Computer algebra independent integration tests

`1_Algebraic_functions/1.1_Binomial_products/1.1.1Linear/1.1.1.2(a+bx)^m(c+dx)^n`

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1 Introduction

This report gives the result of running the computer algebra independent integration problems. The listing of the problems are maintained by and can be downloaded from Albert Rich Rubi web site.

1.1 Listing of CAS systems tested

The following systems were tested at this time.

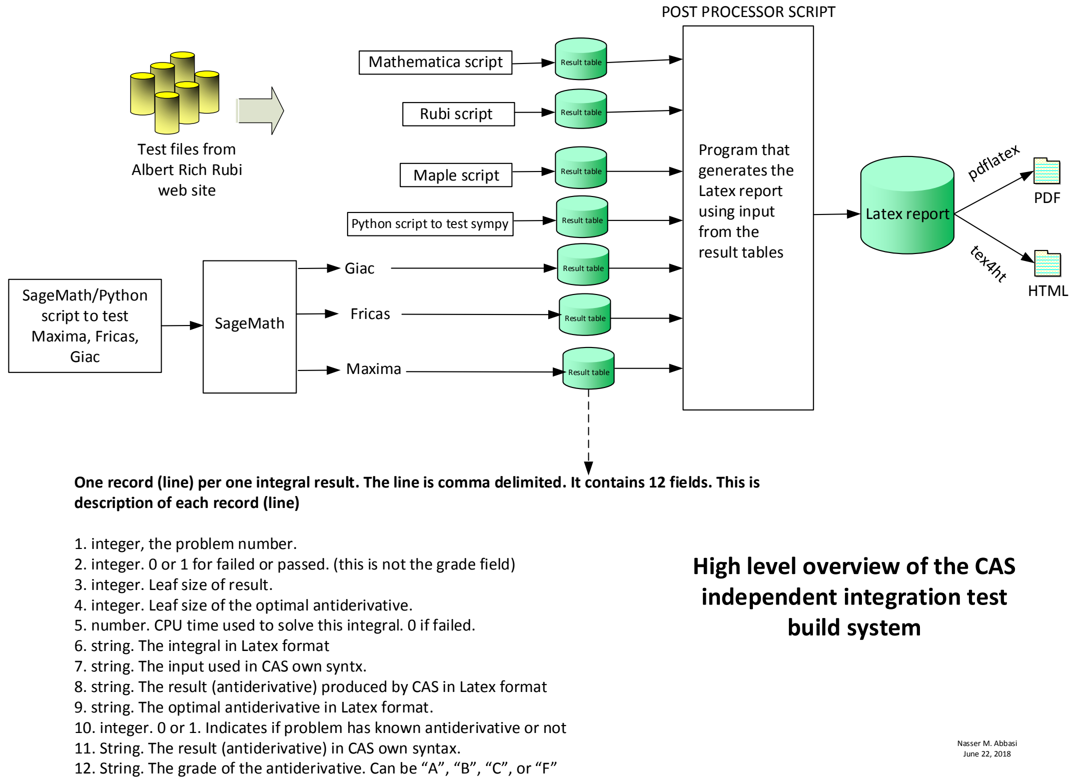
1. Mathematica 11.3 (64 bit).
2. Rubi 4.15.2 in Mathematica 11.3.
3. Rubi in Sympy (Version 1.3) under Python 3.7.0 using Anaconda distribution.
4. Maple 2018.1 (64 bit).
5. Maxima 5.41 Using Lisp ECL 16.1.2.
6. Fricas 1.3.4.
7. Sympy 1.3 under Python 3.7.0 using Anaconda distribution.
8. Giac/Xcas 1.4.9.

Maxima, Fricas and Giac/Xcas were called from inside SageMath version 8.3. This was done using SageMath integrate command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly using Python. Rubi in Sympy was also called directly using sympy 1.3 in python.

1.2 Design of the test system

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



1.3 Timing

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

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

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

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

1.4 Verification

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

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

1.5 Important notes about some of the results

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

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

The percentage of such failures were not counted for each test file, but for an example, for the Timofeev test file, there were about 30 such integrals out of total 705, or about 4 percent. This pecrentage can be higher or lower depending on the specific input test file.

Such integrals can be indentified by looking at the output of the integration in each section for Maxima. If the output was an exception `ValueError` then this is most likely due to this reason.

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

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

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

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

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

Important note about FriCAS and Giac/XCAS results There are Few integrals which failed due to SageMath not able to translate the result back to SageMath syntax and not because these CAS system were not able to do the integrations.

These will fail With error `Exception raised: NotImplementedError`

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

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

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

The other CAS systems (SageMath and Sympy) do not have special buildin function for this purpose at this time. Therefore the leaf size is determined as follows.

For Fricas, Giac and Maxima (all called via sagemath) the following code is used

```
#see https://stackoverflow.com/questions/25202346/how-to-obtain-leaf-count-express

def tree(expr):
    if expr.operator() is None:
       return expr
    else:
       return [expr.operator()]+map(tree, expr.operands())

try:
    # 1.35 is a fudge factor since this estimate of leaf count is bit lower than
    #what it should be compared to Mathematica's
    leafCount = round(1.35*len(flatten(tree(anti))))
except Exception as ee:
    leafCount =1
```

For Sympy, called directly from Python, the following code is used

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

  except Exception as ee:
         leafCount =1
```

When these cas systems implement a buildin function to find the leaf size of expressions, it will be used instead, and these tests run again.

1.6 Grading of results

The table below summarizes the grading of each CAS system.

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

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

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

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

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

System	solved	Failed
Rubi	% 100. (1917)	% 0. (0)
Rubi in Sympy	% 86.96 (1667)	% 13.04 (250)
Mathematica	% 99.79 (1913)	% 0.21 (4)
Maple	% 81.22 (1557)	% 18.78 (360)
Maxima	% 50.23 (963)	% 49.77 (954)
Fricas	% 83.62 (1603)	% 16.38 (314)
Sympy	% 59.21 (1135)	% 40.79 (782)
Giac	% 67.92 (1302)	% 32.08 (615)

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

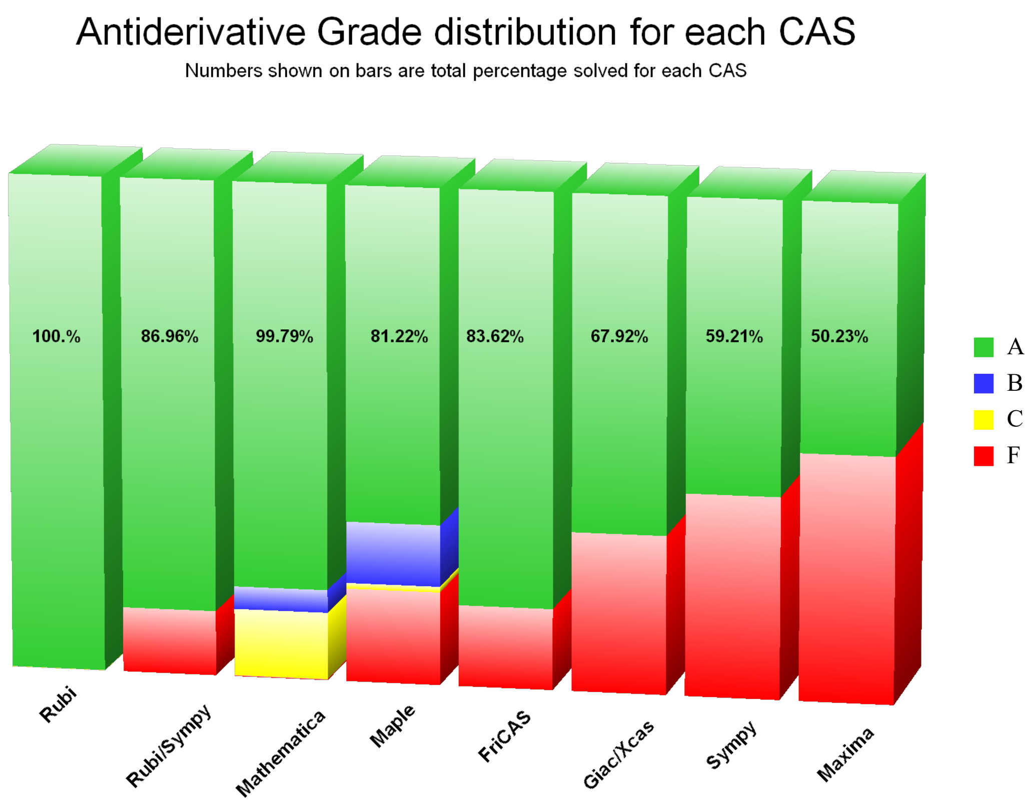
grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality.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

Grading is currently implemented only for for Mathematica, Rubi and Maple results. For all other CAS systems (Maxima, Fricas, Sympy, Giac, Rubi in sympy), the grading function is not yet implemented. For these systems, a grade of A is assigned if the integrate command completes successfully and a grade of F otherwise.

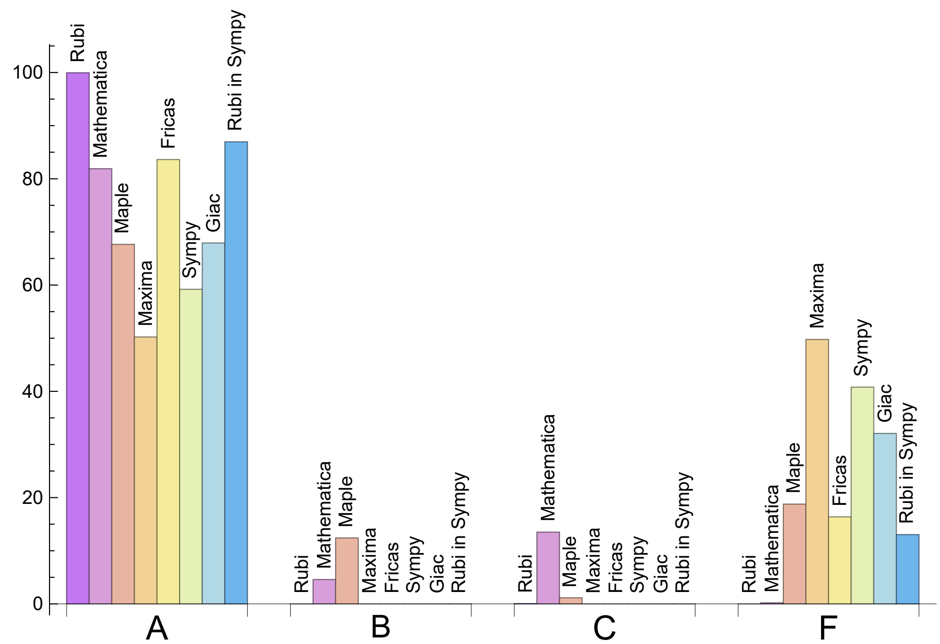
Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	99.95	0.	0.05	0.
Rubi in Sympy	86.96	0.	0.	13.04
Mathematica	81.9	4.59	13.51	0.21
Maple	67.66	12.42	1.15	18.78
Maxima	50.23	0.	0.	49.77
Fricas	83.62	0.	0.	16.38
Sympy	59.21	0.	0.	40.79
Giac	67.92	0.	0.	32.08

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



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



1.7 Performance

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

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.18	108.11	1.	66.	1.
Rubi in Sympy	18.07	97.62	0.9	56.	0.88
Mathematica	0.08	81.28	1.01	55.	0.88
Maple	0.01	103.93	1.3	54.	0.93
Maxima	1.37	155.12	1.99	58.	1.2
Fricas	0.25	179.94	1.8	49.	1.2
Sympy	11.33	353.24	5.39	85.	1.53
Giac	0.38	128.89	1.95	73.	1.31

1.8 list of integrals that has no closed form antiderivative

{}

1.9 list of integrals not solved by each system

Not solved by Rubi {}

Not solved by Rubi in Sympy {5, 6, 7, 9, 13, 45, 46, 47, 54, 56, 57, 69, 70, 71, 84, 85, 86, 87, 88, 107, 108, 109, 110, 111, 112, 113, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 157, 158, 159, 160, 161, 168, 169, 170, 171, 172, 180, 181, 182, 183, 184, 193, 194, 195, 196, 197, 207, 208, 209, 210, 221, 222, 223, 224, 236, 237, 238, 239, 240, 241, 758, 759, 760, 761, 766, 769, 770, 771, 774, 779, 781, 782, 783, 788, 789, 790, 798, 806, 807, 809, 810, 814, 817, 819, 820, 825, 827, 829, 830, 831, 832, 837, 838, 844, 846, 852, 853, 854, 855, 860, 861, 862, 863, 869, 870, 871, 872, 873, 877, 878, 879, 880, 885, 886, 887, 890, 893, 894, 895, 901, 902, 903, 909, 910, 911, 913, 917, 921, 924, 930, 949, 958, 968, 989, 1000, 1008, 1022, 1030, 1031, 1032, 1039, 1043, 1051, 1056, 1057, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1206, 1207, 1208, 1209, 1210, 1211, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1239, 1240, 1241, 1251, 1252, 1264, 1265, 1266, 1283, 1288, 1289, 1299, 1300, 1301, 1302, 1312, 1320, 1321, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1345, 1346, 1354, 1355, 1362, 1363, 1372, 1373, 1374, 1595, 1596, 1600, 1601, 1623, 1624, 1627, 1628, 1724, 1729, 1773, 1774, 1775, 1780, 1781, 1782, 1799, 1800, 1801, 1806, 1807, 1808, 1825, 1826, 1827, 1832, 1833, 1834, 1891, 1894, 1895, 1896, 1898, 1899, 1901, 1902, 1903, 1907, 1909, 1916}

Not solved by Mathematica {1850, 1851, 1857, 1858}

Not solved by Maple {369, 579, 585, 598, 603, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 723, 729, 730, 731, 736, 737, 738, 742, 743, 744, 745, 746, 747, 748, 749, 751, 752, 927, 928, 929, 935, 936, 937, 944, 945, 950, 951, 952, 957, 958, 959, 960, 965, 966, 967, 968, 981, 982, 983, 984, 985, 986, 997, 998, 1170, 1173, 1178, 1179, 1184, 1185, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1212, 1213, 1221, 1224, 1231, 1232, 1233, 1234, 1235, 1465, 1475, 1476, 1485, 1486, 1487, 1502, 1503, 1504, 1505, 1512, 1513, 1514, 1515, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1780, 1781, 1782, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1806, 1807, 1808, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1832, 1833, 1834, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1849, 1850, 1851, 1856, 1857, 1858, 1862, 1863, 1864, 1865, 1866, 1867, 1872, 1873, 1878, 1879, 1880, 1885, 1886, 1887, 1888, 1889, 1890}

Not solved by Maxima {34, 35, 288, 289, 290, 291, 296, 297, 298, 299, 304, 305, 306, 307, 308, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 339, 340, 341, 342, 348, 349, 350, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 370, 375, 376, 377, 382, 383, 384, 389, 390, 391, 396, 397, 398, 403, 404, 405, 410, 411, 412, 417, 418, 419, 428, 435, 442, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 497, 498, 499, 500, 501, 505, 506, 507, 508, 509, 513, 514, 515, 516, 517, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 577, 578, 579, 584, 585, 590, 591, 592, 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Not solved by Fricas {704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 736, 737, 738, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 927, 928, 929, 935, 936, 937, 944, 945, 950, 951, 952, 957, 958, 959, 960, 965, 966, 967, 968, 981, 982, 983, 984, 985, 986, 997, 998, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1189, 1190, 1191, 1192, 1193, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1231, 1232, 1233, 1234, 1235, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1583, 1584, 1585, 1586, 1587, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1623, 1624, 1625, 1626, 1627, 1628, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1701, 1702, 1703, 1704, 1705, 1713, 1714, 1715, 1716, 1717, 1724, 1725, 1726, 1727, 1728, 1729, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1849, 1850, 1851, 1856, 1857, 1858, 1862, 1863, 1864, 1865, 1866, 1867, 1872, 1873, 1878, 1879, 1880, 1885, 1886, 1887, 1888, 1889, 1890}

Not solved by Sympy {368, 496, 504, 512, 520, 521, 527, 533, 539, 545, 546, 551, 552, 557, 558, 563, 564, 575, 576, 583, 589, 607, 614, 615, 622, 628, 646, 707, 718, 739, 740, 741, 742, 743, 744, 753, 754, 755, 761, 762, 771, 783, 784, 789, 790, 796, 809, 810, 811, 819, 827, 831, 832, 833, 837, 838, 839, 844, 845, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 898, 899, 900, 901, 902, 903, 904, 906, 907, 908, 909, 910, 911, 912, 914, 915, 916, 917, 918, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 1063, 1064, 1072, 1073, 1074, 1075, 1076, 1077, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1106, 1114, 1115, 1116, 1123, 1124, 1125, 1126, 1127, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1142, 1143, 1144, 1145, 1146, 1147, 1150, 1151, 1152, 1153, 1154, 1157, 1158, 1159, 1164, 1167, 1168, 1170, 1171, 1172, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1231, 1232, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1362, 1363, 1364, 1365, 1384, 1385, 1386, 1395, 1396, 1397, 1398, 1408, 1409, 1410, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1430, 1431, 1432, 1433, 1434, 1435, 1440, 1441, 1442, 1443, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1523, 1524, 1526, 1528, 1529, 1531, 1533, 1535, 1536, 1538, 1540, 1542, 1543, 1545, 1547, 1549, 1551, 1554, 1555, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1849, 1850, 1851, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1882, 1883, 1884, 1887, 1888, 1890}

Not solved by Giac {368, 369, 497, 498, 499, 500, 501, 505, 506, 507, 508, 509, 513, 514, 515, 516, 517, 521, 522, 523, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 571, 572, 590, 591, 592, 593, 608, 609, 610, 611, 629, 630, 631, 632, 649, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 786, 792, 794, 798, 800, 802, 834, 840, 842, 846, 848, 850, 857, 858, 859, 865, 866, 867, 868, 875, 876, 884, 892, 898, 899, 900, 906, 907, 908, 909, 910, 911, 912, 913, 915, 916, 917, 918, 919, 920, 921, 922, 927, 928, 929, 932, 935, 936, 937, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 988, 990, 991, 992, 993, 994, 995, 996, 997, 998, 1145, 1146, 1147, 1148, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1179, 1180, 1181, 1182, 1183, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1226, 1227, 1228, 1231, 1232, 1233, 1234, 1235, 1340, 1361, 1455, 1553, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1636, 1637, 1638, 1639, 1640, 1642, 1643, 1644, 1645, 1646, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1849, 1850, 1851, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890}

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

Rubi {}

Rubi in Sympy {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

1.11 list of integrals solved by CAS but failed verification

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

Rubi {1566, 1570, 1583, 1584, 1585, 1586, 1587, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1623, 1624, 1625, 1626, 1627, 1628, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1701, 1702, 1703, 1704, 1705, 1713, 1714, 1716, 1717, 1724, 1725, 1726, 1727, 1728, 1729}

Mathematica {1071, 1072, 1073, 1074, 1083, 1084, 1086, 1087, 1098, 1099, 1100, 1102, 1103, 1864, 1865}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Rubi in Sympy Verification phase not implemented yet.

2 detailed summary tables of results

2.1 Detailed conclusion table per each integral for all CAS systems

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

In this table,the column **normalized size** is defined as $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1	1	1	2	1	1	0	1	0
normalized size	1	1.	1.	2.	1.	1.	0.	1.	0.
time (sec)	N/A	0.003	0.	0.006	1.856	0.166	0.014	0.223	0.019

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1	1	1	2	1	1	0	1	0
normalized size	1	1.	1.	2.	1.	1.	0.	1.	0.
time (sec)	N/A	0.002	0.	0.002	1.356	0.183	0.018	0.217	0.012

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	3	3	3	4	4	1	2	4	2
normalized size	1	1.	1.	1.33	1.33	0.33	0.67	1.33	0.67
time (sec)	N/A	0.002	0.	0.	1.326	0.172	0.018	0.21	0.015

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	3	3	3	4	4	1	3	4	3
normalized size	1	1.	1.	1.33	1.33	0.33	1.	1.33	1.
time (sec)	N/A	0.003	0.	0.001	1.313	0.172	0.018	0.207	0.02

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	5	5	5	4	4	4	5	4	0
normalized size	1	1.	1.	0.8	0.8	0.8	1.	0.8	0.
time (sec)	N/A	0.002	0.	0.002	1.319	0.216	0.018	0.212	0.

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	3	3	3	4	4	4	2	4	0
normalized size	1	1.	1.	1.33	1.33	1.33	0.67	1.33	0.
time (sec)	N/A	0.003	0.	0.	1.329	0.197	0.018	0.207	0.

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	3	3	3	4	4	1	2	4	0
normalized size	1	1.	1.	1.33	1.33	0.33	0.67	1.33	0.
time (sec)	N/A	0.003	0.	0.002	1.336	0.171	0.018	0.212	0.

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	4	4	4	5	5	1	3	5	3
normalized size	1	1.	1.	1.25	1.25	0.25	0.75	1.25	0.75
time (sec)	N/A	0.003	0.	0.	1.34	0.173	0.02	0.212	1.143

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	12	15	15	10	15	0
normalized size	1	1.	1.	0.86	1.07	1.07	0.71	1.07	0.
time (sec)	N/A	0.016	0.	0.001	1.331	0.215	0.023	0.215	0.

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	1	3	7	3
normalized size	1	1.	1.	0.86	1.	0.14	0.43	1.	0.43
time (sec)	N/A	0.004	0.	0.001	1.329	0.172	0.024	0.215	0.953

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	1	3	7	3
normalized size	1	1.	1.	0.86	1.	0.14	0.43	1.	0.43
time (sec)	N/A	0.003	0.	0.	1.33	0.18	0.023	0.212	0.9

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	1	3	7	3
normalized size	1	1.	1.	0.86	1.	0.14	0.43	1.	0.43
time (sec)	N/A	0.003	0.	0.002	1.332	0.171	0.023	0.221	0.904

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	1	3	7	0
normalized size	1	1.	1.	0.86	1.	0.14	0.43	1.	0.
time (sec)	N/A	0.003	0.	0.	1.33	0.193	0.021	0.214	0.

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1	1	1	2	1	1	0	1	0
normalized size	1	1.	1.	2.	1.	1.	0.	1.	0.
time (sec)	N/A	0.002	0.	0.	1.329	0.181	0.023	0.208	0.018

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	2	2	2	3	3	3	2	4	2
normalized size	1	1.	1.	1.5	1.5	1.5	1.	2.	1.
time (sec)	N/A	0.001	0.	0.005	1.33	0.206	0.033	0.219	0.046

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	5	5	5	6	7	7	3	7	3
normalized size	1	1.	1.	1.2	1.4	1.4	0.6	1.4	0.6
time (sec)	N/A	0.003	0.	0.	1.332	0.202	0.03	0.212	0.905

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	7	7	7
normalized size	1	1.	1.	0.86	1.	1.	1.	1.	1.
time (sec)	N/A	0.003	0.	0.001	1.334	0.188	0.03	0.207	0.921

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	7	7	7
normalized size	1	1.	1.	0.86	1.	1.	1.	1.	1.
time (sec)	N/A	0.003	0.	0.	1.343	0.188	0.032	0.211	0.913

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	7	7	7
normalized size	1	1.	1.	0.86	1.	1.	1.	1.	1.
time (sec)	N/A	0.003	0.	0.002	1.345	0.188	0.032	0.209	0.904

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.011	1.343	0.201	0.035	0.207	0.913

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.003	1.326	0.2	0.03	0.208	0.903

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.003	1.342	0.197	0.029	0.207	0.908

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	5	7	5
normalized size	1	1.	1.	0.86	1.	1.	0.71	1.	0.71
time (sec)	N/A	0.003	0.001	0.003	1.34	0.197	0.033	0.208	0.941

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	7	7	7
normalized size	1	1.	1.	0.86	1.	1.	1.	1.	1.
time (sec)	N/A	0.003	0.001	0.003	1.344	0.198	0.039	0.207	0.909

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	8	7	8
normalized size	1	1.	1.	0.67	0.78	0.78	0.89	0.78	0.89
time (sec)	N/A	0.003	0.001	0.002	1.334	0.201	0.031	0.204	0.903

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.003	1.361	0.194	0.03	0.207	0.917

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.003	1.332	0.197	0.028	0.206	0.905

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.003	1.331	0.197	0.028	0.206	0.938

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.003	1.335	0.197	0.026	0.219	0.903

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	7	7	7
normalized size	1	1.	1.	0.67	0.78	0.78	0.78	0.78	0.78
time (sec)	N/A	0.003	0.001	0.002	1.33	0.194	0.03	0.211	0.9

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	5	7	5
normalized size	1	1.	1.	0.86	1.	1.	0.71	1.	0.71
time (sec)	N/A	0.003	0.001	0.003	1.354	0.194	0.029	0.208	0.918

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	7	7	7
normalized size	1	1.	1.	0.86	1.	1.	1.	1.	1.
time (sec)	N/A	0.003	0.001	0.003	1.339	0.194	0.031	0.21	0.916

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	6	7	7	8	7	8
normalized size	1	1.	1.	0.67	0.78	0.78	0.89	0.78	0.89
time (sec)	N/A	0.003	0.001	0.002	1.329	0.197	0.031	0.209	0.925

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	0	14	12	15	7
normalized size	1	1.	1.	1.09	0.	1.27	1.09	1.36	0.64
time (sec)	N/A	0.007	0.002	0.004	0.	0.215	0.031	0.206	1.276

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	12	13	0	16	17	22	10
normalized size	1	1.	0.75	0.81	0.	1.	1.06	1.38	0.62
time (sec)	N/A	0.011	0.003	0.001	0.	0.209	0.035	0.206	1.686

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	22	28	28	19	30	17
normalized size	1	1.	1.	0.96	1.22	1.22	0.83	1.3	0.74
time (sec)	N/A	0.028	0.006	0.001	1.321	0.225	0.061	0.213	2.246

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	20	26	140	270	385	17
normalized size	1	1.	1.	0.87	1.13	6.09	11.74	16.74	0.74
time (sec)	N/A	0.027	0.043	0.003	1.309	0.233	173.73	0.218	2.143

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	20	26	80	156	26	17
normalized size	1	1.	1.	0.87	1.13	3.48	6.78	1.13	0.74
time (sec)	N/A	0.024	0.026	0.004	1.338	0.198	14.134	0.21	2.162

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	20	26	26	82	26	17
normalized size	1	1.	1.	0.87	1.13	1.13	3.57	1.13	0.74
time (sec)	N/A	0.024	0.016	0.004	1.335	0.197	0.956	0.21	2.143

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	20	26	26	24	26	15
normalized size	1	1.	1.	0.95	1.24	1.24	1.14	1.24	0.71
time (sec)	N/A	0.025	0.013	0.004	1.354	0.2	3.	0.208	2.126

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	20	26	26	58	26	17
normalized size	1	1.	1.	0.95	1.24	1.24	2.76	1.24	0.81
time (sec)	N/A	0.024	0.013	0.003	1.343	0.202	4.445	0.212	2.184

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	20	26	46	102	26	19
normalized size	1	1.	1.	0.87	1.13	2.	4.43	1.13	0.83
time (sec)	N/A	0.024	0.017	0.004	1.322	0.2	19.725	0.21	2.139

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	1	12	18	12
normalized size	1	1.	1.	0.82	1.06	0.06	0.71	1.06	0.71
time (sec)	N/A	0.021	0.002	0.001	1.358	0.174	0.057	0.21	2.577

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	1	12	18	12
normalized size	1	1.	1.	0.82	1.06	0.06	0.71	1.06	0.71
time (sec)	N/A	0.019	0.001	0.002	1.32	0.189	0.061	0.211	2.526

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	1	12	18	0
normalized size	1	1.	1.	0.82	1.06	0.06	0.71	1.06	0.
time (sec)	N/A	0.016	0.001	0.	1.321	0.176	0.058	0.205	0.

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	11	14	1	8	14	0
normalized size	1	1.	1.	0.92	1.17	0.08	0.67	1.17	0.
time (sec)	N/A	0.008	0.	0.	1.317	0.179	0.062	0.209	0.

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	8	9	11	11	7	12	0
normalized size	1	1.	1.	1.12	1.38	1.38	0.88	1.5	0.
time (sec)	N/A	0.01	0.001	0.018	1.315	0.201	0.131	0.213	0.

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	15	18	7	16	7
normalized size	1	1.	1.	1.09	1.36	1.64	0.64	1.45	0.64
time (sec)	N/A	0.013	0.002	0.025	1.321	0.199	0.986	0.214	2.441

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	15	14	15	15	12	15	10
normalized size	1	1.	0.88	0.82	0.88	0.88	0.71	0.88	0.59
time (sec)	N/A	0.01	0.002	0.008	1.33	0.191	0.995	0.211	2.556

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	18	14	18	14
normalized size	1	1.	1.	0.82	1.06	1.06	0.82	1.06	0.82
time (sec)	N/A	0.015	0.003	0.007	1.446	0.188	1.074	0.208	2.533

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	18	14	18	14
normalized size	1	1.	1.	0.82	1.06	1.06	0.82	1.06	0.82
time (sec)	N/A	0.015	0.002	0.007	1.329	0.196	1.103	0.21	2.605

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	1	26	32	26
normalized size	1	1.	1.	0.83	1.07	0.03	0.87	1.07	0.87
time (sec)	N/A	0.034	0.002	0.001	1.332	0.173	0.087	0.21	5.319

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	1	24	32	24
normalized size	1	1.	1.	0.83	1.07	0.03	0.8	1.07	0.8
time (sec)	N/A	0.029	0.002	0.002	1.325	0.187	0.081	0.214	5.013

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	1	26	32	0
normalized size	1	1.	1.	0.83	1.07	0.03	0.87	1.07	0.
time (sec)	N/A	0.026	0.002	0.	1.333	0.177	0.08	0.209	0.

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	27	1	19	16	8
normalized size	1	1.	1.	0.93	1.93	0.07	1.36	1.14	0.57
time (sec)	N/A	0.007	0.002	0.	1.329	0.191	0.077	0.214	1.248

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	21	27	27	20	28	0
normalized size	1	1.	1.	0.95	1.23	1.23	0.91	1.27	0.
time (sec)	N/A	0.017	0.001	0.004	1.336	0.201	1.004	0.21	0.

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	21	27	32	17	28	0
normalized size	1	1.	1.	1.05	1.35	1.6	0.85	1.4	0.
time (sec)	N/A	0.022	0.002	0.007	1.34	0.193	1.065	0.21	0.

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	23	28	35	20	30	20
normalized size	1	1.	1.	0.96	1.17	1.46	0.83	1.25	0.83
time (sec)	N/A	0.022	0.005	0.01	1.334	0.197	1.166	0.209	4.31

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	26	25	30	30	24	30	14
normalized size	1	1.	1.53	1.47	1.76	1.76	1.41	1.76	0.82
time (sec)	N/A	0.011	0.011	0.007	1.341	0.191	1.174	0.215	2.269

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	32	26	32	27
normalized size	1	1.	1.	0.83	1.07	1.07	0.87	1.07	0.9
time (sec)	N/A	0.023	0.004	0.009	1.334	0.19	1.237	0.208	4.515

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	32	26	32	26
normalized size	1	1.	1.	0.83	1.07	1.07	0.87	1.07	0.87
time (sec)	N/A	0.023	0.012	0.007	1.338	0.195	1.282	0.206	4.509

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	32	26	32	27
normalized size	1	1.	1.	0.83	1.07	1.07	0.87	1.07	0.9
time (sec)	N/A	0.023	0.004	0.007	1.336	0.21	1.315	0.209	4.474

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	32	26	32	26
normalized size	1	1.	1.	0.83	1.07	1.07	0.87	1.07	0.87
time (sec)	N/A	0.024	0.009	0.007	1.329	0.201	1.36	0.21	4.552

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	36	47	1	37	47	37
normalized size	1	1.	1.	0.84	1.09	0.02	0.86	1.09	0.86
time (sec)	N/A	0.046	0.002	0.002	1.336	0.175	0.099	0.208	7.313

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	36	47	1	37	47	37
normalized size	1	1.	1.	0.84	1.09	0.02	0.86	1.09	0.86
time (sec)	N/A	0.039	0.003	0.001	1.33	0.187	0.099	0.215	7.128

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	36	47	1	39	47	39
normalized size	1	1.	1.	0.84	1.09	0.02	0.91	1.09	0.91
time (sec)	N/A	0.038	0.002	0.	1.334	0.176	0.096	0.206	6.701

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	40	35	46	1	36	46	24
normalized size	1	1.	1.33	1.17	1.53	0.03	1.2	1.53	0.8
time (sec)	N/A	0.026	0.002	0.	1.333	0.185	0.093	0.207	5.846

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	42	1	32	16	8
normalized size	1	1.	1.	0.93	3.	0.07	2.29	1.14	0.57
time (sec)	N/A	0.007	0.002	0.	1.349	0.178	0.087	0.211	1.32

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	32	42	42	34	43	0
normalized size	1	1.	1.	0.91	1.2	1.2	0.97	1.23	0.
time (sec)	N/A	0.025	0.004	0.003	1.347	0.211	1.03	0.208	0.

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	33	43	49	31	45	0
normalized size	1	1.	1.	0.97	1.26	1.44	0.91	1.32	0.
time (sec)	N/A	0.031	0.005	0.007	1.344	0.217	1.107	0.211	0.

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	32	41	50	31	42	0
normalized size	1	1.	1.	0.97	1.24	1.52	0.94	1.27	0.
time (sec)	N/A	0.03	0.007	0.008	1.321	0.207	1.22	0.217	0.

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	34	46	50	34	47	34
normalized size	1	1.	1.	0.92	1.24	1.35	0.92	1.27	0.92
time (sec)	N/A	0.03	0.005	0.008	1.337	0.198	1.336	0.209	5.896

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	39	36	45	45	36	45	14
normalized size	1	1.	2.29	2.12	2.65	2.65	2.12	2.65	0.82
time (sec)	N/A	0.011	0.005	0.009	1.341	0.188	1.367	0.206	2.239

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	41	36	47	47	37	47	37
normalized size	1	1.	1.14	1.	1.31	1.31	1.03	1.31	1.03
time (sec)	N/A	0.023	0.008	0.008	1.35	0.194	1.458	0.21	6.215

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	36	47	47	37	47	41
normalized size	1	1.	1.	0.84	1.09	1.09	0.86	1.09	0.95
time (sec)	N/A	0.033	0.005	0.007	1.349	0.187	1.502	0.211	6.284

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	36	47	47	37	47	39
normalized size	1	1.	1.	0.84	1.09	1.09	0.86	1.09	0.91
time (sec)	N/A	0.031	0.005	0.008	1.335	0.19	1.574	0.213	6.351

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	66	57	76	1	63	76	63
normalized size	1	1.	1.	0.86	1.15	0.02	0.95	1.15	0.95
time (sec)	N/A	0.073	0.003	0.036	1.454	0.181	0.122	0.211	12.396

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	69	58	77	1	65	77	65
normalized size	1	1.	1.	0.84	1.12	0.01	0.94	1.12	0.94
time (sec)	N/A	0.064	0.003	0.001	1.326	0.187	0.115	0.211	12.033

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	69	58	77	1	66	77	66
normalized size	1	1.	1.	0.84	1.12	0.01	0.96	1.12	0.96
time (sec)	N/A	0.062	0.003	0.001	1.328	0.182	0.127	0.211	11.661

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	66	57	76	1	63	76	63
normalized size	1	1.	1.03	0.89	1.19	0.02	0.98	1.19	0.98
time (sec)	N/A	0.064	0.003	0.001	1.362	0.184	0.115	0.211	11.294

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	67	58	77	1	65	77	41
normalized size	1	1.	1.43	1.23	1.64	0.02	1.38	1.64	0.87
time (sec)	N/A	0.052	0.003	0.001	1.344	0.182	0.145	0.21	10.341

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	67	58	77	1	65	77	24
normalized size	1	1.	2.23	1.93	2.57	0.03	2.17	2.57	0.8
time (sec)	N/A	0.028	0.003	0.001	1.319	0.188	0.137	0.205	7.149

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	72	1	60	16	8
normalized size	1	1.	1.	0.93	5.14	0.07	4.29	1.14	0.57
time (sec)	N/A	0.007	0.002	0.001	1.33	0.18	0.118	0.207	1.256

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	59	54	72	72	60	73	0
normalized size	1	1.	1.	0.92	1.22	1.22	1.02	1.24	0.
time (sec)	N/A	0.042	0.005	0.017	1.321	0.205	1.266	0.217	0.

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	58	55	73	80	56	74	0
normalized size	1	1.	1.	0.95	1.26	1.38	0.97	1.28	0.
time (sec)	N/A	0.05	0.006	0.009	1.331	0.195	1.296	0.21	0.

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	60	55	72	80	58	73	0
normalized size	1	1.	1.	0.92	1.2	1.33	0.97	1.22	0.
time (sec)	N/A	0.05	0.006	0.01	1.335	0.232	1.407	0.207	0.

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	60	55	74	80	58	76	0
normalized size	1	1.	1.	0.92	1.23	1.33	0.97	1.27	0.
time (sec)	N/A	0.051	0.006	0.01	1.341	0.207	1.585	0.216	0.

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	57	54	73	80	56	74	0
normalized size	1	1.	1.	0.95	1.28	1.4	0.98	1.3	0.
time (sec)	N/A	0.051	0.008	0.01	1.346	0.201	1.834	0.213	0.

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	61	56	76	80	58	77	60
normalized size	1	1.	1.	0.92	1.25	1.31	0.95	1.26	0.98
time (sec)	N/A	0.051	0.006	0.01	1.334	0.202	1.861	0.207	10.121

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	65	58	74	74	60	74	14
normalized size	1	1.	3.82	3.41	4.35	4.35	3.53	4.35	0.82
time (sec)	N/A	0.011	0.005	0.009	1.36	0.191	1.992	0.207	2.263

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	67	58	77	77	61	77	29
normalized size	1	1.	1.86	1.61	2.14	2.14	1.69	2.14	0.81
time (sec)	N/A	0.023	0.005	0.009	1.341	0.189	1.995	0.206	3.571

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	67	58	77	77	61	77	66
normalized size	1	1.	1.2	1.04	1.38	1.38	1.09	1.38	1.18
time (sec)	N/A	0.038	0.005	0.008	1.327	0.191	2.124	0.214	10.468

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	58	77	77	61	77	65
normalized size	1	1.	1.	0.87	1.15	1.15	0.91	1.15	0.97
time (sec)	N/A	0.052	0.009	0.008	1.332	0.191	2.203	0.213	10.539

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	69	58	77	77	61	77	68
normalized size	1	1.	1.	0.84	1.12	1.12	0.88	1.12	0.99
time (sec)	N/A	0.052	0.005	0.008	1.344	0.192	2.254	0.207	10.792

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	69	58	77	77	61	77	66
normalized size	1	1.	1.	0.84	1.12	1.12	0.88	1.12	0.96
time (sec)	N/A	0.05	0.005	0.009	1.333	0.19	2.379	0.206	11.184

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	58	77	77	61	77	65
normalized size	1	1.	1.	0.87	1.15	1.15	0.91	1.15	0.97
time (sec)	N/A	0.053	0.005	0.007	1.485	0.19	2.516	0.207	10.596

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	58	77	77	61	77	65
normalized size	1	1.	1.	0.87	1.15	1.15	0.91	1.15	0.97
time (sec)	N/A	0.051	0.005	0.009	1.349	0.19	2.548	0.213	10.629

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	95	80	107	1	94	107	94
normalized size	1	1.	1.	0.84	1.13	0.01	0.99	1.13	0.99
time (sec)	N/A	0.103	0.004	0.003	1.347	0.174	0.14	0.214	18.532

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	95	80	107	1	92	107	92
normalized size	1	1.	1.	0.84	1.13	0.01	0.97	1.13	0.97
time (sec)	N/A	0.091	0.004	0.001	1.347	0.175	0.143	0.217	17.881

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	95	80	107	1	94	107	94
normalized size	1	1.	1.	0.84	1.13	0.01	0.99	1.13	0.99
time (sec)	N/A	0.09	0.003	0.001	1.348	0.181	0.14	0.208	17.376

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	92	79	105	1	90	105	90
normalized size	1	1.	0.96	0.82	1.09	0.01	0.94	1.09	0.94
time (sec)	N/A	0.098	0.003	0.004	1.348	0.179	0.147	0.207	16.984

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	93	80	107	1	92	107	75
normalized size	1	1.	1.15	0.99	1.32	0.01	1.14	1.32	0.93
time (sec)	N/A	0.083	0.003	0.003	1.347	0.176	0.135	0.208	18.218

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	93	80	107	1	92	107	56
normalized size	1	1.	1.45	1.25	1.67	0.02	1.44	1.67	0.88
time (sec)	N/A	0.072	0.003	0.002	1.345	0.188	0.14	0.205	15.318

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	93	80	107	1	92	107	41
normalized size	1	1.	1.98	1.7	2.28	0.02	1.96	2.28	0.87
time (sec)	N/A	0.06	0.003	0.003	1.342	0.179	0.151	0.209	12.228

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	91	80	107	1	90	107	24
normalized size	1	1.	3.03	2.67	3.57	0.03	3.	3.57	0.8
time (sec)	N/A	0.029	0.003	0.001	1.345	0.181	0.15	0.21	8.872

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	1	83	16	8
normalized size	1	1.	1.	0.93	1.14	0.07	5.93	1.14	0.57
time (sec)	N/A	0.007	0.001	0.	1.34	0.188	0.142	0.21	1.271

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	87	76	101	101	88	103	0
normalized size	1	1.	1.	0.87	1.16	1.16	1.01	1.18	0.
time (sec)	N/A	0.061	0.005	0.003	1.338	0.201	1.244	0.213	0.

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	86	77	103	109	85	104	0
normalized size	1	1.	1.	0.9	1.2	1.27	0.99	1.21	0.
time (sec)	N/A	0.073	0.006	0.007	1.343	0.195	1.384	0.21	0.

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	84	77	101	109	83	103	0
normalized size	1	1.	1.	0.92	1.2	1.3	0.99	1.23	0.
time (sec)	N/A	0.071	0.006	0.009	1.347	0.203	1.499	0.217	0.

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	86	77	104	109	85	105	0
normalized size	1	1.	1.	0.9	1.21	1.27	0.99	1.22	0.
time (sec)	N/A	0.073	0.006	0.009	1.343	0.203	1.621	0.211	0.

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	86	77	104	109	83	105	0
normalized size	1	1.	1.	0.9	1.21	1.27	0.97	1.22	0.
time (sec)	N/A	0.073	0.006	0.012	1.347	0.195	1.81	0.211	0.

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	84	77	104	109	82	105	0
normalized size	1	1.	1.	0.92	1.24	1.3	0.98	1.25	0.
time (sec)	N/A	0.075	0.006	0.01	1.341	0.195	2.057	0.211	0.

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	85	76	103	109	80	104	0
normalized size	1	1.	1.	0.89	1.21	1.28	0.94	1.22	0.
time (sec)	N/A	0.072	0.008	0.01	1.353	0.198	2.321	0.219	0.

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	89	78	105	109	82	107	88
normalized size	1	1.	1.	0.88	1.18	1.22	0.92	1.2	0.99
time (sec)	N/A	0.072	0.006	0.012	1.342	0.196	2.469	0.221	14.754

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	87	80	104	104	83	104	14
normalized size	1	1.	5.12	4.71	6.12	6.12	4.88	6.12	0.82
time (sec)	N/A	0.012	0.006	0.007	1.335	0.192	2.55	0.219	2.247

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	91	80	107	107	85	107	29
normalized size	1	1.	2.53	2.22	2.97	2.97	2.36	2.97	0.81
time (sec)	N/A	0.024	0.006	0.007	1.346	0.191	2.715	0.218	3.54

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	93	80	107	107	85	107	48
normalized size	1	1.	1.66	1.43	1.91	1.91	1.52	1.91	0.86
time (sec)	N/A	0.039	0.006	0.007	1.352	0.186	2.774	0.216	5.793

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	93	80	107	107	85	107	68
normalized size	1	1.	1.22	1.05	1.41	1.41	1.12	1.41	0.89
time (sec)	N/A	0.056	0.005	0.01	1.338	0.19	2.987	0.217	8.658

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	93	80	107	107	85	107	94
normalized size	1	1.	0.97	0.83	1.11	1.11	0.89	1.11	0.98
time (sec)	N/A	0.076	0.006	0.01	1.346	0.187	3.097	0.202	15.377

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	93	80	107	107	85	107	92
normalized size	1	1.	1.	0.86	1.15	1.15	0.91	1.15	0.99
time (sec)	N/A	0.077	0.009	0.01	1.349	0.194	3.191	0.203	15.462

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	95	80	107	107	85	107	95
normalized size	1	1.	1.	0.84	1.13	1.13	0.89	1.13	1.
time (sec)	N/A	0.075	0.006	0.008	1.343	0.192	3.323	0.211	15.508

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	95	80	107	107	85	107	94
normalized size	1	1.	1.	0.84	1.13	1.13	0.89	1.13	0.99
time (sec)	N/A	0.072	0.005	0.01	1.348	0.186	3.44	0.203	15.523

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	132	113	151	1	133	151	133
normalized size	1	1.	1.	0.86	1.14	0.01	1.01	1.14	1.01
time (sec)	N/A	0.161	0.005	0.003	1.364	0.174	0.174	0.212	28.992

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	132	113	151	1	131	151	131
normalized size	1	1.	1.	0.86	1.14	0.01	0.99	1.14	0.99
time (sec)	N/A	0.145	0.005	0.003	1.335	0.183	0.19	0.204	28.053

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	132	113	151	1	133	151	133
normalized size	1	1.	1.	0.86	1.14	0.01	1.01	1.14	1.01
time (sec)	N/A	0.147	0.004	0.002	1.346	0.179	0.177	0.203	27.51

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	125	112	150	1	126	150	126
normalized size	1	1.	0.85	0.76	1.02	0.01	0.86	1.02	0.86
time (sec)	N/A	0.152	0.004	0.003	1.336	0.181	0.173	0.201	26.759

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	130	113	151	1	131	151	131
normalized size	1	1.	0.98	0.86	1.14	0.01	0.99	1.14	0.99
time (sec)	N/A	0.14	0.004	0.001	1.34	0.176	0.174	0.2	26.237

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	126	113	151	1	128	151	104
normalized size	1	1.	1.12	1.01	1.35	0.01	1.14	1.35	0.93
time (sec)	N/A	0.126	0.004	0.002	1.374	0.185	0.166	0.203	28.113

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	132	113	151	1	133	151	90
normalized size	1	1.	1.35	1.15	1.54	0.01	1.36	1.54	0.92
time (sec)	N/A	0.114	0.004	0.003	1.363	0.173	0.177	0.204	25.133

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	130	113	151	1	131	151	73
normalized size	1	1.	1.6	1.4	1.86	0.01	1.62	1.86	0.9
time (sec)	N/A	0.101	0.004	0.003	1.327	0.186	0.17	0.203	21.842

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	128	113	151	1	129	151	56
normalized size	1	1.	2.	1.77	2.36	0.02	2.02	2.36	0.88
time (sec)	N/A	0.092	0.004	0.002	1.33	0.18	0.169	0.201	19.05

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	126	113	151	1	128	151	39
normalized size	1	1.	2.68	2.4	3.21	0.02	2.72	3.21	0.83
time (sec)	N/A	0.078	0.004	0.001	1.332	0.177	0.168	0.203	15.651

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	128	113	151	1	129	151	24
normalized size	1	1.	4.27	3.77	5.03	0.03	4.3	5.03	0.8
time (sec)	N/A	0.031	0.004	0.003	1.335	0.188	0.165	0.2	12.435

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	1	114	16	8
normalized size	1	1.	1.	0.93	1.14	0.07	8.14	1.14	0.57
time (sec)	N/A	0.007	0.001	0.001	1.334	0.18	0.154	0.204	1.305

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	122	109	146	146	126	147	0
normalized size	1	1.	1.	0.89	1.2	1.2	1.03	1.2	0.
time (sec)	N/A	0.093	0.005	0.004	1.358	0.201	1.444	0.207	0.

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	115	110	147	154	117	149	0
normalized size	1	1.	1.	0.96	1.28	1.34	1.02	1.3	0.
time (sec)	N/A	0.116	0.017	0.009	1.338	0.195	1.528	0.207	0.

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	110	146	154	121	147	0
normalized size	1	1.	1.	0.92	1.23	1.29	1.02	1.24	0.
time (sec)	N/A	0.115	0.007	0.009	1.33	0.195	1.666	0.206	0.

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	115	110	146	154	117	147	0
normalized size	1	1.	1.	0.96	1.27	1.34	1.02	1.28	0.
time (sec)	N/A	0.117	0.021	0.008	1.36	0.197	1.797	0.205	0.

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	110	149	154	119	150	0
normalized size	1	1.	1.	0.92	1.25	1.29	1.	1.26	0.
time (sec)	N/A	0.118	0.018	0.01	1.34	0.194	2.02	0.205	0.

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	117	110	149	154	119	150	0
normalized size	1	1.	1.	0.94	1.27	1.32	1.02	1.28	0.
time (sec)	N/A	0.118	0.014	0.011	1.332	0.196	2.239	0.205	0.

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	110	149	154	121	150	0
normalized size	1	1.	1.	0.92	1.25	1.29	1.02	1.26	0.
time (sec)	N/A	0.117	0.007	0.01	1.487	0.195	2.473	0.203	0.

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	115	110	149	154	117	150	0
normalized size	1	1.	1.	0.96	1.3	1.34	1.02	1.3	0.
time (sec)	N/A	0.12	0.019	0.011	1.347	0.192	2.773	0.203	0.

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	110	149	154	117	150	0
normalized size	1	1.	1.	0.92	1.25	1.29	0.98	1.26	0.
time (sec)	N/A	0.118	0.007	0.011	1.352	0.196	3.035	0.206	0.

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	114	109	147	154	116	149	0
normalized size	1	1.	1.	0.96	1.29	1.35	1.02	1.31	0.
time (sec)	N/A	0.118	0.009	0.012	1.348	0.195	3.433	0.211	0.

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	124	111	150	154	117	151	126
normalized size	1	1.	1.	0.9	1.21	1.24	0.94	1.22	1.02
time (sec)	N/A	0.118	0.007	0.012	1.347	0.193	3.627	0.212	23.294

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	114	113	149	149	119	149	14
normalized size	1	1.	6.71	6.65	8.76	8.76	7.	8.76	0.82
time (sec)	N/A	0.013	0.017	0.008	1.346	0.187	3.771	0.203	2.291

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	128	113	151	151	121	151	29
normalized size	1	1.	3.56	3.14	4.19	4.19	3.36	4.19	0.81
time (sec)	N/A	0.025	0.006	0.008	1.358	0.193	3.963	0.214	3.571

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	126	113	151	151	121	151	48
normalized size	1	1.	2.25	2.02	2.7	2.7	2.16	2.7	0.86
time (sec)	N/A	0.039	0.014	0.01	1.344	0.19	4.167	0.242	5.742

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	128	113	151	151	121	151	68
normalized size	1	1.	1.68	1.49	1.99	1.99	1.59	1.99	0.89
time (sec)	N/A	0.057	0.012	0.011	1.349	0.185	4.363	0.215	8.651

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	130	113	151	151	121	151	88
normalized size	1	1.	1.35	1.18	1.57	1.57	1.26	1.57	0.92
time (sec)	N/A	0.077	0.014	0.011	1.343	0.192	4.592	0.209	12.228

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	132	113	151	151	121	151	104
normalized size	1	1.	1.14	0.97	1.3	1.3	1.04	1.3	0.9
time (sec)	N/A	0.1	0.006	0.01	1.345	0.187	4.697	0.245	16.512

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	126	113	151	151	121	151	129
normalized size	1	1.	0.93	0.83	1.11	1.11	0.89	1.11	0.95
time (sec)	N/A	0.126	0.014	0.009	1.351	0.189	4.969	0.215	23.804

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	130	113	151	151	121	151	133
normalized size	1	1.	1.	0.87	1.16	1.16	0.93	1.16	1.02
time (sec)	N/A	0.125	0.007	0.01	1.344	0.187	5.211	0.21	23.842

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	126	113	151	151	121	151	128
normalized size	1	1.	1.	0.9	1.2	1.2	0.96	1.2	1.02
time (sec)	N/A	0.124	0.01	0.01	1.351	0.192	5.431	0.202	24.138

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	14	13	18	1	12	18	10
normalized size	1	1.	0.93	0.87	1.2	0.07	0.8	1.2	0.67
time (sec)	N/A	0.007	0.001	0.001	1.342	0.17	0.058	0.203	1.709

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	19	18	24	36	22	23	14
normalized size	1	1.	0.95	0.9	1.2	1.8	1.1	1.15	0.7
time (sec)	N/A	0.013	0.001	0.002	1.348	0.196	0.081	0.223	2.32

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	63	86	85	61	88	0
normalized size	1	1.	1.	0.9	1.23	1.21	0.87	1.26	0.
time (sec)	N/A	0.078	0.006	0.005	1.338	0.192	1.143	0.228	0.

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	57	52	70	70	49	72	0
normalized size	1	1.	1.	0.91	1.23	1.23	0.86	1.26	0.
time (sec)	N/A	0.057	0.006	0.004	1.334	0.19	1.132	0.226	0.

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	41	57	55	37	58	0
normalized size	1	1.	1.	0.93	1.3	1.25	0.84	1.32	0.
time (sec)	N/A	0.044	0.005	0.004	1.341	0.193	1.135	0.226	0.

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	30	39	39	26	41	0
normalized size	1	1.	1.	0.97	1.26	1.26	0.84	1.32	0.
time (sec)	N/A	0.033	0.005	0.003	1.344	0.19	1.071	0.225	0.

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	24	23	14	26	0
normalized size	1	1.	1.	1.06	1.33	1.28	0.78	1.44	0.
time (sec)	N/A	0.023	0.003	0.004	1.342	0.192	1.02	0.225	0.

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	14	14	7	15	7
normalized size	1	1.	1.	1.1	1.4	1.4	0.7	1.5	0.7
time (sec)	N/A	0.007	0.001	0.002	1.342	0.19	0.091	0.207	1.278

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	24	22	10	27	12
normalized size	1	1.	1.	1.06	1.33	1.22	0.56	1.5	0.67
time (sec)	N/A	0.014	0.005	0.009	1.34	0.199	0.31	0.217	3.45

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	29	38	35	19	41	24
normalized size	1	1.	1.	1.04	1.36	1.25	0.68	1.46	0.86
time (sec)	N/A	0.032	0.007	0.014	1.341	0.2	1.275	0.217	5.726

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	41	54	55	31	61	37
normalized size	1	1.	1.	0.98	1.29	1.31	0.74	1.45	0.88
time (sec)	N/A	0.04	0.007	0.011	1.341	0.199	1.408	0.207	7.594

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	56	53	69	73	44	76	49
normalized size	1	1.	1.	0.95	1.23	1.3	0.79	1.36	0.88
time (sec)	N/A	0.05	0.007	0.01	1.342	0.202	1.509	0.208	9.3

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	68	63	84	88	56	90	61
normalized size	1	1.	1.	0.93	1.24	1.29	0.82	1.32	0.9
time (sec)	N/A	0.058	0.007	0.013	1.346	0.201	1.599	0.219	11.092

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	77	78	111	130	78	139	0
normalized size	1	1.	0.95	0.96	1.37	1.6	0.96	1.72	0.
time (sec)	N/A	0.111	0.044	0.01	1.361	0.194	1.512	0.218	0.

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	66	67	95	115	71	122	0
normalized size	1	1.	0.92	0.93	1.32	1.6	0.99	1.69	0.
time (sec)	N/A	0.09	0.028	0.012	1.377	0.192	1.469	0.216	0.

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	54	57	80	99	54	107	0
normalized size	1	1.	0.93	0.98	1.38	1.71	0.93	1.84	0.
time (sec)	N/A	0.074	0.037	0.01	1.357	0.194	1.415	0.213	0.

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	43	45	63	84	44	89	0
normalized size	1	1.	0.93	0.98	1.37	1.83	0.96	1.93	0.
time (sec)	N/A	0.058	0.027	0.01	1.359	0.191	1.319	0.211	0.

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	29	34	49	63	31	68	0
normalized size	1	1.	0.88	1.03	1.48	1.91	0.94	2.06	0.
time (sec)	N/A	0.042	0.02	0.009	1.341	0.195	1.294	0.266	0.

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	20	24	35	38	20	57	19
normalized size	1	1.	0.87	1.04	1.52	1.65	0.87	2.48	0.83
time (sec)	N/A	0.029	0.009	0.007	1.326	0.193	1.162	0.223	5.24

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	13	16	18	10	16	8
normalized size	1	1.	1.	1.08	1.33	1.5	0.83	1.33	0.67
time (sec)	N/A	0.007	0.003	0.001	1.381	0.186	1.126	0.21	1.281

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	24	30	38	53	22	51	24
normalized size	1	1.	0.83	1.03	1.31	1.83	0.76	1.76	0.83
time (sec)	N/A	0.034	0.021	0.013	1.324	0.217	1.357	0.217	6.125

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	35	43	61	85	36	70	39
normalized size	1	1.	0.83	1.02	1.45	2.02	0.86	1.67	0.93
time (sec)	N/A	0.049	0.081	0.014	1.367	0.214	1.578	0.212	8.452

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	53	57	86	116	54	100	56
normalized size	1	1.	0.91	0.98	1.48	2.	0.93	1.72	0.97
time (sec)	N/A	0.066	0.09	0.015	1.326	0.213	1.724	0.214	11.239

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	66	68	99	128	66	122	66
normalized size	1	1.	0.96	0.99	1.43	1.86	0.96	1.77	0.96
time (sec)	N/A	0.079	0.089	0.016	1.371	0.209	1.85	0.232	12.725

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	79	79	116	146	80	140	83
normalized size	1	1.	0.94	0.94	1.38	1.74	0.95	1.67	0.99
time (sec)	N/A	0.095	0.079	0.017	1.323	0.208	2.021	0.214	15.567

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	89	94	139	174	107	128	0
normalized size	1	1.	0.9	0.95	1.4	1.76	1.08	1.29	0.
time (sec)	N/A	0.145	0.045	0.011	1.338	0.205	1.918	0.205	0.

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	77	83	123	158	92	112	0
normalized size	1	1.	0.9	0.97	1.43	1.84	1.07	1.3	0.
time (sec)	N/A	0.117	0.043	0.011	1.337	0.202	1.841	0.205	0.

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	67	72	109	144	83	99	0
normalized size	1	1.	0.87	0.94	1.42	1.87	1.08	1.29	0.
time (sec)	N/A	0.099	0.048	0.01	1.332	0.202	1.766	0.206	0.

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	55	61	93	128	70	82	0
normalized size	1	1.	0.86	0.95	1.45	2.	1.09	1.28	0.
time (sec)	N/A	0.078	0.037	0.012	1.34	0.203	1.682	0.214	0.

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	40	49	77	112	56	59	0
normalized size	1	1.	0.8	0.98	1.54	2.24	1.12	1.18	0.
time (sec)	N/A	0.062	0.065	0.01	1.333	0.201	1.6	0.218	0.

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	33	40	65	82	46	50	36
normalized size	1	1.	0.8	0.98	1.59	2.	1.12	1.22	0.88
time (sec)	N/A	0.048	0.026	0.009	1.335	0.209	1.382	0.21	8.859

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	20	27	43	43	32	24	12
normalized size	1	1.	1.18	1.59	2.53	2.53	1.88	1.41	0.71
time (sec)	N/A	0.011	0.007	0.007	1.319	0.204	1.352	0.203	2.127

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	32	26	16	12
normalized size	1	1.	1.	0.93	1.14	2.29	1.86	1.14	0.86
time (sec)	N/A	0.007	0.003	0.002	1.481	0.207	1.307	0.223	1.267

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	37	42	69	108	46	58	37
normalized size	1	1.	0.86	0.98	1.6	2.51	1.07	1.35	0.86
time (sec)	N/A	0.047	0.051	0.012	1.35	0.212	1.658	0.215	8.434

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	53	56	93	147	65	81	54
normalized size	1	1.	0.93	0.98	1.63	2.58	1.14	1.42	0.95
time (sec)	N/A	0.066	0.08	0.016	1.346	0.219	1.908	0.209	11.721

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	68	73	116	176	78	99	73
normalized size	1	1.	0.89	0.96	1.53	2.32	1.03	1.3	0.96
time (sec)	N/A	0.087	0.074	0.015	1.348	0.217	2.044	0.204	14.918

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	79	84	131	190	92	116	87
normalized size	1	1.	0.89	0.94	1.47	2.13	1.03	1.3	0.98
time (sec)	N/A	0.104	0.109	0.016	1.351	0.215	2.219	0.206	16.791

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	90	94	146	205	102	131	95
normalized size	1	1.	0.93	0.97	1.51	2.11	1.05	1.35	0.98
time (sec)	N/A	0.124	0.105	0.015	1.351	0.217	2.511	0.21	20.509

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	101	109	169	219	129	143	0
normalized size	1	1.	0.89	0.96	1.48	1.92	1.13	1.25	0.
time (sec)	N/A	0.182	0.057	0.012	1.345	0.21	2.348	0.203	0.

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	90	98	154	204	119	128	0
normalized size	1	1.	0.86	0.93	1.47	1.94	1.13	1.22	0.
time (sec)	N/A	0.154	0.063	0.01	1.343	0.207	2.256	0.206	0.

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	90	87	138	188	105	112	0
normalized size	1	1.	1.	0.97	1.53	2.09	1.17	1.24	0.
time (sec)	N/A	0.128	0.033	0.011	1.329	0.217	2.212	0.203	0.

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	68	76	123	174	94	97	0
normalized size	1	1.	0.84	0.94	1.52	2.15	1.16	1.2	0.
time (sec)	N/A	0.105	0.04	0.011	1.351	0.214	2.078	0.205	0.

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	51	64	107	157	80	74	0
normalized size	1	1.	0.78	0.98	1.65	2.42	1.23	1.14	0.
time (sec)	N/A	0.08	0.08	0.01	1.34	0.217	2.005	0.206	0.

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	44	55	95	127	70	62	53
normalized size	1	1.	0.76	0.95	1.64	2.19	1.21	1.07	0.91
time (sec)	N/A	0.068	0.024	0.009	1.336	0.207	1.672	0.205	12.727

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	31	41	73	73	56	39	12
normalized size	1	1.	1.82	2.41	4.29	4.29	3.29	2.29	0.71
time (sec)	N/A	0.012	0.019	0.008	1.343	0.206	1.59	0.202	2.314

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	20	27	58	58	44	24	26
normalized size	1	1.	0.67	0.9	1.93	1.93	1.47	0.8	0.87
time (sec)	N/A	0.03	0.007	0.008	1.337	0.206	1.491	0.201	5.586

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	47	37	16	12
normalized size	1	1.	1.	0.93	1.14	3.36	2.64	1.14	0.86
time (sec)	N/A	0.007	0.004	0.001	1.347	0.197	1.52	0.204	1.3

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	48	54	99	167	70	73	51
normalized size	1	1.	0.84	0.95	1.74	2.93	1.23	1.28	0.89
time (sec)	N/A	0.06	0.052	0.012	1.34	0.215	1.985	0.203	10.895

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	64	69	123	207	88	96	66
normalized size	1	1.	0.91	0.99	1.76	2.96	1.26	1.37	0.94
time (sec)	N/A	0.087	0.099	0.016	1.344	0.214	2.26	0.204	15.307

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	79	88	146	235	104	116	90
normalized size	1	1.	0.85	0.95	1.57	2.53	1.12	1.25	0.97
time (sec)	N/A	0.116	0.103	0.016	1.355	0.213	2.474	0.204	19.416

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	88	99	158	247	114	126	100
normalized size	1	1.	0.86	0.97	1.55	2.42	1.12	1.24	0.98
time (sec)	N/A	0.128	0.087	0.016	1.349	0.221	2.663	0.204	21.876

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	101	110	176	265	128	146	116
normalized size	1	1.	0.86	0.94	1.5	2.26	1.09	1.25	0.99
time (sec)	N/A	0.16	0.134	0.016	1.35	0.214	2.985	0.207	29.999

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	139	143	243	338	190	173	0
normalized size	1	1.	0.93	0.95	1.62	2.25	1.27	1.15	0.
time (sec)	N/A	0.277	0.041	0.018	1.362	0.22	3.808	0.205	0.

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	128	132	228	323	178	158	0
normalized size	1	1.	0.92	0.95	1.64	2.32	1.28	1.14	0.
time (sec)	N/A	0.237	0.057	0.015	1.354	0.208	3.731	0.203	0.

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	104	121	212	308	165	142	0
normalized size	1	1.	0.81	0.95	1.66	2.41	1.29	1.11	0.
time (sec)	N/A	0.192	0.086	0.013	1.363	0.208	3.445	0.203	0.

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	104	109	196	290	151	119	0
normalized size	1	1.	0.88	0.92	1.66	2.46	1.28	1.01	0.
time (sec)	N/A	0.16	0.048	0.013	1.357	0.21	3.329	0.206	0.

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	77	100	184	261	141	107	104
normalized size	1	1.	0.71	0.92	1.69	2.39	1.29	0.98	0.95
time (sec)	N/A	0.138	0.036	0.011	1.364	0.211	2.843	0.205	26.17

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	64	87	162	162	128	84	12
normalized size	1	1.	3.76	5.12	9.53	9.53	7.53	4.94	0.71
time (sec)	N/A	0.012	0.018	0.01	1.362	0.206	2.658	0.207	2.329

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	53	72	147	147	116	69	27
normalized size	1	1.	1.51	2.06	4.2	4.2	3.31	1.97	0.77
time (sec)	N/A	0.024	0.016	0.008	1.322	0.203	2.561	0.209	4.144

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	64	42	57	132	132	104	54	60
normalized size	1	1.23	0.81	1.1	2.54	2.54	2.	1.04	1.15
time (sec)	N/A	0.07	0.014	0.008	1.412	0.204	2.36	0.219	13.367

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	31	42	117	117	92	39	42
normalized size	1	1.	0.66	0.89	2.49	2.49	1.96	0.83	0.89
time (sec)	N/A	0.05	0.013	0.009	1.341	0.203	2.319	0.22	9.586

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	20	27	103	103	80	24	26
normalized size	1	1.	0.67	0.9	3.43	3.43	2.67	0.8	0.87
time (sec)	N/A	0.032	0.009	0.007	1.341	0.203	2.22	0.215	5.959

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	92	73	16	12
normalized size	1	1.	1.	0.93	1.14	6.57	5.21	1.14	0.86
time (sec)	N/A	0.007	0.004	0.001	1.346	0.201	2.122	0.218	1.272

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	81	90	188	346	141	117	92
normalized size	1	1.	0.82	0.91	1.9	3.49	1.42	1.18	0.93
time (sec)	N/A	0.108	0.093	0.016	1.349	0.223	3.18	0.229	20.122

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	97	108	212	385	160	140	116
normalized size	1	1.	0.83	0.92	1.81	3.29	1.37	1.2	0.99
time (sec)	N/A	0.167	0.147	0.019	1.362	0.222	3.827	0.219	35.283

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	112	133	235	413	175	161	141
normalized size	1	1.	0.78	0.92	1.63	2.87	1.22	1.12	0.98
time (sec)	N/A	0.209	0.137	0.019	1.348	0.222	4.418	0.234	78.726

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	123	144	250	428	187	176	0
normalized size	1	1.	0.78	0.92	1.59	2.73	1.19	1.12	0.
time (sec)	N/A	0.237	0.141	0.019	1.356	0.22	5.25	0.232	0.

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	161	177	316	456	248	201	0
normalized size	1	1.	0.87	0.95	1.7	2.45	1.33	1.08	0.
time (sec)	N/A	0.355	0.085	0.017	1.375	0.214	5.906	0.235	0.

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	150	166	301	441	236	186	0
normalized size	1	1.	0.85	0.94	1.7	2.49	1.33	1.05	0.
time (sec)	N/A	0.303	0.048	0.016	1.392	0.21	5.52	0.229	0.

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	137	154	285	424	223	163	0
normalized size	1	1.	0.86	0.97	1.79	2.67	1.4	1.03	0.
time (sec)	N/A	0.254	0.052	0.017	1.359	0.207	5.324	0.21	0.

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	111	145	273	394	212	151	150
normalized size	1	1.	0.72	0.94	1.77	2.56	1.38	0.98	0.97
time (sec)	N/A	0.232	0.051	0.011	1.347	0.205	4.549	0.214	42.344

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	97	131	251	251	199	128	12
normalized size	1	1.	5.71	7.71	14.76	14.76	11.71	7.53	0.71
time (sec)	N/A	0.012	0.028	0.01	1.346	0.201	4.32	0.219	2.326

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	86	117	236	236	187	113	27
normalized size	1	1.	2.46	3.34	6.74	6.74	5.34	3.23	0.77
time (sec)	N/A	0.024	0.021	0.01	1.351	0.23	4.082	0.205	4.157

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	75	102	221	221	175	99	42
normalized size	1	1.	1.44	1.96	4.25	4.25	3.37	1.9	0.81
time (sec)	N/A	0.037	0.025	0.01	1.343	0.201	3.876	0.203	6.52

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	64	86	207	207	163	84	58
normalized size	1	1.	0.93	1.25	3.	3.	2.36	1.22	0.84
time (sec)	N/A	0.053	0.022	0.01	1.36	0.207	3.572	0.206	9.429

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	53	72	192	192	151	69	75
normalized size	1	1.	0.65	0.89	2.37	2.37	1.86	0.85	0.93
time (sec)	N/A	0.09	0.021	0.007	1.35	0.208	3.46	0.202	18.122

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	42	57	177	177	139	54	60
normalized size	1	1.	0.66	0.89	2.77	2.77	2.17	0.84	0.94
time (sec)	N/A	0.071	0.014	0.007	1.336	0.212	3.276	0.203	14.356

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	31	42	162	162	128	39	41
normalized size	1	1.	0.66	0.89	3.45	3.45	2.72	0.83	0.87
time (sec)	N/A	0.051	0.017	0.009	1.339	0.205	3.153	0.202	10.534

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	20	27	147	147	116	24	26
normalized size	1	1.	0.67	0.9	4.9	4.9	3.87	0.8	0.87
time (sec)	N/A	0.032	0.008	0.006	1.359	0.207	3.075	0.204	6.957

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	136	109	16	12
normalized size	1	1.	1.	0.93	1.14	9.71	7.79	1.14	0.86
time (sec)	N/A	0.007	0.005	0.001	1.34	0.202	3.169	0.202	1.264

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	127	126	277	524	212	162	133
normalized size	1	1.	0.9	0.89	1.96	3.72	1.5	1.15	0.94
time (sec)	N/A	0.161	0.172	0.016	1.362	0.233	6.086	0.208	46.414

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	130	147	301	563	231	185	0
normalized size	1	1.	0.82	0.93	1.91	3.56	1.46	1.17	0.
time (sec)	N/A	0.269	0.213	0.021	1.394	0.237	7.86	0.214	0.

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	145	178	324	591	246	205	0
normalized size	1	1.	0.76	0.93	1.7	3.09	1.29	1.07	0.
time (sec)	N/A	0.323	0.181	0.022	1.372	0.237	10.119	0.215	0.

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	156	189	339	606	258	220	0
normalized size	1	1.	0.79	0.95	1.71	3.06	1.3	1.11	0.
time (sec)	N/A	0.357	0.212	0.023	1.385	0.241	13.182	0.213	0.

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	141	132	178	184	141	180	0
normalized size	1	1.	1.	0.94	1.26	1.3	1.	1.28	0.
time (sec)	N/A	0.171	0.016	0.016	1.338	0.214	3.723	0.206	0.

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	132	121	163	169	129	165	0
normalized size	1	1.	1.	0.92	1.23	1.28	0.98	1.25	0.
time (sec)	N/A	0.146	0.008	0.016	1.35	0.212	3.418	0.205	0.

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	114	109	147	154	116	149	0
normalized size	1	1.	1.	0.96	1.29	1.35	1.02	1.31	0.
time (sec)	N/A	0.128	0.009	0.	1.344	0.212	3.408	0.207	0.

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	109	100	135	139	105	136	110
normalized size	1	1.	1.	0.92	1.24	1.28	0.96	1.25	1.01
time (sec)	N/A	0.111	0.007	0.012	1.345	0.21	3.16	0.205	20.325

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	96	91	119	119	95	119	14
normalized size	1	1.	5.65	5.35	7.	7.	5.59	7.	0.82
time (sec)	N/A	0.012	0.014	0.01	1.343	0.207	2.866	0.206	2.29

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	91	80	107	107	85	107	29
normalized size	1	1.	2.53	2.22	2.97	2.97	2.36	2.97	0.81
time (sec)	N/A	0.023	0.006	0.	1.34	0.201	2.638	0.202	3.596

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	80	69	92	92	73	92	48
normalized size	1	1.	1.43	1.23	1.64	1.64	1.3	1.64	0.86
time (sec)	N/A	0.042	0.013	0.01	1.343	0.199	2.396	0.202	5.806

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	58	77	77	61	77	65
normalized size	1	1.	1.	0.87	1.15	1.15	0.91	1.15	0.97
time (sec)	N/A	0.058	0.01	0.	1.349	0.208	2.149	0.202	10.563

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	56	47	62	62	49	62	53
normalized size	1	1.	1.	0.84	1.11	1.11	0.88	1.11	0.95
time (sec)	N/A	0.046	0.011	0.009	1.347	0.199	1.909	0.203	8.513

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	36	47	47	37	47	41
normalized size	1	1.	1.	0.84	1.09	1.09	0.86	1.09	0.95
time (sec)	N/A	0.035	0.005	0.007	1.345	0.199	1.71	0.203	6.39

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	25	32	32	26	32	26
normalized size	1	1.	1.	0.83	1.07	1.07	0.87	1.07	0.87
time (sec)	N/A	0.024	0.01	0.008	1.349	0.204	1.512	0.203	4.59

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	18	14	18	14
normalized size	1	1.	1.	0.82	1.06	1.06	0.82	1.06	0.82
time (sec)	N/A	0.014	0.003	0.009	1.342	0.201	1.248	0.2	2.671

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	7	7	7	6	7	7	7	7	7
normalized size	1	1.	1.	0.86	1.	1.	1.	1.	1.
time (sec)	N/A	0.004	0.	0.001	1.342	0.199	0.06	0.201	0.907

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	134	119	158	162	116	165	121
normalized size	1	1.	1.	0.89	1.18	1.21	0.87	1.23	0.9
time (sec)	N/A	0.13	0.009	0.016	1.35	0.219	2.816	0.205	20.821

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	134	135	190	220	139	243	144
normalized size	1	1.	0.92	0.92	1.3	1.51	0.95	1.66	0.99
time (sec)	N/A	0.193	0.161	0.018	1.353	0.217	3.729	0.206	37.039

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	145	150	220	279	163	205	165
normalized size	1	1.	0.89	0.92	1.35	1.71	1.	1.26	1.01
time (sec)	N/A	0.238	0.185	0.02	1.358	0.214	4.933	0.206	171.036

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	18	12	20	12
normalized size	1	1.	1.	0.82	1.06	1.06	0.71	1.18	0.71
time (sec)	N/A	0.011	0.004	0.009	1.342	0.215	0.17	0.203	2.225

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	18	12	20	12
normalized size	1	1.	1.	0.82	1.06	1.06	0.71	1.18	0.71
time (sec)	N/A	0.011	0.004	0.	1.342	0.206	0.187	0.202	2.247

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	19	24	28	20	27	20
normalized size	1	1.	1.	0.79	1.	1.17	0.83	1.12	0.83
time (sec)	N/A	0.022	0.004	0.01	1.343	0.212	0.211	0.207	3.586

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	24	31	38	26	34	27
normalized size	1	1.	1.	0.77	1.	1.23	0.84	1.1	0.87
time (sec)	N/A	0.024	0.004	0.011	1.334	0.206	0.243	0.204	4.082

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	29	38	45	31	41	34
normalized size	1	1.	1.	0.76	1.	1.18	0.82	1.08	0.89
time (sec)	N/A	0.027	0.005	0.012	1.388	0.208	0.279	0.205	4.39

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	34	45	51	36	47	41
normalized size	1	1.	1.	0.76	1.	1.13	0.8	1.04	0.91
time (sec)	N/A	0.031	0.004	0.01	1.347	0.213	0.298	0.204	4.86

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	26	23	30	43	19	34	19
normalized size	1	1.	0.93	0.82	1.07	1.54	0.68	1.21	0.68
time (sec)	N/A	0.023	0.019	0.01	1.34	0.221	0.237	0.205	4.289

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	31	28	42	65	29	54	27
normalized size	1	1.	0.89	0.8	1.2	1.86	0.83	1.54	0.77
time (sec)	N/A	0.025	0.022	0.014	1.318	0.209	0.265	0.206	4.484

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	36	33	51	80	36	69	34
normalized size	1	1.	0.86	0.79	1.21	1.9	0.86	1.64	0.81
time (sec)	N/A	0.032	0.021	0.016	1.329	0.21	0.308	0.204	5.144

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	44	38	58	86	41	81	41
normalized size	1	1.	0.9	0.78	1.18	1.76	0.84	1.65	0.84
time (sec)	N/A	0.034	0.052	0.014	1.347	0.209	0.332	0.204	5.477

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	56	43	65	93	46	93	48
normalized size	1	1.	1.	0.77	1.16	1.66	0.82	1.66	0.86
time (sec)	N/A	0.043	0.017	0.013	1.348	0.21	0.362	0.204	6.199

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	29	32	41	68	27	36	29
normalized size	1	1.	0.74	0.82	1.05	1.74	0.69	0.92	0.74
time (sec)	N/A	0.028	0.031	0.01	1.328	0.213	0.292	0.205	5.343

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	39	37	55	92	39	50	37
normalized size	1	1.	0.85	0.8	1.2	2.	0.85	1.09	0.8
time (sec)	N/A	0.034	0.038	0.016	1.348	0.214	0.343	0.205	5.484

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	44	42	65	107	46	58	44
normalized size	1	1.	0.83	0.79	1.23	2.02	0.87	1.09	0.83
time (sec)	N/A	0.039	0.044	0.013	1.316	0.209	0.38	0.205	6.186

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	49	47	72	113	51	63	51
normalized size	1	1.	0.82	0.78	1.2	1.88	0.85	1.05	0.85
time (sec)	N/A	0.045	0.032	0.014	1.33	0.205	0.398	0.204	6.494

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	54	52	78	120	56	70	58
normalized size	1	1.	0.81	0.78	1.16	1.79	0.84	1.04	0.87
time (sec)	N/A	0.052	0.033	0.013	1.334	0.21	0.444	0.205	7.464

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	10	9	8	8	7	9	5
normalized size	1	1.	1.25	1.12	1.	1.	0.88	1.12	0.62
time (sec)	N/A	0.005	0.001	0.001	1.339	0.208	0.066	0.205	1.046

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	9	11	11	8	12	8
normalized size	1	1.	1.	0.9	1.1	1.1	0.8	1.2	0.8
time (sec)	N/A	0.005	0.002	0.002	1.341	0.207	0.076	0.209	1.051

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	16	13	16	16	14	18	12
normalized size	1	1.	1.14	0.93	1.14	1.14	1.	1.29	0.86
time (sec)	N/A	0.008	0.005	0.	1.359	0.218	0.085	0.204	1.259

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	22	22	17	23	17
normalized size	1	1.	1.	0.85	1.1	1.1	0.85	1.15	0.85
time (sec)	N/A	0.018	0.007	0.002	1.341	0.219	0.09	0.204	1.677

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	24	24	19	26	19
normalized size	1	1.	1.	0.86	1.09	1.09	0.86	1.18	0.86
time (sec)	N/A	0.01	0.005	0.002	1.348	0.222	0.095	0.208	1.667

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	24	24	19	26	19
normalized size	1	1.	1.	0.86	1.09	1.09	0.86	1.18	0.86
time (sec)	N/A	0.01	0.005	0.002	1.326	0.223	0.098	0.204	1.66

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	19	24	23	19	26	17
normalized size	1	1.	1.	0.9	1.14	1.1	0.9	1.24	0.81
time (sec)	N/A	0.013	0.01	0.001	1.341	0.217	0.114	0.206	1.865

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	22	19	24	26	20	26	17
normalized size	1	1.	1.1	0.95	1.2	1.3	1.	1.3	0.85
time (sec)	N/A	0.015	0.013	0.002	1.505	0.218	0.124	0.205	2.128

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	12	15	15	8	18	8
normalized size	1	1.	1.	1.09	1.36	1.36	0.73	1.64	0.73
time (sec)	N/A	0.011	0.005	0.008	1.338	0.214	0.215	0.204	2.543

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	12	15	15	8	18	8
normalized size	1	1.	1.	1.	1.25	1.25	0.67	1.5	0.67
time (sec)	N/A	0.011	0.004	0.009	1.343	0.212	0.227	0.208	2.49

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	20	26	28	14	28	15
normalized size	1	1.	1.	1.05	1.37	1.47	0.74	1.47	0.79
time (sec)	N/A	0.022	0.005	0.01	1.336	0.212	1.127	0.209	3.67

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	18	23	28	14	26	15
normalized size	1	1.	1.	1.	1.28	1.56	0.78	1.44	0.83
time (sec)	N/A	0.023	0.004	0.013	1.34	0.219	0.315	0.207	3.788

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	15	19	20	10	20	10
normalized size	1	1.	1.	1.07	1.36	1.43	0.71	1.43	0.71
time (sec)	N/A	0.024	0.007	0.003	1.341	0.209	1.116	0.208	3.751

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	57	43	76	72	1742	82	68
normalized size	1	1.	0.79	0.6	1.06	1.	24.19	1.14	0.94
time (sec)	N/A	0.053	0.021	0.111	1.346	0.207	8.248	0.211	10.993

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	46	32	55	57	666	62	49
normalized size	1	1.	0.87	0.6	1.04	1.08	12.57	1.17	0.92
time (sec)	N/A	0.04	0.017	0.006	1.346	0.208	5.603	0.212	7.968

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	21	35	41	202	34	31
normalized size	1	1.	1.	0.62	1.03	1.21	5.94	1.	0.91
time (sec)	N/A	0.025	0.012	0.004	1.342	0.213	3.659	0.203	4.902

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	12	16	12
normalized size	1	1.	1.	0.81	1.	1.	0.75	1.	0.75
time (sec)	N/A	0.007	0.006	0.004	1.339	0.212	0.068	0.212	1.28

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	28	0	1	68	43	31
normalized size	1	1.	1.	0.8	0.	0.03	1.94	1.23	0.89
time (sec)	N/A	0.035	0.017	0.022	0.	0.225	4.842	0.206	4.706

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	37	0	1	44	55	32
normalized size	1	1.	1.	0.95	0.	0.03	1.13	1.41	0.82
time (sec)	N/A	0.035	0.034	0.017	0.	0.224	6.343	0.223	4.898

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	55	53	0	1	97	89	53
normalized size	1	1.	0.85	0.82	0.	0.02	1.49	1.37	0.82
time (sec)	N/A	0.058	0.044	0.017	0.	0.227	11.659	0.208	7.154

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	67	65	0	1	122	113	73
normalized size	1	1.	0.77	0.75	0.	0.01	1.4	1.3	0.84
time (sec)	N/A	0.079	0.067	0.018	0.	0.234	18.532	0.209	10.093

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	46	43	76	86	1742	193	68
normalized size	1	1.	0.64	0.6	1.06	1.19	24.19	2.68	0.94
time (sec)	N/A	0.051	0.036	0.009	1.349	0.216	9.47	0.214	11.159

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	35	32	55	72	733	153	49
normalized size	1	1.	0.66	0.6	1.04	1.36	13.83	2.89	0.92
time (sec)	N/A	0.038	0.025	0.007	1.346	0.215	6.683	0.237	8.054

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	24	21	35	55	80	104	31
normalized size	1	1.	0.71	0.62	1.03	1.62	2.35	3.06	0.91
time (sec)	N/A	0.025	0.023	0.004	1.342	0.219	1.72	0.219	4.941

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	38	12	16	12
normalized size	1	1.	1.	0.81	1.	2.38	0.75	1.	0.75
time (sec)	N/A	0.007	0.007	0.004	1.338	0.217	0.071	0.218	1.256

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	46	38	0	1	71	59	44
normalized size	1	1.	0.94	0.78	0.	0.02	1.45	1.2	0.9
time (sec)	N/A	0.049	0.028	0.008	0.	0.235	6.958	0.21	6.471

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	45	47	0	1	92	76	44
normalized size	1	1.	0.88	0.92	0.	0.02	1.8	1.49	0.86
time (sec)	N/A	0.05	0.038	0.014	0.	0.236	8.548	0.207	6.727

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	53	51	0	1	76	86	56
normalized size	1	1.	0.85	0.82	0.	0.02	1.23	1.39	0.9
time (sec)	N/A	0.053	0.052	0.016	0.	0.236	10.192	0.207	7.057

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	69	63	0	1	124	113	70
normalized size	1	1.	0.82	0.75	0.	0.01	1.48	1.35	0.83
time (sec)	N/A	0.073	0.059	0.016	0.	0.236	17.276	0.209	9.859

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	46	43	76	101	146	321	68
normalized size	1	1.	0.64	0.6	1.06	1.4	2.03	4.46	0.94
time (sec)	N/A	0.051	0.042	0.007	1.337	0.228	11.795	0.209	11.271

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	35	32	55	86	124	259	49
normalized size	1	1.	0.66	0.6	1.04	1.62	2.34	4.89	0.92
time (sec)	N/A	0.038	0.03	0.008	1.344	0.215	9.333	0.208	8.095

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	24	21	35	70	102	190	31
normalized size	1	1.	0.71	0.62	1.03	2.06	3.	5.59	0.91
time (sec)	N/A	0.025	0.029	0.004	1.339	0.207	6.345	0.208	4.993

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	53	12	116	12
normalized size	1	1.	1.	0.81	1.	3.31	0.75	7.25	0.75
time (sec)	N/A	0.007	0.007	0.006	1.341	0.212	0.093	0.217	1.27

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	56	50	0	1	97	76	60
normalized size	1	1.	0.86	0.77	0.	0.02	1.49	1.17	0.92
time (sec)	N/A	0.063	0.036	0.011	0.	0.221	11.763	0.209	8.569

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	58	61	0	1	99	100	60
normalized size	1	1.	0.88	0.92	0.	0.02	1.5	1.52	0.91
time (sec)	N/A	0.065	0.052	0.017	0.	0.227	11.567	0.208	8.699

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	64	61	0	1	126	108	70
normalized size	1	1.	0.82	0.78	0.	0.01	1.62	1.38	0.9
time (sec)	N/A	0.068	0.064	0.018	0.	0.242	13.302	0.212	9.478

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	64	63	0	1	104	107	75
normalized size	1	1.	0.79	0.78	0.	0.01	1.28	1.32	0.93
time (sec)	N/A	0.069	0.068	0.016	0.	0.22	15.01	0.209	9.699

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	78	75	0	1	155	134	94
normalized size	1	1.	0.76	0.73	0.	0.01	1.5	1.3	0.91
time (sec)	N/A	0.094	0.072	0.016	0.	0.221	24.552	0.208	12.951

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	90	87	157	190	279	1	141
normalized size	1	1.	0.62	0.6	1.08	1.3	1.91	0.01	0.97
time (sec)	N/A	0.103	0.073	0.01	1.341	0.209	115.681	0.217	24.394

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	79	76	136	176	257	1	122
normalized size	1	1.	0.62	0.6	1.07	1.39	2.02	0.01	0.96
time (sec)	N/A	0.09	0.055	0.01	1.327	0.207	99.8	0.215	20.836

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	68	65	116	161	235	1	105
normalized size	1	1.	0.62	0.59	1.05	1.46	2.14	0.01	0.95
time (sec)	N/A	0.079	0.057	0.009	1.345	0.208	82.662	0.215	17.799

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	57	54	96	146	212	737	87
normalized size	1	1.	0.63	0.59	1.05	1.6	2.33	8.1	0.96
time (sec)	N/A	0.065	0.049	0.008	1.334	0.206	71.446	0.215	14.396

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	46	43	76	131	190	636	68
normalized size	1	1.	0.64	0.6	1.06	1.82	2.64	8.83	0.94
time (sec)	N/A	0.053	0.049	0.008	1.321	0.208	61.062	0.214	11.498

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	35	32	55	116	168	533	49
normalized size	1	1.	0.66	0.6	1.04	2.19	3.17	10.06	0.92
time (sec)	N/A	0.04	0.04	0.009	1.333	0.207	51.546	0.232	8.253

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	24	21	35	100	146	425	31
normalized size	1	1.	0.71	0.62	1.03	2.94	4.29	12.5	0.91
time (sec)	N/A	0.025	0.039	0.004	1.343	0.207	42.033	0.212	5.081

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	82	12	309	12
normalized size	1	1.	1.	0.81	1.	5.12	0.75	19.31	0.75
time (sec)	N/A	0.007	0.01	0.003	1.325	0.209	0.103	0.21	1.264

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	78	74	0	1	148	108	90
normalized size	1	1.	0.8	0.76	0.	0.01	1.53	1.11	0.93
time (sec)	N/A	0.102	0.053	0.009	0.	0.222	35.236	0.209	13.686

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	84	84	0	1	150	140	92
normalized size	1	1.	0.86	0.86	0.	0.01	1.53	1.43	0.94
time (sec)	N/A	0.107	0.083	0.016	0.	0.219	36.308	0.212	13.836

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	86	86	0	1	184	151	105
normalized size	1	1.	0.75	0.75	0.	0.01	1.61	1.32	0.92
time (sec)	N/A	0.11	0.085	0.019	0.	0.221	34.709	0.211	14.612

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	85	87	0	1	184	151	105
normalized size	1	1.	0.75	0.76	0.	0.01	1.61	1.32	0.92
time (sec)	N/A	0.109	0.083	0.016	0.	0.218	31.821	0.214	14.782

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	86	85	0	1	182	149	107
normalized size	1	1.	0.74	0.73	0.	0.01	1.57	1.28	0.92
time (sec)	N/A	0.112	0.08	0.021	0.	0.222	33.399	0.214	15.27

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	86	87	0	1	158	147	112
normalized size	1	1.	0.72	0.73	0.	0.01	1.33	1.24	0.94
time (sec)	N/A	0.118	0.091	0.018	0.	0.222	36.351	0.216	15.777

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	100	99	0	1	209	174	131
normalized size	1	1.	0.71	0.7	0.	0.01	1.48	1.23	0.93
time (sec)	N/A	0.145	0.097	0.02	0.	0.231	52.061	0.214	20.094

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	111	111	0	1	236	194	153
normalized size	1	1.	0.68	0.68	0.	0.01	1.45	1.19	0.94
time (sec)	N/A	0.181	0.118	0.022	0.	0.221	69.243	0.213	25.472

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	32	0	1	148	42	31
normalized size	1	1.	1.	0.82	0.	0.03	3.79	1.08	0.79
time (sec)	N/A	0.036	0.02	0.01	0.	0.23	5.431	0.207	5.131

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	35	0	1	121	55	31
normalized size	1	1.	1.	0.83	0.	0.02	2.88	1.31	0.74
time (sec)	N/A	0.037	0.026	0.012	0.	0.227	6.713	0.211	5.272

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	59	55	0	1	207	89	53
normalized size	1	1.	0.83	0.77	0.	0.01	2.92	1.25	0.75
time (sec)	N/A	0.06	0.063	0.016	0.	0.249	8.715	0.235	7.71

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	48	44	0	1	187	58	44
normalized size	1	1.	0.87	0.8	0.	0.02	3.4	1.05	0.8
time (sec)	N/A	0.052	0.056	0.01	0.	0.231	3.704	0.204	7.165

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	48	48	0	1	197	78	44
normalized size	1	1.	0.84	0.84	0.	0.02	3.46	1.37	0.77
time (sec)	N/A	0.053	0.043	0.014	0.	0.225	4.439	0.204	7.298

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	56	53	0	1	190	89	54
normalized size	1	1.	0.82	0.78	0.	0.01	2.79	1.31	0.79
time (sec)	N/A	0.053	0.061	0.015	0.	0.257	5.114	0.205	7.745

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	60	58	0	1	240	77	60
normalized size	1	1.	0.82	0.79	0.	0.01	3.29	1.05	0.82
time (sec)	N/A	0.067	0.042	0.009	0.	0.235	6.225	0.207	9.578

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	62	64	0	1	245	101	60
normalized size	1	1.	0.84	0.86	0.	0.01	3.31	1.36	0.81
time (sec)	N/A	0.069	0.059	0.015	0.	0.225	6.124	0.208	9.649

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	68	70	0	1	267	112	70
normalized size	1	1.	0.79	0.81	0.	0.01	3.1	1.3	0.81
time (sec)	N/A	0.073	0.073	0.015	0.	0.218	6.732	0.209	10.003

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	57	54	96	72	3755	103	85
normalized size	1	1.	0.64	0.61	1.08	0.81	42.19	1.16	0.96
time (sec)	N/A	0.062	0.026	0.01	1.348	0.219	7.078	0.209	13.706

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	46	43	76	57	1640	82	65
normalized size	1	1.	0.68	0.63	1.12	0.84	24.12	1.21	0.96
time (sec)	N/A	0.051	0.021	0.009	1.351	0.232	4.21	0.209	10.991

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	35	32	55	42	600	62	48
normalized size	1	1.	0.69	0.63	1.08	0.82	11.76	1.22	0.94
time (sec)	N/A	0.039	0.017	0.007	1.339	0.232	2.739	0.208	7.93

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	23	21	35	26	162	31	29
normalized size	1	1.	0.72	0.66	1.09	0.81	5.06	0.97	0.91
time (sec)	N/A	0.025	0.012	0.003	1.347	0.23	1.799	0.211	4.873

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	10	16	10
normalized size	1	1.	1.	0.93	1.14	1.14	0.71	1.14	0.71
time (sec)	N/A	0.007	0.003	0.005	1.345	0.231	0.039	0.212	1.274

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	18	0	1	24	28	22
normalized size	1	1.	1.	0.78	0.	0.04	1.04	1.22	0.96
time (sec)	N/A	0.022	0.012	0.006	0.	0.244	1.833	0.208	3.262

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	40	0	1	44	63	32
normalized size	1	1.	1.	0.98	0.	0.02	1.07	1.54	0.78
time (sec)	N/A	0.037	0.029	0.011	0.	0.231	3.762	0.211	4.777

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	56	66	0	1	102	93	60
normalized size	1	1.	0.82	0.97	0.	0.01	1.5	1.37	0.88
time (sec)	N/A	0.055	0.054	0.011	0.	0.23	6.649	0.204	7.21

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	67	90	0	1	129	113	82
normalized size	1	1.	0.74	1.	0.	0.01	1.43	1.26	0.91
time (sec)	N/A	0.079	0.078	0.01	0.	0.24	10.33	0.205	10.206

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	57	54	96	72	3606	104	82
normalized size	1	1.	0.67	0.64	1.13	0.85	42.42	1.22	0.96
time (sec)	N/A	0.061	0.032	0.008	1.343	0.211	7.65	0.203	13.659

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	45	42	76	55	1538	82	63
normalized size	1	1.	0.68	0.64	1.15	0.83	23.3	1.24	0.95
time (sec)	N/A	0.05	0.024	0.009	1.342	0.209	8.932	0.205	10.924

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	34	32	55	41	534	62	46
normalized size	1	1.	0.69	0.65	1.12	0.84	10.9	1.27	0.94
time (sec)	N/A	0.038	0.021	0.009	1.344	0.224	5.536	0.205	7.885

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	21	20	35	26	37	39	27
normalized size	1	1.	0.7	0.67	1.17	0.87	1.23	1.3	0.9
time (sec)	N/A	0.025	0.015	0.006	1.339	0.222	2.018	0.205	4.911

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	12	16	12
normalized size	1	1.	1.	0.93	1.14	1.14	0.86	1.14	0.86
time (sec)	N/A	0.007	0.004	0.003	1.334	0.217	0.077	0.205	1.282

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	31	0	1	146	50	32
normalized size	1	1.	1.	0.82	0.	0.03	3.84	1.32	0.84
time (sec)	N/A	0.036	0.033	0.012	0.	0.231	5.844	0.201	5.041

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	48	55	0	1	73	86	51
normalized size	1	1.	0.81	0.93	0.	0.02	1.24	1.46	0.86
time (sec)	N/A	0.054	0.079	0.02	0.	0.233	12.661	0.205	7.3

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	67	67	0	1	107	108	78
normalized size	1	1.	0.79	0.79	0.	0.01	1.26	1.27	0.92
time (sec)	N/A	0.075	0.096	0.02	0.	0.282	19.274	0.205	10.442

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	57	54	96	85	3456	101	83
normalized size	1	1.	0.66	0.62	1.1	0.98	39.72	1.16	0.95
time (sec)	N/A	0.061	0.033	0.009	1.345	0.233	13.917	0.206	13.715

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	45	43	76	69	163	80	65
normalized size	1	1.	0.66	0.63	1.12	1.01	2.4	1.18	0.96
time (sec)	N/A	0.052	0.033	0.009	1.616	0.217	3.675	0.207	10.952

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	35	32	55	55	121	53	46
normalized size	1	1.	0.71	0.65	1.12	1.12	2.47	1.08	0.94
time (sec)	N/A	0.039	0.024	0.009	1.726	0.225	3.589	0.204	7.966

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	24	21	35	41	80	27	29
normalized size	1	1.	0.75	0.66	1.09	1.28	2.5	0.84	0.91
time (sec)	N/A	0.025	0.018	0.004	1.346	0.214	3.435	0.203	4.983

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	27	14	16	14
normalized size	1	1.	1.	0.81	1.	1.69	0.88	1.	0.88
time (sec)	N/A	0.007	0.005	0.003	1.351	0.22	0.097	0.202	1.268

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	48	43	0	1	697	61	48
normalized size	1	1.	0.89	0.8	0.	0.02	12.91	1.13	0.89
time (sec)	N/A	0.052	0.103	0.015	0.	0.255	9.7	0.205	7.362

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	63	67	0	1	818	88	70
normalized size	1	1.	0.79	0.84	0.	0.01	10.22	1.1	0.88
time (sec)	N/A	0.074	0.119	0.023	0.	0.225	17.219	0.205	10.286

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	78	80	0	1	464	126	99
normalized size	1	1.	0.74	0.75	0.	0.01	4.38	1.19	0.93
time (sec)	N/A	0.1	0.137	0.02	0.	0.228	27.225	0.206	14.079

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	20	0	1	54	26	20
normalized size	1	1.	1.	0.8	0.	0.04	2.16	1.04	0.8
time (sec)	N/A	0.023	0.009	0.006	0.	0.223	3.793	0.205	3.335

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	37	0	1	121	58	32
normalized size	1	1.	1.	0.84	0.	0.02	2.75	1.32	0.73
time (sec)	N/A	0.039	0.031	0.01	0.	0.23	7.603	0.205	5.037

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	60	59	0	1	216	92	60
normalized size	1	1.	0.81	0.8	0.	0.01	2.92	1.24	0.81
time (sec)	N/A	0.059	0.052	0.012	0.	0.235	13.112	0.205	7.695

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	35	0	1	437	46	34
normalized size	1	1.	1.	0.83	0.	0.02	10.4	1.1	0.81
time (sec)	N/A	0.039	0.03	0.012	0.	0.233	6.403	0.204	5.484

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	51	54	0	1	156	86	53
normalized size	1	1.	0.78	0.83	0.	0.02	2.4	1.32	0.82
time (sec)	N/A	0.058	0.077	0.016	0.	0.224	11.338	0.206	7.684

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	71	75	0	1	226	109	80
normalized size	1	1.	0.76	0.81	0.	0.01	2.43	1.17	0.86
time (sec)	N/A	0.08	0.099	0.017	0.	0.243	18.589	0.205	11.003

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	52	49	0	1	1950	57	48
normalized size	1	1.	0.87	0.82	0.	0.02	32.5	0.95	0.8
time (sec)	N/A	0.056	0.084	0.014	0.	0.231	10.663	0.207	8.221

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	67	68	0	1	2234	89	70
normalized size	1	1.	0.76	0.77	0.	0.01	25.39	1.01	0.8
time (sec)	N/A	0.077	0.13	0.021	0.	0.228	18.464	0.209	10.739

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	82	92	0	1	1108	131	99
normalized size	1	1.	0.71	0.79	0.	0.01	9.55	1.13	0.85
time (sec)	N/A	0.103	0.153	0.022	0.	0.225	30.545	0.213	14.723

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	100	12	15	19	0	0	10
normalized size	1	1.	7.69	0.92	1.15	1.46	0.	0.	0.77
time (sec)	N/A	0.02	0.151	0.01	1.691	0.228	0.	0.	4.32

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	C	C	F	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	92	100	0	15	15	73	0	73
normalized size	1	7.08	7.69	0.	1.15	1.15	5.62	0.	5.62
time (sec)	N/A	0.112	0.047	0.15	1.532	0.228	28.015	0.	14.442

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	18	0	1	24	28	22
normalized size	1	1.	1.	0.78	0.	0.04	1.04	1.22	0.96
time (sec)	N/A	0.024	0.012	0.	0.	0.22	3.584	0.202	3.245

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	57	43	76	72	1742	82	68
normalized size	1	1.	0.79	0.6	1.06	1.	24.19	1.14	0.94
time (sec)	N/A	0.053	0.021	0.009	1.34	0.21	8.379	0.206	11.048

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	46	32	55	57	666	62	49
normalized size	1	1.	0.87	0.6	1.04	1.08	12.57	1.17	0.92
time (sec)	N/A	0.04	0.016	0.007	1.341	0.21	5.621	0.206	7.897

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	34	21	35	41	202	34	31
normalized size	1	1.	1.	0.62	1.03	1.21	5.94	1.	0.91
time (sec)	N/A	0.025	0.013	0.003	1.358	0.204	3.71	0.205	4.894

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	12	16	12
normalized size	1	1.	1.	0.81	1.	1.	0.75	1.	0.75
time (sec)	N/A	0.007	0.006	0.004	1.345	0.205	0.079	0.204	1.25

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	57	85	0	116	180	117	83
normalized size	1	1.	0.63	0.93	0.	1.27	1.98	1.29	0.91
time (sec)	N/A	0.105	0.038	0.02	0.	0.216	5.835	0.511	7.087

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	61	92	0	171	515	142	88
normalized size	1	1.	0.63	0.95	0.	1.76	5.31	1.46	0.91
time (sec)	N/A	0.088	0.033	0.014	0.	0.224	6.555	0.527	7.427

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	78	113	0	216	1731	173	112
normalized size	1	1.	0.61	0.89	0.	1.7	13.63	1.36	0.88
time (sec)	N/A	0.122	0.038	0.016	0.	0.22	8.	0.536	11.133

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	57	43	76	72	1742	82	68
normalized size	1	1.	0.79	0.6	1.06	1.	24.19	1.14	0.94
time (sec)	N/A	0.053	0.023	0.007	1.341	0.208	8.926	0.221	11.194

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	46	32	55	57	666	62	49
normalized size	1	1.	0.87	0.6	1.04	1.08	12.57	1.17	0.92
time (sec)	N/A	0.039	0.018	0.007	1.348	0.207	5.923	0.224	7.933

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	37	21	35	42	202	34	31
normalized size	1	1.	1.09	0.62	1.03	1.24	5.94	1.	0.91
time (sec)	N/A	0.026	0.014	0.006	1.348	0.207	3.888	0.211	4.941

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	12	16	12
normalized size	1	1.	1.	0.81	1.	1.	0.75	1.	0.75
time (sec)	N/A	0.007	0.007	0.005	1.344	0.205	0.073	0.202	1.275

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	57	84	0	146	182	116	85
normalized size	1	1.	0.62	0.91	0.	1.59	1.98	1.26	0.92
time (sec)	N/A	0.084	0.032	0.008	0.	0.221	5.936	0.506	6.936

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	58	92	0	151	515	143	88
normalized size	1	1.	0.62	0.98	0.	1.61	5.48	1.52	0.94
time (sec)	N/A	0.083	0.032	0.013	0.	0.221	6.654	0.528	7.233

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	79	113	0	203	1731	174	112
normalized size	1	1.	0.62	0.89	0.	1.6	13.63	1.37	0.88
time (sec)	N/A	0.117	0.043	0.018	0.	0.221	8.234	0.534	10.909

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	46	43	76	86	1844	193	68
normalized size	1	1.	0.64	0.6	1.06	1.19	25.61	2.68	0.94
time (sec)	N/A	0.052	0.035	0.007	1.349	0.208	11.508	0.204	11.18

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	35	32	55	72	733	153	49
normalized size	1	1.	0.66	0.6	1.04	1.36	13.83	2.89	0.92
time (sec)	N/A	0.039	0.026	0.008	1.344	0.207	7.924	0.209	8.109

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	24	21	35	55	80	104	31
normalized size	1	1.	0.71	0.62	1.03	1.62	2.35	3.06	0.91
time (sec)	N/A	0.025	0.023	0.006	1.347	0.21	4.067	0.208	4.939

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	38	12	16	12
normalized size	1	1.	1.	0.81	1.	2.38	0.75	1.	0.75
time (sec)	N/A	0.007	0.006	0.003	1.335	0.223	0.071	0.203	1.259

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	74	95	0	126	209	131	97
normalized size	1	1.	0.7	0.9	0.	1.2	1.99	1.25	0.92
time (sec)	N/A	0.104	0.037	0.007	0.	0.237	7.565	0.511	9.634

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	64	103	0	161	566	161	104
normalized size	1	1.	0.6	0.96	0.	1.5	5.29	1.5	0.97
time (sec)	N/A	0.106	0.054	0.016	0.	0.232	8.669	0.527	9.857

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	76	111	0	200	1731	171	114
normalized size	1	1.	0.61	0.9	0.	1.61	13.96	1.38	0.92
time (sec)	N/A	0.113	0.036	0.017	0.	0.239	9.564	0.589	10.719

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	46	43	76	57	1640	82	68
normalized size	1	1.	0.64	0.6	1.06	0.79	22.78	1.14	0.94
time (sec)	N/A	0.051	0.025	0.007	1.348	0.221	8.295	0.211	10.998

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	35	32	55	42	600	62	49
normalized size	1	1.	0.66	0.6	1.04	0.79	11.32	1.17	0.92
time (sec)	N/A	0.039	0.019	0.006	1.353	0.227	5.333	0.208	7.859

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	24	21	35	27	162	34	31
normalized size	1	1.	0.71	0.62	1.03	0.79	4.76	1.	0.91
time (sec)	N/A	0.026	0.014	0.004	1.349	0.229	3.592	0.205	4.876

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	12	16	12
normalized size	1	1.	1.	0.81	1.	1.	0.75	1.	0.75
time (sec)	N/A	0.007	0.004	0.005	1.369	0.231	0.07	0.205	1.269

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	46	75	0	107	155	104	73
normalized size	1	1.	0.58	0.95	0.	1.35	1.96	1.32	0.92
time (sec)	N/A	0.061	0.023	0.007	0.	0.246	5.278	0.503	4.739

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	60	95	0	176	639	147	90
normalized size	1	1.	0.6	0.95	0.	1.76	6.39	1.47	0.9
time (sec)	N/A	0.083	0.037	0.01	0.	0.248	6.531	0.532	7.377

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	78	117	0	180	1960	176	119
normalized size	1	1.	0.6	0.9	0.	1.38	15.08	1.35	0.92
time (sec)	N/A	0.117	0.043	0.01	0.	0.225	7.994	0.557	11.205

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	48	45	86	59	3492	93	68
normalized size	1	1.	0.6	0.56	1.08	0.74	43.65	1.16	0.85
time (sec)	N/A	0.055	0.026	0.009	1.328	0.208	9.38	0.207	11.814

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	37	34	63	45	1326	70	49
normalized size	1	1.	0.63	0.58	1.07	0.76	22.47	1.19	0.83
time (sec)	N/A	0.042	0.02	0.007	1.331	0.245	5.878	0.207	8.678

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	26	23	41	30	389	39	31
normalized size	1	1.	0.68	0.61	1.08	0.79	10.24	1.03	0.82
time (sec)	N/A	0.027	0.013	0.004	1.338	0.209	3.925	0.204	5.197

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	15	19	19	12	19	12
normalized size	1	1.	1.	0.83	1.06	1.06	0.67	1.06	0.67
time (sec)	N/A	0.007	0.003	0.004	1.34	0.207	0.076	0.206	1.229

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	100	83	0	131	160	151	73
normalized size	1	1.	1.22	1.01	0.	1.6	1.95	1.84	0.89
time (sec)	N/A	0.074	0.075	0.01	0.	0.219	5.308	0.539	4.851

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	62	103	0	186	646	194	90
normalized size	1	1.	0.6	1.	0.	1.81	6.27	1.88	0.87
time (sec)	N/A	0.087	0.043	0.01	0.	0.222	6.577	0.6	7.667

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	81	128	0	215	1974	225	119
normalized size	1	1.	0.6	0.94	0.	1.58	14.51	1.65	0.88
time (sec)	N/A	0.118	0.044	0.011	0.	0.221	8.007	0.542	11.646

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	46	43	76	57	1640	82	66
normalized size	1	1.	0.66	0.61	1.09	0.81	23.43	1.17	0.94
time (sec)	N/A	0.052	0.023	0.007	1.342	0.207	8.242	0.205	11.008

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	35	32	55	42	600	62	48
normalized size	1	1.	0.69	0.63	1.08	0.82	11.76	1.22	0.94
time (sec)	N/A	0.038	0.018	0.007	1.341	0.207	5.423	0.203	7.85

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	23	21	35	26	162	31	29
normalized size	1	1.	0.72	0.66	1.09	0.81	5.06	0.97	0.91
time (sec)	N/A	0.025	0.013	0.005	1.332	0.21	3.626	0.203	4.938

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	10	16	10
normalized size	1	1.	1.	0.93	1.14	1.14	0.71	1.14	0.71
time (sec)	N/A	0.007	0.004	0.003	1.333	0.212	0.07	0.204	1.269

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	48	76	0	122	150	105	73
normalized size	1	1.	0.6	0.95	0.	1.52	1.88	1.31	0.91
time (sec)	N/A	0.064	0.026	0.007	0.	0.218	5.386	0.524	4.911

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	60	95	0	190	610	146	90
normalized size	1	1.	0.61	0.97	0.	1.94	6.22	1.49	0.92
time (sec)	N/A	0.083	0.037	0.012	0.	0.246	6.676	0.555	7.622

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	79	117	0	204	1904	176	122
normalized size	1	1.	0.61	0.9	0.	1.57	14.65	1.35	0.94
time (sec)	N/A	0.116	0.04	0.01	0.	0.221	8.212	0.558	11.335

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	46	43	76	57	1538	84	66
normalized size	1	1.	0.66	0.61	1.09	0.81	21.97	1.2	0.94
time (sec)	N/A	0.052	0.026	0.007	1.324	0.208	8.793	0.242	10.933

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	34	32	55	41	534	62	46
normalized size	1	1.	0.69	0.65	1.12	0.84	10.9	1.27	0.94
time (sec)	N/A	0.039	0.022	0.007	1.353	0.204	5.768	0.215	7.865

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	23	20	35	26	41	41	29
normalized size	1	1.	0.72	0.62	1.09	0.81	1.28	1.28	0.91
time (sec)	N/A	0.025	0.015	0.006	1.343	0.205	2.321	0.206	4.894

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	12	16	12
normalized size	1	1.	1.	0.93	1.14	1.14	0.86	1.14	0.86
time (sec)	N/A	0.007	0.004	0.003	1.34	0.205	0.075	0.203	1.266

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	50	87	0	151	184	120	85
normalized size	1	1.	0.54	0.94	0.	1.62	1.98	1.29	0.91
time (sec)	N/A	0.084	0.036	0.011	0.	0.219	6.215	0.507	7.496

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	61	108	0	213	704	162	110
normalized size	1	1.	0.53	0.94	0.	1.85	6.12	1.41	0.96
time (sec)	N/A	0.108	0.039	0.019	0.	0.223	7.678	0.524	11.095

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	79	131	0	223	2215	189	141
normalized size	1	1.	0.54	0.89	0.	1.52	15.07	1.29	0.96
time (sec)	N/A	0.148	0.049	0.02	0.	0.224	9.497	0.525	15.75

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	99	87	116	113	139	117	60
normalized size	1	1.	1.39	1.23	1.63	1.59	1.96	1.65	0.85
time (sec)	N/A	0.073	0.047	0.017	1.493	0.225	5.289	0.224	5.169

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	103	91	122	119	136	123	60
normalized size	1	1.	1.41	1.25	1.67	1.63	1.86	1.68	0.82
time (sec)	N/A	0.071	0.052	0.008	1.491	0.22	5.341	0.216	5.502

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	104	97	127	120	136	128	60
normalized size	1	1.	1.41	1.31	1.72	1.62	1.84	1.73	0.81
time (sec)	N/A	0.073	0.05	0.015	1.499	0.221	5.293	0.222	5.37

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	108	101	132	126	139	134	63
normalized size	1	1.	1.42	1.33	1.74	1.66	1.83	1.76	0.83
time (sec)	N/A	0.071	0.05	0.01	1.509	0.219	5.372	0.216	5.807

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	95	88	117	111	134	119	65
normalized size	1	1.	1.32	1.22	1.62	1.54	1.86	1.65	0.9
time (sec)	N/A	0.062	0.029	0.013	1.476	0.221	5.379	0.23	5.371

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	99	92	123	116	136	124	65
normalized size	1	1.	1.34	1.24	1.66	1.57	1.84	1.68	0.88
time (sec)	N/A	0.061	0.038	0.007	1.502	0.22	5.427	0.217	5.762

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	108	96	126	123	136	127	65
normalized size	1	1.	1.46	1.3	1.7	1.66	1.84	1.72	0.88
time (sec)	N/A	0.062	0.032	0.013	1.502	0.221	5.435	0.229	5.552

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	112	100	131	128	133	132	68
normalized size	1	1.	1.47	1.32	1.72	1.68	1.75	1.74	0.89
time (sec)	N/A	0.063	0.017	0.005	1.498	0.22	5.449	0.222	6.054

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	23	31	0	45	87	69	19
normalized size	1	1.	0.92	1.24	0.	1.8	3.48	2.76	0.76
time (sec)	N/A	0.022	0.019	0.003	0.	0.223	0.725	0.213	3.509

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	24	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.14	0.9	0.86	0.9
time (sec)	N/A	0.013	0.005	0.005	1.34	0.208	3.571	0.201	2.312

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	24	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.14	0.9	0.86	0.9
time (sec)	N/A	0.013	0.005	0.004	1.344	0.208	1.028	0.2	2.326

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	22	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.05	0.9	0.86	0.9
time (sec)	N/A	0.012	0.005	0.004	1.342	0.208	1.683	0.201	2.338

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	16	13	18	16	17	18	17
normalized size	1	1.	0.84	0.68	0.95	0.84	0.89	0.95	0.89
time (sec)	N/A	0.012	0.004	0.003	1.341	0.21	1.535	0.205	2.331

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	14	12	18	16	15	18	15
normalized size	1	1.	0.82	0.71	1.06	0.94	0.88	1.06	0.88
time (sec)	N/A	0.013	0.005	0.004	1.346	0.21	1.315	0.203	2.316

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	15	12	15	15	19	15	19
normalized size	1	1.	0.79	0.63	0.79	0.79	1.	0.79	1.
time (sec)	N/A	0.013	0.006	0.003	1.343	0.207	2.066	0.206	2.336

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	39	87	0	115	299	182	36
normalized size	1	1.	0.91	2.02	0.	2.67	6.95	4.23	0.84
time (sec)	N/A	0.036	0.026	0.007	0.	0.222	1.39	0.254	6.537

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	39	34	32	34
normalized size	1	1.	0.78	0.69	0.89	1.08	0.94	0.89	0.94
time (sec)	N/A	0.022	0.009	0.007	1.341	0.208	5.1	0.204	3.905

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	39	2033	32	34
normalized size	1	1.	0.78	0.69	0.89	1.08	56.47	0.89	0.94
time (sec)	N/A	0.022	0.009	0.007	1.351	0.205	7.263	0.204	3.893

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	36	1851	32	34
normalized size	1	1.	0.78	0.69	0.89	1.	51.42	0.89	0.94
time (sec)	N/A	0.021	0.009	0.007	1.341	0.205	6.373	0.201	3.89

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	28	25	32	32	1669	32	32
normalized size	1	1.	0.82	0.74	0.94	0.94	49.09	0.94	0.94
time (sec)	N/A	0.021	0.009	0.006	1.339	0.207	6.083	0.201	3.947

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	27	25	32	31	1324	32	31
normalized size	1	1.	0.84	0.78	1.	0.97	41.38	1.	0.97
time (sec)	N/A	0.021	0.01	0.006	1.37	0.206	5.871	0.203	3.887

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	26	23	31	32	31	31	31
normalized size	1	1.	0.81	0.72	0.97	1.	0.97	0.97	0.97
time (sec)	N/A	0.021	0.01	0.007	1.337	0.207	2.211	0.21	3.934

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	55	170	0	212	663	346	53
normalized size	1	1.	0.9	2.79	0.	3.48	10.87	5.67	0.87
time (sec)	N/A	0.051	0.039	0.007	0.	0.221	2.318	0.208	9.311

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	54	49	47	49
normalized size	1	1.	0.76	0.71	0.92	1.06	0.96	0.92	0.96
time (sec)	N/A	0.031	0.011	0.006	1.331	0.204	6.711	0.207	5.161

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	54	4884	47	49
normalized size	1	1.	0.76	0.71	0.92	1.06	95.76	0.92	0.96
time (sec)	N/A	0.031	0.011	0.008	1.334	0.207	10.687	0.211	5.176

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	51	4884	47	49
normalized size	1	1.	0.76	0.71	0.92	1.	95.76	0.92	0.96
time (sec)	N/A	0.03	0.011	0.007	1.349	0.206	9.473	0.203	5.197

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	39	36	47	47	4600	47	46
normalized size	1	1.	0.83	0.77	1.	1.	97.87	1.	0.98
time (sec)	N/A	0.03	0.01	0.006	1.318	0.206	9.373	0.203	5.173

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	38	36	47	46	3847	47	44
normalized size	1	1.	0.84	0.8	1.04	1.02	85.49	1.04	0.98
time (sec)	N/A	0.03	0.011	0.006	1.366	0.207	9.374	0.203	5.168

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	38	34	46	46	46	46	46
normalized size	1	1.	0.81	0.72	0.98	0.98	0.98	0.98	0.98
time (sec)	N/A	0.031	0.013	0.007	1.351	0.209	2.328	0.201	5.245

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	61	54	0	1	65	80	65
normalized size	1	1.	0.9	0.79	0.	0.01	0.96	1.18	0.96
time (sec)	N/A	0.076	0.043	0.013	0.	0.222	10.36	0.201	11.836

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	49	43	0	1	49	61	49
normalized size	1	1.	0.92	0.81	0.	0.02	0.92	1.15	0.92
time (sec)	N/A	0.045	0.031	0.009	0.	0.221	5.454	0.206	8.706

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	32	0	1	36	42	36
normalized size	1	1.	1.	0.8	0.	0.02	0.9	1.05	0.9
time (sec)	N/A	0.032	0.016	0.009	0.	0.221	2.853	0.207	6.259

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	19	0	1	27	24	27
normalized size	1	1.	1.	0.66	0.	0.03	0.93	0.83	0.93
time (sec)	N/A	0.023	0.008	0.007	0.	0.233	1.717	0.205	4.339

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	32	0	1	37	42	37
normalized size	1	1.	1.	0.8	0.	0.02	0.92	1.05	0.92
time (sec)	N/A	0.034	0.02	0.012	0.	0.219	3.009	0.203	6.24

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	50	43	0	1	49	55	49
normalized size	1	1.	0.94	0.81	0.	0.02	0.92	1.04	0.92
time (sec)	N/A	0.046	0.041	0.013	0.	0.228	5.961	0.203	8.722

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	61	54	0	1	65	70	65
normalized size	1	1.	0.9	0.79	0.	0.01	0.96	1.03	0.96
time (sec)	N/A	0.059	0.045	0.014	0.	0.228	12.285	0.203	11.881

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	68	61	0	1	257	88	63
normalized size	1	1.	0.97	0.87	0.	0.01	3.67	1.26	0.9
time (sec)	N/A	0.059	0.067	0.018	0.	0.228	12.363	0.206	11.92

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	54	47	0	1	199	62	49
normalized size	1	1.	0.95	0.82	0.	0.02	3.49	1.09	0.86
time (sec)	N/A	0.046	0.052	0.016	0.	0.234	5.865	0.205	9.131

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	37	0	1	865	49	37
normalized size	1	1.	1.	0.8	0.	0.02	18.8	1.07	0.8
time (sec)	N/A	0.035	0.03	0.014	0.	0.227	3.901	0.205	6.744

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	36	0	1	144	47	37
normalized size	1	1.	1.	0.8	0.	0.02	3.2	1.04	0.82
time (sec)	N/A	0.035	0.03	0.012	0.	0.222	3.454	0.203	6.616

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	54	48	0	1	595	66	51
normalized size	1	1.	0.96	0.86	0.	0.02	10.62	1.18	0.91
time (sec)	N/A	0.046	0.054	0.019	0.	0.265	6.07	0.203	9.121

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	68	60	0	1	991	78	65
normalized size	1	1.	0.99	0.87	0.	0.01	14.36	1.13	0.94
time (sec)	N/A	0.058	0.065	0.022	0.	0.257	11.69	0.202	11.947

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	81	79	0	1	746	104	87
normalized size	1	1.	0.85	0.83	0.	0.01	7.85	1.09	0.92
time (sec)	N/A	0.077	0.069	0.018	0.	0.236	34.595	0.205	15.692

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	70	66	0	1	672	80	73
normalized size	1	1.	0.85	0.8	0.	0.01	8.2	0.98	0.89
time (sec)	N/A	0.06	0.06	0.017	0.	0.24	15.48	0.206	12.422

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	59	50	0	1	4758	63	61
normalized size	1	1.	0.84	0.71	0.	0.01	67.97	0.9	0.87
time (sec)	N/A	0.049	0.052	0.016	0.	0.22	13.277	0.203	9.733

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	62	52	0	1	2732	70	58
normalized size	1	1.	0.85	0.71	0.	0.01	37.42	0.96	0.79
time (sec)	N/A	0.05	0.05	0.018	0.	0.224	7.644	0.204	9.843

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	59	53	0	1	590	63	61
normalized size	1	1.	0.84	0.76	0.	0.01	8.43	0.9	0.87
time (sec)	N/A	0.049	0.045	0.012	0.	0.222	10.112	0.205	9.627

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	70	66	0	1	2790	80	75
normalized size	1	1.	0.85	0.8	0.	0.01	34.02	0.98	0.91
time (sec)	N/A	0.062	0.06	0.019	0.	0.226	13.021	0.205	12.312

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	81	79	0	1	3177	96	88
normalized size	1	1.	0.85	0.83	0.	0.01	33.44	1.01	0.93
time (sec)	N/A	0.077	0.069	0.024	0.	0.226	24.824	0.216	15.491

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	61	54	0	1	707	82	65
normalized size	1	1.	0.9	0.79	0.	0.01	10.4	1.21	0.96
time (sec)	N/A	0.061	0.041	0.01	0.	0.222	11.12	0.222	11.896

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	49	43	0	1	619	63	49
normalized size	1	1.	0.92	0.81	0.	0.02	11.68	1.19	0.92
time (sec)	N/A	0.048	0.031	0.009	0.	0.229	6.041	0.224	8.948

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	32	0	1	493	45	36
normalized size	1	1.	1.	0.8	0.	0.02	12.32	1.12	0.9
time (sec)	N/A	0.035	0.018	0.007	0.	0.226	3.192	0.235	6.671

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	19	0	1	65	27	29
normalized size	1	1.	1.	0.66	0.	0.03	2.24	0.93	1.
time (sec)	N/A	0.026	0.008	0.007	0.	0.218	1.969	0.216	4.87

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	32	0	1	78	45	36
normalized size	1	1.	1.	0.8	0.	0.02	1.95	1.12	0.9
time (sec)	N/A	0.035	0.021	0.012	0.	0.219	3.143	0.232	6.745

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	48	43	0	1	578	55	49
normalized size	1	1.	0.91	0.81	0.	0.02	10.91	1.04	0.92
time (sec)	N/A	0.046	0.043	0.013	0.	0.219	6.405	0.203	9.08

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	61	54	0	1	663	73	65
normalized size	1	1.	0.9	0.79	0.	0.01	9.75	1.07	0.96
time (sec)	N/A	0.06	0.053	0.016	0.	0.219	12.827	0.204	11.959

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	61	0	1	1142	93	63
normalized size	1	1.	1.	0.87	0.	0.01	16.31	1.33	0.9
time (sec)	N/A	0.06	0.076	0.017	0.	0.22	13.451	0.206	12.541

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	56	49	0	1	1003	69	49
normalized size	1	1.	0.98	0.86	0.	0.02	17.6	1.21	0.86
time (sec)	N/A	0.049	0.061	0.016	0.	0.218	6.493	0.206	9.759

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	49	40	0	1	2247	54	37
normalized size	1	1.	1.04	0.85	0.	0.02	47.81	1.15	0.79
time (sec)	N/A	0.037	0.039	0.014	0.	0.22	4.6	0.205	7.502

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	48	39	0	1	401	55	37
normalized size	1	1.	1.04	0.85	0.	0.02	8.72	1.2	0.8
time (sec)	N/A	0.037	0.035	0.01	0.	0.22	3.745	0.205	7.322

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	56	49	0	1	1520	70	51
normalized size	1	1.	0.98	0.86	0.	0.02	26.67	1.23	0.89
time (sec)	N/A	0.05	0.071	0.017	0.	0.225	6.507	0.209	9.562

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	60	0	1	2414	82	65
normalized size	1	1.	1.	0.86	0.	0.01	34.49	1.17	0.93
time (sec)	N/A	0.062	0.093	0.022	0.	0.225	12.481	0.204	12.408

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	82	70	0	1	2649	109	87
normalized size	1	1.	0.85	0.72	0.	0.01	27.31	1.12	0.9
time (sec)	N/A	0.079	0.072	0.017	0.	0.248	38.236	0.205	16.438

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	71	58	0	1	2468	85	73
normalized size	1	1.	0.85	0.69	0.	0.01	29.38	1.01	0.87
time (sec)	N/A	0.064	0.06	0.017	0.	0.222	17.114	0.208	13.316

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	60	52	0	1	11951	69	61
normalized size	1	1.	0.83	0.72	0.	0.01	165.99	0.96	0.85
time (sec)	N/A	0.055	0.056	0.017	0.	0.22	18.638	0.208	10.817

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	60	54	0	1	6882	74	58
normalized size	1	1.	0.8	0.72	0.	0.01	91.76	0.99	0.77
time (sec)	N/A	0.055	0.053	0.016	0.	0.22	9.622	0.207	10.714

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	60	63	0	1	1501	69	63
normalized size	1	1.	0.83	0.88	0.	0.01	20.85	0.96	0.88
time (sec)	N/A	0.054	0.049	0.011	0.	0.219	10.597	0.205	10.33

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	71	58	0	1	6944	85	75
normalized size	1	1.	0.85	0.69	0.	0.01	82.67	1.01	0.89
time (sec)	N/A	0.067	0.068	0.02	0.	0.224	14.389	0.21	12.969

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	82	69	0	1	7891	99	88
normalized size	1	1.	0.85	0.71	0.	0.01	81.35	1.02	0.91
time (sec)	N/A	0.081	0.073	0.023	0.	0.226	27.722	0.206	16.021

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	89	120	0	1	153	4	117
normalized size	1	1.	0.73	0.98	0.	0.01	1.25	0.03	0.96
time (sec)	N/A	0.106	0.067	0.025	0.	0.224	106.69	12.674	14.98

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	78	102	0	1	122	4	88
normalized size	1	1.	0.8	1.04	0.	0.01	1.24	0.04	0.9
time (sec)	N/A	0.078	0.048	0.007	0.	0.221	26.642	12.449	10.855

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	65	81	0	1	97	4	65
normalized size	1	1.	0.88	1.09	0.	0.01	1.31	0.05	0.88
time (sec)	N/A	0.055	0.035	0.007	0.	0.221	11.717	12.248	7.646

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	47	62	0	1	42	4	39
normalized size	1	1.	1.07	1.41	0.	0.02	0.95	0.09	0.89
time (sec)	N/A	0.037	0.021	0.01	0.	0.22	6.499	12.307	4.882

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	48	61	0	1	68	4	41
normalized size	1	1.	1.07	1.36	0.	0.02	1.51	0.09	0.91
time (sec)	N/A	0.036	0.022	0.102	0.	0.253	5.866	12.502	5.064

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	16	20	20	41	45	19
normalized size	1	1.	1.	0.76	0.95	0.95	1.95	2.14	0.9
time (sec)	N/A	0.012	0.015	0.006	1.372	0.231	13.258	0.214	2.245

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	39	24	42	46	65	68	39
normalized size	1	1.	0.89	0.55	0.95	1.05	1.48	1.55	0.89
time (sec)	N/A	0.027	0.019	0.006	1.348	0.208	140.216	0.208	3.548

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	51	35	62	61	0	89	63
normalized size	1	1.	0.75	0.51	0.91	0.9	0.	1.31	0.93
time (sec)	N/A	0.043	0.023	0.007	1.331	0.209	0.	0.213	5.729

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	88	127	0	1	323	0	117
normalized size	1	1.	0.69	1.	0.	0.01	2.54	0.	0.92
time (sec)	N/A	0.1	0.074	0.016	0.	0.223	107.23	0.	14.792

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	77	108	0	1	260	0	88
normalized size	1	1.	0.75	1.06	0.	0.01	2.55	0.	0.86
time (sec)	N/A	0.075	0.055	0.007	0.	0.221	27.183	0.	11.008

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	65	86	0	1	207	0	65
normalized size	1	1.	0.84	1.12	0.	0.01	2.69	0.	0.84
time (sec)	N/A	0.054	0.048	0.007	0.	0.225	11.825	0.	7.71

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	46	66	0	1	119	0	39
normalized size	1	1.	1.	1.43	0.	0.02	2.59	0.	0.85
time (sec)	N/A	0.035	0.026	0.007	0.	0.231	6.674	0.	5.247

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	66	0	1	148	0	42
normalized size	1	1.	1.	1.4	0.	0.02	3.15	0.	0.89
time (sec)	N/A	0.036	0.03	0.036	0.	0.225	6.327	0.	5.298

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	17	22	31	88	57	19
normalized size	1	1.	1.	0.77	1.	1.41	4.	2.59	0.86
time (sec)	N/A	0.013	0.015	0.006	1.332	0.217	13.768	0.233	2.493

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	41	25	45	46	241	82	41
normalized size	1	1.	0.89	0.54	0.98	1.	5.24	1.78	0.89
time (sec)	N/A	0.028	0.02	0.006	1.33	0.22	138.462	0.213	4.074

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	52	36	66	62	0	107	65
normalized size	1	1.	0.73	0.51	0.93	0.87	0.	1.51	0.92
time (sec)	N/A	0.045	0.023	0.006	1.333	0.216	0.	0.212	6.434

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	70	108	0	1	117	0	104
normalized size	1	1.	0.65	1.	0.	0.01	1.08	0.	0.96
time (sec)	N/A	0.091	0.074	0.011	0.	0.228	101.496	0.	11.909

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	58	93	0	1	90	0	76
normalized size	1	1.	0.69	1.11	0.	0.01	1.07	0.	0.9
time (sec)	N/A	0.064	0.056	0.009	0.	0.23	22.995	0.	9.005

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	51	75	0	1	71	0	56
normalized size	1	1.	0.8	1.17	0.	0.02	1.11	0.	0.88
time (sec)	N/A	0.045	0.044	0.02	0.	0.224	9.697	0.	6.428

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	40	58	0	1	37	0	37
normalized size	1	1.	1.	1.45	0.	0.02	0.92	0.	0.92
time (sec)	N/A	0.029	0.018	0.007	0.	0.221	5.767	0.	4.471

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	59	0	1	48	0	39
normalized size	1	1.	1.	1.44	0.	0.02	1.17	0.	0.95
time (sec)	N/A	0.032	0.023	0.033	0.	0.218	5.467	0.	4.857

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	13	16	16	37	39	15
normalized size	1	1.	1.	0.72	0.89	0.89	2.06	2.17	0.83
time (sec)	N/A	0.011	0.014	0.006	1.34	0.208	13.24	0.227	2.042

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	31	18	35	34	56	57	31
normalized size	1	1.	0.82	0.47	0.92	0.89	1.47	1.5	0.82
time (sec)	N/A	0.022	0.015	0.005	1.342	0.21	140.378	0.208	2.865

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	40	27	55	46	0	74	53
normalized size	1	1.	0.68	0.46	0.93	0.78	0.	1.25	0.9
time (sec)	N/A	0.036	0.018	0.006	1.34	0.21	0.	0.209	4.11

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	71	116	0	1	252	0	104
normalized size	1	1.	0.63	1.04	0.	0.01	2.25	0.	0.93
time (sec)	N/A	0.088	0.078	0.015	0.	0.224	100.319	0.	12.237

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	60	100	0	1	196	0	76
normalized size	1	1.	0.69	1.15	0.	0.01	2.25	0.	0.87
time (sec)	N/A	0.068	0.061	0.007	0.	0.22	23.156	0.	9.362

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	51	81	0	1	156	0	56
normalized size	1	1.	0.78	1.25	0.	0.02	2.4	0.	0.86
time (sec)	N/A	0.049	0.051	0.007	0.	0.222	9.985	0.	7.001

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	63	0	1	121	0	37
normalized size	1	1.	1.	1.54	0.	0.02	2.95	0.	0.9
time (sec)	N/A	0.03	0.021	0.007	0.	0.218	6.055	0.	5.006

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	90	0	1	138	0	41
normalized size	1	1.	1.	2.14	0.	0.02	3.29	0.	0.98
time (sec)	N/A	0.033	0.025	0.042	0.	0.221	6.031	0.	5.438

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	14	18	24	83	47	15
normalized size	1	1.	1.	0.74	0.95	1.26	4.37	2.47	0.79
time (sec)	N/A	0.012	0.016	0.004	1.343	0.209	13.669	0.235	2.293

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	31	19	38	34	196	65	32
normalized size	1	1.	0.78	0.48	0.95	0.85	4.9	1.62	0.8
time (sec)	N/A	0.024	0.015	0.005	1.343	0.213	138.413	0.221	3.24

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	41	28	59	47	0	82	54
normalized size	1	1.	0.66	0.45	0.95	0.76	0.	1.32	0.87
time (sec)	N/A	0.038	0.017	0.007	1.347	0.213	0.	0.224	4.575

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	100	138	0	1	0	0	136
normalized size	1	1.	0.7	0.97	0.	0.01	0.	0.	0.95
time (sec)	N/A	0.123	0.08	0.009	0.	0.221	0.	0.	19.395

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	89	120	0	1	153	0	114
normalized size	1	1.	0.75	1.01	0.	0.01	1.29	0.	0.96
time (sec)	N/A	0.096	0.065	0.008	0.	0.22	54.166	0.	15.596

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	78	96	0	1	124	0	85
normalized size	1	1.	0.82	1.01	0.	0.01	1.31	0.	0.89
time (sec)	N/A	0.071	0.048	0.009	0.	0.222	24.913	0.	11.472

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	62	78	0	1	75	4	65
normalized size	1	1.	0.87	1.1	0.	0.01	1.06	0.06	0.92
time (sec)	N/A	0.051	0.046	0.009	0.	0.223	15.291	13.764	7.642

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	55	71	0	1	92	4	60
normalized size	1	1.	0.87	1.13	0.	0.02	1.46	0.06	0.95
time (sec)	N/A	0.05	0.048	0.045	0.	0.221	13.61	14.321	7.926

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	56	67	0	1	71	0	60
normalized size	1	1.	0.88	1.05	0.	0.02	1.11	0.	0.94
time (sec)	N/A	0.049	0.048	0.029	0.	0.221	27.862	0.	8.031

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	100	146	0	1	0	0	136
normalized size	1	1.	0.67	0.98	0.	0.01	0.	0.	0.91
time (sec)	N/A	0.126	0.088	0.01	0.	0.223	0.	0.	20.153

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	89	127	0	1	323	0	114
normalized size	1	1.	0.72	1.02	0.	0.01	2.6	0.	0.92
time (sec)	N/A	0.097	0.076	0.009	0.	0.232	54.629	0.	14.952

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	77	102	0	1	264	0	85
normalized size	1	1.	0.78	1.03	0.	0.01	2.67	0.	0.86
time (sec)	N/A	0.072	0.057	0.008	0.	0.233	25.1	0.	11.127

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	61	83	0	1	190	0	65
normalized size	1	1.	0.82	1.12	0.	0.01	2.57	0.	0.88
time (sec)	N/A	0.051	0.055	0.009	0.	0.221	14.081	0.	7.836

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	55	74	0	1	197	0	60
normalized size	1	1.	0.83	1.12	0.	0.02	2.98	0.	0.91
time (sec)	N/A	0.05	0.057	0.026	0.	0.22	13.896	0.	7.518

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	55	71	0	1	187	0	60
normalized size	1	1.	0.82	1.06	0.	0.01	2.79	0.	0.9
time (sec)	N/A	0.051	0.054	0.029	0.	0.22	28.028	0.	7.51

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	78	123	0	1	0	0	119
normalized size	1	1.	0.62	0.98	0.	0.01	0.	0.	0.94
time (sec)	N/A	0.103	0.086	0.009	0.	0.221	0.	0.	16.282

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	70	108	0	1	117	0	100
normalized size	1	1.	0.67	1.03	0.	0.01	1.11	0.	0.95
time (sec)	N/A	0.08	0.053	0.007	0.	0.225	49.064	0.	11.768

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	60	87	0	1	92	0	73
normalized size	1	1.	0.73	1.06	0.	0.01	1.12	0.	0.89
time (sec)	N/A	0.053	0.063	0.007	0.	0.22	21.919	0.	8.754

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	48	72	0	1	76	0	56
normalized size	1	1.	0.79	1.18	0.	0.02	1.25	0.	0.92
time (sec)	N/A	0.04	0.042	0.008	0.	0.224	12.51	0.	6.38

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	45	72	0	1	73	0	56
normalized size	1	1.	0.78	1.24	0.	0.02	1.26	0.	0.97
time (sec)	N/A	0.041	0.048	0.025	0.	0.222	12.63	0.	6.714

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	49	73	0	1	70	0	58
normalized size	1	1.	0.82	1.22	0.	0.02	1.17	0.	0.97
time (sec)	N/A	0.044	0.06	0.028	0.	0.232	27.009	0.	6.902

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	79	132	0	1	0	0	119
normalized size	1	1.	0.6	1.01	0.	0.01	0.	0.	0.91
time (sec)	N/A	0.109	0.088	0.01	0.	0.226	0.	0.	16.23

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	70	116	0	1	252	0	100
normalized size	1	1.	0.64	1.06	0.	0.01	2.31	0.	0.92
time (sec)	N/A	0.085	0.074	0.007	0.	0.225	49.107	0.	12.189

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	60	94	0	1	199	0	73
normalized size	1	1.	0.71	1.12	0.	0.01	2.37	0.	0.87
time (sec)	N/A	0.057	0.073	0.007	0.	0.24	21.924	0.	9.155

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	49	78	0	1	167	0	56
normalized size	1	1.	0.78	1.24	0.	0.02	2.65	0.	0.89
time (sec)	N/A	0.043	0.05	0.007	0.	0.248	12.77	0.	6.988

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	47	97	0	1	160	0	58
normalized size	1	1.	0.78	1.62	0.	0.02	2.67	0.	0.97
time (sec)	N/A	0.044	0.046	0.029	0.	0.247	12.948	0.	7.147

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	50	98	0	1	184	0	58
normalized size	1	1.	0.81	1.58	0.	0.02	2.97	0.	0.94
time (sec)	N/A	0.047	0.049	0.028	0.	0.22	27.203	0.	7.452

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	111	156	0	1	0	4	160
normalized size	1	1.	0.68	0.95	0.	0.01	0.	0.02	0.98
time (sec)	N/A	0.149	0.096	0.007	0.	0.226	0.	24.832	24.118

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	100	138	0	1	0	4	138
normalized size	1	1.	0.71	0.99	0.	0.01	0.	0.03	0.99
time (sec)	N/A	0.118	0.071	0.009	0.	0.224	0.	24.65	18.751

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	89	111	0	1	155	4	110
normalized size	1	1.	0.77	0.96	0.	0.01	1.34	0.03	0.95
time (sec)	N/A	0.091	0.063	0.008	0.	0.225	101.738	24.627	14.147

Problem 548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	74	93	0	1	102	0	85
normalized size	1	1.	0.8	1.01	0.	0.01	1.11	0.	0.92
time (sec)	N/A	0.068	0.065	0.009	0.	0.225	61.082	0.	10.183

Problem 549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	73	84	0	1	126	0	85
normalized size	1	1.	0.82	0.94	0.	0.01	1.42	0.	0.96
time (sec)	N/A	0.066	0.065	0.026	0.	0.228	78.412	0.	9.589

Problem 550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	70	82	0	1	99	0	82
normalized size	1	1.	0.81	0.95	0.	0.01	1.15	0.	0.95
time (sec)	N/A	0.065	0.075	0.029	0.	0.224	77.302	0.	9.575

Problem 551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	110	165	0	1	0	0	160
normalized size	1	1.	0.64	0.96	0.	0.01	0.	0.	0.94
time (sec)	N/A	0.153	0.103	0.008	0.	0.225	0.	0.	24.694

Problem 552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	99	146	0	1	0	0	138
normalized size	1	1.	0.68	1.	0.	0.01	0.	0.	0.95
time (sec)	N/A	0.122	0.083	0.009	0.	0.223	0.	0.	20.735

Problem 553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	88	118	0	1	326	0	110
normalized size	1	1.	0.73	0.98	0.	0.01	2.69	0.	0.91
time (sec)	N/A	0.091	0.07	0.009	0.	0.225	101.263	0.	15.789

Problem 554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	73	99	0	1	246	0	85
normalized size	1	1.	0.76	1.03	0.	0.01	2.56	0.	0.89
time (sec)	N/A	0.068	0.07	0.008	0.	0.222	61.479	0.	11.297

Problem 555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	72	88	0	1	267	0	87
normalized size	1	1.	0.77	0.95	0.	0.01	2.87	0.	0.94
time (sec)	N/A	0.069	0.08	0.028	0.	0.225	78.541	0.	10.661

Problem 556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	69	86	0	1	245	0	82
normalized size	1	1.	0.77	0.96	0.	0.01	2.72	0.	0.91
time (sec)	N/A	0.067	0.076	0.032	0.	0.223	77.871	0.	10.374

Problem 557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	86	138	0	1	0	0	139
normalized size	1	1.	0.6	0.96	0.	0.01	0.	0.	0.97
time (sec)	N/A	0.122	0.097	0.007	0.	0.225	0.	0.	18.029

Problem 558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	78	123	0	1	0	0	121
normalized size	1	1.	0.63	1.	0.	0.01	0.	0.	0.98
time (sec)	N/A	0.087	0.08	0.008	0.	0.23	0.	0.	15.023

Problem 559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	70	99	0	1	119	0	97
normalized size	1	1.	0.69	0.97	0.	0.01	1.17	0.	0.95
time (sec)	N/A	0.069	0.072	0.009	0.	0.228	97.198	0.	11.946

Problem 560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	57	84	0	1	97	0	73
normalized size	1	1.	0.72	1.06	0.	0.01	1.23	0.	0.92
time (sec)	N/A	0.054	0.054	0.007	0.	0.252	59.089	0.	8.124

Problem 561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	56	81	0	1	94	0	76
normalized size	1	1.	0.71	1.03	0.	0.01	1.19	0.	0.96
time (sec)	N/A	0.056	0.049	0.024	0.	0.254	76.254	0.	8.258

Problem 562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	57	82	0	1	88	0	78
normalized size	1	1.	0.7	1.01	0.	0.01	1.09	0.	0.96
time (sec)	N/A	0.058	0.054	0.027	0.	0.227	75.767	0.	9.1

Problem 563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	87	148	0	1	0	0	139
normalized size	1	1.	0.58	0.99	0.	0.01	0.	0.	0.93
time (sec)	N/A	0.134	0.099	0.008	0.	0.226	0.	0.	19.162

Problem 564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	79	132	0	1	0	0	121
normalized size	1	1.	0.62	1.03	0.	0.01	0.	0.	0.95
time (sec)	N/A	0.096	0.085	0.01	0.	0.226	0.	0.	15.669

Problem 565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	71	107	0	1	255	0	97
normalized size	1	1.	0.67	1.01	0.	0.01	2.41	0.	0.92
time (sec)	N/A	0.074	0.074	0.008	0.	0.223	95.652	0.	12.606

Problem 566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	58	91	0	1	209	0	73
normalized size	1	1.	0.71	1.11	0.	0.01	2.55	0.	0.89
time (sec)	N/A	0.059	0.059	0.009	0.	0.227	59.557	0.	9.902

Problem 567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	57	106	0	1	202	0	78
normalized size	1	1.	0.7	1.29	0.	0.01	2.46	0.	0.95
time (sec)	N/A	0.06	0.05	0.027	0.	0.227	76.389	0.	9.782

Problem 568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	58	107	0	1	223	0	78
normalized size	1	1.	0.69	1.27	0.	0.01	2.65	0.	0.93
time (sec)	N/A	0.061	0.054	0.03	0.	0.228	78.007	0.	10.057

Problem 569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	102	0	1	128	4	94
normalized size	1	1.	0.76	1.01	0.	0.01	1.27	0.04	0.93
time (sec)	N/A	0.075	0.077	0.009	0.	0.246	70.107	12.463	11.273

Problem 570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	67	84	0	1	100	4	70
normalized size	1	1.	0.87	1.09	0.	0.01	1.3	0.05	0.91
time (sec)	N/A	0.054	0.041	0.007	0.	0.226	17.333	12.712	8.021

Problem 571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	51	65	0	1	44	0	41
normalized size	1	1.	1.06	1.35	0.	0.02	0.92	0.	0.85
time (sec)	N/A	0.035	0.03	0.007	0.	0.225	8.224	0.	5.148

Problem 572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	31	48	0	1	22	0	26
normalized size	1	1.	1.11	1.71	0.	0.04	0.79	0.	0.93
time (sec)	N/A	0.022	0.01	0.006	0.	0.221	4.011	0.	3.417

Problem 573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	16	20	20	19	45	17
normalized size	1	1.	1.	0.84	1.05	1.05	1.	2.37	0.89
time (sec)	N/A	0.013	0.014	0.006	1.339	0.211	4.602	0.222	2.365

Problem 574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	27	22	42	31	42	68	39
normalized size	1	1.	0.61	0.5	0.95	0.7	0.95	1.55	0.89
time (sec)	N/A	0.033	0.019	0.007	1.346	0.211	24.188	0.208	3.822

Problem 575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	40	35	62	46	0	89	63
normalized size	1	1.	0.59	0.51	0.91	0.68	0.	1.31	0.93
time (sec)	N/A	0.048	0.024	0.007	1.343	0.216	0.	0.213	6.093

Problem 576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	51	46	82	61	0	111	87
normalized size	1	1.	0.55	0.5	0.89	0.66	0.	1.21	0.95
time (sec)	N/A	0.069	0.028	0.007	1.343	0.234	0.	0.213	9.337

Problem 577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	77	119	0	1	105	177	90
normalized size	1	1.	0.8	1.24	0.	0.01	1.09	1.84	0.94
time (sec)	N/A	0.078	0.098	0.069	0.	0.246	84.926	0.221	11.628

Problem 578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	58	106	0	1	71	155	63
normalized size	1	1.	0.85	1.56	0.	0.01	1.04	2.28	0.93
time (sec)	N/A	0.053	0.075	0.037	0.	0.237	16.66	0.218	7.899

Problem 579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	51	0	0	1	46	115	42
normalized size	1	1.	1.06	0.	0.	0.02	0.96	2.4	0.88
time (sec)	N/A	0.036	0.035	0.036	0.	0.246	6.632	0.218	5.619

Problem 580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	16	20	20	17	61	15
normalized size	1	1.	1.	0.84	1.05	1.05	0.89	3.21	0.79
time (sec)	N/A	0.012	0.013	0.006	1.322	0.223	4.449	0.207	2.434

Problem 581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	25	22	43	28	41	111	34
normalized size	1	1.	0.64	0.56	1.1	0.72	1.05	2.85	0.87
time (sec)	N/A	0.026	0.021	0.005	1.322	0.213	15.979	0.209	4.397

Problem 582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	38	33	68	46	219	126	58
normalized size	1	1.	0.6	0.52	1.08	0.73	3.48	2.	0.92
time (sec)	N/A	0.042	0.028	0.006	1.347	0.209	103.614	0.216	6.262

Problem 583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	49	44	86	58	0	147	82
normalized size	1	1.	0.56	0.51	0.99	0.67	0.	1.69	0.94
time (sec)	N/A	0.061	0.032	0.006	1.363	0.21	0.	0.216	9.457

Problem 584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	73	147	0	1	396	266	85
normalized size	1	1.	0.8	1.62	0.	0.01	4.35	2.92	0.93
time (sec)	N/A	0.072	0.119	0.26	0.	0.225	84.096	0.229	10.968

Problem 585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	61	0	0	1	328	223	63
normalized size	1	1.	0.88	0.	0.	0.01	4.75	3.23	0.91
time (sec)	N/A	0.052	0.104	0.036	0.	0.229	30.313	0.227	8.291

Problem 586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	16	20	30	42	116	17
normalized size	1	1.	1.	0.76	0.95	1.43	2.	5.52	0.81
time (sec)	N/A	0.013	0.019	0.007	1.336	0.214	13.112	0.218	2.319

Problem 587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	29	24	36	47	92	109	37
normalized size	1	1.	0.67	0.56	0.84	1.09	2.14	2.53	0.86
time (sec)	N/A	0.029	0.019	0.006	1.329	0.217	23.58	0.211	4.05

Problem 588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	40	35	62	58	153	215	58
normalized size	1	1.	0.62	0.55	0.97	0.91	2.39	3.36	0.91
time (sec)	N/A	0.045	0.029	0.006	1.355	0.237	104.053	0.224	6.454

Problem 589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	49	44	86	78	0	234	78
normalized size	1	1.	0.58	0.52	1.02	0.93	0.	2.79	0.93
time (sec)	N/A	0.063	0.037	0.007	1.35	0.23	0.	0.23	9.222

Problem 590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	76	108	0	1	270	0	94
normalized size	1	1.	0.72	1.03	0.	0.01	2.57	0.	0.9
time (sec)	N/A	0.085	0.088	0.007	0.	0.243	69.213	0.	11.222

Problem 591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	65	89	0	1	214	0	71
normalized size	1	1.	0.81	1.11	0.	0.01	2.68	0.	0.89
time (sec)	N/A	0.055	0.068	0.008	0.	0.255	17.217	0.	7.995

Problem 592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	70	0	1	121	0	42
normalized size	1	1.	1.	1.4	0.	0.02	2.42	0.	0.84
time (sec)	N/A	0.036	0.036	0.007	0.	0.233	7.899	0.	5.149

Problem 593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	51	0	1	54	0	27
normalized size	1	1.	1.	1.76	0.	0.03	1.86	0.	0.93
time (sec)	N/A	0.022	0.013	0.007	0.	0.218	4.093	0.	3.624

Problem 594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	22	22	46	47	17
normalized size	1	1.	1.	0.85	1.1	1.1	2.3	2.35	0.85
time (sec)	N/A	0.013	0.014	0.006	1.387	0.212	4.645	0.231	2.656

Problem 595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	28	23	43	30	177	73	41
normalized size	1	1.	0.61	0.5	0.93	0.65	3.85	1.59	0.89
time (sec)	N/A	0.029	0.02	0.007	1.332	0.215	23.865	0.214	4.2

Problem 596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	94	127	0	1	224	208	90
normalized size	1	1.	0.94	1.27	0.	0.01	2.24	2.08	0.9
time (sec)	N/A	0.078	0.093	0.039	0.	0.222	85.306	0.229	11.602

Problem 597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	58	114	0	1	155	176	63
normalized size	1	1.	0.82	1.61	0.	0.01	2.18	2.48	0.89
time (sec)	N/A	0.056	0.091	0.036	0.	0.228	16.66	0.223	8.015

Problem 598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	0	0	1	102	138	42
normalized size	1	1.	1.	0.	0.	0.02	2.04	2.76	0.84
time (sec)	N/A	0.036	0.074	0.036	0.	0.226	6.949	0.222	5.544

Problem 599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	22	22	44	72	15
normalized size	1	1.	1.	0.85	1.1	1.1	2.2	3.6	0.75
time (sec)	N/A	0.013	0.014	0.006	1.346	0.211	4.604	0.209	2.543

Problem 600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	26	23	46	32	112	127	34
normalized size	1	1.	0.63	0.56	1.12	0.78	2.73	3.1	0.83
time (sec)	N/A	0.028	0.028	0.005	1.35	0.212	15.461	0.213	4.672

Problem 601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	39	34	70	47	452	144	58
normalized size	1	1.	0.59	0.52	1.06	0.71	6.85	2.18	0.88
time (sec)	N/A	0.044	0.033	0.007	1.346	0.22	103.156	0.22	6.702

Problem 602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	72	160	0	1	971	298	85
normalized size	1	1.	0.76	1.68	0.	0.01	10.22	3.14	0.89
time (sec)	N/A	0.073	0.144	0.052	0.	0.225	84.927	0.236	11.508

Problem 603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	60	0	0	1	833	266	63
normalized size	1	1.	0.83	0.	0.	0.01	11.57	3.69	0.88
time (sec)	N/A	0.055	0.099	0.037	0.	0.227	31.801	0.23	9.133

Problem 604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	17	22	34	95	138	17
normalized size	1	1.	1.	0.77	1.	1.55	4.32	6.27	0.77
time (sec)	N/A	0.013	0.02	0.005	1.353	0.211	13.755	0.222	2.659

Problem 605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	30	25	41	51	197	130	37
normalized size	1	1.	0.67	0.56	0.91	1.13	4.38	2.89	0.82
time (sec)	N/A	0.027	0.02	0.005	1.342	0.227	23.929	0.216	4.682

Problem 606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	41	36	68	62	314	255	58
normalized size	1	1.	0.61	0.54	1.01	0.93	4.69	3.81	0.87
time (sec)	N/A	0.047	0.036	0.007	1.343	0.212	102.587	0.231	7.581

Problem 607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	50	45	92	78	0	277	78
normalized size	1	1.	0.57	0.51	1.05	0.89	0.	3.15	0.89
time (sec)	N/A	0.066	0.044	0.006	1.342	0.227	0.	0.238	10.019

Problem 608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	60	93	0	1	95	0	82
normalized size	1	1.	0.68	1.06	0.	0.01	1.08	0.	0.93
time (sec)	N/A	0.066	0.069	0.008	0.	0.228	65.953	0.	9.704

Problem 609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	51	78	0	1	75	0	61
normalized size	1	1.	0.76	1.16	0.	0.01	1.12	0.	0.91
time (sec)	N/A	0.048	0.051	0.009	0.	0.233	15.008	0.	7.119

Problem 610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	62	0	1	54	0	39
normalized size	1	1.	1.	1.44	0.	0.02	1.26	0.	0.91
time (sec)	N/A	0.033	0.029	0.006	0.	0.219	6.755	0.	4.936

Problem 611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	46	0	1	24	0	24
normalized size	1	1.	1.	1.92	0.	0.04	1.	0.	1.
time (sec)	N/A	0.019	0.01	0.007	0.	0.22	3.806	0.	3.476

Problem 612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	15	39	14
normalized size	1	1.	1.	0.81	1.	1.	0.94	2.44	0.88
time (sec)	N/A	0.011	0.012	0.007	1.337	0.208	4.499	0.232	2.141

Problem 613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	23	18	35	23	34	57	31
normalized size	1	1.	0.61	0.47	0.92	0.61	0.89	1.5	0.82
time (sec)	N/A	0.023	0.016	0.006	1.341	0.209	23.999	0.216	3.061

Problem 614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	32	27	55	35	0	74	53
normalized size	1	1.	0.54	0.46	0.93	0.59	0.	1.25	0.9
time (sec)	N/A	0.036	0.019	0.007	1.341	0.208	0.	0.213	4.431

Problem 615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	40	35	76	46	0	92	73
normalized size	1	1.	0.5	0.44	0.95	0.57	0.	1.15	0.91
time (sec)	N/A	0.052	0.021	0.006	1.347	0.246	0.	0.214	5.96

Problem 616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	59	106	0	1	80	161	82
normalized size	1	1.	0.69	1.23	0.	0.01	0.93	1.87	0.95
time (sec)	N/A	0.067	0.08	0.036	0.	0.23	80.661	0.227	10.486

Problem 617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	48	100	0	1	58	143	60
normalized size	1	1.	0.76	1.59	0.	0.02	0.92	2.27	0.95
time (sec)	N/A	0.048	0.067	0.033	0.	0.222	14.299	0.223	8.108

Problem 618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	48	0	1	41	111	41
normalized size	1	1.	1.	1.09	0.	0.02	0.93	2.52	0.93
time (sec)	N/A	0.033	0.032	0.114	0.	0.22	5.954	0.223	5.469

Problem 619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	12	15	15	15	59	12
normalized size	1	1.	1.	0.8	1.	1.	1.	3.93	0.8
time (sec)	N/A	0.011	0.011	0.005	1.351	0.208	4.351	0.212	2.049

Problem 620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	21	18	35	23	34	100	27
normalized size	1	1.	0.66	0.56	1.09	0.72	1.06	3.12	0.84
time (sec)	N/A	0.022	0.019	0.006	1.347	0.213	15.488	0.214	3.154

Problem 621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	32	27	55	35	170	116	49
normalized size	1	1.	0.6	0.51	1.04	0.66	3.21	2.19	0.92
time (sec)	N/A	0.036	0.02	0.006	1.353	0.212	102.32	0.219	4.389

Problem 622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	39	35	76	46	0	144	70
normalized size	1	1.	0.53	0.47	1.03	0.62	0.	1.95	0.95
time (sec)	N/A	0.053	0.025	0.007	1.346	0.215	0.	0.22	5.937

Problem 623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	60	136	0	1	308	246	82
normalized size	1	1.	0.7	1.58	0.	0.01	3.58	2.86	0.95
time (sec)	N/A	0.065	0.107	0.047	0.	0.252	79.211	0.239	10.467

Problem 624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	52	55	0	1	257	208	61
normalized size	1	1.	0.8	0.85	0.	0.02	3.95	3.2	0.94
time (sec)	N/A	0.048	0.117	0.043	0.	0.221	28.998	0.229	7.961

Problem 625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	13	16	16	27	111	14
normalized size	1	1.	1.	0.72	0.89	0.89	1.5	6.17	0.78
time (sec)	N/A	0.01	0.016	0.006	1.347	0.209	13.064	0.22	2.13

Problem 626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	23	18	32	28	75	107	29
normalized size	1	1.	0.62	0.49	0.86	0.76	2.03	2.89	0.78
time (sec)	N/A	0.021	0.014	0.007	1.358	0.212	23.355	0.212	3.31

Problem 627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	32	27	54	35	117	196	49
normalized size	1	1.	0.58	0.49	0.98	0.64	2.13	3.56	0.89
time (sec)	N/A	0.032	0.022	0.006	1.324	0.209	102.687	0.229	4.539

Problem 628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	40	35	74	61	0	213	66
normalized size	1	1.	0.56	0.49	1.04	0.86	0.	3.	0.93
time (sec)	N/A	0.045	0.026	0.006	1.344	0.213	0.	0.232	5.426

Problem 629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	61	100	0	1	206	0	82
normalized size	1	1.	0.67	1.1	0.	0.01	2.26	0.	0.9
time (sec)	N/A	0.07	0.071	0.007	0.	0.244	65.497	0.	9.615

Problem 630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	52	84	0	1	163	0	61
normalized size	1	1.	0.75	1.22	0.	0.01	2.36	0.	0.88
time (sec)	N/A	0.051	0.055	0.007	0.	0.219	15.256	0.	7.348

Problem 631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	67	0	1	121	0	39
normalized size	1	1.	1.	1.49	0.	0.02	2.69	0.	0.87
time (sec)	N/A	0.034	0.032	0.007	0.	0.222	7.021	0.	5.917

Problem 632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	50	0	1	58	0	24
normalized size	1	1.	1.	2.08	0.	0.04	2.42	0.	1.
time (sec)	N/A	0.02	0.011	0.006	0.	0.219	3.974	0.	3.941

Problem 633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	18	18	41	41	14
normalized size	1	1.	1.	0.82	1.06	1.06	2.41	2.41	0.82
time (sec)	N/A	0.012	0.012	0.005	1.322	0.209	4.638	0.225	2.554

Problem 634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	24	19	38	24	141	58	32
normalized size	1	1.	0.6	0.48	0.95	0.6	3.52	1.45	0.8
time (sec)	N/A	0.025	0.016	0.006	1.329	0.209	23.85	0.21	3.312

Problem 635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	60	138	0	1	173	184	82
normalized size	1	1.	0.67	1.55	0.	0.01	1.94	2.07	0.92
time (sec)	N/A	0.07	0.102	0.042	0.	0.226	82.162	0.222	10.523

Problem 636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	50	133	0	1	128	162	60
normalized size	1	1.	0.77	2.05	0.	0.02	1.97	2.49	0.92
time (sec)	N/A	0.052	0.076	0.036	0.	0.222	14.745	0.218	8.706

Problem 637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	67	0	1	92	124	41
normalized size	1	1.	1.	1.49	0.	0.02	2.04	2.76	0.91
time (sec)	N/A	0.035	0.063	0.046	0.	0.22	6.265	0.218	5.844

Problem 638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	41	68	12
normalized size	1	1.	1.	0.81	1.	1.	2.56	4.25	0.75
time (sec)	N/A	0.011	0.014	0.005	1.355	0.211	4.594	0.207	2.608

Problem 639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	21	18	38	23	92	112	27
normalized size	1	1.	0.62	0.53	1.12	0.68	2.71	3.29	0.79
time (sec)	N/A	0.023	0.023	0.005	1.337	0.209	15.522	0.213	4.045

Problem 640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	33	28	59	36	355	130	49
normalized size	1	1.	0.59	0.5	1.05	0.64	6.34	2.32	0.88
time (sec)	N/A	0.038	0.03	0.006	1.342	0.208	102.609	0.213	5.355

Problem 641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	61	168	0	1	753	270	82
normalized size	1	1.	0.69	1.89	0.	0.01	8.46	3.03	0.92
time (sec)	N/A	0.069	0.142	0.05	0.	0.226	81.57	0.229	11.583

Problem 642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	53	73	0	1	649	244	61
normalized size	1	1.	0.79	1.09	0.	0.01	9.69	3.64	0.91
time (sec)	N/A	0.051	0.089	0.047	0.	0.223	29.954	0.226	8.512

Problem 643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	14	18	27	65	128	14
normalized size	1	1.	1.	0.74	0.95	1.42	3.42	6.74	0.74
time (sec)	N/A	0.012	0.02	0.004	1.343	0.229	13.771	0.218	2.402

Problem 644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	24	19	34	39	165	122	29
normalized size	1	1.	0.62	0.49	0.87	1.	4.23	3.13	0.74
time (sec)	N/A	0.023	0.022	0.007	1.345	0.229	23.828	0.211	3.713

Problem 645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	33	28	57	46	245	230	49
normalized size	1	1.	0.57	0.48	0.98	0.79	4.22	3.97	0.84
time (sec)	N/A	0.036	0.03	0.006	1.357	0.229	103.24	0.223	5.278

Problem 646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	41	36	78	62	0	247	66
normalized size	1	1.	0.55	0.48	1.04	0.83	0.	3.29	0.88
time (sec)	N/A	0.048	0.033	0.006	1.343	0.242	0.	0.229	6.178

Problem 647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	19	41	50	36	54	23	19
normalized size	1	1.	0.7	1.52	1.85	1.33	2.	0.85	0.7
time (sec)	N/A	0.02	0.015	0.026	1.495	0.226	5.803	0.208	3.16

Problem 648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	38	27	19	19	20	8	5
normalized size	1	1.	4.75	3.38	2.38	2.38	2.5	1.	0.62
time (sec)	N/A	0.012	0.014	0.017	1.502	0.226	3.554	0.206	2.403

Problem 649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	48	0	1	42	0	17
normalized size	1	1.	1.	2.53	0.	0.05	2.21	0.	0.89
time (sec)	N/A	0.018	0.013	0.011	0.	0.218	3.912	0.	3.847

Problem 650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	24	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.14	0.9	0.86	0.9
time (sec)	N/A	0.013	0.005	0.005	1.34	0.206	4.546	0.218	2.382

Problem 651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	24	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.14	0.9	0.86	0.9
time (sec)	N/A	0.013	0.006	0.003	1.35	0.205	2.588	0.204	2.358

Problem 652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	22	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.05	0.9	0.86	0.9
time (sec)	N/A	0.013	0.005	0.005	1.343	0.204	1.829	0.207	2.422

Problem 653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	22	19	18	19
normalized size	1	1.	0.81	0.67	0.86	1.05	0.9	0.86	0.9
time (sec)	N/A	0.013	0.005	0.004	1.347	0.206	1.65	0.204	2.384

Problem 654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	17	14	18	18	19	18	19
normalized size	1	1.	0.81	0.67	0.86	0.86	0.9	0.86	0.9
time (sec)	N/A	0.013	0.005	0.004	1.345	0.205	1.609	0.211	2.467

Problem 655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	16	13	18	16	17	18	17
normalized size	1	1.	0.84	0.68	0.95	0.84	0.89	0.95	0.89
time (sec)	N/A	0.013	0.005	0.004	1.347	0.209	1.711	0.205	2.34

Problem 656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	16	14	18	16	17	18	17
normalized size	1	1.	0.84	0.74	0.95	0.84	0.89	0.95	0.89
time (sec)	N/A	0.013	0.006	0.005	1.342	0.206	1.523	0.205	2.548

Problem 657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	12	18	18	17	18	17
normalized size	1	1.	1.	0.63	0.95	0.95	0.89	0.95	0.89
time (sec)	N/A	0.013	0.006	0.004	1.35	0.207	1.754	0.203	2.376

Problem 658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	39	2142	32	34
normalized size	1	1.	0.78	0.69	0.89	1.08	59.5	0.89	0.94
time (sec)	N/A	0.022	0.01	0.006	1.342	0.204	9.99	0.205	4.174

Problem 659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	39	2142	32	34
normalized size	1	1.	0.78	0.69	0.89	1.08	59.5	0.89	0.94
time (sec)	N/A	0.022	0.009	0.007	1.346	0.205	8.831	0.206	4.235

Problem 660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	36	1953	32	34
normalized size	1	1.	0.78	0.69	0.89	1.	54.25	0.89	0.94
time (sec)	N/A	0.022	0.009	0.007	1.349	0.203	7.155	0.203	3.939

Problem 661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	36	1953	32	34
normalized size	1	1.	0.78	0.69	0.89	1.	54.25	0.89	0.94
time (sec)	N/A	0.022	0.009	0.005	1.345	0.204	6.906	0.204	4.04

Problem 662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	28	25	32	32	1765	32	34
normalized size	1	1.	0.78	0.69	0.89	0.89	49.03	0.89	0.94
time (sec)	N/A	0.022	0.009	0.006	1.347	0.204	6.63	0.208	4.009

Problem 663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	28	25	32	32	1765	32	32
normalized size	1	1.	0.82	0.74	0.94	0.94	51.91	0.94	0.94
time (sec)	N/A	0.023	0.009	0.005	1.353	0.202	6.658	0.204	4.021

Problem 664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	27	25	32	31	1413	32	31
normalized size	1	1.	0.84	0.78	1.	0.97	44.16	1.	0.97
time (sec)	N/A	0.023	0.01	0.007	1.344	0.204	6.745	0.204	4.338

Problem 665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	27	25	32	31	1413	32	32
normalized size	1	1.	0.79	0.74	0.94	0.91	41.56	0.94	0.94
time (sec)	N/A	0.022	0.01	0.007	1.344	0.213	7.002	0.205	4.261

Problem 666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	54	5345	47	49
normalized size	1	1.	0.76	0.71	0.92	1.06	104.8	0.92	0.96
time (sec)	N/A	0.032	0.012	0.007	1.344	0.212	15.081	0.205	5.635

Problem 667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	54	5345	47	49
normalized size	1	1.	0.76	0.71	0.92	1.06	104.8	0.92	0.96
time (sec)	N/A	0.031	0.011	0.007	1.344	0.205	13.976	0.203	5.482

Problem 668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	51	5054	47	49
normalized size	1	1.	0.76	0.71	0.92	1.	99.1	0.92	0.96
time (sec)	N/A	0.031	0.011	0.006	1.349	0.223	11.482	0.209	5.475

Problem 669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	51	5054	47	49
normalized size	1	1.	0.76	0.71	0.92	1.	99.1	0.92	0.96
time (sec)	N/A	0.03	0.011	0.007	1.374	0.234	11.059	0.203	5.775

Problem 670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	39	36	47	47	4763	47	49
normalized size	1	1.	0.76	0.71	0.92	0.92	93.39	0.92	0.96
time (sec)	N/A	0.031	0.011	0.007	1.348	0.211	10.701	0.203	5.761

Problem 671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	39	36	47	47	4763	47	48
normalized size	1	1.	0.8	0.73	0.96	0.96	97.2	0.96	0.98
time (sec)	N/A	0.031	0.01	0.007	1.325	0.207	10.656	0.204	5.527

Problem 672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	39	36	47	47	4004	47	48
normalized size	1	1.	0.8	0.73	0.96	0.96	81.71	0.96	0.98
time (sec)	N/A	0.031	0.012	0.007	1.352	0.205	10.629	0.207	5.626

Problem 673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	39	36	47	47	4004	47	48
normalized size	1	1.	0.8	0.73	0.96	0.96	81.71	0.96	0.98
time (sec)	N/A	0.032	0.012	0.007	1.322	0.21	10.769	0.204	5.361

Problem 674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	140	122	0	208	206	186	119
normalized size	1	1.	1.12	0.98	0.	1.66	1.65	1.49	0.95
time (sec)	N/A	0.142	0.078	0.01	0.	0.221	6.298	0.218	15.354

Problem 675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	140	121	0	155	204	184	117
normalized size	1	1.	1.14	0.98	0.	1.26	1.66	1.5	0.95
time (sec)	N/A	0.125	0.04	0.009	0.	0.219	4.99	0.229	15.889

Problem 676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	127	107	0	180	184	159	105
normalized size	1	1.	1.14	0.96	0.	1.62	1.66	1.43	0.95
time (sec)	N/A	0.09	0.03	0.009	0.	0.218	3.638	0.219	11.142

Problem 677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	126	108	0	150	180	161	104
normalized size	1	1.	1.16	0.99	0.	1.38	1.65	1.48	0.95
time (sec)	N/A	0.088	0.028	0.008	0.	0.229	3.57	0.224	11.231

Problem 678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	103	96	0	128	165	159	95
normalized size	1	1.	1.03	0.96	0.	1.28	1.65	1.59	0.95
time (sec)	N/A	0.069	0.03	0.007	0.	0.228	3.058	0.219	7.522

Problem 679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	103	95	0	115	156	158	95
normalized size	1	1.	1.03	0.95	0.	1.15	1.56	1.58	0.95
time (sec)	N/A	0.068	0.023	0.007	0.	0.224	3.181	0.218	7.621

Problem 680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	127	104	0	169	182	169	104
normalized size	1	1.	1.17	0.95	0.	1.55	1.67	1.55	0.95
time (sec)	N/A	0.088	0.067	0.012	0.	0.233	3.915	0.221	11.134

Problem 681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	126	105	0	208	185	162	105
normalized size	1	1.	1.14	0.95	0.	1.87	1.67	1.46	0.95
time (sec)	N/A	0.09	0.053	0.01	0.	0.225	4.25	0.218	11.438

Problem 682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	147	123	0	242	581	182	124
normalized size	1	1.	1.14	0.95	0.	1.88	4.5	1.41	0.96
time (sec)	N/A	0.113	0.139	0.017	0.	0.227	8.444	0.219	16.506

Problem 683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	147	123	0	213	578	182	121
normalized size	1	1.	1.18	0.98	0.	1.7	4.62	1.46	0.97
time (sec)	N/A	0.113	0.142	0.016	0.	0.225	6.175	0.225	16.107

Problem 684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	133	112	0	200	525	184	107
normalized size	1	1.	1.16	0.97	0.	1.74	4.57	1.6	0.93
time (sec)	N/A	0.093	0.127	0.014	0.	0.215	4.119	0.219	11.335

Problem 685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	134	112	0	182	520	184	107
normalized size	1	1.	1.15	0.96	0.	1.56	4.44	1.57	0.91
time (sec)	N/A	0.092	0.144	0.015	0.	0.221	3.979	0.222	11.543

Problem 686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	133	120	0	198	563	178	107
normalized size	1	1.	1.15	1.03	0.	1.71	4.85	1.53	0.92
time (sec)	N/A	0.091	0.124	0.01	0.	0.222	3.955	0.222	11.263

Problem 687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	134	120	0	181	529	178	107
normalized size	1	1.	1.19	1.06	0.	1.6	4.68	1.58	0.95
time (sec)	N/A	0.096	0.132	0.01	0.	0.231	4.312	0.218	11.585

Problem 688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	147	121	0	231	619	196	122
normalized size	1	1.	1.19	0.98	0.	1.86	4.99	1.58	0.98
time (sec)	N/A	0.115	0.202	0.019	0.	0.224	5.479	0.221	15.181

Problem 689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	147	121	0	270	615	185	126
normalized size	1	1.	1.15	0.95	0.	2.11	4.8	1.45	0.98
time (sec)	N/A	0.115	0.174	0.02	0.	0.232	6.088	0.218	15.453

Problem 690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	154	124	0	273	1690	197	133
normalized size	1	1.	1.1	0.89	0.	1.95	12.07	1.41	0.95
time (sec)	N/A	0.117	0.122	0.019	0.	0.228	10.736	0.222	15.829

Problem 691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	154	124	0	257	1681	197	129
normalized size	1	1.	1.1	0.89	0.	1.84	12.01	1.41	0.92
time (sec)	N/A	0.116	0.111	0.018	0.	0.227	7.78	0.226	16.104

Problem 692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	155	132	0	274	1683	201	126
normalized size	1	1.	1.08	0.92	0.	1.92	11.77	1.41	0.88
time (sec)	N/A	0.116	0.15	0.017	0.	0.221	5.695	0.22	15.987

Problem 693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	156	132	0	255	1676	200	126
normalized size	1	1.	1.09	0.92	0.	1.78	11.72	1.4	0.88
time (sec)	N/A	0.118	0.126	0.017	0.	0.218	5.323	0.22	16.328

Problem 694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	153	136	0	271	1693	193	129
normalized size	1	1.	1.09	0.97	0.	1.94	12.09	1.38	0.92
time (sec)	N/A	0.114	0.112	0.011	0.	0.223	5.325	0.224	15.746

Problem 695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	153	136	0	255	1629	193	133
normalized size	1	1.	1.09	0.97	0.	1.82	11.64	1.38	0.95
time (sec)	N/A	0.118	0.113	0.01	0.	0.225	5.943	0.219	15.896

Problem 696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	167	139	0	305	1928	209	146
normalized size	1	1.	1.1	0.91	0.	2.01	12.68	1.38	0.96
time (sec)	N/A	0.14	0.13	0.023	0.	0.233	7.759	0.224	20.108

Problem 697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	167	139	0	344	1921	203	146
normalized size	1	1.	1.1	0.91	0.	2.26	12.64	1.34	0.96
time (sec)	N/A	0.149	0.135	0.023	0.	0.23	9.05	0.222	20.142

Problem 698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	85	62	85	105	243	86	51
normalized size	1	1.	1.47	1.07	1.47	1.81	4.19	1.48	0.88
time (sec)	N/A	0.056	0.041	0.032	1.499	0.223	7.124	0.229	5.103

Problem 699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	167	1535	0	1724	9996	1	172
normalized size	1	1.	0.89	8.21	0.	9.22	53.45	0.01	0.92
time (sec)	N/A	0.198	0.107	0.012	0.	0.229	22.234	0.218	30.986

Problem 700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	119	782	0	898	4257	1	121
normalized size	1	1.	0.89	5.88	0.	6.75	32.01	0.01	0.91
time (sec)	N/A	0.119	0.105	0.008	0.	0.228	9.289	0.208	21.765

Problem 701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	55	170	0	212	663	346	53
normalized size	1	1.	0.9	2.79	0.	3.48	10.87	5.67	0.87
time (sec)	N/A	0.048	0.038	0.001	0.	0.227	2.36	0.21	9.38

Problem 702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	39	87	0	115	299	182	36
normalized size	1	1.	0.91	2.02	0.	2.67	6.95	4.23	0.84
time (sec)	N/A	0.034	0.026	0.	0.	0.227	1.433	0.21	6.729

Problem 703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	23	31	0	45	87	69	19
normalized size	1	1.	0.92	1.24	0.	1.8	3.48	2.76	0.76
time (sec)	N/A	0.02	0.018	0.	0.	0.225	0.737	0.207	3.545

Problem 704	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	0	61	0	20
normalized size	1	1.	1.	0.	0.	0.	2.1	0.	0.69
time (sec)	N/A	0.021	0.019	0.056	0.	0.	2.13	0.	3.082

Problem 705	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	0	262	0	22
normalized size	1	1.	1.	0.	0.	0.	9.03	0.	0.76
time (sec)	N/A	0.02	0.019	0.048	0.	0.	2.911	0.	3.08

Problem 706	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	0	0	0	717	0	22
normalized size	1	1.	1.	0.	0.	0.	24.72	0.	0.76
time (sec)	N/A	0.02	0.022	0.065	0.	0.	4.105	0.	3.12

Problem 707	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	125	0	0	0	0	0	37
normalized size	1	1.	2.6	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.04	0.149	0.027	0.	0.	0.	0.	5.949

Problem 708	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	83	0	0	0	37	0	37
normalized size	1	1.	1.73	0.	0.	0.	0.77	0.	0.77
time (sec)	N/A	0.039	0.072	0.026	0.	0.	23.434	0.	6.113

Problem 709	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	50	0	0	0	37	0	37
normalized size	1	1.	1.04	0.	0.	0.	0.77	0.	0.77
time (sec)	N/A	0.038	0.019	0.036	0.	0.	4.907	0.	6.148

Problem 710	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	50	0	0	0	36	0	36
normalized size	1	1.	1.09	0.	0.	0.	0.78	0.	0.78
time (sec)	N/A	0.039	0.024	0.029	0.	0.	4.185	0.	6.168

Problem 711	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	53	0	0	0	36	0	39
normalized size	1	1.	1.15	0.	0.	0.	0.78	0.	0.85
time (sec)	N/A	0.039	0.034	0.026	0.	0.	6.799	0.	5.978

Problem 712	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	53	0	0	0	36	0	42
normalized size	1	1.	1.1	0.	0.	0.	0.75	0.	0.88
time (sec)	N/A	0.039	0.033	0.027	0.	0.	26.736	0.	5.923

Problem 713	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	109	0	0	0	37	0	42
normalized size	1	1.	2.14	0.	0.	0.	0.73	0.	0.82
time (sec)	N/A	0.045	0.127	0.039	0.	0.	19.331	0.	7.412

Problem 714	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	72	0	0	0	37	0	42
normalized size	1	1.	1.47	0.	0.	0.	0.76	0.	0.86
time (sec)	N/A	0.042	0.054	0.036	0.	0.	10.124	0.	7.3

Problem 715	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	50	0	0	0	36	0	36
normalized size	1	1.	1.09	0.	0.	0.	0.78	0.	0.78
time (sec)	N/A	0.04	0.008	0.	0.	0.	4.187	0.	6.015

Problem 716	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	79	0	0	0	31	0	37
normalized size	1	1.	1.65	0.	0.	0.	0.65	0.	0.77
time (sec)	N/A	0.041	0.073	0.024	0.	0.	22.946	0.	7.706

Problem 717	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	114	0	0	0	32	0	39
normalized size	1	1.	2.33	0.	0.	0.	0.65	0.	0.8
time (sec)	N/A	0.045	0.131	0.03	0.	0.	148.243	0.	7.6

Problem 718	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	156	0	0	0	0	0	42
normalized size	1	1.	3.06	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.046	0.205	0.03	0.	0.	0.	0.	8.375

Problem 719	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	50	29	0	0	37	0	27
normalized size	1	1.	1.61	0.94	0.	0.	1.19	0.	0.87
time (sec)	N/A	0.021	0.022	0.056	0.	0.	3.281	0.	2.646

Problem 720	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	37	29	0	0	46	0	26
normalized size	1	1.	1.19	0.94	0.	0.	1.48	0.	0.84
time (sec)	N/A	0.017	0.021	0.04	0.	0.	3.333	0.	2.609

Problem 721	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	36	43	0	0	36	0	29
normalized size	1	1.	1.	1.19	0.	0.	1.	0.	0.81
time (sec)	N/A	0.024	0.016	0.075	0.	0.	3.331	0.	2.612

Problem 722	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	50	30	0	0	41	0	41
normalized size	1	1.	1.	0.6	0.	0.	0.82	0.	0.82
time (sec)	N/A	0.034	0.019	0.026	0.	0.	3.303	0.	3.586

Problem 723	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	51	0	0	0	42	0	37
normalized size	1	1.	1.06	0.	0.	0.	0.88	0.	0.77
time (sec)	N/A	0.041	0.026	0.032	0.	0.	4.109	0.	6.087

Problem 724	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	36	30	0	0	44	0	31
normalized size	1	1.	1.06	0.88	0.	0.	1.29	0.	0.91
time (sec)	N/A	0.021	0.015	0.026	0.	0.	3.256	0.	2.822

Problem 725	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	52	30	0	0	53	0	29
normalized size	1	1.	1.53	0.88	0.	0.	1.56	0.	0.85
time (sec)	N/A	0.021	0.02	0.033	0.	0.	3.415	0.	2.827

Problem 726	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	44	0	0	42	0	37
normalized size	1	1.	1.	0.9	0.	0.	0.86	0.	0.76
time (sec)	N/A	0.033	0.017	0.047	0.	0.	3.459	0.	3.727

Problem 727	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	C	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	31	0	0	48	0	32
normalized size	1	1.	1.	0.84	0.	0.	1.3	0.	0.86
time (sec)	N/A	0.019	0.015	0.023	0.	0.	3.401	0.	2.706

Problem 728	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	26	23	0	0	26	0	19
normalized size	1	1.	1.	0.88	0.	0.	1.	0.	0.73
time (sec)	N/A	0.017	0.012	0.043	0.	0.	3.171	0.	2.44

Problem 729	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	0	0	0	31	0	22
normalized size	1	1.	1.	0.	0.	0.	1.03	0.	0.73
time (sec)	N/A	0.021	0.023	0.036	0.	0.	3.331	0.	3.069

Problem 730	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	0	0	0	34	0	36
normalized size	1	1.	1.	0.	0.	0.	0.72	0.	0.77
time (sec)	N/A	0.033	0.042	0.146	0.	0.	10.008	0.	5.915

Problem 731	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	48	0	0	0	37	0	39
normalized size	1	1.	0.92	0.	0.	0.	0.71	0.	0.75
time (sec)	N/A	0.041	0.03	0.114	0.	0.	8.452	0.	6.923

Problem 732	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	86	126	136	193	1316	335	71
normalized size	1	1.	1.04	1.52	1.64	2.33	15.86	4.04	0.86
time (sec)	N/A	0.076	0.055	0.007	1.359	0.227	5.648	0.211	17.522

Problem 733	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	57	73	92	130	597	208	51
normalized size	1	1.	0.95	1.22	1.53	2.17	9.95	3.47	0.85
time (sec)	N/A	0.05	0.036	0.009	1.358	0.225	3.225	0.209	12.244

Problem 734	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	36	57	72	201	113	31
normalized size	1	1.	0.85	0.92	1.46	1.85	5.15	2.9	0.79
time (sec)	N/A	0.031	0.02	0.004	1.36	0.227	1.763	0.207	7.192

Problem 735	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	17	19	0	27	20	24	12
normalized size	1	1.	0.94	1.06	0.	1.5	1.11	1.33	0.67
time (sec)	N/A	0.011	0.01	0.003	0.	0.222	0.081	0.203	1.737

Problem 736	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	46	0	0	0	83	0	26
normalized size	1	1.	1.31	0.	0.	0.	2.37	0.	0.74
time (sec)	N/A	0.022	0.018	0.033	0.	0.	4.833	0.	3.172

Problem 737	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	53	0	0	0	354	0	27
normalized size	1	1.	1.51	0.	0.	0.	10.11	0.	0.77
time (sec)	N/A	0.022	0.018	0.043	0.	0.	6.468	0.	3.415

Problem 738	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	53	0	0	0	918	0	31
normalized size	1	1.	1.39	0.	0.	0.	24.16	0.	0.82
time (sec)	N/A	0.025	0.024	0.049	0.	0.	8.772	0.	3.865

Problem 739	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	64	77	0	140	0	0	76
normalized size	1	1.	0.58	0.7	0.	1.27	0.	0.	0.69
time (sec)	N/A	0.095	0.069	0.008	0.	0.23	0.	0.	15.737

Problem 740	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	39	44	0	86	0	0	42
normalized size	1	1.	0.61	0.69	0.	1.34	0.	0.	0.66
time (sec)	N/A	0.038	0.047	0.006	0.	0.222	0.	0.	7.213

Problem 741	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	25	29	0	45	0	0	19
normalized size	1	1.	0.89	1.04	0.	1.61	0.	0.	0.68
time (sec)	N/A	0.017	0.027	0.004	0.	0.231	0.	0.	2.895

Problem 742	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	0	0	0	0	0	29
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.031	0.029	0.073	0.	0.	0.	0.	5.809

Problem 743	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	0	0	34
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.032	0.026	0.078	0.	0.	0.	0.	5.862

Problem 744	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	0	0	34
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.033	0.029	0.079	0.	0.	0.	0.	6.069

Problem 745	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	27	0	36
normalized size	1	1.	1.	0.	0.	0.	0.6	0.	0.8
time (sec)	N/A	0.028	0.019	0.028	0.	0.	56.956	0.	5.314

Problem 746	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	27	0	36
normalized size	1	1.	1.	0.	0.	0.	0.6	0.	0.8
time (sec)	N/A	0.027	0.017	0.027	0.	0.	6.449	0.	5.273

Problem 747	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	0	0	0	26	0	34
normalized size	1	1.	1.	0.	0.	0.	0.6	0.	0.79
time (sec)	N/A	0.027	0.015	0.028	0.	0.	5.195	0.	5.297

Problem 748	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	0	0	0	29	0	37
normalized size	1	1.	1.	0.	0.	0.	0.67	0.	0.86
time (sec)	N/A	0.028	0.018	0.027	0.	0.	12.753	0.	5.335

Problem 749	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	45	0	0	0	32	0	41
normalized size	1	1.	1.	0.	0.	0.	0.71	0.	0.91
time (sec)	N/A	0.028	0.024	0.025	0.	0.	90.601	0.	5.371

Problem 750	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	31	32	0	0	37	0	27
normalized size	1	1.	0.89	0.91	0.	0.	1.06	0.	0.77
time (sec)	N/A	0.029	0.04	0.116	0.	0.	8.508	0.	3.5

Problem 751	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	44	0	0	0	37	0	29
normalized size	1	1.	1.1	0.	0.	0.	0.92	0.	0.72
time (sec)	N/A	0.029	0.039	0.174	0.	0.	8.635	0.	5.573

Problem 752	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	48	0	0	0	37	0	39
normalized size	1	1.	0.92	0.	0.	0.	0.71	0.	0.75
time (sec)	N/A	0.039	0.043	0.092	0.	0.	8.675	0.	6.799

Problem 753	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	20	30	43	0	0	12
normalized size	1	1.	1.	1.05	1.58	2.26	0.	0.	0.63
time (sec)	N/A	0.015	0.014	0.004	1.358	0.223	0.	0.	2.682

Problem 754	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	40	41	0	86	0	0	46
normalized size	1	1.	0.69	0.71	0.	1.48	0.	0.	0.79
time (sec)	N/A	0.045	0.046	0.005	0.	0.223	0.	0.	7.09

Problem 755	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	40	41	0	86	0	0	46
normalized size	1	1.	0.69	0.71	0.	1.48	0.	0.	0.79
time (sec)	N/A	0.04	0.026	0.	0.	0.221	0.	0.	6.965

Problem 756	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	24	21	0	30	36	30	29
normalized size	1	1.	0.69	0.6	0.	0.86	1.03	0.86	0.83
time (sec)	N/A	0.028	0.006	0.005	0.	0.204	1.288	0.205	8.95

Problem 757	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	24	21	0	30	36	30	29
normalized size	1	1.	0.69	0.6	0.	0.86	1.03	0.86	0.83
time (sec)	N/A	0.026	0.005	0.006	0.	0.204	0.923	0.209	6.727

Problem 758	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	24	21	0	30	36	30	0
normalized size	1	1.	0.69	0.6	0.	0.86	1.03	0.86	0.
time (sec)	N/A	0.024	0.005	0.004	0.	0.2	0.686	0.206	0.

Problem 759	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	22	19	0	27	34	30	0
normalized size	1	1.	0.67	0.58	0.	0.82	1.03	0.91	0.
time (sec)	N/A	0.021	0.004	0.03	0.	0.209	0.536	0.206	0.

Problem 760	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	24	17	0	22	29	23	0
normalized size	1	1.	0.89	0.63	0.	0.81	1.07	0.85	0.
time (sec)	N/A	0.013	0.007	0.004	0.	0.204	0.542	0.213	0.

Problem 761	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	20	20	0	26	0	23	0
normalized size	1	1.	0.71	0.71	0.	0.93	0.	0.82	0.
time (sec)	N/A	0.016	0.007	0.02	0.	0.213	0.	0.209	0.

Problem 762	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	20	21	0	27	0	27	27
normalized size	1	1.	0.62	0.66	0.	0.84	0.	0.84	0.84
time (sec)	N/A	0.02	0.008	0.006	0.	0.216	0.	0.208	8.171

Problem 763	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	22	19	0	24	36	26	29
normalized size	1	1.	0.85	0.73	0.	0.92	1.38	1.	1.12
time (sec)	N/A	0.015	0.007	0.006	0.	0.207	1.804	0.211	8.292

Problem 764	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	24	21	0	32	36	30	32
normalized size	1	1.	0.65	0.57	0.	0.86	0.97	0.81	0.86
time (sec)	N/A	0.034	0.009	0.004	0.	0.21	4.01	0.204	9.198

Problem 765	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	24	21	0	32	36	30	32
normalized size	1	1.	0.65	0.57	0.	0.86	0.97	0.81	0.86
time (sec)	N/A	0.032	0.008	0.004	0.	0.202	3.059	0.209	7.285

Problem 766	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	24	21	0	32	36	30	0
normalized size	1	1.	0.65	0.57	0.	0.86	0.97	0.81	0.
time (sec)	N/A	0.027	0.008	0.004	0.	0.207	2.133	0.206	0.

Problem 767	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	22	19	0	32	34	30	32
normalized size	1	1.	0.59	0.51	0.	0.86	0.92	0.81	0.86
time (sec)	N/A	0.025	0.007	0.005	0.	0.204	1.596	0.205	5.603

Problem 768	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	25	18	0	32	31	30	32
normalized size	1	1.	0.68	0.49	0.	0.86	0.84	0.81	0.86
time (sec)	N/A	0.024	0.003	0.004	0.	0.206	1.559	0.208	8.472

Problem 769	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	23	21	0	30	31	30	0
normalized size	1	1.	0.66	0.6	0.	0.86	0.89	0.86	0.
time (sec)	N/A	0.022	0.004	0.003	0.	0.205	1.635	0.21	0.

Problem 770	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	21	20	0	24	32	23	0
normalized size	1	1.	0.72	0.69	0.	0.83	1.1	0.79	0.
time (sec)	N/A	0.013	0.005	0.003	0.	0.203	2.417	0.208	0.

Problem 771	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	21	20	0	28	0	23	0
normalized size	1	1.	0.7	0.67	0.	0.93	0.	0.77	0.
time (sec)	N/A	0.016	0.007	0.007	0.	0.209	0.	0.204	0.

Problem 772	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	24	21	0	38	36	38	36
normalized size	1	1.	0.59	0.51	0.	0.93	0.88	0.93	0.88
time (sec)	N/A	0.038	0.01	0.005	0.	0.204	9.132	0.208	10.54

Problem 773	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	24	21	0	38	36	38	36
normalized size	1	1.	0.59	0.51	0.	0.93	0.88	0.93	0.88
time (sec)	N/A	0.036	0.01	0.006	0.	0.202	8.177	0.21	7.652

Problem 774	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	24	21	0	38	36	38	0
normalized size	1	1.	0.59	0.51	0.	0.93	0.88	0.93	0.
time (sec)	N/A	0.031	0.009	0.005	0.	0.209	6.392	0.204	0.

Problem 775	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	22	19	0	38	34	38	36
normalized size	1	1.	0.54	0.46	0.	0.93	0.83	0.93	0.88
time (sec)	N/A	0.031	0.009	0.005	0.	0.205	5.143	0.205	6.089

Problem 776	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	25	18	0	38	31	38	36
normalized size	1	1.	0.61	0.44	0.	0.93	0.76	0.93	0.88
time (sec)	N/A	0.028	0.004	0.006	0.	0.204	5.091	0.207	9.242

Problem 777	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	23	21	0	38	31	38	36
normalized size	1	1.	0.56	0.51	0.	0.93	0.76	0.93	0.88
time (sec)	N/A	0.027	0.007	0.005	0.	0.207	5.119	0.205	9.077

Problem 778	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	27	21	0	38	34	38	36
normalized size	1	1.	0.66	0.51	0.	0.93	0.83	0.93	0.88
time (sec)	N/A	0.026	0.005	0.004	0.	0.207	6.017	0.207	9.312

Problem 779	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	25	21	0	35	36	38	0
normalized size	1	1.	0.64	0.54	0.	0.9	0.92	0.97	0.
time (sec)	N/A	0.023	0.004	0.005	0.	0.206	5.982	0.206	0.

Problem 780	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	24	21	45	34	36	35	32
normalized size	1	1.	0.69	0.6	1.29	0.97	1.03	1.	0.91
time (sec)	N/A	0.024	0.007	0.005	1.353	0.204	2.167	0.212	9.674

Problem 781	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	24	21	35	31	36	32	0
normalized size	1	1.	0.69	0.6	1.	0.89	1.03	0.91	0.
time (sec)	N/A	0.021	0.006	0.004	1.334	0.196	1.858	0.211	0.

Problem 782	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	23	20	30	26	34	30	0
normalized size	1	1.	0.72	0.62	0.94	0.81	1.06	0.94	0.
time (sec)	N/A	0.013	0.006	0.004	1.349	0.207	1.673	0.211	0.

Problem 783	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	19	18	27	30	0	47	0
normalized size	1	1.	0.66	0.62	0.93	1.03	0.	1.62	0.
time (sec)	N/A	0.015	0.006	0.005	1.34	0.214	0.	0.212	0.

Problem 784	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	23	18	23	31	0	63	31
normalized size	1	1.	0.85	0.67	0.85	1.15	0.	2.33	1.15
time (sec)	N/A	0.018	0.01	0.006	1.352	0.221	0.	0.22	9.062

Problem 785	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	23	19	26	28	31	4	32
normalized size	1	1.	0.88	0.73	1.	1.08	1.19	0.15	1.23
time (sec)	N/A	0.014	0.009	0.004	1.343	0.208	2.03	0.574	9.065

Problem 786	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	22	21	26	31	36	0	34
normalized size	1	1.	0.63	0.6	0.74	0.89	1.03	0.	0.97
time (sec)	N/A	0.02	0.009	0.006	1.34	0.208	2.367	0.	9.189

Problem 787	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	24	21	26	31	37	4	34
normalized size	1	1.	0.69	0.6	0.74	0.89	1.06	0.11	0.97
time (sec)	N/A	0.02	0.008	0.004	1.344	0.21	2.759	0.52	9.195

Problem 788	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	23	20	43	26	34	34	0
normalized size	1	1.	0.61	0.53	1.13	0.68	0.89	0.89	0.
time (sec)	N/A	0.016	0.007	0.005	1.338	0.206	2.272	0.21	0.

Problem 789	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	21	20	31	30	0	54	0
normalized size	1	1.	0.6	0.57	0.89	0.86	0.	1.54	0.
time (sec)	N/A	0.018	0.006	0.004	1.346	0.21	0.	0.213	0.

Problem 790	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	22	21	28	31	0	63	0
normalized size	1	1.	0.67	0.64	0.85	0.94	0.	1.91	0.
time (sec)	N/A	0.02	0.004	0.007	1.34	0.206	0.	0.215	0.

Problem 791	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	22	17	31	28	34	4	36
normalized size	1	1.	0.76	0.59	1.07	0.97	1.17	0.14	1.24
time (sec)	N/A	0.016	0.004	0.004	1.349	0.211	2.033	0.539	6.382

Problem 792	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	25	18	26	31	32	0	37
normalized size	1	1.	0.61	0.44	0.63	0.76	0.78	0.	0.9
time (sec)	N/A	0.022	0.011	0.004	1.339	0.21	2.434	0.	10.113

Problem 793	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	27	21	26	31	32	4	37
normalized size	1	1.	0.66	0.51	0.63	0.76	0.78	0.1	0.9
time (sec)	N/A	0.022	0.012	0.004	1.348	0.214	2.666	0.518	9.229

Problem 794	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	22	21	26	31	36	0	37
normalized size	1	1.	0.54	0.51	0.63	0.76	0.88	0.	0.9
time (sec)	N/A	0.023	0.011	0.006	1.378	0.208	3.404	0.	9.835

Problem 795	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	24	21	26	31	37	4	37
normalized size	1	1.	0.59	0.51	0.63	0.76	0.9	0.1	0.9
time (sec)	N/A	0.023	0.01	0.004	1.34	0.207	3.932	0.516	9.994

Problem 796	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	22	21	32	31	0	63	34
normalized size	1	1.	0.67	0.64	0.97	0.94	0.	1.91	1.03
time (sec)	N/A	0.022	0.008	0.006	1.341	0.206	0.	0.215	10.283

Problem 797	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	24	19	35	28	36	4	36
normalized size	1	1.	0.83	0.66	1.21	0.97	1.24	0.14	1.24
time (sec)	N/A	0.016	0.011	0.004	1.338	0.208	3.379	0.518	7.67

Problem 798	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	24	21	31	31	37	0	0
normalized size	1	1.	0.59	0.51	0.76	0.76	0.9	0.	0.
time (sec)	N/A	0.022	0.006	0.006	1.329	0.209	3.233	0.	0.

Problem 799	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	27	19	31	31	36	4	37
normalized size	1	1.	0.66	0.46	0.76	0.76	0.88	0.1	0.9
time (sec)	N/A	0.023	0.008	0.006	1.323	0.208	3.22	0.52	6.212

Problem 800	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	27	18	26	31	32	0	37
normalized size	1	1.	0.66	0.44	0.63	0.76	0.78	0.	0.9
time (sec)	N/A	0.022	0.014	0.003	1.338	0.208	3.92	0.	9.133

Problem 801	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	27	21	26	31	32	4	37
normalized size	1	1.	0.66	0.51	0.63	0.76	0.78	0.1	0.9
time (sec)	N/A	0.023	0.012	0.004	1.32	0.21	5.106	0.535	9.22

Problem 802	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	22	21	26	31	36	0	37
normalized size	1	1.	0.54	0.51	0.63	0.76	0.88	0.	0.9
time (sec)	N/A	0.024	0.014	0.006	1.338	0.207	6.281	0.	8.997

Problem 803	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	24	21	26	31	37	4	37
normalized size	1	1.	0.59	0.51	0.63	0.76	0.9	0.1	0.9
time (sec)	N/A	0.024	0.013	0.006	1.341	0.206	6.927	0.516	9.143

Problem 804	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	32	0	45	60	47	49
normalized size	1	1.	0.61	0.56	0.	0.79	1.05	0.82	0.86
time (sec)	N/A	0.042	0.009	0.007	0.	0.2	1.771	0.207	17.759

Problem 805	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	32	0	45	61	47	51
normalized size	1	1.	0.61	0.56	0.	0.79	1.07	0.82	0.89
time (sec)	N/A	0.04	0.009	0.006	0.	0.195	1.385	0.206	12.607

Problem 806	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	32	0	45	60	47	0
normalized size	1	1.	0.61	0.56	0.	0.79	1.05	0.82	0.
time (sec)	N/A	0.037	0.008	0.005	0.	0.198	1.015	0.208	0.

Problem 807	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	33	30	0	42	60	47	0
normalized size	1	1.	0.6	0.55	0.	0.76	1.09	0.85	0.
time (sec)	N/A	0.035	0.01	0.004	0.	0.196	0.873	0.209	0.

Problem 808	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	25	28	0	36	51	39	19
normalized size	1	1.	0.96	1.08	0.	1.38	1.96	1.5	0.73
time (sec)	N/A	0.012	0.009	0.003	0.	0.205	0.814	0.205	12.346

Problem 809	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	33	33	0	43	0	43	0
normalized size	1	1.	0.67	0.67	0.	0.88	0.	0.88	0.
time (sec)	N/A	0.027	0.015	0.007	0.	0.213	0.	0.207	0.

Problem 810	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	31	32	0	42	0	42	0
normalized size	1	1.	0.63	0.65	0.	0.86	0.	0.86	0.
time (sec)	N/A	0.032	0.017	0.007	0.	0.226	0.	0.209	0.

Problem 811	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	36	34	0	45	0	47	49
normalized size	1	1.	0.67	0.63	0.	0.83	0.	0.87	0.91
time (sec)	N/A	0.032	0.015	0.007	0.	0.216	0.	0.206	15.395

Problem 812	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	35	32	0	49	60	47	54
normalized size	1	1.	0.58	0.53	0.	0.82	1.	0.78	0.9
time (sec)	N/A	0.047	0.012	0.006	0.	0.209	5.47	0.207	18.625

Problem 813	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	35	32	0	49	61	47	56
normalized size	1	1.	0.58	0.53	0.	0.82	1.02	0.78	0.93
time (sec)	N/A	0.045	0.012	0.007	0.	0.21	4.326	0.207	14.3

Problem 814	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	35	32	0	49	60	47	0
normalized size	1	1.	0.58	0.53	0.	0.82	1.	0.78	0.
time (sec)	N/A	0.04	0.012	0.005	0.	0.204	3.277	0.206	0.

Problem 815	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	33	30	0	49	60	47	56
normalized size	1	1.	0.55	0.5	0.	0.82	1.	0.78	0.93
time (sec)	N/A	0.038	0.012	0.006	0.	0.204	2.365	0.207	11.031

Problem 816	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	36	29	0	49	54	47	54
normalized size	1	1.	0.6	0.48	0.	0.82	0.9	0.78	0.9
time (sec)	N/A	0.037	0.005	0.004	0.	0.209	2.317	0.205	16.296

Problem 817	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	34	32	0	46	54	47	0
normalized size	1	1.	0.59	0.55	0.	0.79	0.93	0.81	0.
time (sec)	N/A	0.034	0.004	0.005	0.	0.205	2.319	0.205	0.

Problem 818	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	26	31	0	41	51	39	20
normalized size	1	1.	0.96	1.15	0.	1.52	1.89	1.44	0.74
time (sec)	N/A	0.013	0.008	0.003	0.	0.207	3.212	0.207	12.265

Problem 819	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	34	33	0	47	0	43	0
normalized size	1	1.	0.65	0.63	0.	0.9	0.	0.83	0.
time (sec)	N/A	0.028	0.014	0.009	0.	0.217	0.	0.205	0.

Problem 820	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	35	32	0	57	60	59	0
normalized size	1	1.	0.53	0.48	0.	0.86	0.91	0.89	0.
time (sec)	N/A	0.047	0.013	0.007	0.	0.205	8.448	0.206	0.

Problem 821	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	33	30	0	57	60	59	61
normalized size	1	1.	0.5	0.45	0.	0.86	0.91	0.89	0.92
time (sec)	N/A	0.045	0.013	0.007	0.	0.206	6.813	0.207	12.592

Problem 822	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	36	29	0	57	54	59	60
normalized size	1	1.	0.55	0.44	0.	0.86	0.82	0.89	0.91
time (sec)	N/A	0.041	0.006	0.007	0.	0.2	6.945	0.21	17.74

Problem 823	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	34	32	0	57	54	59	61
normalized size	1	1.	0.52	0.48	0.	0.86	0.82	0.89	0.92
time (sec)	N/A	0.041	0.008	0.006	0.	0.201	6.837	0.206	17.653

Problem 824	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	38	32	0	57	54	59	60
normalized size	1	1.	0.58	0.48	0.	0.86	0.82	0.89	0.91
time (sec)	N/A	0.039	0.006	0.004	0.	0.203	7.835	0.207	17.465

Problem 825	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	36	32	0	54	60	59	0
normalized size	1	1.	0.56	0.5	0.	0.84	0.94	0.92	0.
time (sec)	N/A	0.036	0.01	0.004	0.	0.208	7.83	0.207	0.

Problem 826	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	26	31	0	49	56	55	22
normalized size	1	1.	0.9	1.07	0.	1.69	1.93	1.9	0.76
time (sec)	N/A	0.013	0.009	0.003	0.	0.204	7.843	0.21	12.768

Problem 827	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	35	33	0	55	0	55	0
normalized size	1	1.	0.6	0.57	0.	0.95	0.	0.95	0.
time (sec)	N/A	0.03	0.016	0.007	0.	0.211	0.	0.213	0.

Problem 828	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	32	73	49	60	55	54
normalized size	1	1.	0.61	0.56	1.28	0.86	1.05	0.96	0.95
time (sec)	N/A	0.035	0.01	0.005	1.346	0.207	2.67	0.213	17.988

Problem 829	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	32	63	46	61	51	0
normalized size	1	1.	0.61	0.56	1.11	0.81	1.07	0.89	0.
time (sec)	N/A	0.033	0.008	0.005	1.358	0.207	2.349	0.213	0.

Problem 830	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	31	57	41	56	49	0
normalized size	1	1.	1.	1.29	2.38	1.71	2.33	2.04	0.
time (sec)	N/A	0.011	0.007	0.004	1.339	0.208	2.008	0.21	0.

Problem 831	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	32	31	47	47	0	68	0
normalized size	1	1.	0.62	0.6	0.9	0.9	0.	1.31	0.
time (sec)	N/A	0.026	0.011	0.007	1.342	0.211	0.	0.217	0.

Problem 832	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	34	29	47	46	0	88	0
normalized size	1	1.	0.72	0.62	1.	0.98	0.	1.87	0.
time (sec)	N/A	0.029	0.017	0.008	1.345	0.207	0.	0.212	0.

Problem 833	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	35	34	42	49	0	4	54
normalized size	1	1.	0.71	0.69	0.86	1.	0.	0.08	1.1
time (sec)	N/A	0.029	0.017	0.007	1.351	0.212	0.	0.523	15.514

Problem 834	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	33	30	45	43	53	0	24
normalized size	1	1.	1.27	1.15	1.73	1.65	2.04	0.	0.92
time (sec)	N/A	0.015	0.016	0.006	1.342	0.213	2.443	0.	12.366

Problem 835	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	32	45	46	61	4	58
normalized size	1	1.	0.61	0.56	0.79	0.81	1.07	0.07	1.02
time (sec)	N/A	0.032	0.011	0.007	1.347	0.215	2.954	0.564	15.845

Problem 836	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	26	31	70	41	56	53	22
normalized size	1	1.	0.96	1.15	2.59	1.52	2.07	1.96	0.81
time (sec)	N/A	0.013	0.007	0.004	1.345	0.202	2.833	0.214	13.906

Problem 837	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	34	33	61	47	0	74	0
normalized size	1	1.	0.56	0.54	1.	0.77	0.	1.21	0.
time (sec)	N/A	0.032	0.014	0.008	1.349	0.213	0.	0.216	0.

Problem 838	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	33	32	57	46	0	93	0
normalized size	1	1.	0.59	0.57	1.02	0.82	0.	1.66	0.
time (sec)	N/A	0.034	0.012	0.007	1.354	0.22	0.	0.223	0.

Problem 839	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	34	32	47	49	0	4	60
normalized size	1	1.	0.59	0.55	0.81	0.84	0.	0.07	1.03
time (sec)	N/A	0.035	0.007	0.008	1.346	0.213	0.	0.502	11.123

Problem 840	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	36	27	50	43	53	0	26
normalized size	1	1.	1.24	0.93	1.72	1.48	1.83	0.	0.9
time (sec)	N/A	0.018	0.019	0.007	1.351	0.207	2.299	0.	13.148

Problem 841	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	38	32	45	46	56	4	63
normalized size	1	1.	0.58	0.48	0.68	0.7	0.85	0.06	0.95
time (sec)	N/A	0.036	0.017	0.006	1.399	0.202	2.71	0.524	17.399

Problem 842	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	33	32	45	46	56	0	61
normalized size	1	1.	0.5	0.48	0.68	0.7	0.85	0.	0.92
time (sec)	N/A	0.037	0.019	0.006	1.369	0.21	3.265	0.	16.555

Problem 843	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	35	32	45	46	61	4	63
normalized size	1	1.	0.53	0.48	0.68	0.7	0.92	0.06	0.95
time (sec)	N/A	0.037	0.013	0.007	1.324	0.21	4.001	0.545	16.869

Problem 844	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	33	32	61	46	0	88	0
normalized size	1	1.	0.59	0.57	1.09	0.82	0.	1.57	0.
time (sec)	N/A	0.035	0.013	0.007	1.376	0.214	0.	0.22	0.

Problem 845	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	36	34	51	49	0	4	60
normalized size	1	1.	0.62	0.59	0.88	0.84	0.	0.07	1.03
time (sec)	N/A	0.035	0.017	0.006	1.353	0.213	0.	0.543	13.537

Problem 846	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	35	30	59	43	58	0	0
normalized size	1	1.	1.21	1.03	2.03	1.48	2.	0.	0.
time (sec)	N/A	0.017	0.017	0.007	1.325	0.205	3.323	0.	0.

Problem 847	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	38	30	50	46	61	4	63
normalized size	1	1.	0.58	0.45	0.76	0.7	0.92	0.06	0.95
time (sec)	N/A	0.035	0.012	0.007	1.326	0.2	3.287	0.506	11.12

Problem 848	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	38	29	50	46	56	0	61
normalized size	1	1.	0.58	0.44	0.76	0.7	0.85	0.	0.92
time (sec)	N/A	0.036	0.022	0.006	1.321	0.208	3.977	0.	17.064

Problem 849	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	38	32	45	46	56	4	63
normalized size	1	1.	0.58	0.48	0.68	0.7	0.85	0.06	0.95
time (sec)	N/A	0.037	0.018	0.009	1.34	0.209	5.132	0.532	16.814

Problem 850	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	33	32	45	46	56	0	61
normalized size	1	1.	0.5	0.48	0.68	0.7	0.85	0.	0.92
time (sec)	N/A	0.038	0.019	0.008	1.342	0.213	6.246	0.	17.03

Problem 851	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	35	32	45	46	61	4	63
normalized size	1	1.	0.53	0.48	0.68	0.7	0.92	0.06	0.95
time (sec)	N/A	0.038	0.016	0.008	1.33	0.208	7.046	0.538	16.992

Problem 852	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	63	63	0	84	0	109	0
normalized size	1	1.	0.62	0.62	0.	0.82	0.	1.07	0.
time (sec)	N/A	0.08	0.028	0.008	0.	0.213	0.	0.206	0.

Problem 853	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	52	52	0	69	0	93	0
normalized size	1	1.	0.65	0.65	0.	0.86	0.	1.16	0.
time (sec)	N/A	0.06	0.023	0.007	0.	0.211	0.	0.209	0.

Problem 854	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	40	40	0	53	0	73	0
normalized size	1	1.	0.69	0.69	0.	0.91	0.	1.26	0.
time (sec)	N/A	0.046	0.018	0.009	0.	0.209	0.	0.205	0.

Problem 855	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	28	29	0	36	0	50	0
normalized size	1	1.	0.74	0.76	0.	0.95	0.	1.32	0.
time (sec)	N/A	0.031	0.011	0.005	0.	0.204	0.	0.208	0.

Problem 856	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	21	21	0	27	0	38	17
normalized size	1	1.	0.95	0.95	0.	1.23	0.	1.73	0.77
time (sec)	N/A	0.011	0.007	0.004	0.	0.201	0.	0.208	11.86

Problem 857	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	26	26	32	1	0	0	32
normalized size	1	1.	0.62	0.62	0.76	0.02	0.	0.	0.76
time (sec)	N/A	0.022	0.011	0.007	1.351	0.212	0.	0.	14.079

Problem 858	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	32	33	50	42	0	0	53
normalized size	1	1.	0.52	0.54	0.82	0.69	0.	0.	0.87
time (sec)	N/A	0.044	0.017	0.007	1.343	0.208	0.	0.	17.283

Problem 859	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	53	51	70	59	0	0	75
normalized size	1	1.	0.63	0.61	0.83	0.7	0.	0.	0.89
time (sec)	N/A	0.057	0.023	0.008	1.348	0.222	0.	0.	20.075

Problem 860	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	64	63	0	90	0	109	0
normalized size	1	1.	0.6	0.59	0.	0.84	0.	1.02	0.
time (sec)	N/A	0.079	0.023	0.008	0.	0.206	0.	0.209	0.

Problem 861	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	53	52	0	74	0	93	0
normalized size	1	1.	0.63	0.62	0.	0.88	0.	1.11	0.
time (sec)	N/A	0.06	0.022	0.007	0.	0.216	0.	0.206	0.

Problem 862	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	42	40	0	57	0	73	0
normalized size	1	1.	0.69	0.66	0.	0.93	0.	1.2	0.
time (sec)	N/A	0.044	0.014	0.009	0.	0.218	0.	0.21	0.

Problem 863	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	30	29	0	39	0	50	0
normalized size	1	1.	0.75	0.72	0.	0.98	0.	1.25	0.
time (sec)	N/A	0.03	0.01	0.005	0.	0.235	0.	0.204	0.

Problem 864	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	22	21	18	28	0	38	19
normalized size	1	1.	0.96	0.91	0.78	1.22	0.	1.65	0.83
time (sec)	N/A	0.011	0.005	0.005	1.357	0.211	0.	0.207	13.094

Problem 865	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	27	26	32	1	0	0	36
normalized size	1	1.	0.61	0.59	0.73	0.02	0.	0.	0.82
time (sec)	N/A	0.023	0.012	0.008	1.362	0.219	0.	0.	14.498

Problem 866	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	34	33	50	45	0	0	58
normalized size	1	1.	0.53	0.52	0.78	0.7	0.	0.	0.91
time (sec)	N/A	0.044	0.017	0.007	1.355	0.234	0.	0.	17.358

Problem 867	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	53	51	70	63	0	0	82
normalized size	1	1.	0.6	0.58	0.8	0.72	0.	0.	0.93
time (sec)	N/A	0.056	0.021	0.007	1.35	0.223	0.	0.	20.042

Problem 868	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	65	62	89	80	0	0	104
normalized size	1	1.	0.58	0.55	0.79	0.71	0.	0.	0.93
time (sec)	N/A	0.075	0.04	0.007	1.348	0.222	0.	0.	22.877

Problem 869	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	76	74	0	123	0	157	0
normalized size	1	1.	0.54	0.52	0.	0.87	0.	1.11	0.
time (sec)	N/A	0.109	0.036	0.008	0.	0.213	0.	0.205	0.

Problem 870	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	65	63	0	104	0	134	0
normalized size	1	1.	0.56	0.54	0.	0.89	0.	1.15	0.
time (sec)	N/A	0.082	0.023	0.009	0.	0.23	0.	0.212	0.

Problem 871	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	54	52	0	85	0	113	0
normalized size	1	1.	0.59	0.57	0.	0.92	0.	1.23	0.
time (sec)	N/A	0.065	0.009	0.009	0.	0.214	0.	0.233	0.

Problem 872	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	42	40	0	65	0	89	0
normalized size	1	1.	0.63	0.6	0.	0.97	0.	1.33	0.
time (sec)	N/A	0.048	0.018	0.009	0.	0.205	0.	0.216	0.

Problem 873	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	30	29	0	45	0	62	0
normalized size	1	1.	0.68	0.66	0.	1.02	0.	1.41	0.
time (sec)	N/A	0.032	0.011	0.007	0.	0.211	0.	0.206	0.

Problem 874	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	22	21	18	31	0	46	20
normalized size	1	1.	0.88	0.84	0.72	1.24	0.	1.84	0.8
time (sec)	N/A	0.012	0.006	0.004	1.354	0.214	0.	0.206	12.351

Problem 875	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	28	26	32	1	0	0	39
normalized size	1	1.	0.58	0.54	0.67	0.02	0.	0.	0.81
time (sec)	N/A	0.025	0.014	0.006	1.361	0.225	0.	0.	15.539

Problem 876	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	34	33	50	50	0	0	63
normalized size	1	1.	0.49	0.47	0.71	0.71	0.	0.	0.9
time (sec)	N/A	0.047	0.02	0.007	1.321	0.215	0.	0.	19.491

Problem 877	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	51	50	0	73	0	108	0
normalized size	1	1.	0.61	0.6	0.	0.88	0.	1.3	0.
time (sec)	N/A	0.056	0.021	0.008	0.	0.217	0.	0.216	0.

Problem 878	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	39	38	0	57	0	89	0
normalized size	1	1.	0.64	0.62	0.	0.93	0.	1.46	0.
time (sec)	N/A	0.042	0.019	0.007	0.	0.22	0.	0.214	0.

Problem 879	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	27	27	0	41	0	68	0
normalized size	1	1.	0.69	0.69	0.	1.05	0.	1.74	0.
time (sec)	N/A	0.028	0.012	0.006	0.	0.214	0.	0.213	0.

Problem 880	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	19	0	31	0	47	0
normalized size	1	1.	1.	0.95	0.	1.55	0.	2.35	0.
time (sec)	N/A	0.01	0.004	0.004	0.	0.21	0.	0.213	0.

Problem 881	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	25	24	0	1	0	80	36
normalized size	1	1.	0.66	0.63	0.	0.03	0.	2.11	0.95
time (sec)	N/A	0.02	0.009	0.006	0.	0.212	0.	0.218	8.821

Problem 882	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	36	30	50	46	0	123	58
normalized size	1	1.	0.67	0.56	0.93	0.85	0.	2.28	1.07
time (sec)	N/A	0.038	0.019	0.007	1.364	0.221	0.	0.219	16.666

Problem 883	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	52	51	74	63	0	4	82
normalized size	1	1.	0.68	0.66	0.96	0.82	0.	0.05	1.06
time (sec)	N/A	0.054	0.024	0.007	1.362	0.219	0.	0.517	20.203

Problem 884	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	63	62	93	78	0	0	104
normalized size	1	1.	0.63	0.62	0.93	0.78	0.	0.	1.04
time (sec)	N/A	0.069	0.025	0.008	1.358	0.221	0.	0.	23.506

Problem 885	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	53	52	0	73	0	115	0
normalized size	1	1.	0.56	0.55	0.	0.77	0.	1.21	0.
time (sec)	N/A	0.071	0.018	0.009	0.	0.213	0.	0.213	0.

Problem 886	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	41	40	0	57	0	95	0
normalized size	1	1.	0.59	0.57	0.	0.81	0.	1.36	0.
time (sec)	N/A	0.051	0.014	0.008	0.	0.216	0.	0.212	0.

Problem 887	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	29	29	0	41	0	73	0
normalized size	1	1.	0.64	0.64	0.	0.91	0.	1.62	0.
time (sec)	N/A	0.033	0.011	0.006	0.	0.22	0.	0.216	0.

Problem 888	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	22	21	0	31	0	47	20
normalized size	1	1.	0.96	0.91	0.	1.35	0.	2.04	0.87
time (sec)	N/A	0.013	0.005	0.004	0.	0.211	0.	0.211	12.134

Problem 889	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	27	26	0	1	0	85	39
normalized size	1	1.	0.61	0.59	0.	0.02	0.	1.93	0.89
time (sec)	N/A	0.025	0.011	0.006	0.	0.216	0.	0.219	11.281

Problem 890	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	35	33	0	46	0	123	0
normalized size	1	1.	0.56	0.52	0.	0.73	0.	1.95	0.
time (sec)	N/A	0.047	0.016	0.007	0.	0.213	0.	0.218	0.

Problem 891	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	51	49	0	63	0	4	88
normalized size	1	1.	0.57	0.55	0.	0.71	0.	0.04	0.99
time (sec)	N/A	0.061	0.01	0.007	0.	0.221	0.	0.505	15.148

Problem 892	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	66	59	93	78	0	0	112
normalized size	1	1.	0.57	0.51	0.81	0.68	0.	0.	0.97
time (sec)	N/A	0.077	0.022	0.007	1.355	0.223	0.	0.	23.33

Problem 893	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	81	88	0	112	0	130	0
normalized size	1	1.	0.76	0.83	0.	1.06	0.	1.23	0.
time (sec)	N/A	0.095	0.044	0.009	0.	0.22	0.	0.213	0.

Problem 894	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	0	97	0	108	0
normalized size	1	1.	0.82	0.89	0.	1.14	0.	1.27	0.
time (sec)	N/A	0.076	0.033	0.009	0.	0.216	0.	0.207	0.

Problem 895	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	53	62	0	77	0	78	0
normalized size	1	1.	0.82	0.95	0.	1.18	0.	1.2	0.
time (sec)	N/A	0.056	0.03	0.007	0.	0.21	0.	0.207	0.

Problem 896	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	36	41	0	51	0	62	39
normalized size	1	1.	0.77	0.87	0.	1.09	0.	1.32	0.83
time (sec)	N/A	0.039	0.018	0.004	0.	0.215	0.	0.208	9.944

Problem 897	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	23	23	22	31	39	39	17
normalized size	1	1.	0.96	0.96	0.92	1.29	1.62	1.62	0.71
time (sec)	N/A	0.012	0.01	0.004	1.346	0.209	2.967	0.205	11.107

Problem 898	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	45	52	51	57	0	0	53
normalized size	1	1.	0.69	0.8	0.78	0.88	0.	0.	0.82
time (sec)	N/A	0.046	0.024	0.007	1.361	0.221	0.	0.	16.746

Problem 899	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	57	74	78	81	0	0	78
normalized size	1	1.	0.66	0.85	0.9	0.93	0.	0.	0.9
time (sec)	N/A	0.067	0.047	0.007	1.344	0.224	0.	0.	19.008

Problem 900	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	82	95	107	104	0	0	104
normalized size	1	1.	0.73	0.85	0.96	0.93	0.	0.	0.93
time (sec)	N/A	0.088	0.043	0.01	1.336	0.226	0.	0.	23.579

Problem 901	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	82	88	0	123	0	130	0
normalized size	1	1.	0.74	0.79	0.	1.11	0.	1.17	0.
time (sec)	N/A	0.093	0.039	0.007	0.	0.216	0.	0.207	0.

Problem 902	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	71	76	0	107	0	108	0
normalized size	1	1.	0.8	0.85	0.	1.2	0.	1.21	0.
time (sec)	N/A	0.076	0.033	0.007	0.	0.214	0.	0.214	0.

Problem 903	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	55	62	0	85	0	78	0
normalized size	1	1.	0.81	0.91	0.	1.25	0.	1.15	0.
time (sec)	N/A	0.053	0.011	0.007	0.	0.209	0.	0.206	0.

Problem 904	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	38	41	0	58	0	62	42
normalized size	1	1.	0.78	0.84	0.	1.18	0.	1.27	0.86
time (sec)	N/A	0.038	0.006	0.007	0.	0.204	0.	0.207	15.789

Problem 905	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	24	23	22	32	44	39	19
normalized size	1	1.	0.96	0.92	0.88	1.28	1.76	1.56	0.76
time (sec)	N/A	0.012	0.009	0.003	1.362	0.196	8.368	0.205	11.906

Problem 906	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	46	52	51	63	0	0	58
normalized size	1	1.	0.68	0.76	0.75	0.93	0.	0.	0.85
time (sec)	N/A	0.046	0.024	0.007	1.355	0.216	0.	0.	17.402

Problem 907	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	59	74	78	88	0	0	85
normalized size	1	1.	0.65	0.81	0.86	0.97	0.	0.	0.93
time (sec)	N/A	0.066	0.043	0.006	1.359	0.22	0.	0.	19.901

Problem 908	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	82	95	107	111	0	0	112
normalized size	1	1.	0.7	0.81	0.91	0.95	0.	0.	0.96
time (sec)	N/A	0.085	0.045	0.007	1.358	0.224	0.	0.	24.473

Problem 909	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	80	86	0	115	0	0	0
normalized size	1	1.	0.75	0.8	0.	1.07	0.	0.	0.
time (sec)	N/A	0.089	0.032	0.007	0.	0.217	0.	0.	0.

Problem 910	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	69	74	0	100	0	0	0
normalized size	1	1.	0.8	0.86	0.	1.16	0.	0.	0.
time (sec)	N/A	0.072	0.023	0.007	0.	0.214	0.	0.	0.

Problem 911	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	52	60	0	80	0	0	0
normalized size	1	1.	0.81	0.94	0.	1.25	0.	0.	0.
time (sec)	N/A	0.052	0.027	0.006	0.	0.217	0.	0.	0.

Problem 912	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	35	39	0	54	0	0	42
normalized size	1	1.	0.81	0.91	0.	1.26	0.	0.	0.98
time (sec)	N/A	0.038	0.016	0.004	0.	0.211	0.	0.	12.118

Problem 913	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	21	0	34	85	0	0
normalized size	1	1.	1.	0.95	0.	1.55	3.86	0.	0.
time (sec)	N/A	0.012	0.008	0.004	0.	0.21	3.804	0.	0.

Problem 914	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	44	50	0	59	0	116	58
normalized size	1	1.	0.75	0.85	0.	1.	0.	1.97	0.98
time (sec)	N/A	0.044	0.017	0.007	0.	0.224	0.	0.221	13.559

Problem 915	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	60	71	77	84	0	0	85
normalized size	1	1.	0.77	0.91	0.99	1.08	0.	0.	1.09
time (sec)	N/A	0.061	0.042	0.006	1.359	0.225	0.	0.	23.152

Problem 916	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	81	95	103	107	0	0	112
normalized size	1	1.	0.79	0.92	1.	1.04	0.	0.	1.09
time (sec)	N/A	0.079	0.041	0.008	1.348	0.227	0.	0.	28.319

Problem 917	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	54	62	0	85	0	0	0
normalized size	1	1.	0.74	0.85	0.	1.16	0.	0.	0.
time (sec)	N/A	0.058	0.034	0.007	0.	0.219	0.	0.	0.

Problem 918	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	37	41	0	59	0	0	46
normalized size	1	1.	0.76	0.84	0.	1.2	0.	0.	0.94
time (sec)	N/A	0.04	0.019	0.006	0.	0.216	0.	0.	20.092

Problem 919	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	24	23	0	39	90	0	20
normalized size	1	1.	0.96	0.92	0.	1.56	3.6	0.	0.8
time (sec)	N/A	0.014	0.008	0.004	0.	0.205	6.149	0.	13.953

Problem 920	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	46	52	0	65	0	0	63
normalized size	1	1.	0.68	0.76	0.	0.96	0.	0.	0.93
time (sec)	N/A	0.048	0.023	0.007	0.	0.225	0.	0.	16.464

Problem 921	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	59	74	0	89	0	0	0
normalized size	1	1.	0.66	0.82	0.	0.99	0.	0.	0.
time (sec)	N/A	0.068	0.036	0.007	0.	0.224	0.	0.	0.

Problem 922	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	80	93	0	112	0	0	121
normalized size	1	1.	0.68	0.79	0.	0.95	0.	0.	1.03
time (sec)	N/A	0.089	0.038	0.007	0.	0.218	0.	0.	20.875

Problem 923	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	97	136	157	207	0	437	112
normalized size	1	1.	0.74	1.04	1.2	1.58	0.	3.34	0.85
time (sec)	N/A	0.096	0.108	0.009	1.362	0.224	0.	0.211	31.779

Problem 924	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	68	83	108	143	0	292	0
normalized size	1	1.	0.71	0.86	1.12	1.49	0.	3.04	0.
time (sec)	N/A	0.07	0.063	0.007	1.365	0.232	0.	0.208	0.

Problem 925	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	44	46	69	85	0	174	51
normalized size	1	1.	0.7	0.73	1.1	1.35	0.	2.76	0.81
time (sec)	N/A	0.045	0.041	0.003	1.364	0.225	0.	0.209	13.261

Problem 926	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	29	29	38	41	0	57	22
normalized size	1	1.	0.97	0.97	1.27	1.37	0.	1.9	0.73
time (sec)	N/A	0.017	0.018	0.003	1.353	0.226	0.	0.204	13.231

Problem 927	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	57	0	0	0	0	0	36
normalized size	1	1.	1.21	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.032	0.021	0.033	0.	0.	0.	0.	14.511

Problem 928	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	62	0	0	0	0	0	37
normalized size	1	1.	1.32	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.031	0.025	0.033	0.	0.	0.	0.	14.702

Problem 929	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	62	0	0	0	0	0	41
normalized size	1	1.	1.24	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.036	0.025	0.039	0.	0.	0.	0.	15.698

Problem 930	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	132	199	212	315	0	621	0
normalized size	1	1.	0.78	1.18	1.25	1.86	0.	3.67	0.
time (sec)	N/A	0.134	0.117	0.01	1.377	0.226	0.	0.213	0.

Problem 931	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	98	136	157	221	0	437	119
normalized size	1	1.	0.73	1.01	1.16	1.64	0.	3.24	0.88
time (sec)	N/A	0.1	0.088	0.007	1.405	0.218	0.	0.211	26.211

Problem 932	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	70	83	108	153	0	0	87
normalized size	1	1.	0.71	0.84	1.09	1.55	0.	0.	0.88
time (sec)	N/A	0.073	0.012	0.006	1.363	0.228	0.	0.	24.782

Problem 933	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	46	46	69	92	0	174	54
normalized size	1	1.	0.71	0.71	1.06	1.42	0.	2.68	0.83
time (sec)	N/A	0.048	0.038	0.003	1.342	0.227	0.	0.209	18.665

Problem 934	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	30	29	38	45	0	57	24
normalized size	1	1.	0.97	0.94	1.23	1.45	0.	1.84	0.77
time (sec)	N/A	0.019	0.02	0.002	1.36	0.232	0.	0.207	12.355

Problem 935	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	58	0	0	0	0	0	37
normalized size	1	1.	1.21	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.032	0.017	0.03	0.	0.	0.	0.	13.632

Problem 936	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	62	0	0	0	0	0	39
normalized size	1	1.	1.29	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.034	0.02	0.034	0.	0.	0.	0.	13.901

Problem 937	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	62	0	0	0	0	0	42
normalized size	1	1.	1.22	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.038	0.026	0.039	0.	0.	0.	0.	15.145

Problem 938	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	172	280	274	475	0	926	194
normalized size	1	1.	0.79	1.29	1.26	2.19	0.	4.27	0.89
time (sec)	N/A	0.182	0.176	0.01	1.379	0.229	0.	0.216	45.276

Problem 939	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	133	199	212	358	0	0	160
normalized size	1	1.	0.74	1.11	1.18	2.	0.	0.	0.89
time (sec)	N/A	0.137	0.095	0.01	1.386	0.225	0.	0.	46.422

Problem 940	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	99	136	157	251	0	0	126
normalized size	1	1.	0.69	0.95	1.1	1.76	0.	0.	0.88
time (sec)	N/A	0.108	0.014	0.008	1.374	0.226	0.	0.	39.017

Problem 941	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	70	83	108	171	0	0	92
normalized size	1	1.	0.67	0.79	1.03	1.63	0.	0.	0.88
time (sec)	N/A	0.079	0.072	0.007	1.35	0.228	0.	0.	30.344

Problem 942	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	46	46	69	103	0	0	58
normalized size	1	1.	0.67	0.67	1.	1.49	0.	0.	0.84
time (sec)	N/A	0.05	0.039	0.003	1.349	0.229	0.	0.	22.211

Problem 943	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	31	29	38	50	0	0	26
normalized size	1	1.	0.94	0.88	1.15	1.52	0.	0.	0.79
time (sec)	N/A	0.021	0.023	0.003	1.37	0.235	0.	0.	14.949

Problem 944	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	58	0	0	0	0	0	39
normalized size	1	1.	1.16	0.	0.	0.	0.	0.	0.78
time (sec)	N/A	0.036	0.021	0.031	0.	0.	0.	0.	17.127

Problem 945	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	62	0	0	0	0	0	41
normalized size	1	1.	1.24	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.035	0.021	0.035	0.	0.	0.	0.	17.266

Problem 946	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	96	134	140	213	0	0	119
normalized size	1	1.	0.78	1.09	1.14	1.73	0.	0.	0.97
time (sec)	N/A	0.086	0.075	0.008	1.362	0.227	0.	0.	37.933

Problem 947	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	67	81	112	149	0	0	87
normalized size	1	1.	0.74	0.9	1.24	1.66	0.	0.	0.97
time (sec)	N/A	0.063	0.048	0.009	1.37	0.251	0.	0.	30.099

Problem 948	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	43	44	61	89	0	0	54
normalized size	1	1.	0.73	0.75	1.03	1.51	0.	0.	0.92
time (sec)	N/A	0.041	0.031	0.003	1.345	0.247	0.	0.	17.313

Problem 949	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	27	42	45	0	0	0
normalized size	1	1.	1.	0.96	1.5	1.61	0.	0.	0.
time (sec)	N/A	0.016	0.016	0.003	1.368	0.248	0.	0.	0.

Problem 950	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	56	0	0	0	0	0	37
normalized size	1	1.	1.24	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.029	0.015	0.049	0.	0.	0.	0.	9.035

Problem 951	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	63	0	0	0	0	0	39
normalized size	1	1.	1.4	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.029	0.023	0.036	0.	0.	0.	0.	15.318

Problem 952	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	61	0	0	0	0	0	42
normalized size	1	1.	1.27	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.034	0.03	0.04	0.	0.	0.	0.	16.355

Problem 953	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	98	136	140	227	0	0	126
normalized size	1	1.	0.73	1.01	1.04	1.68	0.	0.	0.93
time (sec)	N/A	0.102	0.069	0.007	1.37	0.231	0.	0.	35.883

Problem 954	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	69	83	112	159	0	0	92
normalized size	1	1.	0.7	0.84	1.13	1.61	0.	0.	0.93
time (sec)	N/A	0.076	0.048	0.009	1.363	0.243	0.	0.	26.765

Problem 955	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	45	46	61	97	0	0	58
normalized size	1	1.	0.69	0.71	0.94	1.49	0.	0.	0.89
time (sec)	N/A	0.05	0.037	0.003	1.365	0.242	0.	0.	19.446

Problem 956	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	30	29	42	50	0	0	26
normalized size	1	1.	0.97	0.94	1.35	1.61	0.	0.	0.84
time (sec)	N/A	0.02	0.021	0.004	1.357	0.23	0.	0.	13.101

Problem 957	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	58	0	0	0	0	0	39
normalized size	1	1.	1.21	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.035	0.016	0.035	0.	0.	0.	0.	10.323

Problem 958	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	62	0	0	0	0	0	0
normalized size	1	1.	1.29	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.035	0.019	0.036	0.	0.	0.	0.	0.

Problem 959	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	60	0	0	0	0	0	44
normalized size	1	1.	1.18	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.04	0.025	0.049	0.	0.	0.	0.	9.772

Problem 960	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	63	0	0	0	0	0	42
normalized size	1	1.	1.26	0.	0.	0.	0.	0.	0.84
time (sec)	N/A	0.039	0.038	0.046	0.	0.	0.	0.	15.14

Problem 961	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	99	136	140	227	0	0	126
normalized size	1	1.	0.73	1.01	1.04	1.68	0.	0.	0.93
time (sec)	N/A	0.107	0.073	0.008	1.368	0.227	0.	0.	34.703

Problem 962	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	70	83	112	159	0	0	92
normalized size	1	1.	0.71	0.84	1.13	1.61	0.	0.	0.93
time (sec)	N/A	0.078	0.043	0.009	1.357	0.235	0.	0.	26.827

Problem 963	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	46	46	61	97	0	0	58
normalized size	1	1.	0.71	0.71	0.94	1.49	0.	0.	0.89
time (sec)	N/A	0.051	0.035	0.004	1.359	0.246	0.	0.	20.241

Problem 964	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	29	42	50	0	0	26
normalized size	1	1.	1.	0.94	1.35	1.61	0.	0.	0.84
time (sec)	N/A	0.02	0.018	0.003	1.361	0.228	0.	0.	13.581

Problem 965	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	58	0	0	0	0	0	39
normalized size	1	1.	1.21	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.033	0.02	0.033	0.	0.	0.	0.	14.569

Problem 966	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	62	0	0	0	0	0	41
normalized size	1	1.	1.29	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.035	0.02	0.033	0.	0.	0.	0.	14.717

Problem 967	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	62	0	0	0	0	0	44
normalized size	1	1.	1.22	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.039	0.028	0.039	0.	0.	0.	0.	12.814

Problem 968	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	62	0	0	0	0	0	0
normalized size	1	1.	1.24	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.038	0.019	0.043	0.	0.	0.	0.	0.

Problem 969	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	39	40	53	78	0	0	56
normalized size	1	1.	0.6	0.62	0.82	1.2	0.	0.	0.86
time (sec)	N/A	0.071	0.036	0.004	1.369	0.232	0.	0.	17.965

Problem 970	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	39	40	53	68	0	0	53
normalized size	1	1.	0.64	0.66	0.87	1.11	0.	0.	0.87
time (sec)	N/A	0.067	0.03	0.003	1.377	0.223	0.	0.	16.541

Problem 971	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	39	40	53	59	0	0	49
normalized size	1	1.	0.66	0.68	0.9	1.	0.	0.	0.83
time (sec)	N/A	0.061	0.026	0.004	1.371	0.232	0.	0.	15.617

Problem 972	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	30	32	43	49	0	0	44
normalized size	1	1.	0.62	0.67	0.9	1.02	0.	0.	0.92
time (sec)	N/A	0.049	0.022	0.003	1.377	0.227	0.	0.	15.317

Problem 973	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	32	40	53	72	0	0	56
normalized size	1	1.	0.49	0.62	0.82	1.11	0.	0.	0.86
time (sec)	N/A	0.079	0.039	0.004	1.426	0.233	0.	0.	17.742

Problem 974	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	32	40	53	72	0	0	58
normalized size	1	1.	0.48	0.6	0.79	1.07	0.	0.	0.87
time (sec)	N/A	0.08	0.038	0.005	1.35	0.241	0.	0.	18.328

Problem 975	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	48	95	86	166	0	0	92
normalized size	1	1.	0.47	0.92	0.83	1.61	0.	0.	0.89
time (sec)	N/A	0.12	0.07	0.007	1.362	0.23	0.	0.	31.637

Problem 976	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	48	95	86	142	0	0	87
normalized size	1	1.	0.49	0.98	0.89	1.46	0.	0.	0.9
time (sec)	N/A	0.108	0.066	0.007	1.359	0.224	0.	0.	29.966

Problem 977	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	48	95	86	127	0	0	82
normalized size	1	1.	0.51	1.01	0.91	1.35	0.	0.	0.87
time (sec)	N/A	0.098	0.056	0.007	1.373	0.219	0.	0.	29.185

Problem 978	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	46	79	77	115	0	0	78
normalized size	1	1.	0.57	0.98	0.95	1.42	0.	0.	0.96
time (sec)	N/A	0.089	0.045	0.007	1.365	0.232	0.	0.	28.822

Problem 979	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	50	83	80	124	0	0	83
normalized size	1	1.	0.54	0.89	0.86	1.33	0.	0.	0.89
time (sec)	N/A	0.106	0.055	0.006	1.381	0.232	0.	0.	29.207

Problem 980	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-2)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	95	86	143	0	0	94
normalized size	1	1.	0.46	0.9	0.82	1.36	0.	0.	0.9
time (sec)	N/A	0.127	0.066	0.007	1.359	0.232	0.	0.	32.674

Problem 981	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	57	0	0	0	0	0	54
normalized size	1	1.	0.85	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.073	0.073	0.073	0.	0.	0.	0.	20.624

Problem 982	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	57	0	0	0	0	0	53
normalized size	1	1.	0.88	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.067	0.057	0.052	0.	0.	0.	0.	20.088

Problem 983	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	57	0	0	0	0	0	51
normalized size	1	1.	0.89	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.065	0.045	0.051	0.	0.	0.	0.	19.49

Problem 984	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	53	0	0	0	0	0	44
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.83
time (sec)	N/A	0.055	0.035	0.055	0.	0.	0.	0.	19.117

Problem 985	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	57	0	0	0	0	0	56
normalized size	1	1.	0.84	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.073	0.055	0.052	0.	0.	0.	0.	20.638

Problem 986	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	57	0	0	0	0	0	56
normalized size	1	1.	0.84	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.074	0.087	0.051	0.	0.	0.	0.	21.027

Problem 987	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	32	32	0	54	0	103	39
normalized size	1	1.	0.97	0.97	0.	1.64	0.	3.12	1.18
time (sec)	N/A	0.029	0.091	0.004	0.	0.232	0.	0.224	49.746

Problem 988	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	33	0	54	0	0	36
normalized size	1	1.	1.	1.03	0.	1.69	0.	0.	1.12
time (sec)	N/A	0.027	0.067	0.005	0.	0.233	0.	0.	10.091

Problem 989	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	32	32	0	51	0	100	0
normalized size	1	1.	0.97	0.97	0.	1.55	0.	3.03	0.
time (sec)	N/A	0.028	0.062	0.004	0.	0.231	0.	0.217	0.

Problem 990	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	28	31	0	49	0	0	36
normalized size	1	1.	0.93	1.03	0.	1.63	0.	0.	1.2
time (sec)	N/A	0.026	0.057	0.004	0.	0.227	0.	0.	8.371

Problem 991	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	26	25	36	42	0	0	19
normalized size	1	1.	1.	0.96	1.38	1.62	0.	0.	0.73
time (sec)	N/A	0.022	0.017	0.004	1.358	0.221	0.	0.	14.561

Problem 992	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	31	38	0	50	0	0	36
normalized size	1	1.	0.94	1.15	0.	1.52	0.	0.	1.09
time (sec)	N/A	0.029	0.035	0.004	0.	0.233	0.	0.	14.373

Problem 993	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	33	32	0	50	0	0	36
normalized size	1	1.	0.94	0.91	0.	1.43	0.	0.	1.03
time (sec)	N/A	0.031	0.044	0.004	0.	0.233	0.	0.	14.602

Problem 994	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	32	33	0	50	0	0	36
normalized size	1	1.	0.97	1.	0.	1.52	0.	0.	1.09
time (sec)	N/A	0.03	0.055	0.004	0.	0.236	0.	0.	14.772

Problem 995	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	39	0	66	0	0	41
normalized size	1	1.	1.	1.03	0.	1.74	0.	0.	1.08
time (sec)	N/A	0.032	0.076	0.006	0.	0.235	0.	0.	14.667

Problem 996	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	40	0	77	0	0	46
normalized size	1	1.	1.	1.03	0.	1.97	0.	0.	1.18
time (sec)	N/A	0.033	0.053	0.004	0.	0.236	0.	0.	18.334

Problem 997	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	0	0	0	0	0	61
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.97
time (sec)	N/A	0.049	0.055	0.182	0.	0.	0.	0.	17.131

Problem 998	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	64	64	0	0	0	0	0	66
normalized size	1	0.94	0.94	0.	0.	0.	0.	0.	0.97
time (sec)	N/A	0.055	0.039	0.236	0.	0.	0.	0.	20.933

Problem 999	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	42	42	34	54	14
normalized size	1	1.	1.	0.94	2.47	2.47	2.	3.18	0.82
time (sec)	N/A	0.012	0.004	0.001	1.342	0.196	0.231	0.213	4.317

Problem 1000	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	19	18	27	27	20	35	0
normalized size	1	1.	0.83	0.78	1.17	1.17	0.87	1.52	0.
time (sec)	N/A	0.016	0.001	0.001	1.34	0.192	0.22	0.213	0.

Problem 1001	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	8	9	11	11	7	11	7
normalized size	1	1.	1.	1.12	1.38	1.38	0.88	1.38	0.88
time (sec)	N/A	0.007	0.001	0.002	1.339	0.197	0.181	0.209	3.764

Problem 1002	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	18	18	19	19	12
normalized size	1	1.	1.	1.08	1.38	1.38	1.46	1.46	0.92
time (sec)	N/A	0.011	0.003	0.002	1.355	0.209	0.192	0.216	4.319

Problem 1003	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	16	26	26	19	20	12
normalized size	1	1.	1.	1.07	1.73	1.73	1.27	1.33	0.8
time (sec)	N/A	0.011	0.006	0.	1.343	0.199	1.247	0.21	4.27

Problem 1004	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	63	63	53	20	15
normalized size	1	1.	1.	0.94	3.71	3.71	3.12	1.18	0.88
time (sec)	N/A	0.011	0.008	0.	1.341	0.2	1.651	0.211	4.407

Problem 1005	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	82	82	68	20	15
normalized size	1	1.	1.	0.94	4.82	4.82	4.	1.18	0.88
time (sec)	N/A	0.011	0.009	0.	1.354	0.195	1.872	0.212	4.284

Problem 1006	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	101	101	83	20	15
normalized size	1	1.	1.	0.94	5.94	5.94	4.88	1.18	0.88
time (sec)	N/A	0.011	0.01	0.002	1.348	0.195	2.146	0.213	4.501

Problem 1007	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	47	47	34	54	14
normalized size	1	1.	1.	0.94	2.76	2.76	2.	3.18	0.82
time (sec)	N/A	0.012	0.004	0.	1.343	0.192	0.256	0.207	4.476

Problem 1008	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	19	18	28	28	20	35	0
normalized size	1	1.	0.83	0.78	1.22	1.22	0.87	1.52	0.
time (sec)	N/A	0.016	0.002	0.003	1.349	0.197	0.223	0.204	0.

Problem 1009	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	8	9	11	11	7	11	7
normalized size	1	1.	1.	1.12	1.38	1.38	0.88	1.38	0.88
time (sec)	N/A	0.007	0.001	0.	1.35	0.193	0.202	0.208	4.005

Problem 1010	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	18	18	17	19	12
normalized size	1	1.	1.	1.08	1.38	1.38	1.31	1.46	0.92
time (sec)	N/A	0.01	0.003	0.002	1.34	0.202	0.185	0.207	4.782

Problem 1011	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	22	22	12	18	10
normalized size	1	1.	1.	1.08	1.69	1.69	0.92	1.38	0.77
time (sec)	N/A	0.01	0.006	0.001	1.342	0.197	1.179	0.203	3.807

Problem 1012	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	49	49	44	16	12
normalized size	1	1.	1.	0.93	3.5	3.5	3.14	1.14	0.86
time (sec)	N/A	0.009	0.007	0.	1.349	0.197	1.586	0.206	4.221

Problem 1013	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	80	80	68	27	14
normalized size	1	1.	1.	0.93	5.33	5.33	4.53	1.8	0.93
time (sec)	N/A	0.01	0.008	0.003	1.34	0.194	1.881	0.203	4.472

Problem 1014	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	101	101	83	20	15
normalized size	1	1.	1.	0.94	5.94	5.94	4.88	1.18	0.88
time (sec)	N/A	0.012	0.009	0.002	1.435	0.211	2.157	0.206	4.731

Problem 1015	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	25	27	0	108	212	209	19
normalized size	1	1.	1.04	1.12	0.	4.5	8.83	8.71	0.79
time (sec)	N/A	0.023	0.027	0.003	0.	0.236	5.148	0.211	5.957

Problem 1016	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	114	153	1	124	153	12
normalized size	1	1.	1.	6.71	9.	0.06	7.29	9.	0.71
time (sec)	N/A	0.012	0.003	0.001	1.335	0.175	0.181	0.208	4.392

Problem 1017	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	100	134	1	110	134	12
normalized size	1	1.	1.	5.88	7.88	0.06	6.47	7.88	0.71
time (sec)	N/A	0.012	0.003	0.002	1.332	0.177	0.167	0.206	4.233

Problem 1018	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	72	96	1	78	96	10
normalized size	1	1.	1.	4.8	6.4	0.07	5.2	6.4	0.67
time (sec)	N/A	0.011	0.003	0.002	1.327	0.18	0.137	0.208	3.668

Problem 1019	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	65	65	51	85	10
normalized size	1	1.	1.	0.94	3.82	3.82	3.	5.	0.59
time (sec)	N/A	0.011	0.002	0.001	1.346	0.192	0.192	0.208	4.362

Problem 1020	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	50	50	46	24	12
normalized size	1	1.	1.	0.94	2.94	2.94	2.71	1.41	0.71
time (sec)	N/A	0.012	0.002	0.002	1.338	0.189	0.204	0.206	4.352

Problem 1021	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	35	35	29	47	12
normalized size	1	1.	1.	0.94	2.06	2.06	1.71	2.76	0.71
time (sec)	N/A	0.012	0.002	0.	1.35	0.188	0.215	0.212	4.149

Problem 1022	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	16	15	20	20	15	28	0
normalized size	1	1.	0.89	0.83	1.11	1.11	0.83	1.56	0.
time (sec)	N/A	0.013	0.001	0.	1.328	0.191	0.202	0.208	0.

Problem 1023	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	5	5	5	6	7	7	3	20	3
normalized size	1	1.	1.	1.2	1.4	1.4	0.6	4.	0.6
time (sec)	N/A	0.006	0.	0.	1.332	0.191	0.203	0.209	3.384

Problem 1024	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	18	18	17	19	10
normalized size	1	1.	1.	1.08	1.38	1.38	1.31	1.46	0.77
time (sec)	N/A	0.011	0.002	0.003	1.359	0.197	0.251	0.205	4.095

Problem 1025	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	16	26	26	17	20	12
normalized size	1	1.	1.	1.07	1.73	1.73	1.13	1.33	0.8
time (sec)	N/A	0.013	0.005	0.001	1.335	0.19	1.332	0.203	4.101

Problem 1026	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	45	45	36	20	15
normalized size	1	1.	1.	0.94	2.65	2.65	2.12	1.18	0.88
time (sec)	N/A	0.012	0.006	0.002	1.331	0.191	1.555	0.208	4.103

Problem 1027	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	23	8	1	53	12	26
normalized size	1	1.	1.	0.82	0.29	0.04	1.89	0.43	0.93
time (sec)	N/A	0.01	0.01	0.003	1.521	0.211	3.921	0.206	2.819

Problem 1028	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	40	45	59	1	44	59	27
normalized size	1	1.	1.05	1.18	1.55	0.03	1.16	1.55	0.71
time (sec)	N/A	0.037	0.004	0.002	1.335	0.179	0.132	0.206	11.524

Problem 1029	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	42	45	59	1	46	59	29
normalized size	1	1.	1.11	1.18	1.55	0.03	1.21	1.55	0.76
time (sec)	N/A	0.046	0.003	0.001	1.342	0.179	0.116	0.202	11.222

Problem 1030	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	17	22	1	15	22	0
normalized size	1	1.	1.	0.94	1.22	0.06	0.83	1.22	0.
time (sec)	N/A	0.016	0.002	0.002	1.345	0.174	0.078	0.202	0.

Problem 1031	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	11	14	1	8	14	0
normalized size	1	1.	1.	0.92	1.17	0.08	0.67	1.17	0.
time (sec)	N/A	0.007	0.	0.002	1.336	0.174	0.055	0.208	0.

Problem 1032	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	25	32	31	17	34	0
normalized size	1	1.	1.	1.09	1.39	1.35	0.74	1.48	0.
time (sec)	N/A	0.032	0.007	0.004	1.334	0.199	1.113	0.204	0.

Problem 1033	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	28	35	50	53	29	109	24
normalized size	1	1.	0.88	1.09	1.56	1.66	0.91	3.41	0.75
time (sec)	N/A	0.042	0.024	0.007	1.338	0.196	1.331	0.205	10.579

Problem 1034	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	33	41	41	27	19	20
normalized size	1	1.	1.	2.54	3.15	3.15	2.08	1.46	1.54
time (sec)	N/A	0.01	0.011	0.007	1.345	0.203	1.518	0.202	5.362

Problem 1035	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	25	35	73	73	56	31	31
normalized size	1	1.	0.66	0.92	1.92	1.92	1.47	0.82	0.82
time (sec)	N/A	0.045	0.016	0.009	1.344	0.212	1.746	0.203	10.959

Problem 1036	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	24	35	90	90	70	54	29
normalized size	1	1.	0.63	0.92	2.37	2.37	1.84	1.42	0.76
time (sec)	N/A	0.044	0.016	0.007	1.345	0.214	2.045	0.207	11.461

Problem 1037	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	113	113	88	34	31
normalized size	1	1.	0.71	0.92	2.97	2.97	2.32	0.89	0.82
time (sec)	N/A	0.046	0.019	0.007	1.355	0.198	2.295	0.202	11.377

Problem 1038	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	68	73	97	1	78	97	44
normalized size	1	1.	1.19	1.28	1.7	0.02	1.37	1.7	0.77
time (sec)	N/A	0.078	0.005	0.	1.354	0.177	0.147	0.205	16.979

Problem 1039	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	35	46	1	36	46	0
normalized size	1	1.	1.	0.92	1.21	0.03	0.95	1.21	0.
time (sec)	N/A	0.046	0.003	0.001	1.343	0.2	0.12	0.202	0.

Problem 1040	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	40	37	49	1	39	49	26
normalized size	1	1.	1.25	1.16	1.53	0.03	1.22	1.53	0.81
time (sec)	N/A	0.041	0.003	0.001	1.346	0.197	0.109	0.203	8.492

Problem 1041	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	27	1	19	16	8
normalized size	1	1.	1.	0.93	1.93	0.07	1.36	1.14	0.57
time (sec)	N/A	0.007	0.001	0.	1.35	0.195	0.08	0.204	1.29

Problem 1042	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	37	37	47	46	31	62	34
normalized size	1	1.	0.86	0.86	1.09	1.07	0.72	1.44	0.79
time (sec)	N/A	0.04	0.011	0.003	1.34	0.216	1.213	0.204	9.554

Problem 1043	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	35	44	62	77	39	107	0
normalized size	1	1.	0.85	1.07	1.51	1.88	0.95	2.61	0.
time (sec)	N/A	0.056	0.049	0.008	1.34	0.199	1.384	0.206	0.

Problem 1044	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	33	56	82	93	53	62	41
normalized size	1	1.	0.63	1.08	1.58	1.79	1.02	1.19	0.79
time (sec)	N/A	0.064	0.035	0.01	1.349	0.212	1.727	0.204	14.446

Problem 1045	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	31	52	81	81	61	39	20
normalized size	1	1.	1.11	1.86	2.89	2.89	2.18	1.39	0.71
time (sec)	N/A	0.022	0.028	0.009	1.35	0.215	1.871	0.202	5.995

Problem 1046	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	35	51	105	105	82	88	46
normalized size	1	1.	0.62	0.91	1.88	1.88	1.46	1.57	0.82
time (sec)	N/A	0.063	0.019	0.009	1.343	0.216	2.217	0.204	15.972

Problem 1047	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	38	52	128	128	100	49	46
normalized size	1	1.	0.67	0.91	2.25	2.25	1.75	0.86	0.81
time (sec)	N/A	0.067	0.03	0.009	1.354	0.198	2.49	0.204	16.126

Problem 1048	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	37	52	146	146	114	49	49
normalized size	1	1.	0.63	0.88	2.47	2.47	1.93	0.83	0.83
time (sec)	N/A	0.068	0.023	0.008	1.36	0.21	2.864	0.205	16.385

Problem 1049	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	42	49	65	70	49	80	53
normalized size	1	1.	0.69	0.8	1.07	1.15	0.8	1.31	0.87
time (sec)	N/A	0.054	0.011	0.004	1.344	0.217	1.282	0.206	14.955

Problem 1050	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	31	35	46	51	34	61	37
normalized size	1	1.	0.72	0.81	1.07	1.19	0.79	1.42	0.86
time (sec)	N/A	0.041	0.009	0.004	1.342	0.22	1.173	0.211	11.347

Problem 1051	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	19	24	27	15	26	0
normalized size	1	1.	1.	1.06	1.33	1.5	0.83	1.44	0.
time (sec)	N/A	0.027	0.004	0.004	1.335	0.2	1.072	0.203	0.

Problem 1052	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	14	14	7	15	7
normalized size	1	1.	1.	1.1	1.4	1.4	0.7	1.5	0.7
time (sec)	N/A	0.007	0.001	0.	1.354	0.197	0.081	0.206	1.332

Problem 1053	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	38	50	38	22	53	10
normalized size	1	1.	1.	2.24	2.94	2.24	1.29	3.12	0.59
time (sec)	N/A	0.028	0.01	0.009	1.339	0.204	0.416	0.205	10.97

Problem 1054	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	53	58	81	81	48	72	31
normalized size	1	1.	1.26	1.38	1.93	1.93	1.14	1.71	0.74
time (sec)	N/A	0.067	0.024	0.014	1.359	0.209	1.639	0.206	21.193

Problem 1055	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	65	78	111	132	71	93	49
normalized size	1	1.	1.03	1.24	1.76	2.1	1.13	1.48	0.78
time (sec)	N/A	0.085	0.03	0.013	1.353	0.209	2.002	0.209	25.55

Problem 1056	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	46	53	72	107	51	108	0
normalized size	1	1.	0.85	0.98	1.33	1.98	0.94	2.	0.
time (sec)	N/A	0.073	0.031	0.008	1.354	0.201	1.51	0.206	0.

Problem 1057	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	40	54	82	36	80	0
normalized size	1	1.	0.85	1.03	1.38	2.1	0.92	2.05	0.
time (sec)	N/A	0.052	0.027	0.009	1.343	0.202	1.371	0.203	0.

Problem 1058	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	23	28	38	45	24	73	22
normalized size	1	1.	0.85	1.04	1.41	1.67	0.89	2.7	0.81
time (sec)	N/A	0.034	0.014	0.01	1.355	0.2	1.28	0.207	8.596

Problem 1059	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	13	16	18	10	16	8
normalized size	1	1.	1.	1.08	1.33	1.5	0.83	1.33	0.67
time (sec)	N/A	0.007	0.003	0.001	1.354	0.192	1.121	0.202	1.364

Problem 1060	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	50	56	74	69	44	59	27
normalized size	1	1.	1.22	1.37	1.8	1.68	1.07	1.44	0.66
time (sec)	N/A	0.064	0.021	0.013	1.392	0.203	1.645	0.206	20.186

Problem 1061	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	74	76	86	103	49	112	36
normalized size	1	1.	1.61	1.65	1.87	2.24	1.07	2.43	0.78
time (sec)	N/A	0.045	0.037	0.015	1.337	0.203	1.587	0.21	14.191

Problem 1062	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	68	96	146	197	104	109	70
normalized size	1	1.	0.82	1.16	1.76	2.37	1.25	1.31	0.84
time (sec)	N/A	0.11	0.06	0.016	1.33	0.209	2.482	0.205	29.48

Problem 1063	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	59	113	92	311	0	201	90
normalized size	1	1.	0.55	1.05	0.85	2.88	0.	1.86	0.83
time (sec)	N/A	0.075	0.044	0.01	1.49	0.211	0.	0.233	10.297

Problem 1064	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	54	99	73	270	0	143	73
normalized size	1	1.	0.61	1.12	0.83	3.07	0.	1.62	0.83
time (sec)	N/A	0.059	0.041	0.007	1.482	0.212	0.	0.229	8.667

Problem 1065	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	49	85	54	224	218	103	56
normalized size	1	1.	0.72	1.25	0.79	3.29	3.21	1.51	0.82
time (sec)	N/A	0.044	0.028	0.007	1.48	0.211	71.572	0.222	6.933

Problem 1066	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	40	71	38	189	168	59	36
normalized size	1	1.	0.83	1.48	0.79	3.94	3.5	1.23	0.75
time (sec)	N/A	0.03	0.026	0.005	1.492	0.21	17.9	0.215	5.5

Problem 1067	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	20	57	23	127	133	36	20
normalized size	1	1.	0.71	2.04	0.82	4.54	4.75	1.29	0.71
time (sec)	N/A	0.021	0.01	0.006	1.491	0.209	8.641	0.21	4.257

Problem 1068	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	30	42	19	80	100	38	15
normalized size	1	1.	1.43	2.	0.9	3.81	4.76	1.81	0.71
time (sec)	N/A	0.022	0.013	0.006	1.486	0.211	5.949	0.207	3.914

Problem 1069	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	35	64	28	82	71	45	17
normalized size	1	1.	1.52	2.78	1.22	3.57	3.09	1.96	0.74
time (sec)	N/A	0.022	0.03	0.039	1.498	0.213	5.305	0.207	4.224

Problem 1070	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	15	51	76	61	26	14
normalized size	1	1.	1.	0.75	2.55	3.8	3.05	1.3	0.7
time (sec)	N/A	0.012	0.018	0.006	1.34	0.205	10.085	0.21	2.511

Problem 1071	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	28	18	86	146	173	30	29
normalized size	1	1.	0.68	0.44	2.1	3.56	4.22	0.73	0.71
time (sec)	N/A	0.024	0.016	0.006	1.339	0.207	113.561	0.209	4.012

Problem 1072	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	35	25	128	204	0	39	48
normalized size	1	1.	0.57	0.41	2.1	3.34	0.	0.64	0.79
time (sec)	N/A	0.037	0.019	0.004	1.341	0.204	0.	0.21	5.69

Problem 1073	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	40	30	177	257	0	47	63
normalized size	1	1.	0.49	0.37	2.19	3.17	0.	0.58	0.78
time (sec)	N/A	0.051	0.02	0.005	1.335	0.209	0.	0.213	7.451

Problem 1074	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	45	35	232	312	0	57	82
normalized size	1	1.	0.45	0.35	2.3	3.09	0.	0.56	0.81
time (sec)	N/A	0.069	0.022	0.005	1.354	0.21	0.	0.217	9.434

Problem 1075	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	64	127	89	351	0	259	92
normalized size	1	1.	0.59	1.17	0.82	3.22	0.	2.38	0.84
time (sec)	N/A	0.071	0.048	0.006	1.487	0.213	0.	0.241	10.626

Problem 1076	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	59	113	70	311	0	161	75
normalized size	1	1.	0.66	1.27	0.79	3.49	0.	1.81	0.84
time (sec)	N/A	0.055	0.042	0.007	1.494	0.218	0.	0.228	8.696

Problem 1077	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	54	99	54	270	0	143	56
normalized size	1	1.	0.78	1.43	0.78	3.91	0.	2.07	0.81
time (sec)	N/A	0.04	0.034	0.007	1.481	0.217	0.	0.225	6.659

Problem 1078	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	29	85	39	184	214	80	41
normalized size	1	1.	0.59	1.73	0.8	3.76	4.37	1.63	0.84
time (sec)	N/A	0.032	0.029	0.006	1.562	0.218	38.898	0.22	5.601

Problem 1079	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	40	71	38	189	165	59	36
normalized size	1	1.	0.83	1.48	0.79	3.94	3.44	1.23	0.75
time (sec)	N/A	0.029	0.023	0.007	1.5	0.209	19.013	0.218	5.194

Problem 1080	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	35	57	38	140	136	42	37
normalized size	1	1.	0.74	1.21	0.81	2.98	2.89	0.89	0.79
time (sec)	N/A	0.033	0.019	0.005	1.501	0.214	12.562	0.214	4.914

Problem 1081	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	37	72	57	139	100	47	34
normalized size	1	1.	0.9	1.76	1.39	3.39	2.44	1.15	0.83
time (sec)	N/A	0.033	0.037	0.028	1.492	0.216	12.11	0.213	5.337

Problem 1082	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	42	76	89	154	500	51	34
normalized size	1	1.	1.02	1.85	2.17	3.76	12.2	1.24	0.83
time (sec)	N/A	0.031	0.045	0.03	1.518	0.216	23.252	0.214	5.293

Problem 1083	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	25	15	127	108	88	26	14
normalized size	1	1.	1.25	0.75	6.35	5.4	4.4	1.3	0.7
time (sec)	N/A	0.012	0.018	0.004	1.327	0.212	115.04	0.213	2.35

Problem 1084	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	28	18	177	194	0	30	29
normalized size	1	1.	0.68	0.44	4.32	4.73	0.	0.73	0.71
time (sec)	N/A	0.024	0.02	0.005	1.342	0.209	0.	0.214	3.651

Problem 1085	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	35	25	232	257	0	39	48
normalized size	1	1.	0.57	0.41	3.8	4.21	0.	0.64	0.79
time (sec)	N/A	0.037	0.021	0.004	1.347	0.203	0.	0.215	5.12

Problem 1086	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	40	30	294	312	0	47	63
normalized size	1	1.	0.49	0.37	3.63	3.85	0.	0.58	0.78
time (sec)	N/A	0.053	0.024	0.005	1.36	0.214	0.	0.215	6.737

Problem 1087	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	45	35	363	365	0	57	82
normalized size	1	1.	0.45	0.35	3.59	3.61	0.	0.56	0.81
time (sec)	N/A	0.07	0.025	0.006	1.354	0.208	0.	0.221	8.833

Problem 1088	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	74	155	105	432	0	409	110
normalized size	1	1.	0.57	1.19	0.81	3.32	0.	3.15	0.85
time (sec)	N/A	0.089	0.061	0.007	1.501	0.217	0.	0.257	11.53

Problem 1089	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	68	141	86	386	0	335	94
normalized size	1	1.	0.62	1.28	0.78	3.51	0.	3.05	0.85
time (sec)	N/A	0.07	0.062	0.007	1.496	0.217	0.	0.246	9.64

Problem 1090	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	64	127	70	351	0	259	75
normalized size	1	1.	0.71	1.41	0.78	3.9	0.	2.88	0.83
time (sec)	N/A	0.054	0.048	0.007	1.498	0.213	0.	0.246	7.966

Problem 1091	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	34	113	55	243	0	138	60
normalized size	1	1.	0.49	1.61	0.79	3.47	0.	1.97	0.86
time (sec)	N/A	0.045	0.029	0.004	1.494	0.207	0.	0.225	6.881

Problem 1092	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	54	99	54	270	0	143	56
normalized size	1	1.	0.78	1.43	0.78	3.91	0.	2.07	0.81
time (sec)	N/A	0.041	0.035	0.006	1.484	0.209	0.	0.227	6.057

Problem 1093	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	49	85	54	224	214	103	56
normalized size	1	1.	0.72	1.25	0.79	3.29	3.15	1.51	0.82
time (sec)	N/A	0.042	0.028	0.006	1.49	0.209	74.985	0.222	6.038

Problem 1094	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	42	71	57	189	172	53	54
normalized size	1	1.	0.63	1.06	0.85	2.82	2.57	0.79	0.81
time (sec)	N/A	0.048	0.025	0.006	1.505	0.212	50.092	0.211	6.24

Problem 1095	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	45	77	76	198	139	57	54
normalized size	1	1.	0.69	1.18	1.17	3.05	2.14	0.88	0.83
time (sec)	N/A	0.048	0.045	0.027	1.504	0.207	66.609	0.211	6.594

Problem 1096	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	47	84	134	220	576	59	53
normalized size	1	1.	0.75	1.33	2.13	3.49	9.14	0.94	0.84
time (sec)	N/A	0.047	0.058	0.03	1.511	0.21	65.196	0.213	6.894

Problem 1097	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	47	84	216	242	0	59	51
normalized size	1	1.	0.75	1.33	3.43	3.84	0.	0.94	0.81
time (sec)	N/A	0.041	0.051	0.033	1.491	0.211	0.	0.211	6.651

Problem 1098	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	25	15	231	158	0	26	14
normalized size	1	1.	1.25	0.75	11.55	7.9	0.	1.3	0.7
time (sec)	N/A	0.012	0.02	0.006	1.344	0.207	0.	0.212	2.352

Problem 1099	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	28	18	294	250	0	30	29
normalized size	1	1.	0.68	0.44	7.17	6.1	0.	0.73	0.71
time (sec)	N/A	0.024	0.021	0.003	1.355	0.207	0.	0.218	3.656

Problem 1100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	35	25	363	312	0	39	48
normalized size	1	1.	0.57	0.41	5.95	5.11	0.	0.64	0.79
time (sec)	N/A	0.038	0.023	0.003	1.349	0.208	0.	0.22	5.269

Problem 1101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	40	30	439	358	0	47	65
normalized size	1	1.	0.49	0.37	5.42	4.42	0.	0.58	0.8
time (sec)	N/A	0.053	0.025	0.003	1.339	0.209	0.	0.224	6.9

Problem 1102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	45	35	521	420	0	57	82
normalized size	1	1.	0.45	0.35	5.16	4.16	0.	0.56	0.81
time (sec)	N/A	0.07	0.028	0.004	1.346	0.208	0.	0.225	8.601

Problem 1103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	50	40	610	473	0	65	97
normalized size	1	1.	0.41	0.33	5.04	3.91	0.	0.54	0.8
time (sec)	N/A	0.088	0.029	0.006	1.394	0.212	0.	0.23	10.409

Problem 1104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	47	98	69	196	73	57	51
normalized size	1	1.	0.73	1.53	1.08	3.06	1.14	0.89	0.8
time (sec)	N/A	0.065	0.054	0.017	1.48	0.212	33.887	0.214	10.037

Problem 1105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	71	118	57	178	76	46	46
normalized size	1	1.	1.15	1.9	0.92	2.87	1.23	0.74	0.74
time (sec)	N/A	0.109	0.107	0.02	1.479	0.214	10.247	0.215	12.808

Problem 1106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	49	85	76	224	0	136	71
normalized size	1	1.	0.56	0.98	0.87	2.57	0.	1.56	0.82
time (sec)	N/A	0.066	0.038	0.007	1.509	0.208	0.	0.226	8.405

Problem 1107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	42	71	57	189	175	93	54
normalized size	1	1.	0.63	1.06	0.85	2.82	2.61	1.39	0.81
time (sec)	N/A	0.049	0.025	0.006	1.511	0.21	44.953	0.22	6.941

Problem 1108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	35	57	38	140	139	59	37
normalized size	1	1.	0.74	1.21	0.81	2.98	2.96	1.26	0.79
time (sec)	N/A	0.034	0.018	0.005	1.503	0.207	10.881	0.216	5.113

Problem 1109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	28	41	16	81	100	36	15
normalized size	1	1.	1.4	2.05	0.8	4.05	5.	1.8	0.75
time (sec)	N/A	0.021	0.009	0.006	1.484	0.21	5.511	0.208	3.709

Problem 1110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	2	2	2	27	3	30	41	18	2
normalized size	1	1.	1.	13.5	1.5	15.	20.5	9.	1.
time (sec)	N/A	0.011	0.007	0.006	1.5	0.205	3.634	0.205	2.462

Problem 1111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	19	14	22	28	31	26	12
normalized size	1	1.	1.12	0.82	1.29	1.65	1.82	1.53	0.71
time (sec)	N/A	0.016	0.013	0.006	1.499	0.205	3.616	0.208	2.379

Problem 1112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	23	18	51	90	128	30	29
normalized size	1	1.	0.56	0.44	1.24	2.2	3.12	0.73	0.71
time (sec)	N/A	0.025	0.014	0.006	1.492	0.208	18.242	0.207	3.568

Problem 1113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	30	25	86	146	303	39	48
normalized size	1	1.	0.49	0.41	1.41	2.39	4.97	0.64	0.79
time (sec)	N/A	0.038	0.022	0.005	1.487	0.21	179.026	0.211	4.873

Problem 1114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	35	30	128	197	0	47	65
normalized size	1	1.	0.43	0.37	1.58	2.43	0.	0.58	0.8
time (sec)	N/A	0.051	0.019	0.004	1.487	0.207	0.	0.208	6.369

Problem 1115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	40	35	177	257	0	57	82
normalized size	1	1.	0.4	0.35	1.75	2.54	0.	0.56	0.81
time (sec)	N/A	0.067	0.025	0.006	1.518	0.204	0.	0.212	7.86

Problem 1116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	52	84	95	251	0	109	73
normalized size	1	1.	0.61	0.99	1.12	2.95	0.	1.28	0.86
time (sec)	N/A	0.061	0.047	0.027	1.516	0.213	0.	0.237	8.485

Problem 1117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	45	77	76	200	168	99	56
normalized size	1	1.	0.69	1.18	1.17	3.08	2.58	1.52	0.86
time (sec)	N/A	0.046	0.041	0.026	1.488	0.212	63.961	0.23	6.732

Problem 1118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	38	71	55	140	133	95	36
normalized size	1	1.	0.93	1.73	1.34	3.41	3.24	2.32	0.88
time (sec)	N/A	0.033	0.028	0.025	1.518	0.207	11.187	0.219	5.322

Problem 1119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	35	67	28	85	104	74	19
normalized size	1	1.	1.52	2.91	1.22	3.7	4.52	3.22	0.83
time (sec)	N/A	0.021	0.018	0.023	1.502	0.206	5.337	0.213	4.022

Problem 1120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	15	22	30	31	58	14
normalized size	1	1.	1.	0.83	1.22	1.67	1.72	3.22	0.78
time (sec)	N/A	0.012	0.01	0.004	1.51	0.204	3.895	0.208	2.439

Problem 1121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	13	15	15	54	66	84	14
normalized size	1	1.	0.72	0.83	0.83	3.	3.67	4.67	0.78
time (sec)	N/A	0.012	0.01	0.003	1.339	0.203	12.596	0.212	2.636

Problem 1122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	30	25	54	122	160	90	34
normalized size	1	1.	0.71	0.6	1.29	2.9	3.81	2.14	0.81
time (sec)	N/A	0.025	0.024	0.004	1.347	0.205	88.338	0.207	3.965

Problem 1123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	33	28	107	178	0	99	51
normalized size	1	1.	0.53	0.45	1.73	2.87	0.	1.6	0.82
time (sec)	N/A	0.037	0.025	0.004	1.347	0.209	0.	0.21	4.938

Problem 1124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	40	35	181	219	0	107	68
normalized size	1	1.	0.49	0.43	2.21	2.67	0.	1.3	0.83
time (sec)	N/A	0.051	0.029	0.005	1.326	0.207	0.	0.208	6.531

Problem 1125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	45	40	271	286	0	115	85
normalized size	1	1.	0.44	0.39	2.66	2.8	0.	1.13	0.83
time (sec)	N/A	0.068	0.036	0.004	1.348	0.205	0.	0.21	8.068

Problem 1126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	57	89	169	340	0	171	87
normalized size	1	1.	0.55	0.86	1.64	3.3	0.	1.66	0.84
time (sec)	N/A	0.076	0.056	0.033	1.499	0.213	0.	0.257	10.485

Problem 1127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	52	84	150	271	0	161	73
normalized size	1	1.	0.6	0.97	1.72	3.11	0.	1.85	0.84
time (sec)	N/A	0.06	0.055	0.033	1.487	0.212	0.	0.247	8.771

Problem 1128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	47	79	132	227	162	155	53
normalized size	1	1.	0.75	1.25	2.1	3.6	2.57	2.46	0.84
time (sec)	N/A	0.046	0.045	0.032	1.497	0.215	62.013	0.238	7.199

Problem 1129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	42	73	89	151	128	138	34
normalized size	1	1.	1.02	1.78	2.17	3.68	3.12	3.37	0.83
time (sec)	N/A	0.03	0.041	0.029	1.498	0.21	22.458	0.225	5.419

Problem 1130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	15	51	74	66	120	15
normalized size	1	1.	1.	0.75	2.55	3.7	3.3	6.	0.75
time (sec)	N/A	0.012	0.012	0.004	1.342	0.205	10.771	0.214	2.381

Problem 1131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	23	18	51	89	66	120	31
normalized size	1	1.	0.56	0.44	1.24	2.17	1.61	2.93	0.76
time (sec)	N/A	0.025	0.012	0.004	1.484	0.205	18.823	0.209	3.324

Problem 1132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	30	25	51	120	167	146	34
normalized size	1	1.	0.71	0.6	1.21	2.86	3.98	3.48	0.81
time (sec)	N/A	0.025	0.022	0.005	1.339	0.206	86.117	0.21	3.414

Problem 1133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	23	23	34	116	0	153	34
normalized size	1	1.	0.53	0.53	0.79	2.7	0.	3.56	0.79
time (sec)	N/A	0.024	0.017	0.004	1.342	0.206	0.	0.221	3.877

Problem 1134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	40	35	70	232	0	161	53
normalized size	1	1.	0.63	0.56	1.11	3.68	0.	2.56	0.84
time (sec)	N/A	0.037	0.031	0.004	1.346	0.21	0.	0.213	5.38

Problem 1135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	45	40	123	286	0	169	70
normalized size	1	1.	0.54	0.48	1.48	3.45	0.	2.04	0.84
time (sec)	N/A	0.051	0.037	0.006	1.346	0.208	0.	0.215	7.165

Problem 1136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	50	45	197	333	0	177	87
normalized size	1	1.	0.49	0.44	1.91	3.23	0.	1.72	0.84
time (sec)	N/A	0.067	0.038	0.006	1.351	0.207	0.	0.215	9.029

Problem 1137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	91	193	0	1	0	478	116
normalized size	1	1.	0.72	1.53	0.	0.01	0.	3.79	0.92
time (sec)	N/A	0.128	0.181	0.02	0.	0.221	0.	0.337	19.153

Problem 1138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	84	143	0	1	0	277	87
normalized size	1	1.	0.88	1.49	0.	0.01	0.	2.89	0.91
time (sec)	N/A	0.088	0.111	0.009	0.	0.22	0.	0.297	13.843

Problem 1139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	76	98	0	1	0	115	58
normalized size	1	1.	1.13	1.46	0.	0.01	0.	1.72	0.87
time (sec)	N/A	0.061	0.061	0.007	0.	0.216	0.	0.246	9.915

Problem 1140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	52	57	0	1	85	66	41
normalized size	1	1.	1.21	1.33	0.	0.02	1.98	1.53	0.95
time (sec)	N/A	0.039	0.032	0.007	0.	0.223	9.653	0.247	6.482

Problem 1141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	33	25	28	53	82	157	20
normalized size	1	1.	1.22	0.93	1.04	1.96	3.04	5.81	0.74
time (sec)	N/A	0.023	0.041	0.005	1.349	0.207	20.182	0.214	4.167

Problem 1142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	42	32	61	77	0	320	51
normalized size	1	1.	0.69	0.52	1.	1.26	0.	5.25	0.84
time (sec)	N/A	0.049	0.061	0.005	1.349	0.211	0.	0.263	8.363

Problem 1143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	47	37	90	100	0	450	80
normalized size	1	1.	0.52	0.41	0.99	1.1	0.	4.95	0.88
time (sec)	N/A	0.078	0.078	0.004	1.349	0.207	0.	0.307	13.155

Problem 1144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	54	42	120	120	0	590	109
normalized size	1	1.	0.45	0.35	0.99	0.99	0.	4.88	0.9
time (sec)	N/A	0.109	0.094	0.006	1.333	0.21	0.	0.415	19.853

Problem 1145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	105	243	0	1	0	0	126
normalized size	1	1.	0.77	1.79	0.	0.01	0.	0.	0.93
time (sec)	N/A	0.152	0.178	0.02	0.	0.24	0.	0.	25.413

Problem 1146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	94	185	0	1	0	0	94
normalized size	1	1.	0.91	1.8	0.	0.01	0.	0.	0.91
time (sec)	N/A	0.109	0.115	0.008	0.	0.229	0.	0.	18.605

Problem 1147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	79	127	0	1	0	0	60
normalized size	1	1.	1.14	1.84	0.	0.01	0.	0.	0.87
time (sec)	N/A	0.072	0.055	0.007	0.	0.227	0.	0.	12.588

Problem 1148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	49	71	0	1	90	0	36
normalized size	1	1.	1.26	1.82	0.	0.03	2.31	0.	0.92
time (sec)	N/A	0.043	0.035	0.007	0.	0.222	10.828	0.	7.545

Problem 1149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	29	30	34	61	94	155	26
normalized size	1	1.	0.97	1.	1.13	2.03	3.13	5.17	0.87
time (sec)	N/A	0.029	0.035	0.004	1.339	0.216	20.949	0.245	5.873

Problem 1150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	46	45	72	97	0	339	60
normalized size	1	1.	0.69	0.67	1.07	1.45	0.	5.06	0.9
time (sec)	N/A	0.062	0.055	0.006	1.321	0.216	0.	0.258	11.135

Problem 1151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	57	56	107	132	0	494	92
normalized size	1	1.	0.57	0.56	1.07	1.32	0.	4.94	0.92
time (sec)	N/A	0.099	0.071	0.006	1.336	0.243	0.	0.322	17.668

Problem 1152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	76	67	142	165	0	657	124
normalized size	1	1.	0.57	0.5	1.07	1.24	0.	4.94	0.93
time (sec)	N/A	0.139	0.092	0.006	1.341	0.33	0.	0.491	25.501

Problem 1153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	51	134	62	93	0	174	76
normalized size	1	1.	0.51	1.34	0.62	0.93	0.	1.74	0.76
time (sec)	N/A	0.074	0.098	0.012	1.519	0.222	0.	0.235	8.491

Problem 1154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	46	102	46	86	0	103	54
normalized size	1	1.	0.62	1.38	0.62	1.16	0.	1.39	0.73
time (sec)	N/A	0.053	0.074	0.007	1.503	0.211	0.	0.231	6.539

Problem 1155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	36	70	30	76	187	51	31
normalized size	1	1.	0.84	1.63	0.7	1.77	4.35	1.19	0.72
time (sec)	N/A	0.035	0.037	0.006	1.499	0.21	20.542	0.227	4.69

Problem 1156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	37	12	38	41	20	10
normalized size	1	1.	1.	2.85	0.92	2.92	3.15	1.54	0.77
time (sec)	N/A	0.018	0.025	0.005	1.497	0.209	19.345	0.216	2.953

Problem 1157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	16	28	16	35	0	96	19
normalized size	1	1.	0.57	1.	0.57	1.25	0.	3.43	0.68
time (sec)	N/A	0.019	0.049	0.004	1.332	0.207	0.	0.22	2.862

Problem 1158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	37	35	34	53	0	174	39
normalized size	1	1.	0.65	0.61	0.6	0.93	0.	3.05	0.68
time (sec)	N/A	0.038	0.075	0.004	1.348	0.204	0.	0.223	4.723

Problem 1159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	42	40	50	66	0	248	60
normalized size	1	1.	0.49	0.47	0.59	0.78	0.	2.92	0.71
time (sec)	N/A	0.059	0.098	0.006	1.319	0.207	0.	0.23	6.829

Problem 1160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	73	89	90	70	199	117	85
normalized size	1	1.	0.8	0.98	0.99	0.77	2.19	1.29	0.93
time (sec)	N/A	0.07	0.056	0.01	1.494	0.217	38.419	0.225	9.963

Problem 1161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	63	61	51	57	124	38	51
normalized size	1	1.	1.24	1.2	1.	1.12	2.43	0.75	1.
time (sec)	N/A	0.04	0.036	0.008	1.489	0.216	9.574	0.218	6.165

Problem 1162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	8	8	36	31	8	27	26	11	20
normalized size	1	1.	4.5	3.88	1.	3.38	3.25	1.38	2.5
time (sec)	N/A	0.016	0.014	0.006	1.475	0.21	5.072	0.221	3.086

Problem 1163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	21	20	41	39	100	72	29
normalized size	1	1.	0.57	0.54	1.11	1.05	2.7	1.95	0.78
time (sec)	N/A	0.026	0.013	0.004	1.332	0.208	13.396	0.221	3.641

Problem 1164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	43	30	80	66	0	131	65
normalized size	1	1.	0.54	0.38	1.01	0.84	0.	1.66	0.82
time (sec)	N/A	0.054	0.024	0.004	1.488	0.21	0.	0.218	6.686

Problem 1165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	16	16	16	55	75	84	15
normalized size	1	1.	0.76	0.76	0.76	2.62	3.57	4.	0.71
time (sec)	N/A	0.012	0.012	0.004	1.341	0.204	11.649	0.226	2.681

Problem 1166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	19	19	20	69	73	111	19
normalized size	1	1.	0.79	0.79	0.83	2.88	3.04	4.62	0.79
time (sec)	N/A	0.02	0.019	0.004	1.351	0.201	20.405	0.217	3.85

Problem 1167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	21	19	16	30	0	96	17
normalized size	1	1.	0.81	0.73	0.62	1.15	0.	3.69	0.65
time (sec)	N/A	0.015	0.038	0.003	1.346	0.202	0.	0.222	2.658

Problem 1168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	19	24	20	39	0	123	20
normalized size	1	1.	0.66	0.83	0.69	1.34	0.	4.24	0.69
time (sec)	N/A	0.023	0.055	0.005	1.344	0.202	0.	0.22	3.721

Problem 1169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	43	76	0	1	88	0	34
normalized size	1	1.	1.1	1.95	0.	0.03	2.26	0.	0.87
time (sec)	N/A	0.048	0.063	0.013	0.	0.215	10.76	0.	7.336

Problem 1170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	43	0	0	689	0	0	230
normalized size	1	1.	0.19	0.	0.	3.01	0.	0.	1.
time (sec)	N/A	0.303	0.042	0.152	0.	0.231	0.	0.	34.013

Problem 1171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	84	104	0	0	0	0	0
normalized size	1	1.	0.58	0.72	0.	0.	0.	0.	0.
time (sec)	N/A	0.112	0.082	0.266	0.	0.	0.	0.	0.

Problem 1172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	74	94	0	0	0	0	0
normalized size	1	1.	0.7	0.89	0.	0.	0.	0.	0.
time (sec)	N/A	0.077	0.053	0.058	0.	0.	0.	0.	0.

Problem 1173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	A	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	70	0	0	0	102	0	0
normalized size	1	1.	0.99	0.	0.	0.	1.44	0.	0.
time (sec)	N/A	0.045	0.044	0.054	0.	0.	11.331	0.	0.

Problem 1174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	82	94	0	0	0	0	0
normalized size	1	1.	1.05	1.21	0.	0.	0.	0.	0.
time (sec)	N/A	0.064	0.092	0.082	0.	0.	0.	0.	0.

Problem 1175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	97	105	0	0	0	0	0
normalized size	1	1.	1.18	1.28	0.	0.	0.	0.	0.
time (sec)	N/A	0.064	0.104	0.193	0.	0.	0.	0.	0.

Problem 1176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	103	113	0	0	0	0	0
normalized size	1	1.	0.9	0.98	0.	0.	0.	0.	0.
time (sec)	N/A	0.096	0.119	0.089	0.	0.	0.	0.	0.

Problem 1177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	102	114	0	0	0	0	0
normalized size	1	1.	0.69	0.77	0.	0.	0.	0.	0.
time (sec)	N/A	0.129	0.139	0.1	0.	0.	0.	0.	0.

Problem 1178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	71	0	0	262	0	252	212
normalized size	1	1.	0.28	0.	0.	1.02	0.	0.98	0.83
time (sec)	N/A	0.297	0.055	0.083	0.	0.218	0.	0.253	36.306

Problem 1179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	68	0	0	306	0	0	192
normalized size	1	1.	0.29	0.	0.	1.31	0.	0.	0.82
time (sec)	N/A	0.203	0.043	0.066	0.	0.222	0.	0.	28.338

Problem 1180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	31	0	35	0	0	29
normalized size	1	1.	1.	0.94	0.	1.06	0.	0.	0.88
time (sec)	N/A	0.023	0.033	0.074	0.	0.205	0.	0.	5.775

Problem 1181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	45	44	0	55	0	0	58
normalized size	1	1.	0.67	0.66	0.	0.82	0.	0.	0.87
time (sec)	N/A	0.051	0.044	0.069	0.	0.206	0.	0.	12.1

Problem 1182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	52	50	0	73	0	0	87
normalized size	1	1.	0.52	0.5	0.	0.73	0.	0.	0.87
time (sec)	N/A	0.081	0.052	0.068	0.	0.205	0.	0.	18.347

Problem 1183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	57	55	0	90	0	0	116
normalized size	1	1.	0.43	0.41	0.	0.68	0.	0.	0.87
time (sec)	N/A	0.116	0.061	0.072	0.	0.213	0.	0.	25.886

Problem 1184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	71	0	0	275	0	242	219
normalized size	1	1.	0.28	0.	0.	1.07	0.	0.95	0.86
time (sec)	N/A	0.252	0.063	0.075	0.	0.223	0.	0.247	39.027

Problem 1185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	70	0	0	306	0	0	192
normalized size	1	1.	0.3	0.	0.	1.31	0.	0.	0.82
time (sec)	N/A	0.204	0.044	0.063	0.	0.222	0.	0.	30.155

Problem 1186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	31	0	42	0	0	27
normalized size	1	1.	1.	1.	0.	1.35	0.	0.	0.87
time (sec)	N/A	0.023	0.03	0.053	0.	0.205	0.	0.	5.397

Problem 1187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	45	44	0	59	0	0	58
normalized size	1	1.	0.67	0.66	0.	0.88	0.	0.	0.87
time (sec)	N/A	0.051	0.04	0.063	0.	0.206	0.	0.	11.497

Problem 1188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	52	50	0	78	0	0	87
normalized size	1	1.	0.52	0.5	0.	0.78	0.	0.	0.87
time (sec)	N/A	0.081	0.05	0.065	0.	0.212	0.	0.	18.303

Problem 1189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	80	0	0	0	0	0	90
normalized size	1	1.	0.71	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.089	0.068	0.087	0.	0.	0.	0.	21.138

Problem 1190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	72	0	0	0	0	0	63
normalized size	1	1.	0.95	0.	0.	0.	0.	0.	0.83
time (sec)	N/A	0.06	0.051	0.059	0.	0.	0.	0.	14.336

Problem 1191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	68	0	0	0	100	0	39
normalized size	1	1.	1.58	0.	0.	0.	2.33	0.	0.91
time (sec)	N/A	0.031	0.04	0.06	0.	0.	37.113	0.	7.899

Problem 1192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	79	0	0	0	0	0	70
normalized size	1	1.	0.96	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.061	0.074	0.075	0.	0.	0.	0.	14.28

Problem 1193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	93	0	0	0	0	0	99
normalized size	1	1.	0.81	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.092	0.104	0.079	0.	0.	0.	0.	21.177

Problem 1194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	76	0	0	370	0	0	250
normalized size	1	1.	0.26	0.	0.	1.27	0.	0.	0.86
time (sec)	N/A	0.315	0.069	0.072	0.	0.233	0.	0.	48.415

Problem 1195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	266	266	73	0	0	423	0	0	219
normalized size	1	1.	0.27	0.	0.	1.59	0.	0.	0.82
time (sec)	N/A	0.227	0.052	0.072	0.	0.233	0.	0.	34.104

Problem 1196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	38	31	0	35	0	0	27
normalized size	1	1.	1.15	0.94	0.	1.06	0.	0.	0.82
time (sec)	N/A	0.023	0.033	0.053	0.	0.21	0.	0.	6.069

Problem 1197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	47	33	0	35	0	0	56
normalized size	1	1.	0.72	0.51	0.	0.54	0.	0.	0.86
time (sec)	N/A	0.052	0.044	0.065	0.	0.215	0.	0.	10.983

Problem 1198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	52	44	0	55	0	0	85
normalized size	1	1.	0.52	0.44	0.	0.55	0.	0.	0.85
time (sec)	N/A	0.081	0.055	0.188	0.	0.208	0.	0.	18.019

Problem 1199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	80	0	0	0	0	0	112
normalized size	1	1.	0.58	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.121	0.071	0.071	0.	0.	0.	0.	28.37

Problem 1200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	76	0	0	0	0	0	94
normalized size	1	1.	0.67	0.	0.	0.	0.	0.	0.83
time (sec)	N/A	0.09	0.05	0.065	0.	0.	0.	0.	20.169

Problem 1201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	73	0	0	0	0	0	68
normalized size	1	1.	0.92	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.058	0.051	0.06	0.	0.	0.	0.	13.364

Problem 1202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	73	0	0	0	0	0	70
normalized size	1	1.	0.89	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.062	0.049	0.062	0.	0.	0.	0.	12.896

Problem 1203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	76	0	0	0	0	0	75
normalized size	1	1.	0.94	0.	0.	0.	0.	0.	0.93
time (sec)	N/A	0.049	0.084	0.069	0.	0.	0.	0.	10.299

Problem 1204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F(-2)	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	96	0	0	0	0	0	128
normalized size	1	1.	0.84	0.	0.	0.	0.	0.	1.12
time (sec)	N/A	0.081	0.117	0.092	0.	0.	0.	0.	26.521

Problem 1205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F(-2)	F	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	103	0	0	0	0	0	156
normalized size	1	1.	0.7	0.	0.	0.	0.	0.	1.06
time (sec)	N/A	0.116	0.136	0.112	0.	0.	0.	0.	34.515

Problem 1206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	74	96	0	0	0	0	0
normalized size	1	1.	0.54	0.7	0.	0.	0.	0.	0.
time (sec)	N/A	0.108	0.07	0.077	0.	0.	0.	0.	0.

Problem 1207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	71	88	0	0	0	0	0
normalized size	1	1.	0.7	0.86	0.	0.	0.	0.	0.
time (sec)	N/A	0.071	0.052	0.065	0.	0.	0.	0.	0.

Problem 1208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	73	94	0	0	0	0	0
normalized size	1	1.	0.94	1.21	0.	0.	0.	0.	0.
time (sec)	N/A	0.061	0.055	0.053	0.	0.	0.	0.	0.

Problem 1209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	79	91	0	0	0	0	0
normalized size	1	1.	1.72	1.98	0.	0.	0.	0.	0.
time (sec)	N/A	0.033	0.081	0.057	0.	0.	0.	0.	0.

Problem 1210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	96	107	0	0	0	0	0
normalized size	1	1.	1.17	1.3	0.	0.	0.	0.	0.
time (sec)	N/A	0.063	0.107	0.089	0.	0.	0.	0.	0.

Problem 1211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	103	113	0	0	0	0	0
normalized size	1	1.	0.9	0.98	0.	0.	0.	0.	0.
time (sec)	N/A	0.095	0.129	0.102	0.	0.	0.	0.	0.

Problem 1212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	72	0	0	323	0	0	246
normalized size	1	1.	0.25	0.	0.	1.13	0.	0.	0.86
time (sec)	N/A	0.303	0.061	0.066	0.	0.24	0.	0.	45.554

Problem 1213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	71	0	0	408	0	244	218
normalized size	1	1.	0.27	0.	0.	1.55	0.	0.92	0.83
time (sec)	N/A	0.224	0.052	0.06	0.	0.243	0.	0.247	35.412

Problem 1214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	36	31	0	42	0	0	26
normalized size	1	1.	1.16	1.	0.	1.35	0.	0.	0.84
time (sec)	N/A	0.023	0.031	0.054	0.	0.213	0.	0.	6.023

Problem 1215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	45	33	0	35	0	0	54
normalized size	1	1.	0.67	0.49	0.	0.52	0.	0.	0.81
time (sec)	N/A	0.052	0.044	0.059	0.	0.225	0.	0.	11.8

Problem 1216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	52	44	0	55	0	0	83
normalized size	1	1.	0.52	0.44	0.	0.55	0.	0.	0.83
time (sec)	N/A	0.08	0.061	0.072	0.	0.218	0.	0.	19.328

Problem 1217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	84	101	0	0	0	0	0
normalized size	1	1.	0.6	0.72	0.	0.	0.	0.	0.
time (sec)	N/A	0.103	0.097	0.081	0.	0.	0.	0.	0.

Problem 1218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	83	107	0	0	0	0	0
normalized size	1	1.	0.72	0.93	0.	0.	0.	0.	0.
time (sec)	N/A	0.091	0.08	0.058	0.	0.	0.	0.	0.

Problem 1219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	84	105	0	0	0	0	0
normalized size	1	1.	1.02	1.28	0.	0.	0.	0.	0.
time (sec)	N/A	0.062	0.082	0.059	0.	0.	0.	0.	0.

Problem 1220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	94	107	0	0	0	0	0
normalized size	1	1.	1.15	1.3	0.	0.	0.	0.	0.
time (sec)	N/A	0.087	0.107	0.087	0.	0.	0.	0.	0.

Problem 1221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	98	0	0	0	0	0	0
normalized size	1	1.	1.11	0.	0.	0.	0.	0.	0.
time (sec)	N/A	0.053	0.134	0.061	0.	0.	0.	0.	0.

Problem 1222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	120	124	0	0	0	0	0
normalized size	1	1.	0.99	1.02	0.	0.	0.	0.	0.
time (sec)	N/A	0.086	0.162	0.116	0.	0.	0.	0.	0.

Problem 1223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	C	F(-2)	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	127	130	0	0	0	0	0
normalized size	1	1.	0.82	0.84	0.	0.	0.	0.	0.
time (sec)	N/A	0.126	0.188	0.128	0.	0.	0.	0.	0.

Problem 1224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	84	0	0	474	0	0	245
normalized size	1	1.	0.28	0.	0.	1.6	0.	0.	0.82
time (sec)	N/A	0.244	0.089	0.076	0.	0.254	0.	0.	44.086

Problem 1225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	43	50	0	61	0	46	27
normalized size	1	1.	1.3	1.52	0.	1.85	0.	1.39	0.82
time (sec)	N/A	0.023	0.03	0.062	0.	0.226	0.	0.225	5.889

Problem 1226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	45	44	0	59	0	0	56
normalized size	1	1.	0.67	0.66	0.	0.88	0.	0.	0.84
time (sec)	N/A	0.051	0.038	0.061	0.	0.238	0.	0.	11.683

Problem 1227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	52	44	0	55	0	0	85
normalized size	1	1.	0.52	0.44	0.	0.55	0.	0.	0.85
time (sec)	N/A	0.081	0.052	0.072	0.	0.244	0.	0.	16.575

Problem 1228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	64	56	0	62	0	0	114
normalized size	1	1.	0.48	0.42	0.	0.47	0.	0.	0.86
time (sec)	N/A	0.114	0.062	0.08	0.	0.244	0.	0.	23.881

Problem 1229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	77	103	0	173	819	378	66
normalized size	1	1.	0.93	1.24	0.	2.08	9.87	4.55	0.8
time (sec)	N/A	0.077	0.058	0.01	0.	0.24	3.211	0.223	18.998

Problem 1230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	43	47	0	78	245	153	41
normalized size	1	1.	0.81	0.89	0.	1.47	4.62	2.89	0.77
time (sec)	N/A	0.047	0.027	0.003	0.	0.221	1.78	0.221	11.877

Problem 1231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	58	0	0	0	0	0	37
normalized size	1	1.	1.12	0.	0.	0.	0.	0.	0.71
time (sec)	N/A	0.039	0.036	0.095	0.	0.	0.	0.	7.829

Problem 1232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	52	0	0	0	0	0	39
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.75
time (sec)	N/A	0.039	0.036	0.069	0.	0.	0.	0.	8.175

Problem 1233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	0	0	0	124	0	31
normalized size	1	1.	1.	0.	0.	0.	3.02	0.	0.76
time (sec)	N/A	0.032	0.029	0.148	0.	0.	15.206	0.	5.256

Problem 1234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	56	0	0	0	146	0	48
normalized size	1	1.	0.98	0.	0.	0.	2.56	0.	0.84
time (sec)	N/A	0.047	0.046	0.142	0.	0.	17.97	0.	22.608

Problem 1235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	42	0	0	0	42	0	15
normalized size	1	1.	2.1	0.	0.	0.	2.1	0.	0.75
time (sec)	N/A	0.018	0.026	0.23	0.	0.	16.288	0.	3.

Problem 1236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	84	97	130	1	100	131	31
normalized size	1	1.	2.21	2.55	3.42	0.03	2.63	3.45	0.82
time (sec)	N/A	0.045	0.027	0.001	1.357	0.177	0.137	0.22	12.025

Problem 1237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	67	73	93	1	73	97	31
normalized size	1	1.	1.76	1.92	2.45	0.03	1.92	2.55	0.82
time (sec)	N/A	0.039	0.016	0.003	1.342	0.175	0.135	0.219	10.583

Problem 1238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	46	49	65	1	49	66	31
normalized size	1	1.	1.21	1.29	1.71	0.03	1.29	1.74	0.82
time (sec)	N/A	0.061	0.014	0.002	1.479	0.176	0.096	0.22	9.505

Problem 1239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	25	32	1	26	35	0
normalized size	1	1.	1.	0.89	1.14	0.04	0.93	1.25	0.
time (sec)	N/A	0.037	0.006	0.	1.356	0.176	0.065	0.219	0.

Problem 1240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	11	14	1	8	14	0
normalized size	1	1.	1.	0.92	1.17	0.08	0.67	1.17	0.
time (sec)	N/A	0.007	0.	0.	1.34	0.174	0.053	0.219	0.

Problem 1241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	32	34	32	20	35	0
normalized size	1	1.	1.	1.28	1.36	1.28	0.8	1.4	0.
time (sec)	N/A	0.041	0.012	0.004	1.342	0.196	1.133	0.219	0.

Problem 1242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	31	39	47	53	27	77	26
normalized size	1	1.	0.97	1.22	1.47	1.66	0.84	2.41	0.81
time (sec)	N/A	0.046	0.017	0.008	1.387	0.196	1.305	0.218	8.044

Problem 1243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	26	35	51	51	39	32	20
normalized size	1	1.	0.93	1.25	1.82	1.82	1.39	1.14	0.71
time (sec)	N/A	0.02	0.015	0.007	1.346	0.197	1.584	0.216	3.463

Problem 1244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	68	68	53	34	31
normalized size	1	1.	0.71	0.92	1.79	1.79	1.39	0.89	0.82
time (sec)	N/A	0.048	0.014	0.008	1.345	0.205	1.848	0.217	8.319

Problem 1245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	82	82	65	55	31
normalized size	1	1.	0.71	0.92	2.16	2.16	1.71	1.45	0.82
time (sec)	N/A	0.048	0.015	0.009	1.344	0.196	2.227	0.216	8.548

Problem 1246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	148	163	211	1	168	230	54
normalized size	1	1.	2.28	2.51	3.25	0.02	2.58	3.54	0.83
time (sec)	N/A	0.17	0.04	0.002	1.331	0.181	0.174	0.216	22.904

Problem 1247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	122	125	167	1	133	176	56
normalized size	1	1.	1.88	1.92	2.57	0.02	2.05	2.71	0.86
time (sec)	N/A	0.139	0.027	0.002	1.351	0.179	0.158	0.215	19.719

Problem 1248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	79	87	109	1	87	120	54
normalized size	1	1.	1.22	1.34	1.68	0.02	1.34	1.85	0.83
time (sec)	N/A	0.105	0.018	0.	1.332	0.178	0.155	0.223	17.844

Problem 1249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	47	49	65	1	49	66	31
normalized size	1	1.	1.24	1.29	1.71	0.03	1.29	1.74	0.82
time (sec)	N/A	0.065	0.016	0.	1.374	0.18	0.095	0.218	9.381

Problem 1250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	27	1	19	16	8
normalized size	1	1.	1.	0.93	1.93	0.07	1.36	1.14	0.57
time (sec)	N/A	0.007	0.002	0.001	1.336	0.174	0.074	0.22	1.285

Problem 1251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	43	74	82	85	44	81	0
normalized size	1	1.	0.88	1.51	1.67	1.73	0.9	1.65	0.
time (sec)	N/A	0.049	0.027	0.005	1.357	0.199	1.488	0.224	0.

Problem 1252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	47	86	90	124	60	132	0
normalized size	1	1.	0.92	1.69	1.76	2.43	1.18	2.59	0.
time (sec)	N/A	0.076	0.058	0.01	1.341	0.196	1.961	0.229	0.

Problem 1253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	49	92	107	134	80	92	51
normalized size	1	1.	0.83	1.56	1.81	2.27	1.36	1.56	0.86
time (sec)	N/A	0.076	0.038	0.01	1.338	0.202	2.4	0.228	15.689

Problem 1254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	53	70	113	113	88	80	20
normalized size	1	1.	1.89	2.5	4.04	4.04	3.14	2.86	0.71
time (sec)	N/A	0.017	0.039	0.008	1.34	0.197	2.923	0.223	3.716

Problem 1255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	56	71	132	132	104	126	56
normalized size	1	1.	0.86	1.09	2.03	2.03	1.6	1.94	0.86
time (sec)	N/A	0.078	0.03	0.009	1.354	0.198	3.488	0.227	16.345

Problem 1256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	57	71	147	147	116	82	54
normalized size	1	1.	0.88	1.09	2.26	2.26	1.78	1.26	0.83
time (sec)	N/A	0.076	0.042	0.008	1.354	0.208	4.265	0.222	16.725

Problem 1257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	58	71	162	162	128	82	56
normalized size	1	1.	0.89	1.09	2.49	2.49	1.97	1.26	0.86
time (sec)	N/A	0.076	0.033	0.008	1.374	0.217	4.92	0.223	16.791

Problem 1258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	235	281	374	1	308	409	82
normalized size	1	1.	2.55	3.05	4.07	0.01	3.35	4.45	0.89
time (sec)	N/A	0.305	0.115	0.001	1.344	0.177	0.23	0.213	38.828

Problem 1259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	217	229	304	1	243	331	80
normalized size	1	1.	2.36	2.49	3.3	0.01	2.64	3.6	0.87
time (sec)	N/A	0.255	0.047	0.001	1.354	0.19	0.199	0.218	36.154

Problem 1260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	161	177	225	1	190	254	80
normalized size	1	1.	1.75	1.92	2.45	0.01	2.07	2.76	0.87
time (sec)	N/A	0.18	0.035	0.001	1.367	0.182	0.167	0.221	29.14

Problem 1261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	122	125	167	1	133	176	56
normalized size	1	1.	1.88	1.92	2.57	0.02	2.05	2.71	0.86
time (sec)	N/A	0.141	0.026	0.002	1.349	0.186	0.152	0.223	20.162

Problem 1262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	67	73	93	1	73	97	31
normalized size	1	1.	1.76	1.92	2.45	0.03	1.92	2.55	0.82
time (sec)	N/A	0.045	0.012	0.002	1.336	0.177	0.114	0.22	10.517

Problem 1263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	42	1	32	16	8
normalized size	1	1.	1.	0.93	3.	0.07	2.29	1.14	0.57
time (sec)	N/A	0.007	0.002	0.002	1.343	0.181	0.077	0.219	1.303

Problem 1264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	74	133	154	157	82	155	0
normalized size	1	1.	1.01	1.82	2.11	2.15	1.12	2.12	0.
time (sec)	N/A	0.07	0.047	0.006	1.347	0.202	1.772	0.224	0.

Problem 1265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	72	149	159	234	100	225	0
normalized size	1	1.	0.96	1.99	2.12	3.12	1.33	3.	0.
time (sec)	N/A	0.126	0.088	0.011	1.41	0.224	2.655	0.218	0.

Problem 1266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	114	160	169	254	128	151	0
normalized size	1	1.	1.46	2.05	2.17	3.26	1.64	1.94	0.
time (sec)	N/A	0.123	0.068	0.011	1.358	0.214	3.953	0.225	0.

Problem 1267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	80	166	192	238	148	159	76
normalized size	1	1.	0.93	1.93	2.23	2.77	1.72	1.85	0.88
time (sec)	N/A	0.121	0.069	0.01	1.37	0.213	4.812	0.217	24.504

Problem 1268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	91	122	193	193	153	232	20
normalized size	1	1.	3.25	4.36	6.89	6.89	5.46	8.29	0.71
time (sec)	N/A	0.018	0.053	0.008	1.363	0.214	6.464	0.22	3.697

Problem 1269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	97	121	216	216	170	154	46
normalized size	1	1.	1.67	2.09	3.72	3.72	2.93	2.66	0.79
time (sec)	N/A	0.039	0.064	0.007	1.365	0.224	7.946	0.22	7.717

Problem 1270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	97	122	231	231	182	154	82
normalized size	1	1.	1.05	1.33	2.51	2.51	1.98	1.67	0.89
time (sec)	N/A	0.127	0.05	0.008	1.363	0.226	10.281	0.22	25.929

Problem 1271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	97	122	246	246	194	154	80
normalized size	1	1.	1.05	1.33	2.67	2.67	2.11	1.67	0.87
time (sec)	N/A	0.123	0.051	0.009	1.358	0.221	11.993	0.222	26.435

Problem 1272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	97	122	261	261	206	154	80
normalized size	1	1.	1.05	1.33	2.84	2.84	2.24	1.67	0.87
time (sec)	N/A	0.12	0.057	0.009	1.355	0.205	15.357	0.218	26.308

Problem 1273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	993	1033	1381	1	1163	1	184
normalized size	1	1.	4.96	5.16	6.9	0.	5.82	0.	0.92
time (sec)	N/A	1.373	0.218	0.005	1.357	0.211	0.548	0.221	138.645

Problem 1274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	897	925	1243	1	1046	1	184
normalized size	1	1.	4.48	4.62	6.22	0.	5.23	0.	0.92
time (sec)	N/A	1.238	0.194	0.004	1.363	0.199	0.493	0.219	123.539

Problem 1275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	785	817	1089	1	935	1	182
normalized size	1	1.	3.92	4.08	5.44	0.	4.68	0.	0.91
time (sec)	N/A	0.894	0.156	0.004	1.349	0.189	0.45	0.222	107.709

Problem 1276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	684	709	953	1	796	1077	158
normalized size	1	1.	3.95	4.1	5.51	0.01	4.6	6.23	0.91
time (sec)	N/A	0.832	0.143	0.003	1.345	0.181	0.403	0.219	89.134

Problem 1277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	574	601	802	1	673	905	129
normalized size	1	1.	3.99	4.17	5.57	0.01	4.67	6.28	0.9
time (sec)	N/A	0.702	0.123	0.004	1.339	0.18	0.369	0.215	71.104

Problem 1278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	473	493	660	1	549	737	107
normalized size	1	1.	3.97	4.14	5.55	0.01	4.61	6.19	0.9
time (sec)	N/A	0.536	0.101	0.001	1.345	0.177	0.31	0.223	53.974

Problem 1279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	360	385	508	1	427	567	80
normalized size	1	1.	3.91	4.18	5.52	0.01	4.64	6.16	0.87
time (sec)	N/A	0.409	0.076	0.002	1.359	0.19	0.272	0.217	39.086

Problem 1280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	261	277	369	1	303	397	56
normalized size	1	1.	4.02	4.26	5.68	0.02	4.66	6.11	0.86
time (sec)	N/A	0.308	0.052	0.001	1.334	0.184	0.227	0.219	30.503

Problem 1281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	151	169	220	1	178	228	31
normalized size	1	1.	3.97	4.45	5.79	0.03	4.68	6.	0.82
time (sec)	N/A	0.047	0.028	0.003	1.345	0.176	0.179	0.218	18.874

Problem 1282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	1	83	16	8
normalized size	1	1.	1.	0.93	1.14	0.07	5.93	1.14	0.57
time (sec)	N/A	0.007	0.001	0.	1.334	0.178	0.114	0.216	1.299

Problem 1283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	304	539	621	624	384	671	0
normalized size	1	1.	1.8	3.19	3.67	3.69	2.27	3.97	0.
time (sec)	N/A	0.155	0.365	0.008	1.342	0.23	3.52	0.219	0.

Problem 1284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	388	571	630	853	410	765	172
normalized size	1	1.	2.07	3.05	3.37	4.56	2.19	4.09	0.92
time (sec)	N/A	0.492	0.213	0.015	1.405	0.226	6.292	0.218	77.36

Problem 1285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	389	599	639	949	437	644	170
normalized size	1	1.	2.1	3.24	3.45	5.13	2.36	3.48	0.92
time (sec)	N/A	0.47	0.229	0.017	1.361	0.209	11.894	0.221	79.088

Problem 1286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	199	622	653	998	468	635	172
normalized size	1	1.	1.06	3.33	3.49	5.34	2.5	3.4	0.92
time (sec)	N/A	0.476	0.172	0.018	1.377	0.202	24.371	0.227	71.14

Problem 1287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	173	641	667	1018	495	891	172
normalized size	1	1.	0.93	3.43	3.57	5.44	2.65	4.76	0.92
time (sec)	N/A	0.448	0.181	0.02	1.409	0.213	66.473	0.23	65.473

Problem 1288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	389	656	680	988	0	625	0
normalized size	1	1.	2.15	3.62	3.76	5.46	0.	3.45	0.
time (sec)	N/A	0.445	0.269	0.02	1.431	0.228	0.	0.224	0.

Problem 1289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	390	666	697	934	0	620	0
normalized size	1	1.	2.1	3.58	3.75	5.02	0.	3.33	0.
time (sec)	N/A	0.424	0.577	0.019	1.444	0.226	0.	0.224	0.

Problem 1290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	308	672	721	842	0	629	178
normalized size	1	1.	1.59	3.46	3.72	4.34	0.	3.24	0.92
time (sec)	N/A	0.4	0.356	0.016	1.404	0.234	0.	0.226	70.139

Problem 1291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	353	464	687	687	0	660	20
normalized size	1	1.	12.61	16.57	24.54	24.54	0.	23.57	0.71
time (sec)	N/A	0.021	0.277	0.012	1.459	0.201	0.	0.223	3.968

Problem 1292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	367	464	740	740	0	670	46
normalized size	1	1.	6.33	8.	12.76	12.76	0.	11.55	0.79
time (sec)	N/A	0.043	0.237	0.011	1.402	0.209	0.	0.223	7.835

Problem 1293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	371	464	755	755	0	670	73
normalized size	1	1.	4.17	5.21	8.48	8.48	0.	7.53	0.82
time (sec)	N/A	0.066	0.292	0.013	1.385	0.22	0.	0.221	13.768

Problem 1294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	369	464	770	770	0	670	102
normalized size	1	1.	3.08	3.87	6.42	6.42	0.	5.58	0.85
time (sec)	N/A	0.094	0.283	0.012	1.41	0.215	0.	0.22	21.869

Problem 1295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	371	464	784	784	0	670	128
normalized size	1	1.	2.46	3.07	5.19	5.19	0.	4.44	0.85
time (sec)	N/A	0.136	0.297	0.013	1.407	0.229	0.	0.229	31.809

Problem 1296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	369	463	799	799	0	670	180
normalized size	1	1.	1.86	2.34	4.04	4.04	0.	3.38	0.91
time (sec)	N/A	0.411	0.245	0.011	1.4	0.23	0.	0.226	81.888

Problem 1297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	371	464	814	814	0	670	184
normalized size	1	1.	1.86	2.32	4.07	4.07	0.	3.35	0.92
time (sec)	N/A	0.41	0.279	0.011	1.407	0.229	0.	0.218	90.36

Problem 1298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	371	464	829	829	0	670	182
normalized size	1	1.	1.86	2.32	4.14	4.14	0.	3.35	0.91
time (sec)	N/A	0.403	0.275	0.01	1.417	0.229	0.	0.218	102.598

Problem 1299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	1817	1891	2534	1	2088	1	0
normalized size	1	1.	6.61	6.88	9.21	0.	7.59	0.	0.
time (sec)	N/A	3.363	0.447	0.005	1.388	0.196	0.903	0.219	0.

Problem 1300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	1702	1741	2349	1	1965	1	0
normalized size	1	1.	6.1	6.24	8.42	0.	7.04	0.	0.
time (sec)	N/A	2.818	0.388	0.005	1.385	0.188	0.843	0.222	0.

Problem 1301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	1539	1591	2134	1	1775	1	0
normalized size	1	1.	5.52	5.7	7.65	0.	6.36	0.	0.
time (sec)	N/A	2.193	0.332	0.004	1.364	0.186	0.814	0.215	0.

Problem 1302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	1397	1441	1940	1	1598	1	0
normalized size	1	1.	5.59	5.76	7.76	0.	6.39	0.	0.
time (sec)	N/A	2.107	0.339	0.003	1.368	0.188	0.721	0.22	0.

Problem 1303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	1241	1291	1732	1	1428	1	207
normalized size	1	1.	5.52	5.74	7.7	0.	6.35	0.	0.92
time (sec)	N/A	1.851	0.297	0.004	1.371	0.2	0.674	0.215	178.323

Problem 1304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	1105	1141	1532	1	1280	1	184
normalized size	1	1.	5.52	5.7	7.66	0.	6.4	0.	0.92
time (sec)	N/A	1.557	0.248	0.005	1.378	0.214	0.58	0.221	148.316

Problem 1305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	939	991	1319	1	1088	1	153
normalized size	1	1.	5.52	5.83	7.76	0.01	6.4	0.01	0.9
time (sec)	N/A	1.461	0.23	0.003	1.375	0.213	0.524	0.216	119.466

Problem 1306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	811	841	1127	1	940	1	131
normalized size	1	1.	5.55	5.76	7.72	0.01	6.44	0.01	0.9
time (sec)	N/A	1.077	0.173	0.003	1.344	0.214	0.465	0.219	96.487

Problem 1307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	660	691	926	1	748	1041	105
normalized size	1	1.	5.55	5.81	7.78	0.01	6.29	8.75	0.88
time (sec)	N/A	0.864	0.146	0.003	1.357	0.209	0.424	0.217	75.517

Problem 1308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	511	541	722	1	586	802	80
normalized size	1	1.	5.55	5.88	7.85	0.01	6.37	8.72	0.87
time (sec)	N/A	0.682	0.114	0.002	1.359	0.194	0.35	0.219	53.454

Problem 1309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	358	391	518	1	415	563	54
normalized size	1	1.	5.51	6.02	7.97	0.02	6.38	8.66	0.83
time (sec)	N/A	0.484	0.073	0.003	1.34	0.176	0.294	0.218	35.924

Problem 1310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	220	241	324	1	248	325	31
normalized size	1	1.	5.79	6.34	8.53	0.03	6.53	8.55	0.82
time (sec)	N/A	0.052	0.044	0.003	1.382	0.183	0.235	0.224	19.751

Problem 1311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	1	114	16	8
normalized size	1	1.	1.	0.93	1.14	0.07	8.14	1.14	0.57
time (sec)	N/A	0.007	0.002	0.	1.373	0.188	0.175	0.217	1.312

Problem 1312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	591	1022	1169	1172	772	1	0
normalized size	1	1.	2.45	4.24	4.85	4.86	3.2	0.	0.
time (sec)	N/A	0.226	0.865	0.012	1.389	0.209	5.416	0.217	0.

Problem 1313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	708	1066	1180	1517	796	1	240
normalized size	1	1.	2.74	4.13	4.57	5.88	3.09	0.	0.93
time (sec)	N/A	0.954	0.46	0.021	1.415	0.211	10.623	0.22	159.39

Problem 1314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	708	1105	1189	1665	828	1247	243
normalized size	1	1.	2.7	4.22	4.54	6.35	3.16	4.76	0.93
time (sec)	N/A	0.956	0.441	0.025	1.471	0.211	22.007	0.225	151.481

Problem 1315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	427	1141	1203	1777	853	1224	240
normalized size	1	1.	1.66	4.42	4.66	6.89	3.31	4.74	0.93
time (sec)	N/A	0.959	0.296	0.027	1.413	0.209	89.036	0.226	143.012

Problem 1316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	359	1172	1219	1843	0	1	243
normalized size	1	1.	1.37	4.47	4.65	7.03	0.	0.	0.93
time (sec)	N/A	0.95	0.336	0.026	1.451	0.212	0.	0.229	135.097

Problem 1317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	260	305	1199	1231	1883	0	1192	241
normalized size	1	1.	1.17	4.61	4.73	7.24	0.	4.58	0.93
time (sec)	N/A	0.928	0.361	0.029	1.45	0.21	0.	0.22	144.859

Problem 1318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	265	1222	1249	1871	0	1185	243
normalized size	1	1.	1.01	4.66	4.77	7.14	0.	4.52	0.93
time (sec)	N/A	0.897	0.388	0.028	1.488	0.208	0.	0.227	134.581

Problem 1319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	239	1241	1261	1839	0	1177	240
normalized size	1	1.	0.93	4.81	4.89	7.13	0.	4.56	0.93
time (sec)	N/A	0.862	0.439	0.029	1.488	0.225	0.	0.223	122.667

Problem 1320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	712	1256	1276	1750	0	1176	0
normalized size	1	1.	2.76	4.87	4.95	6.78	0.	4.56	0.
time (sec)	N/A	0.857	0.549	0.026	1.5	0.231	0.	0.227	0.

Problem 1321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	708	1266	1292	1642	0	1170	0
normalized size	1	1.	2.75	4.93	5.03	6.39	0.	4.55	0.
time (sec)	N/A	0.814	2.467	0.025	1.469	0.233	0.	0.219	0.

Problem 1322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	591	1271	1316	1494	0	1180	252
normalized size	1	1.	2.18	4.69	4.86	5.51	0.	4.35	0.93
time (sec)	N/A	0.796	0.811	0.018	1.429	0.233	0.	0.224	129.327

Problem 1323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	665	866	1242	1242	0	1	20
normalized size	1	1.	23.75	30.93	44.36	44.36	0.	0.04	0.71
time (sec)	N/A	0.02	0.682	0.013	1.449	0.227	0.	0.22	4.075

Problem 1324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	684	867	1331	1331	0	1	46
normalized size	1	1.	11.79	14.95	22.95	22.95	0.	0.02	0.79
time (sec)	N/A	0.04	0.598	0.013	1.427	0.21	0.	0.226	8.429

Problem 1325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	690	867	1346	1346	0	1	73
normalized size	1	1.	7.75	9.74	15.12	15.12	0.	0.01	0.82
time (sec)	N/A	0.062	0.775	0.013	1.467	0.221	0.	0.216	14.484

Problem 1326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	692	867	1361	1361	0	1	102
normalized size	1	1.	5.77	7.22	11.34	11.34	0.	0.01	0.85
time (sec)	N/A	0.092	0.751	0.013	1.451	0.221	0.	0.219	22.688

Problem 1327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	690	867	1376	1376	0	1	131
normalized size	1	1.	4.57	5.74	9.11	9.11	0.	0.01	0.87
time (sec)	N/A	0.124	0.613	0.014	1.599	0.209	0.	0.216	32.644

Problem 1328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	694	867	1391	1391	0	1	155
normalized size	1	1.	3.81	4.76	7.64	7.64	0.	0.01	0.85
time (sec)	N/A	0.166	0.779	0.015	1.465	0.215	0.	0.224	44.793

Problem 1329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	213	213	690	867	1405	1405	0	1	185
normalized size	1	1.	3.24	4.07	6.6	6.6	0.	0.	0.87
time (sec)	N/A	0.201	0.78	0.014	1.48	0.221	0.	0.221	59.276

Problem 1330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	244	244	694	867	1420	1420	0	1	214
normalized size	1	1.	2.84	3.55	5.82	5.82	0.	0.	0.88
time (sec)	N/A	0.249	0.764	0.014	1.475	0.213	0.	0.221	75.459

Problem 1331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	692	866	1435	1435	0	1	0
normalized size	1	1.	2.53	3.17	5.26	5.26	0.	0.	0.
time (sec)	N/A	0.817	0.77	0.014	1.479	0.213	0.	0.219	0.

Problem 1332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	692	867	1450	1450	0	1	0
normalized size	1	1.	2.48	3.11	5.2	5.2	0.	0.	0.
time (sec)	N/A	0.816	0.933	0.014	1.494	0.211	0.	0.221	0.

Problem 1333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	692	867	1465	1465	0	1	0
normalized size	1	1.	2.48	3.11	5.25	5.25	0.	0.	0.
time (sec)	N/A	0.814	0.793	0.014	1.532	0.204	0.	0.219	0.

Problem 1334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	167	302	348	350	202	369	0
normalized size	1	1.	1.37	2.48	2.85	2.87	1.66	3.02	0.
time (sec)	N/A	0.118	0.115	0.006	1.354	0.203	1.212	0.222	0.

Problem 1335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	115	209	239	242	134	248	0
normalized size	1	1.	1.17	2.13	2.44	2.47	1.37	2.53	0.
time (sec)	N/A	0.091	0.074	0.006	1.381	0.204	1.001	0.221	0.

Problem 1336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	74	133	154	155	82	157	0
normalized size	1	1.	1.	1.8	2.08	2.09	1.11	2.12	0.
time (sec)	N/A	0.069	0.045	0.004	1.348	0.204	0.841	0.217	0.

Problem 1337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	43	74	81	84	44	81	0
normalized size	1	1.	0.86	1.48	1.62	1.68	0.88	1.62	0.
time (sec)	N/A	0.051	0.027	0.003	1.334	0.208	0.688	0.222	0.

Problem 1338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	25	32	35	34	20	36	0
normalized size	1	1.	0.96	1.23	1.35	1.31	0.77	1.38	0.
time (sec)	N/A	0.042	0.013	0.004	1.347	0.203	0.566	0.225	0.

Problem 1339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	14	14	7	15	7
normalized size	1	1.	1.	1.1	1.4	1.4	0.7	1.5	0.7
time (sec)	N/A	0.007	0.001	0.001	1.344	0.21	0.036	0.221	1.292

Problem 1340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	26	37	49	35	128	0	26
normalized size	1	1.	0.72	1.03	1.36	0.97	3.56	0.	0.72
time (sec)	N/A	0.026	0.018	0.008	1.346	0.207	0.462	0.	5.66

Problem 1341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	53	57	124	126	233	105	46
normalized size	1	1.	0.93	1.	2.18	2.21	4.09	1.84	0.81
time (sec)	N/A	0.071	0.04	0.023	1.348	0.211	1.417	0.219	13.967

Problem 1342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	67	81	273	327	381	223	68
normalized size	1	1.	0.82	0.99	3.33	3.99	4.65	2.72	0.83
time (sec)	N/A	0.098	0.109	0.016	1.354	0.21	2.195	0.219	20.632

Problem 1343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	228	326	356	504	224	458	119
normalized size	1	1.	1.75	2.51	2.74	3.88	1.72	3.52	0.92
time (sec)	N/A	0.278	0.125	0.013	1.335	0.2	2.132	0.22	44.684

Problem 1344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	165	230	247	360	151	331	94
normalized size	1	1.	1.59	2.21	2.38	3.46	1.45	3.18	0.9
time (sec)	N/A	0.205	0.096	0.011	1.348	0.197	1.713	0.219	29.311

Problem 1345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	114	149	158	232	100	224	0
normalized size	1	1.	1.52	1.99	2.11	3.09	1.33	2.99	0.
time (sec)	N/A	0.133	0.074	0.01	1.37	0.197	1.298	0.218	0.

Problem 1346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	47	86	90	124	60	132	0
normalized size	1	1.	0.92	1.69	1.76	2.43	1.18	2.59	0.
time (sec)	N/A	0.085	0.063	0.01	1.347	0.204	0.963	0.22	0.

Problem 1347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	39	46	50	27	77	26
normalized size	1	1.	1.	1.26	1.48	1.61	0.87	2.48	0.84
time (sec)	N/A	0.05	0.017	0.01	1.347	0.225	0.648	0.226	8.041

Problem 1348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	13	16	18	10	16	8
normalized size	1	1.	1.	1.08	1.33	1.5	0.83	1.33	0.67
time (sec)	N/A	0.007	0.004	0.001	1.373	0.198	0.516	0.226	1.287

Problem 1349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	53	58	122	124	233	104	46
normalized size	1	1.	0.95	1.04	2.18	2.21	4.16	1.86	0.82
time (sec)	N/A	0.069	0.038	0.019	1.346	0.216	1.428	0.22	13.971

Problem 1350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	66	82	281	325	405	207	70
normalized size	1	1.	0.81	1.01	3.47	4.01	5.	2.56	0.86
time (sec)	N/A	0.106	0.104	0.017	1.367	0.212	2.276	0.228	20.402

Problem 1351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	98	109	521	667	632	292	97
normalized size	1	1.	0.9	1.	4.78	6.12	5.8	2.68	0.89
time (sec)	N/A	0.16	0.123	0.02	1.412	0.242	3.565	0.221	33.038

Problem 1352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	303	464	491	740	335	489	144
normalized size	1	1.	1.92	2.94	3.11	4.68	2.12	3.09	0.91
time (sec)	N/A	0.39	0.187	0.014	1.364	0.204	4.625	0.218	56.835

Problem 1353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	230	346	366	562	253	356	121
normalized size	1	1.	1.73	2.6	2.75	4.23	1.9	2.68	0.91
time (sec)	N/A	0.264	0.137	0.013	1.386	0.21	3.631	0.224	40.53

Problem 1354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	167	245	258	393	184	247	0
normalized size	1	1.	1.62	2.38	2.5	3.82	1.79	2.4	0.
time (sec)	N/A	0.194	0.097	0.013	1.34	0.204	2.71	0.22	0.

Problem 1355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	114	160	169	254	128	151	0
normalized size	1	1.	1.46	2.05	2.17	3.26	1.64	1.94	0.
time (sec)	N/A	0.132	0.068	0.01	1.337	0.21	1.955	0.226	0.

Problem 1356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	48	92	108	135	80	93	51
normalized size	1	1.	0.81	1.56	1.83	2.29	1.36	1.58	0.86
time (sec)	N/A	0.089	0.038	0.008	1.343	0.205	1.181	0.222	16.908

Problem 1357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	26	35	51	51	39	32	22
normalized size	1	1.	0.93	1.25	1.82	1.82	1.39	1.14	0.79
time (sec)	N/A	0.014	0.014	0.007	1.348	0.195	0.782	0.216	3.469

Problem 1358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	32	26	16	12
normalized size	1	1.	1.	0.93	1.14	2.29	1.86	1.14	0.86
time (sec)	N/A	0.007	0.004	0.	1.371	0.194	0.595	0.22	1.308

Problem 1359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	67	81	273	327	381	223	68
normalized size	1	1.	0.82	0.99	3.33	3.99	4.65	2.72	0.83
time (sec)	N/A	0.104	0.078	0.014	1.366	0.221	2.207	0.221	20.765

Problem 1360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	97	108	521	668	632	293	97
normalized size	1	1.	0.88	0.98	4.74	6.07	5.75	2.66	0.88
time (sec)	N/A	0.16	0.17	0.017	1.382	0.216	3.494	0.224	33.665

Problem 1361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	128	140	802	1026	881	0	128
normalized size	1	1.	0.9	0.98	5.61	7.17	6.16	0.	0.9
time (sec)	N/A	0.219	0.182	0.02	1.365	0.241	4.956	0.	72.798

Problem 1362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	584	1035	1061	1476	0	976	0
normalized size	1	1.	2.52	4.46	4.57	6.36	0.	4.21	0.
time (sec)	N/A	0.67	0.464	0.029	1.455	0.228	0.	0.224	0.

Problem 1363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	474	845	876	1150	0	784	0
normalized size	1	1.	2.27	4.04	4.19	5.5	0.	3.75	0.
time (sec)	N/A	0.54	0.358	0.019	1.428	0.229	0.	0.22	0.

Problem 1364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	308	672	722	844	0	630	178
normalized size	1	1.	1.59	3.46	3.72	4.35	0.	3.25	0.92
time (sec)	N/A	0.424	0.521	0.015	1.387	0.216	0.	0.22	70.625

Problem 1365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	271	357	537	537	0	498	22
normalized size	1	1.	9.68	12.75	19.18	19.18	0.	17.79	0.79
time (sec)	N/A	0.018	0.173	0.011	1.365	0.204	0.	0.218	4.153

Problem 1366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	205	265	440	440	348	366	46
normalized size	1	1.	3.53	4.57	7.59	7.59	6.	6.31	0.79
time (sec)	N/A	0.04	0.099	0.011	1.362	0.205	65.829	0.222	8.306

Problem 1367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	144	186	333	333	264	248	73
normalized size	1	1.	1.62	2.09	3.74	3.74	2.97	2.79	0.82
time (sec)	N/A	0.066	0.083	0.01	1.382	0.2	16.473	0.222	15.144

Problem 1368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	94	122	246	246	194	154	82
normalized size	1	1.	1.02	1.33	2.67	2.67	2.11	1.67	0.89
time (sec)	N/A	0.14	0.052	0.009	1.359	0.201	6.082	0.219	27.56

Problem 1369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	55	71	177	177	139	82	56
normalized size	1	1.	0.85	1.09	2.72	2.72	2.14	1.26	0.86
time (sec)	N/A	0.095	0.04	0.007	1.353	0.206	2.849	0.221	18.787

Problem 1370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	127	127	100	34	32
normalized size	1	1.	0.71	0.92	3.34	3.34	2.63	0.89	0.84
time (sec)	N/A	0.052	0.014	0.009	1.337	0.2	1.645	0.217	9.836

Problem 1371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	107	85	16	12
normalized size	1	1.	1.	0.93	1.14	7.64	6.07	1.14	0.86
time (sec)	N/A	0.007	0.004	0.002	1.409	0.22	1.116	0.221	1.44

Problem 1372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	196	192	1914	2145	1776	949	0
normalized size	1	1.	0.97	0.95	9.48	10.62	8.79	4.7	0.
time (sec)	N/A	0.344	0.144	0.025	1.548	0.247	19.67	0.228	0.

Problem 1373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	213	223	2539	3056	2334	964	0
normalized size	1	1.	0.92	0.97	10.99	13.23	10.1	4.17	0.
time (sec)	N/A	0.563	0.379	0.031	1.648	0.284	42.647	0.238	0.

Problem 1374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	254	265	3239	4072	2914	1	0
normalized size	1	1.	0.92	0.96	11.74	14.75	10.56	0.	0.
time (sec)	N/A	0.723	0.316	0.031	1.8	0.346	82.557	0.224	0.

Problem 1375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	217	273	350	456	314	458	144
normalized size	1	1.	1.39	1.75	2.24	2.92	2.01	2.94	0.92
time (sec)	N/A	0.162	0.212	0.011	1.358	0.211	1.476	0.223	39.217

Problem 1376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	154	186	244	331	223	327	119
normalized size	1	1.	1.19	1.44	1.89	2.57	1.73	2.53	0.92
time (sec)	N/A	0.127	0.112	0.01	1.354	0.203	1.3	0.227	29.845

Problem 1377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	102	116	159	221	146	216	92
normalized size	1	1.	1.02	1.16	1.59	2.21	1.46	2.16	0.92
time (sec)	N/A	0.101	0.1	0.008	1.35	0.206	1.186	0.22	22.194

Problem 1378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	61	63	92	134	85	126	65
normalized size	1	1.	0.86	0.89	1.3	1.89	1.2	1.77	0.92
time (sec)	N/A	0.07	0.056	0.009	1.344	0.209	1.087	0.215	15.008

Problem 1379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	30	27	45	62	36	55	37
normalized size	1	1.	0.71	0.64	1.07	1.48	0.86	1.31	0.88
time (sec)	N/A	0.044	0.031	0.004	1.349	0.209	1.094	0.215	7.766

Problem 1380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	16	12	16	12
normalized size	1	1.	1.	0.81	1.	1.	0.75	1.	0.75
time (sec)	N/A	0.007	0.005	0.003	1.337	0.209	0.033	0.214	1.371

Problem 1381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	92	0	1	178	84	53
normalized size	1	1.	1.	1.48	0.	0.02	2.87	1.35	0.85
time (sec)	N/A	0.116	0.058	0.017	0.	0.221	3.727	0.219	12.723

Problem 1382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	64	0	1	675	97	56
normalized size	1	1.	1.	0.91	0.	0.01	9.64	1.39	0.8
time (sec)	N/A	0.079	0.074	0.016	0.	0.218	30.589	0.221	13.055

Problem 1383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	99	111	0	1	1658	170	88
normalized size	1	1.	0.9	1.01	0.	0.01	15.07	1.55	0.8
time (sec)	N/A	0.193	0.137	0.019	0.	0.23	90.453	0.223	21.26

Problem 1384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	130	170	0	1	0	279	119
normalized size	1	1.	0.89	1.16	0.	0.01	0.	1.91	0.82
time (sec)	N/A	0.257	0.177	0.018	0.	0.229	0.	0.225	31.27

Problem 1385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	149	248	0	1	0	420	155
normalized size	1	1.	0.82	1.36	0.	0.01	0.	2.31	0.85
time (sec)	N/A	0.318	0.31	0.02	0.	0.233	0.	0.231	43.239

Problem 1386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	171	337	0	1	0	583	187
normalized size	1	1.	0.78	1.55	0.	0.	0.	2.67	0.86
time (sec)	N/A	0.391	0.347	0.026	0.	0.238	0.	0.229	58.684

Problem 1387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	217	273	350	564	763	1	146
normalized size	1	1.	1.37	1.73	2.22	3.57	4.83	0.01	0.92
time (sec)	N/A	0.157	0.252	0.01	1.394	0.213	4.779	0.233	42.473

Problem 1388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	154	186	244	420	559	761	119
normalized size	1	1.	1.19	1.44	1.89	3.26	4.33	5.9	0.92
time (sec)	N/A	0.118	0.145	0.01	1.347	0.207	3.978	0.228	31.313

Problem 1389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	102	116	159	292	386	517	92
normalized size	1	1.	1.02	1.16	1.59	2.92	3.86	5.17	0.92
time (sec)	N/A	0.096	0.128	0.009	1.338	0.206	3.234	0.225	22.021

Problem 1390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	61	63	92	185	240	315	65
normalized size	1	1.	0.86	0.89	1.3	2.61	3.38	4.44	0.92
time (sec)	N/A	0.069	0.07	0.009	1.348	0.201	2.632	0.224	14.626

Problem 1391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	30	27	45	93	146	153	37
normalized size	1	1.	0.71	0.64	1.07	2.21	3.48	3.64	0.88
time (sec)	N/A	0.043	0.037	0.004	1.392	0.203	0.867	0.222	7.494

Problem 1392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	38	12	16	12
normalized size	1	1.	1.	0.81	1.	2.38	0.75	1.	0.75
time (sec)	N/A	0.007	0.007	0.003	1.365	0.198	0.033	0.219	1.334

Problem 1393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	77	167	0	1	201	142	75
normalized size	1	1.	0.9	1.94	0.	0.01	2.34	1.65	0.87
time (sec)	N/A	0.131	0.137	0.01	0.	0.214	7.306	0.223	17.662

Problem 1394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	85	148	0	1	1129	153	73
normalized size	1	1.	1.	1.74	0.	0.01	13.28	1.8	0.86
time (sec)	N/A	0.102	0.145	0.019	0.	0.224	29.854	0.224	18.071

Problem 1395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	90	121	0	1	0	146	87
normalized size	1	1.	0.9	1.21	0.	0.01	0.	1.46	0.87
time (sec)	N/A	0.12	0.111	0.017	0.	0.235	0.	0.233	19.054

Problem 1396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	128	163	0	1	0	250	114
normalized size	1	1.	0.94	1.2	0.	0.01	0.	1.84	0.84
time (sec)	N/A	0.168	0.179	0.02	0.	0.236	0.	0.23	27.952

Problem 1397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	149	222	0	1	0	385	150
normalized size	1	1.	0.87	1.29	0.	0.01	0.	2.24	0.87
time (sec)	N/A	0.212	0.243	0.023	0.	0.24	0.	0.233	40.171

Problem 1398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	171	300	0	1	0	554	184
normalized size	1	1.	0.82	1.44	0.	0.	0.	2.66	0.88
time (sec)	N/A	0.273	0.503	0.024	0.	0.244	0.	0.234	53.869

Problem 1399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	217	273	350	671	1292	1	146
normalized size	1	1.	1.37	1.73	2.22	4.25	8.18	0.01	0.92
time (sec)	N/A	0.154	0.293	0.01	1.379	0.225	7.449	0.242	39.069

Problem 1400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	154	186	244	509	960	1	119
normalized size	1	1.	1.19	1.44	1.89	3.95	7.44	0.01	0.92
time (sec)	N/A	0.118	0.172	0.01	1.372	0.219	6.273	0.235	29.406

Problem 1401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	102	116	159	362	549	1	92
normalized size	1	1.	1.02	1.16	1.59	3.62	5.49	0.01	0.92
time (sec)	N/A	0.096	0.143	0.009	1.373	0.22	6.275	0.232	22.366

Problem 1402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	61	63	92	235	355	585	65
normalized size	1	1.	0.86	0.89	1.3	3.31	5.	8.24	0.92
time (sec)	N/A	0.068	0.082	0.009	1.354	0.219	4.749	0.224	15.743

Problem 1403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	30	27	45	126	194	308	37
normalized size	1	1.	0.71	0.64	1.07	3.	4.62	7.33	0.88
time (sec)	N/A	0.045	0.047	0.005	1.331	0.227	3.067	0.226	8.208

Problem 1404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	53	12	116	12
normalized size	1	1.	1.	0.81	1.	3.31	0.75	7.25	0.75
time (sec)	N/A	0.007	0.008	0.003	1.348	0.2	0.042	0.217	1.396

Problem 1405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	108	263	0	1	240	231	99
normalized size	1	1.	0.96	2.35	0.	0.01	2.14	2.06	0.88
time (sec)	N/A	0.171	0.123	0.012	0.	0.215	12.735	0.222	26.203

Problem 1406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	104	258	0	1	1622	244	97
normalized size	1	1.	0.95	2.35	0.	0.01	14.75	2.22	0.88
time (sec)	N/A	0.145	0.187	0.02	0.	0.222	50.078	0.231	26.201

Problem 1407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	238	0	1	3842	231	105
normalized size	1	1.	1.	2.	0.	0.01	32.29	1.94	0.88
time (sec)	N/A	0.133	0.217	0.022	0.	0.228	121.672	0.233	25.415

Problem 1408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	119	204	0	1	0	217	112
normalized size	1	1.	0.94	1.62	0.	0.01	0.	1.72	0.89
time (sec)	N/A	0.143	0.184	0.02	0.	0.233	0.	0.229	27.067

Problem 1409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	149	246	0	1	0	350	144
normalized size	1	1.	0.92	1.52	0.	0.01	0.	2.16	0.89
time (sec)	N/A	0.209	0.249	0.021	0.	0.236	0.	0.238	39.216

Problem 1410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	171	305	0	1	0	513	173
normalized size	1	1.	0.86	1.54	0.	0.01	0.	2.59	0.87
time (sec)	N/A	0.265	0.337	0.026	0.	0.227	0.	0.242	53.962

Problem 1411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	30	39	49	105	39	31
normalized size	1	1.	1.	0.86	1.11	1.4	3.	1.11	0.89
time (sec)	N/A	0.029	0.026	0.013	1.567	0.209	2.379	0.219	4.094

Problem 1412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	42	40	58	65	168	50	46
normalized size	1	1.	0.75	0.71	1.04	1.16	3.	0.89	0.82
time (sec)	N/A	0.04	0.037	0.011	1.522	0.217	4.043	0.216	5.447

Problem 1413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	216	273	382	352	728	455	143
normalized size	1	1.	1.4	1.77	2.48	2.29	4.73	2.95	0.93
time (sec)	N/A	0.149	0.215	0.01	1.354	0.213	25.122	0.222	39.513

Problem 1414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	153	186	275	246	532	324	117
normalized size	1	1.	1.2	1.46	2.17	1.94	4.19	2.55	0.92
time (sec)	N/A	0.121	0.108	0.009	1.397	0.213	17.003	0.219	29.633

Problem 1415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	101	116	185	155	366	213	88
normalized size	1	1.	1.05	1.21	1.93	1.61	3.81	2.22	0.92
time (sec)	N/A	0.097	0.076	0.009	1.422	0.202	10.369	0.221	21.42

Problem 1416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	60	63	111	86	231	123	63
normalized size	1	1.	0.87	0.91	1.61	1.25	3.35	1.78	0.91
time (sec)	N/A	0.066	0.048	0.008	1.345	0.207	5.911	0.217	14.886

Problem 1417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	29	26	53	34	121	53	36
normalized size	1	1.	0.72	0.65	1.32	0.85	3.02	1.32	0.9
time (sec)	N/A	0.044	0.022	0.005	1.353	0.222	2.061	0.217	7.894

Problem 1418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	10	16	10
normalized size	1	1.	1.	0.93	1.14	1.14	0.71	1.14	0.71
time (sec)	N/A	0.007	0.003	0.003	1.381	0.218	0.034	0.219	1.367

Problem 1419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	37	0	1	189	51	41
normalized size	1	1.	1.	0.79	0.	0.02	4.02	1.09	0.87
time (sec)	N/A	0.061	0.035	0.009	0.	0.228	3.186	0.218	8.756

Problem 1420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	77	77	0	1	0	117	61
normalized size	1	1.	1.01	1.01	0.	0.01	0.	1.54	0.8
time (sec)	N/A	0.085	0.126	0.012	0.	0.233	0.	0.225	13.523

Problem 1421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	96	115	0	1	0	200	97
normalized size	1	1.	0.84	1.01	0.	0.01	0.	1.75	0.85
time (sec)	N/A	0.115	0.207	0.011	0.	0.22	0.	0.22	21.063

Problem 1422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	128	147	0	1	0	312	128
normalized size	1	1.	0.87	1.	0.	0.01	0.	2.12	0.87
time (sec)	N/A	0.159	0.2	0.011	0.	0.222	0.	0.222	31.441

Problem 1423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	145	179	0	1	0	447	158
normalized size	1	1.	0.81	0.99	0.	0.01	0.	2.48	0.88
time (sec)	N/A	0.199	0.461	0.011	0.	0.226	0.	0.22	44.435

Problem 1424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	214	273	360	352	0	473	141
normalized size	1	1.	1.41	1.8	2.37	2.32	0.	3.11	0.93
time (sec)	N/A	0.155	0.179	0.01	1.364	0.201	0.	0.227	39.307

Problem 1425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	151	186	255	246	0	324	114
normalized size	1	1.	1.23	1.51	2.07	2.	0.	2.63	0.93
time (sec)	N/A	0.116	0.152	0.009	1.351	0.204	0.	0.222	29.735

Problem 1426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	99	116	169	154	0	205	87
normalized size	1	1.	1.05	1.23	1.8	1.64	0.	2.18	0.93
time (sec)	N/A	0.096	0.085	0.009	1.344	0.209	0.	0.218	21.989

Problem 1427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	59	63	101	85	0	113	61
normalized size	1	1.	0.88	0.94	1.51	1.27	0.	1.69	0.91
time (sec)	N/A	0.067	0.054	0.007	1.372	0.204	0.	0.219	15.005

Problem 1428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	26	50	34	60	46	36
normalized size	1	1.	0.71	0.68	1.32	0.89	1.58	1.21	0.95
time (sec)	N/A	0.043	0.025	0.006	1.339	0.203	0.983	0.217	7.97

Problem 1429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	12	16	12
normalized size	1	1.	1.	0.93	1.14	1.14	0.86	1.14	0.86
time (sec)	N/A	0.007	0.004	0.003	1.347	0.207	0.039	0.217	1.353

Problem 1430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	69	68	0	1	0	93	60
normalized size	1	1.	1.	0.99	0.	0.01	0.	1.35	0.87
time (sec)	N/A	0.092	0.097	0.013	0.	0.231	0.	0.22	13.47

Problem 1431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	90	101	0	1	0	193	85
normalized size	1	1.	0.91	1.02	0.	0.01	0.	1.95	0.86
time (sec)	N/A	0.113	0.217	0.023	0.	0.225	0.	0.225	20.288

Problem 1432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	126	179	0	1	0	316	122
normalized size	1	1.	0.9	1.28	0.	0.01	0.	2.26	0.87
time (sec)	N/A	0.148	0.323	0.025	0.	0.228	0.	0.221	30.157

Problem 1433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	141	292	0	1	0	440	153
normalized size	1	1.	0.82	1.69	0.	0.01	0.	2.54	0.88
time (sec)	N/A	0.19	0.488	0.029	0.	0.238	0.	0.223	42.106

Problem 1434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	157	273	358	367	0	452	141
normalized size	1	1.	1.03	1.8	2.36	2.41	0.	2.97	0.93
time (sec)	N/A	0.148	0.284	0.009	1.358	0.207	0.	0.23	38.031

Problem 1435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	110	186	252	259	0	309	116
normalized size	1	1.	0.88	1.49	2.02	2.07	0.	2.47	0.93
time (sec)	N/A	0.116	0.22	0.01	1.368	0.202	0.	0.221	28.96

Problem 1436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	74	115	165	169	461	190	88
normalized size	1	1.	0.77	1.2	1.72	1.76	4.8	1.98	0.92
time (sec)	N/A	0.092	0.131	0.007	1.342	0.207	2.12	0.223	20.613

Problem 1437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	64	62	97	100	265	97	61
normalized size	1	1.	0.96	0.93	1.45	1.49	3.96	1.45	0.91
time (sec)	N/A	0.067	0.059	0.007	1.337	0.205	1.908	0.221	14.127

Problem 1438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	29	26	38	47	124	38	39
normalized size	1	1.	0.72	0.65	0.95	1.18	3.1	0.95	0.98
time (sec)	N/A	0.043	0.028	0.004	1.348	0.203	1.719	0.216	7.326

Problem 1439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	27	14	16	14
normalized size	1	1.	1.	0.81	1.	1.69	0.88	1.	0.88
time (sec)	N/A	0.007	0.005	0.003	1.344	0.206	0.047	0.22	1.294

Problem 1440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	85	90	0	1	0	153	80
normalized size	1	1.	0.91	0.97	0.	0.01	0.	1.65	0.86
time (sec)	N/A	0.114	0.309	0.023	0.	0.22	0.	0.221	18.91

Problem 1441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	125	125	0	1	0	292	109
normalized size	1	1.	1.01	1.01	0.	0.01	0.	2.35	0.88
time (sec)	N/A	0.15	0.242	0.027	0.	0.227	0.	0.22	27.567

Problem 1442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-2)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	143	206	0	1	0	402	148
normalized size	1	1.	0.86	1.23	0.	0.01	0.	2.41	0.89
time (sec)	N/A	0.195	0.475	0.027	0.	0.237	0.	0.224	39.539

Problem 1443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	167	319	0	1	0	583	178
normalized size	1	1.	0.84	1.6	0.	0.	0.	2.92	0.89
time (sec)	N/A	0.377	0.821	0.032	0.	0.246	0.	0.227	51.935

Problem 1444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	25	23	24	128	66	1	19
normalized size	1	1.	1.14	1.05	1.09	5.82	3.	0.05	0.86
time (sec)	N/A	0.015	0.031	0.003	1.351	0.204	2.05	0.232	4.261

Problem 1445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	25	23	24	101	66	621	19
normalized size	1	1.	1.14	1.05	1.09	4.59	3.	28.23	0.86
time (sec)	N/A	0.014	0.017	0.003	1.321	0.21	1.534	0.223	4.389

Problem 1446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	25	23	505	90	83	621	19
normalized size	1	1.	1.14	1.05	22.95	4.09	3.77	28.23	0.86
time (sec)	N/A	0.014	0.02	0.003	1.356	0.216	2.043	0.227	4.402

Problem 1447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	25	23	24	76	83	440	19
normalized size	1	1.	1.14	1.05	1.09	3.45	3.77	20.	0.86
time (sec)	N/A	0.014	0.022	0.003	1.327	0.221	2.054	0.22	4.353

Problem 1448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	25	23	24	61	83	290	19
normalized size	1	1.	1.14	1.05	1.09	2.77	3.77	13.18	0.86
time (sec)	N/A	0.013	0.021	0.004	1.333	0.225	2.163	0.226	4.333

Problem 1449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	25	23	24	46	80	166	19
normalized size	1	1.	1.14	1.05	1.09	2.09	3.64	7.55	0.86
time (sec)	N/A	0.013	0.019	0.003	1.329	0.21	5.386	0.215	4.377

Problem 1450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	26	23	24	31	53	73	19
normalized size	1	1.	1.18	1.05	1.09	1.41	2.41	3.32	0.86
time (sec)	N/A	0.013	0.021	0.004	1.323	0.202	11.655	0.225	4.365

Problem 1451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	24	23	24	24	29	24	17
normalized size	1	1.	1.2	1.15	1.2	1.2	1.45	1.2	0.85
time (sec)	N/A	0.013	0.012	0.005	1.339	0.206	22.155	0.227	4.294

Problem 1452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	24	23	24	24	48	24	19
normalized size	1	1.	1.2	1.15	1.2	1.2	2.4	1.2	0.95
time (sec)	N/A	0.013	0.017	0.004	1.334	0.205	59.995	0.219	4.269

Problem 1453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	31	22	28	28	27	30	10
normalized size	1	1.	2.21	1.57	2.	2.	1.93	2.14	0.71
time (sec)	N/A	0.014	0.006	0.011	1.329	0.207	0.748	0.22	2.404

Problem 1454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	19	24	24	63	24	24
normalized size	1	1.	1.	0.76	0.96	0.96	2.52	0.96	0.96
time (sec)	N/A	0.025	0.02	0.009	1.487	0.221	1.645	0.213	3.003

Problem 1455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	113	84	116	116	172	0	75
normalized size	1	1.	1.35	1.	1.38	1.38	2.05	0.	0.89
time (sec)	N/A	0.091	0.059	0.01	1.511	0.234	3.052	0.	5.432

Problem 1456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	18	15	26	26	119	35	22
normalized size	1	1.	0.67	0.56	0.96	0.96	4.41	1.3	0.81
time (sec)	N/A	0.018	0.011	0.003	1.335	0.218	1.537	0.213	3.428

Problem 1457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	23	20	38	32	146	51	27
normalized size	1	1.	0.61	0.53	1.	0.84	3.84	1.34	0.71
time (sec)	N/A	0.025	0.014	0.004	1.341	0.218	2.105	0.22	3.846

Problem 1458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	47	161	0	234	0	265	124
normalized size	1	1.	0.34	1.16	0.	1.68	0.	1.91	0.89
time (sec)	N/A	0.226	0.043	0.012	0.	0.222	0.	0.249	12.014

Problem 1459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	46	160	0	321	0	279	124
normalized size	1	1.	0.33	1.14	0.	2.29	0.	1.99	0.89
time (sec)	N/A	0.202	0.032	0.007	0.	0.217	0.	0.251	12.927

Problem 1460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	234	858	0	1	0	1	201
normalized size	1	1.	1.02	3.73	0.	0.	0.	0.	0.87
time (sec)	N/A	0.359	0.234	0.016	0.	0.254	0.	0.309	47.054

Problem 1461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	180	645	0	1	0	842	167
normalized size	1	1.	0.94	3.36	0.	0.01	0.	4.39	0.87
time (sec)	N/A	0.248	0.157	0.011	0.	0.241	0.	0.284	34.03

Problem 1462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	141	460	0	1	0	456	129
normalized size	1	1.	0.92	2.99	0.	0.01	0.	2.96	0.84
time (sec)	N/A	0.175	0.128	0.01	0.	0.241	0.	0.263	23.935

Problem 1463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	110	305	0	1	0	189	97
normalized size	1	1.	0.95	2.63	0.	0.01	0.	1.63	0.84
time (sec)	N/A	0.122	0.066	0.008	0.	0.241	0.	0.236	16.11

Problem 1464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	88	107	0	1	0	126	63
normalized size	1	1.	1.22	1.49	0.	0.01	0.	1.75	0.88
time (sec)	N/A	0.078	0.063	0.009	0.	0.262	0.	0.232	10.008

Problem 1465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	78	0	0	1	0	4	60
normalized size	1	1.	1.18	0.	0.	0.02	0.	0.06	0.91
time (sec)	N/A	0.068	0.055	0.043	0.	0.292	0.	0.547	10.204

Problem 1466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	88	0	205	26
normalized size	1	1.	1.	0.84	0.	2.75	0.	6.41	0.81
time (sec)	N/A	0.022	0.038	0.007	0.	0.263	0.	0.242	3.571

Problem 1467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	236	0	603	56
normalized size	1	1.	0.7	0.82	0.	3.58	0.	9.14	0.85
time (sec)	N/A	0.047	0.065	0.008	0.	0.344	0.	0.256	7.436

Problem 1468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	455	0	930	88
normalized size	1	1.	0.76	1.04	0.	4.5	0.	9.21	0.87
time (sec)	N/A	0.075	0.106	0.01	0.	0.697	0.	0.285	13.211

Problem 1469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	718	0	1	121
normalized size	1	1.	0.87	1.26	0.	5.28	0.	0.01	0.89
time (sec)	N/A	0.112	0.174	0.014	0.	2.134	0.	0.318	21.215

Problem 1470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	167	256	0	1054	0	1	153
normalized size	1	1.	0.98	1.5	0.	6.16	0.	0.01	0.89
time (sec)	N/A	0.159	0.22	0.017	0.	5.536	0.	0.364	30.567

Problem 1471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	233	853	0	1	0	1	197
normalized size	1	1.	1.03	3.76	0.	0.	0.	0.	0.87
time (sec)	N/A	0.306	0.243	0.011	0.	0.255	0.	0.354	46.716

Problem 1472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	180	640	0	1	0	1	167
normalized size	1	1.	0.95	3.39	0.	0.01	0.	0.01	0.88
time (sec)	N/A	0.228	0.194	0.01	0.	0.241	0.	0.308	34.837

Problem 1473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	140	459	0	1	0	458	129
normalized size	1	1.	0.93	3.04	0.	0.01	0.	3.03	0.85
time (sec)	N/A	0.161	0.115	0.01	0.	0.23	0.	0.259	23.896

Problem 1474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	107	308	0	1	0	327	100
normalized size	1	1.	0.95	2.73	0.	0.01	0.	2.89	0.88
time (sec)	N/A	0.117	0.069	0.009	0.	0.249	0.	0.255	15.98

Problem 1475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	101	0	0	1	0	4	90
normalized size	1	1.	1.03	0.	0.	0.01	0.	0.04	0.92
time (sec)	N/A	0.114	0.163	0.055	0.	0.315	0.	0.551	14.662

Problem 1476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	93	0	0	1	0	4	85
normalized size	1	1.	1.01	0.	0.	0.01	0.	0.04	0.92
time (sec)	N/A	0.098	0.168	0.053	0.	0.374	0.	0.579	14.689

Problem 1477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	140	0	505	26
normalized size	1	1.	1.	0.84	0.	4.38	0.	15.78	0.81
time (sec)	N/A	0.022	0.071	0.007	0.	0.338	0.	0.31	3.888

Problem 1478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	317	0	1	56
normalized size	1	1.	0.7	0.82	0.	4.8	0.	0.02	0.85
time (sec)	N/A	0.049	0.098	0.008	0.	0.687	0.	0.357	8.095

Problem 1479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	575	0	1	88
normalized size	1	1.	0.76	1.04	0.	5.69	0.	0.01	0.87
time (sec)	N/A	0.081	0.157	0.01	0.	2.269	0.	0.425	14.168

Problem 1480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	876	0	1	121
normalized size	1	1.	0.87	1.26	0.	6.44	0.	0.01	0.89
time (sec)	N/A	0.113	0.216	0.013	0.	5.715	0.	0.501	22.722

Problem 1481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	300	1089	0	1	0	1	233
normalized size	1	1.	1.15	4.16	0.	0.	0.	0.	0.89
time (sec)	N/A	0.38	0.369	0.009	0.	0.293	0.	0.44	69.237

Problem 1482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	233	848	0	1	0	1	202
normalized size	1	1.	1.04	3.79	0.	0.	0.	0.	0.9
time (sec)	N/A	0.292	0.242	0.012	0.	0.285	0.	0.354	52.682

Problem 1483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	181	641	0	1	0	852	167
normalized size	1	1.	0.97	3.45	0.	0.01	0.	4.58	0.9
time (sec)	N/A	0.223	0.163	0.012	0.	0.256	0.	0.29	39.348

Problem 1484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	137	465	0	1	0	614	133
normalized size	1	1.	0.93	3.14	0.	0.01	0.	4.15	0.9
time (sec)	N/A	0.169	0.138	0.01	0.	0.268	0.	0.282	27.351

Problem 1485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	138	0	0	1	0	4	128
normalized size	1	1.	1.	0.	0.	0.01	0.	0.03	0.93
time (sec)	N/A	0.16	0.168	0.046	0.	0.395	0.	0.627	25.977

Problem 1486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	134	0	0	1	0	4	119
normalized size	1	1.	1.05	0.	0.	0.01	0.	0.03	0.93
time (sec)	N/A	0.166	0.176	0.046	0.	0.494	0.	0.599	23.35

Problem 1487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	121	0	0	1	0	4	112
normalized size	1	1.	1.01	0.	0.	0.01	0.	0.03	0.93
time (sec)	N/A	0.137	0.229	0.052	0.	0.595	0.	0.639	21.736

Problem 1488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	186	0	953	26
normalized size	1	1.	1.	0.84	0.	5.81	0.	29.78	0.81
time (sec)	N/A	0.022	0.115	0.007	0.	0.671	0.	0.436	3.917

Problem 1489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	398	0	1	56
normalized size	1	1.	0.7	0.82	0.	6.03	0.	0.02	0.85
time (sec)	N/A	0.049	0.146	0.007	0.	2.126	0.	0.538	8.149

Problem 1490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	693	0	1	88
normalized size	1	1.	0.76	1.04	0.	6.86	0.	0.01	0.87
time (sec)	N/A	0.08	0.218	0.01	0.	5.697	0.	0.666	14.611

Problem 1491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	1033	0	1	121
normalized size	1	1.	0.87	1.26	0.	7.6	0.	0.01	0.89
time (sec)	N/A	0.111	0.264	0.015	0.	13.775	0.	0.824	22.339

Problem 1492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	177	650	0	1	0	362	165
normalized size	1	1.	0.97	3.55	0.	0.01	0.	1.98	0.9
time (sec)	N/A	0.249	0.215	0.011	0.	0.272	0.	0.248	34.333

Problem 1493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	138	465	0	1	0	267	133
normalized size	1	1.	0.93	3.14	0.	0.01	0.	1.8	0.9
time (sec)	N/A	0.176	0.128	0.01	0.	0.249	0.	0.236	25.913

Problem 1494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	107	308	0	1	0	188	100
normalized size	1	1.	0.95	2.73	0.	0.01	0.	1.66	0.88
time (sec)	N/A	0.122	0.076	0.009	0.	0.238	0.	0.24	17.212

Problem 1495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	88	107	0	1	0	131	63
normalized size	1	1.	1.21	1.47	0.	0.01	0.	1.79	0.86
time (sec)	N/A	0.078	0.07	0.009	0.	0.227	0.	0.234	10.992

Problem 1496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	54	76	0	1	0	68	39
normalized size	1	1.	1.29	1.81	0.	0.02	0.	1.62	0.93
time (sec)	N/A	0.042	0.028	0.007	0.	0.219	0.	0.227	6.891

Problem 1497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	89	24
normalized size	1	1.	1.	0.9	0.	1.9	0.	2.97	0.8
time (sec)	N/A	0.024	0.033	0.007	0.	0.224	0.	0.229	3.787

Problem 1498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	159	0	163	56
normalized size	1	1.	0.7	0.82	0.	2.41	0.	2.47	0.85
time (sec)	N/A	0.05	0.06	0.009	0.	0.25	0.	0.232	7.92

Problem 1499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	75	105	0	339	0	306	88
normalized size	1	1.	0.74	1.04	0.	3.36	0.	3.03	0.87
time (sec)	N/A	0.079	0.091	0.01	0.	0.343	0.	0.239	14.468

Problem 1500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	111	171	0	566	0	521	121
normalized size	1	1.	0.82	1.26	0.	4.16	0.	3.83	0.89
time (sec)	N/A	0.115	0.131	0.013	0.	0.677	0.	0.256	22.814

Problem 1501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	117	256	0	861	0	805	153
normalized size	1	1.	0.68	1.5	0.	5.04	0.	4.71	0.89
time (sec)	N/A	0.153	0.333	0.014	0.	2.168	0.	0.285	34.168

Problem 1502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	165	0	0	1	0	423	162
normalized size	1	1.	0.95	0.	0.	0.01	0.	2.43	0.93
time (sec)	N/A	0.228	0.337	0.048	0.	0.566	0.	0.261	33.588

Problem 1503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	138	0	0	1	0	302	128
normalized size	1	1.	1.	0.	0.	0.01	0.	2.19	0.93
time (sec)	N/A	0.16	0.163	0.095	0.	0.376	0.	0.25	23.693

Problem 1504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	101	0	0	1	0	207	90
normalized size	1	1.	1.03	0.	0.	0.01	0.	2.11	0.92
time (sec)	N/A	0.11	0.231	0.066	0.	0.304	0.	0.246	15.382

Problem 1505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	78	0	0	1	0	130	60
normalized size	1	1.	1.18	0.	0.	0.02	0.	1.97	0.91
time (sec)	N/A	0.068	0.056	0.044	0.	0.278	0.	0.248	10.792

Problem 1506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	63	26
normalized size	1	1.	1.	0.9	0.	1.9	0.	2.1	0.87
time (sec)	N/A	0.022	0.034	0.007	0.	0.224	0.	0.218	3.661

Problem 1507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	42	52	0	169	0	192	53
normalized size	1	1.	0.68	0.84	0.	2.73	0.	3.1	0.85
time (sec)	N/A	0.052	0.063	0.006	0.	0.274	0.	0.237	7.791

Problem 1508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	75	105	0	369	0	497	88
normalized size	1	1.	0.74	1.04	0.	3.65	0.	4.92	0.87
time (sec)	N/A	0.08	0.113	0.01	0.	0.361	0.	0.301	13.972

Problem 1509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	112	170	0	614	0	1121	121
normalized size	1	1.	0.82	1.25	0.	4.51	0.	8.24	0.89
time (sec)	N/A	0.115	0.166	0.013	0.	0.788	0.	0.438	22.723

Problem 1510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	120	256	0	930	0	1	155
normalized size	1	1.	0.7	1.5	0.	5.44	0.	0.01	0.91
time (sec)	N/A	0.153	0.388	0.015	0.	1.892	0.	0.711	32.689

Problem 1511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	143	356	0	1289	0	1	189
normalized size	1	1.	0.69	1.73	0.	6.26	0.	0.	0.92
time (sec)	N/A	0.2	0.368	0.017	0.	6.568	0.	1.229	42.924

Problem 1512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	231	0	0	1	0	675	190
normalized size	1	1.	1.13	0.	0.	0.	0.	3.31	0.93
time (sec)	N/A	0.292	0.459	0.057	0.	1.263	0.	0.298	42.42

Problem 1513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	159	0	0	1	0	513	158
normalized size	1	1.	0.94	0.	0.	0.01	0.	3.02	0.93
time (sec)	N/A	0.213	0.275	0.047	0.	0.696	0.	0.274	29.95

Problem 1514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	136	0	0	1	0	373	119
normalized size	1	1.	1.06	0.	0.	0.01	0.	2.91	0.93
time (sec)	N/A	0.147	0.186	0.046	0.	0.498	0.	0.26	19.96

Problem 1515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	93	0	0	1	0	296	85
normalized size	1	1.	1.01	0.	0.	0.01	0.	3.22	0.92
time (sec)	N/A	0.097	0.174	0.063	0.	0.378	0.	0.251	14.451

Problem 1516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	88	0	90	27
normalized size	1	1.	1.	0.84	0.	2.75	0.	2.81	0.84
time (sec)	N/A	0.021	0.038	0.006	0.	0.251	0.	0.235	3.602

Problem 1517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	53	0	159	0	173	56
normalized size	1	1.	0.7	0.8	0.	2.41	0.	2.62	0.85
time (sec)	N/A	0.051	0.057	0.009	0.	0.261	0.	0.226	7.341

Problem 1518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	78	104	0	369	0	393	87
normalized size	1	1.	0.8	1.06	0.	3.77	0.	4.01	0.89
time (sec)	N/A	0.084	0.118	0.01	0.	0.362	0.	0.252	12.868

Problem 1519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	118	169	0	603	0	718	121
normalized size	1	1.	0.87	1.25	0.	4.47	0.	5.32	0.9
time (sec)	N/A	0.118	0.163	0.012	0.	0.731	0.	0.407	21.16

Problem 1520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	124	256	0	965	0	1	155
normalized size	1	1.	0.72	1.49	0.	5.61	0.	0.01	0.9
time (sec)	N/A	0.159	0.385	0.014	0.	2.1	0.	0.826	32.766

Problem 1521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	149	356	0	1349	0	1	190
normalized size	1	1.	0.72	1.72	0.	6.52	0.	0.	0.92
time (sec)	N/A	0.204	0.571	0.019	0.	6.735	0.	1.712	44.885

Problem 1522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	86	0	42	19	34	14
normalized size	1	1.	1.	4.53	0.	2.21	1.	1.79	0.74
time (sec)	N/A	0.027	0.011	0.012	0.	0.227	3.241	0.332	6.967

Problem 1523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	66	0	36	0	32	14
normalized size	1	1.	1.	3.47	0.	1.89	0.	1.68	0.74
time (sec)	N/A	0.024	0.012	0.013	0.	0.232	0.	0.267	4.56

Problem 1524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	66	0	36	0	32	14
normalized size	1	1.	1.	3.47	0.	1.89	0.	1.68	0.74
time (sec)	N/A	0.024	0.012	0.014	0.	0.219	0.	0.261	4.439

Problem 1525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	34	60	0	34	15	30	12
normalized size	1	1.	2.	3.53	0.	2.	0.88	1.76	0.71
time (sec)	N/A	0.017	0.02	0.01	0.	0.215	2.171	0.255	3.583

Problem 1526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	64	0	36	0	32	14
normalized size	1	1.	1.	3.37	0.	1.89	0.	1.68	0.74
time (sec)	N/A	0.024	0.012	0.012	0.	0.222	0.	0.273	4.436

Problem 1527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	19	57	43	35	75	32	7
normalized size	1	1.	1.73	5.18	3.91	3.18	6.82	2.91	0.64
time (sec)	N/A	0.018	0.011	0.009	1.365	0.222	4.788	0.237	3.624

Problem 1528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	19	66	0	36	0	32	20
normalized size	1	1.	1.	3.47	0.	1.89	0.	1.68	1.05
time (sec)	N/A	0.024	0.011	0.012	0.	0.225	0.	0.259	5.236

Problem 1529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	66	0	38	0	32	12
normalized size	1	1.	1.	4.4	0.	2.53	0.	2.13	0.8
time (sec)	N/A	0.022	0.01	0.01	0.	0.224	0.	0.266	4.454

Problem 1530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	14	14	7	15	7
normalized size	1	1.	1.	1.1	1.4	1.4	0.7	1.5	0.7
time (sec)	N/A	0.007	0.001	0.002	1.39	0.212	0.034	0.215	1.354

Problem 1531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	66	0	38	0	32	12
normalized size	1	1.	1.	4.4	0.	2.53	0.	2.13	0.8
time (sec)	N/A	0.022	0.01	0.009	0.	0.205	0.	0.271	4.896

Problem 1532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	36	58	0	34	20	30	17
normalized size	1	1.	1.89	3.05	0.	1.79	1.05	1.58	0.89
time (sec)	N/A	0.02	0.019	0.007	0.	0.204	2.217	0.257	3.607

Problem 1533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	65	0	38	0	32	19
normalized size	1	1.	1.	3.1	0.	1.81	0.	1.52	0.9
time (sec)	N/A	0.025	0.01	0.01	0.	0.222	0.	0.263	4.499

Problem 1534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	19	57	43	35	75	32	7
normalized size	1	1.	1.73	5.18	3.91	3.18	6.82	2.91	0.64
time (sec)	N/A	0.017	0.007	0.	1.545	0.233	4.979	0.239	3.553

Problem 1535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	66	0	38	0	32	19
normalized size	1	1.	1.	3.14	0.	1.81	0.	1.52	0.9
time (sec)	N/A	0.025	0.01	0.009	0.	0.228	0.	0.264	4.625

Problem 1536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	21	65	0	38	0	24	27
normalized size	1	1.	1.31	4.06	0.	2.38	0.	1.5	1.69
time (sec)	N/A	0.039	0.027	0.013	0.	0.223	0.	0.217	6.212

Problem 1537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	56	24	42	76	20	7
normalized size	1	1.	1.	5.09	2.18	3.82	6.91	1.82	0.64
time (sec)	N/A	0.021	0.012	0.01	1.541	0.21	4.848	0.216	5.314

Problem 1538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	21	66	0	38	0	24	29
normalized size	1	1.	1.31	4.12	0.	2.38	0.	1.5	1.81
time (sec)	N/A	0.039	0.026	0.013	0.	0.216	0.	0.222	6.34

Problem 1539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	51	58	0	35	24	24	7
normalized size	1	1.	5.1	5.8	0.	3.5	2.4	2.4	0.7
time (sec)	N/A	0.027	0.025	0.008	0.	0.213	2.247	0.214	5.441

Problem 1540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	49	66	0	38	0	18	32
normalized size	1	1.	4.45	6.	0.	3.45	0.	1.64	2.91
time (sec)	N/A	0.033	0.026	0.011	0.	0.215	0.	0.219	6.05

Problem 1541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	28	26	22	1	53	16	26
normalized size	1	1.	0.97	0.9	0.76	0.03	1.83	0.55	0.9
time (sec)	N/A	0.014	0.014	0.004	1.414	0.22	2.645	0.212	3.689

Problem 1542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	33	66	0	38	0	20	22
normalized size	1	1.	1.27	2.54	0.	1.46	0.	0.77	0.85
time (sec)	N/A	0.033	0.013	0.013	0.	0.215	0.	0.217	4.589

Problem 1543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	70	0	41	0	35	14
normalized size	1	1.	1.	4.38	0.	2.56	0.	2.19	0.88
time (sec)	N/A	0.026	0.012	0.008	0.	0.208	0.	0.273	6.876

Problem 1544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	12	13	15	15	8	16	8
normalized size	1	1.	1.	1.08	1.25	1.25	0.67	1.33	0.67
time (sec)	N/A	0.007	0.001	0.001	1.381	0.198	0.04	0.218	1.359

Problem 1545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	70	0	41	0	35	14
normalized size	1	1.	1.	4.38	0.	2.56	0.	2.19	0.88
time (sec)	N/A	0.026	0.011	0.01	0.	0.202	0.	0.265	6.902

Problem 1546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	37	64	0	36	53	32	20
normalized size	1	1.	1.85	3.2	0.	1.8	2.65	1.6	1.
time (sec)	N/A	0.021	0.017	0.009	0.	0.202	2.324	0.263	5.341

Problem 1547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	70	0	41	0	35	22
normalized size	1	1.	1.	3.18	0.	1.86	0.	1.59	1.
time (sec)	N/A	0.03	0.012	0.01	0.	0.204	0.	0.266	8.205

Problem 1548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	20	61	43	38	78	35	10
normalized size	1	1.	1.67	5.08	3.58	3.17	6.5	2.92	0.83
time (sec)	N/A	0.02	0.011	0.007	1.353	0.204	5.029	0.236	5.128

Problem 1549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	69	0	41	0	35	22
normalized size	1	1.	1.	3.14	0.	1.86	0.	1.59	1.
time (sec)	N/A	0.029	0.011	0.009	0.	0.203	0.	0.263	7.741

Problem 1550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	24	57	43	35	75	32	7
normalized size	1	1.	2.18	5.18	3.91	3.18	6.82	2.91	0.64
time (sec)	N/A	0.018	0.012	0.01	1.344	0.203	4.805	0.242	4.193

Problem 1551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	51	100	0	1	0	84	44
normalized size	1	1.	0.98	1.92	0.	0.02	0.	1.62	0.85
time (sec)	N/A	0.061	0.044	0.021	0.	0.224	0.	0.213	7.982

Problem 1552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	24	48	57	35	44	31	20
normalized size	1	1.	1.09	2.18	2.59	1.59	2.	1.41	0.91
time (sec)	N/A	0.016	0.015	0.009	1.494	0.213	1.7	0.211	2.623

Problem 1553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	26	57	38	65	58	0	22
normalized size	1	1.	1.	2.19	1.46	2.5	2.23	0.	0.85
time (sec)	N/A	0.026	0.023	0.01	1.492	0.213	1.782	0.	4.054

Problem 1554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	54	76	0	1	0	68	39
normalized size	1	1.	1.29	1.81	0.	0.02	0.	1.62	0.93
time (sec)	N/A	0.043	0.043	0.	0.	0.219	0.	0.221	6.836

Problem 1555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	45	118	0	1	0	90	44
normalized size	1	1.	0.87	2.27	0.	0.02	0.	1.73	0.85
time (sec)	N/A	0.062	0.052	0.046	0.	0.226	0.	0.219	7.337

Problem 1556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	38	27	19	19	26	11	5
normalized size	1	1.	3.8	2.7	1.9	1.9	2.6	1.1	0.5
time (sec)	N/A	0.019	0.016	0.009	1.498	0.209	1.654	0.218	2.674

Problem 1557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	31	28	28	44	18	17
normalized size	1	1.	1.	1.55	1.4	1.4	2.2	0.9	0.85
time (sec)	N/A	0.019	0.009	0.008	1.505	0.209	1.708	0.218	2.565

Problem 1558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	27	39	15	55	58	28	22
normalized size	1	1.	1.04	1.5	0.58	2.12	2.23	1.08	0.85
time (sec)	N/A	0.028	0.024	0.01	1.49	0.206	1.704	0.216	3.681

Problem 1559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	B	F(-2)	A	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	64	84	0	1	0	73	39
normalized size	1	1.	1.49	1.95	0.	0.02	0.	1.7	0.91
time (sec)	N/A	0.045	0.111	0.015	0.	0.219	0.	0.229	6.814

Problem 1560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	457	142	0	0	0	0	0	389
normalized size	1	1.	0.31	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	1.116	0.286	0.063	0.	0.	0.	0.	53.585

Problem 1561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	419	419	110	0	0	0	0	0	355
normalized size	1	1.	0.26	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.705	0.192	0.042	0.	0.	0.	0.	41.78

Problem 1562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	93	0	0	0	0	0	321
normalized size	1	1.	0.24	0.	0.	0.	0.	0.	0.84
time (sec)	N/A	0.554	0.155	0.043	0.	0.	0.	0.	29.26

Problem 1563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	366	366	74	0	0	0	0	0	311
normalized size	1	1.	0.2	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.522	0.092	0.078	0.	0.	0.	0.	29.192

Problem 1564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	104	0	0	0	0	0	352
normalized size	1	1.	0.25	0.	0.	0.	0.	0.	0.84
time (sec)	N/A	0.676	0.194	0.107	0.	0.	0.	0.	41.567

Problem 1565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	457	140	0	0	0	0	0	389
normalized size	1	1.	0.31	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.769	0.342	0.085	0.	0.	0.	0.	56.298

Problem 1566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	839	839	108	0	0	0	0	0	728
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	1.834	0.225	0.058	0.	0.	0.	0.	112.794

Problem 1567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	804	804	77	0	0	0	0	0	694
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	1.544	0.186	0.036	0.	0.	0.	0.	86.459

Problem 1568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	762	762	73	0	0	0	0	0	654
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	1.28	0.066	0.082	0.	0.	0.	0.	64.166

Problem 1569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	796	796	83	0	0	0	0	0	685
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	1.515	0.107	0.08	0.	0.	0.	0.	83.546

Problem 1570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	842	842	105	0	0	0	0	0	729
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	1.795	0.248	0.072	0.	0.	0.	0.	107.233

Problem 1571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	416	416	108	0	0	0	0	0	355
normalized size	1	1.	0.26	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.769	0.202	0.045	0.	0.	0.	0.	39.387

Problem 1572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	77	0	0	0	0	0	323
normalized size	1	1.	0.2	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.622	0.163	0.04	0.	0.	0.	0.	26.945

Problem 1573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	71	0	0	0	0	0	291
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	0.84
time (sec)	N/A	0.476	0.059	0.063	0.	0.	0.	0.	17.836

Problem 1574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	81	0	0	0	0	0	323
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	0.84
time (sec)	N/A	0.609	0.1	0.068	0.	0.	0.	0.	26.974

Problem 1575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	102	0	0	0	0	0	359
normalized size	1	1.	0.24	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.719	0.203	0.089	0.	0.	0.	0.	36.986

Problem 1576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	109	0	0	394	0	0	196
normalized size	1	1.	0.5	0.	0.	1.8	0.	0.	0.89
time (sec)	N/A	0.263	0.202	0.044	0.	0.224	0.	0.	22.645

Problem 1577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	90	0	0	319	0	0	160
normalized size	1	1.	0.52	0.	0.	1.85	0.	0.	0.93
time (sec)	N/A	0.148	0.151	0.029	0.	0.221	0.	0.	12.777

Problem 1578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	74	0	0	313	0	0	143
normalized size	1	1.	0.5	0.	0.	2.1	0.	0.	0.96
time (sec)	N/A	0.11	0.092	0.056	0.	0.22	0.	0.	12.323

Problem 1579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	88	0	0	26
normalized size	1	1.	1.	0.84	0.	2.75	0.	0.	0.81
time (sec)	N/A	0.023	0.038	0.007	0.	0.209	0.	0.	3.567

Problem 1580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	236	0	0	56
normalized size	1	1.	0.7	0.82	0.	3.58	0.	0.	0.85
time (sec)	N/A	0.053	0.069	0.007	0.	0.21	0.	0.	7.291

Problem 1581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	455	0	0	88
normalized size	1	1.	0.76	1.04	0.	4.5	0.	0.	0.87
time (sec)	N/A	0.088	0.104	0.01	0.	0.211	0.	0.	13.325

Problem 1582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	720	0	0	121
normalized size	1	1.	0.87	1.26	0.	5.29	0.	0.	0.89
time (sec)	N/A	0.126	0.18	0.012	0.	0.211	0.	0.	20.96

Problem 1583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	655	655	140	0	0	0	0	0	680
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	1.04
time (sec)	N/A	2.775	0.274	0.051	0.	0.	0.	0.	91.65

Problem 1584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	617	617	108	0	0	0	0	0	646
normalized size	1	1.	0.18	0.	0.	0.	0.	0.	1.05
time (sec)	N/A	1.842	0.185	0.031	0.	0.	0.	0.	79.408

Problem 1585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	576	576	93	0	0	0	0	0	614
normalized size	1	1.	0.16	0.	0.	0.	0.	0.	1.07
time (sec)	N/A	1.28	0.152	0.033	0.	0.	0.	0.	58.09

Problem 1586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	568	568	76	0	0	0	0	0	607
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	1.07
time (sec)	N/A	1.368	0.087	0.057	0.	0.	0.	0.	56.616

Problem 1587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	617	617	103	0	0	0	0	0	644
normalized size	1	1.	0.17	0.	0.	0.	0.	0.	1.04
time (sec)	N/A	1.828	0.197	0.061	0.	0.	0.	0.	75.281

Problem 1588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	107	0	0	400	0	0	199
normalized size	1	1.	0.5	0.	0.	1.85	0.	0.	0.92
time (sec)	N/A	0.27	0.204	0.049	0.	0.224	0.	0.	22.45

Problem 1589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	76	0	0	327	0	0	160
normalized size	1	1.	0.44	0.	0.	1.91	0.	0.	0.94
time (sec)	N/A	0.147	0.181	0.031	0.	0.219	0.	0.	12.536

Problem 1590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	73	0	0	239	0	0	122
normalized size	1	1.	0.58	0.	0.	1.9	0.	0.	0.97
time (sec)	N/A	0.063	0.067	0.056	0.	0.224	0.	0.	6.244

Problem 1591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	35	0	0	26
normalized size	1	1.	1.	0.84	0.	1.09	0.	0.	0.81
time (sec)	N/A	0.024	0.038	0.008	0.	0.21	0.	0.	3.539

Problem 1592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	138	0	0	56
normalized size	1	1.	0.7	0.82	0.	2.09	0.	0.	0.85
time (sec)	N/A	0.053	0.062	0.007	0.	0.212	0.	0.	7.389

Problem 1593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	317	0	0	88
normalized size	1	1.	0.76	1.04	0.	3.14	0.	0.	0.87
time (sec)	N/A	0.087	0.097	0.01	0.	0.213	0.	0.	13.564

Problem 1594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	95	171	0	544	0	0	121
normalized size	1	1.	0.7	1.26	0.	4.	0.	0.	0.89
time (sec)	N/A	0.123	0.209	0.013	0.	0.216	0.	0.	21.638

Problem 1595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1365	1365	138	0	0	0	0	0	0
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.
time (sec)	N/A	5.678	0.297	0.065	0.	0.	0.	0.	0.

Problem 1596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1330	1330	107	0	0	0	0	0	0
normalized size	1	1.	0.08	0.	0.	0.	0.	0.	0.
time (sec)	N/A	4.405	0.192	0.055	0.	0.	0.	0.	0.

Problem 1597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1293	1293	76	0	0	0	0	0	1397
normalized size	1	1.	0.06	0.	0.	0.	0.	0.	1.08
time (sec)	N/A	3.479	0.174	0.042	0.	0.	0.	0.	165.312

Problem 1598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1257	1257	73	0	0	0	0	0	1367
normalized size	1	1.	0.06	0.	0.	0.	0.	0.	1.09
time (sec)	N/A	2.69	0.058	0.05	0.	0.	0.	0.	133.28

Problem 1599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1297	1297	83	0	0	0	0	0	1399
normalized size	1	1.	0.06	0.	0.	0.	0.	0.	1.08
time (sec)	N/A	3.402	0.103	0.056	0.	0.	0.	0.	163.213

Problem 1600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1335	1335	100	0	0	0	0	0	0
normalized size	1	1.	0.07	0.	0.	0.	0.	0.	0.
time (sec)	N/A	4.153	0.204	0.058	0.	0.	0.	0.	0.

Problem 1601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1372	1372	136	0	0	0	0	0	0
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.
time (sec)	N/A	5.041	0.347	0.057	0.	0.	0.	0.	0.

Problem 1602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	107	0	0	400	0	0	202
normalized size	1	1.	0.5	0.	0.	1.85	0.	0.	0.94
time (sec)	N/A	0.259	0.2	0.038	0.	0.234	0.	0.	21.557

Problem 1603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	74	0	0	327	0	0	160
normalized size	1	1.	0.44	0.	0.	1.93	0.	0.	0.95
time (sec)	N/A	0.147	0.169	0.029	0.	0.229	0.	0.	11.912

Problem 1604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	71	0	0	239	0	0	122
normalized size	1	1.	0.56	0.	0.	1.9	0.	0.	0.97
time (sec)	N/A	0.065	0.069	0.053	0.	0.222	0.	0.	5.934

Problem 1605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	0	24
normalized size	1	1.	1.	0.9	0.	1.9	0.	0.	0.8
time (sec)	N/A	0.025	0.033	0.007	0.	0.205	0.	0.	3.276

Problem 1606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	159	0	0	56
normalized size	1	1.	0.7	0.82	0.	2.41	0.	0.	0.85
time (sec)	N/A	0.054	0.061	0.009	0.	0.208	0.	0.	6.835

Problem 1607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	75	105	0	339	0	0	88
normalized size	1	1.	0.74	1.04	0.	3.36	0.	0.	0.87
time (sec)	N/A	0.086	0.093	0.01	0.	0.21	0.	0.	12.804

Problem 1608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	95	171	0	566	0	0	121
normalized size	1	1.	0.7	1.26	0.	4.16	0.	0.	0.89
time (sec)	N/A	0.125	0.24	0.014	0.	0.214	0.	0.	19.486

Problem 1609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	649	649	137	0	0	0	0	0	680
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	1.05
time (sec)	N/A	2.413	0.287	0.042	0.	0.	0.	0.	92.67

Problem 1610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	614	614	106	0	0	0	0	0	648
normalized size	1	1.	0.17	0.	0.	0.	0.	0.	1.06
time (sec)	N/A	1.801	0.188	0.036	0.	0.	0.	0.	70.193

Problem 1611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	577	577	76	0	0	0	0	0	614
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	1.06
time (sec)	N/A	1.273	0.166	0.032	0.	0.	0.	0.	55.502

Problem 1612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	542	542	71	0	0	0	0	0	583
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	1.08
time (sec)	N/A	1.004	0.056	0.053	0.	0.	0.	0.	41.037

Problem 1613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	586	586	83	0	0	0	0	0	619
normalized size	1	1.	0.14	0.	0.	0.	0.	0.	1.06
time (sec)	N/A	1.311	0.107	0.062	0.	0.	0.	0.	58.12

Problem 1614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	621	621	102	0	0	0	0	0	653
normalized size	1	1.	0.16	0.	0.	0.	0.	0.	1.05
time (sec)	N/A	1.665	0.234	0.066	0.	0.	0.	0.	74.148

Problem 1615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	656	656	136	0	0	0	0	0	685
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	1.04
time (sec)	N/A	2.064	0.338	0.069	0.	0.	0.	0.	91.876

Problem 1616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	132	0	0	585	0	0	230
normalized size	1	1.	0.55	0.	0.	2.43	0.	0.	0.95
time (sec)	N/A	0.292	0.286	0.083	0.	0.223	0.	0.	33.906

Problem 1617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	95	0	0	427	0	0	189
normalized size	1	1.	0.49	0.	0.	2.19	0.	0.	0.97
time (sec)	N/A	0.178	0.373	0.071	0.	0.221	0.	0.	19.773

Problem 1618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	90	0	0	313	0	0	143
normalized size	1	1.	0.6	0.	0.	2.1	0.	0.	0.96
time (sec)	N/A	0.095	0.157	0.053	0.	0.217	0.	0.	12.171

Problem 1619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	0	26
normalized size	1	1.	1.	0.9	0.	1.9	0.	0.	0.87
time (sec)	N/A	0.021	0.037	0.007	0.	0.223	0.	0.	3.603

Problem 1620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	45	53	0	70	0	0	56
normalized size	1	1.	0.68	0.8	0.	1.06	0.	0.	0.85
time (sec)	N/A	0.048	0.07	0.008	0.	0.211	0.	0.	7.467

Problem 1621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	75	105	0	201	0	0	88
normalized size	1	1.	0.74	1.04	0.	1.99	0.	0.	0.87
time (sec)	N/A	0.075	0.116	0.01	0.	0.212	0.	0.	13.413

Problem 1622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-2)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	112	171	0	392	0	0	121
normalized size	1	1.	0.82	1.26	0.	2.88	0.	0.	0.89
time (sec)	N/A	0.111	0.181	0.013	0.	0.218	0.	0.	21.017

Problem 1623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1355	1355	131	0	0	0	0	0	0
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.
time (sec)	N/A	4.756	0.275	0.055	0.	0.	0.	0.	0.

Problem 1624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1317	1317	98	0	0	0	0	0	0
normalized size	1	1.	0.07	0.	0.	0.	0.	0.	0.
time (sec)	N/A	3.822	0.327	0.049	0.	0.	0.	0.	0.

Problem 1625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1279	1279	87	0	0	0	0	0	1387
normalized size	1	1.	0.07	0.	0.	0.	0.	0.	1.08
time (sec)	N/A	2.97	0.145	0.043	0.	0.	0.	0.	165.908

Problem 1626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1298	1298	100	0	0	0	0	0	1399
normalized size	1	1.	0.08	0.	0.	0.	0.	0.	1.08
time (sec)	N/A	2.959	0.164	0.054	0.	0.	0.	0.	157.301

Problem 1627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1327	1327	98	0	0	0	0	0	0
normalized size	1	1.	0.07	0.	0.	0.	0.	0.	0.
time (sec)	N/A	3.847	0.287	0.053	0.	0.	0.	0.	0.

Problem 1628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1370	1370	138	0	0	0	0	0	0
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.
time (sec)	N/A	4.519	0.305	0.055	0.	0.	0.	0.	0.

Problem 1629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	50	0	0	161	39	0	75
normalized size	1	1.	0.65	0.	0.	2.09	0.51	0.	0.97
time (sec)	N/A	0.044	0.03	0.033	0.	0.212	3.686	0.	3.653

Problem 1630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	140	0	0	0	0	0	233
normalized size	1	1.	0.76	0.	0.	0.	0.	0.	1.26
time (sec)	N/A	0.439	0.277	0.056	0.	0.	0.	0.	40.849

Problem 1631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	109	0	0	0	0	0	199
normalized size	1	1.	0.74	0.	0.	0.	0.	0.	1.35
time (sec)	N/A	0.234	0.198	0.035	0.	0.	0.	0.	30.223

Problem 1632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	93	0	0	0	0	0	167
normalized size	1	1.	0.84	0.	0.	0.	0.	0.	1.5
time (sec)	N/A	0.164	0.155	0.041	0.	0.	0.	0.	21.018

Problem 1633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	74	0	0	0	0	0	160
normalized size	1	1.	0.71	0.	0.	0.	0.	0.	1.54
time (sec)	N/A	0.152	0.092	0.06	0.	0.	0.	0.	20.54

Problem 1634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	103	0	0	0	0	0	194
normalized size	1	1.	0.71	0.	0.	0.	0.	0.	1.34
time (sec)	N/A	0.218	0.197	0.059	0.	0.	0.	0.	29.095

Problem 1635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	140	0	0	0	0	1	228
normalized size	1	1.	0.76	0.	0.	0.	0.	0.01	1.23
time (sec)	N/A	0.305	0.333	0.06	0.	0.	0.	0.45	40.799

Problem 1636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	141	0	0	0	0	0	456
normalized size	1	1.	0.52	0.	0.	0.	0.	0.	1.69
time (sec)	N/A	0.94	0.271	0.05	0.	0.	0.	0.	103.324

Problem 1637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	110	0	0	0	0	0	420
normalized size	1	1.	0.47	0.	0.	0.	0.	0.	1.81
time (sec)	N/A	0.727	0.177	0.033	0.	0.	0.	0.	83.497

Problem 1638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	93	0	0	0	0	0	384
normalized size	1	1.	0.47	0.	0.	0.	0.	0.	1.96
time (sec)	N/A	0.653	0.16	0.036	0.	0.	0.	0.	65.874

Problem 1639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	74	0	0	0	0	0	376
normalized size	1	1.	0.4	0.	0.	0.	0.	0.	2.04
time (sec)	N/A	0.626	0.096	0.059	0.	0.	0.	0.	64.317

Problem 1640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	104	0	0	0	0	0	406
normalized size	1	1.	0.47	0.	0.	0.	0.	0.	1.84
time (sec)	N/A	0.675	0.228	0.057	0.	0.	0.	0.	80.821

Problem 1641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	140	0	0	0	0	1	454
normalized size	1	1.	0.52	0.	0.	0.	0.	0.	1.68
time (sec)	N/A	0.781	0.326	0.063	0.	0.	0.	0.503	102.207

Problem 1642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	182	0	0	0	0	0	269
normalized size	1	1.	0.83	0.	0.	0.	0.	0.	1.22
time (sec)	N/A	0.417	0.367	0.043	0.	0.	0.	0.	54.455

Problem 1643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	143	0	0	0	0	0	233
normalized size	1	1.	0.79	0.	0.	0.	0.	0.	1.28
time (sec)	N/A	0.28	0.274	0.039	0.	0.	0.	0.	40.924

Problem 1644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	111	0	0	0	0	0	197
normalized size	1	1.	0.77	0.	0.	0.	0.	0.	1.37
time (sec)	N/A	0.208	0.206	0.041	0.	0.	0.	0.	29.95

Problem 1645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	95	0	0	0	0	0	189
normalized size	1	1.	0.72	0.	0.	0.	0.	0.	1.43
time (sec)	N/A	0.192	0.177	0.079	0.	0.	0.	0.	29.252

Problem 1646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	95	0	0	0	0	0	192
normalized size	1	1.	0.7	0.	0.	0.	0.	0.	1.42
time (sec)	N/A	0.188	0.202	0.064	0.	0.	0.	0.	28.057

Problem 1647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	138	0	0	0	0	1	223
normalized size	1	1.	0.79	0.	0.	0.	0.	0.01	1.27
time (sec)	N/A	0.25	0.367	0.065	0.	0.	0.	0.463	38.277

Problem 1648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	213	213	181	0	0	0	0	1	260
normalized size	1	1.	0.85	0.	0.	0.	0.	0.	1.22
time (sec)	N/A	0.305	0.334	0.07	0.	0.	0.	0.68	52.089

Problem 1649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	138	0	0	0	0	0	454
normalized size	1	1.	0.52	0.	0.	0.	0.	0.	1.72
time (sec)	N/A	0.828	0.292	0.043	0.	0.	0.	0.	102.957

Problem 1650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	107	0	0	0	0	0	422
normalized size	1	1.	0.47	0.	0.	0.	0.	0.	1.84
time (sec)	N/A	0.723	0.203	0.037	0.	0.	0.	0.	83.582

Problem 1651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	77	0	0	0	0	0	389
normalized size	1	1.	0.39	0.	0.	0.	0.	0.	1.98
time (sec)	N/A	0.653	0.173	0.032	0.	0.	0.	0.	66.541

Problem 1652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	73	0	0	0	0	0	357
normalized size	1	1.	0.44	0.	0.	0.	0.	0.	2.14
time (sec)	N/A	0.595	0.059	0.059	0.	0.	0.	0.	50.551

Problem 1653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	83	0	0	0	0	0	379
normalized size	1	1.	0.43	0.	0.	0.	0.	0.	1.98
time (sec)	N/A	0.645	0.107	0.065	0.	0.	0.	0.	65.506

Problem 1654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	102	0	0	0	0	0	411
normalized size	1	1.	0.46	0.	0.	0.	0.	0.	1.83
time (sec)	N/A	0.678	0.247	0.065	0.	0.	0.	0.	84.79

Problem 1655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	106	0	0	0	0	0	199
normalized size	1	1.	0.74	0.	0.	0.	0.	0.	1.38
time (sec)	N/A	0.231	0.202	0.042	0.	0.	0.	0.	29.446

Problem 1656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	77	0	0	0	0	0	168
normalized size	1	1.	0.69	0.	0.	0.	0.	0.	1.51
time (sec)	N/A	0.167	0.162	0.036	0.	0.	0.	0.	21.116

Problem 1657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	71	0	0	0	0	0	143
normalized size	1	1.	0.86	0.	0.	0.	0.	0.	1.72
time (sec)	N/A	0.118	0.057	0.07	0.	0.	0.	0.	13.68

Problem 1658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	81	0	0	0	0	0	165
normalized size	1	1.	0.73	0.	0.	0.	0.	0.	1.49
time (sec)	N/A	0.157	0.11	0.066	0.	0.	0.	0.	20.795

Problem 1659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	102	0	0	0	0	0	202
normalized size	1	1.	0.68	0.	0.	0.	0.	0.	1.36
time (sec)	N/A	0.19	0.207	0.07	0.	0.	0.	0.	29.974

Problem 1660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	131	0	0	0	0	0	447
normalized size	1	1.	0.52	0.	0.	0.	0.	0.	1.76
time (sec)	N/A	0.787	0.295	0.104	0.	0.	0.	0.	101.099

Problem 1661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	98	0	0	0	0	0	415
normalized size	1	1.	0.45	0.	0.	0.	0.	0.	1.89
time (sec)	N/A	0.685	0.312	0.084	0.	0.	0.	0.	82.528

Problem 1662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	90	0	0	0	0	0	382
normalized size	1	1.	0.47	0.	0.	0.	0.	0.	2.01
time (sec)	N/A	0.629	0.159	0.056	0.	0.	0.	0.	65.432

Problem 1663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	100	0	0	0	0	0	382
normalized size	1	1.	0.51	0.	0.	0.	0.	0.	1.94
time (sec)	N/A	0.64	0.226	0.068	0.	0.	0.	0.	66.475

Problem 1664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	99	0	0	0	0	0	410
normalized size	1	1.	0.45	0.	0.	0.	0.	0.	1.85
time (sec)	N/A	0.679	0.242	0.065	0.	0.	0.	0.	83.195

Problem 1665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	139	0	0	0	0	0	450
normalized size	1	1.	0.53	0.	0.	0.	0.	0.	1.72
time (sec)	N/A	0.77	0.281	0.065	0.	0.	0.	0.	102.62

Problem 1666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	181	0	0	0	0	0	260
normalized size	1	1.	0.87	0.	0.	0.	0.	0.	1.26
time (sec)	N/A	0.343	0.341	0.093	0.	0.	0.	0.	51.003

Problem 1667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	98	0	0	0	0	0	194
normalized size	1	1.	0.72	0.	0.	0.	0.	0.	1.42
time (sec)	N/A	0.201	0.355	0.085	0.	0.	0.	0.	29.663

Problem 1668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	90	0	0	0	0	0	168
normalized size	1	1.	0.81	0.	0.	0.	0.	0.	1.51
time (sec)	N/A	0.157	0.148	0.056	0.	0.	0.	0.	21.106

Problem 1669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	98	0	0	0	0	0	173
normalized size	1	1.	0.83	0.	0.	0.	0.	0.	1.47
time (sec)	N/A	0.161	0.172	0.07	0.	0.	0.	0.	21.517

Problem 1670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	102	0	0	0	0	0	199
normalized size	1	1.	0.7	0.	0.	0.	0.	0.	1.36
time (sec)	N/A	0.207	0.215	0.078	0.	0.	0.	0.	30.535

Problem 1671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	139	0	0	0	0	0	231
normalized size	1	1.	0.78	0.	0.	0.	0.	0.	1.3
time (sec)	N/A	0.276	0.279	0.069	0.	0.	0.	0.	42.277

Problem 1672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	286	169	0	0	0	0	0	478
normalized size	1	1.	0.59	0.	0.	0.	0.	0.	1.67
time (sec)	N/A	0.849	0.378	0.156	0.	0.	0.	0.	121.044

Problem 1673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	141	0	0	0	0	0	442
normalized size	1	1.	0.57	0.	0.	0.	0.	0.	1.78
time (sec)	N/A	0.755	0.251	0.125	0.	0.	0.	0.	100.779

Problem 1674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	107	0	0	0	0	0	416
normalized size	1	1.	0.48	0.	0.	0.	0.	0.	1.87
time (sec)	N/A	0.677	0.22	0.07	0.	0.	0.	0.	80.954

Problem 1675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	116	0	0	0	0	0	420
normalized size	1	1.	0.5	0.	0.	0.	0.	0.	1.81
time (sec)	N/A	0.694	0.219	0.055	0.	0.	0.	0.	82.681

Problem 1676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	236	236	115	0	0	0	0	0	420
normalized size	1	1.	0.49	0.	0.	0.	0.	0.	1.78
time (sec)	N/A	0.697	0.217	0.066	0.	0.	0.	0.	84.301

Problem 1677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	138	0	0	0	0	0	449
normalized size	1	1.	0.53	0.	0.	0.	0.	0.	1.71
time (sec)	N/A	0.749	0.371	0.069	0.	0.	0.	0.	102.671

Problem 1678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	156	0	0	0	0	1	490
normalized size	1	1.	0.51	0.	0.	0.	0.	0.	1.62
time (sec)	N/A	0.862	0.382	0.069	0.	0.	0.	0.55	126.415

Problem 1679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	143	0	0	2225	0	0	184
normalized size	1	1.	0.7	0.	0.	10.85	0.	0.	0.9
time (sec)	N/A	0.27	0.276	0.051	0.	0.262	0.	0.	37.123

Problem 1680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	111	0	0	1519	0	0	151
normalized size	1	1.	0.66	0.	0.	9.1	0.	0.	0.9
time (sec)	N/A	0.194	0.196	0.038	0.	0.25	0.	0.	29.057

Problem 1681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	93	0	0	930	0	0	141
normalized size	1	1.	0.61	0.	0.	6.12	0.	0.	0.93
time (sec)	N/A	0.179	0.205	0.079	0.	0.244	0.	0.	24.488

Problem 1682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	94	0	0	468	0	0	126
normalized size	1	1.	0.7	0.	0.	3.49	0.	0.	0.94
time (sec)	N/A	0.152	0.26	0.082	0.	0.243	0.	0.	25.567

Problem 1683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	140	0	0	26
normalized size	1	1.	1.	0.84	0.	4.38	0.	0.	0.81
time (sec)	N/A	0.022	0.074	0.006	0.	0.229	0.	0.	3.305

Problem 1684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	317	0	0	56
normalized size	1	1.	0.7	0.82	0.	4.8	0.	0.	0.85
time (sec)	N/A	0.047	0.105	0.008	0.	0.263	0.	0.	6.769

Problem 1685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	575	0	0	88
normalized size	1	1.	0.76	1.04	0.	5.69	0.	0.	0.87
time (sec)	N/A	0.074	0.166	0.01	0.	0.315	0.	0.	12.261

Problem 1686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	876	0	0	121
normalized size	1	1.	0.87	1.26	0.	6.44	0.	0.	0.89
time (sec)	N/A	0.111	0.223	0.013	0.	0.407	0.	0.	19.352

Problem 1687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	408	408	183	0	0	0	0	0	449
normalized size	1	1.	0.45	0.	0.	0.	0.	0.	1.1
time (sec)	N/A	1.177	0.245	0.056	0.	0.	0.	0.	89.186

Problem 1688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	142	0	0	0	0	0	411
normalized size	1	1.	0.38	0.	0.	0.	0.	0.	1.11
time (sec)	N/A	0.863	0.265	0.042	0.	0.	0.	0.	72.13

Problem 1689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	111	0	0	0	0	0	382
normalized size	1	1.	0.33	0.	0.	0.	0.	0.	1.15
time (sec)	N/A	0.69	0.195	0.043	0.	0.	0.	0.	57.3

Problem 1690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	95	0	0	0	0	0	377
normalized size	1	1.	0.29	0.	0.	0.	0.	0.	1.16
time (sec)	N/A	0.678	0.184	0.085	0.	0.	0.	0.	57.093

Problem 1691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	95	0	0	0	0	0	377
normalized size	1	1.	0.29	0.	0.	0.	0.	0.	1.16
time (sec)	N/A	0.724	0.228	0.072	0.	0.	0.	0.	56.212

Problem 1692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	363	363	140	0	0	0	0	0	411
normalized size	1	1.	0.39	0.	0.	0.	0.	0.	1.13
time (sec)	N/A	0.829	0.324	0.069	0.	0.	0.	0.	72.144

Problem 1693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	401	401	179	0	0	0	0	0	447
normalized size	1	1.	0.45	0.	0.	0.	0.	0.	1.11
time (sec)	N/A	1.014	0.328	0.083	0.	0.	0.	0.	88.007

Problem 1694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	108	0	0	1519	0	0	151
normalized size	1	1.	0.65	0.	0.	9.1	0.	0.	0.9
time (sec)	N/A	0.209	0.207	0.051	0.	0.248	0.	0.	28.726

Problem 1695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	76	0	0	865	0	0	112
normalized size	1	1.	0.6	0.	0.	6.81	0.	0.	0.88
time (sec)	N/A	0.132	0.179	0.032	0.	0.234	0.	0.	20.712

Problem 1696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	73	0	0	286	0	0	80
normalized size	1	1.	0.86	0.	0.	3.36	0.	0.	0.94
time (sec)	N/A	0.079	0.065	0.058	0.	0.229	0.	0.	16.055

Problem 1697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	35	0	0	26
normalized size	1	1.	1.	0.84	0.	1.09	0.	0.	0.81
time (sec)	N/A	0.022	0.042	0.006	0.	0.211	0.	0.	3.317

Problem 1698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	138	0	0	56
normalized size	1	1.	0.7	0.82	0.	2.09	0.	0.	0.85
time (sec)	N/A	0.05	0.069	0.007	0.	0.215	0.	0.	6.822

Problem 1699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	319	0	0	88
normalized size	1	1.	0.76	1.04	0.	3.16	0.	0.	0.87
time (sec)	N/A	0.08	0.101	0.01	0.	0.212	0.	0.	12.412

Problem 1700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	95	171	0	544	0	0	121
normalized size	1	1.	0.7	1.26	0.	4.	0.	0.	0.89
time (sec)	N/A	0.113	0.194	0.013	0.	0.217	0.	0.	19.346

Problem 1701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	751	751	107	0	0	0	0	0	889
normalized size	1	1.	0.14	0.	0.	0.	0.	0.	1.18
time (sec)	N/A	1.723	0.222	0.05	0.	0.	0.	0.	156.368

Problem 1702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	705	705	76	0	0	0	0	0	845
normalized size	1	1.	0.11	0.	0.	0.	0.	0.	1.2
time (sec)	N/A	1.459	0.185	0.041	0.	0.	0.	0.	131.227

Problem 1703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	688	688	73	0	0	0	0	0	830
normalized size	1	1.	0.11	0.	0.	0.	0.	0.	1.21
time (sec)	N/A	1.233	0.068	0.05	0.	0.	0.	0.	106.582

Problem 1704	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	718	718	84	0	0	0	0	0	857
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	1.19
time (sec)	N/A	1.432	0.115	0.058	0.	0.	0.	0.	130.42

Problem 1705	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	760	760	102	0	0	0	0	0	896
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	1.18
time (sec)	N/A	1.636	0.227	0.058	0.	0.	0.	0.	156.849

Problem 1706	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	107	0	0	1508	0	0	151
normalized size	1	1.	0.64	0.	0.	9.03	0.	0.	0.9
time (sec)	N/A	0.215	0.196	0.038	0.	0.254	0.	0.	26.341

Problem 1707	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	74	0	0	864	0	0	116
normalized size	1	1.	0.58	0.	0.	6.8	0.	0.	0.91
time (sec)	N/A	0.137	0.166	0.032	0.	0.25	0.	0.	18.781

Problem 1708	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	71	0	0	286	0	0	80
normalized size	1	1.	0.84	0.	0.	3.36	0.	0.	0.94
time (sec)	N/A	0.087	0.067	0.054	0.	0.237	0.	0.	13.703

Problem 1709	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	0	24
normalized size	1	1.	1.	0.9	0.	1.9	0.	0.	0.8
time (sec)	N/A	0.023	0.033	0.007	0.	0.214	0.	0.	3.249

Problem 1710	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	159	0	0	56
normalized size	1	1.	0.7	0.82	0.	2.41	0.	0.	0.85
time (sec)	N/A	0.051	0.063	0.009	0.	0.226	0.	0.	6.79

Problem 1711	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	75	105	0	339	0	0	88
normalized size	1	1.	0.74	1.04	0.	3.36	0.	0.	0.87
time (sec)	N/A	0.082	0.099	0.01	0.	0.214	0.	0.	12.199

Problem 1712	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	95	171	0	566	0	0	121
normalized size	1	1.	0.7	1.26	0.	4.16	0.	0.	0.89
time (sec)	N/A	0.114	0.245	0.013	0.	0.217	0.	0.	19.296

Problem 1713	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	107	0	0	0	0	0	382
normalized size	1	1.	0.32	0.	0.	0.	0.	0.	1.15
time (sec)	N/A	0.721	0.196	0.042	0.	0.	0.	0.	57.355

Problem 1714	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	295	295	74	0	0	0	0	0	348
normalized size	1	1.	0.25	0.	0.	0.	0.	0.	1.18
time (sec)	N/A	0.579	0.164	0.036	0.	0.	0.	0.	45.141

Problem 1715	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	71	0	0	0	0	0	326
normalized size	1	1.	0.26	0.	0.	0.	0.	0.	1.21
time (sec)	N/A	0.448	0.059	0.078	0.	0.	0.	0.	33.992

Problem 1716	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	84	0	0	0	0	0	357
normalized size	1	1.	0.27	0.	0.	0.	0.	0.	1.17
time (sec)	N/A	0.555	0.107	0.07	0.	0.	0.	0.	45.472

Problem 1717	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	102	0	0	0	0	0	388
normalized size	1	1.	0.3	0.	0.	0.	0.	0.	1.14
time (sec)	N/A	0.699	0.209	0.092	0.	0.	0.	0.	58.41

Problem 1718	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	99	0	0	930	0	0	141
normalized size	1	1.	0.65	0.	0.	6.12	0.	0.	0.93
time (sec)	N/A	0.186	0.383	0.09	0.	0.244	0.	0.	24.544

Problem 1719	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	89	0	0	346	0	0	100
normalized size	1	1.	0.82	0.	0.	3.2	0.	0.	0.93
time (sec)	N/A	0.111	0.165	0.07	0.	0.232	0.	0.	18.301

Problem 1720	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	0	26
normalized size	1	1.	1.	0.9	0.	1.9	0.	0.	0.87
time (sec)	N/A	0.022	0.036	0.007	0.	0.209	0.	0.	3.344

Problem 1721	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	45	53	0	70	0	0	56
normalized size	1	1.	0.68	0.8	0.	1.06	0.	0.	0.85
time (sec)	N/A	0.049	0.066	0.009	0.	0.215	0.	0.	6.912

Problem 1722	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	76	105	0	201	0	0	88
normalized size	1	1.	0.75	1.04	0.	1.99	0.	0.	0.87
time (sec)	N/A	0.082	0.119	0.01	0.	0.216	0.	0.	12.264

Problem 1723	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	97	171	0	393	0	0	121
normalized size	1	1.	0.71	1.26	0.	2.89	0.	0.	0.89
time (sec)	N/A	0.114	0.254	0.013	0.	0.221	0.	0.	19.451

Problem 1724	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	776	776	132	0	0	0	0	0	0
normalized size	1	1.	0.17	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.946	0.295	0.058	0.	0.	0.	0.	0.

Problem 1725	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	730	730	98	0	0	0	0	0	874
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	1.2
time (sec)	N/A	1.654	0.361	0.05	0.	0.	0.	0.	154.84

Problem 1726	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	712	712	87	0	0	0	0	0	853
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	1.2
time (sec)	N/A	1.454	0.149	0.055	0.	0.	0.	0.	130.635

Problem 1727	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	719	719	100	0	0	0	0	0	857
normalized size	1	1.	0.14	0.	0.	0.	0.	0.	1.19
time (sec)	N/A	1.431	0.203	0.059	0.	0.	0.	0.	131.125

Problem 1728	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	750	750	102	0	0	0	0	0	887
normalized size	1	1.	0.14	0.	0.	0.	0.	0.	1.18
time (sec)	N/A	1.695	0.292	0.061	0.	0.	0.	0.	157.758

Problem 1729	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	F(-1)
verified	N/A	NO	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	795	795	139	0	0	0	0	0	0
normalized size	1	1.	0.17	0.	0.	0.	0.	0.	0.
time (sec)	N/A	1.956	0.309	0.056	0.	0.	0.	0.	0.

Problem 1730	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	63	0	0	302	0	0	257
normalized size	1	1.	0.23	0.	0.	1.08	0.	0.	0.92
time (sec)	N/A	0.416	0.069	0.076	0.	0.242	0.	0.	56.901

Problem 1731	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	38	0	0	608	0	0	165
normalized size	1	1.	0.2	0.	0.	3.15	0.	0.	0.85
time (sec)	N/A	0.221	0.026	0.079	0.	0.254	0.	0.	22.141

Problem 1732	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	108	0	0	0	0	0	70
normalized size	1	1.	1.46	0.	0.	0.	0.	0.	0.95
time (sec)	N/A	0.102	0.285	0.063	0.	0.	0.	0.	13.164

Problem 1733	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	77	0	0	0	0	0	61
normalized size	1	1.	1.04	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.084	0.215	0.039	0.	0.	0.	0.	12.714

Problem 1734	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	73	0	0	0	0	0	65
normalized size	1	1.	1.01	0.	0.	0.	0.	0.	0.9
time (sec)	N/A	0.084	0.085	0.066	0.	0.	0.	0.	13.499

Problem 1735	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	84	0	0	0	0	0	68
normalized size	1	1.	1.17	0.	0.	0.	0.	0.	0.94
time (sec)	N/A	0.083	0.14	0.082	0.	0.	0.	0.	13.948

Problem 1736	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	105	0	0	0	0	0	70
normalized size	1	1.	1.42	0.	0.	0.	0.	0.	0.95
time (sec)	N/A	0.084	0.28	0.072	0.	0.	0.	0.	14.568

Problem 1737	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	487	487	181	0	0	0	0	0	422
normalized size	1	1.	0.37	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	1.088	0.353	0.072	0.	0.	0.	0.	53.72

Problem 1738	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	142	0	0	0	0	0	389
normalized size	1	1.	0.32	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.763	0.267	0.046	0.	0.	0.	0.	40.911

Problem 1739	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	411	411	109	0	0	0	0	0	355
normalized size	1	1.	0.27	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.633	0.196	0.043	0.	0.	0.	0.	29.864

Problem 1740	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	375	375	93	0	0	0	0	0	321
normalized size	1	1.	0.25	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.545	0.154	0.046	0.	0.	0.	0.	20.875

Problem 1741	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	367	367	74	0	0	0	0	0	318
normalized size	1	1.	0.2	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.532	0.088	0.078	0.	0.	0.	0.	20.458

Problem 1742	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	409	409	104	0	0	0	0	0	354
normalized size	1	1.	0.25	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.657	0.205	0.066	0.	0.	0.	0.	29.713

Problem 1743	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	896	896	142	0	0	0	0	0	794
normalized size	1	1.	0.16	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	2.132	0.296	0.05	0.	0.	0.	0.	105.552

Problem 1744	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	858	858	110	0	0	0	0	0	758
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.704	0.219	0.033	0.	0.	0.	0.	85.117

Problem 1745	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	817	817	93	0	0	0	0	0	721
normalized size	1	1.	0.11	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.443	0.16	0.037	0.	0.	0.	0.	66.639

Problem 1746	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	798	798	74	0	0	0	0	0	706
normalized size	1	1.	0.09	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.408	0.099	0.132	0.	0.	0.	0.	65.002

Problem 1747	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	854	854	105	0	0	0	0	0	755
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.632	0.239	0.07	0.	0.	0.	0.	82.452

Problem 1748	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	896	896	140	0	0	0	0	1	794
normalized size	1	1.	0.16	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.871	0.327	0.06	0.	0.	0.	0.838	104.021

Problem 1749	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	890	890	138	0	0	0	0	0	792
normalized size	1	1.	0.16	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	2.062	0.297	0.045	0.	0.	0.	0.	105.235

Problem 1750	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	855	855	108	0	0	0	0	0	760
normalized size	1	1.	0.13	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.751	0.214	0.038	0.	0.	0.	0.	84.863

Problem 1751	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	820	820	77	0	0	0	0	0	726
normalized size	1	1.	0.09	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.497	0.181	0.033	0.	0.	0.	0.	66.886

Problem 1752	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	780	780	73	0	0	0	0	0	685
normalized size	1	1.	0.09	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.236	0.065	0.06	0.	0.	0.	0.	50.92

Problem 1753	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	813	813	84	0	0	0	0	0	716
normalized size	1	1.	0.1	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.437	0.109	0.065	0.	0.	0.	0.	66.242

Problem 1754	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	858	858	105	0	0	0	0	0	765
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.624	0.217	0.065	0.	0.	0.	0.	84.182

Problem 1755	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	440	440	138	0	0	0	0	0	386
normalized size	1	1.	0.31	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.773	0.282	0.053	0.	0.	0.	0.	38.532

Problem 1756	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	405	405	107	0	0	0	0	0	354
normalized size	1	1.	0.26	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.649	0.176	0.046	0.	0.	0.	0.	28.785

Problem 1757	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	77	0	0	0	0	0	323
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.539	0.153	0.042	0.	0.	0.	0.	20.055

Problem 1758	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	343	71	0	0	0	0	0	296
normalized size	1	1.	0.21	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.419	0.054	0.065	0.	0.	0.	0.	13.226

Problem 1759	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	82	0	0	0	0	0	323
normalized size	1	1.	0.22	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.532	0.108	0.069	0.	0.	0.	0.	20.829

Problem 1760	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	102	0	0	0	0	0	357
normalized size	1	1.	0.25	0.	0.	0.	0.	0.	0.87
time (sec)	N/A	0.621	0.204	0.069	0.	0.	0.	0.	29.692

Problem 1761	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	880	880	132	0	0	0	0	0	785
normalized size	1	1.	0.15	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.956	0.327	0.085	0.	0.	0.	0.	102.835

Problem 1762	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	844	844	99	0	0	0	0	0	751
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.658	0.34	0.086	0.	0.	0.	0.	83.666

Problem 1763	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	806	806	90	0	0	0	0	0	712
normalized size	1	1.	0.11	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.392	0.198	0.062	0.	0.	0.	0.	66.508

Problem 1764	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	817	817	100	0	0	0	0	0	716
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	1.425	0.182	0.066	0.	0.	0.	0.	66.993

Problem 1765	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	844	844	102	0	0	0	0	0	750
normalized size	1	1.	0.12	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.645	0.295	0.067	0.	0.	0.	0.	84.044

Problem 1766	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	893	893	139	0	0	0	0	1	797
normalized size	1	1.	0.16	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	1.883	0.306	0.066	0.	0.	0.	0.692	103.749

Problem 1767	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	182	0	0	0	0	0	61
normalized size	1	1.	2.17	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.096	0.354	0.069	0.	0.	0.	0.	12.863

Problem 1768	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	142	0	0	0	0	0	61
normalized size	1	1.	1.73	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.093	0.261	0.051	0.	0.	0.	0.	13.037

Problem 1769	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	108	0	0	0	0	0	61
normalized size	1	1.	1.46	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.084	0.188	0.046	0.	0.	0.	0.	15.017

Problem 1770	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	74	0	0	0	0	0	60
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.083	0.167	0.049	0.	0.	0.	0.	13.017

Problem 1771	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	90	0	0	0	0	0	65
normalized size	1	1.	1.11	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.085	0.156	0.069	0.	0.	0.	0.	12.946

Problem 1772	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	116	0	0	0	0	0	66
normalized size	1	1.	1.41	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.088	0.202	0.085	0.	0.	0.	0.	12.666

Problem 1773	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	109	0	0	5825	0	0	0
normalized size	1	1.	0.26	0.	0.	13.64	0.	0.	0.
time (sec)	N/A	0.983	0.186	0.049	0.	0.31	0.	0.	0.

Problem 1774	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	76	0	0	3193	0	0	0
normalized size	1	1.	0.2	0.	0.	8.45	0.	0.	0.
time (sec)	N/A	0.789	0.16	0.036	0.	0.281	0.	0.	0.

Problem 1775	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	89	0	0	857	0	0	0
normalized size	1	1.	0.27	0.	0.	2.58	0.	0.	0.
time (sec)	N/A	0.76	0.169	0.076	0.	0.253	0.	0.	0.

Problem 1776	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	88	0	0	27
normalized size	1	1.	1.	0.84	0.	2.75	0.	0.	0.84
time (sec)	N/A	0.022	0.042	0.006	0.	0.214	0.	0.	3.341

Problem 1777	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	236	0	0	56
normalized size	1	1.	0.7	0.82	0.	3.58	0.	0.	0.85
time (sec)	N/A	0.051	0.072	0.007	0.	0.207	0.	0.	6.932

Problem 1778	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	456	0	0	88
normalized size	1	1.	0.76	1.04	0.	4.51	0.	0.	0.87
time (sec)	N/A	0.084	0.104	0.01	0.	0.226	0.	0.	12.485

Problem 1779	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	720	0	0	121
normalized size	1	1.	0.87	1.26	0.	5.29	0.	0.	0.89
time (sec)	N/A	0.122	0.161	0.012	0.	0.223	0.	0.	19.881

Problem 1780	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	109	0	0	5825	0	0	0
normalized size	1	1.	0.26	0.	0.	13.64	0.	0.	0.
time (sec)	N/A	1.171	0.208	0.047	0.	0.329	0.	0.	0.

Problem 1781	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	74	0	0	3171	0	0	0
normalized size	1	1.	0.2	0.	0.	8.39	0.	0.	0.
time (sec)	N/A	0.943	0.176	0.036	0.	0.284	0.	0.	0.

Problem 1782	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	90	0	0	1023	0	0	0
normalized size	1	1.	0.27	0.	0.	3.06	0.	0.	0.
time (sec)	N/A	0.911	0.175	0.07	0.	0.256	0.	0.	0.

Problem 1783	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	78	0	0	27
normalized size	1	1.	1.	0.84	0.	2.44	0.	0.	0.84
time (sec)	N/A	0.022	0.043	0.006	0.	0.225	0.	0.	3.379

Problem 1784	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	219	0	0	56
normalized size	1	1.	0.7	0.82	0.	3.32	0.	0.	0.85
time (sec)	N/A	0.052	0.074	0.007	0.	0.224	0.	0.	7.033

Problem 1785	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	437	0	0	88
normalized size	1	1.	0.76	1.04	0.	4.33	0.	0.	0.87
time (sec)	N/A	0.085	0.106	0.01	0.	0.238	0.	0.	12.512

Problem 1786	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	702	0	0	121
normalized size	1	1.	0.87	1.26	0.	5.16	0.	0.	0.89
time (sec)	N/A	0.119	0.163	0.013	0.	0.245	0.	0.	19.673

Problem 1787	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	143	0	0	0	0	0	61
normalized size	1	1.	1.74	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.1	0.321	0.049	0.	0.	0.	0.	12.924

Problem 1788	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	108	0	0	0	0	0	61
normalized size	1	1.	1.46	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.085	0.23	0.124	0.	0.	0.	0.	15.328

Problem 1789	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	76	0	0	0	0	0	61
normalized size	1	1.	1.03	0.	0.	0.	0.	0.	0.82
time (sec)	N/A	0.085	0.2	0.05	0.	0.	0.	0.	12.901

Problem 1790	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	87	0	0	0	0	0	63
normalized size	1	1.	1.07	0.	0.	0.	0.	0.	0.78
time (sec)	N/A	0.087	0.155	0.049	0.	0.	0.	0.	13.04

Problem 1791	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	117	0	0	0	0	0	66
normalized size	1	1.	1.43	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.088	0.226	0.053	0.	0.	0.	0.	12.86

Problem 1792	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	144	0	0	0	0	0	66
normalized size	1	1.	1.71	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.09	0.232	0.051	0.	0.	0.	0.	13.018

Problem 1793	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	234	0	0	0	0	0	70
normalized size	1	1.	2.79	0.	0.	0.	0.	0.	0.83
time (sec)	N/A	0.091	0.46	0.055	0.	0.	0.	0.	13.682

Problem 1794	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	183	0	0	0	0	0	70
normalized size	1	1.	2.23	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.097	0.346	0.052	0.	0.	0.	0.	15.794

Problem 1795	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	142	0	0	0	0	0	70
normalized size	1	1.	1.92	0.	0.	0.	0.	0.	0.95
time (sec)	N/A	0.085	0.266	0.05	0.	0.	0.	0.	13.749

Problem 1796	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	107	0	0	0	0	0	68
normalized size	1	1.	1.45	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.085	0.188	0.051	0.	0.	0.	0.	13.361

Problem 1797	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	99	0	0	0	0	0	73
normalized size	1	1.	1.22	0.	0.	0.	0.	0.	0.9
time (sec)	N/A	0.087	0.348	0.093	0.	0.	0.	0.	13.481

Problem 1798	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	108	0	0	0	0	0	75
normalized size	1	1.	1.32	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.089	0.219	0.073	0.	0.	0.	0.	13.395

Problem 1799	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	108	0	0	5814	0	0	0
normalized size	1	1.	0.25	0.	0.	13.71	0.	0.	0.
time (sec)	N/A	0.971	0.191	0.039	0.	0.318	0.	0.	0.

Problem 1800	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	99	0	0	3270	0	0	0
normalized size	1	1.	0.25	0.	0.	8.11	0.	0.	0.
time (sec)	N/A	0.911	0.385	0.077	0.	0.287	0.	0.	0.

Problem 1801	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	358	358	107	0	0	1106	0	0	0
normalized size	1	1.	0.3	0.	0.	3.09	0.	0.	0.
time (sec)	N/A	0.842	0.231	0.068	0.	0.266	0.	0.	0.

Problem 1802	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	140	0	0	27
normalized size	1	1.	1.	0.84	0.	4.38	0.	0.	0.84
time (sec)	N/A	0.022	0.075	0.007	0.	0.222	0.	0.	3.335

Problem 1803	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	317	0	0	56
normalized size	1	1.	0.7	0.82	0.	4.8	0.	0.	0.85
time (sec)	N/A	0.051	0.102	0.009	0.	0.223	0.	0.	6.833

Problem 1804	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	576	0	0	88
normalized size	1	1.	0.76	1.04	0.	5.7	0.	0.	0.87
time (sec)	N/A	0.085	0.135	0.01	0.	0.228	0.	0.	12.634

Problem 1805	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	171	0	876	0	0	121
normalized size	1	1.	0.87	1.26	0.	6.44	0.	0.	0.89
time (sec)	N/A	0.121	0.212	0.012	0.	0.237	0.	0.	20.102

Problem 1806	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	111	0	0	5814	0	0	0
normalized size	1	1.	0.26	0.	0.	13.71	0.	0.	0.
time (sec)	N/A	1.078	0.215	0.041	0.	0.328	0.	0.	0.

Problem 1807	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	90	0	0	3193	0	0	0
normalized size	1	1.	0.24	0.	0.	8.45	0.	0.	0.
time (sec)	N/A	0.923	0.153	0.031	0.	0.287	0.	0.	0.

Problem 1808	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	71	0	0	797	0	0	0
normalized size	1	1.	0.23	0.	0.	2.58	0.	0.	0.
time (sec)	N/A	0.856	0.066	0.056	0.	0.257	0.	0.	0.

Problem 1809	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	32	27	0	35	0	0	27
normalized size	1	1.	1.	0.84	0.	1.09	0.	0.	0.84
time (sec)	N/A	0.023	0.045	0.005	0.	0.223	0.	0.	3.402

Problem 1810	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	54	0	138	0	0	56
normalized size	1	1.	0.7	0.82	0.	2.09	0.	0.	0.85
time (sec)	N/A	0.051	0.064	0.008	0.	0.229	0.	0.	6.93

Problem 1811	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	317	0	0	88
normalized size	1	1.	0.76	1.04	0.	3.14	0.	0.	0.87
time (sec)	N/A	0.084	0.099	0.01	0.	0.226	0.	0.	12.457

Problem 1812	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	95	171	0	545	0	0	121
normalized size	1	1.	0.7	1.26	0.	4.01	0.	0.	0.89
time (sec)	N/A	0.12	0.19	0.013	0.	0.236	0.	0.	19.971

Problem 1813	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	111	0	0	0	0	0	65
normalized size	1	1.	1.35	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.1	0.239	0.049	0.	0.	0.	0.	13.733

Problem 1814	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	93	0	0	0	0	0	65
normalized size	1	1.	1.26	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.086	0.186	0.04	0.	0.	0.	0.	13.691

Problem 1815	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	73	0	0	0	0	0	65
normalized size	1	1.	0.99	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.086	0.074	0.049	0.	0.	0.	0.	15.924

Problem 1816	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	100	0	0	0	0	0	66
normalized size	1	1.	1.23	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.085	0.186	0.055	0.	0.	0.	0.	13.645

Problem 1817	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	117	0	0	0	0	0	70
normalized size	1	1.	1.43	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.088	0.237	0.055	0.	0.	0.	0.	13.375

Problem 1818	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	145	0	0	0	0	0	70
normalized size	1	1.	1.73	0.	0.	0.	0.	0.	0.83
time (sec)	N/A	0.089	0.25	0.056	0.	0.	0.	0.	13.477

Problem 1819	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	141	0	0	0	0	0	65
normalized size	1	1.	1.72	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.091	0.278	0.056	0.	0.	0.	0.	13.572

Problem 1820	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	111	0	0	0	0	0	65
normalized size	1	1.	1.39	0.	0.	0.	0.	0.	0.81
time (sec)	N/A	0.096	0.187	0.05	0.	0.	0.	0.	13.634

Problem 1821	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	91	0	0	0	0	0	65
normalized size	1	1.	1.26	0.	0.	0.	0.	0.	0.9
time (sec)	N/A	0.085	0.146	0.047	0.	0.	0.	0.	13.454

Problem 1822	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	71	0	0	0	0	0	63
normalized size	1	1.	0.99	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.088	0.055	0.079	0.	0.	0.	0.	15.734

Problem 1823	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	99	0	0	0	0	0	68
normalized size	1	1.	1.25	0.	0.	0.	0.	0.	0.86
time (sec)	N/A	0.087	0.16	0.073	0.	0.	0.	0.	13.476

Problem 1824	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	117	0	0	0	0	0	70
normalized size	1	1.	1.46	0.	0.	0.	0.	0.	0.88
time (sec)	N/A	0.089	0.235	0.075	0.	0.	0.	0.	13.506

Problem 1825	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	111	0	0	5763	0	0	0
normalized size	1	1.	0.26	0.	0.	13.59	0.	0.	0.
time (sec)	N/A	0.926	0.205	0.04	0.	0.301	0.	0.	0.

Problem 1826	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	90	0	0	3171	0	0	0
normalized size	1	1.	0.24	0.	0.	8.39	0.	0.	0.
time (sec)	N/A	0.794	0.151	0.034	0.	0.272	0.	0.	0.

Problem 1827	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	73	0	0	797	0	0	0
normalized size	1	1.	0.24	0.	0.	2.58	0.	0.	0.
time (sec)	N/A	0.726	0.065	0.057	0.	0.244	0.	0.	0.

Problem 1828	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	0	26
normalized size	1	1.	1.	0.9	0.	1.9	0.	0.	0.87
time (sec)	N/A	0.023	0.039	0.007	0.	0.214	0.	0.	3.326

Problem 1829	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	46	53	0	159	0	0	56
normalized size	1	1.	0.7	0.8	0.	2.41	0.	0.	0.85
time (sec)	N/A	0.052	0.06	0.007	0.	0.214	0.	0.	6.914

Problem 1830	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	105	0	340	0	0	88
normalized size	1	1.	0.76	1.04	0.	3.37	0.	0.	0.87
time (sec)	N/A	0.084	0.093	0.01	0.	0.213	0.	0.	12.792

Problem 1831	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	95	171	0	567	0	0	121
normalized size	1	1.	0.7	1.26	0.	4.17	0.	0.	0.89
time (sec)	N/A	0.122	0.187	0.012	0.	0.217	0.	0.	20.003

Problem 1832	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	129	0	0	5878	0	0	0
normalized size	1	1.	0.29	0.	0.	13.09	0.	0.	0.
time (sec)	N/A	1.22	0.35	0.086	0.	0.305	0.	0.	0.

Problem 1833	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F(-1)	F	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	403	403	93	0	0	3270	0	0	0
normalized size	1	1.	0.23	0.	0.	8.11	0.	0.	0.
time (sec)	N/A	1.058	0.205	0.076	0.	0.272	0.	0.	0.

Problem 1834	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	A	F	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	74	0	0	857	0	0	0
normalized size	1	1.	0.22	0.	0.	2.58	0.	0.	0.
time (sec)	N/A	0.913	0.103	0.055	0.	0.243	0.	0.	0.

Problem 1835	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	27	0	57	0	0	24
normalized size	1	1.	1.	0.9	0.	1.9	0.	0.	0.8
time (sec)	N/A	0.025	0.035	0.007	0.	0.207	0.	0.	3.371

Problem 1836	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	45	53	0	70	0	0	54
normalized size	1	1.	0.7	0.83	0.	1.09	0.	0.	0.84
time (sec)	N/A	0.054	0.069	0.009	0.	0.214	0.	0.	6.795

Problem 1837	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	77	105	0	201	0	0	87
normalized size	1	1.	0.79	1.07	0.	2.05	0.	0.	0.89
time (sec)	N/A	0.088	0.12	0.008	0.	0.217	0.	0.	12.067

Problem 1838	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	97	171	0	393	0	0	121
normalized size	1	1.	0.72	1.28	0.	2.93	0.	0.	0.9
time (sec)	N/A	0.125	0.235	0.013	0.	0.223	0.	0.	19.375

Problem 1839	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	95	0	0	0	0	0	68
normalized size	1	1.	1.19	0.	0.	0.	0.	0.	0.85
time (sec)	N/A	0.102	0.325	0.056	0.	0.	0.	0.	14.192

Problem 1840	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	74	0	0	0	0	0	68
normalized size	1	1.	1.03	0.	0.	0.	0.	0.	0.94
time (sec)	N/A	0.087	0.107	0.043	0.	0.	0.	0.	14.189

Problem 1841	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F(-1)	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	84	0	0	0	0	0	68
normalized size	1	1.	1.17	0.	0.	0.	0.	0.	0.94
time (sec)	N/A	0.087	0.118	0.055	0.	0.	0.	0.	14.16

Problem 1842	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	102	0	0	0	0	0	70
normalized size	1	1.	1.29	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.089	0.301	0.056	0.	0.	0.	0.	16.287

Problem 1843	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	138	0	0	0	0	0	73
normalized size	1	1.	1.72	0.	0.	0.	0.	0.	0.91
time (sec)	N/A	0.09	0.405	0.056	0.	0.	0.	0.	14.25

Problem 1844	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	B	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	179	0	0	0	0	0	73
normalized size	1	1.	2.18	0.	0.	0.	0.	0.	0.89
time (sec)	N/A	0.092	0.415	0.059	0.	0.	0.	0.	14.345

Problem 1845	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	74	73	0	0	0	0	0	56
normalized size	1	1.21	1.2	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.066	0.098	0.124	0.	0.	0.	0.	14.939

Problem 1846	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	195	389	0	671	4004	1233	95
normalized size	1	1.	1.77	3.54	0.	6.1	36.4	11.21	0.86
time (sec)	N/A	0.126	0.256	0.012	0.	0.223	6.08	0.251	28.428

Problem 1847	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	99	159	0	317	1506	574	66
normalized size	1	1.	1.27	2.04	0.	4.06	19.31	7.36	0.85
time (sec)	N/A	0.082	0.099	0.011	0.	0.219	2.873	0.301	18.453

Problem 1848	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	41	49	0	112	377	200	37
normalized size	1	1.	0.89	1.07	0.	2.43	8.2	4.35	0.8
time (sec)	N/A	0.047	0.037	0.004	0.	0.217	1.19	0.338	9.424

Problem 1849	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	66	0	0	0	0	0	37
normalized size	1	1.	1.29	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.044	0.044	0.056	0.	0.	0.	0.	5.366

Problem 1850	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	0	0	0	0	0	0	39
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.75
time (sec)	N/A	0.035	0.047	0.068	0.	0.	0.	0.	5.178

Problem 1851	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	0	0	0	0	0	0	42
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.78
time (sec)	N/A	0.039	0.055	0.107	0.	0.	0.	0.	5.985

Problem 1852	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	178	386	0	670	4004	1233	95
normalized size	1	1.	1.6	3.48	0.	6.04	36.07	11.11	0.86
time (sec)	N/A	0.128	0.168	0.011	0.	0.229	6.358	0.248	28.315

Problem 1853	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	95	159	0	320	1506	574	66
normalized size	1	1.	1.22	2.04	0.	4.1	19.31	7.36	0.85
time (sec)	N/A	0.079	0.101	0.012	0.	0.219	2.927	0.243	18.813

Problem 1854	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	41	46	0	112	377	200	37
normalized size	1	1.	0.87	0.98	0.	2.38	8.02	4.26	0.79
time (sec)	N/A	0.049	0.035	0.005	0.	0.22	1.177	0.23	9.483

Problem 1855	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F(-2)	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	17	19	0	27	20	24	12
normalized size	1	1.	0.94	1.06	0.	1.5	1.11	1.33	0.67
time (sec)	N/A	0.011	0.01	0.002	0.	0.218	0.04	0.275	1.665

Problem 1856	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	51	0	0	0	0	0	37
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.035	0.033	0.061	0.	0.	0.	0.	5.43

Problem 1857	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	0	0	0	0	0	0	41
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.8
time (sec)	N/A	0.038	0.046	0.066	0.	0.	0.	0.	5.333

Problem 1858	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	N/A	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	0	0	0	0	0	0	42
normalized size	1	1.	0.	0.	0.	0.	0.	0.	0.78
time (sec)	N/A	0.047	0.056	0.105	0.	0.	0.	0.	5.937

Problem 1859	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	112	322	0	691	0	0	102
normalized size	1	1.	0.78	2.25	0.	4.83	0.	0.	0.71
time (sec)	N/A	0.176	0.212	0.01	0.	0.232	0.	0.	28.444

Problem 1860	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	59	127	0	278	0	0	60
normalized size	1	1.	0.69	1.48	0.	3.23	0.	0.	0.7
time (sec)	N/A	0.06	0.114	0.007	0.	0.227	0.	0.	12.677

Problem 1861	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	36	45	0	81	0	0	26
normalized size	1	1.	0.92	1.15	0.	2.08	0.	0.	0.67
time (sec)	N/A	0.023	0.062	0.005	0.	0.227	0.	0.	4.317

Problem 1862	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	88	0	0	0	0	0	49
normalized size	1	1.	1.33	0.	0.	0.	0.	0.	0.74
time (sec)	N/A	0.069	0.089	0.102	0.	0.	0.	0.	14.805

Problem 1863	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	80	0	0	0	0	0	54
normalized size	1	1.	1.11	0.	0.	0.	0.	0.	0.75
time (sec)	N/A	0.063	0.056	0.118	0.	0.	0.	0.	14.938

Problem 1864	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	200	0	0	0	0	0	66
normalized size	1	1.	2.78	0.	0.	0.	0.	0.	0.92
time (sec)	N/A	0.065	0.621	0.114	0.	0.	0.	0.	16.448

Problem 1865	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	F	F	F	F(-1)	F	A
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	317	0	0	0	0	0	68
normalized size	1	1.	4.4	0.	0.	0.	0.	0.	0.94
time (sec)	N/A	0.065	0.998	0.114	0.	0.	0.	0.	18.017

Problem 1866	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	71	0	0	0	0	0	54
normalized size	1	1.	0.99	0.	0.	0.	0.	0.	0.75
time (sec)	N/A	0.075	0.071	0.103	0.	0.	0.	0.	15.016

Problem 1867	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	81	0	0	0	0	0	54
normalized size	1	1.	1.08	0.	0.	0.	0.	0.	0.72
time (sec)	N/A	0.067	0.073	0.104	0.	0.	0.	0.	14.819

Problem 1868	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	36	41	0	80	0	0	27
normalized size	1	1.	0.97	1.11	0.	2.16	0.	0.	0.73
time (sec)	N/A	0.024	0.06	0.006	0.	0.234	0.	0.	4.26

Problem 1869	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	60	123	0	279	0	0	63
normalized size	1	1.	0.75	1.54	0.	3.49	0.	0.	0.79
time (sec)	N/A	0.068	0.112	0.007	0.	0.231	0.	0.	12.144

Problem 1870	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	112	318	0	687	0	0	107
normalized size	1	1.	0.85	2.43	0.	5.24	0.	0.	0.82
time (sec)	N/A	0.142	0.205	0.009	0.	0.231	0.	0.	27.631

Problem 1871	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	181	661	0	1295	0	0	153
normalized size	1	1.	0.97	3.55	0.	6.96	0.	0.	0.82
time (sec)	N/A	0.23	0.468	0.013	0.	0.237	0.	0.	50.648

Problem 1872	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	80	0	0	0	0	0	54
normalized size	1	1.	1.11	0.	0.	0.	0.	0.	0.75
time (sec)	N/A	0.067	0.065	0.	0.	0.	0.	0.	14.916

Problem 1873	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	74	0	0	0	0	0	54
normalized size	1	1.	0.99	0.	0.	0.	0.	0.	0.72
time (sec)	N/A	0.076	0.057	0.118	0.	0.	0.	0.	15.788

Problem 1874	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	36	42	0	78	0	0	29
normalized size	1	1.	1.	1.17	0.	2.17	0.	0.	0.81
time (sec)	N/A	0.022	0.06	0.006	0.	0.232	0.	0.	4.281

Problem 1875	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	59	124	0	277	0	0	63
normalized size	1	1.	0.75	1.57	0.	3.51	0.	0.	0.8
time (sec)	N/A	0.058	0.111	0.006	0.	0.239	0.	0.	12.445

Problem 1876	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	112	319	0	684	0	0	107
normalized size	1	1.	0.86	2.45	0.	5.26	0.	0.	0.82
time (sec)	N/A	0.108	0.208	0.008	0.	0.242	0.	0.	28.104

Problem 1877	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	B	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	181	662	0	1288	0	0	153
normalized size	1	1.	0.98	3.58	0.	6.96	0.	0.	0.83
time (sec)	N/A	0.177	0.533	0.013	0.	0.253	0.	0.	51.628

Problem 1878	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	101	0	0	0	0	0	63
normalized size	1	1.	1.22	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.094	0.267	0.105	0.	0.	0.	0.	17.338

Problem 1879	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	131	0	0	0	0	0	65
normalized size	1	1.	1.56	0.	0.	0.	0.	0.	0.77
time (sec)	N/A	0.093	0.16	0.103	0.	0.	0.	0.	17.053

Problem 1880	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	66	0	0	0	0	0	37
normalized size	1	1.	1.29	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.034	0.038	0.	0.	0.	0.	0.	5.279

Problem 1881	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	53	57	124	126	233	105	46
normalized size	1	1.	0.93	1.	2.18	2.21	4.09	1.84	0.81
time (sec)	N/A	0.071	0.041	0.003	1.344	0.216	1.506	0.273	12.805

Problem 1882	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	82	57	0	115	0	0	80
normalized size	1	1.	0.86	0.6	0.	1.21	0.	0.	0.84
time (sec)	N/A	0.113	0.25	0.007	0.	0.243	0.	0.	20.543

Problem 1883	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	46	66	0	113	0	0	104
normalized size	1	1.	0.47	0.68	0.	1.16	0.	0.	1.07
time (sec)	N/A	0.079	0.33	0.007	0.	0.233	0.	0.	31.183

Problem 1884	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	C	A	F	A	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	159	66	0	113	0	0	128
normalized size	1	1.	1.64	0.68	0.	1.16	0.	0.	1.32
time (sec)	N/A	0.079	0.219	0.007	0.	0.233	0.	0.	33.081

Problem 1885	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	30	0	0	0	29	0	24
normalized size	1	1.	1.	0.	0.	0.	0.97	0.	0.8
time (sec)	N/A	0.022	0.02	0.039	0.	0.	3.622	0.	2.832

Problem 1886	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	0	0	0	31	0	26
normalized size	1	1.	1.	0.	0.	0.	0.89	0.	0.74
time (sec)	N/A	0.021	0.017	0.037	0.	0.	3.628	0.	2.772

Problem 1887	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	0	0	0	0	0	26
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.79
time (sec)	N/A	0.021	0.034	0.036	0.	0.	0.	0.	2.777

Problem 1888	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	0	0	0	0	0	27
normalized size	1	1.	1.	0.	0.	0.	0.	0.	0.73
time (sec)	N/A	0.02	0.033	0.037	0.	0.	0.	0.	2.734

Problem 1889	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	A	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	0	0	0	42	0	29
normalized size	1	1.	1.	0.	0.	0.	0.89	0.	0.62
time (sec)	N/A	0.038	0.036	0.083	0.	0.	156.431	0.	4.07

Problem 1890	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	F	F	F	F(-1)	F	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	46	0	0	0	0	0	34
normalized size	1	1.	1.02	0.	0.	0.	0.	0.	0.76
time (sec)	N/A	0.058	0.104	0.174	0.	0.	0.	0.	12.904

Problem 1891	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	23	30	1	22	30	0
normalized size	1	1.	1.	0.82	1.07	0.04	0.79	1.07	0.
time (sec)	N/A	0.013	0.	0.001	1.324	0.179	0.037	0.232	0.

Problem 1892	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	12	15	1	8	15	8
normalized size	1	1.	1.	0.8	1.	0.07	0.53	1.	0.53
time (sec)	N/A	0.007	0.	0.001	1.33	0.175	0.029	0.269	1.129

Problem 1893	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	10	12	1	5	12	5
normalized size	1	1.	1.	0.91	1.09	0.09	0.45	1.09	0.45
time (sec)	N/A	0.006	0.	0.	1.317	0.174	0.027	0.236	1.024

Problem 1894	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	10	12	1	7	12	0
normalized size	1	1.	1.	1.11	1.33	0.11	0.78	1.33	0.
time (sec)	N/A	0.006	0.	0.002	1.335	0.174	0.024	0.25	0.

Problem 1895	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	16	16	10	16	0
normalized size	1	1.	1.	0.93	1.14	1.14	0.71	1.14	0.
time (sec)	N/A	0.008	0.	0.001	1.331	0.198	0.03	0.253	0.

Problem 1896	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	10	12	1	8	12	0
normalized size	1	1.	1.	0.91	1.09	0.09	0.73	1.09	0.
time (sec)	N/A	0.006	0.	0.002	1.327	0.173	0.028	0.25	0.

Problem 1897	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	12	15	1	8	15	8
normalized size	1	1.	1.	0.8	1.	0.07	0.53	1.	0.53
time (sec)	N/A	0.007	0.	0.001	1.325	0.174	0.029	0.245	1.38

Problem 1898	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	18	15	19	1	15	19	0
normalized size	1	1.	1.	0.83	1.06	0.06	0.83	1.06	0.
time (sec)	N/A	0.008	0.	0.001	1.319	0.171	0.031	0.236	0.

Problem 1899	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	22	1	12	22	0
normalized size	1	1.	1.	0.85	1.1	0.05	0.6	1.1	0.
time (sec)	N/A	0.008	0.	0.	1.321	0.177	0.029	0.229	0.

Problem 1900	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	13	16	1	10	16	10
normalized size	1	1.	1.	0.81	1.	0.06	0.62	1.	0.62
time (sec)	N/A	0.007	0.	0.001	1.342	0.178	0.033	0.228	1.442

Problem 1901	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	14	18	1	12	18	0
normalized size	1	1.	1.	1.08	1.38	0.08	0.92	1.38	0.
time (sec)	N/A	0.007	0.	0.	1.331	0.173	0.032	0.273	0.

Problem 1902	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	21	27	36	19	28	0
normalized size	1	1.	1.	0.95	1.23	1.64	0.86	1.27	0.
time (sec)	N/A	0.013	0.01	0.003	1.338	0.198	0.623	0.262	0.

Problem 1903	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	17	22	23	15	22	0
normalized size	1	1.	1.	0.77	1.	1.05	0.68	1.	0.
time (sec)	N/A	0.009	0.001	0.001	1.318	0.196	0.077	0.237	0.

Problem 1904	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	18	23	12	19	12
normalized size	1	1.	1.	0.93	1.2	1.53	0.8	1.27	0.8
time (sec)	N/A	0.007	0.003	0.002	1.328	0.202	0.08	0.246	0.93

Problem 1905	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	14	15	7	15	7
normalized size	1	1.	1.	1.1	1.4	1.5	0.7	1.5	0.7
time (sec)	N/A	0.007	0.002	0.002	1.342	0.204	0.068	0.261	1.383

Problem 1906	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	12	15	16	10	15	10
normalized size	1	1.	1.	0.8	1.	1.07	0.67	1.	0.67
time (sec)	N/A	0.007	0.002	0.002	1.34	0.198	0.083	0.241	1.201

Problem 1907	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	11	10	12	12	8	14	0
normalized size	1	1.	1.	0.91	1.09	1.09	0.73	1.27	0.
time (sec)	N/A	0.005	0.001	0.002	1.336	0.204	0.06	0.311	0.

Problem 1908	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	12	15	14	10	15	8
normalized size	1	1.	1.	0.92	1.15	1.08	0.77	1.15	0.62
time (sec)	N/A	0.007	0.002	0.002	1.344	0.193	0.07	0.272	1.345

Problem 1909	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	12	15	15	10	16	0
normalized size	1	1.	1.	0.92	1.15	1.15	0.77	1.23	0.
time (sec)	N/A	0.007	0.001	0.001	1.361	0.198	0.064	0.271	0.

Problem 1910	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	12	15	15	12	15	12
normalized size	1	1.	1.	0.71	0.88	0.88	0.71	0.88	0.71
time (sec)	N/A	0.007	0.003	0.002	1.341	0.202	0.035	0.249	1.117

Problem 1911	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	13	13	13	10	12	12	10	12	10
normalized size	1	1.	1.	0.77	0.92	0.92	0.77	0.92	0.77
time (sec)	N/A	0.006	0.002	0.003	1.342	0.197	0.032	0.241	1.083

Problem 1912	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	14	11	12	14	12	12	12
normalized size	1	1.	0.93	0.73	0.8	0.93	0.8	0.8	0.8
time (sec)	N/A	0.006	0.004	0.004	1.346	0.202	0.036	0.233	1.326

Problem 1913	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	15	14	18	24	14	19	14
normalized size	1	1.	1.	0.93	1.2	1.6	0.93	1.27	0.93
time (sec)	N/A	0.008	0.012	0.001	1.343	0.205	0.039	0.242	1.542

Problem 1914	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	14	11	15	14	14	15	14
normalized size	1	1.	0.82	0.65	0.88	0.82	0.82	0.88	0.82
time (sec)	N/A	0.007	0.006	0.006	1.342	0.199	0.035	0.27	0.928

Problem 1915	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	15	15	10	9	15	19	12	15	12
normalized size	1	1.	0.67	0.6	1.	1.27	0.8	1.	0.8
time (sec)	N/A	0.007	0.004	0.004	1.342	0.202	0.038	0.262	1.352

Problem 1916	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	17	22	19	19	22	0
normalized size	1	1.	1.	0.71	0.92	0.79	0.79	0.92	0.
time (sec)	N/A	0.008	0.007	0.002	1.342	0.214	0.038	0.228	0.

Problem 1917	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Rubi in Sympy
grade	A	A	A	A	A	A	A	A	A
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	23	23	23	16	20	26	20	22	20
normalized size	1	1.	1.	0.7	0.87	1.13	0.87	0.96	0.87
time (sec)	N/A	0.009	0.012	0.003	1.345	0.21	0.039	0.248	1.428

2.2 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$

is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [1] had the largest ratio of [1.]

Table 1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	1	1	1.	1	1.
2	A	1	1	1.	1	1.
3	A	1	1	1.	1	1.
4	A	1	1	1.	1	1.
5	A	1	1	1.	3	0.333
6	A	1	1	1.	1	1.
7	A	1	1	1.	1	1.
8	A	1	1	1.	3	0.333
9	A	1	1	1.	13	0.077
10	A	1	1	1.	3	0.333
11	A	1	1	1.	3	0.333
12	A	1	1	1.	3	0.333
13	A	1	1	1.	1	1.
14	A	1	1	1.	1	1.
15	A	1	1	1.	3	0.333
16	A	1	1	1.	3	0.333
17	A	1	1	1.	3	0.333
18	A	1	1	1.	3	0.333
19	A	1	1	1.	3	0.333
20	A	1	1	1.	5	0.2
21	A	1	1	1.	5	0.2
22	A	1	1	1.	5	0.2
23	A	1	1	1.	5	0.2
24	A	1	1	1.	5	0.2
25	A	1	1	1.	5	0.2
26	A	1	1	1.	5	0.2
27	A	1	1	1.	5	0.2
28	A	1	1	1.	5	0.2
29	A	1	1	1.	5	0.2
30	A	1	1	1.	5	0.2
31	A	1	1	1.	5	0.2
32	A	1	1	1.	5	0.2
33	A	1	1	1.	5	0.2

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
34	A	1	1	1.	3	0.333
35	A	1	1	1.	5	0.2
36	A	2	2	1.	17	0.118
37	A	2	2	1.	13	0.154
38	A	2	2	1.	13	0.154
39	A	2	2	1.	13	0.154
40	A	2	2	1.	13	0.154
41	A	2	2	1.	13	0.154
42	A	2	2	1.	13	0.154
43	A	2	1	1.	9	0.111
44	A	2	1	1.	9	0.111
45	A	2	1	1.	7	0.143
46	A	1	0	1.	5	0.
47	A	2	1	1.	9	0.111
48	A	2	1	1.	9	0.111
49	A	1	1	1.	9	0.111
50	A	2	1	1.	9	0.111
51	A	2	1	1.	9	0.111
52	A	2	1	1.	11	0.091
53	A	2	1	1.	11	0.091
54	A	2	1	1.	9	0.111
55	A	1	1	1.	7	0.143
56	A	2	1	1.	11	0.091
57	A	2	1	1.	11	0.091
58	A	2	1	1.	11	0.091
59	A	1	1	1.	11	0.091
60	A	2	1	1.	11	0.091
61	A	2	1	1.	11	0.091
62	A	2	1	1.	11	0.091
63	A	2	1	1.	11	0.091
64	A	2	1	1.	11	0.091
65	A	2	1	1.	11	0.091
66	A	2	1	1.	11	0.091
67	A	2	1	1.	9	0.111
68	A	1	1	1.	7	0.143
69	A	2	1	1.	11	0.091

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
70	A	2	1	1.	11	0.091
71	A	2	1	1.	11	0.091
72	A	2	1	1.	11	0.091
73	A	1	1	1.	11	0.091
74	A	2	2	1.	11	0.182
75	A	2	1	1.	11	0.091
76	A	2	1	1.	11	0.091
77	A	2	1	1.	11	0.091
78	A	2	1	1.	11	0.091
79	A	2	1	1.	11	0.091
80	A	2	1	1.	11	0.091
81	A	2	1	1.	11	0.091
82	A	2	1	1.	9	0.111
83	A	1	1	1.	7	0.143
84	A	2	1	1.	11	0.091
85	A	2	1	1.	11	0.091
86	A	2	1	1.	11	0.091
87	A	2	1	1.	11	0.091
88	A	2	1	1.	11	0.091
89	A	2	1	1.	11	0.091
90	A	1	1	1.	11	0.091
91	A	2	2	1.	11	0.182
92	A	3	2	1.	11	0.182
93	A	2	1	1.	11	0.091
94	A	2	1	1.	11	0.091
95	A	2	1	1.	11	0.091
96	A	2	1	1.	11	0.091
97	A	2	1	1.	11	0.091
98	A	2	1	1.	11	0.091
99	A	2	1	1.	11	0.091
100	A	2	1	1.	11	0.091
101	A	2	1	1.	11	0.091
102	A	2	1	1.	11	0.091
103	A	2	1	1.	11	0.091
104	A	2	1	1.	11	0.091
105	A	2	1	1.	9	0.111

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
106	A	1	1	1.	7	0.143
107	A	2	1	1.	11	0.091
108	A	2	1	1.	11	0.091
109	A	2	1	1.	11	0.091
110	A	2	1	1.	11	0.091
111	A	2	1	1.	11	0.091
112	A	2	1	1.	11	0.091
113	A	2	1	1.	11	0.091
114	A	2	1	1.	11	0.091
115	A	1	1	1.	11	0.091
116	A	2	2	1.	11	0.182
117	A	3	2	1.	11	0.182
118	A	4	2	1.	11	0.182
119	A	5	2	1.	11	0.182
120	A	2	1	1.	11	0.091
121	A	2	1	1.	11	0.091
122	A	2	1	1.	11	0.091
123	A	2	1	1.	11	0.091
124	A	2	1	1.	11	0.091
125	A	2	1	1.	11	0.091
126	A	2	1	1.	11	0.091
127	A	2	1	1.	11	0.091
128	A	2	1	1.	11	0.091
129	A	2	1	1.	11	0.091
130	A	2	1	1.	11	0.091
131	A	2	1	1.	11	0.091
132	A	2	1	1.	11	0.091
133	A	2	1	1.	9	0.111
134	A	1	1	1.	7	0.143
135	A	2	1	1.	11	0.091
136	A	2	1	1.	11	0.091
137	A	2	1	1.	11	0.091
138	A	2	1	1.	11	0.091
139	A	2	1	1.	11	0.091
140	A	2	1	1.	11	0.091
141	A	2	1	1.	11	0.091

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
142	A	2	1	1.	11	0.091
143	A	2	1	1.	11	0.091
144	A	2	1	1.	11	0.091
145	A	2	1	1.	11	0.091
146	A	1	1	1.	11	0.091
147	A	2	2	1.	11	0.182
148	A	3	2	1.	11	0.182
149	A	4	2	1.	11	0.182
150	A	5	2	1.	11	0.182
151	A	6	2	1.	11	0.182
152	A	7	2	1.	11	0.182
153	A	2	1	1.	11	0.091
154	A	2	1	1.	11	0.091
155	A	1	1	1.	7	0.143
156	A	1	1	1.	12	0.083
157	A	2	1	1.	11	0.091
158	A	2	1	1.	11	0.091
159	A	2	1	1.	11	0.091
160	A	2	1	1.	11	0.091
161	A	2	1	1.	9	0.111
162	A	1	1	1.	7	0.143
163	A	3	3	1.	11	0.273
164	A	2	1	1.	11	0.091
165	A	2	1	1.	11	0.091
166	A	2	1	1.	11	0.091
167	A	2	1	1.	11	0.091
168	A	2	1	1.	11	0.091
169	A	2	1	1.	11	0.091
170	A	2	1	1.	11	0.091
171	A	2	1	1.	11	0.091
172	A	2	1	1.	11	0.091
173	A	2	1	1.	9	0.111
174	A	1	1	1.	7	0.143
175	A	2	1	1.	11	0.091
176	A	2	1	1.	11	0.091
177	A	2	1	1.	11	0.091

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
178	A	2	1	1.	11	0.091
179	A	2	1	1.	11	0.091
180	A	2	1	1.	11	0.091
181	A	2	1	1.	11	0.091
182	A	2	1	1.	11	0.091
183	A	2	1	1.	11	0.091
184	A	2	1	1.	11	0.091
185	A	2	1	1.	11	0.091
186	A	1	1	1.	9	0.111
187	A	1	1	1.	7	0.143
188	A	2	1	1.	11	0.091
189	A	2	1	1.	11	0.091
190	A	2	1	1.	11	0.091
191	A	2	1	1.	11	0.091
192	A	2	1	1.	11	0.091
193	A	2	1	1.	11	0.091
194	A	2	1	1.	11	0.091
195	A	2	1	1.	11	0.091
196	A	2	1	1.	11	0.091
197	A	2	1	1.	11	0.091
198	A	2	1	1.	11	0.091
199	A	1	1	1.	11	0.091
200	A	2	1	1.	9	0.111
201	A	1	1	1.	7	0.143
202	A	2	1	1.	11	0.091
203	A	2	1	1.	11	0.091
204	A	2	1	1.	11	0.091
205	A	2	1	1.	11	0.091
206	A	2	1	1.	11	0.091
207	A	2	1	1.	11	0.091
208	A	2	1	1.	11	0.091
209	A	2	1	1.	11	0.091
210	A	2	1	1.	11	0.091
211	A	2	1	1.	11	0.091
212	A	1	1	1.	11	0.091
213	A	2	2	1.	11	0.182

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
214	A	2	1	1.23	11	0.091
215	A	2	1	1.	11	0.091
216	A	2	1	1.	9	0.111
217	A	1	1	1.	7	0.143
218	A	2	1	1.	11	0.091
219	A	2	1	1.	11	0.091
220	A	2	1	1.	11	0.091
221	A	2	1	1.	11	0.091
222	A	2	1	1.	11	0.091
223	A	2	1	1.	11	0.091
224	A	2	1	1.	11	0.091
225	A	2	1	1.	11	0.091
226	A	1	1	1.	11	0.091
227	A	2	2	1.	11	0.182
228	A	3	2	1.	11	0.182
229	A	4	2	1.	11	0.182
230	A	2	1	1.	11	0.091
231	A	2	1	1.	11	0.091
232	A	2	1	1.	11	0.091
233	A	2	1	1.	9	0.111
234	A	1	1	1.	7	0.143
235	A	2	1	1.	11	0.091
236	A	2	1	1.	11	0.091
237	A	2	1	1.	11	0.091
238	A	2	1	1.	11	0.091
239	A	2	1	1.	11	0.091
240	A	2	1	1.	11	0.091
241	A	2	1	1.	11	0.091
242	A	2	1	1.	11	0.091
243	A	1	1	1.	11	0.091
244	A	2	2	1.	11	0.182
245	A	3	2	1.	11	0.182
246	A	2	1	1.	11	0.091
247	A	2	1	1.	11	0.091
248	A	2	1	1.	11	0.091
249	A	2	1	1.	11	0.091

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
250	A	2	1	1.	9	0.111
251	A	1	1	1.	3	0.333
252	A	2	1	1.	11	0.091
253	A	2	1	1.	11	0.091
254	A	2	1	1.	11	0.091
255	A	3	3	1.	11	0.273
256	A	3	3	1.	11	0.273
257	A	2	1	1.	11	0.091
258	A	2	1	1.	11	0.091
259	A	2	1	1.	11	0.091
260	A	2	1	1.	11	0.091
261	A	2	1	1.	11	0.091
262	A	2	1	1.	11	0.091
263	A	2	1	1.	11	0.091
264	A	2	1	1.	11	0.091
265	A	2	1	1.	11	0.091
266	A	2	1	1.	11	0.091
267	A	2	1	1.	11	0.091
268	A	2	1	1.	11	0.091
269	A	2	1	1.	11	0.091
270	A	2	1	1.	11	0.091
271	A	1	1	1.	7	0.143
272	A	1	1	1.	7	0.143
273	A	1	1	1.	11	0.091
274	A	1	1	1.	13	0.077
275	A	1	1	1.	15	0.067
276	A	1	1	1.	15	0.067
277	A	1	1	1.	15	0.067
278	A	1	1	1.	15	0.067
279	A	3	3	1.	11	0.273
280	A	3	3	1.	11	0.273
281	A	2	1	1.	11	0.091
282	A	2	1	1.	11	0.091
283	A	3	1	1.	17	0.059
284	A	2	1	1.	13	0.077
285	A	2	1	1.	13	0.077

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
286	A	2	1	1.	11	0.091
287	A	1	1	1.	9	0.111
288	A	3	3	1.	13	0.231
289	A	3	3	1.	13	0.231
290	A	4	4	1.	13	0.308
291	A	5	4	1.	13	0.308
292	A	2	1	1.	13	0.077
293	A	2	1	1.	13	0.077
294	A	2	1	1.	11	0.091
295	A	1	1	1.	9	0.111
296	A	4	3	1.	13	0.231
297	A	4	4	1.	13	0.308
298	A	4	3	1.	13	0.231
299	A	5	4	1.	13	0.308
300	A	2	1	1.	13	0.077
301	A	2	1	1.	13	0.077
302	A	2	1	1.	11	0.091
303	A	1	1	1.	9	0.111
304	A	5	3	1.	13	0.231
305	A	5	4	1.	13	0.308
306	A	5	4	1.	13	0.308
307	A	5	3	1.	13	0.231
308	A	6	4	1.	13	0.308
309	A	2	1	1.	13	0.077
310	A	2	1	1.	13	0.077
311	A	2	1	1.	13	0.077
312	A	2	1	1.	13	0.077
313	A	2	1	1.	13	0.077
314	A	2	1	1.	13	0.077
315	A	2	1	1.	11	0.091
316	A	1	1	1.	9	0.111
317	A	7	3	1.	13	0.231
318	A	7	4	1.	13	0.308
319	A	7	4	1.	13	0.308
320	A	7	4	1.	13	0.308
321	A	7	4	1.	13	0.308

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
322	A	7	3	1.	13	0.231
323	A	8	4	1.	13	0.308
324	A	9	4	1.	13	0.308
325	A	3	3	1.	15	0.2
326	A	3	3	1.	15	0.2
327	A	4	4	1.	15	0.267
328	A	4	3	1.	15	0.2
329	A	4	4	1.	15	0.267
330	A	4	3	1.	15	0.2
331	A	5	3	1.	15	0.2
332	A	5	4	1.	15	0.267
333	A	5	4	1.	15	0.267
334	A	2	1	1.	13	0.077
335	A	2	1	1.	13	0.077
336	A	2	1	1.	13	0.077
337	A	2	1	1.	11	0.091
338	A	1	1	1.	9	0.111
339	A	2	2	1.	13	0.154
340	A	3	3	1.	13	0.231
341	A	4	3	1.	13	0.231
342	A	5	3	1.	13	0.231
343	A	2	1	1.	13	0.077
344	A	2	1	1.	13	0.077
345	A	2	1	1.	13	0.077
346	A	2	1	1.	11	0.091
347	A	1	1	1.	9	0.111
348	A	3	3	1.	13	0.231
349	A	4	3	1.	13	0.231
350	A	5	3	1.	13	0.231
351	A	2	1	1.	13	0.077
352	A	2	1	1.	13	0.077
353	A	2	1	1.	13	0.077
354	A	2	1	1.	11	0.091
355	A	1	1	1.	9	0.111
356	A	4	3	1.	13	0.231
357	A	5	3	1.	13	0.231

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
358	A	6	3	1.	13	0.231
359	A	2	2	1.	15	0.133
360	A	3	3	1.	15	0.2
361	A	4	3	1.	15	0.2
362	A	3	3	1.	15	0.2
363	A	4	3	1.	15	0.2
364	A	5	3	1.	15	0.2
365	A	4	3	1.	15	0.2
366	A	5	3	1.	15	0.2
367	A	6	3	1.	15	0.2
368	A	2	2	1.	31	0.065
369	C	5	2	7.08	34	0.059
370	A	3	3	1.	29	0.103
371	A	2	1	1.	13	0.077
372	A	2	1	1.	13	0.077
373	A	2	1	1.	11	0.091
374	A	1	1	1.	9	0.111
375	A	5	5	1.	13	0.385
376	A	5	5	1.	13	0.385
377	A	6	6	1.	13	0.462
378	A	2	1	1.	13	0.077
379	A	2	1	1.	13	0.077
380	A	2	1	1.	11	0.091
381	A	1	1	1.	9	0.111
382	A	5	5	1.	13	0.385
383	A	5	5	1.	13	0.385
384	A	6	6	1.	13	0.462
385	A	2	1	1.	13	0.077
386	A	2	1	1.	13	0.077
387	A	2	1	1.	11	0.091
388	A	1	1	1.	9	0.111
389	A	6	5	1.	13	0.385
390	A	6	6	1.	13	0.462
391	A	6	5	1.	13	0.385
392	A	2	1	1.	13	0.077
393	A	2	1	1.	13	0.077

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
394	A	2	1	1.	11	0.091
395	A	1	1	1.	9	0.111
396	A	4	4	1.	13	0.308
397	A	5	5	1.	13	0.385
398	A	6	5	1.	13	0.385
399	A	2	1	1.	15	0.067
400	A	2	1	1.	15	0.067
401	A	2	1	1.	13	0.077
402	A	1	1	1.	11	0.091
403	A	4	4	1.	15	0.267
404	A	5	5	1.	15	0.333
405	A	6	5	1.	15	0.333
406	A	2	1	1.	13	0.077
407	A	2	1	1.	13	0.077
408	A	2	1	1.	11	0.091
409	A	1	1	1.	9	0.111
410	A	4	4	1.	13	0.308
411	A	5	5	1.	13	0.385
412	A	6	5	1.	13	0.385
413	A	2	1	1.	13	0.077
414	A	2	1	1.	13	0.077
415	A	2	1	1.	11	0.091
416	A	1	1	1.	9	0.111
417	A	5	5	1.	13	0.385
418	A	6	5	1.	13	0.385
419	A	7	5	1.	13	0.385
420	A	4	4	1.	17	0.235
421	A	4	4	1.	18	0.222
422	A	4	4	1.	19	0.21
423	A	4	4	1.	20	0.2
424	A	4	4	1.	17	0.235
425	A	4	4	1.	18	0.222
426	A	4	4	1.	19	0.21
427	A	4	4	1.	20	0.2
428	A	2	1	1.	9	0.111
429	A	2	1	1.	11	0.091

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
430	A	2	1	1.	11	0.091
431	A	2	1	1.	11	0.091
432	A	2	1	1.	11	0.091
433	A	2	1	1.	11	0.091
434	A	2	1	1.	11	0.091
435	A	2	1	1.	11	0.091
436	A	2	1	1.	13	0.077
437	A	2	1	1.	13	0.077
438	A	2	1	1.	13	0.077
439	A	2	1	1.	13	0.077
440	A	2	1	1.	13	0.077
441	A	2	1	1.	13	0.077
442	A	2	1	1.	11	0.091
443	A	2	1	1.	13	0.077
444	A	2	1	1.	13	0.077
445	A	2	1	1.	13	0.077
446	A	2	1	1.	13	0.077
447	A	2	1	1.	13	0.077
448	A	2	1	1.	13	0.077
449	A	5	3	1.	13	0.231
450	A	4	3	1.	13	0.231
451	A	3	3	1.	13	0.231
452	A	2	2	1.	13	0.154
453	A	3	3	1.	13	0.231
454	A	4	3	1.	13	0.231
455	A	5	3	1.	13	0.231
456	A	5	4	1.	13	0.308
457	A	4	4	1.	13	0.308
458	A	3	3	1.	13	0.231
459	A	3	3	1.	13	0.231
460	A	4	4	1.	13	0.308
461	A	5	4	1.	13	0.308
462	A	6	4	1.	13	0.308
463	A	5	4	1.	13	0.308
464	A	4	3	1.	13	0.231
465	A	4	4	1.	13	0.308

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
466	A	4	3	1.	13	0.231
467	A	5	4	1.	13	0.308
468	A	6	4	1.	13	0.308
469	A	5	3	1.	15	0.2
470	A	4	3	1.	15	0.2
471	A	3	3	1.	15	0.2
472	A	2	2	1.	15	0.133
473	A	3	3	1.	15	0.2
474	A	4	3	1.	15	0.2
475	A	5	3	1.	15	0.2
476	A	5	4	1.	15	0.267
477	A	4	4	1.	15	0.267
478	A	3	3	1.	15	0.2
479	A	3	3	1.	15	0.2
480	A	4	4	1.	15	0.267
481	A	5	4	1.	15	0.267
482	A	6	4	1.	15	0.267
483	A	5	4	1.	15	0.267
484	A	4	3	1.	15	0.2
485	A	4	4	1.	15	0.267
486	A	4	3	1.	15	0.2
487	A	5	4	1.	15	0.267
488	A	6	4	1.	15	0.267
489	A	6	3	1.	15	0.2
490	A	5	3	1.	15	0.2
491	A	4	3	1.	15	0.2
492	A	3	3	1.	15	0.2
493	A	3	3	1.	15	0.2
494	A	1	1	1.	15	0.067
495	A	2	2	1.	15	0.133
496	A	3	2	1.	15	0.133
497	A	6	3	1.	16	0.188
498	A	5	3	1.	16	0.188
499	A	4	3	1.	16	0.188
500	A	3	3	1.	16	0.188
501	A	3	3	1.	16	0.188

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
502	A	1	1	1.	16	0.062
503	A	2	2	1.	16	0.125
504	A	3	2	1.	16	0.125
505	A	6	3	1.	15	0.2
506	A	5	3	1.	15	0.2
507	A	4	3	1.	15	0.2
508	A	3	3	1.	15	0.2
509	A	3	3	1.	15	0.2
510	A	1	1	1.	15	0.067
511	A	2	2	1.	15	0.133
512	A	3	2	1.	15	0.133
513	A	6	3	1.	16	0.188
514	A	5	3	1.	16	0.188
515	A	4	3	1.	16	0.188
516	A	3	3	1.	16	0.188
517	A	3	3	1.	16	0.188
518	A	1	1	1.	16	0.062
519	A	2	2	1.	16	0.125
520	A	3	2	1.	16	0.125
521	A	7	3	1.	15	0.2
522	A	6	3	1.	15	0.2
523	A	5	3	1.	15	0.2
524	A	4	3	1.	15	0.2
525	A	4	4	1.	15	0.267
526	A	4	3	1.	15	0.2
527	A	7	3	1.	16	0.188
528	A	6	3	1.	16	0.188
529	A	5	3	1.	16	0.188
530	A	4	3	1.	16	0.188
531	A	4	4	1.	16	0.25
532	A	4	3	1.	16	0.188
533	A	7	3	1.	15	0.2
534	A	6	3	1.	15	0.2
535	A	5	3	1.	15	0.2
536	A	4	3	1.	15	0.2
537	A	4	4	1.	15	0.267

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
538	A	4	3	1.	15	0.2
539	A	7	3	1.	16	0.188
540	A	6	3	1.	16	0.188
541	A	5	3	1.	16	0.188
542	A	4	3	1.	16	0.188
543	A	4	4	1.	16	0.25
544	A	4	3	1.	16	0.188
545	A	8	3	1.	15	0.2
546	A	7	3	1.	15	0.2
547	A	6	3	1.	15	0.2
548	A	5	3	1.	15	0.2
549	A	5	4	1.	15	0.267
550	A	5	4	1.	15	0.267
551	A	8	3	1.	16	0.188
552	A	7	3	1.	16	0.188
553	A	6	3	1.	16	0.188
554	A	5	3	1.	16	0.188
555	A	5	4	1.	16	0.25
556	A	5	4	1.	16	0.25
557	A	8	3	1.	15	0.2
558	A	7	3	1.	15	0.2
559	A	6	3	1.	15	0.2
560	A	5	3	1.	15	0.2
561	A	5	4	1.	15	0.267
562	A	5	4	1.	15	0.267
563	A	8	3	1.	16	0.188
564	A	7	3	1.	16	0.188
565	A	6	3	1.	16	0.188
566	A	5	3	1.	16	0.188
567	A	5	4	1.	16	0.25
568	A	5	4	1.	16	0.25
569	A	5	3	1.	15	0.2
570	A	4	3	1.	15	0.2
571	A	3	3	1.	15	0.2
572	A	2	2	1.	15	0.133
573	A	1	1	1.	15	0.067

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
574	A	2	2	1.	15	0.133
575	A	3	2	1.	15	0.133
576	A	4	2	1.	15	0.133
577	A	5	4	1.	15	0.267
578	A	4	4	1.	15	0.267
579	A	3	3	1.	15	0.2
580	A	1	1	1.	15	0.067
581	A	2	2	1.	15	0.133
582	A	3	2	1.	15	0.133
583	A	4	2	1.	15	0.133
584	A	5	4	1.	15	0.267
585	A	4	3	1.	15	0.2
586	A	1	1	1.	15	0.067
587	A	2	2	1.	15	0.133
588	A	3	2	1.	15	0.133
589	A	4	2	1.	15	0.133
590	A	5	3	1.	16	0.188
591	A	4	3	1.	16	0.188
592	A	3	3	1.	16	0.188
593	A	2	2	1.	16	0.125
594	A	1	1	1.	16	0.062
595	A	2	2	1.	16	0.125
596	A	5	4	1.	16	0.25
597	A	4	4	1.	16	0.25
598	A	3	3	1.	16	0.188
599	A	1	1	1.	16	0.062
600	A	2	2	1.	16	0.125
601	A	3	2	1.	16	0.125
602	A	5	4	1.	16	0.25
603	A	4	3	1.	16	0.188
604	A	1	1	1.	16	0.062
605	A	2	2	1.	16	0.125
606	A	3	2	1.	16	0.125
607	A	4	2	1.	16	0.125
608	A	5	3	1.	15	0.2
609	A	4	3	1.	15	0.2

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
610	A	3	3	1.	15	0.2
611	A	2	2	1.	15	0.133
612	A	1	1	1.	15	0.067
613	A	2	2	1.	15	0.133
614	A	3	2	1.	15	0.133
615	A	4	2	1.	15	0.133
616	A	5	4	1.	15	0.267
617	A	4	4	1.	15	0.267
618	A	3	3	1.	15	0.2
619	A	1	1	1.	15	0.067
620	A	2	2	1.	15	0.133
621	A	3	2	1.	15	0.133
622	A	4	2	1.	15	0.133
623	A	5	4	1.	15	0.267
624	A	4	3	1.	15	0.2
625	A	1	1	1.	15	0.067
626	A	2	2	1.	15	0.133
627	A	3	2	1.	15	0.133
628	A	4	2	1.	15	0.133
629	A	5	3	1.	16	0.188
630	A	4	3	1.	16	0.188
631	A	3	3	1.	16	0.188
632	A	2	2	1.	16	0.125
633	A	1	1	1.	16	0.062
634	A	2	2	1.	16	0.125
635	A	5	4	1.	16	0.25
636	A	4	4	1.	16	0.25
637	A	3	3	1.	16	0.188
638	A	1	1	1.	16	0.062
639	A	2	2	1.	16	0.125
640	A	3	2	1.	16	0.125
641	A	5	4	1.	16	0.25
642	A	4	3	1.	16	0.188
643	A	1	1	1.	16	0.062
644	A	2	2	1.	16	0.125
645	A	3	2	1.	16	0.125

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
646	A	4	2	1.	16	0.125
647	A	4	4	1.	15	0.267
648	A	3	3	1.	15	0.2
649	A	2	2	1.	16	0.125
650	A	2	1	1.	11	0.091
651	A	2	1	1.	11	0.091
652	A	2	1	1.	11	0.091
653	A	2	1	1.	11	0.091
654	A	2	1	1.	11	0.091
655	A	2	1	1.	11	0.091
656	A	2	1	1.	11	0.091
657	A	2	1	1.	11	0.091
658	A	2	1	1.	13	0.077
659	A	2	1	1.	13	0.077
660	A	2	1	1.	13	0.077
661	A	2	1	1.	13	0.077
662	A	2	1	1.	13	0.077
663	A	2	1	1.	13	0.077
664	A	2	1	1.	13	0.077
665	A	2	1	1.	13	0.077
666	A	2	1	1.	13	0.077
667	A	2	1	1.	13	0.077
668	A	2	1	1.	13	0.077
669	A	2	1	1.	13	0.077
670	A	2	1	1.	13	0.077
671	A	2	1	1.	13	0.077
672	A	2	1	1.	13	0.077
673	A	2	1	1.	13	0.077
674	A	6	5	1.	13	0.385
675	A	6	5	1.	13	0.385
676	A	5	5	1.	13	0.385
677	A	5	5	1.	13	0.385
678	A	4	4	1.	13	0.308
679	A	4	4	1.	13	0.308
680	A	5	5	1.	13	0.385
681	A	5	5	1.	13	0.385

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
682	A	6	6	1.	13	0.462
683	A	6	6	1.	13	0.462
684	A	5	5	1.	13	0.385
685	A	5	5	1.	13	0.385
686	A	5	5	1.	13	0.385
687	A	5	5	1.	13	0.385
688	A	6	6	1.	13	0.462
689	A	6	6	1.	13	0.462
690	A	6	5	1.	13	0.385
691	A	6	5	1.	13	0.385
692	A	6	6	1.	13	0.462
693	A	6	6	1.	13	0.462
694	A	6	5	1.	13	0.385
695	A	6	5	1.	13	0.385
696	A	7	6	1.	13	0.462
697	A	7	6	1.	13	0.462
698	A	5	5	1.	15	0.333
699	A	2	1	1.	11	0.091
700	A	2	1	1.	11	0.091
701	A	2	1	1.	11	0.091
702	A	2	1	1.	11	0.091
703	A	2	1	1.	9	0.111
704	A	1	1	1.	11	0.091
705	A	1	1	1.	11	0.091
706	A	1	1	1.	11	0.091
707	A	2	2	1.	13	0.154
708	A	2	2	1.	13	0.154
709	A	2	2	1.	13	0.154
710	A	2	2	1.	13	0.154
711	A	2	2	1.	13	0.154
712	A	2	2	1.	13	0.154
713	A	2	2	1.	15	0.133
714	A	2	2	1.	15	0.133
715	A	2	2	1.	13	0.154
716	A	2	2	1.	15	0.133
717	A	2	2	1.	15	0.133

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
718	A	2	2	1.	15	0.133
719	A	1	1	1.	13	0.077
720	A	1	1	1.	13	0.077
721	A	1	1	1.	13	0.077
722	A	3	3	1.	13	0.231
723	A	2	2	1.	15	0.133
724	A	1	1	1.	15	0.067
725	A	1	1	1.	15	0.067
726	A	3	3	1.	15	0.2
727	A	1	1	1.	15	0.067
728	A	1	1	1.	13	0.077
729	A	1	1	1.	14	0.071
730	A	2	2	1.	11	0.182
731	A	2	2	1.	13	0.154
732	A	2	1	1.	11	0.091
733	A	2	1	1.	11	0.091
734	A	2	1	1.	9	0.111
735	A	1	1	1.	7	0.143
736	A	1	1	1.	11	0.091
737	A	1	1	1.	11	0.091
738	A	1	1	1.	11	0.091
739	A	3	2	1.	15	0.133
740	A	2	2	1.	15	0.133
741	A	1	1	1.	15	0.067
742	A	2	2	1.	15	0.133
743	A	2	2	1.	13	0.154
744	A	2	2	1.	15	0.133
745	A	2	2	1.	13	0.154
746	A	2	2	1.	13	0.154
747	A	2	2	1.	13	0.154
748	A	2	2	1.	13	0.154
749	A	2	2	1.	13	0.154
750	A	1	1	1.	13	0.077
751	A	1	1	1.	15	0.067
752	A	2	2	1.	13	0.154
753	A	1	1	1.	17	0.059

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
754	A	2	2	1.	15	0.133
755	A	2	2	1.	19	0.105
756	A	3	2	1.	18	0.111
757	A	3	2	1.	18	0.111
758	A	3	2	1.	16	0.125
759	A	3	2	1.	15	0.133
760	A	2	1	1.	18	0.056
761	A	3	2	1.	18	0.111
762	A	3	2	1.	18	0.111
763	A	2	2	1.	18	0.111
764	A	3	2	1.	18	0.111
765	A	3	2	1.	18	0.111
766	A	3	2	1.	16	0.125
767	A	3	2	1.	15	0.133
768	A	3	2	1.	18	0.111
769	A	3	2	1.	18	0.111
770	A	2	1	1.	18	0.056
771	A	3	2	1.	18	0.111
772	A	3	2	1.	18	0.111
773	A	3	2	1.	18	0.111
774	A	3	2	1.	16	0.125
775	A	3	2	1.	15	0.133
776	A	3	2	1.	18	0.111
777	A	3	2	1.	18	0.111
778	A	3	2	1.	18	0.111
779	A	3	2	1.	18	0.111
780	A	3	2	1.	18	0.111
781	A	3	2	1.	18	0.111
782	A	2	1	1.	16	0.062
783	A	3	2	1.	15	0.133
784	A	3	2	1.	18	0.111
785	A	2	2	1.	18	0.111
786	A	3	2	1.	18	0.111
787	A	3	2	1.	18	0.111
788	A	2	1	1.	18	0.056
789	A	3	2	1.	18	0.111

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
790	A	3	2	1.	16	0.125
791	A	2	2	1.	15	0.133
792	A	3	2	1.	18	0.111
793	A	3	2	1.	18	0.111
794	A	3	2	1.	18	0.111
795	A	3	2	1.	18	0.111
796	A	3	2	1.	18	0.111
797	A	2	2	1.	18	0.111
798	A	3	2	1.	16	0.125
799	A	3	2	1.	15	0.133
800	A	3	2	1.	18	0.111
801	A	3	2	1.	18	0.111
802	A	3	2	1.	18	0.111
803	A	3	2	1.	18	0.111
804	A	3	2	1.	20	0.1
805	A	3	2	1.	20	0.1
806	A	3	2	1.	18	0.111
807	A	3	2	1.	17	0.118
808	A	2	2	1.	20	0.1
809	A	3	2	1.	20	0.1
810	A	3	2	1.	20	0.1
811	A	3	2	1.	20	0.1
812	A	3	2	1.	20	0.1
813	A	3	2	1.	20	0.1
814	A	3	2	1.	18	0.111
815	A	3	2	1.	17	0.118
816	A	3	2	1.	20	0.1
817	A	3	2	1.	20	0.1
818	A	2	2	1.	20	0.1
819	A	3	2	1.	20	0.1
820	A	3	2	1.	18	0.111
821	A	3	2	1.	17	0.118
822	A	3	2	1.	20	0.1
823	A	3	2	1.	20	0.1
824	A	3	2	1.	20	0.1
825	A	3	2	1.	20	0.1

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
826	A	2	2	1.	20	0.1
827	A	3	2	1.	20	0.1
828	A	3	2	1.	20	0.1
829	A	3	2	1.	20	0.1
830	A	2	2	1.	18	0.111
831	A	3	2	1.	17	0.118
832	A	3	2	1.	20	0.1
833	A	3	2	1.	20	0.1
834	A	2	2	1.	20	0.1
835	A	3	2	1.	20	0.1
836	A	2	2	1.	20	0.1
837	A	3	2	1.	20	0.1
838	A	3	2	1.	18	0.111
839	A	3	2	1.	17	0.118
840	A	2	2	1.	20	0.1
841	A	3	2	1.	20	0.1
842	A	3	2	1.	20	0.1
843	A	3	2	1.	20	0.1
844	A	3	2	1.	20	0.1
845	A	3	2	1.	20	0.1
846	A	2	2	1.	18	0.111
847	A	3	2	1.	17	0.118
848	A	3	2	1.	20	0.1
849	A	3	2	1.	20	0.1
850	A	3	2	1.	20	0.1
851	A	3	2	1.	20	0.1
852	A	3	2	1.	20	0.1
853	A	3	2	1.	20	0.1
854	A	3	2	1.	18	0.111
855	A	3	2	1.	17	0.118
856	A	2	2	1.	20	0.1
857	A	4	4	1.	20	0.2
858	A	3	2	1.	20	0.1
859	A	3	2	1.	20	0.1
860	A	3	2	1.	18	0.111
861	A	3	2	1.	17	0.118

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
862	A	3	2	1.	20	0.1
863	A	3	2	1.	20	0.1
864	A	2	2	1.	20	0.1
865	A	4	4	1.	20	0.2
866	A	3	2	1.	20	0.1
867	A	3	2	1.	20	0.1
868	A	3	2	1.	20	0.1
869	A	3	2	1.	17	0.118
870	A	3	2	1.	20	0.1
871	A	3	2	1.	20	0.1
872	A	3	2	1.	20	0.1
873	A	3	2	1.	20	0.1
874	A	2	2	1.	20	0.1
875	A	4	4	1.	20	0.2
876	A	3	2	1.	20	0.1
877	A	3	2	1.	20	0.1
878	A	3	2	1.	20	0.1
879	A	3	2	1.	20	0.1
880	A	2	2	1.	18	0.111
881	A	4	4	1.	17	0.235
882	A	3	2	1.	20	0.1
883	A	3	2	1.	20	0.1
884	A	3	2	1.	20	0.1
885	A	3	2	1.	20	0.1
886	A	3	2	1.	20	0.1
887	A	3	2	1.	20	0.1
888	A	2	2	1.	20	0.1
889	A	4	4	1.	20	0.2
890	A	3	2	1.	18	0.111
891	A	3	2	1.	17	0.118
892	A	3	2	1.	20	0.1
893	A	3	2	1.	20	0.1
894	A	3	2	1.	20	0.1
895	A	3	2	1.	18	0.111
896	A	3	2	1.	17	0.118
897	A	2	2	1.	20	0.1

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
898	A	3	2	1.	20	0.1
899	A	3	2	1.	20	0.1
900	A	3	2	1.	20	0.1
901	A	3	2	1.	18	0.111
902	A	3	2	1.	17	0.118
903	A	3	2	1.	20	0.1
904	A	3	2	1.	20	0.1
905	A	2	2	1.	20	0.1
906	A	3	2	1.	20	0.1
907	A	3	2	1.	20	0.1
908	A	3	2	1.	20	0.1
909	A	3	2	1.	20	0.1
910	A	3	2	1.	20	0.1
911	A	3	2	1.	20	0.1
912	A	3	2	1.	20	0.1
913	A	2	2	1.	18	0.111
914	A	3	2	1.	17	0.118
915	A	3	2	1.	20	0.1
916	A	3	2	1.	20	0.1
917	A	3	2	1.	20	0.1
918	A	3	2	1.	20	0.1
919	A	2	2	1.	20	0.1
920	A	3	2	1.	20	0.1
921	A	3	2	1.	18	0.111
922	A	3	2	1.	17	0.118
923	A	3	2	1.	20	0.1
924	A	3	2	1.	18	0.111
925	A	3	2	1.	17	0.118
926	A	2	2	1.	20	0.1
927	A	2	2	1.	20	0.1
928	A	2	2	1.	20	0.1
929	A	2	2	1.	20	0.1
930	A	3	2	1.	18	0.111
931	A	3	2	1.	17	0.118
932	A	3	2	1.	20	0.1
933	A	3	2	1.	20	0.1

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
934	A	2	2	1.	20	0.1
935	A	2	2	1.	20	0.1
936	A	2	2	1.	20	0.1
937	A	2	2	1.	20	0.1
938	A	3	2	1.	17	0.118
939	A	3	2	1.	20	0.1
940	A	3	2	1.	20	0.1
941	A	3	2	1.	20	0.1
942	A	3	2	1.	20	0.1
943	A	2	2	1.	20	0.1
944	A	2	2	1.	20	0.1
945	A	2	2	1.	20	0.1
946	A	3	2	1.	20	0.1
947	A	3	2	1.	20	0.1
948	A	3	2	1.	20	0.1
949	A	2	2	1.	18	0.111
950	A	2	2	1.	17	0.118
951	A	2	2	1.	20	0.1
952	A	2	2	1.	20	0.1
953	A	3	2	1.	20	0.1
954	A	3	2	1.	20	0.1
955	A	3	2	1.	20	0.1
956	A	2	2	1.	20	0.1
957	A	2	2	1.	20	0.1
958	A	2	2	1.	18	0.111
959	A	2	2	1.	17	0.118
960	A	2	2	1.	20	0.1
961	A	3	2	1.	20	0.1
962	A	3	2	1.	20	0.1
963	A	3	2	1.	20	0.1
964	A	2	2	1.	20	0.1
965	A	2	2	1.	20	0.1
966	A	2	2	1.	20	0.1
967	A	2	2	1.	20	0.1
968	A	2	2	1.	18	0.111
969	A	4	3	1.	20	0.15

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
970	A	4	3	1.	20	0.15
971	A	4	3	1.	20	0.15
972	A	4	3	1.	20	0.15
973	A	4	3	1.	20	0.15
974	A	4	3	1.	20	0.15
975	A	4	3	1.	22	0.136
976	A	4	3	1.	22	0.136
977	A	4	3	1.	22	0.136
978	A	4	3	1.	22	0.136
979	A	4	3	1.	22	0.136
980	A	4	3	1.	22	0.136
981	A	4	4	1.	22	0.182
982	A	4	4	1.	22	0.182
983	A	4	4	1.	22	0.182
984	A	4	4	1.	22	0.182
985	A	4	4	1.	22	0.182
986	A	4	4	1.	22	0.182
987	A	2	2	1.	22	0.091
988	A	2	2	1.	22	0.091
989	A	2	2	1.	20	0.1
990	A	2	2	1.	19	0.105
991	A	2	2	1.	22	0.091
992	A	2	2	1.	20	0.1
993	A	2	2	1.	22	0.091
994	A	2	2	1.	22	0.091
995	A	2	2	1.	25	0.08
996	A	3	3	1.	27	0.111
997	A	3	3	1.	18	0.167
998	A	4	4	0.94	20	0.2
999	A	2	2	1.	20	0.1
1000	A	2	1	1.	20	0.05
1001	A	2	2	1.	20	0.1
1002	A	2	2	1.	20	0.1
1003	A	2	2	1.	18	0.111
1004	A	2	2	1.	20	0.1
1005	A	2	2	1.	20	0.1

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	number of rules / integrand leaf size
1006	A	2	2	1.	20	0.1
1007	A	2	2	1.	20	0.1
1008	A	2	1	1.	20	0.05
1009	A	2	2	1.	20	0.1
1010	A	2	2	1.	20	0.1
1011	A	2	2	1.	18	0.111
1012	A	2	2	1.	20	0.1
1013	A	2	2	1.	20	0.1
1014	A	2	2	1.	20	0.1
1015	A	2	2	1.	18	0.111
1016	A	2	2	1.	18	0.111
1017	A	2	2	1.	18	0.111
1018	A	2	2	1.	16	0.125
1019	A	2	2	1.	18	0.111
1020	A	2	2	1.	18	0.111
1021	A	2	2	1.	18	0.111
1022	A	2	1	1.	18	0.056
1023	A	2	2	1.	18	0.111
1024	A	2	2	1.	18	0.111
1025	A	2	2	1.	18	0.111
1026	A	2	2	1.	18	0.111
1027	A	2	2	1.	19	0.105
1028	A	2	1	1.	17	0.059
1029	A	2	1	1.	17	0.059
1030	A	2	1	1.	15	0.067
1031	A	1	0	1.	5	0.
1032	A	2	1	1.	17	0.059
1033	A	2	1	1.	17	0.059
1034	A	1	1	1.	17	0.059
1035	A	2	1	1.	17	0.059
1036	A	2	1	1.	17	0.059
1037	A	2	1	1.	17	0.059
1038	A	2	1	1.	19	0.053
1039	A	3	2	1.	19	0.105
1040	A	2	1	1.	17	0.059
1041	A	1	1	1.	7	0.143

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1042	A	2	1	1.	19	0.053
1043	A	2	1	1.	19	0.053
1044	A	2	1	1.	19	0.053
1045	A	1	1	1.	19	0.053
1046	A	2	1	1.	19	0.053
1047	A	2	1	1.	19	0.053
1048	A	2	1	1.	19	0.053
1049	A	2	1	1.	19	0.053
1050	A	2	1	1.	19	0.053
1051	A	2	1	1.	17	0.059
1052	A	1	1	1.	7	0.143
1053	A	2	2	1.	19	0.105
1054	A	3	2	1.	19	0.105
1055	A	3	2	1.	19	0.105
1056	A	2	1	1.	19	0.053
1057	A	2	1	1.	19	0.053
1058	A	2	1	1.	17	0.059
1059	A	1	1	1.	7	0.143
1060	A	3	2	1.	19	0.105
1061	A	3	3	1.	19	0.158
1062	A	3	2	1.	19	0.105
1063	A	7	4	1.	17	0.235
1064	A	6	4	1.	17	0.235
1065	A	5	4	1.	17	0.235
1066	A	4	4	1.	17	0.235
1067	A	3	3	1.	17	0.176
1068	A	3	3	1.	17	0.176
1069	A	3	3	1.	17	0.176
1070	A	1	1	1.	17	0.059
1071	A	2	2	1.	17	0.118
1072	A	3	2	1.	17	0.118
1073	A	4	2	1.	17	0.118
1074	A	5	2	1.	17	0.118
1075	A	7	4	1.	17	0.235
1076	A	6	4	1.	17	0.235
1077	A	5	4	1.	17	0.235

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1078	A	4	3	1.	17	0.176
1079	A	4	4	1.	17	0.235
1080	A	4	3	1.	17	0.176
1081	A	4	4	1.	17	0.235
1082	A	4	3	1.	17	0.176
1083	A	1	1	1.	17	0.059
1084	A	2	2	1.	17	0.118
1085	A	3	2	1.	17	0.118
1086	A	4	2	1.	17	0.118
1087	A	5	2	1.	17	0.118
1088	A	8	4	1.	17	0.235
1089	A	7	4	1.	17	0.235
1090	A	6	4	1.	17	0.235
1091	A	5	3	1.	17	0.176
1092	A	5	4	1.	17	0.235
1093	A	5	4	1.	17	0.235
1094	A	5	3	1.	17	0.176
1095	A	5	4	1.	17	0.235
1096	A	5	4	1.	17	0.235
1097	A	5	3	1.	17	0.176
1098	A	1	1	1.	17	0.059
1099	A	2	2	1.	17	0.118
1100	A	3	2	1.	17	0.118
1101	A	4	2	1.	17	0.118
1102	A	5	2	1.	17	0.118
1103	A	6	2	1.	17	0.118
1104	A	4	3	1.	20	0.15
1105	A	3	3	1.	28	0.107
1106	A	6	3	1.	17	0.176
1107	A	5	3	1.	17	0.176
1108	A	4	3	1.	17	0.176
1109	A	3	3	1.	17	0.176
1110	A	2	2	1.	17	0.118
1111	A	1	1	1.	17	0.059
1112	A	2	2	1.	17	0.118
1113	A	3	2	1.	17	0.118

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1114	A	4	2	1.	17	0.118
1115	A	5	2	1.	17	0.118
1116	A	6	4	1.	17	0.235
1117	A	5	4	1.	17	0.235
1118	A	4	4	1.	17	0.235
1119	A	3	3	1.	17	0.176
1120	A	1	1	1.	17	0.059
1121	A	1	1	1.	17	0.059
1122	A	2	2	1.	17	0.118
1123	A	3	2	1.	17	0.118
1124	A	4	2	1.	17	0.118
1125	A	5	2	1.	17	0.118
1126	A	7	4	1.	17	0.235
1127	A	6	4	1.	17	0.235
1128	A	5	4	1.	17	0.235
1129	A	4	3	1.	17	0.176
1130	A	1	1	1.	17	0.059
1131	A	2	2	1.	17	0.118
1132	A	2	2	1.	17	0.118
1133	A	2	2	1.	17	0.118
1134	A	3	3	1.	17	0.176
1135	A	4	3	1.	17	0.176
1136	A	5	3	1.	17	0.176
1137	A	5	3	1.	20	0.15
1138	A	4	3	1.	20	0.15
1139	A	3	3	1.	20	0.15
1140	A	2	2	1.	20	0.1
1141	A	1	1	1.	20	0.05
1142	A	2	2	1.	20	0.1
1143	A	3	2	1.	20	0.1
1144	A	4	2	1.	20	0.1
1145	A	5	3	1.	23	0.13
1146	A	4	3	1.	23	0.13
1147	A	3	3	1.	23	0.13
1148	A	2	2	1.	23	0.087
1149	A	1	1	1.	23	0.043

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1150	A	2	2	1.	23	0.087
1151	A	3	2	1.	23	0.087
1152	A	4	2	1.	23	0.087
1153	A	5	3	1.	19	0.158
1154	A	4	3	1.	19	0.158
1155	A	3	3	1.	19	0.158
1156	A	2	2	1.	19	0.105
1157	A	1	1	1.	19	0.053
1158	A	2	2	1.	19	0.105
1159	A	3	2	1.	19	0.105
1160	A	7	4	1.	17	0.235
1161	A	5	4	1.	17	0.235
1162	A	3	3	1.	17	0.176
1163	A	2	2	1.	17	0.118
1164	A	4	2	1.	17	0.118
1165	A	1	1	1.	17	0.059
1166	A	1	1	1.	20	0.05
1167	A	1	1	1.	17	0.059
1168	A	1	1	1.	20	0.05
1169	A	2	2	1.	23	0.087
1170	A	10	7	1.	20	0.35
1171	A	6	5	1.	25	0.2
1172	A	5	5	1.	25	0.2
1173	A	4	4	1.	25	0.16
1174	A	4	4	1.	25	0.16
1175	A	4	4	1.	25	0.16
1176	A	5	5	1.	25	0.2
1177	A	6	5	1.	25	0.2
1178	A	11	8	1.	25	0.32
1179	A	10	7	1.	25	0.28
1180	A	1	1	1.	25	0.04
1181	A	2	2	1.	25	0.08
1182	A	3	2	1.	25	0.08
1183	A	4	2	1.	25	0.08
1184	A	11	8	1.	25	0.32
1185	A	10	7	1.	25	0.28

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1186	A	1	1	1.	25	0.04
1187	A	2	2	1.	25	0.08
1188	A	3	2	1.	25	0.08
1189	A	5	4	1.	25	0.16
1190	A	4	4	1.	25	0.16
1191	A	3	3	1.	25	0.12
1192	A	4	4	1.	25	0.16
1193	A	5	4	1.	25	0.16
1194	A	12	9	1.	25	0.36
1195	A	11	8	1.	25	0.32
1196	A	1	1	1.	25	0.04
1197	A	2	2	1.	25	0.08
1198	A	3	2	1.	25	0.08
1199	A	6	5	1.	25	0.2
1200	A	5	5	1.	25	0.2
1201	A	4	4	1.	25	0.16
1202	A	4	4	1.	25	0.16
1203	A	4	4	1.	25	0.16
1204	A	5	5	1.	25	0.2
1205	A	6	5	1.	25	0.2
1206	A	6	6	1.	25	0.24
1207	A	5	5	1.	25	0.2
1208	A	4	4	1.	25	0.16
1209	A	3	3	1.	25	0.12
1210	A	4	4	1.	25	0.16
1211	A	5	4	1.	25	0.16
1212	A	12	9	1.	25	0.36
1213	A	11	8	1.	25	0.32
1214	A	1	1	1.	25	0.04
1215	A	2	2	1.	25	0.08
1216	A	3	2	1.	25	0.08
1217	A	6	5	1.	25	0.2
1218	A	5	5	1.	25	0.2
1219	A	4	4	1.	25	0.16
1220	A	5	5	1.	25	0.2
1221	A	4	4	1.	25	0.16

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1222	A	5	5	1.	25	0.2
1223	A	6	5	1.	25	0.2
1224	A	12	8	1.	25	0.32
1225	A	1	1	1.	25	0.04
1226	A	2	2	1.	25	0.08
1227	A	3	2	1.	25	0.08
1228	A	4	2	1.	25	0.08
1229	A	2	1	1.	19	0.053
1230	A	2	1	1.	17	0.059
1231	A	1	1	1.	19	0.053
1232	A	1	1	1.	19	0.053
1233	A	3	3	1.	16	0.188
1234	A	3	3	1.	19	0.158
1235	A	2	2	1.	15	0.133
1236	A	2	1	1.	13	0.077
1237	A	2	1	1.	13	0.077
1238	A	2	1	1.	13	0.077
1239	A	2	1	1.	11	0.091
1240	A	1	0	1.	5	0.
1241	A	2	1	1.	13	0.077
1242	A	2	1	1.	13	0.077
1243	A	1	1	1.	13	0.077
1244	A	2	1	1.	13	0.077
1245	A	2	1	1.	13	0.077
1246	A	2	1	1.	15	0.067
1247	A	2	1	1.	15	0.067
1248	A	2	1	1.	15	0.067
1249	A	2	1	1.	13	0.077
1250	A	1	1	1.	7	0.143
1251	A	2	1	1.	15	0.067
1252	A	2	1	1.	15	0.067
1253	A	2	1	1.	15	0.067
1254	A	1	1	1.	15	0.067
1255	A	2	1	1.	15	0.067
1256	A	2	1	1.	15	0.067
1257	A	2	1	1.	15	0.067

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1258	A	2	1	1.	15	0.067
1259	A	2	1	1.	15	0.067
1260	A	2	1	1.	15	0.067
1261	A	2	1	1.	15	0.067
1262	A	2	1	1.	13	0.077
1263	A	1	1	1.	7	0.143
1264	A	2	1	1.	15	0.067
1265	A	2	1	1.	15	0.067
1266	A	2	1	1.	15	0.067
1267	A	2	1	1.	15	0.067
1268	A	1	1	1.	15	0.067
1269	A	2	2	1.	15	0.133
1270	A	2	1	1.	15	0.067
1271	A	2	1	1.	15	0.067
1272	A	2	1	1.	15	0.067
1273	A	2	1	1.	15	0.067
1274	A	2	1	1.	15	0.067
1275	A	2	1	1.	15	0.067
1276	A	2	1	1.	15	0.067
1277	A	2	1	1.	15	0.067
1278	A	2	1	1.	15	0.067
1279	A	2	1	1.	15	0.067
1280	A	2	1	1.	15	0.067
1281	A	2	1	1.	13	0.077
1282	A	1	1	1.	7	0.143
1283	A	2	1	1.	15	0.067
1284	A	2	1	1.	15	0.067
1285	A	2	1	1.	15	0.067
1286	A	2	1	1.	15	0.067
1287	A	2	1	1.	15	0.067
1288	A	2	1	1.	15	0.067
1289	A	2	1	1.	15	0.067
1290	A	2	1	1.	15	0.067
1291	A	1	1	1.	15	0.067
1292	A	2	2	1.	15	0.133
1293	A	3	2	1.	15	0.133

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1294	A	4	2	1.	15	0.133
1295	A	5	2	1.	15	0.133
1296	A	2	1	1.	15	0.067
1297	A	2	1	1.	15	0.067
1298	A	2	1	1.	15	0.067
1299	A	2	1	1.	15	0.067
1300	A	2	1	1.	15	0.067
1301	A	2	1	1.	15	0.067
1302	A	2	1	1.	15	0.067
1303	A	2	1	1.	15	0.067
1304	A	2	1	1.	15	0.067
1305	A	2	1	1.	15	0.067
1306	A	2	1	1.	15	0.067
1307	A	2	1	1.	15	0.067
1308	A	2	1	1.	15	0.067
1309	A	2	1	1.	15	0.067
1310	A	2	1	1.	13	0.077
1311	A	1	1	1.	7	0.143
1312	A	2	1	1.	15	0.067
1313	A	2	1	1.	15	0.067
1314	A	2	1	1.	15	0.067
1315	A	2	1	1.	15	0.067
1316	A	2	1	1.	15	0.067
1317	A	2	1	1.	15	0.067
1318	A	2	1	1.	15	0.067
1319	A	2	1	1.	15	0.067
1320	A	2	1	1.	15	0.067
1321	A	2	1	1.	15	0.067
1322	A	2	1	1.	15	0.067
1323	A	1	1	1.	15	0.067
1324	A	2	2	1.	15	0.133
1325	A	3	2	1.	15	0.133
1326	A	4	2	1.	15	0.133
1327	A	5	2	1.	15	0.133
1328	A	6	2	1.	15	0.133
1329	A	7	2	1.	15	0.133

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1330	A	8	2	1.	15	0.133
1331	A	2	1	1.	15	0.067
1332	A	2	1	1.	15	0.067
1333	A	2	1	1.	15	0.067
1334	A	2	1	1.	15	0.067
1335	A	2	1	1.	15	0.067
1336	A	2	1	1.	15	0.067
1337	A	2	1	1.	15	0.067
1338	A	2	1	1.	13	0.077
1339	A	1	1	1.	7	0.143
1340	A	3	2	1.	15	0.133
1341	A	2	1	1.	15	0.067
1342	A	2	1	1.	15	0.067
1343	A	2	1	1.	15	0.067
1344	A	2	1	1.	15	0.067
1345	A	2	1	1.	15	0.067
1346	A	2	1	1.	15	0.067
1347	A	2	1	1.	13	0.077
1348	A	1	1	1.	7	0.143
1349	A	2	1	1.	15	0.067
1350	A	2	1	1.	15	0.067
1351	A	2	1	1.	15	0.067
1352	A	2	1	1.	15	0.067
1353	A	2	1	1.	15	0.067
1354	A	2	1	1.	15	0.067
1355	A	2	1	1.	15	0.067
1356	A	2	1	1.	15	0.067
1357	A	1	1	1.	13	0.077
1358	A	1	1	1.	7	0.143
1359	A	2	1	1.	15	0.067
1360	A	2	1	1.	15	0.067
1361	A	2	1	1.	15	0.067
1362	A	2	1	1.	15	0.067
1363	A	2	1	1.	15	0.067
1364	A	2	1	1.	15	0.067
1365	A	1	1	1.	15	0.067

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1366	A	2	2	1.	15	0.133
1367	A	3	2	1.	15	0.133
1368	A	2	1	1.	15	0.067
1369	A	2	1	1.	15	0.067
1370	A	2	1	1.	13	0.077
1371	A	1	1	1.	7	0.143
1372	A	2	1	1.	15	0.067
1373	A	2	1	1.	15	0.067
1374	A	2	1	1.	15	0.067
1375	A	2	1	1.	17	0.059
1376	A	2	1	1.	17	0.059
1377	A	2	1	1.	17	0.059
1378	A	2	1	1.	17	0.059
1379	A	2	1	1.	15	0.067
1380	A	1	1	1.	9	0.111
1381	A	3	3	1.	17	0.176
1382	A	3	3	1.	17	0.176
1383	A	4	4	1.	17	0.235
1384	A	5	4	1.	17	0.235
1385	A	6	4	1.	17	0.235
1386	A	7	4	1.	17	0.235
1387	A	2	1	1.	17	0.059
1388	A	2	1	1.	17	0.059
1389	A	2	1	1.	17	0.059
1390	A	2	1	1.	17	0.059
1391	A	2	1	1.	15	0.067
1392	A	1	1	1.	9	0.111
1393	A	4	3	1.	17	0.176
1394	A	4	4	1.	17	0.235
1395	A	4	3	1.	17	0.176
1396	A	5	4	1.	17	0.235
1397	A	6	4	1.	17	0.235
1398	A	7	4	1.	17	0.235
1399	A	2	1	1.	17	0.059
1400	A	2	1	1.	17	0.059
1401	A	2	1	1.	17	0.059

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1402	A	2	1	1.	17	0.059
1403	A	2	1	1.	15	0.067
1404	A	1	1	1.	9	0.111
1405	A	5	3	1.	17	0.176
1406	A	5	4	1.	17	0.235
1407	A	5	4	1.	17	0.235
1408	A	5	3	1.	17	0.176
1409	A	6	4	1.	17	0.235
1410	A	7	4	1.	17	0.235
1411	A	3	3	1.	13	0.231
1412	A	4	4	1.	13	0.308
1413	A	2	1	1.	17	0.059
1414	A	2	1	1.	17	0.059
1415	A	2	1	1.	17	0.059
1416	A	2	1	1.	17	0.059
1417	A	2	1	1.	15	0.067
1418	A	1	1	1.	9	0.111
1419	A	2	2	1.	17	0.118
1420	A	3	3	1.	17	0.176
1421	A	4	3	1.	17	0.176
1422	A	5	3	1.	17	0.176
1423	A	6	3	1.	17	0.176
1424	A	2	1	1.	17	0.059
1425	A	2	1	1.	17	0.059
1426	A	2	1	1.	17	0.059
1427	A	2	1	1.	17	0.059
1428	A	2	1	1.	15	0.067
1429	A	1	1	1.	9	0.111
1430	A	3	3	1.	17	0.176
1431	A	4	4	1.	17	0.235
1432	A	5	4	1.	17	0.235
1433	A	6	4	1.	17	0.235
1434	A	2	1	1.	17	0.059
1435	A	2	1	1.	17	0.059
1436	A	2	1	1.	17	0.059
1437	A	2	1	1.	17	0.059

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1438	A	2	1	1.	15	0.067
1439	A	1	1	1.	9	0.111
1440	A	4	3	1.	17	0.176
1441	A	5	4	1.	17	0.235
1442	A	6	4	1.	17	0.235
1443	A	7	4	1.	17	0.235
1444	A	2	2	1.	20	0.1
1445	A	2	2	1.	20	0.1
1446	A	2	2	1.	20	0.1
1447	A	2	2	1.	20	0.1
1448	A	2	2	1.	20	0.1
1449	A	2	2	1.	20	0.1
1450	A	2	2	1.	20	0.1
1451	A	2	2	1.	20	0.1
1452	A	2	2	1.	20	0.1
1453	A	2	2	1.	13	0.154
1454	A	2	2	1.	17	0.118
1455	A	5	5	1.	15	0.333
1456	A	2	1	1.	13	0.077
1457	A	2	1	1.	15	0.067
1458	A	4	4	1.	17	0.235
1459	A	4	4	1.	17	0.235
1460	A	7	3	1.	19	0.158
1461	A	6	3	1.	19	0.158
1462	A	5	3	1.	19	0.158
1463	A	4	3	1.	19	0.158
1464	A	3	3	1.	19	0.158
1465	A	3	3	1.	19	0.158
1466	A	1	1	1.	19	0.053
1467	A	2	2	1.	19	0.105
1468	A	3	2	1.	19	0.105
1469	A	4	2	1.	19	0.105
1470	A	5	2	1.	19	0.105
1471	A	7	3	1.	19	0.158
1472	A	6	3	1.	19	0.158
1473	A	5	3	1.	19	0.158

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1474	A	4	3	1.	19	0.158
1475	A	4	4	1.	19	0.21
1476	A	4	3	1.	19	0.158
1477	A	1	1	1.	19	0.053
1478	A	2	2	1.	19	0.105
1479	A	3	2	1.	19	0.105
1480	A	4	2	1.	19	0.105
1481	A	8	3	1.	19	0.158
1482	A	7	3	1.	19	0.158
1483	A	6	3	1.	19	0.158
1484	A	5	3	1.	19	0.158
1485	A	5	4	1.	19	0.21
1486	A	5	4	1.	19	0.21
1487	A	5	3	1.	19	0.158
1488	A	1	1	1.	19	0.053
1489	A	2	2	1.	19	0.105
1490	A	3	2	1.	19	0.105
1491	A	4	2	1.	19	0.105
1492	A	6	3	1.	19	0.158
1493	A	5	3	1.	19	0.158
1494	A	4	3	1.	19	0.158
1495	A	3	3	1.	19	0.158
1496	A	2	2	1.	19	0.105
1497	A	1	1	1.	19	0.053
1498	A	2	2	1.	19	0.105
1499	A	3	2	1.	19	0.105
1500	A	4	2	1.	19	0.105
1501	A	5	2	1.	19	0.105
1502	A	6	4	1.	19	0.21
1503	A	5	4	1.	19	0.21
1504	A	4	4	1.	19	0.21
1505	A	3	3	1.	19	0.158
1506	A	1	1	1.	19	0.053
1507	A	2	2	1.	19	0.105
1508	A	3	2	1.	19	0.105
1509	A	4	2	1.	19	0.105

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1510	A	5	2	1.	19	0.105
1511	A	6	2	1.	19	0.105
1512	A	7	4	1.	19	0.21
1513	A	6	4	1.	19	0.21
1514	A	5	4	1.	19	0.21
1515	A	4	3	1.	19	0.158
1516	A	1	1	1.	19	0.053
1517	A	2	2	1.	19	0.105
1518	A	3	2	1.	19	0.105
1519	A	4	2	1.	19	0.105
1520	A	5	2	1.	19	0.105
1521	A	6	2	1.	19	0.105
1522	A	2	2	1.	20	0.1
1523	A	2	2	1.	19	0.105
1524	A	2	2	1.	19	0.105
1525	A	2	2	1.	17	0.118
1526	A	2	2	1.	19	0.105
1527	A	1	1	1.	19	0.053
1528	A	2	2	1.	19	0.105
1529	A	2	2	1.	19	0.105
1530	A	1	1	1.	7	0.143
1531	A	2	2	1.	19	0.105
1532	A	2	2	1.	17	0.118
1533	A	2	2	1.	19	0.105
1534	A	1	1	1.	19	0.053
1535	A	2	2	1.	19	0.105
1536	A	3	3	1.	20	0.15
1537	A	2	2	1.	20	0.1
1538	A	3	3	1.	20	0.15
1539	A	3	3	1.	18	0.167
1540	A	3	3	1.	20	0.15
1541	A	2	2	1.	20	0.1
1542	A	2	2	1.	20	0.1
1543	A	2	2	1.	21	0.095
1544	A	1	1	1.	8	0.125
1545	A	2	2	1.	21	0.095

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1546	A	2	2	1.	19	0.105
1547	A	2	2	1.	21	0.095
1548	A	1	1	1.	21	0.048
1549	A	2	2	1.	21	0.095
1550	A	1	1	1.	19	0.053
1551	A	2	2	1.	29	0.069
1552	A	2	2	1.	15	0.133
1553	A	2	2	1.	19	0.105
1554	A	2	2	1.	19	0.105
1555	A	2	2	1.	29	0.069
1556	A	3	3	1.	15	0.2
1557	A	2	2	1.	15	0.133
1558	A	2	2	1.	19	0.105
1559	A	2	2	1.	20	0.1
1560	A	5	3	1.	19	0.158
1561	A	4	3	1.	19	0.158
1562	A	3	3	1.	19	0.158
1563	A	3	3	1.	19	0.158
1564	A	4	4	1.	19	0.21
1565	A	5	4	1.	19	0.21
1566	A	6	5	1.	19	0.263
1567	A	5	5	1.	19	0.263
1568	A	4	4	1.	19	0.21
1569	A	5	5	1.	19	0.263
1570	A	6	5	1.	19	0.263
1571	A	4	3	1.	19	0.158
1572	A	3	3	1.	19	0.158
1573	A	2	2	1.	19	0.105
1574	A	3	3	1.	19	0.158
1575	A	4	3	1.	19	0.158
1576	A	3	2	1.	19	0.105
1577	A	2	2	1.	19	0.105
1578	A	2	2	1.	19	0.105
1579	A	1	1	1.	19	0.053
1580	A	2	2	1.	19	0.105
1581	A	3	2	1.	19	0.105

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1582	A	4	2	1.	19	0.105
1583	A	6	4	1.	19	0.21
1584	A	5	4	1.	19	0.21
1585	A	4	4	1.	19	0.21
1586	A	4	4	1.	19	0.21
1587	A	5	5	1.	19	0.263
1588	A	3	2	1.	19	0.105
1589	A	2	2	1.	19	0.105
1590	A	1	1	1.	19	0.053
1591	A	1	1	1.	19	0.053
1592	A	2	2	1.	19	0.105
1593	A	3	2	1.	19	0.105
1594	A	4	2	1.	19	0.105
1595	A	8	6	1.	19	0.316
1596	A	7	6	1.	19	0.316
1597	A	6	6	1.	19	0.316
1598	A	5	5	1.	19	0.263
1599	A	6	6	1.	19	0.316
1600	A	7	6	1.	19	0.316
1601	A	8	6	1.	19	0.316
1602	A	3	2	1.	19	0.105
1603	A	2	2	1.	19	0.105
1604	A	1	1	1.	19	0.053
1605	A	1	1	1.	19	0.053
1606	A	2	2	1.	19	0.105
1607	A	3	2	1.	19	0.105
1608	A	4	2	1.	19	0.105
1609	A	6	4	1.	19	0.21
1610	A	5	4	1.	19	0.21
1611	A	4	4	1.	19	0.21
1612	A	3	3	1.	19	0.158
1613	A	4	4	1.	19	0.21
1614	A	5	4	1.	19	0.21
1615	A	6	4	1.	19	0.21
1616	A	4	3	1.	19	0.158
1617	A	3	3	1.	19	0.158

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1618	A	2	2	1.	19	0.105
1619	A	1	1	1.	19	0.053
1620	A	2	2	1.	19	0.105
1621	A	3	2	1.	19	0.105
1622	A	4	2	1.	19	0.105
1623	A	8	7	1.	19	0.368
1624	A	7	7	1.	19	0.368
1625	A	6	6	1.	19	0.316
1626	A	6	6	1.	19	0.316
1627	A	7	6	1.	19	0.316
1628	A	8	6	1.	19	0.316
1629	A	2	2	1.	15	0.133
1630	A	6	4	1.	19	0.21
1631	A	5	4	1.	19	0.21
1632	A	4	4	1.	19	0.21
1633	A	4	4	1.	19	0.21
1634	A	5	5	1.	19	0.263
1635	A	6	5	1.	19	0.263
1636	A	10	8	1.	19	0.421
1637	A	9	8	1.	19	0.421
1638	A	8	8	1.	19	0.421
1639	A	8	8	1.	19	0.421
1640	A	9	9	1.	19	0.474
1641	A	10	9	1.	19	0.474
1642	A	7	4	1.	19	0.21
1643	A	6	4	1.	19	0.21
1644	A	5	4	1.	19	0.21
1645	A	5	5	1.	19	0.263
1646	A	5	4	1.	19	0.21
1647	A	6	5	1.	19	0.263
1648	A	7	5	1.	19	0.263
1649	A	10	8	1.	19	0.421
1650	A	9	8	1.	19	0.421
1651	A	8	8	1.	19	0.421
1652	A	7	7	1.	19	0.368
1653	A	8	8	1.	19	0.421

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1654	A	9	8	1.	19	0.421
1655	A	5	4	1.	19	0.21
1656	A	4	4	1.	19	0.21
1657	A	3	3	1.	19	0.158
1658	A	4	4	1.	19	0.21
1659	A	5	4	1.	19	0.21
1660	A	10	9	1.	19	0.474
1661	A	9	9	1.	19	0.474
1662	A	8	8	1.	19	0.421
1663	A	8	8	1.	19	0.421
1664	A	9	8	1.	19	0.421
1665	A	10	8	1.	19	0.421
1666	A	7	5	1.	19	0.263
1667	A	5	5	1.	19	0.263
1668	A	4	4	1.	19	0.21
1669	A	4	4	1.	19	0.21
1670	A	5	4	1.	19	0.21
1671	A	6	4	1.	19	0.21
1672	A	11	9	1.	19	0.474
1673	A	10	9	1.	19	0.474
1674	A	9	8	1.	19	0.421
1675	A	9	9	1.	19	0.474
1676	A	9	8	1.	19	0.421
1677	A	10	8	1.	19	0.421
1678	A	11	8	1.	19	0.421
1679	A	7	5	1.	19	0.263
1680	A	6	5	1.	19	0.263
1681	A	6	6	1.	19	0.316
1682	A	6	5	1.	19	0.263
1683	A	1	1	1.	19	0.053
1684	A	2	2	1.	19	0.105
1685	A	3	2	1.	19	0.105
1686	A	4	2	1.	19	0.105
1687	A	7	4	1.	19	0.21
1688	A	6	4	1.	19	0.21
1689	A	5	4	1.	19	0.21

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1690	A	5	5	1.	19	0.263
1691	A	5	4	1.	19	0.21
1692	A	6	5	1.	19	0.263
1693	A	7	5	1.	19	0.263
1694	A	6	5	1.	19	0.263
1695	A	5	5	1.	19	0.263
1696	A	4	4	1.	19	0.21
1697	A	1	1	1.	19	0.053
1698	A	2	2	1.	19	0.105
1699	A	3	2	1.	19	0.105
1700	A	4	2	1.	19	0.105
1701	A	7	6	1.	19	0.316
1702	A	6	6	1.	19	0.316
1703	A	5	5	1.	19	0.263
1704	A	6	6	1.	19	0.316
1705	A	7	6	1.	19	0.316
1706	A	6	5	1.	19	0.263
1707	A	5	5	1.	19	0.263
1708	A	4	4	1.	19	0.21
1709	A	1	1	1.	19	0.053
1710	A	2	2	1.	19	0.105
1711	A	3	2	1.	19	0.105
1712	A	4	2	1.	19	0.105
1713	A	5	4	1.	19	0.21
1714	A	4	4	1.	19	0.21
1715	A	3	3	1.	19	0.158
1716	A	4	4	1.	19	0.21
1717	A	5	4	1.	19	0.21
1718	A	6	6	1.	19	0.316
1719	A	5	5	1.	19	0.263
1720	A	1	1	1.	19	0.053
1721	A	2	2	1.	19	0.105
1722	A	3	2	1.	19	0.105
1723	A	4	2	1.	19	0.105
1724	A	8	7	1.	19	0.368
1725	A	7	7	1.	19	0.368

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1726	A	6	6	1.	19	0.316
1727	A	6	6	1.	19	0.316
1728	A	7	6	1.	19	0.316
1729	A	8	6	1.	19	0.316
1730	A	10	7	1.	20	0.35
1731	A	10	7	1.	20	0.35
1732	A	2	2	1.	19	0.105
1733	A	2	2	1.	19	0.105
1734	A	2	2	1.	19	0.105
1735	A	2	2	1.	19	0.105
1736	A	2	2	1.	19	0.105
1737	A	6	3	1.	19	0.158
1738	A	5	3	1.	19	0.158
1739	A	4	3	1.	19	0.158
1740	A	3	3	1.	19	0.158
1741	A	3	3	1.	19	0.158
1742	A	4	4	1.	19	0.21
1743	A	7	5	1.	19	0.263
1744	A	6	5	1.	19	0.263
1745	A	5	5	1.	19	0.263
1746	A	5	5	1.	19	0.263
1747	A	6	6	1.	19	0.316
1748	A	7	6	1.	19	0.316
1749	A	7	5	1.	19	0.263
1750	A	6	5	1.	19	0.263
1751	A	5	5	1.	19	0.263
1752	A	4	4	1.	19	0.21
1753	A	5	5	1.	19	0.263
1754	A	6	5	1.	19	0.263
1755	A	5	3	1.	19	0.158
1756	A	4	3	1.	19	0.158
1757	A	3	3	1.	19	0.158
1758	A	2	2	1.	19	0.105
1759	A	3	3	1.	19	0.158
1760	A	4	3	1.	19	0.158
1761	A	7	6	1.	19	0.316

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1762	A	6	6	1.	19	0.316
1763	A	5	5	1.	19	0.263
1764	A	5	5	1.	19	0.263
1765	A	6	5	1.	19	0.263
1766	A	7	5	1.	19	0.263
1767	A	2	2	1.	19	0.105
1768	A	2	2	1.	19	0.105
1769	A	2	2	1.	19	0.105
1770	A	2	2	1.	19	0.105
1771	A	2	2	1.	19	0.105
1772	A	2	2	1.	19	0.105
1773	A	13	8	1.	19	0.421
1774	A	12	8	1.	19	0.421
1775	A	12	8	1.	19	0.421
1776	A	1	1	1.	19	0.053
1777	A	2	2	1.	19	0.105
1778	A	3	2	1.	19	0.105
1779	A	4	2	1.	19	0.105
1780	A	13	8	1.	19	0.421
1781	A	12	8	1.	19	0.421
1782	A	12	8	1.	19	0.421
1783	A	1	1	1.	19	0.053
1784	A	2	2	1.	19	0.105
1785	A	3	2	1.	19	0.105
1786	A	4	2	1.	19	0.105
1787	A	2	2	1.	19	0.105
1788	A	2	2	1.	19	0.105
1789	A	2	2	1.	19	0.105
1790	A	2	2	1.	19	0.105
1791	A	2	2	1.	19	0.105
1792	A	2	2	1.	19	0.105
1793	A	2	2	1.	19	0.105
1794	A	2	2	1.	19	0.105
1795	A	2	2	1.	19	0.105
1796	A	2	2	1.	19	0.105
1797	A	2	2	1.	19	0.105

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1798	A	2	2	1.	19	0.105
1799	A	13	8	1.	19	0.421
1800	A	13	9	1.	19	0.474
1801	A	13	8	1.	19	0.421
1802	A	1	1	1.	19	0.053
1803	A	2	2	1.	19	0.105
1804	A	3	2	1.	19	0.105
1805	A	4	2	1.	19	0.105
1806	A	13	8	1.	19	0.421
1807	A	12	8	1.	19	0.421
1808	A	11	7	1.	19	0.368
1809	A	1	1	1.	19	0.053
1810	A	2	2	1.	19	0.105
1811	A	3	2	1.	19	0.105
1812	A	4	2	1.	19	0.105
1813	A	2	2	1.	19	0.105
1814	A	2	2	1.	19	0.105
1815	A	2	2	1.	19	0.105
1816	A	2	2	1.	19	0.105
1817	A	2	2	1.	19	0.105
1818	A	2	2	1.	19	0.105
1819	A	2	2	1.	19	0.105
1820	A	2	2	1.	19	0.105
1821	A	2	2	1.	19	0.105
1822	A	2	2	1.	19	0.105
1823	A	2	2	1.	19	0.105
1824	A	2	2	1.	19	0.105
1825	A	13	8	1.	19	0.421
1826	A	12	8	1.	19	0.421
1827	A	11	7	1.	19	0.368
1828	A	1	1	1.	19	0.053
1829	A	2	2	1.	19	0.105
1830	A	3	2	1.	19	0.105
1831	A	4	2	1.	19	0.105
1832	A	14	9	1.	19	0.474
1833	A	13	9	1.	19	0.474

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1834	A	12	8	1.	19	0.421
1835	A	1	1	1.	19	0.053
1836	A	2	2	1.	19	0.105
1837	A	3	2	1.	19	0.105
1838	A	4	2	1.	19	0.105
1839	A	2	2	1.	19	0.105
1840	A	2	2	1.	19	0.105
1841	A	2	2	1.	19	0.105
1842	A	2	2	1.	19	0.105
1843	A	2	2	1.	19	0.105
1844	A	2	2	1.	19	0.105
1845	A	2	2	1.21	15	0.133
1846	A	2	1	1.	15	0.067
1847	A	2	1	1.	15	0.067
1848	A	2	1	1.	13	0.077
1849	A	1	1	1.	15	0.067
1850	A	1	1	1.	15	0.067
1851	A	1	1	1.	15	0.067
1852	A	2	1	1.	15	0.067
1853	A	2	1	1.	15	0.067
1854	A	2	1	1.	13	0.077
1855	A	1	1	1.	7	0.143
1856	A	1	1	1.	15	0.067
1857	A	1	1	1.	15	0.067
1858	A	1	1	1.	15	0.067
1859	A	3	2	1.	19	0.105
1860	A	2	2	1.	19	0.105
1861	A	1	1	1.	19	0.053
1862	A	2	2	1.	19	0.105
1863	A	2	2	1.	17	0.118
1864	A	2	2	1.	19	0.105
1865	A	2	2	1.	19	0.105
1866	A	2	2	1.	17	0.118
1867	A	2	2	1.	19	0.105
1868	A	1	1	1.	19	0.053
1869	A	2	2	1.	19	0.105

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1870	A	3	2	1.	19	0.105
1871	A	4	2	1.	19	0.105
1872	A	2	2	1.	17	0.118
1873	A	2	2	1.	19	0.105
1874	A	1	1	1.	19	0.053
1875	A	2	2	1.	19	0.105
1876	A	3	2	1.	19	0.105
1877	A	4	2	1.	19	0.105
1878	A	2	2	1.	21	0.095
1879	A	2	2	1.	21	0.095
1880	A	2	2	1.	24	0.083
1881	A	3	2	1.	24	0.083
1882	A	2	2	1.	28	0.071
1883	A	2	2	1.	44	0.045
1884	A	2	2	1.	51	0.039
1885	A	1	1	1.	15	0.067
1886	A	1	1	1.	15	0.067
1887	A	1	1	1.	15	0.067
1888	A	1	1	1.	15	0.067
1889	A	1	1	1.	17	0.059
1890	A	2	2	1.	27	0.074
1891	A	1	0	1.	15	0.
1892	A	1	0	1.	9	0.
1893	A	1	0	1.	5	0.
1894	A	1	0	1.	5	0.
1895	A	1	0	1.	9	0.
1896	A	1	0	1.	9	0.
1897	A	1	0	1.	15	0.
1898	A	1	0	1.	10	0.
1899	A	1	0	1.	10	0.
1900	A	1	0	1.	12	0.
1901	A	1	0	1.	15	0.
1902	A	1	0	1.	17	0.
1903	A	1	0	1.	8	0.
1904	A	1	0	1.	10	0.
1905	A	1	0	1.	11	0.

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Table 1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1906	A	1	0	1.	11	0.
1907	A	1	0	1.	6	0.
1908	A	1	0	1.	11	0.
1909	A	1	0	1.	10	0.
1910	A	1	0	1.	11	0.
1911	A	1	0	1.	7	0.
1912	A	1	0	1.	17	0.
1913	A	1	0	1.	18	0.
1914	A	1	0	1.	11	0.
1915	A	1	0	1.	15	0.
1916	A	1	0	1.	18	0.
1917	A	1	0	1.	20	0.

3 Listing of integrals

3.1 $\int 0\,dx$

Optimal. Leaf size=1

$$0$$

[Out] 0

Rubi [A] time = 0.00274417, antiderivative size = 1, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.

$$0$$

Antiderivative was successfully verified.

[In] Int[0,x]

[Out] 0

Rubi in Sympy [A] time = 0.018593, size = 0, normalized size = 0.

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(0,x)

[Out] 0

Mathematica [A] time = 0.0000326383, size = 1, normalized size = 1.

$$0$$

Antiderivative was successfully verified.

[In] Integrate[0,x]

[Out] 0

Maple [A] time = 0.006, size = 2, normalized size = 2.

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(0,x)
```

```
[Out] 0
```

Maxima [A] time = 1.85621, size = 1, normalized size = 1.

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(0,x, algorithm="maxima")
```

```
[Out] 0
```

Fricas [A] time = 0.165918, size = 1, normalized size = 1.

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(0,x, algorithm="fricas")
```

```
[Out] 0
```

Sympy [A] time = 0.0143, size = 0, normalized size = 0.

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(0,x)
```

```
[Out] 0
```

GIAC/XCAS [A] time = 0.222878, size = 1, normalized size = 1.

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(0,x, algorithm="giac")
```

```
[Out] 0
```

3.2 $\int 1\,dx$

Optimal. Leaf size=1

$$x$$

```
[Out] x
```

Rubi [A] time = 0.00156824, antiderivative size = 1, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.

$$x$$

Antiderivative was successfully verified.

```
[In] Int[1,x]

[Out] x
```

Rubi in Sympy [A] time = 0.011721, size = 0, normalized size = 0.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1,x)

[Out] x
```

Mathematica [A] time = 0.0000243187, size = 1, normalized size = 1.

$$x$$

Antiderivative was successfully verified.

```
[In] Integrate[1,x]

[Out] x
```

Maple [A] time = 0.002, size = 2, normalized size = 2.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1,x)
```

```
[Out] x
```

Maxima [A] time = 1.35634, size = 1, normalized size = 1.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x, algorithm="maxima")
```

```
[Out] x
```

Fricas [A] time = 0.183028, size = 1, normalized size = 1.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x, algorithm="fricas")
```

```
[Out] x
```

Sympy [A] time = 0.017696, size = 0, normalized size = 0.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x)
```

```
[Out] x
```

GIAC/XCAS [A] time = 0.216547, size = 1, normalized size = 1.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x, algorithm="giac")
```

```
[Out] x
```

3.3 $\int 5 \, dx$

Optimal. Leaf size=3

$$5x$$

```
[Out] 5*x
```

Rubi [A] time = 0.00223956, antiderivative size = 3, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}} = 1.$

$$5x$$

Antiderivative was successfully verified.

```
[In]  Int[5,x]

[Out] 5*x
```

Rubi in Sympy [A] time = 0.015125, size = 2, normalized size = 0.67

$$5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(5,x)

[Out] 5*x
```

Mathematica [A] time = 0.0000294384, size = 3, normalized size = 1.

$$5x$$

Antiderivative was successfully verified.

```
[In]  Integrate[5,x]

[Out] 5*x
```

Maple [A] time = 0., size = 4, normalized size = 1.3

$$5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(5,x)
```

```
[Out] 5*x
```

Maxima [A] time = 1.32552, size = 4, normalized size = 1.33

$$5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5,x, algorithm="maxima")
```

```
[Out] 5*x
```

Fricas [A] time = 0.172442, size = 1, normalized size = 0.33

$$5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5,x, algorithm="fricas")
```

```
[Out] 5*x
```

Sympy [A] time = 0.01761, size = 2, normalized size = 0.67

$$5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5,x)
```

```
[Out] 5*x
```

GIAC/XCAS [A] time = 0.20995, size = 4, normalized size = 1.33

$$5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5,x, algorithm="giac")
```

```
[Out] 5*x
```

3.4 $\int -2\,dx$

Optimal. Leaf size=3

$$-2x$$

```
[Out] -2*x
```

Rubi [A] time = 0.00261618, antiderivative size = 3, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.

$$-2x$$

Antiderivative was successfully verified.

```
[In]  Int[-2,x]

[Out] -2*x
```

Rubi in Sympy [A] time = 0.019963, size = 3, normalized size = 1.

$$-2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-2,x)

[Out] -2*x
```

Mathematica [A] time = 0.0000262386, size = 3, normalized size = 1.

$$-2x$$

Antiderivative was successfully verified.

```
[In]  Integrate[-2,x]

[Out] -2*x
```

Maple [A] time = 0.001, size = 4, normalized size = 1.3

$$-2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-2,x)

[Out] -2*x
```

Maxima [A] time = 1.31337, size = 4, normalized size = 1.33

$$-2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2,x, algorithm="maxima")

[Out] -2*x
```

Fricas [A] time = 0.172101, size = 1, normalized size = 0.33

$$-2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2,x, algorithm="fricas")

[Out] -2*x
```

Sympy [A] time = 0.017666, size = 3, normalized size = 1.

$$-2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2,x)

[Out] -2*x
```

GIAC/XCAS [A] time = 0.207406, size = 4, normalized size = 1.33

$$-2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2,x, algorithm="giac")
```

```
[Out] -2*x
```

3.5 $\int -\frac{3}{2}\,dx$

Optimal. Leaf size=5

$$-\frac{3x}{2}$$

```
[Out] (-3*x)/2
```

Rubi [A] time = 0.00241843, antiderivative size = 5, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{3x}{2}$$

Antiderivative was successfully verified.

```
[In] Int[-3/2,x]

[Out] (-3*x)/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(-\frac{3}{2}\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(-3/2,x)

[Out] Integral(-3/2, x)
```

Mathematica [A] time = 0.0000278385, size = 5, normalized size = 1.

$$-\frac{3x}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[-3/2,x]
```

```
[Out] (-3*x)/2
```

Maple [A] time = 0.002, size = 4, normalized size = 0.8

$$-\frac{3 x}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-3/2,x)
```

```
[Out] -3/2*x
```

Maxima [A] time = 1.31949, size = 4, normalized size = 0.8

$$-\frac{3}{2} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-3/2,x, algorithm="maxima")
```

```
[Out] -3/2*x
```

Fricas [A] time = 0.215632, size = 4, normalized size = 0.8

$$-\frac{3}{2} x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-3/2,x, algorithm="fricas")
```

```
[Out] -3/2*x
```

Sympy [A] time = 0.017999, size = 5, normalized size = 1.

$$-\frac{3x}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-3/2,x)
```

```
[Out] -3*x/2
```

GIAC/XCAS [A] time = 0.212264, size = 4, normalized size = 0.8

$$-\frac{3}{2}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-3/2,x, algorithm="giac")
```

```
[Out] -3/2*x
```

3.6 $\int \pi \, dx$

Optimal. Leaf size=3

$$\pi x$$

```
[Out] Pi*x
```

Rubi [A] time = 0.00307568, antiderivative size = 3, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}} = 1.$

$$\pi x$$

Antiderivative was successfully verified.

```
[In] Int[Pi,x]
```

```
[Out] Pi*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \pi \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(pi,x)
```

```
[Out] Integral(pi, x)
```

Mathematica [A] time = 0.0000278385, size = 3, normalized size = 1.

$$\pi x$$

Antiderivative was successfully verified.

```
[In] Integrate[Pi,x]
```

```
[Out] Pi*x
```

Maple [A] time = 0., size = 4, normalized size = 1.3

$$\pi x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(Pi,x)

[Out] Pi*x
```

Maxima [A] time = 1.32926, size = 4, normalized size = 1.33

$$\pi x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi,x, algorithm="maxima")

[Out] pi*x
```

Fricas [A] time = 0.19709, size = 4, normalized size = 1.33

$$\pi x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi,x, algorithm="fricas")

[Out] pi*x
```

Sympy [A] time = 0.017577, size = 2, normalized size = 0.67

$$\pi x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi,x)

[Out] pi*x
```

GIAC/XCAS [A] time = 0.20663, size = 4, normalized size = 1.33

$$\pi x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi,x, algorithm="giac")
```

```
[Out] pi*x
```

3.7 $\int a\,dx$

Optimal. Leaf size=3

$$ax$$

```
[Out] a*x
```

Rubi [A] time = 0.00268914, antiderivative size = 3, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.

$$ax$$

Antiderivative was successfully verified.

```
[In] Int[a,x]
```

```
[Out] a*x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a,x)
```

```
[Out] Integral(a, x)
```

Mathematica [A] time = 0.0000255986, size = 3, normalized size = 1.

$$ax$$

Antiderivative was successfully verified.

```
[In] Integrate[a,x]
```

```
[Out] a*x
```

Maple [A] time = 0.002, size = 4, normalized size = 1.3

$$ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(a,x)
```

```
[Out] a*x
```

Maxima [A] time = 1.33624, size = 4, normalized size = 1.33

$$ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a,x, algorithm="maxima")
```

```
[Out] a*x
```

Fricas [A] time = 0.170804, size = 1, normalized size = 0.33

$$xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a,x, algorithm="fricas")
```

```
[Out] x*a
```

Sympy [A] time = 0.017737, size = 2, normalized size = 0.67

$$ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a,x)
```

```
[Out] a*x
```

GIAC/XCAS [A] time = 0.211904, size = 4, normalized size = 1.33

$$ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a,x, algorithm="giac")
```

```
[Out] a*x
```

3.8 $\int 3a\,dx$

Optimal. Leaf size=4

$$3ax$$

```
[Out] 3*a*x
```

Rubi [A] time = 0.00300752, antiderivative size = 4, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$3ax$$

Antiderivative was successfully verified.

```
[In]  Int[3*a,x]

[Out] 3*a*x
```

Rubi in Sympy [A] time = 1.14299, size = 3, normalized size = 0.75

$$3ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(3*a,x)

[Out] 3*a*x
```

Mathematica [A] time = 0.000036798, size = 4, normalized size = 1.

$$3ax$$

Antiderivative was successfully verified.

```
[In]  Integrate[3*a,x]

[Out] 3*a*x
```

Maple [A] time = 0., size = 5, normalized size = 1.3

$$3\,ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(3*a,x)

[Out] 3*a*x
```

Maxima [A] time = 1.34033, size = 5, normalized size = 1.25

$$3\,ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3*a,x, algorithm="maxima")

[Out] 3*a*x
```

Fricas [A] time = 0.173085, size = 1, normalized size = 0.25

$$3xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3*a,x, algorithm="fricas")

[Out] 3*x*a
```

Sympy [A] time = 0.02017, size = 3, normalized size = 0.75

$$3ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3*a,x)

[Out] 3*a*x
```

GIAC/XCAS [A] time = 0.212356, size = 5, normalized size = 1.25

$$3\,ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3*a,x, algorithm="giac")
```

```
[Out] 3*a*x
```

3.9 $\int \frac{\pi}{\sqrt{16-e^2}} dx$

Optimal. Leaf size=14

$$\frac{\pi x}{\sqrt{16-e^2}}$$

```
[Out] (Pi*x)/Sqrt[16 - E^2]
```

Rubi [A] time = 0.0161089, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{\pi x}{\sqrt{16-e^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Pi/Sqrt[16 - E^2],x]

[Out] (Pi*x)/Sqrt[16 - E^2]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int \pi \, dx}{\sqrt{-e^2+16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(pi/(16-exp(2))**(1/2),x)

[Out] Integral(pi, x)/sqrt(-exp(2) + 16)
```

Mathematica [A] time = 0.0000435177, size = 14, normalized size = 1.

$$\frac{\pi x}{\sqrt{16-e^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Pi/Sqrt[16 - E^2],x]
```

```
[Out] (Pi*x)/Sqrt[16 - E^2]
```

Maple [A] time = 0.001, size = 12, normalized size = 0.9

$$\frac{\pi x}{\sqrt{16-\mathrm{e}^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(Pi/(16-exp(2))^(1/2),x)

[Out] Pi*x/(16-exp(2))^(1/2)
```

Maxima [A] time = 1.33101, size = 15, normalized size = 1.07

$$\frac{\pi x}{\sqrt{-e^{2}+16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi/sqrt(-e^2 + 16),x, algorithm="maxima")

[Out] pi*x/sqrt(-e^2 + 16)
```

Fricas [A] time = 0.214672, size = 15, normalized size = 1.07

$$\frac{\pi x}{\sqrt{-e^{2}+16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi/sqrt(-e^2 + 16),x, algorithm="fricas")

[Out] pi*x/sqrt(-e^2 + 16)
```

Sympy [A] time = 0.023166, size = 10, normalized size = 0.71

$$\frac{\pi x}{\sqrt{-e^{2}+16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi/(16-exp(2))**(1/2),x)
```

```
[Out] pi*x/sqrt(-exp(2) + 16)
```

GIAC/XCAS [A] time = 0.214826, size = 15, normalized size = 1.07

$$\frac{\pi x}{\sqrt{-e^2 + 16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi/sqrt(-e^2 + 16),x, algorithm="giac")
```

```
[Out] pi*x/sqrt(-e^2 + 16)
```

3.10 $\int x^{100}\,dx$

Optimal. Leaf size=7

$$\frac{x^{101}}{101}$$

```
[Out] x^101/101
```

Rubi [A] time = 0.00350125, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{x^{101}}{101}$$

Antiderivative was successfully verified.

```
[In]  Int[x^100,x]
```

```
[Out] x^101/101
```

Rubi in Sympy [A] time = 0.952965, size = 3, normalized size = 0.43

$$\frac{x^{101}}{101}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**100,x)
```

```
[Out] x**101/101
```

Mathematica [A] time = 0.0000351981, size = 7, normalized size = 1.

$$\frac{x^{101}}{101}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^100,x]
```

```
[Out] x^101/101
```

Maple [A] time = 0.001, size = 6, normalized size = 0.9

$$\frac{x^{101}}{101}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^100,x)
```

```
[Out] 1/101*x^101
```

Maxima [A] time = 1.3286, size = 7, normalized size = 1.

$$\frac{1}{101}\,x^{101}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^100,x, algorithm="maxima")
```

```
[Out] 1/101*x^101
```

Fricas [A] time = 0.171635, size = 1, normalized size = 0.14

$$\frac{1}{101}x^{101}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^100,x, algorithm="fricas")
```

```
[Out] 1/101*x^101
```

Sympy [A] time = 0.024201, size = 3, normalized size = 0.43

$$\frac{x^{101}}{101}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**100,x)
```

```
[Out] x**101/101
```

GIAC/XCAS [A] time = 0.215189, size = 7, normalized size = 1.

$$\frac{1}{101}\,x^{101}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^100,x, algorithm="giac")
```

```
[Out] 1/101*x^101
```

3.11 $\int x^3\,dx$

Optimal. Leaf size=7

$$\frac{x^4}{4}$$

[Out] x^4/4

Rubi [A] time = 0.00284209, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$\frac{x^4}{4}$$

Antiderivative was successfully verified.

[In] Int[x^3,x]

[Out] x^4/4

Rubi in Sympy [A] time = 0.899506, size = 3, normalized size = 0.43

$$\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(x**3,x)

[Out] x**4/4

Mathematica [A] time = 0.000037758, size = 7, normalized size = 1.

$$\frac{x^4}{4}$$

Antiderivative was successfully verified.

[In] Integrate[x^3,x]

```
[Out] x^4/4
```

Maple [A] time = 0., size = 6, normalized size = 0.9

$$\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3,x)
```

```
[Out] 1/4*x^4
```

Maxima [A] time = 1.3301, size = 7, normalized size = 1.

$$\frac{1}{4}\,x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3,x, algorithm="maxima")
```

```
[Out] 1/4*x^4
```

Fricas [A] time = 0.180395, size = 1, normalized size = 0.14

$$\frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3,x, algorithm="fricas")
```

```
[Out] 1/4*x^4
```

Sympy [A] time = 0.02294, size = 3, normalized size = 0.43

$$\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3,x)
```

```
[Out] x**4/4
```

GIAC/XCAS [A] time = 0.211905, size = 7, normalized size = 1.

$$\frac{1}{4}\,x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3,x, algorithm="giac")
```

```
[Out] 1/4*x^4
```

3.12 $\int x^2 \, dx$

Optimal. Leaf size=7

$$\frac{x^3}{3}$$

```
[Out] x^3/3
```

Rubi [A] time = 0.00274865, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{x^3}{3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2,x]

[Out] x^3/3
```

Rubi in Sympy [A] time = 0.903916, size = 3, normalized size = 0.43

$$\frac{x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2,x)

[Out] x**3/3
```

Mathematica [A] time = 0.0000431977, size = 7, normalized size = 1.

$$\frac{x^3}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2,x]
```

```
[Out] x^3/3
```

Maple [A] time = 0.002, size = 6, normalized size = 0.9

$$\frac{x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2,x)
```

```
[Out] 1/3*x^3
```

Maxima [A] time = 1.33211, size = 7, normalized size = 1.

$$\frac{1}{3}\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2,x, algorithm="maxima")
```

```
[Out] 1/3*x^3
```

Fricas [A] time = 0.170871, size = 1, normalized size = 0.14

$$\frac{1}{3}x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2,x, algorithm="fricas")
```

```
[Out] 1/3*x^3
```

Sympy [A] time = 0.023, size = 3, normalized size = 0.43

$$\frac{x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2,x)
```

```
[Out] x**3/3
```

GIAC/XCAS [A] time = 0.220919, size = 7, normalized size = 1.

$$\frac{1}{3}\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2,x, algorithm="giac")
```

```
[Out] 1/3*x^3
```

3.13 $\int x\,dx$

Optimal. Leaf size=7

$$\frac{x^2}{2}$$

```
[Out] x^2/2
```

Rubi [A] time = 0.0025941, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.

$$\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[x,x]

[Out] x^2/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x,x)

[Out] Integral(x, x)
```

Mathematica [A] time = 0.0000310384, size = 7, normalized size = 1.

$$\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x,x]
```

```
[Out] x^2/2
```

Maple [A] time = 0., size = 6, normalized size = 0.9

$$\frac{x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x,x)
```

```
[Out] 1/2*x^2
```

Maxima [A] time = 1.33023, size = 7, normalized size = 1.

$$\frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x,x, algorithm="maxima")
```

```
[Out] 1/2*x^2
```

Fricas [A] time = 0.192703, size = 1, normalized size = 0.14

$$\frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x,x, algorithm="fricas")
```

```
[Out] 1/2*x^2
```

Sympy [A] time = 0.02131, size = 3, normalized size = 0.43

$$\frac{x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x,x)
```

```
[Out] x**2/2
```

GIAC/XCAS [A] time = 0.213656, size = 7, normalized size = 1.

$$\frac{1}{2}\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x,x, algorithm="giac")
```

```
[Out] 1/2*x^2
```

3.14 $\int 1\,dx$

Optimal. Leaf size=1

$$x$$

```
[Out] x
```

Rubi [A] time = 0.00177847, antiderivative size = 1, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 1, $\frac{\text{number of rules}}{\text{integrand size}}$ = 1.

$$x$$

Antiderivative was successfully verified.

```
[In] Int[1,x]

[Out] x
```

Rubi in Sympy [A] time = 0.018213, size = 0, normalized size = 0.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1,x)

[Out] x
```

Mathematica [A] time = 0.0000204789, size = 1, normalized size = 1.

$$x$$

Antiderivative was successfully verified.

```
[In] Integrate[1,x]

[Out] x
```

Maple [A] time = 0., size = 2, normalized size = 2.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1,x)
```

```
[Out] x
```

Maxima [A] time = 1.32945, size = 1, normalized size = 1.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x, algorithm="maxima")
```

```
[Out] x
```

Fricas [A] time = 0.181272, size = 1, normalized size = 1.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x, algorithm="fricas")
```

```
[Out] x
```

Sympy [A] time = 0.02322, size = 0, normalized size = 0.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x)
```

```
[Out] x
```

GIAC/XCAS [A] time = 0.207715, size = 1, normalized size = 1.

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1,x, algorithm="giac")
```

```
[Out] x
```

3.15 $\int \frac{1}{x} \, dx$

Optimal. Leaf size=2

$$\log(x)$$

```
[Out] Log[x]
```

Rubi [A] time = 0.00133401, antiderivative size = 2, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-1),x]

[Out] Log[x]
```

Rubi in Sympy [A] time = 0.045681, size = 2, normalized size = 1.

$$\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x,x)

[Out] log(x)
```

Mathematica [A] time = 0.000239347, size = 2, normalized size = 1.

$$\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-1),x]

[Out] Log[x]
```

Maple [A] time = 0.005, size = 3, normalized size = 1.5

$$\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x,x)

[Out] ln(x)
```

Maxima [A] time = 1.33049, size = 3, normalized size = 1.5

$$\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x,x, algorithm="maxima")

[Out] log(x)
```

Fricas [A] time = 0.206282, size = 3, normalized size = 1.5

$$\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x,x, algorithm="fricas")

[Out] log(x)
```

Sympy [A] time = 0.033161, size = 2, normalized size = 1.

$$\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x,x)

[Out] log(x)
```

GIAC/XCAS [A] time = 0.219186, size = 4, normalized size = 2.

$$\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x,x, algorithm="giac")
```

```
[Out] ln(abs(x))
```

3.16 $\int \frac{1}{x^2} \, dx$

Optimal. Leaf size=5

$$-\frac{1}{x}$$

```
[Out] -x^(-1)
```

Rubi [A] time = 0.00281809, antiderivative size = 5, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-2),x]

[Out] -x^(-1)
```

Rubi in Sympy [A] time = 0.905092, size = 3, normalized size = 0.6

$$-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2,x)

[Out] -1/x
```

Mathematica [A] time = 0.000247027, size = 5, normalized size = 1.

$$-\frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-2),x]

[Out] -x^(-1)
```

Maple [A] time = 0., size = 6, normalized size = 1.2

$$-x^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2,x)

[Out] -1/x
```

Maxima [A] time = 1.33171, size = 7, normalized size = 1.4

$$-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-2),x, algorithm="maxima")

[Out] -1/x
```

Fricas [A] time = 0.201725, size = 7, normalized size = 1.4

$$-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-2),x, algorithm="fricas")

[Out] -1/x
```

Sympy [A] time = 0.030136, size = 3, normalized size = 0.6

$$-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2,x)
```

```
[Out] -1/x
```

GIAC/XCAS [A] time = 0.211797, size = 7, normalized size = 1.4

$$-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-2),x, algorithm="giac")
```

```
[Out] -1/x
```

3.17 $\int \frac{1}{x^3}\, dx$

Optimal. Leaf size=7

$$-\frac{1}{2x^2}$$

```
[Out] -1/(2*x^2)
```

Rubi [A] time = 0.00254099, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{1}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-3),x]

[Out] -1/(2*x^2)
```

Rubi in Sympy [A] time = 0.920635, size = 7, normalized size = 1.

$$-\frac{1}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/x**3,x)

[Out] -1/(2*x**2)
```

Mathematica [A] time = 0.000229748, size = 7, normalized size = 1.

$$-\frac{1}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-3),x]

[Out] -1/(2*x^2)
```

Maple [A] time = 0.001, size = 6, normalized size = 0.9

$$-\frac{1}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3,x)
```

```
[Out] -1/2/x^2
```

Maxima [A] time = 1.3335, size = 7, normalized size = 1.

$$-\frac{1}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-3),x, algorithm="maxima")
```

```
[Out] -1/2/x^2
```

Fricas [A] time = 0.188038, size = 7, normalized size = 1.

$$-\frac{1}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-3),x, algorithm="fricas")
```

```
[Out] -1/2/x^2
```

Sympy [A] time = 0.029585, size = 7, normalized size = 1.

$$-\frac{1}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3,x)
```

```
[Out] -1/(2*x**2)
```

GIAC/XCAS [A] time = 0.207198, size = 7, normalized size = 1.

$$-\frac{1}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-3),x, algorithm="giac")
```

```
[Out] -1/2/x^2
```

3.18 $\int \frac{1}{x^4} \, dx$

Optimal. Leaf size=7

$$-\frac{1}{3x^3}$$

[Out] -1/(3*x^3)

Rubi [A] time = 0.00290481, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{1}{3x^3}$$

Antiderivative was successfully verified.

[In] Int[x^(-4),x]

[Out] -1/(3*x^3)

Rubi in Sympy [A] time = 0.913386, size = 7, normalized size = 1.

$$-\frac{1}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(1/x**4,x)

[Out] -1/(3*x**3)

Mathematica [A] time = 0.000236467, size = 7, normalized size = 1.

$$-\frac{1}{3x^3}$$

Antiderivative was successfully verified.

[In] Integrate[x^(-4),x]

[Out] -1/(3*x^3)

Maple [A] time = 0., size = 6, normalized size = 0.9

$$-\frac{1}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4,x)

[Out] -1/3/x^3
```

Maxima [A] time = 1.34264, size = 7, normalized size = 1.

$$-\frac{1}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-4),x, algorithm="maxima")

[Out] -1/3/x^3
```

Fricas [A] time = 0.187728, size = 7, normalized size = 1.

$$-\frac{1}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-4),x, algorithm="fricas")

[Out] -1/3/x^3
```

Sympy [A] time = 0.031523, size = 7, normalized size = 1.

$$-\frac{1}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4,x)
```

```
[Out] -1/(3*x**3)
```

<u>GIAC/XCAS</u> [A] time = 0.210984, size = 7, normalized size = 1.

$$-\frac{1}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-4),x, algorithm="giac")
```

```
[Out] -1/3/x^3
```

3.19 $\int \frac{1}{x^{100}}\,dx$

Optimal. Leaf size=7

$$-\frac{1}{99x^{99}}$$

```
[Out] -1/(99*x^99)
```

Rubi [A] time = 0.00326159, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{1}{99x^{99}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-100),x]

[Out] -1/(99*x^99)
```

Rubi in Sympy [A] time = 0.90368, size = 7, normalized size = 1.

$$-\frac{1}{99x^{99}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**100,x)

[Out] -1/(99*x**99)
```

Mathematica [A] time = 0.000256306, size = 7, normalized size = 1.

$$-\frac{1}{99x^{99}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-100),x]

[Out] -1/(99*x^99)
```

Maple [A] time = 0.002, size = 6, normalized size = 0.9

$$-\frac{1}{99\,x^{99}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^100,x)
```

```
[Out] -1/99/x^99
```

Maxima [A] time = 1.34511, size = 7, normalized size = 1.

$$-\frac{1}{99\,x^{99}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-100),x, algorithm="maxima")
```

```
[Out] -1/99/x^99
```

Fricas [A] time = 0.187726, size = 7, normalized size = 1.

$$-\frac{1}{99\,x^{99}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-100),x, algorithm="fricas")
```

```
[Out] -1/99/x^99
```

Sympy [A] time = 0.031716, size = 7, normalized size = 1.

$$-\frac{1}{99x^{99}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**100,x)

[Out] -1/(99*x**99)
```

GIAC/XCAS [A]   time = 0.208768, size = 7, normalized size = 1.

$$-\frac{1}{99\,x^{99}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-100),x, algorithm="giac")

[Out] -1/99/x^99
```

3.20 $\int x^{5/2}\,dx$

Optimal. Leaf size=9

$$\frac{2x^{7/2}}{7}$$

```
[Out] (2*x^(7/2))/7
```

Rubi [A] time = 0.00292304, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2x^{7/2}}{7}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2),x]

[Out] (2*x^(7/2))/7
```

Rubi in Sympy [A] time = 0.912801, size = 7, normalized size = 0.78

$$\frac{2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(5/2),x)

[Out] 2*x**(7/2)/7
```

Mathematica [A] time = 0.00100091, size = 9, normalized size = 1.

$$\frac{2x^{7/2}}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2),x]
```

```
[Out] (2*x^(7/2))/7
```

Maple [A] time = 0.011, size = 6, normalized size = 0.7

$$\frac{2}{7}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2),x)
```

```
[Out] 2/7*x^(7/2)
```

Maxima [A] time = 1.34291, size = 7, normalized size = 0.78

$$\frac{2}{7}\,x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*x^(7/2)
```

Fricas [A] time = 0.201477, size = 7, normalized size = 0.78

$$\frac{2}{7}\,x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*x^(7/2)
```

Sympy [A] time = 0.035302, size = 7, normalized size = 0.78

$$\frac{2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2),x)
```

```
[Out] 2*x**(7/2)/7
```

GIAC/XCAS [A] time = 0.207498, size = 7, normalized size = 0.78

$$\frac{2}{7} x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*x^(7/2)
```

3.21 $\int x^{3/2}\,dx$

Optimal. Leaf size=9

$$\frac{2x^{5/2}}{5}$$

```
[Out] (2*x^(5/2))/5
```

Rubi [A] time = 0.00301936, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2x^{5/2}}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2),x]

[Out] (2*x^(5/2))/5
```

Rubi in Sympy [A] time = 0.902529, size = 7, normalized size = 0.78

$$\frac{2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2),x)

[Out] 2*x**(5/2)/5
```

Mathematica [A] time = 0.00094139, size = 9, normalized size = 1.

$$\frac{2x^{5/2}}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2),x]
```

```
[Out] (2*x^(5/2))/5
```

Maple [A] time = 0.003, size = 6, normalized size = 0.7

$$\frac{2}{5}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2),x)
```

```
[Out] 2/5*x^(5/2)
```

Maxima [A] time = 1.32588, size = 7, normalized size = 0.78

$$\frac{2}{5}\,x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*x^(5/2)
```

Fricas [A] time = 0.200177, size = 7, normalized size = 0.78

$$\frac{2}{5}\,x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*x^(5/2)
```

Sympy [A] time = 0.02991, size = 7, normalized size = 0.78

$$\frac{2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2),x)
```

```
[Out] 2*x**(5/2)/5
```

GIAC/XCAS [A] time = 0.207857, size = 7, normalized size = 0.78

$$\frac{2}{5}\,x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*x^(5/2)
```

3.22 $\int \sqrt{x}\,dx$

Optimal. Leaf size=9

$$\frac{2x^{3/2}}{3}$$

```
[Out] (2*x^(3/2))/3
```

Rubi [A] time = 0.00290737, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{2x^{3/2}}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x],x]
```

```
[Out] (2*x^(3/2))/3
```

Rubi in Sympy [A] time = 0.907799, size = 7, normalized size = 0.78

$$\frac{2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2),x)
```

```
[Out] 2*x**(3/2)/3
```

Mathematica [A] time = 0.000781718, size = 9, normalized size = 1.

$$\frac{2x^{3/2}}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x],x]
```

```
[Out] (2*x^(3/2))/3
```

Maple [A] time = 0.003, size = 6, normalized size = 0.7

$$\frac{2}{3}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2),x)
```

```
[Out] 2/3*x^(3/2)
```

Maxima [A] time = 1.34213, size = 7, normalized size = 0.78

$$\frac{2}{3}\,x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/3*x^(3/2)
```

Fricas [A] time = 0.197406, size = 7, normalized size = 0.78

$$\frac{2}{3}\,x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/3*x^(3/2)
```

Sympy [A] time = 0.02884, size = 7, normalized size = 0.78

$$\frac{2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2),x)
```

```
[Out] 2*x**(3/2)/3
```

GIAC/XCAS [A] time = 0.207322, size = 7, normalized size = 0.78

$$\frac{2}{3} x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x),x, algorithm="giac")
```

```
[Out] 2/3*x^(3/2)
```

3.23 $\int \frac{1}{\sqrt{x}}\,dx$

Optimal. Leaf size=7

$$2\sqrt{x}$$

```
[Out] 2*Sqrt[x]
```

Rubi [A] time = 0.00305264, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2\sqrt{x}$$

Antiderivative was successfully verified.

```
[In]  Int[1/Sqrt[x],x]
```

```
[Out] 2*Sqrt[x]
```

Rubi in Sympy [A] time = 0.941094, size = 5, normalized size = 0.71

$$2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2),x)
```

```
[Out] 2*sqrt(x)
```

Mathematica [A] time = 0.000772759, size = 7, normalized size = 1.

$$2\sqrt{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/Sqrt[x],x]
```

```
[Out] 2*Sqrt[x]
```

Maple [A] time = 0.003, size = 6, normalized size = 0.9

$$2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2),x)
```

```
[Out] 2*x^(1/2)
```

Maxima [A] time = 1.33954, size = 7, normalized size = 1.

$$2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2*sqrt(x)
```

Fricas [A] time = 0.196744, size = 7, normalized size = 1.

$$2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2*sqrt(x)
```

Sympy [A] time = 0.032994, size = 5, normalized size = 0.71

$$2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2),x)
```

```
[Out] 2*sqrt(x)
```

GIAC/XCAS [A] time = 0.208187, size = 7, normalized size = 1.

$$2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(x),x, algorithm="giac")
```

```
[Out] 2*sqrt(x)
```

3.24 $\int \frac{1}{x^{3/2}} dx$

Optimal. Leaf size=7

$$-\frac{2}{\sqrt{x}}$$

```
[Out] -2/Sqrt[x]
```

Rubi [A] time = 0.00276689, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-3/2),x]

[Out] -2/Sqrt[x]
```

Rubi in Sympy [A] time = 0.908897, size = 7, normalized size = 1.

$$-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2),x)

[Out] -2/sqrt(x)
```

Mathematica [A] time = 0.000832276, size = 7, normalized size = 1.

$$-\frac{2}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-3/2),x]
```

```
[Out] -2/Sqrt[x]
```

Maple [A] time = 0.003, size = 6, normalized size = 0.9

$$-2\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(3/2),x)

[Out] -2/x^(1/2)
```

Maxima [A] time = 1.34356, size = 7, normalized size = 1.

$$-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3/2),x, algorithm="maxima")

[Out] -2/sqrt(x)
```

Fricas [A] time = 0.19755, size = 7, normalized size = 1.

$$-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-3/2),x, algorithm="fricas")

[Out] -2/sqrt(x)
```

Sympy [A] time = 0.038551, size = 7, normalized size = 1.

$$-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2),x)

[Out] -2/sqrt(x)
```

GIAC/XCAS [A] time = 0.207319, size = 7, normalized size = 1.

$$-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-3/2),x, algorithm="giac")

[Out] -2/sqrt(x)
```

3.25 $\int \frac{1}{x^{5/2}}\,dx$

Optimal. Leaf size=9

$$-\frac{2}{3x^{3/2}}$$

```
[Out] -2/(3*x^(3/2))
```

Rubi [A] time = 0.00282961, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{2}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-5/2),x]

[Out] -2/(3*x^(3/2))
```

Rubi in Sympy [A] time = 0.902821, size = 8, normalized size = 0.89

$$-\frac{2}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2),x)

[Out] -2/(3*x**(3/2))
```

Mathematica [A] time = 0.000862354, size = 9, normalized size = 1.

$$-\frac{2}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-5/2),x]
```

```
[Out] -2/(3*x^(3/2))
```

Maple [A] time = 0.002, size = 6, normalized size = 0.7

$$-\frac{2}{3}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2),x)

[Out] -2/3/x^(3/2)
```

Maxima [A] time = 1.3336, size = 7, normalized size = 0.78

$$-\frac{2}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-5/2),x, algorithm="maxima")

[Out] -2/3/x^(3/2)
```

Fricas [A] time = 0.200862, size = 7, normalized size = 0.78

$$-\frac{2}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-5/2),x, algorithm="fricas")

[Out] -2/3/x^(3/2)
```

Sympy [A] time = 0.030832, size = 8, normalized size = 0.89

$$-\frac{2}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2),x)
```

```
[Out] -2/(3*x**(3/2))
```

GIAC/XCAS [A] time = 0.20353, size = 7, normalized size = 0.78

$$-\frac{2}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-5/2),x, algorithm="giac")
```

```
[Out] -2/3/x^(3/2)
```

3.26 $\int x^{5/3}\,dx$

Optimal. Leaf size=9

$$\frac{3x^{8/3}}{8}$$

```
[Out] (3*x^(8/3))/8
```

Rubi [A] time = 0.00273137, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3x^{8/3}}{8}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/3),x]

[Out] (3*x^(8/3))/8
```

Rubi in Sympy [A] time = 0.916922, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{8}{3}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/3),x)

[Out] 3*x**(8/3)/8
```

Mathematica [A] time = 0.000992907, size = 9, normalized size = 1.

$$\frac{3x^{8/3}}{8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/3),x]
```

```
[Out] (3*x^(8/3))/8
```

Maple [A] time = 0.003, size = 6, normalized size = 0.7

$$\frac{3}{8}x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/3),x)
```

```
[Out] 3/8*x^(8/3)
```

Maxima [A] time = 1.36149, size = 7, normalized size = 0.78

$$\frac{3}{8}\,x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/3),x, algorithm="maxima")
```

```
[Out] 3/8*x^(8/3)
```

Fricas [A] time = 0.193898, size = 7, normalized size = 0.78

$$\frac{3}{8}\,x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/3),x, algorithm="fricas")
```

```
[Out] 3/8*x^(8/3)
```

Sympy [A] time = 0.02975, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{8}{3}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3),x)
```

```
[Out] 3*x**(8/3)/8
```

GIAC/XCAS [A] time = 0.206716, size = 7, normalized size = 0.78

$$\frac{3}{8}\,x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3),x, algorithm="giac")
```

```
[Out] 3/8*x^(8/3)
```

3.27 $\int x^{4/3} \, dx$

Optimal. Leaf size=9

$$\frac{3x^{7/3}}{7}$$

```
[Out] (3*x^(7/3))/7
```

Rubi [A] time = 0.00312431, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{3x^{7/3}}{7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3),x]

[Out] (3*x^(7/3))/7
```

Rubi in Sympy [A] time = 0.905339, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{7}{3}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3),x)

[Out] 3*x**(7/3)/7
```

Mathematica [A] time = 0.000959309, size = 9, normalized size = 1.

$$\frac{3x^{7/3}}{7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3),x]
```

```
[Out] (3*x^(7/3))/7
```

Maple [A] time = 0.003, size = 6, normalized size = 0.7

$$\frac{3}{7}x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(4/3),x)
```

```
[Out] 3/7*x^(7/3)
```

Maxima [A] time = 1.33211, size = 7, normalized size = 0.78

$$\frac{3}{7}\,x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/7*x^(7/3)
```

Fricas [A] time = 0.196792, size = 7, normalized size = 0.78

$$\frac{3}{7}\,x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/7*x^(7/3)
```

Sympy [A] time = 0.028028, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{7}{3}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3),x)
```

```
[Out] 3*x**(7/3)/7
```

GIAC/XCAS [A] time = 0.205666, size = 7, normalized size = 0.78

$$\frac{3}{7}\,x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3),x, algorithm="giac")
```

```
[Out] 3/7*x^(7/3)
```

3.28 $\int x^{2/3}\,dx$

Optimal. Leaf size=9

$$\frac{3x^{5/3}}{5}$$

```
[Out] (3*x^(5/3))/5
```

Rubi [A] time = 0.00316847, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3x^{5/3}}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2/3),x]

[Out] (3*x^(5/3))/5
```

Rubi in Sympy [A] time = 0.937506, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{5}{3}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2/3),x)

[Out] 3*x**(5/3)/5
```

Mathematica [A] time = 0.000832596, size = 9, normalized size = 1.

$$\frac{3x^{5/3}}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2/3),x]
```

```
[Out] (3*x^(5/3))/5
```

Maple [A] time = 0.003, size = 6, normalized size = 0.7

$$\frac{3}{5}x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2/3),x)
```

```
[Out] 3/5*x^(5/3)
```

Maxima [A] time = 1.33078, size = 7, normalized size = 0.78

$$\frac{3}{5}\,x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3),x, algorithm="maxima")
```

```
[Out] 3/5*x^(5/3)
```

Fricas [A] time = 0.197405, size = 7, normalized size = 0.78

$$\frac{3}{5}\,x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3),x, algorithm="fricas")
```

```
[Out] 3/5*x^(5/3)
```

Sympy [A] time = 0.02806, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{5}{3}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3),x)
```

```
[Out] 3*x**(5/3)/5
```

GIAC/XCAS [A] time = 0.20584, size = 7, normalized size = 0.78

$$\frac{3}{5}\,x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3),x, algorithm="giac")
```

```
[Out] 3/5*x^(5/3)
```

3.29 $\int \sqrt[3]{x}\,dx$

Optimal. Leaf size=9

$$\frac{3x^{4/3}}{4}$$

```
[Out] (3*x^(4/3))/4
```

Rubi [A] time = 0.00295984, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{3x^{4/3}}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3),x]

[Out] (3*x^(4/3))/4
```

Rubi in Sympy [A] time = 0.902611, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{4}{3}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3),x)

[Out] 3*x**(4/3)/4
```

Mathematica [A] time = 0.000923151, size = 9, normalized size = 1.

$$\frac{3x^{4/3}}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3),x]
```

```
[Out] (3*x^(4/3))/4
```

Maple [A] time = 0.003, size = 6, normalized size = 0.7

$$\frac{3}{4}x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/3),x)
```

```
[Out] 3/4*x^(4/3)
```

Maxima [A] time = 1.3348, size = 7, normalized size = 0.78

$$\frac{3}{4}\,x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3),x, algorithm="maxima")
```

```
[Out] 3/4*x^(4/3)
```

Fricas [A] time = 0.197454, size = 7, normalized size = 0.78

$$\frac{3}{4}\,x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3),x, algorithm="fricas")
```

```
[Out] 3/4*x^(4/3)
```

Sympy [A] time = 0.025954, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{4}{3}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3),x)
```

```
[Out] 3*x**(4/3)/4
```

GIAC/XCAS [A] time = 0.218914, size = 7, normalized size = 0.78

$$\frac{3}{4}\,x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3),x, algorithm="giac")
```

```
[Out] 3/4*x^(4/3)
```

3.30 $\int \frac{1}{\sqrt[3]{x}} \, dx$

Optimal. Leaf size=9

$$\frac{3x^{2/3}}{2}$$

```
[Out] (3*x^(2/3))/2
```

Rubi [A] time = 0.00312815, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3x^{2/3}}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-1/3),x]

[Out] (3*x^(2/3))/2
```

Rubi in Sympy [A] time = 0.900272, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/3),x)

[Out] 3*x**(2/3)/2
```

Mathematica [A] time = 0.000877713, size = 9, normalized size = 1.

$$\frac{3x^{2/3}}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-1/3),x]
```

```
[Out] (3*x^(2/3))/2
```

Maple [A] time = 0.002, size = 6, normalized size = 0.7

$$\frac{3}{2}x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/3),x)
```

```
[Out] 3/2*x^(2/3)
```

Maxima [A] time = 1.33034, size = 7, normalized size = 0.78

$$\frac{3}{2}\,x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-1/3),x, algorithm="maxima")
```

```
[Out] 3/2*x^(2/3)
```

Fricas [A] time = 0.194364, size = 7, normalized size = 0.78

$$\frac{3}{2}\,x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-1/3),x, algorithm="fricas")
```

```
[Out] 3/2*x^(2/3)
```

Sympy [A] time = 0.029769, size = 7, normalized size = 0.78

$$\frac{3x^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/3),x)
```

```
[Out] 3*x**(2/3)/2
```

GIAC/XCAS [A] time = 0.211061, size = 7, normalized size = 0.78

$$\frac{3}{2}\,x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-1/3),x, algorithm="giac")
```

```
[Out] 3/2*x^(2/3)
```

3.31 $\int \frac{1}{x^{2/3}} \, dx$

Optimal. Leaf size=7

$$3\sqrt[3]{x}$$

```
[Out] 3*x^(1/3)
```

Rubi [A] time = 0.00287505, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$3\sqrt[3]{x}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-2/3),x]

[Out] 3*x^(1/3)
```

Rubi in Sympy [A] time = 0.918349, size = 5, normalized size = 0.71

$$3\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(2/3),x)

[Out] 3*x**(1/3)
```

Mathematica [A] time = 0.000828756, size = 7, normalized size = 1.

$$3\sqrt[3]{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-2/3),x]

[Out] 3*x^(1/3)
```

Maple [A] time = 0.003, size = 6, normalized size = 0.9

$$3\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(2/3),x)
```

```
[Out] 3*x^(1/3)
```

Maxima [A] time = 1.35407, size = 7, normalized size = 1.

$$3x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-2/3),x, algorithm="maxima")
```

```
[Out] 3*x^(1/3)
```

Fricas [A] time = 0.193691, size = 7, normalized size = 1.

$$3x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-2/3),x, algorithm="fricas")
```

```
[Out] 3*x^(1/3)
```

Sympy [A] time = 0.029213, size = 5, normalized size = 0.71

$$3\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(2/3),x)
```

```
[Out] 3*x**(1/3)
```

GIAC/XCAS [A] time = 0.208479, size = 7, normalized size = 1.

$$3x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-2/3),x, algorithm="giac")
```

```
[Out] 3*x^(1/3)
```

3.32 $\int \frac{1}{x^{4/3}}\,dx$

Optimal. Leaf size=7

$$-\frac{3}{\sqrt[3]{x}}$$

```
[Out] -3/x^(1/3)
```

Rubi [A] time = 0.00310671, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{3}{\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In] Int[x^(-4/3),x]

[Out] -3/x^(1/3)
```

Rubi in Sympy [A] time = 0.916291, size = 7, normalized size = 1.

$$-\frac{3}{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/x**(4/3),x)

[Out] -3/x**(1/3)
```

Mathematica [A] time = 0.00093371, size = 7, normalized size = 1.

$$-\frac{3}{\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-4/3),x]
```

```
[Out] -3/x^(1/3)
```

Maple [A] time = 0.003, size = 6, normalized size = 0.9

$$-3\frac{1}{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(4/3),x)
```

```
[Out] -3/x^(1/3)
```

Maxima [A] time = 1.33923, size = 7, normalized size = 1.

$$-\frac{3}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-4/3),x, algorithm="maxima")
```

```
[Out] -3/x^(1/3)
```

Fricas [A] time = 0.193912, size = 7, normalized size = 1.

$$-\frac{3}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(-4/3),x, algorithm="fricas")
```

```
[Out] -3/x^(1/3)
```

Sympy [A] time = 0.030737, size = 7, normalized size = 1.

$$-\frac{3}{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(4/3),x)
```

```
[Out] -3/x**(1/3)
```

GIAC/XCAS [A] time = 0.209722, size = 7, normalized size = 1.

$$-\frac{3}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-4/3),x, algorithm="giac")
```

```
[Out] -3/x^(1/3)
```

3.33 $\int \frac{1}{x^{5/3}} dx$

Optimal. Leaf size=9

$$-\frac{3}{2x^{2/3}}$$

```
[Out] -3/(2*x^(2/3))
```

Rubi [A] time = 0.00276209, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{3}{2x^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-5/3),x]

[Out] -3/(2*x^(2/3))
```

Rubi in Sympy [A] time = 0.924891, size = 8, normalized size = 0.89

$$-\frac{3}{2x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/3),x)

[Out] -3/(2*x**(2/3))
```

Mathematica [A] time = 0.000896592, size = 9, normalized size = 1.

$$-\frac{3}{2x^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-5/3),x]
```

```
[Out] -3/(2*x^(2/3))
```

Maple [A] time = 0.002, size = 6, normalized size = 0.7

$$-\frac{3}{2}x^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/3),x)
```

```
[Out] -3/2/x^(2/3)
```

Maxima [A] time = 1.32929, size = 7, normalized size = 0.78

$$-\frac{3}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-5/3),x, algorithm="maxima")
```

```
[Out] -3/2/x^(2/3)
```

Fricas [A] time = 0.196997, size = 7, normalized size = 0.78

$$-\frac{3}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-5/3),x, algorithm="fricas")
```

```
[Out] -3/2/x^(2/3)
```

Sympy [A] time = 0.031208, size = 8, normalized size = 0.89

$$-\frac{3}{2x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/3),x)
```

```
[Out] -3/(2*x**(2/3))
```

GIAC/XCAS [A] time = 0.208849, size = 7, normalized size = 0.78

$$-\frac{3}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-5/3),x, algorithm="giac")
```

```
[Out] -3/2/x^(2/3)
```

3.34 $\int x^n\,dx$

Optimal. Leaf size=11

$$\frac{x^{n+1}}{n+1}$$

```
[Out] x^(1 + n)/(1 + n)
```

Rubi [A] time = 0.00670172, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$\frac{x^{n+1}}{n+1}$$

Antiderivative was successfully verified.

```
[In] Int[x^n,x]

[Out] x^(1 + n)/(1 + n)
```

Rubi in Sympy [A] time = 1.27615, size = 7, normalized size = 0.64

$$\frac{x^{n+1}}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**n,x)

[Out] x**(n + 1)/(n + 1)
```

Mathematica [A] time = 0.00178167, size = 11, normalized size = 1.

$$\frac{x^{n+1}}{n+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^n,x]
```

```
[Out] x^(1 + n)/(1 + n)
```

Maple [A] time = 0.004, size = 12, normalized size = 1.1

$$\frac{x^{1+n}}{1+n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^n,x)
```

```
[Out] x^(1+n)/(1+n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215282, size = 14, normalized size = 1.27

$$\frac{xx^n}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n,x, algorithm="fricas")
```

```
[Out] x*x^n/(n + 1)
```

Sympy [A] time = 0.030972, size = 12, normalized size = 1.09

$$\begin{cases} \frac{x^{n+1}}{n+1} & \text{for}\: n \neq -1 \\ \log{\left(x \right)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**n,x)
```

```
[Out] Piecewise((x**(n + 1)/(n + 1), Ne(n, -1)), (log(x), True))
```

GIAC/XCAS [A] time = 0.205507, size = 15, normalized size = 1.36

$$\frac{x^{n+1}}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n,x, algorithm="giac")
```

```
[Out] x^(n + 1)/(n + 1)
```

3.35 $\int (bx)^n \, dx$

Optimal. Leaf size=16

$$\frac{(bx)^{n+1}}{b(n+1)}$$

```
[Out] (b*x)^(1 + n)/(b*(1 + n))
```

Rubi [A] time = 0.0110471, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{(bx)^{n+1}}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(b*x)^n,x]
```

```
[Out] (b*x)^(1 + n)/(b*(1 + n))
```

Rubi in Sympy [A] time = 1.68607, size = 10, normalized size = 0.62

$$\frac{(bx)^{n+1}}{b\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x)**n,x)
```

```
[Out] (b*x)**(n + 1)/(b*(n + 1))
```

Mathematica [A] time = 0.00263634, size = 12, normalized size = 0.75

$$\frac{x(bx)^n}{n+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b*x)^n,x]
```

```
[Out] (x*(b*x)^n)/(1 + n)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.8

$$\frac{x\,(bx)^{n}}{1+n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x)^n,x)
```

```
[Out] x/(1+n)*(b*x)^n
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209398, size = 16, normalized size = 1.

$$\frac{(bx)^{n}\,x}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^n,x, algorithm="fricas")
```

```
[Out] (b*x)^n*x/(n + 1)
```

Sympy [A] time = 0.034792, size = 17, normalized size = 1.06

$$\frac{\begin{cases} \frac{(bx)^{n+1}}{n+1} & \text{for}\ n \neq -1 \\ \log{(bx)} & \text{otherwise} \end{cases}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)**n,x)
```

```
[Out] Piecewise(((b*x)**(n + 1)/(n + 1), Ne(n, -1)), (log(b*x), True))/
b
```

GIAC/XCAS [A] time = 0.205556, size = 22, normalized size = 1.38

$$\frac{(bx)^{n+1}}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^n,x, algorithm="giac")
```

```
[Out] (b*x)^(n + 1)/(b*(n + 1))
```

3.36 $\int \frac{1}{\sqrt{-a}+e(c+dx)} \, dx$

Optimal. Leaf size=23

$$\frac{\log \left(\sqrt{-a} + ce + dex\right)}{de}$$

```
[Out] Log[Sqrt[-a] + c*e + d*e*x]/(d*e)
```

Rubi [A] time = 0.0276753, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{\log \left(\sqrt{-a} + ce + dex\right)}{de}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[-a] + e*(c + d*x))^(-1),x]
```

```
[Out] Log[Sqrt[-a] + c*e + d*e*x]/(d*e)
```

Rubi in Sympy [A] time = 2.24643, size = 17, normalized size = 0.74

$$\frac{\log \left(e \left(c + dx\right) + \sqrt{-a}\right)}{de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(e*(d*x+c)+(-a)**(1/2)),x)
```

```
[Out] log(e*(c + d*x) + sqrt(-a))/(d*e)
```

Mathematica [A] time = 0.00586081, size = 23, normalized size = 1.

$$\frac{\log \left(\sqrt{-a} + ce + dex\right)}{de}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[-a] + e*(c + d*x))^(-1),x]
```

```
[Out] Log[Sqrt[-a] + c*e + d*e*x]/(d*e)
```

Maple [A] time = 0.001, size = 22, normalized size = 1.

$$\frac{1}{ed}\ln\left(ce+dex+\sqrt{-a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(e*(d*x+c)+(-a)^(1/2)),x)
```

```
[Out] ln(c*e+d*e*x+(-a)^(1/2))/d/e
```

Maxima [A] time = 1.32138, size = 28, normalized size = 1.22

$$\frac{\log\left((dx+c)e+\sqrt{-a}\right)}{de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((d*x + c)*e + sqrt(-a)),x, algorithm="maxima")
```

```
[Out] log((d*x + c)*e + sqrt(-a))/(d*e)
```

Fricas [A] time = 0.225286, size = 28, normalized size = 1.22

$$\frac{\log\left(dex+ce+\sqrt{-a}\right)}{de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((d*x + c)*e + sqrt(-a)),x, algorithm="fricas")
```

```
[Out] log(d*e*x + c*e + sqrt(-a))/(d*e)
```

Sympy [A] time = 0.061444, size = 19, normalized size = 0.83

$$\frac{\log\left(ce+dex+\sqrt{-a}\right)}{de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(e*(d*x+c)+(-a)**(1/2)),x)
```

```
[Out] log(c*e + d*e*x + sqrt(-a))/(d*e)
```

GIAC/XCAS [A] time = 0.212819, size = 30, normalized size = 1.3

$$\frac{e^{(-1)}\ln\left(\left|(dx+c)e+\sqrt{-a}\right|\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((d*x + c)*e + sqrt(-a)),x, algorithm="giac")
```

```
[Out] e^(-1)*ln(abs((d*x + c)*e + sqrt(-a)))/d
```

3.37 $\int (c+d(a+bx))^{5/2}\,dx$

Optimal. Leaf size=23

$$\frac{2(d(a+bx)+c)^{7/2}}{7bd}$$

```
[Out] (2*(c + d*(a + b*x))^(7/2))/(7*b*d)
```

Rubi [A] time = 0.0271118, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2(d(a+bx)+c)^{7/2}}{7bd}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*(a + b*x))^(5/2),x]
```

```
[Out] (2*(c + d*(a + b*x))^(7/2))/(7*b*d)
```

Rubi in Sympy [A] time = 2.14283, size = 17, normalized size = 0.74

$$\frac{2\,(c+d\,(a+bx))^{\frac{7}{2}}}{7bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c+d*(b*x+a))**(5/2),x)
```

```
[Out] 2*(c + d*(a + b*x))**(7/2)/(7*b*d)
```

Mathematica [A] time = 0.0429123, size = 23, normalized size = 1.

$$\frac{2(d(a+bx)+c)^{7/2}}{7bd}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*(a + b*x))^(5/2),x]
```

```
[Out] (2*(c + d*(a + b*x))^(7/2))/(7*b*d)
```

Maple [A] time = 0.003, size = 20, normalized size = 0.9

$$\frac{2}{7\,db}\left(bdx+ad+c\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c+d*(b*x+a))^(5/2),x)
```

```
[Out] 2/7*(b*d*x+a*d+c)^(7/2)/d/b
```

Maxima [A] time = 1.30901, size = 26, normalized size = 1.13

$$\frac{2\left((bx+a)d+c\right)^{\frac{7}{2}}}{7\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*((b*x + a)*d + c)^(7/2)/(b*d)
```

Fricas [A] time = 0.232988, size = 140, normalized size = 6.09

$$\frac{2\left(b^3d^3x^3+a^3d^3+3\,a^2cd^2+3\,ac^2d+c^3+3\left(ab^2d^3+b^2cd^2\right)x^2+3\left(a^2bd^3+2\,abcd^2+bc^2d\right)x\right)\sqrt{bdx+ad+c}}{7\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(b^3*d^3*x^3 + a^3*d^3 + 3*a^2*c*d^2 + 3*a*c^2*d + c^3 + 3*(a
*b^2*d^3 + b^2*c*d^2)*x^2 + 3*(a^2*b*d^3 + 2*a*b*c*d^2 + b*c^2*d)
*x)*sqrt(b*d*x + a*d + c)/(b*d)
```

Sympy [A] time = 173.73, size = 270, normalized size = 11.74

$$\begin{cases} c^{\frac{5}{2}}x \\ x\,(ad+c)^{\frac{5}{2}} \\ c^{\frac{5}{2}}x \\ \frac{2a^3d^2\sqrt{ad+bdx+c}}{7b} + \frac{6a^2d^2x\sqrt{ad+bdx+c}}{7} + \frac{6a^2cd\sqrt{ad+bdx+c}}{7b} + \frac{6abd^2x^2\sqrt{ad+bdx+c}}{7} + \frac{12acdx\sqrt{ad+bdx+c}}{7} + \frac{6ac^2\sqrt{ad+bdx+c}}{7b} + \frac{2b^2d^2x^3\sqrt{ad+}}{7} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c+d*(b*x+a))**(5/2),x)
```

```
[Out] Piecewise((c**(5/2)*x, Eq(b, 0) & Eq(d, 0)), (x*(a*d + c)**(5/2),
 Eq(b, 0)), (c**(5/2)*x, Eq(d, 0)), (2*a**3*d**2*sqrt(a*d + b*d*x
 + c)/(7*b) + 6*a**2*d**2*x*sqrt(a*d + b*d*x + c)/7 + 6*a**2*c*d*
sqrt(a*d + b*d*x + c)/(7*b) + 6*a*b*d**2*x**2*sqrt(a*d + b*d*x +
c)/7 + 12*a*c*d*x*sqrt(a*d + b*d*x + c)/7 + 6*a*c**2*sqrt(a*d + b
*d*x + c)/(7*b) + 2*b**2*d**2*x**3*sqrt(a*d + b*d*x + c)/7 + 6*b*
c*d*x**2*sqrt(a*d + b*d*x + c)/7 + 6*c**2*x*sqrt(a*d + b*d*x + c)
/7 + 2*c**3*sqrt(a*d + b*d*x + c)/(7*b*d), True))
```

GIAC/XCAS [A] time = 0.217603, size = 385, normalized size = 16.74

$$\frac{2\left(35\,(bdx+ad+c)^{\frac{3}{2}}a^2d^2 + 70\,(bdx+ad+c)^{\frac{3}{2}}acd + 35\,(bdx+ad+c)^{\frac{3}{2}}c^2 - 14\left(5\,(bdx+ad+c)^{\frac{3}{2}}ad - 3\,(bdx+ad+c)^{\frac{5}{2}} + 5\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*(b*d*x + a*d + c)^(3/2)*a^2*d^2 + 70*(b*d*x + a*d + c)^
(3/2)*a*c*d + 35*(b*d*x + a*d + c)^(3/2)*c^2 - 14*(5*(b*d*x + a*d
 + c)^(3/2)*a*d - 3*(b*d*x + a*d + c)^(5/2) + 5*(b*d*x + a*d + c)
^(3/2)*c)*a*d - 14*(5*(b*d*x + a*d + c)^(3/2)*a*d - 3*(b*d*x + a*
d + c)^(5/2) + 5*(b*d*x + a*d + c)^(3/2)*c)*c + (35*(b*d*x + a*d
+ c)^(3/2)*a^2*b^12*d^14 - 42*(b*d*x + a*d + c)^(5/2)*a*b^12*d^13
 + 70*(b*d*x + a*d + c)^(3/2)*a*b^12*c*d^13 + 15*(b*d*x + a*d + c
)^(7/2)*b^12*d^12 - 42*(b*d*x + a*d + c)^(5/2)*b^12*c*d^12 + 35*(
b*d*x + a*d + c)^(3/2)*b^12*c^2*d^12)/(b^12*d^12))/(b*d)
```

3.38 $\int (c+d(a+bx))^{3/2}\,dx$

Optimal. Leaf size=23

$$\frac{2(d(a+bx)+c)^{5/2}}{5bd}$$

```
[Out] (2*(c + d*(a + b*x))^(5/2))/(5*b*d)
```

Rubi [A] time = 0.0243161, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2(d(a+bx)+c)^{5/2}}{5bd}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*(a + b*x))^(3/2),x]
```

```
[Out] (2*(c + d*(a + b*x))^(5/2))/(5*b*d)
```

Rubi in Sympy [A] time = 2.16235, size = 17, normalized size = 0.74

$$\frac{2\left(c+d\left(a+bx\right)\right)^{\frac{5}{2}}}{5bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c+d*(b*x+a))**(3/2),x)
```

```
[Out] 2*(c + d*(a + b*x))**(5/2)/(5*b*d)
```

Mathematica [A] time = 0.0260178, size = 23, normalized size = 1.

$$\frac{2(d(a+bx)+c)^{5/2}}{5bd}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*(a + b*x))^(3/2),x]
```

```
[Out] (2*(c + d*(a + b*x))^(5/2))/(5*b*d)
```

Maple [A] time = 0.004, size = 20, normalized size = 0.9

$$\frac{2}{5\,db}\left(bdx+ad+c\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c+d*(b*x+a))^(3/2),x)
```

```
[Out] 2/5*(b*d*x+a*d+c)^(5/2)/d/b
```

Maxima [A] time = 1.3382, size = 26, normalized size = 1.13

$$\frac{2\left((bx+a)d+c\right)^{\frac{5}{2}}}{5\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*((b*x + a)*d + c)^(5/2)/(b*d)
```

Fricas [A] time = 0.198016, size = 80, normalized size = 3.48

$$\frac{2\left(b^{2}d^{2}x^{2}+a^{2}d^{2}+2\,acd+c^{2}+2\left(abd^{2}+bcd\right)x\right)\sqrt{bdx+ad+c}}{5\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(b^2*d^2*x^2 + a^2*d^2 + 2*a*c*d + c^2 + 2*(a*b*d^2 + b*c*d)*
x)*sqrt(b*d*x + a*d + c)/(b*d)
```

Sympy [A] time = 14.1343, size = 156, normalized size = 6.78

$$\begin{cases} c^{\frac{3}{2}}x & \text{for } b = 0 \wedge d = 0 \\ x(ad+c)^{\frac{3}{2}} & \text{for } b = 0 \\ c^{\frac{3}{2}}x & \text{for } d = 0 \\ \frac{2a^2d\sqrt{ad+bdx+c}}{5b} + \frac{4adx\sqrt{ad+bdx+c}}{5} + \frac{4ac\sqrt{ad+bdx+c}}{5b} + \frac{2bdx^2\sqrt{ad+bdx+c}}{5} + \frac{4cx\sqrt{ad+bdx+c}}{5} + \frac{2c^2\sqrt{ad+bdx+c}}{5bd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c+d*(b*x+a))**(3/2),x)
```

```
[Out] Piecewise((c**(3/2)*x, Eq(b, 0) & Eq(d, 0)), (x*(a*d + c)**(3/2),
 Eq(b, 0)), (c**(3/2)*x, Eq(d, 0)), (2*a**2*d*sqrt(a*d + b*d*x +
c)/(5*b) + 4*a*d*x*sqrt(a*d + b*d*x + c)/5 + 4*a*c*sqrt(a*d + b*d
*x + c)/(5*b) + 2*b*d*x**2*sqrt(a*d + b*d*x + c)/5 + 4*c*x*sqrt(a
*d + b*d*x + c)/5 + 2*c**2*sqrt(a*d + b*d*x + c)/(5*b*d), True))
```

GIAC/XCAS [A] time = 0.210198, size = 26, normalized size = 1.13

$$\frac{2\,(bdx+ad+c)^{\frac{5}{2}}}{5\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*(b*d*x + a*d + c)^(5/2)/(b*d)
```

3.39 $\int \sqrt{c+d(a+bx)}\,dx$

Optimal. Leaf size=23

$$\frac{2(d(a+bx)+c)^{3/2}}{3bd}$$

```
[Out] (2*(c + d*(a + b*x))^(3/2))/(3*b*d)
```

Rubi [A] time = 0.0241309, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2(d(a+bx)+c)^{3/2}}{3bd}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*(a + b*x)],x]

[Out] (2*(c + d*(a + b*x))^(3/2))/(3*b*d)
```

Rubi in Sympy [A] time = 2.14334, size = 17, normalized size = 0.74

$$\frac{2\left(c+d\left(a+bx\right)\right)^{\frac{3}{2}}}{3bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c+d*(b*x+a))**(1/2),x)

[Out] 2*(c + d*(a + b*x))**(3/2)/(3*b*d)
```

Mathematica [A] time = 0.0158129, size = 23, normalized size = 1.

$$\frac{2(d(a+bx)+c)^{3/2}}{3bd}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*(a + b*x)],x]
```

```
[Out] (2*(c + d*(a + b*x))^(3/2))/(3*b*d)
```

Maple [A] time = 0.004, size = 20, normalized size = 0.9

$$\frac{2}{3\,db}\left(bdx+ad+c\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c+d*(b*x+a))^(1/2),x)
```

```
[Out] 2/3*(b*d*x+a*d+c)^(3/2)/d/b
```

Maxima [A] time = 1.33501, size = 26, normalized size = 1.13

$$\frac{2\left((bx+a)d+c\right)^{\frac{3}{2}}}{3\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt((b*x + a)*d + c),x, algorithm="maxima")
```

```
[Out] 2/3*((b*x + a)*d + c)^(3/2)/(b*d)
```

Fricas [A] time = 0.197036, size = 26, normalized size = 1.13

$$\frac{2\left(bdx+ad+c\right)^{\frac{3}{2}}}{3\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt((b*x + a)*d + c),x, algorithm="fricas")
```

```
[Out] 2/3*(b*d*x + a*d + c)^(3/2)/(b*d)
```

Sympy [A] time = 0.956185, size = 82, normalized size = 3.57

$$\begin{cases} \sqrt{c}x & \text{for } b = 0 \wedge d = 0 \\ x\sqrt{ad + c} & \text{for } b = 0 \\ \sqrt{c}x & \text{for } d = 0 \\ \frac{2a\sqrt{ad+bdx+c}}{3b} + \frac{2x\sqrt{ad+bdx+c}}{3} + \frac{2c\sqrt{ad+bdx+c}}{3bd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c+d*(b*x+a))**(1/2),x)
```

```
[Out] Piecewise((sqrt(c)*x, Eq(b, 0) & Eq(d, 0)), (x*sqrt(a*d + c), Eq(
b, 0)), (sqrt(c)*x, Eq(d, 0)), (2*a*sqrt(a*d + b*d*x + c)/(3*b) +
 2*x*sqrt(a*d + b*d*x + c)/3 + 2*c*sqrt(a*d + b*d*x + c)/(3*b*d),
 True))
```

GIAC/XCAS [A] time = 0.209776, size = 26, normalized size = 1.13

$$\frac{2\,(bdx + ad + c)^{\frac{3}{2}}}{3\,bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt((b*x + a)*d + c),x, algorithm="giac")
```

```
[Out] 2/3*(b*d*x + a*d + c)^(3/2)/(b*d)
```

3.40 $\int \frac{1}{\sqrt{c+d(a+bx)}}\,dx$

Optimal. Leaf size=21

$$\frac{2\sqrt{d(a+bx)+c}}{bd}$$

```
[Out] (2*Sqrt[c + d*(a + b*x)])/(b*d)
```

Rubi [A] time = 0.0246451, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2\sqrt{d(a+bx)+c}}{bd}$$

Antiderivative was successfully verified.

```
[In]  Int[1/Sqrt[c + d*(a + b*x)],x]

[Out] (2*Sqrt[c + d*(a + b*x)])/(b*d)
```

Rubi in Sympy [A] time = 2.12569, size = 15, normalized size = 0.71

$$\frac{2\sqrt{c+d\left(a+bx\right)}}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(c+d*(b*x+a))**(1/2),x)

[Out] 2*sqrt(c + d*(a + b*x))/(b*d)
```

Mathematica [A] time = 0.0127974, size = 21, normalized size = 1.

$$\frac{2\sqrt{d(a+bx)+c}}{bd}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/Sqrt[c + d*(a + b*x)],x]
```

```
[Out] (2*Sqrt[c + d*(a + b*x)])/(b*d)
```

Maple [A] time = 0.004, size = 20, normalized size = 1.

$$2\,\frac{\sqrt{bdx+ad+c}}{db}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(c+d*(b*x+a))^(1/2),x)
```

```
[Out] 2*(b*d*x+a*d+c)^(1/2)/d/b
```

Maxima [A] time = 1.35394, size = 26, normalized size = 1.24

$$\frac{2\,\sqrt{(bx+a)d+c}}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt((b*x + a)*d + c),x, algorithm="maxima")
```

```
[Out] 2*sqrt((b*x + a)*d + c)/(b*d)
```

Fricas [A] time = 0.200132, size = 26, normalized size = 1.24

$$\frac{2\,\sqrt{bdx+ad+c}}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt((b*x + a)*d + c),x, algorithm="fricas")
```

```
[Out] 2*sqrt(b*d*x + a*d + c)/(b*d)
```

Sympy [A] time = 3.00045, size = 24, normalized size = 1.14

$$\frac{2\sqrt{c}\sqrt{\frac{bd\left(\frac{a}{b}+x\right)}{c}+1}}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c+d*(b*x+a))**(1/2),x)
```

```
[Out] 2*sqrt(c)*sqrt(b*d*(a/b + x)/c + 1)/(b*d)
```

GIAC/XCAS [A] time = 0.208271, size = 26, normalized size = 1.24

$$\frac{2\sqrt{bdx + ad + c}}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt((b*x + a)*d + c),x, algorithm="giac")
```

```
[Out] 2*sqrt(b*d*x + a*d + c)/(b*d)
```

3.41 $\int \frac{1}{(c+d(a+bx))^{3/2}}\,dx$

Optimal. Leaf size=21

$$-\frac{2}{bd\sqrt{d(a+bx)+c}}$$

```
[Out] -2/(b*d*Sqrt[c + d*(a + b*x)])
```

Rubi [A] time = 0.0242598, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2}{bd\sqrt{d(a+bx)+c}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*(a + b*x))^(-3/2),x]

[Out] -2/(b*d*Sqrt[c + d*(a + b*x)])
```

Rubi in Sympy [A] time = 2.18362, size = 17, normalized size = 0.81

$$-\frac{2}{bd\sqrt{c+d\,(a+bx)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(c+d*(b*x+a))**(3/2),x)

[Out] -2/(b*d*sqrt(c + d*(a + b*x)))
```

Mathematica [A] time = 0.0129472, size = 21, normalized size = 1.

$$-\frac{2}{bd\sqrt{d(a+bx)+c}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*(a + b*x))^(-3/2),x]
```

```
[Out] -2/(b*d*Sqrt[c + d*(a + b*x)])
```

Maple [A] time = 0.003, size = 20, normalized size = 1.

$$-2\frac{1}{\sqrt{bdx+ad+cdb}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(c+d*(b*x+a))^(3/2),x)
```

```
[Out] -2/(b*d*x+a*d+c)^(1/2)/d/b
```

Maxima [A] time = 1.34253, size = 26, normalized size = 1.24

$$-\frac{2}{\sqrt{(bx+a)d+c}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((b*x + a)*d + c)^(-3/2),x, algorithm="maxima")
```

```
[Out] -2/(sqrt((b*x + a)*d + c)*b*d)
```

Fricas [A] time = 0.201832, size = 26, normalized size = 1.24

$$-\frac{2}{\sqrt{bdx+ad+c}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(((b*x + a)*d + c)^(-3/2),x, algorithm="fricas")
```

```
[Out] -2/(sqrt(b*d*x + a*d + c)*b*d)
```

Sympy [A] time = 4.44539, size = 58, normalized size = 2.76

$$\begin{cases} \frac{x}{c^{\frac{3}{2}}} & \text{for } b = 0 \wedge d = 0 \\ \frac{x}{(ad+c)^{\frac{3}{2}}} & \text{for } b = 0 \\ \frac{x}{c^{\frac{3}{2}}} & \text{for } d = 0 \\ -\frac{2\sqrt{ad+bdx+c}}{abd^2+b^2d^2x+bcd} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c+d*(b*x+a))**(3/2),x)
```

```
[Out] Piecewise((x/c**(3/2), Eq(b, 0) & Eq(d, 0)), (x/(a*d + c)**(3/2),
 Eq(b, 0)), (x/c**(3/2), Eq(d, 0)), (-2*sqrt(a*d + b*d*x + c)/(a*
b*d**2 + b**2*d**2*x + b*c*d), True))
```

GIAC/XCAS [A] time = 0.211734, size = 26, normalized size = 1.24

$$-\frac{2}{\sqrt{(bx+a)d+c}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(-3/2),x, algorithm="giac")
```

```
[Out] -2/(sqrt((b*x + a)*d + c)*b*d)
```

3.42 $\int \frac{1}{(c+d(a+bx))^{5/2}}\,dx$

Optimal. Leaf size=23

$$-\frac{2}{3bd(d(a+bx)+c)^{3/2}}$$

```
[Out] -2/(3*b*d*(c + d*(a + b*x))^(3/2))
```

Rubi [A] time = 0.0241968, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$-\frac{2}{3bd(d(a+bx)+c)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*(a + b*x))^(-5/2),x]

[Out] -2/(3*b*d*(c + d*(a + b*x))^(3/2))
```

Rubi in Sympy [A] time = 2.13926, size = 19, normalized size = 0.83

$$-\frac{2}{3bd\left(c+d\left(a+bx\right)\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(c+d*(b*x+a))**(5/2),x)

[Out] -2/(3*b*d*(c + d*(a + b*x))**(3/2))
```

Mathematica [A] time = 0.0172023, size = 23, normalized size = 1.

$$-\frac{2}{3bd(d(a+bx)+c)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*(a + b*x))^(-5/2),x]
```

```
[Out] -2/(3*b*d*(c + d*(a + b*x))^(3/2))
```

Maple [A] time = 0.004, size = 20, normalized size = 0.9

$$-\frac{2}{3\,db}\left(bdx+ad+c\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(c+d*(b*x+a))^(5/2),x)
```

```
[Out] -2/3/(b*d*x+a*d+c)^(3/2)/d/b
```

Maxima [A] time = 1.32207, size = 26, normalized size = 1.13

$$-\frac{2}{3\left((bx+a)d+c\right)^{\frac{3}{2}}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(-5/2),x, algorithm="maxima")
```

```
[Out] -2/3/(((b*x + a)*d + c)^(3/2)*b*d)
```

Fricas [A] time = 0.200409, size = 46, normalized size = 2.

$$-\frac{2}{3\left(b^{2}d^{2}x+abd^{2}+bcd\right)\sqrt{bdx+ad+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(-5/2),x, algorithm="fricas")
```

```
[Out] -2/3/((b^2*d^2*x + a*b*d^2 + b*c*d)*sqrt(b*d*x + a*d + c))
```

Sympy [A] time = 19.7246, size = 102, normalized size = 4.43

$$\begin{cases} \frac{x}{c^{\frac{5}{2}}} & \text{for } b = 0 \wedge d = 0 \\ \frac{x}{(ad+c)^{\frac{5}{2}}} & \text{for } b = 0 \\ \frac{x}{c^{\frac{5}{2}}} & \text{for } d = 0 \\ -\frac{2\sqrt{ad+bdx+c}}{3a^2bd^3+6ab^2d^3x+6abcd^2+3b^3d^3x^2+6b^2cd^2x+3bc^2d} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c+d*(b*x+a))**(5/2),x)
```

```
[Out] Piecewise((x/c**(5/2), Eq(b, 0) & Eq(d, 0)), (x/(a*d + c)**(5/2),
 Eq(b, 0)), (x/c**(5/2), Eq(d, 0)), (-2*sqrt(a*d + b*d*x + c)/(3*
a**2*b*d**3 + 6*a*b**2*d**3*x + 6*a*b*c*d**2 + 3*b**3*d**3*x**2 +
 6*b**2*c*d**2*x + 3*b*c**2*d), True))
```

GIAC/XCAS [A] time = 0.209909, size = 26, normalized size = 1.13

$$-\frac{2}{3\,((bx+a)d+c)^{\frac{3}{2}}bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(((b*x + a)*d + c)^(-5/2),x, algorithm="giac")
```

```
[Out] -2/3/(((b*x + a)*d + c)^(3/2)*b*d)
```

3.43 $\int x^3(a + bx)\,dx$

Optimal. Leaf size=17

$$\frac{ax^4}{4} + \frac{bx^5}{5}$$

```
[Out] (a*x^4)/4 + (b*x^5)/5
```

Rubi [A] time = 0.0212661, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{ax^4}{4} + \frac{bx^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x),x]

[Out] (a*x^4)/4 + (b*x^5)/5
```

Rubi in Sympy [A] time = 2.5771, size = 12, normalized size = 0.71

$$\frac{ax^4}{4} + \frac{bx^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a),x)

[Out] a*x**4/4 + b*x**5/5
```

Mathematica [A] time = 0.00151032, size = 17, normalized size = 1.

$$\frac{ax^4}{4} + \frac{bx^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x),x]
```

```
[Out] (a*x^4)/4 + (b*x^5)/5
```

Maple [A] time = 0.001, size = 14, normalized size = 0.8

$$\frac{ax^4}{4} + \frac{bx^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a),x)
```

```
[Out] 1/4*a*x^4+1/5*b*x^5
```

Maxima [A] time = 1.35794, size = 18, normalized size = 1.06

$$\frac{1}{5}\,bx^5 + \frac{1}{4}\,ax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3,x, algorithm="maxima")
```

```
[Out] 1/5*b*x^5 + 1/4*a*x^4
```

Fricas [A] time = 0.173503, size = 1, normalized size = 0.06

$$\frac{1}{5}x^5b + \frac{1}{4}x^4a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b + 1/4*x^4*a
```

Sympy [A] time = 0.057382, size = 12, normalized size = 0.71

$$\frac{ax^4}{4} + \frac{bx^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a),x)
```

```
[Out] a*x**4/4 + b*x**5/5
```

GIAC/XCAS [A] time = 0.209737, size = 18, normalized size = 1.06

$$\frac{1}{5}\,bx^5 + \frac{1}{4}\,ax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3,x, algorithm="giac")
```

```
[Out] 1/5*b*x^5 + 1/4*a*x^4
```

3.44 $\int x^2(a+bx)\,dx$

Optimal. Leaf size=17

$$\frac{ax^3}{3}+\frac{bx^4}{4}$$

```
[Out] (a*x^3)/3 + (b*x^4)/4
```

Rubi [A] time = 0.0187523, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{ax^3}{3}+\frac{bx^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x),x]

[Out] (a*x^3)/3 + (b*x^4)/4
```

Rubi in Sympy [A] time = 2.52632, size = 12, normalized size = 0.71

$$\frac{ax^3}{3}+\frac{bx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a),x)

[Out] a*x**3/3 + b*x**4/4
```

Mathematica [A] time = 0.00130265, size = 17, normalized size = 1.

$$\frac{ax^3}{3}+\frac{bx^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x),x]
```

```
[Out] (a*x^3)/3 + (b*x^4)/4
```

Maple [A] time = 0.002, size = 14, normalized size = 0.8

$$\frac{ax^3}{3} + \frac{bx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a),x)
```

```
[Out] 1/3*a*x^3+1/4*b*x^4
```

Maxima [A] time = 1.3198, size = 18, normalized size = 1.06

$$\frac{1}{4}\,bx^4 + \frac{1}{3}\,ax^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2,x, algorithm="maxima")
```

```
[Out] 1/4*b*x^4 + 1/3*a*x^3
```

Fricas [A] time = 0.189209, size = 1, normalized size = 0.06

$$\frac{1}{4}x^4b + \frac{1}{3}x^3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/4*x^4*b + 1/3*x^3*a
```

Sympy [A] time = 0.061064, size = 12, normalized size = 0.71

$$\frac{ax^3}{3} + \frac{bx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a),x)
```

```
[Out] a*x**3/3 + b*x**4/4
```

GIAC/XCAS [A] time = 0.210514, size = 18, normalized size = 1.06

$$\frac{1}{4}\,bx^4+\frac{1}{3}\,ax^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2,x, algorithm="giac")
```

```
[Out] 1/4*b*x^4 + 1/3*a*x^3
```

3.45 $\int x(a + bx) \, dx$

Optimal. Leaf size=17

$$\frac{ax^2}{2} + \frac{bx^3}{3}$$

```
[Out] (a*x^2)/2 + (b*x^3)/3
```

Rubi [A] time = 0.0155861, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{ax^2}{2} + \frac{bx^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x),x]

[Out] (a*x^2)/2 + (b*x^3)/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a \int x \, dx + \frac{bx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a),x)

[Out] a*Integral(x, x) + b*x**3/3
```

Mathematica [A] time = 0.00126265, size = 17, normalized size = 1.

$$\frac{ax^2}{2} + \frac{bx^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x),x]
```

```
[Out] (a*x^2)/2 + (b*x^3)/3
```

Maple [A] time = 0., size = 14, normalized size = 0.8

$$\frac{ax^2}{2} + \frac{bx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a),x)
```

```
[Out] 1/2*a*x^2+1/3*b*x^3
```

Maxima [A] time = 1.32054, size = 18, normalized size = 1.06

$$\frac{1}{3}\,bx^3 + \frac{1}{2}\,ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x,x, algorithm="maxima")
```

```
[Out] 1/3*b*x^3 + 1/2*a*x^2
```

Fricas [A] time = 0.176482, size = 1, normalized size = 0.06

$$\frac{1}{3}x^3b + \frac{1}{2}x^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x,x, algorithm="fricas")
```

```
[Out] 1/3*x^3*b + 1/2*x^2*a
```

Sympy [A] time = 0.058228, size = 12, normalized size = 0.71

$$\frac{ax^2}{2} + \frac{bx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a),x)
```

```
[Out] a*x**2/2 + b*x**3/3
```

GIAC/XCAS [A] time = 0.205181, size = 18, normalized size = 1.06

$$\frac{1}{3}\,bx^3 + \frac{1}{2}\,ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x,x, algorithm="giac")
```

```
[Out] 1/3*b*x^3 + 1/2*a*x^2
```

3.46 $\int (a+bx)\,dx$

Optimal. Leaf size=12

$$ax+\frac{bx^2}{2}$$

```
[Out] a*x + (b*x^2)/2
```

Rubi [A] time = 0.00791446, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$ax+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*x,x]

[Out] a*x + (b*x^2)/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$b\int x\,dx+\int a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(b*x+a,x)

[Out] b*Integral(x, x) + Integral(a, x)
```

Mathematica [A] time = 0.0000518372, size = 12, normalized size = 1.

$$ax+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*x,x]
```

```
[Out] a*x + (b*x^2)/2
```

Maple [A] time = 0., size = 11, normalized size = 0.9

$$ax + \frac{bx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(b*x+a,x)
```

```
[Out] a*x+1/2*b*x^2
```

Maxima [A] time = 1.31671, size = 14, normalized size = 1.17

$$\frac{1}{2}\,bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b*x + a,x, algorithm="maxima")
```

```
[Out] 1/2*b*x^2 + a*x
```

Fricas [A] time = 0.178962, size = 1, normalized size = 0.08

$$\frac{1}{2}x^2b + xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b*x + a,x, algorithm="fricas")
```

```
[Out] 1/2*x^2*b + x*a
```

Sympy [A] time = 0.062238, size = 8, normalized size = 0.67

$$ax + \frac{bx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b*x+a,x)

[Out] a*x + b*x**2/2
```

GIAC/XCAS [A] time = 0.20893, size = 14, normalized size = 1.17

$$\frac{1}{2}\,bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b*x + a,x, algorithm="giac")

[Out] 1/2*b*x^2 + a*x
```

3.47 $\int \frac{a+bx}{x} \, dx$

Optimal. Leaf size=8

$$a\log(x) + bx$$

```
[Out] b*x + a*Log[x]
```

Rubi [A] time = 0.00984268, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$a\log(x) + bx$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x,x]

[Out] b*x + a*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a\log(x) + \int b\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x,x)

[Out] a*log(x) + Integral(b, x)
```

Mathematica [A] time = 0.0012073, size = 8, normalized size = 1.

$$a\log(x) + bx$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x,x]

[Out] b*x + a*Log[x]
```

Maple [A] time = 0.018, size = 9, normalized size = 1.1

$$bx + a\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x,x)
```

```
[Out] b*x+a*ln(x)
```

Maxima [A] time = 1.31491, size = 11, normalized size = 1.38

$$bx + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x,x, algorithm="maxima")
```

```
[Out] b*x + a*log(x)
```

Fricas [A] time = 0.201153, size = 11, normalized size = 1.38

$$bx + a\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x,x, algorithm="fricas")
```

```
[Out] b*x + a*log(x)
```

Sympy [A] time = 0.130943, size = 7, normalized size = 0.88

$$a\log(x) + bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x,x)
```

```
[Out] a*log(x) + b*x
```

GIAC/XCAS [A] time = 0.212955, size = 12, normalized size = 1.5

$$bx + a\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x,x, algorithm="giac")
```

```
[Out] b*x + a*ln(abs(x))
```

3.48 $\int \frac{a+bx}{x^2}\,dx$

Optimal. Leaf size=11

$$b\log(x)-\frac{a}{x}$$

```
[Out] -(a/x) + b*Log[x]
```

Rubi [A] time = 0.013359, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$b\log(x)-\frac{a}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^2,x]

[Out] -(a/x) + b*Log[x]
```

Rubi in Sympy [A] time = 2.44065, size = 7, normalized size = 0.64

$$-\frac{a}{x}+b\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**2,x)

[Out] -a/x + b*log(x)
```

Mathematica [A] time = 0.00243443, size = 11, normalized size = 1.

$$b\log(x)-\frac{a}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^2,x]

[Out] -(a/x) + b*Log[x]
```

Maple [A] time = 0.025, size = 12, normalized size = 1.1

$$-\frac{a}{x} + b\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^2,x)
```

```
[Out] -a/x+b*ln(x)
```

Maxima [A] time = 1.32079, size = 15, normalized size = 1.36

$$b\log(x) - \frac{a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^2,x, algorithm="maxima")
```

```
[Out] b*log(x) - a/x
```

Fricas [A] time = 0.198619, size = 18, normalized size = 1.64

$$\frac{bx\log(x) - a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^2,x, algorithm="fricas")
```

```
[Out] (b*x*log(x) - a)/x
```

Sympy [A] time = 0.986301, size = 7, normalized size = 0.64

$$-\frac{a}{x} + b\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**2,x)
```

```
[Out] -a/x + b*log(x)
```

GIAC/XCAS [A] time = 0.214079, size = 16, normalized size = 1.45

$$b\ln\left(|x|\right) - \frac{a}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^2,x, algorithm="giac")
```

```
[Out] b*ln(abs(x)) - a/x
```

3.49 $\int \frac{a+bx}{x^3} \, dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^2}{2ax^2}$$

```
[Out] -(a + b*x)^2/(2*a*x^2)
```

Rubi [A] time = 0.0100279, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$-\frac{(a+bx)^2}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^3,x]
```

```
[Out] -(a + b*x)^2/(2*a*x^2)
```

Rubi in Sympy [A] time = 2.55554, size = 10, normalized size = 0.59

$$-\frac{a}{2x^2} - \frac{b}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**3,x)
```

```
[Out] -a/(2*x**2) - b/x
```

Mathematica [A] time = 0.00198773, size = 15, normalized size = 0.88

$$-\frac{a}{2x^2} - \frac{b}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^3,x]
```

```
[Out] -a/(2*x^2) - b/x
```

Maple [A] time = 0.008, size = 14, normalized size = 0.8

$$-\frac{b}{x}-\frac{a}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^3,x)
```

```
[Out] -b/x-1/2*a/x^2
```

Maxima [A] time = 1.33047, size = 15, normalized size = 0.88

$$-\frac{2\,bx+a}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*x + a)/x^2
```

Fricas [A] time = 0.191097, size = 15, normalized size = 0.88

$$-\frac{2\,bx+a}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*x + a)/x^2
```

Sympy [A] time = 0.994592, size = 12, normalized size = 0.71

$$-\frac{a+2bx}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**3,x)
```

```
[Out] -(a + 2*b*x)/(2*x**2)
```

GIAC/XCAS [A] time = 0.210818, size = 15, normalized size = 0.88

$$-\frac{2\,bx+a}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^3,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*x + a)/x^2
```

3.50 $\int \frac{a+bx}{x^4} dx$

Optimal. Leaf size=17

$$-\frac{a}{3x^3}-\frac{b}{2x^2}$$

```
[Out] -a/(3*x^3) - b/(2*x^2)
```

Rubi [A] time = 0.0145026, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{3x^3}-\frac{b}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/x^4,x]

[Out] -a/(3*x^3) - b/(2*x^2)
```

Rubi in Sympy [A] time = 2.53299, size = 14, normalized size = 0.82

$$-\frac{a}{3x^3}-\frac{b}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)/x**4,x)

[Out] -a/(3*x**3) - b/(2*x**2)
```

Mathematica [A] time = 0.00279633, size = 17, normalized size = 1.

$$-\frac{a}{3x^3}-\frac{b}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/x^4,x]
```

```
[Out] -a/(3*x^3) - b/(2*x^2)
```

Maple [A] time = 0.007, size = 14, normalized size = 0.8

$$-\frac{a}{3\,x^{3}}-\frac{b}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^4,x)
```

```
[Out] -1/3*a/x^3-1/2*b/x^2
```

Maxima [A] time = 1.44602, size = 18, normalized size = 1.06

$$-\frac{3\,bx+2\,a}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*b*x + 2*a)/x^3
```

Fricas [A] time = 0.188437, size = 18, normalized size = 1.06

$$-\frac{3\,bx+2\,a}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^4,x, algorithm="fricas")
```

```
[Out] -1/6*(3*b*x + 2*a)/x^3
```

Sympy [A] time = 1.07389, size = 14, normalized size = 0.82

$$-\frac{2a+3bx}{6x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**4,x)
```

```
[Out] -(2*a + 3*b*x)/(6*x**3)
```

GIAC/XCAS [A] time = 0.207929, size = 18, normalized size = 1.06

$$-\frac{3\,bx + 2\,a}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^4,x, algorithm="giac")
```

```
[Out] -1/6*(3*b*x + 2*a)/x^3
```

3.51 $\int \frac{a+bx}{x^5} \, dx$

Optimal. Leaf size=17

$$-\frac{a}{4x^4} - \frac{b}{3x^3}$$

```
[Out] -a/(4*x^4) - b/(3*x^3)
```

Rubi [A] time = 0.0146728, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{4x^4} - \frac{b}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^5,x]

[Out] -a/(4*x^4) - b/(3*x^3)
```

Rubi in Sympy [A] time = 2.60524, size = 14, normalized size = 0.82

$$-\frac{a}{4x^4} - \frac{b}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**5,x)

[Out] -a/(4*x**4) - b/(3*x**3)
```

Mathematica [A] time = 0.00201429, size = 17, normalized size = 1.

$$-\frac{a}{4x^4} - \frac{b}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^5,x]
```

```
[Out] -a/(4*x^4) - b/(3*x^3)
```

Maple [A] time = 0.007, size = 14, normalized size = 0.8

$$-\frac{a}{4\,x^4}-\frac{b}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^5,x)

[Out] -1/4*a/x^4-1/3*b/x^3
```

Maxima [A] time = 1.32876, size = 18, normalized size = 1.06

$$-\frac{4\,bx+3\,a}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^5,x, algorithm="maxima")

[Out] -1/12*(4*b*x + 3*a)/x^4
```

Fricas [A] time = 0.196124, size = 18, normalized size = 1.06

$$-\frac{4\,bx+3\,a}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^5,x, algorithm="fricas")

[Out] -1/12*(4*b*x + 3*a)/x^4
```

Sympy [A] time = 1.10327, size = 14, normalized size = 0.82

$$-\frac{3a+4bx}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**5,x)

[Out] -(3*a + 4*b*x)/(12*x**4)
```

GIAC/XCAS [A] time = 0.209652, size = 18, normalized size = 1.06

$$-\frac{4\,bx+3\,a}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^5,x, algorithm="giac")

[Out] -1/12*(4*b*x + 3*a)/x^4
```

3.52 $\int x^3(a+bx)^2\,dx$

Optimal. Leaf size=30

$$\frac{a^2x^4}{4}+\frac{2}{5}abx^5+\frac{b^2x^6}{6}$$

```
[Out] (a^2*x^4)/4 + (2*a*b*x^5)/5 + (b^2*x^6)/6
```

Rubi [A] time = 0.0335317, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2x^4}{4}+\frac{2}{5}abx^5+\frac{b^2x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^2,x]

[Out] (a^2*x^4)/4 + (2*a*b*x^5)/5 + (b^2*x^6)/6
```

Rubi in Sympy [A] time = 5.31858, size = 26, normalized size = 0.87

$$\frac{a^2x^4}{4}+\frac{2abx^5}{5}+\frac{b^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**2,x)

[Out] a**2*x**4/4 + 2*a*b*x**5/5 + b**2*x**6/6
```

Mathematica [A] time = 0.00238131, size = 30, normalized size = 1.

$$\frac{a^2x^4}{4}+\frac{2}{5}abx^5+\frac{b^2x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^2,x]
```

```
[Out] (a^2*x^4)/4 + (2*a*b*x^5)/5 + (b^2*x^6)/6
```

Maple [A] time = 0.001, size = 25, normalized size = 0.8

$$\frac{a^2x^4}{4}+\frac{2\,abx^5}{5}+\frac{b^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^2,x)
```

```
[Out] 1/4*a^2*x^4+2/5*a*b*x^5+1/6*b^2*x^6
```

Maxima [A] time = 1.33234, size = 32, normalized size = 1.07

$$\frac{1}{6}\,b^2x^6+\frac{2}{5}\,abx^5+\frac{1}{4}\,a^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3,x, algorithm="maxima")
```

```
[Out] 1/6*b^2*x^6 + 2/5*a*b*x^5 + 1/4*a^2*x^4
```

Fricas [A] time = 0.173221, size = 1, normalized size = 0.03

$$\frac{1}{6}x^6b^2+\frac{2}{5}x^5ba+\frac{1}{4}x^4a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^2 + 2/5*x^5*b*a + 1/4*x^4*a^2
```

Sympy [A] time = 0.08705, size = 26, normalized size = 0.87

$$\frac{a^2x^4}{4}+\frac{2abx^5}{5}+\frac{b^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**2,x)
```

```
[Out] a**2*x**4/4 + 2*a*b*x**5/5 + b**2*x**6/6
```

GIAC/XCAS [A] time = 0.209657, size = 32, normalized size = 1.07

$$\frac{1}{6}\,b^{2}x^{6}+\frac{2}{5}\,abx^{5}+\frac{1}{4}\,a^{2}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3,x, algorithm="giac")
```

```
[Out] 1/6*b^2*x^6 + 2/5*a*b*x^5 + 1/4*a^2*x^4
```

3.53 $\int x^2(a+bx)^2\,dx$

Optimal. Leaf size=30

$$\frac{a^2x^3}{3}+\frac{1}{2}abx^4+\frac{b^2x^5}{5}$$

```
[Out] (a^2*x^3)/3 + (a*b*x^4)/2 + (b^2*x^5)/5
```

Rubi [A] time = 0.0286132, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{a^2x^3}{3}+\frac{1}{2}abx^4+\frac{b^2x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^2,x]

[Out] (a^2*x^3)/3 + (a*b*x^4)/2 + (b^2*x^5)/5
```

Rubi in Sympy [A] time = 5.01251, size = 24, normalized size = 0.8

$$\frac{a^2x^3}{3}+\frac{abx^4}{2}+\frac{b^2x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**2,x)

[Out] a**2*x**3/3 + a*b*x**4/2 + b**2*x**5/5
```

Mathematica [A] time = 0.002213, size = 30, normalized size = 1.

$$\frac{a^2x^3}{3}+\frac{1}{2}abx^4+\frac{b^2x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^2,x]
```

```
[Out] (a^2*x^3)/3 + (a*b*x^4)/2 + (b^2*x^5)/5
```

Maple [A] time = 0.002, size = 25, normalized size = 0.8

$$\frac{a^2x^3}{3} + \frac{abx^4}{2} + \frac{b^2x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^2,x)
```

```
[Out] 1/3*a^2*x^3+1/2*a*b*x^4+1/5*b^2*x^5
```

Maxima [A] time = 1.32527, size = 32, normalized size = 1.07

$$\frac{1}{5}\,b^2x^5 + \frac{1}{2}\,abx^4 + \frac{1}{3}\,a^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2,x, algorithm="maxima")
```

```
[Out] 1/5*b^2*x^5 + 1/2*a*b*x^4 + 1/3*a^2*x^3
```

Fricas [A] time = 0.186504, size = 1, normalized size = 0.03

$$\frac{1}{5}x^5b^2 + \frac{1}{2}x^4ba + \frac{1}{3}x^3a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2,x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b^2 + 1/2*x^4*b*a + 1/3*x^3*a^2
```

Sympy [A] time = 0.081426, size = 24, normalized size = 0.8

$$\frac{a^2x^3}{3} + \frac{abx^4}{2} + \frac{b^2x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**2,x)
```

```
[Out] a**2*x**3/3 + a*b*x**4/2 + b**2*x**5/5
```

GIAC/XCAS [A] time = 0.213879, size = 32, normalized size = 1.07

$$\frac{1}{5}\,b^2x^5 + \frac{1}{2}\,abx^4 + \frac{1}{3}\,a^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2,x, algorithm="giac")
```

```
[Out] 1/5*b^2*x^5 + 1/2*a*b*x^4 + 1/3*a^2*x^3
```

3.54 $\int x(a+bx)^2\,dx$

Optimal. Leaf size=30

$$\frac{a^2x^2}{2}+\frac{2}{3}abx^3+\frac{b^2x^4}{4}$$

```
[Out] (a^2*x^2)/2 + (2*a*b*x^3)/3 + (b^2*x^4)/4
```

Rubi [A] time = 0.0255135, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a^2x^2}{2}+\frac{2}{3}abx^3+\frac{b^2x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^2,x]

[Out] (a^2*x^2)/2 + (2*a*b*x^3)/3 + (b^2*x^4)/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\int x\,dx+\frac{2abx^3}{3}+\frac{b^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**2,x)

[Out] a**2*Integral(x, x) + 2*a*b*x**3/3 + b**2*x**4/4
```

Mathematica [A] time = 0.00187126, size = 30, normalized size = 1.

$$\frac{a^2x^2}{2}+\frac{2}{3}abx^3+\frac{b^2x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^2,x]
```

```
[Out] (a^2*x^2)/2 + (2*a*b*x^3)/3 + (b^2*x^4)/4
```

Maple [A] time = 0., size = 25, normalized size = 0.8

$$\frac{a^2x^2}{2} + \frac{2\,abx^3}{3} + \frac{b^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^2,x)
```

```
[Out] 1/2*a^2*x^2+2/3*a*b*x^3+1/4*b^2*x^4
```

Maxima [A] time = 1.33277, size = 32, normalized size = 1.07

$$\frac{1}{4}\,b^2x^4 + \frac{2}{3}\,abx^3 + \frac{1}{2}\,a^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x,x, algorithm="maxima")
```

```
[Out] 1/4*b^2*x^4 + 2/3*a*b*x^3 + 1/2*a^2*x^2
```

Fricas [A] time = 0.177388, size = 1, normalized size = 0.03

$$\frac{1}{4}x^4b^2 + \frac{2}{3}x^3ba + \frac{1}{2}x^2a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x,x, algorithm="fricas")
```

```
[Out] 1/4*x^4*b^2 + 2/3*x^3*b*a + 1/2*x^2*a^2
```

Sympy [A] time = 0.080362, size = 26, normalized size = 0.87

$$\frac{a^2x^2}{2} + \frac{2abx^3}{3} + \frac{b^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**2,x)
```

```
[Out] a**2*x**2/2 + 2*a*b*x**3/3 + b**2*x**4/4
```

GIAC/XCAS [A] time = 0.208858, size = 32, normalized size = 1.07

$$\frac{1}{4}\,b^2x^4 + \frac{2}{3}\,abx^3 + \frac{1}{2}\,a^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x,x, algorithm="giac")
```

```
[Out] 1/4*b^2*x^4 + 2/3*a*b*x^3 + 1/2*a^2*x^2
```

3.55 $\int (a+bx)^2\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^3}{3b}$$

```
[Out] (a + b*x)^3/(3*b)
```

Rubi [A] time = 0.00679932, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2,x]

[Out] (a + b*x)^3/(3*b)
```

Rubi in Sympy [A] time = 1.24789, size = 8, normalized size = 0.57

$$\frac{(a+bx)^3}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2,x)

[Out] (a + b*x)**3/(3*b)
```

Mathematica [A] time = 0.00188822, size = 14, normalized size = 1.

$$\frac{(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2,x]
```

```
[Out] (a + b*x)^3/(3*b)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$\frac{(bx+a)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2,x)
```

```
[Out] 1/3*(b*x+a)^3/b
```

Maxima [A] time = 1.32919, size = 27, normalized size = 1.93

$$\frac{1}{3}\,b^2x^3 + abx^2 + a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2,x, algorithm="maxima")
```

```
[Out] 1/3*b^2*x^3 + a*b*x^2 + a^2*x
```

Fricas [A] time = 0.191009, size = 1, normalized size = 0.07

$$\frac{1}{3}x^3b^2 + x^2ba + xa^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/3*x^3*b^2 + x^2*b*a + x*a^2
```

Sympy [A] time = 0.076614, size = 19, normalized size = 1.36

$$a^2x + abx^2 + \frac{b^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2,x)

[Out] a**2*x + a*b*x**2 + b**2*x**3/3
```

GIAC/XCAS [A] time = 0.21408, size = 16, normalized size = 1.14

$$\frac{(bx+a)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2,x, algorithm="giac")

[Out] 1/3*(b*x + a)^3/b
```

3.56 $\int \frac{(a+bx)^2}{x} \, dx$

Optimal. Leaf size=22

$$a^2 \log(x) + 2abx + \frac{b^2x^2}{2}$$

```
[Out] 2*a*b*x + (b^2*x^2)/2 + a^2*Log[x]
```

Rubi [A] time = 0.0173239, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$a^2 \log(x) + 2abx + \frac{b^2x^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/x,x]
```

```
[Out] 2*a*b*x + (b^2*x^2)/2 + a^2*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2 \log(x) + 2abx + b^2 \int x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2/x,x)
```

```
[Out] a**2*log(x) + 2*a*b*x + b**2*Integral(x, x)
```

Mathematica [A] time = 0.00109338, size = 22, normalized size = 1.

$$a^2 \log(x) + 2abx + \frac{b^2x^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2/x,x]
```

```
[Out] 2*a*b*x + (b^2*x^2)/2 + a^2*Log[x]
```

Maple [A] time = 0.004, size = 21, normalized size = 1.

$$2\,abx+\frac{b^{2}x^{2}}{2}+a^{2}\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x,x)

[Out] 2*a*b*x+1/2*b^2*x^2+a^2*ln(x)
```

Maxima [A] time = 1.33571, size = 27, normalized size = 1.23

$$\frac{1}{2}\,b^{2}x^{2}+2\,abx+a^{2}\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x,x, algorithm="maxima")

[Out] 1/2*b^2*x^2 + 2*a*b*x + a^2*log(x)
```

Fricas [A] time = 0.200845, size = 27, normalized size = 1.23

$$\frac{1}{2}\,b^{2}x^{2}+2\,abx+a^{2}\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x,x, algorithm="fricas")

[Out] 1/2*b^2*x^2 + 2*a*b*x + a^2*log(x)
```

Sympy [A] time = 1.00371, size = 20, normalized size = 0.91

$$a^{2}\log\left(x\right)+2abx+\frac{b^{2}x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x,x)
```

```
[Out] a**2*log(x) + 2*a*b*x + b**2*x**2/2
```

GIAC/XCAS [A] time = 0.210121, size = 28, normalized size = 1.27

$$\frac{1}{2}\,b^2x^2 + 2\,abx + a^2\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x,x, algorithm="giac")
```

```
[Out] 1/2*b^2*x^2 + 2*a*b*x + a^2*ln(abs(x))
```

3.57 $\int \frac{(a+bx)^2}{x^2} dx$

Optimal. Leaf size=20

$$-\frac{a^2}{x} + 2ab\log(x) + b^2x$$

```
[Out] -(a^2/x) + b^2*x + 2*a*b*Log[x]
```

Rubi [A] time = 0.0220168, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^2}{x} + 2ab\log(x) + b^2x$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^2,x]

[Out] -(a^2/x) + b^2*x + 2*a*b*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2}{x} + 2ab\log(x) + \int b^2\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**2,x)

[Out] -a**2/x + 2*a*b*log(x) + Integral(b**2, x)
```

Mathematica [A] time = 0.00155256, size = 20, normalized size = 1.

$$-\frac{a^2}{x} + 2ab\log(x) + b^2x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^2,x]
```

```
[Out] -(a^2/x) + b^2*x + 2*a*b*Log[x]
```

Maple [A] time = 0.007, size = 21, normalized size = 1.1

$$-\frac{a^2}{x} + b^2x + 2\,ab\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^2,x)
```

```
[Out] -a^2/x+b^2*x+2*a*b*ln(x)
```

Maxima [A] time = 1.33993, size = 27, normalized size = 1.35

$$b^2x + 2\,ab\log(x) - \frac{a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^2,x, algorithm="maxima")
```

```
[Out] b^2*x + 2*a*b*log(x) - a^2/x
```

Fricas [A] time = 0.19319, size = 32, normalized size = 1.6

$$\frac{b^2x^2 + 2\,abx\log(x) - a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^2,x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + 2*a*b*x*log(x) - a^2)/x
```

Sympy [A] time = 1.06526, size = 17, normalized size = 0.85

$$-\frac{a^2}{x} + 2ab\log(x) + b^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**2,x)
```

```
[Out] -a**2/x + 2*a*b*log(x) + b**2*x
```

GIAC/XCAS [A] time = 0.210489, size = 28, normalized size = 1.4

$$b^2x + 2\,ab\ln\left(|x|\right) - \frac{a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^2,x, algorithm="giac")
```

```
[Out] b^2*x + 2*a*b*ln(abs(x)) - a^2/x
```

3.58 $\int \frac{(a+bx)^2}{x^3} \, dx$

Optimal. Leaf size=24

$$-\frac{a^2}{2x^2}-\frac{2ab}{x}+b^2\log(x)$$

```
[Out] -a^2/(2*x^2) - (2*a*b)/x + b^2*Log[x]
```

Rubi [A] time = 0.0219838, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^2}{2x^2}-\frac{2ab}{x}+b^2\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^3,x]

[Out] -a^2/(2*x^2) - (2*a*b)/x + b^2*Log[x]
```

Rubi in Sympy [A] time = 4.30962, size = 20, normalized size = 0.83

$$-\frac{a^2}{2x^2}-\frac{2ab}{x}+b^2\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**3,x)

[Out] -a**2/(2*x**2) - 2*a*b/x + b**2*log(x)
```

Mathematica [A] time = 0.00506693, size = 24, normalized size = 1.

$$-\frac{a^2}{2x^2}-\frac{2ab}{x}+b^2\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^3,x]
```

```
[Out] -a^2/(2*x^2) - (2*a*b)/x + b^2*Log[x]
```

Maple [A] time = 0.01, size = 23, normalized size = 1.

$$-\frac{a^2}{2\,x^2} - 2\,\frac{ab}{x} + b^2\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^3,x)
```

```
[Out] -1/2*a^2/x^2-2*a*b/x+b^2*ln(x)
```

Maxima [A] time = 1.33375, size = 28, normalized size = 1.17

$$b^2\log(x) - \frac{4\,abx + a^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^3,x, algorithm="maxima")
```

```
[Out] b^2*log(x) - 1/2*(4*a*b*x + a^2)/x^2
```

Fricas [A] time = 0.19672, size = 35, normalized size = 1.46

$$\frac{2\,b^2x^2\log(x) - 4\,abx - a^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*x^2*log(x) - 4*a*b*x - a^2)/x^2
```

Sympy [A] time = 1.16613, size = 20, normalized size = 0.83

$$b^2\log(x) - \frac{a^2 + 4abx}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**3,x)
```

```
[Out] b**2*log(x) - (a**2 + 4*a*b*x)/(2*x**2)
```

GIAC/XCAS [A] time = 0.209416, size = 30, normalized size = 1.25

$$b^2\ln(|x|) - \frac{4\,abx + a^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^3,x, algorithm="giac")
```

```
[Out] b^2*ln(abs(x)) - 1/2*(4*a*b*x + a^2)/x^2
```

3.59 $\int \frac{(a+bx)^2}{x^4} \, dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^3}{3ax^3}$$

```
[Out] -(a + b*x)^3/(3*a*x^3)
```

Rubi [A] time = 0.0108487, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{(a+bx)^3}{3ax^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^4,x]

[Out] -(a + b*x)^3/(3*a*x^3)
```

Rubi in Sympy [A] time = 2.26892, size = 14, normalized size = 0.82

$$-\frac{(a+bx)^3}{3ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**4,x)

[Out] -(a + b*x)**3/(3*a*x**3)
```

Mathematica [A] time = 0.011258, size = 26, normalized size = 1.53

$$-\frac{a^2}{3x^3} - \frac{ab}{x^2} - \frac{b^2}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^4,x]
```

```
[Out] -a^2/(3*x^3) - (a*b)/x^2 - b^2/x
```

Maple [A] time = 0.007, size = 25, normalized size = 1.5

$$-\frac{a^2}{3\,x^3}-\frac{b^2}{x}-\frac{ab}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^4,x)
```

```
[Out] -1/3*a^2/x^3-b^2/x-a*b/x^2
```

Maxima [A] time = 1.34092, size = 30, normalized size = 1.76

$$-\frac{3\,b^2x^2+3\,abx+a^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^4,x, algorithm="maxima")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)/x^3
```

Fricas [A] time = 0.190737, size = 30, normalized size = 1.76

$$-\frac{3\,b^2x^2+3\,abx+a^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^4,x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)/x^3
```

Sympy [A] time = 1.17441, size = 24, normalized size = 1.41

$$-\frac{a^2+3abx+3b^2x^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**4,x)
```

```
[Out] -(a**2 + 3*a*b*x + 3*b**2*x**2)/(3*x**3)
```

GIAC/XCAS [A] time = 0.215298, size = 30, normalized size = 1.76

$$-\frac{3\,b^2x^2 + 3\,abx + a^2}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^4,x, algorithm="giac")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)/x^3
```

3.60 $\int \frac{(a+bx)^2}{x^5} \, dx$

Optimal. Leaf size=30

$$-\frac{a^2}{4x^4}-\frac{2ab}{3x^3}-\frac{b^2}{2x^2}$$

```
[Out] -a^2/(4*x^4) - (2*a*b)/(3*x^3) - b^2/(2*x^2)
```

Rubi [A] time = 0.0228829, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^2}{4x^4}-\frac{2ab}{3x^3}-\frac{b^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^5,x]

[Out] -a^2/(4*x^4) - (2*a*b)/(3*x^3) - b^2/(2*x^2)
```

Rubi in Sympy [A] time = 4.51471, size = 27, normalized size = 0.9

$$-\frac{a^2}{4x^4}-\frac{2ab}{3x^3}-\frac{b^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**5,x)

[Out] -a**2/(4*x**4) - 2*a*b/(3*x**3) - b**2/(2*x**2)
```

Mathematica [A] time = 0.00445576, size = 30, normalized size = 1.

$$-\frac{a^2}{4x^4}-\frac{2ab}{3x^3}-\frac{b^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^5,x]
```

```
[Out] -a^2/(4*x^4) - (2*a*b)/(3*x^3) - b^2/(2*x^2)
```

Maple [A] time = 0.009, size = 25, normalized size = 0.8

$$-\frac{a^2}{4\,x^4}-\frac{2\,ab}{3\,x^3}-\frac{b^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^5,x)
```

```
[Out] -1/4*a^2/x^4-2/3*a*b/x^3-1/2*b^2/x^2
```

Maxima [A] time = 1.33363, size = 32, normalized size = 1.07

$$-\frac{6\,b^2x^2+8\,abx+3\,a^2}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^5,x, algorithm="maxima")
```

```
[Out] -1/12*(6*b^2*x^2 + 8*a*b*x + 3*a^2)/x^4
```

Fricas [A] time = 0.189957, size = 32, normalized size = 1.07

$$-\frac{6\,b^2x^2+8\,abx+3\,a^2}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*x^2 + 8*a*b*x + 3*a^2)/x^4
```

Sympy [A] time = 1.23747, size = 26, normalized size = 0.87

$$-\frac{3a^2+8abx+6b^2x^2}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**5,x)
```

```
[Out] -(3*a**2 + 8*a*b*x + 6*b**2*x**2)/(12*x**4)
```

GIAC/XCAS [A] time = 0.208318, size = 32, normalized size = 1.07

$$-\frac{6\, b^2 x^2 + 8\, a b x + 3\, a^2}{12\, x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^5,x, algorithm="giac")
```

```
[Out] -1/12*(6*b^2*x^2 + 8*a*b*x + 3*a^2)/x^4
```

3.61 $\int \frac{(a+bx)^2}{x^6} dx$

Optimal. Leaf size=30

$$-\frac{a^2}{5x^5}-\frac{ab}{2x^4}-\frac{b^2}{3x^3}$$

```
[Out] -a^2/(5*x^5) - (a*b)/(2*x^4) - b^2/(3*x^3)
```

Rubi [A] time = 0.0228637, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^2}{5x^5}-\frac{ab}{2x^4}-\frac{b^2}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^6,x]

[Out] -a^2/(5*x^5) - (a*b)/(2*x^4) - b^2/(3*x^3)
```

Rubi in Sympy [A] time = 4.50882, size = 26, normalized size = 0.87

$$-\frac{a^2}{5x^5}-\frac{ab}{2x^4}-\frac{b^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**6,x)

[Out] -a**2/(5*x**5) - a*b/(2*x**4) - b**2/(3*x**3)
```

Mathematica [A] time = 0.0120701, size = 30, normalized size = 1.

$$-\frac{a^2}{5x^5}-\frac{ab}{2x^4}-\frac{b^2}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^6,x]
```

```
[Out] -a^2/(5*x^5) - (a*b)/(2*x^4) - b^2/(3*x^3)
```

Maple [A] time = 0.007, size = 25, normalized size = 0.8

$$-\frac{a^{2}}{5\,x^{5}}-\frac{ab}{2\,x^{4}}-\frac{b^{2}}{3\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^6,x)
```

```
[Out] -1/5*a^2/x^5-1/2*a*b/x^4-1/3*b^2/x^3
```

Maxima [A] time = 1.33826, size = 32, normalized size = 1.07

$$-\frac{10\,b^{2}x^{2}+15\,abx+6\,a^{2}}{30\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^6,x, algorithm="maxima")
```

```
[Out] -1/30*(10*b^2*x^2 + 15*a*b*x + 6*a^2)/x^5
```

Fricas [A] time = 0.194665, size = 32, normalized size = 1.07

$$-\frac{10\,b^{2}x^{2}+15\,abx+6\,a^{2}}{30\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^6,x, algorithm="fricas")
```

```
[Out] -1/30*(10*b^2*x^2 + 15*a*b*x + 6*a^2)/x^5
```

Sympy [A] time = 1.282, size = 26, normalized size = 0.87

$$-\frac{6a^{2}+15abx+10b^{2}x^{2}}{30x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**6,x)
```

```
[Out] -(6*a**2 + 15*a*b*x + 10*b**2*x**2)/(30*x**5)
```

GIAC/XCAS [A] time = 0.206336, size = 32, normalized size = 1.07

$$-\frac{10\,b^2x^2 + 15\,abx + 6\,a^2}{30\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^6,x, algorithm="giac")
```

```
[Out] -1/30*(10*b^2*x^2 + 15*a*b*x + 6*a^2)/x^5
```

3.62 $\int \frac{(a+bx)^2}{x^7} \, dx$

Optimal. Leaf size=30

$$-\frac{a^2}{6x^6} - \frac{2ab}{5x^5} - \frac{b^2}{4x^4}$$

```
[Out] -a^2/(6*x^6) - (2*a*b)/(5*x^5) - b^2/(4*x^4)
```

Rubi [A] time = 0.0229745, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^2}{6x^6} - \frac{2ab}{5x^5} - \frac{b^2}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/x^7,x]
```

```
[Out] -a^2/(6*x^6) - (2*a*b)/(5*x^5) - b^2/(4*x^4)
```

Rubi in Sympy [A] time = 4.47366, size = 27, normalized size = 0.9

$$-\frac{a^2}{6x^6} - \frac{2ab}{5x^5} - \frac{b^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2/x**7,x)
```

```
[Out] -a**2/(6*x**6) - 2*a*b/(5*x**5) - b**2/(4*x**4)
```

Mathematica [A] time = 0.00445448, size = 30, normalized size = 1.

$$-\frac{a^2}{6x^6} - \frac{2ab}{5x^5} - \frac{b^2}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2/x^7,x]
```

```
[Out] -a^2/(6*x^6) - (2*a*b)/(5*x^5) - b^2/(4*x^4)
```

Maple [A] time = 0.007, size = 25, normalized size = 0.8

$$-\frac{a^2}{6\,x^6}-\frac{2\,ab}{5\,x^5}-\frac{b^2}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^7,x)
```

```
[Out] -1/6*a^2/x^6-2/5*a*b/x^5-1/4*b^2/x^4
```

Maxima [A] time = 1.33554, size = 32, normalized size = 1.07

$$-\frac{15\,b^2x^2+24\,abx+10\,a^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(15*b^2*x^2 + 24*a*b*x + 10*a^2)/x^6
```

Fricas [A] time = 0.210476, size = 32, normalized size = 1.07

$$-\frac{15\,b^2x^2+24\,abx+10\,a^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*x^2 + 24*a*b*x + 10*a^2)/x^6
```

Sympy [A] time = 1.31469, size = 26, normalized size = 0.87

$$-\frac{10a^2+24abx+15b^2x^2}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**7,x)

[Out] -(10*a**2 + 24*a*b*x + 15*b**2*x**2)/(60*x**6)
```

GIAC/XCAS [A] time = 0.209409, size = 32, normalized size = 1.07

$$-\frac{15\,b^2x^2 + 24\,abx + 10\,a^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^7,x, algorithm="giac")

[Out] -1/60*(15*b^2*x^2 + 24*a*b*x + 10*a^2)/x^6
```

3.63 $\int \frac{(a+bx)^2}{x^8} dx$

Optimal. Leaf size=30

$$-\frac{a^2}{7x^7} - \frac{ab}{3x^6} - \frac{b^2}{5x^5}$$

```
[Out] -a^2/(7*x^7) - (a*b)/(3*x^6) - b^2/(5*x^5)
```

Rubi [A] time = 0.0237536, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^2}{7x^7} - \frac{ab}{3x^6} - \frac{b^2}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^8,x]
```

```
[Out] -a^2/(7*x^7) - (a*b)/(3*x^6) - b^2/(5*x^5)
```

Rubi in Sympy [A] time = 4.552, size = 26, normalized size = 0.87

$$-\frac{a^2}{7x^7} - \frac{ab}{3x^6} - \frac{b^2}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**8,x)
```

```
[Out] -a**2/(7*x**7) - a*b/(3*x**6) - b**2/(5*x**5)
```

Mathematica [A] time = 0.00900848, size = 30, normalized size = 1.

$$-\frac{a^2}{7x^7} - \frac{ab}{3x^6} - \frac{b^2}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^8,x]
```

```
[Out] -a^2/(7*x^7) - (a*b)/(3*x^6) - b^2/(5*x^5)
```

Maple [A] time = 0.007, size = 25, normalized size = 0.8

$$-\frac{a^2}{7\,x^7}-\frac{ab}{3\,x^6}-\frac{b^2}{5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^8,x)
```

```
[Out] -1/7*a^2/x^7-1/3*a*b/x^6-1/5*b^2/x^5
```

Maxima [A] time = 1.32932, size = 32, normalized size = 1.07

$$-\frac{21\,b^2x^2+35\,abx+15\,a^2}{105\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/105*(21*b^2*x^2 + 35*a*b*x + 15*a^2)/x^7
```

Fricas [A] time = 0.201019, size = 32, normalized size = 1.07

$$-\frac{21\,b^2x^2+35\,abx+15\,a^2}{105\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/105*(21*b^2*x^2 + 35*a*b*x + 15*a^2)/x^7
```

Sympy [A] time = 1.35977, size = 26, normalized size = 0.87

$$-\frac{15a^2+35abx+21b^2x^2}{105x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**8,x)
```

```
[Out] -(15*a**2 + 35*a*b*x + 21*b**2*x**2)/(105*x**7)
```

GIAC/XCAS [A] time = 0.209978, size = 32, normalized size = 1.07

$$-\frac{21\,b^2x^2 + 35\,abx + 15\,a^2}{105\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/105*(21*b^2*x^2 + 35*a*b*x + 15*a^2)/x^7
```

3.64 $\int x^4(a+bx)^3\,dx$

Optimal. Leaf size=43

$$\frac{a^3x^5}{5}+\frac{1}{2}a^2bx^6+\frac{3}{7}ab^2x^7+\frac{b^3x^8}{8}$$

```
[Out] (a^3*x^5)/5 + (a^2*b*x^6)/2 + (3*a*b^2*x^7)/7 + (b^3*x^8)/8
```

Rubi [A] time = 0.0463079, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3x^5}{5}+\frac{1}{2}a^2bx^6+\frac{3}{7}ab^2x^7+\frac{b^3x^8}{8}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(a + b*x)^3,x]

[Out] (a^3*x^5)/5 + (a^2*b*x^6)/2 + (3*a*b^2*x^7)/7 + (b^3*x^8)/8
```

Rubi in Sympy [A] time = 7.31316, size = 37, normalized size = 0.86

$$\frac{a^3x^5}{5}+\frac{a^2bx^6}{2}+\frac{3ab^2x^7}{7}+\frac{b^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**3,x)

[Out] a**3*x**5/5 + a**2*b*x**6/2 + 3*a*b**2*x**7/7 + b**3*x**8/8
```

Mathematica [A] time = 0.00248435, size = 43, normalized size = 1.

$$\frac{a^3x^5}{5}+\frac{1}{2}a^2bx^6+\frac{3}{7}ab^2x^7+\frac{b^3x^8}{8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(a + b*x)^3,x]
```

```
[Out] (a^3*x^5)/5 + (a^2*b*x^6)/2 + (3*a*b^2*x^7)/7 + (b^3*x^8)/8
```

Maple [A] time = 0.002, size = 36, normalized size = 0.8

$$\frac{a^3x^5}{5} + \frac{a^2bx^6}{2} + \frac{3\,ab^2x^7}{7} + \frac{b^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^3,x)
```

```
[Out] 1/5*a^3*x^5+1/2*a^2*b*x^6+3/7*a*b^2*x^7+1/8*b^3*x^8
```

Maxima [A] time = 1.33646, size = 47, normalized size = 1.09

$$\frac{1}{8}\,b^3x^8 + \frac{3}{7}\,ab^2x^7 + \frac{1}{2}\,a^2bx^6 + \frac{1}{5}\,a^3x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^4,x, algorithm="maxima")
```

```
[Out] 1/8*b^3*x^8 + 3/7*a*b^2*x^7 + 1/2*a^2*b*x^6 + 1/5*a^3*x^5
```

Fricas [A] time = 0.175378, size = 1, normalized size = 0.02

$$\frac{1}{8}x^8b^3 + \frac{3}{7}x^7b^2a + \frac{1}{2}x^6ba^2 + \frac{1}{5}x^5a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^4,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^3 + 3/7*x^7*b^2*a + 1/2*x^6*b*a^2 + 1/5*x^5*a^3
```

Sympy [A] time = 0.098584, size = 37, normalized size = 0.86

$$\frac{a^3x^5}{5} + \frac{a^2bx^6}{2} + \frac{3ab^2x^7}{7} + \frac{b^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**3,x)
```

```
[Out] a**3*x**5/5 + a**2*b*x**6/2 + 3*a*b**2*x**7/7 + b**3*x**8/8
```

GIAC/XCAS [A] time = 0.208159, size = 47, normalized size = 1.09

$$\frac{1}{8}b^3x^8 + \frac{3}{7}ab^2x^7 + \frac{1}{2}a^2bx^6 + \frac{1}{5}a^3x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^4,x, algorithm="giac")
```

```
[Out] 1/8*b^3*x^8 + 3/7*a*b^2*x^7 + 1/2*a^2*b*x^6 + 1/5*a^3*x^5
```

3.65 $\int x^3(a+bx)^3\,dx$

Optimal. Leaf size=43

$$\frac{a^3x^4}{4}+\frac{3}{5}a^2bx^5+\frac{1}{2}ab^2x^6+\frac{b^3x^7}{7}$$

```
[Out] (a^3*x^4)/4 + (3*a^2*b*x^5)/5 + (a*b^2*x^6)/2 + (b^3*x^7)/7
```

Rubi [A] time = 0.0388597, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3x^4}{4}+\frac{3}{5}a^2bx^5+\frac{1}{2}ab^2x^6+\frac{b^3x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^3,x]
```

```
[Out] (a^3*x^4)/4 + (3*a^2*b*x^5)/5 + (a*b^2*x^6)/2 + (b^3*x^7)/7
```

Rubi in Sympy [A] time = 7.1282, size = 37, normalized size = 0.86

$$\frac{a^3x^4}{4}+\frac{3a^2bx^5}{5}+\frac{ab^2x^6}{2}+\frac{b^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**3,x)
```

```
[Out] a**3*x**4/4 + 3*a**2*b*x**5/5 + a*b**2*x**6/2 + b**3*x**7/7
```

Mathematica [A] time = 0.00250099, size = 43, normalized size = 1.

$$\frac{a^3x^4}{4}+\frac{3}{5}a^2bx^5+\frac{1}{2}ab^2x^6+\frac{b^3x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^3,x]
```

```
[Out] (a^3*x^4)/4 + (3*a^2*b*x^5)/5 + (a*b^2*x^6)/2 + (b^3*x^7)/7
```

Maple [A] time = 0.001, size = 36, normalized size = 0.8

$$\frac{a^3x^4}{4}+\frac{3\,a^2bx^5}{5}+\frac{ab^2x^6}{2}+\frac{b^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^3,x)
```

```
[Out] 1/4*a^3*x^4+3/5*a^2*b*x^5+1/2*a*b^2*x^6+1/7*b^3*x^7
```

Maxima [A] time = 1.33019, size = 47, normalized size = 1.09

$$\frac{1}{7}\,b^3x^7+\frac{1}{2}\,ab^2x^6+\frac{3}{5}\,a^2bx^5+\frac{1}{4}\,a^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^3,x, algorithm="maxima")
```

```
[Out] 1/7*b^3*x^7 + 1/2*a*b^2*x^6 + 3/5*a^2*b*x^5 + 1/4*a^3*x^4
```

Fricas [A] time = 0.187018, size = 1, normalized size = 0.02

$$\frac{1}{7}x^7b^3+\frac{1}{2}x^6b^2a+\frac{3}{5}x^5ba^2+\frac{1}{4}x^4a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^3,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*b^3 + 1/2*x^6*b^2*a + 3/5*x^5*b*a^2 + 1/4*x^4*a^3
```

Sympy [A] time = 0.099325, size = 37, normalized size = 0.86

$$\frac{a^3x^4}{4}+\frac{3a^2bx^5}{5}+\frac{ab^2x^6}{2}+\frac{b^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**3,x)
```

```
[Out] a**3*x**4/4 + 3*a**2*b*x**5/5 + a*b**2*x**6/2 + b**3*x**7/7
```

GIAC/XCAS [A] time = 0.21534, size = 47, normalized size = 1.09

$$\frac{1}{7}\,b^3x^7 + \frac{1}{2}\,ab^2x^6 + \frac{3}{5}\,a^2bx^5 + \frac{1}{4}\,a^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^3,x, algorithm="giac")
```

```
[Out] 1/7*b^3*x^7 + 1/2*a*b^2*x^6 + 3/5*a^2*b*x^5 + 1/4*a^3*x^4
```

3.66 $\int x^2(a+bx)^3\,dx$

Optimal. Leaf size=43

$$\frac{a^3x^3}{3}+\frac{3}{4}a^2bx^4+\frac{3}{5}ab^2x^5+\frac{b^3x^6}{6}$$

```
[Out] (a^3*x^3)/3 + (3*a^2*b*x^4)/4 + (3*a*b^2*x^5)/5 + (b^3*x^6)/6
```

Rubi [A] time = 0.0381737, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3x^3}{3}+\frac{3}{4}a^2bx^4+\frac{3}{5}ab^2x^5+\frac{b^3x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^3,x]

[Out] (a^3*x^3)/3 + (3*a^2*b*x^4)/4 + (3*a*b^2*x^5)/5 + (b^3*x^6)/6
```

Rubi in Sympy [A] time = 6.7012, size = 39, normalized size = 0.91

$$\frac{a^3x^3}{3}+\frac{3a^2bx^4}{4}+\frac{3ab^2x^5}{5}+\frac{b^3x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**3,x)

[Out] a**3*x**3/3 + 3*a**2*b*x**4/4 + 3*a*b**2*x**5/5 + b**3*x**6/6
```

Mathematica [A] time = 0.00236019, size = 43, normalized size = 1.

$$\frac{a^3x^3}{3}+\frac{3}{4}a^2bx^4+\frac{3}{5}ab^2x^5+\frac{b^3x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^3,x]
```

```
[Out] (a^3*x^3)/3 + (3*a^2*b*x^4)/4 + (3*a*b^2*x^5)/5 + (b^3*x^6)/6
```

Maple [A] time = 0., size = 36, normalized size = 0.8

$$\frac{a^3x^3}{3}+\frac{3\,a^2bx^4}{4}+\frac{3\,ab^2x^5}{5}+\frac{b^3x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^3,x)
```

```
[Out] 1/3*a^3*x^3+3/4*a^2*b*x^4+3/5*a*b^2*x^5+1/6*b^3*x^6
```

Maxima [A] time = 1.33381, size = 47, normalized size = 1.09

$$\frac{1}{6}\,b^3x^6+\frac{3}{5}\,ab^2x^5+\frac{3}{4}\,a^2bx^4+\frac{1}{3}\,a^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^2,x, algorithm="maxima")
```

```
[Out] 1/6*b^3*x^6 + 3/5*a*b^2*x^5 + 3/4*a^2*b*x^4 + 1/3*a^3*x^3
```

Fricas [A] time = 0.176396, size = 1, normalized size = 0.02

$$\frac{1}{6}x^6b^3+\frac{3}{5}x^5b^2a+\frac{3}{4}x^4ba^2+\frac{1}{3}x^3a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^3 + 3/5*x^5*b^2*a + 3/4*x^4*b*a^2 + 1/3*x^3*a^3
```

Sympy [A] time = 0.096248, size = 39, normalized size = 0.91

$$\frac{a^3x^3}{3}+\frac{3a^2bx^4}{4}+\frac{3ab^2x^5}{5}+\frac{b^3x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**3,x)
```

```
[Out] a**3*x**3/3 + 3*a**2*b*x**4/4 + 3*a*b**2*x**5/5 + b**3*x**6/6
```

GIAC/XCAS [A] time = 0.206085, size = 47, normalized size = 1.09

$$\frac{1}{6}\,b^3x^6 + \frac{3}{5}\,ab^2x^5 + \frac{3}{4}\,a^2bx^4 + \frac{1}{3}\,a^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^2,x, algorithm="giac")
```

```
[Out] 1/6*b^3*x^6 + 3/5*a*b^2*x^5 + 3/4*a^2*b*x^4 + 1/3*a^3*x^3
```

3.67 $\int x(a+bx)^3\,dx$

Optimal. Leaf size=30

$$\frac{(a+bx)^5}{5b^2}-\frac{a(a+bx)^4}{4b^2}$$

```
[Out] -(a*(a + b*x)^4)/(4*b^2) + (a + b*x)^5/(5*b^2)
```

Rubi [A] time = 0.026278, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^5}{5b^2}-\frac{a(a+bx)^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^3,x]

[Out] -(a*(a + b*x)^4)/(4*b^2) + (a + b*x)^5/(5*b^2)
```

Rubi in Sympy [A] time = 5.84566, size = 24, normalized size = 0.8

$$-\frac{a\left(a+bx\right)^4}{4b^2}+\frac{(a+bx)^5}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**3,x)

[Out] -a*(a + b*x)**4/(4*b**2) + (a + b*x)**5/(5*b**2)
```

Mathematica [A] time = 0.00223828, size = 40, normalized size = 1.33

$$\frac{a^3x^2}{2}+a^2bx^3+\frac{3}{4}ab^2x^4+\frac{b^3x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^3,x]
```

```
[Out] (a^3*x^2)/2 + a^2*b*x^3 + (3*a*b^2*x^4)/4 + (b^3*x^5)/5
```

Maple [A] time = 0., size = 35, normalized size = 1.2

$$\frac{b^3x^5}{5}+\frac{3\,ab^2x^4}{4}+a^2bx^3+\frac{a^3x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^3,x)
```

```
[Out] 1/5*b^3*x^5+3/4*a*b^2*x^4+a^2*b*x^3+1/2*a^3*x^2
```

Maxima [A] time = 1.33258, size = 46, normalized size = 1.53

$$\frac{1}{5}\,b^3x^5+\frac{3}{4}\,ab^2x^4+a^2bx^3+\frac{1}{2}\,a^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x,x, algorithm="maxima")
```

```
[Out] 1/5*b^3*x^5 + 3/4*a*b^2*x^4 + a^2*b*x^3 + 1/2*a^3*x^2
```

Fricas [A] time = 0.184825, size = 1, normalized size = 0.03

$$\frac{1}{5}x^5b^3+\frac{3}{4}x^4b^2a+x^3ba^2+\frac{1}{2}x^2a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x,x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b^3 + 3/4*x^4*b^2*a + x^3*b*a^2 + 1/2*x^2*a^3
```

Sympy [A] time = 0.092957, size = 36, normalized size = 1.2

$$\frac{a^3x^2}{2}+a^2bx^3+\frac{3ab^2x^4}{4}+\frac{b^3x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**3,x)
```

```
[Out] a**3*x**2/2 + a**2*b*x**3 + 3*a*b**2*x**4/4 + b**3*x**5/5
```

GIAC/XCAS [A] time = 0.207005, size = 46, normalized size = 1.53

$$\frac{1}{5}\,b^3x^5 + \frac{3}{4}\,ab^2x^4 + a^2bx^3 + \frac{1}{2}\,a^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x,x, algorithm="giac")
```

```
[Out] 1/5*b^3*x^5 + 3/4*a*b^2*x^4 + a^2*b*x^3 + 1/2*a^3*x^2
```

3.68 $\int (a+bx)^3\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^4}{4b}$$

```
[Out] (a + b*x)^4/(4*b)
```

Rubi [A] time = 0.00682716, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^3,x]
```

```
[Out] (a + b*x)^4/(4*b)
```

Rubi in Sympy [A] time = 1.32008, size = 8, normalized size = 0.57

$$\frac{(a+bx)^4}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**3,x)
```

```
[Out] (a + b*x)**4/(4*b)
```

Mathematica [A] time = 0.00172503, size = 14, normalized size = 1.

$$\frac{(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^3,x]
```

```
[Out] (a + b*x)^4/(4*b)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$\frac{(bx+a)^4}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3,x)
```

```
[Out] 1/4*(b*x+a)^4/b
```

Maxima [A] time = 1.3488, size = 42, normalized size = 3.

$$\frac{1}{4}\,b^3x^4+ab^2x^3+\frac{3}{2}\,a^2bx^2+a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*b^3*x^4 + a*b^2*x^3 + 3/2*a^2*b*x^2 + a^3*x
```

Fricas [A] time = 0.177665, size = 1, normalized size = 0.07

$$\frac{1}{4}x^4b^3+x^3b^2a+\frac{3}{2}x^2ba^2+xa^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/4*x^4*b^3 + x^3*b^2*a + 3/2*x^2*b*a^2 + x*a^3
```

Sympy [A] time = 0.086754, size = 32, normalized size = 2.29

$$a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3,x)
```

```
[Out] a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4
```

GIAC/XCAS [A] time = 0.211309, size = 16, normalized size = 1.14

$$\frac{(bx+a)^4}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3,x, algorithm="giac")
```

```
[Out] 1/4*(b*x + a)^4/b
```

3.69 $\int \frac{(a+bx)^3}{x}\,dx$

Optimal. Leaf size=35

$$a^3\log(x)+3a^2bx+\frac{3}{2}ab^2x^2+\frac{b^3x^3}{3}$$

```
[Out] 3*a^2*b*x + (3*a*b^2*x^2)/2 + (b^3*x^3)/3 + a^3*Log[x]
```

Rubi [A] time = 0.0250131, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$a^3\log(x)+3a^2bx+\frac{3}{2}ab^2x^2+\frac{b^3x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x,x]
```

```
[Out] 3*a^2*b*x + (3*a*b^2*x^2)/2 + (b^3*x^3)/3 + a^3*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^3\log(x)+3a^2bx+3ab^2\int x\,dx+\frac{b^3x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x,x)
```

```
[Out] a**3*log(x) + 3*a**2*b*x + 3*a*b**2*Integral(x, x) + b**3*x**3/3
```

Mathematica [A] time = 0.00410186, size = 35, normalized size = 1.

$$a^3\log(x)+3a^2bx+\frac{3}{2}ab^2x^2+\frac{b^3x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x,x]
```

```
[Out] 3*a^2*b*x + (3*a*b^2*x^2)/2 + (b^3*x^3)/3 + a^3*Log[x]
```

Maple [A] time = 0.003, size = 32, normalized size = 0.9

$$3\,a^{2}bx+\frac{3\,ab^{2}x^{2}}{2}+\frac{b^{3}x^{3}}{3}+a^{3}\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x,x)
```

```
[Out] 3*a^2*b*x+3/2*a*b^2*x^2+1/3*b^3*x^3+a^3*ln(x)
```

Maxima [A] time = 1.3467, size = 42, normalized size = 1.2

$$\frac{1}{3}\,b^{3}x^{3}+\frac{3}{2}\,ab^{2}x^{2}+3\,a^{2}bx+a^{3}\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x,x, algorithm="maxima")
```

```
[Out] 1/3*b^3*x^3 + 3/2*a*b^2*x^2 + 3*a^2*b*x + a^3*log(x)
```

Fricas [A] time = 0.210779, size = 42, normalized size = 1.2

$$\frac{1}{3}\,b^{3}x^{3}+\frac{3}{2}\,ab^{2}x^{2}+3\,a^{2}bx+a^{3}\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x,x, algorithm="fricas")
```

```
[Out] 1/3*b^3*x^3 + 3/2*a*b^2*x^2 + 3*a^2*b*x + a^3*log(x)
```

Sympy [A] time = 1.02972, size = 34, normalized size = 0.97

$$a^{3}\log\left(x\right)+3a^{2}bx+\frac{3ab^{2}x^{2}}{2}+\frac{b^{3}x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x,x)
```

```
[Out] a**3*log(x) + 3*a**2*b*x + 3*a*b**2*x**2/2 + b**3*x**3/3
```

GIAC/XCAS [A] time = 0.208016, size = 43, normalized size = 1.23

$$\frac{1}{3}\,b^3x^3 + \frac{3}{2}\,ab^2x^2 + 3\,a^2bx + a^3\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x,x, algorithm="giac")
```

```
[Out] 1/3*b^3*x^3 + 3/2*a*b^2*x^2 + 3*a^2*b*x + a^3*ln(abs(x))
```

3.70 $\int \frac{(a+bx)^3}{x^2} \, dx$

Optimal. Leaf size=34

$$-\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + \frac{b^3x^2}{2}$$

```
[Out] -(a^3/x) + 3*a*b^2*x + (b^3*x^2)/2 + 3*a^2*b*Log[x]
```

Rubi [A] time = 0.0312147, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + \frac{b^3x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^2,x]
```

```
[Out] -(a^3/x) + 3*a*b^2*x + (b^3*x^2)/2 + 3*a^2*b*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + b^3\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**2,x)
```

```
[Out] -a**3/x + 3*a**2*b*log(x) + 3*a*b**2*x + b**3*Integral(x, x)
```

Mathematica [A] time = 0.005361, size = 34, normalized size = 1.

$$-\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + \frac{b^3x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^2,x]
```

```
[Out] -(a^3/x) + 3*a*b^2*x + (b^3*x^2)/2 + 3*a^2*b*Log[x]
```

Maple [A] time = 0.007, size = 33, normalized size = 1.

$$-\frac{a^3}{x} + 3\,ab^2x + \frac{b^3x^2}{2} + 3\,a^2b\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3/x^2,x)
```

```
[Out] -a^3/x+3*a*b^2*x+1/2*b^3*x^2+3*a^2*b*ln(x)
```

Maxima [A] time = 1.34416, size = 43, normalized size = 1.26

$$\frac{1}{2}\,b^3x^2 + 3\,ab^2x + 3\,a^2b\log(x) - \frac{a^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*b^3*x^2 + 3*a*b^2*x + 3*a^2*b*log(x) - a^3/x
```

Fricas [A] time = 0.217389, size = 49, normalized size = 1.44

$$\frac{b^3x^3 + 6\,ab^2x^2 + 6\,a^2bx\log(x) - 2\,a^3}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*x^3 + 6*a*b^2*x^2 + 6*a^2*b*x*log(x) - 2*a^3)/x
```

Sympy [A] time = 1.10745, size = 31, normalized size = 0.91

$$-\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + \frac{b^3x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**2,x)
```

```
[Out] -a**3/x + 3*a**2*b*log(x) + 3*a*b**2*x + b**3*x**2/2
```

GIAC/XCAS [A] time = 0.210913, size = 45, normalized size = 1.32

$$\frac{1}{2}\,b^{3}x^{2} + 3\,ab^{2}x + 3\,a^{2}b\ln\left(|x|\right) - \frac{a^{3}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/2*b^3*x^2 + 3*a*b^2*x + 3*a^2*b*ln(abs(x)) - a^3/x
```

3.71 $\int \frac{(a+bx)^3}{x^3} dx$

Optimal. Leaf size=33

$$-\frac{a^3}{2x^2} - \frac{3a^2b}{x} + 3ab^2\log(x) + b^3x$$

```
[Out] -a^3/(2*x^2) - (3*a^2*b)/x + b^3*x + 3*a*b^2*Log[x]
```

Rubi [A] time = 0.0296144, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^3}{2x^2} - \frac{3a^2b}{x} + 3ab^2\log(x) + b^3x$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^3,x]

[Out] -a^3/(2*x^2) - (3*a^2*b)/x + b^3*x + 3*a*b^2*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3}{2x^2} - \frac{3a^2b}{x} + 3ab^2\log(x) + \int b^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**3,x)

[Out] -a**3/(2*x**2) - 3*a**2*b/x + 3*a*b**2*log(x) + Integral(b**3, x)
```

Mathematica [A] time = 0.00710586, size = 33, normalized size = 1.

$$-\frac{a^3}{2x^2} - \frac{3a^2b}{x} + 3ab^2\log(x) + b^3x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^3,x]
```

```
[Out] -a^3/(2*x^2) - (3*a^2*b)/x + b^3*x + 3*a*b^2*Log[x]
```

Maple [A] time = 0.008, size = 32, normalized size = 1.

$$-\frac{a^3}{2\,x^2}-3\,\frac{a^2b}{x}+b^3x+3\,ab^2\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^3,x)
```

```
[Out] -1/2*a^3/x^2-3*a^2*b/x+b^3*x+3*a*b^2*ln(x)
```

Maxima [A] time = 1.32131, size = 41, normalized size = 1.24

$$b^3x+3\,ab^2\log(x)-\frac{6\,a^2bx+a^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^3,x, algorithm="maxima")
```

```
[Out] b^3*x + 3*a*b^2*log(x) - 1/2*(6*a^2*b*x + a^3)/x^2
```

Fricas [A] time = 0.207257, size = 50, normalized size = 1.52

$$\frac{2\,b^3x^3+6\,ab^2x^2\log(x)-6\,a^2bx-a^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*x^3 + 6*a*b^2*x^2*log(x) - 6*a^2*b*x - a^3)/x^2
```

Sympy [A] time = 1.22046, size = 31, normalized size = 0.94

$$3ab^2\log(x)+b^3x-\frac{a^3+6a^2bx}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**3,x)
```

```
[Out] 3*a*b**2*log(x) + b**3*x - (a**3 + 6*a**2*b*x)/(2*x**2)
```

GIAC/XCAS [A] time = 0.216919, size = 42, normalized size = 1.27

$$b^3x + 3\,ab^2\ln\left(|x|\right) - \frac{6\,a^2bx + a^3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^3,x, algorithm="giac")
```

```
[Out] b^3*x + 3*a*b^2*ln(abs(x)) - 1/2*(6*a^2*b*x + a^3)/x^2
```

3.72 $\int \frac{(a+bx)^3}{x^4}\,dx$

Optimal. Leaf size=37

$$-\frac{a^3}{3x^3}-\frac{3a^2b}{2x^2}-\frac{3ab^2}{x}+b^3\log(x)$$

```
[Out] -a^3/(3*x^3) - (3*a^2*b)/(2*x^2) - (3*a*b^2)/x + b^3*Log[x]
```

Rubi [A] time = 0.0297063, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3}{3x^3}-\frac{3a^2b}{2x^2}-\frac{3ab^2}{x}+b^3\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^4,x]

[Out] -a^3/(3*x^3) - (3*a^2*b)/(2*x^2) - (3*a*b^2)/x + b^3*Log[x]
```

Rubi in Sympy [A] time = 5.89571, size = 34, normalized size = 0.92

$$-\frac{a^3}{3x^3}-\frac{3a^2b}{2x^2}-\frac{3ab^2}{x}+b^3\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**4,x)

[Out] -a**3/(3*x**3) - 3*a**2*b/(2*x**2) - 3*a*b**2/x + b**3*log(x)
```

Mathematica [A] time = 0.00511717, size = 37, normalized size = 1.

$$-\frac{a^3}{3x^3}-\frac{3a^2b}{2x^2}-\frac{3ab^2}{x}+b^3\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^4,x]
```

```
[Out] -a^3/(3*x^3) - (3*a^2*b)/(2*x^2) - (3*a*b^2)/x + b^3*Log[x]
```

Maple [A] time = 0.008, size = 34, normalized size = 0.9

$$-\frac{a^3}{3\,x^3}-\frac{3\,a^2b}{2\,x^2}-3\,\frac{ab^2}{x}+b^3\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3/x^4,x)
```

```
[Out] -1/3*a^3/x^3-3/2*a^2*b/x^2-3*a*b^2/x+b^3*ln(x)
```

Maxima [A] time = 1.33736, size = 46, normalized size = 1.24

$$b^3\log(x)-\frac{18\,ab^2x^2+9\,a^2bx+2\,a^3}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^4,x, algorithm="maxima")
```

```
[Out] b^3*log(x) - 1/6*(18*a*b^2*x^2 + 9*a^2*b*x + 2*a^3)/x^3
```

Fricas [A] time = 0.198237, size = 50, normalized size = 1.35

$$\frac{6\,b^3x^3\log(x)-18\,ab^2x^2-9\,a^2bx-2\,a^3}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(6*b^3*x^3*log(x) - 18*a*b^2*x^2 - 9*a^2*b*x - 2*a^3)/x^3
```

Sympy [A] time = 1.33627, size = 34, normalized size = 0.92

$$b^3\log(x)-\frac{2a^3+9a^2bx+18ab^2x^2}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**4,x)
```

```
[Out] b**3*log(x) - (2*a**3 + 9*a**2*b*x + 18*a*b**2*x**2)/(6*x**3)
```

GIAC/XCAS [A] time = 0.208592, size = 47, normalized size = 1.27

$$b^3 \ln(|x|) - \frac{18\,ab^2x^2 + 9\,a^2bx + 2\,a^3}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^4,x, algorithm="giac")
```

```
[Out] b^3*ln(abs(x)) - 1/6*(18*a*b^2*x^2 + 9*a^2*b*x + 2*a^3)/x^3
```

3.73 $\int \frac{(a+bx)^3}{x^5} \, dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^4}{4ax^4}$$

```
[Out] -(a + b*x)^4/(4*a*x^4)
```

Rubi [A] time = 0.0108289, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{(a+bx)^4}{4ax^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^5,x]

[Out] -(a + b*x)^4/(4*a*x^4)
```

Rubi in Sympy [A] time = 2.2392, size = 14, normalized size = 0.82

$$-\frac{(a+bx)^4}{4ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**5,x)

[Out] -(a + b*x)**4/(4*a*x**4)
```

Mathematica [B] time = 0.00482182, size = 39, normalized size = 2.29

$$-\frac{a^3}{4x^4} - \frac{a^2b}{x^3} - \frac{3ab^2}{2x^2} - \frac{b^3}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^5,x]
```

```
[Out] -a^3/(4*x^4) - (a^2*b)/x^3 - (3*a*b^2)/(2*x^2) - b^3/x
```

Maple [B] time = 0.009, size = 36, normalized size = 2.1

$$-\frac{a^3}{4\,x^4}-\frac{3\,ab^2}{2\,x^2}-\frac{a^2b}{x^3}-\frac{b^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^5,x)
```

```
[Out] -1/4*a^3/x^4-3/2*a*b^2/x^2-a^2*b/x^3-b^3/x
```

Maxima [A] time = 1.34102, size = 45, normalized size = 2.65

$$-\frac{4\,b^3x^3+6\,ab^2x^2+4\,a^2bx+a^3}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^5,x, algorithm="maxima")
```

```
[Out] -1/4*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)/x^4
```

Fricas [A] time = 0.188391, size = 45, normalized size = 2.65

$$-\frac{4\,b^3x^3+6\,ab^2x^2+4\,a^2bx+a^3}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^5,x, algorithm="fricas")
```

```
[Out] -1/4*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)/x^4
```

Sympy [A] time = 1.36705, size = 36, normalized size = 2.12

$$-\frac{a^3+4a^2bx+6ab^2x^2+4b^3x^3}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**5,x)
```

```
[Out] -(a**3 + 4*a**2*b*x + 6*a*b**2*x**2 + 4*b**3*x**3)/(4*x**4)
```

GIAC/XCAS [A] time = 0.206303, size = 45, normalized size = 2.65

$$-\frac{4\,b^3x^3 + 6\,ab^2x^2 + 4\,a^2bx + a^3}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^5,x, algorithm="giac")
```

```
[Out] -1/4*(4*b^3*x^3 + 6*a*b^2*x^2 + 4*a^2*b*x + a^3)/x^4
```

3.74 $\int \frac{(a+bx)^3}{x^6}\,dx$

Optimal. Leaf size=36

$$\frac{b(a+bx)^4}{20a^2x^4}-\frac{(a+bx)^4}{5ax^5}$$

```
[Out] -(a + b*x)^4/(5*a*x^5) + (b*(a + b*x)^4)/(20*a^2*x^4)
```

Rubi [A] time = 0.0229271, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b(a+bx)^4}{20a^2x^4}-\frac{(a+bx)^4}{5ax^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^6,x]

[Out] -(a + b*x)^4/(5*a*x^5) + (b*(a + b*x)^4)/(20*a^2*x^4)
```

Rubi in Sympy [A] time = 6.21481, size = 37, normalized size = 1.03

$$-\frac{a^3}{5x^5}-\frac{3a^2b}{4x^4}-\frac{ab^2}{x^3}-\frac{b^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**6,x)

[Out] -a**3/(5*x**5) - 3*a**2*b/(4*x**4) - a*b**2/x**3 - b**3/(2*x**2)
```

Mathematica [A] time = 0.00842323, size = 41, normalized size = 1.14

$$-\frac{a^3}{5x^5}-\frac{3a^2b}{4x^4}-\frac{ab^2}{x^3}-\frac{b^3}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^6,x]
```

```
[Out] -a^3/(5*x^5) - (3*a^2*b)/(4*x^4) - (a*b^2)/x^3 - b^3/(2*x^2)
```

Maple [A] time = 0.008, size = 36, normalized size = 1.

$$-\frac{b^3}{2\,x^2}-\frac{3\,a^2b}{4\,x^4}-\frac{a^3}{5\,x^5}-\frac{ab^2}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3/x^6,x)
```

```
[Out] -1/2*b^3/x^2-3/4*a^2*b/x^4-1/5*a^3/x^5-a*b^2/x^3
```

Maxima [A] time = 1.34965, size = 47, normalized size = 1.31

$$-\frac{10\,b^3x^3+20\,ab^2x^2+15\,a^2bx+4\,a^3}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^6,x, algorithm="maxima")
```

```
[Out] -1/20*(10*b^3*x^3 + 20*a*b^2*x^2 + 15*a^2*b*x + 4*a^3)/x^5
```

Fricas [A] time = 0.194056, size = 47, normalized size = 1.31

$$-\frac{10\,b^3x^3+20\,ab^2x^2+15\,a^2bx+4\,a^3}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^6,x, algorithm="fricas")
```

```
[Out] -1/20*(10*b^3*x^3 + 20*a*b^2*x^2 + 15*a^2*b*x + 4*a^3)/x^5
```

Sympy [A] time = 1.45834, size = 37, normalized size = 1.03

$$-\frac{4a^3+15a^2bx+20ab^2x^2+10b^3x^3}{20x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**6,x)
```

```
[Out] -(4*a**3 + 15*a**2*b*x + 20*a*b**2*x**2 + 10*b**3*x**3)/(20*x**5)
```

GIAC/XCAS [A] time = 0.209736, size = 47, normalized size = 1.31

$$-\frac{10\,b^3x^3 + 20\,ab^2x^2 + 15\,a^2bx + 4\,a^3}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^6,x, algorithm="giac")
```

```
[Out] -1/20*(10*b^3*x^3 + 20*a*b^2*x^2 + 15*a^2*b*x + 4*a^3)/x^5
```

3.75 $\int \frac{(a+bx)^3}{x^7} dx$

Optimal. Leaf size=43

$$-\frac{a^3}{6x^6}-\frac{3a^2b}{5x^5}-\frac{3ab^2}{4x^4}-\frac{b^3}{3x^3}$$

```
[Out] -a^3/(6*x^6) - (3*a^2*b)/(5*x^5) - (3*a*b^2)/(4*x^4) - b^3/(3*x^3
)
```

Rubi [A] time = 0.0328783, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3}{6x^6}-\frac{3a^2b}{5x^5}-\frac{3ab^2}{4x^4}-\frac{b^3}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^7,x]
```

```
[Out] -a^3/(6*x^6) - (3*a^2*b)/(5*x^5) - (3*a*b^2)/(4*x^4) - b^3/(3*x^3
)
```

Rubi in Sympy [A] time = 6.28425, size = 41, normalized size = 0.95

$$-\frac{a^3}{6x^6}-\frac{3a^2b}{5x^5}-\frac{3ab^2}{4x^4}-\frac{b^3}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**7,x)
```

```
[Out] -a**3/(6*x**6) - 3*a**2*b/(5*x**5) - 3*a*b**2/(4*x**4) - b**3/(3*
x**3)
```

Mathematica [A] time = 0.00476135, size = 43, normalized size = 1.

$$-\frac{a^3}{6x^6}-\frac{3a^2b}{5x^5}-\frac{3ab^2}{4x^4}-\frac{b^3}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^7,x]
```

```
[Out] -a^3/(6*x^6) - (3*a^2*b)/(5*x^5) - (3*a*b^2)/(4*x^4) - b^3/(3*x^3
)
```

Maple [A] time = 0.007, size = 36, normalized size = 0.8

$$-\frac{a^3}{6x^6} - \frac{3a^2b}{5x^5} - \frac{3ab^2}{4x^4} - \frac{b^3}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^7,x)
```

```
[Out] -1/6*a^3/x^6-3/5*a^2*b/x^5-3/4*a*b^2/x^4-1/3*b^3/x^3
```

Maxima [A] time = 1.34874, size = 47, normalized size = 1.09

$$-\frac{20\,b^3x^3 + 45\,ab^2x^2 + 36\,a^2bx + 10\,a^3}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*b^3*x^3 + 45*a*b^2*x^2 + 36*a^2*b*x + 10*a^3)/x^6
```

Fricas [A] time = 0.187415, size = 47, normalized size = 1.09

$$-\frac{20\,b^3x^3 + 45\,ab^2x^2 + 36\,a^2bx + 10\,a^3}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*b^3*x^3 + 45*a*b^2*x^2 + 36*a^2*b*x + 10*a^3)/x^6
```

Sympy [A] time = 1.50162, size = 37, normalized size = 0.86

$$-\frac{10a^3 + 36a^2bx + 45ab^2x^2 + 20b^3x^3}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**7,x)
```

```
[Out] -(10*a**3 + 36*a**2*b*x + 45*a*b**2*x**2 + 20*b**3*x**3)/(60*x**6
)
```

GIAC/XCAS [A] time = 0.210755, size = 47, normalized size = 1.09

$$-\frac{20\, b^3x^3 + 45\, ab^2x^2 + 36\, a^2bx + 10\, a^3}{60\, x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*b^3*x^3 + 45*a*b^2*x^2 + 36*a^2*b*x + 10*a^3)/x^6
```

3.76 $\int \frac{(a+bx)^3}{x^8}\,dx$

Optimal. Leaf size=43

$$-\frac{a^3}{7x^7}-\frac{a^2b}{2x^6}-\frac{3ab^2}{5x^5}-\frac{b^3}{4x^4}$$

```
[Out] -a^3/(7*x^7) - (a^2*b)/(2*x^6) - (3*a*b^2)/(5*x^5) - b^3/(4*x^4)
```

Rubi [A] time = 0.03139, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3}{7x^7}-\frac{a^2b}{2x^6}-\frac{3ab^2}{5x^5}-\frac{b^3}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^8,x]
```

```
[Out] -a^3/(7*x^7) - (a^2*b)/(2*x^6) - (3*a*b^2)/(5*x^5) - b^3/(4*x^4)
```

Rubi in Sympy [A] time = 6.35112, size = 39, normalized size = 0.91

$$-\frac{a^3}{7x^7}-\frac{a^2b}{2x^6}-\frac{3ab^2}{5x^5}-\frac{b^3}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**8,x)
```

```
[Out] -a**3/(7*x**7) - a**2*b/(2*x**6) - 3*a*b**2/(5*x**5) - b**3/(4*x*
*4)
```

Mathematica [A] time = 0.00457256, size = 43, normalized size = 1.

$$-\frac{a^3}{7x^7}-\frac{a^2b}{2x^6}-\frac{3ab^2}{5x^5}-\frac{b^3}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^8,x]
```

```
[Out] -a^3/(7*x^7) - (a^2*b)/(2*x^6) - (3*a*b^2)/(5*x^5) - b^3/(4*x^4)
```

Maple [A] time = 0.008, size = 36, normalized size = 0.8

$$-\frac{a^3}{7\,x^7}-\frac{a^2b}{2\,x^6}-\frac{3\,ab^2}{5\,x^5}-\frac{b^3}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3/x^8,x)
```

```
[Out] -1/7*a^3/x^7-1/2*a^2*b/x^6-3/5*a*b^2/x^5-1/4*b^3/x^4
```

Maxima [A] time = 1.33498, size = 47, normalized size = 1.09

$$-\frac{35\,b^3x^3+84\,ab^2x^2+70\,a^2bx+20\,a^3}{140\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^8,x, algorithm="maxima")
```

```
[Out] -1/140*(35*b^3*x^3 + 84*a*b^2*x^2 + 70*a^2*b*x + 20*a^3)/x^7
```

Fricas [A] time = 0.190005, size = 47, normalized size = 1.09

$$-\frac{35\,b^3x^3+84\,ab^2x^2+70\,a^2bx+20\,a^3}{140\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/x^8,x, algorithm="fricas")
```

```
[Out] -1/140*(35*b^3*x^3 + 84*a*b^2*x^2 + 70*a^2*b*x + 20*a^3)/x^7
```

Sympy [A] time = 1.57391, size = 37, normalized size = 0.86

$$-\frac{20a^3+70a^2bx+84ab^2x^2+35b^3x^3}{140x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**8,x)
```

```
[Out] -(20*a**3 + 70*a**2*b*x + 84*a*b**2*x**2 + 35*b**3*x**3)/(140*x**
7)
```

GIAC/XCAS [A] time = 0.213229, size = 47, normalized size = 1.09

$$-\frac{35\,b^3x^3 + 84\,ab^2x^2 + 70\,a^2bx + 20\,a^3}{140\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^8,x, algorithm="giac")
```

```
[Out] -1/140*(35*b^3*x^3 + 84*a*b^2*x^2 + 70*a^2*b*x + 20*a^3)/x^7
```

3.77 $\int x^6(a+bx)^5\,dx$

Optimal. Leaf size=66

$$\frac{a^5x^7}{7}+\frac{5}{8}a^4bx^8+\frac{10}{9}a^3b^2x^9+a^2b^3x^{10}+\frac{5}{11}ab^4x^{11}+\frac{b^5x^{12}}{12}$$

```
[Out] (a^5*x^7)/7 + (5*a^4*b*x^8)/8 + (10*a^3*b^2*x^9)/9 + a^2*b^3*x^10
 + (5*a*b^4*x^11)/11 + (b^5*x^12)/12
```

Rubi [A] time = 0.0728336, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^5x^7}{7}+\frac{5}{8}a^4bx^8+\frac{10}{9}a^3b^2x^9+a^2b^3x^{10}+\frac{5}{11}ab^4x^{11}+\frac{b^5x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6*(a + b*x)^5,x]
```

```
[Out] (a^5*x^7)/7 + (5*a^4*b*x^8)/8 + (10*a^3*b^2*x^9)/9 + a^2*b^3*x^10
 + (5*a*b^4*x^11)/11 + (b^5*x^12)/12
```

Rubi in Sympy [A] time = 12.3958, size = 63, normalized size = 0.95

$$\frac{a^5x^7}{7}+\frac{5a^4bx^8}{8}+\frac{10a^3b^2x^9}{9}+a^2b^3x^{10}+\frac{5ab^4x^{11}}{11}+\frac{b^5x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(b*x+a)**5,x)
```

```
[Out] a**5*x**7/7 + 5*a**4*b*x**8/8 + 10*a**3*b**2*x**9/9 + a**2*b**3*x
**10 + 5*a*b**4*x**11/11 + b**5*x**12/12
```

Mathematica [A] time = 0.00343054, size = 66, normalized size = 1.

$$\frac{a^5x^7}{7}+\frac{5}{8}a^4bx^8+\frac{10}{9}a^3b^2x^9+a^2b^3x^{10}+\frac{5}{11}ab^4x^{11}+\frac{b^5x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6*(a + b*x)^5,x]
```

```
[Out] (a^5*x^7)/7 + (5*a^4*b*x^8)/8 + (10*a^3*b^2*x^9)/9 + a^2*b^3*x^10
 + (5*a*b^4*x^11)/11 + (b^5*x^12)/12
```

Maple [A] time = 0.036, size = 57, normalized size = 0.9

$$\frac{a^5x^7}{7}+\frac{5\,a^4bx^8}{8}+\frac{10\,a^3b^2x^9}{9}+a^2b^3x^{10}+\frac{5\,ab^4x^{11}}{11}+\frac{b^5x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(b*x+a)^5,x)
```

```
[Out] 1/7*a^5*x^7+5/8*a^4*b*x^8+10/9*a^3*b^2*x^9+a^2*b^3*x^10+5/11*a*b^
4*x^11+1/12*b^5*x^12
```

Maxima [A] time = 1.45358, size = 76, normalized size = 1.15

$$\frac{1}{12}\,b^5x^{12}+\frac{5}{11}\,ab^4x^{11}+a^2b^3x^{10}+\frac{10}{9}\,a^3b^2x^9+\frac{5}{8}\,a^4bx^8+\frac{1}{7}\,a^5x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^6,x, algorithm="maxima")
```

```
[Out] 1/12*b^5*x^12 + 5/11*a*b^4*x^11 + a^2*b^3*x^10 + 10/9*a^3*b^2*x^9
 + 5/8*a^4*b*x^8 + 1/7*a^5*x^7
```

Fricas [A] time = 0.181033, size = 1, normalized size = 0.02

$$\frac{1}{12}x^{12}b^5+\frac{5}{11}x^{11}b^4a+x^{10}b^3a^2+\frac{10}{9}x^9b^2a^3+\frac{5}{8}x^8ba^4+\frac{1}{7}x^7a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^6,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*b^5 + 5/11*x^11*b^4*a + x^10*b^3*a^2 + 10/9*x^9*b^2*a^3
 + 5/8*x^8*b*a^4 + 1/7*x^7*a^5
```

Sympy [A] time = 0.122087, size = 63, normalized size = 0.95

$$\frac{a^5x^7}{7} + \frac{5a^4bx^8}{8} + \frac{10a^3b^2x^9}{9} + a^2b^3x^{10} + \frac{5ab^4x^{11}}{11} + \frac{b^5x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(b*x+a)**5,x)
```

```
[Out] a**5*x**7/7 + 5*a**4*b*x**8/8 + 10*a**3*b**2*x**9/9 + a**2*b**3*x
**10 + 5*a*b**4*x**11/11 + b**5*x**12/12
```

GIAC/XCAS [A] time = 0.21146, size = 76, normalized size = 1.15

$$\frac{1}{12}\,b^5x^{12} + \frac{5}{11}\,ab^4x^{11} + a^2b^3x^{10} + \frac{10}{9}\,a^3b^2x^9 + \frac{5}{8}\,a^4bx^8 + \frac{1}{7}\,a^5x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^6,x, algorithm="giac")
```

```
[Out] 1/12*b^5*x^12 + 5/11*a*b^4*x^11 + a^2*b^3*x^10 + 10/9*a^3*b^2*x^9
 + 5/8*a^4*b*x^8 + 1/7*a^5*x^7
```

3.78 $\int x^5(a+bx)^5\,dx$

Optimal. Leaf size=69

$$\frac{a^5x^6}{6}+\frac{5}{7}a^4bx^7+\frac{5}{4}a^3b^2x^8+\frac{10}{9}a^2b^3x^9+\frac{1}{2}ab^4x^{10}+\frac{b^5x^{11}}{11}$$

```
[Out] (a^5*x^6)/6 + (5*a^4*b*x^7)/7 + (5*a^3*b^2*x^8)/4 + (10*a^2*b^3*x
^9)/9 + (a*b^4*x^10)/2 + (b^5*x^11)/11
```

Rubi [A] time = 0.0643326, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^5x^6}{6}+\frac{5}{7}a^4bx^7+\frac{5}{4}a^3b^2x^8+\frac{10}{9}a^2b^3x^9+\frac{1}{2}ab^4x^{10}+\frac{b^5x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5*(a + b*x)^5,x]
```

```
[Out] (a^5*x^6)/6 + (5*a^4*b*x^7)/7 + (5*a^3*b^2*x^8)/4 + (10*a^2*b^3*x
^9)/9 + (a*b^4*x^10)/2 + (b^5*x^11)/11
```

Rubi in Sympy [A] time = 12.0335, size = 65, normalized size = 0.94

$$\frac{a^5x^6}{6}+\frac{5a^4bx^7}{7}+\frac{5a^3b^2x^8}{4}+\frac{10a^2b^3x^9}{9}+\frac{ab^4x^{10}}{2}+\frac{b^5x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(b*x+a)**5,x)
```

```
[Out] a**5*x**6/6 + 5*a**4*b*x**7/7 + 5*a**3*b**2*x**8/4 + 10*a**2*b**3
*x**9/9 + a*b**4*x**10/2 + b**5*x**11/11
```

Mathematica [A] time = 0.00335886, size = 69, normalized size = 1.

$$\frac{a^5x^6}{6}+\frac{5}{7}a^4bx^7+\frac{5}{4}a^3b^2x^8+\frac{10}{9}a^2b^3x^9+\frac{1}{2}ab^4x^{10}+\frac{b^5x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5*(a + b*x)^5,x]
```

```
[Out] (a^5*x^6)/6 + (5*a^4*b*x^7)/7 + (5*a^3*b^2*x^8)/4 + (10*a^2*b^3*x
^9)/9 + (a*b^4*x^10)/2 + (b^5*x^11)/11
```

Maple [A] time = 0.001, size = 58, normalized size = 0.8

$$\frac{a^5x^6}{6}+\frac{5\,a^4bx^7}{7}+\frac{5\,a^3b^2x^8}{4}+\frac{10\,a^2b^3x^9}{9}+\frac{ab^4x^{10}}{2}+\frac{b^5x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(b*x+a)^5,x)
```

```
[Out] 1/6*a^5*x^6+5/7*a^4*b*x^7+5/4*a^3*b^2*x^8+10/9*a^2*b^3*x^9+1/2*a*
b^4*x^10+1/11*b^5*x^11
```

Maxima [A] time = 1.32577, size = 77, normalized size = 1.12

$$\frac{1}{11}\,b^5x^{11}+\frac{1}{2}\,ab^4x^{10}+\frac{10}{9}\,a^2b^3x^9+\frac{5}{4}\,a^3b^2x^8+\frac{5}{7}\,a^4bx^7+\frac{1}{6}\,a^5x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^5,x, algorithm="maxima")
```

```
[Out] 1/11*b^5*x^11 + 1/2*a*b^4*x^10 + 10/9*a^2*b^3*x^9 + 5/4*a^3*b^2*x
^8 + 5/7*a^4*b*x^7 + 1/6*a^5*x^6
```

Fricas [A] time = 0.187013, size = 1, normalized size = 0.01

$$\frac{1}{11}x^{11}b^5+\frac{1}{2}x^{10}b^4a+\frac{10}{9}x^9b^3a^2+\frac{5}{4}x^8b^2a^3+\frac{5}{7}x^7ba^4+\frac{1}{6}x^6a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^5,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b^5 + 1/2*x^10*b^4*a + 10/9*x^9*b^3*a^2 + 5/4*x^8*b^2*a
^3 + 5/7*x^7*b*a^4 + 1/6*x^6*a^5
```

Sympy [A] time = 0.114614, size = 65, normalized size = 0.94

$$\frac{a^5x^6}{6} + \frac{5a^4bx^7}{7} + \frac{5a^3b^2x^8}{4} + \frac{10a^2b^3x^9}{9} + \frac{ab^4x^{10}}{2} + \frac{b^5x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(b*x+a)**5,x)
```

```
[Out] a**5*x**6/6 + 5*a**4*b*x**7/7 + 5*a**3*b**2*x**8/4 + 10*a**2*b**3
*x**9/9 + a*b**4*x**10/2 + b**5*x**11/11
```

GIAC/XCAS [A] time = 0.21101, size = 77, normalized size = 1.12

$$\frac{1}{11}\,b^5x^{11} + \frac{1}{2}\,ab^4x^{10} + \frac{10}{9}\,a^2b^3x^9 + \frac{5}{4}\,a^3b^2x^8 + \frac{5}{7}\,a^4bx^7 + \frac{1}{6}\,a^5x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^5,x, algorithm="giac")
```

```
[Out] 1/11*b^5*x^11 + 1/2*a*b^4*x^10 + 10/9*a^2*b^3*x^9 + 5/4*a^3*b^2*x
^8 + 5/7*a^4*b*x^7 + 1/6*a^5*x^6
```

3.79 $\int x^4(a+bx)^5\,dx$

Optimal. Leaf size=69

$$\frac{a^5x^5}{5}+\frac{5}{6}a^4bx^6+\frac{10}{7}a^3b^2x^7+\frac{5}{4}a^2b^3x^8+\frac{5}{9}ab^4x^9+\frac{b^5x^{10}}{10}$$

```
[Out] (a^5*x^5)/5 + (5*a^4*b*x^6)/6 + (10*a^3*b^2*x^7)/7 + (5*a^2*b^3*x
^8)/4 + (5*a*b^4*x^9)/9 + (b^5*x^10)/10
```

Rubi [A] time = 0.0624312, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^5x^5}{5}+\frac{5}{6}a^4bx^6+\frac{10}{7}a^3b^2x^7+\frac{5}{4}a^2b^3x^8+\frac{5}{9}ab^4x^9+\frac{b^5x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(a + b*x)^5,x]
```

```
[Out] (a^5*x^5)/5 + (5*a^4*b*x^6)/6 + (10*a^3*b^2*x^7)/7 + (5*a^2*b^3*x
^8)/4 + (5*a*b^4*x^9)/9 + (b^5*x^10)/10
```

Rubi in Sympy [A] time = 11.6606, size = 66, normalized size = 0.96

$$\frac{a^5x^5}{5}+\frac{5a^4bx^6}{6}+\frac{10a^3b^2x^7}{7}+\frac{5a^2b^3x^8}{4}+\frac{5ab^4x^9}{9}+\frac{b^5x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**5,x)
```

```
[Out] a**5*x**5/5 + 5*a**4*b*x**6/6 + 10*a**3*b**2*x**7/7 + 5*a**2*b**3
*x**8/4 + 5*a*b**4*x**9/9 + b**5*x**10/10
```

Mathematica [A] time = 0.00294384, size = 69, normalized size = 1.

$$\frac{a^5x^5}{5}+\frac{5}{6}a^4bx^6+\frac{10}{7}a^3b^2x^7+\frac{5}{4}a^2b^3x^8+\frac{5}{9}ab^4x^9+\frac{b^5x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(a + b*x)^5,x]
```

```
[Out] (a^5*x^5)/5 + (5*a^4*b*x^6)/6 + (10*a^3*b^2*x^7)/7 + (5*a^2*b^3*x
^8)/4 + (5*a*b^4*x^9)/9 + (b^5*x^10)/10
```

Maple [A] time = 0.001, size = 58, normalized size = 0.8

$$\frac{a^5x^5}{5}+\frac{5\,a^4bx^6}{6}+\frac{10\,a^3b^2x^7}{7}+\frac{5\,a^2b^3x^8}{4}+\frac{5\,ab^4x^9}{9}+\frac{b^5x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^5,x)
```

```
[Out] 1/5*a^5*x^5+5/6*a^4*b*x^6+10/7*a^3*b^2*x^7+5/4*a^2*b^3*x^8+5/9*a*
b^4*x^9+1/10*b^5*x^10
```

Maxima [A] time = 1.32839, size = 77, normalized size = 1.12

$$\frac{1}{10}\,b^5x^{10}+\frac{5}{9}\,ab^4x^9+\frac{5}{4}\,a^2b^3x^8+\frac{10}{7}\,a^3b^2x^7+\frac{5}{6}\,a^4bx^6+\frac{1}{5}\,a^5x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^4,x, algorithm="maxima")
```

```
[Out] 1/10*b^5*x^10 + 5/9*a*b^4*x^9 + 5/4*a^2*b^3*x^8 + 10/7*a^3*b^2*x^
7 + 5/6*a^4*b*x^6 + 1/5*a^5*x^5
```

Fricas [A] time = 0.182332, size = 1, normalized size = 0.01

$$\frac{1}{10}x^{10}b^5+\frac{5}{9}x^9b^4a+\frac{5}{4}x^8b^3a^2+\frac{10}{7}x^7b^2a^3+\frac{5}{6}x^6ba^4+\frac{1}{5}x^5a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^4,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*b^5 + 5/9*x^9*b^4*a + 5/4*x^8*b^3*a^2 + 10/7*x^7*b^2*a^
3 + 5/6*x^6*b*a^4 + 1/5*x^5*a^5
```

Sympy [A] time = 0.126919, size = 66, normalized size = 0.96

$$\frac{a^5x^5}{5} + \frac{5a^4bx^6}{6} + \frac{10a^3b^2x^7}{7} + \frac{5a^2b^3x^8}{4} + \frac{5ab^4x^9}{9} + \frac{b^5x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**5,x)
```

```
[Out] a**5*x**5/5 + 5*a**4*b*x**6/6 + 10*a**3*b**2*x**7/7 + 5*a**2*b**3
*x**8/4 + 5*a*b**4*x**9/9 + b**5*x**10/10
```

GIAC/XCAS [A] time = 0.210772, size = 77, normalized size = 1.12

$$\frac{1}{10}\,b^5x^{10} + \frac{5}{9}\,ab^4x^9 + \frac{5}{4}\,a^2b^3x^8 + \frac{10}{7}\,a^3b^2x^7 + \frac{5}{6}\,a^4bx^6 + \frac{1}{5}\,a^5x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^4,x, algorithm="giac")
```

```
[Out] 1/10*b^5*x^10 + 5/9*a*b^4*x^9 + 5/4*a^2*b^3*x^8 + 10/7*a^3*b^2*x^
7 + 5/6*a^4*b*x^6 + 1/5*a^5*x^5
```

3.80 $\int x^3(a+bx)^5\,dx$

Optimal. Leaf size=64

$$-\frac{a^3(a+bx)^6}{6b^4}+\frac{3a^2(a+bx)^7}{7b^4}+\frac{(a+bx)^9}{9b^4}-\frac{3a(a+bx)^8}{8b^4}$$

```
[Out] -(a^3*(a + b*x)^6)/(6*b^4) + (3*a^2*(a + b*x)^7)/(7*b^4) - (3*a*(
a + b*x)^8)/(8*b^4) + (a + b*x)^9/(9*b^4)
```

Rubi [A] time = 0.0637384, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3(a+bx)^6}{6b^4}+\frac{3a^2(a+bx)^7}{7b^4}+\frac{(a+bx)^9}{9b^4}-\frac{3a(a+bx)^8}{8b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^5,x]
```

```
[Out] -(a^3*(a + b*x)^6)/(6*b^4) + (3*a^2*(a + b*x)^7)/(7*b^4) - (3*a*(
a + b*x)^8)/(8*b^4) + (a + b*x)^9/(9*b^4)
```

Rubi in Sympy [A] time = 11.2939, size = 63, normalized size = 0.98

$$\frac{a^5x^4}{4}+a^4bx^5+\frac{5a^3b^2x^6}{3}+\frac{10a^2b^3x^7}{7}+\frac{5ab^4x^8}{8}+\frac{b^5x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**5,x)
```

```
[Out] a**5*x**4/4 + a**4*b*x**5 + 5*a**3*b**2*x**6/3 + 10*a**2*b**3*x**
7/7 + 5*a*b**4*x**8/8 + b**5*x**9/9
```

Mathematica [A] time = 0.00300208, size = 66, normalized size = 1.03

$$\frac{a^5x^4}{4}+a^4bx^5+\frac{5}{3}a^3b^2x^6+\frac{10}{7}a^2b^3x^7+\frac{5}{8}ab^4x^8+\frac{b^5x^9}{9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^5,x]
```

```
[Out] (a^5*x^4)/4 + a^4*b*x^5 + (5*a^3*b^2*x^6)/3 + (10*a^2*b^3*x^7)/7
+ (5*a*b^4*x^8)/8 + (b^5*x^9)/9
```

Maple [A] time = 0.001, size = 57, normalized size = 0.9

$$\frac{b^5x^9}{9}+\frac{5\,ab^4x^8}{8}+\frac{10\,a^2b^3x^7}{7}+\frac{5\,a^3b^2x^6}{3}+a^4bx^5+\frac{a^5x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^5,x)
```

```
[Out] 1/9*b^5*x^9+5/8*a*b^4*x^8+10/7*a^2*b^3*x^7+5/3*a^3*b^2*x^6+a^4*b*
x^5+1/4*a^5*x^4
```

Maxima [A] time = 1.36195, size = 76, normalized size = 1.19

$$\frac{1}{9}\,b^5x^9+\frac{5}{8}\,ab^4x^8+\frac{10}{7}\,a^2b^3x^7+\frac{5}{3}\,a^3b^2x^6+a^4bx^5+\frac{1}{4}\,a^5x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^3,x, algorithm="maxima")
```

```
[Out] 1/9*b^5*x^9 + 5/8*a*b^4*x^8 + 10/7*a^2*b^3*x^7 + 5/3*a^3*b^2*x^6
+ a^4*b*x^5 + 1/4*a^5*x^4
```

Fricas [A] time = 0.183713, size = 1, normalized size = 0.02

$$\frac{1}{9}x^9b^5+\frac{5}{8}x^8b^4a+\frac{10}{7}x^7b^3a^2+\frac{5}{3}x^6b^2a^3+x^5ba^4+\frac{1}{4}x^4a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*b^5 + 5/8*x^8*b^4*a + 10/7*x^7*b^3*a^2 + 5/3*x^6*b^2*a^3
+ x^5*b*a^4 + 1/4*x^4*a^5
```

Sympy [A] time = 0.114794, size = 63, normalized size = 0.98

$$\frac{a^5x^4}{4} + a^4bx^5 + \frac{5a^3b^2x^6}{3} + \frac{10a^2b^3x^7}{7} + \frac{5ab^4x^8}{8} + \frac{b^5x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**5,x)
```

```
[Out] a**5*x**4/4 + a**4*b*x**5 + 5*a**3*b**2*x**6/3 + 10*a**2*b**3*x**
7/7 + 5*a*b**4*x**8/8 + b**5*x**9/9
```

GIAC/XCAS [A] time = 0.211209, size = 76, normalized size = 1.19

$$\frac{1}{9}\,b^5x^9 + \frac{5}{8}\,ab^4x^8 + \frac{10}{7}\,a^2b^3x^7 + \frac{5}{3}\,a^3b^2x^6 + a^4bx^5 + \frac{1}{4}\,a^5x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^3,x, algorithm="giac")
```

```
[Out] 1/9*b^5*x^9 + 5/8*a*b^4*x^8 + 10/7*a^2*b^3*x^7 + 5/3*a^3*b^2*x^6
+ a^4*b*x^5 + 1/4*a^5*x^4
```

3.81 $\int x^2(a+bx)^5\,dx$

Optimal. Leaf size=47

$$\frac{a^2(a+bx)^6}{6b^3}+\frac{(a+bx)^8}{8b^3}-\frac{2a(a+bx)^7}{7b^3}$$

```
[Out] (a^2*(a + b*x)^6)/(6*b^3) - (2*a*(a + b*x)^7)/(7*b^3) + (a + b*x)
^8/(8*b^3)
```

Rubi [A] time = 0.0522513, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2(a+bx)^6}{6b^3}+\frac{(a+bx)^8}{8b^3}-\frac{2a(a+bx)^7}{7b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^5,x]
```

```
[Out] (a^2*(a + b*x)^6)/(6*b^3) - (2*a*(a + b*x)^7)/(7*b^3) + (a + b*x)
^8/(8*b^3)
```

Rubi in Sympy [A] time = 10.3409, size = 41, normalized size = 0.87

$$\frac{a^2\left(a+bx\right)^6}{6b^3}-\frac{2a\left(a+bx\right)^7}{7b^3}+\frac{\left(a+bx\right)^8}{8b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**5,x)
```

```
[Out] a**2*(a + b*x)**6/(6*b**3) - 2*a*(a + b*x)**7/(7*b**3) + (a + b*x
)**8/(8*b**3)
```

Mathematica [A] time = 0.0030456, size = 67, normalized size = 1.43

$$\frac{a^5x^3}{3}+\frac{5}{4}a^4bx^4+2a^3b^2x^5+\frac{5}{3}a^2b^3x^6+\frac{5}{7}ab^4x^7+\frac{b^5x^8}{8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^5,x]
```

```
[Out] (a^5*x^3)/3 + (5*a^4*b*x^4)/4 + 2*a^3*b^2*x^5 + (5*a^2*b^3*x^6)/3
 + (5*a*b^4*x^7)/7 + (b^5*x^8)/8
```

Maple [A] time = 0.001, size = 58, normalized size = 1.2

$$\frac{b^5x^8}{8}+\frac{5\,ab^4x^7}{7}+\frac{5\,a^2b^3x^6}{3}+2\,a^3b^2x^5+\frac{5\,a^4bx^4}{4}+\frac{a^5x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^5,x)
```

```
[Out] 1/8*b^5*x^8+5/7*a*b^4*x^7+5/3*a^2*b^3*x^6+2*a^3*b^2*x^5+5/4*a^4*b
*x^4+1/3*a^5*x^3
```

Maxima [A] time = 1.34425, size = 77, normalized size = 1.64

$$\frac{1}{8}\,b^5x^8+\frac{5}{7}\,ab^4x^7+\frac{5}{3}\,a^2b^3x^6+2\,a^3b^2x^5+\frac{5}{4}\,a^4bx^4+\frac{1}{3}\,a^5x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^2,x, algorithm="maxima")
```

```
[Out] 1/8*b^5*x^8 + 5/7*a*b^4*x^7 + 5/3*a^2*b^3*x^6 + 2*a^3*b^2*x^5 + 5
/4*a^4*b*x^4 + 1/3*a^5*x^3
```

Fricas [A] time = 0.181867, size = 1, normalized size = 0.02

$$\frac{1}{8}x^8b^5+\frac{5}{7}x^7b^4a+\frac{5}{3}x^6b^3a^2+2x^5b^2a^3+\frac{5}{4}x^4ba^4+\frac{1}{3}x^3a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^5 + 5/7*x^7*b^4*a + 5/3*x^6*b^3*a^2 + 2*x^5*b^2*a^3 + 5
/4*x^4*b*a^4 + 1/3*x^3*a^5
```

Sympy [A] time = 0.145386, size = 65, normalized size = 1.38

$$\frac{a^5x^3}{3} + \frac{5a^4bx^4}{4} + 2a^3b^2x^5 + \frac{5a^2b^3x^6}{3} + \frac{5ab^4x^7}{7} + \frac{b^5x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**5,x)
```

```
[Out] a**5*x**3/3 + 5*a**4*b*x**4/4 + 2*a**3*b**2*x**5 + 5*a**2*b**3*x*
*6/3 + 5*a*b**4*x**7/7 + b**5*x**8/8
```

GIAC/XCAS [A] time = 0.209615, size = 77, normalized size = 1.64

$$\frac{1}{8}\,b^5x^8 + \frac{5}{7}\,ab^4x^7 + \frac{5}{3}\,a^2b^3x^6 + 2\,a^3b^2x^5 + \frac{5}{4}\,a^4bx^4 + \frac{1}{3}\,a^5x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x^2,x, algorithm="giac")
```

```
[Out] 1/8*b^5*x^8 + 5/7*a*b^4*x^7 + 5/3*a^2*b^3*x^6 + 2*a^3*b^2*x^5 + 5
/4*a^4*b*x^4 + 1/3*a^5*x^3
```

3.82 $\int x(a+bx)^5\,dx$

Optimal. Leaf size=30

$$\frac{(a+bx)^7}{7b^2}-\frac{a(a+bx)^6}{6b^2}$$

```
[Out] -(a*(a + b*x)^6)/(6*b^2) + (a + b*x)^7/(7*b^2)
```

Rubi [A] time = 0.0276165, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^7}{7b^2}-\frac{a(a+bx)^6}{6b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^5,x]

[Out] -(a*(a + b*x)^6)/(6*b^2) + (a + b*x)^7/(7*b^2)
```

Rubi in Sympy [A] time = 7.14924, size = 24, normalized size = 0.8

$$-\frac{a\,(a+bx)^6}{6b^2}+\frac{(a+bx)^7}{7b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**5,x)

[Out] -a*(a + b*x)**6/(6*b**2) + (a + b*x)**7/(7*b**2)
```

Mathematica [B] time = 0.00255794, size = 67, normalized size = 2.23

$$\frac{a^5x^2}{2}+\frac{5}{3}a^4bx^3+\frac{5}{2}a^3b^2x^4+2a^2b^3x^5+\frac{5}{6}ab^4x^6+\frac{b^5x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^5,x]
```

```
[Out] (a^5*x^2)/2 + (5*a^4*b*x^3)/3 + (5*a^3*b^2*x^4)/2 + 2*a^2*b^3*x^5
 + (5*a*b^4*x^6)/6 + (b^5*x^7)/7
```

Maple [B] time = 0.001, size = 58, normalized size = 1.9

$$\frac{b^5x^7}{7}+\frac{5\,ab^4x^6}{6}+2\,a^2b^3x^5+\frac{5\,a^3b^2x^4}{2}+\frac{5\,a^4bx^3}{3}+\frac{a^5x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^5,x)
```

```
[Out] 1/7*b^5*x^7+5/6*a*b^4*x^6+2*a^2*b^3*x^5+5/2*a^3*b^2*x^4+5/3*a^4*b
*x^3+1/2*a^5*x^2
```

Maxima [A] time = 1.31855, size = 77, normalized size = 2.57

$$\frac{1}{7}\,b^5x^7+\frac{5}{6}\,ab^4x^6+2\,a^2b^3x^5+\frac{5}{2}\,a^3b^2x^4+\frac{5}{3}\,a^4bx^3+\frac{1}{2}\,a^5x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x,x, algorithm="maxima")
```

```
[Out] 1/7*b^5*x^7 + 5/6*a*b^4*x^6 + 2*a^2*b^3*x^5 + 5/2*a^3*b^2*x^4 + 5
/3*a^4*b*x^3 + 1/2*a^5*x^2
```

Fricas [A] time = 0.187731, size = 1, normalized size = 0.03

$$\frac{1}{7}x^7b^5+\frac{5}{6}x^6b^4a+2x^5b^3a^2+\frac{5}{2}x^4b^2a^3+\frac{5}{3}x^3ba^4+\frac{1}{2}x^2a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*b^5 + 5/6*x^6*b^4*a + 2*x^5*b^3*a^2 + 5/2*x^4*b^2*a^3 + 5
/3*x^3*b*a^4 + 1/2*x^2*a^5
```

Sympy [A] time = 0.1374, size = 65, normalized size = 2.17

$$\frac{a^5x^2}{2} + \frac{5a^4bx^3}{3} + \frac{5a^3b^2x^4}{2} + 2a^2b^3x^5 + \frac{5ab^4x^6}{6} + \frac{b^5x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**5,x)
```

```
[Out] a**5*x**2/2 + 5*a**4*b*x**3/3 + 5*a**3*b**2*x**4/2 + 2*a**2*b**3*
x**5 + 5*a*b**4*x**6/6 + b**5*x**7/7
```

GIAC/XCAS [A] time = 0.204708, size = 77, normalized size = 2.57

$$\frac{1}{7}\,b^5x^7 + \frac{5}{6}\,ab^4x^6 + 2\,a^2b^3x^5 + \frac{5}{2}\,a^3b^2x^4 + \frac{5}{3}\,a^4bx^3 + \frac{1}{2}\,a^5x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*x,x, algorithm="giac")
```

```
[Out] 1/7*b^5*x^7 + 5/6*a*b^4*x^6 + 2*a^2*b^3*x^5 + 5/2*a^3*b^2*x^4 + 5
/3*a^4*b*x^3 + 1/2*a^5*x^2
```

3.83 $\int (a+bx)^5 \, dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^6}{6b}$$

```
[Out] (a + b*x)^6/(6*b)
```

Rubi [A] time = 0.00677724, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{(a+bx)^6}{6b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5,x]

[Out] (a + b*x)^6/(6*b)
```

Rubi in Sympy [A] time = 1.25636, size = 8, normalized size = 0.57

$$\frac{(a+bx)^6}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5,x)

[Out] (a + b*x)**6/(6*b)
```

Mathematica [A] time = 0.00223444, size = 14, normalized size = 1.

$$\frac{(a+bx)^6}{6b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5,x]
```

```
[Out] (a + b*x)^6/(6*b)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$\frac{(bx+a)^6}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5,x)
```

```
[Out] 1/6*(b*x+a)^6/b
```

Maxima [A] time = 1.32991, size = 72, normalized size = 5.14

$$\frac{1}{6}\,b^5x^6 + ab^4x^5 + \frac{5}{2}\,a^2b^3x^4 + \frac{10}{3}\,a^3b^2x^3 + \frac{5}{2}\,a^4bx^2 + a^5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5,x, algorithm="maxima")
```

```
[Out] 1/6*b^5*x^6 + a*b^4*x^5 + 5/2*a^2*b^3*x^4 + 10/3*a^3*b^2*x^3 + 5/
2*a^4*b*x^2 + a^5*x
```

Fricas [A] time = 0.179826, size = 1, normalized size = 0.07

$$\frac{1}{6}x^6b^5 + x^5b^4a + \frac{5}{2}x^4b^3a^2 + \frac{10}{3}x^3b^2a^3 + \frac{5}{2}x^2ba^4 + xa^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^5 + x^5*b^4*a + 5/2*x^4*b^3*a^2 + 10/3*x^3*b^2*a^3 + 5/
2*x^2*b*a^4 + x*a^5
```

Sympy [A] time = 0.117757, size = 60, normalized size = 4.29

$$a^5x + \frac{5a^4bx^2}{2} + \frac{10a^3b^2x^3}{3} + \frac{5a^2b^3x^4}{2} + ab^4x^5 + \frac{b^5x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5,x)
```

```
[Out] a**5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*x**3/3 + 5*a**2*b**3*x**4
/2 + a*b**4*x**5 + b**5*x**6/6
```

GIAC/XCAS [A] time = 0.206837, size = 16, normalized size = 1.14

$$\frac{(bx+a)^6}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5,x, algorithm="giac")
```

```
[Out] 1/6*(b*x + a)^6/b
```

3.84 $\int \frac{(a+bx)^5}{x}\,dx$

Optimal. Leaf size=59

$$a^5\log(x)+5a^4bx+5a^3b^2x^2+\frac{10}{3}a^2b^3x^3+\frac{5}{4}ab^4x^4+\frac{b^5x^5}{5}$$

```
[Out] 5*a^4*b*x + 5*a^3*b^2*x^2 + (10*a^2*b^3*x^3)/3 + (5*a*b^4*x^4)/4
+ (b^5*x^5)/5 + a^5*Log[x]
```

Rubi [A] time = 0.0422886, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$a^5\log(x)+5a^4bx+5a^3b^2x^2+\frac{10}{3}a^2b^3x^3+\frac{5}{4}ab^4x^4+\frac{b^5x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x,x]
```

```
[Out] 5*a^4*b*x + 5*a^3*b^2*x^2 + (10*a^2*b^3*x^3)/3 + (5*a*b^4*x^4)/4
+ (b^5*x^5)/5 + a^5*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^5\log(x)+5a^4bx+10a^3b^2\int x\,dx+\frac{10a^2b^3x^3}{3}+\frac{5ab^4x^4}{4}+\frac{b^5x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x,x)
```

```
[Out] a**5*log(x) + 5*a**4*b*x + 10*a**3*b**2*Integral(x, x) + 10*a**2*
b**3*x**3/3 + 5*a*b**4*x**4/4 + b**5*x**5/5
```

Mathematica [A] time = 0.00472775, size = 59, normalized size = 1.

$$a^5\log(x)+5a^4bx+5a^3b^2x^2+\frac{10}{3}a^2b^3x^3+\frac{5}{4}ab^4x^4+\frac{b^5x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x,x]
```

```
[Out] 5*a^4*b*x + 5*a^3*b^2*x^2 + (10*a^2*b^3*x^3)/3 + (5*a*b^4*x^4)/4
+ (b^5*x^5)/5 + a^5*Log[x]
```

Maple [A] time = 0.017, size = 54, normalized size = 0.9

$$5\,a^{4}bx+5\,a^{3}b^{2}x^{2}+{\frac{10\,a^{2}b^{3}x^{3}}{3}}+{\frac{5\,ab^{4}x^{4}}{4}}+{\frac{b^{5}x^{5}}{5}}+{a}^{5}\ln \left(x \right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x,x)
```

```
[Out] 5*a^4*b*x+5*a^3*b^2*x^2+10/3*a^2*b^3*x^3+5/4*a*b^4*x^4+1/5*b^5*x^
5+a^5*ln(x)
```

Maxima [A] time = 1.32056, size = 72, normalized size = 1.22

$$\frac{1}{5}\,b^{5}x^{5}+\frac{5}{4}\,ab^{4}x^{4}+\frac{10}{3}\,a^{2}b^{3}x^{3}+5\,a^{3}b^{2}x^{2}+5\,a^{4}bx+a^{5}\log \left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x,x, algorithm="maxima")
```

```
[Out] 1/5*b^5*x^5 + 5/4*a*b^4*x^4 + 10/3*a^2*b^3*x^3 + 5*a^3*b^2*x^2 +
5*a^4*b*x + a^5*log(x)
```

Fricas [A] time = 0.204691, size = 72, normalized size = 1.22

$$\frac{1}{5}\,b^{5}x^{5}+\frac{5}{4}\,ab^{4}x^{4}+\frac{10}{3}\,a^{2}b^{3}x^{3}+5\,a^{3}b^{2}x^{2}+5\,a^{4}bx+a^{5}\log \left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x,x, algorithm="fricas")
```

```
[Out] 1/5*b^5*x^5 + 5/4*a*b^4*x^4 + 10/3*a^2*b^3*x^3 + 5*a^3*b^2*x^2 +
5*a^4*b*x + a^5*log(x)
```

Sympy [A] time = 1.26561, size = 60, normalized size = 1.02

$$a^5 \log(x) + 5a^4bx + 5a^3b^2x^2 + \frac{10a^2b^3x^3}{3} + \frac{5ab^4x^4}{4} + \frac{b^5x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x,x)
```

```
[Out] a**5*log(x) + 5*a**4*b*x + 5*a**3*b**2*x**2 + 10*a**2*b**3*x**3/3
 + 5*a*b**4*x**4/4 + b**5*x**5/5
```

GIAC/XCAS [A] time = 0.216855, size = 73, normalized size = 1.24

$$\frac{1}{5}b^5x^5 + \frac{5}{4}ab^4x^4 + \frac{10}{3}a^2b^3x^3 + 5a^3b^2x^2 + 5a^4bx + a^5\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x,x, algorithm="giac")
```

```
[Out] 1/5*b^5*x^5 + 5/4*a*b^4*x^4 + 10/3*a^2*b^3*x^3 + 5*a^3*b^2*x^2 +
5*a^4*b*x + a^5*ln(abs(x))
```

3.85 $\int \frac{(a+bx)^5}{x^2}\,dx$

Optimal. Leaf size=58

$$-\frac{a^5}{x}+5a^4b\log(x)+10a^3b^2x+5a^2b^3x^2+\frac{5}{3}ab^4x^3+\frac{b^5x^4}{4}$$

```
[Out] -(a^5/x) + 10*a^3*b^2*x + 5*a^2*b^3*x^2 + (5*a*b^4*x^3)/3 + (b^5*
x^4)/4 + 5*a^4*b*Log[x]
```

Rubi [A] time = 0.049725, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{x}+5a^4b\log(x)+10a^3b^2x+5a^2b^3x^2+\frac{5}{3}ab^4x^3+\frac{b^5x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^2,x]
```

```
[Out] -(a^5/x) + 10*a^3*b^2*x + 5*a^2*b^3*x^2 + (5*a*b^4*x^3)/3 + (b^5*
x^4)/4 + 5*a^4*b*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^5}{x}+5a^4b\log(x)+10a^3b^2x+10a^2b^3\int x\,dx+\frac{5ab^4x^3}{3}+\frac{b^5x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**2,x)
```

```
[Out] -a**5/x + 5*a**4*b*log(x) + 10*a**3*b**2*x + 10*a**2*b**3*Integra
l(x, x) + 5*a*b**4*x**3/3 + b**5*x**4/4
```

Mathematica [A] time = 0.00612415, size = 58, normalized size = 1.

$$-\frac{a^5}{x}+5a^4b\log(x)+10a^3b^2x+5a^2b^3x^2+\frac{5}{3}ab^4x^3+\frac{b^5x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^2,x]
```

```
[Out] -(a^5/x) + 10*a^3*b^2*x + 5*a^2*b^3*x^2 + (5*a*b^4*x^3)/3 + (b^5*
x^4)/4 + 5*a^4*b*Log[x]
```

Maple [A] time = 0.009, size = 55, normalized size = 1.

$$-\frac{a^{5}}{x}+10\,a^{3}b^{2}x+5\,a^{2}b^{3}x^{2}+\frac{5\,ab^{4}x^{3}}{3}+\frac{b^{5}x^{4}}{4}+5\,a^{4}b\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^2,x)
```

```
[Out] -a^5/x+10*a^3*b^2*x+5*a^2*b^3*x^2+5/3*a*b^4*x^3+1/4*b^5*x^4+5*a^4
*b*ln(x)
```

Maxima [A] time = 1.33067, size = 73, normalized size = 1.26

$$\frac{1}{4}\,b^{5}x^{4}+\frac{5}{3}\,ab^{4}x^{3}+5\,a^{2}b^{3}x^{2}+10\,a^{3}b^{2}x+5\,a^{4}b\log\left(x\right)-\frac{a^{5}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*b^5*x^4 + 5/3*a*b^4*x^3 + 5*a^2*b^3*x^2 + 10*a^3*b^2*x + 5*a^
4*b*log(x) - a^5/x
```

Fricas [A] time = 0.195097, size = 80, normalized size = 1.38

$$\frac{3\,b^{5}x^{5}+20\,ab^{4}x^{4}+60\,a^{2}b^{3}x^{3}+120\,a^{3}b^{2}x^{2}+60\,a^{4}bx\log\left(x\right)-12\,a^{5}}{12\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^5*x^5 + 20*a*b^4*x^4 + 60*a^2*b^3*x^3 + 120*a^3*b^2*x^2
 + 60*a^4*b*x*log(x) - 12*a^5)/x
```

Sympy [A] time = 1.29563, size = 56, normalized size = 0.97

$$-\frac{a^5}{x} + 5a^4 b\log(x) + 10a^3b^2x + 5a^2b^3x^2 + \frac{5ab^4x^3}{3} + \frac{b^5x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**2,x)
```

```
[Out] -a**5/x + 5*a**4*b*log(x) + 10*a**3*b**2*x + 5*a**2*b**3*x**2 + 5
*a*b**4*x**3/3 + b**5*x**4/4
```

GIAC/XCAS [A] time = 0.209574, size = 74, normalized size = 1.28

$$\frac{1}{4}\,b^5x^4 + \frac{5}{3}\,ab^4x^3 + 5\,a^2b^3x^2 + 10\,a^3b^2x + 5\,a^4b\ln(|x|) - \frac{a^5}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^2,x, algorithm="giac")
```

```
[Out] 1/4*b^5*x^4 + 5/3*a*b^4*x^3 + 5*a^2*b^3*x^2 + 10*a^3*b^2*x + 5*a^
4*b*ln(abs(x)) - a^5/x
```

3.86 $\int \frac{(a+bx)^5}{x^3} \, dx$

Optimal. Leaf size=60

$$-\frac{a^5}{2x^2}-\frac{5a^4b}{x}+10a^3b^2\log(x)+10a^2b^3x+\frac{5}{2}ab^4x^2+\frac{b^5x^3}{3}$$

```
[Out] -a^5/(2*x^2) - (5*a^4*b)/x + 10*a^2*b^3*x + (5*a*b^4*x^2)/2 + (b^
5*x^3)/3 + 10*a^3*b^2*Log[x]
```

Rubi [A] time = 0.0497974, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{2x^2}-\frac{5a^4b}{x}+10a^3b^2\log(x)+10a^2b^3x+\frac{5}{2}ab^4x^2+\frac{b^5x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^3,x]
```

```
[Out] -a^5/(2*x^2) - (5*a^4*b)/x + 10*a^2*b^3*x + (5*a*b^4*x^2)/2 + (b^
5*x^3)/3 + 10*a^3*b^2*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^5}{2x^2}-\frac{5a^4b}{x}+10a^3b^2\log(x)+10a^2b^3x+5ab^4\int x\,dx+\frac{b^5x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**3,x)
```

```
[Out] -a**5/(2*x**2) - 5*a**4*b/x + 10*a**3*b**2*log(x) + 10*a**2*b**3*
x + 5*a*b**4*Integral(x, x) + b**5*x**3/3
```

Mathematica [A] time = 0.0063235, size = 60, normalized size = 1.

$$-\frac{a^5}{2x^2}-\frac{5a^4b}{x}+10a^3b^2\log(x)+10a^2b^3x+\frac{5}{2}ab^4x^2+\frac{b^5x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^3,x]
```

```
[Out] -a^5/(2*x^2) - (5*a^4*b)/x + 10*a^2*b^3*x + (5*a*b^4*x^2)/2 + (b^
5*x^3)/3 + 10*a^3*b^2*Log[x]
```

Maple [A] time = 0.01, size = 55, normalized size = 0.9

$$-\frac{a^{5}}{2\,x^{2}}-5\,\frac{a^{4}b}{x}+10\,a^{2}b^{3}x+\frac{5\,ab^{4}x^{2}}{2}+\frac{b^{5}x^{3}}{3}+10\,a^{3}b^{2}\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^3,x)
```

```
[Out] -1/2*a^5/x^2-5*a^4*b/x+10*a^2*b^3*x+5/2*a*b^4*x^2+1/3*b^5*x^3+10*
a^3*b^2*ln(x)
```

Maxima [A] time = 1.33464, size = 72, normalized size = 1.2

$$\frac{1}{3}\,b^{5}x^{3}+\frac{5}{2}\,ab^{4}x^{2}+10\,a^{2}b^{3}x+10\,a^{3}b^{2}\log\left(x\right)-\frac{10\,a^{4}bx+a^{5}}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*b^5*x^3 + 5/2*a*b^4*x^2 + 10*a^2*b^3*x + 10*a^3*b^2*log(x) -
1/2*(10*a^4*b*x + a^5)/x^2
```

Fricas [A] time = 0.231677, size = 80, normalized size = 1.33

$$\frac{2\,b^{5}x^{5}+15\,ab^{4}x^{4}+60\,a^{2}b^{3}x^{3}+60\,a^{3}b^{2}x^{2}\log\left(x\right)-30\,a^{4}bx-3\,a^{5}}{6\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^5*x^5 + 15*a*b^4*x^4 + 60*a^2*b^3*x^3 + 60*a^3*b^2*x^2*l
og(x) - 30*a^4*b*x - 3*a^5)/x^2
```

Sympy [A] time = 1.40683, size = 58, normalized size = 0.97

$$10a^3b^2\log(x) + 10a^2b^3x + \frac{5ab^4x^2}{2} + \frac{b^5x^3}{3} - \frac{a^5 + 10a^4bx}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**3,x)
```

```
[Out] 10*a**3*b**2*log(x) + 10*a**2*b**3*x + 5*a*b**4*x**2/2 + b**5*x**
3/3 - (a**5 + 10*a**4*b*x)/(2*x**2)
```

GIAC/XCAS [A] time = 0.206866, size = 73, normalized size = 1.22

$$\frac{1}{3}b^5x^3 + \frac{5}{2}ab^4x^2 + 10\,a^2b^3x + 10\,a^3b^2\ln(|x|) - \frac{10\,a^4bx + a^5}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^3,x, algorithm="giac")
```

```
[Out] 1/3*b^5*x^3 + 5/2*a*b^4*x^2 + 10*a^2*b^3*x + 10*a^3*b^2*ln(abs(x)
) - 1/2*(10*a^4*b*x + a^5)/x^2
```

3.87 $\int \frac{(a+bx)^5}{x^4}\, dx$

Optimal. Leaf size=60

$$-\frac{a^5}{3x^3}-\frac{5a^4b}{2x^2}-\frac{10a^3b^2}{x}+10a^2b^3\log(x)+5ab^4x+\frac{b^5x^2}{2}$$

```
[Out] -a^5/(3*x^3) - (5*a^4*b)/(2*x^2) - (10*a^3*b^2)/x + 5*a*b^4*x + (
b^5*x^2)/2 + 10*a^2*b^3*Log[x]
```

Rubi [A] time = 0.0507455, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{3x^3}-\frac{5a^4b}{2x^2}-\frac{10a^3b^2}{x}+10a^2b^3\log(x)+5ab^4x+\frac{b^5x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^4,x]
```

```
[Out] -a^5/(3*x^3) - (5*a^4*b)/(2*x^2) - (10*a^3*b^2)/x + 5*a*b^4*x + (
b^5*x^2)/2 + 10*a^2*b^3*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^5}{3x^3}-\frac{5a^4b}{2x^2}-\frac{10a^3b^2}{x}+10a^2b^3\log(x)+5ab^4x+b^5\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**4,x)
```

```
[Out] -a**5/(3*x**3) - 5*a**4*b/(2*x**2) - 10*a**3*b**2/x + 10*a**2*b**
3*log(x) + 5*a*b**4*x + b**5*Integral(x, x)
```

Mathematica [A] time = 0.00615775, size = 60, normalized size = 1.

$$-\frac{a^5}{3x^3}-\frac{5a^4b}{2x^2}-\frac{10a^3b^2}{x}+10a^2b^3\log(x)+5ab^4x+\frac{b^5x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^4,x]
```

```
[Out] -a^5/(3*x^3) - (5*a^4*b)/(2*x^2) - (10*a^3*b^2)/x + 5*a*b^4*x + (
b^5*x^2)/2 + 10*a^2*b^3*Log[x]
```

Maple [A] time = 0.01, size = 55, normalized size = 0.9

$$-\frac{a^5}{3\,x^3}-\frac{5\,a^4b}{2\,x^2}-10\,\frac{a^3b^2}{x}+5\,ab^4x+\frac{b^5x^2}{2}+10\,a^2b^3\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^4,x)
```

```
[Out] -1/3*a^5/x^3-5/2*a^4*b/x^2-10*a^3*b^2/x+5*a*b^4*x+1/2*b^5*x^2+10*
a^2*b^3*ln(x)
```

Maxima [A] time = 1.34088, size = 74, normalized size = 1.23

$$\frac{1}{2}\,b^5x^2+5\,ab^4x+10\,a^2b^3\log(x)-\frac{60\,a^3b^2x^2+15\,a^4bx+2\,a^5}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*b^5*x^2 + 5*a*b^4*x + 10*a^2*b^3*log(x) - 1/6*(60*a^3*b^2*x^2
 + 15*a^4*b*x + 2*a^5)/x^3
```

Fricas [A] time = 0.206678, size = 80, normalized size = 1.33

$$\frac{3\,b^5x^5+30\,ab^4x^4+60\,a^2b^3x^3\log(x)-60\,a^3b^2x^2-15\,a^4bx-2\,a^5}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*b^5*x^5 + 30*a*b^4*x^4 + 60*a^2*b^3*x^3*log(x) - 60*a^3*b^
2*x^2 - 15*a^4*b*x - 2*a^5)/x^3
```

Sympy [A] time = 1.58521, size = 58, normalized size = 0.97

$$10a^2b^3\log(x) + 5ab^4x + \frac{b^5x^2}{2} - \frac{2a^5 + 15a^4bx + 60a^3b^2x^2}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**4,x)
```

```
[Out] 10*a**2*b**3*log(x) + 5*a*b**4*x + b**5*x**2/2 - (2*a**5 + 15*a**
4*b*x + 60*a**3*b**2*x**2)/(6*x**3)
```

GIAC/XCAS [A] time = 0.215715, size = 76, normalized size = 1.27

$$\frac{1}{2}b^5x^2 + 5\,ab^4x + 10\,a^2b^3\ln(|x|) - \frac{60\,a^3b^2x^2 + 15\,a^4bx + 2\,a^5}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^4,x, algorithm="giac")
```

```
[Out] 1/2*b^5*x^2 + 5*a*b^4*x + 10*a^2*b^3*ln(abs(x)) - 1/6*(60*a^3*b^2
*x^2 + 15*a^4*b*x + 2*a^5)/x^3
```

3.88 $\int \frac{(a+bx)^5}{x^5} dx$

Optimal. Leaf size=57

$$-\frac{a^5}{4x^4}-\frac{5a^4b}{3x^3}-\frac{5a^3b^2}{x^2}-\frac{10a^2b^3}{x}+5ab^4\log(x)+b^5x$$

```
[Out] -a^5/(4*x^4) - (5*a^4*b)/(3*x^3) - (5*a^3*b^2)/x^2 - (10*a^2*b^3)
/x + b^5*x + 5*a*b^4*Log[x]
```

Rubi [A] time = 0.0507979, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{4x^4}-\frac{5a^4b}{3x^3}-\frac{5a^3b^2}{x^2}-\frac{10a^2b^3}{x}+5ab^4\log(x)+b^5x$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^5/x^5,x]
```

```
[Out] -a^5/(4*x^4) - (5*a^4*b)/(3*x^3) - (5*a^3*b^2)/x^2 - (10*a^2*b^3)
/x + b^5*x + 5*a*b^4*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^5}{4x^4}-\frac{5a^4b}{3x^3}-\frac{5a^3b^2}{x^2}-\frac{10a^2b^3}{x}+5ab^4\log(x)+\int b^5\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**5/x**5,x)
```

```
[Out] -a**5/(4*x**4) - 5*a**4*b/(3*x**3) - 5*a**3*b**2/x**2 - 10*a**2*b
**3/x + 5*a*b**4*log(x) + Integral(b**5, x)
```

Mathematica [A] time = 0.00828468, size = 57, normalized size = 1.

$$-\frac{a^5}{4x^4}-\frac{5a^4b}{3x^3}-\frac{5a^3b^2}{x^2}-\frac{10a^2b^3}{x}+5ab^4\log(x)+b^5x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^5,x]
```

```
[Out] -a^5/(4*x^4) - (5*a^4*b)/(3*x^3) - (5*a^3*b^2)/x^2 - (10*a^2*b^3)
/x + b^5*x + 5*a*b^4*Log[x]
```

Maple [A] time = 0.01, size = 54, normalized size = 1.

$$-\frac{a^5}{4\,x^4}-\frac{5\,a^4b}{3\,x^3}-5\,\frac{a^3b^2}{x^2}-10\,\frac{a^2b^3}{x}+b^5x+5\,ab^4\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^5,x)
```

```
[Out] -1/4*a^5/x^4-5/3*a^4*b/x^3-5*a^3*b^2/x^2-10*a^2*b^3/x+b^5*x+5*a*b
^4*ln(x)
```

Maxima [A] time = 1.34581, size = 73, normalized size = 1.28

$$b^5x+5\,ab^4\log(x)-\frac{120\,a^2b^3x^3+60\,a^3b^2x^2+20\,a^4bx+3\,a^5}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^5,x, algorithm="maxima")
```

```
[Out] b^5*x + 5*a*b^4*log(x) - 1/12*(120*a^2*b^3*x^3 + 60*a^3*b^2*x^2 +
 20*a^4*b*x + 3*a^5)/x^4
```

Fricas [A] time = 0.201102, size = 80, normalized size = 1.4

$$\frac{12\,b^5x^5+60\,ab^4x^4\log(x)-120\,a^2b^3x^3-60\,a^3b^2x^2-20\,a^4bx-3\,a^5}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*b^5*x^5 + 60*a*b^4*x^4*log(x) - 120*a^2*b^3*x^3 - 60*a^3
*b^2*x^2 - 20*a^4*b*x - 3*a^5)/x^4
```

Sympy [A] time = 1.83429, size = 56, normalized size = 0.98

$$5ab^4\log(x) + b^5x - \frac{3a^5 + 20a^4bx + 60a^3b^2x^2 + 120a^2b^3x^3}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**5,x)
```

```
[Out] 5*a*b**4*log(x) + b**5*x - (3*a**5 + 20*a**4*b*x + 60*a**3*b**2*x
**2 + 120*a**2*b**3*x**3)/(12*x**4)
```

GIAC/XCAS [A] time = 0.212931, size = 74, normalized size = 1.3

$$b^5x + 5\,ab^4\ln(|x|) - \frac{120\,a^2b^3x^3 + 60\,a^3b^2x^2 + 20\,a^4bx + 3\,a^5}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^5,x, algorithm="giac")
```

```
[Out] b^5*x + 5*a*b^4*ln(abs(x)) - 1/12*(120*a^2*b^3*x^3 + 60*a^3*b^2*x
^2 + 20*a^4*b*x + 3*a^5)/x^4
```

3.89 $\int \frac{(a+bx)^5}{x^6} \, dx$

Optimal. Leaf size=61

$$-\frac{a^5}{5x^5}-\frac{5a^4b}{4x^4}-\frac{10a^3b^2}{3x^3}-\frac{5a^2b^3}{x^2}-\frac{5ab^4}{x}+b^5\log(x)$$

```
[Out] -a^5/(5*x^5) - (5*a^4*b)/(4*x^4) - (10*a^3*b^2)/(3*x^3) - (5*a^2*
b^3)/x^2 - (5*a*b^4)/x + b^5*Log[x]
```

Rubi [A] time = 0.0508431, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^5}{5x^5}-\frac{5a^4b}{4x^4}-\frac{10a^3b^2}{3x^3}-\frac{5a^2b^3}{x^2}-\frac{5ab^4}{x}+b^5\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^6,x]
```

```
[Out] -a^5/(5*x^5) - (5*a^4*b)/(4*x^4) - (10*a^3*b^2)/(3*x^3) - (5*a^2*
b^3)/x^2 - (5*a*b^4)/x + b^5*Log[x]
```

Rubi in Sympy [A] time = 10.121, size = 60, normalized size = 0.98

$$-\frac{a^5}{5x^5}-\frac{5a^4b}{4x^4}-\frac{10a^3b^2}{3x^3}-\frac{5a^2b^3}{x^2}-\frac{5ab^4}{x}+b^5\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**6,x)
```

```
[Out] -a**5/(5*x**5) - 5*a**4*b/(4*x**4) - 10*a**3*b**2/(3*x**3) - 5*a*
*2*b**3/x**2 - 5*a*b**4/x + b**5*log(x)
```

Mathematica [A] time = 0.00579649, size = 61, normalized size = 1.

$$-\frac{a^5}{5x^5}-\frac{5a^4b}{4x^4}-\frac{10a^3b^2}{3x^3}-\frac{5a^2b^3}{x^2}-\frac{5ab^4}{x}+b^5\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^6,x]
```

```
[Out] -a^5/(5*x^5) - (5*a^4*b)/(4*x^4) - (10*a^3*b^2)/(3*x^3) - (5*a^2*
b^3)/x^2 - (5*a*b^4)/x + b^5*Log[x]
```

Maple [A] time = 0.01, size = 56, normalized size = 0.9

$$-\frac{a^{5}}{5\,x^{5}}-\frac{5\,a^{4}b}{4\,x^{4}}-\frac{10\,a^{3}b^{2}}{3\,x^{3}}-5\,\frac{a^{2}b^{3}}{x^{2}}-5\,\frac{ab^{4}}{x}+b^{5}\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^6,x)
```

```
[Out] -1/5*a^5/x^5-5/4*a^4*b/x^4-10/3*a^3*b^2/x^3-5*a^2*b^3/x^2-5*a*b^4
/x+b^5*ln(x)
```

Maxima [A] time = 1.3342, size = 76, normalized size = 1.25

$$b^{5}\log\left(x\right)-\frac{300\,ab^{4}x^{4}+300\,a^{2}b^{3}x^{3}+200\,a^{3}b^{2}x^{2}+75\,a^{4}bx+12\,a^{5}}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^6,x, algorithm="maxima")
```

```
[Out] b^5*log(x) - 1/60*(300*a*b^4*x^4 + 300*a^2*b^3*x^3 + 200*a^3*b^2*
x^2 + 75*a^4*b*x + 12*a^5)/x^5
```

Fricas [A] time = 0.201568, size = 80, normalized size = 1.31

$$\frac{60\,b^{5}x^{5}\log\left(x\right)-300\,ab^{4}x^{4}-300\,a^{2}b^{3}x^{3}-200\,a^{3}b^{2}x^{2}-75\,a^{4}bx-12\,a^{5}}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(60*b^5*x^5*log(x) - 300*a*b^4*x^4 - 300*a^2*b^3*x^3 - 200*a
^3*b^2*x^2 - 75*a^4*b*x - 12*a^5)/x^5
```

Sympy [A] time = 1.86133, size = 58, normalized size = 0.95

$$b^5\log(x)-\frac{12a^5+75a^4bx+200a^3b^2x^2+300a^2b^3x^3+300ab^4x^4}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**6,x)
```

```
[Out] b**5*log(x) - (12*a**5 + 75*a**4*b*x + 200*a**3*b**2*x**2 + 300*a
**2*b**3*x**3 + 300*a*b**4*x**4)/(60*x**5)
```

GIAC/XCAS [A] time = 0.207086, size = 77, normalized size = 1.26

$$b^5\ln(|x|)-\frac{300\,ab^4x^4+300\,a^2b^3x^3+200\,a^3b^2x^2+75\,a^4bx+12\,a^5}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^6,x, algorithm="giac")
```

```
[Out] b^5*ln(abs(x)) - 1/60*(300*a*b^4*x^4 + 300*a^2*b^3*x^3 + 200*a^3*
b^2*x^2 + 75*a^4*b*x + 12*a^5)/x^5
```

3.90 $\int \frac{(a+bx)^5}{x^7}\,dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^6}{6ax^6}$$

```
[Out] -(a + b*x)^6/(6*a*x^6)
```

Rubi [A] time = 0.0113885, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(a+bx)^6}{6ax^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^7,x]

[Out] -(a + b*x)^6/(6*a*x^6)
```

Rubi in Sympy [A] time = 2.26342, size = 14, normalized size = 0.82

$$-\frac{(a+bx)^6}{6ax^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**7,x)

[Out] -(a + b*x)**6/(6*a*x**6)
```

Mathematica [B] time = 0.00548291, size = 65, normalized size = 3.82

$$-\frac{a^5}{6x^6}-\frac{a^4b}{x^5}-\frac{5a^3b^2}{2x^4}-\frac{10a^2b^3}{3x^3}-\frac{5ab^4}{2x^2}-\frac{b^5}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^7,x]
```

```
[Out] -a^5/(6*x^6) - (a^4*b)/x^5 - (5*a^3*b^2)/(2*x^4) - (10*a^2*b^3)/(
3*x^3) - (5*a*b^4)/(2*x^2) - b^5/x
```

Maple [B] time = 0.009, size = 58, normalized size = 3.4

$$-\frac{5\,ab^4}{2\,x^2}-\frac{b^5}{x}-\frac{10\,a^2b^3}{3\,x^3}-\frac{a^5}{6\,x^6}-\frac{5\,a^3b^2}{2\,x^4}-\frac{a^4b}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^7,x)
```

```
[Out] -5/2*a*b^4/x^2-b^5/x-10/3*a^2*b^3/x^3-1/6*a^5/x^6-5/2*a^3*b^2/x^4
-a^4*b/x^5
```

Maxima [A] time = 1.35964, size = 74, normalized size = 4.35

$$-\frac{6\,b^5x^5+15\,ab^4x^4+20\,a^2b^3x^3+15\,a^3b^2x^2+6\,a^4bx+a^5}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^7,x, algorithm="maxima")
```

```
[Out] -1/6*(6*b^5*x^5 + 15*a*b^4*x^4 + 20*a^2*b^3*x^3 + 15*a^3*b^2*x^2
+ 6*a^4*b*x + a^5)/x^6
```

Fricas [A] time = 0.191183, size = 74, normalized size = 4.35

$$-\frac{6\,b^5x^5+15\,ab^4x^4+20\,a^2b^3x^3+15\,a^3b^2x^2+6\,a^4bx+a^5}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^7,x, algorithm="fricas")
```

```
[Out] -1/6*(6*b^5*x^5 + 15*a*b^4*x^4 + 20*a^2*b^3*x^3 + 15*a^3*b^2*x^2
+ 6*a^4*b*x + a^5)/x^6
```

Sympy [A] time = 1.99232, size = 60, normalized size = 3.53

$$-\frac{a^5 + 6a^4bx + 15a^3b^2x^2 + 20a^2b^3x^3 + 15ab^4x^4 + 6b^5x^5}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**7,x)
```

```
[Out] -(a**5 + 6*a**4*b*x + 15*a**3*b**2*x**2 + 20*a**2*b**3*x**3 + 15*
a*b**4*x**4 + 6*b**5*x**5)/(6*x**6)
```

GIAC/XCAS [A] time = 0.207411, size = 74, normalized size = 4.35

$$-\frac{6\,b^5x^5 + 15\,ab^4x^4 + 20\,a^2b^3x^3 + 15\,a^3b^2x^2 + 6\,a^4bx + a^5}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^7,x, algorithm="giac")
```

```
[Out] -1/6*(6*b^5*x^5 + 15*a*b^4*x^4 + 20*a^2*b^3*x^3 + 15*a^3*b^2*x^2
+ 6*a^4*b*x + a^5)/x^6
```

3.91 $\int \frac{(a+bx)^5}{x^8}\,dx$

Optimal. Leaf size=36

$$\frac{b(a+bx)^6}{42a^2x^6}-\frac{(a+bx)^6}{7ax^7}$$

```
[Out] -(a + b*x)^6/(7*a*x^7) + (b*(a + b*x)^6)/(42*a^2*x^6)
```

Rubi [A] time = 0.0230804, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b(a+bx)^6}{42a^2x^6}-\frac{(a+bx)^6}{7ax^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^8,x]
```

```
[Out] -(a + b*x)^6/(7*a*x^7) + (b*(a + b*x)^6)/(42*a^2*x^6)
```

Rubi in Sympy [A] time = 3.57116, size = 29, normalized size = 0.81

$$-\frac{(a+bx)^6}{7ax^7}+\frac{b\,(a+bx)^6}{42a^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**8,x)
```

```
[Out] -(a + b*x)**6/(7*a*x**7) + b*(a + b*x)**6/(42*a**2*x**6)
```

Mathematica [A] time = 0.00519844, size = 67, normalized size = 1.86

$$-\frac{a^5}{7x^7}-\frac{5a^4b}{6x^6}-\frac{2a^3b^2}{x^5}-\frac{5a^2b^3}{2x^4}-\frac{5ab^4}{3x^3}-\frac{b^5}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^8,x]
```

```
[Out] -a^5/(7*x^7) - (5*a^4*b)/(6*x^6) - (2*a^3*b^2)/x^5 - (5*a^2*b^3)/
(2*x^4) - (5*a*b^4)/(3*x^3) - b^5/(2*x^2)
```

Maple [A] time = 0.009, size = 58, normalized size = 1.6

$$-\frac{b^5}{2\,x^2}-\frac{5\,ab^4}{3\,x^3}-2\,\frac{a^3b^2}{x^5}-\frac{5\,a^4b}{6\,x^6}-\frac{5\,a^2b^3}{2\,x^4}-\frac{a^5}{7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^8,x)
```

```
[Out] -1/2*b^5/x^2-5/3*a*b^4/x^3-2*a^3*b^2/x^5-5/6*a^4*b/x^6-5/2*a^2*b^
3/x^4-1/7*a^5/x^7
```

Maxima [A] time = 1.34056, size = 77, normalized size = 2.14

$$-\frac{21\,b^5x^5+70\,ab^4x^4+105\,a^2b^3x^3+84\,a^3b^2x^2+35\,a^4bx+6\,a^5}{42\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^8,x, algorithm="maxima")
```

```
[Out] -1/42*(21*b^5*x^5 + 70*a*b^4*x^4 + 105*a^2*b^3*x^3 + 84*a^3*b^2*x
^2 + 35*a^4*b*x + 6*a^5)/x^7
```

Fricas [A] time = 0.18883, size = 77, normalized size = 2.14

$$-\frac{21\,b^5x^5+70\,ab^4x^4+105\,a^2b^3x^3+84\,a^3b^2x^2+35\,a^4bx+6\,a^5}{42\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^8,x, algorithm="fricas")
```

```
[Out] -1/42*(21*b^5*x^5 + 70*a*b^4*x^4 + 105*a^2*b^3*x^3 + 84*a^3*b^2*x
^2 + 35*a^4*b*x + 6*a^5)/x^7
```

Sympy [A] time = 1.99454, size = 61, normalized size = 1.69

$$-\frac{6a^5 + 35a^4bx + 84a^3b^2x^2 + 105a^2b^3x^3 + 70ab^4x^4 + 21b^5x^5}{42x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**8,x)
```

```
[Out] -(6*a**5 + 35*a**4*b*x + 84*a**3*b**2*x**2 + 105*a**2*b**3*x**3 +
 70*a*b**4*x**4 + 21*b**5*x**5)/(42*x**7)
```

GIAC/XCAS [A] time = 0.205518, size = 77, normalized size = 2.14

$$-\frac{21\,b^5x^5 + 70\,ab^4x^4 + 105\,a^2b^3x^3 + 84\,a^3b^2x^2 + 35\,a^4bx + 6\,a^5}{42\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^8,x, algorithm="giac")
```

```
[Out] -1/42*(21*b^5*x^5 + 70*a*b^4*x^4 + 105*a^2*b^3*x^3 + 84*a^3*b^2*x
^2 + 35*a^4*b*x + 6*a^5)/x^7
```

3.92 $\int \frac{(a+bx)^5}{x^9} dx$

Optimal. Leaf size=56

$$-\frac{b^2(a+bx)^6}{168a^3x^6}+\frac{b(a+bx)^6}{28a^2x^7}-\frac{(a+bx)^6}{8ax^8}$$

```
[Out] -(a + b*x)^6/(8*a*x^8) + (b*(a + b*x)^6)/(28*a^2*x^7) - (b^2*(a +
 b*x)^6)/(168*a^3*x^6)
```

Rubi [A] time = 0.0383496, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{b^2(a+bx)^6}{168a^3x^6}+\frac{b(a+bx)^6}{28a^2x^7}-\frac{(a+bx)^6}{8ax^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^9,x]
```

```
[Out] -(a + b*x)^6/(8*a*x^8) + (b*(a + b*x)^6)/(28*a^2*x^7) - (b^2*(a +
 b*x)^6)/(168*a^3*x^6)
```

Rubi in Sympy [A] time = 10.4682, size = 66, normalized size = 1.18

$$-\frac{a^5}{8x^8}-\frac{5a^4b}{7x^7}-\frac{5a^3b^2}{3x^6}-\frac{2a^2b^3}{x^5}-\frac{5ab^4}{4x^4}-\frac{b^5}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**9,x)
```

```
[Out] -a**5/(8*x**8) - 5*a**4*b/(7*x**7) - 5*a**3*b**2/(3*x**6) - 2*a**
2*b**3/x**5 - 5*a*b**4/(4*x**4) - b**5/(3*x**3)
```

Mathematica [A] time = 0.00540067, size = 67, normalized size = 1.2

$$-\frac{a^5}{8x^8}-\frac{5a^4b}{7x^7}-\frac{5a^3b^2}{3x^6}-\frac{2a^2b^3}{x^5}-\frac{5ab^4}{4x^4}-\frac{b^5}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^9,x]
```

```
[Out] -a^5/(8*x^8) - (5*a^4*b)/(7*x^7) - (5*a^3*b^2)/(3*x^6) - (2*a^2*b
^3)/x^5 - (5*a*b^4)/(4*x^4) - b^5/(3*x^3)
```

Maple [A] time = 0.008, size = 58, normalized size = 1.

$$-\frac{a^5}{8\,x^8}-2\,\frac{a^2b^3}{x^5}-\frac{b^5}{3\,x^3}-\frac{5\,a^4b}{7\,x^7}-\frac{5\,ab^4}{4\,x^4}-\frac{5\,a^3b^2}{3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^9,x)
```

```
[Out] -1/8*a^5/x^8-2*a^2*b^3/x^5-1/3*b^5/x^3-5/7*a^4*b/x^7-5/4*a*b^4/x^
4-5/3*a^3*b^2/x^6
```

Maxima [A] time = 1.32657, size = 77, normalized size = 1.38

$$-\frac{56\,b^5x^5+210\,ab^4x^4+336\,a^2b^3x^3+280\,a^3b^2x^2+120\,a^4bx+21\,a^5}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^9,x, algorithm="maxima")
```

```
[Out] -1/168*(56*b^5*x^5 + 210*a*b^4*x^4 + 336*a^2*b^3*x^3 + 280*a^3*b^
2*x^2 + 120*a^4*b*x + 21*a^5)/x^8
```

Fricas [A] time = 0.191469, size = 77, normalized size = 1.38

$$-\frac{56\,b^5x^5+210\,ab^4x^4+336\,a^2b^3x^3+280\,a^3b^2x^2+120\,a^4bx+21\,a^5}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^9,x, algorithm="fricas")
```

```
[Out] -1/168*(56*b^5*x^5 + 210*a*b^4*x^4 + 336*a^2*b^3*x^3 + 280*a^3*b^
2*x^2 + 120*a^4*b*x + 21*a^5)/x^8
```

Sympy [A] time = 2.12424, size = 61, normalized size = 1.09

$$-\frac{21a^5 + 120a^4bx + 280a^3b^2x^2 + 336a^2b^3x^3 + 210ab^4x^4 + 56b^5x^5}{168x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**9,x)
```

```
[Out] -(21*a**5 + 120*a**4*b*x + 280*a**3*b**2*x**2 + 336*a**2*b**3*x**
3 + 210*a*b**4*x**4 + 56*b**5*x**5)/(168*x**8)
```

GIAC/XCAS [A] time = 0.213959, size = 77, normalized size = 1.38

$$-\frac{56\,b^5x^5 + 210\,ab^4x^4 + 336\,a^2b^3x^3 + 280\,a^3b^2x^2 + 120\,a^4bx + 21\,a^5}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^9,x, algorithm="giac")
```

```
[Out] -1/168*(56*b^5*x^5 + 210*a*b^4*x^4 + 336*a^2*b^3*x^3 + 280*a^3*b^
2*x^2 + 120*a^4*b*x + 21*a^5)/x^8
```

3.93 $\int \frac{(a+bx)^5}{x^{10}} dx$

Optimal. Leaf size=67

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

```
[Out] -a^5/(9*x^9) - (5*a^4*b)/(8*x^8) - (10*a^3*b^2)/(7*x^7) - (5*a^2*
b^3)/(3*x^6) - (a*b^4)/x^5 - b^5/(4*x^4)
```

Rubi [A] time = 0.0519505, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^10,x]
```

```
[Out] -a^5/(9*x^9) - (5*a^4*b)/(8*x^8) - (10*a^3*b^2)/(7*x^7) - (5*a^2*
b^3)/(3*x^6) - (a*b^4)/x^5 - b^5/(4*x^4)
```

Rubi in Sympy [A] time = 10.5387, size = 65, normalized size = 0.97

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**10,x)
```

```
[Out] -a**5/(9*x**9) - 5*a**4*b/(8*x**8) - 10*a**3*b**2/(7*x**7) - 5*a*
*2*b**3/(3*x**6) - a*b**4/x**5 - b**5/(4*x**4)
```

Mathematica [A] time = 0.00928879, size = 67, normalized size = 1.

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^10,x]
```

```
[Out] -a^5/(9*x^9) - (5*a^4*b)/(8*x^8) - (10*a^3*b^2)/(7*x^7) - (5*a^2*
b^3)/(3*x^6) - (a*b^4)/x^5 - b^5/(4*x^4)
```

Maple [A] time = 0.008, size = 58, normalized size = 0.9

$$-\frac{a^5}{9\,x^9}-\frac{5\,a^4b}{8\,x^8}-\frac{10\,a^3b^2}{7\,x^7}-\frac{5\,a^2b^3}{3\,x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^10,x)
```

```
[Out] -1/9*a^5/x^9-5/8*a^4*b/x^8-10/7*a^3*b^2/x^7-5/3*a^2*b^3/x^6-a*b^4
/x^5-1/4*b^5/x^4
```

Maxima [A] time = 1.33215, size = 77, normalized size = 1.15

$$-\frac{126\,b^5x^5+504\,ab^4x^4+840\,a^2b^3x^3+720\,a^3b^2x^2+315\,a^4bx+56\,a^5}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^10,x, algorithm="maxima")
```

```
[Out] -1/504*(126*b^5*x^5 + 504*a*b^4*x^4 + 840*a^2*b^3*x^3 + 720*a^3*b
^2*x^2 + 315*a^4*b*x + 56*a^5)/x^9
```

Fricas [A] time = 0.191349, size = 77, normalized size = 1.15

$$-\frac{126\,b^5x^5+504\,ab^4x^4+840\,a^2b^3x^3+720\,a^3b^2x^2+315\,a^4bx+56\,a^5}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^10,x, algorithm="fricas")
```

```
[Out] -1/504*(126*b^5*x^5 + 504*a*b^4*x^4 + 840*a^2*b^3*x^3 + 720*a^3*b
^2*x^2 + 315*a^4*b*x + 56*a^5)/x^9
```

Sympy [A] time = 2.20348, size = 61, normalized size = 0.91

$$-\frac{56a^5 + 315a^4bx + 720a^3b^2x^2 + 840a^2b^3x^3 + 504ab^4x^4 + 126b^5x^5}{504x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**10,x)
```

```
[Out] -(56*a**5 + 315*a**4*b*x + 720*a**3*b**2*x**2 + 840*a**2*b**3*x**
3 + 504*a*b**4*x**4 + 126*b**5*x**5)/(504*x**9)
```

GIAC/XCAS [A] time = 0.213393, size = 77, normalized size = 1.15

$$-\frac{126\,b^5x^5 + 504\,ab^4x^4 + 840\,a^2b^3x^3 + 720\,a^3b^2x^2 + 315\,a^4bx + 56\,a^5}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(126*b^5*x^5 + 504*a*b^4*x^4 + 840*a^2*b^3*x^3 + 720*a^3*b
^2*x^2 + 315*a^4*b*x + 56*a^5)/x^9
```

3.94 $\int \frac{(a+bx)^5}{x^{11}}\,dx$

Optimal. Leaf size=69

$$-\frac{a^5}{10x^{10}}-\frac{5a^4b}{9x^9}-\frac{5a^3b^2}{4x^8}-\frac{10a^2b^3}{7x^7}-\frac{5ab^4}{6x^6}-\frac{b^5}{5x^5}$$

```
[Out] -a^5/(10*x^10) - (5*a^4*b)/(9*x^9) - (5*a^3*b^2)/(4*x^8) - (10*a^
2*b^3)/(7*x^7) - (5*a*b^4)/(6*x^6) - b^5/(5*x^5)
```

Rubi [A] time = 0.0515521, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{10x^{10}}-\frac{5a^4b}{9x^9}-\frac{5a^3b^2}{4x^8}-\frac{10a^2b^3}{7x^7}-\frac{5ab^4}{6x^6}-\frac{b^5}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^11,x]
```

```
[Out] -a^5/(10*x^10) - (5*a^4*b)/(9*x^9) - (5*a^3*b^2)/(4*x^8) - (10*a^
2*b^3)/(7*x^7) - (5*a*b^4)/(6*x^6) - b^5/(5*x^5)
```

Rubi in Sympy [A] time = 10.7924, size = 68, normalized size = 0.99

$$-\frac{a^5}{10x^{10}}-\frac{5a^4b}{9x^9}-\frac{5a^3b^2}{4x^8}-\frac{10a^2b^3}{7x^7}-\frac{5ab^4}{6x^6}-\frac{b^5}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**11,x)
```

```
[Out] -a**5/(10*x**10) - 5*a**4*b/(9*x**9) - 5*a**3*b**2/(4*x**8) - 10*
a**2*b**3/(7*x**7) - 5*a*b**4/(6*x**6) - b**5/(5*x**5)
```

Mathematica [A] time = 0.00538659, size = 69, normalized size = 1.

$$-\frac{a^5}{10x^{10}}-\frac{5a^4b}{9x^9}-\frac{5a^3b^2}{4x^8}-\frac{10a^2b^3}{7x^7}-\frac{5ab^4}{6x^6}-\frac{b^5}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^11,x]
```

```
[Out] -a^5/(10*x^10) - (5*a^4*b)/(9*x^9) - (5*a^3*b^2)/(4*x^8) - (10*a^
2*b^3)/(7*x^7) - (5*a*b^4)/(6*x^6) - b^5/(5*x^5)
```

Maple [A] time = 0.008, size = 58, normalized size = 0.8

$$-\frac{a^5}{10\,x^{10}}-\frac{5\,a^4b}{9\,x^9}-\frac{5\,a^3b^2}{4\,x^8}-\frac{10\,a^2b^3}{7\,x^7}-\frac{5\,ab^4}{6\,x^6}-\frac{b^5}{5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^11,x)
```

```
[Out] -1/10*a^5/x^10-5/9*a^4*b/x^9-5/4*a^3*b^2/x^8-10/7*a^2*b^3/x^7-5/6
*a*b^4/x^6-1/5*b^5/x^5
```

Maxima [A] time = 1.3437, size = 77, normalized size = 1.12

$$-\frac{252\,b^5x^5+1050\,ab^4x^4+1800\,a^2b^3x^3+1575\,a^3b^2x^2+700\,a^4bx+126\,a^5}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^11,x, algorithm="maxima")
```

```
[Out] -1/1260*(252*b^5*x^5 + 1050*a*b^4*x^4 + 1800*a^2*b^3*x^3 + 1575*a
^3*b^2*x^2 + 700*a^4*b*x + 126*a^5)/x^10
```

Fricas [A] time = 0.192151, size = 77, normalized size = 1.12

$$-\frac{252\,b^5x^5+1050\,ab^4x^4+1800\,a^2b^3x^3+1575\,a^3b^2x^2+700\,a^4bx+126\,a^5}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^11,x, algorithm="fricas")
```

```
[Out] -1/1260*(252*b^5*x^5 + 1050*a*b^4*x^4 + 1800*a^2*b^3*x^3 + 1575*a
^3*b^2*x^2 + 700*a^4*b*x + 126*a^5)/x^10
```

Sympy [A] time = 2.25446, size = 61, normalized size = 0.88

$$-\frac{126a^5+700a^4bx+1575a^3b^2x^2+1800a^2b^3x^3+1050ab^4x^4+252b^5x^5}{1260x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**11,x)
```

```
[Out] -(126*a**5 + 700*a**4*b*x + 1575*a**3*b**2*x**2 + 1800*a**2*b**3*
x**3 + 1050*a*b**4*x**4 + 252*b**5*x**5)/(1260*x**10)
```

GIAC/XCAS [A] time = 0.206667, size = 77, normalized size = 1.12

$$-\frac{252\,b^5x^5+1050\,ab^4x^4+1800\,a^2b^3x^3+1575\,a^3b^2x^2+700\,a^4bx+126\,a^5}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^11,x, algorithm="giac")
```

```
[Out] -1/1260*(252*b^5*x^5 + 1050*a*b^4*x^4 + 1800*a^2*b^3*x^3 + 1575*a
^3*b^2*x^2 + 700*a^4*b*x + 126*a^5)/x^10
```

3.95 $\int \frac{(a+bx)^5}{x^{12}}\,dx$

Optimal. Leaf size=69

$$-\frac{a^5}{11x^{11}}-\frac{a^4b}{2x^{10}}-\frac{10a^3b^2}{9x^9}-\frac{5a^2b^3}{4x^8}-\frac{5ab^4}{7x^7}-\frac{b^5}{6x^6}$$

```
[Out] -a^5/(11*x^11) - (a^4*b)/(2*x^10) - (10*a^3*b^2)/(9*x^9) - (5*a^2
*b^3)/(4*x^8) - (5*a*b^4)/(7*x^7) - b^5/(6*x^6)
```

Rubi [A] time = 0.0501538, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{11x^{11}}-\frac{a^4b}{2x^{10}}-\frac{10a^3b^2}{9x^9}-\frac{5a^2b^3}{4x^8}-\frac{5ab^4}{7x^7}-\frac{b^5}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^12,x]
```

```
[Out] -a^5/(11*x^11) - (a^4*b)/(2*x^10) - (10*a^3*b^2)/(9*x^9) - (5*a^2
*b^3)/(4*x^8) - (5*a*b^4)/(7*x^7) - b^5/(6*x^6)
```

Rubi in Sympy [A] time = 11.1844, size = 66, normalized size = 0.96

$$-\frac{a^5}{11x^{11}}-\frac{a^4b}{2x^{10}}-\frac{10a^3b^2}{9x^9}-\frac{5a^2b^3}{4x^8}-\frac{5ab^4}{7x^7}-\frac{b^5}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**12,x)
```

```
[Out] -a**5/(11*x**11) - a**4*b/(2*x**10) - 10*a**3*b**2/(9*x**9) - 5*a
**2*b**3/(4*x**8) - 5*a*b**4/(7*x**7) - b**5/(6*x**6)
```

Mathematica [A] time = 0.00526788, size = 69, normalized size = 1.

$$-\frac{a^5}{11x^{11}}-\frac{a^4b}{2x^{10}}-\frac{10a^3b^2}{9x^9}-\frac{5a^2b^3}{4x^8}-\frac{5ab^4}{7x^7}-\frac{b^5}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^12,x]
```

```
[Out] -a^5/(11*x^11) - (a^4*b)/(2*x^10) - (10*a^3*b^2)/(9*x^9) - (5*a^2
*b^3)/(4*x^8) - (5*a*b^4)/(7*x^7) - b^5/(6*x^6)
```

Maple [A] time = 0.009, size = 58, normalized size = 0.8

$$-\frac{a^{5}}{11\,x^{11}}-\frac{a^{4}b}{2\,x^{10}}-\frac{10\,a^{3}b^{2}}{9\,x^{9}}-\frac{5\,a^{2}b^{3}}{4\,x^{8}}-\frac{5\,ab^{4}}{7\,x^{7}}-\frac{b^{5}}{6\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^12,x)
```

```
[Out] -1/11*a^5/x^11-1/2*a^4*b/x^10-10/9*a^3*b^2/x^9-5/4*a^2*b^3/x^8-5/
7*a*b^4/x^7-1/6*b^5/x^6
```

Maxima [A] time = 1.33255, size = 77, normalized size = 1.12

$$-\frac{462\,b^{5}x^{5}+1980\,ab^{4}x^{4}+3465\,a^{2}b^{3}x^{3}+3080\,a^{3}b^{2}x^{2}+1386\,a^{4}bx+252\,a^{5}}{2772\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^12,x, algorithm="maxima")
```

```
[Out] -1/2772*(462*b^5*x^5 + 1980*a*b^4*x^4 + 3465*a^2*b^3*x^3 + 3080*a
^3*b^2*x^2 + 1386*a^4*b*x + 252*a^5)/x^11
```

Fricas [A] time = 0.189828, size = 77, normalized size = 1.12

$$-\frac{462\,b^{5}x^{5}+1980\,ab^{4}x^{4}+3465\,a^{2}b^{3}x^{3}+3080\,a^{3}b^{2}x^{2}+1386\,a^{4}bx+252\,a^{5}}{2772\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^12,x, algorithm="fricas")
```

```
[Out] -1/2772*(462*b^5*x^5 + 1980*a*b^4*x^4 + 3465*a^2*b^3*x^3 + 3080*a
^3*b^2*x^2 + 1386*a^4*b*x + 252*a^5)/x^11
```

Sympy [A] time = 2.37898, size = 61, normalized size = 0.88

$$-\frac{252a^5 + 1386a^4bx + 3080a^3b^2x^2 + 3465a^2b^3x^3 + 1980ab^4x^4 + 462b^5x^5}{2772x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**12,x)
```

```
[Out] -(252*a**5 + 1386*a**4*b*x + 3080*a**3*b**2*x**2 + 3465*a**2*b**3
*x**3 + 1980*a*b**4*x**4 + 462*b**5*x**5)/(2772*x**11)
```

GIAC/XCAS [A] time = 0.206446, size = 77, normalized size = 1.12

$$-\frac{462\,b^5x^5 + 1980\,ab^4x^4 + 3465\,a^2b^3x^3 + 3080\,a^3b^2x^2 + 1386\,a^4bx + 252\,a^5}{2772\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^12,x, algorithm="giac")
```

```
[Out] -1/2772*(462*b^5*x^5 + 1980*a*b^4*x^4 + 3465*a^2*b^3*x^3 + 3080*a
^3*b^2*x^2 + 1386*a^4*b*x + 252*a^5)/x^11
```

3.96 $\int \frac{(a+bx)^5}{x^{13}} \, dx$

Optimal. Leaf size=67

$$-\frac{a^5}{12x^{12}}-\frac{5a^4b}{11x^{11}}-\frac{a^3b^2}{x^{10}}-\frac{10a^2b^3}{9x^9}-\frac{5ab^4}{8x^8}-\frac{b^5}{7x^7}$$

```
[Out] -a^5/(12*x^12) - (5*a^4*b)/(11*x^11) - (a^3*b^2)/x^10 - (10*a^2*b
^3)/(9*x^9) - (5*a*b^4)/(8*x^8) - b^5/(7*x^7)
```

Rubi [A] time = 0.0526455, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{12x^{12}}-\frac{5a^4b}{11x^{11}}-\frac{a^3b^2}{x^{10}}-\frac{10a^2b^3}{9x^9}-\frac{5ab^4}{8x^8}-\frac{b^5}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^13,x]
```

```
[Out] -a^5/(12*x^12) - (5*a^4*b)/(11*x^11) - (a^3*b^2)/x^10 - (10*a^2*b
^3)/(9*x^9) - (5*a*b^4)/(8*x^8) - b^5/(7*x^7)
```

Rubi in Sympy [A] time = 10.5955, size = 65, normalized size = 0.97

$$-\frac{a^5}{12x^{12}}-\frac{5a^4b}{11x^{11}}-\frac{a^3b^2}{x^{10}}-\frac{10a^2b^3}{9x^9}-\frac{5ab^4}{8x^8}-\frac{b^5}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**13,x)
```

```
[Out] -a**5/(12*x**12) - 5*a**4*b/(11*x**11) - a**3*b**2/x**10 - 10*a**
2*b**3/(9*x**9) - 5*a*b**4/(8*x**8) - b**5/(7*x**7)
```

Mathematica [A] time = 0.00546371, size = 67, normalized size = 1.

$$-\frac{a^5}{12x^{12}}-\frac{5a^4b}{11x^{11}}-\frac{a^3b^2}{x^{10}}-\frac{10a^2b^3}{9x^9}-\frac{5ab^4}{8x^8}-\frac{b^5}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^13,x]
```

```
[Out] -a^5/(12*x^12) - (5*a^4*b)/(11*x^11) - (a^3*b^2)/x^10 - (10*a^2*b
^3)/(9*x^9) - (5*a*b^4)/(8*x^8) - b^5/(7*x^7)
```

Maple [A] time = 0.007, size = 58, normalized size = 0.9

$$-\frac{a^{5}}{12\,x^{12}}-\frac{5\,a^{4}b}{11\,x^{11}}-\frac{a^{3}b^{2}}{x^{10}}-\frac{10\,a^{2}b^{3}}{9\,x^{9}}-\frac{5\,ab^{4}}{8\,x^{8}}-\frac{b^{5}}{7\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^13,x)
```

```
[Out] -1/12*a^5/x^12-5/11*a^4*b/x^11-a^3*b^2/x^10-10/9*a^2*b^3/x^9-5/8*
a*b^4/x^8-1/7*b^5/x^7
```

Maxima [A] time = 1.48474, size = 77, normalized size = 1.15

$$-\frac{792\,b^{5}x^{5}+3465\,ab^{4}x^{4}+6160\,a^{2}b^{3}x^{3}+5544\,a^{3}b^{2}x^{2}+2520\,a^{4}bx+462\,a^{5}}{5544\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^13,x, algorithm="maxima")
```

```
[Out] -1/5544*(792*b^5*x^5 + 3465*a*b^4*x^4 + 6160*a^2*b^3*x^3 + 5544*a
^3*b^2*x^2 + 2520*a^4*b*x + 462*a^5)/x^12
```

Fricas [A] time = 0.190063, size = 77, normalized size = 1.15

$$-\frac{792\,b^{5}x^{5}+3465\,ab^{4}x^{4}+6160\,a^{2}b^{3}x^{3}+5544\,a^{3}b^{2}x^{2}+2520\,a^{4}bx+462\,a^{5}}{5544\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^13,x, algorithm="fricas")
```

```
[Out] -1/5544*(792*b^5*x^5 + 3465*a*b^4*x^4 + 6160*a^2*b^3*x^3 + 5544*a
^3*b^2*x^2 + 2520*a^4*b*x + 462*a^5)/x^12
```

Sympy [A] time = 2.51644, size = 61, normalized size = 0.91

$$-\frac{462a^5 + 2520a^4bx + 5544a^3b^2x^2 + 6160a^2b^3x^3 + 3465ab^4x^4 + 792b^5x^5}{5544x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**13,x)
```

```
[Out] -(462*a**5 + 2520*a**4*b*x + 5544*a**3*b**2*x**2 + 6160*a**2*b**3
*x**3 + 3465*a*b**4*x**4 + 792*b**5*x**5)/(5544*x**12)
```

GIAC/XCAS [A] time = 0.207071, size = 77, normalized size = 1.15

$$-\frac{792\,b^5x^5 + 3465\,ab^4x^4 + 6160\,a^2b^3x^3 + 5544\,a^3b^2x^2 + 2520\,a^4bx + 462\,a^5}{5544\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^13,x, algorithm="giac")
```

```
[Out] -1/5544*(792*b^5*x^5 + 3465*a*b^4*x^4 + 6160*a^2*b^3*x^3 + 5544*a
^3*b^2*x^2 + 2520*a^4*b*x + 462*a^5)/x^12
```

3.97 $\int \frac{(a+bx)^5}{x^{14}} dx$

Optimal. Leaf size=67

$$-\frac{a^5}{13x^{13}}-\frac{5a^4b}{12x^{12}}-\frac{10a^3b^2}{11x^{11}}-\frac{a^2b^3}{x^{10}}-\frac{5ab^4}{9x^9}-\frac{b^5}{8x^8}$$

```
[Out] -a^5/(13*x^13) - (5*a^4*b)/(12*x^12) - (10*a^3*b^2)/(11*x^11) - (
a^2*b^3)/x^10 - (5*a*b^4)/(9*x^9) - b^5/(8*x^8)
```

Rubi [A] time = 0.0512251, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{13x^{13}}-\frac{5a^4b}{12x^{12}}-\frac{10a^3b^2}{11x^{11}}-\frac{a^2b^3}{x^{10}}-\frac{5ab^4}{9x^9}-\frac{b^5}{8x^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^14,x]
```

```
[Out] -a^5/(13*x^13) - (5*a^4*b)/(12*x^12) - (10*a^3*b^2)/(11*x^11) - (
a^2*b^3)/x^10 - (5*a*b^4)/(9*x^9) - b^5/(8*x^8)
```

Rubi in Sympy [A] time = 10.6293, size = 65, normalized size = 0.97

$$-\frac{a^5}{13x^{13}}-\frac{5a^4b}{12x^{12}}-\frac{10a^3b^2}{11x^{11}}-\frac{a^2b^3}{x^{10}}-\frac{5ab^4}{9x^9}-\frac{b^5}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**14,x)
```

```
[Out] -a**5/(13*x**13) - 5*a**4*b/(12*x**12) - 10*a**3*b**2/(11*x**11)
- a**2*b**3/x**10 - 5*a*b**4/(9*x**9) - b**5/(8*x**8)
```

Mathematica [A] time = 0.00527204, size = 67, normalized size = 1.

$$-\frac{a^5}{13x^{13}}-\frac{5a^4b}{12x^{12}}-\frac{10a^3b^2}{11x^{11}}-\frac{a^2b^3}{x^{10}}-\frac{5ab^4}{9x^9}-\frac{b^5}{8x^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^14,x]
```

```
[Out] -a^5/(13*x^13) - (5*a^4*b)/(12*x^12) - (10*a^3*b^2)/(11*x^11) - (
a^2*b^3)/x^10 - (5*a*b^4)/(9*x^9) - b^5/(8*x^8)
```

Maple [A] time = 0.009, size = 58, normalized size = 0.9

$$-\frac{a^5}{13\,x^{13}}-\frac{5\,a^4b}{12\,x^{12}}-\frac{10\,a^3b^2}{11\,x^{11}}-\frac{a^2b^3}{x^{10}}-\frac{5\,ab^4}{9\,x^9}-\frac{b^5}{8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^14,x)
```

```
[Out] -1/13*a^5/x^13-5/12*a^4*b/x^12-10/11*a^3*b^2/x^11-a^2*b^3/x^10-5/
9*a*b^4/x^9-1/8*b^5/x^8
```

Maxima [A] time = 1.34888, size = 77, normalized size = 1.15

$$-\frac{1287\,b^5x^5+5720\,ab^4x^4+10296\,a^2b^3x^3+9360\,a^3b^2x^2+4290\,a^4bx+792\,a^5}{10296\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^14,x, algorithm="maxima")
```

```
[Out] -1/10296*(1287*b^5*x^5 + 5720*a*b^4*x^4 + 10296*a^2*b^3*x^3 + 936
0*a^3*b^2*x^2 + 4290*a^4*b*x + 792*a^5)/x^13
```

Fricas [A] time = 0.189852, size = 77, normalized size = 1.15

$$-\frac{1287\,b^5x^5+5720\,ab^4x^4+10296\,a^2b^3x^3+9360\,a^3b^2x^2+4290\,a^4bx+792\,a^5}{10296\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^14,x, algorithm="fricas")
```

```
[Out] -1/10296*(1287*b^5*x^5 + 5720*a*b^4*x^4 + 10296*a^2*b^3*x^3 + 936
0*a^3*b^2*x^2 + 4290*a^4*b*x + 792*a^5)/x^13
```

Sympy [A] time = 2.54818, size = 61, normalized size = 0.91

$$-\frac{792a^5 + 4290a^4bx + 9360a^3b^2x^2 + 10296a^2b^3x^3 + 5720ab^4x^4 + 1287b^5x^5}{10296x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**14,x)
```

```
[Out] -(792*a**5 + 4290*a**4*b*x + 9360*a**3*b**2*x**2 + 10296*a**2*b**
3*x**3 + 5720*a*b**4*x**4 + 1287*b**5*x**5)/(10296*x**13)
```

GIAC/XCAS [A] time = 0.213259, size = 77, normalized size = 1.15

$$-\frac{1287\,b^5x^5 + 5720\,ab^4x^4 + 10296\,a^2b^3x^3 + 9360\,a^3b^2x^2 + 4290\,a^4bx + 792\,a^5}{10296\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^14,x, algorithm="giac")
```

```
[Out] -1/10296*(1287*b^5*x^5 + 5720*a*b^4*x^4 + 10296*a^2*b^3*x^3 + 936
0*a^3*b^2*x^2 + 4290*a^4*b*x + 792*a^5)/x^13
```

3.98 $\int x^8(a+bx)^7\,dx$

Optimal. Leaf size=95

$$\frac{a^7x^9}{9}+\frac{7}{10}a^6bx^{10}+\frac{21}{11}a^5b^2x^{11}+\frac{35}{12}a^4b^3x^{12}+\frac{35}{13}a^3b^4x^{13}+\frac{3}{2}a^2b^5x^{14}+\frac{7}{15}ab^6x^{15}+\frac{b^7x^{16}}{16}$$

```
[Out] (a^7*x^9)/9 + (7*a^6*b*x^10)/10 + (21*a^5*b^2*x^11)/11 + (35*a^4*
b^3*x^12)/12 + (35*a^3*b^4*x^13)/13 + (3*a^2*b^5*x^14)/2 + (7*a*b
^6*x^15)/15 + (b^7*x^16)/16
```

Rubi [A] time = 0.102787, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7x^9}{9}+\frac{7}{10}a^6bx^{10}+\frac{21}{11}a^5b^2x^{11}+\frac{35}{12}a^4b^3x^{12}+\frac{35}{13}a^3b^4x^{13}+\frac{3}{2}a^2b^5x^{14}+\frac{7}{15}ab^6x^{15}+\frac{b^7x^{16}}{16}$$

Antiderivative was successfully verified.

```
[In]  Int[x^8*(a + b*x)^7,x]
```

```
[Out] (a^7*x^9)/9 + (7*a^6*b*x^10)/10 + (21*a^5*b^2*x^11)/11 + (35*a^4*
b^3*x^12)/12 + (35*a^3*b^4*x^13)/13 + (3*a^2*b^5*x^14)/2 + (7*a*b
^6*x^15)/15 + (b^7*x^16)/16
```

Rubi in Sympy [A] time = 18.5317, size = 94, normalized size = 0.99

$$\frac{a^7x^9}{9}+\frac{7a^6bx^{10}}{10}+\frac{21a^5b^2x^{11}}{11}+\frac{35a^4b^3x^{12}}{12}+\frac{35a^3b^4x^{13}}{13}+\frac{3a^2b^5x^{14}}{2}+\frac{7ab^6x^{15}}{15}+\frac{b^7x^{16}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(b*x+a)**7,x)
```

```
[Out] a**7*x**9/9 + 7*a**6*b*x**10/10 + 21*a**5*b**2*x**11/11 + 35*a**4
*b**3*x**12/12 + 35*a**3*b**4*x**13/13 + 3*a**2*b**5*x**14/2 + 7*
a*b**6*x**15/15 + b**7*x**16/16
```

Mathematica [A] time = 0.00368204, size = 95, normalized size = 1.

$$\frac{a^7x^9}{9}+\frac{7}{10}a^6bx^{10}+\frac{21}{11}a^5b^2x^{11}+\frac{35}{12}a^4b^3x^{12}+\frac{35}{13}a^3b^4x^{13}+\frac{3}{2}a^2b^5x^{14}+\frac{7}{15}ab^6x^{15}+\frac{b^7x^{16}}{16}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^8*(a + b*x)^7,x]
```

```
[Out] (a^7*x^9)/9 + (7*a^6*b*x^10)/10 + (21*a^5*b^2*x^11)/11 + (35*a^4*
b^3*x^12)/12 + (35*a^3*b^4*x^13)/13 + (3*a^2*b^5*x^14)/2 + (7*a*b
^6*x^15)/15 + (b^7*x^16)/16
```

Maple [A] time = 0.003, size = 80, normalized size = 0.8

$$\frac{a^7x^9}{9}+\frac{7\,a^6bx^{10}}{10}+\frac{21\,a^5b^2x^{11}}{11}+\frac{35\,a^4b^3x^{12}}{12}+\frac{35\,a^3b^4x^{13}}{13}+\frac{3\,a^2b^5x^{14}}{2}+\frac{7\,ab^6x^{15}}{15}+\frac{b^7x^{16}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8*(b*x+a)^7,x)
```

```
[Out] 1/9*a^7*x^9+7/10*a^6*b*x^10+21/11*a^5*b^2*x^11+35/12*a^4*b^3*x^12
+35/13*a^3*b^4*x^13+3/2*a^2*b^5*x^14+7/15*a*b^6*x^15+1/16*b^7*x^1
6
```

Maxima [A] time = 1.34697, size = 107, normalized size = 1.13

$$\frac{1}{16}\,b^7x^{16}+\frac{7}{15}\,ab^6x^{15}+\frac{3}{2}\,a^2b^5x^{14}+\frac{35}{13}\,a^3b^4x^{13}+\frac{35}{12}\,a^4b^3x^{12}+\frac{21}{11}\,a^5b^2x^{11}+\frac{7}{10}\,a^6bx^{10}+\frac{1}{9}\,a^7x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^8,x, algorithm="maxima")
```

```
[Out] 1/16*b^7*x^16 + 7/15*a*b^6*x^15 + 3/2*a^2*b^5*x^14 + 35/13*a^3*b^
4*x^13 + 35/12*a^4*b^3*x^12 + 21/11*a^5*b^2*x^11 + 7/10*a^6*b*x^1
0 + 1/9*a^7*x^9
```

Fricas [A] time = 0.174029, size = 1, normalized size = 0.01

$$\frac{1}{16}x^{16}b^7+\frac{7}{15}x^{15}b^6a+\frac{3}{2}x^{14}b^5a^2+\frac{35}{13}x^{13}b^4a^3+\frac{35}{12}x^{12}b^3a^4+\frac{21}{11}x^{11}b^2a^5+\frac{7}{10}x^{10}ba^6+\frac{1}{9}x^9a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^8,x, algorithm="fricas")
```

```
[Out] 1/16*x^16*b^7 + 7/15*x^15*b^6*a + 3/2*x^14*b^5*a^2 + 35/13*x^13*b
^4*a^3 + 35/12*x^12*b^3*a^4 + 21/11*x^11*b^2*a^5 + 7/10*x^10*b*a^
6 + 1/9*x^9*a^7
```

Sympy [A] time = 0.140413, size = 94, normalized size = 0.99

$$\frac{a^7x^9}{9} + \frac{7a^6bx^{10}}{10} + \frac{21a^5b^2x^{11}}{11} + \frac{35a^4b^3x^{12}}{12} + \frac{35a^3b^4x^{13}}{13} + \frac{3a^2b^5x^{14}}{2} + \frac{7ab^6x^{15}}{15} + \frac{b^7x^{16}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8*(b*x+a)**7,x)
```

```
[Out] a**7*x**9/9 + 7*a**6*b*x**10/10 + 21*a**5*b**2*x**11/11 + 35*a**4
*b**3*x**12/12 + 35*a**3*b**4*x**13/13 + 3*a**2*b**5*x**14/2 + 7*
a*b**6*x**15/15 + b**7*x**16/16
```

GIAC/XCAS [A] time = 0.213619, size = 107, normalized size = 1.13

$$\frac{1}{16}\,b^7x^{16} + \frac{7}{15}\,ab^6x^{15} + \frac{3}{2}\,a^2b^5x^{14} + \frac{35}{13}\,a^3b^4x^{13} + \frac{35}{12}\,a^4b^3x^{12} + \frac{21}{11}\,a^5b^2x^{11} + \frac{7}{10}\,a^6bx^{10} + \frac{1}{9}\,a^7x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^8,x, algorithm="giac")
```

```
[Out] 1/16*b^7*x^16 + 7/15*a*b^6*x^15 + 3/2*a^2*b^5*x^14 + 35/13*a^3*b^
4*x^13 + 35/12*a^4*b^3*x^12 + 21/11*a^5*b^2*x^11 + 7/10*a^6*b*x^1
0 + 1/9*a^7*x^9
```

3.99 $\int x^7(a+bx)^7\,dx$

Optimal. Leaf size=95

$$\frac{a^7x^8}{8}+\frac{7}{9}a^6bx^9+\frac{21}{10}a^5b^2x^{10}+\frac{35}{11}a^4b^3x^{11}+\frac{35}{12}a^3b^4x^{12}+\frac{21}{13}a^2b^5x^{13}+\frac{1}{2}ab^6x^{14}+\frac{b^7x^{15}}{15}$$

```
[Out] (a^7*x^8)/8 + (7*a^6*b*x^9)/9 + (21*a^5*b^2*x^10)/10 + (35*a^4*b^
3*x^11)/11 + (35*a^3*b^4*x^12)/12 + (21*a^2*b^5*x^13)/13 + (a*b^6
*x^14)/2 + (b^7*x^15)/15
```

Rubi [A] time = 0.0912505, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7x^8}{8}+\frac{7}{9}a^6bx^9+\frac{21}{10}a^5b^2x^{10}+\frac{35}{11}a^4b^3x^{11}+\frac{35}{12}a^3b^4x^{12}+\frac{21}{13}a^2b^5x^{13}+\frac{1}{2}ab^6x^{14}+\frac{b^7x^{15}}{15}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7*(a + b*x)^7,x]
```

```
[Out] (a^7*x^8)/8 + (7*a^6*b*x^9)/9 + (21*a^5*b^2*x^10)/10 + (35*a^4*b^
3*x^11)/11 + (35*a^3*b^4*x^12)/12 + (21*a^2*b^5*x^13)/13 + (a*b^6
*x^14)/2 + (b^7*x^15)/15
```

Rubi in Sympy [A] time = 17.8805, size = 92, normalized size = 0.97

$$\frac{a^7x^8}{8}+\frac{7a^6bx^9}{9}+\frac{21a^5b^2x^{10}}{10}+\frac{35a^4b^3x^{11}}{11}+\frac{35a^3b^4x^{12}}{12}+\frac{21a^2b^5x^{13}}{13}+\frac{ab^6x^{14}}{2}+\frac{b^7x^{15}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(b*x+a)**7,x)
```

```
[Out] a**7*x**8/8 + 7*a**6*b*x**9/9 + 21*a**5*b**2*x**10/10 + 35*a**4*b
**3*x**11/11 + 35*a**3*b**4*x**12/12 + 21*a**2*b**5*x**13/13 + a*
b**6*x**14/2 + b**7*x**15/15
```

Mathematica [A] time = 0.00351693, size = 95, normalized size = 1.

$$\frac{a^7x^8}{8}+\frac{7}{9}a^6bx^9+\frac{21}{10}a^5b^2x^{10}+\frac{35}{11}a^4b^3x^{11}+\frac{35}{12}a^3b^4x^{12}+\frac{21}{13}a^2b^5x^{13}+\frac{1}{2}ab^6x^{14}+\frac{b^7x^{15}}{15}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7*(a + b*x)^7,x]
```

```
[Out] (a^7*x^8)/8 + (7*a^6*b*x^9)/9 + (21*a^5*b^2*x^10)/10 + (35*a^4*b^
3*x^11)/11 + (35*a^3*b^4*x^12)/12 + (21*a^2*b^5*x^13)/13 + (a*b^6
*x^14)/2 + (b^7*x^15)/15
```

Maple [A] time = 0.001, size = 80, normalized size = 0.8

$$\frac{a^{7}x^{8}}{8}+\frac{7\,a^{6}bx^{9}}{9}+\frac{21\,a^{5}b^{2}x^{10}}{10}+\frac{35\,a^{4}b^{3}x^{11}}{11}+\frac{35\,a^{3}b^{4}x^{12}}{12}+\frac{21\,a^{2}b^{5}x^{13}}{13}+\frac{ab^{6}x^{14}}{2}+\frac{b^{7}x^{15}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(b*x+a)^7,x)
```

```
[Out] 1/8*a^7*x^8+7/9*a^6*b*x^9+21/10*a^5*b^2*x^10+35/11*a^4*b^3*x^11+3
5/12*a^3*b^4*x^12+21/13*a^2*b^5*x^13+1/2*a*b^6*x^14+1/15*b^7*x^15
```

Maxima [A] time = 1.34719, size = 107, normalized size = 1.13

$$\frac{1}{15}\,b^{7}x^{15}+\frac{1}{2}\,ab^{6}x^{14}+\frac{21}{13}\,a^{2}b^{5}x^{13}+\frac{35}{12}\,a^{3}b^{4}x^{12}+\frac{35}{11}\,a^{4}b^{3}x^{11}+\frac{21}{10}\,a^{5}b^{2}x^{10}+\frac{7}{9}\,a^{6}bx^{9}+\frac{1}{8}\,a^{7}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^7,x, algorithm="maxima")
```

```
[Out] 1/15*b^7*x^15 + 1/2*a*b^6*x^14 + 21/13*a^2*b^5*x^13 + 35/12*a^3*b
^4*x^12 + 35/11*a^4*b^3*x^11 + 21/10*a^5*b^2*x^10 + 7/9*a^6*b*x^9
 + 1/8*a^7*x^8
```

Fricas [A] time = 0.174687, size = 1, normalized size = 0.01

$$\frac{1}{15}x^{15}b^{7}+\frac{1}{2}x^{14}b^{6}a+\frac{21}{13}x^{13}b^{5}a^{2}+\frac{35}{12}x^{12}b^{4}a^{3}+\frac{35}{11}x^{11}b^{3}a^{4}+\frac{21}{10}x^{10}b^{2}a^{5}+\frac{7}{9}x^{9}ba^{6}+\frac{1}{8}x^{8}a^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^7,x, algorithm="fricas")
```

```
[Out] 1/15*x^15*b^7 + 1/2*x^14*b^6*a + 21/13*x^13*b^5*a^2 + 35/12*x^12*
b^4*a^3 + 35/11*x^11*b^3*a^4 + 21/10*x^10*b^2*a^5 + 7/9*x^9*b*a^6
 + 1/8*x^8*a^7
```

Sympy [A] time = 0.143411, size = 92, normalized size = 0.97

$$\frac{a^7x^8}{8}+\frac{7a^6bx^9}{9}+\frac{21a^5b^2x^{10}}{10}+\frac{35a^4b^3x^{11}}{11}+\frac{35a^3b^4x^{12}}{12}+\frac{21a^2b^5x^{13}}{13}+\frac{ab^6x^{14}}{2}+\frac{b^7x^{15}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(b*x+a)**7,x)
```

```
[Out] a**7*x**8/8 + 7*a**6*b*x**9/9 + 21*a**5*b**2*x**10/10 + 35*a**4*b
**3*x**11/11 + 35*a**3*b**4*x**12/12 + 21*a**2*b**5*x**13/13 + a*
b**6*x**14/2 + b**7*x**15/15
```

GIAC/XCAS [A] time = 0.216858, size = 107, normalized size = 1.13

$$\frac{1}{15}\,b^7x^{15}+\frac{1}{2}\,ab^6x^{14}+\frac{21}{13}\,a^2b^5x^{13}+\frac{35}{12}\,a^3b^4x^{12}+\frac{35}{11}\,a^4b^3x^{11}+\frac{21}{10}\,a^5b^2x^{10}+\frac{7}{9}\,a^6bx^9+\frac{1}{8}\,a^7x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^7,x, algorithm="giac")
```

```
[Out] 1/15*b^7*x^15 + 1/2*a*b^6*x^14 + 21/13*a^2*b^5*x^13 + 35/12*a^3*b
^4*x^12 + 35/11*a^4*b^3*x^11 + 21/10*a^5*b^2*x^10 + 7/9*a^6*b*x^9
 + 1/8*a^7*x^8
```

3.100 $\int x^6(a+bx)^7\,dx$

Optimal. Leaf size=95

$$\frac{a^7x^7}{7}+\frac{7}{8}a^6bx^8+\frac{7}{3}a^5b^2x^9+\frac{7}{2}a^4b^3x^{10}+\frac{35}{11}a^3b^4x^{11}+\frac{7}{4}a^2b^5x^{12}+\frac{7}{13}ab^6x^{13}+\frac{b^7x^{14}}{14}$$

```
[Out] (a^7*x^7)/7 + (7*a^6*b*x^8)/8 + (7*a^5*b^2*x^9)/3 + (7*a^4*b^3*x^
10)/2 + (35*a^3*b^4*x^11)/11 + (7*a^2*b^5*x^12)/4 + (7*a*b^6*x^13
)/13 + (b^7*x^14)/14
```

Rubi [A] time = 0.0904637, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7x^7}{7}+\frac{7}{8}a^6bx^8+\frac{7}{3}a^5b^2x^9+\frac{7}{2}a^4b^3x^{10}+\frac{35}{11}a^3b^4x^{11}+\frac{7}{4}a^2b^5x^{12}+\frac{7}{13}ab^6x^{13}+\frac{b^7x^{14}}{14}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6*(a + b*x)^7,x]
```

```
[Out] (a^7*x^7)/7 + (7*a^6*b*x^8)/8 + (7*a^5*b^2*x^9)/3 + (7*a^4*b^3*x^
10)/2 + (35*a^3*b^4*x^11)/11 + (7*a^2*b^5*x^12)/4 + (7*a*b^6*x^13
)/13 + (b^7*x^14)/14
```

Rubi in Sympy [A] time = 17.3758, size = 94, normalized size = 0.99

$$\frac{a^7x^7}{7}+\frac{7a^6bx^8}{8}+\frac{7a^5b^2x^9}{3}+\frac{7a^4b^3x^{10}}{2}+\frac{35a^3b^4x^{11}}{11}+\frac{7a^2b^5x^{12}}{4}+\frac{7ab^6x^{13}}{13}+\frac{b^7x^{14}}{14}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(b*x+a)**7,x)
```

```
[Out] a**7*x**7/7 + 7*a**6*b*x**8/8 + 7*a**5*b**2*x**9/3 + 7*a**4*b**3*
x**10/2 + 35*a**3*b**4*x**11/11 + 7*a**2*b**5*x**12/4 + 7*a*b**6*
x**13/13 + b**7*x**14/14
```

Mathematica [A] time = 0.00333806, size = 95, normalized size = 1.

$$\frac{a^7x^7}{7}+\frac{7}{8}a^6bx^8+\frac{7}{3}a^5b^2x^9+\frac{7}{2}a^4b^3x^{10}+\frac{35}{11}a^3b^4x^{11}+\frac{7}{4}a^2b^5x^{12}+\frac{7}{13}ab^6x^{13}+\frac{b^7x^{14}}{14}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6*(a + b*x)^7,x]
```

```
[Out] (a^7*x^7)/7 + (7*a^6*b*x^8)/8 + (7*a^5*b^2*x^9)/3 + (7*a^4*b^3*x^
10)/2 + (35*a^3*b^4*x^11)/11 + (7*a^2*b^5*x^12)/4 + (7*a*b^6*x^13
)/13 + (b^7*x^14)/14
```

Maple [A] time = 0.001, size = 80, normalized size = 0.8

$$\frac{a^7x^7}{7}+\frac{7\,a^6bx^8}{8}+\frac{7\,a^5b^2x^9}{3}+\frac{7\,a^4b^3x^{10}}{2}+\frac{35\,a^3b^4x^{11}}{11}+\frac{7\,a^2b^5x^{12}}{4}+\frac{7\,ab^6x^{13}}{13}+\frac{b^7x^{14}}{14}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(b*x+a)^7,x)
```

```
[Out] 1/7*a^7*x^7+7/8*a^6*b*x^8+7/3*a^5*b^2*x^9+7/2*a^4*b^3*x^10+35/11*
a^3*b^4*x^11+7/4*a^2*b^5*x^12+7/13*a*b^6*x^13+1/14*b^7*x^14
```

Maxima [A] time = 1.348, size = 107, normalized size = 1.13

$$\frac{1}{14}\,b^7x^{14}+\frac{7}{13}\,ab^6x^{13}+\frac{7}{4}\,a^2b^5x^{12}+\frac{35}{11}\,a^3b^4x^{11}+\frac{7}{2}\,a^4b^3x^{10}+\frac{7}{3}\,a^5b^2x^9+\frac{7}{8}\,a^6bx^8+\frac{1}{7}\,a^7x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^6,x, algorithm="maxima")
```

```
[Out] 1/14*b^7*x^14 + 7/13*a*b^6*x^13 + 7/4*a^2*b^5*x^12 + 35/11*a^3*b^
4*x^11 + 7/2*a^4*b^3*x^10 + 7/3*a^5*b^2*x^9 + 7/8*a^6*b*x^8 + 1/7
*a^7*x^7
```

Fricas [A] time = 0.180684, size = 1, normalized size = 0.01

$$\frac{1}{14}x^{14}b^7+\frac{7}{13}x^{13}b^6a+\frac{7}{4}x^{12}b^5a^2+\frac{35}{11}x^{11}b^4a^3+\frac{7}{2}x^{10}b^3a^4+\frac{7}{3}x^9b^2a^5+\frac{7}{8}x^8ba^6+\frac{1}{7}x^7a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^6,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*b^7 + 7/13*x^13*b^6*a + 7/4*x^12*b^5*a^2 + 35/11*x^11*b
^4*a^3 + 7/2*x^10*b^3*a^4 + 7/3*x^9*b^2*a^5 + 7/8*x^8*b*a^6 + 1/7
*x^7*a^7
```

Sympy [A] time = 0.140416, size = 94, normalized size = 0.99

$$\frac{a^7x^7}{7} + \frac{7a^6bx^8}{8} + \frac{7a^5b^2x^9}{3} + \frac{7a^4b^3x^{10}}{2} + \frac{35a^3b^4x^{11}}{11} + \frac{7a^2b^5x^{12}}{4} + \frac{7ab^6x^{13}}{13} + \frac{b^7x^{14}}{14}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(b*x+a)**7,x)
```

```
[Out] a**7*x**7/7 + 7*a**6*b*x**8/8 + 7*a**5*b**2*x**9/3 + 7*a**4*b**3*
x**10/2 + 35*a**3*b**4*x**11/11 + 7*a**2*b**5*x**12/4 + 7*a*b**6*
x**13/13 + b**7*x**14/14
```

GIAC/XCAS [A] time = 0.20839, size = 107, normalized size = 1.13

$$\frac{1}{14}\,b^7x^{14} + \frac{7}{13}\,ab^6x^{13} + \frac{7}{4}\,a^2b^5x^{12} + \frac{35}{11}\,a^3b^4x^{11} + \frac{7}{2}\,a^4b^3x^{10} + \frac{7}{3}\,a^5b^2x^9 + \frac{7}{8}\,a^6bx^8 + \frac{1}{7}\,a^7x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^6,x, algorithm="giac")
```

```
[Out] 1/14*b^7*x^14 + 7/13*a*b^6*x^13 + 7/4*a^2*b^5*x^12 + 35/11*a^3*b^
4*x^11 + 7/2*a^4*b^3*x^10 + 7/3*a^5*b^2*x^9 + 7/8*a^6*b*x^8 + 1/7
*a^7*x^7
```

3.101 $\int x^5(a+bx)^7\,dx$

Optimal. Leaf size=96

$$-\frac{a^5(a+bx)^8}{8b^6}+\frac{5a^4(a+bx)^9}{9b^6}-\frac{a^3(a+bx)^{10}}{b^6}+\frac{10a^2(a+bx)^{11}}{11b^6}+\frac{(a+bx)^{13}}{13b^6}-\frac{5a(a+bx)^{12}}{12b^6}$$

```
[Out] -(a^5*(a + b*x)^8)/(8*b^6) + (5*a^4*(a + b*x)^9)/(9*b^6) - (a^3*(
a + b*x)^10)/b^6 + (10*a^2*(a + b*x)^11)/(11*b^6) - (5*a*(a + b*x
)^12)/(12*b^6) + (a + b*x)^13/(13*b^6)
```

Rubi [A] time = 0.0975971, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5(a+bx)^8}{8b^6}+\frac{5a^4(a+bx)^9}{9b^6}-\frac{a^3(a+bx)^{10}}{b^6}+\frac{10a^2(a+bx)^{11}}{11b^6}+\frac{(a+bx)^{13}}{13b^6}-\frac{5a(a+bx)^{12}}{12b^6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5*(a + b*x)^7,x]
```

```
[Out] -(a^5*(a + b*x)^8)/(8*b^6) + (5*a^4*(a + b*x)^9)/(9*b^6) - (a^3*(
a + b*x)^10)/b^6 + (10*a^2*(a + b*x)^11)/(11*b^6) - (5*a*(a + b*x
)^12)/(12*b^6) + (a + b*x)^13/(13*b^6)
```

Rubi in Sympy [A] time = 16.9838, size = 90, normalized size = 0.94

$$\frac{a^7x^6}{6}+a^6bx^7+\frac{21a^5b^2x^8}{8}+\frac{35a^4b^3x^9}{9}+\frac{7a^3b^4x^{10}}{2}+\frac{21a^2b^5x^{11}}{11}+\frac{7ab^6x^{12}}{12}+\frac{b^7x^{13}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(b*x+a)**7,x)
```

```
[Out] a**7*x**6/6 + a**6*b*x**7 + 21*a**5*b**2*x**8/8 + 35*a**4*b**3*x*
*9/9 + 7*a**3*b**4*x**10/2 + 21*a**2*b**5*x**11/11 + 7*a*b**6*x**
12/12 + b**7*x**13/13
```

Mathematica [A] time = 0.00330446, size = 92, normalized size = 0.96

$$\frac{a^7x^6}{6}+a^6bx^7+\frac{21}{8}a^5b^2x^8+\frac{35}{9}a^4b^3x^9+\frac{7}{2}a^3b^4x^{10}+\frac{21}{11}a^2b^5x^{11}+\frac{7}{12}ab^6x^{12}+\frac{b^7x^{13}}{13}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5*(a + b*x)^7,x]
```

```
[Out] (a^7*x^6)/6 + a^6*b*x^7 + (21*a^5*b^2*x^8)/8 + (35*a^4*b^3*x^9)/9
 + (7*a^3*b^4*x^10)/2 + (21*a^2*b^5*x^11)/11 + (7*a*b^6*x^12)/12
+ (b^7*x^13)/13
```

Maple [A] time = 0.004, size = 79, normalized size = 0.8

$$\frac{b^7x^{13}}{13}+\frac{7\,ab^6x^{12}}{12}+\frac{21\,a^2b^5x^{11}}{11}+\frac{7\,a^3b^4x^{10}}{2}+\frac{35\,a^4b^3x^9}{9}+\frac{21\,a^5b^2x^8}{8}+a^6bx^7+\frac{a^7x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(b*x+a)^7,x)
```

```
[Out] 1/13*b^7*x^13+7/12*a*b^6*x^12+21/11*a^2*b^5*x^11+7/2*a^3*b^4*x^10
+35/9*a^4*b^3*x^9+21/8*a^5*b^2*x^8+a^6*b*x^7+1/6*a^7*x^6
```

Maxima [A] time = 1.34788, size = 105, normalized size = 1.09

$$\frac{1}{13}\,b^7x^{13}+\frac{7}{12}\,ab^6x^{12}+\frac{21}{11}\,a^2b^5x^{11}+\frac{7}{2}\,a^3b^4x^{10}+\frac{35}{9}\,a^4b^3x^9+\frac{21}{8}\,a^5b^2x^8+a^6bx^7+\frac{1}{6}\,a^7x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^5,x, algorithm="maxima")
```

```
[Out] 1/13*b^7*x^13 + 7/12*a*b^6*x^12 + 21/11*a^2*b^5*x^11 + 7/2*a^3*b^
4*x^10 + 35/9*a^4*b^3*x^9 + 21/8*a^5*b^2*x^8 + a^6*b*x^7 + 1/6*a^
7*x^6
```

Fricas [A] time = 0.17936, size = 1, normalized size = 0.01

$$\frac{1}{13}x^{13}b^7+\frac{7}{12}x^{12}b^6a+\frac{21}{11}x^{11}b^5a^2+\frac{7}{2}x^{10}b^4a^3+\frac{35}{9}x^9b^3a^4+\frac{21}{8}x^8b^2a^5+x^7ba^6+\frac{1}{6}x^6a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^5,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*b^7 + 7/12*x^12*b^6*a + 21/11*x^11*b^5*a^2 + 7/2*x^10*b
^4*a^3 + 35/9*x^9*b^3*a^4 + 21/8*x^8*b^2*a^5 + x^7*b*a^6 + 1/6*x^
6*a^7
```

Sympy [A] time = 0.147395, size = 90, normalized size = 0.94

$$\frac{a^7x^6}{6}+a^6bx^7+\frac{21a^5b^2x^8}{8}+\frac{35a^4b^3x^9}{9}+\frac{7a^3b^4x^{10}}{2}+\frac{21a^2b^5x^{11}}{11}+\frac{7ab^6x^{12}}{12}+\frac{b^7x^{13}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(b*x+a)**7,x)
```

```
[Out] a**7*x**6/6 + a**6*b*x**7 + 21*a**5*b**2*x**8/8 + 35*a**4*b**3*x*
*9/9 + 7*a**3*b**4*x**10/2 + 21*a**2*b**5*x**11/11 + 7*a*b**6*x**
12/12 + b**7*x**13/13
```

GIAC/XCAS [A] time = 0.206798, size = 105, normalized size = 1.09

$$\frac{1}{13}\,b^7x^{13}+\frac{7}{12}\,ab^6x^{12}+\frac{21}{11}\,a^2b^5x^{11}+\frac{7}{2}\,a^3b^4x^{10}+\frac{35}{9}\,a^4b^3x^9+\frac{21}{8}\,a^5b^2x^8+a^6bx^7+\frac{1}{6}\,a^7x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^5,x, algorithm="giac")
```

```
[Out] 1/13*b^7*x^13 + 7/12*a*b^6*x^12 + 21/11*a^2*b^5*x^11 + 7/2*a^3*b^
4*x^10 + 35/9*a^4*b^3*x^9 + 21/8*a^5*b^2*x^8 + a^6*b*x^7 + 1/6*a^
7*x^6
```

3.102 $\int x^4(a+bx)^7\,dx$

Optimal. Leaf size=81

$$\frac{a^4(a+bx)^8}{8b^5}-\frac{4a^3(a+bx)^9}{9b^5}+\frac{3a^2(a+bx)^{10}}{5b^5}+\frac{(a+bx)^{12}}{12b^5}-\frac{4a(a+bx)^{11}}{11b^5}$$

```
[Out] (a^4*(a + b*x)^8)/(8*b^5) - (4*a^3*(a + b*x)^9)/(9*b^5) + (3*a^2*
(a + b*x)^10)/(5*b^5) - (4*a*(a + b*x)^11)/(11*b^5) + (a + b*x)^1
2/(12*b^5)
```

Rubi [A] time = 0.0830989, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^4(a+bx)^8}{8b^5}-\frac{4a^3(a+bx)^9}{9b^5}+\frac{3a^2(a+bx)^{10}}{5b^5}+\frac{(a+bx)^{12}}{12b^5}-\frac{4a(a+bx)^{11}}{11b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(a + b*x)^7,x]
```

```
[Out] (a^4*(a + b*x)^8)/(8*b^5) - (4*a^3*(a + b*x)^9)/(9*b^5) + (3*a^2*
(a + b*x)^10)/(5*b^5) - (4*a*(a + b*x)^11)/(11*b^5) + (a + b*x)^1
2/(12*b^5)
```

Rubi in Sympy [A] time = 18.218, size = 75, normalized size = 0.93

$$\frac{a^4\left(a+bx\right)^8}{8b^5}-\frac{4a^3\left(a+bx\right)^9}{9b^5}+\frac{3a^2\left(a+bx\right)^{10}}{5b^5}-\frac{4a\left(a+bx\right)^{11}}{11b^5}+\frac{\left(a+bx\right)^{12}}{12b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**7,x)
```

```
[Out] a**4*(a + b*x)**8/(8*b**5) - 4*a**3*(a + b*x)**9/(9*b**5) + 3*a**
2*(a + b*x)**10/(5*b**5) - 4*a*(a + b*x)**11/(11*b**5) + (a + b*x
)**12/(12*b**5)
```

Mathematica [A] time = 0.00329103, size = 93, normalized size = 1.15

$$\frac{a^7x^5}{5}+\frac{7}{6}a^6bx^6+3a^5b^2x^7+\frac{35}{8}a^4b^3x^8+\frac{35}{9}a^3b^4x^9+\frac{21}{10}a^2b^5x^{10}+\frac{7}{11}ab^6x^{11}+\frac{b^7x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(a + b*x)^7,x]
```

```
[Out] (a^7*x^5)/5 + (7*a^6*b*x^6)/6 + 3*a^5*b^2*x^7 + (35*a^4*b^3*x^8)/
8 + (35*a^3*b^4*x^9)/9 + (21*a^2*b^5*x^10)/10 + (7*a*b^6*x^11)/11
 + (b^7*x^12)/12
```

Maple [A] time = 0.003, size = 80, normalized size = 1.

$$\frac{b^7x^{12}}{12}+\frac{7\,ab^6x^{11}}{11}+\frac{21\,a^2b^5x^{10}}{10}+\frac{35\,a^3b^4x^9}{9}+\frac{35\,a^4b^3x^8}{8}+3\,a^5b^2x^7+\frac{7\,a^6bx^6}{6}+\frac{a^7x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^7,x)
```

```
[Out] 1/12*b^7*x^12+7/11*a*b^6*x^11+21/10*a^2*b^5*x^10+35/9*a^3*b^4*x^9
+35/8*a^4*b^3*x^8+3*a^5*b^2*x^7+7/6*a^6*b*x^6+1/5*a^7*x^5
```

Maxima [A] time = 1.34667, size = 107, normalized size = 1.32

$$\frac{1}{12}\,b^7x^{12}+\frac{7}{11}\,ab^6x^{11}+\frac{21}{10}\,a^2b^5x^{10}+\frac{35}{9}\,a^3b^4x^9+\frac{35}{8}\,a^4b^3x^8+3\,a^5b^2x^7+\frac{7}{6}\,a^6bx^6+\frac{1}{5}\,a^7x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^4,x, algorithm="maxima")
```

```
[Out] 1/12*b^7*x^12 + 7/11*a*b^6*x^11 + 21/10*a^2*b^5*x^10 + 35/9*a^3*b
^4*x^9 + 35/8*a^4*b^3*x^8 + 3*a^5*b^2*x^7 + 7/6*a^6*b*x^6 + 1/5*a
^7*x^5
```

Fricas [A] time = 0.176396, size = 1, normalized size = 0.01

$$\frac{1}{12}x^{12}b^7+\frac{7}{11}x^{11}b^6a+\frac{21}{10}x^{10}b^5a^2+\frac{35}{9}x^9b^4a^3+\frac{35}{8}x^8b^3a^4+3x^7b^2a^5+\frac{7}{6}x^6ba^6+\frac{1}{5}x^5a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^4,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*b^7 + 7/11*x^11*b^6*a + 21/10*x^10*b^5*a^2 + 35/9*x^9*b
^4*a^3 + 35/8*x^8*b^3*a^4 + 3*x^7*b^2*a^5 + 7/6*x^6*b*a^6 + 1/5*x
^5*a^7
```

Sympy [A] time = 0.135242, size = 92, normalized size = 1.14

$$\frac{a^7x^5}{5}+\frac{7a^6bx^6}{6}+3a^5b^2x^7+\frac{35a^4b^3x^8}{8}+\frac{35a^3b^4x^9}{9}+\frac{21a^2b^5x^{10}}{10}+\frac{7ab^6x^{11}}{11}+\frac{b^7x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**7,x)
```

```
[Out] a**7*x**5/5 + 7*a**6*b*x**6/6 + 3*a**5*b**2*x**7 + 35*a**4*b**3*x
**8/8 + 35*a**3*b**4*x**9/9 + 21*a**2*b**5*x**10/10 + 7*a*b**6*x*
*11/11 + b**7*x**12/12
```

GIAC/XCAS [A] time = 0.207633, size = 107, normalized size = 1.32

$$\frac{1}{12}b^7x^{12}+\frac{7}{11}ab^6x^{11}+\frac{21}{10}a^2b^5x^{10}+\frac{35}{9}a^3b^4x^9+\frac{35}{8}a^4b^3x^8+3a^5b^2x^7+\frac{7}{6}a^6bx^6+\frac{1}{5}a^7x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^4,x, algorithm="giac")
```

```
[Out] 1/12*b^7*x^12 + 7/11*a*b^6*x^11 + 21/10*a^2*b^5*x^10 + 35/9*a^3*b
^4*x^9 + 35/8*a^4*b^3*x^8 + 3*a^5*b^2*x^7 + 7/6*a^6*b*x^6 + 1/5*a
^7*x^5
```

3.103 $\int x^3(a+bx)^7\,dx$

Optimal. Leaf size=64

$$-\frac{a^3(a+bx)^8}{8b^4}+\frac{a^2(a+bx)^9}{3b^4}+\frac{(a+bx)^{11}}{11b^4}-\frac{3a(a+bx)^{10}}{10b^4}$$

```
[Out] -(a^3*(a + b*x)^8)/(8*b^4) + (a^2*(a + b*x)^9)/(3*b^4) - (3*a*(a
+ b*x)^10)/(10*b^4) + (a + b*x)^11/(11*b^4)
```

Rubi [A] time = 0.0720845, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3(a+bx)^8}{8b^4}+\frac{a^2(a+bx)^9}{3b^4}+\frac{(a+bx)^{11}}{11b^4}-\frac{3a(a+bx)^{10}}{10b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^7,x]
```

```
[Out] -(a^3*(a + b*x)^8)/(8*b^4) + (a^2*(a + b*x)^9)/(3*b^4) - (3*a*(a
+ b*x)^10)/(10*b^4) + (a + b*x)^11/(11*b^4)
```

Rubi in Sympy [A] time = 15.3183, size = 56, normalized size = 0.88

$$-\frac{a^3\,(a+bx)^8}{8b^4}+\frac{a^2\,(a+bx)^9}{3b^4}-\frac{3a\,(a+bx)^{10}}{10b^4}+\frac{(a+bx)^{11}}{11b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**7,x)
```

```
[Out] -a**3*(a + b*x)**8/(8*b**4) + a**2*(a + b*x)**9/(3*b**4) - 3*a*(a
 + b*x)**10/(10*b**4) + (a + b*x)**11/(11*b**4)
```

Mathematica [A] time = 0.00336014, size = 93, normalized size = 1.45

$$\frac{a^7x^4}{4}+\frac{7}{5}a^6bx^5+\frac{7}{2}a^5b^2x^6+5a^4b^3x^7+\frac{35}{8}a^3b^4x^8+\frac{7}{3}a^2b^5x^9+\frac{7}{10}ab^6x^{10}+\frac{b^7x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^7,x]
```

```
[Out] (a^7*x^4)/4 + (7*a^6*b*x^5)/5 + (7*a^5*b^2*x^6)/2 + 5*a^4*b^3*x^7
 + (35*a^3*b^4*x^8)/8 + (7*a^2*b^5*x^9)/3 + (7*a*b^6*x^10)/10 + (
b^7*x^11)/11
```

Maple [A] time = 0.002, size = 80, normalized size = 1.3

$$\frac{b^7x^{11}}{11}+\frac{7\,ab^6x^{10}}{10}+\frac{7\,a^2b^5x^9}{3}+\frac{35\,a^3b^4x^8}{8}+5\,a^4b^3x^7+\frac{7\,a^5b^2x^6}{2}+\frac{7\,a^6bx^5}{5}+\frac{a^7x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^7,x)
```

```
[Out] 1/11*b^7*x^11+7/10*a*b^6*x^10+7/3*a^2*b^5*x^9+35/8*a^3*b^4*x^8+5*
a^4*b^3*x^7+7/2*a^5*b^2*x^6+7/5*a^6*b*x^5+1/4*a^7*x^4
```

Maxima [A] time = 1.34453, size = 107, normalized size = 1.67

$$\frac{1}{11}\,b^7x^{11}+\frac{7}{10}\,ab^6x^{10}+\frac{7}{3}\,a^2b^5x^9+\frac{35}{8}\,a^3b^4x^8+5\,a^4b^3x^7+\frac{7}{2}\,a^5b^2x^6+\frac{7}{5}\,a^6bx^5+\frac{1}{4}\,a^7x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^3,x, algorithm="maxima")
```

```
[Out] 1/11*b^7*x^11 + 7/10*a*b^6*x^10 + 7/3*a^2*b^5*x^9 + 35/8*a^3*b^4*
x^8 + 5*a^4*b^3*x^7 + 7/2*a^5*b^2*x^6 + 7/5*a^6*b*x^5 + 1/4*a^7*x
^4
```

Fricas [A] time = 0.187523, size = 1, normalized size = 0.02

$$\frac{1}{11}x^{11}b^7+\frac{7}{10}x^{10}b^6a+\frac{7}{3}x^9b^5a^2+\frac{35}{8}x^8b^4a^3+5x^7b^3a^4+\frac{7}{2}x^6b^2a^5+\frac{7}{5}x^5ba^6+\frac{1}{4}x^4a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b^7 + 7/10*x^10*b^6*a + 7/3*x^9*b^5*a^2 + 35/8*x^8*b^4*
a^3 + 5*x^7*b^3*a^4 + 7/2*x^6*b^2*a^5 + 7/5*x^5*b*a^6 + 1/4*x^4*a
```

```
^7
```

Sympy [A] time = 0.140184, size = 92, normalized size = 1.44

$$\frac{a^7x^4}{4}+\frac{7a^6bx^5}{5}+\frac{7a^5b^2x^6}{2}+5a^4b^3x^7+\frac{35a^3b^4x^8}{8}+\frac{7a^2b^5x^9}{3}+\frac{7ab^6x^{10}}{10}+\frac{b^7x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**7,x)
```

```
[Out] a**7*x**4/4 + 7*a**6*b*x**5/5 + 7*a**5*b**2*x**6/2 + 5*a**4*b**3*
x**7 + 35*a**3*b**4*x**8/8 + 7*a**2*b**5*x**9/3 + 7*a*b**6*x**10/
10 + b**7*x**11/11
```

GIAC/XCAS [A] time = 0.205466, size = 107, normalized size = 1.67

$$\frac{1}{11}\,b^7x^{11}+\frac{7}{10}\,ab^6x^{10}+\frac{7}{3}\,a^2b^5x^9+\frac{35}{8}\,a^3b^4x^8+5\,a^4b^3x^7+\frac{7}{2}\,a^5b^2x^6+\frac{7}{5}\,a^6bx^5+\frac{1}{4}\,a^7x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^3,x, algorithm="giac")
```

```
[Out] 1/11*b^7*x^11 + 7/10*a*b^6*x^10 + 7/3*a^2*b^5*x^9 + 35/8*a^3*b^4*
x^8 + 5*a^4*b^3*x^7 + 7/2*a^5*b^2*x^6 + 7/5*a^6*b*x^5 + 1/4*a^7*x
^4
```

3.104 $\int x^2(a+bx)^7\,dx$

Optimal. Leaf size=47

$$\frac{a^2(a+bx)^8}{8b^3}+\frac{(a+bx)^{10}}{10b^3}-\frac{2a(a+bx)^9}{9b^3}$$

```
[Out] (a^2*(a + b*x)^8)/(8*b^3) - (2*a*(a + b*x)^9)/(9*b^3) + (a + b*x)
^10/(10*b^3)
```

Rubi [A] time = 0.0596413, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2(a+bx)^8}{8b^3}+\frac{(a+bx)^{10}}{10b^3}-\frac{2a(a+bx)^9}{9b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^7,x]
```

```
[Out] (a^2*(a + b*x)^8)/(8*b^3) - (2*a*(a + b*x)^9)/(9*b^3) + (a + b*x)
^10/(10*b^3)
```

Rubi in Sympy [A] time = 12.228, size = 41, normalized size = 0.87

$$\frac{a^2\left(a+bx\right)^8}{8b^3}-\frac{2a\left(a+bx\right)^9}{9b^3}+\frac{\left(a+bx\right)^{10}}{10b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**7,x)
```

```
[Out] a**2*(a + b*x)**8/(8*b**3) - 2*a*(a + b*x)**9/(9*b**3) + (a + b*x
)**10/(10*b**3)
```

Mathematica [A] time = 0.00325423, size = 93, normalized size = 1.98

$$\frac{a^7x^3}{3}+\frac{7}{4}a^6bx^4+\frac{21}{5}a^5b^2x^5+\frac{35}{6}a^4b^3x^6+5a^3b^4x^7+\frac{21}{8}a^2b^5x^8+\frac{7}{9}ab^6x^9+\frac{b^7x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^7,x]
```

```
[Out] (a^7*x^3)/3 + (7*a^6*b*x^4)/4 + (21*a^5*b^2*x^5)/5 + (35*a^4*b^3*
x^6)/6 + 5*a^3*b^4*x^7 + (21*a^2*b^5*x^8)/8 + (7*a*b^6*x^9)/9 + (
b^7*x^10)/10
```

Maple [A] time = 0.003, size = 80, normalized size = 1.7

$$\frac{b^7x^{10}}{10}+\frac{7\,ab^6x^9}{9}+\frac{21\,a^2b^5x^8}{8}+5\,a^3b^4x^7+\frac{35\,a^4b^3x^6}{6}+\frac{21\,a^5b^2x^5}{5}+\frac{7\,a^6bx^4}{4}+\frac{a^7x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^7,x)
```

```
[Out] 1/10*b^7*x^10+7/9*a*b^6*x^9+21/8*a^2*b^5*x^8+5*a^3*b^4*x^7+35/6*a
^4*b^3*x^6+21/5*a^5*b^2*x^5+7/4*a^6*b*x^4+1/3*a^7*x^3
```

Maxima [A] time = 1.3422, size = 107, normalized size = 2.28

$$\frac{1}{10}\,b^7x^{10}+\frac{7}{9}\,ab^6x^9+\frac{21}{8}\,a^2b^5x^8+5\,a^3b^4x^7+\frac{35}{6}\,a^4b^3x^6+\frac{21}{5}\,a^5b^2x^5+\frac{7}{4}\,a^6bx^4+\frac{1}{3}\,a^7x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^2,x, algorithm="maxima")
```

```
[Out] 1/10*b^7*x^10 + 7/9*a*b^6*x^9 + 21/8*a^2*b^5*x^8 + 5*a^3*b^4*x^7
+ 35/6*a^4*b^3*x^6 + 21/5*a^5*b^2*x^5 + 7/4*a^6*b*x^4 + 1/3*a^7*x
^3
```

Fricas [A] time = 0.179023, size = 1, normalized size = 0.02

$$\frac{1}{10}x^{10}b^7+\frac{7}{9}x^9b^6a+\frac{21}{8}x^8b^5a^2+5x^7b^4a^3+\frac{35}{6}x^6b^3a^4+\frac{21}{5}x^5b^2a^5+\frac{7}{4}x^4ba^6+\frac{1}{3}x^3a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*b^7 + 7/9*x^9*b^6*a + 21/8*x^8*b^5*a^2 + 5*x^7*b^4*a^3
+ 35/6*x^6*b^3*a^4 + 21/5*x^5*b^2*a^5 + 7/4*x^4*b*a^6 + 1/3*x^3*a
```

```
^7
```

Sympy [A] time = 0.151019, size = 92, normalized size = 1.96

$$\frac{a^7x^3}{3} + \frac{7a^6bx^4}{4} + \frac{21a^5b^2x^5}{5} + \frac{35a^4b^3x^6}{6} + 5a^3b^4x^7 + \frac{21a^2b^5x^8}{8} + \frac{7ab^6x^9}{9} + \frac{b^7x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**7,x)
```

```
[Out] a**7*x**3/3 + 7*a**6*b*x**4/4 + 21*a**5*b**2*x**5/5 + 35*a**4*b**
3*x**6/6 + 5*a**3*b**4*x**7 + 21*a**2*b**5*x**8/8 + 7*a*b**6*x**9
/9 + b**7*x**10/10
```

GIAC/XCAS [A] time = 0.209304, size = 107, normalized size = 2.28

$$\frac{1}{10}\,b^7x^{10} + \frac{7}{9}\,ab^6x^9 + \frac{21}{8}\,a^2b^5x^8 + 5\,a^3b^4x^7 + \frac{35}{6}\,a^4b^3x^6 + \frac{21}{5}\,a^5b^2x^5 + \frac{7}{4}\,a^6bx^4 + \frac{1}{3}\,a^7x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^2,x, algorithm="giac")
```

```
[Out] 1/10*b^7*x^10 + 7/9*a*b^6*x^9 + 21/8*a^2*b^5*x^8 + 5*a^3*b^4*x^7
+ 35/6*a^4*b^3*x^6 + 21/5*a^5*b^2*x^5 + 7/4*a^6*b*x^4 + 1/3*a^7*x
^3
```

3.105 $\int x(a+bx)^7\,dx$

Optimal. Leaf size=30

$$\frac{(a+bx)^9}{9b^2}-\frac{a(a+bx)^8}{8b^2}$$

```
[Out] -(a*(a + b*x)^8)/(8*b^2) + (a + b*x)^9/(9*b^2)
```

Rubi [A] time = 0.0290225, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^9}{9b^2}-\frac{a(a+bx)^8}{8b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^7,x]
```

```
[Out] -(a*(a + b*x)^8)/(8*b^2) + (a + b*x)^9/(9*b^2)
```

Rubi in Sympy [A] time = 8.87201, size = 24, normalized size = 0.8

$$-\frac{a\left(a+bx\right)^8}{8b^2}+\frac{\left(a+bx\right)^9}{9b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**7,x)
```

```
[Out] -a*(a + b*x)**8/(8*b**2) + (a + b*x)**9/(9*b**2)
```

Mathematica [B] time = 0.00281233, size = 91, normalized size = 3.03

$$\frac{a^7x^2}{2}+\frac{7}{3}a^6bx^3+\frac{21}{4}a^5b^2x^4+7a^4b^3x^5+\frac{35}{6}a^3b^4x^6+3a^2b^5x^7+\frac{7}{8}ab^6x^8+\frac{b^7x^9}{9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^7,x]
```

```
[Out] (a^7*x^2)/2 + (7*a^6*b*x^3)/3 + (21*a^5*b^2*x^4)/4 + 7*a^4*b^3*x^
5 + (35*a^3*b^4*x^6)/6 + 3*a^2*b^5*x^7 + (7*a*b^6*x^8)/8 + (b^7*x
^9)/9
```

Maple [B] time = 0.001, size = 80, normalized size = 2.7

$$\frac{b^7x^9}{9}+\frac{7\,ab^6x^8}{8}+3\,a^2b^5x^7+\frac{35\,a^3b^4x^6}{6}+7\,a^4b^3x^5+\frac{21\,a^5b^2x^4}{4}+\frac{7\,a^6bx^3}{3}+\frac{a^7x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^7,x)
```

```
[Out] 1/9*b^7*x^9+7/8*a*b^6*x^8+3*a^2*b^5*x^7+35/6*a^3*b^4*x^6+7*a^4*b^
3*x^5+21/4*a^5*b^2*x^4+7/3*a^6*b*x^3+1/2*a^7*x^2
```

Maxima [A] time = 1.34543, size = 107, normalized size = 3.57

$$\frac{1}{9}\,b^7x^9+\frac{7}{8}\,ab^6x^8+3\,a^2b^5x^7+\frac{35}{6}\,a^3b^4x^6+7\,a^4b^3x^5+\frac{21}{4}\,a^5b^2x^4+\frac{7}{3}\,a^6bx^3+\frac{1}{2}\,a^7x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x,x, algorithm="maxima")
```

```
[Out] 1/9*b^7*x^9 + 7/8*a*b^6*x^8 + 3*a^2*b^5*x^7 + 35/6*a^3*b^4*x^6 +
7*a^4*b^3*x^5 + 21/4*a^5*b^2*x^4 + 7/3*a^6*b*x^3 + 1/2*a^7*x^2
```

Fricas [A] time = 0.18109, size = 1, normalized size = 0.03

$$\frac{1}{9}x^9b^7+\frac{7}{8}x^8b^6a+3x^7b^5a^2+\frac{35}{6}x^6b^4a^3+7x^5b^3a^4+\frac{21}{4}x^4b^2a^5+\frac{7}{3}x^3ba^6+\frac{1}{2}x^2a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*b^7 + 7/8*x^8*b^6*a + 3*x^7*b^5*a^2 + 35/6*x^6*b^4*a^3 +
7*x^5*b^3*a^4 + 21/4*x^4*b^2*a^5 + 7/3*x^3*b*a^6 + 1/2*x^2*a^7
```

Sympy [A] time = 0.150287, size = 90, normalized size = 3.

$$\frac{a^7x^2}{2} + \frac{7a^6bx^3}{3} + \frac{21a^5b^2x^4}{4} + 7a^4b^3x^5 + \frac{35a^3b^4x^6}{6} + 3a^2b^5x^7 + \frac{7ab^6x^8}{8} + \frac{b^7x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**7,x)
```

```
[Out] a**7*x**2/2 + 7*a**6*b*x**3/3 + 21*a**5*b**2*x**4/4 + 7*a**4*b**3
*x**5 + 35*a**3*b**4*x**6/6 + 3*a**2*b**5*x**7 + 7*a*b**6*x**8/8
+ b**7*x**9/9
```

GIAC/XCAS [A] time = 0.210255, size = 107, normalized size = 3.57

$$\frac{1}{9}\,b^7x^9 + \frac{7}{8}\,ab^6x^8 + 3\,a^2b^5x^7 + \frac{35}{6}\,a^3b^4x^6 + 7\,a^4b^3x^5 + \frac{21}{4}\,a^5b^2x^4 + \frac{7}{3}\,a^6bx^3 + \frac{1}{2}\,a^7x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x,x, algorithm="giac")
```

```
[Out] 1/9*b^7*x^9 + 7/8*a*b^6*x^8 + 3*a^2*b^5*x^7 + 35/6*a^3*b^4*x^6 +
7*a^4*b^3*x^5 + 21/4*a^5*b^2*x^4 + 7/3*a^6*b*x^3 + 1/2*a^7*x^2
```

3.106 $\int (a+bx)^7\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^8}{8b}$$

```
[Out] (a + b*x)^8/(8*b)
```

Rubi [A] time = 0.00692603, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7,x]
```

```
[Out] (a + b*x)^8/(8*b)
```

Rubi in Sympy [A] time = 1.27103, size = 8, normalized size = 0.57

$$\frac{(a+bx)^8}{8b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7,x)
```

```
[Out] (a + b*x)**8/(8*b)
```

Mathematica [A] time = 0.00120698, size = 14, normalized size = 1.

$$\frac{(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7,x]
```

```
[Out] (a + b*x)^8/(8*b)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$\frac{(bx+a)^8}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^7,x)
```

```
[Out] 1/8*(b*x+a)^8/b
```

Maxima [A] time = 1.33965, size = 16, normalized size = 1.14

$$\frac{(bx+a)^8}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^7,x, algorithm="maxima")
```

```
[Out] 1/8*(b*x + a)^8/b
```

Fricas [A] time = 0.187577, size = 1, normalized size = 0.07

$$\frac{1}{8}x^8b^7 + x^7b^6a + \frac{7}{2}x^6b^5a^2 + 7x^5b^4a^3 + \frac{35}{4}x^4b^3a^4 + 7x^3b^2a^5 + \frac{7}{2}x^2ba^6 + xa^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^7 + x^7*b^6*a + 7/2*x^6*b^5*a^2 + 7*x^5*b^4*a^3 + 35/4*
x^4*b^3*a^4 + 7*x^3*b^2*a^5 + 7/2*x^2*b*a^6 + x*a^7
```

Sympy [A] time = 0.141681, size = 83, normalized size = 5.93

$$a^7x + \frac{7a^6bx^2}{2} + 7a^5b^2x^3 + \frac{35a^4b^3x^4}{4} + 7a^3b^4x^5 + \frac{7a^2b^5x^6}{2} + ab^6x^7 + \frac{b^7x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7,x)
```

```
[Out] a**7*x + 7*a**6*b*x**2/2 + 7*a**5*b**2*x**3 + 35*a**4*b**3*x**4/4
 + 7*a**3*b**4*x**5 + 7*a**2*b**5*x**6/2 + a*b**6*x**7 + b**7*x**
8/8
```

GIAC/XCAS [A] time = 0.210359, size = 16, normalized size = 1.14

$$\frac{(bx+a)^8}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7,x, algorithm="giac")
```

```
[Out] 1/8*(b*x + a)^8/b
```

3.107 $\int \frac{(a+bx)^7}{x}\,dx$

Optimal. Leaf size=87

$$a^7\log(x)+7a^6bx+\frac{21}{2}a^5b^2x^2+\frac{35}{3}a^4b^3x^3+\frac{35}{4}a^3b^4x^4+\frac{21}{5}a^2b^5x^5+\frac{7}{6}ab^6x^6+\frac{b^7x^7}{7}$$

```
[Out] 7*a^6*b*x + (21*a^5*b^2*x^2)/2 + (35*a^4*b^3*x^3)/3 + (35*a^3*b^4
*x^4)/4 + (21*a^2*b^5*x^5)/5 + (7*a*b^6*x^6)/6 + (b^7*x^7)/7 + a^
7*Log[x]
```

Rubi [A] time = 0.0614451, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$a^7\log(x)+7a^6bx+\frac{21}{2}a^5b^2x^2+\frac{35}{3}a^4b^3x^3+\frac{35}{4}a^3b^4x^4+\frac{21}{5}a^2b^5x^5+\frac{7}{6}ab^6x^6+\frac{b^7x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x,x]
```

```
[Out] 7*a^6*b*x + (21*a^5*b^2*x^2)/2 + (35*a^4*b^3*x^3)/3 + (35*a^3*b^4
*x^4)/4 + (21*a^2*b^5*x^5)/5 + (7*a*b^6*x^6)/6 + (b^7*x^7)/7 + a^
7*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^7\log(x)+7a^6bx+21a^5b^2\int x\,dx+\frac{35a^4b^3x^3}{3}+\frac{35a^3b^4x^4}{4}+\frac{21a^2b^5x^5}{5}+\frac{7ab^6x^6}{6}+\frac{b^7x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x,x)
```

```
[Out] a**7*log(x) + 7*a**6*b*x + 21*a**5*b**2*Integral(x, x) + 35*a**4*
b**3*x**3/3 + 35*a**3*b**4*x**4/4 + 21*a**2*b**5*x**5/5 + 7*a*b**
6*x**6/6 + b**7*x**7/7
```

Mathematica [A] time = 0.00469767, size = 87, normalized size = 1.

$$a^7\log(x)+7a^6bx+\frac{21}{2}a^5b^2x^2+\frac{35}{3}a^4b^3x^3+\frac{35}{4}a^3b^4x^4+\frac{21}{5}a^2b^5x^5+\frac{7}{6}ab^6x^6+\frac{b^7x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x,x]
```

```
[Out] 7*a^6*b*x + (21*a^5*b^2*x^2)/2 + (35*a^4*b^3*x^3)/3 + (35*a^3*b^4
*x^4)/4 + (21*a^2*b^5*x^5)/5 + (7*a*b^6*x^6)/6 + (b^7*x^7)/7 + a^
7*Log[x]
```

Maple [A] time = 0.003, size = 76, normalized size = 0.9

$$7\,a^6bx+\frac{21\,a^5b^2x^2}{2}+\frac{35\,a^4b^3x^3}{3}+\frac{35\,a^3b^4x^4}{4}+\frac{21\,a^2b^5x^5}{5}+\frac{7\,ab^6x^6}{6}+\frac{b^7x^7}{7}+a^7\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x,x)
```

```
[Out] 7*a^6*b*x+21/2*a^5*b^2*x^2+35/3*a^4*b^3*x^3+35/4*a^3*b^4*x^4+21/5
*a^2*b^5*x^5+7/6*a*b^6*x^6+1/7*b^7*x^7+a^7*ln(x)
```

Maxima [A] time = 1.33816, size = 101, normalized size = 1.16

$$\frac{1}{7}\,b^7x^7+\frac{7}{6}\,ab^6x^6+\frac{21}{5}\,a^2b^5x^5+\frac{35}{4}\,a^3b^4x^4+\frac{35}{3}\,a^4b^3x^3+\frac{21}{2}\,a^5b^2x^2+7\,a^6bx+a^7\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x,x, algorithm="maxima")
```

```
[Out] 1/7*b^7*x^7 + 7/6*a*b^6*x^6 + 21/5*a^2*b^5*x^5 + 35/4*a^3*b^4*x^4
 + 35/3*a^4*b^3*x^3 + 21/2*a^5*b^2*x^2 + 7*a^6*b*x + a^7*log(x)
```

Fricas [A] time = 0.200846, size = 101, normalized size = 1.16

$$\frac{1}{7}\,b^7x^7+\frac{7}{6}\,ab^6x^6+\frac{21}{5}\,a^2b^5x^5+\frac{35}{4}\,a^3b^4x^4+\frac{35}{3}\,a^4b^3x^3+\frac{21}{2}\,a^5b^2x^2+7\,a^6bx+a^7\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x,x, algorithm="fricas")
```

```
[Out] 1/7*b^7*x^7 + 7/6*a*b^6*x^6 + 21/5*a^2*b^5*x^5 + 35/4*a^3*b^4*x^4
 + 35/3*a^4*b^3*x^3 + 21/2*a^5*b^2*x^2 + 7*a^6*b*x + a^7*log(x)
```

Sympy [A] time = 1.24442, size = 88, normalized size = 1.01

$$a^7\log(x) + 7a^6bx + \frac{21a^5b^2x^2}{2} + \frac{35a^4b^3x^3}{3} + \frac{35a^3b^4x^4}{4} + \frac{21a^2b^5x^5}{5} + \frac{7ab^6x^6}{6} + \frac{b^7x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x,x)
```

```
[Out] a**7*log(x) + 7*a**6*b*x + 21*a**5*b**2*x**2/2 + 35*a**4*b**3*x**
3/3 + 35*a**3*b**4*x**4/4 + 21*a**2*b**5*x**5/5 + 7*a*b**6*x**6/6
 + b**7*x**7/7
```

GIAC/XCAS [A] time = 0.212537, size = 103, normalized size = 1.18

$$\frac{1}{7}\,b^7x^7 + \frac{7}{6}\,ab^6x^6 + \frac{21}{5}\,a^2b^5x^5 + \frac{35}{4}\,a^3b^4x^4 + \frac{35}{3}\,a^4b^3x^3 + \frac{21}{2}\,a^5b^2x^2 + 7\,a^6bx + a^7\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x,x, algorithm="giac")
```

```
[Out] 1/7*b^7*x^7 + 7/6*a*b^6*x^6 + 21/5*a^2*b^5*x^5 + 35/4*a^3*b^4*x^4
 + 35/3*a^4*b^3*x^3 + 21/2*a^5*b^2*x^2 + 7*a^6*b*x + a^7*ln(abs(x
))
```

3.108 $\int \frac{(a+bx)^7}{x^2}\,dx$

Optimal. Leaf size=86

$$-\frac{a^7}{x}+7a^6b\log(x)+21a^5b^2x+\frac{35}{2}a^4b^3x^2+\frac{35}{3}a^3b^4x^3+\frac{21}{4}a^2b^5x^4+\frac{7}{5}ab^6x^5+\frac{b^7x^6}{6}$$

```
[Out] -(a^7/x) + 21*a^5*b^2*x + (35*a^4*b^3*x^2)/2 + (35*a^3*b^4*x^3)/3
 + (21*a^2*b^5*x^4)/4 + (7*a*b^6*x^5)/5 + (b^7*x^6)/6 + 7*a^6*b*L
og[x]
```

Rubi [A] time = 0.0732908, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{x}+7a^6b\log(x)+21a^5b^2x+\frac{35}{2}a^4b^3x^2+\frac{35}{3}a^3b^4x^3+\frac{21}{4}a^2b^5x^4+\frac{7}{5}ab^6x^5+\frac{b^7x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^2,x]
```

```
[Out] -(a^7/x) + 21*a^5*b^2*x + (35*a^4*b^3*x^2)/2 + (35*a^3*b^4*x^3)/3
 + (21*a^2*b^5*x^4)/4 + (7*a*b^6*x^5)/5 + (b^7*x^6)/6 + 7*a^6*b*L
og[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^7}{x}+7a^6b\log(x)+21a^5b^2x+35a^4b^3\int x\,dx+\frac{35a^3b^4x^3}{3}+\frac{21a^2b^5x^4}{4}+\frac{7ab^6x^5}{5}+\frac{b^7x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**2,x)
```

```
[Out] -a**7/x + 7*a**6*b*log(x) + 21*a**5*b**2*x + 35*a**4*b**3*Integra
l(x, x) + 35*a**3*b**4*x**3/3 + 21*a**2*b**5*x**4/4 + 7*a*b**6*x*
*5/5 + b**7*x**6/6
```

Mathematica [A] time = 0.00616383, size = 86, normalized size = 1.

$$-\frac{a^7}{x}+7a^6b\log(x)+21a^5b^2x+\frac{35}{2}a^4b^3x^2+\frac{35}{3}a^3b^4x^3+\frac{21}{4}a^2b^5x^4+\frac{7}{5}ab^6x^5+\frac{b^7x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^2,x]
```

```
[Out] -(a^7/x) + 21*a^5*b^2*x + (35*a^4*b^3*x^2)/2 + (35*a^3*b^4*x^3)/3
 + (21*a^2*b^5*x^4)/4 + (7*a*b^6*x^5)/5 + (b^7*x^6)/6 + 7*a^6*b*L
og[x]
```

Maple [A] time = 0.007, size = 77, normalized size = 0.9

$$-\frac{a^7}{x} + 21\,a^5b^2x + \frac{35\,a^4b^3x^2}{2} + \frac{35\,a^3b^4x^3}{3} + \frac{21\,a^2b^5x^4}{4} + \frac{7\,ab^6x^5}{5} + \frac{b^7x^6}{6} + 7\,a^6b\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^2,x)
```

```
[Out] -a^7/x+21*a^5*b^2*x+35/2*a^4*b^3*x^2+35/3*a^3*b^4*x^3+21/4*a^2*b^
5*x^4+7/5*a*b^6*x^5+1/6*b^7*x^6+7*a^6*b*ln(x)
```

Maxima [A] time = 1.34264, size = 103, normalized size = 1.2

$$\frac{1}{6}\,b^7x^6 + \frac{7}{5}\,ab^6x^5 + \frac{21}{4}\,a^2b^5x^4 + \frac{35}{3}\,a^3b^4x^3 + \frac{35}{2}\,a^4b^3x^2 + 21\,a^5b^2x + 7\,a^6b\log(x) - \frac{a^7}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*b^7*x^6 + 7/5*a*b^6*x^5 + 21/4*a^2*b^5*x^4 + 35/3*a^3*b^4*x^3
 + 35/2*a^4*b^3*x^2 + 21*a^5*b^2*x + 7*a^6*b*log(x) - a^7/x
```

Fricas [A] time = 0.19518, size = 109, normalized size = 1.27

$$\frac{10\,b^7x^7 + 84\,ab^6x^6 + 315\,a^2b^5x^5 + 700\,a^3b^4x^4 + 1050\,a^4b^3x^3 + 1260\,a^5b^2x^2 + 420\,a^6bx\log(x) - 60\,a^7}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*b^7*x^7 + 84*a*b^6*x^6 + 315*a^2*b^5*x^5 + 700*a^3*b^4*x
^4 + 1050*a^4*b^3*x^3 + 1260*a^5*b^2*x^2 + 420*a^6*b*x*log(x) - 6
0*a^7)/x
```

Sympy [A] time = 1.38357, size = 85, normalized size = 0.99

$$-\frac{a^7}{x} + 7a^6b\log(x) + 21a^5b^2x + \frac{35a^4b^3x^2}{2} + \frac{35a^3b^4x^3}{3} + \frac{21a^2b^5x^4}{4} + \frac{7ab^6x^5}{5} + \frac{b^7x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**2,x)
```

```
[Out] -a**7/x + 7*a**6*b*log(x) + 21*a**5*b**2*x + 35*a**4*b**3*x**2/2
+ 35*a**3*b**4*x**3/3 + 21*a**2*b**5*x**4/4 + 7*a*b**6*x**5/5 + b
**7*x**6/6
```

GIAC/XCAS [A] time = 0.210409, size = 104, normalized size = 1.21

$$\frac{1}{6}\,b^7x^6 + \frac{7}{5}\,ab^6x^5 + \frac{21}{4}\,a^2b^5x^4 + \frac{35}{3}\,a^3b^4x^3 + \frac{35}{2}\,a^4b^3x^2 + 21\,a^5b^2x + 7\,a^6b\ln(|x|) - \frac{a^7}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^2,x, algorithm="giac")
```

```
[Out] 1/6*b^7*x^6 + 7/5*a*b^6*x^5 + 21/4*a^2*b^5*x^4 + 35/3*a^3*b^4*x^3
 + 35/2*a^4*b^3*x^2 + 21*a^5*b^2*x + 7*a^6*b*ln(abs(x)) - a^7/x
```

3.109 $\int \frac{(a+bx)^7}{x^3}\,dx$

Optimal. Leaf size=84

$$-\frac{a^7}{2x^2}-\frac{7a^6b}{x}+21a^5b^2\log(x)+35a^4b^3x+\frac{35}{2}a^3b^4x^2+7a^2b^5x^3+\frac{7}{4}ab^6x^4+\frac{b^7x^5}{5}$$

```
[Out] -a^7/(2*x^2) - (7*a^6*b)/x + 35*a^4*b^3*x + (35*a^3*b^4*x^2)/2 +
7*a^2*b^5*x^3 + (7*a*b^6*x^4)/4 + (b^7*x^5)/5 + 21*a^5*b^2*Log[x]
```

Rubi [A] time = 0.0712833, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{2x^2}-\frac{7a^6b}{x}+21a^5b^2\log(x)+35a^4b^3x+\frac{35}{2}a^3b^4x^2+7a^2b^5x^3+\frac{7}{4}ab^6x^4+\frac{b^7x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^3,x]
```

```
[Out] -a^7/(2*x^2) - (7*a^6*b)/x + 35*a^4*b^3*x + (35*a^3*b^4*x^2)/2 +
7*a^2*b^5*x^3 + (7*a*b^6*x^4)/4 + (b^7*x^5)/5 + 21*a^5*b^2*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^7}{2x^2}-\frac{7a^6b}{x}+21a^5b^2\log(x)+35a^4b^3x+35a^3b^4\int x\,dx+7a^2b^5x^3+\frac{7ab^6x^4}{4}+\frac{b^7x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**3,x)
```

```
[Out] -a**7/(2*x**2) - 7*a**6*b/x + 21*a**5*b**2*log(x) + 35*a**4*b**3*
x + 35*a**3*b**4*Integral(x, x) + 7*a**2*b**5*x**3 + 7*a*b**6*x**
4/4 + b**7*x**5/5
```

Mathematica [A] time = 0.00638366, size = 84, normalized size = 1.

$$-\frac{a^7}{2x^2}-\frac{7a^6b}{x}+21a^5b^2\log(x)+35a^4b^3x+\frac{35}{2}a^3b^4x^2+7a^2b^5x^3+\frac{7}{4}ab^6x^4+\frac{b^7x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^3,x]
```

```
[Out] -a^7/(2*x^2) - (7*a^6*b)/x + 35*a^4*b^3*x + (35*a^3*b^4*x^2)/2 +
7*a^2*b^5*x^3 + (7*a*b^6*x^4)/4 + (b^7*x^5)/5 + 21*a^5*b^2*Log[x]
```

Maple [A] time = 0.009, size = 77, normalized size = 0.9

$$-\frac{a^7}{2\,x^2}-7\,\frac{a^6b}{x}+35\,a^4b^3x+\frac{35\,a^3b^4x^2}{2}+7\,a^2b^5x^3+\frac{7\,ab^6x^4}{4}+\frac{b^7x^5}{5}+21\,a^5b^2\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^3,x)
```

```
[Out] -1/2*a^7/x^2-7*a^6*b/x+35*a^4*b^3*x+35/2*a^3*b^4*x^2+7*a^2*b^5*x^
3+7/4*a*b^6*x^4+1/5*b^7*x^5+21*a^5*b^2*ln(x)
```

Maxima [A] time = 1.34749, size = 101, normalized size = 1.2

$$\frac{1}{5}\,b^7x^5+\frac{7}{4}\,ab^6x^4+7\,a^2b^5x^3+\frac{35}{2}\,a^3b^4x^2+35\,a^4b^3x+21\,a^5b^2\log(x)-\frac{14\,a^6bx+a^7}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*b^7*x^5 + 7/4*a*b^6*x^4 + 7*a^2*b^5*x^3 + 35/2*a^3*b^4*x^2 +
35*a^4*b^3*x + 21*a^5*b^2*log(x) - 1/2*(14*a^6*b*x + a^7)/x^2
```

Fricas [A] time = 0.202818, size = 109, normalized size = 1.3

$$\frac{4\,b^7x^7+35\,ab^6x^6+140\,a^2b^5x^5+350\,a^3b^4x^4+700\,a^4b^3x^3+420\,a^5b^2x^2\log(x)-140\,a^6bx-10\,a^7}{20\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*b^7*x^7 + 35*a*b^6*x^6 + 140*a^2*b^5*x^5 + 350*a^3*b^4*x^
4 + 700*a^4*b^3*x^3 + 420*a^5*b^2*x^2*log(x) - 140*a^6*b*x - 10*a
^7)/x^2
```

Sympy [A] time = 1.49877, size = 83, normalized size = 0.99

$$21a^5b^2\log(x) + 35a^4b^3x + \frac{35a^3b^4x^2}{2} + 7a^2b^5x^3 + \frac{7ab^6x^4}{4} + \frac{b^7x^5}{5} - \frac{a^7 + 14a^6bx}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**3,x)
```

```
[Out] 21*a**5*b**2*log(x) + 35*a**4*b**3*x + 35*a**3*b**4*x**2/2 + 7*a*
*2*b**5*x**3 + 7*a*b**6*x**4/4 + b**7*x**5/5 - (a**7 + 14*a**6*b*
x)/(2*x**2)
```

GIAC/XCAS [A] time = 0.216558, size = 103, normalized size = 1.23

$$\frac{1}{5}b^7x^5 + \frac{7}{4}ab^6x^4 + 7a^2b^5x^3 + \frac{35}{2}a^3b^4x^2 + 35a^4b^3x + 21a^5b^2\ln(|x|) - \frac{14a^6bx + a^7}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^3,x, algorithm="giac")
```

```
[Out] 1/5*b^7*x^5 + 7/4*a*b^6*x^4 + 7*a^2*b^5*x^3 + 35/2*a^3*b^4*x^2 +
35*a^4*b^3*x + 21*a^5*b^2*ln(abs(x)) - 1/2*(14*a^6*b*x + a^7)/x^2
```

3.110 $\int \frac{(a+bx)^7}{x^4} \, dx$

Optimal. Leaf size=86

$$-\frac{a^7}{3x^3}-\frac{7a^6b}{2x^2}-\frac{21a^5b^2}{x}+35a^4b^3\log(x)+35a^3b^4x+\frac{21}{2}a^2b^5x^2+\frac{7}{3}ab^6x^3+\frac{b^7x^4}{4}$$

```
[Out] -a^7/(3*x^3) - (7*a^6*b)/(2*x^2) - (21*a^5*b^2)/x + 35*a^3*b^4*x
+ (21*a^2*b^5*x^2)/2 + (7*a*b^6*x^3)/3 + (b^7*x^4)/4 + 35*a^4*b^3
*Log[x]
```

Rubi [A] time = 0.0725491, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{3x^3}-\frac{7a^6b}{2x^2}-\frac{21a^5b^2}{x}+35a^4b^3\log(x)+35a^3b^4x+\frac{21}{2}a^2b^5x^2+\frac{7}{3}ab^6x^3+\frac{b^7x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^4,x]
```

```
[Out] -a^7/(3*x^3) - (7*a^6*b)/(2*x^2) - (21*a^5*b^2)/x + 35*a^3*b^4*x
+ (21*a^2*b^5*x^2)/2 + (7*a*b^6*x^3)/3 + (b^7*x^4)/4 + 35*a^4*b^3
*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^7}{3x^3}-\frac{7a^6b}{2x^2}-\frac{21a^5b^2}{x}+35a^4b^3\log(x)+35a^3b^4x+21a^2b^5\int x\,dx+\frac{7ab^6x^3}{3}+\frac{b^7x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**4,x)
```

```
[Out] -a**7/(3*x**3) - 7*a**6*b/(2*x**2) - 21*a**5*b**2/x + 35*a**4*b**
3*log(x) + 35*a**3*b**4*x + 21*a**2*b**5*Integral(x, x) + 7*a*b**
6*x**3/3 + b**7*x**4/4
```

Mathematica [A] time = 0.00622047, size = 86, normalized size = 1.

$$-\frac{a^7}{3x^3}-\frac{7a^6b}{2x^2}-\frac{21a^5b^2}{x}+35a^4b^3\log(x)+35a^3b^4x+\frac{21}{2}a^2b^5x^2+\frac{7}{3}ab^6x^3+\frac{b^7x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^4,x]
```

```
[Out] -a^7/(3*x^3) - (7*a^6*b)/(2*x^2) - (21*a^5*b^2)/x + 35*a^3*b^4*x
+ (21*a^2*b^5*x^2)/2 + (7*a*b^6*x^3)/3 + (b^7*x^4)/4 + 35*a^4*b^3
*Log[x]
```

Maple [A] time = 0.009, size = 77, normalized size = 0.9

$$-\frac{a^7}{3\,x^3}-\frac{7\,a^6b}{2\,x^2}-21\,\frac{a^5b^2}{x}+35\,a^3b^4x+\frac{21\,a^2b^5x^2}{2}+\frac{7\,ab^6x^3}{3}+\frac{b^7x^4}{4}+35\,a^4b^3\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^4,x)
```

```
[Out] -1/3*a^7/x^3-7/2*a^6*b/x^2-21*a^5*b^2/x+35*a^3*b^4*x+21/2*a^2*b^5
*x^2+7/3*a*b^6*x^3+1/4*b^7*x^4+35*a^4*b^3*ln(x)
```

Maxima [A] time = 1.34302, size = 104, normalized size = 1.21

$$\frac{1}{4}\,b^7x^4+\frac{7}{3}\,ab^6x^3+\frac{21}{2}\,a^2b^5x^2+35\,a^3b^4x+35\,a^4b^3\log(x)-\frac{126\,a^5b^2x^2+21\,a^6bx+2\,a^7}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^4,x, algorithm="maxima")
```

```
[Out] 1/4*b^7*x^4 + 7/3*a*b^6*x^3 + 21/2*a^2*b^5*x^2 + 35*a^3*b^4*x + 3
5*a^4*b^3*log(x) - 1/6*(126*a^5*b^2*x^2 + 21*a^6*b*x + 2*a^7)/x^3
```

Fricas [A] time = 0.202863, size = 109, normalized size = 1.27

$$\frac{3\,b^7x^7+28\,ab^6x^6+126\,a^2b^5x^5+420\,a^3b^4x^4+420\,a^4b^3x^3\log(x)-252\,a^5b^2x^2-42\,a^6bx-4\,a^7}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^7*x^7 + 28*a*b^6*x^6 + 126*a^2*b^5*x^5 + 420*a^3*b^4*x^
4 + 420*a^4*b^3*x^3*log(x) - 252*a^5*b^2*x^2 - 42*a^6*b*x - 4*a^7
)/x^3
```

Sympy [A] time = 1.6212, size = 85, normalized size = 0.99

$$35a^4b^3\log(x) + 35a^3b^4x + \frac{21a^2b^5x^2}{2} + \frac{7ab^6x^3}{3} + \frac{b^7x^4}{4} - \frac{2a^7 + 21a^6bx + 126a^5b^2x^2}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**4,x)
```

```
[Out] 35*a**4*b**3*log(x) + 35*a**3*b**4*x + 21*a**2*b**5*x**2/2 + 7*a*
b**6*x**3/3 + b**7*x**4/4 - (2*a**7 + 21*a**6*b*x + 126*a**5*b**2
*x**2)/(6*x**3)
```

GIAC/XCAS [A] time = 0.21122, size = 105, normalized size = 1.22

$$\frac{1}{4}\,b^7x^4 + \frac{7}{3}\,ab^6x^3 + \frac{21}{2}\,a^2b^5x^2 + 35\,a^3b^4x + 35\,a^4b^3\ln(|x|) - \frac{126\,a^5b^2x^2 + 21\,a^6bx + 2\,a^7}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^4,x, algorithm="giac")
```

```
[Out] 1/4*b^7*x^4 + 7/3*a*b^6*x^3 + 21/2*a^2*b^5*x^2 + 35*a^3*b^4*x + 3
5*a^4*b^3*ln(abs(x)) - 1/6*(126*a^5*b^2*x^2 + 21*a^6*b*x + 2*a^7)
/x^3
```

3.111 $\int \frac{(a+bx)^7}{x^5}\,dx$

Optimal. Leaf size=86

$$-\frac{a^7}{4x^4}-\frac{7a^6b}{3x^3}-\frac{21a^5b^2}{2x^2}-\frac{35a^4b^3}{x}+35a^3b^4\log(x)+21a^2b^5x+\frac{7}{2}ab^6x^2+\frac{b^7x^3}{3}$$

```
[Out] -a^7/(4*x^4) - (7*a^6*b)/(3*x^3) - (21*a^5*b^2)/(2*x^2) - (35*a^4
*b^3)/x + 21*a^2*b^5*x + (7*a*b^6*x^2)/2 + (b^7*x^3)/3 + 35*a^3*b
^4*Log[x]
```

Rubi [A] time = 0.0732876, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{4x^4}-\frac{7a^6b}{3x^3}-\frac{21a^5b^2}{2x^2}-\frac{35a^4b^3}{x}+35a^3b^4\log(x)+21a^2b^5x+\frac{7}{2}ab^6x^2+\frac{b^7x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^5,x]
```

```
[Out] -a^7/(4*x^4) - (7*a^6*b)/(3*x^3) - (21*a^5*b^2)/(2*x^2) - (35*a^4
*b^3)/x + 21*a^2*b^5*x + (7*a*b^6*x^2)/2 + (b^7*x^3)/3 + 35*a^3*b
^4*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^7}{4x^4}-\frac{7a^6b}{3x^3}-\frac{21a^5b^2}{2x^2}-\frac{35a^4b^3}{x}+35a^3b^4\log(x)+21a^2b^5x+7ab^6\int x\,dx+\frac{b^7x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**5,x)
```

```
[Out] -a**7/(4*x**4) - 7*a**6*b/(3*x**3) - 21*a**5*b**2/(2*x**2) - 35*a
**4*b**3/x + 35*a**3*b**4*log(x) + 21*a**2*b**5*x + 7*a*b**6*Inte
gral(x, x) + b**7*x**3/3
```

Mathematica [A] time = 0.00632766, size = 86, normalized size = 1.

$$-\frac{a^7}{4x^4}-\frac{7a^6b}{3x^3}-\frac{21a^5b^2}{2x^2}-\frac{35a^4b^3}{x}+35a^3b^4\log(x)+21a^2b^5x+\frac{7}{2}ab^6x^2+\frac{b^7x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^5,x]
```

```
[Out] -a^7/(4*x^4) - (7*a^6*b)/(3*x^3) - (21*a^5*b^2)/(2*x^2) - (35*a^4
*b^3)/x + 21*a^2*b^5*x + (7*a*b^6*x^2)/2 + (b^7*x^3)/3 + 35*a^3*b
^4*Log[x]
```

Maple [A] time = 0.012, size = 77, normalized size = 0.9

$$-\frac{a^7}{4\,x^4}-\frac{7\,a^6b}{3\,x^3}-\frac{21\,a^5b^2}{2\,x^2}-35\,\frac{a^4b^3}{x}+21\,a^2b^5x+\frac{7\,ab^6x^2}{2}+\frac{b^7x^3}{3}+35\,a^3b^4\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^5,x)
```

```
[Out] -1/4*a^7/x^4-7/3*a^6*b/x^3-21/2*a^5*b^2/x^2-35*a^4*b^3/x+21*a^2*b
^5*x+7/2*a*b^6*x^2+1/3*b^7*x^3+35*a^3*b^4*ln(x)
```

Maxima [A] time = 1.34673, size = 104, normalized size = 1.21

$$\frac{1}{3}\,b^7x^3+\frac{7}{2}\,ab^6x^2+21\,a^2b^5x+35\,a^3b^4\log(x)-\frac{420\,a^4b^3x^3+126\,a^5b^2x^2+28\,a^6bx+3\,a^7}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*b^7*x^3 + 7/2*a*b^6*x^2 + 21*a^2*b^5*x + 35*a^3*b^4*log(x) -
1/12*(420*a^4*b^3*x^3 + 126*a^5*b^2*x^2 + 28*a^6*b*x + 3*a^7)/x^4
```

Fricas [A] time = 0.194693, size = 109, normalized size = 1.27

$$\frac{4\,b^7x^7+42\,ab^6x^6+252\,a^2b^5x^5+420\,a^3b^4x^4\log(x)-420\,a^4b^3x^3-126\,a^5b^2x^2-28\,a^6bx-3\,a^7}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*b^7*x^7 + 42*a*b^6*x^6 + 252*a^2*b^5*x^5 + 420*a^3*b^4*x^
4*log(x) - 420*a^4*b^3*x^3 - 126*a^5*b^2*x^2 - 28*a^6*b*x - 3*a^7
)/x^4
```

Sympy [A] time = 1.8098, size = 83, normalized size = 0.97

$$35a^3b^4\log(x) + 21a^2b^5x + \frac{7ab^6x^2}{2} + \frac{b^7x^3}{3} - \frac{3a^7 + 28a^6bx + 126a^5b^2x^2 + 420a^4b^3x^3}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**5,x)
```

```
[Out] 35*a**3*b**4*log(x) + 21*a**2*b**5*x + 7*a*b**6*x**2/2 + b**7*x**
3/3 - (3*a**7 + 28*a**6*b*x + 126*a**5*b**2*x**2 + 420*a**4*b**3*
x**3)/(12*x**4)
```

GIAC/XCAS [A] time = 0.211075, size = 105, normalized size = 1.22

$$\frac{1}{3}b^7x^3 + \frac{7}{2}ab^6x^2 + 21a^2b^5x + 35a^3b^4\ln(|x|) - \frac{420a^4b^3x^3 + 126a^5b^2x^2 + 28a^6bx + 3a^7}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^5,x, algorithm="giac")
```

```
[Out] 1/3*b^7*x^3 + 7/2*a*b^6*x^2 + 21*a^2*b^5*x + 35*a^3*b^4*ln(abs(x)
) - 1/12*(420*a^4*b^3*x^3 + 126*a^5*b^2*x^2 + 28*a^6*b*x + 3*a^7)
/x^4
```

3.112 $\int \frac{(a+bx)^7}{x^6} dx$

Optimal. Leaf size=84

$$-\frac{a^7}{5x^5}-\frac{7a^6b}{4x^4}-\frac{7a^5b^2}{x^3}-\frac{35a^4b^3}{2x^2}-\frac{35a^3b^4}{x}+21a^2b^5\log(x)+7ab^6x+\frac{b^7x^2}{2}$$

```
[Out] -a^7/(5*x^5) - (7*a^6*b)/(4*x^4) - (7*a^5*b^2)/x^3 - (35*a^4*b^3)
/(2*x^2) - (35*a^3*b^4)/x + 7*a*b^6*x + (b^7*x^2)/2 + 21*a^2*b^5*
Log[x]
```

Rubi [A] time = 0.0751528, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{5x^5}-\frac{7a^6b}{4x^4}-\frac{7a^5b^2}{x^3}-\frac{35a^4b^3}{2x^2}-\frac{35a^3b^4}{x}+21a^2b^5\log(x)+7ab^6x+\frac{b^7x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^6,x]
```

```
[Out] -a^7/(5*x^5) - (7*a^6*b)/(4*x^4) - (7*a^5*b^2)/x^3 - (35*a^4*b^3)
/(2*x^2) - (35*a^3*b^4)/x + 7*a*b^6*x + (b^7*x^2)/2 + 21*a^2*b^5*
Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^7}{5x^5}-\frac{7a^6b}{4x^4}-\frac{7a^5b^2}{x^3}-\frac{35a^4b^3}{2x^2}-\frac{35a^3b^4}{x}+21a^2b^5\log(x)+7ab^6x+b^7\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**6,x)
```

```
[Out] -a**7/(5*x**5) - 7*a**6*b/(4*x**4) - 7*a**5*b**2/x**3 - 35*a**4*b
**3/(2*x**2) - 35*a**3*b**4/x + 21*a**2*b**5*log(x) + 7*a*b**6*x
+ b**7*Integral(x, x)
```

Mathematica [A] time = 0.00640926, size = 84, normalized size = 1.

$$-\frac{a^7}{5x^5}-\frac{7a^6b}{4x^4}-\frac{7a^5b^2}{x^3}-\frac{35a^4b^3}{2x^2}-\frac{35a^3b^4}{x}+21a^2b^5\log(x)+7ab^6x+\frac{b^7x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^6,x]
```

```
[Out] -a^7/(5*x^5) - (7*a^6*b)/(4*x^4) - (7*a^5*b^2)/x^3 - (35*a^4*b^3)
/(2*x^2) - (35*a^3*b^4)/x + 7*a*b^6*x + (b^7*x^2)/2 + 21*a^2*b^5*
Log[x]
```

Maple [A] time = 0.01, size = 77, normalized size = 0.9

$$-\frac{a^7}{5\,x^5}-\frac{7\,a^6b}{4\,x^4}-7\,\frac{a^5b^2}{x^3}-\frac{35\,a^4b^3}{2\,x^2}-35\,\frac{a^3b^4}{x}+7\,ab^6x+\frac{b^7x^2}{2}+21\,a^2b^5\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^6,x)
```

```
[Out] -1/5*a^7/x^5-7/4*a^6*b/x^4-7*a^5*b^2/x^3-35/2*a^4*b^3/x^2-35*a^3*
b^4/x+7*a*b^6*x+1/2*b^7*x^2+21*a^2*b^5*ln(x)
```

Maxima [A] time = 1.34075, size = 104, normalized size = 1.24

$$\frac{1}{2}\,b^7x^2+7\,ab^6x+21\,a^2b^5\log(x)-\frac{700\,a^3b^4x^4+350\,a^4b^3x^3+140\,a^5b^2x^2+35\,a^6bx+4\,a^7}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*b^7*x^2 + 7*a*b^6*x + 21*a^2*b^5*log(x) - 1/20*(700*a^3*b^4*x
^4 + 350*a^4*b^3*x^3 + 140*a^5*b^2*x^2 + 35*a^6*b*x + 4*a^7)/x^5
```

Fricas [A] time = 0.194796, size = 109, normalized size = 1.3

$$\frac{10\,b^7x^7+140\,ab^6x^6+420\,a^2b^5x^5\log(x)-700\,a^3b^4x^4-350\,a^4b^3x^3-140\,a^5b^2x^2-35\,a^6bx-4\,a^7}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*b^7*x^7 + 140*a*b^6*x^6 + 420*a^2*b^5*x^5*log(x) - 700*a
^3*b^4*x^4 - 350*a^4*b^3*x^3 - 140*a^5*b^2*x^2 - 35*a^6*b*x - 4*a
^7)/x^5
```

Sympy [A] time = 2.05653, size = 82, normalized size = 0.98

$$21a^2b^5\log{(x)} + 7ab^6x + \frac{b^7x^2}{2} - \frac{4a^7 + 35a^6bx + 140a^5b^2x^2 + 350a^4b^3x^3 + 700a^3b^4x^4}{20x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**6,x)
```

```
[Out] 21*a**2*b**5*log(x) + 7*a*b**6*x + b**7*x**2/2 - (4*a**7 + 35*a**
6*b*x + 140*a**5*b**2*x**2 + 350*a**4*b**3*x**3 + 700*a**3*b**4*x
**4)/(20*x**5)
```

GIAC/XCAS [A] time = 0.21088, size = 105, normalized size = 1.25

$$\frac{1}{2}\,b^7x^2 + 7\,ab^6x + 21\,a^2b^5\ln\left(|x|\right) - \frac{700\,a^3b^4x^4 + 350\,a^4b^3x^3 + 140\,a^5b^2x^2 + 35\,a^6bx + 4\,a^7}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^6,x, algorithm="giac")
```

```
[Out] 1/2*b^7*x^2 + 7*a*b^6*x + 21*a^2*b^5*ln(abs(x)) - 1/20*(700*a^3*b
^4*x^4 + 350*a^4*b^3*x^3 + 140*a^5*b^2*x^2 + 35*a^6*b*x + 4*a^7)/
x^5
```

3.113 $\int \frac{(a+bx)^7}{x^7} \, dx$

Optimal. Leaf size=85

$$-\frac{a^7}{6x^6}-\frac{7a^6b}{5x^5}-\frac{21a^5b^2}{4x^4}-\frac{35a^4b^3}{3x^3}-\frac{35a^3b^4}{2x^2}-\frac{21a^2b^5}{x}+7ab^6\log(x)+b^7x$$

```
[Out] -a^7/(6*x^6) - (7*a^6*b)/(5*x^5) - (21*a^5*b^2)/(4*x^4) - (35*a^4
*b^3)/(3*x^3) - (35*a^3*b^4)/(2*x^2) - (21*a^2*b^5)/x + b^7*x + 7
*a*b^6*Log[x]
```

Rubi [A] time = 0.0720413, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^7}{6x^6}-\frac{7a^6b}{5x^5}-\frac{21a^5b^2}{4x^4}-\frac{35a^4b^3}{3x^3}-\frac{35a^3b^4}{2x^2}-\frac{21a^2b^5}{x}+7ab^6\log(x)+b^7x$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^7,x]
```

```
[Out] -a^7/(6*x^6) - (7*a^6*b)/(5*x^5) - (21*a^5*b^2)/(4*x^4) - (35*a^4
*b^3)/(3*x^3) - (35*a^3*b^4)/(2*x^2) - (21*a^2*b^5)/x + b^7*x + 7
*a*b^6*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^7}{6x^6}-\frac{7a^6b}{5x^5}-\frac{21a^5b^2}{4x^4}-\frac{35a^4b^3}{3x^3}-\frac{35a^3b^4}{2x^2}-\frac{21a^2b^5}{x}+7ab^6\log(x)+\int b^7\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**7,x)
```

```
[Out] -a**7/(6*x**6) - 7*a**6*b/(5*x**5) - 21*a**5*b**2/(4*x**4) - 35*a
**4*b**3/(3*x**3) - 35*a**3*b**4/(2*x**2) - 21*a**2*b**5/x + 7*a*
b**6*log(x) + Integral(b**7, x)
```

Mathematica [A] time = 0.00786646, size = 85, normalized size = 1.

$$-\frac{a^7}{6x^6}-\frac{7a^6b}{5x^5}-\frac{21a^5b^2}{4x^4}-\frac{35a^4b^3}{3x^3}-\frac{35a^3b^4}{2x^2}-\frac{21a^2b^5}{x}+7ab^6\log(x)+b^7x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^7,x]
```

```
[Out] -a^7/(6*x^6) - (7*a^6*b)/(5*x^5) - (21*a^5*b^2)/(4*x^4) - (35*a^4
*b^3)/(3*x^3) - (35*a^3*b^4)/(2*x^2) - (21*a^2*b^5)/x + b^7*x + 7
*a*b^6*Log[x]
```

Maple [A] time = 0.01, size = 76, normalized size = 0.9

$$-\frac{a^7}{6\,x^6}-\frac{7\,a^6b}{5\,x^5}-\frac{21\,a^5b^2}{4\,x^4}-\frac{35\,a^4b^3}{3\,x^3}-\frac{35\,a^3b^4}{2\,x^2}-21\,\frac{a^2b^5}{x}+b^7x+7\,ab^6\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^7,x)
```

```
[Out] -1/6*a^7/x^6-7/5*a^6*b/x^5-21/4*a^5*b^2/x^4-35/3*a^4*b^3/x^3-35/2
*a^3*b^4/x^2-21*a^2*b^5/x+b^7*x+7*a*b^6*ln(x)
```

Maxima [A] time = 1.35323, size = 103, normalized size = 1.21

$$b^7x+7\,ab^6\log(x)-\frac{1260\,a^2b^5x^5+1050\,a^3b^4x^4+700\,a^4b^3x^3+315\,a^5b^2x^2+84\,a^6bx+10\,a^7}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^7,x, algorithm="maxima")
```

```
[Out] b^7*x + 7*a*b^6*log(x) - 1/60*(1260*a^2*b^5*x^5 + 1050*a^3*b^4*x^
4 + 700*a^4*b^3*x^3 + 315*a^5*b^2*x^2 + 84*a^6*b*x + 10*a^7)/x^6
```

Fricas [A] time = 0.197532, size = 109, normalized size = 1.28

$$\frac{60\,b^7x^7+420\,ab^6x^6\log(x)-1260\,a^2b^5x^5-1050\,a^3b^4x^4-700\,a^4b^3x^3-315\,a^5b^2x^2-84\,a^6bx-10\,a^7}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*b^7*x^7 + 420*a*b^6*x^6*log(x) - 1260*a^2*b^5*x^5 - 1050
*a^3*b^4*x^4 - 700*a^4*b^3*x^3 - 315*a^5*b^2*x^2 - 84*a^6*b*x - 1
0*a^7)/x^6
```

Sympy [A] time = 2.32077, size = 80, normalized size = 0.94

$$7ab^6\log(x) + b^7x - \frac{10a^7 + 84a^6bx + 315a^5b^2x^2 + 700a^4b^3x^3 + 1050a^3b^4x^4 + 1260a^2b^5x^5}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**7,x)
```

```
[Out] 7*a*b**6*log(x) + b**7*x - (10*a**7 + 84*a**6*b*x + 315*a**5*b**2
*x**2 + 700*a**4*b**3*x**3 + 1050*a**3*b**4*x**4 + 1260*a**2*b**5
*x**5)/(60*x**6)
```

GIAC/XCAS [A] time = 0.218544, size = 104, normalized size = 1.22

$$b^7x + 7\,ab^6\ln(|x|) - \frac{1260\,a^2b^5x^5 + 1050\,a^3b^4x^4 + 700\,a^4b^3x^3 + 315\,a^5b^2x^2 + 84\,a^6bx + 10\,a^7}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^7,x, algorithm="giac")
```

```
[Out] b^7*x + 7*a*b^6*ln(abs(x)) - 1/60*(1260*a^2*b^5*x^5 + 1050*a^3*b^
4*x^4 + 700*a^4*b^3*x^3 + 315*a^5*b^2*x^2 + 84*a^6*b*x + 10*a^7)/
x^6
```

3.114 $\int \frac{(a+bx)^7}{x^8}\,dx$

Optimal. Leaf size=89

$$-\frac{a^7}{7x^7}-\frac{7a^6b}{6x^6}-\frac{21a^5b^2}{5x^5}-\frac{35a^4b^3}{4x^4}-\frac{35a^3b^4}{3x^3}-\frac{21a^2b^5}{2x^2}-\frac{7ab^6}{x}+b^7\log(x)$$

```
[Out] -a^7/(7*x^7) - (7*a^6*b)/(6*x^6) - (21*a^5*b^2)/(5*x^5) - (35*a^4
*b^3)/(4*x^4) - (35*a^3*b^4)/(3*x^3) - (21*a^2*b^5)/(2*x^2) - (7*
a*b^6)/x + b^7*Log[x]
```

Rubi [A] time = 0.0716816, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{7x^7}-\frac{7a^6b}{6x^6}-\frac{21a^5b^2}{5x^5}-\frac{35a^4b^3}{4x^4}-\frac{35a^3b^4}{3x^3}-\frac{21a^2b^5}{2x^2}-\frac{7ab^6}{x}+b^7\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^8,x]
```

```
[Out] -a^7/(7*x^7) - (7*a^6*b)/(6*x^6) - (21*a^5*b^2)/(5*x^5) - (35*a^4
*b^3)/(4*x^4) - (35*a^3*b^4)/(3*x^3) - (21*a^2*b^5)/(2*x^2) - (7*
a*b^6)/x + b^7*Log[x]
```

Rubi in Sympy [A] time = 14.7544, size = 88, normalized size = 0.99

$$-\frac{a^7}{7x^7}-\frac{7a^6b}{6x^6}-\frac{21a^5b^2}{5x^5}-\frac{35a^4b^3}{4x^4}-\frac{35a^3b^4}{3x^3}-\frac{21a^2b^5}{2x^2}-\frac{7ab^6}{x}+b^7\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**8,x)
```

```
[Out] -a**7/(7*x**7) - 7*a**6*b/(6*x**6) - 21*a**5*b**2/(5*x**5) - 35*a
**4*b**3/(4*x**4) - 35*a**3*b**4/(3*x**3) - 21*a**2*b**5/(2*x**2)
 - 7*a*b**6/x + b**7*log(x)
```

Mathematica [A] time = 0.0059792, size = 89, normalized size = 1.

$$-\frac{a^7}{7x^7}-\frac{7a^6b}{6x^6}-\frac{21a^5b^2}{5x^5}-\frac{35a^4b^3}{4x^4}-\frac{35a^3b^4}{3x^3}-\frac{21a^2b^5}{2x^2}-\frac{7ab^6}{x}+b^7\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^8,x]
```

```
[Out] -a^7/(7*x^7) - (7*a^6*b)/(6*x^6) - (21*a^5*b^2)/(5*x^5) - (35*a^4
*b^3)/(4*x^4) - (35*a^3*b^4)/(3*x^3) - (21*a^2*b^5)/(2*x^2) - (7*
a*b^6)/x + b^7*Log[x]
```

Maple [A] time = 0.012, size = 78, normalized size = 0.9

$$-\frac{a^7}{7\,x^7}-\frac{7\,a^6b}{6\,x^6}-\frac{21\,a^5b^2}{5\,x^5}-\frac{35\,a^4b^3}{4\,x^4}-\frac{35\,a^3b^4}{3\,x^3}-\frac{21\,a^2b^5}{2\,x^2}-7\,\frac{ab^6}{x}+b^7\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^8,x)
```

```
[Out] -1/7*a^7/x^7-7/6*a^6*b/x^6-21/5*a^5*b^2/x^5-35/4*a^4*b^3/x^4-35/3
*a^3*b^4/x^3-21/2*a^2*b^5/x^2-7*a*b^6/x+b^7*ln(x)
```

Maxima [A] time = 1.34241, size = 105, normalized size = 1.18

$$b^7\log(x)-\frac{2940\,ab^6x^6+4410\,a^2b^5x^5+4900\,a^3b^4x^4+3675\,a^4b^3x^3+1764\,a^5b^2x^2+490\,a^6bx+60\,a^7}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^8,x, algorithm="maxima")
```

```
[Out] b^7*log(x) - 1/420*(2940*a*b^6*x^6 + 4410*a^2*b^5*x^5 + 4900*a^3*
b^4*x^4 + 3675*a^4*b^3*x^3 + 1764*a^5*b^2*x^2 + 490*a^6*b*x + 60*
a^7)/x^7
```

Fricas [A] time = 0.196088, size = 109, normalized size = 1.22

$$\frac{420\,b^7x^7\log(x)-2940\,ab^6x^6-4410\,a^2b^5x^5-4900\,a^3b^4x^4-3675\,a^4b^3x^3-1764\,a^5b^2x^2-490\,a^6bx-60\,a^7}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^8,x, algorithm="fricas")
```

```
[Out] 1/420*(420*b^7*x^7*log(x) - 2940*a*b^6*x^6 - 4410*a^2*b^5*x^5 - 4
900*a^3*b^4*x^4 - 3675*a^4*b^3*x^3 - 1764*a^5*b^2*x^2 - 490*a^6*b
*x - 60*a^7)/x^7
```

Sympy [A] time = 2.4695, size = 82, normalized size = 0.92

$$b^7 \log(x) - \frac{60a^7 + 490a^6bx + 1764a^5b^2x^2 + 3675a^4b^3x^3 + 4900a^3b^4x^4 + 4410a^2b^5x^5 + 2940ab^6x^6}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**8,x)
```

```
[Out] b**7*log(x) - (60*a**7 + 490*a**6*b*x + 1764*a**5*b**2*x**2 + 367
5*a**4*b**3*x**3 + 4900*a**3*b**4*x**4 + 4410*a**2*b**5*x**5 + 29
40*a*b**6*x**6)/(420*x**7)
```

GIAC/XCAS [A] time = 0.220656, size = 107, normalized size = 1.2

$$b^7 \ln(|x|) - \frac{2940\, ab^6x^6 + 4410\, a^2b^5x^5 + 4900\, a^3b^4x^4 + 3675\, a^4b^3x^3 + 1764\, a^5b^2x^2 + 490\, a^6bx + 60\, a^7}{420\, x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^8,x, algorithm="giac")
```

```
[Out] b^7*ln(abs(x)) - 1/420*(2940*a*b^6*x^6 + 4410*a^2*b^5*x^5 + 4900*
a^3*b^4*x^4 + 3675*a^4*b^3*x^3 + 1764*a^5*b^2*x^2 + 490*a^6*b*x +
 60*a^7)/x^7
```

3.115 $\int \frac{(a+bx)^7}{x^9} \, dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^8}{8ax^8}$$

```
[Out] -(a + b*x)^8/(8*a*x^8)
```

Rubi [A] time = 0.012129, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(a+bx)^8}{8ax^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^9,x]

[Out] -(a + b*x)^8/(8*a*x^8)
```

Rubi in Sympy [A] time = 2.24652, size = 14, normalized size = 0.82

$$-\frac{(a+bx)^8}{8ax^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**9,x)

[Out] -(a + b*x)**8/(8*a*x**8)
```

Mathematica [B] time = 0.00552547, size = 87, normalized size = 5.12

$$-\frac{a^7}{8x^8}-\frac{a^6b}{x^7}-\frac{7a^5b^2}{2x^6}-\frac{7a^4b^3}{x^5}-\frac{35a^3b^4}{4x^4}-\frac{7a^2b^5}{x^3}-\frac{7ab^6}{2x^2}-\frac{b^7}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^9,x]
```

```
[Out] -a^7/(8*x^8) - (a^6*b)/x^7 - (7*a^5*b^2)/(2*x^6) - (7*a^4*b^3)/x^
5 - (35*a^3*b^4)/(4*x^4) - (7*a^2*b^5)/x^3 - (7*a*b^6)/(2*x^2) -
b^7/x
```

Maple [B] time = 0.007, size = 80, normalized size = 4.7

$$-\frac{7\,ab^{6}}{2\,x^{2}}-7\,\frac{a^{4}b^{3}}{x^{5}}-\frac{b^{7}}{x}-\frac{a^{6}b}{x^{7}}-7\,\frac{a^{2}b^{5}}{x^{3}}-\frac{a^{7}}{8\,x^{8}}-\frac{35\,a^{3}b^{4}}{4\,x^{4}}-\frac{7\,a^{5}b^{2}}{2\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^9,x)
```

```
[Out] -7/2*a*b^6/x^2-7*a^4*b^3/x^5-b^7/x-a^6*b/x^7-7*a^2*b^5/x^3-1/8*a^
7/x^8-35/4*a^3*b^4/x^4-7/2*a^5*b^2/x^6
```

Maxima [A] time = 1.33515, size = 104, normalized size = 6.12

$$-\frac{8\,b^{7}x^{7}+28\,ab^{6}x^{6}+56\,a^{2}b^{5}x^{5}+70\,a^{3}b^{4}x^{4}+56\,a^{4}b^{3}x^{3}+28\,a^{5}b^{2}x^{2}+8\,a^{6}bx+a^{7}}{8\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^9,x, algorithm="maxima")
```

```
[Out] -1/8*(8*b^7*x^7 + 28*a*b^6*x^6 + 56*a^2*b^5*x^5 + 70*a^3*b^4*x^4
+ 56*a^4*b^3*x^3 + 28*a^5*b^2*x^2 + 8*a^6*b*x + a^7)/x^8
```

Fricas [A] time = 0.192436, size = 104, normalized size = 6.12

$$-\frac{8\,b^{7}x^{7}+28\,ab^{6}x^{6}+56\,a^{2}b^{5}x^{5}+70\,a^{3}b^{4}x^{4}+56\,a^{4}b^{3}x^{3}+28\,a^{5}b^{2}x^{2}+8\,a^{6}bx+a^{7}}{8\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^9,x, algorithm="fricas")
```

```
[Out] -1/8*(8*b^7*x^7 + 28*a*b^6*x^6 + 56*a^2*b^5*x^5 + 70*a^3*b^4*x^4
+ 56*a^4*b^3*x^3 + 28*a^5*b^2*x^2 + 8*a^6*b*x + a^7)/x^8
```

Sympy [A] time = 2.54978, size = 83, normalized size = 4.88

$$-\frac{a^7+8a^6bx+28a^5b^2x^2+56a^4b^3x^3+70a^3b^4x^4+56a^2b^5x^5+28ab^6x^6+8b^7x^7}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**9,x)
```

```
[Out] -(a**7 + 8*a**6*b*x + 28*a**5*b**2*x**2 + 56*a**4*b**3*x**3 + 70*
a**3*b**4*x**4 + 56*a**2*b**5*x**5 + 28*a*b**6*x**6 + 8*b**7*x**7
)/(8*x**8)
```

GIAC/XCAS [A] time = 0.218573, size = 104, normalized size = 6.12

$$-\frac{8\,b^7x^7+28\,ab^6x^6+56\,a^2b^5x^5+70\,a^3b^4x^4+56\,a^4b^3x^3+28\,a^5b^2x^2+8\,a^6bx+a^7}{8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^9,x, algorithm="giac")
```

```
[Out] -1/8*(8*b^7*x^7 + 28*a*b^6*x^6 + 56*a^2*b^5*x^5 + 70*a^3*b^4*x^4
+ 56*a^4*b^3*x^3 + 28*a^5*b^2*x^2 + 8*a^6*b*x + a^7)/x^8
```

3.116 $\int \frac{(a+bx)^7}{x^{10}}\,dx$

Optimal. Leaf size=36

$$\frac{b(a+bx)^8}{72a^2x^8}-\frac{(a+bx)^8}{9ax^9}$$

```
[Out] -(a + b*x)^8/(9*a*x^9) + (b*(a + b*x)^8)/(72*a^2*x^8)
```

Rubi [A] time = 0.0238509, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b(a+bx)^8}{72a^2x^8}-\frac{(a+bx)^8}{9ax^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^10,x]
```

```
[Out] -(a + b*x)^8/(9*a*x^9) + (b*(a + b*x)^8)/(72*a^2*x^8)
```

Rubi in Sympy [A] time = 3.54033, size = 29, normalized size = 0.81

$$-\frac{(a+bx)^8}{9ax^9}+\frac{b\,(a+bx)^8}{72a^2x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**10,x)
```

```
[Out] -(a + b*x)**8/(9*a*x**9) + b*(a + b*x)**8/(72*a**2*x**8)
```

Mathematica [B] time = 0.00593568, size = 91, normalized size = 2.53

$$-\frac{a^7}{9x^9}-\frac{7a^6b}{8x^8}-\frac{3a^5b^2}{x^7}-\frac{35a^4b^3}{6x^6}-\frac{7a^3b^4}{x^5}-\frac{21a^2b^5}{4x^4}-\frac{7ab^6}{3x^3}-\frac{b^7}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^10,x]
```

```
[Out] -a^7/(9*x^9) - (7*a^6*b)/(8*x^8) - (3*a^5*b^2)/x^7 - (35*a^4*b^3)
/(6*x^6) - (7*a^3*b^4)/x^5 - (21*a^2*b^5)/(4*x^4) - (7*a*b^6)/(3*
x^3) - b^7/(2*x^2)
```

Maple [B] time = 0.007, size = 80, normalized size = 2.2

$$-\frac{b^7}{2\,x^2}-3\,\frac{a^5b^2}{x^7}-7\,\frac{a^3b^4}{x^5}-\frac{7\,ab^6}{3\,x^3}-\frac{7\,a^6b}{8\,x^8}-\frac{21\,a^2b^5}{4\,x^4}-\frac{a^7}{9\,x^9}-\frac{35\,a^4b^3}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^10,x)
```

```
[Out] -1/2*b^7/x^2-3*a^5*b^2/x^7-7*a^3*b^4/x^5-7/3*a*b^6/x^3-7/8*a^6*b/
x^8-21/4*a^2*b^5/x^4-1/9*a^7/x^9-35/6*a^4*b^3/x^6
```

Maxima [A] time = 1.34553, size = 107, normalized size = 2.97

$$-\frac{36\,b^7x^7+168\,ab^6x^6+378\,a^2b^5x^5+504\,a^3b^4x^4+420\,a^4b^3x^3+216\,a^5b^2x^2+63\,a^6bx+8\,a^7}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^10,x, algorithm="maxima")
```

```
[Out] -1/72*(36*b^7*x^7 + 168*a*b^6*x^6 + 378*a^2*b^5*x^5 + 504*a^3*b^4
*x^4 + 420*a^4*b^3*x^3 + 216*a^5*b^2*x^2 + 63*a^6*b*x + 8*a^7)/x^
9
```

Fricas [A] time = 0.190817, size = 107, normalized size = 2.97

$$-\frac{36\,b^7x^7+168\,ab^6x^6+378\,a^2b^5x^5+504\,a^3b^4x^4+420\,a^4b^3x^3+216\,a^5b^2x^2+63\,a^6bx+8\,a^7}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^10,x, algorithm="fricas")
```

```
[Out] -1/72*(36*b^7*x^7 + 168*a*b^6*x^6 + 378*a^2*b^5*x^5 + 504*a^3*b^4
*x^4 + 420*a^4*b^3*x^3 + 216*a^5*b^2*x^2 + 63*a^6*b*x + 8*a^7)/x^
9
```

Sympy [A] time = 2.71491, size = 85, normalized size = 2.36

$$-\frac{8a^7 + 63a^6bx + 216a^5b^2x^2 + 420a^4b^3x^3 + 504a^3b^4x^4 + 378a^2b^5x^5 + 168ab^6x^6 + 36b^7x^7}{72x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**10,x)
```

```
[Out] -(8*a**7 + 63*a**6*b*x + 216*a**5*b**2*x**2 + 420*a**4*b**3*x**3
+ 504*a**3*b**4*x**4 + 378*a**2*b**5*x**5 + 168*a*b**6*x**6 + 36*
b**7*x**7)/(72*x**9)
```

GIAC/XCAS [A] time = 0.217814, size = 107, normalized size = 2.97

$$-\frac{36\,b^7x^7 + 168\,ab^6x^6 + 378\,a^2b^5x^5 + 504\,a^3b^4x^4 + 420\,a^4b^3x^3 + 216\,a^5b^2x^2 + 63\,a^6bx + 8\,a^7}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^10,x, algorithm="giac")
```

```
[Out] -1/72*(36*b^7*x^7 + 168*a*b^6*x^6 + 378*a^2*b^5*x^5 + 504*a^3*b^4
*x^4 + 420*a^4*b^3*x^3 + 216*a^5*b^2*x^2 + 63*a^6*b*x + 8*a^7)/x^
9
```

3.117 $\int \frac{(a+bx)^7}{x^{11}}\,dx$

Optimal. Leaf size=56

$$-\frac{b^2(a+bx)^8}{360a^3x^8}+\frac{b(a+bx)^8}{45a^2x^9}-\frac{(a+bx)^8}{10ax^{10}}$$

```
[Out] -(a + b*x)^8/(10*a*x^10) + (b*(a + b*x)^8)/(45*a^2*x^9) - (b^2*(a
 + b*x)^8)/(360*a^3*x^8)
```

Rubi [A] time = 0.0389771, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{b^2(a+bx)^8}{360a^3x^8}+\frac{b(a+bx)^8}{45a^2x^9}-\frac{(a+bx)^8}{10ax^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^11,x]
```

```
[Out] -(a + b*x)^8/(10*a*x^10) + (b*(a + b*x)^8)/(45*a^2*x^9) - (b^2*(a
 + b*x)^8)/(360*a^3*x^8)
```

Rubi in Sympy [A] time = 5.79342, size = 48, normalized size = 0.86

$$-\frac{(a+bx)^8}{10ax^{10}}+\frac{b\,(a+bx)^8}{45a^2x^9}-\frac{b^2\,(a+bx)^8}{360a^3x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**11,x)
```

```
[Out] -(a + b*x)**8/(10*a*x**10) + b*(a + b*x)**8/(45*a**2*x**9) - b**2
*(a + b*x)**8/(360*a**3*x**8)
```

Mathematica [A] time = 0.00576865, size = 93, normalized size = 1.66

$$-\frac{a^7}{10x^{10}}-\frac{7a^6b}{9x^9}-\frac{21a^5b^2}{8x^8}-\frac{5a^4b^3}{x^7}-\frac{35a^3b^4}{6x^6}-\frac{21a^2b^5}{5x^5}-\frac{7ab^6}{4x^4}-\frac{b^7}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^11,x]
```

```
[Out] -a^7/(10*x^10) - (7*a^6*b)/(9*x^9) - (21*a^5*b^2)/(8*x^8) - (5*a^
4*b^3)/x^7 - (35*a^3*b^4)/(6*x^6) - (21*a^2*b^5)/(5*x^5) - (7*a*b
^6)/(4*x^4) - b^7/(3*x^3)
```

Maple [A] time = 0.007, size = 80, normalized size = 1.4

$$-5\,{\frac{{a}^{4}{b}^{3}}{{x}^{7}}}-{\frac{21\,{a}^{2}{b}^{5}}{5\,{x}^{5}}}-{\frac{{a}^{7}}{10\,{x}^{10}}}-{\frac{21\,{a}^{5}{b}^{2}}{8\,{x}^{8}}}-{\frac{7\,{a}^{6}b}{9\,{x}^{9}}}-{\frac{{b}^{7}}{3\,{x}^{3}}}-{\frac{7\,a{b}^{6}}{4\,{x}^{4}}}-{\frac{35\,{a}^{3}{b}^{4}}{6\,{x}^{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^11,x)
```

```
[Out] -5*a^4*b^3/x^7-21/5*a^2*b^5/x^5-1/10*a^7/x^10-21/8*a^5*b^2/x^8-7/
9*a^6*b/x^9-1/3*b^7/x^3-7/4*a*b^6/x^4-35/6*a^3*b^4/x^6
```

Maxima [A] time = 1.35218, size = 107, normalized size = 1.91

$$-\frac{120\,b^{7}x^{7} + 630\,ab^{6}x^{6} + 1512\,a^{2}b^{5}x^{5} + 2100\,a^{3}b^{4}x^{4} + 1800\,a^{4}b^{3}x^{3} + 945\,a^{5}b^{2}x^{2} + 280\,a^{6}bx + 36\,a^{7}}{360\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^11,x, algorithm="maxima")
```

```
[Out] -1/360*(120*b^7*x^7 + 630*a*b^6*x^6 + 1512*a^2*b^5*x^5 + 2100*a^3
*b^4*x^4 + 1800*a^4*b^3*x^3 + 945*a^5*b^2*x^2 + 280*a^6*b*x + 36*
a^7)/x^10
```

Fricas [A] time = 0.186019, size = 107, normalized size = 1.91

$$-\frac{120\,b^{7}x^{7} + 630\,ab^{6}x^{6} + 1512\,a^{2}b^{5}x^{5} + 2100\,a^{3}b^{4}x^{4} + 1800\,a^{4}b^{3}x^{3} + 945\,a^{5}b^{2}x^{2} + 280\,a^{6}bx + 36\,a^{7}}{360\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^11,x, algorithm="fricas")
```

```
[Out] -1/360*(120*b^7*x^7 + 630*a*b^6*x^6 + 1512*a^2*b^5*x^5 + 2100*a^3
*b^4*x^4 + 1800*a^4*b^3*x^3 + 945*a^5*b^2*x^2 + 280*a^6*b*x + 36*
```

```
a^7)/x^10
```

Sympy [A] time = 2.77409, size = 85, normalized size = 1.52

$$-\frac{36a^7 + 280a^6bx + 945a^5b^2x^2 + 1800a^4b^3x^3 + 2100a^3b^4x^4 + 1512a^2b^5x^5 + 630ab^6x^6 + 120b^7x^7}{360x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**11,x)
```

```
[Out] -(36*a**7 + 280*a**6*b*x + 945*a**5*b**2*x**2 + 1800*a**4*b**3*x*
*3 + 2100*a**3*b**4*x**4 + 1512*a**2*b**5*x**5 + 630*a*b**6*x**6
+ 120*b**7*x**7)/(360*x**10)
```

GIAC/XCAS [A] time = 0.215962, size = 107, normalized size = 1.91

$$-\frac{120\,b^7x^7 + 630\,ab^6x^6 + 1512\,a^2b^5x^5 + 2100\,a^3b^4x^4 + 1800\,a^4b^3x^3 + 945\,a^5b^2x^2 + 280\,a^6bx + 36\,a^7}{360\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^11,x, algorithm="giac")
```

```
[Out] -1/360*(120*b^7*x^7 + 630*a*b^6*x^6 + 1512*a^2*b^5*x^5 + 2100*a^3
*b^4*x^4 + 1800*a^4*b^3*x^3 + 945*a^5*b^2*x^2 + 280*a^6*b*x + 36*
a^7)/x^10
```

3.118 $\int \frac{(a+bx)^7}{x^{12}}\,dx$

Optimal. Leaf size=76

$$\frac{b^3(a+bx)^8}{1320a^4x^8}-\frac{b^2(a+bx)^8}{165a^3x^9}+\frac{3b(a+bx)^8}{110a^2x^{10}}-\frac{(a+bx)^8}{11ax^{11}}$$

```
[Out] -(a + b*x)^8/(11*a*x^11) + (3*b*(a + b*x)^8)/(110*a^2*x^10) - (b^
2*(a + b*x)^8)/(165*a^3*x^9) + (b^3*(a + b*x)^8)/(1320*a^4*x^8)
```

Rubi [A] time = 0.0561874, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$\frac{b^3(a+bx)^8}{1320a^4x^8}-\frac{b^2(a+bx)^8}{165a^3x^9}+\frac{3b(a+bx)^8}{110a^2x^{10}}-\frac{(a+bx)^8}{11ax^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^12,x]
```

```
[Out] -(a + b*x)^8/(11*a*x^11) + (3*b*(a + b*x)^8)/(110*a^2*x^10) - (b^
2*(a + b*x)^8)/(165*a^3*x^9) + (b^3*(a + b*x)^8)/(1320*a^4*x^8)
```

Rubi in Sympy [A] time = 8.65817, size = 68, normalized size = 0.89

$$-\frac{(a+bx)^8}{11ax^{11}}+\frac{3b\,(a+bx)^8}{110a^2x^{10}}-\frac{b^2\,(a+bx)^8}{165a^3x^9}+\frac{b^3\,(a+bx)^8}{1320a^4x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**12,x)
```

```
[Out] -(a + b*x)**8/(11*a*x**11) + 3*b*(a + b*x)**8/(110*a**2*x**10) -
b**2*(a + b*x)**8/(165*a**3*x**9) + b**3*(a + b*x)**8/(1320*a**4*
x**8)
```

Mathematica [A] time = 0.00543107, size = 93, normalized size = 1.22

$$-\frac{a^7}{11x^{11}}-\frac{7a^6b}{10x^{10}}-\frac{7a^5b^2}{3x^9}-\frac{35a^4b^3}{8x^8}-\frac{5a^3b^4}{x^7}-\frac{7a^2b^5}{2x^6}-\frac{7ab^6}{5x^5}-\frac{b^7}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^12,x]
```

```
[Out] -a^7/(11*x^11) - (7*a^6*b)/(10*x^10) - (7*a^5*b^2)/(3*x^9) - (35*
a^4*b^3)/(8*x^8) - (5*a^3*b^4)/x^7 - (7*a^2*b^5)/(2*x^6) - (7*a*b
^6)/(5*x^5) - b^7/(4*x^4)
```

Maple [A]   time = 0.01, size = 80, normalized size = 1.1

$$-\frac{7\,a b^6}{5\,x^5}-\frac{7\,a^6 b}{10\,x^{10}}-\frac{7\,a^5 b^2}{3\,x^9}-5\,\frac{a^3 b^4}{x^7}-\frac{35\,a^4 b^3}{8\,x^8}-\frac{a^7}{11\,x^{11}}-\frac{b^7}{4\,x^4}-\frac{7\,a^2 b^5}{2\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^12,x)
```

```
[Out] -7/5*a*b^6/x^5-7/10*a^6*b/x^10-7/3*a^5*b^2/x^9-5*a^3*b^4/x^7-35/8
*a^4*b^3/x^8-1/11*a^7/x^11-1/4*b^7/x^4-7/2*a^2*b^5/x^6
```

Maxima [A]   time = 1.33803, size = 107, normalized size = 1.41

$$-\frac{330\,b^7 x^7+1848\,a b^6 x^6+4620\,a^2 b^5 x^5+6600\,a^3 b^4 x^4+5775\,a^4 b^3 x^3+3080\,a^5 b^2 x^2+924\,a^6 b x+120\,a^7}{1320\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^12,x, algorithm="maxima")
```

```
[Out] -1/1320*(330*b^7*x^7 + 1848*a*b^6*x^6 + 4620*a^2*b^5*x^5 + 6600*a
^3*b^4*x^4 + 5775*a^4*b^3*x^3 + 3080*a^5*b^2*x^2 + 924*a^6*b*x +
120*a^7)/x^11
```

Fricas [A]   time = 0.190174, size = 107, normalized size = 1.41

$$-\frac{330\,b^7 x^7+1848\,a b^6 x^6+4620\,a^2 b^5 x^5+6600\,a^3 b^4 x^4+5775\,a^4 b^3 x^3+3080\,a^5 b^2 x^2+924\,a^6 b x+120\,a^7}{1320\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^12,x, algorithm="fricas")
```

```
[Out] -1/1320*(330*b^7*x^7 + 1848*a*b^6*x^6 + 4620*a^2*b^5*x^5 + 6600*a
^3*b^4*x^4 + 5775*a^4*b^3*x^3 + 3080*a^5*b^2*x^2 + 924*a^6*b*x +
```

```
120*a^7)/x^11
```

Sympy [A] time = 2.98672, size = 85, normalized size = 1.12

$$-\frac{120a^7 + 924a^6bx + 3080a^5b^2x^2 + 5775a^4b^3x^3 + 6600a^3b^4x^4 + 4620a^2b^5x^5 + 1848ab^6x^6 + 330b^7x^7}{1320x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**12,x)
```

```
[Out] -(120*a**7 + 924*a**6*b*x + 3080*a**5*b**2*x**2 + 5775*a**4*b**3*
x**3 + 6600*a**3*b**4*x**4 + 4620*a**2*b**5*x**5 + 1848*a*b**6*x*
*6 + 330*b**7*x**7)/(1320*x**11)
```

GIAC/XCAS [A] time = 0.216855, size = 107, normalized size = 1.41

$$-\frac{330\,b^7x^7 + 1848\,ab^6x^6 + 4620\,a^2b^5x^5 + 6600\,a^3b^4x^4 + 5775\,a^4b^3x^3 + 3080\,a^5b^2x^2 + 924\,a^6bx + 120\,a^7}{1320\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^12,x, algorithm="giac")
```

```
[Out] -1/1320*(330*b^7*x^7 + 1848*a*b^6*x^6 + 4620*a^2*b^5*x^5 + 6600*a
^3*b^4*x^4 + 5775*a^4*b^3*x^3 + 3080*a^5*b^2*x^2 + 924*a^6*b*x +
120*a^7)/x^11
```

3.119 $\int \frac{(a+bx)^7}{x^{13}}\,dx$

Optimal. Leaf size=96

$$-\frac{b^4(a+bx)^8}{3960a^5x^8}+\frac{b^3(a+bx)^8}{495a^4x^9}-\frac{b^2(a+bx)^8}{110a^3x^{10}}+\frac{b(a+bx)^8}{33a^2x^{11}}-\frac{(a+bx)^8}{12ax^{12}}$$

```
[Out] -(a + b*x)^8/(12*a*x^12) + (b*(a + b*x)^8)/(33*a^2*x^11) - (b^2*(
a + b*x)^8)/(110*a^3*x^10) + (b^3*(a + b*x)^8)/(495*a^4*x^9) - (b
^4*(a + b*x)^8)/(3960*a^5*x^8)
```

Rubi [A] time = 0.0757435, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{b^4(a+bx)^8}{3960a^5x^8}+\frac{b^3(a+bx)^8}{495a^4x^9}-\frac{b^2(a+bx)^8}{110a^3x^{10}}+\frac{b(a+bx)^8}{33a^2x^{11}}-\frac{(a+bx)^8}{12ax^{12}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^13,x]
```

```
[Out] -(a + b*x)^8/(12*a*x^12) + (b*(a + b*x)^8)/(33*a^2*x^11) - (b^2*(
a + b*x)^8)/(110*a^3*x^10) + (b^3*(a + b*x)^8)/(495*a^4*x^9) - (b
^4*(a + b*x)^8)/(3960*a^5*x^8)
```

Rubi in Sympy [A] time = 15.3769, size = 94, normalized size = 0.98

$$-\frac{a^7}{12x^{12}}-\frac{7a^6b}{11x^{11}}-\frac{21a^5b^2}{10x^{10}}-\frac{35a^4b^3}{9x^9}-\frac{35a^3b^4}{8x^8}-\frac{3a^2b^5}{x^7}-\frac{7ab^6}{6x^6}-\frac{b^7}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**13,x)
```

```
[Out] -a**7/(12*x**12) - 7*a**6*b/(11*x**11) - 21*a**5*b**2/(10*x**10)
- 35*a**4*b**3/(9*x**9) - 35*a**3*b**4/(8*x**8) - 3*a**2*b**5/x**
7 - 7*a*b**6/(6*x**6) - b**7/(5*x**5)
```

Mathematica [A] time = 0.00557122, size = 93, normalized size = 0.97

$$-\frac{a^7}{12x^{12}}-\frac{7a^6b}{11x^{11}}-\frac{21a^5b^2}{10x^{10}}-\frac{35a^4b^3}{9x^9}-\frac{35a^3b^4}{8x^8}-\frac{3a^2b^5}{x^7}-\frac{7ab^6}{6x^6}-\frac{b^7}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^13,x]
```

```
[Out] -a^7/(12*x^12) - (7*a^6*b)/(11*x^11) - (21*a^5*b^2)/(10*x^10) - (
35*a^4*b^3)/(9*x^9) - (35*a^3*b^4)/(8*x^8) - (3*a^2*b^5)/x^7 - (7
*a*b^6)/(6*x^6) - b^7/(5*x^5)
```

Maple [A] time = 0.01, size = 80, normalized size = 0.8

$$-\frac{35\,a^{4}b^{3}}{9\,x^{9}}-3\,\frac{a^{2}b^{5}}{x^{7}}-\frac{b^{7}}{5\,x^{5}}-\frac{7\,a^{6}b}{11\,x^{11}}-\frac{35\,a^{3}b^{4}}{8\,x^{8}}-\frac{21\,a^{5}b^{2}}{10\,x^{10}}-\frac{a^{7}}{12\,x^{12}}-\frac{7\,ab^{6}}{6\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^13,x)
```

```
[Out] -35/9*a^4*b^3/x^9-3*a^2*b^5/x^7-1/5*b^7/x^5-7/11*a^6*b/x^11-35/8*
a^3*b^4/x^8-21/10*a^5*b^2/x^10-1/12*a^7/x^12-7/6*a*b^6/x^6
```

Maxima [A] time = 1.34628, size = 107, normalized size = 1.11

$$-\frac{792\,b^{7}x^{7}+4620\,ab^{6}x^{6}+11880\,a^{2}b^{5}x^{5}+17325\,a^{3}b^{4}x^{4}+15400\,a^{4}b^{3}x^{3}+8316\,a^{5}b^{2}x^{2}+2520\,a^{6}bx+330\,a^{7}}{3960\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^13,x, algorithm="maxima")
```

```
[Out] -1/3960*(792*b^7*x^7 + 4620*a*b^6*x^6 + 11880*a^2*b^5*x^5 + 17325
*a^3*b^4*x^4 + 15400*a^4*b^3*x^3 + 8316*a^5*b^2*x^2 + 2520*a^6*b*
x + 330*a^7)/x^12
```

Fricas [A] time = 0.186837, size = 107, normalized size = 1.11

$$-\frac{792\,b^{7}x^{7}+4620\,ab^{6}x^{6}+11880\,a^{2}b^{5}x^{5}+17325\,a^{3}b^{4}x^{4}+15400\,a^{4}b^{3}x^{3}+8316\,a^{5}b^{2}x^{2}+2520\,a^{6}bx+330\,a^{7}}{3960\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^13,x, algorithm="fricas")
```

```
[Out] -1/3960*(792*b^7*x^7 + 4620*a*b^6*x^6 + 11880*a^2*b^5*x^5 + 17325
*a^3*b^4*x^4 + 15400*a^4*b^3*x^3 + 8316*a^5*b^2*x^2 + 2520*a^6*b*
x + 330*a^7)/x^12
```

Sympy [A] time = 3.09676, size = 85, normalized size = 0.89

$$-\frac{330a^7 + 2520a^6bx + 8316a^5b^2x^2 + 15400a^4b^3x^3 + 17325a^3b^4x^4 + 11880a^2b^5x^5 + 4620ab^6x^6 + 792b^7x^7}{3960x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**13,x)
```

```
[Out] -(330*a**7 + 2520*a**6*b*x + 8316*a**5*b**2*x**2 + 15400*a**4*b**
3*x**3 + 17325*a**3*b**4*x**4 + 11880*a**2*b**5*x**5 + 4620*a*b**
6*x**6 + 792*b**7*x**7)/(3960*x**12)
```

GIAC/XCAS [A] time = 0.201741, size = 107, normalized size = 1.11

$$-\frac{792\,b^7x^7 + 4620\,ab^6x^6 + 11880\,a^2b^5x^5 + 17325\,a^3b^4x^4 + 15400\,a^4b^3x^3 + 8316\,a^5b^2x^2 + 2520\,a^6bx + 330\,a^7}{3960\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^13,x, algorithm="giac")
```

```
[Out] -1/3960*(792*b^7*x^7 + 4620*a*b^6*x^6 + 11880*a^2*b^5*x^5 + 17325
*a^3*b^4*x^4 + 15400*a^4*b^3*x^3 + 8316*a^5*b^2*x^2 + 2520*a^6*b*
x + 330*a^7)/x^12
```

3.120 $\int \frac{(a+bx)^7}{x^{14}}\,dx$

Optimal. Leaf size=93

$$-\frac{a^7}{13x^{13}}-\frac{7a^6b}{12x^{12}}-\frac{21a^5b^2}{11x^{11}}-\frac{7a^4b^3}{2x^{10}}-\frac{35a^3b^4}{9x^9}-\frac{21a^2b^5}{8x^8}-\frac{ab^6}{x^7}-\frac{b^7}{6x^6}$$

```
[Out] -a^7/(13*x^13) - (7*a^6*b)/(12*x^12) - (21*a^5*b^2)/(11*x^11) - (
7*a^4*b^3)/(2*x^10) - (35*a^3*b^4)/(9*x^9) - (21*a^2*b^5)/(8*x^8)
 - (a*b^6)/x^7 - b^7/(6*x^6)
```

Rubi [A] time = 0.0771543, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{13x^{13}}-\frac{7a^6b}{12x^{12}}-\frac{21a^5b^2}{11x^{11}}-\frac{7a^4b^3}{2x^{10}}-\frac{35a^3b^4}{9x^9}-\frac{21a^2b^5}{8x^8}-\frac{ab^6}{x^7}-\frac{b^7}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^14,x]
```

```
[Out] -a^7/(13*x^13) - (7*a^6*b)/(12*x^12) - (21*a^5*b^2)/(11*x^11) - (
7*a^4*b^3)/(2*x^10) - (35*a^3*b^4)/(9*x^9) - (21*a^2*b^5)/(8*x^8)
 - (a*b^6)/x^7 - b^7/(6*x^6)
```

Rubi in Sympy [A] time = 15.4623, size = 92, normalized size = 0.99

$$-\frac{a^7}{13x^{13}}-\frac{7a^6b}{12x^{12}}-\frac{21a^5b^2}{11x^{11}}-\frac{7a^4b^3}{2x^{10}}-\frac{35a^3b^4}{9x^9}-\frac{21a^2b^5}{8x^8}-\frac{ab^6}{x^7}-\frac{b^7}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**14,x)
```

```
[Out] -a**7/(13*x**13) - 7*a**6*b/(12*x**12) - 21*a**5*b**2/(11*x**11)
- 7*a**4*b**3/(2*x**10) - 35*a**3*b**4/(9*x**9) - 21*a**2*b**5/(8
*x**8) - a*b**6/x**7 - b**7/(6*x**6)
```

Mathematica [A] time = 0.00944462, size = 93, normalized size = 1.

$$-\frac{a^7}{13x^{13}}-\frac{7a^6b}{12x^{12}}-\frac{21a^5b^2}{11x^{11}}-\frac{7a^4b^3}{2x^{10}}-\frac{35a^3b^4}{9x^9}-\frac{21a^2b^5}{8x^8}-\frac{ab^6}{x^7}-\frac{b^7}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^14,x]
```

```
[Out] -a^7/(13*x^13) - (7*a^6*b)/(12*x^12) - (21*a^5*b^2)/(11*x^11) - (
7*a^4*b^3)/(2*x^10) - (35*a^3*b^4)/(9*x^9) - (21*a^2*b^5)/(8*x^8)
 - (a*b^6)/x^7 - b^7/(6*x^6)
```

Maple [A] time = 0.01, size = 80, normalized size = 0.9

$$-\frac{a^7}{13\,x^{13}}-\frac{7\,a^6b}{12\,x^{12}}-\frac{21\,a^5b^2}{11\,x^{11}}-\frac{7\,a^4b^3}{2\,x^{10}}-\frac{35\,a^3b^4}{9\,x^9}-\frac{21\,a^2b^5}{8\,x^8}-\frac{ab^6}{x^7}-\frac{b^7}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^14,x)
```

```
[Out] -1/13*a^7/x^13-7/12*a^6*b/x^12-21/11*a^5*b^2/x^11-7/2*a^4*b^3/x^1
0-35/9*a^3*b^4/x^9-21/8*a^2*b^5/x^8-a*b^6/x^7-1/6*b^7/x^6
```

Maxima [A] time = 1.34893, size = 107, normalized size = 1.15

$$-\frac{1716\,b^7x^7+10296\,ab^6x^6+27027\,a^2b^5x^5+40040\,a^3b^4x^4+36036\,a^4b^3x^3+19656\,a^5b^2x^2+6006\,a^6bx+792\,a^7}{10296\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^14,x, algorithm="maxima")
```

```
[Out] -1/10296*(1716*b^7*x^7 + 10296*a*b^6*x^6 + 27027*a^2*b^5*x^5 + 40
040*a^3*b^4*x^4 + 36036*a^4*b^3*x^3 + 19656*a^5*b^2*x^2 + 6006*a^
6*b*x + 792*a^7)/x^13
```

Fricas [A] time = 0.194475, size = 107, normalized size = 1.15

$$-\frac{1716\,b^7x^7+10296\,ab^6x^6+27027\,a^2b^5x^5+40040\,a^3b^4x^4+36036\,a^4b^3x^3+19656\,a^5b^2x^2+6006\,a^6bx+792\,a^7}{10296\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^14,x, algorithm="fricas")
```

```
[Out] -1/10296*(1716*b^7*x^7 + 10296*a*b^6*x^6 + 27027*a^2*b^5*x^5 + 40
040*a^3*b^4*x^4 + 36036*a^4*b^3*x^3 + 19656*a^5*b^2*x^2 + 6006*a^
6*b*x + 792*a^7)/x^13
```

Sympy [A] time = 3.19113, size = 85, normalized size = 0.91

$$-\frac{792a^7 + 6006a^6bx + 19656a^5b^2x^2 + 36036a^4b^3x^3 + 40040a^3b^4x^4 + 27027a^2b^5x^5 + 10296ab^6x^6 + 1716b^7x^7}{10296x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**14,x)
```

```
[Out] -(792*a**7 + 6006*a**6*b*x + 19656*a**5*b**2*x**2 + 36036*a**4*b*
*3*x**3 + 40040*a**3*b**4*x**4 + 27027*a**2*b**5*x**5 + 10296*a*b
**6*x**6 + 1716*b**7*x**7)/(10296*x**13)
```

GIAC/XCAS [A] time = 0.203175, size = 107, normalized size = 1.15

$$-\frac{1716\,b^7x^7 + 10296\,ab^6x^6 + 27027\,a^2b^5x^5 + 40040\,a^3b^4x^4 + 36036\,a^4b^3x^3 + 19656\,a^5b^2x^2 + 6006\,a^6bx + 792\,a^7}{10296\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^14,x, algorithm="giac")
```

```
[Out] -1/10296*(1716*b^7*x^7 + 10296*a*b^6*x^6 + 27027*a^2*b^5*x^5 + 40
040*a^3*b^4*x^4 + 36036*a^4*b^3*x^3 + 19656*a^5*b^2*x^2 + 6006*a^
6*b*x + 792*a^7)/x^13
```

3.121 $\int \frac{(a+bx)^7}{x^{15}} \, dx$

Optimal. Leaf size=95

$$-\frac{a^7}{14x^{14}}-\frac{7a^6b}{13x^{13}}-\frac{7a^5b^2}{4x^{12}}-\frac{35a^4b^3}{11x^{11}}-\frac{7a^3b^4}{2x^{10}}-\frac{7a^2b^5}{3x^9}-\frac{7ab^6}{8x^8}-\frac{b^7}{7x^7}$$

```
[Out] -a^7/(14*x^14) - (7*a^6*b)/(13*x^13) - (7*a^5*b^2)/(4*x^12) - (35
*a^4*b^3)/(11*x^11) - (7*a^3*b^4)/(2*x^10) - (7*a^2*b^5)/(3*x^9)
- (7*a*b^6)/(8*x^8) - b^7/(7*x^7)
```

Rubi [A] time = 0.0748104, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{14x^{14}}-\frac{7a^6b}{13x^{13}}-\frac{7a^5b^2}{4x^{12}}-\frac{35a^4b^3}{11x^{11}}-\frac{7a^3b^4}{2x^{10}}-\frac{7a^2b^5}{3x^9}-\frac{7ab^6}{8x^8}-\frac{b^7}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^15,x]
```

```
[Out] -a^7/(14*x^14) - (7*a^6*b)/(13*x^13) - (7*a^5*b^2)/(4*x^12) - (35
*a^4*b^3)/(11*x^11) - (7*a^3*b^4)/(2*x^10) - (7*a^2*b^5)/(3*x^9)
- (7*a*b^6)/(8*x^8) - b^7/(7*x^7)
```

Rubi in Sympy [A] time = 15.5083, size = 95, normalized size = 1.

$$-\frac{a^7}{14x^{14}}-\frac{7a^6b}{13x^{13}}-\frac{7a^5b^2}{4x^{12}}-\frac{35a^4b^3}{11x^{11}}-\frac{7a^3b^4}{2x^{10}}-\frac{7a^2b^5}{3x^9}-\frac{7ab^6}{8x^8}-\frac{b^7}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**15,x)
```

```
[Out] -a**7/(14*x**14) - 7*a**6*b/(13*x**13) - 7*a**5*b**2/(4*x**12) -
35*a**4*b**3/(11*x**11) - 7*a**3*b**4/(2*x**10) - 7*a**2*b**5/(3*
x**9) - 7*a*b**6/(8*x**8) - b**7/(7*x**7)
```

Mathematica [A] time = 0.00551619, size = 95, normalized size = 1.

$$-\frac{a^7}{14x^{14}}-\frac{7a^6b}{13x^{13}}-\frac{7a^5b^2}{4x^{12}}-\frac{35a^4b^3}{11x^{11}}-\frac{7a^3b^4}{2x^{10}}-\frac{7a^2b^5}{3x^9}-\frac{7ab^6}{8x^8}-\frac{b^7}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^15,x]
```

```
[Out] -a^7/(14*x^14) - (7*a^6*b)/(13*x^13) - (7*a^5*b^2)/(4*x^12) - (35
*a^4*b^3)/(11*x^11) - (7*a^3*b^4)/(2*x^10) - (7*a^2*b^5)/(3*x^9)
- (7*a*b^6)/(8*x^8) - b^7/(7*x^7)
```

Maple [A] time = 0.008, size = 80, normalized size = 0.8

$$-\frac{a^7}{14\,x^{14}}-\frac{7\,a^6b}{13\,x^{13}}-\frac{7\,a^5b^2}{4\,x^{12}}-\frac{35\,a^4b^3}{11\,x^{11}}-\frac{7\,a^3b^4}{2\,x^{10}}-\frac{7\,a^2b^5}{3\,x^9}-\frac{7\,ab^6}{8\,x^8}-\frac{b^7}{7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^15,x)
```

```
[Out] -1/14*a^7/x^14-7/13*a^6*b/x^13-7/4*a^5*b^2/x^12-35/11*a^4*b^3/x^1
1-7/2*a^3*b^4/x^10-7/3*a^2*b^5/x^9-7/8*a*b^6/x^8-1/7*b^7/x^7
```

Maxima [A] time = 1.34268, size = 107, normalized size = 1.13

$$-\frac{3432\,b^7x^7+21021\,ab^6x^6+56056\,a^2b^5x^5+84084\,a^3b^4x^4+76440\,a^4b^3x^3+42042\,a^5b^2x^2+12936\,a^6bx+1716\,a^7}{24024\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^15,x, algorithm="maxima")
```

```
[Out] -1/24024*(3432*b^7*x^7 + 21021*a*b^6*x^6 + 56056*a^2*b^5*x^5 + 84
084*a^3*b^4*x^4 + 76440*a^4*b^3*x^3 + 42042*a^5*b^2*x^2 + 12936*a
^6*b*x + 1716*a^7)/x^14
```

Fricas [A] time = 0.191817, size = 107, normalized size = 1.13

$$-\frac{3432\,b^7x^7+21021\,ab^6x^6+56056\,a^2b^5x^5+84084\,a^3b^4x^4+76440\,a^4b^3x^3+42042\,a^5b^2x^2+12936\,a^6bx+1716\,a^7}{24024\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^15,x, algorithm="fricas")
```

```
[Out] -1/24024*(3432*b^7*x^7 + 21021*a*b^6*x^6 + 56056*a^2*b^5*x^5 + 84
084*a^3*b^4*x^4 + 76440*a^4*b^3*x^3 + 42042*a^5*b^2*x^2 + 12936*a
^6*b*x + 1716*a^7)/x^14
```

Sympy [A] time = 3.3231, size = 85, normalized size = 0.89

$$-\frac{1716a^7 + 12936a^6bx + 42042a^5b^2x^2 + 76440a^4b^3x^3 + 84084a^3b^4x^4 + 56056a^2b^5x^5 + 21021ab^6x^6 + 3432b^7x^7}{24024x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**15,x)
```

```
[Out] -(1716*a**7 + 12936*a**6*b*x + 42042*a**5*b**2*x**2 + 76440*a**4*
b**3*x**3 + 84084*a**3*b**4*x**4 + 56056*a**2*b**5*x**5 + 21021*a
*b**6*x**6 + 3432*b**7*x**7)/(24024*x**14)
```

GIAC/XCAS [A] time = 0.210611, size = 107, normalized size = 1.13

$$-\frac{3432\,b^7x^7 + 21021\,ab^6x^6 + 56056\,a^2b^5x^5 + 84084\,a^3b^4x^4 + 76440\,a^4b^3x^3 + 42042\,a^5b^2x^2 + 12936\,a^6bx + 1716\,a^7}{24024\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^15,x, algorithm="giac")
```

```
[Out] -1/24024*(3432*b^7*x^7 + 21021*a*b^6*x^6 + 56056*a^2*b^5*x^5 + 84
084*a^3*b^4*x^4 + 76440*a^4*b^3*x^3 + 42042*a^5*b^2*x^2 + 12936*a
^6*b*x + 1716*a^7)/x^14
```

3.122 $\int \frac{(a+bx)^7}{x^{16}}\,dx$

Optimal. Leaf size=95

$$-\frac{a^7}{15x^{15}}-\frac{a^6b}{2x^{14}}-\frac{21a^5b^2}{13x^{13}}-\frac{35a^4b^3}{12x^{12}}-\frac{35a^3b^4}{11x^{11}}-\frac{21a^2b^5}{10x^{10}}-\frac{7ab^6}{9x^9}-\frac{b^7}{8x^8}$$

```
[Out] -a^7/(15*x^15) - (a^6*b)/(2*x^14) - (21*a^5*b^2)/(13*x^13) - (35*
a^4*b^3)/(12*x^12) - (35*a^3*b^4)/(11*x^11) - (21*a^2*b^5)/(10*x^
10) - (7*a*b^6)/(9*x^9) - b^7/(8*x^8)
```

Rubi [A] time = 0.0724602, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7}{15x^{15}}-\frac{a^6b}{2x^{14}}-\frac{21a^5b^2}{13x^{13}}-\frac{35a^4b^3}{12x^{12}}-\frac{35a^3b^4}{11x^{11}}-\frac{21a^2b^5}{10x^{10}}-\frac{7ab^6}{9x^9}-\frac{b^7}{8x^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^16,x]
```

```
[Out] -a^7/(15*x^15) - (a^6*b)/(2*x^14) - (21*a^5*b^2)/(13*x^13) - (35*
a^4*b^3)/(12*x^12) - (35*a^3*b^4)/(11*x^11) - (21*a^2*b^5)/(10*x^
10) - (7*a*b^6)/(9*x^9) - b^7/(8*x^8)
```

Rubi in Sympy [A] time = 15.5226, size = 94, normalized size = 0.99

$$-\frac{a^7}{15x^{15}}-\frac{a^6b}{2x^{14}}-\frac{21a^5b^2}{13x^{13}}-\frac{35a^4b^3}{12x^{12}}-\frac{35a^3b^4}{11x^{11}}-\frac{21a^2b^5}{10x^{10}}-\frac{7ab^6}{9x^9}-\frac{b^7}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**16,x)
```

```
[Out] -a**7/(15*x**15) - a**6*b/(2*x**14) - 21*a**5*b**2/(13*x**13) - 3
5*a**4*b**3/(12*x**12) - 35*a**3*b**4/(11*x**11) - 21*a**2*b**5/(
10*x**10) - 7*a*b**6/(9*x**9) - b**7/(8*x**8)
```

Mathematica [A] time = 0.00534916, size = 95, normalized size = 1.

$$-\frac{a^7}{15x^{15}}-\frac{a^6b}{2x^{14}}-\frac{21a^5b^2}{13x^{13}}-\frac{35a^4b^3}{12x^{12}}-\frac{35a^3b^4}{11x^{11}}-\frac{21a^2b^5}{10x^{10}}-\frac{7ab^6}{9x^9}-\frac{b^7}{8x^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^16,x]
```

```
[Out] -a^7/(15*x^15) - (a^6*b)/(2*x^14) - (21*a^5*b^2)/(13*x^13) - (35*
a^4*b^3)/(12*x^12) - (35*a^3*b^4)/(11*x^11) - (21*a^2*b^5)/(10*x^
10) - (7*a*b^6)/(9*x^9) - b^7/(8*x^8)
```

Maple [A] time = 0.01, size = 80, normalized size = 0.8

$$-\frac{a^{7}}{15\,x^{15}}-\frac{a^{6}b}{2\,x^{14}}-\frac{21\,a^{5}b^{2}}{13\,x^{13}}-\frac{35\,a^{4}b^{3}}{12\,x^{12}}-\frac{35\,a^{3}b^{4}}{11\,x^{11}}-\frac{21\,a^{2}b^{5}}{10\,x^{10}}-\frac{7\,ab^{6}}{9\,x^{9}}-\frac{b^{7}}{8\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^16,x)
```

```
[Out] -1/15*a^7/x^15-1/2*a^6*b/x^14-21/13*a^5*b^2/x^13-35/12*a^4*b^3/x^
12-35/11*a^3*b^4/x^11-21/10*a^2*b^5/x^10-7/9*a*b^6/x^9-1/8*b^7/x^
8
```

Maxima [A] time = 1.3477, size = 107, normalized size = 1.13

$$-\frac{6435\,b^{7}x^{7}+40040\,ab^{6}x^{6}+108108\,a^{2}b^{5}x^{5}+163800\,a^{3}b^{4}x^{4}+150150\,a^{4}b^{3}x^{3}+83160\,a^{5}b^{2}x^{2}+25740\,a^{6}bx+3432\,a^{7}}{51480\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^16,x, algorithm="maxima")
```

```
[Out] -1/51480*(6435*b^7*x^7 + 40040*a*b^6*x^6 + 108108*a^2*b^5*x^5 + 1
63800*a^3*b^4*x^4 + 150150*a^4*b^3*x^3 + 83160*a^5*b^2*x^2 + 2574
0*a^6*b*x + 3432*a^7)/x^15
```

Fricas [A] time = 0.185797, size = 107, normalized size = 1.13

$$-\frac{6435\,b^{7}x^{7}+40040\,ab^{6}x^{6}+108108\,a^{2}b^{5}x^{5}+163800\,a^{3}b^{4}x^{4}+150150\,a^{4}b^{3}x^{3}+83160\,a^{5}b^{2}x^{2}+25740\,a^{6}bx+3432\,a^{7}}{51480\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^16,x, algorithm="fricas")
```

```
[Out] -1/51480*(6435*b^7*x^7 + 40040*a*b^6*x^6 + 108108*a^2*b^5*x^5 + 1
63800*a^3*b^4*x^4 + 150150*a^4*b^3*x^3 + 83160*a^5*b^2*x^2 + 2574
0*a^6*b*x + 3432*a^7)/x^15
```

Sympy [A] time = 3.44036, size = 85, normalized size = 0.89

$$-\frac{3432a^7 + 25740a^6bx + 83160a^5b^2x^2 + 150150a^4b^3x^3 + 163800a^3b^4x^4 + 108108a^2b^5x^5 + 40040ab^6x^6 + 6435b^7x^7}{51480x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**16,x)
```

```
[Out] -(3432*a**7 + 25740*a**6*b*x + 83160*a**5*b**2*x**2 + 150150*a**4
*b**3*x**3 + 163800*a**3*b**4*x**4 + 108108*a**2*b**5*x**5 + 4004
0*a*b**6*x**6 + 6435*b**7*x**7)/(51480*x**15)
```

GIAC/XCAS [A] time = 0.203329, size = 107, normalized size = 1.13

$$-\frac{6435\,b^7x^7 + 40040\,ab^6x^6 + 108108\,a^2b^5x^5 + 163800\,a^3b^4x^4 + 150150\,a^4b^3x^3 + 83160\,a^5b^2x^2 + 25740\,a^6bx + 3432\,a^7}{51480\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^16,x, algorithm="giac")
```

```
[Out] -1/51480*(6435*b^7*x^7 + 40040*a*b^6*x^6 + 108108*a^2*b^5*x^5 + 1
63800*a^3*b^4*x^4 + 150150*a^4*b^3*x^3 + 83160*a^5*b^2*x^2 + 2574
0*a^6*b*x + 3432*a^7)/x^15
```

3.123 $\int x^{11}(a+bx)^{10}\,dx$

Optimal. Leaf size=132

$$\frac{a^{10}x^{12}}{12}+\frac{10}{13}a^9bx^{13}+\frac{45}{14}a^8b^2x^{14}+8a^7b^3x^{15}+\frac{105}{8}a^6b^4x^{16}+\frac{252}{17}a^5b^5x^{17}+\frac{35}{3}a^4b^6x^{18}+\frac{120}{19}a^3b^7x^{19}+\frac{9}{4}a^2b^8x^{20}+\frac{10}{21}ab^9x^{21}+\frac{b^{10}x^{22}}{22}$$

```
[Out] (a^10*x^12)/12 + (10*a^9*b*x^13)/13 + (45*a^8*b^2*x^14)/14 + 8*a^
7*b^3*x^15 + (105*a^6*b^4*x^16)/8 + (252*a^5*b^5*x^17)/17 + (35*a
^4*b^6*x^18)/3 + (120*a^3*b^7*x^19)/19 + (9*a^2*b^8*x^20)/4 + (10
*a*b^9*x^21)/21 + (b^10*x^22)/22
```

Rubi [A] time = 0.161009, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^{10}x^{12}}{12}+\frac{10}{13}a^9bx^{13}+\frac{45}{14}a^8b^2x^{14}+8a^7b^3x^{15}+\frac{105}{8}a^6b^4x^{16}+\frac{252}{17}a^5b^5x^{17}+\frac{35}{3}a^4b^6x^{18}+\frac{120}{19}a^3b^7x^{19}+\frac{9}{4}a^2b^8x^{20}+\frac{10}{21}ab^9x^{21}+\frac{b^{10}x^{22}}{22}$$

Antiderivative was successfully verified.

```
[In]  Int[x^11*(a + b*x)^10,x]
```

```
[Out] (a^10*x^12)/12 + (10*a^9*b*x^13)/13 + (45*a^8*b^2*x^14)/14 + 8*a^
7*b^3*x^15 + (105*a^6*b^4*x^16)/8 + (252*a^5*b^5*x^17)/17 + (35*a
^4*b^6*x^18)/3 + (120*a^3*b^7*x^19)/19 + (9*a^2*b^8*x^20)/4 + (10
*a*b^9*x^21)/21 + (b^10*x^22)/22
```

Rubi in Sympy [A] time = 28.9923, size = 133, normalized size = 1.01

$$\frac{a^{10}x^{12}}{12}+\frac{10a^9bx^{13}}{13}+\frac{45a^8b^2x^{14}}{14}+8a^7b^3x^{15}+\frac{105a^6b^4x^{16}}{8}+\frac{252a^5b^5x^{17}}{17}+\frac{35a^4b^6x^{18}}{3}+\frac{120a^3b^7x^{19}}{19}+\frac{9a^2b^8x^{20}}{4}+\frac{10ab^9x^{21}}{21}+\frac{b^{10}x^{22}}{22}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**11*(b*x+a)**10,x)
```

```
[Out] a**10*x**12/12 + 10*a**9*b*x**13/13 + 45*a**8*b**2*x**14/14 + 8*a
**7*b**3*x**15 + 105*a**6*b**4*x**16/8 + 252*a**5*b**5*x**17/17 +
```

```
 35*a**4*b**6*x**18/3 + 120*a**3*b**7*x**19/19 + 9*a**2*b**8*x**2
0/4 + 10*a*b**9*x**21/21 + b**10*x**22/22
```

Mathematica [A] time = 0.0045908, size = 132, normalized size = 1.

$$\frac{a^{10}x^{12}}{12}+\frac{10}{13}a^9bx^{13}+\frac{45}{14}a^8b^2x^{14}+8a^7b^3x^{15}+\frac{105}{8}a^6b^4x^{16}+\frac{252}{17}a^5b^5x^{17}+\frac{35}{3}a^4b^6x^{18}+\frac{120}{19}a^3b^7x^{19}+\frac{9}{4}a^2b^8x^{20}+\frac{10}{21}ab^9x^{21}+\frac{b^{10}x^{22}}{22}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^11*(a + b*x)^10,x]
```

```
[Out] (a^10*x^12)/12 + (10*a^9*b*x^13)/13 + (45*a^8*b^2*x^14)/14 + 8*a^
7*b^3*x^15 + (105*a^6*b^4*x^16)/8 + (252*a^5*b^5*x^17)/17 + (35*a
^4*b^6*x^18)/3 + (120*a^3*b^7*x^19)/19 + (9*a^2*b^8*x^20)/4 + (10
*a*b^9*x^21)/21 + (b^10*x^22)/22
```

Maple [A] time = 0.003, size = 113, normalized size = 0.9

$$\frac{a^{10}x^{12}}{12}+\frac{10\,a^9bx^{13}}{13}+\frac{45\,a^8b^2x^{14}}{14}+8\,a^7b^3x^{15}+\frac{105\,a^6b^4x^{16}}{8}+\frac{252\,a^5b^5x^{17}}{17}+\frac{35\,a^4b^6x^{18}}{3}+\frac{120\,a^3b^7x^{19}}{19}+\frac{9\,a^2b^8x^{20}}{4}+\frac{10\,ab^9x^{21}}{21}+\frac{b^{10}x^{22}}{22}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^11*(b*x+a)^10,x)
```

```
[Out] 1/12*a^10*x^12+10/13*a^9*b*x^13+45/14*a^8*b^2*x^14+8*a^7*b^3*x^15
+105/8*a^6*b^4*x^16+252/17*a^5*b^5*x^17+35/3*a^4*b^6*x^18+120/19*
a^3*b^7*x^19+9/4*a^2*b^8*x^20+10/21*a*b^9*x^21+1/22*b^10*x^22
```

Maxima [A] time = 1.36386, size = 151, normalized size = 1.14

$$\frac{1}{22}\,b^{10}x^{22}+\frac{10}{21}\,ab^9x^{21}+\frac{9}{4}\,a^2b^8x^{20}+\frac{120}{19}\,a^3b^7x^{19}+\frac{35}{3}\,a^4b^6x^{18}+\frac{252}{17}\,a^5b^5x^{17}+\frac{105}{8}\,a^6b^4x^{16}+8\,a^7b^3x^{15}+\frac{45}{14}\,a^8b^2x^{14}+\frac{10}{13}\,a^9bx^{13}+\frac{1}{12}\,a^{10}x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^11,x, algorithm="maxima")
```

```
[Out] 1/22*b^10*x^22 + 10/21*a*b^9*x^21 + 9/4*a^2*b^8*x^20 + 120/19*a^3
*b^7*x^19 + 35/3*a^4*b^6*x^18 + 252/17*a^5*b^5*x^17 + 105/8*a^6*b
^4*x^16 + 8*a^7*b^3*x^15 + 45/14*a^8*b^2*x^14 + 10/13*a^9*b*x^13
+ 1/12*a^10*x^12
```

Fricas [A] time = 0.174301, size = 1, normalized size = 0.01

$$\frac{1}{22}x^{22}b^{10} + \frac{10}{21}x^{21}b^9a + \frac{9}{4}x^{20}b^8a^2 + \frac{120}{19}x^{19}b^7a^3 + \frac{35}{3}x^{18}b^6a^4 + \frac{252}{17}x^{17}b^5a^5 + \frac{105}{8}x^{16}b^4a^6 + 8x^{15}b^3a^7 + \frac{45}{14}x^{14}b^2a^8 + \frac{10}{13}x^{13}ba^9 + \frac{1}{12}x^{12}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^11,x, algorithm="fricas")
```

```
[Out] 1/22*x^22*b^10 + 10/21*x^21*b^9*a + 9/4*x^20*b^8*a^2 + 120/19*x^1
9*b^7*a^3 + 35/3*x^18*b^6*a^4 + 252/17*x^17*b^5*a^5 + 105/8*x^16*
b^4*a^6 + 8*x^15*b^3*a^7 + 45/14*x^14*b^2*a^8 + 10/13*x^13*b*a^9
+ 1/12*x^12*a^10
```

Sympy [A] time = 0.174201, size = 133, normalized size = 1.01

$$\frac{a^{10}x^{12}}{12} + \frac{10a^9bx^{13}}{13} + \frac{45a^8b^2x^{14}}{14} + 8a^7b^3x^{15} + \frac{105a^6b^4x^{16}}{8} + \frac{252a^5b^5x^{17}}{17} + \frac{35a^4b^6x^{18}}{3} + \frac{120a^3b^7x^{19}}{19} + \frac{9a^2b^8x^{20}}{4} + \frac{10ab^9x^{21}}{21} + \frac{b^{10}x^{22}}{22}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**11*(b*x+a)**10,x)
```

```
[Out] a**10*x**12/12 + 10*a**9*b*x**13/13 + 45*a**8*b**2*x**14/14 + 8*a
**7*b**3*x**15 + 105*a**6*b**4*x**16/8 + 252*a**5*b**5*x**17/17 +
 35*a**4*b**6*x**18/3 + 120*a**3*b**7*x**19/19 + 9*a**2*b**8*x**2
0/4 + 10*a*b**9*x**21/21 + b**10*x**22/22
```

GIAC/XCAS [A] time = 0.211898, size = 151, normalized size = 1.14

$$\frac{1}{22}\,b^{10}x^{22} + \frac{10}{21}\,ab^9x^{21} + \frac{9}{4}\,a^2b^8x^{20} + \frac{120}{19}\,a^3b^7x^{19} + \frac{35}{3}\,a^4b^6x^{18} + \frac{252}{17}\,a^5b^5x^{17} + \frac{105}{8}\,a^6b^4x^{16} + 8\,a^7b^3x^{15} + \frac{45}{14}\,a^8b^2x^{14} + \frac{10}{13}\,a^9bx^{13} + \frac{1}{12}\,a^{10}x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^11,x, algorithm="giac")
```

```
[Out] 1/22*b^10*x^22 + 10/21*a*b^9*x^21 + 9/4*a^2*b^8*x^20 + 120/19*a^3
*b^7*x^19 + 35/3*a^4*b^6*x^18 + 252/17*a^5*b^5*x^17 + 105/8*a^6*b
^4*x^16 + 8*a^7*b^3*x^15 + 45/14*a^8*b^2*x^14 + 10/13*a^9*b*x^13
+ 1/12*a^10*x^12
```

3.124 $\int x^{10}(a+bx)^{10}\,dx$

Optimal. Leaf size=132

$$\frac{a^{10}x^{11}}{11}+\frac{5}{6}a^9bx^{12}+\frac{45}{13}a^8b^2x^{13}+\frac{60}{7}a^7b^3x^{14}+14a^6b^4x^{15}+\frac{63}{4}a^5b^5x^{16}+\frac{210}{17}a^4b^6x^{17}+\frac{20}{3}a^3b^7x^{18}+\frac{45}{19}a^2b^8x^{19}+\frac{1}{2}ab^9x^{20}+\frac{b^{10}x^{21}}{21}$$

```
[Out] (a^10*x^11)/11 + (5*a^9*b*x^12)/6 + (45*a^8*b^2*x^13)/13 + (60*a^
7*b^3*x^14)/7 + 14*a^6*b^4*x^15 + (63*a^5*b^5*x^16)/4 + (210*a^4*
b^6*x^17)/17 + (20*a^3*b^7*x^18)/3 + (45*a^2*b^8*x^19)/19 + (a*b^
9*x^20)/2 + (b^10*x^21)/21
```

Rubi [A] time = 0.144602, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^{10}x^{11}}{11}+\frac{5}{6}a^9bx^{12}+\frac{45}{13}a^8b^2x^{13}+\frac{60}{7}a^7b^3x^{14}+14a^6b^4x^{15}+\frac{63}{4}a^5b^5x^{16}+\frac{210}{17}a^4b^6x^{17}+\frac{20}{3}a^3b^7x^{18}+\frac{45}{19}a^2b^8x^{19}+\frac{1}{2}ab^9x^{20}+\frac{b^{10}x^{21}}{21}$$

Antiderivative was successfully verified.

```
[In]  Int[x^10*(a + b*x)^10,x]
```

```
[Out] (a^10*x^11)/11 + (5*a^9*b*x^12)/6 + (45*a^8*b^2*x^13)/13 + (60*a^
7*b^3*x^14)/7 + 14*a^6*b^4*x^15 + (63*a^5*b^5*x^16)/4 + (210*a^4*
b^6*x^17)/17 + (20*a^3*b^7*x^18)/3 + (45*a^2*b^8*x^19)/19 + (a*b^
9*x^20)/2 + (b^10*x^21)/21
```

Rubi in Sympy [A] time = 28.0527, size = 131, normalized size = 0.99

$$\frac{a^{10}x^{11}}{11}+\frac{5a^9bx^{12}}{6}+\frac{45a^8b^2x^{13}}{13}+\frac{60a^7b^3x^{14}}{7}+14a^6b^4x^{15}+\frac{63a^5b^5x^{16}}{4}+\frac{210a^4b^6x^{17}}{17}+\frac{20a^3b^7x^{18}}{3}+\frac{45a^2b^8x^{19}}{19}+\frac{ab^9x^{20}}{2}+\frac{b^{10}x^{21}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**10*(b*x+a)**10,x)
```

```
[Out] a**10*x**11/11 + 5*a**9*b*x**12/6 + 45*a**8*b**2*x**13/13 + 60*a*
*7*b**3*x**14/7 + 14*a**6*b**4*x**15 + 63*a**5*b**5*x**16/4 + 210
```

```
*a**4*b**6*x**17/17 + 20*a**3*b**7*x**18/3 + 45*a**2*b**8*x**19/1
9 + a*b**9*x**20/2 + b**10*x**21/21
```

Mathematica [A] time = 0.00465351, size = 132, normalized size = 1.

$$\frac{a^{10}x^{11}}{11}+\frac{5}{6}a^9bx^{12}+\frac{45}{13}a^8b^2x^{13}+\frac{60}{7}a^7b^3x^{14}+14a^6b^4x^{15}+\frac{63}{4}a^5b^5x^{16}+\frac{210}{17}a^4b^6x^{17}+\frac{20}{3}a^3b^7x^{18}+\frac{45}{19}a^2b^8x^{19}+\frac{1}{2}ab^9x^{20}+\frac{b^{10}x^{21}}{21}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^10*(a + b*x)^10,x]
```

```
[Out] (a^10*x^11)/11 + (5*a^9*b*x^12)/6 + (45*a^8*b^2*x^13)/13 + (60*a^
7*b^3*x^14)/7 + 14*a^6*b^4*x^15 + (63*a^5*b^5*x^16)/4 + (210*a^4*
b^6*x^17)/17 + (20*a^3*b^7*x^18)/3 + (45*a^2*b^8*x^19)/19 + (a*b^
9*x^20)/2 + (b^10*x^21)/21
```

Maple [A] time = 0.003, size = 113, normalized size = 0.9

$$\frac{a^{10}x^{11}}{11}+\frac{5\,a^9bx^{12}}{6}+\frac{45\,a^8b^2x^{13}}{13}+\frac{60\,a^7b^3x^{14}}{7}+14\,a^6b^4x^{15}+\frac{63\,a^5b^5x^{16}}{4}+\frac{210\,a^4b^6x^{17}}{17}+\frac{20\,a^3b^7x^{18}}{3}+\frac{45\,a^2b^8x^{19}}{19}+\frac{ab^9x^{20}}{2}+\frac{b^{10}x^{21}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^10*(b*x+a)^10,x)
```

```
[Out] 1/11*a^10*x^11+5/6*a^9*b*x^12+45/13*a^8*b^2*x^13+60/7*a^7*b^3*x^1
4+14*a^6*b^4*x^15+63/4*a^5*b^5*x^16+210/17*a^4*b^6*x^17+20/3*a^3*
b^7*x^18+45/19*a^2*b^8*x^19+1/2*a*b^9*x^20+1/21*b^10*x^21
```

Maxima [A] time = 1.33485, size = 151, normalized size = 1.14

$$\frac{1}{21}\,b^{10}x^{21}+\frac{1}{2}\,ab^9x^{20}+\frac{45}{19}\,a^2b^8x^{19}+\frac{20}{3}\,a^3b^7x^{18}+\frac{210}{17}\,a^4b^6x^{17}+\frac{63}{4}\,a^5b^5x^{16}+14\,a^6b^4x^{15}+\frac{60}{7}\,a^7b^3x^{14}+\frac{45}{13}\,a^8b^2x^{13}+\frac{5}{6}\,a^9bx^{12}+\frac{1}{11}\,a^{10}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^10,x, algorithm="maxima")
```

```
[Out] 1/21*b^10*x^21 + 1/2*a*b^9*x^20 + 45/19*a^2*b^8*x^19 + 20/3*a^3*b
^7*x^18 + 210/17*a^4*b^6*x^17 + 63/4*a^5*b^5*x^16 + 14*a^6*b^4*x^
15 + 60/7*a^7*b^3*x^14 + 45/13*a^8*b^2*x^13 + 5/6*a^9*b*x^12 + 1/
11*a^10*x^11
```

Fricas [A] time = 0.183081, size = 1, normalized size = 0.01

$$\frac{1}{21}x^{21}b^{10} + \frac{1}{2}x^{20}b^{9}a + \frac{45}{19}x^{19}b^{8}a^{2} + \frac{20}{3}x^{18}b^{7}a^{3} + \frac{210}{17}x^{17}b^{6}a^{4} + \frac{63}{4}x^{16}b^{5}a^{5} + 14x^{15}b^{4}a^{6} + \frac{60}{7}x^{14}b^{3}a^{7} + \frac{45}{13}x^{13}b^{2}a^{8} + \frac{5}{6}x^{12}ba^{9} + \frac{1}{11}x^{11}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^10,x, algorithm="fricas")
```

```
[Out] 1/21*x^21*b^10 + 1/2*x^20*b^9*a + 45/19*x^19*b^8*a^2 + 20/3*x^18*
b^7*a^3 + 210/17*x^17*b^6*a^4 + 63/4*x^16*b^5*a^5 + 14*x^15*b^4*a
^6 + 60/7*x^14*b^3*a^7 + 45/13*x^13*b^2*a^8 + 5/6*x^12*b*a^9 + 1/
11*x^11*a^10
```

Sympy [A] time = 0.19033, size = 131, normalized size = 0.99

$$\frac{a^{10}x^{11}}{11} + \frac{5a^{9}bx^{12}}{6} + \frac{45a^{8}b^{2}x^{13}}{13} + \frac{60a^{7}b^{3}x^{14}}{7} + 14a^{6}b^{4}x^{15} + \frac{63a^{5}b^{5}x^{16}}{4} + \frac{210a^{4}b^{6}x^{17}}{17} + \frac{20a^{3}b^{7}x^{18}}{3} + \frac{45a^{2}b^{8}x^{19}}{19} + \frac{ab^{9}x^{20}}{2} + \frac{b^{10}x^{21}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**10*(b*x+a)**10,x)
```

```
[Out] a**10*x**11/11 + 5*a**9*b*x**12/6 + 45*a**8*b**2*x**13/13 + 60*a*
*7*b**3*x**14/7 + 14*a**6*b**4*x**15 + 63*a**5*b**5*x**16/4 + 210
*a**4*b**6*x**17/17 + 20*a**3*b**7*x**18/3 + 45*a**2*b**8*x**19/1
9 + a*b**9*x**20/2 + b**10*x**21/21
```

GIAC/XCAS [A] time = 0.204211, size = 151, normalized size = 1.14

$$\frac{1}{21}b^{10}x^{21} + \frac{1}{2}ab^{9}x^{20} + \frac{45}{19}a^{2}b^{8}x^{19} + \frac{20}{3}a^{3}b^{7}x^{18} + \frac{210}{17}a^{4}b^{6}x^{17} + \frac{63}{4}a^{5}b^{5}x^{16} + 14a^{6}b^{4}x^{15} + \frac{60}{7}a^{7}b^{3}x^{14} + \frac{45}{13}a^{8}b^{2}x^{13} + \frac{5}{6}a^{9}bx^{12} + \frac{1}{11}a^{10}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^10,x, algorithm="giac")
```

```
[Out] 1/21*b^10*x^21 + 1/2*a*b^9*x^20 + 45/19*a^2*b^8*x^19 + 20/3*a^3*b
^7*x^18 + 210/17*a^4*b^6*x^17 + 63/4*a^5*b^5*x^16 + 14*a^6*b^4*x^
15 + 60/7*a^7*b^3*x^14 + 45/13*a^8*b^2*x^13 + 5/6*a^9*b*x^12 + 1/
11*a^10*x^11
```

3.125 $\int x^9(a+bx)^{10}\,dx$

Optimal. Leaf size=132

$$\frac{a^{10}x^{10}}{10}+\frac{10}{11}a^9bx^{11}+\frac{15}{4}a^8b^2x^{12}+\frac{120}{13}a^7b^3x^{13}+15a^6b^4x^{14}+\frac{84}{5}a^5b^5x^{15}+\frac{105}{8}a^4b^6x^{16}+\frac{120}{17}a^3b^7x^{17}+\frac{5}{2}a^2b^8x^{18}+\frac{10}{19}ab^9x^{19}+\frac{b^{10}x^{20}}{20}$$

```
[Out] (a^10*x^10)/10 + (10*a^9*b*x^11)/11 + (15*a^8*b^2*x^12)/4 + (120*
a^7*b^3*x^13)/13 + 15*a^6*b^4*x^14 + (84*a^5*b^5*x^15)/5 + (105*a
^4*b^6*x^16)/8 + (120*a^3*b^7*x^17)/17 + (5*a^2*b^8*x^18)/2 + (10
*a*b^9*x^19)/19 + (b^10*x^20)/20
```

Rubi [A] time = 0.146712, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^{10}x^{10}}{10}+\frac{10}{11}a^9bx^{11}+\frac{15}{4}a^8b^2x^{12}+\frac{120}{13}a^7b^3x^{13}+15a^6b^4x^{14}+\frac{84}{5}a^5b^5x^{15}+\frac{105}{8}a^4b^6x^{16}+\frac{120}{17}a^3b^7x^{17}+\frac{5}{2}a^2b^8x^{18}+\frac{10}{19}ab^9x^{19}+\frac{b^{10}x^{20}}{20}$$

Antiderivative was successfully verified.

```
[In]  Int[x^9*(a + b*x)^10,x]
```

```
[Out] (a^10*x^10)/10 + (10*a^9*b*x^11)/11 + (15*a^8*b^2*x^12)/4 + (120*
a^7*b^3*x^13)/13 + 15*a^6*b^4*x^14 + (84*a^5*b^5*x^15)/5 + (105*a
^4*b^6*x^16)/8 + (120*a^3*b^7*x^17)/17 + (5*a^2*b^8*x^18)/2 + (10
*a*b^9*x^19)/19 + (b^10*x^20)/20
```

Rubi in Sympy [A] time = 27.5103, size = 133, normalized size = 1.01

$$\frac{a^{10}x^{10}}{10}+\frac{10a^9bx^{11}}{11}+\frac{15a^8b^2x^{12}}{4}+\frac{120a^7b^3x^{13}}{13}+15a^6b^4x^{14}+\frac{84a^5b^5x^{15}}{5}+\frac{105a^4b^6x^{16}}{8}+\frac{120a^3b^7x^{17}}{17}+\frac{5a^2b^8x^{18}}{2}+\frac{10ab^9x^{19}}{19}+\frac{b^{10}x^{20}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9*(b*x+a)**10,x)
```

```
[Out] a**10*x**10/10 + 10*a**9*b*x**11/11 + 15*a**8*b**2*x**12/4 + 120*
a**7*b**3*x**13/13 + 15*a**6*b**4*x**14 + 84*a**5*b**5*x**15/5 +
```

```
105*a**4*b**6*x**16/8 + 120*a**3*b**7*x**17/17 + 5*a**2*b**8*x**1
8/2 + 10*a*b**9*x**19/19 + b**10*x**20/20
```

Mathematica [A] time = 0.00426473, size = 132, normalized size = 1.

$$\frac{a^{10}x^{10}}{10}+\frac{10}{11}a^9bx^{11}+\frac{15}{4}a^8b^2x^{12}+\frac{120}{13}a^7b^3x^{13}+15a^6b^4x^{14}+\frac{84}{5}a^5b^5x^{15}+\frac{105}{8}a^4b^6x^{16}+\frac{120}{17}a^3b^7x^{17}+\frac{5}{2}a^2b^8x^{18}+\frac{10}{19}ab^9x^{19}+\frac{b^{10}x^{20}}{20}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^9*(a + b*x)^10,x]
```

```
[Out] (a^10*x^10)/10 + (10*a^9*b*x^11)/11 + (15*a^8*b^2*x^12)/4 + (120*
a^7*b^3*x^13)/13 + 15*a^6*b^4*x^14 + (84*a^5*b^5*x^15)/5 + (105*a
^4*b^6*x^16)/8 + (120*a^3*b^7*x^17)/17 + (5*a^2*b^8*x^18)/2 + (10
*a*b^9*x^19)/19 + (b^10*x^20)/20
```

Maple [A] time = 0.002, size = 113, normalized size = 0.9

$$\frac{a^{10}x^{10}}{10}+\frac{10\,a^9bx^{11}}{11}+\frac{15\,a^8b^2x^{12}}{4}+\frac{120\,a^7b^3x^{13}}{13}+15\,a^6b^4x^{14}+\frac{84\,a^5b^5x^{15}}{5}+\frac{105\,a^4b^6x^{16}}{8}+\frac{120\,a^3b^7x^{17}}{17}+\frac{5\,a^2b^8x^{18}}{2}+\frac{10\,ab^9x^{19}}{19}+\frac{b^{10}x^{20}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^9*(b*x+a)^10,x)
```

```
[Out] 1/10*a^10*x^10+10/11*a^9*b*x^11+15/4*a^8*b^2*x^12+120/13*a^7*b^3*
x^13+15*a^6*b^4*x^14+84/5*a^5*b^5*x^15+105/8*a^4*b^6*x^16+120/17*
a^3*b^7*x^17+5/2*a^2*b^8*x^18+10/19*a*b^9*x^19+1/20*b^10*x^20
```

Maxima [A] time = 1.34639, size = 151, normalized size = 1.14

$$\frac{1}{20}\,b^{10}x^{20}+\frac{10}{19}\,ab^9x^{19}+\frac{5}{2}\,a^2b^8x^{18}+\frac{120}{17}\,a^3b^7x^{17}+\frac{105}{8}\,a^4b^6x^{16}+\frac{84}{5}\,a^5b^5x^{15}+15\,a^6b^4x^{14}+\frac{120}{13}\,a^7b^3x^{13}+\frac{15}{4}\,a^8b^2x^{12}+\frac{10}{11}\,a^9bx^{11}+\frac{1}{10}\,a^{10}x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^9,x, algorithm="maxima")
```

```
[Out] 1/20*b^10*x^20 + 10/19*a*b^9*x^19 + 5/2*a^2*b^8*x^18 + 120/17*a^3
*b^7*x^17 + 105/8*a^4*b^6*x^16 + 84/5*a^5*b^5*x^15 + 15*a^6*b^4*x
^14 + 120/13*a^7*b^3*x^13 + 15/4*a^8*b^2*x^12 + 10/11*a^9*b*x^11
+ 1/10*a^10*x^10
```

Fricas [A] time = 0.179298, size = 1, normalized size = 0.01

$$\frac{1}{20}x^{20}b^{10} + \frac{10}{19}x^{19}b^9a + \frac{5}{2}x^{18}b^8a^2 + \frac{120}{17}x^{17}b^7a^3 + \frac{105}{8}x^{16}b^6a^4 + \frac{84}{5}x^{15}b^5a^5 + 15x^{14}b^4a^6 + \frac{120}{13}x^{13}b^3a^7 + \frac{15}{4}x^{12}b^2a^8 + \frac{10}{11}x^{11}ba^9 + \frac{1}{10}x^{10}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^9,x, algorithm="fricas")
```

```
[Out] 1/20*x^20*b^10 + 10/19*x^19*b^9*a + 5/2*x^18*b^8*a^2 + 120/17*x^1
7*b^7*a^3 + 105/8*x^16*b^6*a^4 + 84/5*x^15*b^5*a^5 + 15*x^14*b^4*
a^6 + 120/13*x^13*b^3*a^7 + 15/4*x^12*b^2*a^8 + 10/11*x^11*b*a^9
+ 1/10*x^10*a^10
```

Sympy [A] time = 0.176864, size = 133, normalized size = 1.01

$$\frac{a^{10}x^{10}}{10} + \frac{10a^9bx^{11}}{11} + \frac{15a^8b^2x^{12}}{4} + \frac{120a^7b^3x^{13}}{13} + 15a^6b^4x^{14} + \frac{84a^5b^5x^{15}}{5} + \frac{105a^4b^6x^{16}}{8} + \frac{120a^3b^7x^{17}}{17} + \frac{5a^2b^8x^{18}}{2} + \frac{10ab^9x^{19}}{19} + \frac{b^{10}x^{20}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**9*(b*x+a)**10,x)
```

```
[Out] a**10*x**10/10 + 10*a**9*b*x**11/11 + 15*a**8*b**2*x**12/4 + 120*
a**7*b**3*x**13/13 + 15*a**6*b**4*x**14 + 84*a**5*b**5*x**15/5 +
105*a**4*b**6*x**16/8 + 120*a**3*b**7*x**17/17 + 5*a**2*b**8*x**1
8/2 + 10*a*b**9*x**19/19 + b**10*x**20/20
```

GIAC/XCAS [A] time = 0.203144, size = 151, normalized size = 1.14

$$\frac{1}{20}\,b^{10}x^{20} + \frac{10}{19}\,ab^9x^{19} + \frac{5}{2}\,a^2b^8x^{18} + \frac{120}{17}\,a^3b^7x^{17} + \frac{105}{8}\,a^4b^6x^{16} + \frac{84}{5}\,a^5b^5x^{15} + 15\,a^6b^4x^{14} + \frac{120}{13}\,a^7b^3x^{13} + \frac{15}{4}\,a^8b^2x^{12} + \frac{10}{11}\,a^9bx^{11} + \frac{1}{10}\,a^{10}x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^9,x, algorithm="giac")
```

```
[Out] 1/20*b^10*x^20 + 10/19*a*b^9*x^19 + 5/2*a^2*b^8*x^18 + 120/17*a^3
*b^7*x^17 + 105/8*a^4*b^6*x^16 + 84/5*a^5*b^5*x^15 + 15*a^6*b^4*x
^14 + 120/13*a^7*b^3*x^13 + 15/4*a^8*b^2*x^12 + 10/11*a^9*b*x^11
+ 1/10*a^10*x^10
```

3.126 $\int x^8(a+bx)^{10}\,dx$

Optimal. Leaf size=147

$$\frac{a^8(a+bx)^{11}}{11b^9}-\frac{2a^7(a+bx)^{12}}{3b^9}+\frac{28a^6(a+bx)^{13}}{13b^9}-\frac{4a^5(a+bx)^{14}}{b^9}+\frac{14a^4(a+bx)^{15}}{3b^9}-\frac{7a^3(a+bx)^{16}}{2b^9}+\frac{28a^2(a+bx)^{17}}{17b^9}+\frac{(a+bx)^{19}}{19b^9}-\frac{4a(a+bx)^{18}}{9b^9}$$

```
[Out] (a^8*(a + b*x)^11)/(11*b^9) - (2*a^7*(a + b*x)^12)/(3*b^9) + (28*
a^6*(a + b*x)^13)/(13*b^9) - (4*a^5*(a + b*x)^14)/b^9 + (14*a^4*(
a + b*x)^15)/(3*b^9) - (7*a^3*(a + b*x)^16)/(2*b^9) + (28*a^2*(a
+ b*x)^17)/(17*b^9) - (4*a*(a + b*x)^18)/(9*b^9) + (a + b*x)^19/(
19*b^9)
```

Rubi [A] time = 0.151793, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^8(a+bx)^{11}}{11b^9}-\frac{2a^7(a+bx)^{12}}{3b^9}+\frac{28a^6(a+bx)^{13}}{13b^9}-\frac{4a^5(a+bx)^{14}}{b^9}+\frac{14a^4(a+bx)^{15}}{3b^9}-\frac{7a^3(a+bx)^{16}}{2b^9}+\frac{28a^2(a+bx)^{17}}{17b^9}+\frac{(a+bx)^{19}}{19b^9}-\frac{4a(a+bx)^{18}}{9b^9}$$

Antiderivative was successfully verified.

```
[In]  Int[x^8*(a + b*x)^10,x]
```

```
[Out] (a^8*(a + b*x)^11)/(11*b^9) - (2*a^7*(a + b*x)^12)/(3*b^9) + (28*
a^6*(a + b*x)^13)/(13*b^9) - (4*a^5*(a + b*x)^14)/b^9 + (14*a^4*(
a + b*x)^15)/(3*b^9) - (7*a^3*(a + b*x)^16)/(2*b^9) + (28*a^2*(a
+ b*x)^17)/(17*b^9) - (4*a*(a + b*x)^18)/(9*b^9) + (a + b*x)^19/(
19*b^9)
```

Rubi in Sympy [A] time = 26.7589, size = 126, normalized size = 0.86

$$\frac{a^{10}x^9}{9}+a^9bx^{10}+\frac{45a^8b^2x^{11}}{11}+10a^7b^3x^{12}+\frac{210a^6b^4x^{13}}{13}+18a^5b^5x^{14}+14a^4b^6x^{15}+\frac{15a^3b^7x^{16}}{2}+\frac{45a^2b^8x^{17}}{17}+\frac{5ab^9x^{18}}{9}+\frac{b^{10}x^{19}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(b*x+a)**10,x)
```

```
[Out] a**10*x**9/9 + a**9*b*x**10 + 45*a**8*b**2*x**11/11 + 10*a**7*b**
3*x**12 + 210*a**6*b**4*x**13/13 + 18*a**5*b**5*x**14 + 14*a**4*b
**6*x**15 + 15*a**3*b**7*x**16/2 + 45*a**2*b**8*x**17/17 + 5*a*b*
*9*x**18/9 + b**10*x**19/19
```

Mathematica [A] time = 0.00429353, size = 125, normalized size = 0.85

$$\frac{a^{10}x^9}{9} + a^9bx^{10} + \frac{45}{11}a^8b^2x^{11} + 10a^7b^3x^{12} + \frac{210}{13}a^6b^4x^{13} + 18a^5b^5x^{14} + 14a^4b^6x^{15} + \frac{15}{2}a^3b^7x^{16} + \frac{45}{17}a^2b^8x^{17} + \frac{5}{9}ab^9x^{18} + \frac{b^{10}x^{19}}{19}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^8*(a + b*x)^10,x]
```

```
[Out] (a^10*x^9)/9 + a^9*b*x^10 + (45*a^8*b^2*x^11)/11 + 10*a^7*b^3*x^1
2 + (210*a^6*b^4*x^13)/13 + 18*a^5*b^5*x^14 + 14*a^4*b^6*x^15 + (
15*a^3*b^7*x^16)/2 + (45*a^2*b^8*x^17)/17 + (5*a*b^9*x^18)/9 + (b
^10*x^19)/19
```

Maple [A] time = 0.003, size = 112, normalized size = 0.8

$$\frac{b^{10}x^{19}}{19} + \frac{5\,ab^9x^{18}}{9} + \frac{45\,a^2b^8x^{17}}{17} + \frac{15\,a^3b^7x^{16}}{2} + 14\,a^4b^6x^{15} + 18\,a^5b^5x^{14} + \frac{210\,a^6b^4x^{13}}{13} + 10\,a^7b^3x^{12} + \frac{45\,a^8b^2x^{11}}{11} + a^9bx^{10} + \frac{a^{10}x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8*(b*x+a)^10,x)
```

```
[Out] 1/19*b^10*x^19+5/9*a*b^9*x^18+45/17*a^2*b^8*x^17+15/2*a^3*b^7*x^1
6+14*a^4*b^6*x^15+18*a^5*b^5*x^14+210/13*a^6*b^4*x^13+10*a^7*b^3*
x^12+45/11*a^8*b^2*x^11+a^9*b*x^10+1/9*a^10*x^9
```

Maxima [A] time = 1.33609, size = 150, normalized size = 1.02

$$\frac{1}{19}\,b^{10}x^{19} + \frac{5}{9}\,ab^9x^{18} + \frac{45}{17}\,a^2b^8x^{17} + \frac{15}{2}\,a^3b^7x^{16} + 14\,a^4b^6x^{15} + 18\,a^5b^5x^{14} + \frac{210}{13}\,a^6b^4x^{13} + 10\,a^7b^3x^{12} + \frac{45}{11}\,a^8b^2x^{11} + a^9bx^{10} + \frac{1}{9}\,a^{10}x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^8,x, algorithm="maxima")
```

```
[Out] 1/19*b^10*x^19 + 5/9*a*b^9*x^18 + 45/17*a^2*b^8*x^17 + 15/2*a^3*b
^7*x^16 + 14*a^4*b^6*x^15 + 18*a^5*b^5*x^14 + 210/13*a^6*b^4*x^13
 + 10*a^7*b^3*x^12 + 45/11*a^8*b^2*x^11 + a^9*b*x^10 + 1/9*a^10*x
^9
```

Fricas [A] time = 0.181013, size = 1, normalized size = 0.01

$$\frac{1}{19}x^{19}b^{10} + \frac{5}{9}x^{18}b^9a + \frac{45}{17}x^{17}b^8a^2 + \frac{15}{2}x^{16}b^7a^3 + 14x^{15}b^6a^4 + 18x^{14}b^5a^5 + \frac{210}{13}x^{13}b^4a^6 + 10x^{12}b^3a^7 + \frac{45}{11}x^{11}b^2a^8 + x^{10}ba^9 + \frac{1}{9}x^9a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^8,x, algorithm="fricas")
```

```
[Out] 1/19*x^19*b^10 + 5/9*x^18*b^9*a + 45/17*x^17*b^8*a^2 + 15/2*x^16*
b^7*a^3 + 14*x^15*b^6*a^4 + 18*x^14*b^5*a^5 + 210/13*x^13*b^4*a^6
 + 10*x^12*b^3*a^7 + 45/11*x^11*b^2*a^8 + x^10*b*a^9 + 1/9*x^9*a^
10
```

Sympy [A] time = 0.172723, size = 126, normalized size = 0.86

$$\frac{a^{10}x^9}{9} + a^9bx^{10} + \frac{45a^8b^2x^{11}}{11} + 10a^7b^3x^{12} + \frac{210a^6b^4x^{13}}{13} + 18a^5b^5x^{14} + 14a^4b^6x^{15} + \frac{15a^3b^7x^{16}}{2} + \frac{45a^2b^8x^{17}}{17} + \frac{5ab^9x^{18}}{9} + \frac{b^{10}x^{19}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8*(b*x+a)**10,x)
```

```
[Out] a**10*x**9/9 + a**9*b*x**10 + 45*a**8*b**2*x**11/11 + 10*a**7*b**
3*x**12 + 210*a**6*b**4*x**13/13 + 18*a**5*b**5*x**14 + 14*a**4*b
**6*x**15 + 15*a**3*b**7*x**16/2 + 45*a**2*b**8*x**17/17 + 5*a*b*
*9*x**18/9 + b**10*x**19/19
```

GIAC/XCAS [A] time = 0.201109, size = 150, normalized size = 1.02

$$\frac{1}{19}\,b^{10}x^{19} + \frac{5}{9}\,ab^9x^{18} + \frac{45}{17}\,a^2b^8x^{17} + \frac{15}{2}\,a^3b^7x^{16} + 14\,a^4b^6x^{15} + 18\,a^5b^5x^{14} + \frac{210}{13}\,a^6b^4x^{13} + 10\,a^7b^3x^{12} + \frac{45}{11}\,a^8b^2x^{11} + a^9bx^{10} + \frac{1}{9}\,a^{10}x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^8,x, algorithm="giac")
```

```
[Out] 1/19*b^10*x^19 + 5/9*a*b^9*x^18 + 45/17*a^2*b^8*x^17 + 15/2*a^3*b
^7*x^16 + 14*a^4*b^6*x^15 + 18*a^5*b^5*x^14 + 210/13*a^6*b^4*x^13
 + 10*a^7*b^3*x^12 + 45/11*a^8*b^2*x^11 + a^9*b*x^10 + 1/9*a^10*x
^9
```

3.127 $\int x^7(a+bx)^{10}\,dx$

Optimal. Leaf size=132

$$-\frac{a^7(a+bx)^{11}}{11b^8}+\frac{7a^6(a+bx)^{12}}{12b^8}-\frac{21a^5(a+bx)^{13}}{13b^8}+\frac{5a^4(a+bx)^{14}}{2b^8}-\frac{7a^3(a+bx)^{15}}{3b^8}+\frac{21a^2(a+bx)^{16}}{16b^8}+\frac{(a+bx)^{18}}{18b^8}-\frac{7a(a+bx)^{17}}{17b^8}$$

```
[Out] -(a^7*(a + b*x)^11)/(11*b^8) + (7*a^6*(a + b*x)^12)/(12*b^8) - (2
1*a^5*(a + b*x)^13)/(13*b^8) + (5*a^4*(a + b*x)^14)/(2*b^8) - (7*
a^3*(a + b*x)^15)/(3*b^8) + (21*a^2*(a + b*x)^16)/(16*b^8) - (7*a
*(a + b*x)^17)/(17*b^8) + (a + b*x)^18/(18*b^8)
```

Rubi [A] time = 0.139521, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^7(a+bx)^{11}}{11b^8}+\frac{7a^6(a+bx)^{12}}{12b^8}-\frac{21a^5(a+bx)^{13}}{13b^8}+\frac{5a^4(a+bx)^{14}}{2b^8}-\frac{7a^3(a+bx)^{15}}{3b^8}+\frac{21a^2(a+bx)^{16}}{16b^8}+\frac{(a+bx)^{18}}{18b^8}-\frac{7a(a+bx)^{17}}{17b^8}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7*(a + b*x)^10,x]
```

```
[Out] -(a^7*(a + b*x)^11)/(11*b^8) + (7*a^6*(a + b*x)^12)/(12*b^8) - (2
1*a^5*(a + b*x)^13)/(13*b^8) + (5*a^4*(a + b*x)^14)/(2*b^8) - (7*
a^3*(a + b*x)^15)/(3*b^8) + (21*a^2*(a + b*x)^16)/(16*b^8) - (7*a
*(a + b*x)^17)/(17*b^8) + (a + b*x)^18/(18*b^8)
```

Rubi in Sympy [A] time = 26.2368, size = 131, normalized size = 0.99

$$\frac{a^{10}x^8}{8}+\frac{10a^9bx^9}{9}+\frac{9a^8b^2x^{10}}{2}+\frac{120a^7b^3x^{11}}{11}+\frac{35a^6b^4x^{12}}{2}+\frac{252a^5b^5x^{13}}{13}+15a^4b^6x^{14}+8a^3b^7x^{15}+\frac{45a^2b^8x^{16}}{16}+\frac{10ab^9x^{17}}{17}+\frac{b^{10}x^{18}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(b*x+a)**10,x)
```

```
[Out] a**10*x**8/8 + 10*a**9*b*x**9/9 + 9*a**8*b**2*x**10/2 + 120*a**7*
b**3*x**11/11 + 35*a**6*b**4*x**12/2 + 252*a**5*b**5*x**13/13 + 1
```

```
5*a**4*b**6*x**14 + 8*a**3*b**7*x**15 + 45*a**2*b**8*x**16/16 + 1
0*a*b**9*x**17/17 + b**10*x**18/18
```

Mathematica [A] time = 0.00421802, size = 130, normalized size = 0.98

$$\frac{a^{10}x^8}{8}+\frac{10}{9}a^9bx^9+\frac{9}{2}a^8b^2x^{10}+\frac{120}{11}a^7b^3x^{11}+\frac{35}{2}a^6b^4x^{12}+\frac{252}{13}a^5b^5x^{13}+15a^4b^6x^{14}+8a^3b^7x^{15}+\frac{45}{16}a^2b^8x^{16}+\frac{10}{17}ab^9x^{17}+\frac{b^{10}x^{18}}{18}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7*(a + b*x)^10,x]
```

```
[Out] (a^10*x^8)/8 + (10*a^9*b*x^9)/9 + (9*a^8*b^2*x^10)/2 + (120*a^7*b
^3*x^11)/11 + (35*a^6*b^4*x^12)/2 + (252*a^5*b^5*x^13)/13 + 15*a^
4*b^6*x^14 + 8*a^3*b^7*x^15 + (45*a^2*b^8*x^16)/16 + (10*a*b^9*x^
17)/17 + (b^10*x^18)/18
```

Maple [A] time = 0.001, size = 113, normalized size = 0.9

$$\frac{b^{10}x^{18}}{18}+\frac{10\,ab^9x^{17}}{17}+\frac{45\,a^2b^8x^{16}}{16}+8\,a^3b^7x^{15}+15\,a^4b^6x^{14}+\frac{252\,a^5b^5x^{13}}{13}+\frac{35\,a^6b^4x^{12}}{2}+\frac{120\,a^7b^3x^{11}}{11}+\frac{9\,a^8b^2x^{10}}{2}+\frac{10\,a^9bx^9}{9}+\frac{a^{10}x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(b*x+a)^10,x)
```

```
[Out] 1/18*b^10*x^18+10/17*a*b^9*x^17+45/16*a^2*b^8*x^16+8*a^3*b^7*x^15
+15*a^4*b^6*x^14+252/13*a^5*b^5*x^13+35/2*a^6*b^4*x^12+120/11*a^7
*b^3*x^11+9/2*a^8*b^2*x^10+10/9*a^9*b*x^9+1/8*a^10*x^8
```

Maxima [A] time = 1.33982, size = 151, normalized size = 1.14

$$\frac{1}{18}\,b^{10}x^{18}+\frac{10}{17}\,ab^9x^{17}+\frac{45}{16}\,a^2b^8x^{16}+8\,a^3b^7x^{15}+15\,a^4b^6x^{14}+\frac{252}{13}\,a^5b^5x^{13}+\frac{35}{2}\,a^6b^4x^{12}+\frac{120}{11}\,a^7b^3x^{11}+\frac{9}{2}\,a^8b^2x^{10}+\frac{10}{9}\,a^9bx^9+\frac{1}{8}\,a^{10}x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^7,x, algorithm="maxima")
```

```
[Out] 1/18*b^10*x^18 + 10/17*a*b^9*x^17 + 45/16*a^2*b^8*x^16 + 8*a^3*b^
7*x^15 + 15*a^4*b^6*x^14 + 252/13*a^5*b^5*x^13 + 35/2*a^6*b^4*x^1
2 + 120/11*a^7*b^3*x^11 + 9/2*a^8*b^2*x^10 + 10/9*a^9*b*x^9 + 1/8
*a^10*x^8
```

Fricas [A] time = 0.176141, size = 1, normalized size = 0.01

$$\frac{1}{18}x^{18}b^{10} + \frac{10}{17}x^{17}b^9a + \frac{45}{16}x^{16}b^8a^2 + 8x^{15}b^7a^3 + 15x^{14}b^6a^4 + \frac{252}{13}x^{13}b^5a^5 + \frac{35}{2}x^{12}b^4a^6 + \frac{120}{11}x^{11}b^3a^7 + \frac{9}{2}x^{10}b^2a^8 + \frac{10}{9}x^9ba^9 + \frac{1}{8}x^8a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^7,x, algorithm="fricas")
```

```
[Out] 1/18*x^18*b^10 + 10/17*x^17*b^9*a + 45/16*x^16*b^8*a^2 + 8*x^15*b
^7*a^3 + 15*x^14*b^6*a^4 + 252/13*x^13*b^5*a^5 + 35/2*x^12*b^4*a^
6 + 120/11*x^11*b^3*a^7 + 9/2*x^10*b^2*a^8 + 10/9*x^9*b*a^9 + 1/8
*x^8*a^10
```

Sympy [A] time = 0.173615, size = 131, normalized size = 0.99

$$\frac{a^{10}x^8}{8} + \frac{10a^9bx^9}{9} + \frac{9a^8b^2x^{10}}{2} + \frac{120a^7b^3x^{11}}{11} + \frac{35a^6b^4x^{12}}{2} + \frac{252a^5b^5x^{13}}{13} + 15a^4b^6x^{14} + 8a^3b^7x^{15} + \frac{45a^2b^8x^{16}}{16} + \frac{10ab^9x^{17}}{17} + \frac{b^{10}x^{18}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(b*x+a)**10,x)
```

```
[Out] a**10*x**8/8 + 10*a**9*b*x**9/9 + 9*a**8*b**2*x**10/2 + 120*a**7*
b**3*x**11/11 + 35*a**6*b**4*x**12/2 + 252*a**5*b**5*x**13/13 + 1
5*a**4*b**6*x**14 + 8*a**3*b**7*x**15 + 45*a**2*b**8*x**16/16 + 1
0*a*b**9*x**17/17 + b**10*x**18/18
```

GIAC/XCAS [A] time = 0.200192, size = 151, normalized size = 1.14

$$\frac{1}{18}b^{10}x^{18} + \frac{10}{17}ab^9x^{17} + \frac{45}{16}a^2b^8x^{16} + 8a^3b^7x^{15} + 15a^4b^6x^{14} + \frac{252}{13}a^5b^5x^{13} + \frac{35}{2}a^6b^4x^{12} + \frac{120}{11}a^7b^3x^{11} + \frac{9}{2}a^8b^2x^{10} + \frac{10}{9}a^9bx^9 + \frac{1}{8}a^{10}x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^7,x, algorithm="giac")
```

```
[Out] 1/18*b^10*x^18 + 10/17*a*b^9*x^17 + 45/16*a^2*b^8*x^16 + 8*a^3*b^
7*x^15 + 15*a^4*b^6*x^14 + 252/13*a^5*b^5*x^13 + 35/2*a^6*b^4*x^1
2 + 120/11*a^7*b^3*x^11 + 9/2*a^8*b^2*x^10 + 10/9*a^9*b*x^9 + 1/8
*a^10*x^8
```

3.128 $\int x^6(a+bx)^{10}\,dx$

Optimal. Leaf size=112

$$\frac{a^6(a+bx)^{11}}{11b^7}-\frac{a^5(a+bx)^{12}}{2b^7}+\frac{15a^4(a+bx)^{13}}{13b^7}-\frac{10a^3(a+bx)^{14}}{7b^7}+\frac{a^2(a+bx)^{15}}{b^7}+\frac{(a+bx)^{17}}{17b^7}-\frac{3a(a+bx)^{16}}{8b^7}$$

```
[Out] (a^6*(a + b*x)^11)/(11*b^7) - (a^5*(a + b*x)^12)/(2*b^7) + (15*a^
4*(a + b*x)^13)/(13*b^7) - (10*a^3*(a + b*x)^14)/(7*b^7) + (a^2*(
a + b*x)^15)/b^7 - (3*a*(a + b*x)^16)/(8*b^7) + (a + b*x)^17/(17*
b^7)
```

Rubi [A] time = 0.125822, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{a^6(a+bx)^{11}}{11b^7}-\frac{a^5(a+bx)^{12}}{2b^7}+\frac{15a^4(a+bx)^{13}}{13b^7}-\frac{10a^3(a+bx)^{14}}{7b^7}+\frac{a^2(a+bx)^{15}}{b^7}+\frac{(a+bx)^{17}}{17b^7}-\frac{3a(a+bx)^{16}}{8b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6*(a + b*x)^10,x]
```

```
[Out] (a^6*(a + b*x)^11)/(11*b^7) - (a^5*(a + b*x)^12)/(2*b^7) + (15*a^
4*(a + b*x)^13)/(13*b^7) - (10*a^3*(a + b*x)^14)/(7*b^7) + (a^2*(
a + b*x)^15)/b^7 - (3*a*(a + b*x)^16)/(8*b^7) + (a + b*x)^17/(17*
b^7)
```

Rubi in Sympy [A] time = 28.1127, size = 104, normalized size = 0.93

$$\frac{a^6\left(a+bx\right)^{11}}{11b^7}-\frac{a^5\left(a+bx\right)^{12}}{2b^7}+\frac{15a^4\left(a+bx\right)^{13}}{13b^7}-\frac{10a^3\left(a+bx\right)^{14}}{7b^7}+\frac{a^2\left(a+bx\right)^{15}}{b^7}-\frac{3a\left(a+bx\right)^{16}}{8b^7}+\frac{\left(a+bx\right)^{17}}{17b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(b*x+a)**10,x)
```

```
[Out] a**6*(a + b*x)**11/(11*b**7) - a**5*(a + b*x)**12/(2*b**7) + 15*a
**4*(a + b*x)**13/(13*b**7) - 10*a**3*(a + b*x)**14/(7*b**7) + a*
*2*(a + b*x)**15/b**7 - 3*a*(a + b*x)**16/(8*b**7) + (a + b*x)**1
7/(17*b**7)
```

Mathematica [A] time = 0.00422314, size = 126, normalized size = 1.12

$$\frac{a^{10}x^7}{7}+\frac{5}{4}a^9bx^8+5a^8b^2x^9+12a^7b^3x^{10}+\frac{210}{11}a^6b^4x^{11}+21a^5b^5x^{12}+\frac{210}{13}a^4b^6x^{13}+\frac{60}{7}a^3b^7x^{14}+3a^2b^8x^{15}+\frac{5}{8}ab^9x^{16}+\frac{b^{10}x^{17}}{17}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6*(a + b*x)^10,x]
```

```
[Out] (a^10*x^7)/7 + (5*a^9*b*x^8)/4 + 5*a^8*b^2*x^9 + 12*a^7*b^3*x^10
+ (210*a^6*b^4*x^11)/11 + 21*a^5*b^5*x^12 + (210*a^4*b^6*x^13)/13
 + (60*a^3*b^7*x^14)/7 + 3*a^2*b^8*x^15 + (5*a*b^9*x^16)/8 + (b^1
0*x^17)/17
```

Maple [A] time = 0.002, size = 113, normalized size = 1.

$$\frac{b^{10}x^{17}}{17}+\frac{5\,ab^9x^{16}}{8}+3\,a^2b^8x^{15}+\frac{60\,a^3b^7x^{14}}{7}+\frac{210\,a^4b^6x^{13}}{13}+21\,a^5b^5x^{12}+\frac{210\,a^6b^4x^{11}}{11}+12\,a^7b^3x^{10}+5\,a^8b^2x^9+\frac{5\,a^9bx^8}{4}+\frac{a^{10}x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(b*x+a)^10,x)
```

```
[Out] 1/17*b^10*x^17+5/8*a*b^9*x^16+3*a^2*b^8*x^15+60/7*a^3*b^7*x^14+21
0/13*a^4*b^6*x^13+21*a^5*b^5*x^12+210/11*a^6*b^4*x^11+12*a^7*b^3*
x^10+5*a^8*b^2*x^9+5/4*a^9*b*x^8+1/7*a^10*x^7
```

Maxima [A] time = 1.37421, size = 151, normalized size = 1.35

$$\frac{1}{17}\,b^{10}x^{17}+\frac{5}{8}\,ab^9x^{16}+3\,a^2b^8x^{15}+\frac{60}{7}\,a^3b^7x^{14}+\frac{210}{13}\,a^4b^6x^{13}+21\,a^5b^5x^{12}+\frac{210}{11}\,a^6b^4x^{11}+12\,a^7b^3x^{10}+5\,a^8b^2x^9+\frac{5}{4}\,a^9bx^8+\frac{1}{7}\,a^{10}x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^6,x, algorithm="maxima")
```

```
[Out] 1/17*b^10*x^17 + 5/8*a*b^9*x^16 + 3*a^2*b^8*x^15 + 60/7*a^3*b^7*x
^14 + 210/13*a^4*b^6*x^13 + 21*a^5*b^5*x^12 + 210/11*a^6*b^4*x^11
```

```
 + 12*a^7*b^3*x^10 + 5*a^8*b^2*x^9 + 5/4*a^9*b*x^8 + 1/7*a^10*x^7
```

Fricas [A] time = 0.184641, size = 1, normalized size = 0.01

$$\frac{1}{17}x^{17}b^{10} + \frac{5}{8}x^{16}b^{9}a + 3x^{15}b^{8}a^{2} + \frac{60}{7}x^{14}b^{7}a^{3} + \frac{210}{13}x^{13}b^{6}a^{4} + 21x^{12}b^{5}a^{5} + \frac{210}{11}x^{11}b^{4}a^{6} + 12x^{10}b^{3}a^{7} + 5x^{9}b^{2}a^{8} + \frac{5}{4}x^{8}ba^{9} + \frac{1}{7}x^{7}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^6,x, algorithm="fricas")
```

```
[Out] 1/17*x^17*b^10 + 5/8*x^16*b^9*a + 3*x^15*b^8*a^2 + 60/7*x^14*b^7*
a^3 + 210/13*x^13*b^6*a^4 + 21*x^12*b^5*a^5 + 210/11*x^11*b^4*a^6
 + 12*x^10*b^3*a^7 + 5*x^9*b^2*a^8 + 5/4*x^8*b*a^9 + 1/7*x^7*a^10
```

Sympy [A] time = 0.165544, size = 128, normalized size = 1.14

$$\frac{a^{10}x^{7}}{7} + \frac{5a^{9}bx^{8}}{4} + 5a^{8}b^{2}x^{9} + 12a^{7}b^{3}x^{10} + \frac{210a^{6}b^{4}x^{11}}{11} + 21a^{5}b^{5}x^{12} + \frac{210a^{4}b^{6}x^{13}}{13} + \frac{60a^{3}b^{7}x^{14}}{7} + 3a^{2}b^{8}x^{15} + \frac{5ab^{9}x^{16}}{8} + \frac{b^{10}x^{17}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(b*x+a)**10,x)
```

```
[Out] a**10*x**7/7 + 5*a**9*b*x**8/4 + 5*a**8*b**2*x**9 + 12*a**7*b**3*
x**10 + 210*a**6*b**4*x**11/11 + 21*a**5*b**5*x**12 + 210*a**4*b*
*6*x**13/13 + 60*a**3*b**7*x**14/7 + 3*a**2*b**8*x**15 + 5*a*b**9
*x**16/8 + b**10*x**17/17
```

GIAC/XCAS [A] time = 0.202963, size = 151, normalized size = 1.35

$$\frac{1}{17}\,b^{10}x^{17} + \frac{5}{8}\,ab^{9}x^{16} + 3\,a^{2}b^{8}x^{15} + \frac{60}{7}\,a^{3}b^{7}x^{14} + \frac{210}{13}\,a^{4}b^{6}x^{13} + 21\,a^{5}b^{5}x^{12} + \frac{210}{11}\,a^{6}b^{4}x^{11} + 12\,a^{7}b^{3}x^{10} + 5\,a^{8}b^{2}x^{9} + \frac{5}{4}\,a^{9}bx^{8} + \frac{1}{7}\,a^{10}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^6,x, algorithm="giac")
```

```
[Out] 1/17*b^10*x^17 + 5/8*a*b^9*x^16 + 3*a^2*b^8*x^15 + 60/7*a^3*b^7*x
^14 + 210/13*a^4*b^6*x^13 + 21*a^5*b^5*x^12 + 210/11*a^6*b^4*x^11
 + 12*a^7*b^3*x^10 + 5*a^8*b^2*x^9 + 5/4*a^9*b*x^8 + 1/7*a^10*x^7
```

3.129 $\int x^5(a+bx)^{10}\,dx$

Optimal. Leaf size=98

$$-\frac{a^5(a+bx)^{11}}{11b^6}+\frac{5a^4(a+bx)^{12}}{12b^6}-\frac{10a^3(a+bx)^{13}}{13b^6}+\frac{5a^2(a+bx)^{14}}{7b^6}+\frac{(a+bx)^{16}}{16b^6}-\frac{a(a+bx)^{15}}{3b^6}$$

```
[Out] -(a^5*(a + b*x)^11)/(11*b^6) + (5*a^4*(a + b*x)^12)/(12*b^6) - (1
0*a^3*(a + b*x)^13)/(13*b^6) + (5*a^2*(a + b*x)^14)/(7*b^6) - (a*
(a + b*x)^15)/(3*b^6) + (a + b*x)^16/(16*b^6)
```

Rubi [A] time = 0.113513, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^5(a+bx)^{11}}{11b^6}+\frac{5a^4(a+bx)^{12}}{12b^6}-\frac{10a^3(a+bx)^{13}}{13b^6}+\frac{5a^2(a+bx)^{14}}{7b^6}+\frac{(a+bx)^{16}}{16b^6}-\frac{a(a+bx)^{15}}{3b^6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5*(a + b*x)^10,x]
```

```
[Out] -(a^5*(a + b*x)^11)/(11*b^6) + (5*a^4*(a + b*x)^12)/(12*b^6) - (1
0*a^3*(a + b*x)^13)/(13*b^6) + (5*a^2*(a + b*x)^14)/(7*b^6) - (a*
(a + b*x)^15)/(3*b^6) + (a + b*x)^16/(16*b^6)
```

Rubi in Sympy [A] time = 25.133, size = 90, normalized size = 0.92

$$-\frac{a^5\left(a+bx\right)^{11}}{11b^6}+\frac{5a^4\left(a+bx\right)^{12}}{12b^6}-\frac{10a^3\left(a+bx\right)^{13}}{13b^6}+\frac{5a^2\left(a+bx\right)^{14}}{7b^6}-\frac{a\left(a+bx\right)^{15}}{3b^6}+\frac{\left(a+bx\right)^{16}}{16b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(b*x+a)**10,x)
```

```
[Out] -a**5*(a + b*x)**11/(11*b**6) + 5*a**4*(a + b*x)**12/(12*b**6) -
10*a**3*(a + b*x)**13/(13*b**6) + 5*a**2*(a + b*x)**14/(7*b**6) -
 a*(a + b*x)**15/(3*b**6) + (a + b*x)**16/(16*b**6)
```

Mathematica [A] time = 0.00426473, size = 132, normalized size = 1.35

$$\frac{a^{10}x^6}{6}+\frac{10}{7}a^9bx^7+\frac{45}{8}a^8b^2x^8+\frac{40}{3}a^7b^3x^9+21a^6b^4x^{10}+\frac{252}{11}a^5b^5x^{11}+\frac{35}{2}a^4b^6x^{12}+\frac{120}{13}a^3b^7x^{13}+\frac{45}{14}a^2b^8x^{14}+\frac{2}{3}ab^9x^{15}+\frac{b^{10}x^{16}}{16}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5*(a + b*x)^10,x]
```

```
[Out] (a^10*x^6)/6 + (10*a^9*b*x^7)/7 + (45*a^8*b^2*x^8)/8 + (40*a^7*b^
3*x^9)/3 + 21*a^6*b^4*x^10 + (252*a^5*b^5*x^11)/11 + (35*a^4*b^6*
x^12)/2 + (120*a^3*b^7*x^13)/13 + (45*a^2*b^8*x^14)/14 + (2*a*b^9
*x^15)/3 + (b^10*x^16)/16
```

Maple [A] time = 0.003, size = 113, normalized size = 1.2

$$\frac{b^{10}x^{16}}{16}+\frac{2\,ab^{9}x^{15}}{3}+\frac{45\,a^{2}b^{8}x^{14}}{14}+\frac{120\,a^{3}b^{7}x^{13}}{13}+\frac{35\,a^{4}b^{6}x^{12}}{2}+\frac{252\,a^{5}b^{5}x^{11}}{11}+21\,a^{6}b^{4}x^{10}+\frac{40\,a^{7}b^{3}x^{9}}{3}+\frac{45\,a^{8}b^{2}x^{8}}{8}+\frac{10\,a^{9}bx^{7}}{7}+\frac{a^{10}x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(b*x+a)^10,x)
```

```
[Out] 1/16*b^10*x^16+2/3*a*b^9*x^15+45/14*a^2*b^8*x^14+120/13*a^3*b^7*x
^13+35/2*a^4*b^6*x^12+252/11*a^5*b^5*x^11+21*a^6*b^4*x^10+40/3*a^
7*b^3*x^9+45/8*a^8*b^2*x^8+10/7*a^9*b*x^7+1/6*a^10*x^6
```

Maxima [A] time = 1.36262, size = 151, normalized size = 1.54

$$\frac{1}{16}\,b^{10}x^{16}+\frac{2}{3}\,ab^{9}x^{15}+\frac{45}{14}\,a^{2}b^{8}x^{14}+\frac{120}{13}\,a^{3}b^{7}x^{13}+\frac{35}{2}\,a^{4}b^{6}x^{12}+\frac{252}{11}\,a^{5}b^{5}x^{11}+21\,a^{6}b^{4}x^{10}+\frac{40}{3}\,a^{7}b^{3}x^{9}+\frac{45}{8}\,a^{8}b^{2}x^{8}+\frac{10}{7}\,a^{9}bx^{7}+\frac{1}{6}\,a^{10}x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^5,x, algorithm="maxima")
```

```
[Out] 1/16*b^10*x^16 + 2/3*a*b^9*x^15 + 45/14*a^2*b^8*x^14 + 120/13*a^3
*b^7*x^13 + 35/2*a^4*b^6*x^12 + 252/11*a^5*b^5*x^11 + 21*a^6*b^4*
x^10 + 40/3*a^7*b^3*x^9 + 45/8*a^8*b^2*x^8 + 10/7*a^9*b*x^7 + 1/6
*a^10*x^6
```

Fricas [A] time = 0.173261, size = 1, normalized size = 0.01

$$\frac{1}{16}x^{16}b^{10} + \frac{2}{3}x^{15}b^{9}a + \frac{45}{14}x^{14}b^{8}a^{2} + \frac{120}{13}x^{13}b^{7}a^{3} + \frac{35}{2}x^{12}b^{6}a^{4} + \frac{252}{11}x^{11}b^{5}a^{5} + 21x^{10}b^{4}a^{6} + \frac{40}{3}x^{9}b^{3}a^{7} + \frac{45}{8}x^{8}b^{2}a^{8} + \frac{10}{7}x^{7}ba^{9} + \frac{1}{6}x^{6}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^5,x, algorithm="fricas")
```

```
[Out] 1/16*x^16*b^10 + 2/3*x^15*b^9*a + 45/14*x^14*b^8*a^2 + 120/13*x^1
3*b^7*a^3 + 35/2*x^12*b^6*a^4 + 252/11*x^11*b^5*a^5 + 21*x^10*b^4
*a^6 + 40/3*x^9*b^3*a^7 + 45/8*x^8*b^2*a^8 + 10/7*x^7*b*a^9 + 1/6
*x^6*a^10
```

Sympy [A] time = 0.177077, size = 133, normalized size = 1.36

$$\frac{a^{10}x^{6}}{6} + \frac{10a^{9}bx^{7}}{7} + \frac{45a^{8}b^{2}x^{8}}{8} + \frac{40a^{7}b^{3}x^{9}}{3} + 21a^{6}b^{4}x^{10} + \frac{252a^{5}b^{5}x^{11}}{11} + \frac{35a^{4}b^{6}x^{12}}{2} + \frac{120a^{3}b^{7}x^{13}}{13} + \frac{45a^{2}b^{8}x^{14}}{14} + \frac{2ab^{9}x^{15}}{3} + \frac{b^{10}x^{16}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(b*x+a)**10,x)
```

```
[Out] a**10*x**6/6 + 10*a**9*b*x**7/7 + 45*a**8*b**2*x**8/8 + 40*a**7*b
**3*x**9/3 + 21*a**6*b**4*x**10 + 252*a**5*b**5*x**11/11 + 35*a**
4*b**6*x**12/2 + 120*a**3*b**7*x**13/13 + 45*a**2*b**8*x**14/14 +
 2*a*b**9*x**15/3 + b**10*x**16/16
```

GIAC/XCAS [A] time = 0.203946, size = 151, normalized size = 1.54

$$\frac{1}{16}\,b^{10}x^{16} + \frac{2}{3}\,ab^{9}x^{15} + \frac{45}{14}\,a^{2}b^{8}x^{14} + \frac{120}{13}\,a^{3}b^{7}x^{13} + \frac{35}{2}\,a^{4}b^{6}x^{12} + \frac{252}{11}\,a^{5}b^{5}x^{11} + 21\,a^{6}b^{4}x^{10} + \frac{40}{3}\,a^{7}b^{3}x^{9} + \frac{45}{8}\,a^{8}b^{2}x^{8} + \frac{10}{7}\,a^{9}bx^{7} + \frac{1}{6}\,a^{10}x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^5,x, algorithm="giac")
```

```
[Out] 1/16*b^10*x^16 + 2/3*a*b^9*x^15 + 45/14*a^2*b^8*x^14 + 120/13*a^3
*b^7*x^13 + 35/2*a^4*b^6*x^12 + 252/11*a^5*b^5*x^11 + 21*a^6*b^4*
```

```
x^10 + 40/3*a^7*b^3*x^9 + 45/8*a^8*b^2*x^8 + 10/7*a^9*b*x^7 + 1/6
*a^10*x^6
```

3.130 $\int x^4(a+bx)^{10}\,dx$

Optimal. Leaf size=81

$$\frac{a^4(a+bx)^{11}}{11b^5}-\frac{a^3(a+bx)^{12}}{3b^5}+\frac{6a^2(a+bx)^{13}}{13b^5}+\frac{(a+bx)^{15}}{15b^5}-\frac{2a(a+bx)^{14}}{7b^5}$$

```
[Out] (a^4*(a + b*x)^11)/(11*b^5) - (a^3*(a + b*x)^12)/(3*b^5) + (6*a^2
*(a + b*x)^13)/(13*b^5) - (2*a*(a + b*x)^14)/(7*b^5) + (a + b*x)^
15/(15*b^5)
```

Rubi [A] time = 0.100929, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{a^4(a+bx)^{11}}{11b^5}-\frac{a^3(a+bx)^{12}}{3b^5}+\frac{6a^2(a+bx)^{13}}{13b^5}+\frac{(a+bx)^{15}}{15b^5}-\frac{2a(a+bx)^{14}}{7b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(a + b*x)^10,x]
```

```
[Out] (a^4*(a + b*x)^11)/(11*b^5) - (a^3*(a + b*x)^12)/(3*b^5) + (6*a^2
*(a + b*x)^13)/(13*b^5) - (2*a*(a + b*x)^14)/(7*b^5) + (a + b*x)^
15/(15*b^5)
```

Rubi in Sympy [A] time = 21.842, size = 73, normalized size = 0.9

$$\frac{a^4\left(a+bx\right)^{11}}{11b^5}-\frac{a^3\left(a+bx\right)^{12}}{3b^5}+\frac{6a^2\left(a+bx\right)^{13}}{13b^5}-\frac{2a\left(a+bx\right)^{14}}{7b^5}+\frac{\left(a+bx\right)^{15}}{15b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**10,x)
```

```
[Out] a**4*(a + b*x)**11/(11*b**5) - a**3*(a + b*x)**12/(3*b**5) + 6*a*
*2*(a + b*x)**13/(13*b**5) - 2*a*(a + b*x)**14/(7*b**5) + (a + b*
x)**15/(15*b**5)
```

Mathematica [A] time = 0.0041105, size = 130, normalized size = 1.6

$$\frac{a^{10}x^5}{5}+\frac{5}{3}a^9bx^6+\frac{45}{7}a^8b^2x^7+15a^7b^3x^8+\frac{70}{3}a^6b^4x^9+\frac{126}{5}a^5b^5x^{10}+\frac{210}{11}a^4b^6x^{11}+10a^3b^7x^{12}+\frac{45}{13}a^2b^8x^{13}+\frac{5}{7}ab^9x^{14}+\frac{b^{10}x^{15}}{15}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(a + b*x)^10,x]
```

```
[Out] (a^10*x^5)/5 + (5*a^9*b*x^6)/3 + (45*a^8*b^2*x^7)/7 + 15*a^7*b^3*
x^8 + (70*a^6*b^4*x^9)/3 + (126*a^5*b^5*x^10)/5 + (210*a^4*b^6*x^
11)/11 + 10*a^3*b^7*x^12 + (45*a^2*b^8*x^13)/13 + (5*a*b^9*x^14)/
7 + (b^10*x^15)/15
```

Maple [A] time = 0.003, size = 113, normalized size = 1.4

$$\frac{b^{10}x^{15}}{15}+\frac{5\,ab^{9}x^{14}}{7}+\frac{45\,a^{2}b^{8}x^{13}}{13}+10\,a^{3}b^{7}x^{12}+\frac{210\,a^{4}b^{6}x^{11}}{11}+\frac{126\,a^{5}b^{5}x^{10}}{5}+\frac{70\,a^{6}b^{4}x^{9}}{3}+15\,a^{7}b^{3}x^{8}+\frac{45\,a^{8}b^{2}x^{7}}{7}+\frac{5\,a^{9}bx^{6}}{3}+\frac{a^{10}x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^10,x)
```

```
[Out] 1/15*b^10*x^15+5/7*a*b^9*x^14+45/13*a^2*b^8*x^13+10*a^3*b^7*x^12+
210/11*a^4*b^6*x^11+126/5*a^5*b^5*x^10+70/3*a^6*b^4*x^9+15*a^7*b^
3*x^8+45/7*a^8*b^2*x^7+5/3*a^9*b*x^6+1/5*a^10*x^5
```

Maxima [A] time = 1.3267, size = 151, normalized size = 1.86

$$\frac{1}{15}\,b^{10}x^{15}+\frac{5}{7}\,ab^{9}x^{14}+\frac{45}{13}\,a^{2}b^{8}x^{13}+10\,a^{3}b^{7}x^{12}+\frac{210}{11}\,a^{4}b^{6}x^{11}+\frac{126}{5}\,a^{5}b^{5}x^{10}+\frac{70}{3}\,a^{6}b^{4}x^{9}+15\,a^{7}b^{3}x^{8}+\frac{45}{7}\,a^{8}b^{2}x^{7}+\frac{5}{3}\,a^{9}bx^{6}+\frac{1}{5}\,a^{10}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^4,x, algorithm="maxima")
```

```
[Out] 1/15*b^10*x^15 + 5/7*a*b^9*x^14 + 45/13*a^2*b^8*x^13 + 10*a^3*b^7
*x^12 + 210/11*a^4*b^6*x^11 + 126/5*a^5*b^5*x^10 + 70/3*a^6*b^4*x
^9 + 15*a^7*b^3*x^8 + 45/7*a^8*b^2*x^7 + 5/3*a^9*b*x^6 + 1/5*a^10
*x^5
```

Fricas [A] time = 0.186029, size = 1, normalized size = 0.01

$$\frac{1}{15}x^{15}b^{10} + \frac{5}{7}x^{14}b^{9}a + \frac{45}{13}x^{13}b^{8}a^{2} + 10x^{12}b^{7}a^{3} + \frac{210}{11}x^{11}b^{6}a^{4} + \frac{126}{5}x^{10}b^{5}a^{5} + \frac{70}{3}x^{9}b^{4}a^{6} + 15x^{8}b^{3}a^{7} + \frac{45}{7}x^{7}b^{2}a^{8} + \frac{5}{3}x^{6}ba^{9} + \frac{1}{5}x^{5}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^4,x, algorithm="fricas")
```

```
[Out] 1/15*x^15*b^10 + 5/7*x^14*b^9*a + 45/13*x^13*b^8*a^2 + 10*x^12*b^
7*a^3 + 210/11*x^11*b^6*a^4 + 126/5*x^10*b^5*a^5 + 70/3*x^9*b^4*a
^6 + 15*x^8*b^3*a^7 + 45/7*x^7*b^2*a^8 + 5/3*x^6*b*a^9 + 1/5*x^5*
a^10
```

Sympy [A] time = 0.169596, size = 131, normalized size = 1.62

$$\frac{a^{10}x^{5}}{5} + \frac{5a^{9}bx^{6}}{3} + \frac{45a^{8}b^{2}x^{7}}{7} + 15a^{7}b^{3}x^{8} + \frac{70a^{6}b^{4}x^{9}}{3} + \frac{126a^{5}b^{5}x^{10}}{5} + \frac{210a^{4}b^{6}x^{11}}{11} + 10a^{3}b^{7}x^{12} + \frac{45a^{2}b^{8}x^{13}}{13} + \frac{5ab^{9}x^{14}}{7} + \frac{b^{10}x^{15}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**10,x)
```

```
[Out] a**10*x**5/5 + 5*a**9*b*x**6/3 + 45*a**8*b**2*x**7/7 + 15*a**7*b*
*3*x**8 + 70*a**6*b**4*x**9/3 + 126*a**5*b**5*x**10/5 + 210*a**4*
b**6*x**11/11 + 10*a**3*b**7*x**12 + 45*a**2*b**8*x**13/13 + 5*a*
b**9*x**14/7 + b**10*x**15/15
```

GIAC/XCAS [A] time = 0.202547, size = 151, normalized size = 1.86

$$\frac{1}{15}\,b^{10}x^{15} + \frac{5}{7}\,ab^{9}x^{14} + \frac{45}{13}\,a^{2}b^{8}x^{13} + 10\,a^{3}b^{7}x^{12} + \frac{210}{11}\,a^{4}b^{6}x^{11} + \frac{126}{5}\,a^{5}b^{5}x^{10} + \frac{70}{3}\,a^{6}b^{4}x^{9} + 15\,a^{7}b^{3}x^{8} + \frac{45}{7}\,a^{8}b^{2}x^{7} + \frac{5}{3}\,a^{9}bx^{6} + \frac{1}{5}\,a^{10}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^4,x, algorithm="giac")
```

```
[Out] 1/15*b^10*x^15 + 5/7*a*b^9*x^14 + 45/13*a^2*b^8*x^13 + 10*a^3*b^7
*x^12 + 210/11*a^4*b^6*x^11 + 126/5*a^5*b^5*x^10 + 70/3*a^6*b^4*x
```

```
^9 + 15*a^7*b^3*x^8 + 45/7*a^8*b^2*x^7 + 5/3*a^9*b*x^6 + 1/5*a^10
*x^5
```

3.131 $\int x^3(a+bx)^{10}\,dx$

Optimal. Leaf size=64

$$-\frac{a^3(a+bx)^{11}}{11b^4}+\frac{a^2(a+bx)^{12}}{4b^4}+\frac{(a+bx)^{14}}{14b^4}-\frac{3a(a+bx)^{13}}{13b^4}$$

```
[Out] -(a^3*(a + b*x)^11)/(11*b^4) + (a^2*(a + b*x)^12)/(4*b^4) - (3*a*
(a + b*x)^13)/(13*b^4) + (a + b*x)^14/(14*b^4)
```

Rubi [A] time = 0.0920351, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3(a+bx)^{11}}{11b^4}+\frac{a^2(a+bx)^{12}}{4b^4}+\frac{(a+bx)^{14}}{14b^4}-\frac{3a(a+bx)^{13}}{13b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^10,x]
```

```
[Out] -(a^3*(a + b*x)^11)/(11*b^4) + (a^2*(a + b*x)^12)/(4*b^4) - (3*a*
(a + b*x)^13)/(13*b^4) + (a + b*x)^14/(14*b^4)
```

Rubi in Sympy [A] time = 19.0495, size = 56, normalized size = 0.88

$$-\frac{a^3\,(a+bx)^{11}}{11b^4}+\frac{a^2\,(a+bx)^{12}}{4b^4}-\frac{3a\,(a+bx)^{13}}{13b^4}+\frac{(a+bx)^{14}}{14b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**10,x)
```

```
[Out] -a**3*(a + b*x)**11/(11*b**4) + a**2*(a + b*x)**12/(4*b**4) - 3*a
*(a + b*x)**13/(13*b**4) + (a + b*x)**14/(14*b**4)
```

Mathematica [A] time = 0.00423498, size = 128, normalized size = 2.

$$\frac{a^{10}x^4}{4}+2a^9bx^5+\frac{15}{2}a^8b^2x^6+\frac{120}{7}a^7b^3x^7+\frac{105}{4}a^6b^4x^8+28a^5b^5x^9+21a^4b^6x^{10}+\frac{120}{11}a^3b^7x^{11}+\frac{15}{4}a^2b^8x^{12}+\frac{10}{13}ab^9x^{13}+\frac{b^{10}x^{14}}{14}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^10,x]
```

```
[Out] (a^10*x^4)/4 + 2*a^9*b*x^5 + (15*a^8*b^2*x^6)/2 + (120*a^7*b^3*x^
7)/7 + (105*a^6*b^4*x^8)/4 + 28*a^5*b^5*x^9 + 21*a^4*b^6*x^10 + (
120*a^3*b^7*x^11)/11 + (15*a^2*b^8*x^12)/4 + (10*a*b^9*x^13)/13 +
 (b^10*x^14)/14
```

Maple [A] time = 0.002, size = 113, normalized size = 1.8

$$\frac{b^{10}x^{14}}{14}+\frac{10\,ab^{9}x^{13}}{13}+\frac{15\,a^{2}b^{8}x^{12}}{4}+\frac{120\,a^{3}b^{7}x^{11}}{11}+21\,a^{4}b^{6}x^{10}+28\,a^{5}b^{5}x^{9}+\frac{105\,a^{6}b^{4}x^{8}}{4}+\frac{120\,a^{7}b^{3}x^{7}}{7}+\frac{15\,a^{8}b^{2}x^{6}}{2}+2\,a^{9}bx^{5}+\frac{a^{10}x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^10,x)
```

```
[Out] 1/14*b^10*x^14+10/13*a*b^9*x^13+15/4*a^2*b^8*x^12+120/11*a^3*b^7*
x^11+21*a^4*b^6*x^10+28*a^5*b^5*x^9+105/4*a^6*b^4*x^8+120/7*a^7*b
^3*x^7+15/2*a^8*b^2*x^6+2*a^9*b*x^5+1/4*a^10*x^4
```

Maxima [A] time = 1.33008, size = 151, normalized size = 2.36

$$\frac{1}{14}\,b^{10}x^{14}+\frac{10}{13}\,ab^{9}x^{13}+\frac{15}{4}\,a^{2}b^{8}x^{12}+\frac{120}{11}\,a^{3}b^{7}x^{11}+21\,a^{4}b^{6}x^{10}+28\,a^{5}b^{5}x^{9}+\frac{105}{4}\,a^{6}b^{4}x^{8}+\frac{120}{7}\,a^{7}b^{3}x^{7}+\frac{15}{2}\,a^{8}b^{2}x^{6}+2\,a^{9}bx^{5}+\frac{1}{4}\,a^{10}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^3,x, algorithm="maxima")
```

```
[Out] 1/14*b^10*x^14 + 10/13*a*b^9*x^13 + 15/4*a^2*b^8*x^12 + 120/11*a^
3*b^7*x^11 + 21*a^4*b^6*x^10 + 28*a^5*b^5*x^9 + 105/4*a^6*b^4*x^8
 + 120/7*a^7*b^3*x^7 + 15/2*a^8*b^2*x^6 + 2*a^9*b*x^5 + 1/4*a^10*
x^4
```

Fricas [A] time = 0.179613, size = 1, normalized size = 0.02

$$\frac{1}{14}x^{14}b^{10} + \frac{10}{13}x^{13}b^{9}a + \frac{15}{4}x^{12}b^{8}a^{2} + \frac{120}{11}x^{11}b^{7}a^{3} + 21x^{10}b^{6}a^{4} + 28x^{9}b^{5}a^{5} + \frac{105}{4}x^{8}b^{4}a^{6} + \frac{120}{7}x^{7}b^{3}a^{7} + \frac{15}{2}x^{6}b^{2}a^{8} + 2x^{5}ba^{9} + \frac{1}{4}x^{4}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^3,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*b^10 + 10/13*x^13*b^9*a + 15/4*x^12*b^8*a^2 + 120/11*x^
11*b^7*a^3 + 21*x^10*b^6*a^4 + 28*x^9*b^5*a^5 + 105/4*x^8*b^4*a^6
 + 120/7*x^7*b^3*a^7 + 15/2*x^6*b^2*a^8 + 2*x^5*b*a^9 + 1/4*x^4*a
^10
```

Sympy [A] time = 0.168623, size = 129, normalized size = 2.02

$$\frac{a^{10}x^{4}}{4} + 2a^{9}bx^{5} + \frac{15a^{8}b^{2}x^{6}}{2} + \frac{120a^{7}b^{3}x^{7}}{7} + \frac{105a^{6}b^{4}x^{8}}{4} + 28a^{5}b^{5}x^{9} + 21a^{4}b^{6}x^{10} + \frac{120a^{3}b^{7}x^{11}}{11} + \frac{15a^{2}b^{8}x^{12}}{4} + \frac{10ab^{9}x^{13}}{13} + \frac{b^{10}x^{14}}{14}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**10,x)
```

```
[Out] a**10*x**4/4 + 2*a**9*b*x**5 + 15*a**8*b**2*x**6/2 + 120*a**7*b**
3*x**7/7 + 105*a**6*b**4*x**8/4 + 28*a**5*b**5*x**9 + 21*a**4*b**
6*x**10 + 120*a**3*b**7*x**11/11 + 15*a**2*b**8*x**12/4 + 10*a*b*
*9*x**13/13 + b**10*x**14/14
```

GIAC/XCAS [A] time = 0.201333, size = 151, normalized size = 2.36

$$\frac{1}{14}\,b^{10}x^{14} + \frac{10}{13}\,ab^{9}x^{13} + \frac{15}{4}\,a^{2}b^{8}x^{12} + \frac{120}{11}\,a^{3}b^{7}x^{11} + 21\,a^{4}b^{6}x^{10} + 28\,a^{5}b^{5}x^{9} + \frac{105}{4}\,a^{6}b^{4}x^{8} + \frac{120}{7}\,a^{7}b^{3}x^{7} + \frac{15}{2}\,a^{8}b^{2}x^{6} + 2\,a^{9}bx^{5} + \frac{1}{4}\,a^{10}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^3,x, algorithm="giac")
```

```
[Out] 1/14*b^10*x^14 + 10/13*a*b^9*x^13 + 15/4*a^2*b^8*x^12 + 120/11*a^
3*b^7*x^11 + 21*a^4*b^6*x^10 + 28*a^5*b^5*x^9 + 105/4*a^6*b^4*x^8
```

```
 + 120/7*a^7*b^3*x^7 + 15/2*a^8*b^2*x^6 + 2*a^9*b*x^5 + 1/4*a^10*
x^4
```

3.132 $\int x^2(a+bx)^{10}\,dx$

Optimal. Leaf size=47

$$\frac{a^2(a+bx)^{11}}{11b^3}+\frac{(a+bx)^{13}}{13b^3}-\frac{a(a+bx)^{12}}{6b^3}$$

```
[Out] (a^2*(a + b*x)^11)/(11*b^3) - (a*(a + b*x)^12)/(6*b^3) + (a + b*x
)^13/(13*b^3)
```

Rubi [A] time = 0.078097, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2(a+bx)^{11}}{11b^3}+\frac{(a+bx)^{13}}{13b^3}-\frac{a(a+bx)^{12}}{6b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^10,x]
```

```
[Out] (a^2*(a + b*x)^11)/(11*b^3) - (a*(a + b*x)^12)/(6*b^3) + (a + b*x
)^13/(13*b^3)
```

Rubi in Sympy [A] time = 15.651, size = 39, normalized size = 0.83

$$\frac{a^2\left(a+bx\right)^{11}}{11b^3}-\frac{a\left(a+bx\right)^{12}}{6b^3}+\frac{\left(a+bx\right)^{13}}{13b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**10,x)
```

```
[Out] a**2*(a + b*x)**11/(11*b**3) - a*(a + b*x)**12/(6*b**3) + (a + b*
x)**13/(13*b**3)
```

Mathematica [B] time = 0.00393003, size = 126, normalized size = 2.68

$$\frac{a^{10}x^3}{3}+\frac{5}{2}a^9bx^4+9a^8b^2x^5+20a^7b^3x^6+30a^6b^4x^7+\frac{63}{2}a^5b^5x^8+\frac{70}{3}a^4b^6x^9+12a^3b^7x^{10}+\frac{45}{11}a^2b^8x^{11}+\frac{5}{6}ab^9x^{12}+\frac{b^{10}x^{13}}{13}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^10,x]
```

```
[Out] (a^10*x^3)/3 + (5*a^9*b*x^4)/2 + 9*a^8*b^2*x^5 + 20*a^7*b^3*x^6 +
 30*a^6*b^4*x^7 + (63*a^5*b^5*x^8)/2 + (70*a^4*b^6*x^9)/3 + 12*a^
3*b^7*x^10 + (45*a^2*b^8*x^11)/11 + (5*a*b^9*x^12)/6 + (b^10*x^13
)/13
```

Maple [B] time = 0.001, size = 113, normalized size = 2.4

$$\frac{b^{10}x^{13}}{13} + \frac{5\,ab^{9}x^{12}}{6} + \frac{45\,a^{2}b^{8}x^{11}}{11} + 12\,a^{3}b^{7}x^{10} + \frac{70\,a^{4}b^{6}x^{9}}{3} + \frac{63\,a^{5}b^{5}x^{8}}{2} + 30\,a^{6}b^{4}x^{7} + 20\,a^{7}b^{3}x^{6} + 9\,a^{8}b^{2}x^{5} + \frac{5\,a^{9}bx^{4}}{2} + \frac{a^{10}x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^10,x)
```

```
[Out] 1/13*b^10*x^13+5/6*a*b^9*x^12+45/11*a^2*b^8*x^11+12*a^3*b^7*x^10+
70/3*a^4*b^6*x^9+63/2*a^5*b^5*x^8+30*a^6*b^4*x^7+20*a^7*b^3*x^6+9
*a^8*b^2*x^5+5/2*a^9*b*x^4+1/3*a^10*x^3
```

Maxima [A] time = 1.33178, size = 151, normalized size = 3.21

$$\frac{1}{13}\,b^{10}x^{13} + \frac{5}{6}\,ab^{9}x^{12} + \frac{45}{11}\,a^{2}b^{8}x^{11} + 12\,a^{3}b^{7}x^{10} + \frac{70}{3}\,a^{4}b^{6}x^{9} + \frac{63}{2}\,a^{5}b^{5}x^{8} + 30\,a^{6}b^{4}x^{7} + 20\,a^{7}b^{3}x^{6} + 9\,a^{8}b^{2}x^{5} + \frac{5}{2}\,a^{9}bx^{4} + \frac{1}{3}\,a^{10}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^2,x, algorithm="maxima")
```

```
[Out] 1/13*b^10*x^13 + 5/6*a*b^9*x^12 + 45/11*a^2*b^8*x^11 + 12*a^3*b^7
*x^10 + 70/3*a^4*b^6*x^9 + 63/2*a^5*b^5*x^8 + 30*a^6*b^4*x^7 + 20
*a^7*b^3*x^6 + 9*a^8*b^2*x^5 + 5/2*a^9*b*x^4 + 1/3*a^10*x^3
```

Fricas [A] time = 0.176742, size = 1, normalized size = 0.02

$$\frac{1}{13}x^{13}b^{10} + \frac{5}{6}x^{12}b^{9}a + \frac{45}{11}x^{11}b^{8}a^{2} + 12x^{10}b^{7}a^{3} + \frac{70}{3}x^{9}b^{6}a^{4} + \frac{63}{2}x^{8}b^{5}a^{5} + 30x^{7}b^{4}a^{6} + 20x^{6}b^{3}a^{7} + 9x^{5}b^{2}a^{8} + \frac{5}{2}x^{4}ba^{9} + \frac{1}{3}x^{3}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^2,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*b^10 + 5/6*x^12*b^9*a + 45/11*x^11*b^8*a^2 + 12*x^10*b^
7*a^3 + 70/3*x^9*b^6*a^4 + 63/2*x^8*b^5*a^5 + 30*x^7*b^4*a^6 + 20
*x^6*b^3*a^7 + 9*x^5*b^2*a^8 + 5/2*x^4*b*a^9 + 1/3*x^3*a^10
```

Sympy [A] time = 0.168343, size = 128, normalized size = 2.72

$$\frac{a^{10}x^3}{3}+\frac{5a^9bx^4}{2}+9a^8b^2x^5+20a^7b^3x^6+30a^6b^4x^7+\frac{63a^5b^5x^8}{2}+\frac{70a^4b^6x^9}{3}+12a^3b^7x^{10}+\frac{45a^2b^8x^{11}}{11}+\frac{5ab^9x^{12}}{6}+\frac{b^{10}x^{13}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**10,x)
```

```
[Out] a**10*x**3/3 + 5*a**9*b*x**4/2 + 9*a**8*b**2*x**5 + 20*a**7*b**3*
x**6 + 30*a**6*b**4*x**7 + 63*a**5*b**5*x**8/2 + 70*a**4*b**6*x**
9/3 + 12*a**3*b**7*x**10 + 45*a**2*b**8*x**11/11 + 5*a*b**9*x**12
/6 + b**10*x**13/13
```

GIAC/XCAS [A] time = 0.202672, size = 151, normalized size = 3.21

$$\frac{1}{13}\,b^{10}x^{13}+\frac{5}{6}\,ab^9x^{12}+\frac{45}{11}\,a^2b^8x^{11}+12\,a^3b^7x^{10}+\frac{70}{3}\,a^4b^6x^9+\frac{63}{2}\,a^5b^5x^8+30\,a^6b^4x^7+20\,a^7b^3x^6+9\,a^8b^2x^5+\frac{5}{2}\,a^9bx^4+\frac{1}{3}\,a^{10}x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^2,x, algorithm="giac")
```

```
[Out] 1/13*b^10*x^13 + 5/6*a*b^9*x^12 + 45/11*a^2*b^8*x^11 + 12*a^3*b^7
*x^10 + 70/3*a^4*b^6*x^9 + 63/2*a^5*b^5*x^8 + 30*a^6*b^4*x^7 + 20
*a^7*b^3*x^6 + 9*a^8*b^2*x^5 + 5/2*a^9*b*x^4 + 1/3*a^10*x^3
```

3.133 $\int x(a+bx)^{10}\,dx$

Optimal. Leaf size=30

$$\frac{(a+bx)^{12}}{12b^2}-\frac{a(a+bx)^{11}}{11b^2}$$

```
[Out] -(a*(a + b*x)^11)/(11*b^2) + (a + b*x)^12/(12*b^2)
```

Rubi [A] time = 0.0312031, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}=0.111$

$$\frac{(a+bx)^{12}}{12b^2}-\frac{a(a+bx)^{11}}{11b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*x)^10,x]
```

```
[Out] -(a*(a + b*x)^11)/(11*b^2) + (a + b*x)^12/(12*b^2)
```

Rubi in Sympy [A] time = 12.4348, size = 24, normalized size = 0.8

$$-\frac{a\,(a+bx)^{11}}{11b^2}+\frac{(a+bx)^{12}}{12b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x*(b*x+a)**10,x)
```

```
[Out] -a*(a + b*x)**11/(11*b**2) + (a + b*x)**12/(12*b**2)
```

Mathematica [B] time = 0.00360685, size = 128, normalized size = 4.27

$$\frac{a^{10}x^2}{2}+\frac{10}{3}a^9bx^3+\frac{45}{4}a^8b^2x^4+24a^7b^3x^5+35a^6b^4x^6+36a^5b^5x^7 +\frac{105}{4}a^4b^6x^8+\frac{40}{3}a^3b^7x^9+\frac{9}{2}a^2b^8x^{10}+\frac{10}{11}ab^9x^{11}+\frac{b^{10}x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*x)^10,x]
```

```
[Out] (a^10*x^2)/2 + (10*a^9*b*x^3)/3 + (45*a^8*b^2*x^4)/4 + 24*a^7*b^3
*x^5 + 35*a^6*b^4*x^6 + 36*a^5*b^5*x^7 + (105*a^4*b^6*x^8)/4 + (4
0*a^3*b^7*x^9)/3 + (9*a^2*b^8*x^10)/2 + (10*a*b^9*x^11)/11 + (b^1
0*x^12)/12
```

Maple [B] time = 0.003, size = 113, normalized size = 3.8

$$\frac{b^{10}x^{12}}{12}+\frac{10\,ab^{9}x^{11}}{11}+\frac{9\,a^{2}b^{8}x^{10}}{2}+\frac{40\,a^{3}b^{7}x^{9}}{3}+\frac{105\,a^{4}b^{6}x^{8}}{4}+36\,a^{5}b^{5}x^{7}+35\,a^{6}b^{4}x^{6}+24\,a^{7}b^{3}x^{5}+\frac{45\,a^{8}b^{2}x^{4}}{4}+\frac{10\,a^{9}bx^{3}}{3}+\frac{a^{10}x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^10,x)
```

```
[Out] 1/12*b^10*x^12+10/11*a*b^9*x^11+9/2*a^2*b^8*x^10+40/3*a^3*b^7*x^9
+105/4*a^4*b^6*x^8+36*a^5*b^5*x^7+35*a^6*b^4*x^6+24*a^7*b^3*x^5+4
5/4*a^8*b^2*x^4+10/3*a^9*b*x^3+1/2*a^10*x^2
```

Maxima [A] time = 1.33495, size = 151, normalized size = 5.03

$$\frac{1}{12}\,b^{10}x^{12}+\frac{10}{11}\,ab^{9}x^{11}+\frac{9}{2}\,a^{2}b^{8}x^{10}+\frac{40}{3}\,a^{3}b^{7}x^{9}+\frac{105}{4}\,a^{4}b^{6}x^{8}+36\,a^{5}b^{5}x^{7}+35\,a^{6}b^{4}x^{6}+24\,a^{7}b^{3}x^{5}+\frac{45}{4}\,a^{8}b^{2}x^{4}+\frac{10}{3}\,a^{9}bx^{3}+\frac{1}{2}\,a^{10}x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x,x, algorithm="maxima")
```

```
[Out] 1/12*b^10*x^12 + 10/11*a*b^9*x^11 + 9/2*a^2*b^8*x^10 + 40/3*a^3*b
^7*x^9 + 105/4*a^4*b^6*x^8 + 36*a^5*b^5*x^7 + 35*a^6*b^4*x^6 + 24
*a^7*b^3*x^5 + 45/4*a^8*b^2*x^4 + 10/3*a^9*b*x^3 + 1/2*a^10*x^2
```

Fricas [A] time = 0.187813, size = 1, normalized size = 0.03

$$\frac{1}{12}x^{12}b^{10}+\frac{10}{11}x^{11}b^{9}a+\frac{9}{2}x^{10}b^{8}a^{2}+\frac{40}{3}x^{9}b^{7}a^{3}+\frac{105}{4}x^{8}b^{6}a^{4}+36x^{7}b^{5}a^{5}+35x^{6}b^{4}a^{6}+24x^{5}b^{3}a^{7}+\frac{45}{4}x^{4}b^{2}a^{8}+\frac{10}{3}x^{3}ba^{9}+\frac{1}{2}x^{2}a^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*b^10 + 10/11*x^11*b^9*a + 9/2*x^10*b^8*a^2 + 40/3*x^9*b
^7*a^3 + 105/4*x^8*b^6*a^4 + 36*x^7*b^5*a^5 + 35*x^6*b^4*a^6 + 24
*x^5*b^3*a^7 + 45/4*x^4*b^2*a^8 + 10/3*x^3*b*a^9 + 1/2*x^2*a^10
```

Sympy [A] time = 0.165047, size = 129, normalized size = 4.3

$$\frac{a^{10}x^2}{2} + \frac{10a^9bx^3}{3} + \frac{45a^8b^2x^4}{4} + 24a^7b^3x^5 + 35a^6b^4x^6 + 36a^5b^5x^7 + \frac{105a^4b^6x^8}{4} + \frac{40a^3b^7x^9}{3} + \frac{9a^2b^8x^{10}}{2} + \frac{10ab^9x^{11}}{11} + \frac{b^{10}x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**10,x)
```

```
[Out] a**10*x**2/2 + 10*a**9*b*x**3/3 + 45*a**8*b**2*x**4/4 + 24*a**7*b
**3*x**5 + 35*a**6*b**4*x**6 + 36*a**5*b**5*x**7 + 105*a**4*b**6*
x**8/4 + 40*a**3*b**7*x**9/3 + 9*a**2*b**8*x**10/2 + 10*a*b**9*x*
*11/11 + b**10*x**12/12
```

GIAC/XCAS [A] time = 0.200475, size = 151, normalized size = 5.03

$$\frac{1}{12}\,b^{10}x^{12} + \frac{10}{11}\,ab^9x^{11} + \frac{9}{2}\,a^2b^8x^{10} + \frac{40}{3}\,a^3b^7x^9 + \frac{105}{4}\,a^4b^6x^8 + 36\,a^5b^5x^7 + 35\,a^6b^4x^6 + 24\,a^7b^3x^5 + \frac{45}{4}\,a^8b^2x^4 + \frac{10}{3}\,a^9bx^3 + \frac{1}{2}\,a^{10}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x,x, algorithm="giac")
```

```
[Out] 1/12*b^10*x^12 + 10/11*a*b^9*x^11 + 9/2*a^2*b^8*x^10 + 40/3*a^3*b
^7*x^9 + 105/4*a^4*b^6*x^8 + 36*a^5*b^5*x^7 + 35*a^6*b^4*x^6 + 24
*a^7*b^3*x^5 + 45/4*a^8*b^2*x^4 + 10/3*a^9*b*x^3 + 1/2*a^10*x^2
```

3.134 $\int (a+bx)^{10}\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^{11}}{11b}$$

```
[Out] (a + b*x)^11/(11*b)
```

Rubi [A] time = 0.0067894, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(a+bx)^{11}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10,x]

[Out] (a + b*x)^11/(11*b)
```

Rubi in Sympy [A] time = 1.30491, size = 8, normalized size = 0.57

$$\frac{(a+bx)^{11}}{11b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10,x)

[Out] (a + b*x)**11/(11*b)
```

Mathematica [A] time = 0.00125881, size = 14, normalized size = 1.

$$\frac{(a+bx)^{11}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10,x]
```

```
[Out] (a + b*x)^11/(11*b)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$\frac{(bx+a)^{11}}{11\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10,x)
```

```
[Out] 1/11*(b*x+a)^11/b
```

Maxima [A] time = 1.33363, size = 16, normalized size = 1.14

$$\frac{(bx+a)^{11}}{11\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10,x, algorithm="maxima")
```

```
[Out] 1/11*(b*x + a)^11/b
```

Fricas [A] time = 0.17976, size = 1, normalized size = 0.07

$$\frac{1}{11}x^{11}b^{10} + x^{10}b^{9}a + 5x^{9}b^{8}a^{2} + 15x^{8}b^{7}a^{3} + 30x^{7}b^{6}a^{4} + 42x^{6}b^{5}a^{5} + 42x^{5}b^{4}a^{6} + 30x^{4}b^{3}a^{7} + 15x^{3}b^{2}a^{8} + 5x^{2}ba^{9} + xa^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b^10 + x^10*b^9*a + 5*x^9*b^8*a^2 + 15*x^8*b^7*a^3 + 30
*x^7*b^6*a^4 + 42*x^6*b^5*a^5 + 42*x^5*b^4*a^6 + 30*x^4*b^3*a^7 +
 15*x^3*b^2*a^8 + 5*x^2*b*a^9 + x*a^10
```

Sympy [A] time = 0.15361, size = 114, normalized size = 8.14

$$a^{10}x + 5a^9bx^2 + 15a^8b^2x^3 + 30a^7b^3x^4 + 42a^6b^4x^5 + 42a^5b^5x^6 + 30a^4b^6x^7 + 15a^3b^7x^8 + 5a^2b^8x^9 + ab^9x^{10} + \frac{b^{10}x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10,x)
```

```
[Out] a**10*x + 5*a**9*b*x**2 + 15*a**8*b**2*x**3 + 30*a**7*b**3*x**4 +
 42*a**6*b**4*x**5 + 42*a**5*b**5*x**6 + 30*a**4*b**6*x**7 + 15*a
**3*b**7*x**8 + 5*a**2*b**8*x**9 + a*b**9*x**10 + b**10*x**11/11
```

GIAC/XCAS [A] time = 0.203896, size = 16, normalized size = 1.14

$$\frac{(bx + a)^{11}}{11\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10,x, algorithm="giac")
```

```
[Out] 1/11*(b*x + a)^11/b
```

3.135 $\int \frac{(a+bx)^{10}}{x} \, dx$

Optimal. Leaf size=122

$$a^{10}\log(x)+10a^9bx+\frac{45}{2}a^8b^2x^2+40a^7b^3x^3+\frac{105}{2}a^6b^4x^4+\frac{252}{5}a^5b^5x^5+35a^4b^6x^6+\frac{120}{7}a^3b^7x^7+\frac{45}{8}a^2b^8x^8+\frac{10}{9}ab^9x^9+\frac{b^{10}x^{10}}{10}$$

```
[Out] 10*a^9*b*x + (45*a^8*b^2*x^2)/2 + 40*a^7*b^3*x^3 + (105*a^6*b^4*x
^4)/2 + (252*a^5*b^5*x^5)/5 + 35*a^4*b^6*x^6 + (120*a^3*b^7*x^7)/
7 + (45*a^2*b^8*x^8)/8 + (10*a*b^9*x^9)/9 + (b^10*x^10)/10 + a^10
*Log[x]
```

Rubi [A] time = 0.0931147, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$a^{10}\log(x)+10a^9bx+\frac{45}{2}a^8b^2x^2+40a^7b^3x^3+\frac{105}{2}a^6b^4x^4+\frac{252}{5}a^5b^5x^5+35a^4b^6x^6+\frac{120}{7}a^3b^7x^7+\frac{45}{8}a^2b^8x^8+\frac{10}{9}ab^9x^9+\frac{b^{10}x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x,x]
```

```
[Out] 10*a^9*b*x + (45*a^8*b^2*x^2)/2 + 40*a^7*b^3*x^3 + (105*a^6*b^4*x
^4)/2 + (252*a^5*b^5*x^5)/5 + 35*a^4*b^6*x^6 + (120*a^3*b^7*x^7)/
7 + (45*a^2*b^8*x^8)/8 + (10*a*b^9*x^9)/9 + (b^10*x^10)/10 + a^10
*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^{10}\log(x)+10a^9bx+45a^8b^2\int x\,dx+40a^7b^3x^3+\frac{105a^6b^4x^4}{2}+\frac{252a^5b^5x^5}{5}+35a^4b^6x^6+\frac{120a^3b^7x^7}{7}+\frac{45a^2b^8x^8}{8}+\frac{10ab^9x^9}{9}+\frac{b^{10}x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x,x)
```

```
[Out] a**10*log(x) + 10*a**9*b*x + 45*a**8*b**2*Integral(x, x) + 40*a**
7*b**3*x**3 + 105*a**6*b**4*x**4/2 + 252*a**5*b**5*x**5/5 + 35*a*
```

```
*4*b**6*x**6 + 120*a**3*b**7*x**7/7 + 45*a**2*b**8*x**8/8 + 10*a*
b**9*x**9/9 + b**10*x**10/10
```

Mathematica [A] time = 0.005273, size = 122, normalized size = 1.

$$a^{10}\log(x)+10a^9bx+\frac{45}{2}a^8b^2x^2+40a^7b^3x^3+\frac{105}{2}a^6b^4x^4+\frac{252}{5}a^5b^5x^5+35a^4b^6x^6+\frac{120}{7}a^3b^7x^7+\frac{45}{8}a^2b^8x^8+\frac{10}{9}ab^9x^9+\frac{b^{10}x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x,x]
```

```
[Out] 10*a^9*b*x + (45*a^8*b^2*x^2)/2 + 40*a^7*b^3*x^3 + (105*a^6*b^4*x
^4)/2 + (252*a^5*b^5*x^5)/5 + 35*a^4*b^6*x^6 + (120*a^3*b^7*x^7)/
7 + (45*a^2*b^8*x^8)/8 + (10*a*b^9*x^9)/9 + (b^10*x^10)/10 + a^10
*Log[x]
```

Maple [A] time = 0.004, size = 109, normalized size = 0.9

$$10\,a^9bx+\frac{45\,a^8b^2x^2}{2}+40\,a^7b^3x^3+\frac{105\,a^6b^4x^4}{2}+\frac{252\,a^5b^5x^5}{5}+35\,a^4b^6x^6+\frac{120\,a^3b^7x^7}{7}+\frac{45\,a^2b^8x^8}{8}+\frac{10\,ab^9x^9}{9}+\frac{b^{10}x^{10}}{10}+a^{10}\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x,x)
```

```
[Out] 10*a^9*b*x+45/2*a^8*b^2*x^2+40*a^7*b^3*x^3+105/2*a^6*b^4*x^4+252/
5*a^5*b^5*x^5+35*a^4*b^6*x^6+120/7*a^3*b^7*x^7+45/8*a^2*b^8*x^8+1
0/9*a*b^9*x^9+1/10*b^10*x^10+a^10*ln(x)
```

Maxima [A] time = 1.35797, size = 146, normalized size = 1.2

$$\frac{1}{10}\,b^{10}x^{10}+\frac{10}{9}\,ab^9x^9+\frac{45}{8}\,a^2b^8x^8+\frac{120}{7}\,a^3b^7x^7+35\,a^4b^6x^6+\frac{252}{5}\,a^5b^5x^5+\frac{105}{2}\,a^6b^4x^4+40\,a^7b^3x^3+\frac{45}{2}\,a^8b^2x^2+10\,a^9bx+a^{10}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x,x, algorithm="maxima")
```

```
[Out] 1/10*b^10*x^10 + 10/9*a*b^9*x^9 + 45/8*a^2*b^8*x^8 + 120/7*a^3*b^
7*x^7 + 35*a^4*b^6*x^6 + 252/5*a^5*b^5*x^5 + 105/2*a^6*b^4*x^4 +
40*a^7*b^3*x^3 + 45/2*a^8*b^2*x^2 + 10*a^9*b*x + a^10*log(x)
```

Fricas [A] time = 0.201021, size = 146, normalized size = 1.2

$$\frac{1}{10}\,b^{10}x^{10} + \frac{10}{9}\,ab^{9}x^{9} + \frac{45}{8}\,a^{2}b^{8}x^{8} + \frac{120}{7}\,a^{3}b^{7}x^{7} + 35\,a^{4}b^{6}x^{6} + \frac{252}{5}\,a^{5}b^{5}x^{5} + \frac{105}{2}\,a^{6}b^{4}x^{4} + 40\,a^{7}b^{3}x^{3} + \frac{45}{2}\,a^{8}b^{2}x^{2} + 10\,a^{9}bx + a^{10}\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x,x, algorithm="fricas")
```

```
[Out] 1/10*b^10*x^10 + 10/9*a*b^9*x^9 + 45/8*a^2*b^8*x^8 + 120/7*a^3*b^
7*x^7 + 35*a^4*b^6*x^6 + 252/5*a^5*b^5*x^5 + 105/2*a^6*b^4*x^4 +
40*a^7*b^3*x^3 + 45/2*a^8*b^2*x^2 + 10*a^9*b*x + a^10*log(x)
```

Sympy [A] time = 1.44414, size = 126, normalized size = 1.03

$$a^{10}\log\left(x\right) + 10a^{9}bx + \frac{45a^{8}b^{2}x^{2}}{2} + 40a^{7}b^{3}x^{3} + \frac{105a^{6}b^{4}x^{4}}{2} + \frac{252a^{5}b^{5}x^{5}}{5} + 35a^{4}b^{6}x^{6} + \frac{120a^{3}b^{7}x^{7}}{7} + \frac{45a^{2}b^{8}x^{8}}{8} + \frac{10ab^{9}x^{9}}{9} + \frac{b^{10}x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x,x)
```

```
[Out] a**10*log(x) + 10*a**9*b*x + 45*a**8*b**2*x**2/2 + 40*a**7*b**3*x
**3 + 105*a**6*b**4*x**4/2 + 252*a**5*b**5*x**5/5 + 35*a**4*b**6*
x**6 + 120*a**3*b**7*x**7/7 + 45*a**2*b**8*x**8/8 + 10*a*b**9*x**
9/9 + b**10*x**10/10
```

GIAC/XCAS [A] time = 0.207158, size = 147, normalized size = 1.2

$$\frac{1}{10}\,b^{10}x^{10} + \frac{10}{9}\,ab^{9}x^{9} + \frac{45}{8}\,a^{2}b^{8}x^{8} + \frac{120}{7}\,a^{3}b^{7}x^{7} + 35\,a^{4}b^{6}x^{6} + \frac{252}{5}\,a^{5}b^{5}x^{5} + \frac{105}{2}\,a^{6}b^{4}x^{4} + 40\,a^{7}b^{3}x^{3} + \frac{45}{2}\,a^{8}b^{2}x^{2} + 10\,a^{9}bx + a^{10}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x,x, algorithm="giac")
```

```
[Out] 1/10*b^10*x^10 + 10/9*a*b^9*x^9 + 45/8*a^2*b^8*x^8 + 120/7*a^3*b^
7*x^7 + 35*a^4*b^6*x^6 + 252/5*a^5*b^5*x^5 + 105/2*a^6*b^4*x^4 +
40*a^7*b^3*x^3 + 45/2*a^8*b^2*x^2 + 10*a^9*b*x + a^10*ln(abs(x))
```

3.136 $\int \frac{(a+bx)^{10}}{x^2}\,dx$

Optimal. Leaf size=115

$$-\frac{a^{10}}{x}+10a^9b\log(x)+45a^8b^2x+60a^7b^3x^2+70a^6b^4x^3+63a^5b^5x^4+42a^4b^6x^5+20a^3b^7x^6+\frac{45}{7}a^2b^8x^7+\frac{5}{4}ab^9x^8+\frac{b^{10}x^9}{9}$$

```
[Out] -(a^10/x) + 45*a^8*b^2*x + 60*a^7*b^3*x^2 + 70*a^6*b^4*x^3 + 63*a
^5*b^5*x^4 + 42*a^4*b^6*x^5 + 20*a^3*b^7*x^6 + (45*a^2*b^8*x^7)/7
 + (5*a*b^9*x^8)/4 + (b^10*x^9)/9 + 10*a^9*b*Log[x]
```

Rubi [A] time = 0.116286, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{x}+10a^9b\log(x)+45a^8b^2x+60a^7b^3x^2+70a^6b^4x^3+63a^5b^5x^4+42a^4b^6x^5+20a^3b^7x^6+\frac{45}{7}a^2b^8x^7+\frac{5}{4}ab^9x^8+\frac{b^{10}x^9}{9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^2,x]
```

```
[Out] -(a^10/x) + 45*a^8*b^2*x + 60*a^7*b^3*x^2 + 70*a^6*b^4*x^3 + 63*a
^5*b^5*x^4 + 42*a^4*b^6*x^5 + 20*a^3*b^7*x^6 + (45*a^2*b^8*x^7)/7
 + (5*a*b^9*x^8)/4 + (b^10*x^9)/9 + 10*a^9*b*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{x}+10a^9b\log(x)+45a^8b^2x+120a^7b^3\int x\,dx+70a^6b^4x^3+63a^5b^5x^4+42a^4b^6x^5+20a^3b^7x^6+\frac{45a^2b^8x^7}{7}+\frac{5ab^9x^8}{4}+\frac{b^{10}x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**2,x)
```

```
[Out] -a**10/x + 10*a**9*b*log(x) + 45*a**8*b**2*x + 120*a**7*b**3*Inte
gral(x, x) + 70*a**6*b**4*x**3 + 63*a**5*b**5*x**4 + 42*a**4*b**6
*x**5 + 20*a**3*b**7*x**6 + 45*a**2*b**8*x**7/7 + 5*a*b**9*x**8/4
```

```
 + b**10*x**9/9
```

Mathematica [A] time = 0.0165786, size = 115, normalized size = 1.

$$-\frac{a^{10}}{x}+10a^9b\log(x)+45a^8b^2x+60a^7b^3x^2+70a^6b^4x^3+63a^5b^5x^4+42a^4b^6x^5+20a^3b^7x^6+\frac{45}{7}a^2b^8x^7+\frac{5}{4}ab^9x^8+\frac{b^{10}x^9}{9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^2,x]
```

```
[Out] -(a^10/x) + 45*a^8*b^2*x + 60*a^7*b^3*x^2 + 70*a^6*b^4*x^3 + 63*a
^5*b^5*x^4 + 42*a^4*b^6*x^5 + 20*a^3*b^7*x^6 + (45*a^2*b^8*x^7)/7
 + (5*a*b^9*x^8)/4 + (b^10*x^9)/9 + 10*a^9*b*Log[x]
```

Maple [A] time = 0.009, size = 110, normalized size = 1.

$$-\frac{a^{10}}{x}+45\,a^8b^2x+60\,a^7b^3x^2+70\,a^6b^4x^3+63\,a^5b^5x^4+42\,a^4b^6x^5+20\,a^3b^7x^6+\frac{45\,a^2b^8x^7}{7}+\frac{5\,ab^9x^8}{4}+\frac{b^{10}x^9}{9}+10\,a^9b\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^2,x)
```

```
[Out] -a^10/x+45*a^8*b^2*x+60*a^7*b^3*x^2+70*a^6*b^4*x^3+63*a^5*b^5*x^4
+42*a^4*b^6*x^5+20*a^3*b^7*x^6+45/7*a^2*b^8*x^7+5/4*a*b^9*x^8+1/9
*b^10*x^9+10*a^9*b*ln(x)
```

Maxima [A] time = 1.33777, size = 147, normalized size = 1.28

$$\frac{1}{9}\,b^{10}x^9+\frac{5}{4}\,ab^9x^8+\frac{45}{7}\,a^2b^8x^7+20\,a^3b^7x^6+42\,a^4b^6x^5+63\,a^5b^5x^4+70\,a^6b^4x^3+60\,a^7b^3x^2+45\,a^8b^2x+10\,a^9b\log(x)-\frac{a^{10}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^2,x, algorithm="maxima")
```

```
[Out] 1/9*b^10*x^9 + 5/4*a*b^9*x^8 + 45/7*a^2*b^8*x^7 + 20*a^3*b^7*x^6
+ 42*a^4*b^6*x^5 + 63*a^5*b^5*x^4 + 70*a^6*b^4*x^3 + 60*a^7*b^3*x
^2 + 45*a^8*b^2*x + 10*a^9*b*log(x) - a^10/x
```

Fricas [A] time = 0.194793, size = 154, normalized size = 1.34

$$\frac{28\,b^{10}x^{10} + 315\,ab^{9}x^{9} + 1620\,a^{2}b^{8}x^{8} + 5040\,a^{3}b^{7}x^{7} + 10584\,a^{4}b^{6}x^{6} + 15876\,a^{5}b^{5}x^{5} + 17640\,a^{6}b^{4}x^{4} + 15120\,a^{7}b^{3}x^{3} + 11340\,a}{252\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^2,x, algorithm="fricas")
```

```
[Out] 1/252*(28*b^10*x^10 + 315*a*b^9*x^9 + 1620*a^2*b^8*x^8 + 5040*a^3
*b^7*x^7 + 10584*a^4*b^6*x^6 + 15876*a^5*b^5*x^5 + 17640*a^6*b^4*
x^4 + 15120*a^7*b^3*x^3 + 11340*a^8*b^2*x^2 + 2520*a^9*b*x*log(x)
 - 252*a^10)/x
```

Sympy [A] time = 1.52769, size = 117, normalized size = 1.02

$$-\frac{a^{10}}{x} + 10a^{9}b\log{(x)} + 45a^{8}b^{2}x + 60a^{7}b^{3}x^{2} + 70a^{6}b^{4}x^{3} + 63a^{5}b^{5}x^{4} + 42a^{4}b^{6}x^{5} + 20a^{3}b^{7}x^{6} + \frac{45a^{2}b^{8}x^{7}}{7} + \frac{5ab^{9}x^{8}}{4} + \frac{b^{10}x^{9}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**2,x)
```

```
[Out] -a**10/x + 10*a**9*b*log(x) + 45*a**8*b**2*x + 60*a**7*b**3*x**2
+ 70*a**6*b**4*x**3 + 63*a**5*b**5*x**4 + 42*a**4*b**6*x**5 + 20*
a**3*b**7*x**6 + 45*a**2*b**8*x**7/7 + 5*a*b**9*x**8/4 + b**10*x*
*9/9
```

GIAC/XCAS [A] time = 0.206985, size = 149, normalized size = 1.3

$$\frac{1}{9}\,b^{10}x^{9} + \frac{5}{4}\,ab^{9}x^{8} + \frac{45}{7}\,a^{2}b^{8}x^{7} + 20\,a^{3}b^{7}x^{6} + 42\,a^{4}b^{6}x^{5} + 63\,a^{5}b^{5}x^{4} + 70\,a^{6}b^{4}x^{3} + 60\,a^{7}b^{3}x^{2} + 45\,a^{8}b^{2}x + 10\,a^{9}b\ln\left(|x|\right) - \frac{a^{10}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^2,x, algorithm="giac")
```

```
[Out] 1/9*b^10*x^9 + 5/4*a*b^9*x^8 + 45/7*a^2*b^8*x^7 + 20*a^3*b^7*x^6
+ 42*a^4*b^6*x^5 + 63*a^5*b^5*x^4 + 70*a^6*b^4*x^3 + 60*a^7*b^3*x
^2 + 45*a^8*b^2*x + 10*a^9*b*ln(abs(x)) - a^10/x
```

3.137 $\int \frac{(a+bx)^{10}}{x^3}\,dx$

Optimal. Leaf size=119

$$-\frac{a^{10}}{2x^2}-\frac{10a^9b}{x}+45a^8b^2\log(x)+120a^7b^3x+105a^6b^4x^2+84a^5b^5x^3+\frac{105}{2}a^4b^6x^4+24a^3b^7x^5+\frac{15}{2}a^2b^8x^6+\frac{10}{7}ab^9x^7+\frac{b^{10}x^8}{8}$$

```
[Out] -a^10/(2*x^2) - (10*a^9*b)/x + 120*a^7*b^3*x + 105*a^6*b^4*x^2 +
84*a^5*b^5*x^3 + (105*a^4*b^6*x^4)/2 + 24*a^3*b^7*x^5 + (15*a^2*b
^8*x^6)/2 + (10*a*b^9*x^7)/7 + (b^10*x^8)/8 + 45*a^8*b^2*Log[x]
```

Rubi [A] time = 0.115209, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{2x^2}-\frac{10a^9b}{x}+45a^8b^2\log(x)+120a^7b^3x+105a^6b^4x^2+84a^5b^5x^3+\frac{105}{2}a^4b^6x^4+24a^3b^7x^5+\frac{15}{2}a^2b^8x^6+\frac{10}{7}ab^9x^7+\frac{b^{10}x^8}{8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^3,x]
```

```
[Out] -a^10/(2*x^2) - (10*a^9*b)/x + 120*a^7*b^3*x + 105*a^6*b^4*x^2 +
84*a^5*b^5*x^3 + (105*a^4*b^6*x^4)/2 + 24*a^3*b^7*x^5 + (15*a^2*b
^8*x^6)/2 + (10*a*b^9*x^7)/7 + (b^10*x^8)/8 + 45*a^8*b^2*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{2x^2}-\frac{10a^9b}{x}+45a^8b^2\log{(x)}+120a^7b^3x+210a^6b^4\int x\,dx+84a^5b^5x^3+\frac{105a^4b^6x^4}{2}+24a^3b^7x^5+\frac{15a^2b^8x^6}{2}+\frac{10ab^9x^7}{7}+\frac{b^{10}x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**3,x)
```

```
[Out] -a**10/(2*x**2) - 10*a**9*b/x + 45*a**8*b**2*log(x) + 120*a**7*b*
*3*x + 210*a**6*b**4*Integral(x, x) + 84*a**5*b**5*x**3 + 105*a**
4*b**6*x**4/2 + 24*a**3*b**7*x**5 + 15*a**2*b**8*x**6/2 + 10*a*b*
```

```
*9*x**7/7 + b**10*x**8/8
```

Mathematica [A] time = 0.0072313, size = 119, normalized size = 1.

$$-\frac{a^{10}}{2x^2}-\frac{10a^9b}{x}+45a^8b^2\log(x)+120a^7b^3x+105a^6b^4x^2+84a^5b^5x^3+\frac{105}{2}a^4b^6x^4+24a^3b^7x^5+\frac{15}{2}a^2b^8x^6+\frac{10}{7}ab^9x^7+\frac{b^{10}x^8}{8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^3,x]
```

```
[Out] -a^10/(2*x^2) - (10*a^9*b)/x + 120*a^7*b^3*x + 105*a^6*b^4*x^2 +
84*a^5*b^5*x^3 + (105*a^4*b^6*x^4)/2 + 24*a^3*b^7*x^5 + (15*a^2*b
^8*x^6)/2 + (10*a*b^9*x^7)/7 + (b^10*x^8)/8 + 45*a^8*b^2*Log[x]
```

Maple [A] time = 0.009, size = 110, normalized size = 0.9

$$-\frac{a^{10}}{2\,x^2}-10\,\frac{a^9b}{x}+120\,a^7b^3x+105\,a^6b^4x^2+84\,a^5b^5x^3+\frac{105\,a^4b^6x^4}{2}+24\,a^3b^7x^5+\frac{15\,a^2b^8x^6}{2}+\frac{10\,ab^9x^7}{7}+\frac{b^{10}x^8}{8}+45\,a^8b^2\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^3,x)
```

```
[Out] -1/2*a^10/x^2-10*a^9*b/x+120*a^7*b^3*x+105*a^6*b^4*x^2+84*a^5*b^5
*x^3+105/2*a^4*b^6*x^4+24*a^3*b^7*x^5+15/2*a^2*b^8*x^6+10/7*a*b^9
*x^7+1/8*b^10*x^8+45*a^8*b^2*ln(x)
```

Maxima [A] time = 1.33014, size = 146, normalized size = 1.23

$$\frac{1}{8}\,b^{10}x^8+\frac{10}{7}\,ab^9x^7+\frac{15}{2}\,a^2b^8x^6+24\,a^3b^7x^5+\frac{105}{2}\,a^4b^6x^4+84\,a^5b^5x^3+105\,a^6b^4x^2+120\,a^7b^3x+45\,a^8b^2\log(x)-\frac{20\,a^9bx+a^{10}}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^3,x, algorithm="maxima")
```

```
[Out] 1/8*b^10*x^8 + 10/7*a*b^9*x^7 + 15/2*a^2*b^8*x^6 + 24*a^3*b^7*x^5
 + 105/2*a^4*b^6*x^4 + 84*a^5*b^5*x^3 + 105*a^6*b^4*x^2 + 120*a^7
*b^3*x + 45*a^8*b^2*log(x) - 1/2*(20*a^9*b*x + a^10)/x^2
```

Fricas [A] time = 0.195307, size = 154, normalized size = 1.29

$$\frac{7\,b^{10}x^{10} + 80\,ab^{9}x^{9} + 420\,a^{2}b^{8}x^{8} + 1344\,a^{3}b^{7}x^{7} + 2940\,a^{4}b^{6}x^{6} + 4704\,a^{5}b^{5}x^{5} + 5880\,a^{6}b^{4}x^{4} + 6720\,a^{7}b^{3}x^{3} + 2520\,a^{8}b^{2}x^{2}\log}{56\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^3,x, algorithm="fricas")
```

```
[Out] 1/56*(7*b^10*x^10 + 80*a*b^9*x^9 + 420*a^2*b^8*x^8 + 1344*a^3*b^7
*x^7 + 2940*a^4*b^6*x^6 + 4704*a^5*b^5*x^5 + 5880*a^6*b^4*x^4 + 6
720*a^7*b^3*x^3 + 2520*a^8*b^2*x^2*log(x) - 560*a^9*b*x - 28*a^10
)/x^2
```

Sympy [A] time = 1.66618, size = 121, normalized size = 1.02

$$45a^{8}b^{2}\log(x) + 120a^{7}b^{3}x + 105a^{6}b^{4}x^{2} + 84a^{5}b^{5}x^{3} + \frac{105a^{4}b^{6}x^{4}}{2} + 24a^{3}b^{7}x^{5} + \frac{15a^{2}b^{8}x^{6}}{2} + \frac{10ab^{9}x^{7}}{7} + \frac{b^{10}x^{8}}{8} - \frac{a^{10} + 20a^{9}bx}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**3,x)
```

```
[Out] 45*a**8*b**2*log(x) + 120*a**7*b**3*x + 105*a**6*b**4*x**2 + 84*a
**5*b**5*x**3 + 105*a**4*b**6*x**4/2 + 24*a**3*b**7*x**5 + 15*a**
2*b**8*x**6/2 + 10*a*b**9*x**7/7 + b**10*x**8/8 - (a**10 + 20*a**
9*b*x)/(2*x**2)
```

GIAC/XCAS [A] time = 0.205734, size = 147, normalized size = 1.24

$$\frac{1}{8}\,b^{10}x^{8} + \frac{10}{7}\,ab^{9}x^{7} + \frac{15}{2}\,a^{2}b^{8}x^{6} + 24\,a^{3}b^{7}x^{5} + \frac{105}{2}\,a^{4}b^{6}x^{4} + 84\,a^{5}b^{5}x^{3} + 105\,a^{6}b^{4}x^{2} + 120\,a^{7}b^{3}x + 45\,a^{8}b^{2}\ln(|x|) - \frac{20\,a^{9}bx + a^{10}}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^3,x, algorithm="giac")
```

```
[Out] 1/8*b^10*x^8 + 10/7*a*b^9*x^7 + 15/2*a^2*b^8*x^6 + 24*a^3*b^7*x^5
 + 105/2*a^4*b^6*x^4 + 84*a^5*b^5*x^3 + 105*a^6*b^4*x^2 + 120*a^7
*b^3*x + 45*a^8*b^2*ln(abs(x)) - 1/2*(20*a^9*b*x + a^10)/x^2
```

3.138 $\int \frac{(a+bx)^{10}}{x^4} \, dx$

Optimal. Leaf size=115

$$-\frac{a^{10}}{3x^3}-\frac{5a^9b}{x^2}-\frac{45a^8b^2}{x}+120a^7b^3\log(x)+210a^6b^4x+126a^5b^5x^2+70a^4b^6x^3+30a^3b^7x^4+9a^2b^8x^5+\frac{5}{3}ab^9x^6+\frac{b^{10}x^7}{7}$$

```
[Out] -a^10/(3*x^3) - (5*a^9*b)/x^2 - (45*a^8*b^2)/x + 210*a^6*b^4*x + 
126*a^5*b^5*x^2 + 70*a^4*b^6*x^3 + 30*a^3*b^7*x^4 + 9*a^2*b^8*x^5
 + (5*a*b^9*x^6)/3 + (b^10*x^7)/7 + 120*a^7*b^3*Log[x]
```

Rubi [A] time = 0.117369, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^{10}}{3x^3}-\frac{5a^9b}{x^2}-\frac{45a^8b^2}{x}+120a^7b^3\log(x)+210a^6b^4x+126a^5b^5x^2+70a^4b^6x^3+30a^3b^7x^4+9a^2b^8x^5+\frac{5}{3}ab^9x^6+\frac{b^{10}x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^4,x]
```

```
[Out] -a^10/(3*x^3) - (5*a^9*b)/x^2 - (45*a^8*b^2)/x + 210*a^6*b^4*x + 
126*a^5*b^5*x^2 + 70*a^4*b^6*x^3 + 30*a^3*b^7*x^4 + 9*a^2*b^8*x^5
 + (5*a*b^9*x^6)/3 + (b^10*x^7)/7 + 120*a^7*b^3*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{3x^3}-\frac{5a^9b}{x^2}-\frac{45a^8b^2}{x}+120a^7b^3\log{(x)}+210a^6b^4x+252a^5b^5\int x\,dx+70a^4b^6x^3+30a^3b^7x^4+9a^2b^8x^5+\frac{5ab^9x^6}{3}+\frac{b^{10}x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**4,x)
```

```
[Out] -a**10/(3*x**3) - 5*a**9*b/x**2 - 45*a**8*b**2/x + 120*a**7*b**3*
log(x) + 210*a**6*b**4*x + 252*a**5*b**5*Integral(x, x) + 70*a**4
*b**6*x**3 + 30*a**3*b**7*x**4 + 9*a**2*b**8*x**5 + 5*a*b**9*x**6
```

```
/3 + b**10*x**7/7
```

Mathematica [A] time = 0.0214888, size = 115, normalized size = 1.

$$-\frac{a^{10}}{3x^3}-\frac{5a^9b}{x^2}-\frac{45a^8b^2}{x}+120a^7b^3\log(x)+210a^6b^4x+126a^5b^5x^2+70a^4b^6x^3+30a^3b^7x^4+9a^2b^8x^5+\frac{5}{3}ab^9x^6+\frac{b^{10}x^7}{7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^4,x]
```

```
[Out] -a^10/(3*x^3) - (5*a^9*b)/x^2 - (45*a^8*b^2)/x + 210*a^6*b^4*x +
126*a^5*b^5*x^2 + 70*a^4*b^6*x^3 + 30*a^3*b^7*x^4 + 9*a^2*b^8*x^5
 + (5*a*b^9*x^6)/3 + (b^10*x^7)/7 + 120*a^7*b^3*Log[x]
```

Maple [A] time = 0.008, size = 110, normalized size = 1.

$$-\frac{a^{10}}{3\,x^3}-5\,\frac{a^9b}{x^2}-45\,\frac{a^8b^2}{x}+210\,a^6b^4x+126\,a^5b^5x^2+70\,a^4b^6x^3+30\,a^3b^7x^4+9\,a^2b^8x^5+\frac{5\,ab^9x^6}{3}+\frac{b^{10}x^7}{7}+120\,a^7b^3\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^4,x)
```

```
[Out] -1/3*a^10/x^3-5*a^9*b/x^2-45*a^8*b^2/x+210*a^6*b^4*x+126*a^5*b^5*
x^2+70*a^4*b^6*x^3+30*a^3*b^7*x^4+9*a^2*b^8*x^5+5/3*a*b^9*x^6+1/7
*b^10*x^7+120*a^7*b^3*ln(x)
```

Maxima [A] time = 1.36017, size = 146, normalized size = 1.27

$$\frac{1}{7}\,b^{10}x^7+\frac{5}{3}\,ab^9x^6+9\,a^2b^8x^5+30\,a^3b^7x^4+70\,a^4b^6x^3+126\,a^5b^5x^2+210\,a^6b^4x+120\,a^7b^3\log(x)-\frac{135\,a^8b^2x^2+15\,a^9bx+a^{10}}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^4,x, algorithm="maxima")
```

```
[Out] 1/7*b^10*x^7 + 5/3*a*b^9*x^6 + 9*a^2*b^8*x^5 + 30*a^3*b^7*x^4 + 7
0*a^4*b^6*x^3 + 126*a^5*b^5*x^2 + 210*a^6*b^4*x + 120*a^7*b^3*log
(x) - 1/3*(135*a^8*b^2*x^2 + 15*a^9*b*x + a^10)/x^3
```

Fricas [A] time = 0.196924, size = 154, normalized size = 1.34

$$\frac{3\,b^{10}x^{10} + 35\,ab^9x^9 + 189\,a^2b^8x^8 + 630\,a^3b^7x^7 + 1470\,a^4b^6x^6 + 2646\,a^5b^5x^5 + 4410\,a^6b^4x^4 + 2520\,a^7b^3x^3\log\left(x\right) - 945\,a^8b^2x}{21\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^4,x, algorithm="fricas")
```

```
[Out] 1/21*(3*b^10*x^10 + 35*a*b^9*x^9 + 189*a^2*b^8*x^8 + 630*a^3*b^7*
x^7 + 1470*a^4*b^6*x^6 + 2646*a^5*b^5*x^5 + 4410*a^6*b^4*x^4 + 25
20*a^7*b^3*x^3*log(x) - 945*a^8*b^2*x^2 - 105*a^9*b*x - 7*a^10)/x
^3
```

Sympy [A] time = 1.79672, size = 117, normalized size = 1.02

$$120a^7b^3\log\left(x\right) + 210a^6b^4x + 126a^5b^5x^2 + 70a^4b^6x^3 + 30a^3b^7x^4 + 9a^2b^8x^5 + \frac{5ab^9x^6}{3} + \frac{b^{10}x^7}{7} - \frac{a^{10} + 15a^9bx + 135a^8b^2x^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**4,x)
```

```
[Out] 120*a**7*b**3*log(x) + 210*a**6*b**4*x + 126*a**5*b**5*x**2 + 70*
a**4*b**6*x**3 + 30*a**3*b**7*x**4 + 9*a**2*b**8*x**5 + 5*a*b**9*
x**6/3 + b**10*x**7/7 - (a**10 + 15*a**9*b*x + 135*a**8*b**2*x**2
)/(3*x**3)
```

GIAC/XCAS [A] time = 0.205351, size = 147, normalized size = 1.28

$$\frac{1}{7}\,b^{10}x^7 + \frac{5}{3}\,ab^9x^6 + 9\,a^2b^8x^5 + 30\,a^3b^7x^4 + 70\,a^4b^6x^3 + 126\,a^5b^5x^2 + 210\,a^6b^4x + 120\,a^7b^3\ln\left(|x|\right) - \frac{135\,a^8b^2x^2 + 15\,a^9bx + a^{10}}{3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^4,x, algorithm="giac")
```

```
[Out] 1/7*b^10*x^7 + 5/3*a*b^9*x^6 + 9*a^2*b^8*x^5 + 30*a^3*b^7*x^4 + 7
0*a^4*b^6*x^3 + 126*a^5*b^5*x^2 + 210*a^6*b^4*x + 120*a^7*b^3*ln(
abs(x)) - 1/3*(135*a^8*b^2*x^2 + 15*a^9*b*x + a^10)/x^3
```

3.139 $\int \frac{(a+bx)^{10}}{x^5} \, dx$

Optimal. Leaf size=119

$$-\frac{a^{10}}{4x^4}-\frac{10a^9b}{3x^3}-\frac{45a^8b^2}{2x^2}-\frac{120a^7b^3}{x}+210a^6b^4\log(x)+252a^5b^5x+105a^4b^6x^2+40a^3b^7x^3+\frac{45}{4}a^2b^8x^4+2ab^9x^5+\frac{b^{10}x^6}{6}$$

```
[Out] -a^10/(4*x^4) - (10*a^9*b)/(3*x^3) - (45*a^8*b^2)/(2*x^2) - (120*
a^7*b^3)/x + 252*a^5*b^5*x + 105*a^4*b^6*x^2 + 40*a^3*b^7*x^3 + (
45*a^2*b^8*x^4)/4 + 2*a*b^9*x^5 + (b^10*x^6)/6 + 210*a^6*b^4*Log[
x]
```

Rubi [A] time = 0.118007, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^{10}}{4x^4}-\frac{10a^9b}{3x^3}-\frac{45a^8b^2}{2x^2}-\frac{120a^7b^3}{x}+210a^6b^4\log(x)+252a^5b^5x+105a^4b^6x^2+40a^3b^7x^3+\frac{45}{4}a^2b^8x^4+2ab^9x^5+\frac{b^{10}x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^5,x]
```

```
[Out] -a^10/(4*x^4) - (10*a^9*b)/(3*x^3) - (45*a^8*b^2)/(2*x^2) - (120*
a^7*b^3)/x + 252*a^5*b^5*x + 105*a^4*b^6*x^2 + 40*a^3*b^7*x^3 + (
45*a^2*b^8*x^4)/4 + 2*a*b^9*x^5 + (b^10*x^6)/6 + 210*a^6*b^4*Log[
x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{4x^4}-\frac{10a^9b}{3x^3}-\frac{45a^8b^2}{2x^2}-\frac{120a^7b^3}{x}+210a^6b^4\log(x)+252a^5b^5x+210a^4b^6\int x\,dx+40a^3b^7x^3+\frac{45a^2b^8x^4}{4}+2ab^9x^5+\frac{b^{10}x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**5,x)
```

```
[Out] -a**10/(4*x**4) - 10*a**9*b/(3*x**3) - 45*a**8*b**2/(2*x**2) - 12
0*a**7*b**3/x + 210*a**6*b**4*log(x) + 252*a**5*b**5*x + 210*a**4
```

```
*b**6*Integral(x, x) + 40*a**3*b**7*x**3 + 45*a**2*b**8*x**4/4 +
2*a*b**9*x**5 + b**10*x**6/6
```

Mathematica [A] time = 0.0177834, size = 119, normalized size = 1.

$$-\frac{a^{10}}{4x^4}-\frac{10a^9b}{3x^3}-\frac{45a^8b^2}{2x^2}-\frac{120a^7b^3}{x}+210a^6b^4\log(x)+252a^5b^5x+105a^4b^6x^2+40a^3b^7x^3+\frac{45}{4}a^2b^8x^4+2ab^9x^5+\frac{b^{10}x^6}{6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^5,x]
```

```
[Out] -a^10/(4*x^4) - (10*a^9*b)/(3*x^3) - (45*a^8*b^2)/(2*x^2) - (120*
a^7*b^3)/x + 252*a^5*b^5*x + 105*a^4*b^6*x^2 + 40*a^3*b^7*x^3 + (
45*a^2*b^8*x^4)/4 + 2*a*b^9*x^5 + (b^10*x^6)/6 + 210*a^6*b^4*Log[
x]
```

Maple [A] time = 0.01, size = 110, normalized size = 0.9

$$-\frac{a^{10}}{4\,x^4}-\frac{10\,a^9b}{3\,x^3}-\frac{45\,a^8b^2}{2\,x^2}-120\,\frac{a^7b^3}{x}+252\,a^5b^5x+105\,a^4b^6x^2+40\,a^3b^7x^3+\frac{45\,a^2b^8x^4}{4}+2\,ab^9x^5+\frac{b^{10}x^6}{6}+210\,a^6b^4\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^5,x)
```

```
[Out] -1/4*a^10/x^4-10/3*a^9*b/x^3-45/2*a^8*b^2/x^2-120*a^7*b^3/x+252*a
^5*b^5*x+105*a^4*b^6*x^2+40*a^3*b^7*x^3+45/4*a^2*b^8*x^4+2*a*b^9*
x^5+1/6*b^10*x^6+210*a^6*b^4*ln(x)
```

Maxima [A] time = 1.34043, size = 149, normalized size = 1.25

$$\frac{1}{6}\,b^{10}x^6+2\,ab^9x^5+\frac{45}{4}\,a^2b^8x^4+40\,a^3b^7x^3+105\,a^4b^6x^2+252\,a^5b^5x+210\,a^6b^4\log(x)-\frac{1440\,a^7b^3x^3+270\,a^8b^2x^2+40\,a^9bx+3\,a^{10}}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^5,x, algorithm="maxima")
```

```
[Out] 1/6*b^10*x^6 + 2*a*b^9*x^5 + 45/4*a^2*b^8*x^4 + 40*a^3*b^7*x^3 +
105*a^4*b^6*x^2 + 252*a^5*b^5*x + 210*a^6*b^4*log(x) - 1/12*(1440
*a^7*b^3*x^3 + 270*a^8*b^2*x^2 + 40*a^9*b*x + 3*a^10)/x^4
```

Fricas [A] time = 0.194369, size = 154, normalized size = 1.29

$$\frac{2\,b^{10}x^{10} + 24\,ab^{9}x^{9} + 135\,a^{2}b^{8}x^{8} + 480\,a^{3}b^{7}x^{7} + 1260\,a^{4}b^{6}x^{6} + 3024\,a^{5}b^{5}x^{5} + 2520\,a^{6}b^{4}x^{4}\log\left(x\right) - 1440\,a^{7}b^{3}x^{3} - 270\,a^{8}b^{2}x}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(2*b^10*x^10 + 24*a*b^9*x^9 + 135*a^2*b^8*x^8 + 480*a^3*b^7*
x^7 + 1260*a^4*b^6*x^6 + 3024*a^5*b^5*x^5 + 2520*a^6*b^4*x^4*log(
x) - 1440*a^7*b^3*x^3 - 270*a^8*b^2*x^2 - 40*a^9*b*x - 3*a^10)/x^
4
```

Sympy [A] time = 2.02006, size = 119, normalized size = 1.

$$210a^{6}b^{4}\log\left(x\right) + 252a^{5}b^{5}x + 105a^{4}b^{6}x^{2} + 40a^{3}b^{7}x^{3} + \frac{45a^{2}b^{8}x^{4}}{4} + 2ab^{9}x^{5} + \frac{b^{10}x^{6}}{6} - \frac{3a^{10} + 40a^{9}bx + 270a^{8}b^{2}x^{2} + 1440a^{7}b^{3}x^{3}}{12x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**5,x)
```

```
[Out] 210*a**6*b**4*log(x) + 252*a**5*b**5*x + 105*a**4*b**6*x**2 + 40*
a**3*b**7*x**3 + 45*a**2*b**8*x**4/4 + 2*a*b**9*x**5 + b**10*x**6
/6 - (3*a**10 + 40*a**9*b*x + 270*a**8*b**2*x**2 + 1440*a**7*b**3
*x**3)/(12*x**4)
```

GIAC/XCAS [A] time = 0.205331, size = 150, normalized size = 1.26

$$\frac{1}{6}\,b^{10}x^{6} + 2\,ab^{9}x^{5} + \frac{45}{4}\,a^{2}b^{8}x^{4} + 40\,a^{3}b^{7}x^{3} + 105\,a^{4}b^{6}x^{2} + 252\,a^{5}b^{5}x + 210\,a^{6}b^{4}\ln\left(|x|\right) - \frac{1440\,a^{7}b^{3}x^{3} + 270\,a^{8}b^{2}x^{2} + 40\,a^{9}bx + 3\,a^{10}}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^5,x, algorithm="giac")
```

```
[Out] 1/6*b^10*x^6 + 2*a*b^9*x^5 + 45/4*a^2*b^8*x^4 + 40*a^3*b^7*x^3 +
105*a^4*b^6*x^2 + 252*a^5*b^5*x + 210*a^6*b^4*ln(abs(x)) - 1/12*(
1440*a^7*b^3*x^3 + 270*a^8*b^2*x^2 + 40*a^9*b*x + 3*a^10)/x^4
```

3.140 $\int \frac{(a+bx)^{10}}{x^6} \, dx$

Optimal. Leaf size=117

$$-\frac{a^{10}}{5x^5}-\frac{5a^9b}{2x^4}-\frac{15a^8b^2}{x^3}-\frac{60a^7b^3}{x^2}-\frac{210a^6b^4}{x}+252a^5b^5\log(x)+210a^4b^6x+60a^3b^7x^2+15a^2b^8x^3+\frac{5}{2}ab^9x^4+\frac{b^{10}x^5}{5}$$

```
[Out] -a^10/(5*x^5) - (5*a^9*b)/(2*x^4) - (15*a^8*b^2)/x^3 - (60*a^7*b^
3)/x^2 - (210*a^6*b^4)/x + 210*a^4*b^6*x + 60*a^3*b^7*x^2 + 15*a^
2*b^8*x^3 + (5*a*b^9*x^4)/2 + (b^10*x^5)/5 + 252*a^5*b^5*Log[x]
```

Rubi [A] time = 0.11832, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{5x^5}-\frac{5a^9b}{2x^4}-\frac{15a^8b^2}{x^3}-\frac{60a^7b^3}{x^2}-\frac{210a^6b^4}{x}+252a^5b^5\log(x)+210a^4b^6x+60a^3b^7x^2+15a^2b^8x^3+\frac{5}{2}ab^9x^4+\frac{b^{10}x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^6,x]
```

```
[Out] -a^10/(5*x^5) - (5*a^9*b)/(2*x^4) - (15*a^8*b^2)/x^3 - (60*a^7*b^
3)/x^2 - (210*a^6*b^4)/x + 210*a^4*b^6*x + 60*a^3*b^7*x^2 + 15*a^
2*b^8*x^3 + (5*a*b^9*x^4)/2 + (b^10*x^5)/5 + 252*a^5*b^5*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{5x^5}-\frac{5a^9b}{2x^4}-\frac{15a^8b^2}{x^3}-\frac{60a^7b^3}{x^2}-\frac{210a^6b^4}{x}+252a^5b^5\log{(x)}+210a^4b^6x+120a^3b^7\int x\,dx+15a^2b^8x^3+\frac{5ab^9x^4}{2}+\frac{b^{10}x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**6,x)
```

```
[Out] -a**10/(5*x**5) - 5*a**9*b/(2*x**4) - 15*a**8*b**2/x**3 - 60*a**7
*b**3/x**2 - 210*a**6*b**4/x + 252*a**5*b**5*log(x) + 210*a**4*b*
*6*x + 120*a**3*b**7*Integral(x, x) + 15*a**2*b**8*x**3 + 5*a*b**
```

```
9*x**4/2 + b**10*x**5/5
```

Mathematica [A] time = 0.0139001, size = 117, normalized size = 1.

$$-\frac{a^{10}}{5x^5}-\frac{5a^9b}{2x^4}-\frac{15a^8b^2}{x^3}-\frac{60a^7b^3}{x^2}-\frac{210a^6b^4}{x}+252a^5b^5\log(x)+210a^4b^6x+60a^3b^7x^2+15a^2b^8x^3+\frac{5}{2}ab^9x^4+\frac{b^{10}x^5}{5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^6,x]
```

```
[Out] -a^10/(5*x^5) - (5*a^9*b)/(2*x^4) - (15*a^8*b^2)/x^3 - (60*a^7*b^
3)/x^2 - (210*a^6*b^4)/x + 210*a^4*b^6*x + 60*a^3*b^7*x^2 + 15*a^
2*b^8*x^3 + (5*a*b^9*x^4)/2 + (b^10*x^5)/5 + 252*a^5*b^5*Log[x]
```

Maple [A] time = 0.011, size = 110, normalized size = 0.9

$$-\frac{a^{10}}{5\,x^5}-\frac{5\,a^9b}{2\,x^4}-15\,\frac{a^8b^2}{x^3}-60\,\frac{a^7b^3}{x^2}-210\,\frac{a^6b^4}{x}+210\,a^4b^6x+60\,a^3b^7x^2+15\,a^2b^8x^3+\frac{5\,ab^9x^4}{2}+\frac{b^{10}x^5}{5}+252\,a^5b^5\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^6,x)
```

```
[Out] -1/5*a^10/x^5-5/2*a^9*b/x^4-15*a^8*b^2/x^3-60*a^7*b^3/x^2-210*a^6
*b^4/x+210*a^4*b^6*x+60*a^3*b^7*x^2+15*a^2*b^8*x^3+5/2*a*b^9*x^4+
1/5*b^10*x^5+252*a^5*b^5*ln(x)
```

Maxima [A] time = 1.33163, size = 149, normalized size = 1.27

$$\frac{1}{5}\,b^{10}x^5+\frac{5}{2}\,ab^9x^4+15\,a^2b^8x^3+60\,a^3b^7x^2+210\,a^4b^6x+252\,a^5b^5\log(x)-\frac{2100\,a^6b^4x^4+600\,a^7b^3x^3+150\,a^8b^2x^2+25\,a^9bx+2\,a^{10}}{10\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^6,x, algorithm="maxima")
```

```
[Out] 1/5*b^10*x^5 + 5/2*a*b^9*x^4 + 15*a^2*b^8*x^3 + 60*a^3*b^7*x^2 +
210*a^4*b^6*x + 252*a^5*b^5*log(x) - 1/10*(2100*a^6*b^4*x^4 + 600
*a^7*b^3*x^3 + 150*a^8*b^2*x^2 + 25*a^9*b*x + 2*a^10)/x^5
```

Fricas [A] time = 0.195875, size = 154, normalized size = 1.32

$$\frac{2\,b^{10}x^{10} + 25\,ab^{9}x^{9} + 150\,a^{2}b^{8}x^{8} + 600\,a^{3}b^{7}x^{7} + 2100\,a^{4}b^{6}x^{6} + 2520\,a^{5}b^{5}x^{5}\log\left(x\right) - 2100\,a^{6}b^{4}x^{4} - 600\,a^{7}b^{3}x^{3} - 150\,a^{8}b^{2}x}{10\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^6,x, algorithm="fricas")
```

```
[Out] 1/10*(2*b^10*x^10 + 25*a*b^9*x^9 + 150*a^2*b^8*x^8 + 600*a^3*b^7*
x^7 + 2100*a^4*b^6*x^6 + 2520*a^5*b^5*x^5*log(x) - 2100*a^6*b^4*x
^4 - 600*a^7*b^3*x^3 - 150*a^8*b^2*x^2 - 25*a^9*b*x - 2*a^10)/x^5
```

Sympy [A] time = 2.23886, size = 119, normalized size = 1.02

$$252a^{5}b^{5}\log\left(x\right) + 210a^{4}b^{6}x + 60a^{3}b^{7}x^{2} + 15a^{2}b^{8}x^{3} + \frac{5ab^{9}x^{4}}{2} + \frac{b^{10}x^{5}}{5} - \frac{2a^{10} + 25a^{9}bx + 150a^{8}b^{2}x^{2} + 600a^{7}b^{3}x^{3} + 2100a^{6}b^{4}x^{4}}{10x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**6,x)
```

```
[Out] 252*a**5*b**5*log(x) + 210*a**4*b**6*x + 60*a**3*b**7*x**2 + 15*a
**2*b**8*x**3 + 5*a*b**9*x**4/2 + b**10*x**5/5 - (2*a**10 + 25*a*
*9*b*x + 150*a**8*b**2*x**2 + 600*a**7*b**3*x**3 + 2100*a**6*b**4
*x**4)/(10*x**5)
```

GIAC/XCAS [A] time = 0.204963, size = 150, normalized size = 1.28

$$\frac{1}{5}\,b^{10}x^{5} + \frac{5}{2}\,ab^{9}x^{4} + 15\,a^{2}b^{8}x^{3} + 60\,a^{3}b^{7}x^{2} + 210\,a^{4}b^{6}x + 252\,a^{5}b^{5}\ln\left(|x|\right) - \frac{2100\,a^{6}b^{4}x^{4} + 600\,a^{7}b^{3}x^{3} + 150\,a^{8}b^{2}x^{2} + 25\,a^{9}bx + 2\,a^{10}}{10\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^6,x, algorithm="giac")
```

```
[Out] 1/5*b^10*x^5 + 5/2*a*b^9*x^4 + 15*a^2*b^8*x^3 + 60*a^3*b^7*x^2 +
210*a^4*b^6*x + 252*a^5*b^5*ln(abs(x)) - 1/10*(2100*a^6*b^4*x^4 +
 600*a^7*b^3*x^3 + 150*a^8*b^2*x^2 + 25*a^9*b*x + 2*a^10)/x^5
```

3.141 $\int \frac{(a+bx)^{10}}{x^7}\,dx$

Optimal. Leaf size=119

$$-\frac{a^{10}}{6x^6}-\frac{2a^9b}{x^5}-\frac{45a^8b^2}{4x^4}-\frac{40a^7b^3}{x^3}-\frac{105a^6b^4}{x^2}-\frac{252a^5b^5}{x}+210a^4b^6\log(x)+120a^3b^7x+\frac{45}{2}a^2b^8x^2+\frac{10}{3}ab^9x^3+\frac{b^{10}x^4}{4}$$

```
[Out] -a^10/(6*x^6) - (2*a^9*b)/x^5 - (45*a^8*b^2)/(4*x^4) - (40*a^7*b^
3)/x^3 - (105*a^6*b^4)/x^2 - (252*a^5*b^5)/x + 120*a^3*b^7*x + (4
5*a^2*b^8*x^2)/2 + (10*a*b^9*x^3)/3 + (b^10*x^4)/4 + 210*a^4*b^6*
Log[x]
```

Rubi [A] time = 0.117378, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{6x^6}-\frac{2a^9b}{x^5}-\frac{45a^8b^2}{4x^4}-\frac{40a^7b^3}{x^3}-\frac{105a^6b^4}{x^2}-\frac{252a^5b^5}{x}+210a^4b^6\log(x)+120a^3b^7x+\frac{45}{2}a^2b^8x^2+\frac{10}{3}ab^9x^3+\frac{b^{10}x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^7,x]
```

```
[Out] -a^10/(6*x^6) - (2*a^9*b)/x^5 - (45*a^8*b^2)/(4*x^4) - (40*a^7*b^
3)/x^3 - (105*a^6*b^4)/x^2 - (252*a^5*b^5)/x + 120*a^3*b^7*x + (4
5*a^2*b^8*x^2)/2 + (10*a*b^9*x^3)/3 + (b^10*x^4)/4 + 210*a^4*b^6*
Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{6x^6}-\frac{2a^9b}{x^5}-\frac{45a^8b^2}{4x^4}-\frac{40a^7b^3}{x^3}-\frac{105a^6b^4}{x^2}-\frac{252a^5b^5}{x}+210a^4b^6\log(x)+120a^3b^7x+45a^2b^8\int x\,dx+\frac{10ab^9x^3}{3}+\frac{b^{10}x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**7,x)
```

```
[Out] -a**10/(6*x**6) - 2*a**9*b/x**5 - 45*a**8*b**2/(4*x**4) - 40*a**7
*b**3/x**3 - 105*a**6*b**4/x**2 - 252*a**5*b**5/x + 210*a**4*b**6
```

```
*log(x) + 120*a**3*b**7*x + 45*a**2*b**8*Integral(x, x) + 10*a*b*
*9*x**3/3 + b**10*x**4/4
```

Mathematica [A] time = 0.00694907, size = 119, normalized size = 1.

$$-\frac{a^{10}}{6x^6}-\frac{2a^9b}{x^5}-\frac{45a^8b^2}{4x^4}-\frac{40a^7b^3}{x^3}-\frac{105a^6b^4}{x^2}-\frac{252a^5b^5}{x}+210a^4b^6\log(x)+120a^3b^7x+\frac{45}{2}a^2b^8x^2+\frac{10}{3}ab^9x^3+\frac{b^{10}x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^7,x]
```

```
[Out] -a^10/(6*x^6) - (2*a^9*b)/x^5 - (45*a^8*b^2)/(4*x^4) - (40*a^7*b^
3)/x^3 - (105*a^6*b^4)/x^2 - (252*a^5*b^5)/x + 120*a^3*b^7*x + (4
5*a^2*b^8*x^2)/2 + (10*a*b^9*x^3)/3 + (b^10*x^4)/4 + 210*a^4*b^6*
Log[x]
```

Maple [A] time = 0.01, size = 110, normalized size = 0.9

$$-\frac{a^{10}}{6\,x^6}-2\,\frac{a^9b}{x^5}-\frac{45\,a^8b^2}{4\,x^4}-40\,\frac{a^7b^3}{x^3}-105\,\frac{a^6b^4}{x^2}-252\,\frac{a^5b^5}{x}+120\,a^3b^7x+\frac{45\,a^2b^8x^2}{2}+\frac{10\,ab^9x^3}{3}+\frac{b^{10}x^4}{4}+210\,a^4b^6\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^7,x)
```

```
[Out] -1/6*a^10/x^6-2*a^9*b/x^5-45/4*a^8*b^2/x^4-40*a^7*b^3/x^3-105*a^6
*b^4/x^2-252*a^5*b^5/x+120*a^3*b^7*x+45/2*a^2*b^8*x^2+10/3*a*b^9*
x^3+1/4*b^10*x^4+210*a^4*b^6*ln(x)
```

Maxima [A] time = 1.48716, size = 149, normalized size = 1.25

$$\frac{1}{4}\,b^{10}x^4+\frac{10}{3}\,ab^9x^3+\frac{45}{2}\,a^2b^8x^2+120\,a^3b^7x+210\,a^4b^6\log(x)-\frac{3024\,a^5b^5x^5+1260\,a^6b^4x^4+480\,a^7b^3x^3+135\,a^8b^2x^2+24\,a^9bx+2\,a^{10}}{12\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^7,x, algorithm="maxima")
```

```
[Out] 1/4*b^10*x^4 + 10/3*a*b^9*x^3 + 45/2*a^2*b^8*x^2 + 120*a^3*b^7*x
+ 210*a^4*b^6*log(x) - 1/12*(3024*a^5*b^5*x^5 + 1260*a^6*b^4*x^4
+ 480*a^7*b^3*x^3 + 135*a^8*b^2*x^2 + 24*a^9*b*x + 2*a^10)/x^6
```

Fricas [A] time = 0.194578, size = 154, normalized size = 1.29

$$\frac{3\,b^{10}x^{10}+40\,ab^{9}x^{9}+270\,a^{2}b^{8}x^{8}+1440\,a^{3}b^{7}x^{7}+2520\,a^{4}b^{6}x^{6}\log\left(x\right)-3024\,a^{5}b^{5}x^{5}-1260\,a^{6}b^{4}x^{4}-480\,a^{7}b^{3}x^{3}-135\,a^{8}b^{2}}{12\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^7,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^10*x^10 + 40*a*b^9*x^9 + 270*a^2*b^8*x^8 + 1440*a^3*b^7
*x^7 + 2520*a^4*b^6*x^6*log(x) - 3024*a^5*b^5*x^5 - 1260*a^6*b^4*
x^4 - 480*a^7*b^3*x^3 - 135*a^8*b^2*x^2 - 24*a^9*b*x - 2*a^10)/x^
6
```

Sympy [A] time = 2.47318, size = 121, normalized size = 1.02

$$210a^{4}b^{6}\log\left(x\right)+120a^{3}b^{7}x+\frac{45a^{2}b^{8}x^{2}}{2}+\frac{10ab^{9}x^{3}}{3}+\frac{b^{10}x^{4}}{4}-\frac{2a^{10}+24a^{9}bx+135a^{8}b^{2}x^{2}+480a^{7}b^{3}x^{3}+1260a^{6}b^{4}x^{4}+3024a^{5}b^{5}x^{5}}{12x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**7,x)
```

```
[Out] 210*a**4*b**6*log(x) + 120*a**3*b**7*x + 45*a**2*b**8*x**2/2 + 10
*a*b**9*x**3/3 + b**10*x**4/4 - (2*a**10 + 24*a**9*b*x + 135*a**8
*b**2*x**2 + 480*a**7*b**3*x**3 + 1260*a**6*b**4*x**4 + 3024*a**5
*b**5*x**5)/(12*x**6)
```

GIAC/XCAS [A] time = 0.203111, size = 150, normalized size = 1.26

$$\frac{1}{4}\,b^{10}x^{4}+\frac{10}{3}\,ab^{9}x^{3}+\frac{45}{2}\,a^{2}b^{8}x^{2}+120\,a^{3}b^{7}x+210\,a^{4}b^{6}\ln\left(|x|\right)-\frac{3024\,a^{5}b^{5}x^{5}+1260\,a^{6}b^{4}x^{4}+480\,a^{7}b^{3}x^{3}+135\,a^{8}b^{2}x^{2}+24\,a^{9}bx+2\,a^{10}}{12\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^7,x, algorithm="giac")
```

```
[Out] 1/4*b^10*x^4 + 10/3*a*b^9*x^3 + 45/2*a^2*b^8*x^2 + 120*a^3*b^7*x
+ 210*a^4*b^6*ln(abs(x)) - 1/12*(3024*a^5*b^5*x^5 + 1260*a^6*b^4*
x^4 + 480*a^7*b^3*x^3 + 135*a^8*b^2*x^2 + 24*a^9*b*x + 2*a^10)/x^
6
```

3.142 $\int \frac{(a+bx)^{10}}{x^8} \, dx$

Optimal. Leaf size=115

$$-\frac{a^{10}}{7x^7}-\frac{5a^9b}{3x^6}-\frac{9a^8b^2}{x^5}-\frac{30a^7b^3}{x^4}-\frac{70a^6b^4}{x^3}-\frac{126a^5b^5}{x^2}-\frac{210a^4b^6}{x}+120a^3b^7\log(x)+45a^2b^8x+5ab^9x^2+\frac{b^{10}x^3}{3}$$

```
[Out] -a^10/(7*x^7) - (5*a^9*b)/(3*x^6) - (9*a^8*b^2)/x^5 - (30*a^7*b^3
)/x^4 - (70*a^6*b^4)/x^3 - (126*a^5*b^5)/x^2 - (210*a^4*b^6)/x +
45*a^2*b^8*x + 5*a*b^9*x^2 + (b^10*x^3)/3 + 120*a^3*b^7*Log[x]
```

Rubi [A] time = 0.119685, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{7x^7}-\frac{5a^9b}{3x^6}-\frac{9a^8b^2}{x^5}-\frac{30a^7b^3}{x^4}-\frac{70a^6b^4}{x^3}-\frac{126a^5b^5}{x^2}-\frac{210a^4b^6}{x}+120a^3b^7\log(x)+45a^2b^8x+5ab^9x^2+\frac{b^{10}x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^8,x]
```

```
[Out] -a^10/(7*x^7) - (5*a^9*b)/(3*x^6) - (9*a^8*b^2)/x^5 - (30*a^7*b^3
)/x^4 - (70*a^6*b^4)/x^3 - (126*a^5*b^5)/x^2 - (210*a^4*b^6)/x +
45*a^2*b^8*x + 5*a*b^9*x^2 + (b^10*x^3)/3 + 120*a^3*b^7*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{7x^7}-\frac{5a^9b}{3x^6}-\frac{9a^8b^2}{x^5}-\frac{30a^7b^3}{x^4}-\frac{70a^6b^4}{x^3}-\frac{126a^5b^5}{x^2}-\frac{210a^4b^6}{x}+120a^3b^7\log(x)+45a^2b^8x+10ab^9\int x\,dx+\frac{b^{10}x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**8,x)
```

```
[Out] -a**10/(7*x**7) - 5*a**9*b/(3*x**6) - 9*a**8*b**2/x**5 - 30*a**7*
b**3/x**4 - 70*a**6*b**4/x**3 - 126*a**5*b**5/x**2 - 210*a**4*b**
6/x + 120*a**3*b**7*log(x) + 45*a**2*b**8*x + 10*a*b**9*Integral(
```

```
x, x) + b**10*x**3/3
```

Mathematica [A] time = 0.0188499, size = 115, normalized size = 1.

$$-\frac{a^{10}}{7x^7}-\frac{5a^9b}{3x^6}-\frac{9a^8b^2}{x^5}-\frac{30a^7b^3}{x^4}-\frac{70a^6b^4}{x^3}-\frac{126a^5b^5}{x^2}-\frac{210a^4b^6}{x}+120a^3b^7\log(x)+45a^2b^8x+5ab^9x^2+\frac{b^{10}x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^8,x]
```

```
[Out] -a^10/(7*x^7) - (5*a^9*b)/(3*x^6) - (9*a^8*b^2)/x^5 - (30*a^7*b^3
)/x^4 - (70*a^6*b^4)/x^3 - (126*a^5*b^5)/x^2 - (210*a^4*b^6)/x +
45*a^2*b^8*x + 5*a*b^9*x^2 + (b^10*x^3)/3 + 120*a^3*b^7*Log[x]
```

Maple [A] time = 0.011, size = 110, normalized size = 1.

$$-\frac{a^{10}}{7\,x^7}-\frac{5\,a^9b}{3\,x^6}-9\,\frac{a^8b^2}{x^5}-30\,\frac{a^7b^3}{x^4}-70\,\frac{a^6b^4}{x^3}-126\,\frac{a^5b^5}{x^2}-210\,\frac{a^4b^6}{x}+45\,a^2b^8x+5\,ab^9x^2+\frac{b^{10}x^3}{3}+120\,a^3b^7\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^8,x)
```

```
[Out] -1/7*a^10/x^7-5/3*a^9*b/x^6-9*a^8*b^2/x^5-30*a^7*b^3/x^4-70*a^6*b
^4/x^3-126*a^5*b^5/x^2-210*a^4*b^6/x+45*a^2*b^8*x+5*a*b^9*x^2+1/3
*b^10*x^3+120*a^3*b^7*ln(x)
```

Maxima [A] time = 1.3465, size = 149, normalized size = 1.3

$$\frac{1}{3}\,b^{10}x^3+5\,ab^9x^2+45\,a^2b^8x+120\,a^3b^7\log(x)-\frac{4410\,a^4b^6x^6+2646\,a^5b^5x^5+1470\,a^6b^4x^4+630\,a^7b^3x^3+189\,a^8b^2x^2+35\,a^9bx+3\,a^{10}}{21\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^8,x, algorithm="maxima")
```

```
[Out] 1/3*b^10*x^3 + 5*a*b^9*x^2 + 45*a^2*b^8*x + 120*a^3*b^7*log(x) -
1/21*(4410*a^4*b^6*x^6 + 2646*a^5*b^5*x^5 + 1470*a^6*b^4*x^4 + 63
0*a^7*b^3*x^3 + 189*a^8*b^2*x^2 + 35*a^9*b*x + 3*a^10)/x^7
```

Fricas [A] time = 0.192348, size = 154, normalized size = 1.34

$$\frac{7\,b^{10}x^{10} + 105\,ab^{9}x^{9} + 945\,a^{2}b^{8}x^{8} + 2520\,a^{3}b^{7}x^{7}\log\left(x\right) - 4410\,a^{4}b^{6}x^{6} - 2646\,a^{5}b^{5}x^{5} - 1470\,a^{6}b^{4}x^{4} - 630\,a^{7}b^{3}x^{3} - 189\,a^{8}b}{21\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^8,x, algorithm="fricas")
```

```
[Out] 1/21*(7*b^10*x^10 + 105*a*b^9*x^9 + 945*a^2*b^8*x^8 + 2520*a^3*b^
7*x^7*log(x) - 4410*a^4*b^6*x^6 - 2646*a^5*b^5*x^5 - 1470*a^6*b^4
*x^4 - 630*a^7*b^3*x^3 - 189*a^8*b^2*x^2 - 35*a^9*b*x - 3*a^10)/x
^7
```

Sympy [A] time = 2.77332, size = 117, normalized size = 1.02

$$120a^{3}b^{7}\log\left(x\right) + 45a^{2}b^{8}x + 5ab^{9}x^{2} + \frac{b^{10}x^{3}}{3} - \frac{3a^{10} + 35a^{9}bx + 189a^{8}b^{2}x^{2} + 630a^{7}b^{3}x^{3} + 1470a^{6}b^{4}x^{4} + 2646a^{5}b^{5}x^{5} + 4410a^{4}b^{6}x^{6}}{21x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**8,x)
```

```
[Out] 120*a**3*b**7*log(x) + 45*a**2*b**8*x + 5*a*b**9*x**2 + b**10*x**
3/3 - (3*a**10 + 35*a**9*b*x + 189*a**8*b**2*x**2 + 630*a**7*b**3
*x**3 + 1470*a**6*b**4*x**4 + 2646*a**5*b**5*x**5 + 4410*a**4*b**
6*x**6)/(21*x**7)
```

GIAC/XCAS [A] time = 0.203252, size = 150, normalized size = 1.3

$$\frac{1}{3}\,b^{10}x^{3} + 5\,ab^{9}x^{2} + 45\,a^{2}b^{8}x + 120\,a^{3}b^{7}\ln\left(|x|\right) - \frac{4410\,a^{4}b^{6}x^{6} + 2646\,a^{5}b^{5}x^{5} + 1470\,a^{6}b^{4}x^{4} + 630\,a^{7}b^{3}x^{3} + 189\,a^{8}b^{2}x^{2} + 35\,a^{9}bx + 3\,a^{10}}{21\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^8,x, algorithm="giac")
```

```
[Out] 1/3*b^10*x^3 + 5*a*b^9*x^2 + 45*a^2*b^8*x + 120*a^3*b^7*ln(abs(x)
) - 1/21*(4410*a^4*b^6*x^6 + 2646*a^5*b^5*x^5 + 1470*a^6*b^4*x^4
+ 630*a^7*b^3*x^3 + 189*a^8*b^2*x^2 + 35*a^9*b*x + 3*a^10)/x^7
```

3.143 $\int \frac{(a+bx)^{10}}{x^9}\,dx$

Optimal. Leaf size=119

$$-\frac{a^{10}}{8x^8}-\frac{10a^9b}{7x^7}-\frac{15a^8b^2}{2x^6}-\frac{24a^7b^3}{x^5}-\frac{105a^6b^4}{2x^4}-\frac{84a^5b^5}{x^3}-\frac{105a^4b^6}{x^2}-\frac{120a^3b^7}{x}+45a^2b^8\log(x)+10ab^9x+\frac{b^{10}x^2}{2}$$

```
[Out] -a^10/(8*x^8) - (10*a^9*b)/(7*x^7) - (15*a^8*b^2)/(2*x^6) - (24*a
^7*b^3)/x^5 - (105*a^6*b^4)/(2*x^4) - (84*a^5*b^5)/x^3 - (105*a^4
*b^6)/x^2 - (120*a^3*b^7)/x + 10*a*b^9*x + (b^10*x^2)/2 + 45*a^2*
b^8*Log[x]
```

Rubi [A] time = 0.117922, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{8x^8}-\frac{10a^9b}{7x^7}-\frac{15a^8b^2}{2x^6}-\frac{24a^7b^3}{x^5}-\frac{105a^6b^4}{2x^4}-\frac{84a^5b^5}{x^3}-\frac{105a^4b^6}{x^2}-\frac{120a^3b^7}{x}+45a^2b^8\log(x)+10ab^9x+\frac{b^{10}x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^9,x]
```

```
[Out] -a^10/(8*x^8) - (10*a^9*b)/(7*x^7) - (15*a^8*b^2)/(2*x^6) - (24*a
^7*b^3)/x^5 - (105*a^6*b^4)/(2*x^4) - (84*a^5*b^5)/x^3 - (105*a^4
*b^6)/x^2 - (120*a^3*b^7)/x + 10*a*b^9*x + (b^10*x^2)/2 + 45*a^2*
b^8*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{8x^8}-\frac{10a^9b}{7x^7}-\frac{15a^8b^2}{2x^6}-\frac{24a^7b^3}{x^5}-\frac{105a^6b^4}{2x^4}-\frac{84a^5b^5}{x^3}-\frac{105a^4b^6}{x^2}-\frac{120a^3b^7}{x}+45a^2b^8\log{(x)}+10ab^9x+b^{10}\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**9,x)
```

```
[Out] -a**10/(8*x**8) - 10*a**9*b/(7*x**7) - 15*a**8*b**2/(2*x**6) - 24
*a**7*b**3/x**5 - 105*a**6*b**4/(2*x**4) - 84*a**5*b**5/x**3 - 10
```

```
5*a**4*b**6/x**2 - 120*a**3*b**7/x + 45*a**2*b**8*log(x) + 10*a*b
**9*x + b**10*Integral(x, x)
```

Mathematica [A] time = 0.00727417, size = 119, normalized size = 1.

$$-\frac{a^{10}}{8x^8}-\frac{10a^9b}{7x^7}-\frac{15a^8b^2}{2x^6}-\frac{24a^7b^3}{x^5}-\frac{105a^6b^4}{2x^4}-\frac{84a^5b^5}{x^3}-\frac{105a^4b^6}{x^2}-\frac{120a^3b^7}{x}+45a^2b^8\log(x)+10ab^9x+\frac{b^{10}x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^9,x]
```

```
[Out] -a^10/(8*x^8) - (10*a^9*b)/(7*x^7) - (15*a^8*b^2)/(2*x^6) - (24*a
^7*b^3)/x^5 - (105*a^6*b^4)/(2*x^4) - (84*a^5*b^5)/x^3 - (105*a^4
*b^6)/x^2 - (120*a^3*b^7)/x + 10*a*b^9*x + (b^10*x^2)/2 + 45*a^2*
b^8*Log[x]
```

Maple [A] time = 0.011, size = 110, normalized size = 0.9

$$-\frac{a^{10}}{8\,x^8}-\frac{10\,a^9b}{7\,x^7}-\frac{15\,a^8b^2}{2\,x^6}-24\,\frac{a^7b^3}{x^5}-\frac{105\,a^6b^4}{2\,x^4}-84\,\frac{a^5b^5}{x^3}-105\,\frac{a^4b^6}{x^2}-120\,\frac{a^3b^7}{x}+10\,ab^9x+\frac{b^{10}x^2}{2}+45\,a^2b^8\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^9,x)
```

```
[Out] -1/8*a^10/x^8-10/7*a^9*b/x^7-15/2*a^8*b^2/x^6-24*a^7*b^3/x^5-105/
2*a^6*b^4/x^4-84*a^5*b^5/x^3-105*a^4*b^6/x^2-120*a^3*b^7/x+10*a*b
^9*x+1/2*b^10*x^2+45*a^2*b^8*ln(x)
```

Maxima [A] time = 1.35197, size = 149, normalized size = 1.25

$$\frac{1}{2}\,b^{10}x^2+10\,ab^9x+45\,a^2b^8\log(x)-\frac{6720\,a^3b^7x^7+5880\,a^4b^6x^6+4704\,a^5b^5x^5+2940\,a^6b^4x^4+1344\,a^7b^3x^3+420\,a^8b^2x^2+80\,a^9bx+7\,a^{10}}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^9,x, algorithm="maxima")
```

```
[Out] 1/2*b^10*x^2 + 10*a*b^9*x + 45*a^2*b^8*log(x) - 1/56*(6720*a^3*b^
7*x^7 + 5880*a^4*b^6*x^6 + 4704*a^5*b^5*x^5 + 2940*a^6*b^4*x^4 +
1344*a^7*b^3*x^3 + 420*a^8*b^2*x^2 + 80*a^9*b*x + 7*a^10)/x^8
```

Fricas [A] time = 0.195655, size = 154, normalized size = 1.29

$$\frac{28\,b^{10}x^{10} + 560\,ab^{9}x^{9} + 2520\,a^{2}b^{8}x^{8}\log\left(x\right) - 6720\,a^{3}b^{7}x^{7} - 5880\,a^{4}b^{6}x^{6} - 4704\,a^{5}b^{5}x^{5} - 2940\,a^{6}b^{4}x^{4} - 1344\,a^{7}b^{3}x^{3} - 420}{56\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^9,x, algorithm="fricas")
```

```
[Out] 1/56*(28*b^10*x^10 + 560*a*b^9*x^9 + 2520*a^2*b^8*x^8*log(x) - 67
20*a^3*b^7*x^7 - 5880*a^4*b^6*x^6 - 4704*a^5*b^5*x^5 - 2940*a^6*b
^4*x^4 - 1344*a^7*b^3*x^3 - 420*a^8*b^2*x^2 - 80*a^9*b*x - 7*a^10
)/x^8
```

Sympy [A] time = 3.03506, size = 117, normalized size = 0.98

$$45a^{2}b^{8}\log\left(x\right) + 10ab^{9}x + \frac{b^{10}x^{2}}{2} - \frac{7a^{10} + 80a^{9}bx + 420a^{8}b^{2}x^{2} + 1344a^{7}b^{3}x^{3} + 2940a^{6}b^{4}x^{4} + 4704a^{5}b^{5}x^{5} + 5880a^{4}b^{6}x^{6} + 6720a^{3}b^{7}x^{7}}{56x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**9,x)
```

```
[Out] 45*a**2*b**8*log(x) + 10*a*b**9*x + b**10*x**2/2 - (7*a**10 + 80*
a**9*b*x + 420*a**8*b**2*x**2 + 1344*a**7*b**3*x**3 + 2940*a**6*b
**4*x**4 + 4704*a**5*b**5*x**5 + 5880*a**4*b**6*x**6 + 6720*a**3*
b**7*x**7)/(56*x**8)
```

GIAC/XCAS [A] time = 0.206213, size = 150, normalized size = 1.26

$$\frac{1}{2}\,b^{10}x^{2} + 10\,ab^{9}x + 45\,a^{2}b^{8}\ln\left(|x|\right) - \frac{6720\,a^{3}b^{7}x^{7} + 5880\,a^{4}b^{6}x^{6} + 4704\,a^{5}b^{5}x^{5} + 2940\,a^{6}b^{4}x^{4} + 1344\,a^{7}b^{3}x^{3} + 420\,a^{8}b^{2}x^{2} + 80\,a^{9}bx + 7\,a^{10}}{56\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^9,x, algorithm="giac")
```

```
[Out] 1/2*b^10*x^2 + 10*a*b^9*x + 45*a^2*b^8*ln(abs(x)) - 1/56*(6720*a^
3*b^7*x^7 + 5880*a^4*b^6*x^6 + 4704*a^5*b^5*x^5 + 2940*a^6*b^4*x^
4 + 1344*a^7*b^3*x^3 + 420*a^8*b^2*x^2 + 80*a^9*b*x + 7*a^10)/x^8
```

3.144 $\int \frac{(a+bx)^{10}}{x^{10}}\,dx$

Optimal. Leaf size=114

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+b^{10}x$$

```
[Out] -a^10/(9*x^9) - (5*a^9*b)/(4*x^8) - (45*a^8*b^2)/(7*x^7) - (20*a^
7*b^3)/x^6 - (42*a^6*b^4)/x^5 - (63*a^5*b^5)/x^4 - (70*a^4*b^6)/x
^3 - (60*a^3*b^7)/x^2 - (45*a^2*b^8)/x + b^10*x + 10*a*b^9*Log[x]
```

Rubi [A] time = 0.117572, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+b^{10}x$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^10,x]
```

```
[Out] -a^10/(9*x^9) - (5*a^9*b)/(4*x^8) - (45*a^8*b^2)/(7*x^7) - (20*a^
7*b^3)/x^6 - (42*a^6*b^4)/x^5 - (63*a^5*b^5)/x^4 - (70*a^4*b^6)/x
^3 - (60*a^3*b^7)/x^2 - (45*a^2*b^8)/x + b^10*x + 10*a*b^9*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+\int b^{10}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**10,x)
```

```
[Out] -a**10/(9*x**9) - 5*a**9*b/(4*x**8) - 45*a**8*b**2/(7*x**7) - 20*
a**7*b**3/x**6 - 42*a**6*b**4/x**5 - 63*a**5*b**5/x**4 - 70*a**4*
b**6/x**3 - 60*a**3*b**7/x**2 - 45*a**2*b**8/x + 10*a*b**9*log(x)
 + Integral(b**10, x)
```

Mathematica [A] time = 0.00856243, size = 114, normalized size = 1.

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+b^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^10,x]
```

```
[Out] -a^10/(9*x^9) - (5*a^9*b)/(4*x^8) - (45*a^8*b^2)/(7*x^7) - (20*a^
7*b^3)/x^6 - (42*a^6*b^4)/x^5 - (63*a^5*b^5)/x^4 - (70*a^4*b^6)/x
^3 - (60*a^3*b^7)/x^2 - (45*a^2*b^8)/x + b^10*x + 10*a*b^9*Log[x]
```

Maple [A] time = 0.012, size = 109, normalized size = 1.

$$-\frac{a^{10}}{9\,x^{9}}-\frac{5\,a^{9}b}{4\,x^{8}}-\frac{45\,a^{8}b^{2}}{7\,x^{7}}-20\,\frac{a^{7}b^{3}}{x^{6}}-42\,\frac{a^{6}b^{4}}{x^{5}}-63\,\frac{a^{5}b^{5}}{x^{4}}-70\,\frac{a^{4}b^{6}}{x^{3}}-60\,\frac{a^{3}b^{7}}{x^{2}}-45\,\frac{a^{2}b^{8}}{x}+b^{10}x+10\,ab^{9}\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^10,x)
```

```
[Out] -1/9*a^10/x^9-5/4*a^9*b/x^8-45/7*a^8*b^2/x^7-20*a^7*b^3/x^6-42*a^
6*b^4/x^5-63*a^5*b^5/x^4-70*a^4*b^6/x^3-60*a^3*b^7/x^2-45*a^2*b^8
/x+b^10*x+10*a*b^9*ln(x)
```

Maxima [A] time = 1.34786, size = 147, normalized size = 1.29

$$b^{10}x+10\,ab^{9}\log\left(x\right)-\frac{11340\,a^{2}b^{8}x^{8}+15120\,a^{3}b^{7}x^{7}+17640\,a^{4}b^{6}x^{6}+15876\,a^{5}b^{5}x^{5}+10584\,a^{6}b^{4}x^{4}+5040\,a^{7}b^{3}x^{3}+1620\,a^{8}b^{2}x^{2}+315\,a^{9}bx+28}{252\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^10,x, algorithm="maxima")
```

```
[Out] b^10*x + 10*a*b^9*log(x) - 1/252*(11340*a^2*b^8*x^8 + 15120*a^3*b
^7*x^7 + 17640*a^4*b^6*x^6 + 15876*a^5*b^5*x^5 + 10584*a^6*b^4*x^
4 + 5040*a^7*b^3*x^3 + 1620*a^8*b^2*x^2 + 315*a^9*b*x + 28*a^10)/
x^9
```

Fricas [A] time = 0.195108, size = 154, normalized size = 1.35

$$\frac{252\,b^{10}x^{10}+2520\,ab^{9}x^{9}\log\left(x\right)-11340\,a^{2}b^{8}x^{8}-15120\,a^{3}b^{7}x^{7}-17640\,a^{4}b^{6}x^{6}-15876\,a^{5}b^{5}x^{5}-10584\,a^{6}b^{4}x^{4}-5040\,a^{7}b^{3}}{252\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^10,x, algorithm="fricas")
```

```
[Out] 1/252*(252*b^10*x^10 + 2520*a*b^9*x^9*log(x) - 11340*a^2*b^8*x^8
- 15120*a^3*b^7*x^7 - 17640*a^4*b^6*x^6 - 15876*a^5*b^5*x^5 - 105
84*a^6*b^4*x^4 - 5040*a^7*b^3*x^3 - 1620*a^8*b^2*x^2 - 315*a^9*b*
x - 28*a^10)/x^9
```

Sympy [A] time = 3.43253, size = 116, normalized size = 1.02

$$10ab^9\log(x) + b^{10}x - \frac{28a^{10} + 315a^9bx + 1620a^8b^2x^2 + 5040a^7b^3x^3 + 10584a^6b^4x^4 + 15876a^5b^5x^5 + 17640a^4b^6x^6 + 15120a^3b^7x^7 + 11340a^2b^8x^8}{252x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**10,x)
```

```
[Out] 10*a*b**9*log(x) + b**10*x - (28*a**10 + 315*a**9*b*x + 1620*a**8
*b**2*x**2 + 5040*a**7*b**3*x**3 + 10584*a**6*b**4*x**4 + 15876*a
**5*b**5*x**5 + 17640*a**4*b**6*x**6 + 15120*a**3*b**7*x**7 + 113
40*a**2*b**8*x**8)/(252*x**9)
```

GIAC/XCAS [A] time = 0.21056, size = 149, normalized size = 1.31

$$b^{10}x + 10\,ab^9\ln(|x|) - \frac{11340\,a^2b^8x^8 + 15120\,a^3b^7x^7 + 17640\,a^4b^6x^6 + 15876\,a^5b^5x^5 + 10584\,a^6b^4x^4 + 5040\,a^7b^3x^3 + 1620\,a^8b^2x^2 + 315\,a^9bx + 28}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^10,x, algorithm="giac")
```

```
[Out] b^10*x + 10*a*b^9*ln(abs(x)) - 1/252*(11340*a^2*b^8*x^8 + 15120*a
^3*b^7*x^7 + 17640*a^4*b^6*x^6 + 15876*a^5*b^5*x^5 + 10584*a^6*b^
4*x^4 + 5040*a^7*b^3*x^3 + 1620*a^8*b^2*x^2 + 315*a^9*b*x + 28*a^
10)/x^9
```

3.145 $\int \frac{(a+bx)^{10}}{x^{11}}\,dx$

Optimal. Leaf size=124

$$-\frac{a^{10}}{10x^{10}}-\frac{10a^9b}{9x^9}-\frac{45a^8b^2}{8x^8}-\frac{120a^7b^3}{7x^7}-\frac{35a^6b^4}{x^6}-\frac{252a^5b^5}{5x^5}-\frac{105a^4b^6}{2x^4}-\frac{40a^3b^7}{x^3}-\frac{45a^2b^8}{2x^2}-\frac{10ab^9}{x}+b^{10}\log(x)$$

```
[Out] -a^10/(10*x^10) - (10*a^9*b)/(9*x^9) - (45*a^8*b^2)/(8*x^8) - (12
0*a^7*b^3)/(7*x^7) - (35*a^6*b^4)/x^6 - (252*a^5*b^5)/(5*x^5) - (
105*a^4*b^6)/(2*x^4) - (40*a^3*b^7)/x^3 - (45*a^2*b^8)/(2*x^2) -
(10*a*b^9)/x + b^10*Log[x]
```

Rubi [A] time = 0.117807, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{10x^{10}}-\frac{10a^9b}{9x^9}-\frac{45a^8b^2}{8x^8}-\frac{120a^7b^3}{7x^7}-\frac{35a^6b^4}{x^6}-\frac{252a^5b^5}{5x^5}-\frac{105a^4b^6}{2x^4}-\frac{40a^3b^7}{x^3}-\frac{45a^2b^8}{2x^2}-\frac{10ab^9}{x}+b^{10}\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^11,x]
```

```
[Out] -a^10/(10*x^10) - (10*a^9*b)/(9*x^9) - (45*a^8*b^2)/(8*x^8) - (12
0*a^7*b^3)/(7*x^7) - (35*a^6*b^4)/x^6 - (252*a^5*b^5)/(5*x^5) - (
105*a^4*b^6)/(2*x^4) - (40*a^3*b^7)/x^3 - (45*a^2*b^8)/(2*x^2) -
(10*a*b^9)/x + b^10*Log[x]
```

Rubi in Sympy [A] time = 23.2936, size = 126, normalized size = 1.02

$$-\frac{a^{10}}{10x^{10}}-\frac{10a^9b}{9x^9}-\frac{45a^8b^2}{8x^8}-\frac{120a^7b^3}{7x^7}-\frac{35a^6b^4}{x^6}-\frac{252a^5b^5}{5x^5}-\frac{105a^4b^6}{2x^4}-\frac{40a^3b^7}{x^3}-\frac{45a^2b^8}{2x^2}-\frac{10ab^9}{x}+b^{10}\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**11,x)
```

```
[Out] -a**10/(10*x**10) - 10*a**9*b/(9*x**9) - 45*a**8*b**2/(8*x**8) -
120*a**7*b**3/(7*x**7) - 35*a**6*b**4/x**6 - 252*a**5*b**5/(5*x**
```

```
5) - 105*a**4*b**6/(2*x**4) - 40*a**3*b**7/x**3 - 45*a**2*b**8/(2
*x**2) - 10*a*b**9/x + b**10*log(x)
```

Mathematica [A] time = 0.0067894, size = 124, normalized size = 1.

$$-\frac{a^{10}}{10x^{10}}-\frac{10a^9b}{9x^9}-\frac{45a^8b^2}{8x^8}-\frac{120a^7b^3}{7x^7}-\frac{35a^6b^4}{x^6}-\frac{252a^5b^5}{5x^5}-\frac{105a^4b^6}{2x^4}-\frac{40a^3b^7}{x^3}-\frac{45a^2b^8}{2x^2}-\frac{10ab^9}{x}+b^{10}\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^11,x]
```

```
[Out] -a^10/(10*x^10) - (10*a^9*b)/(9*x^9) - (45*a^8*b^2)/(8*x^8) - (12
0*a^7*b^3)/(7*x^7) - (35*a^6*b^4)/x^6 - (252*a^5*b^5)/(5*x^5) - (
105*a^4*b^6)/(2*x^4) - (40*a^3*b^7)/x^3 - (45*a^2*b^8)/(2*x^2) -
(10*a*b^9)/x + b^10*Log[x]
```

Maple [A] time = 0.012, size = 111, normalized size = 0.9

$$-\frac{a^{10}}{10\,x^{10}}-\frac{10\,a^9b}{9\,x^9}-\frac{45\,a^8b^2}{8\,x^8}-\frac{120\,a^7b^3}{7\,x^7}-35\,\frac{a^6b^4}{x^6}-\frac{252\,a^5b^5}{5\,x^5}-\frac{105\,a^4b^6}{2\,x^4}-40\,\frac{a^3b^7}{x^3}-\frac{45\,a^2b^8}{2\,x^2}-10\,\frac{ab^9}{x}+b^{10}\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^11,x)
```

```
[Out] -1/10*a^10/x^10-10/9*a^9*b/x^9-45/8*a^8*b^2/x^8-120/7*a^7*b^3/x^7
-35*a^6*b^4/x^6-252/5*a^5*b^5/x^5-105/2*a^4*b^6/x^4-40*a^3*b^7/x^
3-45/2*a^2*b^8/x^2-10*a*b^9/x+b^10*ln(x)
```

Maxima [A] time = 1.3474, size = 150, normalized size = 1.21

$$b^{10}\log(x)-\frac{25200\,ab^9x^9+56700\,a^2b^8x^8+100800\,a^3b^7x^7+132300\,a^4b^6x^6+127008\,a^5b^5x^5+88200\,a^6b^4x^4+43200\,a^7b^3x^3+14175\,a^8}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^11,x, algorithm="maxima")
```

```
[Out] b^10*log(x) - 1/2520*(25200*a*b^9*x^9 + 56700*a^2*b^8*x^8 + 10080
0*a^3*b^7*x^7 + 132300*a^4*b^6*x^6 + 127008*a^5*b^5*x^5 + 88200*a
^6*b^4*x^4 + 43200*a^7*b^3*x^3 + 14175*a^8*b^2*x^2 + 2800*a^9*b*x
 + 252*a^10)/x^10
```

Fricas [A] time = 0.193399, size = 154, normalized size = 1.24

$$\frac{2520\, b^{10}x^{10}\log\left(x\right) - 25200\, ab^{9}x^{9} - 56700\, a^{2}b^{8}x^{8} - 100800\, a^{3}b^{7}x^{7} - 132300\, a^{4}b^{6}x^{6} - 127008\, a^{5}b^{5}x^{5} - 88200\, a^{6}b^{4}x^{4} - 432}{2520\, x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^11,x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*b^10*x^10*log(x) - 25200*a*b^9*x^9 - 56700*a^2*b^8*x
^8 - 100800*a^3*b^7*x^7 - 132300*a^4*b^6*x^6 - 127008*a^5*b^5*x^5
 - 88200*a^6*b^4*x^4 - 43200*a^7*b^3*x^3 - 14175*a^8*b^2*x^2 - 28
00*a^9*b*x - 252*a^10)/x^10
```

Sympy [A] time = 3.62706, size = 117, normalized size = 0.94

$$b^{10}\log\left(x\right) - \frac{252a^{10} + 2800a^{9}bx + 14175a^{8}b^{2}x^{2} + 43200a^{7}b^{3}x^{3} + 88200a^{6}b^{4}x^{4} + 127008a^{5}b^{5}x^{5} + 132300a^{4}b^{6}x^{6} + 100800a^{3}b^{7}x^{7} + 5670}{2520x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**11,x)
```

```
[Out] b**10*log(x) - (252*a**10 + 2800*a**9*b*x + 14175*a**8*b**2*x**2
+ 43200*a**7*b**3*x**3 + 88200*a**6*b**4*x**4 + 127008*a**5*b**5*
x**5 + 132300*a**4*b**6*x**6 + 100800*a**3*b**7*x**7 + 56700*a**2
*b**8*x**8 + 25200*a*b**9*x**9)/(2520*x**10)
```

GIAC/XCAS [A] time = 0.21245, size = 151, normalized size = 1.22

$$b^{10}\ln\left(|x|\right) - \frac{25200\, ab^{9}x^{9} + 56700\, a^{2}b^{8}x^{8} + 100800\, a^{3}b^{7}x^{7} + 132300\, a^{4}b^{6}x^{6} + 127008\, a^{5}b^{5}x^{5} + 88200\, a^{6}b^{4}x^{4} + 43200\, a^{7}b^{3}x^{3} + 14175\, a^{8}}{2520\, x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^11,x, algorithm="giac")
```

```
[Out] b^10*ln(abs(x)) - 1/2520*(25200*a*b^9*x^9 + 56700*a^2*b^8*x^8 + 1
00800*a^3*b^7*x^7 + 132300*a^4*b^6*x^6 + 127008*a^5*b^5*x^5 + 882
00*a^6*b^4*x^4 + 43200*a^7*b^3*x^3 + 14175*a^8*b^2*x^2 + 2800*a^9
*b*x + 252*a^10)/x^10
```

3.146 $\int \frac{(a+bx)^{10}}{x^{12}}\,dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^{11}}{11ax^{11}}$$

```
[Out] -(a + b*x)^11/(11*a*x^11)
```

Rubi [A] time = 0.0126368, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(a+bx)^{11}}{11ax^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^12,x]

[Out] -(a + b*x)^11/(11*a*x^11)
```

Rubi in Sympy [A] time = 2.29132, size = 14, normalized size = 0.82

$$-\frac{(a+bx)^{11}}{11ax^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**12,x)

[Out] -(a + b*x)**11/(11*a*x**11)
```

Mathematica [B] time = 0.0167908, size = 114, normalized size = 6.71

$$-\frac{a^{10}}{11x^{11}}-\frac{a^9b}{x^{10}}-\frac{5a^8b^2}{x^9}-\frac{15a^7b^3}{x^8}-\frac{30a^6b^4}{x^7}-\frac{42a^5b^5}{x^6}-\frac{42a^4b^6}{x^5}-\frac{30a^3b^7}{x^4}-\frac{15a^2b^8}{x^3}-\frac{5ab^9}{x^2}-\frac{b^{10}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^12,x]
```

```
[Out] -a^10/(11*x^11) - (a^9*b)/x^10 - (5*a^8*b^2)/x^9 - (15*a^7*b^3)/x
^8 - (30*a^6*b^4)/x^7 - (42*a^5*b^5)/x^6 - (42*a^4*b^6)/x^5 - (30
*a^3*b^7)/x^4 - (15*a^2*b^8)/x^3 - (5*a*b^9)/x^2 - b^10/x
```

Maple [B] time = 0.008, size = 113, normalized size = 6.7

$$-15\,{\frac{{a}^{7}{b}^{3}}{{x}^{8}}}-30\,{\frac{{a}^{6}{b}^{4}}{{x}^{7}}}-5\,{\frac{{a}^{8}{b}^{2}}{{x}^{9}}}-5\,{\frac{a{b}^{9}}{{x}^{2}}}-42\,{\frac{{a}^{4}{b}^{6}}{{x}^{5}}}-{\frac{{b}^{10}}{x}}-15\,{\frac{{a}^{2}{b}^{8}}{{x}^{3}}}-{\frac{{a}^{10}}{11\,{x}^{11}}}-{\frac{{a}^{9}b}{{x}^{10}}}-30\,{\frac{{a}^{3}{b}^{7}}{{x}^{4}}}-42\,{\frac{{a}^{5}{b}^{5}}{{x}^{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^12,x)
```

```
[Out] -15*a^7*b^3/x^8-30*a^6*b^4/x^7-5*a^8*b^2/x^9-5*a*b^9/x^2-42*a^4*b
^6/x^5-b^10/x-15*a^2*b^8/x^3-1/11*a^10/x^11-a^9*b/x^10-30*a^3*b^7
/x^4-42*a^5*b^5/x^6
```

Maxima [A] time = 1.34644, size = 149, normalized size = 8.76

$$-\frac{11\,b^{10}x^{10} + 55\,ab^{9}x^{9} + 165\,a^{2}b^{8}x^{8} + 330\,a^{3}b^{7}x^{7} + 462\,a^{4}b^{6}x^{6} + 462\,a^{5}b^{5}x^{5} + 330\,a^{6}b^{4}x^{4} + 165\,a^{7}b^{3}x^{3} + 55\,a^{8}b^{2}x^{2} + 11\,a^{9}b}{11\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^12,x, algorithm="maxima")
```

```
[Out] -1/11*(11*b^10*x^10 + 55*a*b^9*x^9 + 165*a^2*b^8*x^8 + 330*a^3*b^
7*x^7 + 462*a^4*b^6*x^6 + 462*a^5*b^5*x^5 + 330*a^6*b^4*x^4 + 165
*a^7*b^3*x^3 + 55*a^8*b^2*x^2 + 11*a^9*b*x + a^10)/x^11
```

Fricas [A] time = 0.1873, size = 149, normalized size = 8.76

$$-\frac{11\,b^{10}x^{10} + 55\,ab^{9}x^{9} + 165\,a^{2}b^{8}x^{8} + 330\,a^{3}b^{7}x^{7} + 462\,a^{4}b^{6}x^{6} + 462\,a^{5}b^{5}x^{5} + 330\,a^{6}b^{4}x^{4} + 165\,a^{7}b^{3}x^{3} + 55\,a^{8}b^{2}x^{2} + 11\,a^{9}b}{11\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^12,x, algorithm="fricas")
```

```
[Out] -1/11*(11*b^10*x^10 + 55*a*b^9*x^9 + 165*a^2*b^8*x^8 + 330*a^3*b^
7*x^7 + 462*a^4*b^6*x^6 + 462*a^5*b^5*x^5 + 330*a^6*b^4*x^4 + 165
*a^7*b^3*x^3 + 55*a^8*b^2*x^2 + 11*a^9*b*x + a^10)/x^11
```

Sympy [A] time = 3.77137, size = 119, normalized size = 7.

$$-\frac{a^{10}+11a^9bx+55a^8b^2x^2+165a^7b^3x^3+330a^6b^4x^4+462a^5b^5x^5+462a^4b^6x^6+330a^3b^7x^7+165a^2b^8x^8+55ab^9x^9+11b^{10}x^{10}}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**12,x)
```

```
[Out] -(a**10 + 11*a**9*b*x + 55*a**8*b**2*x**2 + 165*a**7*b**3*x**3 +
330*a**6*b**4*x**4 + 462*a**5*b**5*x**5 + 462*a**4*b**6*x**6 + 33
0*a**3*b**7*x**7 + 165*a**2*b**8*x**8 + 55*a*b**9*x**9 + 11*b**10
*x**10)/(11*x**11)
```

GIAC/XCAS [A] time = 0.203486, size = 149, normalized size = 8.76

$$-\frac{11\,b^{10}x^{10}+55\,ab^9x^9+165\,a^2b^8x^8+330\,a^3b^7x^7+462\,a^4b^6x^6+462\,a^5b^5x^5+330\,a^6b^4x^4+165\,a^7b^3x^3+55\,a^8b^2x^2+11\,a^9bx+a^{10}}{11\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^12,x, algorithm="giac")
```

```
[Out] -1/11*(11*b^10*x^10 + 55*a*b^9*x^9 + 165*a^2*b^8*x^8 + 330*a^3*b^
7*x^7 + 462*a^4*b^6*x^6 + 462*a^5*b^5*x^5 + 330*a^6*b^4*x^4 + 165
*a^7*b^3*x^3 + 55*a^8*b^2*x^2 + 11*a^9*b*x + a^10)/x^11
```

3.147 $\int \frac{(a+bx)^{10}}{x^{13}} \, dx$

Optimal. Leaf size=36

$$\frac{b(a+bx)^{11}}{132a^2x^{11}} - \frac{(a+bx)^{11}}{12ax^{12}}$$

```
[Out] -(a + b*x)^11/(12*a*x^12) + (b*(a + b*x)^11)/(132*a^2*x^11)
```

Rubi [A] time = 0.025199, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b(a+bx)^{11}}{132a^2x^{11}} - \frac{(a+bx)^{11}}{12ax^{12}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^13,x]

[Out] -(a + b*x)^11/(12*a*x^12) + (b*(a + b*x)^11)/(132*a^2*x^11)
```

Rubi in Sympy [A] time = 3.57084, size = 29, normalized size = 0.81

$$-\frac{(a+bx)^{11}}{12ax^{12}} + \frac{b\,(a+bx)^{11}}{132a^2x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**13,x)

[Out] -(a + b*x)**11/(12*a*x**12) + b*(a + b*x)**11/(132*a**2*x**11)
```

Mathematica [B] time = 0.00648062, size = 128, normalized size = 3.56

$$-\frac{a^{10}}{12x^{12}} - \frac{10a^9b}{11x^{11}} - \frac{9a^8b^2}{2x^{10}} - \frac{40a^7b^3}{3x^9} - \frac{105a^6b^4}{4x^8} - \frac{36a^5b^5}{x^7} - \frac{35a^4b^6}{x^6} - \frac{24a^3b^7}{x^5} - \frac{45a^2b^8}{4x^4} - \frac{10ab^9}{3x^3} - \frac{b^{10}}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^13,x]
```

```
[Out] -a^10/(12*x^12) - (10*a^9*b)/(11*x^11) - (9*a^8*b^2)/(2*x^10) - (
40*a^7*b^3)/(3*x^9) - (105*a^6*b^4)/(4*x^8) - (36*a^5*b^5)/x^7 -
(35*a^4*b^6)/x^6 - (24*a^3*b^7)/x^5 - (45*a^2*b^8)/(4*x^4) - (10*
a*b^9)/(3*x^3) - b^10/(2*x^2)
```

Maple [B] time = 0.008, size = 113, normalized size = 3.1

$$-\frac{105\,a^6b^4}{4\,x^8}-36\,\frac{a^5b^5}{x^7}-\frac{40\,a^7b^3}{3\,x^9}-\frac{b^{10}}{2\,x^2}-\frac{a^{10}}{12\,x^{12}}-\frac{9\,a^8b^2}{2\,x^{10}}-24\,\frac{a^3b^7}{x^5}-\frac{10\,ab^9}{3\,x^3}-\frac{10\,a^9b}{11\,x^{11}}-\frac{45\,a^2b^8}{4\,x^4}-35\,\frac{a^4b^6}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^13,x)
```

```
[Out] -105/4*a^6*b^4/x^8-36*a^5*b^5/x^7-40/3*a^7*b^3/x^9-1/2*b^10/x^2-1
/12*a^10/x^12-9/2*a^8*b^2/x^10-24*a^3*b^7/x^5-10/3*a*b^9/x^3-10/1
1*a^9*b/x^11-45/4*a^2*b^8/x^4-35*a^4*b^6/x^6
```

Maxima [A] time = 1.35778, size = 151, normalized size = 4.19

$$-\frac{66\,b^{10}x^{10}+440\,ab^9x^9+1485\,a^2b^8x^8+3168\,a^3b^7x^7+4620\,a^4b^6x^6+4752\,a^5b^5x^5+3465\,a^6b^4x^4+1760\,a^7b^3x^3+594\,a^8b^2x}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^13,x, algorithm="maxima")
```

```
[Out] -1/132*(66*b^10*x^10 + 440*a*b^9*x^9 + 1485*a^2*b^8*x^8 + 3168*a^
3*b^7*x^7 + 4620*a^4*b^6*x^6 + 4752*a^5*b^5*x^5 + 3465*a^6*b^4*x^
4 + 1760*a^7*b^3*x^3 + 594*a^8*b^2*x^2 + 120*a^9*b*x + 11*a^10)/x
^12
```

Fricas [A] time = 0.192872, size = 151, normalized size = 4.19

$$-\frac{66\,b^{10}x^{10}+440\,ab^9x^9+1485\,a^2b^8x^8+3168\,a^3b^7x^7+4620\,a^4b^6x^6+4752\,a^5b^5x^5+3465\,a^6b^4x^4+1760\,a^7b^3x^3+594\,a^8b^2x}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^13,x, algorithm="fricas")
```

```
[Out] -1/132*(66*b^10*x^10 + 440*a*b^9*x^9 + 1485*a^2*b^8*x^8 + 3168*a^
3*b^7*x^7 + 4620*a^4*b^6*x^6 + 4752*a^5*b^5*x^5 + 3465*a^6*b^4*x^
```

```
4 + 1760*a^7*b^3*x^3 + 594*a^8*b^2*x^2 + 120*a^9*b*x + 11*a^10)/x
^12
```

Sympy [A] time = 3.9634, size = 121, normalized size = 3.36

$$-\frac{11a^{10} + 120a^9bx + 594a^8b^2x^2 + 1760a^7b^3x^3 + 3465a^6b^4x^4 + 4752a^5b^5x^5 + 4620a^4b^6x^6 + 3168a^3b^7x^7 + 1485a^2b^8x^8 + 440a}{132x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**13,x)
```

```
[Out] -(11*a**10 + 120*a**9*b*x + 594*a**8*b**2*x**2 + 1760*a**7*b**3*x
**3 + 3465*a**6*b**4*x**4 + 4752*a**5*b**5*x**5 + 4620*a**4*b**6*
x**6 + 3168*a**3*b**7*x**7 + 1485*a**2*b**8*x**8 + 440*a*b**9*x**
9 + 66*b**10*x**10)/(132*x**12)
```

GIAC/XCAS [A] time = 0.213768, size = 151, normalized size = 4.19

$$-\frac{66\,b^{10}x^{10} + 440\,ab^9x^9 + 1485\,a^2b^8x^8 + 3168\,a^3b^7x^7 + 4620\,a^4b^6x^6 + 4752\,a^5b^5x^5 + 3465\,a^6b^4x^4 + 1760\,a^7b^3x^3 + 594\,a^8b^2x}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^13,x, algorithm="giac")
```

```
[Out] -1/132*(66*b^10*x^10 + 440*a*b^9*x^9 + 1485*a^2*b^8*x^8 + 3168*a^
3*b^7*x^7 + 4620*a^4*b^6*x^6 + 4752*a^5*b^5*x^5 + 3465*a^6*b^4*x^
4 + 1760*a^7*b^3*x^3 + 594*a^8*b^2*x^2 + 120*a^9*b*x + 11*a^10)/x
^12
```

3.148 $\int \frac{(a+bx)^{10}}{x^{14}}\,dx$

Optimal. Leaf size=56

$$-\frac{b^2(a+bx)^{11}}{858a^3x^{11}}+\frac{b(a+bx)^{11}}{78a^2x^{12}}-\frac{(a+bx)^{11}}{13ax^{13}}$$

```
[Out] -(a + b*x)^11/(13*a*x^13) + (b*(a + b*x)^11)/(78*a^2*x^12) - (b^2
*(a + b*x)^11)/(858*a^3*x^11)
```

Rubi [A] time = 0.0394731, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{b^2(a+bx)^{11}}{858a^3x^{11}}+\frac{b(a+bx)^{11}}{78a^2x^{12}}-\frac{(a+bx)^{11}}{13ax^{13}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^14,x]
```

```
[Out] -(a + b*x)^11/(13*a*x^13) + (b*(a + b*x)^11)/(78*a^2*x^12) - (b^2
*(a + b*x)^11)/(858*a^3*x^11)
```

Rubi in Sympy [A] time = 5.74189, size = 48, normalized size = 0.86

$$-\frac{(a+bx)^{11}}{13ax^{13}}+\frac{b\,(a+bx)^{11}}{78a^2x^{12}}-\frac{b^2\,(a+bx)^{11}}{858a^3x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**14,x)
```

```
[Out] -(a + b*x)**11/(13*a*x**13) + b*(a + b*x)**11/(78*a**2*x**12) - b
**2*(a + b*x)**11/(858*a**3*x**11)
```

Mathematica [B] time = 0.014381, size = 126, normalized size = 2.25

$$-\frac{a^{10}}{13x^{13}}-\frac{5a^9b}{6x^{12}}-\frac{45a^8b^2}{11x^{11}}-\frac{12a^7b^3}{x^{10}}-\frac{70a^6b^4}{3x^9}-\frac{63a^5b^5}{2x^8}-\frac{30a^4b^6}{x^7}-\frac{20a^3b^7}{x^6}-\frac{9a^2b^8}{x^5}-\frac{5ab^9}{2x^4}-\frac{b^{10}}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^14,x]
```

```
[Out] -a^10/(13*x^13) - (5*a^9*b)/(6*x^12) - (45*a^8*b^2)/(11*x^11) - (
12*a^7*b^3)/x^10 - (70*a^6*b^4)/(3*x^9) - (63*a^5*b^5)/(2*x^8) -
(30*a^4*b^6)/x^7 - (20*a^3*b^7)/x^6 - (9*a^2*b^8)/x^5 - (5*a*b^9)
/(2*x^4) - b^10/(3*x^3)
```

Maple [B] time = 0.01, size = 113, normalized size = 2.

$$-\frac{63\,a^{5}b^{5}}{2\,x^{8}}-12\,\frac{a^{7}b^{3}}{x^{10}}-30\,\frac{a^{4}b^{6}}{x^{7}}-\frac{70\,a^{6}b^{4}}{3\,x^{9}}-9\,\frac{a^{2}b^{8}}{x^{5}}-\frac{5\,a^{9}b}{6\,x^{12}}-\frac{45\,a^{8}b^{2}}{11\,x^{11}}-\frac{b^{10}}{3\,x^{3}}-\frac{a^{10}}{13\,x^{13}}-\frac{5\,ab^{9}}{2\,x^{4}}-20\,\frac{a^{3}b^{7}}{x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^14,x)
```

```
[Out] -63/2*a^5*b^5/x^8-12*a^7*b^3/x^10-30*a^4*b^6/x^7-70/3*a^6*b^4/x^9
-9*a^2*b^8/x^5-5/6*a^9*b/x^12-45/11*a^8*b^2/x^11-1/3*b^10/x^3-1/1
3*a^10/x^13-5/2*a*b^9/x^4-20*a^3*b^7/x^6
```

Maxima [A] time = 1.34376, size = 151, normalized size = 2.7

$$-\frac{286\,b^{10}x^{10}+2145\,ab^{9}x^{9}+7722\,a^{2}b^{8}x^{8}+17160\,a^{3}b^{7}x^{7}+25740\,a^{4}b^{6}x^{6}+27027\,a^{5}b^{5}x^{5}+20020\,a^{6}b^{4}x^{4}+10296\,a^{7}b^{3}x^{3}+35}{858\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^14,x, algorithm="maxima")
```

```
[Out] -1/858*(286*b^10*x^10 + 2145*a*b^9*x^9 + 7722*a^2*b^8*x^8 + 17160
*a^3*b^7*x^7 + 25740*a^4*b^6*x^6 + 27027*a^5*b^5*x^5 + 20020*a^6*
b^4*x^4 + 10296*a^7*b^3*x^3 + 3510*a^8*b^2*x^2 + 715*a^9*b*x + 66
*a^10)/x^13
```

Fricas [A] time = 0.190454, size = 151, normalized size = 2.7

$$-\frac{286\,b^{10}x^{10}+2145\,ab^{9}x^{9}+7722\,a^{2}b^{8}x^{8}+17160\,a^{3}b^{7}x^{7}+25740\,a^{4}b^{6}x^{6}+27027\,a^{5}b^{5}x^{5}+20020\,a^{6}b^{4}x^{4}+10296\,a^{7}b^{3}x^{3}+35}{858\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^14,x, algorithm="fricas")
```

```
[Out] -1/858*(286*b^10*x^10 + 2145*a*b^9*x^9 + 7722*a^2*b^8*x^8 + 17160
*a^3*b^7*x^7 + 25740*a^4*b^6*x^6 + 27027*a^5*b^5*x^5 + 20020*a^6*
b^4*x^4 + 10296*a^7*b^3*x^3 + 3510*a^8*b^2*x^2 + 715*a^9*b*x + 66
*a^10)/x^13
```

Sympy [A] time = 4.16707, size = 121, normalized size = 2.16

$$-\frac{66a^{10} + 715a^9bx + 3510a^8b^2x^2 + 10296a^7b^3x^3 + 20020a^6b^4x^4 + 27027a^5b^5x^5 + 25740a^4b^6x^6 + 17160a^3b^7x^7 + 7722a^2b^8x^8}{858x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**14,x)
```

```
[Out] -(66*a**10 + 715*a**9*b*x + 3510*a**8*b**2*x**2 + 10296*a**7*b**3
*x**3 + 20020*a**6*b**4*x**4 + 27027*a**5*b**5*x**5 + 25740*a**4*
b**6*x**6 + 17160*a**3*b**7*x**7 + 7722*a**2*b**8*x**8 + 2145*a*b
**9*x**9 + 286*b**10*x**10)/(858*x**13)
```

GIAC/XCAS [A] time = 0.242341, size = 151, normalized size = 2.7

$$-\frac{286\,b^{10}x^{10} + 2145\,ab^9x^9 + 7722\,a^2b^8x^8 + 17160\,a^3b^7x^7 + 25740\,a^4b^6x^6 + 27027\,a^5b^5x^5 + 20020\,a^6b^4x^4 + 10296\,a^7b^3x^3 + 35}{858\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^14,x, algorithm="giac")
```

```
[Out] -1/858*(286*b^10*x^10 + 2145*a*b^9*x^9 + 7722*a^2*b^8*x^8 + 17160
*a^3*b^7*x^7 + 25740*a^4*b^6*x^6 + 27027*a^5*b^5*x^5 + 20020*a^6*
b^4*x^4 + 10296*a^7*b^3*x^3 + 3510*a^8*b^2*x^2 + 715*a^9*b*x + 66
*a^10)/x^13
```

3.149 $\int \frac{(a+bx)^{10}}{x^{15}}\,dx$

Optimal. Leaf size=76

$$\frac{b^3(a+bx)^{11}}{4004a^4x^{11}}-\frac{b^2(a+bx)^{11}}{364a^3x^{12}}+\frac{3b(a+bx)^{11}}{182a^2x^{13}}-\frac{(a+bx)^{11}}{14ax^{14}}$$

```
[Out] -(a + b*x)^11/(14*a*x^14) + (3*b*(a + b*x)^11)/(182*a^2*x^13) - (
b^2*(a + b*x)^11)/(364*a^3*x^12) + (b^3*(a + b*x)^11)/(4004*a^4*x
^11)
```

Rubi [A] time = 0.0567551, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b^3(a+bx)^{11}}{4004a^4x^{11}}-\frac{b^2(a+bx)^{11}}{364a^3x^{12}}+\frac{3b(a+bx)^{11}}{182a^2x^{13}}-\frac{(a+bx)^{11}}{14ax^{14}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^15,x]
```

```
[Out] -(a + b*x)^11/(14*a*x^14) + (3*b*(a + b*x)^11)/(182*a^2*x^13) - (
b^2*(a + b*x)^11)/(364*a^3*x^12) + (b^3*(a + b*x)^11)/(4004*a^4*x
^11)
```

Rubi in Sympy [A] time = 8.65147, size = 68, normalized size = 0.89

$$-\frac{(a+bx)^{11}}{14ax^{14}}+\frac{3b\,(a+bx)^{11}}{182a^2x^{13}}-\frac{b^2\,(a+bx)^{11}}{364a^3x^{12}}+\frac{b^3\,(a+bx)^{11}}{4004a^4x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**15,x)
```

```
[Out] -(a + b*x)**11/(14*a*x**14) + 3*b*(a + b*x)**11/(182*a**2*x**13)
- b**2*(a + b*x)**11/(364*a**3*x**12) + b**3*(a + b*x)**11/(4004*
a**4*x**11)
```

Mathematica [A] time = 0.0118586, size = 128, normalized size = 1.68

$$-\frac{a^{10}}{14x^{14}}-\frac{10a^9b}{13x^{13}}-\frac{15a^8b^2}{4x^{12}}-\frac{120a^7b^3}{11x^{11}}-\frac{21a^6b^4}{x^{10}}-\frac{28a^5b^5}{x^9}-\frac{105a^4b^6}{4x^8}-\frac{120a^3b^7}{7x^7}-\frac{15a^2b^8}{2x^6}-\frac{2ab^9}{x^5}-\frac{b^{10}}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^15,x]
```

```
[Out] -a^10/(14*x^14) - (10*a^9*b)/(13*x^13) - (15*a^8*b^2)/(4*x^12) -
(120*a^7*b^3)/(11*x^11) - (21*a^6*b^4)/x^10 - (28*a^5*b^5)/x^9 -
(105*a^4*b^6)/(4*x^8) - (120*a^3*b^7)/(7*x^7) - (15*a^2*b^8)/(2*x
^6) - (2*a*b^9)/x^5 - b^10/(4*x^4)
```

Maple [A] time = 0.011, size = 113, normalized size = 1.5

$$-\frac{105\,a^4b^6}{4\,x^8}-\frac{120\,a^7b^3}{11\,x^{11}}-\frac{120\,a^3b^7}{7\,x^7}-28\,\frac{a^5b^5}{x^9}-\frac{a^{10}}{14\,x^{14}}-2\,\frac{ab^9}{x^5}-\frac{10\,a^9b}{13\,x^{13}}-\frac{b^{10}}{4\,x^4}-\frac{15\,a^8b^2}{4\,x^{12}}-21\,\frac{a^6b^4}{x^{10}}-\frac{15\,a^2b^8}{2\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^15,x)
```

```
[Out] -105/4*a^4*b^6/x^8-120/11*a^7*b^3/x^11-120/7*a^3*b^7/x^7-28*a^5*b
^5/x^9-1/14*a^10/x^14-2*a*b^9/x^5-10/13*a^9*b/x^13-1/4*b^10/x^4-1
5/4*a^8*b^2/x^12-21*a^6*b^4/x^10-15/2*a^2*b^8/x^6
```

Maxima [A] time = 1.34871, size = 151, normalized size = 1.99

$$-\frac{1001\,b^{10}x^{10}+8008\,ab^9x^9+30030\,a^2b^8x^8+68640\,a^3b^7x^7+105105\,a^4b^6x^6+112112\,a^5b^5x^5+84084\,a^6b^4x^4+43680\,a^7b^3x^3}{4004\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^15,x, algorithm="maxima")
```

```
[Out] -1/4004*(1001*b^10*x^10 + 8008*a*b^9*x^9 + 30030*a^2*b^8*x^8 + 68
640*a^3*b^7*x^7 + 105105*a^4*b^6*x^6 + 112112*a^5*b^5*x^5 + 84084
*a^6*b^4*x^4 + 43680*a^7*b^3*x^3 + 15015*a^8*b^2*x^2 + 3080*a^9*b
*x + 286*a^10)/x^14
```

Fricas [A] time = 0.184921, size = 151, normalized size = 1.99

$$-\frac{1001\,b^{10}x^{10}+8008\,ab^9x^9+30030\,a^2b^8x^8+68640\,a^3b^7x^7+105105\,a^4b^6x^6+112112\,a^5b^5x^5+84084\,a^6b^4x^4+43680\,a^7b^3x^3}{4004\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^15,x, algorithm="fricas")
```

```
[Out] -1/4004*(1001*b^10*x^10 + 8008*a*b^9*x^9 + 30030*a^2*b^8*x^8 + 68
640*a^3*b^7*x^7 + 105105*a^4*b^6*x^6 + 112112*a^5*b^5*x^5 + 84084
*a^6*b^4*x^4 + 43680*a^7*b^3*x^3 + 15015*a^8*b^2*x^2 + 3080*a^9*b
*x + 286*a^10)/x^14
```

Sympy [A] time = 4.36319, size = 121, normalized size = 1.59

$$-\frac{286a^{10} + 3080a^9bx + 15015a^8b^2x^2 + 43680a^7b^3x^3 + 84084a^6b^4x^4 + 112112a^5b^5x^5 + 105105a^4b^6x^6 + 68640a^3b^7x^7 + 30030}{4004x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**15,x)
```

```
[Out] -(286*a**10 + 3080*a**9*b*x + 15015*a**8*b**2*x**2 + 43680*a**7*b
**3*x**3 + 84084*a**6*b**4*x**4 + 112112*a**5*b**5*x**5 + 105105*
a**4*b**6*x**6 + 68640*a**3*b**7*x**7 + 30030*a**2*b**8*x**8 + 80
08*a*b**9*x**9 + 1001*b**10*x**10)/(4004*x**14)
```

GIAC/XCAS [A] time = 0.214585, size = 151, normalized size = 1.99

$$-\frac{1001\,b^{10}x^{10} + 8008\,ab^9x^9 + 30030\,a^2b^8x^8 + 68640\,a^3b^7x^7 + 105105\,a^4b^6x^6 + 112112\,a^5b^5x^5 + 84084\,a^6b^4x^4 + 43680\,a^7b^3x^3}{4004\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^15,x, algorithm="giac")
```

```
[Out] -1/4004*(1001*b^10*x^10 + 8008*a*b^9*x^9 + 30030*a^2*b^8*x^8 + 68
640*a^3*b^7*x^7 + 105105*a^4*b^6*x^6 + 112112*a^5*b^5*x^5 + 84084
*a^6*b^4*x^4 + 43680*a^7*b^3*x^3 + 15015*a^8*b^2*x^2 + 3080*a^9*b
*x + 286*a^10)/x^14
```

3.150 $\int \frac{(a+bx)^{10}}{x^{16}} \, dx$

Optimal. Leaf size=96

$$-\frac{b^4(a+bx)^{11}}{15015a^5x^{11}}+\frac{b^3(a+bx)^{11}}{1365a^4x^{12}}-\frac{2b^2(a+bx)^{11}}{455a^3x^{13}}+\frac{2b(a+bx)^{11}}{105a^2x^{14}}-\frac{(a+bx)^{11}}{15ax^{15}}$$

```
[Out] -(a + b*x)^11/(15*a*x^15) + (2*b*(a + b*x)^11)/(105*a^2*x^14) - (
2*b^2*(a + b*x)^11)/(455*a^3*x^13) + (b^3*(a + b*x)^11)/(1365*a^4
*x^12) - (b^4*(a + b*x)^11)/(15015*a^5*x^11)
```

Rubi [A] time = 0.0772445, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{b^4(a+bx)^{11}}{15015a^5x^{11}}+\frac{b^3(a+bx)^{11}}{1365a^4x^{12}}-\frac{2b^2(a+bx)^{11}}{455a^3x^{13}}+\frac{2b(a+bx)^{11}}{105a^2x^{14}}-\frac{(a+bx)^{11}}{15ax^{15}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^16,x]
```

```
[Out] -(a + b*x)^11/(15*a*x^15) + (2*b*(a + b*x)^11)/(105*a^2*x^14) - (
2*b^2*(a + b*x)^11)/(455*a^3*x^13) + (b^3*(a + b*x)^11)/(1365*a^4
*x^12) - (b^4*(a + b*x)^11)/(15015*a^5*x^11)
```

Rubi in Sympy [A] time = 12.2279, size = 88, normalized size = 0.92

$$-\frac{(a+bx)^{11}}{15ax^{15}}+\frac{2b\,(a+bx)^{11}}{105a^2x^{14}}-\frac{2b^2\,(a+bx)^{11}}{455a^3x^{13}}+\frac{b^3\,(a+bx)^{11}}{1365a^4x^{12}}-\frac{b^4\,(a+bx)^{11}}{15015a^5x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**16,x)
```

```
[Out] -(a + b*x)**11/(15*a*x**15) + 2*b*(a + b*x)**11/(105*a**2*x**14)
- 2*b**2*(a + b*x)**11/(455*a**3*x**13) + b**3*(a + b*x)**11/(136
5*a**4*x**12) - b**4*(a + b*x)**11/(15015*a**5*x**11)
```

Mathematica [A] time = 0.0136633, size = 130, normalized size = 1.35

$$-\frac{a^{10}}{15x^{15}}-\frac{5a^9b}{7x^{14}}-\frac{45a^8b^2}{13x^{13}}-\frac{10a^7b^3}{x^{12}}-\frac{210a^6b^4}{11x^{11}}-\frac{126a^5b^5}{5x^{10}}-\frac{70a^4b^6}{3x^9}-\frac{15a^3b^7}{x^8}-\frac{45a^2b^8}{7x^7}-\frac{5ab^9}{3x^6}-\frac{b^{10}}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^16,x]
```

```
[Out] -a^10/(15*x^15) - (5*a^9*b)/(7*x^14) - (45*a^8*b^2)/(13*x^13) - (
10*a^7*b^3)/x^12 - (210*a^6*b^4)/(11*x^11) - (126*a^5*b^5)/(5*x^1
0) - (70*a^4*b^6)/(3*x^9) - (15*a^3*b^7)/x^8 - (45*a^2*b^8)/(7*x^
7) - (5*a*b^9)/(3*x^6) - b^10/(5*x^5)
```

Maple [A] time = 0.011, size = 113, normalized size = 1.2

$$-15\,\frac{a^3b^7}{x^8}-\frac{45\,a^2b^8}{7\,x^7}-\frac{210\,a^6b^4}{11\,x^{11}}-\frac{70\,a^4b^6}{3\,x^9}-\frac{5\,a^9b}{7\,x^{14}}-\frac{45\,a^8b^2}{13\,x^{13}}-\frac{a^{10}}{15\,x^{15}}-\frac{b^{10}}{5\,x^5}-10\,\frac{a^7b^3}{x^{12}}-\frac{126\,a^5b^5}{5\,x^{10}}-\frac{5\,ab^9}{3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^16,x)
```

```
[Out] -15*a^3*b^7/x^8-45/7*a^2*b^8/x^7-210/11*a^6*b^4/x^11-70/3*a^4*b^6
/x^9-5/7*a^9*b/x^14-45/13*a^8*b^2/x^13-1/15*a^10/x^15-1/5*b^10/x^
5-10*a^7*b^3/x^12-126/5*a^5*b^5/x^10-5/3*a*b^9/x^6
```

Maxima [A] time = 1.34315, size = 151, normalized size = 1.57

$$-\frac{3003\,b^{10}x^{10}+25025\,ab^9x^9+96525\,a^2b^8x^8+225225\,a^3b^7x^7+350350\,a^4b^6x^6+378378\,a^5b^5x^5+286650\,a^6b^4x^4+150150\,a}{15015\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^16,x, algorithm="maxima")
```

```
[Out] -1/15015*(3003*b^10*x^10 + 25025*a*b^9*x^9 + 96525*a^2*b^8*x^8 +
225225*a^3*b^7*x^7 + 350350*a^4*b^6*x^6 + 378378*a^5*b^5*x^5 + 28
6650*a^6*b^4*x^4 + 150150*a^7*b^3*x^3 + 51975*a^8*b^2*x^2 + 10725
*a^9*b*x + 1001*a^10)/x^15
```

Fricas [A] time = 0.191977, size = 151, normalized size = 1.57

$$-\frac{3003\,b^{10}x^{10}+25025\,ab^9x^9+96525\,a^2b^8x^8+225225\,a^3b^7x^7+350350\,a^4b^6x^6+378378\,a^5b^5x^5+286650\,a^6b^4x^4+150150\,a}{15015\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^16,x, algorithm="fricas")
```

```
[Out] -1/15015*(3003*b^10*x^10 + 25025*a*b^9*x^9 + 96525*a^2*b^8*x^8 +
225225*a^3*b^7*x^7 + 350350*a^4*b^6*x^6 + 378378*a^5*b^5*x^5 + 28
6650*a^6*b^4*x^4 + 150150*a^7*b^3*x^3 + 51975*a^8*b^2*x^2 + 10725
*a^9*b*x + 1001*a^10)/x^15
```

Sympy [A] time = 4.59183, size = 121, normalized size = 1.26

$$-\frac{1001a^{10} + 10725a^9bx + 51975a^8b^2x^2 + 150150a^7b^3x^3 + 286650a^6b^4x^4 + 378378a^5b^5x^5 + 350350a^4b^6x^6 + 225225a^3b^7x^7 + \cdots}{15015x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**16,x)
```

```
[Out] -(1001*a**10 + 10725*a**9*b*x + 51975*a**8*b**2*x**2 + 150150*a**
7*b**3*x**3 + 286650*a**6*b**4*x**4 + 378378*a**5*b**5*x**5 + 350
350*a**4*b**6*x**6 + 225225*a**3*b**7*x**7 + 96525*a**2*b**8*x**8
 + 25025*a*b**9*x**9 + 3003*b**10*x**10)/(15015*x**15)
```

GIAC/XCAS [A] time = 0.208639, size = 151, normalized size = 1.57

$$-\frac{3003\,b^{10}x^{10} + 25025\,ab^9x^9 + 96525\,a^2b^8x^8 + 225225\,a^3b^7x^7 + 350350\,a^4b^6x^6 + 378378\,a^5b^5x^5 + 286650\,a^6b^4x^4 + 150150\,a^7 \cdots}{15015\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^16,x, algorithm="giac")
```

```
[Out] -1/15015*(3003*b^10*x^10 + 25025*a*b^9*x^9 + 96525*a^2*b^8*x^8 +
225225*a^3*b^7*x^7 + 350350*a^4*b^6*x^6 + 378378*a^5*b^5*x^5 + 28
6650*a^6*b^4*x^4 + 150150*a^7*b^3*x^3 + 51975*a^8*b^2*x^2 + 10725
*a^9*b*x + 1001*a^10)/x^15
```

3.151 $\int \frac{(a+bx)^{10}}{x^{17}} dx$

Optimal. Leaf size=116

$$\frac{b^5(a+bx)^{11}}{48048a^6x^{11}}-\frac{b^4(a+bx)^{11}}{4368a^5x^{12}}+\frac{b^3(a+bx)^{11}}{728a^4x^{13}}-\frac{b^2(a+bx)^{11}}{168a^3x^{14}}+\frac{b(a+bx)^{11}}{48a^2x^{15}}-\frac{(a+bx)^{11}}{16ax^{16}}$$

```
[Out] -(a + b*x)^11/(16*a*x^16) + (b*(a + b*x)^11)/(48*a^2*x^15) - (b^2
*(a + b*x)^11)/(168*a^3*x^14) + (b^3*(a + b*x)^11)/(728*a^4*x^13)
 - (b^4*(a + b*x)^11)/(4368*a^5*x^12) + (b^5*(a + b*x)^11)/(48048
*a^6*x^11)
```

Rubi [A] time = 0.10017, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b^5(a+bx)^{11}}{48048a^6x^{11}}-\frac{b^4(a+bx)^{11}}{4368a^5x^{12}}+\frac{b^3(a+bx)^{11}}{728a^4x^{13}}-\frac{b^2(a+bx)^{11}}{168a^3x^{14}}+\frac{b(a+bx)^{11}}{48a^2x^{15}}-\frac{(a+bx)^{11}}{16ax^{16}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^17,x]
```

```
[Out] -(a + b*x)^11/(16*a*x^16) + (b*(a + b*x)^11)/(48*a^2*x^15) - (b^2
*(a + b*x)^11)/(168*a^3*x^14) + (b^3*(a + b*x)^11)/(728*a^4*x^13)
 - (b^4*(a + b*x)^11)/(4368*a^5*x^12) + (b^5*(a + b*x)^11)/(48048
*a^6*x^11)
```

Rubi in Sympy [A] time = 16.5121, size = 104, normalized size = 0.9

$$-\frac{(a+bx)^{11}}{16ax^{16}}+\frac{b\,(a+bx)^{11}}{48a^2x^{15}}-\frac{b^2\,(a+bx)^{11}}{168a^3x^{14}}+\frac{b^3\,(a+bx)^{11}}{728a^4x^{13}}-\frac{b^4\,(a+bx)^{11}}{4368a^5x^{12}}+\frac{b^5\,(a+bx)^{11}}{48048a^6x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**17,x)
```

```
[Out] -(a + b*x)**11/(16*a*x**16) + b*(a + b*x)**11/(48*a**2*x**15) - b
**2*(a + b*x)**11/(168*a**3*x**14) + b**3*(a + b*x)**11/(728*a**4
*x**13) - b**4*(a + b*x)**11/(4368*a**5*x**12) + b**5*(a + b*x)**
11/(48048*a**6*x**11)
```

Mathematica [A] time = 0.00649022, size = 132, normalized size = 1.14

$$-\frac{a^{10}}{16x^{16}}-\frac{2a^9b}{3x^{15}}-\frac{45a^8b^2}{14x^{14}}-\frac{120a^7b^3}{13x^{13}}-\frac{35a^6b^4}{2x^{12}}-\frac{252a^5b^5}{11x^{11}}-\frac{21a^4b^6}{x^{10}}-\frac{40a^3b^7}{3x^9}-\frac{45a^2b^8}{8x^8}-\frac{10ab^9}{7x^7}-\frac{b^{10}}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^17,x]
```

```
[Out] -a^10/(16*x^16) - (2*a^9*b)/(3*x^15) - (45*a^8*b^2)/(14*x^14) - (
120*a^7*b^3)/(13*x^13) - (35*a^6*b^4)/(2*x^12) - (252*a^5*b^5)/(1
1*x^11) - (21*a^4*b^6)/x^10 - (40*a^3*b^7)/(3*x^9) - (45*a^2*b^8)
/(8*x^8) - (10*a*b^9)/(7*x^7) - b^10/(6*x^6)
```

Maple [A] time = 0.01, size = 113, normalized size = 1.

$$-\frac{45\,a^2b^8}{8\,x^8}-\frac{a^{10}}{16\,x^{16}}-\frac{10\,ab^9}{7\,x^7}-\frac{40\,a^3b^7}{3\,x^9}-\frac{45\,a^8b^2}{14\,x^{14}}-\frac{252\,a^5b^5}{11\,x^{11}}-\frac{2\,a^9b}{3\,x^{15}}-\frac{35\,a^6b^4}{2\,x^{12}}-21\,\frac{a^4b^6}{x^{10}}-\frac{120\,a^7b^3}{13\,x^{13}}-\frac{b^{10}}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^17,x)
```

```
[Out] -45/8*a^2*b^8/x^8-1/16*a^10/x^16-10/7*a*b^9/x^7-40/3*a^3*b^7/x^9-
45/14*a^8*b^2/x^14-252/11*a^5*b^5/x^11-2/3*a^9*b/x^15-35/2*a^6*b^
4/x^12-21*a^4*b^6/x^10-120/13*a^7*b^3/x^13-1/6*b^10/x^6
```

Maxima [A] time = 1.34496, size = 151, normalized size = 1.3

$$-\frac{8008\,b^{10}x^{10}+68640\,ab^9x^9+270270\,a^2b^8x^8+640640\,a^3b^7x^7+1009008\,a^4b^6x^6+1100736\,a^5b^5x^5+840840\,a^6b^4x^4+44352}{48048\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^17,x, algorithm="maxima")
```

```
[Out] -1/48048*(8008*b^10*x^10 + 68640*a*b^9*x^9 + 270270*a^2*b^8*x^8 +
 640640*a^3*b^7*x^7 + 1009008*a^4*b^6*x^6 + 1100736*a^5*b^5*x^5 +
 840840*a^6*b^4*x^4 + 443520*a^7*b^3*x^3 + 154440*a^8*b^2*x^2 + 3
2032*a^9*b*x + 3003*a^10)/x^16
```

Fricas [A] time = 0.187402, size = 151, normalized size = 1.3

$$-\frac{8008\,b^{10}x^{10}+68640\,ab^9x^9+270270\,a^2b^8x^8+640640\,a^3b^7x^7+1009008\,a^4b^6x^6+1100736\,a^5b^5x^5+840840\,a^6b^4x^4+44352}{48048\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^17,x, algorithm="fricas")
```

```
[Out] -1/48048*(8008*b^10*x^10 + 68640*a*b^9*x^9 + 270270*a^2*b^8*x^8 +
 640640*a^3*b^7*x^7 + 1009008*a^4*b^6*x^6 + 1100736*a^5*b^5*x^5 +
 840840*a^6*b^4*x^4 + 443520*a^7*b^3*x^3 + 154440*a^8*b^2*x^2 + 3
2032*a^9*b*x + 3003*a^10)/x^16
```

Sympy [A] time = 4.6968, size = 121, normalized size = 1.04

$$-\frac{3003a^{10} + 32032a^9bx + 154440a^8b^2x^2 + 443520a^7b^3x^3 + 840840a^6b^4x^4 + 1100736a^5b^5x^5 + 1009008a^4b^6x^6 + 640640a^3b^7x}{48048x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**17,x)
```

```
[Out] -(3003*a**10 + 32032*a**9*b*x + 154440*a**8*b**2*x**2 + 443520*a*
*7*b**3*x**3 + 840840*a**6*b**4*x**4 + 1100736*a**5*b**5*x**5 + 1
009008*a**4*b**6*x**6 + 640640*a**3*b**7*x**7 + 270270*a**2*b**8*
x**8 + 68640*a*b**9*x**9 + 8008*b**10*x**10)/(48048*x**16)
```

GIAC/XCAS [A] time = 0.244873, size = 151, normalized size = 1.3

$$-\frac{8008\,b^{10}x^{10} + 68640\,ab^9x^9 + 270270\,a^2b^8x^8 + 640640\,a^3b^7x^7 + 1009008\,a^4b^6x^6 + 1100736\,a^5b^5x^5 + 840840\,a^6b^4x^4 + 44352}{48048\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^17,x, algorithm="giac")
```

```
[Out] -1/48048*(8008*b^10*x^10 + 68640*a*b^9*x^9 + 270270*a^2*b^8*x^8 +
 640640*a^3*b^7*x^7 + 1009008*a^4*b^6*x^6 + 1100736*a^5*b^5*x^5 +
 840840*a^6*b^4*x^4 + 443520*a^7*b^3*x^3 + 154440*a^8*b^2*x^2 + 3
2032*a^9*b*x + 3003*a^10)/x^16
```

3.152 $\int \frac{(a+bx)^{10}}{x^{18}}\,dx$

Optimal. Leaf size=136

$$-\frac{b^6(a+bx)^{11}}{136136a^7x^{11}}+\frac{b^5(a+bx)^{11}}{12376a^6x^{12}}-\frac{3b^4(a+bx)^{11}}{6188a^5x^{13}}+\frac{b^3(a+bx)^{11}}{476a^4x^{14}}-\frac{b^2(a+bx)^{11}}{136a^3x^{15}}+\frac{3b(a+bx)^{11}}{136a^2x^{16}}-\frac{(a+bx)^{11}}{17ax^{17}}$$

```
[Out] -(a + b*x)^11/(17*a*x^17) + (3*b*(a + b*x)^11)/(136*a^2*x^16) - (
b^2*(a + b*x)^11)/(136*a^3*x^15) + (b^3*(a + b*x)^11)/(476*a^4*x^
14) - (3*b^4*(a + b*x)^11)/(6188*a^5*x^13) + (b^5*(a + b*x)^11)/(
12376*a^6*x^12) - (b^6*(a + b*x)^11)/(136136*a^7*x^11)
```

Rubi [A] time = 0.126197, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$-\frac{b^6(a+bx)^{11}}{136136a^7x^{11}}+\frac{b^5(a+bx)^{11}}{12376a^6x^{12}}-\frac{3b^4(a+bx)^{11}}{6188a^5x^{13}}+\frac{b^3(a+bx)^{11}}{476a^4x^{14}}-\frac{b^2(a+bx)^{11}}{136a^3x^{15}}+\frac{3b(a+bx)^{11}}{136a^2x^{16}}-\frac{(a+bx)^{11}}{17ax^{17}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^18,x]
```

```
[Out] -(a + b*x)^11/(17*a*x^17) + (3*b*(a + b*x)^11)/(136*a^2*x^16) - (
b^2*(a + b*x)^11)/(136*a^3*x^15) + (b^3*(a + b*x)^11)/(476*a^4*x^
14) - (3*b^4*(a + b*x)^11)/(6188*a^5*x^13) + (b^5*(a + b*x)^11)/(
12376*a^6*x^12) - (b^6*(a + b*x)^11)/(136136*a^7*x^11)
```

Rubi in Sympy [A] time = 23.8036, size = 129, normalized size = 0.95

$$-\frac{a^{10}}{17x^{17}}-\frac{5a^9b}{8x^{16}}-\frac{3a^8b^2}{x^{15}}-\frac{60a^7b^3}{7x^{14}}-\frac{210a^6b^4}{13x^{13}}-\frac{21a^5b^5}{x^{12}}-\frac{210a^4b^6}{11x^{11}}-\frac{12a^3b^7}{x^{10}}-\frac{5a^2b^8}{x^9}-\frac{5ab^9}{4x^8}-\frac{b^{10}}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**18,x)
```

```
[Out] -a**10/(17*x**17) - 5*a**9*b/(8*x**16) - 3*a**8*b**2/x**15 - 60*a
**7*b**3/(7*x**14) - 210*a**6*b**4/(13*x**13) - 21*a**5*b**5/x**1
2 - 210*a**4*b**6/(11*x**11) - 12*a**3*b**7/x**10 - 5*a**2*b**8/x
**9 - 5*a*b**9/(4*x**8) - b**10/(7*x**7)
```

Mathematica [A] time = 0.0137305, size = 126, normalized size = 0.93

$$-\frac{a^{10}}{17x^{17}}-\frac{5a^9b}{8x^{16}}-\frac{3a^8b^2}{x^{15}}-\frac{60a^7b^3}{7x^{14}}-\frac{210a^6b^4}{13x^{13}}-\frac{21a^5b^5}{x^{12}}-\frac{210a^4b^6}{11x^{11}}-\frac{12a^3b^7}{x^{10}}-\frac{5a^2b^8}{x^9}-\frac{5ab^9}{4x^8}-\frac{b^{10}}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^18,x]
```

```
[Out] -a^10/(17*x^17) - (5*a^9*b)/(8*x^16) - (3*a^8*b^2)/x^15 - (60*a^7
*b^3)/(7*x^14) - (210*a^6*b^4)/(13*x^13) - (21*a^5*b^5)/x^12 - (2
10*a^4*b^6)/(11*x^11) - (12*a^3*b^7)/x^10 - (5*a^2*b^8)/x^9 - (5*
a*b^9)/(4*x^8) - b^10/(7*x^7)
```

Maple [A] time = 0.009, size = 113, normalized size = 0.8

$$-\frac{5\,ab^9}{4\,x^8}-\frac{5\,a^9b}{8\,x^{16}}-\frac{b^{10}}{7\,x^7}-\frac{210\,a^6b^4}{13\,x^{13}}-5\,\frac{a^2b^8}{x^9}-21\,\frac{a^5b^5}{x^{12}}-3\,\frac{a^8b^2}{x^{15}}-\frac{a^{10}}{17\,x^{17}}-\frac{60\,a^7b^3}{7\,x^{14}}-12\,\frac{a^3b^7}{x^{10}}-\frac{210\,a^4b^6}{11\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^18,x)
```

```
[Out] -5/4*a*b^9/x^8-5/8*a^9*b/x^16-1/7*b^10/x^7-210/13*a^6*b^4/x^13-5*
a^2*b^8/x^9-21*a^5*b^5/x^12-3*a^8*b^2/x^15-1/17*a^10/x^17-60/7*a^
7*b^3/x^14-12*a^3*b^7/x^10-210/11*a^4*b^6/x^11
```

Maxima [A] time = 1.35091, size = 151, normalized size = 1.11

$$-\frac{19448\,b^{10}x^{10}+170170\,ab^9x^9+680680\,a^2b^8x^8+1633632\,a^3b^7x^7+2598960\,a^4b^6x^6+2858856\,a^5b^5x^5+2199120\,a^6b^4x^4+1}{136136\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^18,x, algorithm="maxima")
```

```
[Out] -1/136136*(19448*b^10*x^10 + 170170*a*b^9*x^9 + 680680*a^2*b^8*x^
8 + 1633632*a^3*b^7*x^7 + 2598960*a^4*b^6*x^6 + 2858856*a^5*b^5*x
^5 + 2199120*a^6*b^4*x^4 + 1166880*a^7*b^3*x^3 + 408408*a^8*b^2*x
^2 + 85085*a^9*b*x + 8008*a^10)/x^17
```

Fricas [A] time = 0.189312, size = 151, normalized size = 1.11

$$-\frac{19448\,b^{10}x^{10}+170170\,ab^9x^9+680680\,a^2b^8x^8+1633632\,a^3b^7x^7+2598960\,a^4b^6x^6+2858856\,a^5b^5x^5+2199120\,a^6b^4x^4+1}{136136\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^18,x, algorithm="fricas")
```

```
[Out] -1/136136*(19448*b^10*x^10 + 170170*a*b^9*x^9 + 680680*a^2*b^8*x^
8 + 1633632*a^3*b^7*x^7 + 2598960*a^4*b^6*x^6 + 2858856*a^5*b^5*x
^5 + 2199120*a^6*b^4*x^4 + 1166880*a^7*b^3*x^3 + 408408*a^8*b^2*x
^2 + 85085*a^9*b*x + 8008*a^10)/x^17
```

Sympy [A] time = 4.96935, size = 121, normalized size = 0.89

$$-\frac{8008a^{10} + 85085a^9bx + 408408a^8b^2x^2 + 1166880a^7b^3x^3 + 2199120a^6b^4x^4 + 2858856a^5b^5x^5 + 2598960a^4b^6x^6 + 1633632a^3}{136136x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**18,x)
```

```
[Out] -(8008*a**10 + 85085*a**9*b*x + 408408*a**8*b**2*x**2 + 1166880*a
**7*b**3*x**3 + 2199120*a**6*b**4*x**4 + 2858856*a**5*b**5*x**5 +
 2598960*a**4*b**6*x**6 + 1633632*a**3*b**7*x**7 + 680680*a**2*b*
*8*x**8 + 170170*a*b**9*x**9 + 19448*b**10*x**10)/(136136*x**17)
```

GIAC/XCAS [A] time = 0.215159, size = 151, normalized size = 1.11

$$-\frac{19448\,b^{10}x^{10} + 170170\,ab^9x^9 + 680680\,a^2b^8x^8 + 1633632\,a^3b^7x^7 + 2598960\,a^4b^6x^6 + 2858856\,a^5b^5x^5 + 2199120\,a^6b^4x^4 + 1}{136136\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^18,x, algorithm="giac")
```

```
[Out] -1/136136*(19448*b^10*x^10 + 170170*a*b^9*x^9 + 680680*a^2*b^8*x^
8 + 1633632*a^3*b^7*x^7 + 2598960*a^4*b^6*x^6 + 2858856*a^5*b^5*x
^5 + 2199120*a^6*b^4*x^4 + 1166880*a^7*b^3*x^3 + 408408*a^8*b^2*x
^2 + 85085*a^9*b*x + 8008*a^10)/x^17
```

3.153 $\int \frac{(a+bx)^{10}}{x^{19}}\,dx$

Optimal. Leaf size=130

$$-\frac{a^{10}}{18x^{18}}-\frac{10a^9b}{17x^{17}}-\frac{45a^8b^2}{16x^{16}}-\frac{8a^7b^3}{x^{15}}-\frac{15a^6b^4}{x^{14}}-\frac{252a^5b^5}{13x^{13}}-\frac{35a^4b^6}{2x^{12}}-\frac{120a^3b^7}{11x^{11}}-\frac{9a^2b^8}{2x^{10}}-\frac{10ab^9}{9x^9}-\frac{b^{10}}{8x^8}$$

```
[Out] -a^10/(18*x^18) - (10*a^9*b)/(17*x^17) - (45*a^8*b^2)/(16*x^16) -
 (8*a^7*b^3)/x^15 - (15*a^6*b^4)/x^14 - (252*a^5*b^5)/(13*x^13) -
 (35*a^4*b^6)/(2*x^12) - (120*a^3*b^7)/(11*x^11) - (9*a^2*b^8)/(2
*x^10) - (10*a*b^9)/(9*x^9) - b^10/(8*x^8)
```

Rubi [A] time = 0.125308, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^{10}}{18x^{18}}-\frac{10a^9b}{17x^{17}}-\frac{45a^8b^2}{16x^{16}}-\frac{8a^7b^3}{x^{15}}-\frac{15a^6b^4}{x^{14}}-\frac{252a^5b^5}{13x^{13}}-\frac{35a^4b^6}{2x^{12}}-\frac{120a^3b^7}{11x^{11}}-\frac{9a^2b^8}{2x^{10}}-\frac{10ab^9}{9x^9}-\frac{b^{10}}{8x^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^19,x]
```

```
[Out] -a^10/(18*x^18) - (10*a^9*b)/(17*x^17) - (45*a^8*b^2)/(16*x^16) -
 (8*a^7*b^3)/x^15 - (15*a^6*b^4)/x^14 - (252*a^5*b^5)/(13*x^13) -
 (35*a^4*b^6)/(2*x^12) - (120*a^3*b^7)/(11*x^11) - (9*a^2*b^8)/(2
*x^10) - (10*a*b^9)/(9*x^9) - b^10/(8*x^8)
```

Rubi in Sympy [A] time = 23.8417, size = 133, normalized size = 1.02

$$-\frac{a^{10}}{18x^{18}}-\frac{10a^9b}{17x^{17}}-\frac{45a^8b^2}{16x^{16}}-\frac{8a^7b^3}{x^{15}}-\frac{15a^6b^4}{x^{14}}-\frac{252a^5b^5}{13x^{13}}-\frac{35a^4b^6}{2x^{12}}-\frac{120a^3b^7}{11x^{11}}-\frac{9a^2b^8}{2x^{10}}-\frac{10ab^9}{9x^9}-\frac{b^{10}}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**19,x)
```

```
[Out] -a**10/(18*x**18) - 10*a**9*b/(17*x**17) - 45*a**8*b**2/(16*x**16
) - 8*a**7*b**3/x**15 - 15*a**6*b**4/x**14 - 252*a**5*b**5/(13*x*
*13) - 35*a**4*b**6/(2*x**12) - 120*a**3*b**7/(11*x**11) - 9*a**2
*b**8/(2*x**10) - 10*a*b**9/(9*x**9) - b**10/(8*x**8)
```

Mathematica [A] time = 0.00650269, size = 130, normalized size = 1.

$$-\frac{a^{10}}{18x^{18}}-\frac{10a^9b}{17x^{17}}-\frac{45a^8b^2}{16x^{16}}-\frac{8a^7b^3}{x^{15}}-\frac{15a^6b^4}{x^{14}}-\frac{252a^5b^5}{13x^{13}}-\frac{35a^4b^6}{2x^{12}}-\frac{120a^3b^7}{11x^{11}}-\frac{9a^2b^8}{2x^{10}}-\frac{10ab^9}{9x^9}-\frac{b^{10}}{8x^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^19,x]
```

```
[Out] -a^10/(18*x^18) - (10*a^9*b)/(17*x^17) - (45*a^8*b^2)/(16*x^16) -
 (8*a^7*b^3)/x^15 - (15*a^6*b^4)/x^14 - (252*a^5*b^5)/(13*x^13) -
 (35*a^4*b^6)/(2*x^12) - (120*a^3*b^7)/(11*x^11) - (9*a^2*b^8)/(2
*x^10) - (10*a*b^9)/(9*x^9) - b^10/(8*x^8)
```

Maple [A] time = 0.01, size = 113, normalized size = 0.9

$$-\frac{a^{10}}{18\,x^{18}}-\frac{10\,a^9b}{17\,x^{17}}-\frac{45\,a^8b^2}{16\,x^{16}}-8\,\frac{a^7b^3}{x^{15}}-15\,\frac{a^6b^4}{x^{14}}-\frac{252\,a^5b^5}{13\,x^{13}}-\frac{35\,a^4b^6}{2\,x^{12}}-\frac{120\,a^3b^7}{11\,x^{11}}-\frac{9\,a^2b^8}{2\,x^{10}}-\frac{10\,ab^9}{9\,x^9}-\frac{b^{10}}{8\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^19,x)
```

```
[Out] -1/18*a^10/x^18-10/17*a^9*b/x^17-45/16*a^8*b^2/x^16-8*a^7*b^3/x^1
5-15*a^6*b^4/x^14-252/13*a^5*b^5/x^13-35/2*a^4*b^6/x^12-120/11*a^
3*b^7/x^11-9/2*a^2*b^8/x^10-10/9*a*b^9/x^9-1/8*b^10/x^8
```

Maxima [A] time = 1.34401, size = 151, normalized size = 1.16

$$-\frac{43758\,b^{10}x^{10}+388960\,ab^9x^9+1575288\,a^2b^8x^8+3818880\,a^3b^7x^7+6126120\,a^4b^6x^6+6785856\,a^5b^5x^5+5250960\,a^6b^4x^4+}{350064\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^19,x, algorithm="maxima")
```

```
[Out] -1/350064*(43758*b^10*x^10 + 388960*a*b^9*x^9 + 1575288*a^2*b^8*x
^8 + 3818880*a^3*b^7*x^7 + 6126120*a^4*b^6*x^6 + 6785856*a^5*b^5*
x^5 + 5250960*a^6*b^4*x^4 + 2800512*a^7*b^3*x^3 + 984555*a^8*b^2*
x^2 + 205920*a^9*b*x + 19448*a^10)/x^18
```

Fricas [A] time = 0.186625, size = 151, normalized size = 1.16

$$-\frac{43758\,b^{10}x^{10}+388960\,ab^9x^9+1575288\,a^2b^8x^8+3818880\,a^3b^7x^7+6126120\,a^4b^6x^6+6785856\,a^5b^5x^5+5250960\,a^6b^4x^4+}{350064\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^19,x, algorithm="fricas")
```

```
[Out] -1/350064*(43758*b^10*x^10 + 388960*a*b^9*x^9 + 1575288*a^2*b^8*x
^8 + 3818880*a^3*b^7*x^7 + 6126120*a^4*b^6*x^6 + 6785856*a^5*b^5*
x^5 + 5250960*a^6*b^4*x^4 + 2800512*a^7*b^3*x^3 + 984555*a^8*b^2*
x^2 + 205920*a^9*b*x + 19448*a^10)/x^18
```

Sympy [A] time = 5.21072, size = 121, normalized size = 0.93

$$-\frac{19448a^{10} + 205920a^9bx + 984555a^8b^2x^2 + 2800512a^7b^3x^3 + 5250960a^6b^4x^4 + 6785856a^5b^5x^5 + 6126120a^4b^6x^6 + 3818880}{350064x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**19,x)
```

```
[Out] -(19448*a**10 + 205920*a**9*b*x + 984555*a**8*b**2*x**2 + 2800512
*a**7*b**3*x**3 + 5250960*a**6*b**4*x**4 + 6785856*a**5*b**5*x**5
 + 6126120*a**4*b**6*x**6 + 3818880*a**3*b**7*x**7 + 1575288*a**2
*b**8*x**8 + 388960*a*b**9*x**9 + 43758*b**10*x**10)/(350064*x**1
8)
```

GIAC/XCAS [A] time = 0.210345, size = 151, normalized size = 1.16

$$-\frac{43758\,b^{10}x^{10} + 388960\,ab^9x^9 + 1575288\,a^2b^8x^8 + 3818880\,a^3b^7x^7 + 6126120\,a^4b^6x^6 + 6785856\,a^5b^5x^5 + 5250960\,a^6b^4x^4 +}{350064\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^19,x, algorithm="giac")
```

```
[Out] -1/350064*(43758*b^10*x^10 + 388960*a*b^9*x^9 + 1575288*a^2*b^8*x
^8 + 3818880*a^3*b^7*x^7 + 6126120*a^4*b^6*x^6 + 6785856*a^5*b^5*
x^5 + 5250960*a^6*b^4*x^4 + 2800512*a^7*b^3*x^3 + 984555*a^8*b^2*
x^2 + 205920*a^9*b*x + 19448*a^10)/x^18
```

3.154 $\int \frac{(a+bx)^{10}}{x^{20}} dx$

Optimal. Leaf size=126

$$-\frac{a^{10}}{19x^{19}}-\frac{5a^9b}{9x^{18}}-\frac{45a^8b^2}{17x^{17}}-\frac{15a^7b^3}{2x^{16}}-\frac{14a^6b^4}{x^{15}}-\frac{18a^5b^5}{x^{14}}-\frac{210a^4b^6}{13x^{13}}-\frac{10a^3b^7}{x^{12}}-\frac{45a^2b^8}{11x^{11}}-\frac{ab^9}{x^{10}}-\frac{b^{10}}{9x^9}$$

```
[Out] -a^10/(19*x^19) - (5*a^9*b)/(9*x^18) - (45*a^8*b^2)/(17*x^17) - (
15*a^7*b^3)/(2*x^16) - (14*a^6*b^4)/x^15 - (18*a^5*b^5)/x^14 - (2
10*a^4*b^6)/(13*x^13) - (10*a^3*b^7)/x^12 - (45*a^2*b^8)/(11*x^11
) - (a*b^9)/x^10 - b^10/(9*x^9)
```

Rubi [A] time = 0.124331, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{19x^{19}}-\frac{5a^9b}{9x^{18}}-\frac{45a^8b^2}{17x^{17}}-\frac{15a^7b^3}{2x^{16}}-\frac{14a^6b^4}{x^{15}}-\frac{18a^5b^5}{x^{14}}-\frac{210a^4b^6}{13x^{13}}-\frac{10a^3b^7}{x^{12}}-\frac{45a^2b^8}{11x^{11}}-\frac{ab^9}{x^{10}}-\frac{b^{10}}{9x^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^20,x]
```

```
[Out] -a^10/(19*x^19) - (5*a^9*b)/(9*x^18) - (45*a^8*b^2)/(17*x^17) - (
15*a^7*b^3)/(2*x^16) - (14*a^6*b^4)/x^15 - (18*a^5*b^5)/x^14 - (2
10*a^4*b^6)/(13*x^13) - (10*a^3*b^7)/x^12 - (45*a^2*b^8)/(11*x^11
) - (a*b^9)/x^10 - b^10/(9*x^9)
```

Rubi in Sympy [A] time = 24.1383, size = 128, normalized size = 1.02

$$-\frac{a^{10}}{19x^{19}}-\frac{5a^9b}{9x^{18}}-\frac{45a^8b^2}{17x^{17}}-\frac{15a^7b^3}{2x^{16}}-\frac{14a^6b^4}{x^{15}}-\frac{18a^5b^5}{x^{14}}-\frac{210a^4b^6}{13x^{13}}-\frac{10a^3b^7}{x^{12}}-\frac{45a^2b^8}{11x^{11}}-\frac{ab^9}{x^{10}}-\frac{b^{10}}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**20,x)
```

```
[Out] -a**10/(19*x**19) - 5*a**9*b/(9*x**18) - 45*a**8*b**2/(17*x**17)
- 15*a**7*b**3/(2*x**16) - 14*a**6*b**4/x**15 - 18*a**5*b**5/x**1
4 - 210*a**4*b**6/(13*x**13) - 10*a**3*b**7/x**12 - 45*a**2*b**8/
(11*x**11) - a*b**9/x**10 - b**10/(9*x**9)
```

Mathematica [A] time = 0.0102395, size = 126, normalized size = 1.

$$-\frac{a^{10}}{19x^{19}}-\frac{5a^9b}{9x^{18}}-\frac{45a^8b^2}{17x^{17}}-\frac{15a^7b^3}{2x^{16}}-\frac{14a^6b^4}{x^{15}}-\frac{18a^5b^5}{x^{14}}-\frac{210a^4b^6}{13x^{13}}-\frac{10a^3b^7}{x^{12}}-\frac{45a^2b^8}{11x^{11}}-\frac{ab^9}{x^{10}}-\frac{b^{10}}{9x^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^20,x]
```

```
[Out] -a^10/(19*x^19) - (5*a^9*b)/(9*x^18) - (45*a^8*b^2)/(17*x^17) - (
15*a^7*b^3)/(2*x^16) - (14*a^6*b^4)/x^15 - (18*a^5*b^5)/x^14 - (2
10*a^4*b^6)/(13*x^13) - (10*a^3*b^7)/x^12 - (45*a^2*b^8)/(11*x^11
) - (a*b^9)/x^10 - b^10/(9*x^9)
```

Maple [A] time = 0.01, size = 113, normalized size = 0.9

$$-\frac{a^{10}}{19\,x^{19}}-\frac{5\,a^9b}{9\,x^{18}}-\frac{45\,a^8b^2}{17\,x^{17}}-\frac{15\,a^7b^3}{2\,x^{16}}-14\,\frac{a^6b^4}{x^{15}}-18\,\frac{a^5b^5}{x^{14}}-\frac{210\,a^4b^6}{13\,x^{13}}-10\,\frac{a^3b^7}{x^{12}}-\frac{45\,a^2b^8}{11\,x^{11}}-\frac{ab^9}{x^{10}}-\frac{b^{10}}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^20,x)
```

```
[Out] -1/19*a^10/x^19-5/9*a^9*b/x^18-45/17*a^8*b^2/x^17-15/2*a^7*b^3/x^
16-14*a^6*b^4/x^15-18*a^5*b^5/x^14-210/13*a^4*b^6/x^13-10*a^3*b^7
/x^12-45/11*a^2*b^8/x^11-a*b^9/x^10-1/9*b^10/x^9
```

Maxima [A] time = 1.35112, size = 151, normalized size = 1.2

$$-\frac{92378\,b^{10}x^{10}+831402\,ab^9x^9+3401190\,a^2b^8x^8+8314020\,a^3b^7x^7+13430340\,a^4b^6x^6+14965236\,a^5b^5x^5+11639628\,a^6b^4x}{831402\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^20,x, algorithm="maxima")
```

```
[Out] -1/831402*(92378*b^10*x^10 + 831402*a*b^9*x^9 + 3401190*a^2*b^8*x
^8 + 8314020*a^3*b^7*x^7 + 13430340*a^4*b^6*x^6 + 14965236*a^5*b^
5*x^5 + 11639628*a^6*b^4*x^4 + 6235515*a^7*b^3*x^3 + 2200770*a^8*
b^2*x^2 + 461890*a^9*b*x + 43758*a^10)/x^19
```

Fricas [A] time = 0.191574, size = 151, normalized size = 1.2

$$-\frac{92378\,b^{10}x^{10}+831402\,ab^9x^9+3401190\,a^2b^8x^8+8314020\,a^3b^7x^7+13430340\,a^4b^6x^6+14965236\,a^5b^5x^5+11639628\,a^6b^4x}{831402\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^20,x, algorithm="fricas")
```

```
[Out] -1/831402*(92378*b^10*x^10 + 831402*a*b^9*x^9 + 3401190*a^2*b^8*x
^8 + 8314020*a^3*b^7*x^7 + 13430340*a^4*b^6*x^6 + 14965236*a^5*b^
5*x^5 + 11639628*a^6*b^4*x^4 + 6235515*a^7*b^3*x^3 + 2200770*a^8*
b^2*x^2 + 461890*a^9*b*x + 43758*a^10)/x^19
```

Sympy [A] time = 5.43138, size = 121, normalized size = 0.96

$$-\frac{43758a^{10} + 461890a^9bx + 2200770a^8b^2x^2 + 6235515a^7b^3x^3 + 11639628a^6b^4x^4 + 14965236a^5b^5x^5 + 13430340a^4b^6x^6 + 831}{831402x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**20,x)
```

```
[Out] -(43758*a**10 + 461890*a**9*b*x + 2200770*a**8*b**2*x**2 + 623551
5*a**7*b**3*x**3 + 11639628*a**6*b**4*x**4 + 14965236*a**5*b**5*x
**5 + 13430340*a**4*b**6*x**6 + 8314020*a**3*b**7*x**7 + 3401190*
a**2*b**8*x**8 + 831402*a*b**9*x**9 + 92378*b**10*x**10)/(831402*
x**19)
```

GIAC/XCAS [A] time = 0.202318, size = 151, normalized size = 1.2

$$-\frac{92378\,b^{10}x^{10} + 831402\,ab^9x^9 + 3401190\,a^2b^8x^8 + 8314020\,a^3b^7x^7 + 13430340\,a^4b^6x^6 + 14965236\,a^5b^5x^5 + 11639628\,a^6b^4x}{831402\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^20,x, algorithm="giac")
```

```
[Out] -1/831402*(92378*b^10*x^10 + 831402*a*b^9*x^9 + 3401190*a^2*b^8*x
^8 + 8314020*a^3*b^7*x^7 + 13430340*a^4*b^6*x^6 + 14965236*a^5*b^
5*x^5 + 11639628*a^6*b^4*x^4 + 6235515*a^7*b^3*x^3 + 2200770*a^8*
b^2*x^2 + 461890*a^9*b*x + 43758*a^10)/x^19
```

3.155 $\int c(a+bx)\,dx$

Optimal. Leaf size=15

$$\frac{c(a+bx)^2}{2b}$$

```
[Out] (c*(a + b*x)^2)/(2*b)
```

Rubi [A] time = 0.00743257, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{c(a+bx)^2}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[c*(a + b*x),x]
```

```
[Out] (c*(a + b*x)^2)/(2*b)
```

Rubi in Sympy [A] time = 1.70861, size = 10, normalized size = 0.67

$$\frac{c\,(a+bx)^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(c*(b*x+a),x)
```

```
[Out] c*(a + b*x)**2/(2*b)
```

Mathematica [A] time = 0.000647646, size = 14, normalized size = 0.93

$$c\left(ax+\frac{bx^2}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[c*(a + b*x),x]
```

```
[Out] c*(a*x + (b*x^2)/2)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$c\left(ax+\frac{bx^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(c*(b*x+a),x)
```

```
[Out] c*(a*x+1/2*b*x^2)
```

Maxima [A] time = 1.34169, size = 18, normalized size = 1.2

$$\frac{1}{2}\left(bx^2+2\,ax\right)c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*c,x, algorithm="maxima")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*c
```

Fricas [A] time = 0.170187, size = 1, normalized size = 0.07

$$\frac{1}{2}x^2cb+xca$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*c,x, algorithm="fricas")
```

```
[Out] 1/2*x^2*c*b + x*c*a
```

Sympy [A] time = 0.058057, size = 12, normalized size = 0.8

$$acx+\frac{bcx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(c*(b*x+a),x)
```

```
[Out] a*c*x + b*c*x**2/2
```

GIAC/XCAS [A] time = 0.203124, size = 18, normalized size = 1.2

$$\frac{1}{2}\left(bx^{2}+2\,ax\right)c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*c,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*c
```

3.156 $\int \frac{(c+d)(a+bx)}{e} \, dx$

Optimal. Leaf size=20

$$\frac{(c+d)(a+bx)^2}{2be}$$

```
[Out] ((c + d)*(a + b*x)^2)/(2*b*e)
```

Rubi [A] time = 0.0133103, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083

$$\frac{(c+d)(a+bx)^2}{2be}$$

Antiderivative was successfully verified.

```
[In] Int[((c + d)*(a + b*x))/e,x]
```

```
[Out] ((c + d)*(a + b*x)^2)/(2*b*e)
```

Rubi in Sympy [A] time = 2.32039, size = 14, normalized size = 0.7

$$\frac{(a+bx)^2\,(c+d)}{2be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c+d)*(b*x+a)/e,x)
```

```
[Out] (a + b*x)**2*(c + d)/(2*b*e)
```

Mathematica [A] time = 0.00134553, size = 19, normalized size = 0.95

$$\frac{(c+d)\left(ax+\frac{bx^2}{2}\right)}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c + d)*(a + b*x))/e,x]
```

```
[Out] ((c + d)*(a*x + (b*x^2)/2))/e
```

Maple [A] time = 0.002, size = 18, normalized size = 0.9

$$\frac{c+d}{e}\left(ax+\frac{bx^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c+d)*(b*x+a)/e,x)
```

```
[Out] (c+d)/e*(a*x+1/2*b*x^2)
```

Maxima [A] time = 1.34811, size = 24, normalized size = 1.2

$$\frac{(bx^2+2\,ax)\,(c+d)}{2\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(c + d)/e,x, algorithm="maxima")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*(c + d)/e
```

Fricas [A] time = 0.196058, size = 36, normalized size = 1.8

$$\frac{(bc+bd)x^2+2\,(ac+ad)x}{2\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(c + d)/e,x, algorithm="fricas")
```

```
[Out] 1/2*((b*c + b*d)*x^2 + 2*(a*c + a*d)*x)/e
```

Sympy [A] time = 0.080573, size = 22, normalized size = 1.1

$$\frac{x^2\,(bc+bd)}{2e}+\frac{x\,(ac+ad)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c+d)*(b*x+a)/e,x)
```

```
[Out] x**2*(b*c + b*d)/(2*e) + x*(a*c + a*d)/e
```

GIAC/XCAS [A] time = 0.223422, size = 23, normalized size = 1.15

$$\frac{1}{2}\left(bx^{2}+2\,ax\right)(c+d)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(c + d)/e,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*(c + d)*e^(-1)
```

3.157 $\int \frac{x^5}{a+bx}\,dx$

Optimal. Leaf size=70

$$-\frac{a^5\log(a+bx)}{b^6}+\frac{a^4x}{b^5}-\frac{a^3x^2}{2b^4}+\frac{a^2x^3}{3b^3}-\frac{ax^4}{4b^2}+\frac{x^5}{5b}$$

```
[Out] (a^4*x)/b^5 - (a^3*x^2)/(2*b^4) + (a^2*x^3)/(3*b^3) - (a*x^4)/(4*
b^2) + x^5/(5*b) - (a^5*Log[a + b*x])/b^6
```

Rubi [A] time = 0.0780007, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5\log(a+bx)}{b^6}+\frac{a^4x}{b^5}-\frac{a^3x^2}{2b^4}+\frac{a^2x^3}{3b^3}-\frac{ax^4}{4b^2}+\frac{x^5}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/(a + b*x),x]
```

```
[Out] (a^4*x)/b^5 - (a^3*x^2)/(2*b^4) + (a^2*x^3)/(3*b^3) - (a*x^4)/(4*
b^2) + x^5/(5*b) - (a^5*Log[a + b*x])/b^6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^5\log\left(a+bx\right)}{b^6}-\frac{a^3\int x\,dx}{b^4}+\frac{a^2x^3}{3b^3}-\frac{ax^4}{4b^2}+\frac{x^5}{5b}+\frac{\int a^4\,dx}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(b*x+a),x)
```

```
[Out] -a**5*log(a + b*x)/b**6 - a**3*Integral(x, x)/b**4 + a**2*x**3/(3
*b**3) - a*x**4/(4*b**2) + x**5/(5*b) + Integral(a**4, x)/b**5
```

Mathematica [A] time = 0.00590081, size = 70, normalized size = 1.

$$-\frac{a^5\log(a+bx)}{b^6}+\frac{a^4x}{b^5}-\frac{a^3x^2}{2b^4}+\frac{a^2x^3}{3b^3}-\frac{ax^4}{4b^2}+\frac{x^5}{5b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(a + b*x),x]
```

```
[Out] (a^4*x)/b^5 - (a^3*x^2)/(2*b^4) + (a^2*x^3)/(3*b^3) - (a*x^4)/(4*
b^2) + x^5/(5*b) - (a^5*Log[a + b*x])/b^6
```

Maple [A] time = 0.005, size = 63, normalized size = 0.9

$$\frac{a^4x}{b^5} - \frac{a^3x^2}{2\,b^4} + \frac{a^2x^3}{3\,b^3} - \frac{ax^4}{4\,b^2} + \frac{x^5}{5\,b} - \frac{a^5\ln(bx+a)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a),x)
```

```
[Out] a^4*x/b^5-1/2*a^3*x^2/b^4+1/3*a^2*x^3/b^3-1/4*a*x^4/b^2+1/5*x^5/b
-a^5*ln(b*x+a)/b^6
```

Maxima [A] time = 1.33816, size = 86, normalized size = 1.23

$$-\frac{a^5\log(bx+a)}{b^6} + \frac{12\,b^4x^5 - 15\,ab^3x^4 + 20\,a^2b^2x^3 - 30\,a^3bx^2 + 60\,a^4x}{60\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a),x, algorithm="maxima")
```

```
[Out] -a^5*log(b*x + a)/b^6 + 1/60*(12*b^4*x^5 - 15*a*b^3*x^4 + 20*a^2*
b^2*x^3 - 30*a^3*b*x^2 + 60*a^4*x)/b^5
```

Fricas [A] time = 0.192226, size = 85, normalized size = 1.21

$$\frac{12\,b^5x^5 - 15\,ab^4x^4 + 20\,a^2b^3x^3 - 30\,a^3b^2x^2 + 60\,a^4bx - 60\,a^5\log(bx+a)}{60\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/60*(12*b^5*x^5 - 15*a*b^4*x^4 + 20*a^2*b^3*x^3 - 30*a^3*b^2*x^2
 + 60*a^4*b*x - 60*a^5*log(b*x + a))/b^6
```

Sympy [A] time = 1.14328, size = 61, normalized size = 0.87

$$-\frac{a^5\log(a+bx)}{b^6}+\frac{a^4x}{b^5}-\frac{a^3x^2}{2b^4}+\frac{a^2x^3}{3b^3}-\frac{ax^4}{4b^2}+\frac{x^5}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a),x)
```

```
[Out] -a**5*log(a + b*x)/b**6 + a**4*x/b**5 - a**3*x**2/(2*b**4) + a**2
*x**3/(3*b**3) - a*x**4/(4*b**2) + x**5/(5*b)
```

GIAC/XCAS [A] time = 0.227563, size = 88, normalized size = 1.26

$$-\frac{a^5\ln(|bx+a|)}{b^6}+\frac{12\,b^4x^5-15\,ab^3x^4+20\,a^2b^2x^3-30\,a^3bx^2+60\,a^4x}{60\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a),x, algorithm="giac")
```

```
[Out] -a^5*ln(abs(b*x + a))/b^6 + 1/60*(12*b^4*x^5 - 15*a*b^3*x^4 + 20*
a^2*b^2*x^3 - 30*a^3*b*x^2 + 60*a^4*x)/b^5
```

3.158 $\int \frac{x^4}{a+bx} dx$

Optimal. Leaf size=57

$$\frac{a^4 \log(a+bx)}{b^5} - \frac{a^3 x}{b^4} + \frac{a^2 x^2}{2b^3} - \frac{a x^3}{3b^2} + \frac{x^4}{4b}$$

```
[Out] -((a^3*x)/b^4) + (a^2*x^2)/(2*b^3) - (a*x^3)/(3*b^2) + x^4/(4*b)
+ (a^4*Log[a + b*x])/b^5
```

Rubi [A] time = 0.0569483, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^4 \log(a+bx)}{b^5} - \frac{a^3 x}{b^4} + \frac{a^2 x^2}{2b^3} - \frac{a x^3}{3b^2} + \frac{x^4}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x),x]
```

```
[Out] -((a^3*x)/b^4) + (a^2*x^2)/(2*b^3) - (a*x^3)/(3*b^2) + x^4/(4*b)
+ (a^4*Log[a + b*x])/b^5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^4 \log(a+bx)}{b^5} + \frac{a^2 \int x\, dx}{b^3} - \frac{a x^3}{3b^2} + \frac{x^4}{4b} - \frac{\int a^3\, dx}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a),x)
```

```
[Out] a**4*log(a + b*x)/b**5 + a**2*Integral(x, x)/b**3 - a*x**3/(3*b**
2) + x**4/(4*b) - Integral(a**3, x)/b**4
```

Mathematica [A] time = 0.00613247, size = 57, normalized size = 1.

$$\frac{a^4 \log(a+bx)}{b^5} - \frac{a^3 x}{b^4} + \frac{a^2 x^2}{2b^3} - \frac{a x^3}{3b^2} + \frac{x^4}{4b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x),x]
```

```
[Out] -((a^3*x)/b^4) + (a^2*x^2)/(2*b^3) - (a*x^3)/(3*b^2) + x^4/(4*b)
+ (a^4*Log[a + b*x])/b^5
```

Maple [A] time = 0.004, size = 52, normalized size = 0.9

$$-\frac{a^3x}{b^4}+\frac{a^2x^2}{2\,b^3}-\frac{ax^3}{3\,b^2}+\frac{x^4}{4\,b}+\frac{a^4\ln\left(bx+a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a),x)
```

```
[Out] -a^3*x/b^4+1/2*a^2*x^2/b^3-1/3*a*x^3/b^2+1/4*x^4/b+a^4*ln(b*x+a)/
b^5
```

Maxima [A] time = 1.33445, size = 70, normalized size = 1.23

$$\frac{a^4\log\left(bx+a\right)}{b^5}+\frac{3\,b^3x^4-4\,ab^2x^3+6\,a^2bx^2-12\,a^3x}{12\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a),x, algorithm="maxima")
```

```
[Out] a^4*log(b*x + a)/b^5 + 1/12*(3*b^3*x^4 - 4*a*b^2*x^3 + 6*a^2*b*x^
2 - 12*a^3*x)/b^4
```

Fricas [A] time = 0.189942, size = 70, normalized size = 1.23

$$\frac{3\,b^4x^4-4\,ab^3x^3+6\,a^2b^2x^2-12\,a^3bx+12\,a^4\log\left(bx+a\right)}{12\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*x^4 - 4*a*b^3*x^3 + 6*a^2*b^2*x^2 - 12*a^3*b*x + 12*a
^4*log(b*x + a))/b^5
```

Sympy [A] time = 1.13154, size = 49, normalized size = 0.86

$$\frac{a^4 \log(a + bx)}{b^5} - \frac{a^3 x}{b^4} + \frac{a^2 x^2}{2b^3} - \frac{a x^3}{3b^2} + \frac{x^4}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a),x)
```

```
[Out] a**4*log(a + b*x)/b**5 - a**3*x/b**4 + a**2*x**2/(2*b**3) - a*x**
3/(3*b**2) + x**4/(4*b)
```

GIAC/XCAS [A] time = 0.22616, size = 72, normalized size = 1.26

$$\frac{a^4 \ln(|bx + a|)}{b^5} + \frac{3\, b^3 x^4 - 4\, a b^2 x^3 + 6\, a^2 b x^2 - 12\, a^3 x}{12\, b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a),x, algorithm="giac")
```

```
[Out] a^4*ln(abs(b*x + a))/b^5 + 1/12*(3*b^3*x^4 - 4*a*b^2*x^3 + 6*a^2*
b*x^2 - 12*a^3*x)/b^4
```

3.159 $\int \frac{x^3}{a+bx}\,dx$

Optimal. Leaf size=44

$$-\frac{a^3\log(a+bx)}{b^4}+\frac{a^2x}{b^3}-\frac{ax^2}{2b^2}+\frac{x^3}{3b}$$

```
[Out] (a^2*x)/b^3 - (a*x^2)/(2*b^2) + x^3/(3*b) - (a^3*Log[a + b*x])/b^
4
```

Rubi [A] time = 0.0442856, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3\log(a+bx)}{b^4}+\frac{a^2x}{b^3}-\frac{ax^2}{2b^2}+\frac{x^3}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x),x]
```

```
[Out] (a^2*x)/b^3 - (a*x^2)/(2*b^2) + x^3/(3*b) - (a^3*Log[a + b*x])/b^
4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3\log{(a+bx)}}{b^4}-\frac{a\int x\,dx}{b^2}+\frac{x^3}{3b}+\frac{\int a^2\,dx}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a),x)
```

```
[Out] -a**3*log(a + b*x)/b**4 - a*Integral(x, x)/b**2 + x**3/(3*b) + In
tegral(a**2, x)/b**3
```

Mathematica [A] time = 0.00502725, size = 44, normalized size = 1.

$$-\frac{a^3\log(a+bx)}{b^4}+\frac{a^2x}{b^3}-\frac{ax^2}{2b^2}+\frac{x^3}{3b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x),x]
```

```
[Out] (a^2*x)/b^3 - (a*x^2)/(2*b^2) + x^3/(3*b) - (a^3*Log[a + b*x])/b^
4
```

Maple [A] time = 0.004, size = 41, normalized size = 0.9

$$\frac{a^2x}{b^3} - \frac{ax^2}{2\,b^2} + \frac{x^3}{3\,b} - \frac{a^3\ln\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a),x)
```

```
[Out] a^2*x/b^3-1/2*a*x^2/b^2+1/3*x^3/b-a^3*ln(b*x+a)/b^4
```

Maxima [A] time = 1.34132, size = 57, normalized size = 1.3

$$-\frac{a^3\log\left(bx+a\right)}{b^4} + \frac{2\,b^2x^3 - 3\,abx^2 + 6\,a^2x}{6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a),x, algorithm="maxima")
```

```
[Out] -a^3*log(b*x + a)/b^4 + 1/6*(2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)/b^3
```

Fricas [A] time = 0.192691, size = 55, normalized size = 1.25

$$\frac{2\,b^3x^3 - 3\,ab^2x^2 + 6\,a^2bx - 6\,a^3\log\left(bx+a\right)}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3 - 3*a*b^2*x^2 + 6*a^2*b*x - 6*a^3*log(b*x + a))/b^
4
```

<u>Sympy</u> [A] time = 1.13516, size = 37, normalized size = 0.84

$$-\frac{a^3\log(a+bx)}{b^4}+\frac{a^2x}{b^3}-\frac{ax^2}{2b^2}+\frac{x^3}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a),x)
```

```
[Out] -a**3*log(a + b*x)/b**4 + a**2*x/b**3 - a*x**2/(2*b**2) + x**3/(3
*b)
```

<u>GIAC/XCAS</u> [A] time = 0.225851, size = 58, normalized size = 1.32

$$-\frac{a^3\ln(|bx+a|)}{b^4}+\frac{2\,b^2x^3-3\,abx^2+6\,a^2x}{6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a),x, algorithm="giac")
```

```
[Out] -a^3*ln(abs(b*x + a))/b^4 + 1/6*(2*b^2*x^3 - 3*a*b*x^2 + 6*a^2*x)
/b^3
```

3.160 $\int \frac{x^2}{a+bx} dx$

Optimal. Leaf size=31

$$\frac{a^2 \log(a+bx)}{b^3} - \frac{ax}{b^2} + \frac{x^2}{2b}$$

```
[Out] -((a*x)/b^2) + x^2/(2*b) + (a^2*Log[a + b*x])/b^3
```

Rubi [A] time = 0.0334421, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2 \log(a+bx)}{b^3} - \frac{ax}{b^2} + \frac{x^2}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x),x]
```

```
[Out] -((a*x)/b^2) + x^2/(2*b) + (a^2*Log[a + b*x])/b^3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2 \log(a+bx)}{b^3} + \frac{\int x\, dx}{b} - \frac{\int a\, dx}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a),x)
```

```
[Out] a**2*log(a + b*x)/b**3 + Integral(x, x)/b - Integral(a, x)/b**2
```

Mathematica [A] time = 0.00474759, size = 31, normalized size = 1.

$$\frac{a^2 \log(a+bx)}{b^3} - \frac{ax}{b^2} + \frac{x^2}{2b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x),x]
```

```
[Out] -((a*x)/b^2) + x^2/(2*b) + (a^2*Log[a + b*x])/b^3
```

Maple [A] time = 0.003, size = 30, normalized size = 1.

$$-\frac{ax}{b^2}+\frac{x^2}{2\,b}+\frac{a^2\ln\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a),x)
```

```
[Out] -a*x/b^2+1/2*x^2/b+a^2*ln(b*x+a)/b^3
```

Maxima [A] time = 1.34351, size = 39, normalized size = 1.26

$$\frac{a^2\log\left(bx+a\right)}{b^3}+\frac{bx^2-2\,ax}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a),x, algorithm="maxima")
```

```
[Out] a^2*log(b*x + a)/b^3 + 1/2*(b*x^2 - 2*a*x)/b^2
```

Fricas [A] time = 0.190455, size = 39, normalized size = 1.26

$$\frac{b^2x^2-2\,abx+2\,a^2\log\left(bx+a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 - 2*a*b*x + 2*a^2*log(b*x + a))/b^3
```

Sympy [A] time = 1.07131, size = 26, normalized size = 0.84

$$\frac{a^2\log\left(a+bx\right)}{b^3}-\frac{ax}{b^2}+\frac{x^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a),x)
```

```
[Out] a**2*log(a + b*x)/b**3 - a*x/b**2 + x**2/(2*b)
```

GIAC/XCAS [A] time = 0.224822, size = 41, normalized size = 1.32

$$\frac{a^2 \ln\left(|bx + a|\right)}{b^3} + \frac{bx^2 - 2\,ax}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a),x, algorithm="giac")
```

```
[Out] a^2*ln(abs(b*x + a))/b^3 + 1/2*(b*x^2 - 2*a*x)/b^2
```

3.161 $\int \frac{x}{a+bx} \, dx$

Optimal. Leaf size=18

$$\frac{x}{b} - \frac{a \log(a + bx)}{b^2}$$

```
[Out] x/b - (a*Log[a + b*x])/b^2
```

Rubi [A] time = 0.0225335, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{x}{b} - \frac{a \log(a + bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x),x]

[Out] x/b - (a*Log[a + b*x])/b^2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a \log (a + bx)}{b^2} + \int \frac{1}{b} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a),x)

[Out] -a*log(a + b*x)/b**2 + Integral(1/b, x)
```

Mathematica [A] time = 0.00347118, size = 18, normalized size = 1.

$$\frac{x}{b} - \frac{a \log(a + bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x),x]
```

```
[Out] x/b - (a*Log[a + b*x])/b^2
```

Maple [A] time = 0.004, size = 19, normalized size = 1.1

$$\frac{x}{b} - \frac{a \ln (bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a),x)
```

```
[Out] x/b-a*ln(b*x+a)/b^2
```

Maxima [A] time = 1.34242, size = 24, normalized size = 1.33

$$\frac{x}{b} - \frac{a \log (bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a),x, algorithm="maxima")
```

```
[Out] x/b - a*log(b*x + a)/b^2
```

Fricas [A] time = 0.191706, size = 23, normalized size = 1.28

$$\frac{bx - a \log (bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a),x, algorithm="fricas")
```

```
[Out] (b*x - a*log(b*x + a))/b^2
```

Sympy [A] time = 1.02025, size = 14, normalized size = 0.78

$$-\frac{a \log (a + bx)}{b^2} + \frac{x}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a),x)
```

```
[Out] -a*log(a + b*x)/b**2 + x/b
```

GIAC/XCAS [A] time = 0.2246, size = 26, normalized size = 1.44

$$\frac{x}{b} - \frac{a\ln\left(|bx + a|\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a),x, algorithm="giac")
```

```
[Out] x/b - a*ln(abs(b*x + a))/b^2
```

3.162 $\int \frac{1}{a+bx}\,dx$

Optimal. Leaf size=10

$$\frac{\log(a+bx)}{b}$$

```
[Out] Log[a + b*x]/b
```

Rubi [A] time = 0.00650909, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-1),x]

[Out] Log[a + b*x]/b
```

Rubi in Sympy [A] time = 1.27818, size = 7, normalized size = 0.7

$$\frac{\log{(a+bx)}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a),x)

[Out] log(a + b*x)/b
```

Mathematica [A] time = 0.000900752, size = 10, normalized size = 1.

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-1),x]
```

```
[Out] Log[a + b*x]/b
```

Maple [A] time = 0.002, size = 11, normalized size = 1.1

$$\frac{\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a),x)
```

```
[Out] ln(b*x+a)/b
```

Maxima [A] time = 1.34205, size = 14, normalized size = 1.4

$$\frac{\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + a),x, algorithm="maxima")
```

```
[Out] log(b*x + a)/b
```

Fricas [A] time = 0.189694, size = 14, normalized size = 1.4

$$\frac{\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + a),x, algorithm="fricas")
```

```
[Out] log(b*x + a)/b
```

Sympy [A] time = 0.090697, size = 7, normalized size = 0.7

$$\frac{\log(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a),x)
```

```
[Out] log(a + b*x)/b
```

GIAC/XCAS [A] time = 0.206622, size = 15, normalized size = 1.5

$$\frac{\ln(|bx + a|)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + a),x, algorithm="giac")
```

```
[Out] ln(abs(b*x + a))/b
```

3.163 $\int \frac{1}{x(a+bx)} dx$

Optimal. Leaf size=18

$$\frac{\log(x)}{a} - \frac{\log(a+bx)}{a}$$

```
[Out] Log[x]/a - Log[a + b*x]/a
```

Rubi [A] time = 0.0135164, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$

$$\frac{\log(x)}{a} - \frac{\log(a+bx)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)),x]

[Out] Log[x]/a - Log[a + b*x]/a
```

Rubi in Sympy [A] time = 3.45017, size = 12, normalized size = 0.67

$$\frac{\log(x)}{a} - \frac{\log(a+bx)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a),x)

[Out] log(x)/a - log(a + b*x)/a
```

Mathematica [A] time = 0.00518244, size = 18, normalized size = 1.

$$\frac{\log(x)}{a} - \frac{\log(a+bx)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)),x]
```

```
[Out] Log[x]/a - Log[a + b*x]/a
```

Maple [A] time = 0.009, size = 19, normalized size = 1.1

$$\frac{\ln(x)}{a} - \frac{\ln(bx + a)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a),x)
```

```
[Out] ln(x)/a-ln(b*x+a)/a
```

Maxima [A] time = 1.34008, size = 24, normalized size = 1.33

$$-\frac{\log(bx + a)}{a} + \frac{\log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x),x, algorithm="maxima")
```

```
[Out] -log(b*x + a)/a + log(x)/a
```

Fricas [A] time = 0.19851, size = 22, normalized size = 1.22

$$-\frac{\log(bx + a) - \log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x),x, algorithm="fricas")
```

```
[Out] -(log(b*x + a) - log(x))/a
```

Sympy [A] time = 0.310256, size = 10, normalized size = 0.56

$$\frac{\log(x) - \log\left(\frac{a}{b} + x\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a),x)
```

```
[Out] (log(x) - log(a/b + x))/a
```

GIAC/XCAS [A] time = 0.216505, size = 27, normalized size = 1.5

$$-\frac{\ln(|bx+a|)}{a}+\frac{\ln(|x|)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x),x, algorithm="giac")
```

```
[Out] -ln(abs(b*x + a))/a + ln(abs(x))/a
```

3.164 $\int \frac{1}{x^2(a+bx)}\,dx$

Optimal. Leaf size=28

$$-\frac{b\log(x)}{a^2}+\frac{b\log(a+bx)}{a^2}-\frac{1}{ax}$$

```
[Out] -(1/(a*x)) - (b*Log[x])/a^2 + (b*Log[a + b*x])/a^2
```

Rubi [A] time = 0.0315487, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{b\log(x)}{a^2}+\frac{b\log(a+bx)}{a^2}-\frac{1}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)),x]

[Out] -(1/(a*x)) - (b*Log[x])/a^2 + (b*Log[a + b*x])/a^2
```

Rubi in Sympy [A] time = 5.72571, size = 24, normalized size = 0.86

$$-\frac{1}{ax}-\frac{b\log(x)}{a^2}+\frac{b\log(a+bx)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a),x)

[Out] -1/(a*x) - b*log(x)/a**2 + b*log(a + b*x)/a**2
```

Mathematica [A] time = 0.00674428, size = 28, normalized size = 1.

$$-\frac{b\log(x)}{a^2}+\frac{b\log(a+bx)}{a^2}-\frac{1}{ax}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)),x]
```

```
[Out] -(1/(a*x)) - (b*Log[x])/a^2 + (b*Log[a + b*x])/a^2
```

Maple [A] time = 0.014, size = 29, normalized size = 1.

$$-\frac{1}{ax}-\frac{b\ln(x)}{a^2}+\frac{b\ln(bx+a)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a),x)
```

```
[Out] -1/a/x-b*ln(x)/a^2+b*ln(b*x+a)/a^2
```

Maxima [A] time = 1.34077, size = 38, normalized size = 1.36

$$\frac{b\log(bx+a)}{a^2}-\frac{b\log(x)}{a^2}-\frac{1}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^2),x, algorithm="maxima")
```

```
[Out] b*log(b*x + a)/a^2 - b*log(x)/a^2 - 1/(a*x)
```

Fricas [A] time = 0.199765, size = 35, normalized size = 1.25

$$\frac{bx\log(bx+a)-bx\log(x)-a}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^2),x, algorithm="fricas")
```

```
[Out] (b*x*log(b*x + a) - b*x*log(x) - a)/(a^2*x)
```

Sympy [A] time = 1.27486, size = 19, normalized size = 0.68

$$-\frac{1}{ax}+\frac{b\left(-\log(x)+\log\left(\frac{a}{b}+x\right)\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a),x)
```

```
[Out] -1/(a*x) + b*(-log(x) + log(a/b + x))/a**2
```

GIAC/XCAS [A] time = 0.216976, size = 41, normalized size = 1.46

$$\frac{b\ln\left(|bx+a|\right)}{a^2}-\frac{b\ln\left(|x|\right)}{a^2}-\frac{1}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^2),x, algorithm="giac")
```

```
[Out] b*ln(abs(b*x + a))/a^2 - b*ln(abs(x))/a^2 - 1/(a*x)
```

3.165 $\int \frac{1}{x^3(a+bx)} dx$

Optimal. Leaf size=42

$$\frac{b^2\log(x)}{a^3} - \frac{b^2\log(a+bx)}{a^3} + \frac{b}{a^2x} - \frac{1}{2ax^2}$$

```
[Out] -1/(2*a*x^2) + b/(a^2*x) + (b^2*Log[x])/a^3 - (b^2*Log[a + b*x])/
a^3
```

Rubi [A] time = 0.0402526, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{b^2\log(x)}{a^3} - \frac{b^2\log(a+bx)}{a^3} + \frac{b}{a^2x} - \frac{1}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)),x]
```

```
[Out] -1/(2*a*x^2) + b/(a^2*x) + (b^2*Log[x])/a^3 - (b^2*Log[a + b*x])/
a^3
```

Rubi in Sympy [A] time = 7.59428, size = 37, normalized size = 0.88

$$-\frac{1}{2ax^2} + \frac{b}{a^2x} + \frac{b^2\log(x)}{a^3} - \frac{b^2\log(a+bx)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a),x)
```

```
[Out] -1/(2*a*x**2) + b/(a**2*x) + b**2*log(x)/a**3 - b**2*log(a + b*x)
/a**3
```

Mathematica [A] time = 0.00651453, size = 42, normalized size = 1.

$$\frac{b^2\log(x)}{a^3} - \frac{b^2\log(a+bx)}{a^3} + \frac{b}{a^2x} - \frac{1}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)),x]
```

```
[Out] -1/(2*a*x^2) + b/(a^2*x) + (b^2*Log[x])/a^3 - (b^2*Log[a + b*x])/
a^3
```

Maple [A] time = 0.011, size = 41, normalized size = 1.

$$-\frac{1}{2\,ax^2}+\frac{b}{a^2x}+\frac{b^2\ln(x)}{a^3}-\frac{b^2\ln(bx+a)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a),x)
```

```
[Out] -1/2/a/x^2+b/a^2/x+b^2*ln(x)/a^3-b^2*ln(b*x+a)/a^3
```

Maxima [A] time = 1.34059, size = 54, normalized size = 1.29

$$-\frac{b^2\log(bx+a)}{a^3}+\frac{b^2\log(x)}{a^3}+\frac{2\,bx-a}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^3),x, algorithm="maxima")
```

```
[Out] -b^2*log(b*x + a)/a^3 + b^2*log(x)/a^3 + 1/2*(2*b*x - a)/(a^2*x^2
)
```

Fricas [A] time = 0.199177, size = 55, normalized size = 1.31

$$-\frac{2\,b^2x^2\log(bx+a)-2\,b^2x^2\log(x)-2\,abx+a^2}{2\,a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^3),x, algorithm="fricas")
```

```
[Out] -1/2*(2*b^2*x^2*log(b*x + a) - 2*b^2*x^2*log(x) - 2*a*b*x + a^2)/
(a^3*x^2)
```

Sympy [A] time = 1.40797, size = 31, normalized size = 0.74

$$\frac{-a+2bx}{2a^2x^2}+\frac{b^2\left(\log\left(x\right)-\log\left(\frac{a}{b}+x\right)\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a),x)
```

```
[Out] (-a + 2*b*x)/(2*a**2*x**2) + b**2*(log(x) - log(a/b + x))/a**3
```

GIAC/XCAS [A] time = 0.207017, size = 61, normalized size = 1.45

$$-\frac{b^2\ln\left(|bx+a|\right)}{a^3}+\frac{b^2\ln\left(|x|\right)}{a^3}+\frac{2\,abx-a^2}{2\,a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^3),x, algorithm="giac")
```

```
[Out] -b^2*ln(abs(b*x + a))/a^3 + b^2*ln(abs(x))/a^3 + 1/2*(2*a*b*x - a
^2)/(a^3*x^2)
```

3.166 $\int \frac{1}{x^4(a+bx)}\,dx$

Optimal. Leaf size=56

$$-\frac{b^3\log(x)}{a^4}+\frac{b^3\log(a+bx)}{a^4}-\frac{b^2}{a^3x}+\frac{b}{2a^2x^2}-\frac{1}{3ax^3}$$

```
[Out] -1/(3*a*x^3) + b/(2*a^2*x^2) - b^2/(a^3*x) - (b^3*Log[x])/a^4 + (
b^3*Log[a + b*x])/a^4
```

Rubi [A] time = 0.0500316, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{b^3\log(x)}{a^4}+\frac{b^3\log(a+bx)}{a^4}-\frac{b^2}{a^3x}+\frac{b}{2a^2x^2}-\frac{1}{3ax^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(a + b*x)),x]
```

```
[Out] -1/(3*a*x^3) + b/(2*a^2*x^2) - b^2/(a^3*x) - (b^3*Log[x])/a^4 + (
b^3*Log[a + b*x])/a^4
```

Rubi in Sympy [A] time = 9.29952, size = 49, normalized size = 0.88

$$-\frac{1}{3ax^3}+\frac{b}{2a^2x^2}-\frac{b^2}{a^3x}-\frac{b^3\log{(x)}}{a^4}+\frac{b^3\log{(a+bx)}}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a),x)
```

```
[Out] -1/(3*a*x**3) + b/(2*a**2*x**2) - b**2/(a**3*x) - b**3*log(x)/a**
4 + b**3*log(a + b*x)/a**4
```

Mathematica [A] time = 0.0074812, size = 56, normalized size = 1.

$$-\frac{b^3\log(x)}{a^4}+\frac{b^3\log(a+bx)}{a^4}-\frac{b^2}{a^3x}+\frac{b}{2a^2x^2}-\frac{1}{3ax^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(a + b*x)),x]
```

```
[Out] -1/(3*a*x^3) + b/(2*a^2*x^2) - b^2/(a^3*x) - (b^3*Log[x])/a^4 + (
b^3*Log[a + b*x])/a^4
```

Maple [A] time = 0.01, size = 53, normalized size = 1.

$$-\frac{1}{3\,ax^3}+\frac{b}{2\,a^2x^2}-\frac{b^2}{a^3x}-\frac{b^3\ln(x)}{a^4}+\frac{b^3\ln(bx+a)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a),x)
```

```
[Out] -1/3/a/x^3+1/2*b/a^2/x^2-b^2/a^3/x-b^3*ln(x)/a^4+b^3*ln(b*x+a)/a^
4
```

Maxima [A] time = 1.34175, size = 69, normalized size = 1.23

$$\frac{b^3\log(bx+a)}{a^4}-\frac{b^3\log(x)}{a^4}-\frac{6\,b^2x^2-3\,abx+2\,a^2}{6\,a^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^4),x, algorithm="maxima")
```

```
[Out] b^3*log(b*x + a)/a^4 - b^3*log(x)/a^4 - 1/6*(6*b^2*x^2 - 3*a*b*x
+ 2*a^2)/(a^3*x^3)
```

Fricas [A] time = 0.201673, size = 73, normalized size = 1.3

$$\frac{6\,b^3x^3\log(bx+a)-6\,b^3x^3\log(x)-6\,ab^2x^2+3\,a^2bx-2\,a^3}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^4),x, algorithm="fricas")
```

```
[Out] 1/6*(6*b^3*x^3*log(b*x + a) - 6*b^3*x^3*log(x) - 6*a*b^2*x^2 + 3*
a^2*b*x - 2*a^3)/(a^4*x^3)
```

Sympy [A] time = 1.50914, size = 44, normalized size = 0.79

$$-\frac{2a^2-3abx+6b^2x^2}{6a^3x^3}+\frac{b^3\left(-\log\left(x\right)+\log\left(\frac{a}{b}+x\right)\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a),x)
```

```
[Out] -(2*a**2 - 3*a*b*x + 6*b**2*x**2)/(6*a**3*x**3) + b**3*(-log(x) +
 log(a/b + x))/a**4
```

GIAC/XCAS [A] time = 0.207985, size = 76, normalized size = 1.36

$$\frac{b^3\ln\left(|bx+a|\right)}{a^4}-\frac{b^3\ln\left(|x|\right)}{a^4}-\frac{6\,ab^2x^2-3\,a^2bx+2\,a^3}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^4),x, algorithm="giac")
```

```
[Out] b^3*ln(abs(b*x + a))/a^4 - b^3*ln(abs(x))/a^4 - 1/6*(6*a*b^2*x^2
- 3*a^2*b*x + 2*a^3)/(a^4*x^3)
```

3.167 $\int \frac{1}{x^5(a+bx)}\,dx$

Optimal. Leaf size=68

$$\frac{b^4\log(x)}{a^5}-\frac{b^4\log(a+bx)}{a^5}+\frac{b^3}{a^4x}-\frac{b^2}{2a^3x^2}+\frac{b}{3a^2x^3}-\frac{1}{4ax^4}$$

```
[Out] -1/(4*a*x^4) + b/(3*a^2*x^3) - b^2/(2*a^3*x^2) + b^3/(a^4*x) + (b
^4*Log[x])/a^5 - (b^4*Log[a + b*x])/a^5
```

Rubi [A] time = 0.0584225, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{b^4\log(x)}{a^5}-\frac{b^4\log(a+bx)}{a^5}+\frac{b^3}{a^4x}-\frac{b^2}{2a^3x^2}+\frac{b}{3a^2x^3}-\frac{1}{4ax^4}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(a + b*x)),x]
```

```
[Out] -1/(4*a*x^4) + b/(3*a^2*x^3) - b^2/(2*a^3*x^2) + b^3/(a^4*x) + (b
^4*Log[x])/a^5 - (b^4*Log[a + b*x])/a^5
```

Rubi in Sympy [A] time = 11.0919, size = 61, normalized size = 0.9

$$-\frac{1}{4ax^4}+\frac{b}{3a^2x^3}-\frac{b^2}{2a^3x^2}+\frac{b^3}{a^4x}+\frac{b^4\log(x)}{a^5}-\frac{b^4\log(a+bx)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(b*x+a),x)
```

```
[Out] -1/(4*a*x**4) + b/(3*a**2*x**3) - b**2/(2*a**3*x**2) + b**3/(a**4
*x) + b**4*log(x)/a**5 - b**4*log(a + b*x)/a**5
```

Mathematica [A] time = 0.00676188, size = 68, normalized size = 1.

$$\frac{b^4\log(x)}{a^5}-\frac{b^4\log(a+bx)}{a^5}+\frac{b^3}{a^4x}-\frac{b^2}{2a^3x^2}+\frac{b}{3a^2x^3}-\frac{1}{4ax^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(a + b*x)),x]
```

```
[Out] -1/(4*a*x^4) + b/(3*a^2*x^3) - b^2/(2*a^3*x^2) + b^3/(a^4*x) + (b
^4*Log[x])/a^5 - (b^4*Log[a + b*x])/a^5
```

Maple [A] time = 0.013, size = 63, normalized size = 0.9

$$-\frac{1}{4\,a x^4}+\frac{b}{3\,a^2 x^3}-\frac{b^2}{2\,a^3 x^2}+\frac{b^3}{a^4 x}+\frac{b^4\ln(x)}{a^5}-\frac{b^4\ln(bx+a)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(b*x+a),x)
```

```
[Out] -1/4/a/x^4+1/3*b/a^2/x^3-1/2*b^2/a^3/x^2+b^3/a^4/x+b^4*ln(x)/a^5-
b^4*ln(b*x+a)/a^5
```

Maxima [A] time = 1.34621, size = 84, normalized size = 1.24

$$-\frac{b^4\log(bx+a)}{a^5}+\frac{b^4\log(x)}{a^5}+\frac{12\,b^3x^3-6\,ab^2x^2+4\,a^2bx-3\,a^3}{12\,a^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^5),x, algorithm="maxima")
```

```
[Out] -b^4*log(b*x + a)/a^5 + b^4*log(x)/a^5 + 1/12*(12*b^3*x^3 - 6*a*b
^2*x^2 + 4*a^2*b*x - 3*a^3)/(a^4*x^4)
```

Fricas [A] time = 0.200885, size = 88, normalized size = 1.29

$$-\frac{12\,b^4x^4\log(bx+a)-12\,b^4x^4\log(x)-12\,ab^3x^3+6\,a^2b^2x^2-4\,a^3bx+3\,a^4}{12\,a^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^5),x, algorithm="fricas")
```

```
[Out] -1/12*(12*b^4*x^4*log(b*x + a) - 12*b^4*x^4*log(x) - 12*a*b^3*x^3
 + 6*a^2*b^2*x^2 - 4*a^3*b*x + 3*a^4)/(a^5*x^4)
```

Sympy [A] time = 1.59872, size = 56, normalized size = 0.82

$$\frac{-3a^3+4a^2bx-6ab^2x^2+12b^3x^3}{12a^4x^4}+\frac{b^4\left(\log\left(x\right)-\log\left(\frac{a}{b}+x\right)\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(b*x+a),x)
```

```
[Out] (-3*a**3 + 4*a**2*b*x - 6*a*b**2*x**2 + 12*b**3*x**3)/(12*a**4*x*
*4) + b**4*(log(x) - log(a/b + x))/a**5
```

GIAC/XCAS [A] time = 0.218773, size = 90, normalized size = 1.32

$$-\frac{b^4\ln\left(|bx+a|\right)}{a^5}+\frac{b^4\ln\left(|x|\right)}{a^5}+\frac{12\,ab^3x^3-6\,a^2b^2x^2+4\,a^3bx-3\,a^4}{12\,a^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^5),x, algorithm="giac")
```

```
[Out] -b^4*ln(abs(b*x + a))/a^5 + b^4*ln(abs(x))/a^5 + 1/12*(12*a*b^3*x
^3 - 6*a^2*b^2*x^2 + 4*a^3*b*x - 3*a^4)/(a^5*x^4)
```

3.168 $\int \frac{x^6}{(a+bx)^2}\,dx$

Optimal. Leaf size=81

$$-\frac{a^6}{b^7(a+bx)}-\frac{6a^5\log(a+bx)}{b^7}+\frac{5a^4x}{b^6}-\frac{2a^3x^2}{b^5}+\frac{a^2x^3}{b^4}-\frac{ax^4}{2b^3}+\frac{x^5}{5b^2}$$

```
[Out] (5*a^4*x)/b^6 - (2*a^3*x^2)/b^5 + (a^2*x^3)/b^4 - (a*x^4)/(2*b^3)
 + x^5/(5*b^2) - a^6/(b^7*(a + b*x)) - (6*a^5*Log[a + b*x])/b^7
```

Rubi [A] time = 0.111031, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^6}{b^7(a+bx)}-\frac{6a^5\log(a+bx)}{b^7}+\frac{5a^4x}{b^6}-\frac{2a^3x^2}{b^5}+\frac{a^2x^3}{b^4}-\frac{ax^4}{2b^3}+\frac{x^5}{5b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6/(a + b*x)^2,x]
```

```
[Out] (5*a^4*x)/b^6 - (2*a^3*x^2)/b^5 + (a^2*x^3)/b^4 - (a*x^4)/(2*b^3)
 + x^5/(5*b^2) - a^6/(b^7*(a + b*x)) - (6*a^5*Log[a + b*x])/b^7
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^6}{b^7\left(a+bx\right)}-\frac{6a^5\log\left(a+bx\right)}{b^7}+\frac{5a^4x}{b^6}-\frac{4a^3\int x\,dx}{b^5}+\frac{a^2x^3}{b^4}-\frac{ax^4}{2b^3}+\frac{x^5}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6/(b*x+a)**2,x)
```

```
[Out] -a**6/(b**7*(a + b*x)) - 6*a**5*log(a + b*x)/b**7 + 5*a**4*x/b**6
 - 4*a**3*Integral(x, x)/b**5 + a**2*x**3/b**4 - a*x**4/(2*b**3)
+ x**5/(5*b**2)
```

Mathematica [A] time = 0.0442018, size = 77, normalized size = 0.95

$$\frac{-\frac{10a^6}{a+bx}-60a^5\log(a+bx)+50a^4bx-20a^3b^2x^2+10a^2b^3x^3-5ab^4x^4+2b^5x^5}{10b^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6/(a + b*x)^2,x]
```

```
[Out] (50*a^4*b*x - 20*a^3*b^2*x^2 + 10*a^2*b^3*x^3 - 5*a*b^4*x^4 + 2*b
^5*x^5 - (10*a^6)/(a + b*x) - 60*a^5*Log[a + b*x])/(10*b^7)
```

Maple [A] time = 0.01, size = 78, normalized size = 1.

$$5\,\frac{a^4x}{b^6}-2\,\frac{a^3x^2}{b^5}+\frac{a^2x^3}{b^4}-\frac{ax^4}{2\,b^3}+\frac{x^5}{5\,b^2}-\frac{a^6}{b^7\,(bx+a)}-6\,\frac{a^5\ln(bx+a)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6/(b*x+a)^2,x)
```

```
[Out] 5*a^4*x/b^6-2*a^3*x^2/b^5+a^2*x^3/b^4-1/2*a*x^4/b^3+1/5*x^5/b^2-a
^6/b^7/(b*x+a)-6*a^5*ln(b*x+a)/b^7
```

Maxima [A] time = 1.3606, size = 111, normalized size = 1.37

$$-\frac{a^6}{b^8x+ab^7}-\frac{6\,a^5\log(bx+a)}{b^7}+\frac{2\,b^4x^5-5\,ab^3x^4+10\,a^2b^2x^3-20\,a^3bx^2+50\,a^4x}{10\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -a^6/(b^8*x + a*b^7) - 6*a^5*log(b*x + a)/b^7 + 1/10*(2*b^4*x^5 -
 5*a*b^3*x^4 + 10*a^2*b^2*x^3 - 20*a^3*b*x^2 + 50*a^4*x)/b^6
```

Fricas [A] time = 0.194298, size = 130, normalized size = 1.6

$$\frac{2\,b^6x^6-3\,ab^5x^5+5\,a^2b^4x^4-10\,a^3b^3x^3+30\,a^4b^2x^2+50\,a^5bx-10\,a^6-60\,\left(a^5bx+a^6\right)\log(bx+a)}{10\,(b^8x+ab^7)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/10*(2*b^6*x^6 - 3*a*b^5*x^5 + 5*a^2*b^4*x^4 - 10*a^3*b^3*x^3 +
30*a^4*b^2*x^2 + 50*a^5*b*x - 10*a^6 - 60*(a^5*b*x + a^6)*log(b*x
```

```
+ a))/(b^8*x + a*b^7)
```

Sympy [A] time = 1.51226, size = 78, normalized size = 0.96

$$-\frac{a^6}{ab^7+b^8x}-\frac{6a^5\log(a+bx)}{b^7}+\frac{5a^4x}{b^6}-\frac{2a^3x^2}{b^5}+\frac{a^2x^3}{b^4}-\frac{ax^4}{2b^3}+\frac{x^5}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6/(b*x+a)**2,x)
```

```
[Out] -a**6/(a*b**7 + b**8*x) - 6*a**5*log(a + b*x)/b**7 + 5*a**4*x/b**
6 - 2*a**3*x**2/b**5 + a**2*x**3/b**4 - a*x**4/(2*b**3) + x**5/(5
*b**2)
```

GIAC/XCAS [A] time = 0.217648, size = 139, normalized size = 1.72

$$-\frac{(bx+a)^5\left(\frac{15\,a}{bx+a}-\frac{50\,a^2}{(bx+a)^2}+\frac{100\,a^3}{(bx+a)^3}-\frac{150\,a^4}{(bx+a)^4}-2\right)}{10\,b^7}+\frac{6\,a^5\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^7}-\frac{a^6}{(bx+a)b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/10*(b*x + a)^5*(15*a/(b*x + a) - 50*a^2/(b*x + a)^2 + 100*a^3/
(b*x + a)^3 - 150*a^4/(b*x + a)^4 - 2)/b^7 + 6*a^5*ln(abs(b*x + a
)/((b*x + a)^2*abs(b)))/b^7 - a^6/((b*x + a)*b^7)
```

3.169 $\int \frac{x^5}{(a+bx)^2} dx$

Optimal. Leaf size=72

$$\frac{a^5}{b^6(a+bx)}+\frac{5a^4\log(a+bx)}{b^6}-\frac{4a^3x}{b^5}+\frac{3a^2x^2}{2b^4}-\frac{2ax^3}{3b^3}+\frac{x^4}{4b^2}$$

```
[Out] (-4*a^3*x)/b^5 + (3*a^2*x^2)/(2*b^4) - (2*a*x^3)/(3*b^3) + x^4/(4
*b^2) + a^5/(b^6*(a + b*x)) + (5*a^4*Log[a + b*x])/b^6
```

Rubi [A] time = 0.0895364, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^5}{b^6(a+bx)}+\frac{5a^4\log(a+bx)}{b^6}-\frac{4a^3x}{b^5}+\frac{3a^2x^2}{2b^4}-\frac{2ax^3}{3b^3}+\frac{x^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/(a + b*x)^2,x]
```

```
[Out] (-4*a^3*x)/b^5 + (3*a^2*x^2)/(2*b^4) - (2*a*x^3)/(3*b^3) + x^4/(4
*b^2) + a^5/(b^6*(a + b*x)) + (5*a^4*Log[a + b*x])/b^6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^5}{b^6\left(a+bx\right)}+\frac{5a^4\log\left(a+bx\right)}{b^6}-\frac{4a^3x}{b^5}+\frac{3a^2\int x\,dx}{b^4}-\frac{2ax^3}{3b^3}+\frac{x^4}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(b*x+a)**2,x)
```

```
[Out] a**5/(b**6*(a + b*x)) + 5*a**4*log(a + b*x)/b**6 - 4*a**3*x/b**5
+ 3*a**2*Integral(x, x)/b**4 - 2*a*x**3/(3*b**3) + x**4/(4*b**2)
```

Mathematica [A] time = 0.0277246, size = 66, normalized size = 0.92

$$\frac{\frac{12a^5}{a+bx}+60a^4\log(a+bx)-48a^3bx+18a^2b^2x^2-8ab^3x^3+3b^4x^4}{12b^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(a + b*x)^2,x]
```

```
[Out] (-48*a^3*b*x + 18*a^2*b^2*x^2 - 8*a*b^3*x^3 + 3*b^4*x^4 + (12*a^5
)/(a + b*x) + 60*a^4*Log[a + b*x])/(12*b^6)
```

Maple [A] time = 0.012, size = 67, normalized size = 0.9

$$-4\,{\frac{{a}^{3}x}{{b}^{5}}}+{\frac{3\,{a}^{2}{x}^{2}}{2\,{b}^{4}}}-{\frac{2\,a{x}^{3}}{3\,{b}^{3}}}+{\frac{{x}^{4}}{4\,{b}^{2}}}+{\frac{{a}^{5}}{{b}^{6}\left(bx+a\right)}}+5\,{\frac{{a}^{4}\ln\left(bx+a\right)}{{b}^{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a)^2,x)
```

```
[Out] -4*a^3*x/b^5+3/2*a^2*x^2/b^4-2/3*a*x^3/b^3+1/4*x^4/b^2+a^5/b^6/(b
*x+a)+5*a^4*ln(b*x+a)/b^6
```

Maxima [A] time = 1.37676, size = 95, normalized size = 1.32

$$\frac{a^{5}}{b^{7} x + a b^{6}} + \frac{5 \, a^{4} \log\left(b x + a\right)}{b^{6}} + \frac{3 \, b^{3} x^{4} - 8 \, a b^{2} x^{3} + 18 \, a^{2} b x^{2} - 48 \, a^{3} x}{12 \, b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] a^5/(b^7*x + a*b^6) + 5*a^4*log(b*x + a)/b^6 + 1/12*(3*b^3*x^4 -
8*a*b^2*x^3 + 18*a^2*b*x^2 - 48*a^3*x)/b^5
```

Fricas [A] time = 0.191743, size = 115, normalized size = 1.6

$$\frac{3 \, b^{5} x^{5} - 5 \, a b^{4} x^{4} + 10 \, a^{2} b^{3} x^{3} - 30 \, a^{3} b^{2} x^{2} - 48 \, a^{4} b x + 12 \, a^{5} + 60 \,{\left(a^{4} b x + a^{5}\right)} \log\left(b x + a\right)}{12 \,{\left(b^{7} x + a b^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^5*x^5 - 5*a*b^4*x^4 + 10*a^2*b^3*x^3 - 30*a^3*b^2*x^2 -
 48*a^4*b*x + 12*a^5 + 60*(a^4*b*x + a^5)*log(b*x + a))/(b^7*x +
a*b^6)
```

Sympy [A] time = 1.46896, size = 71, normalized size = 0.99

$$\frac{a^5}{ab^6 + b^7x} + \frac{5a^4 \log{(a + bx)}}{b^6} - \frac{4a^3x}{b^5} + \frac{3a^2x^2}{2b^4} - \frac{2ax^3}{3b^3} + \frac{x^4}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a)**2,x)
```

```
[Out] a**5/(a*b**6 + b**7*x) + 5*a**4*log(a + b*x)/b**6 - 4*a**3*x/b**5
 + 3*a**2*x**2/(2*b**4) - 2*a*x**3/(3*b**3) + x**4/(4*b**2)
```

GIAC/XCAS [A] time = 0.216018, size = 122, normalized size = 1.69

$$-\frac{(bx+a)^4\left(\frac{20\,a}{bx+a} - \frac{60\,a^2}{(bx+a)^2} + \frac{120\,a^3}{(bx+a)^3} - 3\right)}{12\,b^6} - \frac{5\,a^4\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^6} + \frac{a^5}{(bx+a)b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/12*(b*x + a)^4*(20*a/(b*x + a) - 60*a^2/(b*x + a)^2 + 120*a^3/
(b*x + a)^3 - 3)/b^6 - 5*a^4*ln(abs(b*x + a)/((b*x + a)^2*abs(b))
)/b^6 + a^5/((b*x + a)*b^6)
```

3.170 $\int \frac{x^4}{(a+bx)^2} dx$

Optimal. Leaf size=58

$$-\frac{a^4}{b^5(a+bx)}-\frac{4a^3\log(a+bx)}{b^5}+\frac{3a^2x}{b^4}-\frac{ax^2}{b^3}+\frac{x^3}{3b^2}$$

```
[Out] (3*a^2*x)/b^4 - (a*x^2)/b^3 + x^3/(3*b^2) - a^4/(b^5*(a + b*x)) -
 (4*a^3*Log[a + b*x])/b^5
```

Rubi [A] time = 0.0743986, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^4}{b^5(a+bx)}-\frac{4a^3\log(a+bx)}{b^5}+\frac{3a^2x}{b^4}-\frac{ax^2}{b^3}+\frac{x^3}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^2,x]
```

```
[Out] (3*a^2*x)/b^4 - (a*x^2)/b^3 + x^3/(3*b^2) - a^4/(b^5*(a + b*x)) -
 (4*a^3*Log[a + b*x])/b^5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^4}{b^5\left(a+bx\right)}-\frac{4a^3\log\left(a+bx\right)}{b^5}+\frac{3a^2x}{b^4}-\frac{2a\int x\,dx}{b^3}+\frac{x^3}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**2,x)
```

```
[Out] -a**4/(b**5*(a + b*x)) - 4*a**3*log(a + b*x)/b**5 + 3*a**2*x/b**4
 - 2*a*Integral(x, x)/b**3 + x**3/(3*b**2)
```

Mathematica [A] time = 0.0365501, size = 54, normalized size = 0.93

$$\frac{-\frac{3a^4}{a+bx}-12a^3\log(a+bx)+9a^2bx-3ab^2x^2+b^3x^3}{3b^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^2,x]
```

```
[Out] (9*a^2*b*x - 3*a*b^2*x^2 + b^3*x^3 - (3*a^4)/(a + b*x) - 12*a^3*L
og[a + b*x])/(3*b^5)
```

Maple [A] time = 0.01, size = 57, normalized size = 1.

$$3\,{\frac {{a}^{2}x}{{b}^{4}}}-{\frac {a{x}^{2}}{{b}^{3}}}+{\frac {{x}^{3}}{3\,{b}^{2}}}-{\frac {{a}^{4}}{{b}^{5} \left(bx+a \right) }}-4\,{\frac {{a}^{3}\ln \left(bx+a \right) }{{b}^{5}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^2,x)
```

```
[Out] 3*a^2*x/b^4-a*x^2/b^3+1/3*x^3/b^2-a^4/b^5/(b*x+a)-4*a^3*ln(b*x+a)
/b^5
```

Maxima [A] time = 1.3569, size = 80, normalized size = 1.38

$$-\frac{a^{4}}{b^{6} x + a b^{5}} - \frac{4 \, a^{3} \log\left(b x + a\right)}{b^{5}} + \frac{b^{2} x^{3} - 3 \, a b x^{2} + 9 \, a^{2} x}{3 \, b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -a^4/(b^6*x + a*b^5) - 4*a^3*log(b*x + a)/b^5 + 1/3*(b^2*x^3 - 3*
a*b*x^2 + 9*a^2*x)/b^4
```

Fricas [A] time = 0.194377, size = 99, normalized size = 1.71

$$\frac{b^{4} x^{4} - 2 \, a b^{3} x^{3} + 6 \, a^{2} b^{2} x^{2} + 9 \, a^{3} b x - 3 \, a^{4} - 12 \,{\left (a^{3} b x + a^{4}\right)} \log\left (b x + a\right)}{3 \,{\left (b^{6} x + a b^{5}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/3*(b^4*x^4 - 2*a*b^3*x^3 + 6*a^2*b^2*x^2 + 9*a^3*b*x - 3*a^4 -
12*(a^3*b*x + a^4)*log(b*x + a))/(b^6*x + a*b^5)
```

Sympy [A] time = 1.41476, size = 54, normalized size = 0.93

$$-\frac{a^4}{ab^5+b^6x}-\frac{4a^3\log{(a+bx)}}{b^5}+\frac{3a^2x}{b^4}-\frac{ax^2}{b^3}+\frac{x^3}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**2,x)
```

```
[Out] -a**4/(a*b**5 + b**6*x) - 4*a**3*log(a + b*x)/b**5 + 3*a**2*x/b**
4 - a*x**2/b**3 + x**3/(3*b**2)
```

GIAC/XCAS [A] time = 0.212805, size = 107, normalized size = 1.84

$$-\frac{(bx+a)^3\left(\frac{6\,a}{bx+a}-\frac{18\,a^2}{(bx+a)^2}-1\right)}{3\,b^5}+\frac{4\,a^3\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^5}-\frac{a^4}{(bx+a)b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/3*(b*x + a)^3*(6*a/(b*x + a) - 18*a^2/(b*x + a)^2 - 1)/b^5 + 4
*a^3*ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b^5 - a^4/((b*x + a)*b
^5)
```

3.171 $\int \frac{x^3}{(a+bx)^2}\,dx$

Optimal. Leaf size=46

$$\frac{a^3}{b^4(a+bx)}+\frac{3a^2\log(a+bx)}{b^4}-\frac{2ax}{b^3}+\frac{x^2}{2b^2}$$

```
[Out] (-2*a*x)/b^3 + x^2/(2*b^2) + a^3/(b^4*(a + b*x)) + (3*a^2*Log[a +
 b*x])/b^4
```

Rubi [A] time = 0.0582561, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3}{b^4(a+bx)}+\frac{3a^2\log(a+bx)}{b^4}-\frac{2ax}{b^3}+\frac{x^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^2,x]
```

```
[Out] (-2*a*x)/b^3 + x^2/(2*b^2) + a^3/(b^4*(a + b*x)) + (3*a^2*Log[a +
 b*x])/b^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3}{b^4\,(a+bx)}+\frac{3a^2\log\,(a+bx)}{b^4}-\frac{2ax}{b^3}+\frac{\int x\,dx}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**2,x)
```

```
[Out] a**3/(b**4*(a + b*x)) + 3*a**2*log(a + b*x)/b**4 - 2*a*x/b**3 + I
ntegral(x, x)/b**2
```

Mathematica [A] time = 0.0268376, size = 43, normalized size = 0.93

$$\frac{\frac{2a^3}{a+bx}+6a^2\log(a+bx)-4abx+b^2x^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^2,x]
```

```
[Out] (-4*a*b*x + b^2*x^2 + (2*a^3)/(a + b*x) + 6*a^2*Log[a + b*x])/(2*
b^4)
```

Maple [A] time = 0.01, size = 45, normalized size = 1.

$$-2\,{\frac{ax}{{b}^{3}}}+{\frac{{x}^{2}}{2\,{b}^{2}}}+{\frac{{a}^{3}}{{b}^{4} \left(bx+a \right) }}+3\,{\frac{{a}^{2}\ln \left(bx+a \right) }{{b}^{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^2,x)
```

```
[Out] -2*a*x/b^3+1/2*x^2/b^2+a^3/b^4/(b*x+a)+3*a^2*ln(b*x+a)/b^4
```

Maxima [A] time = 1.35873, size = 63, normalized size = 1.37

$$\frac{a^{3}}{b^{5} x + a b^{4}} + \frac{3 \, a^{2} \log\left(b x + a\right)}{b^{4}} + \frac{b x^{2} - 4 \, a x}{2 \, b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] a^3/(b^5*x + a*b^4) + 3*a^2*log(b*x + a)/b^4 + 1/2*(b*x^2 - 4*a*x
)/b^3
```

Fricas [A] time = 0.191224, size = 84, normalized size = 1.83

$$\frac{b^{3} x^{3} - 3 \, a b^{2} x^{2} - 4 \, a^{2} b x + 2 \, a^{3} + 6 \, {\left(a^{2} b x + a^{3}\right)} \log\left(b x + a\right)}{2 \,{\left(b^{5} x + a b^{4}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*x^3 - 3*a*b^2*x^2 - 4*a^2*b*x + 2*a^3 + 6*(a^2*b*x + a^3
)*log(b*x + a))/(b^5*x + a*b^4)
```

Sympy [A] time = 1.31883, size = 44, normalized size = 0.96

$$\frac{a^3}{ab^4 + b^5x} + \frac{3a^2 \log{(a + bx)}}{b^4} - \frac{2ax}{b^3} + \frac{x^2}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**2,x)
```

```
[Out] a**3/(a*b**4 + b**5*x) + 3*a**2*log(a + b*x)/b**4 - 2*a*x/b**3 +
x**2/(2*b**2)
```

GIAC/XCAS [A] time = 0.211341, size = 89, normalized size = 1.93

$$-\frac{(bx+a)^2\left(\frac{6\,a}{bx+a}-1\right)}{2\,b^4} - \frac{3\,a^2 \ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^4} + \frac{a^3}{(bx+a)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(b*x + a)^2*(6*a/(b*x + a) - 1)/b^4 - 3*a^2*ln(abs(b*x + a)/
((b*x + a)^2*abs(b)))/b^4 + a^3/((b*x + a)*b^4)
```

3.172 $\int \frac{x^2}{(a+bx)^2} dx$

Optimal. Leaf size=33

$$-\frac{a^2}{b^3(a+bx)}-\frac{2a\log(a+bx)}{b^3}+\frac{x}{b^2}$$

```
[Out] x/b^2 - a^2/(b^3*(a + b*x)) - (2*a*Log[a + b*x])/b^3
```

Rubi [A] time = 0.0416701, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^2}{b^3(a+bx)}-\frac{2a\log(a+bx)}{b^3}+\frac{x}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^2,x]

[Out] x/b^2 - a^2/(b^3*(a + b*x)) - (2*a*Log[a + b*x])/b^3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2}{b^3\left(a+bx\right)}-\frac{2a\log\left(a+bx\right)}{b^3}+\int\frac{1}{b^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**2,x)

[Out] -a**2/(b**3*(a + b*x)) - 2*a*log(a + b*x)/b**3 + Integral(b**(-2)
, x)
```

Mathematica [A] time = 0.0198876, size = 29, normalized size = 0.88

$$\frac{-\frac{a^2}{a+bx}-2a\log(a+bx)+bx}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^2,x]
```

```
[Out] (b*x - a^2/(a + b*x) - 2*a*Log[a + b*x])/b^3
```

Maple [A] time = 0.009, size = 34, normalized size = 1.

$$\frac{x}{b^2} - \frac{a^2}{b^3 (bx + a)} - 2\,\frac{a \ln (bx + a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^2,x)
```

```
[Out] x/b^2-a^2/b^3/(b*x+a)-2*a*ln(b*x+a)/b^3
```

Maxima [A] time = 1.34096, size = 49, normalized size = 1.48

$$-\frac{a^2}{b^4 x + ab^3} + \frac{x}{b^2} - \frac{2\,a \log (bx + a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -a^2/(b^4*x + a*b^3) + x/b^2 - 2*a*log(b*x + a)/b^3
```

Fricas [A] time = 0.194601, size = 63, normalized size = 1.91

$$\frac{b^2 x^2 + abx - a^2 - 2\left(abx + a^2\right) \log (bx + a)}{b^4 x + ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + a*b*x - a^2 - 2*(a*b*x + a^2)*log(b*x + a))/(b^4*x + a
*b^3)
```

Sympy [A] time = 1.29396, size = 31, normalized size = 0.94

$$-\frac{a^2}{ab^3 + b^4 x} - \frac{2a \log (a + bx)}{b^3} + \frac{x}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**2,x)
```

```
[Out] -a**2/(a*b**3 + b**4*x) - 2*a*log(a + b*x)/b**3 + x/b**2
```

GIAC/XCAS [A] time = 0.265744, size = 68, normalized size = 2.06

$$\frac{2\,a\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^3}+\frac{bx+a}{b^3}-\frac{a^2}{(bx+a)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 2*a*ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b^3 + (b*x + a)/b^3 - a
^2/((b*x + a)*b^3)
```

3.173 $\int \frac{x}{(a+bx)^2}\,dx$

Optimal. Leaf size=23

$$\frac{a}{b^2(a+bx)}+\frac{\log(a+bx)}{b^2}$$

```
[Out] a/(b^2*(a + b*x)) + Log[a + b*x]/b^2
```

Rubi [A] time = 0.0289089, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a}{b^2(a+bx)}+\frac{\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^2,x]

[Out] a/(b^2*(a + b*x)) + Log[a + b*x]/b^2
```

Rubi in Sympy [A] time = 5.24035, size = 19, normalized size = 0.83

$$\frac{a}{b^2\left(a+bx\right)}+\frac{\log\left(a+bx\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**2,x)

[Out] a/(b**2*(a + b*x)) + log(a + b*x)/b**2
```

Mathematica [A] time = 0.00917967, size = 20, normalized size = 0.87

$$\frac{\frac{a}{a+bx}+\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^2,x]
```

```
[Out] (a/(a + b*x) + Log[a + b*x])/b^2
```

Maple [A] time = 0.007, size = 24, normalized size = 1.

$$\frac{a}{b^2(bx+a)}+\frac{\ln(bx+a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^2,x)

[Out] a/b^2/(b*x+a)+ln(b*x+a)/b^2
```

Maxima [A] time = 1.32646, size = 35, normalized size = 1.52

$$\frac{a}{b^3x+ab^2}+\frac{\log(bx+a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^2,x, algorithm="maxima")

[Out] a/(b^3*x + a*b^2) + log(b*x + a)/b^2
```

Fricas [A] time = 0.192578, size = 38, normalized size = 1.65

$$\frac{(bx+a)\log(bx+a)+a}{b^3x+ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^2,x, algorithm="fricas")

[Out] ((b*x + a)*log(b*x + a) + a)/(b^3*x + a*b^2)
```

Sympy [A] time = 1.16168, size = 20, normalized size = 0.87

$$\frac{a}{ab^2+b^3x}+\frac{\log(a+bx)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**2,x)
```

```
[Out] a/(a*b**2 + b**3*x) + log(a + b*x)/b**2
```

GIAC/XCAS [A] time = 0.223441, size = 57, normalized size = 2.48

$$-\frac{\frac{\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b} - \frac{a}{(bx+a)b}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -(ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b - a/((b*x + a)*b))/b
```

3.174 $\int \frac{1}{(a+bx)^2}\,dx$

Optimal. Leaf size=12

$$-\frac{1}{b(a+bx)}$$

```
[Out] -(1/(b*(a + b*x)))
```

Rubi [A] time = 0.00695323, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$-\frac{1}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-2),x]

[Out] -(1/(b*(a + b*x)))
```

Rubi in Sympy [A] time = 1.28131, size = 8, normalized size = 0.67

$$-\frac{1}{b\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2,x)

[Out] -1/(b*(a + b*x))
```

Mathematica [A] time = 0.00343662, size = 12, normalized size = 1.

$$-\frac{1}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-2),x]
```

```
[Out] -(1/(b*(a + b*x)))
```

Maple [A] time = 0.001, size = 13, normalized size = 1.1

$$-\frac{1}{b\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^2,x)
```

```
[Out] -1/b/(b*x+a)
```

Maxima [A] time = 1.38086, size = 16, normalized size = 1.33

$$-\frac{1}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-2),x, algorithm="maxima")
```

```
[Out] -1/((b*x + a)*b)
```

Fricas [A] time = 0.18573, size = 18, normalized size = 1.5

$$-\frac{1}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-2),x, algorithm="fricas")
```

```
[Out] -1/(b^2*x + a*b)
```

Sympy [A] time = 1.12607, size = 10, normalized size = 0.83

$$-\frac{1}{ab+b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2,x)
```

```
[Out] -1/(a*b + b**2*x)
```

GIAC/XCAS [A] time = 0.209959, size = 16, normalized size = 1.33

$$-\frac{1}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-2),x, algorithm="giac")
```

```
[Out] -1/((b*x + a)*b)
```

3.175 $\int \frac{1}{x(a+bx)^2}\,dx$

Optimal. Leaf size=29

$$-\frac{\log(a+bx)}{a^2}+\frac{\log(x)}{a^2}+\frac{1}{a(a+bx)}$$

```
[Out] 1/(a*(a + b*x)) + Log[x]/a^2 - Log[a + b*x]/a^2
```

Rubi [A] time = 0.0336133, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{\log(a+bx)}{a^2}+\frac{\log(x)}{a^2}+\frac{1}{a(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^2),x]
```

```
[Out] 1/(a*(a + b*x)) + Log[x]/a^2 - Log[a + b*x]/a^2
```

Rubi in Sympy [A] time = 6.125, size = 24, normalized size = 0.83

$$\frac{1}{a\left(a+bx\right)}+\frac{\log\left(x\right)}{a^2}-\frac{\log\left(a+bx\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**2,x)
```

```
[Out] 1/(a*(a + b*x)) + log(x)/a**2 - log(a + b*x)/a**2
```

Mathematica [A] time = 0.0210766, size = 24, normalized size = 0.83

$$\frac{\frac{a}{a+bx}-\log(a+bx)+\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^2),x]
```

```
[Out] (a/(a + b*x) + Log[x] - Log[a + b*x])/a^2
```

Maple [A] time = 0.013, size = 30, normalized size = 1.

$$\frac{1}{a\left(bx+a\right)}+\frac{\ln\left(x\right)}{a^{2}}-\frac{\ln\left(bx+a\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^2,x)
```

```
[Out] 1/a/(b*x+a)+ln(x)/a^2-ln(b*x+a)/a^2
```

Maxima [A] time = 1.324, size = 38, normalized size = 1.31

$$\frac{1}{abx+a^{2}}-\frac{\log\left(bx+a\right)}{a^{2}}+\frac{\log\left(x\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x),x, algorithm="maxima")
```

```
[Out] 1/(a*b*x + a^2) - log(b*x + a)/a^2 + log(x)/a^2
```

Fricas [A] time = 0.217118, size = 53, normalized size = 1.83

$$-\frac{\left(bx+a\right)\log\left(bx+a\right)-\left(bx+a\right)\log\left(x\right)-a}{a^{2}bx+a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x),x, algorithm="fricas")
```

```
[Out] -((b*x + a)*log(b*x + a) - (b*x + a)*log(x) - a)/(a^2*b*x + a^3)
```

Sympy [A] time = 1.35745, size = 22, normalized size = 0.76

$$\frac{1}{a^{2}+abx}+\frac{\log\left(x\right)-\log\left(\frac{a}{b}+x\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**2,x)
```

```
[Out] 1/(a**2 + a*b*x) + (log(x) - log(a/b + x))/a**2
```

GIAC/XCAS [A] time = 0.216764, size = 51, normalized size = 1.76

$$b\left(\frac{\ln\left(\left|-\frac{a}{bx+a}+1\right|\right)}{a^2b}+\frac{1}{(bx+a)ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x),x, algorithm="giac")
```

```
[Out] b*(ln(abs(-a/(b*x + a) + 1))/(a^2*b) + 1/((b*x + a)*a*b))
```

3.176 $\int \frac{1}{x^2(a+bx)^2}\,dx$

Optimal. Leaf size=42

$$-\frac{2b\log(x)}{a^3}+\frac{2b\log(a+bx)}{a^3}-\frac{b}{a^2(a+bx)}-\frac{1}{a^2x}$$

```
[Out] -(1/(a^2*x)) - b/(a^2*(a + b*x)) - (2*b*Log[x])/a^3 + (2*b*Log[a
+ b*x])/a^3
```

Rubi [A] time = 0.0489097, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{2b\log(x)}{a^3}+\frac{2b\log(a+bx)}{a^3}-\frac{b}{a^2(a+bx)}-\frac{1}{a^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^2),x]
```

```
[Out] -(1/(a^2*x)) - b/(a^2*(a + b*x)) - (2*b*Log[x])/a^3 + (2*b*Log[a
+ b*x])/a^3
```

Rubi in Sympy [A] time = 8.45152, size = 39, normalized size = 0.93

$$-\frac{b}{a^2(a+bx)}-\frac{1}{a^2x}-\frac{2b\log(x)}{a^3}+\frac{2b\log(a+bx)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**2,x)
```

```
[Out] -b/(a**2*(a + b*x)) - 1/(a**2*x) - 2*b*log(x)/a**3 + 2*b*log(a +
b*x)/a**3
```

Mathematica [A] time = 0.0814997, size = 35, normalized size = 0.83

$$-\frac{a\left(\frac{b}{a+bx}+\frac{1}{x}\right)-2b\log(a+bx)+2b\log(x)}{a^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^2),x]
```

```
[Out] -((a*(x^(-1) + b/(a + b*x)) + 2*b*Log[x] - 2*b*Log[a + b*x])/a^3)
```

Maple [A] time = 0.014, size = 43, normalized size = 1.

$$-\frac{1}{a^2x} - \frac{b}{a^2(bx+a)} - 2\,\frac{b\ln(x)}{a^3} + 2\,\frac{b\ln(bx+a)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^2,x)
```

```
[Out] -1/a^2/x-b/a^2/(b*x+a)-2*b*ln(x)/a^3+2*b*ln(b*x+a)/a^3
```

Maxima [A] time = 1.36734, size = 61, normalized size = 1.45

$$-\frac{2\,bx+a}{a^2bx^2+a^3x} + \frac{2\,b\log(bx+a)}{a^3} - \frac{2\,b\log(x)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^2),x, algorithm="maxima")
```

```
[Out] -(2*b*x + a)/(a^2*b*x^2 + a^3*x) + 2*b*log(b*x + a)/a^3 - 2*b*log
(x)/a^3
```

Fricas [A] time = 0.213742, size = 85, normalized size = 2.02

$$-\frac{2\,abx+a^2-2\left(b^2x^2+abx\right)\log(bx+a)+2\left(b^2x^2+abx\right)\log(x)}{a^3bx^2+a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^2),x, algorithm="fricas")
```

```
[Out] -(2*a*b*x + a^2 - 2*(b^2*x^2 + a*b*x)*log(b*x + a) + 2*(b^2*x^2 +
 a*b*x)*log(x))/(a^3*b*x^2 + a^4*x)
```

Sympy [A] time = 1.57837, size = 36, normalized size = 0.86

$$-\frac{a+2bx}{a^3x+a^2bx^2}+\frac{2b\left(-\log\left(x\right)+\log\left(\frac{a}{b}+x\right)\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**2,x)
```

```
[Out] -(a + 2*b*x)/(a**3*x + a**2*b*x**2) + 2*b*(-log(x) + log(a/b + x)
)/a**3
```

GIAC/XCAS [A] time = 0.212444, size = 70, normalized size = 1.67

$$-\frac{2\,b\ln\left(\left|-\frac{a}{bx+a}+1\right|\right)}{a^3}-\frac{b}{(bx+a)a^2}+\frac{b}{a^3\left(\frac{a}{bx+a}-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^2),x, algorithm="giac")
```

```
[Out] -2*b*ln(abs(-a/(b*x + a) + 1))/a^3 - b/((b*x + a)*a^2) + b/(a^3*(
a/(b*x + a) - 1))
```

3.177 $\int \frac{1}{x^3(a+bx)^2}\,dx$

Optimal. Leaf size=58

$$\frac{3b^2\log(x)}{a^4}-\frac{3b^2\log(a+bx)}{a^4}+\frac{b^2}{a^3(a+bx)}+\frac{2b}{a^3x}-\frac{1}{2a^2x^2}$$

```
[Out] -1/(2*a^2*x^2) + (2*b)/(a^3*x) + b^2/(a^3*(a + b*x)) + (3*b^2*Log
[x])/a^4 - (3*b^2*Log[a + b*x])/a^4
```

Rubi [A] time = 0.0662848, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3b^2\log(x)}{a^4}-\frac{3b^2\log(a+bx)}{a^4}+\frac{b^2}{a^3(a+bx)}+\frac{2b}{a^3x}-\frac{1}{2a^2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^2),x]
```

```
[Out] -1/(2*a^2*x^2) + (2*b)/(a^3*x) + b^2/(a^3*(a + b*x)) + (3*b^2*Log
[x])/a^4 - (3*b^2*Log[a + b*x])/a^4
```

Rubi in Sympy [A] time = 11.2387, size = 56, normalized size = 0.97

$$-\frac{1}{2a^2x^2}+\frac{b^2}{a^3\,(a+bx)}+\frac{2b}{a^3x}+\frac{3b^2\log{(x)}}{a^4}-\frac{3b^2\log{(a+bx)}}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**2,x)
```

```
[Out] -1/(2*a**2*x**2) + b**2/(a**3*(a + b*x)) + 2*b/(a**3*x) + 3*b**2*
log(x)/a**4 - 3*b**2*log(a + b*x)/a**4
```

Mathematica [A] time = 0.0897402, size = 53, normalized size = 0.91

$$\frac{a\left(\frac{2b^2}{a+bx}-\frac{a}{x^2}+\frac{4b}{x}\right)-6b^2\log(a+bx)+6b^2\log(x)}{2a^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^2),x]
```

```
[Out] (a*(-(a/x^2) + (4*b)/x + (2*b^2)/(a + b*x)) + 6*b^2*Log[x] - 6*b^
2*Log[a + b*x])/(2*a^4)
```

Maple [A] time = 0.015, size = 57, normalized size = 1.

$$-\frac{1}{2\,a^2x^2}+2\,\frac{b}{a^3x}+\frac{b^2}{a^3\,(bx+a)}+3\,\frac{b^2\ln(x)}{a^4}-3\,\frac{b^2\ln(bx+a)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^2,x)
```

```
[Out] -1/2/a^2/x^2+2*b/a^3/x+b^2/a^3/(b*x+a)+3*b^2*ln(x)/a^4-3*b^2*ln(b
*x+a)/a^4
```

Maxima [A] time = 1.32573, size = 86, normalized size = 1.48

$$\frac{6\,b^2x^2+3\,abx-a^2}{2\,(a^3bx^3+a^4x^2)}-\frac{3\,b^2\log(bx+a)}{a^4}+\frac{3\,b^2\log(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^3),x, algorithm="maxima")
```

```
[Out] 1/2*(6*b^2*x^2 + 3*a*b*x - a^2)/(a^3*b*x^3 + a^4*x^2) - 3*b^2*log
(b*x + a)/a^4 + 3*b^2*log(x)/a^4
```

Fricas [A] time = 0.212616, size = 116, normalized size = 2.

$$\frac{6\,ab^2x^2+3\,a^2bx-a^3-6\left(b^3x^3+ab^2x^2\right)\log(bx+a)+6\left(b^3x^3+ab^2x^2\right)\log(x)}{2\,(a^4bx^3+a^5x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^3),x, algorithm="fricas")
```

```
[Out] 1/2*(6*a*b^2*x^2 + 3*a^2*b*x - a^3 - 6*(b^3*x^3 + a*b^2*x^2)*log(
b*x + a) + 6*(b^3*x^3 + a*b^2*x^2)*log(x))/(a^4*b*x^3 + a^5*x^2)
```

Sympy [A] time = 1.72449, size = 54, normalized size = 0.93

$$\frac{-a^2 + 3abx + 6b^2x^2}{2a^4x^2 + 2a^3bx^3} + \frac{3b^2\left(\log\left(x\right) - \log\left(\frac{a}{b} + x\right)\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**2,x)
```

```
[Out] (-a**2 + 3*a*b*x + 6*b**2*x**2)/(2*a**4*x**2 + 2*a**3*b*x**3) + 3
*b**2*(log(x) - log(a/b + x))/a**4
```

GIAC/XCAS [A] time = 0.214086, size = 100, normalized size = 1.72

$$\frac{3\,b^2\ln\left(\left|-\frac{a}{bx+a} + 1\right|\right)}{a^4} + \frac{b^2}{(bx+a)a^3} - \frac{\frac{6\,ab^2}{bx+a} - 5\,b^2}{2\,a^4\left(\frac{a}{bx+a} - 1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^3),x, algorithm="giac")
```

```
[Out] 3*b^2*ln(abs(-a/(b*x + a) + 1))/a^4 + b^2/((b*x + a)*a^3) - 1/2*(
6*a*b^2/(b*x + a) - 5*b^2)/(a^4*(a/(b*x + a) - 1)^2)
```

3.178 $\int \frac{1}{x^4(a+bx)^2}\,dx$

Optimal. Leaf size=69

$$-\frac{4b^3\log(x)}{a^5}+\frac{4b^3\log(a+bx)}{a^5}-\frac{b^3}{a^4(a+bx)}-\frac{3b^2}{a^4x}+\frac{b}{a^3x^2}-\frac{1}{3a^2x^3}$$

```
[Out] -1/(3*a^2*x^3) + b/(a^3*x^2) - (3*b^2)/(a^4*x) - b^3/(a^4*(a + b*
x)) - (4*b^3*Log[x])/a^5 + (4*b^3*Log[a + b*x])/a^5
```

Rubi [A] time = 0.0793353, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{4b^3\log(x)}{a^5}+\frac{4b^3\log(a+bx)}{a^5}-\frac{b^3}{a^4(a+bx)}-\frac{3b^2}{a^4x}+\frac{b}{a^3x^2}-\frac{1}{3a^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(a + b*x)^2),x]
```

```
[Out] -1/(3*a^2*x^3) + b/(a^3*x^2) - (3*b^2)/(a^4*x) - b^3/(a^4*(a + b*
x)) - (4*b^3*Log[x])/a^5 + (4*b^3*Log[a + b*x])/a^5
```

Rubi in Sympy [A] time = 12.725, size = 66, normalized size = 0.96

$$-\frac{1}{3a^2x^3}+\frac{b}{a^3x^2}-\frac{b^3}{a^4\left(a+bx\right)}-\frac{3b^2}{a^4x}-\frac{4b^3\log\left(x\right)}{a^5}+\frac{4b^3\log\left(a+bx\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a)**2,x)
```

```
[Out] -1/(3*a**2*x**3) + b/(a**3*x**2) - b**3/(a**4*(a + b*x)) - 3*b**2
/(a**4*x) - 4*b**3*log(x)/a**5 + 4*b**3*log(a + b*x)/a**5
```

Mathematica [A] time = 0.0893661, size = 66, normalized size = 0.96

$$-\frac{\frac{a\left(a^3-2a^2bx+6ab^2x^2+12b^3x^3\right)}{x^3(a+bx)}-12b^3\log(a+bx)+12b^3\log(x)}{3a^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(a + b*x)^2),x]
```

```
[Out] -((a*(a^3 - 2*a^2*b*x + 6*a*b^2*x^2 + 12*b^3*x^3))/(x^3*(a + b*x)
) + 12*b^3*Log[x] - 12*b^3*Log[a + b*x])/(3*a^5)
```

Maple [A] time = 0.016, size = 68, normalized size = 1.

$$-\frac{1}{3\,a^2x^3}+\frac{b}{a^3x^2}-3\,\frac{b^2}{a^4x}-\frac{b^3}{a^4\,(bx+a)}-4\,\frac{b^3\ln(x)}{a^5}+4\,\frac{b^3\ln(bx+a)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a)^2,x)
```

```
[Out] -1/3/a^2/x^3+b/a^3/x^2-3*b^2/a^4/x-b^3/a^4/(b*x+a)-4*b^3*ln(x)/a^
5+4*b^3*ln(b*x+a)/a^5
```

Maxima [A] time = 1.37126, size = 99, normalized size = 1.43

$$-\frac{12\,b^3x^3+6\,ab^2x^2-2\,a^2bx+a^3}{3\,(a^4bx^4+a^5x^3)}+\frac{4\,b^3\log(bx+a)}{a^5}-\frac{4\,b^3\log(x)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^4),x, algorithm="maxima")
```

```
[Out] -1/3*(12*b^3*x^3 + 6*a*b^2*x^2 - 2*a^2*b*x + a^3)/(a^4*b*x^4 + a^
5*x^3) + 4*b^3*log(b*x + a)/a^5 - 4*b^3*log(x)/a^5
```

Fricas [A] time = 0.208677, size = 128, normalized size = 1.86

$$-\frac{12\,ab^3x^3+6\,a^2b^2x^2-2\,a^3bx+a^4-12\,\left(b^4x^4+ab^3x^3\right)\log(bx+a)+12\,\left(b^4x^4+ab^3x^3\right)\log(x)}{3\,(a^5bx^4+a^6x^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^4),x, algorithm="fricas")
```

```
[Out] -1/3*(12*a*b^3*x^3 + 6*a^2*b^2*x^2 - 2*a^3*b*x + a^4 - 12*(b^4*x^
4 + a*b^3*x^3)*log(b*x + a) + 12*(b^4*x^4 + a*b^3*x^3)*log(x))/(a
^5*b*x^4 + a^6*x^3)
```

Sympy [A] time = 1.84959, size = 66, normalized size = 0.96

$$-\frac{a^{3}-2a^{2}bx+6ab^{2}x^{2}+12b^{3}x^{3}}{3a^{5}x^{3}+3a^{4}bx^{4}}+\frac{4b^{3}\left(-\log\left(x\right)+\log\left(\frac{a}{b}+x\right)\right)}{a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a)**2,x)
```

```
[Out] -(a**3 - 2*a**2*b*x + 6*a*b**2*x**2 + 12*b**3*x**3)/(3*a**5*x**3
+ 3*a**4*b*x**4) + 4*b**3*(-log(x) + log(a/b + x))/a**5
```

GIAC/XCAS [A] time = 0.231857, size = 122, normalized size = 1.77

$$-\frac{4\,b^{3}\ln\left(\left|-\frac{a}{bx+a}+1\right|\right)}{a^{5}}-\frac{b^{3}}{(bx+a)a^{4}}-\frac{\frac{30\,ab^{3}}{bx+a}-\frac{18\,a^{2}b^{3}}{(bx+a)^{2}}-13\,b^{3}}{3\,a^{5}\left(\frac{a}{bx+a}-1\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^4),x, algorithm="giac")
```

```
[Out] -4*b^3*ln(abs(-a/(b*x + a) + 1))/a^5 - b^3/((b*x + a)*a^4) - 1/3*
(30*a*b^3/(b*x + a) - 18*a^2*b^3/(b*x + a)^2 - 13*b^3)/(a^5*(a/(b
*x + a) - 1)^3)
```

3.179 $\int \frac{1}{x^5(a+bx)^2}\,dx$

Optimal. Leaf size=84

$$\frac{5b^4\log(x)}{a^6}-\frac{5b^4\log(a+bx)}{a^6}+\frac{b^4}{a^5(a+bx)}+\frac{4b^3}{a^5x}-\frac{3b^2}{2a^4x^2}+\frac{2b}{3a^3x^3}-\frac{1}{4a^2x^4}$$

```
[Out] -1/(4*a^2*x^4) + (2*b)/(3*a^3*x^3) - (3*b^2)/(2*a^4*x^2) + (4*b^3
)/(a^5*x) + b^4/(a^5*(a + b*x)) + (5*b^4*Log[x])/a^6 - (5*b^4*Log
[a + b*x])/a^6
```

Rubi [A] time = 0.0946695, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{5b^4\log(x)}{a^6}-\frac{5b^4\log(a+bx)}{a^6}+\frac{b^4}{a^5(a+bx)}+\frac{4b^3}{a^5x}-\frac{3b^2}{2a^4x^2}+\frac{2b}{3a^3x^3}-\frac{1}{4a^2x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(a + b*x)^2),x]
```

```
[Out] -1/(4*a^2*x^4) + (2*b)/(3*a^3*x^3) - (3*b^2)/(2*a^4*x^2) + (4*b^3
)/(a^5*x) + b^4/(a^5*(a + b*x)) + (5*b^4*Log[x])/a^6 - (5*b^4*Log
[a + b*x])/a^6
```

Rubi in Sympy [A] time = 15.5668, size = 83, normalized size = 0.99

$$-\frac{1}{4a^2x^4}+\frac{2b}{3a^3x^3}-\frac{3b^2}{2a^4x^2}+\frac{b^4}{a^5\left(a+bx\right)}+\frac{4b^3}{a^5x}+\frac{5b^4\log\left(x\right)}{a^6}-\frac{5b^4\log\left(a+bx\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(b*x+a)**2,x)
```

```
[Out] -1/(4*a**2*x**4) + 2*b/(3*a**3*x**3) - 3*b**2/(2*a**4*x**2) + b**
4/(a**5*(a + b*x)) + 4*b**3/(a**5*x) + 5*b**4*log(x)/a**6 - 5*b**
4*log(a + b*x)/a**6
```

Mathematica [A] time = 0.0794422, size = 79, normalized size = 0.94

$$\frac{\frac{a\left(-3a^4+5a^3bx-10a^2b^2x^2+30ab^3x^3+60b^4x^4\right)}{x^4(a+bx)}-60b^4\log(a+bx)+60b^4\log(x)}{12a^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(a + b*x)^2),x]
```

```
[Out] ((a*(-3*a^4 + 5*a^3*b*x - 10*a^2*b^2*x^2 + 30*a*b^3*x^3 + 60*b^4*
x^4))/(x^4*(a + b*x)) + 60*b^4*Log[x] - 60*b^4*Log[a + b*x])/(12*
a^6)
```

Maple [A] time = 0.017, size = 79, normalized size = 0.9

$$-\frac{1}{4\,a^2x^4}+\frac{2\,b}{3\,a^3x^3}-\frac{3\,b^2}{2\,a^4x^2}+4\,\frac{b^3}{a^5x}+\frac{b^4}{a^5\,(bx+a)}+5\,\frac{b^4\ln(x)}{a^6}-5\,\frac{b^4\ln(bx+a)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(b*x+a)^2,x)
```

```
[Out] -1/4/a^2/x^4+2/3*b/a^3/x^3-3/2*b^2/a^4/x^2+4*b^3/a^5/x+b^4/a^5/(b
*x+a)+5*b^4*ln(x)/a^6-5*b^4*ln(b*x+a)/a^6
```

Maxima [A] time = 1.32318, size = 116, normalized size = 1.38

$$\frac{60\,b^4x^4+30\,ab^3x^3-10\,a^2b^2x^2+5\,a^3bx-3\,a^4}{12\,(a^5bx^5+a^6x^4)}-\frac{5\,b^4\log(bx+a)}{a^6}+\frac{5\,b^4\log(x)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^5),x, algorithm="maxima")
```

```
[Out] 1/12*(60*b^4*x^4 + 30*a*b^3*x^3 - 10*a^2*b^2*x^2 + 5*a^3*b*x - 3*
a^4)/(a^5*b*x^5 + a^6*x^4) - 5*b^4*log(b*x + a)/a^6 + 5*b^4*log(x
)/a^6
```

Fricas [A] time = 0.208307, size = 146, normalized size = 1.74

$$\frac{60\,ab^4x^4+30\,a^2b^3x^3-10\,a^3b^2x^2+5\,a^4bx-3\,a^5-60\left(b^5x^5+ab^4x^4\right)\log(bx+a)+60\left(b^5x^5+ab^4x^4\right)\log(x)}{12\,(a^6bx^5+a^7x^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^5),x, algorithm="fricas")
```

```
[Out] 1/12*(60*a*b^4*x^4 + 30*a^2*b^3*x^3 - 10*a^3*b^2*x^2 + 5*a^4*b*x
- 3*a^5 - 60*(b^5*x^5 + a*b^4*x^4)*log(b*x + a) + 60*(b^5*x^5 + a
*b^4*x^4)*log(x))/(a^6*b*x^5 + a^7*x^4)
```

Sympy [A] time = 2.02078, size = 80, normalized size = 0.95

$$\frac{-3a^4 + 5a^3bx - 10a^2b^2x^2 + 30ab^3x^3 + 60b^4x^4}{12a^6x^4 + 12a^5bx^5} + \frac{5b^4\left(\log(x) - \log\left(\frac{a}{b} + x\right)\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(b*x+a)**2,x)
```

```
[Out] (-3*a**4 + 5*a**3*b*x - 10*a**2*b**2*x**2 + 30*a*b**3*x**3 + 60*b
**4*x**4)/(12*a**6*x**4 + 12*a**5*b*x**5) + 5*b**4*(log(x) - log(
a/b + x))/a**6
```

GIAC/XCAS [A] time = 0.214089, size = 140, normalized size = 1.67

$$\frac{5\,b^4\ln\left(\left|-\frac{a}{bx+a} + 1\right|\right)}{a^6} + \frac{b^4}{(bx+a)a^5} - \frac{\frac{260\,ab^4}{bx+a} - \frac{300\,a^2b^4}{(bx+a)^2} + \frac{120\,a^3b^4}{(bx+a)^3} - 77\,b^4}{12\,a^6\left(\frac{a}{bx+a} - 1\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^5),x, algorithm="giac")
```

```
[Out] 5*b^4*ln(abs(-a/(b*x + a) + 1))/a^6 + b^4/((b*x + a)*a^5) - 1/12*
(260*a*b^4/(b*x + a) - 300*a^2*b^4/(b*x + a)^2 + 120*a^3*b^4/(b*x
 + a)^3 - 77*b^4)/(a^6*(a/(b*x + a) - 1)^4)
```

3.180 $\int \frac{x^7}{(a+bx)^3}\,dx$

Optimal. Leaf size=99

$$\frac{a^7}{2b^8(a+bx)^2}-\frac{7a^6}{b^8(a+bx)}-\frac{21a^5\log(a+bx)}{b^8}+\frac{15a^4x}{b^7}-\frac{5a^3x^2}{b^6}+\frac{2a^2x^3}{b^5}-\frac{3ax^4}{4b^4}+\frac{x^5}{5b^3}$$

```
[Out] (15*a^4*x)/b^7 - (5*a^3*x^2)/b^6 + (2*a^2*x^3)/b^5 - (3*a*x^4)/(4
*b^4) + x^5/(5*b^3) + a^7/(2*b^8*(a + b*x)^2) - (7*a^6)/(b^8*(a +
 b*x)) - (21*a^5*Log[a + b*x])/b^8
```

Rubi [A] time = 0.145035, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7}{2b^8(a+bx)^2}-\frac{7a^6}{b^8(a+bx)}-\frac{21a^5\log(a+bx)}{b^8}+\frac{15a^4x}{b^7}-\frac{5a^3x^2}{b^6}+\frac{2a^2x^3}{b^5}-\frac{3ax^4}{4b^4}+\frac{x^5}{5b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7/(a + b*x)^3,x]
```

```
[Out] (15*a^4*x)/b^7 - (5*a^3*x^2)/b^6 + (2*a^2*x^3)/b^5 - (3*a*x^4)/(4
*b^4) + x^5/(5*b^3) + a^7/(2*b^8*(a + b*x)^2) - (7*a^6)/(b^8*(a +
 b*x)) - (21*a^5*Log[a + b*x])/b^8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^7}{2b^8\left(a+bx\right)^2}-\frac{7a^6}{b^8\left(a+bx\right)}-\frac{21a^5\log\left(a+bx\right)}{b^8}+\frac{15a^4x}{b^7}-\frac{10a^3\int x\,dx}{b^6}+\frac{2a^2x^3}{b^5}-\frac{3ax^4}{4b^4}+\frac{x^5}{5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7/(b*x+a)**3,x)
```

```
[Out] a**7/(2*b**8*(a + b*x)**2) - 7*a**6/(b**8*(a + b*x)) - 21*a**5*lo
g(a + b*x)/b**8 + 15*a**4*x/b**7 - 10*a**3*Integral(x, x)/b**6 +
2*a**2*x**3/b**5 - 3*a*x**4/(4*b**4) + x**5/(5*b**3)
```

Mathematica [A] time = 0.0450533, size = 89, normalized size = 0.9

$$\frac{\frac{10a^7}{(a+bx)^2}-\frac{140a^6}{a+bx}-420a^5\log(a+bx)+300a^4bx-100a^3b^2x^2+40a^2b^3x^3-15ab^4x^4+4b^5x^5}{20b^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7/(a + b*x)^3,x]
```

```
[Out] (300*a^4*b*x - 100*a^3*b^2*x^2 + 40*a^2*b^3*x^3 - 15*a*b^4*x^4 +
4*b^5*x^5 + (10*a^7)/(a + b*x)^2 - (140*a^6)/(a + b*x) - 420*a^5*
Log[a + b*x])/(20*b^8)
```

Maple [A] time = 0.011, size = 94, normalized size = 1.

$$15\,{\frac{{a}^{4}x}{{b}^{7}}}-5\,{\frac{{a}^{3}{x}^{2}}{{b}^{6}}}+2\,{\frac{{a}^{2}{x}^{3}}{{b}^{5}}}-{\frac{3\,a{x}^{4}}{4\,{b}^{4}}}+{\frac{{x}^{5}}{5\,{b}^{3}}}+{\frac{{a}^{7}}{2\,{b}^{8} \left(bx+a \right) ^{2}}}-7\,{\frac{{a}^{6}}{{b}^{8} \left(bx+a \right) }}-21\,{\frac{{a}^{5}\ln \left(bx+a \right) }{{b}^{8}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7/(b*x+a)^3,x)
```

```
[Out] 15*a^4*x/b^7-5*a^3*x^2/b^6+2*a^2*x^3/b^5-3/4*a*x^4/b^4+1/5*x^5/b^
3+1/2*a^7/b^8/(b*x+a)^2-7*a^6/b^8/(b*x+a)-21*a^5*ln(b*x+a)/b^8
```

Maxima [A] time = 1.33808, size = 139, normalized size = 1.4

$$-\frac{14\,a^{6}bx+13\,a^{7}}{2\,(b^{10}x^{2}+2\,ab^{9}x+a^{2}b^{8})}-\frac{21\,a^{5}\log\left(bx+a\right)}{b^{8}}+\frac{4\,b^{4}x^{5}-15\,ab^{3}x^{4}+40\,a^{2}b^{2}x^{3}-100\,a^{3}bx^{2}+300\,a^{4}x}{20\,b^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(14*a^6*b*x + 13*a^7)/(b^10*x^2 + 2*a*b^9*x + a^2*b^8) - 21*
a^5*log(b*x + a)/b^8 + 1/20*(4*b^4*x^5 - 15*a*b^3*x^4 + 40*a^2*b^
2*x^3 - 100*a^3*b*x^2 + 300*a^4*x)/b^7
```

Fricas [A] time = 0.205087, size = 174, normalized size = 1.76

$$\frac{4\,b^{7}x^{7}-7\,ab^{6}x^{6}+14\,a^{2}b^{5}x^{5}-35\,a^{3}b^{4}x^{4}+140\,a^{4}b^{3}x^{3}+500\,a^{5}b^{2}x^{2}+160\,a^{6}bx-130\,a^{7}-420\,\left(a^{5}b^{2}x^{2}+2\,a^{6}bx+a^{7}\right)\log\left(b\right.}{20\,(b^{10}x^{2}+2\,ab^{9}x+a^{2}b^{8})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*b^7*x^7 - 7*a*b^6*x^6 + 14*a^2*b^5*x^5 - 35*a^3*b^4*x^4 +
 140*a^4*b^3*x^3 + 500*a^5*b^2*x^2 + 160*a^6*b*x - 130*a^7 - 420*
(a^5*b^2*x^2 + 2*a^6*b*x + a^7)*log(b*x + a))/(b^10*x^2 + 2*a*b^9
*x + a^2*b^8)
```

Sympy [A] time = 1.91836, size = 107, normalized size = 1.08

$$-\frac{21a^5\log(a+bx)}{b^8}+\frac{15a^4x}{b^7}-\frac{5a^3x^2}{b^6}+\frac{2a^2x^3}{b^5}-\frac{3ax^4}{4b^4}-\frac{13a^7+14a^6bx}{2a^2b^8+4ab^9x+2b^{10}x^2}+\frac{x^5}{5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7/(b*x+a)**3,x)
```

```
[Out] -21*a**5*log(a + b*x)/b**8 + 15*a**4*x/b**7 - 5*a**3*x**2/b**6 +
2*a**2*x**3/b**5 - 3*a*x**4/(4*b**4) - (13*a**7 + 14*a**6*b*x)/(2
*a**2*b**8 + 4*a*b**9*x + 2*b**10*x**2) + x**5/(5*b**3)
```

GIAC/XCAS [A] time = 0.205329, size = 128, normalized size = 1.29

$$-\frac{21\,a^5\ln(|bx+a|)}{b^8}-\frac{14\,a^6bx+13\,a^7}{2\,(bx+a)^2b^8}+\frac{4\,b^{12}x^5-15\,ab^{11}x^4+40\,a^2b^{10}x^3-100\,a^3b^9x^2+300\,a^4b^8x}{20\,b^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -21*a^5*ln(abs(b*x + a))/b^8 - 1/2*(14*a^6*b*x + 13*a^7)/((b*x +
a)^2*b^8) + 1/20*(4*b^12*x^5 - 15*a*b^11*x^4 + 40*a^2*b^10*x^3 -
100*a^3*b^9*x^2 + 300*a^4*b^8*x)/b^15
```

3.181 $\int \frac{x^6}{(a+bx)^3} dx$

Optimal. Leaf size=86

$$-\frac{a^6}{2b^7(a+bx)^2}+\frac{6a^5}{b^7(a+bx)}+\frac{15a^4\log(a+bx)}{b^7}-\frac{10a^3x}{b^6}+\frac{3a^2x^2}{b^5}-\frac{ax^3}{b^4}+\frac{x^4}{4b^3}$$

```
[Out] (-10*a^3*x)/b^6 + (3*a^2*x^2)/b^5 - (a*x^3)/b^4 + x^4/(4*b^3) - a
^6/(2*b^7*(a + b*x)^2) + (6*a^5)/(b^7*(a + b*x)) + (15*a^4*Log[a
+ b*x])/b^7
```

Rubi [A] time = 0.11741, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^6}{2b^7(a+bx)^2}+\frac{6a^5}{b^7(a+bx)}+\frac{15a^4\log(a+bx)}{b^7}-\frac{10a^3x}{b^6}+\frac{3a^2x^2}{b^5}-\frac{ax^3}{b^4}+\frac{x^4}{4b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6/(a + b*x)^3,x]
```

```
[Out] (-10*a^3*x)/b^6 + (3*a^2*x^2)/b^5 - (a*x^3)/b^4 + x^4/(4*b^3) - a
^6/(2*b^7*(a + b*x)^2) + (6*a^5)/(b^7*(a + b*x)) + (15*a^4*Log[a
+ b*x])/b^7
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^6}{2b^7\left(a+bx\right)^2}+\frac{6a^5}{b^7\left(a+bx\right)}+\frac{15a^4\log\left(a+bx\right)}{b^7}-\frac{10a^3x}{b^6}+\frac{6a^2\int x\,dx}{b^5}-\frac{ax^3}{b^4}+\frac{x^4}{4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6/(b*x+a)**3,x)
```

```
[Out] -a**6/(2*b**7*(a + b*x)**2) + 6*a**5/(b**7*(a + b*x)) + 15*a**4*l
og(a + b*x)/b**7 - 10*a**3*x/b**6 + 6*a**2*Integral(x, x)/b**5 -
a*x**3/b**4 + x**4/(4*b**3)
```

Mathematica [A] time = 0.0426259, size = 77, normalized size = 0.9

$$\frac{-\frac{2a^6}{(a+bx)^2}+\frac{24a^5}{a+bx}+60a^4\log(a+bx)-40a^3bx+12a^2b^2x^2-4ab^3x^3+b^4x^4}{4b^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6/(a + b*x)^3,x]
```

```
[Out] (-40*a^3*b*x + 12*a^2*b^2*x^2 - 4*a*b^3*x^3 + b^4*x^4 - (2*a^6)/(
a + b*x)^2 + (24*a^5)/(a + b*x) + 60*a^4*Log[a + b*x])/(4*b^7)
```

Maple [A] time = 0.011, size = 83, normalized size = 1.

$$-10\,\frac{a^3x}{b^6}+3\,\frac{a^2x^2}{b^5}-\frac{ax^3}{b^4}+\frac{x^4}{4\,b^3}-\frac{a^6}{2\,b^7\,(bx+a)^2}+6\,\frac{a^5}{b^7\,(bx+a)}+15\,\frac{a^4\ln(bx+a)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6/(b*x+a)^3,x)
```

```
[Out] -10*a^3*x/b^6+3*a^2*x^2/b^5-a*x^3/b^4+1/4*x^4/b^3-1/2*a^6/b^7/(b*
x+a)^2+6*a^5/b^7/(b*x+a)+15*a^4*ln(b*x+a)/b^7
```

Maxima [A] time = 1.3369, size = 123, normalized size = 1.43

$$\frac{12\,a^5bx+11\,a^6}{2\,(b^9x^2+2\,ab^8x+a^2b^7)}+\frac{15\,a^4\log(bx+a)}{b^7}+\frac{b^3x^4-4\,ab^2x^3+12\,a^2bx^2-40\,a^3x}{4\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(12*a^5*b*x + 11*a^6)/(b^9*x^2 + 2*a*b^8*x + a^2*b^7) + 15*a^
4*log(b*x + a)/b^7 + 1/4*(b^3*x^4 - 4*a*b^2*x^3 + 12*a^2*b*x^2 -
40*a^3*x)/b^6
```

Fricas [A] time = 0.201567, size = 158, normalized size = 1.84

$$\frac{b^6x^6-2\,ab^5x^5+5\,a^2b^4x^4-20\,a^3b^3x^3-68\,a^4b^2x^2-16\,a^5bx+22\,a^6+60\,\left(a^4b^2x^2+2\,a^5bx+a^6\right)\log(bx+a)}{4\,(b^9x^2+2\,ab^8x+a^2b^7)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(b^6*x^6 - 2*a*b^5*x^5 + 5*a^2*b^4*x^4 - 20*a^3*b^3*x^3 - 68*
a^4*b^2*x^2 - 16*a^5*b*x + 22*a^6 + 60*(a^4*b^2*x^2 + 2*a^5*b*x +
 a^6)*log(b*x + a))/(b^9*x^2 + 2*a*b^8*x + a^2*b^7)
```

Sympy [A] time = 1.84118, size = 92, normalized size = 1.07

$$\frac{15a^4\log{(a+bx)}}{b^7} - \frac{10a^3x}{b^6} + \frac{3a^2x^2}{b^5} - \frac{ax^3}{b^4} + \frac{11a^6+12a^5bx}{2a^2b^7+4ab^8x+2b^9x^2} + \frac{x^4}{4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6/(b*x+a)**3,x)
```

```
[Out] 15*a**4*log(a + b*x)/b**7 - 10*a**3*x/b**6 + 3*a**2*x**2/b**5 - a
*x**3/b**4 + (11*a**6 + 12*a**5*b*x)/(2*a**2*b**7 + 4*a*b**8*x +
2*b**9*x**2) + x**4/(4*b**3)
```

GIAC/XCAS [A] time = 0.204568, size = 112, normalized size = 1.3

$$\frac{15\,a^4\ln{(|bx+a|)}}{b^7} + \frac{12\,a^5bx+11\,a^6}{2\,(bx+a)^2b^7} + \frac{b^9x^4-4\,ab^8x^3+12\,a^2b^7x^2-40\,a^3b^6x}{4\,b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 15*a^4*ln(abs(b*x + a))/b^7 + 1/2*(12*a^5*b*x + 11*a^6)/((b*x + a
)^2*b^7) + 1/4*(b^9*x^4 - 4*a*b^8*x^3 + 12*a^2*b^7*x^2 - 40*a^3*b
^6*x)/b^12
```

3.182 $\int \frac{x^5}{(a+bx)^3} \, dx$

Optimal. Leaf size=77

$$\frac{a^5}{2b^6(a+bx)^2} - \frac{5a^4}{b^6(a+bx)} - \frac{10a^3 \log(a+bx)}{b^6} + \frac{6a^2x}{b^5} - \frac{3ax^2}{2b^4} + \frac{x^3}{3b^3}$$

```
[Out] (6*a^2*x)/b^5 - (3*a*x^2)/(2*b^4) + x^3/(3*b^3) + a^5/(2*b^6*(a +
 b*x)^2) - (5*a^4)/(b^6*(a + b*x)) - (10*a^3*Log[a + b*x])/b^6
```

Rubi [A] time = 0.0987493, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{a^5}{2b^6(a+bx)^2} - \frac{5a^4}{b^6(a+bx)} - \frac{10a^3 \log(a+bx)}{b^6} + \frac{6a^2x}{b^5} - \frac{3ax^2}{2b^4} + \frac{x^3}{3b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^5/(a + b*x)^3,x]
```

```
[Out] (6*a^2*x)/b^5 - (3*a*x^2)/(2*b^4) + x^3/(3*b^3) + a^5/(2*b^6*(a +
 b*x)^2) - (5*a^4)/(b^6*(a + b*x)) - (10*a^3*Log[a + b*x])/b^6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^5}{2b^6 (a+bx)^2} - \frac{5a^4}{b^6 (a+bx)} - \frac{10a^3 \log (a+bx)}{b^6} + \frac{6a^2x}{b^5} - \frac{3a \int x \, dx}{b^4} + \frac{x^3}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**5/(b*x+a)**3,x)
```

```
[Out] a**5/(2*b**6*(a + b*x)**2) - 5*a**4/(b**6*(a + b*x)) - 10*a**3*lo
g(a + b*x)/b**6 + 6*a**2*x/b**5 - 3*a*Integral(x, x)/b**4 + x**3/
(3*b**3)
```

Mathematica [A] time = 0.0475476, size = 67, normalized size = 0.87

$$\frac{\frac{3a^5}{(a+bx)^2} - \frac{30a^4}{a+bx} - 60a^3 \log(a+bx) + 36a^2bx - 9ab^2x^2 + 2b^3x^3}{6b^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(a + b*x)^3,x]
```

```
[Out] (36*a^2*b*x - 9*a*b^2*x^2 + 2*b^3*x^3 + (3*a^5)/(a + b*x)^2 - (30
*a^4)/(a + b*x) - 60*a^3*Log[a + b*x])/(6*b^6)
```

Maple [A] time = 0.01, size = 72, normalized size = 0.9

$$6\,{\frac{{a}^{2}x}{{b}^{5}}}-{\frac{3\,a{x}^{2}}{2\,{b}^{4}}}+{\frac{{x}^{3}}{3\,{b}^{3}}}+{\frac{{a}^{5}}{2\,{b}^{6} \left(bx+a \right) ^{2}}}-5\,{\frac{{a}^{4}}{{b}^{6} \left(bx+a \right) }}-10\,{\frac{{a}^{3}\ln \left(bx+a \right) }{{b}^{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a)^3,x)
```

```
[Out] 6*a^2*x/b^5-3/2*a*x^2/b^4+1/3*x^3/b^3+1/2*a^5/b^6/(b*x+a)^2-5*a^4
/b^6/(b*x+a)-10*a^3*ln(b*x+a)/b^6
```

Maxima [A] time = 1.33174, size = 109, normalized size = 1.42

$$-\frac{10\,a^{4}bx+9\,a^{5}}{2\,\left(b^{8}x^{2}+2\,ab^{7}x+a^{2}b^{6}\right)}-\frac{10\,a^{3}\log\left(bx+a\right)}{b^{6}}+\frac{2\,b^{2}x^{3}-9\,abx^{2}+36\,a^{2}x}{6\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(10*a^4*b*x + 9*a^5)/(b^8*x^2 + 2*a*b^7*x + a^2*b^6) - 10*a^
3*log(b*x + a)/b^6 + 1/6*(2*b^2*x^3 - 9*a*b*x^2 + 36*a^2*x)/b^5
```

Fricas [A] time = 0.202211, size = 144, normalized size = 1.87

$$\frac{2\,b^{5}x^{5}-5\,ab^{4}x^{4}+20\,a^{2}b^{3}x^{3}+63\,a^{3}b^{2}x^{2}+6\,a^{4}bx-27\,a^{5}-60\,\left(a^{3}b^{2}x^{2}+2\,a^{4}bx+a^{5}\right)\log\left(bx+a\right)}{6\,\left(b^{8}x^{2}+2\,ab^{7}x+a^{2}b^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^5*x^5 - 5*a*b^4*x^4 + 20*a^2*b^3*x^3 + 63*a^3*b^2*x^2 +
6*a^4*b*x - 27*a^5 - 60*(a^3*b^2*x^2 + 2*a^4*b*x + a^5)*log(b*x +
```

```
a))/(b^8*x^2 + 2*a*b^7*x + a^2*b^6)
```

Sympy [A] time = 1.76577, size = 83, normalized size = 1.08

$$-\frac{10a^3\log(a+bx)}{b^6}+\frac{6a^2x}{b^5}-\frac{3ax^2}{2b^4}-\frac{9a^5+10a^4bx}{2a^2b^6+4ab^7x+2b^8x^2}+\frac{x^3}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a)**3,x)
```

```
[Out] -10*a**3*log(a + b*x)/b**6 + 6*a**2*x/b**5 - 3*a*x**2/(2*b**4) -
(9*a**5 + 10*a**4*b*x)/(2*a**2*b**6 + 4*a*b**7*x + 2*b**8*x**2) +
 x**3/(3*b**3)
```

GIAC/XCAS [A] time = 0.205916, size = 99, normalized size = 1.29

$$-\frac{10\,a^3\ln(|bx+a|)}{b^6}-\frac{10\,a^4bx+9\,a^5}{2\,(bx+a)^2b^6}+\frac{2\,b^6x^3-9\,ab^5x^2+36\,a^2b^4x}{6\,b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -10*a^3*ln(abs(b*x + a))/b^6 - 1/2*(10*a^4*b*x + 9*a^5)/((b*x + a
)^2*b^6) + 1/6*(2*b^6*x^3 - 9*a*b^5*x^2 + 36*a^2*b^4*x)/b^9
```

3.183 $\int \frac{x^4}{(a+bx)^3}\,dx$

Optimal. Leaf size=64

$$-\frac{a^4}{2b^5(a+bx)^2}+\frac{4a^3}{b^5(a+bx)}+\frac{6a^2\log(a+bx)}{b^5}-\frac{3ax}{b^4}+\frac{x^2}{2b^3}$$

```
[Out] (-3*a*x)/b^4 + x^2/(2*b^3) - a^4/(2*b^5*(a + b*x)^2) + (4*a^3)/(b
^5*(a + b*x)) + (6*a^2*Log[a + b*x])/b^5
```

Rubi [A] time = 0.0783238, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^4}{2b^5(a+bx)^2}+\frac{4a^3}{b^5(a+bx)}+\frac{6a^2\log(a+bx)}{b^5}-\frac{3ax}{b^4}+\frac{x^2}{2b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^3,x]
```

```
[Out] (-3*a*x)/b^4 + x^2/(2*b^3) - a^4/(2*b^5*(a + b*x)^2) + (4*a^3)/(b
^5*(a + b*x)) + (6*a^2*Log[a + b*x])/b^5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^4}{2b^5\,(a+bx)^2}+\frac{4a^3}{b^5\,(a+bx)}+\frac{6a^2\log\,(a+bx)}{b^5}-\frac{3ax}{b^4}+\frac{\int x\,dx}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**3,x)
```

```
[Out] -a**4/(2*b**5*(a + b*x)**2) + 4*a**3/(b**5*(a + b*x)) + 6*a**2*lo
g(a + b*x)/b**5 - 3*a*x/b**4 + Integral(x, x)/b**3
```

Mathematica [A] time = 0.0369782, size = 55, normalized size = 0.86

$$\frac{-\frac{a^4}{(a+bx)^2}+\frac{8a^3}{a+bx}+12a^2\log(a+bx)-6abx+b^2x^2}{2b^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^3,x]
```

```
[Out] (-6*a*b*x + b^2*x^2 - a^4/(a + b*x)^2 + (8*a^3)/(a + b*x) + 12*a^
2*Log[a + b*x])/(2*b^5)
```

Maple [A] time = 0.012, size = 61, normalized size = 1.

$$-3\,\frac{ax}{b^4}+\frac{x^2}{2\,b^3}-\frac{a^4}{2\,b^5\,(bx+a)^2}+4\,\frac{a^3}{b^5\,(bx+a)}+6\,\frac{a^2\ln(bx+a)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^3,x)
```

```
[Out] -3*a*x/b^4+1/2*x^2/b^3-1/2*a^4/b^5/(b*x+a)^2+4*a^3/b^5/(b*x+a)+6*
a^2*ln(b*x+a)/b^5
```

Maxima [A] time = 1.34034, size = 93, normalized size = 1.45

$$\frac{8\,a^3bx+7\,a^4}{2\,(b^7x^2+2\,ab^6x+a^2b^5)}+\frac{6\,a^2\log(bx+a)}{b^5}+\frac{bx^2-6\,ax}{2\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(8*a^3*b*x + 7*a^4)/(b^7*x^2 + 2*a*b^6*x + a^2*b^5) + 6*a^2*l
og(b*x + a)/b^5 + 1/2*(b*x^2 - 6*a*x)/b^4
```

Fricas [A] time = 0.202919, size = 128, normalized size = 2.

$$\frac{b^4x^4-4\,ab^3x^3-11\,a^2b^2x^2+2\,a^3bx+7\,a^4+12\,\left(a^2b^2x^2+2\,a^3bx+a^4\right)\log(bx+a)}{2\,(b^7x^2+2\,ab^6x+a^2b^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*x^4 - 4*a*b^3*x^3 - 11*a^2*b^2*x^2 + 2*a^3*b*x + 7*a^4 +
 12*(a^2*b^2*x^2 + 2*a^3*b*x + a^4)*log(b*x + a))/(b^7*x^2 + 2*a*
b^6*x + a^2*b^5)
```

Sympy [A] time = 1.68173, size = 70, normalized size = 1.09

$$\frac{6a^2\log(a+bx)}{b^5}-\frac{3ax}{b^4}+\frac{7a^4+8a^3bx}{2a^2b^5+4ab^6x+2b^7x^2}+\frac{x^2}{2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**3,x)
```

```
[Out] 6*a**2*log(a + b*x)/b**5 - 3*a*x/b**4 + (7*a**4 + 8*a**3*b*x)/(2*
a**2*b**5 + 4*a*b**6*x + 2*b**7*x**2) + x**2/(2*b**3)
```

GIAC/XCAS [A] time = 0.213824, size = 82, normalized size = 1.28

$$\frac{6\,a^2\ln(|bx+a|)}{b^5}+\frac{b^3x^2-6\,ab^2x}{2\,b^6}+\frac{8\,a^3bx+7\,a^4}{2\,(bx+a)^2b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 6*a^2*ln(abs(b*x + a))/b^5 + 1/2*(b^3*x^2 - 6*a*b^2*x)/b^6 + 1/2*
(8*a^3*b*x + 7*a^4)/((b*x + a)^2*b^5)
```

3.184 $\int \frac{x^3}{(a+bx)^3} dx$

Optimal. Leaf size=50

$$\frac{a^3}{2b^4(a+bx)^2} - \frac{3a^2}{b^4(a+bx)} - \frac{3a\log(a+bx)}{b^4} + \frac{x}{b^3}$$

```
[Out] x/b^3 + a^3/(2*b^4*(a + b*x)^2) - (3*a^2)/(b^4*(a + b*x)) - (3*a*
Log[a + b*x])/b^4
```

Rubi [A] time = 0.0619439, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3}{2b^4(a+bx)^2} - \frac{3a^2}{b^4(a+bx)} - \frac{3a\log(a+bx)}{b^4} + \frac{x}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^3,x]
```

```
[Out] x/b^3 + a^3/(2*b^4*(a + b*x)^2) - (3*a^2)/(b^4*(a + b*x)) - (3*a*
Log[a + b*x])/b^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3}{2b^4\left(a+bx\right)^2} - \frac{3a^2}{b^4\left(a+bx\right)} - \frac{3a\log\left(a+bx\right)}{b^4} + \int \frac{1}{b^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**3,x)
```

```
[Out] a**3/(2*b**4*(a + b*x)**2) - 3*a**2/(b**4*(a + b*x)) - 3*a*log(a
+ b*x)/b**4 + Integral(b**(-3), x)
```

Mathematica [A] time = 0.0651063, size = 40, normalized size = 0.8

$$-\frac{\frac{a^2(5a+6bx)}{(a+bx)^2} + 6a\log(a+bx) - 2bx}{2b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^3,x]
```

```
[Out] -(-2*b*x + (a^2*(5*a + 6*b*x))/(a + b*x)^2 + 6*a*Log[a + b*x])/(2
*b^4)
```

Maple [A] time = 0.01, size = 49, normalized size = 1.

$$\frac{x}{b^3} + \frac{a^3}{2\,b^4\,(bx+a)^2} - 3\,\frac{a^2}{b^4\,(bx+a)} - 3\,\frac{a\ln(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^3,x)
```

```
[Out] x/b^3+1/2*a^3/b^4/(b*x+a)^2-3*a^2/b^4/(b*x+a)-3*a*ln(b*x+a)/b^4
```

Maxima [A] time = 1.33276, size = 77, normalized size = 1.54

$$-\frac{6\,a^2bx + 5\,a^3}{2\,(b^6x^2 + 2\,ab^5x + a^2b^4)} + \frac{x}{b^3} - \frac{3\,a\log(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(6*a^2*b*x + 5*a^3)/(b^6*x^2 + 2*a*b^5*x + a^2*b^4) + x/b^3
- 3*a*log(b*x + a)/b^4
```

Fricas [A] time = 0.201459, size = 112, normalized size = 2.24

$$\frac{2\,b^3x^3 + 4\,ab^2x^2 - 4\,a^2bx - 5\,a^3 - 6\,\left(ab^2x^2 + 2\,a^2bx + a^3\right)\log(bx+a)}{2\,(b^6x^2 + 2\,ab^5x + a^2b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*x^3 + 4*a*b^2*x^2 - 4*a^2*b*x - 5*a^3 - 6*(a*b^2*x^2 +
 2*a^2*b*x + a^3)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)
```

Sympy [A] time = 1.60025, size = 56, normalized size = 1.12

$$-\frac{3a\log(a+bx)}{b^4}-\frac{5a^3+6a^2bx}{2a^2b^4+4ab^5x+2b^6x^2}+\frac{x}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**3,x)
```

```
[Out] -3*a*log(a + b*x)/b**4 - (5*a**3 + 6*a**2*b*x)/(2*a**2*b**4 + 4*a
*b**5*x + 2*b**6*x**2) + x/b**3
```

GIAC/XCAS [A] time = 0.218105, size = 59, normalized size = 1.18

$$\frac{x}{b^3}-\frac{3\,a\ln(|bx+a|)}{b^4}-\frac{6\,a^2bx+5\,a^3}{2\,(bx+a)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] x/b^3 - 3*a*ln(abs(b*x + a))/b^4 - 1/2*(6*a^2*b*x + 5*a^3)/((b*x
+ a)^2*b^4)
```

3.185 $\int \frac{x^2}{(a+bx)^3}\,dx$

Optimal. Leaf size=41

$$-\frac{a^2}{2b^3(a+bx)^2}+\frac{2a}{b^3(a+bx)}+\frac{\log(a+bx)}{b^3}$$

```
[Out] -a^2/(2*b^3*(a + b*x)^2) + (2*a)/(b^3*(a + b*x)) + Log[a + b*x]/b
^3
```

Rubi [A] time = 0.0480858, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^2}{2b^3(a+bx)^2}+\frac{2a}{b^3(a+bx)}+\frac{\log(a+bx)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2/(a + b*x)^3,x]
```

```
[Out] -a^2/(2*b^3*(a + b*x)^2) + (2*a)/(b^3*(a + b*x)) + Log[a + b*x]/b
^3
```

Rubi in Sympy [A] time = 8.8587, size = 36, normalized size = 0.88

$$-\frac{a^2}{2b^3\left(a+bx\right)^2}+\frac{2a}{b^3\left(a+bx\right)}+\frac{\log\left(a+bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2/(b*x+a)**3,x)
```

```
[Out] -a**2/(2*b**3*(a + b*x)**2) + 2*a/(b**3*(a + b*x)) + log(a + b*x)
/b**3
```

Mathematica [A] time = 0.0262066, size = 33, normalized size = 0.8

$$\frac{\frac{a(3a+4bx)}{(a+bx)^2}+2\log(a+bx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^3,x]
```

```
[Out] ((a*(3*a + 4*b*x))/(a + b*x)^2 + 2*Log[a + b*x])/(2*b^3)
```

Maple [A] time = 0.009, size = 40, normalized size = 1.

$$-\frac{a^2}{2\,b^3\,(bx+a)^2}+2\,\frac{a}{b^3\,(bx+a)}+\frac{\ln(bx+a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^3,x)
```

```
[Out] -1/2*a^2/b^3/(b*x+a)^2+2*a/b^3/(b*x+a)+ln(b*x+a)/b^3
```

Maxima [A] time = 1.33496, size = 65, normalized size = 1.59

$$\frac{4\,abx+3\,a^2}{2\,(b^5x^2+2\,ab^4x+a^2b^3)}+\frac{\log(bx+a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(4*a*b*x + 3*a^2)/(b^5*x^2 + 2*a*b^4*x + a^2*b^3) + log(b*x +
 a)/b^3
```

Fricas [A] time = 0.208947, size = 82, normalized size = 2.

$$\frac{4\,abx+3\,a^2+2\,\left(b^2x^2+2\,abx+a^2\right)\log(bx+a)}{2\,(b^5x^2+2\,ab^4x+a^2b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(4*a*b*x + 3*a^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)*log(b*x + a))/
(b^5*x^2 + 2*a*b^4*x + a^2*b^3)
```

Sympy [A] time = 1.38224, size = 46, normalized size = 1.12

$$\frac{3a^2 + 4abx}{2a^2b^3 + 4ab^4x + 2b^5x^2} + \frac{\log(a + bx)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**3,x)
```

```
[Out] (3*a**2 + 4*a*b*x)/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) + log
(a + b*x)/b**3
```

GIAC/XCAS [A] time = 0.210155, size = 50, normalized size = 1.22

$$\frac{\ln(|bx + a|)}{b^3} + \frac{4\,ax + \frac{3\,a^2}{b}}{2\,(bx + a)^2 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] ln(abs(b*x + a))/b^3 + 1/2*(4*a*x + 3*a^2/b)/((b*x + a)^2*b^2)
```

3.186 $\int \frac{x}{(a+bx)^3} \, dx$

Optimal. Leaf size=17

$$\frac{x^2}{2a(a+bx)^2}$$

```
[Out] x^2/(2*a*(a + b*x)^2)
```

Rubi [A] time = 0.0107175, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{x^2}{2a(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^3,x]

[Out] x^2/(2*a*(a + b*x)^2)
```

Rubi in Sympy [A] time = 2.12743, size = 12, normalized size = 0.71

$$\frac{x^2}{2a\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**3,x)

[Out] x**2/(2*a*(a + b*x)**2)
```

Mathematica [A] time = 0.0070905, size = 20, normalized size = 1.18

$$-\frac{a+2bx}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^3,x]
```

```
[Out] -(a + 2*b*x)/(2*b^2*(a + b*x)^2)
```

Maple [A] time = 0.007, size = 27, normalized size = 1.6

$$\frac{a}{2\,b^{2}\left(bx+a\right)^{2}}-\frac{1}{\left(bx+a\right)b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a)^3,x)
```

```
[Out] 1/2*a/b^2/(b*x+a)^2-1/(b*x+a)/b^2
```

Maxima [A] time = 1.31935, size = 43, normalized size = 2.53

$$-\frac{2\,bx+a}{2\,\left(b^{4}x^{2}+2\,ab^{3}x+a^{2}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*x + a)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

Fricas [A] time = 0.203891, size = 43, normalized size = 2.53

$$-\frac{2\,bx+a}{2\,\left(b^{4}x^{2}+2\,ab^{3}x+a^{2}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*x + a)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

Sympy [A] time = 1.3515, size = 32, normalized size = 1.88

$$-\frac{a+2bx}{2a^{2}b^{2}+4ab^{3}x+2b^{4}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**3,x)
```

```
[Out] -(a + 2*b*x)/(2*a**2*b**2 + 4*a*b**3*x + 2*b**4*x**2)
```

GIAC/XCAS [A] time = 0.203472, size = 24, normalized size = 1.41

$$-\frac{2\,bx + a}{2\,{\left(bx + a\right)}^{2} b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*x + a)/((b*x + a)^2*b^2)
```

3.187 $\int \frac{1}{(a+bx)^3}\,dx$

Optimal. Leaf size=14

$$-\frac{1}{2b(a+bx)^2}$$

```
[Out] -1/(2*b*(a + b*x)^2)
```

Rubi [A] time = 0.00692411, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{1}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-3),x]
```

```
[Out] -1/(2*b*(a + b*x)^2)
```

Rubi in Sympy [A] time = 1.26706, size = 12, normalized size = 0.86

$$-\frac{1}{2b\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3,x)
```

```
[Out] -1/(2*b*(a + b*x)**2)
```

Mathematica [A] time = 0.00333774, size = 14, normalized size = 1.

$$-\frac{1}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-3),x]
```

```
[Out] -1/(2*b*(a + b*x)^2)
```

Maple [A] time = 0.002, size = 13, normalized size = 0.9

$$-\frac{1}{2\,b\,(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3,x)
```

```
[Out] -1/2/b/(b*x+a)^2
```

Maxima [A] time = 1.48088, size = 16, normalized size = 1.14

$$-\frac{1}{2\,(bx+a)^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-3),x, algorithm="maxima")
```

```
[Out] -1/2/((b*x + a)^2*b)
```

Fricas [A] time = 0.206673, size = 32, normalized size = 2.29

$$-\frac{1}{2\,(b^3x^2+2\,ab^2x+a^2b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-3),x, algorithm="fricas")
```

```
[Out] -1/2/(b^3*x^2 + 2*a*b^2*x + a^2*b)
```

Sympy [A] time = 1.30741, size = 26, normalized size = 1.86

$$-\frac{1}{2a^2b+4ab^2x+2b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3,x)
```

```
[Out] -1/(2*a**2*b + 4*a*b**2*x + 2*b**3*x**2)
```

GIAC/XCAS [A] time = 0.22274, size = 16, normalized size = 1.14

$$-\frac{1}{2\,(bx+a)^2 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-3),x, algorithm="giac")
```

```
[Out] -1/2/((b*x + a)^2*b)
```

3.188 $\int \frac{1}{x(a+bx)^3} dx$

Optimal. Leaf size=43

$$-\frac{\log(a+bx)}{a^3}+\frac{\log(x)}{a^3}+\frac{1}{a^2(a+bx)}+\frac{1}{2a(a+bx)^2}$$

```
[Out] 1/(2*a*(a + b*x)^2) + 1/(a^2*(a + b*x)) + Log[x]/a^3 - Log[a + b*
x]/a^3
```

Rubi [A] time = 0.0471972, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{\log(a+bx)}{a^3}+\frac{\log(x)}{a^3}+\frac{1}{a^2(a+bx)}+\frac{1}{2a(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^3),x]
```

```
[Out] 1/(2*a*(a + b*x)^2) + 1/(a^2*(a + b*x)) + Log[x]/a^3 - Log[a + b*
x]/a^3
```

Rubi in Sympy [A] time = 8.43421, size = 37, normalized size = 0.86

$$\frac{1}{2a\,(a+bx)^2}+\frac{1}{a^2\,(a+bx)}+\frac{\log{(x)}}{a^3}-\frac{\log{(a+bx)}}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**3,x)
```

```
[Out] 1/(2*a*(a + b*x)**2) + 1/(a**2*(a + b*x)) + log(x)/a**3 - log(a +
 b*x)/a**3
```

Mathematica [A] time = 0.0510398, size = 37, normalized size = 0.86

$$\frac{\frac{a(3a+2bx)}{(a+bx)^2}-2\log(a+bx)+2\log(x)}{2a^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^3),x]
```

```
[Out] ((a*(3*a + 2*b*x))/(a + b*x)^2 + 2*Log[x] - 2*Log[a + b*x])/(2*a^
3)
```

Maple [A] time = 0.012, size = 42, normalized size = 1.

$$\frac{1}{2\,a\,(bx+a)^{2}}+\frac{1}{a^{2}\,(bx+a)}+\frac{\ln(x)}{a^{3}}-\frac{\ln(bx+a)}{a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^3,x)
```

```
[Out] 1/2/a/(b*x+a)^2+1/a^2/(b*x+a)+ln(x)/a^3-ln(b*x+a)/a^3
```

Maxima [A] time = 1.3501, size = 69, normalized size = 1.6

$$\frac{2\,bx+3\,a}{2\,(a^{2}b^{2}x^{2}+2\,a^{3}bx+a^{4})}-\frac{\log(bx+a)}{a^{3}}+\frac{\log(x)}{a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x),x, algorithm="maxima")
```

```
[Out] 1/2*(2*b*x + 3*a)/(a^2*b^2*x^2 + 2*a^3*b*x + a^4) - log(b*x + a)/
a^3 + log(x)/a^3
```

Fricas [A] time = 0.212399, size = 108, normalized size = 2.51

$$\frac{2\,abx+3\,a^{2}-2\,\left(b^{2}x^{2}+2\,abx+a^{2}\right)\log(bx+a)+2\,\left(b^{2}x^{2}+2\,abx+a^{2}\right)\log(x)}{2\,(a^{3}b^{2}x^{2}+2\,a^{4}bx+a^{5})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*b*x + 3*a^2 - 2*(b^2*x^2 + 2*a*b*x + a^2)*log(b*x + a) +
 2*(b^2*x^2 + 2*a*b*x + a^2)*log(x))/(a^3*b^2*x^2 + 2*a^4*b*x + a
^5)
```

Sympy [A] time = 1.65765, size = 46, normalized size = 1.07

$$\frac{3a+2bx}{2a^4+4a^3bx+2a^2b^2x^2}+\frac{\log\left(x\right)-\log\left(\frac{a}{b}+x\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**3,x)
```

```
[Out] (3*a + 2*b*x)/(2*a**4 + 4*a**3*b*x + 2*a**2*b**2*x**2) + (log(x)
- log(a/b + x))/a**3
```

GIAC/XCAS [A] time = 0.214702, size = 58, normalized size = 1.35

$$-\frac{\ln\left(|bx+a|\right)}{a^3}+\frac{\ln\left(|x|\right)}{a^3}+\frac{2\,abx+3\,a^2}{2\,(bx+a)^2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x),x, algorithm="giac")
```

```
[Out] -ln(abs(b*x + a))/a^3 + ln(abs(x))/a^3 + 1/2*(2*a*b*x + 3*a^2)/((
b*x + a)^2*a^3)
```

3.189 $\int \frac{1}{x^2(a+bx)^3}\,dx$

Optimal. Leaf size=57

$$-\frac{3b\log(x)}{a^4}+\frac{3b\log(a+bx)}{a^4}-\frac{2b}{a^3(a+bx)}-\frac{1}{a^3x}-\frac{b}{2a^2(a+bx)^2}$$

```
[Out] -(1/(a^3*x)) - b/(2*a^2*(a + b*x)^2) - (2*b)/(a^3*(a + b*x)) - (3
*b*Log[x])/a^4 + (3*b*Log[a + b*x])/a^4
```

Rubi [A] time = 0.0664493, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{3b\log(x)}{a^4}+\frac{3b\log(a+bx)}{a^4}-\frac{2b}{a^3(a+bx)}-\frac{1}{a^3x}-\frac{b}{2a^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^3),x]
```

```
[Out] -(1/(a^3*x)) - b/(2*a^2*(a + b*x)^2) - (2*b)/(a^3*(a + b*x)) - (3
*b*Log[x])/a^4 + (3*b*Log[a + b*x])/a^4
```

Rubi in Sympy [A] time = 11.7211, size = 54, normalized size = 0.95

$$-\frac{b}{2a^2\left(a+bx\right)^2}-\frac{2b}{a^3\left(a+bx\right)}-\frac{1}{a^3x}-\frac{3b\log\left(x\right)}{a^4}+\frac{3b\log\left(a+bx\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**3,x)
```

```
[Out] -b/(2*a**2*(a + b*x)**2) - 2*b/(a**3*(a + b*x)) - 1/(a**3*x) - 3*
b*log(x)/a**4 + 3*b*log(a + b*x)/a**4
```

Mathematica [A] time = 0.0803801, size = 53, normalized size = 0.93

$$-\frac{\frac{a(2a^2+9abx+6b^2x^2)}{x(a+bx)^2}-6b\log(a+bx)+6b\log(x)}{2a^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^3),x]
```

```
[Out] -((a*(2*a^2 + 9*a*b*x + 6*b^2*x^2))/(x*(a + b*x)^2) + 6*b*Log[x]
- 6*b*Log[a + b*x])/(2*a^4)
```

Maple [A] time = 0.016, size = 56, normalized size = 1.

$$-\frac{1}{a^3x} - \frac{b}{2\,a^2\,(bx+a)^2} - 2\,\frac{b}{a^3\,(bx+a)} - 3\,\frac{b\ln(x)}{a^4} + 3\,\frac{b\ln(bx+a)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^3,x)
```

```
[Out] -1/a^3/x-1/2*b/a^2/(b*x+a)^2-2*b/a^3/(b*x+a)-3*b*ln(x)/a^4+3*b*ln
(b*x+a)/a^4
```

Maxima [A] time = 1.34609, size = 93, normalized size = 1.63

$$-\frac{6\,b^2x^2 + 9\,abx + 2\,a^2}{2\,(a^3b^2x^3 + 2\,a^4bx^2 + a^5x)} + \frac{3\,b\log(bx+a)}{a^4} - \frac{3\,b\log(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^2),x, algorithm="maxima")
```

```
[Out] -1/2*(6*b^2*x^2 + 9*a*b*x + 2*a^2)/(a^3*b^2*x^3 + 2*a^4*b*x^2 + a
^5*x) + 3*b*log(b*x + a)/a^4 - 3*b*log(x)/a^4
```

Fricas [A] time = 0.218736, size = 147, normalized size = 2.58

$$-\frac{6\,ab^2x^2 + 9\,a^2bx + 2\,a^3 - 6\,\left(b^3x^3 + 2\,ab^2x^2 + a^2bx\right)\log(bx+a) + 6\,\left(b^3x^3 + 2\,ab^2x^2 + a^2bx\right)\log(x)}{2\,(a^4b^2x^3 + 2\,a^5bx^2 + a^6x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^2),x, algorithm="fricas")
```

```
[Out] -1/2*(6*a*b^2*x^2 + 9*a^2*b*x + 2*a^3 - 6*(b^3*x^3 + 2*a*b^2*x^2
+ a^2*b*x)*log(b*x + a) + 6*(b^3*x^3 + 2*a*b^2*x^2 + a^2*b*x)*log
(x))/(a^4*b^2*x^3 + 2*a^5*b*x^2 + a^6*x)
```

Sympy [A] time = 1.90753, size = 65, normalized size = 1.14

$$-\frac{2a^2 + 9abx + 6b^2x^2}{2a^5x + 4a^4bx^2 + 2a^3b^2x^3} + \frac{3b\left(-\log\left(x\right) + \log\left(\frac{a}{b} + x\right)\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**3,x)
```

```
[Out] -(2*a**2 + 9*a*b*x + 6*b**2*x**2)/(2*a**5*x + 4*a**4*b*x**2 + 2*a
**3*b**2*x**3) + 3*b*(-log(x) + log(a/b + x))/a**4
```

GIAC/XCAS [A] time = 0.208565, size = 81, normalized size = 1.42

$$\frac{3\,b\ln\left(|bx + a|\right)}{a^4} - \frac{3\,b\ln\left(|x|\right)}{a^4} - \frac{6\,ab^2x^2 + 9\,a^2bx + 2\,a^3}{2\,(bx + a)^2a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^2),x, algorithm="giac")
```

```
[Out] 3*b*ln(abs(b*x + a))/a^4 - 3*b*ln(abs(x))/a^4 - 1/2*(6*a*b^2*x^2
+ 9*a^2*b*x + 2*a^3)/((b*x + a)^2*a^4*x)
```

3.190 $\int \frac{1}{x^3(a+bx)^3}\,dx$

Optimal. Leaf size=76

$$\frac{6b^2\log(x)}{a^5}-\frac{6b^2\log(a+bx)}{a^5}+\frac{3b^2}{a^4(a+bx)}+\frac{3b}{a^4x}+\frac{b^2}{2a^3(a+bx)^2}-\frac{1}{2a^3x^2}$$

```
[Out] -1/(2*a^3*x^2) + (3*b)/(a^4*x) + b^2/(2*a^3*(a + b*x)^2) + (3*b^2
)/(a^4*(a + b*x)) + (6*b^2*Log[x])/a^5 - (6*b^2*Log[a + b*x])/a^5
```

Rubi [A] time = 0.086742, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{6b^2\log(x)}{a^5}-\frac{6b^2\log(a+bx)}{a^5}+\frac{3b^2}{a^4(a+bx)}+\frac{3b}{a^4x}+\frac{b^2}{2a^3(a+bx)^2}-\frac{1}{2a^3x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^3),x]
```

```
[Out] -1/(2*a^3*x^2) + (3*b)/(a^4*x) + b^2/(2*a^3*(a + b*x)^2) + (3*b^2
)/(a^4*(a + b*x)) + (6*b^2*Log[x])/a^5 - (6*b^2*Log[a + b*x])/a^5
```

Rubi in Sympy [A] time = 14.918, size = 73, normalized size = 0.96

$$\frac{b^2}{2a^3\left(a+bx\right)^2}-\frac{1}{2a^3x^2}+\frac{3b^2}{a^4\left(a+bx\right)}+\frac{3b}{a^4x}+\frac{6b^2\log\left(x\right)}{a^5}-\frac{6b^2\log\left(a+bx\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**3,x)
```

```
[Out] b**2/(2*a**3*(a + b*x)**2) - 1/(2*a**3*x**2) + 3*b**2/(a**4*(a +
b*x)) + 3*b/(a**4*x) + 6*b**2*log(x)/a**5 - 6*b**2*log(a + b*x)/a
**5
```

Mathematica [A] time = 0.0739238, size = 68, normalized size = 0.89

$$\frac{\frac{a\left(-a^3+4a^2bx+18ab^2x^2+12b^3x^3\right)}{x^2(a+bx)^2}-12b^2\log(a+bx)+12b^2\log(x)}{2a^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^3),x]
```

```
[Out] ((a*(-a^3 + 4*a^2*b*x + 18*a*b^2*x^2 + 12*b^3*x^3))/(x^2*(a + b*x
)^2) + 12*b^2*Log[x] - 12*b^2*Log[a + b*x])/(2*a^5)
```

Maple [A] time = 0.015, size = 73, normalized size = 1.

$$-\frac{1}{2\,a^3x^2}+3\,\frac{b}{a^4x}+\frac{b^2}{2\,a^3\,(bx+a)^2}+3\,\frac{b^2}{a^4\,(bx+a)}+6\,\frac{b^2\ln(x)}{a^5}-6\,\frac{b^2\ln(bx+a)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^3,x)
```

```
[Out] -1/2/a^3/x^2+3*b/a^4/x+1/2*b^2/a^3/(b*x+a)^2+3*b^2/a^4/(b*x+a)+6*
b^2*ln(x)/a^5-6*b^2*ln(b*x+a)/a^5
```

Maxima [A] time = 1.34774, size = 116, normalized size = 1.53

$$\frac{12\,b^3x^3+18\,ab^2x^2+4\,a^2bx-a^3}{2\,(a^4b^2x^4+2\,a^5bx^3+a^6x^2)}-\frac{6\,b^2\log(bx+a)}{a^5}+\frac{6\,b^2\log(x)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^3),x, algorithm="maxima")
```

```
[Out] 1/2*(12*b^3*x^3 + 18*a*b^2*x^2 + 4*a^2*b*x - a^3)/(a^4*b^2*x^4 +
2*a^5*b*x^3 + a^6*x^2) - 6*b^2*log(b*x + a)/a^5 + 6*b^2*log(x)/a^
5
```

Fricas [A] time = 0.217056, size = 176, normalized size = 2.32

$$\frac{12\,ab^3x^3+18\,a^2b^2x^2+4\,a^3bx-a^4-12\left(b^4x^4+2\,ab^3x^3+a^2b^2x^2\right)\log(bx+a)+12\left(b^4x^4+2\,ab^3x^3+a^2b^2x^2\right)\log(x)}{2\,(a^5b^2x^4+2\,a^6bx^3+a^7x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^3),x, algorithm="fricas")
```

```
[Out] 1/2*(12*a*b^3*x^3 + 18*a^2*b^2*x^2 + 4*a^3*b*x - a^4 - 12*(b^4*x^
4 + 2*a*b^3*x^3 + a^2*b^2*x^2)*log(b*x + a) + 12*(b^4*x^4 + 2*a*b
^3*x^3 + a^2*b^2*x^2)*log(x))/(a^5*b^2*x^4 + 2*a^6*b*x^3 + a^7*x^
2)
```

Sympy [A] time = 2.04418, size = 78, normalized size = 1.03

$$\frac{-a^3 + 4a^2bx + 18ab^2x^2 + 12b^3x^3}{2a^6x^2 + 4a^5bx^3 + 2a^4b^2x^4} + \frac{6b^2\left(\log\left(x\right) - \log\left(\frac{a}{b} + x\right)\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**3,x)
```

```
[Out] (-a**3 + 4*a**2*b*x + 18*a*b**2*x**2 + 12*b**3*x**3)/(2*a**6*x**2
 + 4*a**5*b*x**3 + 2*a**4*b**2*x**4) + 6*b**2*(log(x) - log(a/b +
 x))/a**5
```

GIAC/XCAS [A] time = 0.203942, size = 99, normalized size = 1.3

$$-\frac{6\,b^2\ln\left(|bx + a|\right)}{a^5} + \frac{6\,b^2\ln\left(|x|\right)}{a^5} + \frac{12\,b^3x^3 + 18\,ab^2x^2 + 4\,a^2bx - a^3}{2\,{\left(bx^2 + ax\right)}^2a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^3),x, algorithm="giac")
```

```
[Out] -6*b^2*ln(abs(b*x + a))/a^5 + 6*b^2*ln(abs(x))/a^5 + 1/2*(12*b^3*
x^3 + 18*a*b^2*x^2 + 4*a^2*b*x - a^3)/((b*x^2 + a*x)^2*a^4)
```

3.191 $\int \frac{1}{x^4(a+bx)^3}\,dx$

Optimal. Leaf size=89

$$-\frac{10b^3\log(x)}{a^6}+\frac{10b^3\log(a+bx)}{a^6}-\frac{4b^3}{a^5(a+bx)}-\frac{6b^2}{a^5x}-\frac{b^3}{2a^4(a+bx)^2}+\frac{3b}{2a^4x^2}-\frac{1}{3a^3x^3}$$

```
[Out] -1/(3*a^3*x^3) + (3*b)/(2*a^4*x^2) - (6*b^2)/(a^5*x) - b^3/(2*a^4
*(a + b*x)^2) - (4*b^3)/(a^5*(a + b*x)) - (10*b^3*Log[x])/a^6 + (
10*b^3*Log[a + b*x])/a^6
```

Rubi [A] time = 0.104454, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{10b^3\log(x)}{a^6}+\frac{10b^3\log(a+bx)}{a^6}-\frac{4b^3}{a^5(a+bx)}-\frac{6b^2}{a^5x}-\frac{b^3}{2a^4(a+bx)^2}+\frac{3b}{2a^4x^2}-\frac{1}{3a^3x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(a + b*x)^3),x]
```

```
[Out] -1/(3*a^3*x^3) + (3*b)/(2*a^4*x^2) - (6*b^2)/(a^5*x) - b^3/(2*a^4
*(a + b*x)^2) - (4*b^3)/(a^5*(a + b*x)) - (10*b^3*Log[x])/a^6 + (
10*b^3*Log[a + b*x])/a^6
```

Rubi in Sympy [A] time = 16.791, size = 87, normalized size = 0.98

$$-\frac{1}{3a^3x^3}-\frac{b^3}{2a^4\left(a+bx\right)^2}+\frac{3b}{2a^4x^2}-\frac{4b^3}{a^5\left(a+bx\right)}-\frac{6b^2}{a^5x}-\frac{10b^3\log\left(x\right)}{a^6}+\frac{10b^3\log\left(a+bx\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a)**3,x)
```

```
[Out] -1/(3*a**3*x**3) - b**3/(2*a**4*(a + b*x)**2) + 3*b/(2*a**4*x**2)
 - 4*b**3/(a**5*(a + b*x)) - 6*b**2/(a**5*x) - 10*b**3*log(x)/a**
6 + 10*b**3*log(a + b*x)/a**6
```

Mathematica [A] time = 0.109444, size = 79, normalized size = 0.89

$$-\frac{\frac{a\left(2a^4-5a^3bx+20a^2b^2x^2+90ab^3x^3+60b^4x^4\right)}{x^3(a+bx)^2}-60b^3\log(a+bx)+60b^3\log(x)}{6a^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(a + b*x)^3),x]
```

```
[Out] -((a*(2*a^4 - 5*a^3*b*x + 20*a^2*b^2*x^2 + 90*a*b^3*x^3 + 60*b^4*
x^4))/(x^3*(a + b*x)^2) + 60*b^3*Log[x] - 60*b^3*Log[a + b*x])/(6
*a^6)
```

Maple [A] time = 0.016, size = 84, normalized size = 0.9

$$-\frac{1}{3\,a^3x^3}+\frac{3\,b}{2\,a^4x^2}-6\,\frac{b^2}{a^5x}-\frac{b^3}{2\,a^4\,(bx+a)^2}-4\,\frac{b^3}{a^5\,(bx+a)}-10\,\frac{b^3\ln(x)}{a^6}+10\,\frac{b^3\ln(bx+a)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a)^3,x)
```

```
[Out] -1/3/a^3/x^3+3/2*b/a^4/x^2-6*b^2/a^5/x-1/2*b^3/a^4/(b*x+a)^2-4*b^
3/a^5/(b*x+a)-10*b^3*ln(x)/a^6+10*b^3*ln(b*x+a)/a^6
```

Maxima [A] time = 1.35138, size = 131, normalized size = 1.47

$$-\frac{60\,b^4x^4+90\,ab^3x^3+20\,a^2b^2x^2-5\,a^3bx+2\,a^4}{6\,(a^5b^2x^5+2\,a^6bx^4+a^7x^3)}+\frac{10\,b^3\log(bx+a)}{a^6}-\frac{10\,b^3\log(x)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^4),x, algorithm="maxima")
```

```
[Out] -1/6*(60*b^4*x^4 + 90*a*b^3*x^3 + 20*a^2*b^2*x^2 - 5*a^3*b*x + 2*
a^4)/(a^5*b^2*x^5 + 2*a^6*b*x^4 + a^7*x^3) + 10*b^3*log(b*x + a)/
a^6 - 10*b^3*log(x)/a^6
```

Fricas [A] time = 0.214948, size = 190, normalized size = 2.13

$$-\frac{60\,ab^4x^4+90\,a^2b^3x^3+20\,a^3b^2x^2-5\,a^4bx+2\,a^5-60\left(b^5x^5+2\,ab^4x^4+a^2b^3x^3\right)\log(bx+a)+60\left(b^5x^5+2\,ab^4x^4+a^2b^3x\right.}{6\,(a^6b^2x^5+2\,a^7bx^4+a^8x^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^4),x, algorithm="fricas")
```

```
[Out] -1/6*(60*a*b^4*x^4 + 90*a^2*b^3*x^3 + 20*a^3*b^2*x^2 - 5*a^4*b*x
+ 2*a^5 - 60*(b^5*x^5 + 2*a*b^4*x^4 + a^2*b^3*x^3)*log(b*x + a) +
 60*(b^5*x^5 + 2*a*b^4*x^4 + a^2*b^3*x^3)*log(x))/(a^6*b^2*x^5 +
2*a^7*b*x^4 + a^8*x^3)
```

Sympy [A] time = 2.21895, size = 92, normalized size = 1.03

$$-\frac{2a^4 - 5a^3bx + 20a^2b^2x^2 + 90ab^3x^3 + 60b^4x^4}{6a^7x^3 + 12a^6bx^4 + 6a^5b^2x^5} + \frac{10b^3\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a)**3,x)
```

```
[Out] -(2*a**4 - 5*a**3*b*x + 20*a**2*b**2*x**2 + 90*a*b**3*x**3 + 60*b
**4*x**4)/(6*a**7*x**3 + 12*a**6*b*x**4 + 6*a**5*b**2*x**5) + 10*
b**3*(-log(x) + log(a/b + x))/a**6
```

GIAC/XCAS [A] time = 0.205728, size = 116, normalized size = 1.3

$$\frac{10\,b^3\ln(|bx + a|)}{a^6} - \frac{10\,b^3\ln(|x|)}{a^6} - \frac{60\,ab^4x^4 + 90\,a^2b^3x^3 + 20\,a^3b^2x^2 - 5\,a^4bx + 2\,a^5}{6\,(bx + a)^2a^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^4),x, algorithm="giac")
```

```
[Out] 10*b^3*ln(abs(b*x + a))/a^6 - 10*b^3*ln(abs(x))/a^6 - 1/6*(60*a*b
^4*x^4 + 90*a^2*b^3*x^3 + 20*a^3*b^2*x^2 - 5*a^4*b*x + 2*a^5)/((b
*x + a)^2*a^6*x^3)
```

3.192 $\int \frac{1}{x^5(a+bx)^3}\,dx$

Optimal. Leaf size=97

$$\frac{15b^4\log(x)}{a^7}-\frac{15b^4\log(a+bx)}{a^7}+\frac{5b^4}{a^6(a+bx)}+\frac{10b^3}{a^6x}+\frac{b^4}{2a^5(a+bx)^2}-\frac{3b^2}{a^5x^2}+\frac{b}{a^4x^3}-\frac{1}{4a^3x^4}$$

```
[Out] -1/(4*a^3*x^4) + b/(a^4*x^3) - (3*b^2)/(a^5*x^2) + (10*b^3)/(a^6*
x) + b^4/(2*a^5*(a + b*x)^2) + (5*b^4)/(a^6*(a + b*x)) + (15*b^4*
Log[x])/a^7 - (15*b^4*Log[a + b*x])/a^7
```

Rubi [A] time = 0.124366, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{15b^4\log(x)}{a^7}-\frac{15b^4\log(a+bx)}{a^7}+\frac{5b^4}{a^6(a+bx)}+\frac{10b^3}{a^6x}+\frac{b^4}{2a^5(a+bx)^2}-\frac{3b^2}{a^5x^2}+\frac{b}{a^4x^3}-\frac{1}{4a^3x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(a + b*x)^3),x]
```

```
[Out] -1/(4*a^3*x^4) + b/(a^4*x^3) - (3*b^2)/(a^5*x^2) + (10*b^3)/(a^6*
x) + b^4/(2*a^5*(a + b*x)^2) + (5*b^4)/(a^6*(a + b*x)) + (15*b^4*
Log[x])/a^7 - (15*b^4*Log[a + b*x])/a^7
```

Rubi in Sympy [A] time = 20.5086, size = 95, normalized size = 0.98

$$-\frac{1}{4a^3x^4}+\frac{b}{a^4x^3}+\frac{b^4}{2a^5\left(a+bx\right)^2}-\frac{3b^2}{a^5x^2}+\frac{5b^4}{a^6\left(a+bx\right)}+\frac{10b^3}{a^6x}+\frac{15b^4\log\left(x\right)}{a^7}-\frac{15b^4\log\left(a+bx\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(b*x+a)**3,x)
```

```
[Out] -1/(4*a**3*x**4) + b/(a**4*x**3) + b**4/(2*a**5*(a + b*x)**2) - 3
*b**2/(a**5*x**2) + 5*b**4/(a**6*(a + b*x)) + 10*b**3/(a**6*x) +
15*b**4*log(x)/a**7 - 15*b**4*log(a + b*x)/a**7
```

Mathematica [A] time = 0.105073, size = 90, normalized size = 0.93

$$\frac{\frac{a\left(-a^5+2a^4bx-5a^3b^2x^2+20a^2b^3x^3+90ab^4x^4+60b^5x^5\right)}{x^4(a+bx)^2}-60b^4\log(a+bx)+60b^4\log(x)}{4a^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(a + b*x)^3),x]
```

```
[Out] ((a*(-a^5 + 2*a^4*b*x - 5*a^3*b^2*x^2 + 20*a^2*b^3*x^3 + 90*a*b^4
*x^4 + 60*b^5*x^5))/(x^4*(a + b*x)^2) + 60*b^4*Log[x] - 60*b^4*Lo
g[a + b*x])/(4*a^7)
```

Maple [A] time = 0.015, size = 94, normalized size = 1.

$$-\frac{1}{4\,a^3x^4}+\frac{b}{a^4x^3}-3\,\frac{b^2}{a^5x^2}+10\,\frac{b^3}{a^6x}+\frac{b^4}{2\,a^5\,(bx+a)^2}+5\,\frac{b^4}{a^6\,(bx+a)}+15\,\frac{b^4\ln(x)}{a^7}-15\,\frac{b^4\ln(bx+a)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(b*x+a)^3,x)
```

```
[Out] -1/4/a^3/x^4+b/a^4/x^3-3*b^2/a^5/x^2+10*b^3/a^6/x+1/2*b^4/a^5/(b*
x+a)^2+5*b^4/a^6/(b*x+a)+15*b^4*ln(x)/a^7-15*b^4*ln(b*x+a)/a^7
```

Maxima [A] time = 1.35077, size = 146, normalized size = 1.51

$$\frac{60\,b^5x^5+90\,ab^4x^4+20\,a^2b^3x^3-5\,a^3b^2x^2+2\,a^4bx-a^5}{4\,(a^6b^2x^6+2\,a^7bx^5+a^8x^4)}-\frac{15\,b^4\log(bx+a)}{a^7}+\frac{15\,b^4\log(x)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^5),x, algorithm="maxima")
```

```
[Out] 1/4*(60*b^5*x^5 + 90*a*b^4*x^4 + 20*a^2*b^3*x^3 - 5*a^3*b^2*x^2 +
 2*a^4*b*x - a^5)/(a^6*b^2*x^6 + 2*a^7*b*x^5 + a^8*x^4) - 15*b^4*
log(b*x + a)/a^7 + 15*b^4*log(x)/a^7
```

Fricas [A] time = 0.217177, size = 205, normalized size = 2.11

$$\frac{60\,ab^5x^5+90\,a^2b^4x^4+20\,a^3b^3x^3-5\,a^4b^2x^2+2\,a^5bx-a^6-60\left(b^6x^6+2\,ab^5x^5+a^2b^4x^4\right)\log(bx+a)+60\left(b^6x^6+2\,ab^5x^5\right.}{4\,(a^7b^2x^6+2\,a^8bx^5+a^9x^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^5),x, algorithm="fricas")
```

```
[Out] 1/4*(60*a*b^5*x^5 + 90*a^2*b^4*x^4 + 20*a^3*b^3*x^3 - 5*a^4*b^2*x
^2 + 2*a^5*b*x - a^6 - 60*(b^6*x^6 + 2*a*b^5*x^5 + a^2*b^4*x^4)*l
og(b*x + a) + 60*(b^6*x^6 + 2*a*b^5*x^5 + a^2*b^4*x^4)*log(x))/(a
^7*b^2*x^6 + 2*a^8*b*x^5 + a^9*x^4)
```

Sympy [A] time = 2.5107, size = 102, normalized size = 1.05

$$\frac{-a^5+2a^4bx-5a^3b^2x^2+20a^2b^3x^3+90ab^4x^4+60b^5x^5}{4a^8x^4+8a^7bx^5+4a^6b^2x^6}+\frac{15b^4\left(\log\left(x\right)-\log\left(\frac{a}{b}+x\right)\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(b*x+a)**3,x)
```

```
[Out] (-a**5 + 2*a**4*b*x - 5*a**3*b**2*x**2 + 20*a**2*b**3*x**3 + 90*a
*b**4*x**4 + 60*b**5*x**5)/(4*a**8*x**4 + 8*a**7*b*x**5 + 4*a**6*
b**2*x**6) + 15*b**4*(log(x) - log(a/b + x))/a**7
```

GIAC/XCAS [A] time = 0.21023, size = 131, normalized size = 1.35

$$-\frac{15\,b^4\ln\left(|bx+a|\right)}{a^7}+\frac{15\,b^4\ln\left(|x|\right)}{a^7}+\frac{60\,ab^5x^5+90\,a^2b^4x^4+20\,a^3b^3x^3-5\,a^4b^2x^2+2\,a^5bx-a^6}{4\,(bx+a)^2a^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^5),x, algorithm="giac")
```

```
[Out] -15*b^4*ln(abs(b*x + a))/a^7 + 15*b^4*ln(abs(x))/a^7 + 1/4*(60*a*
b^5*x^5 + 90*a^2*b^4*x^4 + 20*a^3*b^3*x^3 - 5*a^4*b^2*x^2 + 2*a^5
*b*x - a^6)/((b*x + a)^2*a^7*x^4)
```

3.193 $\int \frac{x^8}{(a+bx)^4} \, dx$

Optimal. Leaf size=114

$$-\frac{a^8}{3b^9(a+bx)^3}+\frac{4a^7}{b^9(a+bx)^2}-\frac{28a^6}{b^9(a+bx)}-\frac{56a^5\log(a+bx)}{b^9}+\frac{35a^4x}{b^8}-\frac{10a^3x^2}{b^7}+\frac{10a^2x^3}{3b^6}-\frac{ax^4}{b^5}+\frac{x^5}{5b^4}$$

```
[Out] (35*a^4*x)/b^8 - (10*a^3*x^2)/b^7 + (10*a^2*x^3)/(3*b^6) - (a*x^4
)/b^5 + x^5/(5*b^4) - a^8/(3*b^9*(a + b*x)^3) + (4*a^7)/(b^9*(a +
 b*x)^2) - (28*a^6)/(b^9*(a + b*x)) - (56*a^5*Log[a + b*x])/b^9
```

Rubi [A] time = 0.182108, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^8}{3b^9(a+bx)^3}+\frac{4a^7}{b^9(a+bx)^2}-\frac{28a^6}{b^9(a+bx)}-\frac{56a^5\log(a+bx)}{b^9}+\frac{35a^4x}{b^8}-\frac{10a^3x^2}{b^7}+\frac{10a^2x^3}{3b^6}-\frac{ax^4}{b^5}+\frac{x^5}{5b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^8/(a + b*x)^4,x]
```

```
[Out] (35*a^4*x)/b^8 - (10*a^3*x^2)/b^7 + (10*a^2*x^3)/(3*b^6) - (a*x^4
)/b^5 + x^5/(5*b^4) - a^8/(3*b^9*(a + b*x)^3) + (4*a^7)/(b^9*(a +
 b*x)^2) - (28*a^6)/(b^9*(a + b*x)) - (56*a^5*Log[a + b*x])/b^9
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^8}{3b^9\left(a+bx\right)^3}+\frac{4a^7}{b^9\left(a+bx\right)^2}-\frac{28a^6}{b^9\left(a+bx\right)}-\frac{56a^5\log\left(a+bx\right)}{b^9}+\frac{35a^4x}{b^8}-\frac{20a^3\int x\,dx}{b^7}+\frac{10a^2x^3}{3b^6}-\frac{ax^4}{b^5}+\frac{x^5}{5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8/(b*x+a)**4,x)
```

```
[Out] -a**8/(3*b**9*(a + b*x)**3) + 4*a**7/(b**9*(a + b*x)**2) - 28*a**
6/(b**9*(a + b*x)) - 56*a**5*log(a + b*x)/b**9 + 35*a**4*x/b**8 -
 20*a**3*Integral(x, x)/b**7 + 10*a**2*x**3/(3*b**6) - a*x**4/b**
5 + x**5/(5*b**4)
```

Mathematica [A] time = 0.0574478, size = 101, normalized size = 0.89

$$\frac{-\frac{5a^8}{(a+bx)^3}+\frac{60a^7}{(a+bx)^2}-\frac{420a^6}{a+bx}-840a^5\log(a+bx)+525a^4bx-150a^3b^2x^2+50a^2b^3x^3-15ab^4x^4+3b^5x^5}{15b^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^8/(a + b*x)^4,x]
```

```
[Out] (525*a^4*b*x - 150*a^3*b^2*x^2 + 50*a^2*b^3*x^3 - 15*a*b^4*x^4 +
3*b^5*x^5 - (5*a^8)/(a + b*x)^3 + (60*a^7)/(a + b*x)^2 - (420*a^6
)/(a + b*x) - 840*a^5*Log[a + b*x])/(15*b^9)
```

Maple [A] time = 0.012, size = 109, normalized size = 1.

$$35\,{\frac{{a}^{4}x}{{b}^{8}}}-10\,{\frac{{a}^{3}{x}^{2}}{{b}^{7}}}+{\frac{10\,{a}^{2}{x}^{3}}{3\,{b}^{6}}}-{\frac{a{x}^{4}}{{b}^{5}}}+{\frac{{x}^{5}}{5\,{b}^{4}}}-{\frac{{a}^{8}}{3\,{b}^{9} \left(bx+a \right)^{3}}}+4\,{\frac{{a}^{7}}{{b}^{9} \left(bx+a \right)^{2}}}-28\,{\frac{{a}^{6}}{{b}^{9} \left(bx+a \right)}}-56\,{\frac{{a}^{5}\ln \left(bx+a \right)}{{b}^{9}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8/(b*x+a)^4,x)
```

```
[Out] 35*a^4*x/b^8-10*a^3*x^2/b^7+10/3*a^2*x^3/b^6-a*x^4/b^5+1/5*x^5/b^
4-1/3*a^8/b^9/(b*x+a)^3+4*a^7/b^9/(b*x+a)^2-28*a^6/b^9/(b*x+a)-56
*a^5*ln(b*x+a)/b^9
```

Maxima [A] time = 1.34451, size = 169, normalized size = 1.48

$$-\frac{84\,a^{6}b^{2}x^{2}+156\,a^{7}bx+73\,a^{8}}{3\,(b^{12}x^{3}+3\,ab^{11}x^{2}+3\,a^{2}b^{10}x+a^{3}b^{9})}-\frac{56\,a^{5}\log(bx+a)}{b^{9}}+\frac{3\,b^{4}x^{5}-15\,ab^{3}x^{4}+50\,a^{2}b^{2}x^{3}-150\,a^{3}bx^{2}+525\,a^{4}x}{15\,b^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(84*a^6*b^2*x^2 + 156*a^7*b*x + 73*a^8)/(b^12*x^3 + 3*a*b^11
*x^2 + 3*a^2*b^10*x + a^3*b^9) - 56*a^5*log(b*x + a)/b^9 + 1/15*(
3*b^4*x^5 - 15*a*b^3*x^4 + 50*a^2*b^2*x^3 - 150*a^3*b*x^2 + 525*a
^4*x)/b^8
```

Fricas [A] time = 0.210266, size = 219, normalized size = 1.92

$$\frac{3\,b^{8}x^{8}-6\,ab^{7}x^{7}+14\,a^{2}b^{6}x^{6}-42\,a^{3}b^{5}x^{5}+210\,a^{4}b^{4}x^{4}+1175\,a^{5}b^{3}x^{3}+1005\,a^{6}b^{2}x^{2}-255\,a^{7}bx-365\,a^{8}-840\,\left(a^{5}b^{3}x^{3}+3\right.}{15\,(b^{12}x^{3}+3\,ab^{11}x^{2}+3\,a^{2}b^{10}x+a^{3}b^{9})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/15*(3*b^8*x^8 - 6*a*b^7*x^7 + 14*a^2*b^6*x^6 - 42*a^3*b^5*x^5 +
 210*a^4*b^4*x^4 + 1175*a^5*b^3*x^3 + 1005*a^6*b^2*x^2 - 255*a^7*
b*x - 365*a^8 - 840*(a^5*b^3*x^3 + 3*a^6*b^2*x^2 + 3*a^7*b*x + a^
8)*log(b*x + a))/(b^12*x^3 + 3*a*b^11*x^2 + 3*a^2*b^10*x + a^3*b^
9)
```

Sympy [A] time = 2.34752, size = 129, normalized size = 1.13

$$-\frac{56a^5\log{(a+bx)}}{b^9}+\frac{35a^4x}{b^8}-\frac{10a^3x^2}{b^7}+\frac{10a^2x^3}{3b^6}-\frac{ax^4}{b^5}-\frac{73a^8+156a^7bx+84a^6b^2x^2}{3a^3b^9+9a^2b^{10}x+9ab^{11}x^2+3b^{12}x^3}+\frac{x^5}{5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8/(b*x+a)**4,x)
```

```
[Out] -56*a**5*log(a + b*x)/b**9 + 35*a**4*x/b**8 - 10*a**3*x**2/b**7 +
 10*a**2*x**3/(3*b**6) - a*x**4/b**5 - (73*a**8 + 156*a**7*b*x +
84*a**6*b**2*x**2)/(3*a**3*b**9 + 9*a**2*b**10*x + 9*a*b**11*x**2
 + 3*b**12*x**3) + x**5/(5*b**4)
```

GIAC/XCAS [A] time = 0.202679, size = 143, normalized size = 1.25

$$-\frac{56\,a^5\ln\left(|bx+a|\right)}{b^9}-\frac{84\,a^6b^2x^2+156\,a^7bx+73\,a^8}{3\,(bx+a)^3b^9}+\frac{3\,b^{16}x^5-15\,ab^{15}x^4+50\,a^2b^{14}x^3-150\,a^3b^{13}x^2+525\,a^4b^{12}x}{15\,b^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -56*a^5*ln(abs(b*x + a))/b^9 - 1/3*(84*a^6*b^2*x^2 + 156*a^7*b*x
+ 73*a^8)/((b*x + a)^3*b^9) + 1/15*(3*b^16*x^5 - 15*a*b^15*x^4 +
50*a^2*b^14*x^3 - 150*a^3*b^13*x^2 + 525*a^4*b^12*x)/b^20
```

3.194 $\int \frac{x^7}{(a+bx)^4} \, dx$

Optimal. Leaf size=105

$$\frac{a^7}{3b^8(a+bx)^3}-\frac{7a^6}{2b^8(a+bx)^2}+\frac{21a^5}{b^8(a+bx)}+\frac{35a^4\log(a+bx)}{b^8}-\frac{20a^3x}{b^7}+\frac{5a^2x^2}{b^6}-\frac{4ax^3}{3b^5}+\frac{x^4}{4b^4}$$

```
[Out] (-20*a^3*x)/b^7 + (5*a^2*x^2)/b^6 - (4*a*x^3)/(3*b^5) + x^4/(4*b^
4) + a^7/(3*b^8*(a + b*x)^3) - (7*a^6)/(2*b^8*(a + b*x)^2) + (21*
a^5)/(b^8*(a + b*x)) + (35*a^4*Log[a + b*x])/b^8
```

Rubi [A] time = 0.154311, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7}{3b^8(a+bx)^3}-\frac{7a^6}{2b^8(a+bx)^2}+\frac{21a^5}{b^8(a+bx)}+\frac{35a^4\log(a+bx)}{b^8}-\frac{20a^3x}{b^7}+\frac{5a^2x^2}{b^6}-\frac{4ax^3}{3b^5}+\frac{x^4}{4b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7/(a + b*x)^4,x]
```

```
[Out] (-20*a^3*x)/b^7 + (5*a^2*x^2)/b^6 - (4*a*x^3)/(3*b^5) + x^4/(4*b^
4) + a^7/(3*b^8*(a + b*x)^3) - (7*a^6)/(2*b^8*(a + b*x)^2) + (21*
a^5)/(b^8*(a + b*x)) + (35*a^4*Log[a + b*x])/b^8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^7}{3b^8\left(a+bx\right)^3}-\frac{7a^6}{2b^8\left(a+bx\right)^2}+\frac{21a^5}{b^8\left(a+bx\right)}+\frac{35a^4\log\left(a+bx\right)}{b^8}-\frac{20a^3x}{b^7}+\frac{10a^2\int x\,dx}{b^6}-\frac{4ax^3}{3b^5}+\frac{x^4}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7/(b*x+a)**4,x)
```

```
[Out] a**7/(3*b**8*(a + b*x)**3) - 7*a**6/(2*b**8*(a + b*x)**2) + 21*a*
*5/(b**8*(a + b*x)) + 35*a**4*log(a + b*x)/b**8 - 20*a**3*x/b**7
+ 10*a**2*Integral(x, x)/b**6 - 4*a*x**3/(3*b**5) + x**4/(4*b**4)
```

Mathematica [A] time = 0.0632389, size = 90, normalized size = 0.86

$$\frac{\frac{4a^7}{(a+bx)^3}-\frac{42a^6}{(a+bx)^2}+\frac{252a^5}{a+bx}+420a^4\log(a+bx)-240a^3bx+60a^2b^2x^2-16ab^3x^3+3b^4x^4}{12b^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7/(a + b*x)^4,x]
```

```
[Out] (-240*a^3*b*x + 60*a^2*b^2*x^2 - 16*a*b^3*x^3 + 3*b^4*x^4 + (4*a^
7)/(a + b*x)^3 - (42*a^6)/(a + b*x)^2 + (252*a^5)/(a + b*x) + 420
*a^4*Log[a + b*x])/(12*b^8)
```

Maple [A] time = 0.01, size = 98, normalized size = 0.9

$$-20\,\frac{a^3x}{b^7}+5\,\frac{a^2x^2}{b^6}-\frac{4\,ax^3}{3\,b^5}+\frac{x^4}{4\,b^4}+\frac{a^7}{3\,b^8\left(bx+a\right)^3}-\frac{7\,a^6}{2\,b^8\left(bx+a\right)^2}+21\,\frac{a^5}{b^8\left(bx+a\right)}+35\,\frac{a^4\ln\left(bx+a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7/(b*x+a)^4,x)
```

```
[Out] -20*a^3*x/b^7+5*a^2*x^2/b^6-4/3*a*x^3/b^5+1/4*x^4/b^4+1/3*a^7/b^8
/(b*x+a)^3-7/2*a^6/b^8/(b*x+a)^2+21*a^5/b^8/(b*x+a)+35*a^4*ln(b*x
+a)/b^8
```

Maxima [A] time = 1.34261, size = 154, normalized size = 1.47

$$\frac{126\,a^5b^2x^2+231\,a^6bx+107\,a^7}{6\left(b^{11}x^3+3\,ab^{10}x^2+3\,a^2b^9x+a^3b^8\right)}+\frac{35\,a^4\log\left(bx+a\right)}{b^8}+\frac{3\,b^3x^4-16\,ab^2x^3+60\,a^2bx^2-240\,a^3x}{12\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(126*a^5*b^2*x^2 + 231*a^6*b*x + 107*a^7)/(b^11*x^3 + 3*a*b^1
0*x^2 + 3*a^2*b^9*x + a^3*b^8) + 35*a^4*log(b*x + a)/b^8 + 1/12*(
3*b^3*x^4 - 16*a*b^2*x^3 + 60*a^2*b*x^2 - 240*a^3*x)/b^7
```

Fricas [A] time = 0.207295, size = 204, normalized size = 1.94

$$\frac{3\,b^7x^7-7\,ab^6x^6+21\,a^2b^5x^5-105\,a^3b^4x^4-556\,a^4b^3x^3-408\,a^5b^2x^2+222\,a^6bx+214\,a^7+420\left(a^4b^3x^3+3\,a^5b^2x^2+3\,a^6bx\right.}{12\left(b^{11}x^3+3\,ab^{10}x^2+3\,a^2b^9x+a^3b^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^7*x^7 - 7*a*b^6*x^6 + 21*a^2*b^5*x^5 - 105*a^3*b^4*x^4
- 556*a^4*b^3*x^3 - 408*a^5*b^2*x^2 + 222*a^6*b*x + 214*a^7 + 420
*(a^4*b^3*x^3 + 3*a^5*b^2*x^2 + 3*a^6*b*x + a^7)*log(b*x + a))/(b
^11*x^3 + 3*a*b^10*x^2 + 3*a^2*b^9*x + a^3*b^8)
```

Sympy [A] time = 2.25623, size = 119, normalized size = 1.13

$$\frac{35a^4\log{(a+bx)}}{b^8}-\frac{20a^3x}{b^7}+\frac{5a^2x^2}{b^6}-\frac{4ax^3}{3b^5}+\frac{107a^7+231a^6bx+126a^5b^2x^2}{6a^3b^8+18a^2b^9x+18ab^{10}x^2+6b^{11}x^3}+\frac{x^4}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7/(b*x+a)**4,x)
```

```
[Out] 35*a**4*log(a + b*x)/b**8 - 20*a**3*x/b**7 + 5*a**2*x**2/b**6 - 4
*a*x**3/(3*b**5) + (107*a**7 + 231*a**6*b*x + 126*a**5*b**2*x**2)
/(6*a**3*b**8 + 18*a**2*b**9*x + 18*a*b**10*x**2 + 6*b**11*x**3)
+ x**4/(4*b**4)
```

GIAC/XCAS [A] time = 0.205905, size = 128, normalized size = 1.22

$$\frac{35\,a^4\ln\left(|bx+a|\right)}{b^8}+\frac{126\,a^5b^2x^2+231\,a^6bx+107\,a^7}{6\,(bx+a)^3b^8}+\frac{3\,b^{12}x^4-16\,ab^{11}x^3+60\,a^2b^{10}x^2-240\,a^3b^9x}{12\,b^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] 35*a^4*ln(abs(b*x + a))/b^8 + 1/6*(126*a^5*b^2*x^2 + 231*a^6*b*x
+ 107*a^7)/((b*x + a)^3*b^8) + 1/12*(3*b^12*x^4 - 16*a*b^11*x^3 +
 60*a^2*b^10*x^2 - 240*a^3*b^9*x)/b^16
```

3.195 $\int \frac{x^6}{(a+bx)^4}\,dx$

Optimal. Leaf size=90

$$-\frac{a^6}{3b^7(a+bx)^3}+\frac{3a^5}{b^7(a+bx)^2}-\frac{15a^4}{b^7(a+bx)}-\frac{20a^3\log(a+bx)}{b^7}+\frac{10a^2x}{b^6}-\frac{2ax^2}{b^5}+\frac{x^3}{3b^4}$$

```
[Out] (10*a^2*x)/b^6 - (2*a*x^2)/b^5 + x^3/(3*b^4) - a^6/(3*b^7*(a + b*
x)^3) + (3*a^5)/(b^7*(a + b*x)^2) - (15*a^4)/(b^7*(a + b*x)) - (2
0*a^3*Log[a + b*x])/b^7
```

Rubi [A] time = 0.128264, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^6}{3b^7(a+bx)^3}+\frac{3a^5}{b^7(a+bx)^2}-\frac{15a^4}{b^7(a+bx)}-\frac{20a^3\log(a+bx)}{b^7}+\frac{10a^2x}{b^6}-\frac{2ax^2}{b^5}+\frac{x^3}{3b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6/(a + b*x)^4,x]
```

```
[Out] (10*a^2*x)/b^6 - (2*a*x^2)/b^5 + x^3/(3*b^4) - a^6/(3*b^7*(a + b*
x)^3) + (3*a^5)/(b^7*(a + b*x)^2) - (15*a^4)/(b^7*(a + b*x)) - (2
0*a^3*Log[a + b*x])/b^7
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^6}{3b^7\left(a+bx\right)^3}+\frac{3a^5}{b^7\left(a+bx\right)^2}-\frac{15a^4}{b^7\left(a+bx\right)}-\frac{20a^3\log\left(a+bx\right)}{b^7}+\frac{10a^2x}{b^6}-\frac{4a\int x\,dx}{b^5}+\frac{x^3}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6/(b*x+a)**4,x)
```

```
[Out] -a**6/(3*b**7*(a + b*x)**3) + 3*a**5/(b**7*(a + b*x)**2) - 15*a**
4/(b**7*(a + b*x)) - 20*a**3*log(a + b*x)/b**7 + 10*a**2*x/b**6 -
 4*a*Integral(x, x)/b**5 + x**3/(3*b**4)
```

Mathematica [A] time = 0.0326514, size = 90, normalized size = 1.

$$-\frac{a^6}{3b^7(a+bx)^3}+\frac{3a^5}{b^7(a+bx)^2}-\frac{15a^4}{b^7(a+bx)}-\frac{20a^3\log(a+bx)}{b^7}+\frac{10a^2x}{b^6}-\frac{2ax^2}{b^5}+\frac{x^3}{3b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6/(a + b*x)^4,x]
```

```
[Out] (10*a^2*x)/b^6 - (2*a*x^2)/b^5 + x^3/(3*b^4) - a^6/(3*b^7*(a + b*
x)^3) + (3*a^5)/(b^7*(a + b*x)^2) - (15*a^4)/(b^7*(a + b*x)) - (2
0*a^3*Log[a + b*x])/b^7
```

Maple [A]   time = 0.011, size = 87, normalized size = 1.

$$10\,{\frac{{a}^{2}x}{{b}^{6}}}-2\,{\frac{a{x}^{2}}{{b}^{5}}}+{\frac{{x}^{3}}{3\,{b}^{4}}}-{\frac{{a}^{6}}{3\,{b}^{7} \left(bx+a \right) ^{3}}}+3\,{\frac{{a}^{5}}{{b}^{7} \left(bx+a \right) ^{2}}}-15\,{\frac{{a}^{4}}{{b}^{7} \left(bx+a \right) }}-20\,{\frac{{a}^{3}\ln \left(bx+a \right) }{{b}^{7}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6/(b*x+a)^4,x)
```

```
[Out] 10*a^2*x/b^6-2*a*x^2/b^5+1/3*x^3/b^4-1/3*a^6/b^7/(b*x+a)^3+3*a^5/
b^7/(b*x+a)^2-15*a^4/b^7/(b*x+a)-20*a^3*ln(b*x+a)/b^7
```

Maxima [A]   time = 1.3293, size = 138, normalized size = 1.53

$$-\frac{45 \, a^{4} b^{2} x^{2} + 81 \, a^{5} b x + 37 \, a^{6}}{3 \,{\left (b^{10} x^{3} + 3 \, a b^{9} x^{2} + 3 \, a^{2} b^{8} x + a^{3} b^{7}\right)}} - \frac{20 \, a^{3} \log \left (b x + a\right)}{b^{7}} + \frac{b^{2} x^{3} - 6 \, a b x^{2} + 30 \, a^{2} x}{3 \, b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(45*a^4*b^2*x^2 + 81*a^5*b*x + 37*a^6)/(b^10*x^3 + 3*a*b^9*x
^2 + 3*a^2*b^8*x + a^3*b^7) - 20*a^3*log(b*x + a)/b^7 + 1/3*(b^2*
x^3 - 6*a*b*x^2 + 30*a^2*x)/b^6
```

Fricas [A]   time = 0.216908, size = 188, normalized size = 2.09

$$\frac{b^{6} x^{6} - 3 \, a b^{5} x^{5} + 15 \, a^{2} b^{4} x^{4} + 73 \, a^{3} b^{3} x^{3} + 39 \, a^{4} b^{2} x^{2} - 51 \, a^{5} b x - 37 \, a^{6} - 60 \,{\left (a^{3} b^{3} x^{3} + 3 \, a^{4} b^{2} x^{2} + 3 \, a^{5} b x + a^{6}\right)} \log \left (b x + a\right)}{3 \,{\left (b^{10} x^{3} + 3 \, a b^{9} x^{2} + 3 \, a^{2} b^{8} x + a^{3} b^{7}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/3*(b^6*x^6 - 3*a*b^5*x^5 + 15*a^2*b^4*x^4 + 73*a^3*b^3*x^3 + 39
*a^4*b^2*x^2 - 51*a^5*b*x - 37*a^6 - 60*(a^3*b^3*x^3 + 3*a^4*b^2*
x^2 + 3*a^5*b*x + a^6)*log(b*x + a))/(b^10*x^3 + 3*a*b^9*x^2 + 3*
a^2*b^8*x + a^3*b^7)
```

Sympy [A] time = 2.2116, size = 105, normalized size = 1.17

$$-\frac{20a^3\log(a+bx)}{b^7}+\frac{10a^2x}{b^6}-\frac{2ax^2}{b^5}-\frac{37a^6+81a^5bx+45a^4b^2x^2}{3a^3b^7+9a^2b^8x+9ab^9x^2+3b^{10}x^3}+\frac{x^3}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6/(b*x+a)**4,x)
```

```
[Out] -20*a**3*log(a + b*x)/b**7 + 10*a**2*x/b**6 - 2*a*x**2/b**5 - (37
*a**6 + 81*a**5*b*x + 45*a**4*b**2*x**2)/(3*a**3*b**7 + 9*a**2*b*
*8*x + 9*a*b**9*x**2 + 3*b**10*x**3) + x**3/(3*b**4)
```

GIAC/XCAS [A] time = 0.202789, size = 112, normalized size = 1.24

$$-\frac{20\,a^3\ln(|bx+a|)}{b^7}-\frac{45\,a^4b^2x^2+81\,a^5bx+37\,a^6}{3\,(bx+a)^3b^7}+\frac{b^8x^3-6\,ab^7x^2+30\,a^2b^6x}{3\,b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -20*a^3*ln(abs(b*x + a))/b^7 - 1/3*(45*a^4*b^2*x^2 + 81*a^5*b*x +
 37*a^6)/((b*x + a)^3*b^7) + 1/3*(b^8*x^3 - 6*a*b^7*x^2 + 30*a^2*
b^6*x)/b^12
```

3.196 $\int \frac{x^5}{(a+bx)^4} dx$

Optimal. Leaf size=81

$$\frac{a^5}{3b^6(a+bx)^3}-\frac{5a^4}{2b^6(a+bx)^2}+\frac{10a^3}{b^6(a+bx)}+\frac{10a^2\log(a+bx)}{b^6}-\frac{4ax}{b^5}+\frac{x^2}{2b^4}$$

```
[Out] (-4*a*x)/b^5 + x^2/(2*b^4) + a^5/(3*b^6*(a + b*x)^3) - (5*a^4)/(2
*b^6*(a + b*x)^2) + (10*a^3)/(b^6*(a + b*x)) + (10*a^2*Log[a + b*
x])/b^6
```

Rubi [A] time = 0.104634, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^5}{3b^6(a+bx)^3}-\frac{5a^4}{2b^6(a+bx)^2}+\frac{10a^3}{b^6(a+bx)}+\frac{10a^2\log(a+bx)}{b^6}-\frac{4ax}{b^5}+\frac{x^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/(a + b*x)^4,x]
```

```
[Out] (-4*a*x)/b^5 + x^2/(2*b^4) + a^5/(3*b^6*(a + b*x)^3) - (5*a^4)/(2
*b^6*(a + b*x)^2) + (10*a^3)/(b^6*(a + b*x)) + (10*a^2*Log[a + b*
x])/b^6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^5}{3b^6\left(a+bx\right)^3}-\frac{5a^4}{2b^6\left(a+bx\right)^2}+\frac{10a^3}{b^6\left(a+bx\right)}+\frac{10a^2\log\left(a+bx\right)}{b^6}-\frac{4ax}{b^5}+\frac{\int x\,dx}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(b*x+a)**4,x)
```

```
[Out] a**5/(3*b**6*(a + b*x)**3) - 5*a**4/(2*b**6*(a + b*x)**2) + 10*a*
*3/(b**6*(a + b*x)) + 10*a**2*log(a + b*x)/b**6 - 4*a*x/b**5 + In
tegral(x, x)/b**4
```

Mathematica [A] time = 0.0402747, size = 68, normalized size = 0.84

$$\frac{\frac{2a^5}{(a+bx)^3}-\frac{15a^4}{(a+bx)^2}+\frac{60a^3}{a+bx}+60a^2\log(a+bx)-24abx+3b^2x^2}{6b^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(a + b*x)^4,x]
```

```
[Out] (-24*a*b*x + 3*b^2*x^2 + (2*a^5)/(a + b*x)^3 - (15*a^4)/(a + b*x)
^2 + (60*a^3)/(a + b*x) + 60*a^2*Log[a + b*x])/(6*b^6)
```

Maple [A] time = 0.011, size = 76, normalized size = 0.9

$$-4\,{\frac {ax}{{b}^{5}}}+{\frac {{x}^{2}}{2\,{b}^{4}}}+{\frac {{a}^{5}}{3\,{b}^{6} \left(bx+a \right) ^{3}}}-{\frac {5\,{a}^{4}}{2\,{b}^{6} \left(bx+a \right) ^{2}}}+10\,{\frac {{a}^{3}}{{b}^{6} \left(bx+a \right) }}+10\,{\frac {{a}^{2}\ln \left(bx+a \right) }{{b}^{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a)^4,x)
```

```
[Out] -4*a*x/b^5+1/2*x^2/b^4+1/3*a^5/b^6/(b*x+a)^3-5/2*a^4/b^6/(b*x+a)^
2+10*a^3/b^6/(b*x+a)+10*a^2*ln(b*x+a)/b^6
```

Maxima [A] time = 1.35051, size = 123, normalized size = 1.52

$$\frac{60 \, a^{3} b^{2} x^{2} + 105 \, a^{4} b x + 47 \, a^{5}}{6 \,{\left (b^{9} x^{3} + 3 \, a b^{8} x^{2} + 3 \, a^{2} b^{7} x + a^{3} b^{6}\right)}} + \frac{10 \, a^{2} \log \left (b x + a\right)}{b^{6}} + \frac{b x^{2} - 8 \, a x}{2 \, b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(60*a^3*b^2*x^2 + 105*a^4*b*x + 47*a^5)/(b^9*x^3 + 3*a*b^8*x^
2 + 3*a^2*b^7*x + a^3*b^6) + 10*a^2*log(b*x + a)/b^6 + 1/2*(b*x^2
 - 8*a*x)/b^5
```

Fricas [A] time = 0.213784, size = 174, normalized size = 2.15

$$\frac{3 \, b^{5} x^{5} - 15 \, a b^{4} x^{4} - 63 \, a^{2} b^{3} x^{3} - 9 \, a^{3} b^{2} x^{2} + 81 \, a^{4} b x + 47 \, a^{5} + 60 \,{\left (a^{2} b^{3} x^{3} + 3 \, a^{3} b^{2} x^{2} + 3 \, a^{4} b x + a^{5}\right)} \log \left (b x + a\right)}{6 \,{\left (b^{9} x^{3} + 3 \, a b^{8} x^{2} + 3 \, a^{2} b^{7} x + a^{3} b^{6}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*b^5*x^5 - 15*a*b^4*x^4 - 63*a^2*b^3*x^3 - 9*a^3*b^2*x^2 +
81*a^4*b*x + 47*a^5 + 60*(a^2*b^3*x^3 + 3*a^3*b^2*x^2 + 3*a^4*b*x
 + a^5)*log(b*x + a))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*
b^6)
```

Sympy [A] time = 2.07843, size = 94, normalized size = 1.16

$$\frac{10a^2\log(a+bx)}{b^6} - \frac{4ax}{b^5} + \frac{47a^5 + 105a^4bx + 60a^3b^2x^2}{6a^3b^6 + 18a^2b^7x + 18ab^8x^2 + 6b^9x^3} + \frac{x^2}{2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a)**4,x)
```

```
[Out] 10*a**2*log(a + b*x)/b**6 - 4*a*x/b**5 + (47*a**5 + 105*a**4*b*x
+ 60*a**3*b**2*x**2)/(6*a**3*b**6 + 18*a**2*b**7*x + 18*a*b**8*x*
*2 + 6*b**9*x**3) + x**2/(2*b**4)
```

GIAC/XCAS [A] time = 0.205047, size = 97, normalized size = 1.2

$$\frac{10\,a^2\ln(|bx+a|)}{b^6} + \frac{b^4x^2 - 8\,ab^3x}{2\,b^8} + \frac{60\,a^3b^2x^2 + 105\,a^4bx + 47\,a^5}{6\,(bx+a)^3b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] 10*a^2*ln(abs(b*x + a))/b^6 + 1/2*(b^4*x^2 - 8*a*b^3*x)/b^8 + 1/6
*(60*a^3*b^2*x^2 + 105*a^4*b*x + 47*a^5)/((b*x + a)^3*b^6)
```

3.197 $\int \frac{x^4}{(a+bx)^4} dx$

Optimal. Leaf size=65

$$-\frac{a^4}{3b^5(a+bx)^3}+\frac{2a^3}{b^5(a+bx)^2}-\frac{6a^2}{b^5(a+bx)}-\frac{4a\log(a+bx)}{b^5}+\frac{x}{b^4}$$

```
[Out] x/b^4 - a^4/(3*b^5*(a + b*x)^3) + (2*a^3)/(b^5*(a + b*x)^2) - (6*
a^2)/(b^5*(a + b*x)) - (4*a*Log[a + b*x])/b^5
```

Rubi [A] time = 0.080038, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^4}{3b^5(a+bx)^3}+\frac{2a^3}{b^5(a+bx)^2}-\frac{6a^2}{b^5(a+bx)}-\frac{4a\log(a+bx)}{b^5}+\frac{x}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^4,x]
```

```
[Out] x/b^4 - a^4/(3*b^5*(a + b*x)^3) + (2*a^3)/(b^5*(a + b*x)^2) - (6*
a^2)/(b^5*(a + b*x)) - (4*a*Log[a + b*x])/b^5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^4}{3b^5\left(a+bx\right)^3}+\frac{2a^3}{b^5\left(a+bx\right)^2}-\frac{6a^2}{b^5\left(a+bx\right)}-\frac{4a\log\left(a+bx\right)}{b^5}+\int\frac{1}{b^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**4,x)
```

```
[Out] -a**4/(3*b**5*(a + b*x)**3) + 2*a**3/(b**5*(a + b*x)**2) - 6*a**2
/(b**5*(a + b*x)) - 4*a*log(a + b*x)/b**5 + Integral(b**(-4), x)
```

Mathematica [A] time = 0.08023, size = 51, normalized size = 0.78

$$-\frac{\frac{a^2\left(13a^2+30abx+18b^2x^2\right)}{(a+bx)^3}+12a\log(a+bx)-3bx}{3b^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^4,x]
```

```
[Out] -(-3*b*x + (a^2*(13*a^2 + 30*a*b*x + 18*b^2*x^2))/(a + b*x)^3 + 1
2*a*Log[a + b*x])/(3*b^5)
```

Maple [A] time = 0.01, size = 64, normalized size = 1.

$$\frac{x}{b^4} - \frac{a^4}{3\,b^5\,(bx+a)^3} + 2\,\frac{a^3}{b^5\,(bx+a)^2} - 6\,\frac{a^2}{b^5\,(bx+a)} - 4\,\frac{a\ln(bx+a)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^4,x)
```

```
[Out] x/b^4-1/3*a^4/b^5/(b*x+a)^3+2*a^3/b^5/(b*x+a)^2-6*a^2/b^5/(b*x+a)
-4*a*ln(b*x+a)/b^5
```

Maxima [A] time = 1.33958, size = 107, normalized size = 1.65

$$-\frac{18\,a^2b^2x^2 + 30\,a^3bx + 13\,a^4}{3\,(b^8x^3 + 3\,ab^7x^2 + 3\,a^2b^6x + a^3b^5)} + \frac{x}{b^4} - \frac{4\,a\log(bx+a)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(18*a^2*b^2*x^2 + 30*a^3*b*x + 13*a^4)/(b^8*x^3 + 3*a*b^7*x^
2 + 3*a^2*b^6*x + a^3*b^5) + x/b^4 - 4*a*log(b*x + a)/b^5
```

Fricas [A] time = 0.216938, size = 157, normalized size = 2.42

$$\frac{3\,b^4x^4 + 9\,ab^3x^3 - 9\,a^2b^2x^2 - 27\,a^3bx - 13\,a^4 - 12\,\left(ab^3x^3 + 3\,a^2b^2x^2 + 3\,a^3bx + a^4\right)\log(bx+a)}{3\,(b^8x^3 + 3\,ab^7x^2 + 3\,a^2b^6x + a^3b^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/3*(3*b^4*x^4 + 9*a*b^3*x^3 - 9*a^2*b^2*x^2 - 27*a^3*b*x - 13*a^
4 - 12*(a*b^3*x^3 + 3*a^2*b^2*x^2 + 3*a^3*b*x + a^4)*log(b*x + a)
)/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)
```

Sympy [A] time = 2.00459, size = 80, normalized size = 1.23

$$-\frac{4a\log(a+bx)}{b^5}-\frac{13a^4+30a^3bx+18a^2b^2x^2}{3a^3b^5+9a^2b^6x+9ab^7x^2+3b^8x^3}+\frac{x}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**4,x)
```

```
[Out] -4*a*log(a + b*x)/b**5 - (13*a**4 + 30*a**3*b*x + 18*a**2*b**2*x*
*2)/(3*a**3*b**5 + 9*a**2*b**6*x + 9*a*b**7*x**2 + 3*b**8*x**3) +
 x/b**4
```

GIAC/XCAS [A] time = 0.206389, size = 74, normalized size = 1.14

$$\frac{x}{b^4}-\frac{4\,a\ln(|bx+a|)}{b^5}-\frac{18\,a^2b^2x^2+30\,a^3bx+13\,a^4}{3\,(bx+a)^3b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] x/b^4 - 4*a*ln(abs(b*x + a))/b^5 - 1/3*(18*a^2*b^2*x^2 + 30*a^3*b
*x + 13*a^4)/((b*x + a)^3*b^5)
```

3.198 $\int \frac{x^3}{(a+bx)^4}\,dx$

Optimal. Leaf size=58

$$\frac{a^3}{3b^4(a+bx)^3} - \frac{3a^2}{2b^4(a+bx)^2} + \frac{3a}{b^4(a+bx)} + \frac{\log(a+bx)}{b^4}$$

```
[Out] a^3/(3*b^4*(a + b*x)^3) - (3*a^2)/(2*b^4*(a + b*x)^2) + (3*a)/(b^
4*(a + b*x)) + Log[a + b*x]/b^4
```

Rubi [A] time = 0.0676924, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3}{3b^4(a+bx)^3} - \frac{3a^2}{2b^4(a+bx)^2} + \frac{3a}{b^4(a+bx)} + \frac{\log(a+bx)}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^4,x]
```

```
[Out] a^3/(3*b^4*(a + b*x)^3) - (3*a^2)/(2*b^4*(a + b*x)^2) + (3*a)/(b^
4*(a + b*x)) + Log[a + b*x]/b^4
```

Rubi in Sympy [A] time = 12.7271, size = 53, normalized size = 0.91

$$\frac{a^3}{3b^4\left(a+bx\right)^3} - \frac{3a^2}{2b^4\left(a+bx\right)^2} + \frac{3a}{b^4\left(a+bx\right)} + \frac{\log\left(a+bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**4,x)
```

```
[Out] a**3/(3*b**4*(a + b*x)**3) - 3*a**2/(2*b**4*(a + b*x)**2) + 3*a/(
b**4*(a + b*x)) + log(a + b*x)/b**4
```

Mathematica [A] time = 0.0237264, size = 44, normalized size = 0.76

$$\frac{\frac{a\left(11a^2+27abx+18b^2x^2\right)}{(a+bx)^3} + 6\log(a+bx)}{6b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^4,x]
```

```
[Out] ((a*(11*a^2 + 27*a*b*x + 18*b^2*x^2))/(a + b*x)^3 + 6*Log[a + b*x
])/(6*b^4)
```

Maple [A] time = 0.009, size = 55, normalized size = 1.

$$\frac{a^3}{3\,b^4\,(bx+a)^3}-\frac{3\,a^2}{2\,b^4\,(bx+a)^2}+3\,\frac{a}{b^4\,(bx+a)}+\frac{\ln(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^4,x)
```

```
[Out] 1/3*a^3/b^4/(b*x+a)^3-3/2*a^2/b^4/(b*x+a)^2+3*a/b^4/(b*x+a)+ln(b*
x+a)/b^4
```

Maxima [A] time = 1.33587, size = 95, normalized size = 1.64

$$\frac{18\,ab^2x^2+27\,a^2bx+11\,a^3}{6\,(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4)}+\frac{\log(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3)/(b^7*x^3 + 3*a*b^6*x^2 +
 3*a^2*b^5*x + a^3*b^4) + log(b*x + a)/b^4
```

Fricas [A] time = 0.207187, size = 127, normalized size = 2.19

$$\frac{18\,ab^2x^2+27\,a^2bx+11\,a^3+6\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)\log(bx+a)}{6\,(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(18*a*b^2*x^2 + 27*a^2*b*x + 11*a^3 + 6*(b^3*x^3 + 3*a*b^2*x^
2 + 3*a^2*b*x + a^3)*log(b*x + a))/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2
*b^5*x + a^3*b^4)
```

Sympy [A] time = 1.67152, size = 70, normalized size = 1.21

$$\frac{11a^3 + 27a^2bx + 18ab^2x^2}{6a^3b^4 + 18a^2b^5x + 18ab^6x^2 + 6b^7x^3} + \frac{\log(a + bx)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**4,x)
```

```
[Out] (11*a**3 + 27*a**2*b*x + 18*a*b**2*x**2)/(6*a**3*b**4 + 18*a**2*b
**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + log(a + b*x)/b**4
```

GIAC/XCAS [A] time = 0.205453, size = 62, normalized size = 1.07

$$\frac{\ln(|bx + a|)}{b^4} + \frac{18\,abx^2 + 27\,a^2x + \frac{11\,a^3}{b}}{6\,(bx + a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] ln(abs(b*x + a))/b^4 + 1/6*(18*a*b*x^2 + 27*a^2*x + 11*a^3/b)/((b
*x + a)^3*b^3)
```

3.199 $\int \frac{x^2}{(a+bx)^4}\,dx$

Optimal. Leaf size=17

$$\frac{x^3}{3a(a+bx)^3}$$

[Out] x^3/(3*a*(a + b*x)^3)

Rubi [A] time = 0.0123673, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{x^3}{3a(a+bx)^3}$$

Antiderivative was successfully verified.

[In] Int[x^2/(a + b*x)^4,x]

[Out] x^3/(3*a*(a + b*x)^3)

Rubi in Sympy [A] time = 2.31418, size = 12, normalized size = 0.71

$$\frac{x^3}{3a\,(a+bx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(x**2/(b*x+a)**4,x)

[Out] x**3/(3*a*(a + b*x)**3)

Mathematica [A] time = 0.0190025, size = 31, normalized size = 1.82

$$-\frac{a^2+3abx+3b^2x^2}{3b^3(a+bx)^3}$$

Antiderivative was successfully verified.

[In] Integrate[x^2/(a + b*x)^4,x]

```
[Out] -(a^2 + 3*a*b*x + 3*b^2*x^2)/(3*b^3*(a + b*x)^3)
```

Maple [B] time = 0.008, size = 41, normalized size = 2.4

$$-\frac{a^2}{3\,b^3\,(bx+a)^3}+\frac{a}{b^3\,(bx+a)^2}-\frac{1}{(bx+a)\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^4,x)
```

```
[Out] -1/3*a^2/b^3/(b*x+a)^3+a/b^3/(b*x+a)^2-1/(b*x+a)/b^3
```

Maxima [A] time = 1.34299, size = 73, normalized size = 4.29

$$-\frac{3\,b^2x^2+3\,abx+a^2}{3\,(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b
^4*x + a^3*b^3)
```

Fricas [A] time = 0.205522, size = 73, normalized size = 4.29

$$-\frac{3\,b^2x^2+3\,abx+a^2}{3\,(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b
^4*x + a^3*b^3)
```

Sympy [A] time = 1.58982, size = 56, normalized size = 3.29

$$-\frac{a^2+3abx+3b^2x^2}{3a^3b^3+9a^2b^4x+9ab^5x^2+3b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**4,x)
```

```
[Out] -(a**2 + 3*a*b*x + 3*b**2*x**2)/(3*a**3*b**3 + 9*a**2*b**4*x + 9*
a*b**5*x**2 + 3*b**6*x**3)
```

GIAC/XCAS [A] time = 0.202093, size = 39, normalized size = 2.29

$$-\frac{3\,b^2x^2 + 3\,abx + a^2}{3\,(bx + a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)/((b*x + a)^3*b^3)
```

3.200 $\int \frac{x}{(a+bx)^4} dx$

Optimal. Leaf size=30

$$\frac{a}{3b^2(a+bx)^3} - \frac{1}{2b^2(a+bx)^2}$$

```
[Out] a/(3*b^2*(a + b*x)^3) - 1/(2*b^2*(a + b*x)^2)
```

Rubi [A] time = 0.0303053, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a}{3b^2(a+bx)^3} - \frac{1}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^4,x]

[Out] a/(3*b^2*(a + b*x)^3) - 1/(2*b^2*(a + b*x)^2)
```

Rubi in Sympy [A] time = 5.5859, size = 26, normalized size = 0.87

$$\frac{a}{3b^2\left(a+bx\right)^3} - \frac{1}{2b^2\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**4,x)

[Out] a/(3*b**2*(a + b*x)**3) - 1/(2*b**2*(a + b*x)**2)
```

Mathematica [A] time = 0.00747, size = 20, normalized size = 0.67

$$-\frac{a+3bx}{6b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^4,x]
```

```
[Out] -(a + 3*b*x)/(6*b^2*(a + b*x)^3)
```

Maple [A] time = 0.008, size = 27, normalized size = 0.9

$$\frac{a}{3\,b^{2}\left(bx+a\right)^{3}}-\frac{1}{2\,b^{2}\left(bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^4,x)

[Out] 1/3*a/b^2/(b*x+a)^3-1/2/b^2/(b*x+a)^2
```

Maxima [A] time = 1.3368, size = 58, normalized size = 1.93

$$-\frac{3\,bx+a}{6\,\left(b^{5}x^{3}+3\,ab^{4}x^{2}+3\,a^{2}b^{3}x+a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^4,x, algorithm="maxima")

[Out] -1/6*(3*b*x + a)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2)
```

Fricas [A] time = 0.205653, size = 58, normalized size = 1.93

$$-\frac{3\,bx+a}{6\,\left(b^{5}x^{3}+3\,ab^{4}x^{2}+3\,a^{2}b^{3}x+a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^4,x, algorithm="fricas")

[Out] -1/6*(3*b*x + a)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2)
```

Sympy [A] time = 1.49142, size = 44, normalized size = 1.47

$$-\frac{a+3bx}{6a^{3}b^{2}+18a^{2}b^{3}x+18ab^{4}x^{2}+6b^{5}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**4,x)
```

```
[Out] -(a + 3*b*x)/(6*a**3*b**2 + 18*a**2*b**3*x + 18*a*b**4*x**2 + 6*b
**5*x**3)
```

GIAC/XCAS [A] time = 0.200993, size = 24, normalized size = 0.8

$$-\frac{3\,bx+a}{6\,(bx+a)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -1/6*(3*b*x + a)/((b*x + a)^3*b^2)
```

3.201 $\int \frac{1}{(a+bx)^4} dx$

Optimal. Leaf size=14

$$-\frac{1}{3b(a+bx)^3}$$

```
[Out] -1/(3*b*(a + b*x)^3)
```

Rubi [A] time = 0.00686396, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{1}{3b(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-4),x]

[Out] -1/(3*b*(a + b*x)^3)
```

Rubi in Sympy [A] time = 1.3005, size = 12, normalized size = 0.86

$$-\frac{1}{3b\left(a+bx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**4,x)

[Out] -1/(3*b*(a + b*x)**3)
```

Mathematica [A] time = 0.00404874, size = 14, normalized size = 1.

$$-\frac{1}{3b(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-4),x]
```

```
[Out] -1/(3*b*(a + b*x)^3)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$-\frac{1}{3\,b\,(bx+a)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^4,x)
```

```
[Out] -1/3/b/(b*x+a)^3
```

Maxima [A] time = 1.34676, size = 16, normalized size = 1.14

$$-\frac{1}{3\,(bx+a)^{3}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-4),x, algorithm="maxima")
```

```
[Out] -1/3/((b*x + a)^3*b)
```

Fricas [A] time = 0.196907, size = 47, normalized size = 3.36

$$-\frac{1}{3\,(b^{4}x^{3}+3\,ab^{3}x^{2}+3\,a^{2}b^{2}x+a^{3}b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-4),x, algorithm="fricas")
```

```
[Out] -1/3/(b^4*x^3 + 3*a*b^3*x^2 + 3*a^2*b^2*x + a^3*b)
```

Sympy [A] time = 1.51976, size = 37, normalized size = 2.64

$$-\frac{1}{3a^{3}b+9a^{2}b^{2}x+9ab^{3}x^{2}+3b^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**4,x)

[Out] -1/(3*a**3*b + 9*a**2*b**2*x + 9*a*b**3*x**2 + 3*b**4*x**3)
```

GIAC/XCAS [A] time = 0.20378, size = 16, normalized size = 1.14

$$-\frac{1}{3\,(bx+a)^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-4),x, algorithm="giac")

[Out] -1/3/((b*x + a)^3*b)
```

3.202 $\int \frac{1}{x(a+bx)^4} \, dx$

Optimal. Leaf size=57

$$-\frac{\log(a+bx)}{a^4}+\frac{\log(x)}{a^4}+\frac{1}{a^3(a+bx)}+\frac{1}{2a^2(a+bx)^2}+\frac{1}{3a(a+bx)^3}$$

```
[Out] 1/(3*a*(a + b*x)^3) + 1/(2*a^2*(a + b*x)^2) + 1/(a^3*(a + b*x)) +
 Log[x]/a^4 - Log[a + b*x]/a^4
```

Rubi [A] time = 0.0602294, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{\log(a+bx)}{a^4}+\frac{\log(x)}{a^4}+\frac{1}{a^3(a+bx)}+\frac{1}{2a^2(a+bx)^2}+\frac{1}{3a(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^4),x]
```

```
[Out] 1/(3*a*(a + b*x)^3) + 1/(2*a^2*(a + b*x)^2) + 1/(a^3*(a + b*x)) +
 Log[x]/a^4 - Log[a + b*x]/a^4
```

Rubi in Sympy [A] time = 10.8952, size = 51, normalized size = 0.89

$$\frac{1}{3a\left(a+bx\right)^3}+\frac{1}{2a^2\left(a+bx\right)^2}+\frac{1}{a^3\left(a+bx\right)}+\frac{\log\left(x\right)}{a^4}-\frac{\log\left(a+bx\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**4,x)
```

```
[Out] 1/(3*a*(a + b*x)**3) + 1/(2*a**2*(a + b*x)**2) + 1/(a**3*(a + b*x
)) + log(x)/a**4 - log(a + b*x)/a**4
```

Mathematica [A] time = 0.0517304, size = 48, normalized size = 0.84

$$\frac{\frac{a\left(11a^2+15abx+6b^2x^2\right)}{(a+bx)^3}-6\log(a+bx)+6\log(x)}{6a^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^4),x]
```

```
[Out] ((a*(11*a^2 + 15*a*b*x + 6*b^2*x^2))/(a + b*x)^3 + 6*Log[x] - 6*L
og[a + b*x])/(6*a^4)
```

Maple [A] time = 0.012, size = 54, normalized size = 1.

$$\frac{1}{3\,a\,(bx+a)^{3}}+\frac{1}{2\,a^{2}\,(bx+a)^{2}}+\frac{1}{a^{3}\,(bx+a)}+\frac{\ln(x)}{a^{4}}-\frac{\ln(bx+a)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^4,x)
```

```
[Out] 1/3/a/(b*x+a)^3+1/2/a^2/(b*x+a)^2+1/a^3/(b*x+a)+ln(x)/a^4-ln(b*x+
a)/a^4
```

Maxima [A] time = 1.34044, size = 99, normalized size = 1.74

$$\frac{6\,b^{2}x^{2}+15\,abx+11\,a^{2}}{6\,(a^{3}b^{3}x^{3}+3\,a^{4}b^{2}x^{2}+3\,a^{5}bx+a^{6})}-\frac{\log(bx+a)}{a^{4}}+\frac{\log(x)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x),x, algorithm="maxima")
```

```
[Out] 1/6*(6*b^2*x^2 + 15*a*b*x + 11*a^2)/(a^3*b^3*x^3 + 3*a^4*b^2*x^2
+ 3*a^5*b*x + a^6) - log(b*x + a)/a^4 + log(x)/a^4
```

Fricas [A] time = 0.214982, size = 167, normalized size = 2.93

$$\frac{6\,ab^{2}x^{2}+15\,a^{2}bx+11\,a^{3}-6\left(b^{3}x^{3}+3\,ab^{2}x^{2}+3\,a^{2}bx+a^{3}\right)\log(bx+a)+6\left(b^{3}x^{3}+3\,ab^{2}x^{2}+3\,a^{2}bx+a^{3}\right)\log(x)}{6\,(a^{4}b^{3}x^{3}+3\,a^{5}b^{2}x^{2}+3\,a^{6}bx+a^{7})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x),x, algorithm="fricas")
```

```
[Out] 1/6*(6*a*b^2*x^2 + 15*a^2*b*x + 11*a^3 - 6*(b^3*x^3 + 3*a*b^2*x^2
 + 3*a^2*b*x + a^3)*log(b*x + a) + 6*(b^3*x^3 + 3*a*b^2*x^2 + 3*a
^2*b*x + a^3)*log(x))/(a^4*b^3*x^3 + 3*a^5*b^2*x^2 + 3*a^6*b*x +
```

```
a^7)
```

Sympy [A] time = 1.98516, size = 70, normalized size = 1.23

$$\frac{11a^2 + 15abx + 6b^2x^2}{6a^6 + 18a^5bx + 18a^4b^2x^2 + 6a^3b^3x^3} + \frac{\log(x) - \log\left(\frac{a}{b} + x\right)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**4,x)
```

```
[Out] (11*a**2 + 15*a*b*x + 6*b**2*x**2)/(6*a**6 + 18*a**5*b*x + 18*a**
4*b**2*x**2 + 6*a**3*b**3*x**3) + (log(x) - log(a/b + x))/a**4
```

GIAC/XCAS [A] time = 0.203031, size = 73, normalized size = 1.28

$$-\frac{\ln(|bx + a|)}{a^4} + \frac{\ln(|x|)}{a^4} + \frac{6\,ab^2x^2 + 15\,a^2bx + 11\,a^3}{6\,(bx + a)^3a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x),x, algorithm="giac")
```

```
[Out] -ln(abs(b*x + a))/a^4 + ln(abs(x))/a^4 + 1/6*(6*a*b^2*x^2 + 15*a^
2*b*x + 11*a^3)/((b*x + a)^3*a^4)
```

3.203 $\int \frac{1}{x^2(a+bx)^4}\,dx$

Optimal. Leaf size=70

$$-\frac{4b\log(x)}{a^5}+\frac{4b\log(a+bx)}{a^5}-\frac{3b}{a^4(a+bx)}-\frac{1}{a^4x}-\frac{b}{a^3(a+bx)^2}-\frac{b}{3a^2(a+bx)^3}$$

```
[Out] -(1/(a^4*x)) - b/(3*a^2*(a + b*x)^3) - b/(a^3*(a + b*x)^2) - (3*b
)/(a^4*(a + b*x)) - (4*b*Log[x])/a^5 + (4*b*Log[a + b*x])/a^5
```

Rubi [A] time = 0.0866428, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{4b\log(x)}{a^5}+\frac{4b\log(a+bx)}{a^5}-\frac{3b}{a^4(a+bx)}-\frac{1}{a^4x}-\frac{b}{a^3(a+bx)^2}-\frac{b}{3a^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^4),x]
```

```
[Out] -(1/(a^4*x)) - b/(3*a^2*(a + b*x)^3) - b/(a^3*(a + b*x)^2) - (3*b
)/(a^4*(a + b*x)) - (4*b*Log[x])/a^5 + (4*b*Log[a + b*x])/a^5
```

Rubi in Sympy [A] time = 15.3072, size = 66, normalized size = 0.94

$$-\frac{b}{3a^2\left(a+bx\right)^3}-\frac{b}{a^3\left(a+bx\right)^2}-\frac{3b}{a^4\left(a+bx\right)}-\frac{1}{a^4x}-\frac{4b\log\left(x\right)}{a^5}+\frac{4b\log\left(a+bx\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**4,x)
```

```
[Out] -b/(3*a**2*(a + b*x)**3) - b/(a**3*(a + b*x)**2) - 3*b/(a**4*(a +
 b*x)) - 1/(a**4*x) - 4*b*log(x)/a**5 + 4*b*log(a + b*x)/a**5
```

Mathematica [A] time = 0.099213, size = 64, normalized size = 0.91

$$-\frac{\frac{a\left(3a^3+22a^2bx+30ab^2x^2+12b^3x^3\right)}{x(a+bx)^3}-12b\log(a+bx)+12b\log(x)}{3a^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^4),x]
```

```
[Out] -((a*(3*a^3 + 22*a^2*b*x + 30*a*b^2*x^2 + 12*b^3*x^3))/(x*(a + b*
x)^3) + 12*b*Log[x] - 12*b*Log[a + b*x])/(3*a^5)
```

Maple [A] time = 0.016, size = 69, normalized size = 1.

$$-\frac{1}{a^4x}-\frac{b}{3\,a^2\,(bx+a)^3}-\frac{b}{a^3\,(bx+a)^2}-3\,\frac{b}{a^4\,(bx+a)}-4\,\frac{b\ln(x)}{a^5}+4\,\frac{b\ln(bx+a)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^4,x)
```

```
[Out] -1/a^4/x-1/3*b/a^2/(b*x+a)^3-b/a^3/(b*x+a)^2-3*b/a^4/(b*x+a)-4*b*
ln(x)/a^5+4*b*ln(b*x+a)/a^5
```

Maxima [A] time = 1.34396, size = 123, normalized size = 1.76

$$-\frac{12\,b^3x^3+30\,ab^2x^2+22\,a^2bx+3\,a^3}{3\,(a^4b^3x^4+3\,a^5b^2x^3+3\,a^6bx^2+a^7x)}+\frac{4\,b\log(bx+a)}{a^5}-\frac{4\,b\log(x)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^2),x, algorithm="maxima")
```

```
[Out] -1/3*(12*b^3*x^3 + 30*a*b^2*x^2 + 22*a^2*b*x + 3*a^3)/(a^4*b^3*x^
4 + 3*a^5*b^2*x^3 + 3*a^6*b*x^2 + a^7*x) + 4*b*log(b*x + a)/a^5 -
 4*b*log(x)/a^5
```

Fricas [A] time = 0.213598, size = 207, normalized size = 2.96

$$-\frac{12\,ab^3x^3+30\,a^2b^2x^2+22\,a^3bx+3\,a^4-12\left(b^4x^4+3\,ab^3x^3+3\,a^2b^2x^2+a^3bx\right)\log(bx+a)+12\left(b^4x^4+3\,ab^3x^3+3\,a^2b^2x\right.}{3\,(a^5b^3x^4+3\,a^6b^2x^3+3\,a^7bx^2+a^8x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^2),x, algorithm="fricas")
```

```
[Out] -1/3*(12*a*b^3*x^3 + 30*a^2*b^2*x^2 + 22*a^3*b*x + 3*a^4 - 12*(b^
4*x^4 + 3*a*b^3*x^3 + 3*a^2*b^2*x^2 + a^3*b*x)*log(b*x + a) + 12*
```

```
(b^4*x^4 + 3*a*b^3*x^3 + 3*a^2*b^2*x^2 + a^3*b*x)*log(x))/(a^5*b^
3*x^4 + 3*a^6*b^2*x^3 + 3*a^7*b*x^2 + a^8*x)
```

Sympy [A] time = 2.25957, size = 88, normalized size = 1.26

$$-\frac{3a^3 + 22a^2bx + 30ab^2x^2 + 12b^3x^3}{3a^7x + 9a^6bx^2 + 9a^5b^2x^3 + 3a^4b^3x^4} + \frac{4b\left(-\log\left(x\right) + \log\left(\frac{a}{b} + x\right)\right)}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**4,x)
```

```
[Out] -(3*a**3 + 22*a**2*b*x + 30*a*b**2*x**2 + 12*b**3*x**3)/(3*a**7*x
 + 9*a**6*b*x**2 + 9*a**5*b**2*x**3 + 3*a**4*b**3*x**4) + 4*b*(-l
og(x) + log(a/b + x))/a**5
```

GIAC/XCAS [A] time = 0.203845, size = 96, normalized size = 1.37

$$\frac{4\,b\ln\left(|bx + a|\right)}{a^5} - \frac{4\,b\ln\left(|x|\right)}{a^5} - \frac{12\,ab^3x^3 + 30\,a^2b^2x^2 + 22\,a^3bx + 3\,a^4}{3\,(bx + a)^3a^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^2),x, algorithm="giac")
```

```
[Out] 4*b*ln(abs(b*x + a))/a^5 - 4*b*ln(abs(x))/a^5 - 1/3*(12*a*b^3*x^3
 + 30*a^2*b^2*x^2 + 22*a^3*b*x + 3*a^4)/((b*x + a)^3*a^5*x)
```

3.204 $\int \frac{1}{x^3(a+bx)^4}\,dx$

Optimal. Leaf size=93

$$\frac{10b^2\log(x)}{a^6}-\frac{10b^2\log(a+bx)}{a^6}+\frac{6b^2}{a^5(a+bx)}+\frac{4b}{a^5x}+\frac{3b^2}{2a^4(a+bx)^2}-\frac{1}{2a^4x^2}+\frac{b^2}{3a^3(a+bx)^3}$$

```
[Out] -1/(2*a^4*x^2) + (4*b)/(a^5*x) + b^2/(3*a^3*(a + b*x)^3) + (3*b^2
)/(2*a^4*(a + b*x)^2) + (6*b^2)/(a^5*(a + b*x)) + (10*b^2*Log[x])
/a^6 - (10*b^2*Log[a + b*x])/a^6
```

Rubi [A] time = 0.116437, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{10b^2\log(x)}{a^6}-\frac{10b^2\log(a+bx)}{a^6}+\frac{6b^2}{a^5(a+bx)}+\frac{4b}{a^5x}+\frac{3b^2}{2a^4(a+bx)^2}-\frac{1}{2a^4x^2}+\frac{b^2}{3a^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^4),x]
```

```
[Out] -1/(2*a^4*x^2) + (4*b)/(a^5*x) + b^2/(3*a^3*(a + b*x)^3) + (3*b^2
)/(2*a^4*(a + b*x)^2) + (6*b^2)/(a^5*(a + b*x)) + (10*b^2*Log[x])
/a^6 - (10*b^2*Log[a + b*x])/a^6
```

Rubi in Sympy [A] time = 19.416, size = 90, normalized size = 0.97

$$\frac{b^2}{3a^3\left(a+bx\right)^3}+\frac{3b^2}{2a^4\left(a+bx\right)^2}-\frac{1}{2a^4x^2}+\frac{6b^2}{a^5\left(a+bx\right)}+\frac{4b}{a^5x}+\frac{10b^2\log\left(x\right)}{a^6}-\frac{10b^2\log\left(a+bx\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**4,x)
```

```
[Out] b**2/(3*a**3*(a + b*x)**3) + 3*b**2/(2*a**4*(a + b*x)**2) - 1/(2*
a**4*x**2) + 6*b**2/(a**5*(a + b*x)) + 4*b/(a**5*x) + 10*b**2*log
(x)/a**6 - 10*b**2*log(a + b*x)/a**6
```

Mathematica [A] time = 0.102852, size = 79, normalized size = 0.85

$$\frac{\frac{a\left(-3a^4+15a^3bx+110a^2b^2x^2+150ab^3x^3+60b^4x^4\right)}{x^2(a+bx)^3}-60b^2\log(a+bx)+60b^2\log(x)}{6a^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^4),x]
```

```
[Out] ((a*(-3*a^4 + 15*a^3*b*x + 110*a^2*b^2*x^2 + 150*a*b^3*x^3 + 60*b
^4*x^4))/(x^2*(a + b*x)^3) + 60*b^2*Log[x] - 60*b^2*Log[a + b*x])
/(6*a^6)
```

Maple [A] time = 0.016, size = 88, normalized size = 1.

$$-\frac{1}{2\,a^4x^2}+4\,\frac{b}{a^5x}+\frac{b^2}{3\,a^3\,(bx+a)^3}+\frac{3\,b^2}{2\,a^4\,(bx+a)^2}+6\,\frac{b^2}{a^5\,(bx+a)}+10\,\frac{b^2\ln(x)}{a^6}-10\,\frac{b^2\ln(bx+a)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^4,x)
```

```
[Out] -1/2/a^4/x^2+4*b/a^5/x+1/3*b^2/a^3/(b*x+a)^3+3/2*b^2/a^4/(b*x+a)^
2+6*b^2/a^5/(b*x+a)+10*b^2*ln(x)/a^6-10*b^2*ln(b*x+a)/a^6
```

Maxima [A] time = 1.35482, size = 146, normalized size = 1.57

$$\frac{60\,b^4x^4+150\,ab^3x^3+110\,a^2b^2x^2+15\,a^3bx-3\,a^4}{6\,(a^5b^3x^5+3\,a^6b^2x^4+3\,a^7bx^3+a^8x^2)}-\frac{10\,b^2\log(bx+a)}{a^6}+\frac{10\,b^2\log(x)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^3),x, algorithm="maxima")
```

```
[Out] 1/6*(60*b^4*x^4 + 150*a*b^3*x^3 + 110*a^2*b^2*x^2 + 15*a^3*b*x -
3*a^4)/(a^5*b^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*b*x^3 + a^8*x^2) - 10
*b^2*log(b*x + a)/a^6 + 10*b^2*log(x)/a^6
```

Fricas [A] time = 0.212957, size = 235, normalized size = 2.53

$$\frac{60\,ab^4x^4+150\,a^2b^3x^3+110\,a^3b^2x^2+15\,a^4bx-3\,a^5-60\,\left(b^5x^5+3\,ab^4x^4+3\,a^2b^3x^3+a^3b^2x^2\right)\log(bx+a)+60\,\left(b^5x^5+3\,a\right.}{6\,(a^6b^3x^5+3\,a^7b^2x^4+3\,a^8bx^3+a^9x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^3),x, algorithm="fricas")
```

```
[Out] 1/6*(60*a*b^4*x^4 + 150*a^2*b^3*x^3 + 110*a^3*b^2*x^2 + 15*a^4*b*
x - 3*a^5 - 60*(b^5*x^5 + 3*a*b^4*x^4 + 3*a^2*b^3*x^3 + a^3*b^2*x
^2)*log(b*x + a) + 60*(b^5*x^5 + 3*a*b^4*x^4 + 3*a^2*b^3*x^3 + a^
3*b^2*x^2)*log(x))/(a^6*b^3*x^5 + 3*a^7*b^2*x^4 + 3*a^8*b*x^3 + a
^9*x^2)
```

Sympy [A] time = 2.47417, size = 104, normalized size = 1.12

$$\frac{-3a^4 + 15a^3bx + 110a^2b^2x^2 + 150ab^3x^3 + 60b^4x^4}{6a^8x^2 + 18a^7bx^3 + 18a^6b^2x^4 + 6a^5b^3x^5} + \frac{10b^2\left(\log\left(x\right) - \log\left(\frac{a}{b} + x\right)\right)}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**4,x)
```

```
[Out] (-3*a**4 + 15*a**3*b*x + 110*a**2*b**2*x**2 + 150*a*b**3*x**3 + 6
0*b**4*x**4)/(6*a**8*x**2 + 18*a**7*b*x**3 + 18*a**6*b**2*x**4 +
6*a**5*b**3*x**5) + 10*b**2*(log(x) - log(a/b + x))/a**6
```

GIAC/XCAS [A] time = 0.204071, size = 116, normalized size = 1.25

$$-\frac{10\,b^2\ln\left(|bx + a|\right)}{a^6} + \frac{10\,b^2\ln\left(|x|\right)}{a^6} + \frac{60\,ab^4x^4 + 150\,a^2b^3x^3 + 110\,a^3b^2x^2 + 15\,a^4bx - 3\,a^5}{6\,(bx + a)^3a^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^3),x, algorithm="giac")
```

```
[Out] -10*b^2*ln(abs(b*x + a))/a^6 + 10*b^2*ln(abs(x))/a^6 + 1/6*(60*a*
b^4*x^4 + 150*a^2*b^3*x^3 + 110*a^3*b^2*x^2 + 15*a^4*b*x - 3*a^5)
/((b*x + a)^3*a^6*x^2)
```

3.205 $\int \frac{1}{x^4(a+bx)^4}\,dx$

Optimal. Leaf size=102

$$-\frac{20b^3\log(x)}{a^7}+\frac{20b^3\log(a+bx)}{a^7}-\frac{10b^3}{a^6(a+bx)}-\frac{10b^2}{a^6x}-\frac{2b^3}{a^5(a+bx)^2}+\frac{2b}{a^5x^2}-\frac{b^3}{3a^4(a+bx)^3}-\frac{1}{3a^4x^3}$$

```
[Out] -1/(3*a^4*x^3) + (2*b)/(a^5*x^2) - (10*b^2)/(a^6*x) - b^3/(3*a^4*
(a + b*x)^3) - (2*b^3)/(a^5*(a + b*x)^2) - (10*b^3)/(a^6*(a + b*x
)) - (20*b^3*Log[x])/a^7 + (20*b^3*Log[a + b*x])/a^7
```

Rubi [A] time = 0.128163, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{20b^3\log(x)}{a^7}+\frac{20b^3\log(a+bx)}{a^7}-\frac{10b^3}{a^6(a+bx)}-\frac{10b^2}{a^6x}-\frac{2b^3}{a^5(a+bx)^2}+\frac{2b}{a^5x^2}-\frac{b^3}{3a^4(a+bx)^3}-\frac{1}{3a^4x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(a + b*x)^4),x]
```

```
[Out] -1/(3*a^4*x^3) + (2*b)/(a^5*x^2) - (10*b^2)/(a^6*x) - b^3/(3*a^4*
(a + b*x)^3) - (2*b^3)/(a^5*(a + b*x)^2) - (10*b^3)/(a^6*(a + b*x
)) - (20*b^3*Log[x])/a^7 + (20*b^3*Log[a + b*x])/a^7
```

Rubi in Sympy [A] time = 21.876, size = 100, normalized size = 0.98

$$-\frac{b^3}{3a^4\left(a+bx\right)^3}-\frac{1}{3a^4x^3}-\frac{2b^3}{a^5\left(a+bx\right)^2}+\frac{2b}{a^5x^2}-\frac{10b^3}{a^6\left(a+bx\right)}-\frac{10b^2}{a^6x}-\frac{20b^3\log\left(x\right)}{a^7}+\frac{20b^3\log\left(a+bx\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a)**4,x)
```

```
[Out] -b**3/(3*a**4*(a + b*x)**3) - 1/(3*a**4*x**3) - 2*b**3/(a**5*(a +
 b*x)**2) + 2*b/(a**5*x**2) - 10*b**3/(a**6*(a + b*x)) - 10*b**2/
(a**6*x) - 20*b**3*log(x)/a**7 + 20*b**3*log(a + b*x)/a**7
```

Mathematica [A] time = 0.087469, size = 88, normalized size = 0.86

$$-\frac{\frac{a\left(a^5-3a^4bx+15a^3b^2x^2+110a^2b^3x^3+150ab^4x^4+60b^5x^5\right)}{x^3(a+bx)^3}-60b^3\log(a+bx)+60b^3\log(x)}{3a^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(a + b*x)^4),x]
```

```
[Out] -((a*(a^5 - 3*a^4*b*x + 15*a^3*b^2*x^2 + 110*a^2*b^3*x^3 + 150*a*
b^4*x^4 + 60*b^5*x^5))/(x^3*(a + b*x)^3) + 60*b^3*Log[x] - 60*b^3
*Log[a + b*x])/(3*a^7)
```

Maple [A] time = 0.016, size = 99, normalized size = 1.

$$-\frac{1}{3\,a^4x^3}+2\,\frac{b}{a^5x^2}-10\,\frac{b^2}{a^6x}-\frac{b^3}{3\,a^4\,(bx+a)^3}-2\,\frac{b^3}{a^5\,(bx+a)^2}-10\,\frac{b^3}{a^6\,(bx+a)}-20\,\frac{b^3\ln(x)}{a^7}+20\,\frac{b^3\ln(bx+a)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a)^4,x)
```

```
[Out] -1/3/a^4/x^3+2*b/a^5/x^2-10*b^2/a^6/x-1/3*b^3/a^4/(b*x+a)^3-2*b^3
/a^5/(b*x+a)^2-10*b^3/a^6/(b*x+a)-20*b^3*ln(x)/a^7+20*b^3*ln(b*x+
a)/a^7
```

Maxima [A] time = 1.34857, size = 158, normalized size = 1.55

$$-\frac{60\,b^5x^5+150\,ab^4x^4+110\,a^2b^3x^3+15\,a^3b^2x^2-3\,a^4bx+a^5}{3\,(a^6b^3x^6+3\,a^7b^2x^5+3\,a^8bx^4+a^9x^3)}+\frac{20\,b^3\log(bx+a)}{a^7}-\frac{20\,b^3\log(x)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^4),x, algorithm="maxima")
```

```
[Out] -1/3*(60*b^5*x^5 + 150*a*b^4*x^4 + 110*a^2*b^3*x^3 + 15*a^3*b^2*x
^2 - 3*a^4*b*x + a^5)/(a^6*b^3*x^6 + 3*a^7*b^2*x^5 + 3*a^8*b*x^4
+ a^9*x^3) + 20*b^3*log(b*x + a)/a^7 - 20*b^3*log(x)/a^7
```

Fricas [A] time = 0.221032, size = 247, normalized size = 2.42

$$-\frac{60\,ab^5x^5+150\,a^2b^4x^4+110\,a^3b^3x^3+15\,a^4b^2x^2-3\,a^5bx+a^6-60\left(b^6x^6+3\,ab^5x^5+3\,a^2b^4x^4+a^3b^3x^3\right)\log(bx+a)+60}{3\,(a^7b^3x^6+3\,a^8b^2x^5+3\,a^9bx^4+a^{10}x^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^4),x, algorithm="fricas")
```

```
[Out] -1/3*(60*a*b^5*x^5 + 150*a^2*b^4*x^4 + 110*a^3*b^3*x^3 + 15*a^4*b
^2*x^2 - 3*a^5*b*x + a^6 - 60*(b^6*x^6 + 3*a*b^5*x^5 + 3*a^2*b^4*
x^4 + a^3*b^3*x^3)*log(b*x + a) + 60*(b^6*x^6 + 3*a*b^5*x^5 + 3*a
^2*b^4*x^4 + a^3*b^3*x^3)*log(x))/(a^7*b^3*x^6 + 3*a^8*b^2*x^5 +
3*a^9*b*x^4 + a^10*x^3)
```

Sympy [A] time = 2.66258, size = 114, normalized size = 1.12

$$-\frac{a^5 - 3a^4bx + 15a^3b^2x^2 + 110a^2b^3x^3 + 150ab^4x^4 + 60b^5x^5}{3a^9x^3 + 9a^8bx^4 + 9a^7b^2x^5 + 3a^6b^3x^6} + \frac{20b^3\left(-\log\left(x\right) + \log\left(\frac{a}{b} + x\right)\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a)**4,x)
```

```
[Out] -(a**5 - 3*a**4*b*x + 15*a**3*b**2*x**2 + 110*a**2*b**3*x**3 + 15
0*a*b**4*x**4 + 60*b**5*x**5)/(3*a**9*x**3 + 9*a**8*b*x**4 + 9*a*
*7*b**2*x**5 + 3*a**6*b**3*x**6) + 20*b**3*(-log(x) + log(a/b + x
))/a**7
```

GIAC/XCAS [A] time = 0.204264, size = 126, normalized size = 1.24

$$\frac{20\,b^3\ln\left(|bx + a|\right)}{a^7} - \frac{20\,b^3\ln\left(|x|\right)}{a^7} - \frac{60\,b^5x^5 + 150\,ab^4x^4 + 110\,a^2b^3x^3 + 15\,a^3b^2x^2 - 3\,a^4bx + a^5}{3\,(bx^2 + ax)^3a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^4),x, algorithm="giac")
```

```
[Out] 20*b^3*ln(abs(b*x + a))/a^7 - 20*b^3*ln(abs(x))/a^7 - 1/3*(60*b^5
*x^5 + 150*a*b^4*x^4 + 110*a^2*b^3*x^3 + 15*a^3*b^2*x^2 - 3*a^4*b
*x + a^5)/((b*x^2 + a*x)^3*a^6)
```

3.206 $\int \frac{1}{x^5(a+bx)^4} dx$

Optimal. Leaf size=117

$$\frac{35b^4\log(x)}{a^8}-\frac{35b^4\log(a+bx)}{a^8}+\frac{15b^4}{a^7(a+bx)}+\frac{20b^3}{a^7x}+\frac{5b^4}{2a^6(a+bx)^2}-\frac{5b^2}{a^6x^2}+\frac{b^4}{3a^5(a+bx)^3}+\frac{4b}{3a^5x^3}-\frac{1}{4a^4x^4}$$

```
[Out] -1/(4*a^4*x^4) + (4*b)/(3*a^5*x^3) - (5*b^2)/(a^6*x^2) + (20*b^3)
/(a^7*x) + b^4/(3*a^5*(a + b*x)^3) + (5*b^4)/(2*a^6*(a + b*x)^2)
+ (15*b^4)/(a^7*(a + b*x)) + (35*b^4*Log[x])/a^8 - (35*b^4*Log[a
+ b*x])/a^8
```

Rubi [A] time = 0.159796, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{35b^4\log(x)}{a^8}-\frac{35b^4\log(a+bx)}{a^8}+\frac{15b^4}{a^7(a+bx)}+\frac{20b^3}{a^7x}+\frac{5b^4}{2a^6(a+bx)^2}-\frac{5b^2}{a^6x^2}+\frac{b^4}{3a^5(a+bx)^3}+\frac{4b}{3a^5x^3}-\frac{1}{4a^4x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(a + b*x)^4),x]
```

```
[Out] -1/(4*a^4*x^4) + (4*b)/(3*a^5*x^3) - (5*b^2)/(a^6*x^2) + (20*b^3)
/(a^7*x) + b^4/(3*a^5*(a + b*x)^3) + (5*b^4)/(2*a^6*(a + b*x)^2)
+ (15*b^4)/(a^7*(a + b*x)) + (35*b^4*Log[x])/a^8 - (35*b^4*Log[a
+ b*x])/a^8
```

Rubi in Sympy [A] time = 29.9991, size = 116, normalized size = 0.99

$$-\frac{1}{4a^4x^4}+\frac{b^4}{3a^5\left(a+bx\right)^3}+\frac{4b}{3a^5x^3}+\frac{5b^4}{2a^6\left(a+bx\right)^2}-\frac{5b^2}{a^6x^2}+\frac{15b^4}{a^7\left(a+bx\right)}+\frac{20b^3}{a^7x}+\frac{35b^4\log\left(x\right)}{a^8}-\frac{35b^4\log\left(a+bx\right)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(b*x+a)**4,x)
```

```
[Out] -1/(4*a**4*x**4) + b**4/(3*a**5*(a + b*x)**3) + 4*b/(3*a**5*x**3)
 + 5*b**4/(2*a**6*(a + b*x)**2) - 5*b**2/(a**6*x**2) + 15*b**4/(a
**7*(a + b*x)) + 20*b**3/(a**7*x) + 35*b**4*log(x)/a**8 - 35*b**4
*log(a + b*x)/a**8
```

Mathematica [A] time = 0.133833, size = 101, normalized size = 0.86

$$\frac{\frac{a(-3a^6+7a^5bx-21a^4b^2x^2+105a^3b^3x^3+770a^2b^4x^4+1050ab^5x^5+420b^6x^6)}{x^4(a+bx)^3} - 420b^4\log(a+bx) + 420b^4\log(x)}{12a^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(a + b*x)^4),x]
```

```
[Out] ((a*(-3*a^6 + 7*a^5*b*x - 21*a^4*b^2*x^2 + 105*a^3*b^3*x^3 + 770*
a^2*b^4*x^4 + 1050*a*b^5*x^5 + 420*b^6*x^6))/(x^4*(a + b*x)^3) +
420*b^4*Log[x] - 420*b^4*Log[a + b*x])/(12*a^8)
```

Maple [A] time = 0.016, size = 110, normalized size = 0.9

$$-\frac{1}{4\,a^4x^4}+\frac{4\,b}{3\,a^5x^3}-5\,\frac{b^2}{a^6x^2}+20\,\frac{b^3}{a^7x}+\frac{b^4}{3\,a^5\,(bx+a)^3}+\frac{5\,b^4}{2\,a^6\,(bx+a)^2}+15\,\frac{b^4}{a^7\,(bx+a)}+35\,\frac{b^4\ln(x)}{a^8}-35\,\frac{b^4\ln(bx+a)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(b*x+a)^4,x)
```

```
[Out] -1/4/a^4/x^4+4/3*b/a^5/x^3-5*b^2/a^6/x^2+20*b^3/a^7/x+1/3*b^4/a^5
/(b*x+a)^3+5/2*b^4/a^6/(b*x+a)^2+15*b^4/a^7/(b*x+a)+35*b^4*ln(x)/
a^8-35*b^4*ln(b*x+a)/a^8
```

Maxima [A] time = 1.34978, size = 176, normalized size = 1.5

$$\frac{420\,b^6x^6+1050\,ab^5x^5+770\,a^2b^4x^4+105\,a^3b^3x^3-21\,a^4b^2x^2+7\,a^5bx-3\,a^6}{12\,(a^7b^3x^7+3\,a^8b^2x^6+3\,a^9bx^5+a^{10}x^4)}-\frac{35\,b^4\log(bx+a)}{a^8}+\frac{35\,b^4\log(x)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^5),x, algorithm="maxima")
```

```
[Out] 1/12*(420*b^6*x^6 + 1050*a*b^5*x^5 + 770*a^2*b^4*x^4 + 105*a^3*b^
3*x^3 - 21*a^4*b^2*x^2 + 7*a^5*b*x - 3*a^6)/(a^7*b^3*x^7 + 3*a^8*
```

```
b^2*x^6 + 3*a^9*b*x^5 + a^10*x^4) - 35*b^4*log(b*x + a)/a^8 + 35*
b^4*log(x)/a^8
```

Fricas [A] time = 0.213538, size = 265, normalized size = 2.26

$$\frac{420\,ab^6x^6 + 1050\,a^2b^5x^5 + 770\,a^3b^4x^4 + 105\,a^4b^3x^3 - 21\,a^5b^2x^2 + 7\,a^6bx - 3\,a^7 - 420\,\left(b^7x^7 + 3\,ab^6x^6 + 3\,a^2b^5x^5 + a^3b^4x^4\right)}{12\,\left(a^8b^3x^7 + 3\,a^9b^2x^6 + 3\,a^{10}bx^5 + a^{11}x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^5),x, algorithm="fricas")
```

```
[Out] 1/12*(420*a*b^6*x^6 + 1050*a^2*b^5*x^5 + 770*a^3*b^4*x^4 + 105*a^
4*b^3*x^3 - 21*a^5*b^2*x^2 + 7*a^6*b*x - 3*a^7 - 420*(b^7*x^7 + 3
*a*b^6*x^6 + 3*a^2*b^5*x^5 + a^3*b^4*x^4)*log(b*x + a) + 420*(b^7
*x^7 + 3*a*b^6*x^6 + 3*a^2*b^5*x^5 + a^3*b^4*x^4)*log(x))/(a^8*b^
3*x^7 + 3*a^9*b^2*x^6 + 3*a^10*b*x^5 + a^11*x^4)
```

Sympy [A] time = 2.98459, size = 128, normalized size = 1.09

$$\frac{-3a^6 + 7a^5bx - 21a^4b^2x^2 + 105a^3b^3x^3 + 770a^2b^4x^4 + 1050ab^5x^5 + 420b^6x^6}{12a^{10}x^4 + 36a^9bx^5 + 36a^8b^2x^6 + 12a^7b^3x^7} + \frac{35b^4\left(\log(x) - \log\left(\frac{a}{b} + x\right)\right)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(b*x+a)**4,x)
```

```
[Out] (-3*a**6 + 7*a**5*b*x - 21*a**4*b**2*x**2 + 105*a**3*b**3*x**3 +
770*a**2*b**4*x**4 + 1050*a*b**5*x**5 + 420*b**6*x**6)/(12*a**10*
x**4 + 36*a**9*b*x**5 + 36*a**8*b**2*x**6 + 12*a**7*b**3*x**7) +
35*b**4*(log(x) - log(a/b + x))/a**8
```

GIAC/XCAS [A] time = 0.207018, size = 146, normalized size = 1.25

$$-\frac{35\,b^4\ln\left(|bx + a|\right)}{a^8} + \frac{35\,b^4\ln\left(|x|\right)}{a^8} + \frac{420\,ab^6x^6 + 1050\,a^2b^5x^5 + 770\,a^3b^4x^4 + 105\,a^4b^3x^3 - 21\,a^5b^2x^2 + 7\,a^6bx - 3\,a^7}{12\,(bx + a)^3a^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*x^5),x, algorithm="giac")
```

```
[Out] -35*b^4*ln(abs(b*x + a))/a^8 + 35*b^4*ln(abs(x))/a^8 + 1/12*(420*
a*b^6*x^6 + 1050*a^2*b^5*x^5 + 770*a^3*b^4*x^4 + 105*a^4*b^3*x^3
- 21*a^5*b^2*x^2 + 7*a^6*b*x - 3*a^7)/((b*x + a)^3*a^8*x^4)
```

3.207 $\int \frac{x^{10}}{(a+bx)^7}\,dx$

Optimal. Leaf size=150

$$-\frac{a^{10}}{6b^{11}(a+bx)^6}+\frac{2a^9}{b^{11}(a+bx)^5}-\frac{45a^8}{4b^{11}(a+bx)^4}+\frac{40a^7}{b^{11}(a+bx)^3}-\frac{105a^6}{b^{11}(a+bx)^2}+\frac{252a^5}{b^{11}(a+bx)}+\frac{210a^4\log(a+bx)}{b^{11}}-\frac{84a^3x}{b^{10}}+\frac{14a^2x^2}{b^9}-\frac{7ax^3}{3b^8}+\frac{x^4}{4b^7}$$

```
[Out] (-84*a^3*x)/b^10 + (14*a^2*x^2)/b^9 - (7*a*x^3)/(3*b^8) + x^4/(4*
b^7) - a^10/(6*b^11*(a + b*x)^6) + (2*a^9)/(b^11*(a + b*x)^5) - (
45*a^8)/(4*b^11*(a + b*x)^4) + (40*a^7)/(b^11*(a + b*x)^3) - (105
*a^6)/(b^11*(a + b*x)^2) + (252*a^5)/(b^11*(a + b*x)) + (210*a^4*
Log[a + b*x])/b^11
```

Rubi [A] time = 0.277479, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{6b^{11}(a+bx)^6}+\frac{2a^9}{b^{11}(a+bx)^5}-\frac{45a^8}{4b^{11}(a+bx)^4}+\frac{40a^7}{b^{11}(a+bx)^3}-\frac{105a^6}{b^{11}(a+bx)^2}+\frac{252a^5}{b^{11}(a+bx)}+\frac{210a^4\log(a+bx)}{b^{11}}-\frac{84a^3x}{b^{10}}+\frac{14a^2x^2}{b^9}-\frac{7ax^3}{3b^8}+\frac{x^4}{4b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^10/(a + b*x)^7,x]
```

```
[Out] (-84*a^3*x)/b^10 + (14*a^2*x^2)/b^9 - (7*a*x^3)/(3*b^8) + x^4/(4*
b^7) - a^10/(6*b^11*(a + b*x)^6) + (2*a^9)/(b^11*(a + b*x)^5) - (
45*a^8)/(4*b^11*(a + b*x)^4) + (40*a^7)/(b^11*(a + b*x)^3) - (105
*a^6)/(b^11*(a + b*x)^2) + (252*a^5)/(b^11*(a + b*x)) + (210*a^4*
Log[a + b*x])/b^11
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{6b^{11}\left(a+bx\right)^6}+\frac{2a^9}{b^{11}\left(a+bx\right)^5}-\frac{45a^8}{4b^{11}\left(a+bx\right)^4}+\frac{40a^7}{b^{11}\left(a+bx\right)^3}-\frac{105a^6}{b^{11}\left(a+bx\right)^2}+\frac{252a^5}{b^{11}\left(a+bx\right)}+\frac{210a^4\log\left(a+bx\right)}{b^{11}}-\frac{84a^3x}{b^{10}}+\frac{28a^2\int x\,dx}{b^9}-\frac{7ax^3}{3b^8}+\frac{x^4}{4b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**10/(b*x+a)**7,x)
```

```
[Out] -a**10/(6*b**11*(a + b*x)**6) + 2*a**9/(b**11*(a + b*x)**5) - 45*
a**8/(4*b**11*(a + b*x)**4) + 40*a**7/(b**11*(a + b*x)**3) - 105*
a**6/(b**11*(a + b*x)**2) + 252*a**5/(b**11*(a + b*x)) + 210*a**4
*log(a + b*x)/b**11 - 84*a**3*x/b**10 + 28*a**2*Integral(x, x)/b*
*9 - 7*a*x**3/(3*b**8) + x**4/(4*b**7)
```

Mathematica [A] time = 0.0407684, size = 139, normalized size = 0.93

$$\frac{2131a^{10} + 10266a^9bx + 18105a^8b^2x^2 + 11540a^7b^3x^3 - 3945a^6b^4x^4 - 9138a^5b^5x^5 - 4043a^4b^6x^6 + 2520a^4(a+bx)^6\log(a+b}{12b^{11}(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^10/(a + b*x)^7,x]
```

```
[Out] (2131*a^10 + 10266*a^9*b*x + 18105*a^8*b^2*x^2 + 11540*a^7*b^3*x^
3 - 3945*a^6*b^4*x^4 - 9138*a^5*b^5*x^5 - 4043*a^4*b^6*x^6 - 360*
a^3*b^7*x^7 + 45*a^2*b^8*x^8 - 10*a*b^9*x^9 + 3*b^10*x^10 + 2520*
a^4*(a + b*x)^6*Log[a + b*x])/(12*b^11*(a + b*x)^6)
```

Maple [A] time = 0.018, size = 143, normalized size = 1.

$$-84\,\frac{a^3x}{b^{10}}+14\,\frac{a^2x^2}{b^9}-\frac{7\,ax^3}{3\,b^8}+\frac{x^4}{4\,b^7}-\frac{a^{10}}{6\,b^{11}\,(bx+a)^6}+2\,\frac{a^9}{b^{11}\,(bx+a)^5}-\frac{45\,a^8}{4\,b^{11}\,(bx+a)^4}+40\,\frac{a^7}{b^{11}\,(bx+a)^3}-105\,\frac{a^6}{b^{11}\,(bx+a)^2}+252\,\frac{a^5}{b^{11}\,(bx+a)}+210\,\frac{a^4\ln(bx+a)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^10/(b*x+a)^7,x)
```

```
[Out] -84*a^3*x/b^10+14*a^2*x^2/b^9-7/3*a*x^3/b^8+1/4*x^4/b^7-1/6*a^10/
b^11/(b*x+a)^6+2*a^9/b^11/(b*x+a)^5-45/4*a^8/b^11/(b*x+a)^4+40*a^
7/b^11/(b*x+a)^3-105*a^6/b^11/(b*x+a)^2+252*a^5/b^11/(b*x+a)+210*
a^4*ln(b*x+a)/b^11
```

Maxima [A] time = 1.36173, size = 243, normalized size = 1.62

$$\frac{3024\,a^5b^5x^5+13860\,a^6b^4x^4+25680\,a^7b^3x^3+23985\,a^8b^2x^2+11274\,a^9bx+2131\,a^{10}}{12\,(b^{17}x^6+6\,ab^{16}x^5+15\,a^2b^{15}x^4+20\,a^3b^{14}x^3+15\,a^4b^{13}x^2+6\,a^5b^{12}x+a^6b^{11})}+\frac{210\,a^4\log(bx+a)}{b^{11}}+\frac{3\,b^3x^4-28\,ab^2x^3+168\,a^2bx^2-1008\,a^3x}{12\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^10/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] 1/12*(3024*a^5*b^5*x^5 + 13860*a^6*b^4*x^4 + 25680*a^7*b^3*x^3 +
23985*a^8*b^2*x^2 + 11274*a^9*b*x + 2131*a^10)/(b^17*x^6 + 6*a*b^
16*x^5 + 15*a^2*b^15*x^4 + 20*a^3*b^14*x^3 + 15*a^4*b^13*x^2 + 6*
a^5*b^12*x + a^6*b^11) + 210*a^4*log(b*x + a)/b^11 + 1/12*(3*b^3*
x^4 - 28*a*b^2*x^3 + 168*a^2*b*x^2 - 1008*a^3*x)/b^10
```

Fricas [A] time = 0.220063, size = 338, normalized size = 2.25

$$\frac{3\,b^{10}x^{10} - 10\,ab^{9}x^{9} + 45\,a^{2}b^{8}x^{8} - 360\,a^{3}b^{7}x^{7} - 4043\,a^{4}b^{6}x^{6} - 9138\,a^{5}b^{5}x^{5} - 3945\,a^{6}b^{4}x^{4} + 11540\,a^{7}b^{3}x^{3} + 18105\,a^{8}b^{2}x^{2} + \cdots}{12\,(b^{17}x^{6} + 6\,ab^{16}x^{5} + 15\,a^{2}b^{15}x^{4} + 20\,a^{3}b^{14}\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^10/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^10*x^10 - 10*a*b^9*x^9 + 45*a^2*b^8*x^8 - 360*a^3*b^7*x
^7 - 4043*a^4*b^6*x^6 - 9138*a^5*b^5*x^5 - 3945*a^6*b^4*x^4 + 115
40*a^7*b^3*x^3 + 18105*a^8*b^2*x^2 + 10266*a^9*b*x + 2131*a^10 +
2520*(a^4*b^6*x^6 + 6*a^5*b^5*x^5 + 15*a^6*b^4*x^4 + 20*a^7*b^3*x
^3 + 15*a^8*b^2*x^2 + 6*a^9*b*x + a^10)*log(b*x + a))/(b^17*x^6 +
 6*a*b^16*x^5 + 15*a^2*b^15*x^4 + 20*a^3*b^14*x^3 + 15*a^4*b^13*x
^2 + 6*a^5*b^12*x + a^6*b^11)
```

Sympy [A] time = 3.80788, size = 190, normalized size = 1.27

$$\frac{210a^{4}\log{(a + bx)}}{b^{11}} - \frac{84a^{3}x}{b^{10}} + \frac{14a^{2}x^{2}}{b^{9}} - \frac{7ax^{3}}{3b^{8}} + \frac{2131a^{10} + 11274a^{9}bx + 23985a^{8}b^{2}x^{2} + 25680a^{7}b^{3}x^{3} + 13860a^{6}b^{4}x^{4} + 3024a^{5}b^{5}x^{5}}{12a^{6}b^{11} + 72a^{5}b^{12}x + 180a^{4}b^{13}x^{2} + 240a^{3}b^{14}x^{3} + 180a^{2}b^{15}x^{4} + 72ab^{16}x^{5} + 12b^{17}x^{6}} + \frac{x^{4}}{4b^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**10/(b*x+a)**7,x)
```

```
[Out] 210*a**4*log(a + b*x)/b**11 - 84*a**3*x/b**10 + 14*a**2*x**2/b**9
 - 7*a*x**3/(3*b**8) + (2131*a**10 + 11274*a**9*b*x + 23985*a**8*
b**2*x**2 + 25680*a**7*b**3*x**3 + 13860*a**6*b**4*x**4 + 3024*a*
*5*b**5*x**5)/(12*a**6*b**11 + 72*a**5*b**12*x + 180*a**4*b**13*x
**2 + 240*a**3*b**14*x**3 + 180*a**2*b**15*x**4 + 72*a*b**16*x**5
 + 12*b**17*x**6) + x**4/(4*b**7)
```

GIAC/XCAS [A] time = 0.205258, size = 173, normalized size = 1.15

$$\frac{210\,a^{4}\ln\left(\left|bx+a\right|\right)}{b^{11}}+\frac{3024\,a^{5}b^{5}x^{5}+13860\,a^{6}b^{4}x^{4}+25680\,a^{7}b^{3}x^{3}+23985\,a^{8}b^{2}x^{2}+11274\,a^{9}bx+2131\,a^{10}}{12\,(bx+a)^{6}b^{11}}+\frac{3\,b^{21}x^{4}-28\,ab^{20}x^{3}+168\,a^{2}b^{19}x^{2}-1008\,a^{3}b^{18}x}{12\,b^{28}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^10/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] 210*a^4*ln(abs(b*x + a))/b^11 + 1/12*(3024*a^5*b^5*x^5 + 13860*a^
6*b^4*x^4 + 25680*a^7*b^3*x^3 + 23985*a^8*b^2*x^2 + 11274*a^9*b*x
 + 2131*a^10)/((b*x + a)^6*b^11) + 1/12*(3*b^21*x^4 - 28*a*b^20*x
^3 + 168*a^2*b^19*x^2 - 1008*a^3*b^18*x)/b^28
```

3.208 $\int \frac{x^9}{(a+bx)^7}\,dx$

Optimal. Leaf size=139

$$\frac{a^9}{6b^{10}(a+bx)^6}-\frac{9a^8}{5b^{10}(a+bx)^5}+\frac{9a^7}{b^{10}(a+bx)^4}-\frac{28a^6}{b^{10}(a+bx)^3}+\frac{63a^5}{b^{10}(a+bx)^2}-\frac{126a^4}{b^{10}(a+bx)}-\frac{84a^3\log(a+bx)}{b^{10}}+\frac{28a^2x}{b^9}-\frac{7ax^2}{2b^8}+\frac{x^3}{3b^7}$$

```
[Out] (28*a^2*x)/b^9 - (7*a*x^2)/(2*b^8) + x^3/(3*b^7) + a^9/(6*b^10*(a
 + b*x)^6) - (9*a^8)/(5*b^10*(a + b*x)^5) + (9*a^7)/(b^10*(a + b*
x)^4) - (28*a^6)/(b^10*(a + b*x)^3) + (63*a^5)/(b^10*(a + b*x)^2)
 - (126*a^4)/(b^10*(a + b*x)) - (84*a^3*Log[a + b*x])/b^10
```

Rubi [A] time = 0.236787, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^9}{6b^{10}(a+bx)^6}-\frac{9a^8}{5b^{10}(a+bx)^5}+\frac{9a^7}{b^{10}(a+bx)^4}-\frac{28a^6}{b^{10}(a+bx)^3}+\frac{63a^5}{b^{10}(a+bx)^2}-\frac{126a^4}{b^{10}(a+bx)}-\frac{84a^3\log(a+bx)}{b^{10}}+\frac{28a^2x}{b^9}-\frac{7ax^2}{2b^8}+\frac{x^3}{3b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^9/(a + b*x)^7,x]
```

```
[Out] (28*a^2*x)/b^9 - (7*a*x^2)/(2*b^8) + x^3/(3*b^7) + a^9/(6*b^10*(a
 + b*x)^6) - (9*a^8)/(5*b^10*(a + b*x)^5) + (9*a^7)/(b^10*(a + b*
x)^4) - (28*a^6)/(b^10*(a + b*x)^3) + (63*a^5)/(b^10*(a + b*x)^2)
 - (126*a^4)/(b^10*(a + b*x)) - (84*a^3*Log[a + b*x])/b^10
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^9}{6b^{10}\left(a+bx\right)^6}-\frac{9a^8}{5b^{10}\left(a+bx\right)^5}+\frac{9a^7}{b^{10}\left(a+bx\right)^4}-\frac{28a^6}{b^{10}\left(a+bx\right)^3}+\frac{63a^5}{b^{10}\left(a+bx\right)^2}-\frac{126a^4}{b^{10}\left(a+bx\right)}-\frac{84a^3\log\left(a+bx\right)}{b^{10}}+\frac{28a^2x}{b^9}-\frac{7a\int x\,dx}{b^8}+\frac{x^3}{3b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9/(b*x+a)**7,x)
```

```
[Out] a**9/(6*b**10*(a + b*x)**6) - 9*a**8/(5*b**10*(a + b*x)**5) + 9*a
**7/(b**10*(a + b*x)**4) - 28*a**6/(b**10*(a + b*x)**3) + 63*a**5
/(b**10*(a + b*x)**2) - 126*a**4/(b**10*(a + b*x)) - 84*a**3*log(
a + b*x)/b**10 + 28*a**2*x/b**9 - 7*a*Integral(x, x)/b**8 + x**3/
(3*b**7)
```

Mathematica [A] time = 0.0566402, size = 128, normalized size = 0.92

$$-\frac{2509a^9+12534a^8bx+23775a^7b^2x^2+19100a^6b^3x^3+1725a^5b^4x^4-6870a^4b^5x^5-3665a^3b^6x^6+2520a^3(a+bx)^6\log(a+b}{30b^{10}(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^9/(a + b*x)^7,x]
```

```
[Out] -(2509*a^9 + 12534*a^8*b*x + 23775*a^7*b^2*x^2 + 19100*a^6*b^3*x^
3 + 1725*a^5*b^4*x^4 - 6870*a^4*b^5*x^5 - 3665*a^3*b^6*x^6 - 360*
a^2*b^7*x^7 + 45*a*b^8*x^8 - 10*b^9*x^9 + 2520*a^3*(a + b*x)^6*Lo
g[a + b*x])/(30*b^10*(a + b*x)^6)
```

Maple [A] time = 0.015, size = 132, normalized size = 1.

$$28\,\frac{a^2x}{b^9}-\frac{7\,ax^2}{2\,b^8}+\frac{x^3}{3\,b^7}+\frac{a^9}{6\,b^{10}\,(bx+a)^6}-\frac{9\,a^8}{5\,b^{10}\,(bx+a)^5}+9\,\frac{a^7}{b^{10}\,(bx+a)^4}-28\,\frac{a^6}{b^{10}\,(bx+a)^3}+63\,\frac{a^5}{b^{10}\,(bx+a)^2}-126\,\frac{a^4}{b^{10}\,(bx+a)}-84\,\frac{a^3\ln(bx+a)}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^9/(b*x+a)^7,x)
```

```
[Out] 28*a^2*x/b^9-7/2*a*x^2/b^8+1/3*x^3/b^7+1/6*a^9/b^10/(b*x+a)^6-9/5
*a^8/b^10/(b*x+a)^5+9*a^7/b^10/(b*x+a)^4-28*a^6/b^10/(b*x+a)^3+63
*a^5/b^10/(b*x+a)^2-126*a^4/b^10/(b*x+a)-84*a^3*ln(b*x+a)/b^10
```

Maxima [A] time = 1.35391, size = 228, normalized size = 1.64

$$-\frac{3780\,a^4b^5x^5+17010\,a^5b^4x^4+31080\,a^6b^3x^3+28710\,a^7b^2x^2+13374\,a^8bx+2509\,a^9}{30\,(b^{16}x^6+6\,ab^{15}x^5+15\,a^2b^{14}x^4+20\,a^3b^{13}x^3+15\,a^4b^{12}x^2+6\,a^5b^{11}x+a^6b^{10})}-\frac{84\,a^3\log(bx+a)}{b^{10}}+\frac{2\,b^2x^3-21\,abx^2+168\,a^2x}{6\,b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^9/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/30*(3780*a^4*b^5*x^5 + 17010*a^5*b^4*x^4 + 31080*a^6*b^3*x^3 +
 28710*a^7*b^2*x^2 + 13374*a^8*b*x + 2509*a^9)/(b^16*x^6 + 6*a*b^
15*x^5 + 15*a^2*b^14*x^4 + 20*a^3*b^13*x^3 + 15*a^4*b^12*x^2 + 6*
a^5*b^11*x + a^6*b^10) - 84*a^3*log(b*x + a)/b^10 + 1/6*(2*b^2*x^
3 - 21*a*b*x^2 + 168*a^2*x)/b^9
```

Fricas [A] time = 0.208136, size = 323, normalized size = 2.32

$$\frac{10\,b^9x^9 - 45\,ab^8x^8 + 360\,a^2b^7x^7 + 3665\,a^3b^6x^6 + 6870\,a^4b^5x^5 - 1725\,a^5b^4x^4 - 19100\,a^6b^3x^3 - 23775\,a^7b^2x^2 - 12534\,a^8bx}{30\,(b^{16}x^6 + 6\,ab^{15}x^5 + 15\,a^2b^{14}x^4 + 20\,a^3b^{13}x^3 + 15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^9/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/30*(10*b^9*x^9 - 45*a*b^8*x^8 + 360*a^2*b^7*x^7 + 3665*a^3*b^6*
x^6 + 6870*a^4*b^5*x^5 - 1725*a^5*b^4*x^4 - 19100*a^6*b^3*x^3 - 2
3775*a^7*b^2*x^2 - 12534*a^8*b*x - 2509*a^9 - 2520*(a^3*b^6*x^6 +
 6*a^4*b^5*x^5 + 15*a^5*b^4*x^4 + 20*a^6*b^3*x^3 + 15*a^7*b^2*x^2
 + 6*a^8*b*x + a^9)*log(b*x + a))/(b^16*x^6 + 6*a*b^15*x^5 + 15*a
^2*b^14*x^4 + 20*a^3*b^13*x^3 + 15*a^4*b^12*x^2 + 6*a^5*b^11*x +
a^6*b^10)
```

Sympy [A] time = 3.73075, size = 178, normalized size = 1.28

$$-\frac{84a^3\log(a+bx)}{b^{10}} + \frac{28a^2x}{b^9} - \frac{7ax^2}{2b^8} - \frac{2509a^9 + 13374a^8bx + 28710a^7b^2x^2 + 31080a^6b^3x^3 + 17010a^5b^4x^4 + 3780a^4b^5x^5}{30a^6b^{10} + 180a^5b^{11}x + 450a^4b^{12}x^2 + 600a^3b^{13}x^3 + 450a^2b^{14}x^4 + 180ab^{15}x^5 + 30b^{16}x^6} + \frac{x^3}{3b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**9/(b*x+a)**7,x)
```

```
[Out] -84*a**3*log(a + b*x)/b**10 + 28*a**2*x/b**9 - 7*a*x**2/(2*b**8)
- (2509*a**9 + 13374*a**8*b*x + 28710*a**7*b**2*x**2 + 31080*a**6
*b**3*x**3 + 17010*a**5*b**4*x**4 + 3780*a**4*b**5*x**5)/(30*a**6
*b**10 + 180*a**5*b**11*x + 450*a**4*b**12*x**2 + 600*a**3*b**13*
x**3 + 450*a**2*b**14*x**4 + 180*a*b**15*x**5 + 30*b**16*x**6) +
x**3/(3*b**7)
```

GIAC/XCAS [A] time = 0.202908, size = 158, normalized size = 1.14

$$-\frac{84\,a^3\ln\left(|bx+a|\right)}{b^{10}} - \frac{3780\,a^4b^5x^5 + 17010\,a^5b^4x^4 + 31080\,a^6b^3x^3 + 28710\,a^7b^2x^2 + 13374\,a^8bx + 2509\,a^9}{30\,(bx+a)^6b^{10}} + \frac{2\,b^{14}x^3 - 21\,ab^{13}x^2 + 168\,a^2b^{12}x}{6\,b^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^9/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -84*a^3*ln(abs(b*x + a))/b^10 - 1/30*(3780*a^4*b^5*x^5 + 17010*a^
5*b^4*x^4 + 31080*a^6*b^3*x^3 + 28710*a^7*b^2*x^2 + 13374*a^8*b*x
 + 2509*a^9)/((b*x + a)^6*b^10) + 1/6*(2*b^14*x^3 - 21*a*b^13*x^2
 + 168*a^2*b^12*x)/b^21
```

3.209 $\int \frac{x^8}{(a+bx)^7} \, dx$

Optimal. Leaf size=128

$$-\frac{a^8}{6b^9(a+bx)^6}+\frac{8a^7}{5b^9(a+bx)^5}-\frac{7a^6}{b^9(a+bx)^4}+\frac{56a^5}{3b^9(a+bx)^3}-\frac{35a^4}{b^9(a+bx)^2}+\frac{56a^3}{b^9(a+bx)}+\frac{28a^2\log(a+bx)}{b^9}-\frac{7ax}{b^8}+\frac{x^2}{2b^7}$$

```
[Out] (-7*a*x)/b^8 + x^2/(2*b^7) - a^8/(6*b^9*(a + b*x)^6) + (8*a^7)/(5
*b^9*(a + b*x)^5) - (7*a^6)/(b^9*(a + b*x)^4) + (56*a^5)/(3*b^9*(
a + b*x)^3) - (35*a^4)/(b^9*(a + b*x)^2) + (56*a^3)/(b^9*(a + b*x
)) + (28*a^2*Log[a + b*x])/b^9
```

Rubi [A] time = 0.192286, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^8}{6b^9(a+bx)^6}+\frac{8a^7}{5b^9(a+bx)^5}-\frac{7a^6}{b^9(a+bx)^4}+\frac{56a^5}{3b^9(a+bx)^3}-\frac{35a^4}{b^9(a+bx)^2}+\frac{56a^3}{b^9(a+bx)}+\frac{28a^2\log(a+bx)}{b^9}-\frac{7ax}{b^8}+\frac{x^2}{2b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^8/(a + b*x)^7,x]
```

```
[Out] (-7*a*x)/b^8 + x^2/(2*b^7) - a^8/(6*b^9*(a + b*x)^6) + (8*a^7)/(5
*b^9*(a + b*x)^5) - (7*a^6)/(b^9*(a + b*x)^4) + (56*a^5)/(3*b^9*(
a + b*x)^3) - (35*a^4)/(b^9*(a + b*x)^2) + (56*a^3)/(b^9*(a + b*x
)) + (28*a^2*Log[a + b*x])/b^9
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^8}{6b^9\left(a+bx\right)^6}+\frac{8a^7}{5b^9\left(a+bx\right)^5}-\frac{7a^6}{b^9\left(a+bx\right)^4}+\frac{56a^5}{3b^9\left(a+bx\right)^3}-\frac{35a^4}{b^9\left(a+bx\right)^2}+\frac{56a^3}{b^9\left(a+bx\right)}+\frac{28a^2\log\left(a+bx\right)}{b^9}-\frac{7ax}{b^8}+\frac{\int x\,dx}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8/(b*x+a)**7,x)
```

```
[Out] -a**8/(6*b**9*(a + b*x)**6) + 8*a**7/(5*b**9*(a + b*x)**5) - 7*a*
*6/(b**9*(a + b*x)**4) + 56*a**5/(3*b**9*(a + b*x)**3) - 35*a**4/
(b**9*(a + b*x)**2) + 56*a**3/(b**9*(a + b*x)) + 28*a**2*log(a +
b*x)/b**9 - 7*a*x/b**8 + Integral(x, x)/b**7
```

Mathematica [A] time = 0.0861279, size = 104, normalized size = 0.81

$$\frac{-\frac{5a^8}{(a+bx)^6}+\frac{48a^7}{(a+bx)^5}-\frac{210a^6}{(a+bx)^4}+\frac{560a^5}{(a+bx)^3}-\frac{1050a^4}{(a+bx)^2}+\frac{1680a^3}{a+bx}+840a^2\log(a+bx)-210abx+15b^2x^2}{30b^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^8/(a + b*x)^7,x]
```

```
[Out] (-210*a*b*x + 15*b^2*x^2 - (5*a^8)/(a + b*x)^6 + (48*a^7)/(a + b*
x)^5 - (210*a^6)/(a + b*x)^4 + (560*a^5)/(a + b*x)^3 - (1050*a^4)
/(a + b*x)^2 + (1680*a^3)/(a + b*x) + 840*a^2*Log[a + b*x])/(30*b
^9)
```

Maple [A] time = 0.013, size = 121, normalized size = 1.

$$-7\,\frac{ax}{b^8}+\frac{x^2}{2\,b^7}-\frac{a^8}{6\,b^9\,(bx+a)^6}+\frac{8\,a^7}{5\,b^9\,(bx+a)^5}-7\,\frac{a^6}{b^9\,(bx+a)^4}+\frac{56\,a^5}{3\,b^9\,(bx+a)^3}-35\,\frac{a^4}{b^9\,(bx+a)^2}+56\,\frac{a^3}{b^9\,(bx+a)}+28\,\frac{a^2\ln(bx+a)}{b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8/(b*x+a)^7,x)
```

```
[Out] -7*a*x/b^8+1/2*x^2/b^7-1/6*a^8/b^9/(b*x+a)^6+8/5*a^7/b^9/(b*x+a)^
5-7*a^6/b^9/(b*x+a)^4+56/3*a^5/b^9/(b*x+a)^3-35*a^4/b^9/(b*x+a)^2
+56*a^3/b^9/(b*x+a)+28*a^2*ln(b*x+a)/b^9
```

Maxima [A] time = 1.3631, size = 212, normalized size = 1.66

$$\frac{1680\,a^3b^5x^5+7350\,a^4b^4x^4+13160\,a^5b^3x^3+11970\,a^6b^2x^2+5508\,a^7bx+1023\,a^8}{30\,(b^{15}x^6+6\,ab^{14}x^5+15\,a^2b^{13}x^4+20\,a^3b^{12}x^3+15\,a^4b^{11}x^2+6\,a^5b^{10}x+a^6b^9)}+\frac{28\,a^2\log(bx+a)}{b^9}+\frac{bx^2-14\,ax}{2\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] 1/30*(1680*a^3*b^5*x^5 + 7350*a^4*b^4*x^4 + 13160*a^5*b^3*x^3 + 1
1970*a^6*b^2*x^2 + 5508*a^7*b*x + 1023*a^8)/(b^15*x^6 + 6*a*b^14*
x^5 + 15*a^2*b^13*x^4 + 20*a^3*b^12*x^3 + 15*a^4*b^11*x^2 + 6*a^5
*b^10*x + a^6*b^9) + 28*a^2*log(b*x + a)/b^9 + 1/2*(b*x^2 - 14*a*
x)/b^8
```

Fricas [A] time = 0.208366, size = 308, normalized size = 2.41

$$\frac{15\,b^{8}x^{8} - 120\,ab^{7}x^{7} - 1035\,a^{2}b^{6}x^{6} - 1170\,a^{3}b^{5}x^{5} + 3375\,a^{4}b^{4}x^{4} + 10100\,a^{5}b^{3}x^{3} + 10725\,a^{6}b^{2}x^{2} + 5298\,a^{7}bx + 1023\,a^{8} + 84}{30\,(b^{15}x^{6} + 6\,ab^{14}x^{5} + 15\,a^{2}b^{13}x^{4} + 20\,a^{3}b^{12}x^{3} + 15\,a^{4}b^{11}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/30*(15*b^8*x^8 - 120*a*b^7*x^7 - 1035*a^2*b^6*x^6 - 1170*a^3*b^
5*x^5 + 3375*a^4*b^4*x^4 + 10100*a^5*b^3*x^3 + 10725*a^6*b^2*x^2
+ 5298*a^7*b*x + 1023*a^8 + 840*(a^2*b^6*x^6 + 6*a^3*b^5*x^5 + 15
*a^4*b^4*x^4 + 20*a^5*b^3*x^3 + 15*a^6*b^2*x^2 + 6*a^7*b*x + a^8)
*log(b*x + a))/(b^15*x^6 + 6*a*b^14*x^5 + 15*a^2*b^13*x^4 + 20*a^
3*b^12*x^3 + 15*a^4*b^11*x^2 + 6*a^5*b^10*x + a^6*b^9)
```

Sympy [A] time = 3.44537, size = 165, normalized size = 1.29

$$\frac{28a^{2}\log{(a + bx)}}{b^{9}} - \frac{7ax}{b^{8}} + \frac{1023a^{8} + 5508a^{7}bx + 11970a^{6}b^{2}x^{2} + 13160a^{5}b^{3}x^{3} + 7350a^{4}b^{4}x^{4} + 1680a^{3}b^{5}x^{5}}{30a^{6}b^{9} + 180a^{5}b^{10}x + 450a^{4}b^{11}x^{2} + 600a^{3}b^{12}x^{3} + 450a^{2}b^{13}x^{4} + 180ab^{14}x^{5} + 30b^{15}x^{6}} + \frac{x^{2}}{2b^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8/(b*x+a)**7,x)
```

```
[Out] 28*a**2*log(a + b*x)/b**9 - 7*a*x/b**8 + (1023*a**8 + 5508*a**7*b
*x + 11970*a**6*b**2*x**2 + 13160*a**5*b**3*x**3 + 7350*a**4*b**4
*x**4 + 1680*a**3*b**5*x**5)/(30*a**6*b**9 + 180*a**5*b**10*x + 4
50*a**4*b**11*x**2 + 600*a**3*b**12*x**3 + 450*a**2*b**13*x**4 +
180*a*b**14*x**5 + 30*b**15*x**6) + x**2/(2*b**7)
```

GIAC/XCAS [A] time = 0.202512, size = 142, normalized size = 1.11

$$\frac{28\,a^2\ln\left(|bx+a|\right)}{b^9}+\frac{b^7x^2-14\,ab^6x}{2\,b^{14}}+\frac{1680\,a^3b^5x^5+7350\,a^4b^4x^4+13160\,a^5b^3x^3+11970\,a^6b^2x^2+5508\,a^7bx+1023\,a^8}{30\,(bx+a)^6b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] 28*a^2*ln(abs(b*x + a))/b^9 + 1/2*(b^7*x^2 - 14*a*b^6*x)/b^14 + 1
/30*(1680*a^3*b^5*x^5 + 7350*a^4*b^4*x^4 + 13160*a^5*b^3*x^3 + 11
970*a^6*b^2*x^2 + 5508*a^7*b*x + 1023*a^8)/((b*x + a)^6*b^9)
```

3.210 $\int \frac{x^7}{(a+bx)^7}\,dx$

Optimal. Leaf size=118

$$\frac{a^7}{6b^8(a+bx)^6}-\frac{7a^6}{5b^8(a+bx)^5}+\frac{21a^5}{4b^8(a+bx)^4}-\frac{35a^4}{3b^8(a+bx)^3}+\frac{35a^3}{2b^8(a+bx)^2}-\frac{21a^2}{b^8(a+bx)}-\frac{7a\log(a+bx)}{b^8}+\frac{x}{b^7}$$

```
[Out] x/b^7 + a^7/(6*b^8*(a + b*x)^6) - (7*a^6)/(5*b^8*(a + b*x)^5) + (
21*a^5)/(4*b^8*(a + b*x)^4) - (35*a^4)/(3*b^8*(a + b*x)^3) + (35*
a^3)/(2*b^8*(a + b*x)^2) - (21*a^2)/(b^8*(a + b*x)) - (7*a*Log[a
+ b*x])/b^8
```

Rubi [A] time = 0.160295, antiderivative size = 118, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7}{6b^8(a+bx)^6}-\frac{7a^6}{5b^8(a+bx)^5}+\frac{21a^5}{4b^8(a+bx)^4}-\frac{35a^4}{3b^8(a+bx)^3}+\frac{35a^3}{2b^8(a+bx)^2}-\frac{21a^2}{b^8(a+bx)}-\frac{7a\log(a+bx)}{b^8}+\frac{x}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7/(a + b*x)^7,x]
```

```
[Out] x/b^7 + a^7/(6*b^8*(a + b*x)^6) - (7*a^6)/(5*b^8*(a + b*x)^5) + (
21*a^5)/(4*b^8*(a + b*x)^4) - (35*a^4)/(3*b^8*(a + b*x)^3) + (35*
a^3)/(2*b^8*(a + b*x)^2) - (21*a^2)/(b^8*(a + b*x)) - (7*a*Log[a
+ b*x])/b^8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^7}{6b^8\left(a+bx\right)^6}-\frac{7a^6}{5b^8\left(a+bx\right)^5}+\frac{21a^5}{4b^8\left(a+bx\right)^4}-\frac{35a^4}{3b^8\left(a+bx\right)^3}+\frac{35a^3}{2b^8\left(a+bx\right)^2}-\frac{21a^2}{b^8\left(a+bx\right)}-\frac{7a\log\left(a+bx\right)}{b^8}+\int\frac{1}{b^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7/(b*x+a)**7,x)
```

```
[Out] a**7/(6*b**8*(a + b*x)**6) - 7*a**6/(5*b**8*(a + b*x)**5) + 21*a*
*5/(4*b**8*(a + b*x)**4) - 35*a**4/(3*b**8*(a + b*x)**3) + 35*a**
3/(2*b**8*(a + b*x)**2) - 21*a**2/(b**8*(a + b*x)) - 7*a*log(a +
b*x)/b**8 + Integral(b**(-7), x)
```

Mathematica [A] time = 0.0480314, size = 104, normalized size = 0.88

$$-\frac{669a^7+3594a^6bx+7725a^5b^2x^2+8200a^4b^3x^3+4050a^3b^4x^4+360a^2b^5x^5-360ab^6x^6+420a(a+bx)^6\log(a+bx)-60b^7x}{60b^8(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7/(a + b*x)^7,x]
```

```
[Out] -(669*a^7 + 3594*a^6*b*x + 7725*a^5*b^2*x^2 + 8200*a^4*b^3*x^3 +
4050*a^3*b^4*x^4 + 360*a^2*b^5*x^5 - 360*a*b^6*x^6 - 60*b^7*x^7 +
 420*a*(a + b*x)^6*Log[a + b*x])/(60*b^8*(a + b*x)^6)
```

Maple [A] time = 0.013, size = 109, normalized size = 0.9

$$\frac{x}{b^7}+\frac{a^7}{6\,b^8\,(bx+a)^6}-\frac{7\,a^6}{5\,b^8\,(bx+a)^5}+\frac{21\,a^5}{4\,b^8\,(bx+a)^4}-\frac{35\,a^4}{3\,b^8\,(bx+a)^3}+\frac{35\,a^3}{2\,b^8\,(bx+a)^2}-21\,\frac{a^2}{b^8\,(bx+a)}-7\,\frac{a\ln(bx+a)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7/(b*x+a)^7,x)
```

```
[Out] x/b^7+1/6*a^7/b^8/(b*x+a)^6-7/5*a^6/b^8/(b*x+a)^5+21/4*a^5/b^8/(b
*x+a)^4-35/3*a^4/b^8/(b*x+a)^3+35/2*a^3/b^8/(b*x+a)^2-21*a^2/b^8/
(b*x+a)-7*a*ln(b*x+a)/b^8
```

Maxima [A] time = 1.35698, size = 196, normalized size = 1.66

$$-\frac{1260\,a^2b^5x^5+5250\,a^3b^4x^4+9100\,a^4b^3x^3+8085\,a^5b^2x^2+3654\,a^6bx+669\,a^7}{60\,(b^{14}x^6+6\,ab^{13}x^5+15\,a^2b^{12}x^4+20\,a^3b^{11}x^3+15\,a^4b^{10}x^2+6\,a^5b^9x+a^6b^8)}+\frac{x}{b^7}-\frac{7\,a\log(bx+a)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(1260*a^2*b^5*x^5 + 5250*a^3*b^4*x^4 + 9100*a^4*b^3*x^3 + 8
085*a^5*b^2*x^2 + 3654*a^6*b*x + 669*a^7)/(b^14*x^6 + 6*a*b^13*x^
5 + 15*a^2*b^12*x^4 + 20*a^3*b^11*x^3 + 15*a^4*b^10*x^2 + 6*a^5*b
^9*x + a^6*b^8) + x/b^7 - 7*a*log(b*x + a)/b^8
```

Fricas [A] time = 0.20965, size = 290, normalized size = 2.46

$$\frac{60\,b^7x^7 + 360\,ab^6x^6 - 360\,a^2b^5x^5 - 4050\,a^3b^4x^4 - 8200\,a^4b^3x^3 - 7725\,a^5b^2x^2 - 3594\,a^6bx - 669\,a^7 - 420\,\left(ab^6x^6 + 6\,a^2b^5x}{60\,(b^{14}x^6 + 6\,ab^{13}x^5 + 15\,a^2b^{12}x^4 + 20\,a^3b^{11}x^3 + 15\,a^4b^{10}x^2 + 6\,a^5b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*b^7*x^7 + 360*a*b^6*x^6 - 360*a^2*b^5*x^5 - 4050*a^3*b^4
*x^4 - 8200*a^4*b^3*x^3 - 7725*a^5*b^2*x^2 - 3594*a^6*b*x - 669*a
^7 - 420*(a*b^6*x^6 + 6*a^2*b^5*x^5 + 15*a^3*b^4*x^4 + 20*a^4*b^3
*x^3 + 15*a^5*b^2*x^2 + 6*a^6*b*x + a^7)*log(b*x + a))/(b^14*x^6
+ 6*a*b^13*x^5 + 15*a^2*b^12*x^4 + 20*a^3*b^11*x^3 + 15*a^4*b^10*
x^2 + 6*a^5*b^9*x + a^6*b^8)
```

Sympy [A] time = 3.32869, size = 151, normalized size = 1.28

$$-\frac{7a\log{(a+bx)}}{b^8} - \frac{669a^7 + 3654a^6bx + 8085a^5b^2x^2 + 9100a^4b^3x^3 + 5250a^3b^4x^4 + 1260a^2b^5x^5}{60a^6b^8 + 360a^5b^9x + 900a^4b^{10}x^2 + 1200a^3b^{11}x^3 + 900a^2b^{12}x^4 + 360ab^{13}x^5 + 60b^{14}x^6} + \frac{x}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7/(b*x+a)**7,x)
```

```
[Out] -7*a*log(a + b*x)/b**8 - (669*a**7 + 3654*a**6*b*x + 8085*a**5*b*
*2*x**2 + 9100*a**4*b**3*x**3 + 5250*a**3*b**4*x**4 + 1260*a**2*b
**5*x**5)/(60*a**6*b**8 + 360*a**5*b**9*x + 900*a**4*b**10*x**2 +
 1200*a**3*b**11*x**3 + 900*a**2*b**12*x**4 + 360*a*b**13*x**5 +
60*b**14*x**6) + x/b**7
```

GIAC/XCAS [A] time = 0.205607, size = 119, normalized size = 1.01

$$\frac{x}{b^7} - \frac{7\,a\ln\left(|bx+a|\right)}{b^8} - \frac{1260\,a^2b^5x^5 + 5250\,a^3b^4x^4 + 9100\,a^4b^3x^3 + 8085\,a^5b^2x^2 + 3654\,a^6bx + 669\,a^7}{60\,(bx+a)^6b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] x/b^7 - 7*a*ln(abs(b*x + a))/b^8 - 1/60*(1260*a^2*b^5*x^5 + 5250*
a^3*b^4*x^4 + 9100*a^4*b^3*x^3 + 8085*a^5*b^2*x^2 + 3654*a^6*b*x
+ 669*a^7)/((b*x + a)^6*b^8)
```

3.211 $\int \frac{x^6}{(a+bx)^7}\,dx$

Optimal. Leaf size=109

$$-\frac{a^6}{6b^7(a+bx)^6}+\frac{6a^5}{5b^7(a+bx)^5}-\frac{15a^4}{4b^7(a+bx)^4}+\frac{20a^3}{3b^7(a+bx)^3}-\frac{15a^2}{2b^7(a+bx)^2}+\frac{6a}{b^7(a+bx)}+\frac{\log(a+bx)}{b^7}$$

```
[Out] -a^6/(6*b^7*(a + b*x)^6) + (6*a^5)/(5*b^7*(a + b*x)^5) - (15*a^4)
/(4*b^7*(a + b*x)^4) + (20*a^3)/(3*b^7*(a + b*x)^3) - (15*a^2)/(2
*b^7*(a + b*x)^2) + (6*a)/(b^7*(a + b*x)) + Log[a + b*x]/b^7
```

Rubi [A] time = 0.137967, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^6}{6b^7(a+bx)^6}+\frac{6a^5}{5b^7(a+bx)^5}-\frac{15a^4}{4b^7(a+bx)^4}+\frac{20a^3}{3b^7(a+bx)^3}-\frac{15a^2}{2b^7(a+bx)^2}+\frac{6a}{b^7(a+bx)}+\frac{\log(a+bx)}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6/(a + b*x)^7,x]
```

```
[Out] -a^6/(6*b^7*(a + b*x)^6) + (6*a^5)/(5*b^7*(a + b*x)^5) - (15*a^4)
/(4*b^7*(a + b*x)^4) + (20*a^3)/(3*b^7*(a + b*x)^3) - (15*a^2)/(2
*b^7*(a + b*x)^2) + (6*a)/(b^7*(a + b*x)) + Log[a + b*x]/b^7
```

Rubi in Sympy [A] time = 26.1698, size = 104, normalized size = 0.95

$$-\frac{a^6}{6b^7\left(a+bx\right)^6}+\frac{6a^5}{5b^7\left(a+bx\right)^5}-\frac{15a^4}{4b^7\left(a+bx\right)^4}+\frac{20a^3}{3b^7\left(a+bx\right)^3}-\frac{15a^2}{2b^7\left(a+bx\right)^2}+\frac{6a}{b^7\left(a+bx\right)}+\frac{\log\left(a+bx\right)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6/(b*x+a)**7,x)
```

```
[Out] -a**6/(6*b**7*(a + b*x)**6) + 6*a**5/(5*b**7*(a + b*x)**5) - 15*a
**4/(4*b**7*(a + b*x)**4) + 20*a**3/(3*b**7*(a + b*x)**3) - 15*a*
*2/(2*b**7*(a + b*x)**2) + 6*a/(b**7*(a + b*x)) + log(a + b*x)/b*
*7
```

Mathematica [A] time = 0.0362397, size = 77, normalized size = 0.71

$$\frac{\frac{a\left(147a^5+822a^4bx+1875a^3b^2x^2+2200a^2b^3x^3+1350ab^4x^4+360b^5x^5\right)}{(a+bx)^6}+60\log(a+bx)}{60b^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6/(a + b*x)^7,x]
```

```
[Out] ((a*(147*a^5 + 822*a^4*b*x + 1875*a^3*b^2*x^2 + 2200*a^2*b^3*x^3
+ 1350*a*b^4*x^4 + 360*b^5*x^5))/(a + b*x)^6 + 60*Log[a + b*x])/(
60*b^7)
```

Maple [A] time = 0.011, size = 100, normalized size = 0.9

$$-\frac{a^6}{6\,b^7\,(bx+a)^6}+\frac{6\,a^5}{5\,b^7\,(bx+a)^5}-\frac{15\,a^4}{4\,b^7\,(bx+a)^4}+\frac{20\,a^3}{3\,b^7\,(bx+a)^3}-\frac{15\,a^2}{2\,b^7\,(bx+a)^2}+6\,\frac{a}{b^7\,(bx+a)}+\frac{\ln(bx+a)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6/(b*x+a)^7,x)
```

```
[Out] -1/6*a^6/b^7/(b*x+a)^6+6/5*a^5/b^7/(b*x+a)^5-15/4*a^4/b^7/(b*x+a)
^4+20/3*a^3/b^7/(b*x+a)^3-15/2*a^2/b^7/(b*x+a)^2+6*a/b^7/(b*x+a)+
ln(b*x+a)/b^7
```

Maxima [A] time = 1.36404, size = 184, normalized size = 1.69

$$\frac{360\,ab^5x^5+1350\,a^2b^4x^4+2200\,a^3b^3x^3+1875\,a^4b^2x^2+822\,a^5bx+147\,a^6}{60\,(b^{13}x^6+6\,ab^{12}x^5+15\,a^2b^{11}x^4+20\,a^3b^{10}x^3+15\,a^4b^9x^2+6\,a^5b^8x+a^6b^7)}+\frac{\log(bx+a)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] 1/60*(360*a*b^5*x^5 + 1350*a^2*b^4*x^4 + 2200*a^3*b^3*x^3 + 1875*
a^4*b^2*x^2 + 822*a^5*b*x + 147*a^6)/(b^13*x^6 + 6*a*b^12*x^5 + 1
5*a^2*b^11*x^4 + 20*a^3*b^10*x^3 + 15*a^4*b^9*x^2 + 6*a^5*b^8*x +
 a^6*b^7) + log(b*x + a)/b^7
```

Fricas [A] time = 0.211238, size = 261, normalized size = 2.39

$$\frac{360\,ab^5x^5+1350\,a^2b^4x^4+2200\,a^3b^3x^3+1875\,a^4b^2x^2+822\,a^5bx+147\,a^6+60\,\left(b^6x^6+6\,ab^5x^5+15\,a^2b^4x^4+20\,a^3b^3x^3+1\right.}{60\,(b^{13}x^6+6\,ab^{12}x^5+15\,a^2b^{11}x^4+20\,a^3b^{10}x^3+15\,a^4b^9x^2+6\,a^5b^8x+a^6b^7)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(360*a*b^5*x^5 + 1350*a^2*b^4*x^4 + 2200*a^3*b^3*x^3 + 1875*
a^4*b^2*x^2 + 822*a^5*b*x + 147*a^6 + 60*(b^6*x^6 + 6*a*b^5*x^5 +
 15*a^2*b^4*x^4 + 20*a^3*b^3*x^3 + 15*a^4*b^2*x^2 + 6*a^5*b*x + a
^6)*log(b*x + a))/(b^13*x^6 + 6*a*b^12*x^5 + 15*a^2*b^11*x^4 + 20
*a^3*b^10*x^3 + 15*a^4*b^9*x^2 + 6*a^5*b^8*x + a^6*b^7)
```

Sympy [A] time = 2.84344, size = 141, normalized size = 1.29

$$\frac{147a^6 + 822a^5bx + 1875a^4b^2x^2 + 2200a^3b^3x^3 + 1350a^2b^4x^4 + 360ab^5x^5}{60a^6b^7 + 360a^5b^8x + 900a^4b^9x^2 + 1200a^3b^{10}x^3 + 900a^2b^{11}x^4 + 360ab^{12}x^5 + 60b^{13}x^6} + \frac{\log(a + bx)}{b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6/(b*x+a)**7,x)
```

```
[Out] (147*a**6 + 822*a**5*b*x + 1875*a**4*b**2*x**2 + 2200*a**3*b**3*x
**3 + 1350*a**2*b**4*x**4 + 360*a*b**5*x**5)/(60*a**6*b**7 + 360*
a**5*b**8*x + 900*a**4*b**9*x**2 + 1200*a**3*b**10*x**3 + 900*a**
2*b**11*x**4 + 360*a*b**12*x**5 + 60*b**13*x**6) + log(a + b*x)/b
**7
```

GIAC/XCAS [A] time = 0.204778, size = 107, normalized size = 0.98

$$\frac{\ln(|bx + a|)}{b^7} + \frac{360\,ab^4x^5 + 1350\,a^2b^3x^4 + 2200\,a^3b^2x^3 + 1875\,a^4bx^2 + 822\,a^5x + \frac{147\,a^6}{b}}{60\,(bx + a)^6b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] ln(abs(b*x + a))/b^7 + 1/60*(360*a*b^4*x^5 + 1350*a^2*b^3*x^4 + 2
200*a^3*b^2*x^3 + 1875*a^4*b*x^2 + 822*a^5*x + 147*a^6/b)/((b*x +
 a)^6*b^6)
```

3.212 $\int \frac{x^5}{(a+bx)^7}\,dx$

Optimal. Leaf size=17

$$\frac{x^6}{6a(a+bx)^6}$$

```
[Out] x^6/(6*a*(a + b*x)^6)
```

Rubi [A] time = 0.0119152, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{x^6}{6a(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/(a + b*x)^7,x]

[Out] x^6/(6*a*(a + b*x)^6)
```

Rubi in Sympy [A] time = 2.3291, size = 12, normalized size = 0.71

$$\frac{x^6}{6a\,(a+bx)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(b*x+a)**7,x)

[Out] x**6/(6*a*(a + b*x)**6)
```

Mathematica [B] time = 0.0182617, size = 64, normalized size = 3.76

$$-\frac{a^5+6a^4bx+15a^3b^2x^2+20a^2b^3x^3+15ab^4x^4+6b^5x^5}{6b^6(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(a + b*x)^7,x]
```

```
[Out] -(a^5 + 6*a^4*b*x + 15*a^3*b^2*x^2 + 20*a^2*b^3*x^3 + 15*a*b^4*x^
4 + 6*b^5*x^5)/(6*b^6*(a + b*x)^6)
```

Maple [B] time = 0.01, size = 87, normalized size = 5.1

$$\frac{5\,a^3}{2\,b^6\,(bx+a)^4}+\frac{a^5}{6\,b^6\,(bx+a)^6}-\frac{10\,a^2}{3\,b^6\,(bx+a)^3}+\frac{5\,a}{2\,b^6\,(bx+a)^2}-\frac{1}{(bx+a)\,b^6}-\frac{a^4}{b^6\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a)^7,x)
```

```
[Out] 5/2*a^3/b^6/(b*x+a)^4+1/6*a^5/b^6/(b*x+a)^6-10/3*a^2/b^6/(b*x+a)^
3+5/2*a/b^6/(b*x+a)^2-1/(b*x+a)/b^6-a^4/b^6/(b*x+a)^5
```

Maxima [A] time = 1.36247, size = 162, normalized size = 9.53

$$-\frac{6\,b^5x^5+15\,ab^4x^4+20\,a^2b^3x^3+15\,a^3b^2x^2+6\,a^4bx+a^5}{6\,(b^{12}x^6+6\,ab^{11}x^5+15\,a^2b^{10}x^4+20\,a^3b^9x^3+15\,a^4b^8x^2+6\,a^5b^7x+a^6b^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/6*(6*b^5*x^5 + 15*a*b^4*x^4 + 20*a^2*b^3*x^3 + 15*a^3*b^2*x^2
+ 6*a^4*b*x + a^5)/(b^12*x^6 + 6*a*b^11*x^5 + 15*a^2*b^10*x^4 + 2
0*a^3*b^9*x^3 + 15*a^4*b^8*x^2 + 6*a^5*b^7*x + a^6*b^6)
```

Fricas [A] time = 0.205751, size = 162, normalized size = 9.53

$$-\frac{6\,b^5x^5+15\,ab^4x^4+20\,a^2b^3x^3+15\,a^3b^2x^2+6\,a^4bx+a^5}{6\,(b^{12}x^6+6\,ab^{11}x^5+15\,a^2b^{10}x^4+20\,a^3b^9x^3+15\,a^4b^8x^2+6\,a^5b^7x+a^6b^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/6*(6*b^5*x^5 + 15*a*b^4*x^4 + 20*a^2*b^3*x^3 + 15*a^3*b^2*x^2
+ 6*a^4*b*x + a^5)/(b^12*x^6 + 6*a*b^11*x^5 + 15*a^2*b^10*x^4 + 2
0*a^3*b^9*x^3 + 15*a^4*b^8*x^2 + 6*a^5*b^7*x + a^6*b^6)
```

Sympy [A] time = 2.65751, size = 128, normalized size = 7.53

$$-\frac{a^5+6a^4bx+15a^3b^2x^2+20a^2b^3x^3+15ab^4x^4+6b^5x^5}{6a^6b^6+36a^5b^7x+90a^4b^8x^2+120a^3b^9x^3+90a^2b^{10}x^4+36ab^{11}x^5+6b^{12}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a)**7,x)
```

```
[Out] -(a**5 + 6*a**4*b*x + 15*a**3*b**2*x**2 + 20*a**2*b**3*x**3 + 15*
a*b**4*x**4 + 6*b**5*x**5)/(6*a**6*b**6 + 36*a**5*b**7*x + 90*a**
4*b**8*x**2 + 120*a**3*b**9*x**3 + 90*a**2*b**10*x**4 + 36*a*b**1
1*x**5 + 6*b**12*x**6)
```

GIAC/XCAS [A] time = 0.20679, size = 84, normalized size = 4.94

$$-\frac{6\,b^5x^5+15\,ab^4x^4+20\,a^2b^3x^3+15\,a^3b^2x^2+6\,a^4bx+a^5}{6\,(bx+a)^6b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/6*(6*b^5*x^5 + 15*a*b^4*x^4 + 20*a^2*b^3*x^3 + 15*a^3*b^2*x^2
+ 6*a^4*b*x + a^5)/((b*x + a)^6*b^6)
```

3.213 $\int \frac{x^4}{(a+bx)^7} \, dx$

Optimal. Leaf size=35

$$\frac{x^5}{30a^2(a+bx)^5}+\frac{x^5}{6a(a+bx)^6}$$

```
[Out] x^5/(6*a*(a + b*x)^6) + x^5/(30*a^2*(a + b*x)^5)
```

Rubi [A] time = 0.0235098, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{x^5}{30a^2(a+bx)^5}+\frac{x^5}{6a(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^7,x]

[Out] x^5/(6*a*(a + b*x)^6) + x^5/(30*a^2*(a + b*x)^5)
```

Rubi in Sympy [A] time = 4.14424, size = 27, normalized size = 0.77

$$\frac{x^5}{6a\left(a+bx\right)^6}+\frac{x^5}{30a^2\left(a+bx\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**7,x)

[Out] x**5/(6*a*(a + b*x)**6) + x**5/(30*a**2*(a + b*x)**5)
```

Mathematica [A] time = 0.0159163, size = 53, normalized size = 1.51

$$-\frac{a^4+6a^3bx+15a^2b^2x^2+20ab^3x^3+15b^4x^4}{30b^5(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^7,x]
```

```
[Out] -(a^4 + 6*a^3*b*x + 15*a^2*b^2*x^2 + 20*a*b^3*x^3 + 15*b^4*x^4)/(
30*b^5*(a + b*x)^6)
```

Maple [B] time = 0.008, size = 72, normalized size = 2.1

$$-\frac{a^4}{6\,b^5\,(bx+a)^6}+\frac{4\,a}{3\,b^5\,(bx+a)^3}-\frac{1}{2\,(bx+a)^2\,b^5}+\frac{4\,a^3}{5\,b^5\,(bx+a)^5}-\frac{3\,a^2}{2\,b^5\,(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^7,x)
```

```
[Out] -1/6*a^4/b^5/(b*x+a)^6+4/3*a/b^5/(b*x+a)^3-1/2/(b*x+a)^2/b^5+4/5*
a^3/b^5/(b*x+a)^5-3/2*a^2/b^5/(b*x+a)^4
```

Maxima [A] time = 1.32237, size = 147, normalized size = 4.2

$$-\frac{15\,b^4x^4+20\,ab^3x^3+15\,a^2b^2x^2+6\,a^3bx+a^4}{30\,(b^{11}x^6+6\,ab^{10}x^5+15\,a^2b^9x^4+20\,a^3b^8x^3+15\,a^4b^7x^2+6\,a^5b^6x+a^6b^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/30*(15*b^4*x^4 + 20*a*b^3*x^3 + 15*a^2*b^2*x^2 + 6*a^3*b*x + a
^4)/(b^11*x^6 + 6*a*b^10*x^5 + 15*a^2*b^9*x^4 + 20*a^3*b^8*x^3 +
15*a^4*b^7*x^2 + 6*a^5*b^6*x + a^6*b^5)
```

Fricas [A] time = 0.203021, size = 147, normalized size = 4.2

$$-\frac{15\,b^4x^4+20\,ab^3x^3+15\,a^2b^2x^2+6\,a^3bx+a^4}{30\,(b^{11}x^6+6\,ab^{10}x^5+15\,a^2b^9x^4+20\,a^3b^8x^3+15\,a^4b^7x^2+6\,a^5b^6x+a^6b^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/30*(15*b^4*x^4 + 20*a*b^3*x^3 + 15*a^2*b^2*x^2 + 6*a^3*b*x + a
^4)/(b^11*x^6 + 6*a*b^10*x^5 + 15*a^2*b^9*x^4 + 20*a^3*b^8*x^3 +
15*a^4*b^7*x^2 + 6*a^5*b^6*x + a^6*b^5)
```

Sympy [A] time = 2.56095, size = 116, normalized size = 3.31

$$-\frac{a^4 + 6a^3bx + 15a^2b^2x^2 + 20ab^3x^3 + 15b^4x^4}{30a^6b^5 + 180a^5b^6x + 450a^4b^7x^2 + 600a^3b^8x^3 + 450a^2b^9x^4 + 180ab^{10}x^5 + 30b^{11}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**7,x)
```

```
[Out] -(a**4 + 6*a**3*b*x + 15*a**2*b**2*x**2 + 20*a*b**3*x**3 + 15*b**
4*x**4)/(30*a**6*b**5 + 180*a**5*b**6*x + 450*a**4*b**7*x**2 + 60
0*a**3*b**8*x**3 + 450*a**2*b**9*x**4 + 180*a*b**10*x**5 + 30*b**
11*x**6)
```

GIAC/XCAS [A] time = 0.209, size = 69, normalized size = 1.97

$$-\frac{15\,b^4x^4 + 20\,ab^3x^3 + 15\,a^2b^2x^2 + 6\,a^3bx + a^4}{30\,(bx+a)^6b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/30*(15*b^4*x^4 + 20*a*b^3*x^3 + 15*a^2*b^2*x^2 + 6*a^3*b*x + a
^4)/((b*x + a)^6*b^5)
```

3.214 $\int \frac{x^3}{(a+bx)^7}\,dx$

Optimal. Leaf size=52

$$\frac{x^4}{60a^3(a+bx)^4}+\frac{x^4}{15a^2(a+bx)^5}+\frac{x^4}{6a(a+bx)^6}$$

```
[Out] x^4/(6*a*(a + b*x)^6) + x^4/(15*a^2*(a + b*x)^5) + x^4/(60*a^3*(a
 + b*x)^4)
```

Rubi [A] time = 0.070458, antiderivative size = 64, normalized size of antiderivative = 1.23, number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3}{6b^4(a+bx)^6}-\frac{3a^2}{5b^4(a+bx)^5}+\frac{3a}{4b^4(a+bx)^4}-\frac{1}{3b^4(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^7,x]
```

```
[Out] a^3/(6*b^4*(a + b*x)^6) - (3*a^2)/(5*b^4*(a + b*x)^5) + (3*a)/(4*
b^4*(a + b*x)^4) - 1/(3*b^4*(a + b*x)^3)
```

Rubi in Sympy [A] time = 13.3672, size = 60, normalized size = 1.15

$$\frac{a^3}{6b^4\left(a+bx\right)^6}-\frac{3a^2}{5b^4\left(a+bx\right)^5}+\frac{3a}{4b^4\left(a+bx\right)^4}-\frac{1}{3b^4\left(a+bx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**7,x)
```

```
[Out] a**3/(6*b**4*(a + b*x)**6) - 3*a**2/(5*b**4*(a + b*x)**5) + 3*a/(
4*b**4*(a + b*x)**4) - 1/(3*b**4*(a + b*x)**3)
```

Mathematica [A] time = 0.0141058, size = 42, normalized size = 0.81

$$-\frac{a^3+6a^2bx+15ab^2x^2+20b^3x^3}{60b^4(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^7,x]
```

```
[Out] -(a^3 + 6*a^2*b*x + 15*a*b^2*x^2 + 20*b^3*x^3)/(60*b^4*(a + b*x)^
6)
```

Maple [A] time = 0.008, size = 57, normalized size = 1.1

$$\frac{a^3}{6\,b^4\,(bx+a)^6}-\frac{3\,a^2}{5\,b^4\,(bx+a)^5}+\frac{3\,a}{4\,b^4\,(bx+a)^4}-\frac{1}{3\,b^4\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^7,x)
```

```
[Out] 1/6*a^3/b^4/(b*x+a)^6-3/5*a^2/b^4/(b*x+a)^5+3/4*a/b^4/(b*x+a)^4-1
/3/b^4/(b*x+a)^3
```

Maxima [A] time = 1.4118, size = 132, normalized size = 2.54

$$-\frac{20\,b^3x^3+15\,ab^2x^2+6\,a^2bx+a^3}{60\,(b^{10}x^6+6\,ab^9x^5+15\,a^2b^8x^4+20\,a^3b^7x^3+15\,a^4b^6x^2+6\,a^5b^5x+a^6b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)/(b^10*x^6 + 6
*a*b^9*x^5 + 15*a^2*b^8*x^4 + 20*a^3*b^7*x^3 + 15*a^4*b^6*x^2 + 6
*a^5*b^5*x + a^6*b^4)
```

Fricas [A] time = 0.203912, size = 132, normalized size = 2.54

$$-\frac{20\,b^3x^3+15\,ab^2x^2+6\,a^2bx+a^3}{60\,(b^{10}x^6+6\,ab^9x^5+15\,a^2b^8x^4+20\,a^3b^7x^3+15\,a^4b^6x^2+6\,a^5b^5x+a^6b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)/(b^10*x^6 + 6
*a*b^9*x^5 + 15*a^2*b^8*x^4 + 20*a^3*b^7*x^3 + 15*a^4*b^6*x^2 + 6
```

```
*a^5*b^5*x + a^6*b^4)
```

Sympy [A] time = 2.3603, size = 104, normalized size = 2.

$$-\frac{a^3+6a^2bx+15ab^2x^2+20b^3x^3}{60a^6b^4+360a^5b^5x+900a^4b^6x^2+1200a^3b^7x^3+900a^2b^8x^4+360ab^9x^5+60b^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**7,x)
```

```
[Out] -(a**3 + 6*a**2*b*x + 15*a*b**2*x**2 + 20*b**3*x**3)/(60*a**6*b**
4 + 360*a**5*b**5*x + 900*a**4*b**6*x**2 + 1200*a**3*b**7*x**3 +
900*a**2*b**8*x**4 + 360*a*b**9*x**5 + 60*b**10*x**6)
```

GIAC/XCAS [A] time = 0.218568, size = 54, normalized size = 1.04

$$-\frac{20\,b^3x^3+15\,ab^2x^2+6\,a^2bx+a^3}{60\,(bx+a)^6b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*b^3*x^3 + 15*a*b^2*x^2 + 6*a^2*b*x + a^3)/((b*x + a)^6*
b^4)
```

3.215 $\int \frac{x^2}{(a+bx)^7} dx$

Optimal. Leaf size=47

$$-\frac{a^2}{6b^3(a+bx)^6}+\frac{2a}{5b^3(a+bx)^5}-\frac{1}{4b^3(a+bx)^4}$$

```
[Out] -a^2/(6*b^3*(a + b*x)^6) + (2*a)/(5*b^3*(a + b*x)^5) - 1/(4*b^3*(
a + b*x)^4)
```

Rubi [A] time = 0.0503404, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^2}{6b^3(a+bx)^6}+\frac{2a}{5b^3(a+bx)^5}-\frac{1}{4b^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^7,x]
```

```
[Out] -a^2/(6*b^3*(a + b*x)^6) + (2*a)/(5*b^3*(a + b*x)^5) - 1/(4*b^3*(
a + b*x)^4)
```

Rubi in Sympy [A] time = 9.58587, size = 42, normalized size = 0.89

$$-\frac{a^2}{6b^3\left(a+bx\right)^6}+\frac{2a}{5b^3\left(a+bx\right)^5}-\frac{1}{4b^3\left(a+bx\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**7,x)
```

```
[Out] -a**2/(6*b**3*(a + b*x)**6) + 2*a/(5*b**3*(a + b*x)**5) - 1/(4*b*
*3*(a + b*x)**4)
```

Mathematica [A] time = 0.0126672, size = 31, normalized size = 0.66

$$-\frac{a^2+6abx+15b^2x^2}{60b^3(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^7,x]
```

```
[Out] -(a^2 + 6*a*b*x + 15*b^2*x^2)/(60*b^3*(a + b*x)^6)
```

Maple [A] time = 0.009, size = 42, normalized size = 0.9

$$-\frac{a^2}{6\,b^3\,(bx+a)^6}+\frac{2\,a}{5\,b^3\,(bx+a)^5}-\frac{1}{4\,b^3\,(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^7,x)
```

```
[Out] -1/6*a^2/b^3/(b*x+a)^6+2/5*a/b^3/(b*x+a)^5-1/4/b^3/(b*x+a)^4
```

Maxima [A] time = 1.34074, size = 117, normalized size = 2.49

$$-\frac{15\,b^2x^2+6\,abx+a^2}{60\,(b^9x^6+6\,ab^8x^5+15\,a^2b^7x^4+20\,a^3b^6x^3+15\,a^4b^5x^2+6\,a^5b^4x+a^6b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(15*b^2*x^2 + 6*a*b*x + a^2)/(b^9*x^6 + 6*a*b^8*x^5 + 15*a^
2*b^7*x^4 + 20*a^3*b^6*x^3 + 15*a^4*b^5*x^2 + 6*a^5*b^4*x + a^6*b
^3)
```

Fricas [A] time = 0.203165, size = 117, normalized size = 2.49

$$-\frac{15\,b^2x^2+6\,abx+a^2}{60\,(b^9x^6+6\,ab^8x^5+15\,a^2b^7x^4+20\,a^3b^6x^3+15\,a^4b^5x^2+6\,a^5b^4x+a^6b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*x^2 + 6*a*b*x + a^2)/(b^9*x^6 + 6*a*b^8*x^5 + 15*a^
2*b^7*x^4 + 20*a^3*b^6*x^3 + 15*a^4*b^5*x^2 + 6*a^5*b^4*x + a^6*b
^3)
```

Sympy [A] time = 2.3188, size = 92, normalized size = 1.96

$$-\frac{a^2 + 6abx + 15b^2x^2}{60a^6b^3 + 360a^5b^4x + 900a^4b^5x^2 + 1200a^3b^6x^3 + 900a^2b^7x^4 + 360ab^8x^5 + 60b^9x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**7,x)
```

```
[Out] -(a**2 + 6*a*b*x + 15*b**2*x**2)/(60*a**6*b**3 + 360*a**5*b**4*x
+ 900*a**4*b**5*x**2 + 1200*a**3*b**6*x**3 + 900*a**2*b**7*x**4 +
 360*a*b**8*x**5 + 60*b**9*x**6)
```

GIAC/XCAS [A] time = 0.22031, size = 39, normalized size = 0.83

$$-\frac{15\,b^2x^2 + 6\,abx + a^2}{60\,(bx + a)^6b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/60*(15*b^2*x^2 + 6*a*b*x + a^2)/((b*x + a)^6*b^3)
```

3.216 $\int \frac{x}{(a+bx)^7}\,dx$

Optimal. Leaf size=30

$$\frac{a}{6b^2(a+bx)^6}-\frac{1}{5b^2(a+bx)^5}$$

```
[Out] a/(6*b^2*(a + b*x)^6) - 1/(5*b^2*(a + b*x)^5)
```

Rubi [A] time = 0.0318969, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a}{6b^2(a+bx)^6}-\frac{1}{5b^2(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^7,x]

[Out] a/(6*b^2*(a + b*x)^6) - 1/(5*b^2*(a + b*x)^5)
```

Rubi in Sympy [A] time = 5.95895, size = 26, normalized size = 0.87

$$\frac{a}{6b^2\left(a+bx\right)^6}-\frac{1}{5b^2\left(a+bx\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**7,x)

[Out] a/(6*b**2*(a + b*x)**6) - 1/(5*b**2*(a + b*x)**5)
```

Mathematica [A] time = 0.00867442, size = 20, normalized size = 0.67

$$-\frac{a+6bx}{30b^2(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^7,x]
```

```
[Out] -(a + 6*b*x)/(30*b^2*(a + b*x)^6)
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$\frac{a}{6\,b^2\,(bx+a)^6}-\frac{1}{5\,b^2\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a)^7,x)
```

```
[Out] 1/6*a/b^2/(b*x+a)^6-1/5/b^2/(b*x+a)^5
```

Maxima [A] time = 1.34092, size = 103, normalized size = 3.43

$$-\frac{6\,bx+a}{30\,(b^8x^6+6\,ab^7x^5+15\,a^2b^6x^4+20\,a^3b^5x^3+15\,a^4b^4x^2+6\,a^5b^3x+a^6b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/30*(6*b*x + a)/(b^8*x^6 + 6*a*b^7*x^5 + 15*a^2*b^6*x^4 + 20*a^
3*b^5*x^3 + 15*a^4*b^4*x^2 + 6*a^5*b^3*x + a^6*b^2)
```

Fricas [A] time = 0.203212, size = 103, normalized size = 3.43

$$-\frac{6\,bx+a}{30\,(b^8x^6+6\,ab^7x^5+15\,a^2b^6x^4+20\,a^3b^5x^3+15\,a^4b^4x^2+6\,a^5b^3x+a^6b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/30*(6*b*x + a)/(b^8*x^6 + 6*a*b^7*x^5 + 15*a^2*b^6*x^4 + 20*a^
3*b^5*x^3 + 15*a^4*b^4*x^2 + 6*a^5*b^3*x + a^6*b^2)
```

Sympy [A] time = 2.21987, size = 80, normalized size = 2.67

$$-\frac{a+6bx}{30a^6b^2+180a^5b^3x+450a^4b^4x^2+600a^3b^5x^3+450a^2b^6x^4+180ab^7x^5+30b^8x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**7,x)
```

```
[Out] -(a + 6*b*x)/(30*a**6*b**2 + 180*a**5*b**3*x + 450*a**4*b**4*x**2
 + 600*a**3*b**5*x**3 + 450*a**2*b**6*x**4 + 180*a*b**7*x**5 + 30
*b**8*x**6)
```

GIAC/XCAS [A] time = 0.214932, size = 24, normalized size = 0.8

$$-\frac{6\,bx + a}{30\,(bx + a)^6 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/30*(6*b*x + a)/((b*x + a)^6*b^2)
```

3.217 $\int \frac{1}{(a+bx)^7} dx$

Optimal. Leaf size=14

$$-\frac{1}{6b(a+bx)^6}$$

[Out] -1/(6*b*(a + b*x)^6)

Rubi [A] time = 0.00687739, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{1}{6b(a+bx)^6}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)^(-7),x]

[Out] -1/(6*b*(a + b*x)^6)

Rubi in Sympy [A] time = 1.27233, size = 12, normalized size = 0.86

$$-\frac{1}{6b(a+bx)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(1/(b*x+a)**7,x)

[Out] -1/(6*b*(a + b*x)**6)

Mathematica [A] time = 0.00437641, size = 14, normalized size = 1.

$$-\frac{1}{6b(a+bx)^6}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)^(-7),x]

```
[Out] -1/(6*b*(a + b*x)^6)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$-\frac{1}{6\,b\,(bx+a)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^7,x)
```

```
[Out] -1/6/b/(b*x+a)^6
```

Maxima [A] time = 1.34606, size = 16, normalized size = 1.14

$$-\frac{1}{6\,(bx+a)^{6}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-7),x, algorithm="maxima")
```

```
[Out] -1/6/((b*x + a)^6*b)
```

Fricas [A] time = 0.201074, size = 92, normalized size = 6.57

$$-\frac{1}{6\,(b^{7}x^{6}+6\,ab^{6}x^{5}+15\,a^{2}b^{5}x^{4}+20\,a^{3}b^{4}x^{3}+15\,a^{4}b^{3}x^{2}+6\,a^{5}b^{2}x+a^{6}b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-7),x, algorithm="fricas")
```

```
[Out] -1/6/(b^7*x^6 + 6*a*b^6*x^5 + 15*a^2*b^5*x^4 + 20*a^3*b^4*x^3 + 1
5*a^4*b^3*x^2 + 6*a^5*b^2*x + a^6*b)
```

Sympy [A] time = 2.12242, size = 73, normalized size = 5.21

$$-\frac{1}{6a^{6}b+36a^{5}b^{2}x+90a^{4}b^{3}x^{2}+120a^{3}b^{4}x^{3}+90a^{2}b^{5}x^{4}+36ab^{6}x^{5}+6b^{7}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**7,x)
```

```
[Out] -1/(6*a**6*b + 36*a**5*b**2*x + 90*a**4*b**3*x**2 + 120*a**3*b**4
*x**3 + 90*a**2*b**5*x**4 + 36*a*b**6*x**5 + 6*b**7*x**6)
```

GIAC/XCAS [A] time = 0.217755, size = 16, normalized size = 1.14

$$-\frac{1}{6\,(bx+a)^6 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-7),x, algorithm="giac")
```

```
[Out] -1/6/((b*x + a)^6*b)
```

3.218 $\int \frac{1}{x(a+bx)^7}\,dx$

Optimal. Leaf size=99

$$-\frac{\log(a+bx)}{a^7}+\frac{\log(x)}{a^7}+\frac{1}{a^6(a+bx)}+\frac{1}{2a^5(a+bx)^2}+\frac{1}{3a^4(a+bx)^3}+\frac{1}{4a^3(a+bx)^4}+\frac{1}{5a^2(a+bx)^5}+\frac{1}{6a(a+bx)^6}$$

```
[Out] 1/(6*a*(a + b*x)^6) + 1/(5*a^2*(a + b*x)^5) + 1/(4*a^3*(a + b*x)^
4) + 1/(3*a^4*(a + b*x)^3) + 1/(2*a^5*(a + b*x)^2) + 1/(a^6*(a +
b*x)) + Log[x]/a^7 - Log[a + b*x]/a^7
```

Rubi [A] time = 0.10823, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{\log(a+bx)}{a^7}+\frac{\log(x)}{a^7}+\frac{1}{a^6(a+bx)}+\frac{1}{2a^5(a+bx)^2}+\frac{1}{3a^4(a+bx)^3}+\frac{1}{4a^3(a+bx)^4}+\frac{1}{5a^2(a+bx)^5}+\frac{1}{6a(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^7),x]
```

```
[Out] 1/(6*a*(a + b*x)^6) + 1/(5*a^2*(a + b*x)^5) + 1/(4*a^3*(a + b*x)^
4) + 1/(3*a^4*(a + b*x)^3) + 1/(2*a^5*(a + b*x)^2) + 1/(a^6*(a +
b*x)) + Log[x]/a^7 - Log[a + b*x]/a^7
```

Rubi in Sympy [A] time = 20.1217, size = 92, normalized size = 0.93

$$\frac{1}{6a\left(a+bx\right)^6}+\frac{1}{5a^2\left(a+bx\right)^5}+\frac{1}{4a^3\left(a+bx\right)^4}+\frac{1}{3a^4\left(a+bx\right)^3}+\frac{1}{2a^5\left(a+bx\right)^2}+\frac{1}{a^6\left(a+bx\right)}+\frac{\log\left(x\right)}{a^7}-\frac{\log\left(a+bx\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**7,x)
```

```
[Out] 1/(6*a*(a + b*x)**6) + 1/(5*a**2*(a + b*x)**5) + 1/(4*a**3*(a + b
*x)**4) + 1/(3*a**4*(a + b*x)**3) + 1/(2*a**5*(a + b*x)**2) + 1/(
a**6*(a + b*x)) + log(x)/a**7 - log(a + b*x)/a**7
```

Mathematica [A] time = 0.0929195, size = 81, normalized size = 0.82

$$\frac{\frac{a(147a^5+522a^4bx+855a^3b^2x^2+740a^2b^3x^3+330ab^4x^4+60b^5x^5)}{(a+bx)^6}-60\log(a+bx)+60\log(x)}{60a^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^7),x]
```

```
[Out] ((a*(147*a^5 + 522*a^4*b*x + 855*a^3*b^2*x^2 + 740*a^2*b^3*x^3 +
330*a*b^4*x^4 + 60*b^5*x^5))/(a + b*x)^6 + 60*Log[x] - 60*Log[a +
 b*x])/(60*a^7)
```

Maple [A] time = 0.016, size = 90, normalized size = 0.9

$$\frac{1}{6\,a\,(bx+a)^6}+\frac{1}{5\,a^2\,(bx+a)^5}+\frac{1}{4\,a^3\,(bx+a)^4}+\frac{1}{3\,a^4\,(bx+a)^3}+\frac{1}{2\,a^5\,(bx+a)^2}+\frac{1}{a^6\,(bx+a)}+\frac{\ln(x)}{a^7}-\frac{\ln(bx+a)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^7,x)
```

```
[Out] 1/6/a/(b*x+a)^6+1/5/a^2/(b*x+a)^5+1/4/a^3/(b*x+a)^4+1/3/a^4/(b*x+
a)^3+1/2/a^5/(b*x+a)^2+1/a^6/(b*x+a)+ln(x)/a^7-ln(b*x+a)/a^7
```

Maxima [A] time = 1.34929, size = 188, normalized size = 1.9

$$\frac{60\,b^5x^5+330\,ab^4x^4+740\,a^2b^3x^3+855\,a^3b^2x^2+522\,a^4bx+147\,a^5}{60\,(a^6b^6x^6+6\,a^7b^5x^5+15\,a^8b^4x^4+20\,a^9b^3x^3+15\,a^{10}b^2x^2+6\,a^{11}bx+a^{12})}-\frac{\log(bx+a)}{a^7}+\frac{\log(x)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x),x, algorithm="maxima")
```

```
[Out] 1/60*(60*b^5*x^5 + 330*a*b^4*x^4 + 740*a^2*b^3*x^3 + 855*a^3*b^2*
x^2 + 522*a^4*b*x + 147*a^5)/(a^6*b^6*x^6 + 6*a^7*b^5*x^5 + 15*a^
8*b^4*x^4 + 20*a^9*b^3*x^3 + 15*a^10*b^2*x^2 + 6*a^11*b*x + a^12)
 - log(b*x + a)/a^7 + log(x)/a^7
```

Fricas [A] time = 0.222602, size = 346, normalized size = 3.49

$$\frac{60\,ab^5x^5 + 330\,a^2b^4x^4 + 740\,a^3b^3x^3 + 855\,a^4b^2x^2 + 522\,a^5bx + 147\,a^6 - 60\left(b^6x^6 + 6\,ab^5x^5 + 15\,a^2b^4x^4 + 20\,a^3b^3x^3 + 15\,a^4b}{60\,(a^7b^6x^6 + 6\,a^8b^5x^5 + 15\,a^9b^4x^4 + 20\,a^{10}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x),x, algorithm="fricas")
```

```
[Out] 1/60*(60*a*b^5*x^5 + 330*a^2*b^4*x^4 + 740*a^3*b^3*x^3 + 855*a^4*
b^2*x^2 + 522*a^5*b*x + 147*a^6 - 60*(b^6*x^6 + 6*a*b^5*x^5 + 15*
a^2*b^4*x^4 + 20*a^3*b^3*x^3 + 15*a^4*b^2*x^2 + 6*a^5*b*x + a^6)*
log(b*x + a) + 60*(b^6*x^6 + 6*a*b^5*x^5 + 15*a^2*b^4*x^4 + 20*a^
3*b^3*x^3 + 15*a^4*b^2*x^2 + 6*a^5*b*x + a^6)*log(x))/(a^7*b^6*x^
6 + 6*a^8*b^5*x^5 + 15*a^9*b^4*x^4 + 20*a^10*b^3*x^3 + 15*a^11*b^
2*x^2 + 6*a^12*b*x + a^13)
```

Sympy [A] time = 3.18036, size = 141, normalized size = 1.42

$$\frac{147a^5 + 522a^4bx + 855a^3b^2x^2 + 740a^2b^3x^3 + 330ab^4x^4 + 60b^5x^5}{60a^{12} + 360a^{11}bx + 900a^{10}b^2x^2 + 1200a^9b^3x^3 + 900a^8b^4x^4 + 360a^7b^5x^5 + 60a^6b^6x^6} + \frac{\log(x) - \log\left(\frac{a}{b} + x\right)}{a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**7,x)
```

```
[Out] (147*a**5 + 522*a**4*b*x + 855*a**3*b**2*x**2 + 740*a**2*b**3*x**
3 + 330*a*b**4*x**4 + 60*b**5*x**5)/(60*a**12 + 360*a**11*b*x + 9
00*a**10*b**2*x**2 + 1200*a**9*b**3*x**3 + 900*a**8*b**4*x**4 + 3
60*a**7*b**5*x**5 + 60*a**6*b**6*x**6) + (log(x) - log(a/b + x))/
a**7
```

GIAC/XCAS [A] time = 0.228818, size = 117, normalized size = 1.18

$$-\frac{\ln(|bx + a|)}{a^7} + \frac{\ln(|x|)}{a^7} + \frac{60\,ab^5x^5 + 330\,a^2b^4x^4 + 740\,a^3b^3x^3 + 855\,a^4b^2x^2 + 522\,a^5bx + 147\,a^6}{60\,(bx + a)^6a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x),x, algorithm="giac")
```

```
[Out] -ln(abs(b*x + a))/a^7 + ln(abs(x))/a^7 + 1/60*(60*a*b^5*x^5 + 330
*a^2*b^4*x^4 + 740*a^3*b^3*x^3 + 855*a^4*b^2*x^2 + 522*a^5*b*x +
147*a^6)/((b*x + a)^6*a^7)
```

3.219 $\int \frac{1}{x^2(a+bx)^7} dx$

Optimal. Leaf size=117

$$-\frac{7b\log(x)}{a^8}+\frac{7b\log(a+bx)}{a^8}-\frac{6b}{a^7(a+bx)}-\frac{1}{a^7x}-\frac{5b}{2a^6(a+bx)^2}-\frac{4b}{3a^5(a+bx)^3}-\frac{3b}{4a^4(a+bx)^4}-\frac{2b}{5a^3(a+bx)^5}-\frac{b}{6a^2(a+bx)^6}$$

```
[Out] -(1/(a^7*x)) - b/(6*a^2*(a + b*x)^6) - (2*b)/(5*a^3*(a + b*x)^5)
- (3*b)/(4*a^4*(a + b*x)^4) - (4*b)/(3*a^5*(a + b*x)^3) - (5*b)/(
2*a^6*(a + b*x)^2) - (6*b)/(a^7*(a + b*x)) - (7*b*Log[x])/a^8 + (
7*b*Log[a + b*x])/a^8
```

Rubi [A] time = 0.166656, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{7b\log(x)}{a^8}+\frac{7b\log(a+bx)}{a^8}-\frac{6b}{a^7(a+bx)}-\frac{1}{a^7x}-\frac{5b}{2a^6(a+bx)^2}-\frac{4b}{3a^5(a+bx)^3}-\frac{3b}{4a^4(a+bx)^4}-\frac{2b}{5a^3(a+bx)^5}-\frac{b}{6a^2(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^7),x]
```

```
[Out] -(1/(a^7*x)) - b/(6*a^2*(a + b*x)^6) - (2*b)/(5*a^3*(a + b*x)^5)
- (3*b)/(4*a^4*(a + b*x)^4) - (4*b)/(3*a^5*(a + b*x)^3) - (5*b)/(
2*a^6*(a + b*x)^2) - (6*b)/(a^7*(a + b*x)) - (7*b*Log[x])/a^8 + (
7*b*Log[a + b*x])/a^8
```

Rubi in Sympy [A] time = 35.283, size = 116, normalized size = 0.99

$$-\frac{b}{6a^2(a+bx)^6}-\frac{2b}{5a^3(a+bx)^5}-\frac{3b}{4a^4(a+bx)^4}-\frac{4b}{3a^5(a+bx)^3}-\frac{5b}{2a^6(a+bx)^2}-\frac{6b}{a^7(a+bx)}-\frac{1}{a^7x}-\frac{7b\log(x)}{a^8}+\frac{7b\log(a+bx)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**7,x)
```

```
[Out] -b/(6*a**2*(a + b*x)**6) - 2*b/(5*a**3*(a + b*x)**5) - 3*b/(4*a**
4*(a + b*x)**4) - 4*b/(3*a**5*(a + b*x)**3) - 5*b/(2*a**6*(a + b*
```

```
x)**2) - 6*b/(a**7*(a + b*x)) - 1/(a**7*x) - 7*b*log(x)/a**8 + 7*
b*log(a + b*x)/a**8
```

Mathematica [A] time = 0.147122, size = 97, normalized size = 0.83

$$-\frac{\frac{a\left(60a^6+1029a^5bx+3654a^4b^2x^2+5985a^3b^3x^3+5180a^2b^4x^4+2310ab^5x^5+420b^6x^6\right)}{x(a+bx)^6}-420b\log(a+bx)+420b\log(x)}{60a^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^7),x]
```

```
[Out] -((a*(60*a^6 + 1029*a^5*b*x + 3654*a^4*b^2*x^2 + 5985*a^3*b^3*x^3
 + 5180*a^2*b^4*x^4 + 2310*a*b^5*x^5 + 420*b^6*x^6))/(x*(a + b*x)
^6) + 420*b*Log[x] - 420*b*Log[a + b*x])/(60*a^8)
```

Maple [A] time = 0.019, size = 108, normalized size = 0.9

$$-\frac{1}{a^7x}-\frac{b}{6\,a^2\,(bx+a)^6}-\frac{2\,b}{5\,a^3\,(bx+a)^5}-\frac{3\,b}{4\,a^4\,(bx+a)^4}-\frac{4\,b}{3\,a^5\,(bx+a)^3}-\frac{5\,b}{2\,a^6\,(bx+a)^2}-6\,\frac{b}{a^7\,(bx+a)}-7\,\frac{b\ln(x)}{a^8}+7\,\frac{b\ln(bx+a)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^7,x)
```

```
[Out] -1/a^7/x-1/6*b/a^2/(b*x+a)^6-2/5*b/a^3/(b*x+a)^5-3/4*b/a^4/(b*x+a
)^4-4/3*b/a^5/(b*x+a)^3-5/2*b/a^6/(b*x+a)^2-6*b/a^7/(b*x+a)-7*b*l
n(x)/a^8+7*b*ln(b*x+a)/a^8
```

Maxima [A] time = 1.36248, size = 212, normalized size = 1.81

$$-\frac{420\,b^6x^6+2310\,ab^5x^5+5180\,a^2b^4x^4+5985\,a^3b^3x^3+3654\,a^4b^2x^2+1029\,a^5bx+60\,a^6}{60\,(a^7b^6x^7+6\,a^8b^5x^6+15\,a^9b^4x^5+20\,a^{10}b^3x^4+15\,a^{11}b^2x^3+6\,a^{12}bx^2+a^{13}x)}+\frac{7\,b\log(bx+a)}{a^8}-\frac{7\,b\log(x)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^2),x, algorithm="maxima")
```

```
[Out] -1/60*(420*b^6*x^6 + 2310*a*b^5*x^5 + 5180*a^2*b^4*x^4 + 5985*a^3
*b^3*x^3 + 3654*a^4*b^2*x^2 + 1029*a^5*b*x + 60*a^6)/(a^7*b^6*x^7
 + 6*a^8*b^5*x^6 + 15*a^9*b^4*x^5 + 20*a^10*b^3*x^4 + 15*a^11*b^2
*x^3 + 6*a^12*b*x^2 + a^13*x) + 7*b*log(b*x + a)/a^8 - 7*b*log(x)
/a^8
```

Fricas [A] time = 0.221881, size = 385, normalized size = 3.29

$$-\frac{420\,ab^6x^6 + 2310\,a^2b^5x^5 + 5180\,a^3b^4x^4 + 5985\,a^4b^3x^3 + 3654\,a^5b^2x^2 + 1029\,a^6bx + 60\,a^7 - 420\,\left(b^7x^7 + 6\,ab^6x^6 + 15\,a^2b^5x}{60\,(a^8b^6x^7 + 6\,a^9b^5x^6 + 15\,a^{1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^2),x, algorithm="fricas")
```

```
[Out] -1/60*(420*a*b^6*x^6 + 2310*a^2*b^5*x^5 + 5180*a^3*b^4*x^4 + 5985
*a^4*b^3*x^3 + 3654*a^5*b^2*x^2 + 1029*a^6*b*x + 60*a^7 - 420*(b^
7*x^7 + 6*a*b^6*x^6 + 15*a^2*b^5*x^5 + 20*a^3*b^4*x^4 + 15*a^4*b^
3*x^3 + 6*a^5*b^2*x^2 + a^6*b*x)*log(b*x + a) + 420*(b^7*x^7 + 6*
a*b^6*x^6 + 15*a^2*b^5*x^5 + 20*a^3*b^4*x^4 + 15*a^4*b^3*x^3 + 6*
a^5*b^2*x^2 + a^6*b*x)*log(x))/(a^8*b^6*x^7 + 6*a^9*b^5*x^6 + 15*
a^10*b^4*x^5 + 20*a^11*b^3*x^4 + 15*a^12*b^2*x^3 + 6*a^13*b*x^2 +
 a^14*x)
```

Sympy [A] time = 3.82687, size = 160, normalized size = 1.37

$$-\frac{60a^6 + 1029a^5bx + 3654a^4b^2x^2 + 5985a^3b^3x^3 + 5180a^2b^4x^4 + 2310ab^5x^5 + 420b^6x^6}{60a^{13}x + 360a^{12}bx^2 + 900a^{11}b^2x^3 + 1200a^{10}b^3x^4 + 900a^9b^4x^5 + 360a^8b^5x^6 + 60a^7b^6x^7} + \frac{7b\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**7,x)
```

```
[Out] -(60*a**6 + 1029*a**5*b*x + 3654*a**4*b**2*x**2 + 5985*a**3*b**3*
x**3 + 5180*a**2*b**4*x**4 + 2310*a*b**5*x**5 + 420*b**6*x**6)/(6
0*a**13*x + 360*a**12*b*x**2 + 900*a**11*b**2*x**3 + 1200*a**10*b
**3*x**4 + 900*a**9*b**4*x**5 + 360*a**8*b**5*x**6 + 60*a**7*b**6
*x**7) + 7*b*(-log(x) + log(a/b + x))/a**8
```

GIAC/XCAS [A] time = 0.21871, size = 140, normalized size = 1.2

$$\frac{7\,b\ln\left(|bx+a|\right)}{a^8}-\frac{7\,b\ln\left(|x|\right)}{a^8}-\frac{420\,ab^6x^6+2310\,a^2b^5x^5+5180\,a^3b^4x^4+5985\,a^4b^3x^3+3654\,a^5b^2x^2+1029\,a^6bx+60\,a^7}{60\,(bx+a)^6a^8x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^2),x, algorithm="giac")
```

```
[Out] 7*b*ln(abs(b*x + a))/a^8 - 7*b*ln(abs(x))/a^8 - 1/60*(420*a*b^6*x
^6 + 2310*a^2*b^5*x^5 + 5180*a^3*b^4*x^4 + 5985*a^4*b^3*x^3 + 365
4*a^5*b^2*x^2 + 1029*a^6*b*x + 60*a^7)/((b*x + a)^6*a^8*x)
```

3.220 $\int \frac{1}{x^3(a+bx)^7}\,dx$

Optimal. Leaf size=144

$$\frac{28b^2\log(x)}{a^9}-\frac{28b^2\log(a+bx)}{a^9}+\frac{21b^2}{a^8(a+bx)}+\frac{7b}{a^8x}+\frac{15b^2}{2a^7(a+bx)^2}-\frac{1}{2a^7x^2}+\frac{10b^2}{3a^6(a+bx)^3}+\frac{3b^2}{2a^5(a+bx)^4}+\frac{3b^2}{5a^4(a+bx)^5}+\frac{b^2}{6a^3(a+bx)^6}$$

```
[Out] -1/(2*a^7*x^2) + (7*b)/(a^8*x) + b^2/(6*a^3*(a + b*x)^6) + (3*b^2
)/(5*a^4*(a + b*x)^5) + (3*b^2)/(2*a^5*(a + b*x)^4) + (10*b^2)/(3
*a^6*(a + b*x)^3) + (15*b^2)/(2*a^7*(a + b*x)^2) + (21*b^2)/(a^8*
(a + b*x)) + (28*b^2*Log[x])/a^9 - (28*b^2*Log[a + b*x])/a^9
```

Rubi [A] time = 0.208567, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{28b^2\log(x)}{a^9}-\frac{28b^2\log(a+bx)}{a^9}+\frac{21b^2}{a^8(a+bx)}+\frac{7b}{a^8x}+\frac{15b^2}{2a^7(a+bx)^2}-\frac{1}{2a^7x^2}+\frac{10b^2}{3a^6(a+bx)^3}+\frac{3b^2}{2a^5(a+bx)^4}+\frac{3b^2}{5a^4(a+bx)^5}+\frac{b^2}{6a^3(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^7),x]
```

```
[Out] -1/(2*a^7*x^2) + (7*b)/(a^8*x) + b^2/(6*a^3*(a + b*x)^6) + (3*b^2
)/(5*a^4*(a + b*x)^5) + (3*b^2)/(2*a^5*(a + b*x)^4) + (10*b^2)/(3
*a^6*(a + b*x)^3) + (15*b^2)/(2*a^7*(a + b*x)^2) + (21*b^2)/(a^8*
(a + b*x)) + (28*b^2*Log[x])/a^9 - (28*b^2*Log[a + b*x])/a^9
```

Rubi in Sympy [A] time = 78.7256, size = 141, normalized size = 0.98

$$\frac{b^2}{6a^3\left(a+bx\right)^6}+\frac{3b^2}{5a^4\left(a+bx\right)^5}+\frac{3b^2}{2a^5\left(a+bx\right)^4}+\frac{10b^2}{3a^6\left(a+bx\right)^3}+\frac{15b^2}{2a^7\left(a+bx\right)^2}-\frac{1}{2a^7x^2}+\frac{21b^2}{a^8\left(a+bx\right)}+\frac{7b}{a^8x}+\frac{28b^2\log\left(x\right)}{a^9}-\frac{28b^2\log\left(a+bx\right)}{a^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**7,x)
```

```
[Out] b**2/(6*a**3*(a + b*x)**6) + 3*b**2/(5*a**4*(a + b*x)**5) + 3*b**
2/(2*a**5*(a + b*x)**4) + 10*b**2/(3*a**6*(a + b*x)**3) + 15*b**2
```

```
/(2*a**7*(a + b*x)**2) - 1/(2*a**7*x**2) + 21*b**2/(a**8*(a + b*x
)) + 7*b/(a**8*x) + 28*b**2*log(x)/a**9 - 28*b**2*log(a + b*x)/a*
*9
```

Mathematica [A] time = 0.137494, size = 112, normalized size = 0.78

$$\frac{\frac{a(-15a^7+120a^6bx+2058a^5b^2x^2+7308a^4b^3x^3+11970a^3b^4x^4+10360a^2b^5x^5+4620ab^6x^6+840b^7x^7)}{x^2(a+bx)^6}-840b^2\log(a+bx)+840b^2\log(x)}{30a^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^7),x]
```

```
[Out] ((a*(-15*a^7 + 120*a^6*b*x + 2058*a^5*b^2*x^2 + 7308*a^4*b^3*x^3
+ 11970*a^3*b^4*x^4 + 10360*a^2*b^5*x^5 + 4620*a*b^6*x^6 + 840*b^
7*x^7))/(x^2*(a + b*x)^6) + 840*b^2*Log[x] - 840*b^2*Log[a + b*x]
)/(30*a^9)
```

Maple [A] time = 0.019, size = 133, normalized size = 0.9

$$-\frac{1}{2a^7x^2}+7\frac{b}{a^8x}+\frac{b^2}{6a^3(bx+a)^6}+\frac{3b^2}{5a^4(bx+a)^5}+\frac{3b^2}{2a^5(bx+a)^4}+\frac{10b^2}{3a^6(bx+a)^3}+\frac{15b^2}{2a^7(bx+a)^2}+21\frac{b^2}{a^8(bx+a)}+28\frac{b^2\ln(x)}{a^9}-28\frac{b^2\ln(bx+a)}{a^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^7,x)
```

```
[Out] -1/2/a^7/x^2+7*b/a^8/x+1/6*b^2/a^3/(b*x+a)^6+3/5*b^2/a^4/(b*x+a)^
5+3/2*b^2/a^5/(b*x+a)^4+10/3*b^2/a^6/(b*x+a)^3+15/2*b^2/a^7/(b*x+
a)^2+21*b^2/a^8/(b*x+a)+28*b^2*ln(x)/a^9-28*b^2*ln(b*x+a)/a^9
```

Maxima [A] time = 1.34842, size = 235, normalized size = 1.63

$$\frac{840b^7x^7+4620ab^6x^6+10360a^2b^5x^5+11970a^3b^4x^4+7308a^4b^3x^3+2058a^5b^2x^2+120a^6bx-15a^7}{30(a^8b^6x^8+6a^9b^5x^7+15a^{10}b^4x^6+20a^{11}b^3x^5+15a^{12}b^2x^4+6a^{13}bx^3+a^{14}x^2)}-\frac{28b^2\log(bx+a)}{a^9}+\frac{28b^2\log(x)}{a^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^3),x, algorithm="maxima")
```

```
[Out] 1/30*(840*b^7*x^7 + 4620*a*b^6*x^6 + 10360*a^2*b^5*x^5 + 11970*a^
3*b^4*x^4 + 7308*a^4*b^3*x^3 + 2058*a^5*b^2*x^2 + 120*a^6*b*x - 1
5*a^7)/(a^8*b^6*x^8 + 6*a^9*b^5*x^7 + 15*a^10*b^4*x^6 + 20*a^11*b
^3*x^5 + 15*a^12*b^2*x^4 + 6*a^13*b*x^3 + a^14*x^2) - 28*b^2*log(
b*x + a)/a^9 + 28*b^2*log(x)/a^9
```

Fricas [A] time = 0.221672, size = 413, normalized size = 2.87

$$\frac{840\,ab^7x^7 + 4620\,a^2b^6x^6 + 10360\,a^3b^5x^5 + 11970\,a^4b^4x^4 + 7308\,a^5b^3x^3 + 2058\,a^6b^2x^2 + 120\,a^7bx - 15\,a^8 - 840\,\left(b^8x^8 + 6\,ab\right.}{30\,(a^9b^6x^8 + 6\,a^{10}b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^3),x, algorithm="fricas")
```

```
[Out] 1/30*(840*a*b^7*x^7 + 4620*a^2*b^6*x^6 + 10360*a^3*b^5*x^5 + 1197
0*a^4*b^4*x^4 + 7308*a^5*b^3*x^3 + 2058*a^6*b^2*x^2 + 120*a^7*b*x
 - 15*a^8 - 840*(b^8*x^8 + 6*a*b^7*x^7 + 15*a^2*b^6*x^6 + 20*a^3*
b^5*x^5 + 15*a^4*b^4*x^4 + 6*a^5*b^3*x^3 + a^6*b^2*x^2)*log(b*x +
 a) + 840*(b^8*x^8 + 6*a*b^7*x^7 + 15*a^2*b^6*x^6 + 20*a^3*b^5*x^
5 + 15*a^4*b^4*x^4 + 6*a^5*b^3*x^3 + a^6*b^2*x^2)*log(x))/(a^9*b^
6*x^8 + 6*a^10*b^5*x^7 + 15*a^11*b^4*x^6 + 20*a^12*b^3*x^5 + 15*a
^13*b^2*x^4 + 6*a^14*b*x^3 + a^15*x^2)
```

Sympy [A] time = 4.41825, size = 175, normalized size = 1.22

$$\frac{-15a^7 + 120a^6bx + 2058a^5b^2x^2 + 7308a^4b^3x^3 + 11970a^3b^4x^4 + 10360a^2b^5x^5 + 4620ab^6x^6 + 840b^7x^7}{30a^{14}x^2 + 180a^{13}bx^3 + 450a^{12}b^2x^4 + 600a^{11}b^3x^5 + 450a^{10}b^4x^6 + 180a^9b^5x^7 + 30a^8b^6x^8} + \frac{28b^2\left(\log(x) - \log\left(\frac{a}{b} + x\right)\right)}{a^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**7,x)
```

```
[Out] (-15*a**7 + 120*a**6*b*x + 2058*a**5*b**2*x**2 + 7308*a**4*b**3*x
**3 + 11970*a**3*b**4*x**4 + 10360*a**2*b**5*x**5 + 4620*a*b**6*x
**6 + 840*b**7*x**7)/(30*a**14*x**2 + 180*a**13*b*x**3 + 450*a**1
2*b**2*x**4 + 600*a**11*b**3*x**5 + 450*a**10*b**4*x**6 + 180*a**
9*b**5*x**7 + 30*a**8*b**6*x**8) + 28*b**2*(log(x) - log(a/b + x)
)/a**9
```

GIAC/XCAS [A] time = 0.233528, size = 161, normalized size = 1.12

$$-\frac{28\,b^2\ln\left(|bx+a|\right)}{a^9}+\frac{28\,b^2\ln\left(|x|\right)}{a^9}+\frac{840\,ab^7x^7+4620\,a^2b^6x^6+10360\,a^3b^5x^5+11970\,a^4b^4x^4+7308\,a^5b^3x^3+2058\,a^6b^2x^2+120\,a^7bx-15\,a^8}{30\,(bx+a)^6a^9x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^3),x, algorithm="giac")
```

```
[Out] -28*b^2*ln(abs(b*x + a))/a^9 + 28*b^2*ln(abs(x))/a^9 + 1/30*(840*
a*b^7*x^7 + 4620*a^2*b^6*x^6 + 10360*a^3*b^5*x^5 + 11970*a^4*b^4*
x^4 + 7308*a^5*b^3*x^3 + 2058*a^6*b^2*x^2 + 120*a^7*b*x - 15*a^8)
/((b*x + a)^6*a^9*x^2)
```

3.221 $\int \frac{1}{x^4(a+bx)^7} dx$

Optimal. Leaf size=157

$$-\frac{84b^3\log(x)}{a^{10}}+\frac{84b^3\log(a+bx)}{a^{10}}-\frac{56b^3}{a^9(a+bx)}-\frac{28b^2}{a^9x}-\frac{35b^3}{2a^8(a+bx)^2}+\frac{7b}{2a^8x^2}-\frac{20b^3}{3a^7(a+bx)^3}-\frac{1}{3a^7x^3}-\frac{5b^3}{2a^6(a+bx)^4}-\frac{4b^3}{5a^5(a+bx)^5}-\frac{b^3}{6a^4(a+bx)^6}$$

```
[Out] -1/(3*a^7*x^3) + (7*b)/(2*a^8*x^2) - (28*b^2)/(a^9*x) - b^3/(6*a^
4*(a + b*x)^6) - (4*b^3)/(5*a^5*(a + b*x)^5) - (5*b^3)/(2*a^6*(a
+ b*x)^4) - (20*b^3)/(3*a^7*(a + b*x)^3) - (35*b^3)/(2*a^8*(a + b
*x)^2) - (56*b^3)/(a^9*(a + b*x)) - (84*b^3*Log[x])/a^10 + (84*b^
3*Log[a + b*x])/a^10
```

Rubi [A] time = 0.236959, antiderivative size = 157, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{84b^3\log(x)}{a^{10}}+\frac{84b^3\log(a+bx)}{a^{10}}-\frac{56b^3}{a^9(a+bx)}-\frac{28b^2}{a^9x}-\frac{35b^3}{2a^8(a+bx)^2}+\frac{7b}{2a^8x^2}-\frac{20b^3}{3a^7(a+bx)^3}-\frac{1}{3a^7x^3}-\frac{5b^3}{2a^6(a+bx)^4}-\frac{4b^3}{5a^5(a+bx)^5}-\frac{b^3}{6a^4(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(a + b*x)^7),x]
```

```
[Out] -1/(3*a^7*x^3) + (7*b)/(2*a^8*x^2) - (28*b^2)/(a^9*x) - b^3/(6*a^
4*(a + b*x)^6) - (4*b^3)/(5*a^5*(a + b*x)^5) - (5*b^3)/(2*a^6*(a
+ b*x)^4) - (20*b^3)/(3*a^7*(a + b*x)^3) - (35*b^3)/(2*a^8*(a + b
*x)^2) - (56*b^3)/(a^9*(a + b*x)) - (84*b^3*Log[x])/a^10 + (84*b^
3*Log[a + b*x])/a^10
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a)**7,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.141112, size = 123, normalized size = 0.78

$$-\frac{\frac{a(10a^8-45a^7bx+360a^6b^2x^2+6174a^5b^3x^3+21924a^4b^4x^4+35910a^3b^5x^5+31080a^2b^6x^6+13860ab^7x^7+2520b^8x^8)}{x^3(a+bx)^6} - 2520b^3\log(a+bx) + 2520b^3\log(x}{30a^{10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(a + b*x)^7),x]
```

```
[Out] -((a*(10*a^8 - 45*a^7*b*x + 360*a^6*b^2*x^2 + 6174*a^5*b^3*x^3 +
21924*a^4*b^4*x^4 + 35910*a^3*b^5*x^5 + 31080*a^2*b^6*x^6 + 13860
*a*b^7*x^7 + 2520*b^8*x^8))/(x^3*(a + b*x)^6) + 2520*b^3*Log[x] -
 2520*b^3*Log[a + b*x])/(30*a^10)
```

Maple [A] time = 0.019, size = 144, normalized size = 0.9

$$-\frac{1}{3a^7x^3}+\frac{7b}{2a^8x^2}-28\frac{b^2}{a^9x}-\frac{b^3}{6a^4(bx+a)^6}-\frac{4b^3}{5a^5(bx+a)^5}-\frac{5b^3}{2a^6(bx+a)^4}-\frac{20b^3}{3a^7(bx+a)^3}-\frac{35b^3}{2a^8(bx+a)^2}-56\frac{b^3}{a^9(bx+a)}-84\frac{b^3\ln(x)}{a^{10}}+84\frac{b^3\ln(bx+a)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a)^7,x)
```

```
[Out] -1/3/a^7/x^3+7/2*b/a^8/x^2-28*b^2/a^9/x-1/6*b^3/a^4/(b*x+a)^6-4/5
*b^3/a^5/(b*x+a)^5-5/2*b^3/a^6/(b*x+a)^4-20/3*b^3/a^7/(b*x+a)^3-3
5/2*b^3/a^8/(b*x+a)^2-56*b^3/a^9/(b*x+a)-84*b^3*ln(x)/a^10+84*b^3
*ln(b*x+a)/a^10
```

Maxima [A] time = 1.35608, size = 250, normalized size = 1.59

$$-\frac{2520b^8x^8+13860ab^7x^7+31080a^2b^6x^6+35910a^3b^5x^5+21924a^4b^4x^4+6174a^5b^3x^3+360a^6b^2x^2-45a^7bx+10a^8}{30(a^9b^6x^9+6a^{10}b^5x^8+15a^{11}b^4x^7+20a^{12}b^3x^6+15a^{13}b^2x^5+6a^{14}bx^4+a^{15}x^3)}+\frac{84b^3\log(bx+a)}{a^{10}}-\frac{84b^3\log(x)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^4),x, algorithm="maxima")
```

```
[Out] -1/30*(2520*b^8*x^8 + 13860*a*b^7*x^7 + 31080*a^2*b^6*x^6 + 35910
*a^3*b^5*x^5 + 21924*a^4*b^4*x^4 + 6174*a^5*b^3*x^3 + 360*a^6*b^2
*x^2 - 45*a^7*b*x + 10*a^8)/(a^9*b^6*x^9 + 6*a^10*b^5*x^8 + 15*a^
11*b^4*x^7 + 20*a^12*b^3*x^6 + 15*a^13*b^2*x^5 + 6*a^14*b*x^4 + a
^15*x^3) + 84*b^3*log(b*x + a)/a^10 - 84*b^3*log(x)/a^10
```

Fricas [A] time = 0.22024, size = 428, normalized size = 2.73

$$-\frac{2520\,ab^8x^8 + 13860\,a^2b^7x^7 + 31080\,a^3b^6x^6 + 35910\,a^4b^5x^5 + 21924\,a^5b^4x^4 + 6174\,a^6b^3x^3 + 360\,a^7b^2x^2 - 45\,a^8bx + 10\,a^9 - \cdots}{30\,(a^{10}b^6x^9 \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^4),x, algorithm="fricas")
```

```
[Out] -1/30*(2520*a*b^8*x^8 + 13860*a^2*b^7*x^7 + 31080*a^3*b^6*x^6 + 3
5910*a^4*b^5*x^5 + 21924*a^5*b^4*x^4 + 6174*a^6*b^3*x^3 + 360*a^7
*b^2*x^2 - 45*a^8*b*x + 10*a^9 - 2520*(b^9*x^9 + 6*a*b^8*x^8 + 15
*a^2*b^7*x^7 + 20*a^3*b^6*x^6 + 15*a^4*b^5*x^5 + 6*a^5*b^4*x^4 +
a^6*b^3*x^3)*log(b*x + a) + 2520*(b^9*x^9 + 6*a*b^8*x^8 + 15*a^2*
b^7*x^7 + 20*a^3*b^6*x^6 + 15*a^4*b^5*x^5 + 6*a^5*b^4*x^4 + a^6*b
^3*x^3)*log(x))/(a^10*b^6*x^9 + 6*a^11*b^5*x^8 + 15*a^12*b^4*x^7
+ 20*a^13*b^3*x^6 + 15*a^14*b^2*x^5 + 6*a^15*b*x^4 + a^16*x^3)
```

Sympy [A] time = 5.24994, size = 187, normalized size = 1.19

$$-\frac{10a^8 - 45a^7bx + 360a^6b^2x^2 + 6174a^5b^3x^3 + 21924a^4b^4x^4 + 35910a^3b^5x^5 + 31080a^2b^6x^6 + 13860ab^7x^7 + 2520b^8x^8}{30a^{15}x^3 + 180a^{14}bx^4 + 450a^{13}b^2x^5 + 600a^{12}b^3x^6 + 450a^{11}b^4x^7 + 180a^{10}b^5x^8 + 30a^9b^6x^9} + \frac{84b^3\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a)**7,x)
```

```
[Out] -(10*a**8 - 45*a**7*b*x + 360*a**6*b**2*x**2 + 6174*a**5*b**3*x**
3 + 21924*a**4*b**4*x**4 + 35910*a**3*b**5*x**5 + 31080*a**2*b**6
*x**6 + 13860*a*b**7*x**7 + 2520*b**8*x**8)/(30*a**15*x**3 + 180*
a**14*b*x**4 + 450*a**13*b**2*x**5 + 600*a**12*b**3*x**6 + 450*a*
*11*b**4*x**7 + 180*a**10*b**5*x**8 + 30*a**9*b**6*x**9) + 84*b**
3*(-log(x) + log(a/b + x))/a**10
```

GIAC/XCAS [A] time = 0.232247, size = 176, normalized size = 1.12

$$\frac{84\,b^3\ln\left(|bx+a|\right)}{a^{10}}-\frac{84\,b^3\ln\left(|x|\right)}{a^{10}}-\frac{2520\,ab^8x^8+13860\,a^2b^7x^7+31080\,a^3b^6x^6+35910\,a^4b^5x^5+21924\,a^5b^4x^4+6174\,a^6b^3x^3+360\,a^7b^2x^2-45\,a^8bx+10\,a^9}{30\,(bx+a)^6a^{10}x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^7*x^4),x, algorithm="giac")
```

```
[Out] 84*b^3*ln(abs(b*x + a))/a^10 - 84*b^3*ln(abs(x))/a^10 - 1/30*(252
0*a*b^8*x^8 + 13860*a^2*b^7*x^7 + 31080*a^3*b^6*x^6 + 35910*a^4*b
^5*x^5 + 21924*a^5*b^4*x^4 + 6174*a^6*b^3*x^3 + 360*a^7*b^2*x^2 -
 45*a^8*b*x + 10*a^9)/((b*x + a)^6*a^10*x^3)
```

3.222 $\int \frac{x^{12}}{(a+bx)^{10}} \, dx$

Optimal. Leaf size=186

$$-\frac{a^{12}}{9b^{13}(a+bx)^9}+\frac{3a^{11}}{2b^{13}(a+bx)^8}-\frac{66a^{10}}{7b^{13}(a+bx)^7}+\frac{110a^9}{3b^{13}(a+bx)^6}-\frac{99a^8}{b^{13}(a+bx)^5}+\frac{198a^7}{b^{13}(a+bx)^4}-\frac{308a^6}{b^{13}(a+bx)^3}+\frac{396a^5}{b^{13}(a+bx)^2}-\frac{495a^4}{b^{13}(a+bx)}-\frac{220a^3\log(a+bx)}{b^{13}}+\frac{55a^2x}{b^{12}}-\frac{5ax^2}{b^{11}}+\frac{x^3}{3b^{10}}$$

```
[Out] (55*a^2*x)/b^12 - (5*a*x^2)/b^11 + x^3/(3*b^10) - a^12/(9*b^13*(a
 + b*x)^9) + (3*a^11)/(2*b^13*(a + b*x)^8) - (66*a^10)/(7*b^13*(a
 + b*x)^7) + (110*a^9)/(3*b^13*(a + b*x)^6) - (99*a^8)/(b^13*(a +
 b*x)^5) + (198*a^7)/(b^13*(a + b*x)^4) - (308*a^6)/(b^13*(a + b*
x)^3) + (396*a^5)/(b^13*(a + b*x)^2) - (495*a^4)/(b^13*(a + b*x))
 - (220*a^3*Log[a + b*x])/b^13
```

Rubi [A] time = 0.355149, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{12}}{9b^{13}(a+bx)^9}+\frac{3a^{11}}{2b^{13}(a+bx)^8}-\frac{66a^{10}}{7b^{13}(a+bx)^7}+\frac{110a^9}{3b^{13}(a+bx)^6}-\frac{99a^8}{b^{13}(a+bx)^5}+\frac{198a^7}{b^{13}(a+bx)^4}-\frac{308a^6}{b^{13}(a+bx)^3}+\frac{396a^5}{b^{13}(a+bx)^2}-\frac{495a^4}{b^{13}(a+bx)}-\frac{220a^3\log(a+bx)}{b^{13}}+\frac{55a^2x}{b^{12}}-\frac{5ax^2}{b^{11}}+\frac{x^3}{3b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^12/(a + b*x)^10,x]
```

```
[Out] (55*a^2*x)/b^12 - (5*a*x^2)/b^11 + x^3/(3*b^10) - a^12/(9*b^13*(a
 + b*x)^9) + (3*a^11)/(2*b^13*(a + b*x)^8) - (66*a^10)/(7*b^13*(a
 + b*x)^7) + (110*a^9)/(3*b^13*(a + b*x)^6) - (99*a^8)/(b^13*(a +
 b*x)^5) + (198*a^7)/(b^13*(a + b*x)^4) - (308*a^6)/(b^13*(a + b*
x)^3) + (396*a^5)/(b^13*(a + b*x)^2) - (495*a^4)/(b^13*(a + b*x))
 - (220*a^3*Log[a + b*x])/b^13
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{12}}{9b^{13}\left(a+bx\right)^9}+\frac{3a^{11}}{2b^{13}\left(a+bx\right)^8}-\frac{66a^{10}}{7b^{13}\left(a+bx\right)^7}+\frac{110a^9}{3b^{13}\left(a+bx\right)^6}-\frac{99a^8}{b^{13}\left(a+bx\right)^5}+\frac{198a^7}{b^{13}\left(a+bx\right)^4}-\frac{308a^6}{b^{13}\left(a+bx\right)^3}+\frac{396a^5}{b^{13}\left(a+bx\right)^2}-\frac{495a^4}{b^{13}\left(a+bx\right)}-\frac{220a^3\log\left(a+bx\right)}{b^{13}}+\frac{55a^2x}{b^{12}}-\frac{10a\int x\,dx}{b^{11}}+\frac{x^3}{3b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**12/(b*x+a)**10,x)
```

```
[Out] -a**12/(9*b**13*(a + b*x)**9) + 3*a**11/(2*b**13*(a + b*x)**8) -
66*a**10/(7*b**13*(a + b*x)**7) + 110*a**9/(3*b**13*(a + b*x)**6)
 - 99*a**8/(b**13*(a + b*x)**5) + 198*a**7/(b**13*(a + b*x)**4) -
 308*a**6/(b**13*(a + b*x)**3) + 396*a**5/(b**13*(a + b*x)**2) -
495*a**4/(b**13*(a + b*x)) - 220*a**3*log(a + b*x)/b**13 + 55*a**
2*x/b**12 - 10*a*Integral(x, x)/b**11 + x**3/(3*b**10)
```

Mathematica [A] time = 0.0845597, size = 161, normalized size = 0.87

$$-\frac{35201a^{12} + 289089a^{11}bx + 1031616a^{10}b^2x^2 + 2074464a^9b^3x^3 + 2529576a^8b^4x^4 + 1831032a^7b^5x^5 + 638568a^6b^6x^6 - 58968}{126b^{13}(a+b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^12/(a + b*x)^10,x]
```

```
[Out] -(35201*a^12 + 289089*a^11*b*x + 1031616*a^10*b^2*x^2 + 2074464*a
^9*b^3*x^3 + 2529576*a^8*b^4*x^4 + 1831032*a^7*b^5*x^5 + 638568*a
^6*b^6*x^6 - 58968*a^5*b^7*x^7 - 139482*a^4*b^8*x^8 - 43218*a^3*b
^9*x^9 - 2772*a^2*b^10*x^10 + 252*a*b^11*x^11 - 42*b^12*x^12 + 27
720*a^3*(a + b*x)^9*Log[a + b*x])/(126*b^13*(a + b*x)^9)
```

Maple [A] time = 0.017, size = 177, normalized size = 1.

$$55\,{\frac{{a}^{2}x}{{b}^{12}}}-5\,{\frac{a{x}^{2}}{{b}^{11}}}+{\frac{{x}^{3}}{3\,{b}^{10}}}-{\frac{{a}^{12}}{9\,{b}^{13} \left(bx+a \right) ^{9}}}+{\frac{3\,{a}^{11}}{2\,{b}^{13} \left(bx+a \right) ^{8}}}-{\frac{66\,{a}^{10}}{7\,{b}^{13} \left(bx+a \right) ^{7}}}+{\frac{110\,{a}^{9}}{3\,{b}^{13} \left(bx+a \right) ^{6}}}-99\,{\frac{{a}^{8}}{{b}^{13} \left(bx+a \right) ^{5}}}+198\,{\frac{{a}^{7}}{{b}^{13} \left(bx+a \right) ^{4}}}-308\,{\frac{{a}^{6}}{{b}^{13} \left(bx+a \right) ^{3}}}+396\,{\frac{{a}^{5}}{{b}^{13} \left(bx+a \right) ^{2}}}-495\,{\frac{{a}^{4}}{{b}^{13} \left(bx+a \right) }}-220\,{\frac{{a}^{3}\ln \left(bx+a \right) }{{b}^{13}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^12/(b*x+a)^10,x)
```

```
[Out] 55*a^2*x/b^12-5*a*x^2/b^11+1/3*x^3/b^10-1/9*a^12/b^13/(b*x+a)^9+3
/2*a^11/b^13/(b*x+a)^8-66/7*a^10/b^13/(b*x+a)^7+110/3*a^9/b^13/(b
*x+a)^6-99*a^8/b^13/(b*x+a)^5+198*a^7/b^13/(b*x+a)^4-308*a^6/b^13
/(b*x+a)^3+396*a^5/b^13/(b*x+a)^2-495*a^4/b^13/(b*x+a)-220*a^3*ln
(b*x+a)/b^13
```

Maxima [A] time = 1.37466, size = 316, normalized size = 1.7

$$-\frac{62370\,a^{4}b^{8}x^{8}+449064\,a^{5}b^{7}x^{7}+1435896\,a^{6}b^{6}x^{6}+2652804\,a^{7}b^{5}x^{5}+3089394\,a^{8}b^{4}x^{4}+2318316\,a^{9}b^{3}x^{3}+1093356\,a^{10}b^{2}x^{2}}{126\,(b^{22}x^{9}+9\,ab^{21}x^{8}+36\,a^{2}b^{20}x^{7}+84\,a^{3}b^{19}x^{6}+126\,a^{4}b^{18}x^{5}+126\,a^{5}b^{17}x^{4}+84\,a^{6}b^{16}x^{3}+36\,a^{7}b^{15}x^{2}+9\,a}$$
$$-\frac{220\,a^{3}\log(bx+a)}{b^{13}}+\frac{b^{2}x^{3}-15\,abx^{2}+165\,a^{2}x}{3\,b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^12/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/126*(62370*a^4*b^8*x^8 + 449064*a^5*b^7*x^7 + 1435896*a^6*b^6*
x^6 + 2652804*a^7*b^5*x^5 + 3089394*a^8*b^4*x^4 + 2318316*a^9*b^3
*x^3 + 1093356*a^10*b^2*x^2 + 296019*a^11*b*x + 35201*a^12)/(b^22
*x^9 + 9*a*b^21*x^8 + 36*a^2*b^20*x^7 + 84*a^3*b^19*x^6 + 126*a^4
*b^18*x^5 + 126*a^5*b^17*x^4 + 84*a^6*b^16*x^3 + 36*a^7*b^15*x^2
+ 9*a^8*b^14*x + a^9*b^13) - 220*a^3*log(b*x + a)/b^13 + 1/3*(b^2
*x^3 - 15*a*b*x^2 + 165*a^2*x)/b^12
```

Fricas [A] time = 0.213775, size = 456, normalized size = 2.45

$$\frac{42\,b^{12}x^{12}-252\,ab^{11}x^{11}+2772\,a^{2}b^{10}x^{10}+43218\,a^{3}b^{9}x^{9}+139482\,a^{4}b^{8}x^{8}+58968\,a^{5}b^{7}x^{7}-638568\,a^{6}b^{6}x^{6}-1831032\,a^{7}b^{5}x}{126\,(b^{22}x^{9}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^12/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] 1/126*(42*b^12*x^12 - 252*a*b^11*x^11 + 2772*a^2*b^10*x^10 + 4321
8*a^3*b^9*x^9 + 139482*a^4*b^8*x^8 + 58968*a^5*b^7*x^7 - 638568*a
^6*b^6*x^6 - 1831032*a^7*b^5*x^5 - 2529576*a^8*b^4*x^4 - 2074464*
a^9*b^3*x^3 - 1031616*a^10*b^2*x^2 - 289089*a^11*b*x - 35201*a^12
 - 27720*(a^3*b^9*x^9 + 9*a^4*b^8*x^8 + 36*a^5*b^7*x^7 + 84*a^6*b
^6*x^6 + 126*a^7*b^5*x^5 + 126*a^8*b^4*x^4 + 84*a^9*b^3*x^3 + 36*
a^10*b^2*x^2 + 9*a^11*b*x + a^12)*log(b*x + a))/(b^22*x^9 + 9*a*b
^21*x^8 + 36*a^2*b^20*x^7 + 84*a^3*b^19*x^6 + 126*a^4*b^18*x^5 +
126*a^5*b^17*x^4 + 84*a^6*b^16*x^3 + 36*a^7*b^15*x^2 + 9*a^8*b^14
*x + a^9*b^13)
```

Sympy [A] time = 5.90638, size = 248, normalized size = 1.33

$$-\frac{220a^{3}\log(a+bx)}{b^{13}}+\frac{55a^{2}x}{b^{12}}-\frac{5ax^{2}}{b^{11}}$$
$$-\frac{35201a^{12}+296019a^{11}bx+1093356a^{10}b^{2}x^{2}+2318316a^{9}b^{3}x^{3}+3089394a^{8}b^{4}x^{4}+2652804a^{7}b^{5}x^{5}+1435896a^{6}b^{6}x^{6}+4490}{126a^{9}b^{13}+1134a^{8}b^{14}x+4536a^{7}b^{15}x^{2}+10584a^{6}b^{16}x^{3}+15876a^{5}b^{17}x^{4}+15876a^{4}b^{18}x^{5}+10584a^{3}b^{19}x^{6}+4536a^{2}b^{20}x^{7}+}$$
$$+\frac{x^{3}}{3b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**12/(b*x+a)**10,x)
```

```
[Out] -220*a**3*log(a + b*x)/b**13 + 55*a**2*x/b**12 - 5*a*x**2/b**11 -
 (35201*a**12 + 296019*a**11*b*x + 1093356*a**10*b**2*x**2 + 2318
316*a**9*b**3*x**3 + 3089394*a**8*b**4*x**4 + 2652804*a**7*b**5*x
**5 + 1435896*a**6*b**6*x**6 + 449064*a**5*b**7*x**7 + 62370*a**4
*b**8*x**8)/(126*a**9*b**13 + 1134*a**8*b**14*x + 4536*a**7*b**15
*x**2 + 10584*a**6*b**16*x**3 + 15876*a**5*b**17*x**4 + 15876*a**
4*b**18*x**5 + 10584*a**3*b**19*x**6 + 4536*a**2*b**20*x**7 + 113
4*a*b**21*x**8 + 126*b**22*x**9) + x**3/(3*b**10)
```

GIAC/XCAS [A] time = 0.234896, size = 201, normalized size = 1.08

$$-\frac{220\,a^3\ln\left(|bx+a|\right)}{b^{13}} - \frac{62370\,a^4b^8x^8 + 449064\,a^5b^7x^7 + 1435896\,a^6b^6x^6 + 2652804\,a^7b^5x^5 + 3089394\,a^8b^4x^4 + 2318316\,a^9b^3x^3 + 1093356\,a^{10}b^2x^2}{126\,(bx+a)^9b^{13}} + \frac{b^{20}x^3 - 15\,ab^{19}x^2 + 165\,a^2b^{18}x}{3\,b^{30}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^12/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -220*a^3*ln(abs(b*x + a))/b^13 - 1/126*(62370*a^4*b^8*x^8 + 44906
4*a^5*b^7*x^7 + 1435896*a^6*b^6*x^6 + 2652804*a^7*b^5*x^5 + 30893
94*a^8*b^4*x^4 + 2318316*a^9*b^3*x^3 + 1093356*a^10*b^2*x^2 + 296
019*a^11*b*x + 35201*a^12)/((b*x + a)^9*b^13) + 1/3*(b^20*x^3 - 1
5*a*b^19*x^2 + 165*a^2*b^18*x)/b^30
```

3.223 $\int \frac{x^{11}}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=177

$$\frac{a^{11}}{9b^{12}(a+bx)^9}-\frac{11a^{10}}{8b^{12}(a+bx)^8}+\frac{55a^9}{7b^{12}(a+bx)^7}-\frac{55a^8}{2b^{12}(a+bx)^6}+\frac{66a^7}{b^{12}(a+bx)^5}-\frac{231a^6}{2b^{12}(a+bx)^4}+\frac{154a^5}{b^{12}(a+bx)^3}-\frac{165a^4}{b^{12}(a+bx)^2}+\frac{165a^3}{b^{12}(a+bx)}+\frac{55a^2\log(a+bx)}{b^{12}}-\frac{10ax}{b^{11}}+\frac{x^2}{2b^{10}}$$

```
[Out] (-10*a*x)/b^11 + x^2/(2*b^10) + a^11/(9*b^12*(a + b*x)^9) - (11*a
^10)/(8*b^12*(a + b*x)^8) + (55*a^9)/(7*b^12*(a + b*x)^7) - (55*a
^8)/(2*b^12*(a + b*x)^6) + (66*a^7)/(b^12*(a + b*x)^5) - (231*a^6
)/(2*b^12*(a + b*x)^4) + (154*a^5)/(b^12*(a + b*x)^3) - (165*a^4)
/(b^12*(a + b*x)^2) + (165*a^3)/(b^12*(a + b*x)) + (55*a^2*Log[a
+ b*x])/b^12
```

Rubi [A] time = 0.303188, antiderivative size = 177, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{a^{11}}{9b^{12}(a+bx)^9}-\frac{11a^{10}}{8b^{12}(a+bx)^8}+\frac{55a^9}{7b^{12}(a+bx)^7}-\frac{55a^8}{2b^{12}(a+bx)^6}+\frac{66a^7}{b^{12}(a+bx)^5}-\frac{231a^6}{2b^{12}(a+bx)^4}+\frac{154a^5}{b^{12}(a+bx)^3}-\frac{165a^4}{b^{12}(a+bx)^2}+\frac{165a^3}{b^{12}(a+bx)}+\frac{55a^2\log(a+bx)}{b^{12}}-\frac{10ax}{b^{11}}+\frac{x^2}{2b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^11/(a + b*x)^10,x]
```

```
[Out] (-10*a*x)/b^11 + x^2/(2*b^10) + a^11/(9*b^12*(a + b*x)^9) - (11*a
^10)/(8*b^12*(a + b*x)^8) + (55*a^9)/(7*b^12*(a + b*x)^7) - (55*a
^8)/(2*b^12*(a + b*x)^6) + (66*a^7)/(b^12*(a + b*x)^5) - (231*a^6
)/(2*b^12*(a + b*x)^4) + (154*a^5)/(b^12*(a + b*x)^3) - (165*a^4)
/(b^12*(a + b*x)^2) + (165*a^3)/(b^12*(a + b*x)) + (55*a^2*Log[a
+ b*x])/b^12
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^{11}}{9b^{12}\left(a+bx\right)^9}-\frac{11a^{10}}{8b^{12}\left(a+bx\right)^8}+\frac{55a^9}{7b^{12}\left(a+bx\right)^7}-\frac{55a^8}{2b^{12}\left(a+bx\right)^6}+\frac{66a^7}{b^{12}\left(a+bx\right)^5}-\frac{231a^6}{2b^{12}\left(a+bx\right)^4}+\frac{154a^5}{b^{12}\left(a+bx\right)^3}-\frac{165a^4}{b^{12}\left(a+bx\right)^2}+\frac{165a^3}{b^{12}\left(a+bx\right)}+\frac{55a^2\log\left(a+bx\right)}{b^{12}}-\frac{10ax}{b^{11}}+\frac{\int x\,dx}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**11/(b*x+a)**10,x)
```

```
[Out] a**11/(9*b**12*(a + b*x)**9) - 11*a**10/(8*b**12*(a + b*x)**8) +
55*a**9/(7*b**12*(a + b*x)**7) - 55*a**8/(2*b**12*(a + b*x)**6) +
 66*a**7/(b**12*(a + b*x)**5) - 231*a**6/(2*b**12*(a + b*x)**4) +
 154*a**5/(b**12*(a + b*x)**3) - 165*a**4/(b**12*(a + b*x)**2) +
165*a**3/(b**12*(a + b*x)) + 55*a**2*log(a + b*x)/b**12 - 10*a*x/
b**11 + Integral(x, x)/b**10
```

Mathematica [A] time = 0.0479536, size = 150, normalized size = 0.85

$$\frac{42131a^{11} + 351459a^{10}bx + 1281096a^9b^2x^2 + 2656584a^8b^3x^3 + 3402756a^7b^4x^4 + 2704212a^6b^5x^5 + 1220688a^5b^6x^6 + 190512a}{504b^{12}(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^11/(a + b*x)^10,x]
```

```
[Out] (42131*a^11 + 351459*a^10*b*x + 1281096*a^9*b^2*x^2 + 2656584*a^8
*b^3*x^3 + 3402756*a^7*b^4*x^4 + 2704212*a^6*b^5*x^5 + 1220688*a^
5*b^6*x^6 + 190512*a^4*b^7*x^7 - 77112*a^3*b^8*x^8 - 36288*a^2*b^
9*x^9 - 2772*a*b^10*x^10 + 252*b^11*x^11 + 27720*a^2*(a + b*x)^9*
Log[a + b*x])/(504*b^12*(a + b*x)^9)
```

Maple [A] time = 0.016, size = 166, normalized size = 0.9

$$-10\,{\frac{ax}{{b}^{11}}}+{\frac{{x}^{2}}{2\,{b}^{10}}}+{\frac{{a}^{11}}{9\,{b}^{12} \left(bx+a \right) ^{9}}}-{\frac{11\,{a}^{10}}{8\,{b}^{12} \left(bx+a \right) ^{8}}}+{\frac{55\,{a}^{9}}{7\,{b}^{12} \left(bx+a \right) ^{7}}}-{\frac{55\,{a}^{8}}{2\,{b}^{12} \left(bx+a \right) ^{6}}}+66\,{\frac{{a}^{7}}{{b}^{12} \left(bx+a \right) ^{5}}}-{\frac{231\,{a}^{6}}{2\,{b}^{12} \left(bx+a \right) ^{4}}}+154\,{\frac{{a}^{5}}{{b}^{12} \left(bx+a \right) ^{3}}}-165\,{\frac{{a}^{4}}{{b}^{12} \left(bx+a \right) ^{2}}}+165\,{\frac{{a}^{3}}{{b}^{12} \left(bx+a \right) }}+55\,{\frac{{a}^{2}\ln \left(bx+a \right) }{{b}^{12}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^11/(b*x+a)^10,x)
```

```
[Out] -10*a*x/b^11+1/2*x^2/b^10+1/9*a^11/b^12/(b*x+a)^9-11/8*a^10/b^12/
(b*x+a)^8+55/7*a^9/b^12/(b*x+a)^7-55/2*a^8/b^12/(b*x+a)^6+66*a^7/
b^12/(b*x+a)^5-231/2*a^6/b^12/(b*x+a)^4+154*a^5/b^12/(b*x+a)^3-16
5*a^4/b^12/(b*x+a)^2+165*a^3/b^12/(b*x+a)+55*a^2*ln(b*x+a)/b^12
```

Maxima [A] time = 1.39154, size = 301, normalized size = 1.7

$$\frac{83160\,a^3b^8x^8 + 582120\,a^4b^7x^7 + 1823976\,a^5b^6x^6 + 3318084\,a^6b^5x^5 + 3817044\,a^7b^4x^4 + 2835756\,a^8b^3x^3 + 1326204\,a^9b^2x^2 + \cdots}{504\,(b^{21}x^9 + 9\,ab^{20}x^8 + 36\,a^2b^{19}x^7 + 84\,a^3b^{18}x^6 + 126\,a^4b^{17}x^5 + 126\,a^5b^{16}x^4 + 84\,a^6b^{15}x^3 + 36\,a^7b^{14}x^2 + 9\,a^8b\cdots}$$
$$+ \frac{55\,a^2\log(bx+a)}{b^{12}} + \frac{bx^2 - 20\,ax}{2\,b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^11/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] 1/504*(83160*a^3*b^8*x^8 + 582120*a^4*b^7*x^7 + 1823976*a^5*b^6*x
^6 + 3318084*a^6*b^5*x^5 + 3817044*a^7*b^4*x^4 + 2835756*a^8*b^3*
x^3 + 1326204*a^9*b^2*x^2 + 356499*a^10*b*x + 42131*a^11)/(b^21*x
^9 + 9*a*b^20*x^8 + 36*a^2*b^19*x^7 + 84*a^3*b^18*x^6 + 126*a^4*b
^17*x^5 + 126*a^5*b^16*x^4 + 84*a^6*b^15*x^3 + 36*a^7*b^14*x^2 +
9*a^8*b^13*x + a^9*b^12) + 55*a^2*log(b*x + a)/b^12 + 1/2*(b*x^2
- 20*a*x)/b^11
```

Fricas [A] time = 0.209506, size = 441, normalized size = 2.49

$$\frac{252\,b^{11}x^{11} - 2772\,ab^{10}x^{10} - 36288\,a^2b^9x^9 - 77112\,a^3b^8x^8 + 190512\,a^4b^7x^7 + 1220688\,a^5b^6x^6 + 2704212\,a^6b^5x^5 + 3402756\,a\cdots}{504\,(b^{21}x^9 + 9\,ab^{20}x^8\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^11/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] 1/504*(252*b^11*x^11 - 2772*a*b^10*x^10 - 36288*a^2*b^9*x^9 - 771
12*a^3*b^8*x^8 + 190512*a^4*b^7*x^7 + 1220688*a^5*b^6*x^6 + 27042
12*a^6*b^5*x^5 + 3402756*a^7*b^4*x^4 + 2656584*a^8*b^3*x^3 + 1281
096*a^9*b^2*x^2 + 351459*a^10*b*x + 42131*a^11 + 27720*(a^2*b^9*x
^9 + 9*a^3*b^8*x^8 + 36*a^4*b^7*x^7 + 84*a^5*b^6*x^6 + 126*a^6*b^
5*x^5 + 126*a^7*b^4*x^4 + 84*a^8*b^3*x^3 + 36*a^9*b^2*x^2 + 9*a^1
0*b*x + a^11)*log(b*x + a))/(b^21*x^9 + 9*a*b^20*x^8 + 36*a^2*b^1
9*x^7 + 84*a^3*b^18*x^6 + 126*a^4*b^17*x^5 + 126*a^5*b^16*x^4 + 8
4*a^6*b^15*x^3 + 36*a^7*b^14*x^2 + 9*a^8*b^13*x + a^9*b^12)
```

Sympy [A] time = 5.52028, size = 236, normalized size = 1.33

$$\frac{55a^2\log(a+bx)}{b^{12}} - \frac{10ax}{b^{11}}$$
$$+ \frac{42131a^{11} + 356499a^{10}bx + 1326204a^9b^2x^2 + 2835756a^8b^3x^3 + 3817044a^7b^4x^4 + 3318084a^6b^5x^5 + 1823976a^5b^6x^6 + 58212\cdots}{504a^9b^{12} + 4536a^8b^{13}x + 18144a^7b^{14}x^2 + 42336a^6b^{15}x^3 + 63504a^5b^{16}x^4 + 63504a^4b^{17}x^5 + 42336a^3b^{18}x^6 + 18144a^2b^{19}x^7 + \cdots}$$
$$+ \frac{x^2}{2b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**11/(b*x+a)**10,x)
```

```
[Out] 55*a**2*log(a + b*x)/b**12 - 10*a*x/b**11 + (42131*a**11 + 356499
*a**10*b*x + 1326204*a**9*b**2*x**2 + 2835756*a**8*b**3*x**3 + 38
17044*a**7*b**4*x**4 + 3318084*a**6*b**5*x**5 + 1823976*a**5*b**6
*x**6 + 582120*a**4*b**7*x**7 + 83160*a**3*b**8*x**8)/(504*a**9*b
**12 + 4536*a**8*b**13*x + 18144*a**7*b**14*x**2 + 42336*a**6*b**
15*x**3 + 63504*a**5*b**16*x**4 + 63504*a**4*b**17*x**5 + 42336*a
**3*b**18*x**6 + 18144*a**2*b**19*x**7 + 4536*a*b**20*x**8 + 504*
b**21*x**9) + x**2/(2*b**10)
```

GIAC/XCAS [A] time = 0.2289, size = 186, normalized size = 1.05

$$\frac{55\,a^2\ln\left(|bx+a|\right)}{b^{12}}+\frac{b^{10}x^2-20\,ab^9x}{2\,b^{20}}+\frac{83160\,a^3b^8x^8+582120\,a^4b^7x^7+1823976\,a^5b^6x^6+3318084\,a^6b^5x^5+3817044\,a^7b^4x^4+2835756\,a^8b^3x^3+1326204\,a^9b^2x^2+\cdots}{504\,(bx+a)^9b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^11/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] 55*a^2*ln(abs(b*x + a))/b^12 + 1/2*(b^10*x^2 - 20*a*b^9*x)/b^20 +
 1/504*(83160*a^3*b^8*x^8 + 582120*a^4*b^7*x^7 + 1823976*a^5*b^6*
x^6 + 3318084*a^6*b^5*x^5 + 3817044*a^7*b^4*x^4 + 2835756*a^8*b^3
*x^3 + 1326204*a^9*b^2*x^2 + 356499*a^10*b*x + 42131*a^11)/((b*x
+ a)^9*b^12)
```

3.224 $\int \frac{x^{10}}{(a+bx)^{10}}\, dx$

Optimal. Leaf size=159

$$-\frac{a^{10}}{9b^{11}(a+bx)^9}+\frac{5a^9}{4b^{11}(a+bx)^8}-\frac{45a^8}{7b^{11}(a+bx)^7}+\frac{20a^7}{b^{11}(a+bx)^6}-\frac{42a^6}{b^{11}(a+bx)^5}+\frac{63a^5}{b^{11}(a+bx)^4}-\frac{70a^4}{b^{11}(a+bx)^3}+\frac{60a^3}{b^{11}(a+bx)^2}-\frac{45a^2}{b^{11}(a+bx)}-\frac{10a\log(a+bx)}{b^{11}}+\frac{x}{b^{10}}$$

```
[Out] x/b^10 - a^10/(9*b^11*(a + b*x)^9) + (5*a^9)/(4*b^11*(a + b*x)^8)
 - (45*a^8)/(7*b^11*(a + b*x)^7) + (20*a^7)/(b^11*(a + b*x)^6) -
(42*a^6)/(b^11*(a + b*x)^5) + (63*a^5)/(b^11*(a + b*x)^4) - (70*a
^4)/(b^11*(a + b*x)^3) + (60*a^3)/(b^11*(a + b*x)^2) - (45*a^2)/(
b^11*(a + b*x)) - (10*a*Log[a + b*x])/b^11
```

Rubi [A] time = 0.253597, antiderivative size = 159, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^{10}}{9b^{11}(a+bx)^9}+\frac{5a^9}{4b^{11}(a+bx)^8}-\frac{45a^8}{7b^{11}(a+bx)^7}+\frac{20a^7}{b^{11}(a+bx)^6}-\frac{42a^6}{b^{11}(a+bx)^5}+\frac{63a^5}{b^{11}(a+bx)^4}-\frac{70a^4}{b^{11}(a+bx)^3}+\frac{60a^3}{b^{11}(a+bx)^2}-\frac{45a^2}{b^{11}(a+bx)}-\frac{10a\log(a+bx)}{b^{11}}+\frac{x}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^10/(a + b*x)^10,x]
```

```
[Out] x/b^10 - a^10/(9*b^11*(a + b*x)^9) + (5*a^9)/(4*b^11*(a + b*x)^8)
 - (45*a^8)/(7*b^11*(a + b*x)^7) + (20*a^7)/(b^11*(a + b*x)^6) -
(42*a^6)/(b^11*(a + b*x)^5) + (63*a^5)/(b^11*(a + b*x)^4) - (70*a
^4)/(b^11*(a + b*x)^3) + (60*a^3)/(b^11*(a + b*x)^2) - (45*a^2)/(
b^11*(a + b*x)) - (10*a*Log[a + b*x])/b^11
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{9b^{11}\left(a+bx\right)^{9}}+\frac{5a^9}{4b^{11}\left(a+bx\right)^{8}}-\frac{45a^8}{7b^{11}\left(a+bx\right)^{7}}+\frac{20a^7}{b^{11}\left(a+bx\right)^{6}}-\frac{42a^6}{b^{11}\left(a+bx\right)^{5}}+\frac{63a^5}{b^{11}\left(a+bx\right)^{4}}-\frac{70a^4}{b^{11}\left(a+bx\right)^{3}}+\frac{60a^3}{b^{11}\left(a+bx\right)^{2}}-\frac{45a^2}{b^{11}\left(a+bx\right)}-\frac{10a\log\left(a+bx\right)}{b^{11}}+\int\frac{1}{b^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**10/(b*x+a)**10,x)
```

```
[Out] -a**10/(9*b**11*(a + b*x)**9) + 5*a**9/(4*b**11*(a + b*x)**8) - 4
5*a**8/(7*b**11*(a + b*x)**7) + 20*a**7/(b**11*(a + b*x)**6) - 42
*a**6/(b**11*(a + b*x)**5) + 63*a**5/(b**11*(a + b*x)**4) - 70*a*
*4/(b**11*(a + b*x)**3) + 60*a**3/(b**11*(a + b*x)**2) - 45*a**2/
(b**11*(a + b*x)) - 10*a*log(a + b*x)/b**11 + Integral(b**(-10),
x)
```

Mathematica [A] time = 0.0518203, size = 137, normalized size = 0.86

$$-\frac{4861a^{10} + 41229a^9bx + 153576a^8b^2x^2 + 328104a^7b^3x^3 + 439236a^6b^4x^4 + 375732a^5b^5x^5 + 197568a^4b^6x^6 + 54432a^3b^7x^7 + }{252b^{11}(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^10/(a + b*x)^10,x]
```

```
[Out] -(4861*a^10 + 41229*a^9*b*x + 153576*a^8*b^2*x^2 + 328104*a^7*b^3
*x^3 + 439236*a^6*b^4*x^4 + 375732*a^5*b^5*x^5 + 197568*a^4*b^6*x
^6 + 54432*a^3*b^7*x^7 + 2268*a^2*b^8*x^8 - 2268*a*b^9*x^9 - 252*
b^10*x^10 + 2520*a*(a + b*x)^9*Log[a + b*x])/(252*b^11*(a + b*x)^
9)
```

Maple [A] time = 0.017, size = 154, normalized size = 1.

$$\frac{x}{b^{10}} - \frac{a^{10}}{9\,b^{11}\,(bx+a)^9} + \frac{5\,a^9}{4\,b^{11}\,(bx+a)^8} - \frac{45\,a^8}{7\,b^{11}\,(bx+a)^7} + 20\,\frac{a^7}{b^{11}\,(bx+a)^6} - 42\,\frac{a^6}{b^{11}\,(bx+a)^5} + 63\,\frac{a^5}{b^{11}\,(bx+a)^4} - 70\,\frac{a^4}{b^{11}\,(bx+a)^3} + 60\,\frac{a^3}{b^{11}\,(bx+a)^2} - 45\,\frac{a^2}{b^{11}\,(bx+a)} - 10\,\frac{a\ln(bx+a)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^10/(b*x+a)^10,x)
```

```
[Out] x/b^10-1/9*a^10/b^11/(b*x+a)^9+5/4*a^9/b^11/(b*x+a)^8-45/7*a^8/b^
11/(b*x+a)^7+20*a^7/b^11/(b*x+a)^6-42*a^6/b^11/(b*x+a)^5+63*a^5/b
^11/(b*x+a)^4-70*a^4/b^11/(b*x+a)^3+60*a^3/b^11/(b*x+a)^2-45*a^2/
b^11/(b*x+a)-10*a*ln(b*x+a)/b^11
```

Maxima [A] time = 1.35872, size = 285, normalized size = 1.79

$$-\frac{11340\,a^2b^8x^8 + 75600\,a^3b^7x^7 + 229320\,a^4b^6x^6 + 407484\,a^5b^5x^5 + 460404\,a^6b^4x^4 + 337176\,a^7b^3x^3 + 155844\,a^8b^2x^2 + 4148}{252\,(b^{20}x^9 + 9\,ab^{19}x^8 + 36\,a^2b^{18}x^7 + 84\,a^3b^{17}x^6 + 126\,a^4b^{16}x^5 + 126\,a^5b^{15}x^4 + 84\,a^6b^{14}x^3 + 36\,a^7b^{13}x^2 + 9\,a^8b^{12}x}$$
$$+ \frac{x}{b^{10}} - \frac{10\,a\log(bx+a)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^10/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/252*(11340*a^2*b^8*x^8 + 75600*a^3*b^7*x^7 + 229320*a^4*b^6*x^
6 + 407484*a^5*b^5*x^5 + 460404*a^6*b^4*x^4 + 337176*a^7*b^3*x^3
+ 155844*a^8*b^2*x^2 + 41481*a^9*b*x + 4861*a^10)/(b^20*x^9 + 9*a
*b^19*x^8 + 36*a^2*b^18*x^7 + 84*a^3*b^17*x^6 + 126*a^4*b^16*x^5
+ 126*a^5*b^15*x^4 + 84*a^6*b^14*x^3 + 36*a^7*b^13*x^2 + 9*a^8*b^
12*x + a^9*b^11) + x/b^10 - 10*a*log(b*x + a)/b^11
```

Fricas [A] time = 0.206964, size = 424, normalized size = 2.67

$$\frac{252\,b^{10}x^{10} + 2268\,ab^{9}x^{9} - 2268\,a^{2}b^{8}x^{8} - 54432\,a^{3}b^{7}x^{7} - 197568\,a^{4}b^{6}x^{6} - 375732\,a^{5}b^{5}x^{5} - 439236\,a^{6}b^{4}x^{4} - 328104\,a^{7}b^{3}x^{3}}{252\,(b^{20}x^{9} + 9\,ab^{19}x^{8} + 36\,a^{2}b^{18}x^{7} +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^10/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] 1/252*(252*b^10*x^10 + 2268*a*b^9*x^9 - 2268*a^2*b^8*x^8 - 54432*
a^3*b^7*x^7 - 197568*a^4*b^6*x^6 - 375732*a^5*b^5*x^5 - 439236*a^
6*b^4*x^4 - 328104*a^7*b^3*x^3 - 153576*a^8*b^2*x^2 - 41229*a^9*b
*x - 4861*a^10 - 2520*(a*b^9*x^9 + 9*a^2*b^8*x^8 + 36*a^3*b^7*x^7
 + 84*a^4*b^6*x^6 + 126*a^5*b^5*x^5 + 126*a^6*b^4*x^4 + 84*a^7*b^
3*x^3 + 36*a^8*b^2*x^2 + 9*a^9*b*x + a^10)*log(b*x + a))/(b^20*x^
9 + 9*a*b^19*x^8 + 36*a^2*b^18*x^7 + 84*a^3*b^17*x^6 + 126*a^4*b^
16*x^5 + 126*a^5*b^15*x^4 + 84*a^6*b^14*x^3 + 36*a^7*b^13*x^2 + 9
*a^8*b^12*x + a^9*b^11)
```

Sympy [A] time = 5.32416, size = 223, normalized size = 1.4

$$-\frac{10a\log{(a + bx)}}{b^{11}} - \frac{4861a^{10} + 41481a^{9}bx + 155844a^{8}b^{2}x^{2} + 337176a^{7}b^{3}x^{3} + 460404a^{6}b^{4}x^{4} + 407484a^{5}b^{5}x^{5} + 229320a^{4}b^{6}x^{6} + 75600a^{3}b^{7}}{252a^{9}b^{11} + 2268a^{8}b^{12}x + 9072a^{7}b^{13}x^{2} + 21168a^{6}b^{14}x^{3} + 31752a^{5}b^{15}x^{4} + 31752a^{4}b^{16}x^{5} + 21168a^{3}b^{17}x^{6} + 9072a^{2}b^{18}x^{7} + 2} + \frac{x}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**10/(b*x+a)**10,x)
```

```
[Out] -10*a*log(a + b*x)/b**11 - (4861*a**10 + 41481*a**9*b*x + 155844*
a**8*b**2*x**2 + 337176*a**7*b**3*x**3 + 460404*a**6*b**4*x**4 +
407484*a**5*b**5*x**5 + 229320*a**4*b**6*x**6 + 75600*a**3*b**7*x
```

```
**7 + 11340*a**2*b**8*x**8)/(252*a**9*b**11 + 2268*a**8*b**12*x +
 9072*a**7*b**13*x**2 + 21168*a**6*b**14*x**3 + 31752*a**5*b**15*
x**4 + 31752*a**4*b**16*x**5 + 21168*a**3*b**17*x**6 + 9072*a**2*
b**18*x**7 + 2268*a*b**19*x**8 + 252*b**20*x**9) + x/b**10
```

GIAC/XCAS [A] time = 0.210335, size = 163, normalized size = 1.03

$$\frac{x}{b^{10}} - \frac{10\,a\ln\left(|bx+a|\right)}{b^{11}} - \frac{11340\,a^2b^8x^8 + 75600\,a^3b^7x^7 + 229320\,a^4b^6x^6 + 407484\,a^5b^5x^5 + 460404\,a^6b^4x^4 + 337176\,a^7b^3x^3 + 155844\,a^8b^2x^2 + 4148}{252\,(bx+a)^9b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^10/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] x/b^10 - 10*a*ln(abs(b*x + a))/b^11 - 1/252*(11340*a^2*b^8*x^8 +
75600*a^3*b^7*x^7 + 229320*a^4*b^6*x^6 + 407484*a^5*b^5*x^5 + 460
404*a^6*b^4*x^4 + 337176*a^7*b^3*x^3 + 155844*a^8*b^2*x^2 + 41481
*a^9*b*x + 4861*a^10)/((b*x + a)^9*b^11)
```

3.225 $\int \frac{x^9}{(a+bx)^{10}} \, dx$

Optimal. Leaf size=154

$$\frac{a^9}{9b^{10}(a+bx)^9}-\frac{9a^8}{8b^{10}(a+bx)^8}+\frac{36a^7}{7b^{10}(a+bx)^7}-\frac{14a^6}{b^{10}(a+bx)^6}+\frac{126a^5}{5b^{10}(a+bx)^5}-\frac{63a^4}{2b^{10}(a+bx)^4}+\frac{28a^3}{b^{10}(a+bx)^3}-\frac{18a^2}{b^{10}(a+bx)^2}+\frac{9a}{b^{10}(a+bx)}+\frac{\log(a+bx)}{b^{10}}$$

```
[Out] a^9/(9*b^10*(a + b*x)^9) - (9*a^8)/(8*b^10*(a + b*x)^8) + (36*a^7
)/(7*b^10*(a + b*x)^7) - (14*a^6)/(b^10*(a + b*x)^6) + (126*a^5)/
(5*b^10*(a + b*x)^5) - (63*a^4)/(2*b^10*(a + b*x)^4) + (28*a^3)/(
b^10*(a + b*x)^3) - (18*a^2)/(b^10*(a + b*x)^2) + (9*a)/(b^10*(a
+ b*x)) + Log[a + b*x]/b^10
```

Rubi [A] time = 0.231525, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{a^9}{9b^{10}(a+bx)^9}-\frac{9a^8}{8b^{10}(a+bx)^8}+\frac{36a^7}{7b^{10}(a+bx)^7}-\frac{14a^6}{b^{10}(a+bx)^6}+\frac{126a^5}{5b^{10}(a+bx)^5}-\frac{63a^4}{2b^{10}(a+bx)^4}+\frac{28a^3}{b^{10}(a+bx)^3}-\frac{18a^2}{b^{10}(a+bx)^2}+\frac{9a}{b^{10}(a+bx)}+\frac{\log(a+bx)}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^9/(a + b*x)^10,x]
```

```
[Out] a^9/(9*b^10*(a + b*x)^9) - (9*a^8)/(8*b^10*(a + b*x)^8) + (36*a^7
)/(7*b^10*(a + b*x)^7) - (14*a^6)/(b^10*(a + b*x)^6) + (126*a^5)/
(5*b^10*(a + b*x)^5) - (63*a^4)/(2*b^10*(a + b*x)^4) + (28*a^3)/(
b^10*(a + b*x)^3) - (18*a^2)/(b^10*(a + b*x)^2) + (9*a)/(b^10*(a
+ b*x)) + Log[a + b*x]/b^10
```

Rubi in Sympy [A] time = 42.3444, size = 150, normalized size = 0.97

$$\frac{a^9}{9b^{10}\left(a+bx\right)^9}-\frac{9a^8}{8b^{10}\left(a+bx\right)^8}+\frac{36a^7}{7b^{10}\left(a+bx\right)^7}-\frac{14a^6}{b^{10}\left(a+bx\right)^6}+\frac{126a^5}{5b^{10}\left(a+bx\right)^5}-\frac{63a^4}{2b^{10}\left(a+bx\right)^4}+\frac{28a^3}{b^{10}\left(a+bx\right)^3}-\frac{18a^2}{b^{10}\left(a+bx\right)^2}+\frac{9a}{b^{10}\left(a+bx\right)}+\frac{\log\left(a+bx\right)}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**9/(b*x+a)**10,x)
```

```
[Out] a**9/(9*b**10*(a + b*x)**9) - 9*a**8/(8*b**10*(a + b*x)**8) + 36*
a**7/(7*b**10*(a + b*x)**7) - 14*a**6/(b**10*(a + b*x)**6) + 126*
a**5/(5*b**10*(a + b*x)**5) - 63*a**4/(2*b**10*(a + b*x)**4) + 28
*a**3/(b**10*(a + b*x)**3) - 18*a**2/(b**10*(a + b*x)**2) + 9*a/(
b**10*(a + b*x)) + log(a + b*x)/b**10
```

Mathematica [A] time = 0.0506274, size = 111, normalized size = 0.72

$$\frac{a\left(7129a^8+61641a^7bx+235224a^6b^2x^2+518616a^5b^3x^3+725004a^4b^4x^4+661500a^3b^5x^5+388080a^2b^6x^6+136080ab^7x^7+\right.}{2520b^{10}(a+bx)^9}$$

$$+\frac{\log(a+bx)}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^9/(a + b*x)^10,x]
```

```
[Out] (a*(7129*a^8 + 61641*a^7*b*x + 235224*a^6*b^2*x^2 + 518616*a^5*b^
3*x^3 + 725004*a^4*b^4*x^4 + 661500*a^3*b^5*x^5 + 388080*a^2*b^6*
x^6 + 136080*a*b^7*x^7 + 22680*b^8*x^8))/(2520*b^10*(a + b*x)^9)
+ Log[a + b*x]/b^10
```

Maple [A] time = 0.011, size = 145, normalized size = 0.9

$$\frac{a^9}{9\,b^{10}\,(bx+a)^9}-\frac{9\,a^8}{8\,b^{10}\,(bx+a)^8}+\frac{36\,a^7}{7\,b^{10}\,(bx+a)^7}-14\,\frac{a^6}{b^{10}\,(bx+a)^6}+\frac{126\,a^5}{5\,b^{10}\,(bx+a)^5}$$
$$-\frac{63\,a^4}{2\,b^{10}\,(bx+a)^4}+28\,\frac{a^3}{b^{10}\,(bx+a)^3}-18\,\frac{a^2}{b^{10}\,(bx+a)^2}+9\,\frac{a}{b^{10}\,(bx+a)}+\frac{\ln(bx+a)}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^9/(b*x+a)^10,x)
```

```
[Out] 1/9*a^9/b^10/(b*x+a)^9-9/8*a^8/b^10/(b*x+a)^8+36/7*a^7/b^10/(b*x+
a)^7-14*a^6/b^10/(b*x+a)^6+126/5*a^5/b^10/(b*x+a)^5-63/2*a^4/b^10
/(b*x+a)^4+28*a^3/b^10/(b*x+a)^3-18*a^2/b^10/(b*x+a)^2+9*a/b^10/(
b*x+a)+ln(b*x+a)/b^10
```

Maxima [A] time = 1.34663, size = 273, normalized size = 1.77

$$\frac{22680\,ab^8x^8+136080\,a^2b^7x^7+388080\,a^3b^6x^6+661500\,a^4b^5x^5+725004\,a^5b^4x^4+518616\,a^6b^3x^3+235224\,a^7b^2x^2+61641\,}{2520\,(b^{19}x^9+9\,ab^{18}x^8+36\,a^2b^{17}x^7+84\,a^3b^{16}x^6+126\,a^4b^{15}x^5+126\,a^5b^{14}x^4+84\,a^6b^{13}x^3+36\,a^7b^{12}x^2+9\,a^8b^{11}x+}$$

$$+\frac{\log(bx+a)}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^9/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] 1/2520*(22680*a*b^8*x^8 + 136080*a^2*b^7*x^7 + 388080*a^3*b^6*x^6
 + 661500*a^4*b^5*x^5 + 725004*a^5*b^4*x^4 + 518616*a^6*b^3*x^3 +
 235224*a^7*b^2*x^2 + 61641*a^8*b*x + 7129*a^9)/(b^19*x^9 + 9*a*b
^18*x^8 + 36*a^2*b^17*x^7 + 84*a^3*b^16*x^6 + 126*a^4*b^15*x^5 +
126*a^5*b^14*x^4 + 84*a^6*b^13*x^3 + 36*a^7*b^12*x^2 + 9*a^8*b^11
*x + a^9*b^10) + log(b*x + a)/b^10
```

Fricas [A] time = 0.205123, size = 394, normalized size = 2.56

$$\frac{22680\, ab^8x^8 + 136080\, a^2b^7x^7 + 388080\, a^3b^6x^6 + 661500\, a^4b^5x^5 + 725004\, a^5b^4x^4 + 518616\, a^6b^3x^3 + 235224\, a^7b^2x^2 + 61641\, a \cdots}{2520\, (b^{19}x^9 + 9\, ab^{18}x^8 + 36\, a^2b^{17}x^7 + 84\, a^3b^{16}x^6 + 12 \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^9/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] 1/2520*(22680*a*b^8*x^8 + 136080*a^2*b^7*x^7 + 388080*a^3*b^6*x^6
 + 661500*a^4*b^5*x^5 + 725004*a^5*b^4*x^4 + 518616*a^6*b^3*x^3 +
 235224*a^7*b^2*x^2 + 61641*a^8*b*x + 7129*a^9 + 2520*(b^9*x^9 +
9*a*b^8*x^8 + 36*a^2*b^7*x^7 + 84*a^3*b^6*x^6 + 126*a^4*b^5*x^5 +
 126*a^5*b^4*x^4 + 84*a^6*b^3*x^3 + 36*a^7*b^2*x^2 + 9*a^8*b*x +
a^9)*log(b*x + a))/(b^19*x^9 + 9*a*b^18*x^8 + 36*a^2*b^17*x^7 + 8
4*a^3*b^16*x^6 + 126*a^4*b^15*x^5 + 126*a^5*b^14*x^4 + 84*a^6*b^1
3*x^3 + 36*a^7*b^12*x^2 + 9*a^8*b^11*x + a^9*b^10)
```

Sympy [A] time = 4.54877, size = 212, normalized size = 1.38

$$\frac{7129a^9 + 61641a^8bx + 235224a^7b^2x^2 + 518616a^6b^3x^3 + 725004a^5b^4x^4 + 661500a^4b^5x^5 + 388080a^3b^6x^6 + 136080 \cdots}{2520a^9b^{10} + 22680a^8b^{11}x + 90720a^7b^{12}x^2 + 211680a^6b^{13}x^3 + 317520a^5b^{14}x^4 + 317520a^4b^{15}x^5 + 211680a^3b^{16}x^6 + 90720a^2b \cdots} + \frac{\log{(a + bx)}}{b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**9/(b*x+a)**10,x)
```

```
[Out] (7129*a**9 + 61641*a**8*b*x + 235224*a**7*b**2*x**2 + 518616*a**6
*b**3*x**3 + 725004*a**5*b**4*x**4 + 661500*a**4*b**5*x**5 + 3880
80*a**3*b**6*x**6 + 136080*a**2*b**7*x**7 + 22680*a*b**8*x**8)/(2
520*a**9*b**10 + 22680*a**8*b**11*x + 90720*a**7*b**12*x**2 + 211
680*a**6*b**13*x**3 + 317520*a**5*b**14*x**4 + 317520*a**4*b**15*
x**5 + 211680*a**3*b**16*x**6 + 90720*a**2*b**17*x**7 + 22680*a*b
```

```
**18*x**8 + 2520*b**19*x**9) + log(a + b*x)/b**10
```

GIAC/XCAS [A] time = 0.213873, size = 151, normalized size = 0.98

$$\frac{\ln\left(|bx+a|\right)}{b^{10}} + \frac{22680\,ab^{7}x^{8} + 136080\,a^{2}b^{6}x^{7} + 388080\,a^{3}b^{5}x^{6} + 661500\,a^{4}b^{4}x^{5} + 725004\,a^{5}b^{3}x^{4} + 518616\,a^{6}b^{2}x^{3} + 235224\,a^{7}bx^{2} + 61641}{2520\,(bx+a)^{9}b^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^9/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] ln(abs(b*x + a))/b^10 + 1/2520*(22680*a*b^7*x^8 + 136080*a^2*b^6*
x^7 + 388080*a^3*b^5*x^6 + 661500*a^4*b^4*x^5 + 725004*a^5*b^3*x^
4 + 518616*a^6*b^2*x^3 + 235224*a^7*b*x^2 + 61641*a^8*x + 7129*a^
9/b)/((b*x + a)^9*b^9)
```

3.226 $\int \frac{x^8}{(a+bx)^{10}} dx$

Optimal. Leaf size=17

$$\frac{x^9}{9a(a+bx)^9}$$

```
[Out] x^9/(9*a*(a + b*x)^9)
```

Rubi [A] time = 0.011927, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{x^9}{9a(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[x^8/(a + b*x)^10,x]

[Out] x^9/(9*a*(a + b*x)^9)
```

Rubi in Sympy [A] time = 2.32601, size = 12, normalized size = 0.71

$$\frac{x^9}{9a\left(a+bx\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8/(b*x+a)**10,x)

[Out] x**9/(9*a*(a + b*x)**9)
```

Mathematica [B] time = 0.0282628, size = 97, normalized size = 5.71

$$-\frac{a^8+9a^7bx+36a^6b^2x^2+84a^5b^3x^3+126a^4b^4x^4+126a^3b^5x^5+84a^2b^6x^6+36ab^7x^7+9b^8x^8}{9b^9(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^8/(a + b*x)^10,x]
```

```
[Out] -(a^8 + 9*a^7*b*x + 36*a^6*b^2*x^2 + 84*a^5*b^3*x^3 + 126*a^4*b^4
*x^4 + 126*a^3*b^5*x^5 + 84*a^2*b^6*x^6 + 36*a*b^7*x^7 + 9*b^8*x^
8)/(9*b^9*(a + b*x)^9)
```

Maple [B] time = 0.01, size = 131, normalized size = 7.7

$$\frac{28\,a^5}{3\,b^9\,(bx+a)^6}-\frac{a^8}{9\,b^9\,(bx+a)^9}-\frac{28\,a^2}{3\,b^9\,(bx+a)^3}+14\,\frac{a^3}{b^9\,(bx+a)^4}+4\,\frac{a}{b^9\,(bx+a)^2}-14\,\frac{a^4}{b^9\,(bx+a)^5}-4\,\frac{a^6}{b^9\,(bx+a)^7}+\frac{a^7}{b^9\,(bx+a)^8}-\frac{1}{(bx+a)\,b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8/(b*x+a)^10,x)
```

```
[Out] 28/3*a^5/b^9/(b*x+a)^6-1/9*a^8/b^9/(b*x+a)^9-28/3*a^2/b^9/(b*x+a)
^3+14*a^3/b^9/(b*x+a)^4+4*a/b^9/(b*x+a)^2-14*a^4/b^9/(b*x+a)^5-4*
a^6/b^9/(b*x+a)^7+a^7/b^9/(b*x+a)^8-1/(b*x+a)/b^9
```

Maxima [A] time = 1.34649, size = 251, normalized size = 14.76

$$-\frac{9\,b^8x^8+36\,ab^7x^7+84\,a^2b^6x^6+126\,a^3b^5x^5+126\,a^4b^4x^4+84\,a^5b^3x^3+36\,a^6b^2x^2+9\,a^7bx+a^8}{9\,(b^{18}x^9+9\,ab^{17}x^8+36\,a^2b^{16}x^7+84\,a^3b^{15}x^6+126\,a^4b^{14}x^5+126\,a^5b^{13}x^4+84\,a^6b^{12}x^3+36\,a^7b^{11}x^2+9\,a^8b^{10}x+a^9b^9)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/9*(9*b^8*x^8 + 36*a*b^7*x^7 + 84*a^2*b^6*x^6 + 126*a^3*b^5*x^5
 + 126*a^4*b^4*x^4 + 84*a^5*b^3*x^3 + 36*a^6*b^2*x^2 + 9*a^7*b*x
+ a^8)/(b^18*x^9 + 9*a*b^17*x^8 + 36*a^2*b^16*x^7 + 84*a^3*b^15*x
^6 + 126*a^4*b^14*x^5 + 126*a^5*b^13*x^4 + 84*a^6*b^12*x^3 + 36*a
^7*b^11*x^2 + 9*a^8*b^10*x + a^9*b^9)
```

Fricas [A] time = 0.2011, size = 251, normalized size = 14.76

$$-\frac{9\,b^8x^8+36\,ab^7x^7+84\,a^2b^6x^6+126\,a^3b^5x^5+126\,a^4b^4x^4+84\,a^5b^3x^3+36\,a^6b^2x^2+9\,a^7bx+a^8}{9\,(b^{18}x^9+9\,ab^{17}x^8+36\,a^2b^{16}x^7+84\,a^3b^{15}x^6+126\,a^4b^{14}x^5+126\,a^5b^{13}x^4+84\,a^6b^{12}x^3+36\,a^7b^{11}x^2+9\,a^8b^{10}x+a^9b^9)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/9*(9*b^8*x^8 + 36*a*b^7*x^7 + 84*a^2*b^6*x^6 + 126*a^3*b^5*x^5
 + 126*a^4*b^4*x^4 + 84*a^5*b^3*x^3 + 36*a^6*b^2*x^2 + 9*a^7*b*x
+ a^8)/(b^18*x^9 + 9*a*b^17*x^8 + 36*a^2*b^16*x^7 + 84*a^3*b^15*x
^6 + 126*a^4*b^14*x^5 + 126*a^5*b^13*x^4 + 84*a^6*b^12*x^3 + 36*a
^7*b^11*x^2 + 9*a^8*b^10*x + a^9*b^9)
```

Sympy [A] time = 4.32046, size = 199, normalized size = 11.71

$$-\frac{a^8 + 9a^7bx + 36a^6b^2x^2 + 84a^5b^3x^3 + 126a^4b^4x^4 + 126a^3b^5x^5 + 84a^2b^6x^6 + 36ab^7x^7 + 9b^8x^8}{9a^9b^9 + 81a^8b^{10}x + 324a^7b^{11}x^2 + 756a^6b^{12}x^3 + 1134a^5b^{13}x^4 + 1134a^4b^{14}x^5 + 756a^3b^{15}x^6 + 324a^2b^{16}x^7 + 81ab^{17}x^8 + 9b^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8/(b*x+a)**10,x)
```

```
[Out] -(a**8 + 9*a**7*b*x + 36*a**6*b**2*x**2 + 84*a**5*b**3*x**3 + 126
*a**4*b**4*x**4 + 126*a**3*b**5*x**5 + 84*a**2*b**6*x**6 + 36*a*b
**7*x**7 + 9*b**8*x**8)/(9*a**9*b**9 + 81*a**8*b**10*x + 324*a**7
*b**11*x**2 + 756*a**6*b**12*x**3 + 1134*a**5*b**13*x**4 + 1134*a
**4*b**14*x**5 + 756*a**3*b**15*x**6 + 324*a**2*b**16*x**7 + 81*a
*b**17*x**8 + 9*b**18*x**9)
```

GIAC/XCAS [A] time = 0.219259, size = 128, normalized size = 7.53

$$-\frac{9\,b^8x^8 + 36\,ab^7x^7 + 84\,a^2b^6x^6 + 126\,a^3b^5x^5 + 126\,a^4b^4x^4 + 84\,a^5b^3x^3 + 36\,a^6b^2x^2 + 9\,a^7bx + a^8}{9\,(bx + a)^9b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^8/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/9*(9*b^8*x^8 + 36*a*b^7*x^7 + 84*a^2*b^6*x^6 + 126*a^3*b^5*x^5
 + 126*a^4*b^4*x^4 + 84*a^5*b^3*x^3 + 36*a^6*b^2*x^2 + 9*a^7*b*x
+ a^8)/((b*x + a)^9*b^9)
```

3.227 $\int \frac{x^7}{(a+bx)^{10}} dx$

Optimal. Leaf size=35

$$\frac{x^8}{72a^2(a+bx)^8}+\frac{x^8}{9a(a+bx)^9}$$

```
[Out] x^8/(9*a*(a + b*x)^9) + x^8/(72*a^2*(a + b*x)^8)
```

Rubi [A] time = 0.0236503, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{x^8}{72a^2(a+bx)^8}+\frac{x^8}{9a(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7/(a + b*x)^10,x]

[Out] x^8/(9*a*(a + b*x)^9) + x^8/(72*a^2*(a + b*x)^8)
```

Rubi in Sympy [A] time = 4.15727, size = 27, normalized size = 0.77

$$\frac{x^8}{9a\,(a+bx)^9}+\frac{x^8}{72a^2\,(a+bx)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7/(b*x+a)**10,x)

[Out] x**8/(9*a*(a + b*x)**9) + x**8/(72*a**2*(a + b*x)**8)
```

Mathematica [B] time = 0.0205483, size = 86, normalized size = 2.46

$$-\frac{a^7+9a^6bx+36a^5b^2x^2+84a^4b^3x^3+126a^3b^4x^4+126a^2b^5x^5+84ab^6x^6+36b^7x^7}{72b^8(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7/(a + b*x)^10,x]
```

```
[Out] -(a^7 + 9*a^6*b*x + 36*a^5*b^2*x^2 + 84*a^4*b^3*x^3 + 126*a^3*b^4
*x^4 + 126*a^2*b^5*x^5 + 84*a*b^6*x^6 + 36*b^7*x^7)/(72*b^8*(a +
b*x)^9)
```

Maple [B] time = 0.01, size = 117, normalized size = 3.3

$$7\frac{a^3}{b^8(bx+a)^5}-\frac{35a^4}{6b^8(bx+a)^6}+3\frac{a^5}{b^8(bx+a)^7}+\frac{a^7}{9b^8(bx+a)^9}+\frac{7a}{3b^8(bx+a)^3}-\frac{7a^6}{8b^8(bx+a)^8}-\frac{1}{2(bx+a)^2b^8}-\frac{21a^2}{4b^8(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7/(b*x+a)^10,x)
```

```
[Out] 7*a^3/b^8/(b*x+a)^5-35/6*a^4/b^8/(b*x+a)^6+3*a^5/b^8/(b*x+a)^7+1/
9*a^7/b^8/(b*x+a)^9+7/3*a/b^8/(b*x+a)^3-7/8*a^6/b^8/(b*x+a)^8-1/2
/(b*x+a)^2/b^8-21/4*a^2/b^8/(b*x+a)^4
```

Maxima [A] time = 1.35074, size = 236, normalized size = 6.74

$$-\frac{36b^7x^7+84ab^6x^6+126a^2b^5x^5+126a^3b^4x^4+84a^4b^3x^3+36a^5b^2x^2+9a^6bx+a^7}{72(b^{17}x^9+9ab^{16}x^8+36a^2b^{15}x^7+84a^3b^{14}x^6+126a^4b^{13}x^5+126a^5b^{12}x^4+84a^6b^{11}x^3+36a^7b^{10}x^2+9a^8b^9x+a^9b^8)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/72*(36*b^7*x^7 + 84*a*b^6*x^6 + 126*a^2*b^5*x^5 + 126*a^3*b^4*
x^4 + 84*a^4*b^3*x^3 + 36*a^5*b^2*x^2 + 9*a^6*b*x + a^7)/(b^17*x^
9 + 9*a*b^16*x^8 + 36*a^2*b^15*x^7 + 84*a^3*b^14*x^6 + 126*a^4*b^
13*x^5 + 126*a^5*b^12*x^4 + 84*a^6*b^11*x^3 + 36*a^7*b^10*x^2 + 9
*a^8*b^9*x + a^9*b^8)
```

Fricas [A] time = 0.229551, size = 236, normalized size = 6.74

$$-\frac{36b^7x^7+84ab^6x^6+126a^2b^5x^5+126a^3b^4x^4+84a^4b^3x^3+36a^5b^2x^2+9a^6bx+a^7}{72(b^{17}x^9+9ab^{16}x^8+36a^2b^{15}x^7+84a^3b^{14}x^6+126a^4b^{13}x^5+126a^5b^{12}x^4+84a^6b^{11}x^3+36a^7b^{10}x^2+9a^8b^9x+a^9b^8)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/72*(36*b^7*x^7 + 84*a*b^6*x^6 + 126*a^2*b^5*x^5 + 126*a^3*b^4*
x^4 + 84*a^4*b^3*x^3 + 36*a^5*b^2*x^2 + 9*a^6*b*x + a^7)/(b^17*x^
9 + 9*a*b^16*x^8 + 36*a^2*b^15*x^7 + 84*a^3*b^14*x^6 + 126*a^4*b^
13*x^5 + 126*a^5*b^12*x^4 + 84*a^6*b^11*x^3 + 36*a^7*b^10*x^2 + 9
*a^8*b^9*x + a^9*b^8)
```

Sympy [A] time = 4.08153, size = 187, normalized size = 5.34

$$-\frac{a^7+9a^6bx+36a^5b^2x^2+84a^4b^3x^3+126a^3b^4x^4+126a^2b^5x^5+84ab^6x^6+36b^7x^7}{72a^9b^8+648a^8b^9x+2592a^7b^{10}x^2+6048a^6b^{11}x^3+9072a^5b^{12}x^4+9072a^4b^{13}x^5+6048a^3b^{14}x^6+2592a^2b^{15}x^7+648ab^{16}x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7/(b*x+a)**10,x)
```

```
[Out] -(a**7 + 9*a**6*b*x + 36*a**5*b**2*x**2 + 84*a**4*b**3*x**3 + 126
*a**3*b**4*x**4 + 126*a**2*b**5*x**5 + 84*a*b**6*x**6 + 36*b**7*x
**7)/(72*a**9*b**8 + 648*a**8*b**9*x + 2592*a**7*b**10*x**2 + 604
8*a**6*b**11*x**3 + 9072*a**5*b**12*x**4 + 9072*a**4*b**13*x**5 +
 6048*a**3*b**14*x**6 + 2592*a**2*b**15*x**7 + 648*a*b**16*x**8 +
 72*b**17*x**9)
```

GIAC/XCAS [A] time = 0.205495, size = 113, normalized size = 3.23

$$-\frac{36\,b^7x^7+84\,ab^6x^6+126\,a^2b^5x^5+126\,a^3b^4x^4+84\,a^4b^3x^3+36\,a^5b^2x^2+9\,a^6bx+a^7}{72\,(bx+a)^9b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^7/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/72*(36*b^7*x^7 + 84*a*b^6*x^6 + 126*a^2*b^5*x^5 + 126*a^3*b^4*
x^4 + 84*a^4*b^3*x^3 + 36*a^5*b^2*x^2 + 9*a^6*b*x + a^7)/((b*x +
a)^9*b^8)
```

3.228 $\int \frac{x^6}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=52

$$\frac{x^7}{252a^3(a+bx)^7}+\frac{x^7}{36a^2(a+bx)^8}+\frac{x^7}{9a(a+bx)^9}$$

```
[Out] x^7/(9*a*(a + b*x)^9) + x^7/(36*a^2*(a + b*x)^8) + x^7/(252*a^3*(
a + b*x)^7)
```

Rubi [A] time = 0.0370975, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{x^7}{252a^3(a+bx)^7}+\frac{x^7}{36a^2(a+bx)^8}+\frac{x^7}{9a(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6/(a + b*x)^10,x]
```

```
[Out] x^7/(9*a*(a + b*x)^9) + x^7/(36*a^2*(a + b*x)^8) + x^7/(252*a^3*(
a + b*x)^7)
```

Rubi in Sympy [A] time = 6.51958, size = 42, normalized size = 0.81

$$\frac{x^7}{9a\left(a+bx\right)^9}+\frac{x^7}{36a^2\left(a+bx\right)^8}+\frac{x^7}{252a^3\left(a+bx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6/(b*x+a)**10,x)
```

```
[Out] x**7/(9*a*(a + b*x)**9) + x**7/(36*a**2*(a + b*x)**8) + x**7/(252
*a**3*(a + b*x)**7)
```

Mathematica [A] time = 0.0253315, size = 75, normalized size = 1.44

$$-\frac{a^6+9a^5bx+36a^4b^2x^2+84a^3b^3x^3+126a^2b^4x^4+126ab^5x^5+84b^6x^6}{252b^7(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6/(a + b*x)^10,x]
```

```
[Out] -(a^6 + 9*a^5*b*x + 36*a^4*b^2*x^2 + 84*a^3*b^3*x^3 + 126*a^2*b^4
*x^4 + 126*a*b^5*x^5 + 84*b^6*x^6)/(252*b^7*(a + b*x)^9)
```

Maple [B] time = 0.01, size = 102, normalized size = 2.

$$\frac{10\,a^{3}}{3\,b^{7}\,(bx+a)^{6}}-\frac{a^{6}}{9\,b^{7}\,(bx+a)^{9}}-\frac{1}{3\,(bx+a)^{3}\,b^{7}}+\frac{3\,a}{2\,b^{7}\,(bx+a)^{4}}-\frac{15\,a^{4}}{7\,b^{7}\,(bx+a)^{7}}-3\,\frac{a^{2}}{b^{7}\,(bx+a)^{5}}+\frac{3\,a^{5}}{4\,b^{7}\,(bx+a)^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6/(b*x+a)^10,x)
```

```
[Out] 10/3*a^3/b^7/(b*x+a)^6-1/9*a^6/b^7/(b*x+a)^9-1/3/(b*x+a)^3/b^7+3/
2*a/b^7/(b*x+a)^4-15/7*a^4/b^7/(b*x+a)^7-3*a^2/b^7/(b*x+a)^5+3/4*
a^5/b^7/(b*x+a)^8
```

Maxima [A] time = 1.34302, size = 221, normalized size = 4.25

$$-\frac{84\,b^{6}x^{6}+126\,ab^{5}x^{5}+126\,a^{2}b^{4}x^{4}+84\,a^{3}b^{3}x^{3}+36\,a^{4}b^{2}x^{2}+9\,a^{5}bx+a^{6}}{252\,(b^{16}x^{9}+9\,ab^{15}x^{8}+36\,a^{2}b^{14}x^{7}+84\,a^{3}b^{13}x^{6}+126\,a^{4}b^{12}x^{5}+126\,a^{5}b^{11}x^{4}+84\,a^{6}b^{10}x^{3}+36\,a^{7}b^{9}x^{2}+9\,a^{8}b^{8}x+a^{9}b^{7})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/252*(84*b^6*x^6 + 126*a*b^5*x^5 + 126*a^2*b^4*x^4 + 84*a^3*b^3
*x^3 + 36*a^4*b^2*x^2 + 9*a^5*b*x + a^6)/(b^16*x^9 + 9*a*b^15*x^8
 + 36*a^2*b^14*x^7 + 84*a^3*b^13*x^6 + 126*a^4*b^12*x^5 + 126*a^5
*b^11*x^4 + 84*a^6*b^10*x^3 + 36*a^7*b^9*x^2 + 9*a^8*b^8*x + a^9*
b^7)
```

Fricas [A] time = 0.201022, size = 221, normalized size = 4.25

$$-\frac{84\,b^{6}x^{6}+126\,ab^{5}x^{5}+126\,a^{2}b^{4}x^{4}+84\,a^{3}b^{3}x^{3}+36\,a^{4}b^{2}x^{2}+9\,a^{5}bx+a^{6}}{252\,(b^{16}x^{9}+9\,ab^{15}x^{8}+36\,a^{2}b^{14}x^{7}+84\,a^{3}b^{13}x^{6}+126\,a^{4}b^{12}x^{5}+126\,a^{5}b^{11}x^{4}+84\,a^{6}b^{10}x^{3}+36\,a^{7}b^{9}x^{2}+9\,a^{8}b^{8}x+a^{9}b^{7})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/252*(84*b^6*x^6 + 126*a*b^5*x^5 + 126*a^2*b^4*x^4 + 84*a^3*b^3
*x^3 + 36*a^4*b^2*x^2 + 9*a^5*b*x + a^6)/(b^16*x^9 + 9*a*b^15*x^8
 + 36*a^2*b^14*x^7 + 84*a^3*b^13*x^6 + 126*a^4*b^12*x^5 + 126*a^5
*b^11*x^4 + 84*a^6*b^10*x^3 + 36*a^7*b^9*x^2 + 9*a^8*b^8*x + a^9*
b^7)
```

Sympy [A] time = 3.87593, size = 175, normalized size = 3.37

$$-\frac{a^6 + 9a^5bx + 36a^4b^2x^2 + 84a^3b^3x^3 + 126a^2b^4x^4 + 126ab^5x^5 + 84b^6x^6}{252a^9b^7 + 2268a^8b^8x + 9072a^7b^9x^2 + 21168a^6b^{10}x^3 + 31752a^5b^{11}x^4 + 31752a^4b^{12}x^5 + 21168a^3b^{13}x^6 + 9072a^2b^{14}x^7 + 2268}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6/(b*x+a)**10,x)
```

```
[Out] -(a**6 + 9*a**5*b*x + 36*a**4*b**2*x**2 + 84*a**3*b**3*x**3 + 126
*a**2*b**4*x**4 + 126*a*b**5*x**5 + 84*b**6*x**6)/(252*a**9*b**7
+ 2268*a**8*b**8*x + 9072*a**7*b**9*x**2 + 21168*a**6*b**10*x**3
+ 31752*a**5*b**11*x**4 + 31752*a**4*b**12*x**5 + 21168*a**3*b**1
3*x**6 + 9072*a**2*b**14*x**7 + 2268*a*b**15*x**8 + 252*b**16*x**
9)
```

GIAC/XCAS [A] time = 0.203326, size = 99, normalized size = 1.9

$$-\frac{84\,b^6x^6 + 126\,ab^5x^5 + 126\,a^2b^4x^4 + 84\,a^3b^3x^3 + 36\,a^4b^2x^2 + 9\,a^5bx + a^6}{252\,(bx + a)^9b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/252*(84*b^6*x^6 + 126*a*b^5*x^5 + 126*a^2*b^4*x^4 + 84*a^3*b^3
*x^3 + 36*a^4*b^2*x^2 + 9*a^5*b*x + a^6)/((b*x + a)^9*b^7)
```

3.229 $\int \frac{x^5}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=69

$$\frac{x^6}{504a^4(a+bx)^6}+\frac{x^6}{84a^3(a+bx)^7}+\frac{x^6}{24a^2(a+bx)^8}+\frac{x^6}{9a(a+bx)^9}$$

```
[Out] x^6/(9*a*(a + b*x)^9) + x^6/(24*a^2*(a + b*x)^8) + x^6/(84*a^3*(a
 + b*x)^7) + x^6/(504*a^4*(a + b*x)^6)
```

Rubi [A] time = 0.0525418, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{x^6}{504a^4(a+bx)^6}+\frac{x^6}{84a^3(a+bx)^7}+\frac{x^6}{24a^2(a+bx)^8}+\frac{x^6}{9a(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/(a + b*x)^10,x]
```

```
[Out] x^6/(9*a*(a + b*x)^9) + x^6/(24*a^2*(a + b*x)^8) + x^6/(84*a^3*(a
 + b*x)^7) + x^6/(504*a^4*(a + b*x)^6)
```

Rubi in Sympy [A] time = 9.42943, size = 58, normalized size = 0.84

$$\frac{x^6}{9a\,(a+bx)^9}+\frac{x^6}{24a^2\,(a+bx)^8}+\frac{x^6}{84a^3\,(a+bx)^7}+\frac{x^6}{504a^4\,(a+bx)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(b*x+a)**10,x)
```

```
[Out] x**6/(9*a*(a + b*x)**9) + x**6/(24*a**2*(a + b*x)**8) + x**6/(84*
a**3*(a + b*x)**7) + x**6/(504*a**4*(a + b*x)**6)
```

Mathematica [A] time = 0.0218206, size = 64, normalized size = 0.93

$$-\frac{a^5+9a^4bx+36a^3b^2x^2+84a^2b^3x^3+126ab^4x^4+126b^5x^5}{504b^6(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(a + b*x)^10,x]
```

```
[Out] -(a^5 + 9*a^4*b*x + 36*a^3*b^2*x^2 + 84*a^2*b^3*x^3 + 126*a*b^4*x
^4 + 126*b^5*x^5)/(504*b^6*(a + b*x)^9)
```

Maple [A] time = 0.01, size = 86, normalized size = 1.3

$$-\frac{5 a^{4}}{8 b^{6} (bx+a)^{8}}-\frac{5 a^{2}}{3 b^{6} (bx+a)^{6}}+\frac{a^{5}}{9 b^{6} (bx+a)^{9}}+\frac{a}{b^{6} (bx+a)^{5}}+\frac{10 a^{3}}{7 b^{6} (bx+a)^{7}}-\frac{1}{4 (bx+a)^{4} b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a)^10,x)
```

```
[Out] -5/8*a^4/b^6/(b*x+a)^8-5/3*a^2/b^6/(b*x+a)^6+1/9*a^5/b^6/(b*x+a)^
9+a/b^6/(b*x+a)^5+10/7*a^3/b^6/(b*x+a)^7-1/4/(b*x+a)^4/b^6
```

Maxima [A] time = 1.36016, size = 207, normalized size = 3.

$$-\frac{126 b^{5} x^{5}+126 a b^{4} x^{4}+84 a^{2} b^{3} x^{3}+36 a^{3} b^{2} x^{2}+9 a^{4} b x+a^{5}}{504 (b^{15} x^{9}+9 a b^{14} x^{8}+36 a^{2} b^{13} x^{7}+84 a^{3} b^{12} x^{6}+126 a^{4} b^{11} x^{5}+126 a^{5} b^{10} x^{4}+84 a^{6} b^{9} x^{3}+36 a^{7} b^{8} x^{2}+9 a^{8} b^{7} x+a^{9} b^{6})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/504*(126*b^5*x^5 + 126*a*b^4*x^4 + 84*a^2*b^3*x^3 + 36*a^3*b^2
*x^2 + 9*a^4*b*x + a^5)/(b^15*x^9 + 9*a*b^14*x^8 + 36*a^2*b^13*x^
7 + 84*a^3*b^12*x^6 + 126*a^4*b^11*x^5 + 126*a^5*b^10*x^4 + 84*a^
6*b^9*x^3 + 36*a^7*b^8*x^2 + 9*a^8*b^7*x + a^9*b^6)
```

Fricas [A] time = 0.206536, size = 207, normalized size = 3.

$$-\frac{126 b^{5} x^{5}+126 a b^{4} x^{4}+84 a^{2} b^{3} x^{3}+36 a^{3} b^{2} x^{2}+9 a^{4} b x+a^{5}}{504 (b^{15} x^{9}+9 a b^{14} x^{8}+36 a^{2} b^{13} x^{7}+84 a^{3} b^{12} x^{6}+126 a^{4} b^{11} x^{5}+126 a^{5} b^{10} x^{4}+84 a^{6} b^{9} x^{3}+36 a^{7} b^{8} x^{2}+9 a^{8} b^{7} x+a^{9} b^{6})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/504*(126*b^5*x^5 + 126*a*b^4*x^4 + 84*a^2*b^3*x^3 + 36*a^3*b^2
*x^2 + 9*a^4*b*x + a^5)/(b^15*x^9 + 9*a*b^14*x^8 + 36*a^2*b^13*x^
```

```
7 + 84*a^3*b^12*x^6 + 126*a^4*b^11*x^5 + 126*a^5*b^10*x^4 + 84*a^
6*b^9*x^3 + 36*a^7*b^8*x^2 + 9*a^8*b^7*x + a^9*b^6)
```

Sympy [A] time = 3.57153, size = 163, normalized size = 2.36

$$-\frac{a^5 + 9a^4bx + 36a^3b^2x^2 + 84a^2b^3x^3 + 126ab^4x^4 + 126b^5x^5}{504a^9b^6 + 4536a^8b^7x + 18144a^7b^8x^2 + 42336a^6b^9x^3 + 63504a^5b^{10}x^4 + 63504a^4b^{11}x^5 + 42336a^3b^{12}x^6 + 18144a^2b^{13}x^7 + 45}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a)**10,x)
```

```
[Out] -(a**5 + 9*a**4*b*x + 36*a**3*b**2*x**2 + 84*a**2*b**3*x**3 + 126
*a*b**4*x**4 + 126*b**5*x**5)/(504*a**9*b**6 + 4536*a**8*b**7*x +
 18144*a**7*b**8*x**2 + 42336*a**6*b**9*x**3 + 63504*a**5*b**10*x
**4 + 63504*a**4*b**11*x**5 + 42336*a**3*b**12*x**6 + 18144*a**2*
b**13*x**7 + 4536*a*b**14*x**8 + 504*b**15*x**9)
```

GIAC/XCAS [A] time = 0.206471, size = 84, normalized size = 1.22

$$-\frac{126\,b^5x^5 + 126\,ab^4x^4 + 84\,a^2b^3x^3 + 36\,a^3b^2x^2 + 9\,a^4bx + a^5}{504\,(bx + a)^9b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/504*(126*b^5*x^5 + 126*a*b^4*x^4 + 84*a^2*b^3*x^3 + 36*a^3*b^2
*x^2 + 9*a^4*b*x + a^5)/((b*x + a)^9*b^6)
```

3.230 $\int \frac{x^4}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=81

$$-\frac{a^4}{9b^5(a+bx)^9}+\frac{a^3}{2b^5(a+bx)^8}-\frac{6a^2}{7b^5(a+bx)^7}+\frac{2a}{3b^5(a+bx)^6}-\frac{1}{5b^5(a+bx)^5}$$

```
[Out] -a^4/(9*b^5*(a + b*x)^9) + a^3/(2*b^5*(a + b*x)^8) - (6*a^2)/(7*b
^5*(a + b*x)^7) + (2*a)/(3*b^5*(a + b*x)^6) - 1/(5*b^5*(a + b*x)^
5)
```

Rubi [A] time = 0.0902403, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^4}{9b^5(a+bx)^9}+\frac{a^3}{2b^5(a+bx)^8}-\frac{6a^2}{7b^5(a+bx)^7}+\frac{2a}{3b^5(a+bx)^6}-\frac{1}{5b^5(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^10,x]
```

```
[Out] -a^4/(9*b^5*(a + b*x)^9) + a^3/(2*b^5*(a + b*x)^8) - (6*a^2)/(7*b
^5*(a + b*x)^7) + (2*a)/(3*b^5*(a + b*x)^6) - 1/(5*b^5*(a + b*x)^
5)
```

Rubi in Sympy [A] time = 18.1218, size = 75, normalized size = 0.93

$$-\frac{a^4}{9b^5\left(a+bx\right)^9}+\frac{a^3}{2b^5\left(a+bx\right)^8}-\frac{6a^2}{7b^5\left(a+bx\right)^7}+\frac{2a}{3b^5\left(a+bx\right)^6}-\frac{1}{5b^5\left(a+bx\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**10,x)
```

```
[Out] -a**4/(9*b**5*(a + b*x)**9) + a**3/(2*b**5*(a + b*x)**8) - 6*a**2
/(7*b**5*(a + b*x)**7) + 2*a/(3*b**5*(a + b*x)**6) - 1/(5*b**5*(a
 + b*x)**5)
```

Mathematica [A] time = 0.0213473, size = 53, normalized size = 0.65

$$-\frac{a^4+9a^3bx+36a^2b^2x^2+84ab^3x^3+126b^4x^4}{630b^5(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^10,x]
```

```
[Out] -(a^4 + 9*a^3*b*x + 36*a^2*b^2*x^2 + 84*a*b^3*x^3 + 126*b^4*x^4)/
(630*b^5*(a + b*x)^9)
```

Maple [A] time = 0.007, size = 72, normalized size = 0.9

$$-\frac{a^4}{9\,b^5\,(bx+a)^9}+\frac{a^3}{2\,b^5\,(bx+a)^8}-\frac{6\,a^2}{7\,b^5\,(bx+a)^7}+\frac{2\,a}{3\,b^5\,(bx+a)^6}-\frac{1}{5\,b^5\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^10,x)
```

```
[Out] -1/9*a^4/b^5/(b*x+a)^9+1/2*a^3/b^5/(b*x+a)^8-6/7*a^2/b^5/(b*x+a)^
7+2/3*a/b^5/(b*x+a)^6-1/5/b^5/(b*x+a)^5
```

Maxima [A] time = 1.34987, size = 192, normalized size = 2.37

$$-\frac{126\,b^4x^4+84\,ab^3x^3+36\,a^2b^2x^2+9\,a^3bx+a^4}{630\,(b^{14}x^9+9\,ab^{13}x^8+36\,a^2b^{12}x^7+84\,a^3b^{11}x^6+126\,a^4b^{10}x^5+126\,a^5b^9x^4+84\,a^6b^8x^3+36\,a^7b^7x^2+9\,a^8b^6x+a^9b^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/630*(126*b^4*x^4 + 84*a*b^3*x^3 + 36*a^2*b^2*x^2 + 9*a^3*b*x +
 a^4)/(b^14*x^9 + 9*a*b^13*x^8 + 36*a^2*b^12*x^7 + 84*a^3*b^11*x^
6 + 126*a^4*b^10*x^5 + 126*a^5*b^9*x^4 + 84*a^6*b^8*x^3 + 36*a^7*
b^7*x^2 + 9*a^8*b^6*x + a^9*b^5)
```

Fricas [A] time = 0.20779, size = 192, normalized size = 2.37

$$-\frac{126\,b^4x^4+84\,ab^3x^3+36\,a^2b^2x^2+9\,a^3bx+a^4}{630\,(b^{14}x^9+9\,ab^{13}x^8+36\,a^2b^{12}x^7+84\,a^3b^{11}x^6+126\,a^4b^{10}x^5+126\,a^5b^9x^4+84\,a^6b^8x^3+36\,a^7b^7x^2+9\,a^8b^6x+a^9b^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/630*(126*b^4*x^4 + 84*a*b^3*x^3 + 36*a^2*b^2*x^2 + 9*a^3*b*x +
 a^4)/(b^14*x^9 + 9*a*b^13*x^8 + 36*a^2*b^12*x^7 + 84*a^3*b^11*x^
6 + 126*a^4*b^10*x^5 + 126*a^5*b^9*x^4 + 84*a^6*b^8*x^3 + 36*a^7*
b^7*x^2 + 9*a^8*b^6*x + a^9*b^5)
```

Sympy [A] time = 3.46004, size = 151, normalized size = 1.86

$$-\frac{a^4 + 9a^3bx + 36a^2b^2x^2 + 84ab^3x^3 + 126b^4x^4}{630a^9b^5 + 5670a^8b^6x + 22680a^7b^7x^2 + 52920a^6b^8x^3 + 79380a^5b^9x^4 + 79380a^4b^{10}x^5 + 52920a^3b^{11}x^6 + 22680a^2b^{12}x^7 + 567}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**10,x)
```

```
[Out] -(a**4 + 9*a**3*b*x + 36*a**2*b**2*x**2 + 84*a*b**3*x**3 + 126*b*
*4*x**4)/(630*a**9*b**5 + 5670*a**8*b**6*x + 22680*a**7*b**7*x**2
 + 52920*a**6*b**8*x**3 + 79380*a**5*b**9*x**4 + 79380*a**4*b**10
*x**5 + 52920*a**3*b**11*x**6 + 22680*a**2*b**12*x**7 + 5670*a*b*
*13*x**8 + 630*b**14*x**9)
```

GIAC/XCAS [A] time = 0.202393, size = 69, normalized size = 0.85

$$-\frac{126\,b^4x^4 + 84\,ab^3x^3 + 36\,a^2b^2x^2 + 9\,a^3bx + a^4}{630\,(bx+a)^9b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/630*(126*b^4*x^4 + 84*a*b^3*x^3 + 36*a^2*b^2*x^2 + 9*a^3*b*x +
 a^4)/((b*x + a)^9*b^5)
```

3.231 $\int \frac{x^3}{(a+bx)^{10}}\, dx$

Optimal. Leaf size=64

$$\frac{a^3}{9b^4(a+bx)^9}-\frac{3a^2}{8b^4(a+bx)^8}+\frac{3a}{7b^4(a+bx)^7}-\frac{1}{6b^4(a+bx)^6}$$

```
[Out] a^3/(9*b^4*(a + b*x)^9) - (3*a^2)/(8*b^4*(a + b*x)^8) + (3*a)/(7*
b^4*(a + b*x)^7) - 1/(6*b^4*(a + b*x)^6)
```

Rubi [A] time = 0.0714916, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3}{9b^4(a+bx)^9}-\frac{3a^2}{8b^4(a+bx)^8}+\frac{3a}{7b^4(a+bx)^7}-\frac{1}{6b^4(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^10,x]
```

```
[Out] a^3/(9*b^4*(a + b*x)^9) - (3*a^2)/(8*b^4*(a + b*x)^8) + (3*a)/(7*
b^4*(a + b*x)^7) - 1/(6*b^4*(a + b*x)^6)
```

Rubi in Sympy [A] time = 14.3559, size = 60, normalized size = 0.94

$$\frac{a^3}{9b^4\left(a+bx\right)^9}-\frac{3a^2}{8b^4\left(a+bx\right)^8}+\frac{3a}{7b^4\left(a+bx\right)^7}-\frac{1}{6b^4\left(a+bx\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**10,x)
```

```
[Out] a**3/(9*b**4*(a + b*x)**9) - 3*a**2/(8*b**4*(a + b*x)**8) + 3*a/(
7*b**4*(a + b*x)**7) - 1/(6*b**4*(a + b*x)**6)
```

Mathematica [A] time = 0.0141554, size = 42, normalized size = 0.66

$$-\frac{a^3+9a^2bx+36ab^2x^2+84b^3x^3}{504b^4(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^10,x]
```

```
[Out] -(a^3 + 9*a^2*b*x + 36*a*b^2*x^2 + 84*b^3*x^3)/(504*b^4*(a + b*x)
^9)
```

Maple [A] time = 0.007, size = 57, normalized size = 0.9

$$\frac{a^3}{9\,b^4\,(bx+a)^9}-\frac{3\,a^2}{8\,b^4\,(bx+a)^8}+\frac{3\,a}{7\,b^4\,(bx+a)^7}-\frac{1}{6\,b^4\,(bx+a)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^10,x)
```

```
[Out] 1/9*a^3/b^4/(b*x+a)^9-3/8*a^2/b^4/(b*x+a)^8+3/7*a/b^4/(b*x+a)^7-1
/6/b^4/(b*x+a)^6
```

Maxima [A] time = 1.33597, size = 177, normalized size = 2.77

$$-\frac{84\,b^3x^3+36\,ab^2x^2+9\,a^2bx+a^3}{504\,(b^{13}x^9+9\,ab^{12}x^8+36\,a^2b^{11}x^7+84\,a^3b^{10}x^6+126\,a^4b^9x^5+126\,a^5b^8x^4+84\,a^6b^7x^3+36\,a^7b^6x^2+9\,a^8b^5x+a^9b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/504*(84*b^3*x^3 + 36*a*b^2*x^2 + 9*a^2*b*x + a^3)/(b^13*x^9 +
9*a*b^12*x^8 + 36*a^2*b^11*x^7 + 84*a^3*b^10*x^6 + 126*a^4*b^9*x^
5 + 126*a^5*b^8*x^4 + 84*a^6*b^7*x^3 + 36*a^7*b^6*x^2 + 9*a^8*b^5
*x + a^9*b^4)
```

Fricas [A] time = 0.211935, size = 177, normalized size = 2.77

$$-\frac{84\,b^3x^3+36\,ab^2x^2+9\,a^2bx+a^3}{504\,(b^{13}x^9+9\,ab^{12}x^8+36\,a^2b^{11}x^7+84\,a^3b^{10}x^6+126\,a^4b^9x^5+126\,a^5b^8x^4+84\,a^6b^7x^3+36\,a^7b^6x^2+9\,a^8b^5x+a^9b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/504*(84*b^3*x^3 + 36*a*b^2*x^2 + 9*a^2*b*x + a^3)/(b^13*x^9 +
9*a*b^12*x^8 + 36*a^2*b^11*x^7 + 84*a^3*b^10*x^6 + 126*a^4*b^9*x^
```

```
5 + 126*a^5*b^8*x^4 + 84*a^6*b^7*x^3 + 36*a^7*b^6*x^2 + 9*a^8*b^5
*x + a^9*b^4)
```

Sympy [A] time = 3.27566, size = 139, normalized size = 2.17

$$-\frac{a^3+9a^2bx+36ab^2x^2+84b^3x^3}{504a^9b^4+4536a^8b^5x+18144a^7b^6x^2+42336a^6b^7x^3+63504a^5b^8x^4+63504a^4b^9x^5+42336a^3b^{10}x^6+18144a^2b^{11}x^7+4536$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**10,x)
```

```
[Out] -(a**3 + 9*a**2*b*x + 36*a*b**2*x**2 + 84*b**3*x**3)/(504*a**9*b*
*4 + 4536*a**8*b**5*x + 18144*a**7*b**6*x**2 + 42336*a**6*b**7*x*
*3 + 63504*a**5*b**8*x**4 + 63504*a**4*b**9*x**5 + 42336*a**3*b**
10*x**6 + 18144*a**2*b**11*x**7 + 4536*a*b**12*x**8 + 504*b**13*x
**9)
```

GIAC/XCAS [A] time = 0.203175, size = 54, normalized size = 0.84

$$-\frac{84\,b^3x^3+36\,ab^2x^2+9\,a^2bx+a^3}{504\,(bx+a)^9b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/504*(84*b^3*x^3 + 36*a*b^2*x^2 + 9*a^2*b*x + a^3)/((b*x + a)^9
*b^4)
```

3.232 $\int \frac{x^2}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=47

$$-\frac{a^2}{9b^3(a+bx)^9}+\frac{a}{4b^3(a+bx)^8}-\frac{1}{7b^3(a+bx)^7}$$

```
[Out] -a^2/(9*b^3*(a + b*x)^9) + a/(4*b^3*(a + b*x)^8) - 1/(7*b^3*(a +
b*x)^7)
```

Rubi [A] time = 0.0513666, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^2}{9b^3(a+bx)^9}+\frac{a}{4b^3(a+bx)^8}-\frac{1}{7b^3(a+bx)^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^10,x]
```

```
[Out] -a^2/(9*b^3*(a + b*x)^9) + a/(4*b^3*(a + b*x)^8) - 1/(7*b^3*(a +
b*x)^7)
```

Rubi in Sympy [A] time = 10.5336, size = 41, normalized size = 0.87

$$-\frac{a^2}{9b^3\left(a+bx\right)^9}+\frac{a}{4b^3\left(a+bx\right)^8}-\frac{1}{7b^3\left(a+bx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**10,x)
```

```
[Out] -a**2/(9*b**3*(a + b*x)**9) + a/(4*b**3*(a + b*x)**8) - 1/(7*b**3
*(a + b*x)**7)
```

Mathematica [A] time = 0.0170964, size = 31, normalized size = 0.66

$$-\frac{a^2+9abx+36b^2x^2}{252b^3(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^10,x]
```

```
[Out] -(a^2 + 9*a*b*x + 36*b^2*x^2)/(252*b^3*(a + b*x)^9)
```

Maple [A] time = 0.009, size = 42, normalized size = 0.9

$$-\frac{a^{2}}{9\,b^{3}\left(bx+a\right)^{9}}+\frac{a}{4\,b^{3}\left(bx+a\right)^{8}}-\frac{1}{7\,b^{3}\left(bx+a\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^10,x)
```

```
[Out] -1/9*a^2/b^3/(b*x+a)^9+1/4*a/b^3/(b*x+a)^8-1/7/b^3/(b*x+a)^7
```

Maxima [A] time = 1.33859, size = 162, normalized size = 3.45

$$-\frac{36\,b^{2}x^{2}+9\,abx+a^{2}}{252\,(b^{12}x^{9}+9\,ab^{11}x^{8}+36\,a^{2}b^{10}x^{7}+84\,a^{3}b^{9}x^{6}+126\,a^{4}b^{8}x^{5}+126\,a^{5}b^{7}x^{4}+84\,a^{6}b^{6}x^{3}+36\,a^{7}b^{5}x^{2}+9\,a^{8}b^{4}x+a^{9}b^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/252*(36*b^2*x^2 + 9*a*b*x + a^2)/(b^12*x^9 + 9*a*b^11*x^8 + 36
*a^2*b^10*x^7 + 84*a^3*b^9*x^6 + 126*a^4*b^8*x^5 + 126*a^5*b^7*x^
4 + 84*a^6*b^6*x^3 + 36*a^7*b^5*x^2 + 9*a^8*b^4*x + a^9*b^3)
```

Fricas [A] time = 0.204506, size = 162, normalized size = 3.45

$$-\frac{36\,b^{2}x^{2}+9\,abx+a^{2}}{252\,(b^{12}x^{9}+9\,ab^{11}x^{8}+36\,a^{2}b^{10}x^{7}+84\,a^{3}b^{9}x^{6}+126\,a^{4}b^{8}x^{5}+126\,a^{5}b^{7}x^{4}+84\,a^{6}b^{6}x^{3}+36\,a^{7}b^{5}x^{2}+9\,a^{8}b^{4}x+a^{9}b^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/252*(36*b^2*x^2 + 9*a*b*x + a^2)/(b^12*x^9 + 9*a*b^11*x^8 + 36
*a^2*b^10*x^7 + 84*a^3*b^9*x^6 + 126*a^4*b^8*x^5 + 126*a^5*b^7*x^
4 + 84*a^6*b^6*x^3 + 36*a^7*b^5*x^2 + 9*a^8*b^4*x + a^9*b^3)
```

Sympy [A] time = 3.15336, size = 128, normalized size = 2.72

$$-\frac{a^2 + 9abx + 36b^2x^2}{252a^9b^3 + 2268a^8b^4x + 9072a^7b^5x^2 + 21168a^6b^6x^3 + 31752a^5b^7x^4 + 31752a^4b^8x^5 + 21168a^3b^9x^6 + 9072a^2b^{10}x^7 + 2268ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**10,x)
```

```
[Out] -(a**2 + 9*a*b*x + 36*b**2*x**2)/(252*a**9*b**3 + 2268*a**8*b**4*
x + 9072*a**7*b**5*x**2 + 21168*a**6*b**6*x**3 + 31752*a**5*b**7*
x**4 + 31752*a**4*b**8*x**5 + 21168*a**3*b**9*x**6 + 9072*a**2*b*
*10*x**7 + 2268*a*b**11*x**8 + 252*b**12*x**9)
```

GIAC/XCAS [A] time = 0.202219, size = 39, normalized size = 0.83

$$-\frac{36 b^2x^2 + 9 abx + a^2}{252 (bx + a)^9 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/252*(36*b^2*x^2 + 9*a*b*x + a^2)/((b*x + a)^9*b^3)
```

3.233 $\int \frac{x}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=30

$$\frac{a}{9b^2(a+bx)^9}-\frac{1}{8b^2(a+bx)^8}$$

```
[Out] a/(9*b^2*(a + b*x)^9) - 1/(8*b^2*(a + b*x)^8)
```

Rubi [A] time = 0.03187, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a}{9b^2(a+bx)^9}-\frac{1}{8b^2(a+bx)^8}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^10,x]
```

```
[Out] a/(9*b^2*(a + b*x)^9) - 1/(8*b^2*(a + b*x)^8)
```

Rubi in Sympy [A] time = 6.95668, size = 26, normalized size = 0.87

$$\frac{a}{9b^2\left(a+bx\right)^9}-\frac{1}{8b^2\left(a+bx\right)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**10,x)
```

```
[Out] a/(9*b**2*(a + b*x)**9) - 1/(8*b**2*(a + b*x)**8)
```

Mathematica [A] time = 0.00831508, size = 20, normalized size = 0.67

$$-\frac{a+9bx}{72b^2(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^10,x]
```

```
[Out] -(a + 9*b*x)/(72*b^2*(a + b*x)^9)
```

Maple [A] time = 0.006, size = 27, normalized size = 0.9

$$\frac{a}{9\,b^2\,(bx+a)^9}-\frac{1}{8\,b^2\,(bx+a)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^10,x)
```

```
[Out] 1/9*a/b^2/(b*x+a)^9-1/8/b^2/(b*x+a)^8
```

Maxima [A] time = 1.35876, size = 147, normalized size = 4.9

$$-\frac{9\,bx+a}{72\,(b^{11}x^9+9\,ab^{10}x^8+36\,a^2b^9x^7+84\,a^3b^8x^6+126\,a^4b^7x^5+126\,a^5b^6x^4+84\,a^6b^5x^3+36\,a^7b^4x^2+9\,a^8b^3x+a^9b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/72*(9*b*x + a)/(b^11*x^9 + 9*a*b^10*x^8 + 36*a^2*b^9*x^7 + 84*
a^3*b^8*x^6 + 126*a^4*b^7*x^5 + 126*a^5*b^6*x^4 + 84*a^6*b^5*x^3
+ 36*a^7*b^4*x^2 + 9*a^8*b^3*x + a^9*b^2)
```

Fricas [A] time = 0.206846, size = 147, normalized size = 4.9

$$-\frac{9\,bx+a}{72\,(b^{11}x^9+9\,ab^{10}x^8+36\,a^2b^9x^7+84\,a^3b^8x^6+126\,a^4b^7x^5+126\,a^5b^6x^4+84\,a^6b^5x^3+36\,a^7b^4x^2+9\,a^8b^3x+a^9b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/72*(9*b*x + a)/(b^11*x^9 + 9*a*b^10*x^8 + 36*a^2*b^9*x^7 + 84*
a^3*b^8*x^6 + 126*a^4*b^7*x^5 + 126*a^5*b^6*x^4 + 84*a^6*b^5*x^3
+ 36*a^7*b^4*x^2 + 9*a^8*b^3*x + a^9*b^2)
```

Sympy [A] time = 3.07517, size = 116, normalized size = 3.87

$$-\frac{a+9bx}{72a^9b^2+648a^8b^3x+2592a^7b^4x^2+6048a^6b^5x^3+9072a^5b^6x^4+9072a^4b^7x^5+6048a^3b^8x^6+2592a^2b^9x^7+648ab^{10}x^8+72}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**10,x)
```

```
[Out] -(a + 9*b*x)/(72*a**9*b**2 + 648*a**8*b**3*x + 2592*a**7*b**4*x**
2 + 6048*a**6*b**5*x**3 + 9072*a**5*b**6*x**4 + 9072*a**4*b**7*x*
*5 + 6048*a**3*b**8*x**6 + 2592*a**2*b**9*x**7 + 648*a*b**10*x**8
 + 72*b**11*x**9)
```

GIAC/XCAS [A] time = 0.204325, size = 24, normalized size = 0.8

$$-\frac{9\,bx+a}{72\,(bx+a)^9b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/72*(9*b*x + a)/((b*x + a)^9*b^2)
```

3.234 $\int \frac{1}{(a+bx)^{10}} dx$

Optimal. Leaf size=14

$$-\frac{1}{9b(a+bx)^9}$$

```
[Out] -1/(9*b*(a + b*x)^9)
```

Rubi [A] time = 0.00706202, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{1}{9b(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-10),x]

[Out] -1/(9*b*(a + b*x)^9)
```

Rubi in Sympy [A] time = 1.26439, size = 12, normalized size = 0.86

$$-\frac{1}{9b\left(a+bx\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**10,x)

[Out] -1/(9*b*(a + b*x)**9)
```

Mathematica [A] time = 0.00466183, size = 14, normalized size = 1.

$$-\frac{1}{9b(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-10),x]
```

```
[Out] -1/(9*b*(a + b*x)^9)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$-\frac{1}{9\,b\,(bx+a)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^10,x)
```

```
[Out] -1/9/b/(b*x+a)^9
```

Maxima [A] time = 1.34045, size = 16, normalized size = 1.14

$$-\frac{1}{9\,(bx+a)^9 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-10),x, algorithm="maxima")
```

```
[Out] -1/9/((b*x + a)^9*b)
```

Fricas [A] time = 0.202429, size = 136, normalized size = 9.71

$$-\frac{1}{9\,(b^{10}x^9 + 9\,ab^9x^8 + 36\,a^2b^8x^7 + 84\,a^3b^7x^6 + 126\,a^4b^6x^5 + 126\,a^5b^5x^4 + 84\,a^6b^4x^3 + 36\,a^7b^3x^2 + 9\,a^8b^2x + a^9b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-10),x, algorithm="fricas")
```

```
[Out] -1/9/(b^10*x^9 + 9*a*b^9*x^8 + 36*a^2*b^8*x^7 + 84*a^3*b^7*x^6 +
126*a^4*b^6*x^5 + 126*a^5*b^5*x^4 + 84*a^6*b^4*x^3 + 36*a^7*b^3*x
^2 + 9*a^8*b^2*x + a^9*b)
```

Sympy [A] time = 3.16885, size = 109, normalized size = 7.79

$$-\frac{1}{9a^9b + 81a^8b^2x + 324a^7b^3x^2 + 756a^6b^4x^3 + 1134a^5b^5x^4 + 1134a^4b^6x^5 + 756a^3b^7x^6 + 324a^2b^8x^7 + 81ab^9x^8 + 9b^{10}x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**10,x)
```

```
[Out] -1/(9*a**9*b + 81*a**8*b**2*x + 324*a**7*b**3*x**2 + 756*a**6*b**
4*x**3 + 1134*a**5*b**5*x**4 + 1134*a**4*b**6*x**5 + 756*a**3*b**
7*x**6 + 324*a**2*b**8*x**7 + 81*a*b**9*x**8 + 9*b**10*x**9)
```

GIAC/XCAS [A] time = 0.20156, size = 16, normalized size = 1.14

$$-\frac{1}{9\,(bx+a)^9 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-10),x, algorithm="giac")
```

```
[Out] -1/9/((b*x + a)^9*b)
```

3.235 $\int \frac{1}{x(a+bx)^{10}}\,dx$

Optimal. Leaf size=141

$$-\frac{\log(a+bx)}{a^{10}}+\frac{\log(x)}{a^{10}}+\frac{1}{a^9(a+bx)}+\frac{1}{2a^8(a+bx)^2}+\frac{1}{3a^7(a+bx)^3}+\frac{1}{4a^6(a+bx)^4}+\frac{1}{5a^5(a+bx)^5}+\frac{1}{6a^4(a+bx)^6}+\frac{1}{7a^3(a+bx)^7}+\frac{1}{8a^2(a+bx)^8}+\frac{1}{9a(a+bx)^9}$$

```
[Out] 1/(9*a*(a + b*x)^9) + 1/(8*a^2*(a + b*x)^8) + 1/(7*a^3*(a + b*x)^
7) + 1/(6*a^4*(a + b*x)^6) + 1/(5*a^5*(a + b*x)^5) + 1/(4*a^6*(a
+ b*x)^4) + 1/(3*a^7*(a + b*x)^3) + 1/(2*a^8*(a + b*x)^2) + 1/(a^
9*(a + b*x)) + Log[x]/a^10 - Log[a + b*x]/a^10
```

Rubi [A] time = 0.161242, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{\log(a+bx)}{a^{10}}+\frac{\log(x)}{a^{10}}+\frac{1}{a^9(a+bx)}+\frac{1}{2a^8(a+bx)^2}+\frac{1}{3a^7(a+bx)^3}+\frac{1}{4a^6(a+bx)^4}+\frac{1}{5a^5(a+bx)^5}+\frac{1}{6a^4(a+bx)^6}+\frac{1}{7a^3(a+bx)^7}+\frac{1}{8a^2(a+bx)^8}+\frac{1}{9a(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^10),x]
```

```
[Out] 1/(9*a*(a + b*x)^9) + 1/(8*a^2*(a + b*x)^8) + 1/(7*a^3*(a + b*x)^
7) + 1/(6*a^4*(a + b*x)^6) + 1/(5*a^5*(a + b*x)^5) + 1/(4*a^6*(a
+ b*x)^4) + 1/(3*a^7*(a + b*x)^3) + 1/(2*a^8*(a + b*x)^2) + 1/(a^
9*(a + b*x)) + Log[x]/a^10 - Log[a + b*x]/a^10
```

Rubi in Sympy [A] time = 46.414, size = 133, normalized size = 0.94

$$\frac{1}{9a\,(a+bx)^9}+\frac{1}{8a^2\,(a+bx)^8}+\frac{1}{7a^3\,(a+bx)^7}+\frac{1}{6a^4\,(a+bx)^6}+\frac{1}{5a^5\,(a+bx)^5}+\frac{1}{4a^6\,(a+bx)^4}+\frac{1}{3a^7\,(a+bx)^3}+\frac{1}{2a^8\,(a+bx)^2}+\frac{1}{a^9\,(a+bx)}+\frac{\log(x)}{a^{10}}-\frac{\log(a+bx)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**10,x)
```

```
[Out] 1/(9*a*(a + b*x)**9) + 1/(8*a**2*(a + b*x)**8) + 1/(7*a**3*(a + b
*x)**7) + 1/(6*a**4*(a + b*x)**6) + 1/(5*a**5*(a + b*x)**5) + 1/(
```

```
4*a**6*(a + b*x)**4) + 1/(3*a**7*(a + b*x)**3) + 1/(2*a**8*(a + b
*x)**2) + 1/(a**9*(a + b*x)) + log(x)/a**10 - log(a + b*x)/a**10
```

Mathematica [A] time = 0.171862, size = 127, normalized size = 0.9

$$-\frac{\log(a+bx)}{a^{10}}+\frac{\log(x)}{a^{10}}+\frac{280a^8+315a^7(a+bx)+360a^6(a+bx)^2+420a^5(a+bx)^3+504a^4(a+bx)^4+630a^3(a+bx)^5+840a^2(a+bx)^6+1260a(a+bx)^7+2520(a+bx)^8}{2520a^9(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^10),x]
```

```
[Out] (280*a^8 + 315*a^7*(a + b*x) + 360*a^6*(a + b*x)^2 + 420*a^5*(a +
 b*x)^3 + 504*a^4*(a + b*x)^4 + 630*a^3*(a + b*x)^5 + 840*a^2*(a
+ b*x)^6 + 1260*a*(a + b*x)^7 + 2520*(a + b*x)^8)/(2520*a^9*(a +
b*x)^9) + Log[x]/a^10 - Log[a + b*x]/a^10
```

Maple [A] time = 0.016, size = 126, normalized size = 0.9

$$\frac{1}{9\,a\,(bx+a)^9}+\frac{1}{8\,a^2\,(bx+a)^8}+\frac{1}{7\,a^3\,(bx+a)^7}+\frac{1}{6\,a^4\,(bx+a)^6}+\frac{1}{5\,a^5\,(bx+a)^5}+\frac{1}{4\,a^6\,(bx+a)^4}+\frac{1}{3\,a^7\,(bx+a)^3}+\frac{1}{2\,a^8\,(bx+a)^2}+\frac{1}{a^9\,(bx+a)}+\frac{\ln(x)}{a^{10}}-\frac{\ln(bx+a)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^10,x)
```

```
[Out] 1/9/a/(b*x+a)^9+1/8/a^2/(b*x+a)^8+1/7/a^3/(b*x+a)^7+1/6/a^4/(b*x+
a)^6+1/5/a^5/(b*x+a)^5+1/4/a^6/(b*x+a)^4+1/3/a^7/(b*x+a)^3+1/2/a^
8/(b*x+a)^2+1/a^9/(b*x+a)+ln(x)/a^10-ln(b*x+a)/a^10
```

Maxima [A] time = 1.36161, size = 277, normalized size = 1.96

$$\frac{2520\,b^8x^8+21420\,ab^7x^7+80220\,a^2b^6x^6+173250\,a^3b^5x^5+236754\,a^4b^4x^4+210756\,a^5b^3x^3+120564\,a^6b^2x^2+41481\,a^7bx+\cdots}{2520\,(a^9b^9x^9+9\,a^{10}b^8x^8+36\,a^{11}b^7x^7+84\,a^{12}b^6x^6+126\,a^{13}b^5x^5+126\,a^{14}b^4x^4+84\,a^{15}b^3x^3+36\,a^{16}b^2x^2+9\,a^{17}bx+\cdots}-\frac{\log(bx+a)}{a^{10}}+\frac{\log(x)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x),x, algorithm="maxima")
```

```
[Out] 1/2520*(2520*b^8*x^8 + 21420*a*b^7*x^7 + 80220*a^2*b^6*x^6 + 1732
50*a^3*b^5*x^5 + 236754*a^4*b^4*x^4 + 210756*a^5*b^3*x^3 + 120564
*a^6*b^2*x^2 + 41481*a^7*b*x + 7129*a^8)/(a^9*b^9*x^9 + 9*a^10*b^
8*x^8 + 36*a^11*b^7*x^7 + 84*a^12*b^6*x^6 + 126*a^13*b^5*x^5 + 12
6*a^14*b^4*x^4 + 84*a^15*b^3*x^3 + 36*a^16*b^2*x^2 + 9*a^17*b*x +
 a^18) - log(b*x + a)/a^10 + log(x)/a^10
```

Fricas [A] time = 0.233266, size = 524, normalized size = 3.72

$$\frac{2520\,ab^{8}x^{8} + 21420\,a^{2}b^{7}x^{7} + 80220\,a^{3}b^{6}x^{6} + 173250\,a^{4}b^{5}x^{5} + 236754\,a^{5}b^{4}x^{4} + 210756\,a^{6}b^{3}x^{3} + 120564\,a^{7}b^{2}x^{2} + 41481\,a^{8}b\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x),x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*a*b^8*x^8 + 21420*a^2*b^7*x^7 + 80220*a^3*b^6*x^6 +
173250*a^4*b^5*x^5 + 236754*a^5*b^4*x^4 + 210756*a^6*b^3*x^3 + 12
0564*a^7*b^2*x^2 + 41481*a^8*b*x + 7129*a^9 - 2520*(b^9*x^9 + 9*a
*b^8*x^8 + 36*a^2*b^7*x^7 + 84*a^3*b^6*x^6 + 126*a^4*b^5*x^5 + 12
6*a^5*b^4*x^4 + 84*a^6*b^3*x^3 + 36*a^7*b^2*x^2 + 9*a^8*b*x + a^9
)*log(b*x + a) + 2520*(b^9*x^9 + 9*a*b^8*x^8 + 36*a^2*b^7*x^7 + 8
4*a^3*b^6*x^6 + 126*a^4*b^5*x^5 + 126*a^5*b^4*x^4 + 84*a^6*b^3*x^
3 + 36*a^7*b^2*x^2 + 9*a^8*b*x + a^9)*log(x))/(a^10*b^9*x^9 + 9*a
^11*b^8*x^8 + 36*a^12*b^7*x^7 + 84*a^13*b^6*x^6 + 126*a^14*b^5*x^
5 + 126*a^15*b^4*x^4 + 84*a^16*b^3*x^3 + 36*a^17*b^2*x^2 + 9*a^18
*b*x + a^19)
```

Sympy [A] time = 6.08617, size = 212, normalized size = 1.5

$$\frac{7129a^{8} + 41481a^{7}bx + 120564a^{6}b^{2}x^{2} + 210756a^{5}b^{3}x^{3} + 236754a^{4}b^{4}x^{4} + 173250a^{3}b^{5}x^{5} + 80220a^{2}b^{6}x^{6} + 21420\cdots}{2520a^{18} + 22680a^{17}bx + 90720a^{16}b^{2}x^{2} + 211680a^{15}b^{3}x^{3} + 317520a^{14}b^{4}x^{4} + 317520a^{13}b^{5}x^{5} + 211680a^{12}b^{6}x^{6} + 90720a^{11}b^{7}x\cdots} + \frac{\log{\left(x \right)} - \log{\left(\frac{a}{b} + x \right)}}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**10,x)
```

```
[Out] (7129*a**8 + 41481*a**7*b*x + 120564*a**6*b**2*x**2 + 210756*a**5
*b**3*x**3 + 236754*a**4*b**4*x**4 + 173250*a**3*b**5*x**5 + 8022
0*a**2*b**6*x**6 + 21420*a*b**7*x**7 + 2520*b**8*x**8)/(2520*a**1
8 + 22680*a**17*b*x + 90720*a**16*b**2*x**2 + 211680*a**15*b**3*x
**3 + 317520*a**14*b**4*x**4 + 317520*a**13*b**5*x**5 + 211680*a*
```

```
*12*b**6*x**6 + 90720*a**11*b**7*x**7 + 22680*a**10*b**8*x**8 + 2
520*a**9*b**9*x**9) + (log(x) - log(a/b + x))/a**10
```

GIAC/XCAS [A] time = 0.207657, size = 162, normalized size = 1.15

$$-\frac{\ln\left(|bx+a|\right)}{a^{10}}+\frac{\ln\left(|x|\right)}{a^{10}}+\frac{2520\,ab^{8}x^{8}+21420\,a^{2}b^{7}x^{7}+80220\,a^{3}b^{6}x^{6}+173250\,a^{4}b^{5}x^{5}+236754\,a^{5}b^{4}x^{4}+210756\,a^{6}b^{3}x^{3}+120564\,a^{7}b^{2}x^{2}+41481\,a^{8}b\cdots}{2520\,(bx+a)^{9}a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x),x, algorithm="giac")
```

```
[Out] -ln(abs(b*x + a))/a^10 + ln(abs(x))/a^10 + 1/2520*(2520*a*b^8*x^8
 + 21420*a^2*b^7*x^7 + 80220*a^3*b^6*x^6 + 173250*a^4*b^5*x^5 + 2
36754*a^5*b^4*x^4 + 210756*a^6*b^3*x^3 + 120564*a^7*b^2*x^2 + 414
81*a^8*b*x + 7129*a^9)/((b*x + a)^9*a^10)
```

3.236 $\int \frac{1}{x^2(a+bx)^{10}}\,dx$

Optimal. Leaf size=158

$$-\frac{10b\log(x)}{a^{11}}+\frac{10b\log(a+bx)}{a^{11}}-\frac{9b}{a^{10}(a+bx)}-\frac{1}{a^{10}x}-\frac{4b}{a^9(a+bx)^2}-\frac{7b}{3a^8(a+bx)^3}-\frac{3b}{2a^7(a+bx)^4}-\frac{b}{a^6(a+bx)^5}-\frac{2b}{3a^5(a+bx)^6}-\frac{3b}{7a^4(a+bx)^7}-\frac{b}{4a^3(a+bx)^8}-\frac{b}{9a^2(a+bx)^9}$$

```
[Out] -(1/(a^10*x)) - b/(9*a^2*(a + b*x)^9) - b/(4*a^3*(a + b*x)^8) - (
3*b)/(7*a^4*(a + b*x)^7) - (2*b)/(3*a^5*(a + b*x)^6) - b/(a^6*(a
+ b*x)^5) - (3*b)/(2*a^7*(a + b*x)^4) - (7*b)/(3*a^8*(a + b*x)^3)
 - (4*b)/(a^9*(a + b*x)^2) - (9*b)/(a^10*(a + b*x)) - (10*b*Log[x
])/a^11 + (10*b*Log[a + b*x])/a^11
```

Rubi [A] time = 0.268919, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{10b\log(x)}{a^{11}}+\frac{10b\log(a+bx)}{a^{11}}-\frac{9b}{a^{10}(a+bx)}-\frac{1}{a^{10}x}-\frac{4b}{a^9(a+bx)^2}-\frac{7b}{3a^8(a+bx)^3}-\frac{3b}{2a^7(a+bx)^4}-\frac{b}{a^6(a+bx)^5}-\frac{2b}{3a^5(a+bx)^6}-\frac{3b}{7a^4(a+bx)^7}-\frac{b}{4a^3(a+bx)^8}-\frac{b}{9a^2(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^10),x]
```

```
[Out] -(1/(a^10*x)) - b/(9*a^2*(a + b*x)^9) - b/(4*a^3*(a + b*x)^8) - (
3*b)/(7*a^4*(a + b*x)^7) - (2*b)/(3*a^5*(a + b*x)^6) - b/(a^6*(a
+ b*x)^5) - (3*b)/(2*a^7*(a + b*x)^4) - (7*b)/(3*a^8*(a + b*x)^3)
 - (4*b)/(a^9*(a + b*x)^2) - (9*b)/(a^10*(a + b*x)) - (10*b*Log[x
])/a^11 + (10*b*Log[a + b*x])/a^11
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**10,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.212826, size = 130, normalized size = 0.82

$$-\frac{\frac{a(252a^9+7129a^8bx+41481a^7b^2x^2+120564a^6b^3x^3+210756a^5b^4x^4+236754a^4b^5x^5+173250a^3b^6x^6+80220a^2b^7x^7+21420ab^8x^8+2520b^9x^9)}{x(a+bx)^9} - 2520b\log(a +}{252a^{11}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^10),x]
```

```
[Out] -((a*(252*a^9 + 7129*a^8*b*x + 41481*a^7*b^2*x^2 + 120564*a^6*b^3
*x^3 + 210756*a^5*b^4*x^4 + 236754*a^4*b^5*x^5 + 173250*a^3*b^6*x
^6 + 80220*a^2*b^7*x^7 + 21420*a*b^8*x^8 + 2520*b^9*x^9))/(x*(a +
 b*x)^9) + 2520*b*Log[x] - 2520*b*Log[a + b*x])/(252*a^11)
```

Maple [A] time = 0.021, size = 147, normalized size = 0.9

$$-\frac{1}{a^{10}x}-\frac{b}{9\,a^2\,(bx+a)^9}-\frac{b}{4\,a^3\,(bx+a)^8}-\frac{3\,b}{7\,a^4\,(bx+a)^7}-\frac{2\,b}{3\,a^5\,(bx+a)^6}-\frac{b}{a^6\,(bx+a)^5}-\frac{3\,b}{2\,a^7\,(bx+a)^4}-\frac{7\,b}{3\,a^8\,(bx+a)^3}-4\,\frac{b}{a^9\,(bx+a)^2}-9\,\frac{b}{a^{10}\,(bx+a)}-10\,\frac{b\ln(x)}{a^{11}}+10\,\frac{b\ln(bx+a)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^10,x)
```

```
[Out] -1/a^10/x-1/9*b/a^2/(b*x+a)^9-1/4*b/a^3/(b*x+a)^8-3/7*b/a^4/(b*x+
a)^7-2/3*b/a^5/(b*x+a)^6-b/a^6/(b*x+a)^5-3/2*b/a^7/(b*x+a)^4-7/3*
b/a^8/(b*x+a)^3-4*b/a^9/(b*x+a)^2-9*b/a^10/(b*x+a)-10*b*ln(x)/a^1
1+10*b*ln(b*x+a)/a^11
```

Maxima [A] time = 1.3939, size = 301, normalized size = 1.91

$$-\frac{2520\,b^9x^9+21420\,ab^8x^8+80220\,a^2b^7x^7+173250\,a^3b^6x^6+236754\,a^4b^5x^5+210756\,a^5b^4x^4+120564\,a^6b^3x^3+41481\,a^7b^2}{252\,(a^{10}b^9x^{10}+9\,a^{11}b^8x^9+36\,a^{12}b^7x^8+84\,a^{13}b^6x^7+126\,a^{14}b^5x^6+126\,a^{15}b^4x^5+84\,a^{16}b^3x^4+36\,a^{17}b^2x^3+9\,a}+\frac{10\,b\log(bx+a)}{a^{11}}-\frac{10\,b\log(x)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^2),x, algorithm="maxima")
```

```
[Out] -1/252*(2520*b^9*x^9 + 21420*a*b^8*x^8 + 80220*a^2*b^7*x^7 + 1732
50*a^3*b^6*x^6 + 236754*a^4*b^5*x^5 + 210756*a^5*b^4*x^4 + 120564
```

```
*a^6*b^3*x^3 + 41481*a^7*b^2*x^2 + 7129*a^8*b*x + 252*a^9)/(a^10*
b^9*x^10 + 9*a^11*b^8*x^9 + 36*a^12*b^7*x^8 + 84*a^13*b^6*x^7 + 1
26*a^14*b^5*x^6 + 126*a^15*b^4*x^5 + 84*a^16*b^3*x^4 + 36*a^17*b^
2*x^3 + 9*a^18*b*x^2 + a^19*x) + 10*b*log(b*x + a)/a^11 - 10*b*lo
g(x)/a^11
```

Fricas [A] time = 0.237482, size = 563, normalized size = 3.56

$$-\frac{2520\,ab^9x^9 + 21420\,a^2b^8x^8 + 80220\,a^3b^7x^7 + 173250\,a^4b^6x^6 + 236754\,a^5b^5x^5 + 210756\,a^6b^4x^4 + 120564\,a^7b^3x^3 + 41481\,a^8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^2),x, algorithm="fricas")
```

```
[Out] -1/252*(2520*a*b^9*x^9 + 21420*a^2*b^8*x^8 + 80220*a^3*b^7*x^7 +
173250*a^4*b^6*x^6 + 236754*a^5*b^5*x^5 + 210756*a^6*b^4*x^4 + 12
0564*a^7*b^3*x^3 + 41481*a^8*b^2*x^2 + 7129*a^9*b*x + 252*a^10 -
2520*(b^10*x^10 + 9*a*b^9*x^9 + 36*a^2*b^8*x^8 + 84*a^3*b^7*x^7 +
 126*a^4*b^6*x^6 + 126*a^5*b^5*x^5 + 84*a^6*b^4*x^4 + 36*a^7*b^3*
x^3 + 9*a^8*b^2*x^2 + a^9*b*x)*log(b*x + a) + 2520*(b^10*x^10 + 9
*a*b^9*x^9 + 36*a^2*b^8*x^8 + 84*a^3*b^7*x^7 + 126*a^4*b^6*x^6 +
126*a^5*b^5*x^5 + 84*a^6*b^4*x^4 + 36*a^7*b^3*x^3 + 9*a^8*b^2*x^2
 + a^9*b*x)*log(x))/(a^11*b^9*x^10 + 9*a^12*b^8*x^9 + 36*a^13*b^7
*x^8 + 84*a^14*b^6*x^7 + 126*a^15*b^5*x^6 + 126*a^16*b^4*x^5 + 84
*a^17*b^3*x^4 + 36*a^18*b^2*x^3 + 9*a^19*b*x^2 + a^20*x)
```

Sympy [A] time = 7.86027, size = 231, normalized size = 1.46

$$-\frac{252a^9 + 7129a^8bx + 41481a^7b^2x^2 + 120564a^6b^3x^3 + 210756a^5b^4x^4 + 236754a^4b^5x^5 + 173250a^3b^6x^6 + 80220a^2b^7x^7 + 2}{252a^{19}x + 2268a^{18}bx^2 + 9072a^{17}b^2x^3 + 21168a^{16}b^3x^4 + 31752a^{15}b^4x^5 + 31752a^{14}b^5x^6 + 21168a^{13}b^6x^7 + 9072a^{12}b^7x^8 + 22} + \frac{10b\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**10,x)
```

```
[Out] -(252*a**9 + 7129*a**8*b*x + 41481*a**7*b**2*x**2 + 120564*a**6*b
**3*x**3 + 210756*a**5*b**4*x**4 + 236754*a**4*b**5*x**5 + 173250
*a**3*b**6*x**6 + 80220*a**2*b**7*x**7 + 21420*a*b**8*x**8 + 2520
*b**9*x**9)/(252*a**19*x + 2268*a**18*b*x**2 + 9072*a**17*b**2*x*
*3 + 21168*a**16*b**3*x**4 + 31752*a**15*b**4*x**5 + 31752*a**14*
b**5*x**6 + 21168*a**13*b**6*x**7 + 9072*a**12*b**7*x**8 + 2268*a
**11*b**8*x**9 + 252*a**10*b**9*x**10) + 10*b*(-log(x) + log(a/b
+ x))/a**11
```

GIAC/XCAS [A] time = 0.213566, size = 185, normalized size = 1.17

$$\frac{10\,b\ln\left(|bx+a|\right)}{a^{11}}-\frac{10\,b\ln\left(|x|\right)}{a^{11}}-\frac{2520\,ab^{9}x^{9}+21420\,a^{2}b^{8}x^{8}+80220\,a^{3}b^{7}x^{7}+173250\,a^{4}b^{6}x^{6}+236754\,a^{5}b^{5}x^{5}+210756\,a^{6}b^{4}x^{4}+120564\,a^{7}b^{3}x^{3}+41481\,a^{8}}{252\,(bx+a)^{9}a^{11}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^2),x, algorithm="giac")
```

```
[Out] 10*b*ln(abs(b*x + a))/a^11 - 10*b*ln(abs(x))/a^11 - 1/252*(2520*a
*b^9*x^9 + 21420*a^2*b^8*x^8 + 80220*a^3*b^7*x^7 + 173250*a^4*b^6
*x^6 + 236754*a^5*b^5*x^5 + 210756*a^6*b^4*x^4 + 120564*a^7*b^3*x
^3 + 41481*a^8*b^2*x^2 + 7129*a^9*b*x + 252*a^10)/((b*x + a)^9*a^
11*x)
```

3.237 $\int \frac{1}{x^3(a+bx)^{10}}\,dx$

Optimal. Leaf size=191

$$\frac{55b^2\log(x)}{a^{12}}-\frac{55b^2\log(a+bx)}{a^{12}}+\frac{45b^2}{a^{11}(a+bx)}+\frac{10b}{a^{11}x}+\frac{18b^2}{a^{10}(a+bx)^2}-\frac{1}{2a^{10}x^2}+\frac{28b^2}{3a^9(a+bx)^3}+\frac{21b^2}{4a^8(a+bx)^4}+\frac{3b^2}{a^7(a+bx)^5}+\frac{5b^2}{3a^6(a+bx)^6}+\frac{6b^2}{7a^5(a+bx)^7}+\frac{3b^2}{8a^4(a+bx)^8}+\frac{b^2}{9a^3(a+bx)^9}$$

```
[Out] -1/(2*a^10*x^2) + (10*b)/(a^11*x) + b^2/(9*a^3*(a + b*x)^9) + (3*
b^2)/(8*a^4*(a + b*x)^8) + (6*b^2)/(7*a^5*(a + b*x)^7) + (5*b^2)/
(3*a^6*(a + b*x)^6) + (3*b^2)/(a^7*(a + b*x)^5) + (21*b^2)/(4*a^8
*(a + b*x)^4) + (28*b^2)/(3*a^9*(a + b*x)^3) + (18*b^2)/(a^10*(a
+ b*x)^2) + (45*b^2)/(a^11*(a + b*x)) + (55*b^2*Log[x])/a^12 - (5
5*b^2*Log[a + b*x])/a^12
```

Rubi [A] time = 0.323249, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{55b^2\log(x)}{a^{12}}-\frac{55b^2\log(a+bx)}{a^{12}}+\frac{45b^2}{a^{11}(a+bx)}+\frac{10b}{a^{11}x}+\frac{18b^2}{a^{10}(a+bx)^2}-\frac{1}{2a^{10}x^2}+\frac{28b^2}{3a^9(a+bx)^3}+\frac{21b^2}{4a^8(a+bx)^4}+\frac{3b^2}{a^7(a+bx)^5}+\frac{5b^2}{3a^6(a+bx)^6}+\frac{6b^2}{7a^5(a+bx)^7}+\frac{3b^2}{8a^4(a+bx)^8}+\frac{b^2}{9a^3(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^10),x]
```

```
[Out] -1/(2*a^10*x^2) + (10*b)/(a^11*x) + b^2/(9*a^3*(a + b*x)^9) + (3*
b^2)/(8*a^4*(a + b*x)^8) + (6*b^2)/(7*a^5*(a + b*x)^7) + (5*b^2)/
(3*a^6*(a + b*x)^6) + (3*b^2)/(a^7*(a + b*x)^5) + (21*b^2)/(4*a^8
*(a + b*x)^4) + (28*b^2)/(3*a^9*(a + b*x)^3) + (18*b^2)/(a^10*(a
+ b*x)^2) + (45*b^2)/(a^11*(a + b*x)) + (55*b^2*Log[x])/a^12 - (5
5*b^2*Log[a + b*x])/a^12
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**10,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.181095, size = 145, normalized size = 0.76

$$\frac{\frac{a\left(-252a^{10}+2772a^9bx+78419a^8b^2x^2+456291a^7b^3x^3+1326204a^6b^4x^4+2318316a^5b^5x^5+2604294a^4b^6x^6+1905750a^3b^7x^7+882420a^2b^8x^8+235620ab^9x^9+27720b^{10}x}{x^2(a+bx)^9}}{504a^{12}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^10),x]
```

```
[Out] ((a*(-252*a^10 + 2772*a^9*b*x + 78419*a^8*b^2*x^2 + 456291*a^7*b^
3*x^3 + 1326204*a^6*b^4*x^4 + 2318316*a^5*b^5*x^5 + 2604294*a^4*b
^6*x^6 + 1905750*a^3*b^7*x^7 + 882420*a^2*b^8*x^8 + 235620*a*b^9*
x^9 + 27720*b^10*x^10))/(x^2*(a + b*x)^9) + 27720*b^2*Log[x] - 27
720*b^2*Log[a + b*x])/(504*a^12)
```

Maple [A] time = 0.022, size = 178, normalized size = 0.9

$$-\frac{1}{2\,a^{10}x^2}+10\,\frac{b}{a^{11}x}+\frac{b^2}{9\,a^3\,(bx+a)^9}+\frac{3\,b^2}{8\,a^4\,(bx+a)^8}+\frac{6\,b^2}{7\,a^5\,(bx+a)^7}+\frac{5\,b^2}{3\,a^6\,(bx+a)^6}+3\,\frac{b^2}{a^7\,(bx+a)^5}+\frac{21\,b^2}{4\,a^8\,(bx+a)^4}+\frac{28\,b^2}{3\,a^9\,(bx+a)^3}+18\,\frac{b^2}{a^{10}\,(bx+a)^2}+45\,\frac{b^2}{a^{11}\,(bx+a)}+55\,\frac{b^2\ln(x)}{a^{12}}-55\,\frac{b^2\ln(bx+a)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^10,x)
```

```
[Out] -1/2/a^10/x^2+10*b/a^11/x+1/9*b^2/a^3/(b*x+a)^9+3/8*b^2/a^4/(b*x+
a)^8+6/7*b^2/a^5/(b*x+a)^7+5/3*b^2/a^6/(b*x+a)^6+3*b^2/a^7/(b*x+a
)^5+21/4*b^2/a^8/(b*x+a)^4+28/3*b^2/a^9/(b*x+a)^3+18*b^2/a^10/(b*
x+a)^2+45*b^2/a^11/(b*x+a)+55*b^2*ln(x)/a^12-55*b^2*ln(b*x+a)/a^1
2
```

Maxima [A] time = 1.37158, size = 324, normalized size = 1.7

$$\frac{27720\,b^{10}x^{10}+235620\,ab^9x^9+882420\,a^2b^8x^8+1905750\,a^3b^7x^7+2604294\,a^4b^6x^6+2318316\,a^5b^5x^5+1326204\,a^6b^4x^4+45}{504\,(a^{11}b^9x^{11}+9\,a^{12}b^8x^{10}+36\,a^{13}b^7x^9+84\,a^{14}b^6x^8+126\,a^{15}b^5x^7+126\,a^{16}b^4x^6+84\,a^{17}b^3x^5+36\,a}$$
$$-\frac{55\,b^2\log(bx+a)}{a^{12}}+\frac{55\,b^2\log(x)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^3),x, algorithm="maxima")
```

```
[Out] 1/504*(27720*b^10*x^10 + 235620*a*b^9*x^9 + 882420*a^2*b^8*x^8 +
1905750*a^3*b^7*x^7 + 2604294*a^4*b^6*x^6 + 2318316*a^5*b^5*x^5 +
 1326204*a^6*b^4*x^4 + 456291*a^7*b^3*x^3 + 78419*a^8*b^2*x^2 + 2
772*a^9*b*x - 252*a^10)/(a^11*b^9*x^11 + 9*a^12*b^8*x^10 + 36*a^1
3*b^7*x^9 + 84*a^14*b^6*x^8 + 126*a^15*b^5*x^7 + 126*a^16*b^4*x^6
 + 84*a^17*b^3*x^5 + 36*a^18*b^2*x^4 + 9*a^19*b*x^3 + a^20*x^2) -
 55*b^2*log(b*x + a)/a^12 + 55*b^2*log(x)/a^12
```

Fricas [A] time = 0.236545, size = 591, normalized size = 3.09

$$\frac{27720\,ab^{10}x^{10} + 235620\,a^2b^9x^9 + 882420\,a^3b^8x^8 + 1905750\,a^4b^7x^7 + 2604294\,a^5b^6x^6 + 2318316\,a^6b^5x^5 + 1326204\,a^7b^4x^4 + \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^3),x, algorithm="fricas")
```

```
[Out] 1/504*(27720*a*b^10*x^10 + 235620*a^2*b^9*x^9 + 882420*a^3*b^8*x^
8 + 1905750*a^4*b^7*x^7 + 2604294*a^5*b^6*x^6 + 2318316*a^6*b^5*x
^5 + 1326204*a^7*b^4*x^4 + 456291*a^8*b^3*x^3 + 78419*a^9*b^2*x^2
 + 2772*a^10*b*x - 252*a^11 - 27720*(b^11*x^11 + 9*a*b^10*x^10 +
36*a^2*b^9*x^9 + 84*a^3*b^8*x^8 + 126*a^4*b^7*x^7 + 126*a^5*b^6*x
^6 + 84*a^6*b^5*x^5 + 36*a^7*b^4*x^4 + 9*a^8*b^3*x^3 + a^9*b^2*x^
2)*log(b*x + a) + 27720*(b^11*x^11 + 9*a*b^10*x^10 + 36*a^2*b^9*x
^9 + 84*a^3*b^8*x^8 + 126*a^4*b^7*x^7 + 126*a^5*b^6*x^6 + 84*a^6*
b^5*x^5 + 36*a^7*b^4*x^4 + 9*a^8*b^3*x^3 + a^9*b^2*x^2)*log(x))/(
a^12*b^9*x^11 + 9*a^13*b^8*x^10 + 36*a^14*b^7*x^9 + 84*a^15*b^6*x
^8 + 126*a^16*b^5*x^7 + 126*a^17*b^4*x^6 + 84*a^18*b^3*x^5 + 36*a
^19*b^2*x^4 + 9*a^20*b*x^3 + a^21*x^2)
```

Sympy [A] time = 10.1191, size = 246, normalized size = 1.29

$$\frac{-252a^{10} + 2772a^9bx + 78419a^8b^2x^2 + 456291a^7b^3x^3 + 1326204a^6b^4x^4 + 2318316a^5b^5x^5 + 2604294a^4b^6x^6 + 1905750a^3b^7x^7 \cdots}{504a^{20}x^2 + 4536a^{19}bx^3 + 18144a^{18}b^2x^4 + 42336a^{17}b^3x^5 + 63504a^{16}b^4x^6 + 63504a^{15}b^5x^7 + 42336a^{14}b^6x^8 + 18144a \cdots} + \frac{55b^2\left(\log\left(x\right) - \log\left(\frac{a}{b} + x\right)\right)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**10,x)
```

```
[Out] (-252*a**10 + 2772*a**9*b*x + 78419*a**8*b**2*x**2 + 456291*a**7*
b**3*x**3 + 1326204*a**6*b**4*x**4 + 2318316*a**5*b**5*x**5 + 260
4294*a**4*b**6*x**6 + 1905750*a**3*b**7*x**7 + 882420*a**2*b**8*x
```

```
**8 + 235620*a*b**9*x**9 + 27720*b**10*x**10)/(504*a**20*x**2 + 4
536*a**19*b*x**3 + 18144*a**18*b**2*x**4 + 42336*a**17*b**3*x**5
+ 63504*a**16*b**4*x**6 + 63504*a**15*b**5*x**7 + 42336*a**14*b**
6*x**8 + 18144*a**13*b**7*x**9 + 4536*a**12*b**8*x**10 + 504*a**1
1*b**9*x**11) + 55*b**2*(log(x) - log(a/b + x))/a**12
```

GIAC/XCAS [A] time = 0.215403, size = 205, normalized size = 1.07

$$-\frac{55\,b^2\ln\left(|bx+a|\right)}{a^{12}}+\frac{55\,b^2\ln\left(|x|\right)}{a^{12}}+\frac{27720\,ab^{10}x^{10}+235620\,a^2b^9x^9+882420\,a^3b^8x^8+1905750\,a^4b^7x^7+2604294\,a^5b^6x^6+2318316\,a^6b^5x^5+1326204\,a^7b^4x^4+}{504\,(bx+a)^9a^{12}x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^3),x, algorithm="giac")
```

```
[Out] -55*b^2*ln(abs(b*x + a))/a^12 + 55*b^2*ln(abs(x))/a^12 + 1/504*(2
7720*a*b^10*x^10 + 235620*a^2*b^9*x^9 + 882420*a^3*b^8*x^8 + 1905
750*a^4*b^7*x^7 + 2604294*a^5*b^6*x^6 + 2318316*a^6*b^5*x^5 + 132
6204*a^7*b^4*x^4 + 456291*a^8*b^3*x^3 + 78419*a^9*b^2*x^2 + 2772*
a^10*b*x - 252*a^11)/((b*x + a)^9*a^12*x^2)
```

3.238 $\int \frac{1}{x^4(a+bx)^{10}} \, dx$

Optimal. Leaf size=198

$$-\frac{220b^3\log(x)}{a^{13}}+\frac{220b^3\log(a+bx)}{a^{13}}-\frac{165b^3}{a^{12}(a+bx)}-\frac{55b^2}{a^{12}x}-\frac{60b^3}{a^{11}(a+bx)^2}+\frac{5b}{a^{11}x^2}-\frac{28b^3}{a^{10}(a+bx)^3}-\frac{1}{3a^{10}x^3}-\frac{14b^3}{a^9(a+bx)^4}-\frac{7b^3}{a^8(a+bx)^5}-\frac{10b^3}{3a^7(a+bx)^6}-\frac{10b^3}{7a^6(a+bx)^7}-\frac{b^3}{2a^5(a+bx)^8}-\frac{b^3}{9a^4(a+bx)^9}$$

```
[Out] -1/(3*a^10*x^3) + (5*b)/(a^11*x^2) - (55*b^2)/(a^12*x) - b^3/(9*a
^4*(a + b*x)^9) - b^3/(2*a^5*(a + b*x)^8) - (10*b^3)/(7*a^6*(a +
b*x)^7) - (10*b^3)/(3*a^7*(a + b*x)^6) - (7*b^3)/(a^8*(a + b*x)^5
) - (14*b^3)/(a^9*(a + b*x)^4) - (28*b^3)/(a^10*(a + b*x)^3) - (6
0*b^3)/(a^11*(a + b*x)^2) - (165*b^3)/(a^12*(a + b*x)) - (220*b^3
*Log[x])/a^13 + (220*b^3*Log[a + b*x])/a^13
```

Rubi [A] time = 0.357127, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{220b^3\log(x)}{a^{13}}+\frac{220b^3\log(a+bx)}{a^{13}}-\frac{165b^3}{a^{12}(a+bx)}-\frac{55b^2}{a^{12}x}-\frac{60b^3}{a^{11}(a+bx)^2}+\frac{5b}{a^{11}x^2}-\frac{28b^3}{a^{10}(a+bx)^3}-\frac{1}{3a^{10}x^3}-\frac{14b^3}{a^9(a+bx)^4}-\frac{7b^3}{a^8(a+bx)^5}-\frac{10b^3}{3a^7(a+bx)^6}-\frac{10b^3}{7a^6(a+bx)^7}-\frac{b^3}{2a^5(a+bx)^8}-\frac{b^3}{9a^4(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(a + b*x)^10),x]
```

```
[Out] -1/(3*a^10*x^3) + (5*b)/(a^11*x^2) - (55*b^2)/(a^12*x) - b^3/(9*a
^4*(a + b*x)^9) - b^3/(2*a^5*(a + b*x)^8) - (10*b^3)/(7*a^6*(a +
b*x)^7) - (10*b^3)/(3*a^7*(a + b*x)^6) - (7*b^3)/(a^8*(a + b*x)^5
) - (14*b^3)/(a^9*(a + b*x)^4) - (28*b^3)/(a^10*(a + b*x)^3) - (6
0*b^3)/(a^11*(a + b*x)^2) - (165*b^3)/(a^12*(a + b*x)) - (220*b^3
*Log[x])/a^13 + (220*b^3*Log[a + b*x])/a^13
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a)**10,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.212453, size = 156, normalized size = 0.79

$$-\frac{-27720b^3\log(a+bx)+\frac{a\left(42a^{11}-252a^{10}bx+2772a^9b^2x^2+78419a^8b^3x^3+456291a^7b^4x^4+1326204a^6b^5x^5+2318316a^5b^6x^6+2604294a^4b^7x^7+1905750a^3b^8\right.}{x^3(a+bx)^9}}{126a^{13}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(a + b*x)^10),x]
```

```
[Out] -((a*(42*a^11 - 252*a^10*b*x + 2772*a^9*b^2*x^2 + 78419*a^8*b^3*x
^3 + 456291*a^7*b^4*x^4 + 1326204*a^6*b^5*x^5 + 2318316*a^5*b^6*x
^6 + 2604294*a^4*b^7*x^7 + 1905750*a^3*b^8*x^8 + 882420*a^2*b^9*x
^9 + 235620*a*b^10*x^10 + 27720*b^11*x^11))/(x^3*(a + b*x)^9) + 2
7720*b^3*Log[x] - 27720*b^3*Log[a + b*x])/(126*a^13)
```

Maple [A] time = 0.023, size = 189, normalized size = 1.

$$-\frac{1}{3\,a^{10}x^3}+5\,\frac{b}{a^{11}x^2}-55\,\frac{b^2}{a^{12}x}-\frac{b^3}{9\,a^4\,(bx+a)^9}-\frac{b^3}{2\,a^5\,(bx+a)^8}-\frac{10\,b^3}{7\,a^6\,(bx+a)^7}-\frac{10\,b^3}{3\,a^7\,(bx+a)^6}-7\,\frac{b^3}{a^8\,(bx+a)^5}-14\,\frac{b^3}{a^9\,(bx+a)^4}-28\,\frac{b^3}{a^{10}\,(bx+a)^3}-60\,\frac{b^3}{a^{11}\,(bx+a)^2}-165\,\frac{b^3}{a^{12}\,(bx+a)}-220\,\frac{b^3\ln(x)}{a^{13}}+220\,\frac{b^3\ln(bx+a)}{a^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a)^10,x)
```

```
[Out] -1/3/a^10/x^3+5*b/a^11/x^2-55*b^2/a^12/x-1/9*b^3/a^4/(b*x+a)^9-1/
2*b^3/a^5/(b*x+a)^8-10/7*b^3/a^6/(b*x+a)^7-10/3*b^3/a^7/(b*x+a)^6
-7*b^3/a^8/(b*x+a)^5-14*b^3/a^9/(b*x+a)^4-28*b^3/a^10/(b*x+a)^3-6
0*b^3/a^11/(b*x+a)^2-165*b^3/a^12/(b*x+a)-220*b^3*ln(x)/a^13+220*
b^3*ln(b*x+a)/a^13
```

Maxima [A] time = 1.38459, size = 339, normalized size = 1.71

$$-\frac{27720\,b^{11}x^{11}+235620\,ab^{10}x^{10}+882420\,a^2b^9x^9+1905750\,a^3b^8x^8+2604294\,a^4b^7x^7+2318316\,a^5b^6x^6+1326204\,a^6b^5x^5+}{126\,(a^{12}b^9x^{12}+9\,a^{13}b^8x^{11}+36\,a^{14}b^7x^{10}+84\,a^{15}b^6x^9+126\,a^{16}b^5x^8+126\,a^{17}b^4x^7+84\,a^{18}b}+\frac{220\,b^3\log(bx+a)}{a^{13}}-\frac{220\,b^3\log(x)}{a^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^4),x, algorithm="maxima")
```

```
[Out] -1/126*(27720*b^11*x^11 + 235620*a*b^10*x^10 + 882420*a^2*b^9*x^9
 + 1905750*a^3*b^8*x^8 + 2604294*a^4*b^7*x^7 + 2318316*a^5*b^6*x^
6 + 1326204*a^6*b^5*x^5 + 456291*a^7*b^4*x^4 + 78419*a^8*b^3*x^3
+ 2772*a^9*b^2*x^2 - 252*a^10*b*x + 42*a^11)/(a^12*b^9*x^12 + 9*a
^13*b^8*x^11 + 36*a^14*b^7*x^10 + 84*a^15*b^6*x^9 + 126*a^16*b^5*
x^8 + 126*a^17*b^4*x^7 + 84*a^18*b^3*x^6 + 36*a^19*b^2*x^5 + 9*a^
20*b*x^4 + a^21*x^3) + 220*b^3*log(b*x + a)/a^13 - 220*b^3*log(x)
/a^13
```

Fricas [A] time = 0.240885, size = 606, normalized size = 3.06

$$-\frac{27720\, ab^{11}x^{11} + 235620\, a^2b^{10}x^{10} + 882420\, a^3b^9x^9 + 1905750\, a^4b^8x^8 + 2604294\, a^5b^7x^7 + 2318316\, a^6b^6x^6 + 1326204\, a^7b^5x^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^4),x, algorithm="fricas")
```

```
[Out] -1/126*(27720*a*b^11*x^11 + 235620*a^2*b^10*x^10 + 882420*a^3*b^9
*x^9 + 1905750*a^4*b^8*x^8 + 2604294*a^5*b^7*x^7 + 2318316*a^6*b^
6*x^6 + 1326204*a^7*b^5*x^5 + 456291*a^8*b^4*x^4 + 78419*a^9*b^3*
x^3 + 2772*a^10*b^2*x^2 - 252*a^11*b*x + 42*a^12 - 27720*(b^12*x^
12 + 9*a*b^11*x^11 + 36*a^2*b^10*x^10 + 84*a^3*b^9*x^9 + 126*a^4*
b^8*x^8 + 126*a^5*b^7*x^7 + 84*a^6*b^6*x^6 + 36*a^7*b^5*x^5 + 9*a
^8*b^4*x^4 + a^9*b^3*x^3)*log(b*x + a) + 27720*(b^12*x^12 + 9*a*b
^11*x^11 + 36*a^2*b^10*x^10 + 84*a^3*b^9*x^9 + 126*a^4*b^8*x^8 +
126*a^5*b^7*x^7 + 84*a^6*b^6*x^6 + 36*a^7*b^5*x^5 + 9*a^8*b^4*x^4
 + a^9*b^3*x^3)*log(x))/(a^13*b^9*x^12 + 9*a^14*b^8*x^11 + 36*a^1
5*b^7*x^10 + 84*a^16*b^6*x^9 + 126*a^17*b^5*x^8 + 126*a^18*b^4*x^
7 + 84*a^19*b^3*x^6 + 36*a^20*b^2*x^5 + 9*a^21*b*x^4 + a^22*x^3)
```

Sympy [A] time = 13.1817, size = 258, normalized size = 1.3

$$-\frac{42a^{11} - 252a^{10}bx + 2772a^9b^2x^2 + 78419a^8b^3x^3 + 456291a^7b^4x^4 + 1326204a^6b^5x^5 + 2318316a^5b^6x^6 + 2604294a^4b^7x^7 + 19}{126a^{21}x^3 + 1134a^{20}bx^4 + 4536a^{19}b^2x^5 + 10584a^{18}b^3x^6 + 15876a^{17}b^4x^7 + 15876a^{16}b^5x^8 + 10584a^{15}b^6x^9 +} + \frac{220b^3\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a)**10,x)
```

```
[Out] -(42*a**11 - 252*a**10*b*x + 2772*a**9*b**2*x**2 + 78419*a**8*b**
3*x**3 + 456291*a**7*b**4*x**4 + 1326204*a**6*b**5*x**5 + 2318316
*a**5*b**6*x**6 + 2604294*a**4*b**7*x**7 + 1905750*a**3*b**8*x**8
 + 882420*a**2*b**9*x**9 + 235620*a*b**10*x**10 + 27720*b**11*x**
11)/(126*a**21*x**3 + 1134*a**20*b*x**4 + 4536*a**19*b**2*x**5 +
10584*a**18*b**3*x**6 + 15876*a**17*b**4*x**7 + 15876*a**16*b**5*
x**8 + 10584*a**15*b**6*x**9 + 4536*a**14*b**7*x**10 + 1134*a**13
*b**8*x**11 + 126*a**12*b**9*x**12) + 220*b**3*(-log(x) + log(a/b
 + x))/a**13
```

GIAC/XCAS [A] time = 0.213352, size = 220, normalized size = 1.11

$$\frac{220\,b^3\ln\left(|bx+a|\right)}{a^{13}} - \frac{220\,b^3\ln\left(|x|\right)}{a^{13}} - \frac{27720\,ab^{11}x^{11} + 235620\,a^2b^{10}x^{10} + 882420\,a^3b^9x^9 + 1905750\,a^4b^8x^8 + 2604294\,a^5b^7x^7 + 2318316\,a^6b^6x^6 + 1326204\,a^7b^5x^5}{126\,(bx+a)^9a^{13}x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^10*x^4),x, algorithm="giac")
```

```
[Out] 220*b^3*ln(abs(b*x + a))/a^13 - 220*b^3*ln(abs(x))/a^13 - 1/126*(
27720*a*b^11*x^11 + 235620*a^2*b^10*x^10 + 882420*a^3*b^9*x^9 + 1
905750*a^4*b^8*x^8 + 2604294*a^5*b^7*x^7 + 2318316*a^6*b^6*x^6 +
1326204*a^7*b^5*x^5 + 456291*a^8*b^4*x^4 + 78419*a^9*b^3*x^3 + 27
72*a^10*b^2*x^2 - 252*a^11*b*x + 42*a^12)/((b*x + a)^9*a^13*x^3)
```

3.239 $\int \frac{(a+bx)^{12}}{x^{10}} dx$

Optimal. Leaf size=141

$$-\frac{a^{12}}{9x^9}-\frac{3a^{11}b}{2x^8}-\frac{66a^{10}b^2}{7x^7}-\frac{110a^9b^3}{3x^6}-\frac{99a^8b^4}{x^5}-\frac{198a^7b^5}{x^4}-\frac{308a^6b^6}{x^3}-\frac{396a^5b^7}{x^2}-\frac{495a^4b^8}{x}+220a^3b^9\log(x)+66a^2b^{10}x+6ab^{11}x^2+\frac{b^{12}x^3}{3}$$

```
[Out] -a^12/(9*x^9) - (3*a^11*b)/(2*x^8) - (66*a^10*b^2)/(7*x^7) - (110
*a^9*b^3)/(3*x^6) - (99*a^8*b^4)/x^5 - (198*a^7*b^5)/x^4 - (308*a
^6*b^6)/x^3 - (396*a^5*b^7)/x^2 - (495*a^4*b^8)/x + 66*a^2*b^10*x
 + 6*a*b^11*x^2 + (b^12*x^3)/3 + 220*a^3*b^9*Log[x]
```

Rubi [A] time = 0.171258, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{12}}{9x^9}-\frac{3a^{11}b}{2x^8}-\frac{66a^{10}b^2}{7x^7}-\frac{110a^9b^3}{3x^6}-\frac{99a^8b^4}{x^5}-\frac{198a^7b^5}{x^4}-\frac{308a^6b^6}{x^3}-\frac{396a^5b^7}{x^2}-\frac{495a^4b^8}{x}+220a^3b^9\log(x)+66a^2b^{10}x+6ab^{11}x^2+\frac{b^{12}x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^12/x^10,x]
```

```
[Out] -a^12/(9*x^9) - (3*a^11*b)/(2*x^8) - (66*a^10*b^2)/(7*x^7) - (110
*a^9*b^3)/(3*x^6) - (99*a^8*b^4)/x^5 - (198*a^7*b^5)/x^4 - (308*a
^6*b^6)/x^3 - (396*a^5*b^7)/x^2 - (495*a^4*b^8)/x + 66*a^2*b^10*x
 + 6*a*b^11*x^2 + (b^12*x^3)/3 + 220*a^3*b^9*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{12}}{9x^9}-\frac{3a^{11}b}{2x^8}-\frac{66a^{10}b^2}{7x^7}-\frac{110a^9b^3}{3x^6}-\frac{99a^8b^4}{x^5}-\frac{198a^7b^5}{x^4}-\frac{308a^6b^6}{x^3}-\frac{396a^5b^7}{x^2}-\frac{495a^4b^8}{x}+220a^3b^9\log(x)+66a^2b^{10}x+12ab^{11}\int x\,dx+\frac{b^{12}x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**12/x**10,x)
```

```
[Out] -a**12/(9*x**9) - 3*a**11*b/(2*x**8) - 66*a**10*b**2/(7*x**7) - 1
10*a**9*b**3/(3*x**6) - 99*a**8*b**4/x**5 - 198*a**7*b**5/x**4 -
```

```
308*a**6*b**6/x**3 - 396*a**5*b**7/x**2 - 495*a**4*b**8/x + 220*a
**3*b**9*log(x) + 66*a**2*b**10*x + 12*a*b**11*Integral(x, x) + b
**12*x**3/3
```

Mathematica [A] time = 0.0160087, size = 141, normalized size = 1.

$$-\frac{a^{12}}{9x^9}-\frac{3a^{11}b}{2x^8}-\frac{66a^{10}b^2}{7x^7}-\frac{110a^9b^3}{3x^6}-\frac{99a^8b^4}{x^5}-\frac{198a^7b^5}{x^4}-\frac{308a^6b^6}{x^3}-\frac{396a^5b^7}{x^2}-\frac{495a^4b^8}{x}+220a^3b^9\log(x)+66a^2b^{10}x+6ab^{11}x^2+\frac{b^{12}x^3}{3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^12/x^10,x]
```

```
[Out] -a^12/(9*x^9) - (3*a^11*b)/(2*x^8) - (66*a^10*b^2)/(7*x^7) - (110
*a^9*b^3)/(3*x^6) - (99*a^8*b^4)/x^5 - (198*a^7*b^5)/x^4 - (308*a
^6*b^6)/x^3 - (396*a^5*b^7)/x^2 - (495*a^4*b^8)/x + 66*a^2*b^10*x
 + 6*a*b^11*x^2 + (b^12*x^3)/3 + 220*a^3*b^9*Log[x]
```

Maple [A] time = 0.016, size = 132, normalized size = 0.9

$$-\frac{a^{12}}{9\,x^9}-\frac{3\,a^{11}b}{2\,x^8}-\frac{66\,a^{10}b^2}{7\,x^7}-\frac{110\,a^9b^3}{3\,x^6}-99\,\frac{a^8b^4}{x^5}-198\,\frac{a^7b^5}{x^4}-308\,\frac{a^6b^6}{x^3}-396\,\frac{a^5b^7}{x^2}-495\,\frac{a^4b^8}{x}+66\,a^2b^{10}x+6\,ab^{11}x^2+\frac{b^{12}x^3}{3}+220\,a^3b^9\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^12/x^10,x)
```

```
[Out] -1/9*a^12/x^9-3/2*a^11*b/x^8-66/7*a^10*b^2/x^7-110/3*a^9*b^3/x^6-
99*a^8*b^4/x^5-198*a^7*b^5/x^4-308*a^6*b^6/x^3-396*a^5*b^7/x^2-49
5*a^4*b^8/x+66*a^2*b^10*x+6*a*b^11*x^2+1/3*b^12*x^3+220*a^3*b^9*l
n(x)
```

Maxima [A] time = 1.33843, size = 178, normalized size = 1.26

$$\frac{1}{3}\,b^{12}x^3+6\,ab^{11}x^2+66\,a^2b^{10}x+220\,a^3b^9\log(x)-\frac{62370\,a^4b^8x^8+49896\,a^5b^7x^7+38808\,a^6b^6x^6+24948\,a^7b^5x^5+12474\,a^8b^4x^4+4620\,a^9b^3x^3+1188\,a^{10}b^2x^2+189\,a^{11}bx+}{126\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^12/x^10,x, algorithm="maxima")
```

```
[Out] 1/3*b^12*x^3 + 6*a*b^11*x^2 + 66*a^2*b^10*x + 220*a^3*b^9*log(x)
- 1/126*(62370*a^4*b^8*x^8 + 49896*a^5*b^7*x^7 + 38808*a^6*b^6*x^
6 + 24948*a^7*b^5*x^5 + 12474*a^8*b^4*x^4 + 4620*a^9*b^3*x^3 + 11
88*a^10*b^2*x^2 + 189*a^11*b*x + 14*a^12)/x^9
```

Fricas [A] time = 0.213878, size = 184, normalized size = 1.3

$$\frac{42\,b^{12}x^{12} + 756\,ab^{11}x^{11} + 8316\,a^{2}b^{10}x^{10} + 27720\,a^{3}b^{9}x^{9}\log\left(x\right) - 62370\,a^{4}b^{8}x^{8} - 49896\,a^{5}b^{7}x^{7} - 38808\,a^{6}b^{6}x^{6} - 24948\,a^{7}b}{126\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^12/x^10,x, algorithm="fricas")
```

```
[Out] 1/126*(42*b^12*x^12 + 756*a*b^11*x^11 + 8316*a^2*b^10*x^10 + 2772
0*a^3*b^9*x^9*log(x) - 62370*a^4*b^8*x^8 - 49896*a^5*b^7*x^7 - 38
808*a^6*b^6*x^6 - 24948*a^7*b^5*x^5 - 12474*a^8*b^4*x^4 - 4620*a^
9*b^3*x^3 - 1188*a^10*b^2*x^2 - 189*a^11*b*x - 14*a^12)/x^9
```

Sympy [A] time = 3.72284, size = 141, normalized size = 1.

$$220a^{3}b^{9}\log\left(x\right) + 66a^{2}b^{10}x + 6ab^{11}x^{2} + \frac{b^{12}x^{3}}{3} - \frac{14a^{12} + 189a^{11}bx + 1188a^{10}b^{2}x^{2} + 4620a^{9}b^{3}x^{3} + 12474a^{8}b^{4}x^{4} + 24948a^{7}b^{5}x^{5} + 38808a^{6}b^{6}x^{6} + 49896a^{5}b^{7}x^{7} + 62370a^{4}b^{8}x}{126x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**12/x**10,x)
```

```
[Out] 220*a**3*b**9*log(x) + 66*a**2*b**10*x + 6*a*b**11*x**2 + b**12*x
**3/3 - (14*a**12 + 189*a**11*b*x + 1188*a**10*b**2*x**2 + 4620*a
**9*b**3*x**3 + 12474*a**8*b**4*x**4 + 24948*a**7*b**5*x**5 + 388
08*a**6*b**6*x**6 + 49896*a**5*b**7*x**7 + 62370*a**4*b**8*x**8)/
(126*x**9)
```

GIAC/XCAS [A] time = 0.206189, size = 180, normalized size = 1.28

$$\frac{1}{3}\,b^{12}x^{3} + 6\,ab^{11}x^{2} + 66\,a^{2}b^{10}x + 220\,a^{3}b^{9}\ln\left(|x|\right) - \frac{62370\,a^{4}b^{8}x^{8} + 49896\,a^{5}b^{7}x^{7} + 38808\,a^{6}b^{6}x^{6} + 24948\,a^{7}b^{5}x^{5} + 12474\,a^{8}b^{4}x^{4} + 4620\,a^{9}b^{3}x^{3} + 1188\,a^{10}b^{2}x^{2} + 189\,a^{11}bx +}{126\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^12/x^10,x, algorithm="giac")
```

```
[Out] 1/3*b^12*x^3 + 6*a*b^11*x^2 + 66*a^2*b^10*x + 220*a^3*b^9*ln(abs(
x)) - 1/126*(62370*a^4*b^8*x^8 + 49896*a^5*b^7*x^7 + 38808*a^6*b^
6*x^6 + 24948*a^7*b^5*x^5 + 12474*a^8*b^4*x^4 + 4620*a^9*b^3*x^3
+ 1188*a^10*b^2*x^2 + 189*a^11*b*x + 14*a^12)/x^9
```

3.240 $\int \frac{(a+bx)^{11}}{x^{10}}\,dx$

Optimal. Leaf size=132

$$-\frac{a^{11}}{9x^9}-\frac{11a^{10}b}{8x^8}-\frac{55a^9b^2}{7x^7}-\frac{55a^8b^3}{2x^6}-\frac{66a^7b^4}{x^5}-\frac{231a^6b^5}{2x^4}-\frac{154a^5b^6}{x^3}-\frac{165a^4b^7}{x^2}-\frac{165a^3b^8}{x}+55a^2b^9\log(x)+11ab^{10}x+\frac{b^{11}x^2}{2}$$

```
[Out] -a^11/(9*x^9) - (11*a^10*b)/(8*x^8) - (55*a^9*b^2)/(7*x^7) - (55*
a^8*b^3)/(2*x^6) - (66*a^7*b^4)/x^5 - (231*a^6*b^5)/(2*x^4) - (15
4*a^5*b^6)/x^3 - (165*a^4*b^7)/x^2 - (165*a^3*b^8)/x + 11*a*b^10*
x + (b^11*x^2)/2 + 55*a^2*b^9*Log[x]
```

Rubi [A] time = 0.146417, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{11}}{9x^9}-\frac{11a^{10}b}{8x^8}-\frac{55a^9b^2}{7x^7}-\frac{55a^8b^3}{2x^6}-\frac{66a^7b^4}{x^5}-\frac{231a^6b^5}{2x^4}-\frac{154a^5b^6}{x^3}-\frac{165a^4b^7}{x^2}-\frac{165a^3b^8}{x}+55a^2b^9\log(x)+11ab^{10}x+\frac{b^{11}x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^11/x^10,x]
```

```
[Out] -a^11/(9*x^9) - (11*a^10*b)/(8*x^8) - (55*a^9*b^2)/(7*x^7) - (55*
a^8*b^3)/(2*x^6) - (66*a^7*b^4)/x^5 - (231*a^6*b^5)/(2*x^4) - (15
4*a^5*b^6)/x^3 - (165*a^4*b^7)/x^2 - (165*a^3*b^8)/x + 11*a*b^10*
x + (b^11*x^2)/2 + 55*a^2*b^9*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{11}}{9x^9}-\frac{11a^{10}b}{8x^8}-\frac{55a^9b^2}{7x^7}-\frac{55a^8b^3}{2x^6}-\frac{66a^7b^4}{x^5}-\frac{231a^6b^5}{2x^4}-\frac{154a^5b^6}{x^3}-\frac{165a^4b^7}{x^2}-\frac{165a^3b^8}{x}+55a^2b^9\log(x)+11ab^{10}x+b^{11}\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**11/x**10,x)
```

```
[Out] -a**11/(9*x**9) - 11*a**10*b/(8*x**8) - 55*a**9*b**2/(7*x**7) - 5
5*a**8*b**3/(2*x**6) - 66*a**7*b**4/x**5 - 231*a**6*b**5/(2*x**4)
```

```
 - 154*a**5*b**6/x**3 - 165*a**4*b**7/x**2 - 165*a**3*b**8/x + 55
*a**2*b**9*log(x) + 11*a*b**10*x + b**11*Integral(x, x)
```

Mathematica [A] time = 0.00778839, size = 132, normalized size = 1.

$$-\frac{a^{11}}{9x^9}-\frac{11a^{10}b}{8x^8}-\frac{55a^9b^2}{7x^7}-\frac{55a^8b^3}{2x^6}-\frac{66a^7b^4}{x^5}-\frac{231a^6b^5}{2x^4}-\frac{154a^5b^6}{x^3}-\frac{165a^4b^7}{x^2}-\frac{165a^3b^8}{x}+55a^2b^9\log(x)+11ab^{10}x+\frac{b^{11}x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^11/x^10,x]
```

```
[Out] -a^11/(9*x^9) - (11*a^10*b)/(8*x^8) - (55*a^9*b^2)/(7*x^7) - (55*
a^8*b^3)/(2*x^6) - (66*a^7*b^4)/x^5 - (231*a^6*b^5)/(2*x^4) - (15
4*a^5*b^6)/x^3 - (165*a^4*b^7)/x^2 - (165*a^3*b^8)/x + 11*a*b^10*
x + (b^11*x^2)/2 + 55*a^2*b^9*Log[x]
```

Maple [A] time = 0.016, size = 121, normalized size = 0.9

$$-\frac{a^{11}}{9\,x^9}-\frac{11\,a^{10}b}{8\,x^8}-\frac{55\,a^9b^2}{7\,x^7}-\frac{55\,a^8b^3}{2\,x^6}-66\,\frac{a^7b^4}{x^5}-\frac{231\,a^6b^5}{2\,x^4}-154\,\frac{a^5b^6}{x^3}-165\,\frac{a^4b^7}{x^2}-165\,\frac{a^3b^8}{x}+11\,ab^{10}x+\frac{b^{11}x^2}{2}+55\,a^2b^9\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^11/x^10,x)
```

```
[Out] -1/9*a^11/x^9-11/8*a^10*b/x^8-55/7*a^9*b^2/x^7-55/2*a^8*b^3/x^6-6
6*a^7*b^4/x^5-231/2*a^6*b^5/x^4-154*a^5*b^6/x^3-165*a^4*b^7/x^2-1
65*a^3*b^8/x+11*a*b^10*x+1/2*b^11*x^2+55*a^2*b^9*ln(x)
```

Maxima [A] time = 1.34993, size = 163, normalized size = 1.23

$$\frac{1}{2}\,b^{11}x^2+11\,ab^{10}x+55\,a^2b^9\log(x)-\frac{83160\,a^3b^8x^8+83160\,a^4b^7x^7+77616\,a^5b^6x^6+58212\,a^6b^5x^5+33264\,a^7b^4x^4+13860\,a^8b^3x^3+3960\,a^9b^2x^2+693\,a^{10}bx+}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^11/x^10,x, algorithm="maxima")
```

```
[Out] 1/2*b^11*x^2 + 11*a*b^10*x + 55*a^2*b^9*log(x) - 1/504*(83160*a^3
*b^8*x^8 + 83160*a^4*b^7*x^7 + 77616*a^5*b^6*x^6 + 58212*a^6*b^5*
x^5 + 33264*a^7*b^4*x^4 + 13860*a^8*b^3*x^3 + 3960*a^9*b^2*x^2 +
693*a^10*b*x + 56*a^11)/x^9
```

Fricas [A] time = 0.211931, size = 169, normalized size = 1.28

$$\frac{252\,b^{11}x^{11} + 5544\,ab^{10}x^{10} + 27720\,a^{2}b^{9}x^{9}\log\left(x\right) - 83160\,a^{3}b^{8}x^{8} - 83160\,a^{4}b^{7}x^{7} - 77616\,a^{5}b^{6}x^{6} - 58212\,a^{6}b^{5}x^{5} - 33264\,a^{7}}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^11/x^10,x, algorithm="fricas")
```

```
[Out] 1/504*(252*b^11*x^11 + 5544*a*b^10*x^10 + 27720*a^2*b^9*x^9*log(x
) - 83160*a^3*b^8*x^8 - 83160*a^4*b^7*x^7 - 77616*a^5*b^6*x^6 - 5
8212*a^6*b^5*x^5 - 33264*a^7*b^4*x^4 - 13860*a^8*b^3*x^3 - 3960*a
^9*b^2*x^2 - 693*a^10*b*x - 56*a^11)/x^9
```

Sympy [A] time = 3.41833, size = 129, normalized size = 0.98

$$55a^{2}b^{9}\log\left(x\right) + 11ab^{10}x + \frac{b^{11}x^{2}}{2} - \frac{56a^{11} + 693a^{10}bx + 3960a^{9}b^{2}x^{2} + 13860a^{8}b^{3}x^{3} + 33264a^{7}b^{4}x^{4} + 58212a^{6}b^{5}x^{5} + 77616a^{5}b^{6}x^{6} + 83160a^{4}b^{7}x^{7} + 83160a^{3}b^{8}}{504x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**11/x**10,x)
```

```
[Out] 55*a**2*b**9*log(x) + 11*a*b**10*x + b**11*x**2/2 - (56*a**11 + 6
93*a**10*b*x + 3960*a**9*b**2*x**2 + 13860*a**8*b**3*x**3 + 33264
*a**7*b**4*x**4 + 58212*a**6*b**5*x**5 + 77616*a**5*b**6*x**6 + 8
3160*a**4*b**7*x**7 + 83160*a**3*b**8*x**8)/(504*x**9)
```

GIAC/XCAS [A] time = 0.204582, size = 165, normalized size = 1.25

$$\frac{1}{2}\,b^{11}x^{2} + 11\,ab^{10}x + 55\,a^{2}b^{9}\ln\left(|x|\right) - \frac{83160\,a^{3}b^{8}x^{8} + 83160\,a^{4}b^{7}x^{7} + 77616\,a^{5}b^{6}x^{6} + 58212\,a^{6}b^{5}x^{5} + 33264\,a^{7}b^{4}x^{4} + 13860\,a^{8}b^{3}x^{3} + 3960\,a^{9}b^{2}x^{2} + 693\,a^{10}bx +}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^11/x^10,x, algorithm="giac")
```

```
[Out] 1/2*b^11*x^2 + 11*a*b^10*x + 55*a^2*b^9*ln(abs(x)) - 1/504*(83160
*a^3*b^8*x^8 + 83160*a^4*b^7*x^7 + 77616*a^5*b^6*x^6 + 58212*a^6*
b^5*x^5 + 33264*a^7*b^4*x^4 + 13860*a^8*b^3*x^3 + 3960*a^9*b^2*x^
2 + 693*a^10*b*x + 56*a^11)/x^9
```

3.241 $\int \frac{(a+bx)^{10}}{x^{10}}\,dx$

Optimal. Leaf size=114

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+b^{10}x$$

```
[Out] -a^10/(9*x^9) - (5*a^9*b)/(4*x^8) - (45*a^8*b^2)/(7*x^7) - (20*a^
7*b^3)/x^6 - (42*a^6*b^4)/x^5 - (63*a^5*b^5)/x^4 - (70*a^4*b^6)/x
^3 - (60*a^3*b^7)/x^2 - (45*a^2*b^8)/x + b^10*x + 10*a*b^9*Log[x]
```

Rubi [A] time = 0.128302, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+b^{10}x$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10/x^10,x]
```

```
[Out] -a^10/(9*x^9) - (5*a^9*b)/(4*x^8) - (45*a^8*b^2)/(7*x^7) - (20*a^
7*b^3)/x^6 - (42*a^6*b^4)/x^5 - (63*a^5*b^5)/x^4 - (70*a^4*b^6)/x
^3 - (60*a^3*b^7)/x^2 - (45*a^2*b^8)/x + b^10*x + 10*a*b^9*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+\int b^{10}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10/x**10,x)
```

```
[Out] -a**10/(9*x**9) - 5*a**9*b/(4*x**8) - 45*a**8*b**2/(7*x**7) - 20*
a**7*b**3/x**6 - 42*a**6*b**4/x**5 - 63*a**5*b**5/x**4 - 70*a**4*
b**6/x**3 - 60*a**3*b**7/x**2 - 45*a**2*b**8/x + 10*a*b**9*log(x)
 + Integral(b**10, x)
```

Mathematica [A] time = 0.00893361, size = 114, normalized size = 1.

$$-\frac{a^{10}}{9x^9}-\frac{5a^9b}{4x^8}-\frac{45a^8b^2}{7x^7}-\frac{20a^7b^3}{x^6}-\frac{42a^6b^4}{x^5}-\frac{63a^5b^5}{x^4}-\frac{70a^4b^6}{x^3}-\frac{60a^3b^7}{x^2}-\frac{45a^2b^8}{x}+10ab^9\log(x)+b^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10/x^10,x]
```

```
[Out] -a^10/(9*x^9) - (5*a^9*b)/(4*x^8) - (45*a^8*b^2)/(7*x^7) - (20*a^
7*b^3)/x^6 - (42*a^6*b^4)/x^5 - (63*a^5*b^5)/x^4 - (70*a^4*b^6)/x
^3 - (60*a^3*b^7)/x^2 - (45*a^2*b^8)/x + b^10*x + 10*a*b^9*Log[x]
```

Maple [A] time = 0., size = 109, normalized size = 1.

$$-\frac{a^{10}}{9\,x^9}-\frac{5\,a^9b}{4\,x^8}-\frac{45\,a^8b^2}{7\,x^7}-20\,\frac{a^7b^3}{x^6}-42\,\frac{a^6b^4}{x^5}-63\,\frac{a^5b^5}{x^4}-70\,\frac{a^4b^6}{x^3}-60\,\frac{a^3b^7}{x^2}-45\,\frac{a^2b^8}{x}+b^{10}x+10\,ab^9\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10/x^10,x)
```

```
[Out] -1/9*a^10/x^9-5/4*a^9*b/x^8-45/7*a^8*b^2/x^7-20*a^7*b^3/x^6-42*a^
6*b^4/x^5-63*a^5*b^5/x^4-70*a^4*b^6/x^3-60*a^3*b^7/x^2-45*a^2*b^8
/x+b^10*x+10*a*b^9*ln(x)
```

Maxima [A] time = 1.34391, size = 147, normalized size = 1.29

$$b^{10}x+10\,ab^9\log(x)-\frac{11340\,a^2b^8x^8+15120\,a^3b^7x^7+17640\,a^4b^6x^6+15876\,a^5b^5x^5+10584\,a^6b^4x^4+5040\,a^7b^3x^3+1620\,a^8b^2x^2+315\,a^9bx+28}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^10,x, algorithm="maxima")
```

```
[Out] b^10*x + 10*a*b^9*log(x) - 1/252*(11340*a^2*b^8*x^8 + 15120*a^3*b
^7*x^7 + 17640*a^4*b^6*x^6 + 15876*a^5*b^5*x^5 + 10584*a^6*b^4*x^
4 + 5040*a^7*b^3*x^3 + 1620*a^8*b^2*x^2 + 315*a^9*b*x + 28*a^10)/
x^9
```

Fricas [A] time = 0.211575, size = 154, normalized size = 1.35

$$\frac{252\,b^{10}x^{10}+2520\,ab^9x^9\log(x)-11340\,a^2b^8x^8-15120\,a^3b^7x^7-17640\,a^4b^6x^6-15876\,a^5b^5x^5-10584\,a^6b^4x^4-5040\,a^7b^3}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^10,x, algorithm="fricas")
```

```
[Out] 1/252*(252*b^10*x^10 + 2520*a*b^9*x^9*log(x) - 11340*a^2*b^8*x^8
- 15120*a^3*b^7*x^7 - 17640*a^4*b^6*x^6 - 15876*a^5*b^5*x^5 - 105
84*a^6*b^4*x^4 - 5040*a^7*b^3*x^3 - 1620*a^8*b^2*x^2 - 315*a^9*b*
x - 28*a^10)/x^9
```

Sympy [A] time = 3.40822, size = 116, normalized size = 1.02

$$10ab^9\log(x) + b^{10}x - \frac{28a^{10} + 315a^9bx + 1620a^8b^2x^2 + 5040a^7b^3x^3 + 10584a^6b^4x^4 + 15876a^5b^5x^5 + 17640a^4b^6x^6 + 15120a^3b^7x^7 + 11340a^2b^8x^8}{252x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10/x**10,x)
```

```
[Out] 10*a*b**9*log(x) + b**10*x - (28*a**10 + 315*a**9*b*x + 1620*a**8
*b**2*x**2 + 5040*a**7*b**3*x**3 + 10584*a**6*b**4*x**4 + 15876*a
**5*b**5*x**5 + 17640*a**4*b**6*x**6 + 15120*a**3*b**7*x**7 + 113
40*a**2*b**8*x**8)/(252*x**9)
```

GIAC/XCAS [A] time = 0.207122, size = 149, normalized size = 1.31

$$b^{10}x + 10\,ab^9\ln(|x|) - \frac{11340\,a^2b^8x^8 + 15120\,a^3b^7x^7 + 17640\,a^4b^6x^6 + 15876\,a^5b^5x^5 + 10584\,a^6b^4x^4 + 5040\,a^7b^3x^3 + 1620\,a^8b^2x^2 + 315\,a^9bx + 28}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10/x^10,x, algorithm="giac")
```

```
[Out] b^10*x + 10*a*b^9*ln(abs(x)) - 1/252*(11340*a^2*b^8*x^8 + 15120*a
^3*b^7*x^7 + 17640*a^4*b^6*x^6 + 15876*a^5*b^5*x^5 + 10584*a^6*b^
4*x^4 + 5040*a^7*b^3*x^3 + 1620*a^8*b^2*x^2 + 315*a^9*b*x + 28*a^
10)/x^9
```

3.242 $\int \frac{(a+bx)^9}{x^{10}}\,dx$

Optimal. Leaf size=109

$$-\frac{a^9}{9x^9}-\frac{9a^8b}{8x^8}-\frac{36a^7b^2}{7x^7}-\frac{14a^6b^3}{x^6}-\frac{126a^5b^4}{5x^5}-\frac{63a^4b^5}{2x^4}-\frac{28a^3b^6}{x^3}-\frac{18a^2b^7}{x^2}-\frac{9ab^8}{x}+b^9\log(x)$$

```
[Out] -a^9/(9*x^9) - (9*a^8*b)/(8*x^8) - (36*a^7*b^2)/(7*x^7) - (14*a^6
*b^3)/x^6 - (126*a^5*b^4)/(5*x^5) - (63*a^4*b^5)/(2*x^4) - (28*a^
3*b^6)/x^3 - (18*a^2*b^7)/x^2 - (9*a*b^8)/x + b^9*Log[x]
```

Rubi [A] time = 0.111354, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^9}{9x^9}-\frac{9a^8b}{8x^8}-\frac{36a^7b^2}{7x^7}-\frac{14a^6b^3}{x^6}-\frac{126a^5b^4}{5x^5}-\frac{63a^4b^5}{2x^4}-\frac{28a^3b^6}{x^3}-\frac{18a^2b^7}{x^2}-\frac{9ab^8}{x}+b^9\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^9/x^10,x]
```

```
[Out] -a^9/(9*x^9) - (9*a^8*b)/(8*x^8) - (36*a^7*b^2)/(7*x^7) - (14*a^6
*b^3)/x^6 - (126*a^5*b^4)/(5*x^5) - (63*a^4*b^5)/(2*x^4) - (28*a^
3*b^6)/x^3 - (18*a^2*b^7)/x^2 - (9*a*b^8)/x + b^9*Log[x]
```

Rubi in Sympy [A] time = 20.3246, size = 110, normalized size = 1.01

$$-\frac{a^9}{9x^9}-\frac{9a^8b}{8x^8}-\frac{36a^7b^2}{7x^7}-\frac{14a^6b^3}{x^6}-\frac{126a^5b^4}{5x^5}-\frac{63a^4b^5}{2x^4}-\frac{28a^3b^6}{x^3}-\frac{18a^2b^7}{x^2}-\frac{9ab^8}{x}+b^9\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**9/x**10,x)
```

```
[Out] -a**9/(9*x**9) - 9*a**8*b/(8*x**8) - 36*a**7*b**2/(7*x**7) - 14*a
**6*b**3/x**6 - 126*a**5*b**4/(5*x**5) - 63*a**4*b**5/(2*x**4) -
28*a**3*b**6/x**3 - 18*a**2*b**7/x**2 - 9*a*b**8/x + b**9*log(x)
```

Mathematica [A] time = 0.00698235, size = 109, normalized size = 1.

$$-\frac{a^9}{9x^9}-\frac{9a^8b}{8x^8}-\frac{36a^7b^2}{7x^7}-\frac{14a^6b^3}{x^6}-\frac{126a^5b^4}{5x^5}-\frac{63a^4b^5}{2x^4}-\frac{28a^3b^6}{x^3}-\frac{18a^2b^7}{x^2}-\frac{9ab^8}{x}+b^9\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^9/x^10,x]
```

```
[Out] -a^9/(9*x^9) - (9*a^8*b)/(8*x^8) - (36*a^7*b^2)/(7*x^7) - (14*a^6
*b^3)/x^6 - (126*a^5*b^4)/(5*x^5) - (63*a^4*b^5)/(2*x^4) - (28*a^
3*b^6)/x^3 - (18*a^2*b^7)/x^2 - (9*a*b^8)/x + b^9*Log[x]
```

Maple [A] time = 0.012, size = 100, normalized size = 0.9

$$-\frac{a^{9}}{9\,x^{9}}-\frac{9\,a^{8}b}{8\,x^{8}}-\frac{36\,a^{7}b^{2}}{7\,x^{7}}-14\,\frac{a^{6}b^{3}}{x^{6}}-\frac{126\,a^{5}b^{4}}{5\,x^{5}}-\frac{63\,a^{4}b^{5}}{2\,x^{4}}-28\,\frac{a^{3}b^{6}}{x^{3}}-18\,\frac{a^{2}b^{7}}{x^{2}}-9\,\frac{ab^{8}}{x}+b^{9}\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^9/x^10,x)
```

```
[Out] -1/9*a^9/x^9-9/8*a^8*b/x^8-36/7*a^7*b^2/x^7-14*a^6*b^3/x^6-126/5*
a^5*b^4/x^5-63/2*a^4*b^5/x^4-28*a^3*b^6/x^3-18*a^2*b^7/x^2-9*a*b^
8/x+b^9*ln(x)
```

Maxima [A] time = 1.34518, size = 135, normalized size = 1.24

$$b^{9}\log\left(x\right)-\frac{22680\,ab^{8}x^{8}+45360\,a^{2}b^{7}x^{7}+70560\,a^{3}b^{6}x^{6}+79380\,a^{4}b^{5}x^{5}+63504\,a^{5}b^{4}x^{4}+35280\,a^{6}b^{3}x^{3}+12960\,a^{7}b^{2}x^{2}+2835\,a^{8}bx+}{2520\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9/x^10,x, algorithm="maxima")
```

```
[Out] b^9*log(x) - 1/2520*(22680*a*b^8*x^8 + 45360*a^2*b^7*x^7 + 70560*
a^3*b^6*x^6 + 79380*a^4*b^5*x^5 + 63504*a^5*b^4*x^4 + 35280*a^6*b
^3*x^3 + 12960*a^7*b^2*x^2 + 2835*a^8*b*x + 280*a^9)/x^9
```

Fricas [A] time = 0.210099, size = 139, normalized size = 1.28

$$\frac{2520\,b^{9}x^{9}\log\left(x\right)-22680\,ab^{8}x^{8}-45360\,a^{2}b^{7}x^{7}-70560\,a^{3}b^{6}x^{6}-79380\,a^{4}b^{5}x^{5}-63504\,a^{5}b^{4}x^{4}-35280\,a^{6}b^{3}x^{3}-12960\,a^{7}}{2520\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9/x^10,x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*b^9*x^9*log(x) - 22680*a*b^8*x^8 - 45360*a^2*b^7*x^7
 - 70560*a^3*b^6*x^6 - 79380*a^4*b^5*x^5 - 63504*a^5*b^4*x^4 - 35
280*a^6*b^3*x^3 - 12960*a^7*b^2*x^2 - 2835*a^8*b*x - 280*a^9)/x^9
```

Sympy [A] time = 3.16019, size = 105, normalized size = 0.96

$$b^9 \log(x) - \frac{280a^9 + 2835a^8bx + 12960a^7b^2x^2 + 35280a^6b^3x^3 + 63504a^5b^4x^4 + 79380a^4b^5x^5 + 70560a^3b^6x^6 + 45360a^2b^7x^7 + 22680ab^8x^8}{2520x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**9/x**10,x)
```

```
[Out] b**9*log(x) - (280*a**9 + 2835*a**8*b*x + 12960*a**7*b**2*x**2 +
35280*a**6*b**3*x**3 + 63504*a**5*b**4*x**4 + 79380*a**4*b**5*x**
5 + 70560*a**3*b**6*x**6 + 45360*a**2*b**7*x**7 + 22680*a*b**8*x*
*8)/(2520*x**9)
```

GIAC/XCAS [A] time = 0.204813, size = 136, normalized size = 1.25

$$b^9\ln(|x|) - \frac{22680\,ab^8x^8 + 45360\,a^2b^7x^7 + 70560\,a^3b^6x^6 + 79380\,a^4b^5x^5 + 63504\,a^5b^4x^4 + 35280\,a^6b^3x^3 + 12960\,a^7b^2x^2 + 2835\,a^8bx + 280\,a^9}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9/x^10,x, algorithm="giac")
```

```
[Out] b^9*ln(abs(x)) - 1/2520*(22680*a*b^8*x^8 + 45360*a^2*b^7*x^7 + 70
560*a^3*b^6*x^6 + 79380*a^4*b^5*x^5 + 63504*a^5*b^4*x^4 + 35280*a
^6*b^3*x^3 + 12960*a^7*b^2*x^2 + 2835*a^8*b*x + 280*a^9)/x^9
```

3.243 $\int \frac{(a+bx)^8}{x^{10}}\,dx$

Optimal. Leaf size=17

$$-\frac{(a+bx)^9}{9ax^9}$$

```
[Out] -(a + b*x)^9/(9*a*x^9)
```

Rubi [A] time = 0.0123817, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{(a+bx)^9}{9ax^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^8/x^10,x]

[Out] -(a + b*x)^9/(9*a*x^9)
```

Rubi in Sympy [A] time = 2.29027, size = 14, normalized size = 0.82

$$-\frac{(a+bx)^9}{9ax^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**8/x**10,x)

[Out] -(a + b*x)**9/(9*a*x**9)
```

Mathematica [B] time = 0.0135586, size = 96, normalized size = 5.65

$$-\frac{a^8}{9x^9}-\frac{a^7b}{x^8}-\frac{4a^6b^2}{x^7}-\frac{28a^5b^3}{3x^6}-\frac{14a^4b^4}{x^5}-\frac{14a^3b^5}{x^4}-\frac{28a^2b^6}{3x^3}-\frac{4ab^7}{x^2}-\frac{b^8}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^8/x^10,x]
```

```
[Out] -a^8/(9*x^9) - (a^7*b)/x^8 - (4*a^6*b^2)/x^7 - (28*a^5*b^3)/(3*x^
6) - (14*a^4*b^4)/x^5 - (14*a^3*b^5)/x^4 - (28*a^2*b^6)/(3*x^3) -
 (4*a*b^7)/x^2 - b^8/x
```

Maple [B] time = 0.01, size = 91, normalized size = 5.4

$$-\frac{a^7b}{x^8}-4\frac{a^6b^2}{x^7}-\frac{a^8}{9\,x^9}-4\frac{ab^7}{x^2}-14\frac{a^4b^4}{x^5}-\frac{b^8}{x}-\frac{28\,a^2b^6}{3\,x^3}-14\frac{a^3b^5}{x^4}-\frac{28\,a^5b^3}{3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^8/x^10,x)
```

```
[Out] -a^7*b/x^8-4*a^6*b^2/x^7-1/9*a^8/x^9-4*a*b^7/x^2-14*a^4*b^4/x^5-b
^8/x-28/3*a^2*b^6/x^3-14*a^3*b^5/x^4-28/3*a^5*b^3/x^6
```

Maxima [A] time = 1.34252, size = 119, normalized size = 7.

$$-\frac{9\,b^8x^8+36\,ab^7x^7+84\,a^2b^6x^6+126\,a^3b^5x^5+126\,a^4b^4x^4+84\,a^5b^3x^3+36\,a^6b^2x^2+9\,a^7bx+a^8}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8/x^10,x, algorithm="maxima")
```

```
[Out] -1/9*(9*b^8*x^8 + 36*a*b^7*x^7 + 84*a^2*b^6*x^6 + 126*a^3*b^5*x^5
 + 126*a^4*b^4*x^4 + 84*a^5*b^3*x^3 + 36*a^6*b^2*x^2 + 9*a^7*b*x
+ a^8)/x^9
```

Fricas [A] time = 0.206655, size = 119, normalized size = 7.

$$-\frac{9\,b^8x^8+36\,ab^7x^7+84\,a^2b^6x^6+126\,a^3b^5x^5+126\,a^4b^4x^4+84\,a^5b^3x^3+36\,a^6b^2x^2+9\,a^7bx+a^8}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8/x^10,x, algorithm="fricas")
```

```
[Out] -1/9*(9*b^8*x^8 + 36*a*b^7*x^7 + 84*a^2*b^6*x^6 + 126*a^3*b^5*x^5
 + 126*a^4*b^4*x^4 + 84*a^5*b^3*x^3 + 36*a^6*b^2*x^2 + 9*a^7*b*x
+ a^8)/x^9
```

Sympy [A] time = 2.86613, size = 95, normalized size = 5.59

$$-\frac{a^8 + 9a^7bx + 36a^6b^2x^2 + 84a^5b^3x^3 + 126a^4b^4x^4 + 126a^3b^5x^5 + 84a^2b^6x^6 + 36ab^7x^7 + 9b^8x^8}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**8/x**10,x)
```

```
[Out] -(a**8 + 9*a**7*b*x + 36*a**6*b**2*x**2 + 84*a**5*b**3*x**3 + 126
*a**4*b**4*x**4 + 126*a**3*b**5*x**5 + 84*a**2*b**6*x**6 + 36*a*b
**7*x**7 + 9*b**8*x**8)/(9*x**9)
```

GIAC/XCAS [A] time = 0.20595, size = 119, normalized size = 7.

$$-\frac{9\,b^8x^8 + 36\,ab^7x^7 + 84\,a^2b^6x^6 + 126\,a^3b^5x^5 + 126\,a^4b^4x^4 + 84\,a^5b^3x^3 + 36\,a^6b^2x^2 + 9\,a^7bx + a^8}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8/x^10,x, algorithm="giac")
```

```
[Out] -1/9*(9*b^8*x^8 + 36*a*b^7*x^7 + 84*a^2*b^6*x^6 + 126*a^3*b^5*x^5
 + 126*a^4*b^4*x^4 + 84*a^5*b^3*x^3 + 36*a^6*b^2*x^2 + 9*a^7*b*x
+ a^8)/x^9
```

3.244 $\int \frac{(a+bx)^7}{x^{10}}\,dx$

Optimal. Leaf size=36

$$\frac{b(a+bx)^8}{72a^2x^8}-\frac{(a+bx)^8}{9ax^9}$$

```
[Out] -(a + b*x)^8/(9*a*x^9) + (b*(a + b*x)^8)/(72*a^2*x^8)
```

Rubi [A] time = 0.0229815, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{b(a+bx)^8}{72a^2x^8}-\frac{(a+bx)^8}{9ax^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/x^10,x]

[Out] -(a + b*x)^8/(9*a*x^9) + (b*(a + b*x)^8)/(72*a^2*x^8)
```

Rubi in Sympy [A] time = 3.59573, size = 29, normalized size = 0.81

$$-\frac{(a+bx)^8}{9ax^9}+\frac{b\,(a+bx)^8}{72a^2x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/x**10,x)

[Out] -(a + b*x)**8/(9*a*x**9) + b*(a + b*x)**8/(72*a**2*x**8)
```

Mathematica [B] time = 0.00599584, size = 91, normalized size = 2.53

$$-\frac{a^7}{9x^9}-\frac{7a^6b}{8x^8}-\frac{3a^5b^2}{x^7}-\frac{35a^4b^3}{6x^6}-\frac{7a^3b^4}{x^5}-\frac{21a^2b^5}{4x^4}-\frac{7ab^6}{3x^3}-\frac{b^7}{2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/x^10,x]
```

```
[Out] -a^7/(9*x^9) - (7*a^6*b)/(8*x^8) - (3*a^5*b^2)/x^7 - (35*a^4*b^3)
/(6*x^6) - (7*a^3*b^4)/x^5 - (21*a^2*b^5)/(4*x^4) - (7*a*b^6)/(3*
x^3) - b^7/(2*x^2)
```

Maple [B] time = 0., size = 80, normalized size = 2.2

$$-\frac{b^7}{2\,x^2}-3\,\frac{a^5b^2}{x^7}-7\,\frac{a^3b^4}{x^5}-\frac{7\,ab^6}{3\,x^3}-\frac{7\,a^6b}{8\,x^8}-\frac{21\,a^2b^5}{4\,x^4}-\frac{a^7}{9\,x^9}-\frac{35\,a^4b^3}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/x^10,x)
```

```
[Out] -1/2*b^7/x^2-3*a^5*b^2/x^7-7*a^3*b^4/x^5-7/3*a*b^6/x^3-7/8*a^6*b/
x^8-21/4*a^2*b^5/x^4-1/9*a^7/x^9-35/6*a^4*b^3/x^6
```

Maxima [A] time = 1.34012, size = 107, normalized size = 2.97

$$-\frac{36\,b^7x^7+168\,ab^6x^6+378\,a^2b^5x^5+504\,a^3b^4x^4+420\,a^4b^3x^3+216\,a^5b^2x^2+63\,a^6bx+8\,a^7}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^10,x, algorithm="maxima")
```

```
[Out] -1/72*(36*b^7*x^7 + 168*a*b^6*x^6 + 378*a^2*b^5*x^5 + 504*a^3*b^4
*x^4 + 420*a^4*b^3*x^3 + 216*a^5*b^2*x^2 + 63*a^6*b*x + 8*a^7)/x^
9
```

Fricas [A] time = 0.200763, size = 107, normalized size = 2.97

$$-\frac{36\,b^7x^7+168\,ab^6x^6+378\,a^2b^5x^5+504\,a^3b^4x^4+420\,a^4b^3x^3+216\,a^5b^2x^2+63\,a^6bx+8\,a^7}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^10,x, algorithm="fricas")
```

```
[Out] -1/72*(36*b^7*x^7 + 168*a*b^6*x^6 + 378*a^2*b^5*x^5 + 504*a^3*b^4
*x^4 + 420*a^4*b^3*x^3 + 216*a^5*b^2*x^2 + 63*a^6*b*x + 8*a^7)/x^
9
```

Sympy [A] time = 2.63764, size = 85, normalized size = 2.36

$$-\frac{8a^7 + 63a^6bx + 216a^5b^2x^2 + 420a^4b^3x^3 + 504a^3b^4x^4 + 378a^2b^5x^5 + 168ab^6x^6 + 36b^7x^7}{72x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/x**10,x)
```

```
[Out] -(8*a**7 + 63*a**6*b*x + 216*a**5*b**2*x**2 + 420*a**4*b**3*x**3
+ 504*a**3*b**4*x**4 + 378*a**2*b**5*x**5 + 168*a*b**6*x**6 + 36*
b**7*x**7)/(72*x**9)
```

GIAC/XCAS [A] time = 0.20219, size = 107, normalized size = 2.97

$$-\frac{36\,b^7x^7 + 168\,ab^6x^6 + 378\,a^2b^5x^5 + 504\,a^3b^4x^4 + 420\,a^4b^3x^3 + 216\,a^5b^2x^2 + 63\,a^6bx + 8\,a^7}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/x^10,x, algorithm="giac")
```

```
[Out] -1/72*(36*b^7*x^7 + 168*a*b^6*x^6 + 378*a^2*b^5*x^5 + 504*a^3*b^4
*x^4 + 420*a^4*b^3*x^3 + 216*a^5*b^2*x^2 + 63*a^6*b*x + 8*a^7)/x^
9
```

3.245 $\int \frac{(a+bx)^6}{x^{10}} dx$

Optimal. Leaf size=56

$$-\frac{b^2(a+bx)^7}{252a^3x^7}+\frac{b(a+bx)^7}{36a^2x^8}-\frac{(a+bx)^7}{9ax^9}$$

```
[Out] -(a + b*x)^7/(9*a*x^9) + (b*(a + b*x)^7)/(36*a^2*x^8) - (b^2*(a +
 b*x)^7)/(252*a^3*x^7)
```

Rubi [A] time = 0.0415242, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$-\frac{b^2(a+bx)^7}{252a^3x^7}+\frac{b(a+bx)^7}{36a^2x^8}-\frac{(a+bx)^7}{9ax^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^6/x^10,x]
```

```
[Out] -(a + b*x)^7/(9*a*x^9) + (b*(a + b*x)^7)/(36*a^2*x^8) - (b^2*(a +
 b*x)^7)/(252*a^3*x^7)
```

Rubi in Sympy [A] time = 5.80555, size = 48, normalized size = 0.86

$$-\frac{(a+bx)^7}{9ax^9}+\frac{b\,(a+bx)^7}{36a^2x^8}-\frac{b^2\,(a+bx)^7}{252a^3x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**6/x**10,x)
```

```
[Out] -(a + b*x)**7/(9*a*x**9) + b*(a + b*x)**7/(36*a**2*x**8) - b**2*(
a + b*x)**7/(252*a**3*x**7)
```

Mathematica [A] time = 0.0133087, size = 80, normalized size = 1.43

$$-\frac{a^6}{9x^9}-\frac{3a^5b}{4x^8}-\frac{15a^4b^2}{7x^7}-\frac{10a^3b^3}{3x^6}-\frac{3a^2b^4}{x^5}-\frac{3ab^5}{2x^4}-\frac{b^6}{3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^6/x^10,x]
```

```
[Out] -a^6/(9*x^9) - (3*a^5*b)/(4*x^8) - (15*a^4*b^2)/(7*x^7) - (10*a^3
*b^3)/(3*x^6) - (3*a^2*b^4)/x^5 - (3*a*b^5)/(2*x^4) - b^6/(3*x^3)
```

Maple [A] time = 0.01, size = 69, normalized size = 1.2

$$-\frac{3\,a^5b}{4\,x^8}-\frac{15\,a^4b^2}{7\,x^7}-\frac{a^6}{9\,x^9}-3\,\frac{a^2b^4}{x^5}-\frac{b^6}{3\,x^3}-\frac{3\,ab^5}{2\,x^4}-\frac{10\,a^3b^3}{3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^6/x^10,x)
```

```
[Out] -3/4*a^5*b/x^8-15/7*a^4*b^2/x^7-1/9*a^6/x^9-3*a^2*b^4/x^5-1/3*b^6
/x^3-3/2*a*b^5/x^4-10/3*a^3*b^3/x^6
```

Maxima [A] time = 1.34302, size = 92, normalized size = 1.64

$$-\frac{84\,b^6x^6+378\,ab^5x^5+756\,a^2b^4x^4+840\,a^3b^3x^3+540\,a^4b^2x^2+189\,a^5bx+28\,a^6}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/x^10,x, algorithm="maxima")
```

```
[Out] -1/252*(84*b^6*x^6 + 378*a*b^5*x^5 + 756*a^2*b^4*x^4 + 840*a^3*b^
3*x^3 + 540*a^4*b^2*x^2 + 189*a^5*b*x + 28*a^6)/x^9
```

Fricas [A] time = 0.199422, size = 92, normalized size = 1.64

$$-\frac{84\,b^6x^6+378\,ab^5x^5+756\,a^2b^4x^4+840\,a^3b^3x^3+540\,a^4b^2x^2+189\,a^5bx+28\,a^6}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/x^10,x, algorithm="fricas")
```

```
[Out] -1/252*(84*b^6*x^6 + 378*a*b^5*x^5 + 756*a^2*b^4*x^4 + 840*a^3*b^
3*x^3 + 540*a^4*b^2*x^2 + 189*a^5*b*x + 28*a^6)/x^9
```

Sympy [A] time = 2.39614, size = 73, normalized size = 1.3

$$-\frac{28a^6+189a^5bx+540a^4b^2x^2+840a^3b^3x^3+756a^2b^4x^4+378ab^5x^5+84b^6x^6}{252x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**6/x**10,x)
```

```
[Out] -(28*a**6 + 189*a**5*b*x + 540*a**4*b**2*x**2 + 840*a**3*b**3*x**
3 + 756*a**2*b**4*x**4 + 378*a*b**5*x**5 + 84*b**6*x**6)/(252*x**
9)
```

GIAC/XCAS [A] time = 0.20192, size = 92, normalized size = 1.64

$$-\frac{84\,b^6x^6+378\,ab^5x^5+756\,a^2b^4x^4+840\,a^3b^3x^3+540\,a^4b^2x^2+189\,a^5bx+28\,a^6}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/x^10,x, algorithm="giac")
```

```
[Out] -1/252*(84*b^6*x^6 + 378*a*b^5*x^5 + 756*a^2*b^4*x^4 + 840*a^3*b^
3*x^3 + 540*a^4*b^2*x^2 + 189*a^5*b*x + 28*a^6)/x^9
```

3.246 $\int \frac{(a+bx)^5}{x^{10}} \, dx$

Optimal. Leaf size=67

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

```
[Out] -a^5/(9*x^9) - (5*a^4*b)/(8*x^8) - (10*a^3*b^2)/(7*x^7) - (5*a^2*
b^3)/(3*x^6) - (a*b^4)/x^5 - b^5/(4*x^4)
```

Rubi [A] time = 0.057788, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/x^10,x]
```

```
[Out] -a^5/(9*x^9) - (5*a^4*b)/(8*x^8) - (10*a^3*b^2)/(7*x^7) - (5*a^2*
b^3)/(3*x^6) - (a*b^4)/x^5 - b^5/(4*x^4)
```

Rubi in Sympy [A] time = 10.5628, size = 65, normalized size = 0.97

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/x**10,x)
```

```
[Out] -a**5/(9*x**9) - 5*a**4*b/(8*x**8) - 10*a**3*b**2/(7*x**7) - 5*a*
*2*b**3/(3*x**6) - a*b**4/x**5 - b**5/(4*x**4)
```

Mathematica [A] time = 0.0101857, size = 67, normalized size = 1.

$$-\frac{a^5}{9x^9}-\frac{5a^4b}{8x^8}-\frac{10a^3b^2}{7x^7}-\frac{5a^2b^3}{3x^6}-\frac{ab^4}{x^5}-\frac{b^5}{4x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/x^10,x]
```

```
[Out] -a^5/(9*x^9) - (5*a^4*b)/(8*x^8) - (10*a^3*b^2)/(7*x^7) - (5*a^2*
b^3)/(3*x^6) - (a*b^4)/x^5 - b^5/(4*x^4)
```

Maple [A] time = 0., size = 58, normalized size = 0.9

$$-\frac{a^{5}}{9\,x^{9}}-\frac{5\,a^{4}b}{8\,x^{8}}-\frac{10\,a^{3}b^{2}}{7\,x^{7}}-\frac{5\,a^{2}b^{3}}{3\,x^{6}}-\frac{ab^{4}}{x^{5}}-\frac{b^{5}}{4\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/x^10,x)
```

```
[Out] -1/9*a^5/x^9-5/8*a^4*b/x^8-10/7*a^3*b^2/x^7-5/3*a^2*b^3/x^6-a*b^4
/x^5-1/4*b^5/x^4
```

Maxima [A] time = 1.34949, size = 77, normalized size = 1.15

$$-\frac{126\,b^{5}x^{5}+504\,ab^{4}x^{4}+840\,a^{2}b^{3}x^{3}+720\,a^{3}b^{2}x^{2}+315\,a^{4}bx+56\,a^{5}}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^10,x, algorithm="maxima")
```

```
[Out] -1/504*(126*b^5*x^5 + 504*a*b^4*x^4 + 840*a^2*b^3*x^3 + 720*a^3*b
^2*x^2 + 315*a^4*b*x + 56*a^5)/x^9
```

Fricas [A] time = 0.207821, size = 77, normalized size = 1.15

$$-\frac{126\,b^{5}x^{5}+504\,ab^{4}x^{4}+840\,a^{2}b^{3}x^{3}+720\,a^{3}b^{2}x^{2}+315\,a^{4}bx+56\,a^{5}}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^10,x, algorithm="fricas")
```

```
[Out] -1/504*(126*b^5*x^5 + 504*a*b^4*x^4 + 840*a^2*b^3*x^3 + 720*a^3*b
^2*x^2 + 315*a^4*b*x + 56*a^5)/x^9
```

Sympy [A] time = 2.14885, size = 61, normalized size = 0.91

$$-\frac{56a^5 + 315a^4bx + 720a^3b^2x^2 + 840a^2b^3x^3 + 504ab^4x^4 + 126b^5x^5}{504x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/x**10,x)
```

```
[Out] -(56*a**5 + 315*a**4*b*x + 720*a**3*b**2*x**2 + 840*a**2*b**3*x**
3 + 504*a*b**4*x**4 + 126*b**5*x**5)/(504*x**9)
```

GIAC/XCAS [A] time = 0.201788, size = 77, normalized size = 1.15

$$-\frac{126\,b^5x^5 + 504\,ab^4x^4 + 840\,a^2b^3x^3 + 720\,a^3b^2x^2 + 315\,a^4bx + 56\,a^5}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(126*b^5*x^5 + 504*a*b^4*x^4 + 840*a^2*b^3*x^3 + 720*a^3*b
^2*x^2 + 315*a^4*b*x + 56*a^5)/x^9
```

3.247 $\int \frac{(a+bx)^4}{x^{10}} \, dx$

Optimal. Leaf size=56

$$-\frac{a^4}{9x^9}-\frac{a^3b}{2x^8}-\frac{6a^2b^2}{7x^7}-\frac{2ab^3}{3x^6}-\frac{b^4}{5x^5}$$

```
[Out] -a^4/(9*x^9) - (a^3*b)/(2*x^8) - (6*a^2*b^2)/(7*x^7) - (2*a*b^3)/
(3*x^6) - b^4/(5*x^5)
```

Rubi [A] time = 0.0462404, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^4}{9x^9}-\frac{a^3b}{2x^8}-\frac{6a^2b^2}{7x^7}-\frac{2ab^3}{3x^6}-\frac{b^4}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/x^10,x]
```

```
[Out] -a^4/(9*x^9) - (a^3*b)/(2*x^8) - (6*a^2*b^2)/(7*x^7) - (2*a*b^3)/
(3*x^6) - b^4/(5*x^5)
```

Rubi in Sympy [A] time = 8.51258, size = 53, normalized size = 0.95

$$-\frac{a^4}{9x^9}-\frac{a^3b}{2x^8}-\frac{6a^2b^2}{7x^7}-\frac{2ab^3}{3x^6}-\frac{b^4}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/x**10,x)
```

```
[Out] -a**4/(9*x**9) - a**3*b/(2*x**8) - 6*a**2*b**2/(7*x**7) - 2*a*b**
3/(3*x**6) - b**4/(5*x**5)
```

Mathematica [A] time = 0.011464, size = 56, normalized size = 1.

$$-\frac{a^4}{9x^9}-\frac{a^3b}{2x^8}-\frac{6a^2b^2}{7x^7}-\frac{2ab^3}{3x^6}-\frac{b^4}{5x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/x^10,x]
```

```
[Out] -a^4/(9*x^9) - (a^3*b)/(2*x^8) - (6*a^2*b^2)/(7*x^7) - (2*a*b^3)/
(3*x^6) - b^4/(5*x^5)
```

Maple [A] time = 0.009, size = 47, normalized size = 0.8

$$-\frac{a^4}{9\,x^9}-\frac{a^3b}{2\,x^8}-\frac{6\,a^2b^2}{7\,x^7}-\frac{2\,ab^3}{3\,x^6}-\frac{b^4}{5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/x^10,x)
```

```
[Out] -1/9*a^4/x^9-1/2*a^3*b/x^8-6/7*a^2*b^2/x^7-2/3*a*b^3/x^6-1/5*b^4/
x^5
```

Maxima [A] time = 1.34696, size = 62, normalized size = 1.11

$$-\frac{126\,b^4x^4+420\,ab^3x^3+540\,a^2b^2x^2+315\,a^3bx+70\,a^4}{630\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/x^10,x, algorithm="maxima")
```

```
[Out] -1/630*(126*b^4*x^4 + 420*a*b^3*x^3 + 540*a^2*b^2*x^2 + 315*a^3*b
*x + 70*a^4)/x^9
```

Fricas [A] time = 0.199451, size = 62, normalized size = 1.11

$$-\frac{126\,b^4x^4+420\,ab^3x^3+540\,a^2b^2x^2+315\,a^3bx+70\,a^4}{630\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/x^10,x, algorithm="fricas")
```

```
[Out] -1/630*(126*b^4*x^4 + 420*a*b^3*x^3 + 540*a^2*b^2*x^2 + 315*a^3*b
*x + 70*a^4)/x^9
```

Sympy [A] time = 1.90877, size = 49, normalized size = 0.88

$$-\frac{70a^4+315a^3bx+540a^2b^2x^2+420ab^3x^3+126b^4x^4}{630x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/x**10,x)
```

```
[Out] -(70*a**4 + 315*a**3*b*x + 540*a**2*b**2*x**2 + 420*a*b**3*x**3 +
 126*b**4*x**4)/(630*x**9)
```

GIAC/XCAS [A] time = 0.20321, size = 62, normalized size = 1.11

$$-\frac{126\,b^4x^4+420\,ab^3x^3+540\,a^2b^2x^2+315\,a^3bx+70\,a^4}{630\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/x^10,x, algorithm="giac")
```

```
[Out] -1/630*(126*b^4*x^4 + 420*a*b^3*x^3 + 540*a^2*b^2*x^2 + 315*a^3*b
*x + 70*a^4)/x^9
```

3.248 $\int \frac{(a+bx)^3}{x^{10}}\,dx$

Optimal. Leaf size=43

$$-\frac{a^3}{9x^9}-\frac{3a^2b}{8x^8}-\frac{3ab^2}{7x^7}-\frac{b^3}{6x^6}$$

```
[Out] -a^3/(9*x^9) - (3*a^2*b)/(8*x^8) - (3*a*b^2)/(7*x^7) - b^3/(6*x^6
)
```

Rubi [A] time = 0.0352077, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3}{9x^9}-\frac{3a^2b}{8x^8}-\frac{3ab^2}{7x^7}-\frac{b^3}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^10,x]
```

```
[Out] -a^3/(9*x^9) - (3*a^2*b)/(8*x^8) - (3*a*b^2)/(7*x^7) - b^3/(6*x^6
)
```

Rubi in Sympy [A] time = 6.39008, size = 41, normalized size = 0.95

$$-\frac{a^3}{9x^9}-\frac{3a^2b}{8x^8}-\frac{3ab^2}{7x^7}-\frac{b^3}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**10,x)
```

```
[Out] -a**3/(9*x**9) - 3*a**2*b/(8*x**8) - 3*a*b**2/(7*x**7) - b**3/(6*
x**6)
```

Mathematica [A] time = 0.00499941, size = 43, normalized size = 1.

$$-\frac{a^3}{9x^9}-\frac{3a^2b}{8x^8}-\frac{3ab^2}{7x^7}-\frac{b^3}{6x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^10,x]

[Out] -a^3/(9*x^9) - (3*a^2*b)/(8*x^8) - (3*a*b^2)/(7*x^7) - b^3/(6*x^6
)
```

Maple [A]   time = 0.007, size = 36, normalized size = 0.8

$$-\frac{a^3}{9\,x^9}-\frac{3\,a^2b}{8\,x^8}-\frac{3\,ab^2}{7\,x^7}-\frac{b^3}{6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^10,x)

[Out] -1/9*a^3/x^9-3/8*a^2*b/x^8-3/7*a*b^2/x^7-1/6*b^3/x^6
```

Maxima [A]   time = 1.34535, size = 47, normalized size = 1.09

$$-\frac{84\,b^3x^3+216\,ab^2x^2+189\,a^2bx+56\,a^3}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^10,x, algorithm="maxima")

[Out] -1/504*(84*b^3*x^3 + 216*a*b^2*x^2 + 189*a^2*b*x + 56*a^3)/x^9
```

Fricas [A]   time = 0.198587, size = 47, normalized size = 1.09

$$-\frac{84\,b^3x^3+216\,ab^2x^2+189\,a^2bx+56\,a^3}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^10,x, algorithm="fricas")

[Out] -1/504*(84*b^3*x^3 + 216*a*b^2*x^2 + 189*a^2*b*x + 56*a^3)/x^9
```

Sympy [A] time = 1.71034, size = 37, normalized size = 0.86

$$-\frac{56a^3 + 189a^2bx + 216ab^2x^2 + 84b^3x^3}{504x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**10,x)
```

```
[Out] -(56*a**3 + 189*a**2*b*x + 216*a*b**2*x**2 + 84*b**3*x**3)/(504*x
**9)
```

GIAC/XCAS [A] time = 0.202556, size = 47, normalized size = 1.09

$$-\frac{84\,b^3x^3 + 216\,ab^2x^2 + 189\,a^2bx + 56\,a^3}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(84*b^3*x^3 + 216*a*b^2*x^2 + 189*a^2*b*x + 56*a^3)/x^9
```

3.249 $\int \frac{(a+bx)^2}{x^{10}}\,dx$

Optimal. Leaf size=30

$$-\frac{a^2}{9x^9}-\frac{ab}{4x^8}-\frac{b^2}{7x^7}$$

```
[Out] -a^2/(9*x^9) - (a*b)/(4*x^8) - b^2/(7*x^7)
```

Rubi [A] time = 0.0243808, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{a^2}{9x^9}-\frac{ab}{4x^8}-\frac{b^2}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^10,x]

[Out] -a^2/(9*x^9) - (a*b)/(4*x^8) - b^2/(7*x^7)
```

Rubi in Sympy [A] time = 4.59011, size = 26, normalized size = 0.87

$$-\frac{a^2}{9x^9}-\frac{ab}{4x^8}-\frac{b^2}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**10,x)

[Out] -a**2/(9*x**9) - a*b/(4*x**8) - b**2/(7*x**7)
```

Mathematica [A] time = 0.00973804, size = 30, normalized size = 1.

$$-\frac{a^2}{9x^9}-\frac{ab}{4x^8}-\frac{b^2}{7x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^10,x]
```

```
[Out] -a^2/(9*x^9) - (a*b)/(4*x^8) - b^2/(7*x^7)
```

Maple [A] time = 0.008, size = 25, normalized size = 0.8

$$-\frac{a^2}{9\,x^9}-\frac{ab}{4\,x^8}-\frac{b^2}{7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^10,x)
```

```
[Out] -1/9*a^2/x^9-1/4*a*b/x^8-1/7*b^2/x^7
```

Maxima [A] time = 1.34935, size = 32, normalized size = 1.07

$$-\frac{36\,b^2x^2+63\,abx+28\,a^2}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^10,x, algorithm="maxima")
```

```
[Out] -1/252*(36*b^2*x^2 + 63*a*b*x + 28*a^2)/x^9
```

Fricas [A] time = 0.204045, size = 32, normalized size = 1.07

$$-\frac{36\,b^2x^2+63\,abx+28\,a^2}{252\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^10,x, algorithm="fricas")
```

```
[Out] -1/252*(36*b^2*x^2 + 63*a*b*x + 28*a^2)/x^9
```

Sympy [A] time = 1.51164, size = 26, normalized size = 0.87

$$-\frac{28a^2+63abx+36b^2x^2}{252x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**10,x)
```

```
[Out] -(28*a**2 + 63*a*b*x + 36*b**2*x**2)/(252*x**9)
```

GIAC/XCAS [A] time = 0.202977, size = 32, normalized size = 1.07

$$-\frac{36 b^2 x^2 + 63 abx + 28 a^2}{252 x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^10,x, algorithm="giac")
```

```
[Out] -1/252*(36*b^2*x^2 + 63*a*b*x + 28*a^2)/x^9
```

3.250 $\int \frac{a+bx}{x^{10}}\,dx$

Optimal. Leaf size=17

$$-\frac{a}{9x^9}-\frac{b}{8x^8}$$

```
[Out] -a/(9*x^9) - b/(8*x^8)
```

Rubi [A] time = 0.0144879, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{9x^9}-\frac{b}{8x^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/x^10,x]

[Out] -a/(9*x^9) - b/(8*x^8)
```

Rubi in Sympy [A] time = 2.67068, size = 14, normalized size = 0.82

$$-\frac{a}{9x^9}-\frac{b}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)/x**10,x)

[Out] -a/(9*x**9) - b/(8*x**8)
```

Mathematica [A] time = 0.0027269, size = 17, normalized size = 1.

$$-\frac{a}{9x^9}-\frac{b}{8x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/x^10,x]
```

```
[Out] -a/(9*x^9) - b/(8*x^8)
```

Maple [A] time = 0.009, size = 14, normalized size = 0.8

$$-\frac{a}{9\,x^{9}}-\frac{b}{8\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^10,x)
```

```
[Out] -1/9*a/x^9-1/8*b/x^8
```

Maxima [A] time = 1.34232, size = 18, normalized size = 1.06

$$-\frac{9\,bx+8\,a}{72\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^10,x, algorithm="maxima")
```

```
[Out] -1/72*(9*b*x + 8*a)/x^9
```

Fricas [A] time = 0.200919, size = 18, normalized size = 1.06

$$-\frac{9\,bx+8\,a}{72\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^10,x, algorithm="fricas")
```

```
[Out] -1/72*(9*b*x + 8*a)/x^9
```

Sympy [A] time = 1.24789, size = 14, normalized size = 0.82

$$-\frac{8a+9bx}{72x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**10,x)
```

```
[Out] -(8*a + 9*b*x)/(72*x**9)
```

GIAC/XCAS [A] time = 0.200296, size = 18, normalized size = 1.06

$$-\frac{9\,bx+8\,a}{72\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^10,x, algorithm="giac")
```

```
[Out] -1/72*(9*b*x + 8*a)/x^9
```

3.251 $\int \frac{1}{x^{10}} \, dx$

Optimal. Leaf size=7

$$-\frac{1}{9x^9}$$

```
[Out] -1/(9*x^9)
```

Rubi [A] time = 0.0037614, antiderivative size = 7, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 3, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$-\frac{1}{9x^9}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-10),x]

[Out] -1/(9*x^9)
```

Rubi in Sympy [A] time = 0.907053, size = 7, normalized size = 1.

$$-\frac{1}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**10,x)

[Out] -1/(9*x**9)
```

Mathematica [A] time = 0.000142072, size = 7, normalized size = 1.

$$-\frac{1}{9x^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-10),x]

[Out] -1/(9*x^9)
```

Maple [A] time = 0.001, size = 6, normalized size = 0.9

$$-\frac{1}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^10,x)
```

```
[Out] -1/9/x^9
```

Maxima [A] time = 1.34175, size = 7, normalized size = 1.

$$-\frac{1}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-10),x, algorithm="maxima")
```

```
[Out] -1/9/x^9
```

Fricas [A] time = 0.199068, size = 7, normalized size = 1.

$$-\frac{1}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-10),x, algorithm="fricas")
```

```
[Out] -1/9/x^9
```

Sympy [A] time = 0.060399, size = 7, normalized size = 1.

$$-\frac{1}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**10,x)
```

```
[Out] -1/(9*x**9)
```

GIAC/XCAS [A] time = 0.201004, size = 7, normalized size = 1.

$$-\frac{1}{9\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(-10),x, algorithm="giac")
```

```
[Out] -1/9/x^9
```

3.252 $\int \frac{1}{x^{10}(a+bx)}\,dx$

Optimal. Leaf size=134

$$-\frac{b^9\log(x)}{a^{10}}+\frac{b^9\log(a+bx)}{a^{10}}-\frac{b^8}{a^9x}+\frac{b^7}{2a^8x^2}-\frac{b^6}{3a^7x^3}+\frac{b^5}{4a^6x^4}-\frac{b^4}{5a^5x^5}+\frac{b^3}{6a^4x^6}-\frac{b^2}{7a^3x^7}+\frac{b}{8a^2x^8}-\frac{1}{9ax^9}$$

```
[Out] -1/(9*a*x^9) + b/(8*a^2*x^8) - b^2/(7*a^3*x^7) + b^3/(6*a^4*x^6)
- b^4/(5*a^5*x^5) + b^5/(4*a^6*x^4) - b^6/(3*a^7*x^3) + b^7/(2*a^
8*x^2) - b^8/(a^9*x) - (b^9*Log[x])/a^10 + (b^9*Log[a + b*x])/a^1
0
```

Rubi [A] time = 0.130101, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{b^9\log(x)}{a^{10}}+\frac{b^9\log(a+bx)}{a^{10}}-\frac{b^8}{a^9x}+\frac{b^7}{2a^8x^2}-\frac{b^6}{3a^7x^3}+\frac{b^5}{4a^6x^4}-\frac{b^4}{5a^5x^5}+\frac{b^3}{6a^4x^6}-\frac{b^2}{7a^3x^7}+\frac{b}{8a^2x^8}-\frac{1}{9ax^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^10*(a + b*x)),x]
```

```
[Out] -1/(9*a*x^9) + b/(8*a^2*x^8) - b^2/(7*a^3*x^7) + b^3/(6*a^4*x^6)
- b^4/(5*a^5*x^5) + b^5/(4*a^6*x^4) - b^6/(3*a^7*x^3) + b^7/(2*a^
8*x^2) - b^8/(a^9*x) - (b^9*Log[x])/a^10 + (b^9*Log[a + b*x])/a^1
0
```

Rubi in Sympy [A] time = 20.8213, size = 121, normalized size = 0.9

$$-\frac{1}{9ax^9}+\frac{b}{8a^2x^8}-\frac{b^2}{7a^3x^7}+\frac{b^3}{6a^4x^6}-\frac{b^4}{5a^5x^5}+\frac{b^5}{4a^6x^4}-\frac{b^6}{3a^7x^3}+\frac{b^7}{2a^8x^2}-\frac{b^8}{a^9x}-\frac{b^9\log(x)}{a^{10}}+\frac{b^9\log(a+bx)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**10/(b*x+a),x)
```

```
[Out] -1/(9*a*x**9) + b/(8*a**2*x**8) - b**2/(7*a**3*x**7) + b**3/(6*a*
*4*x**6) - b**4/(5*a**5*x**5) + b**5/(4*a**6*x**4) - b**6/(3*a**7
*x**3) + b**7/(2*a**8*x**2) - b**8/(a**9*x) - b**9*log(x)/a**10 +
 b**9*log(a + b*x)/a**10
```

Mathematica [A] time = 0.00893041, size = 134, normalized size = 1.

$$-\frac{b^9\log(x)}{a^{10}}+\frac{b^9\log(a+bx)}{a^{10}}-\frac{b^8}{a^9x}+\frac{b^7}{2a^8x^2}-\frac{b^6}{3a^7x^3}+\frac{b^5}{4a^6x^4}-\frac{b^4}{5a^5x^5}+\frac{b^3}{6a^4x^6}-\frac{b^2}{7a^3x^7}+\frac{b}{8a^2x^8}-\frac{1}{9ax^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^10*(a + b*x)),x]
```

```
[Out] -1/(9*a*x^9) + b/(8*a^2*x^8) - b^2/(7*a^3*x^7) + b^3/(6*a^4*x^6)
- b^4/(5*a^5*x^5) + b^5/(4*a^6*x^4) - b^6/(3*a^7*x^3) + b^7/(2*a^
8*x^2) - b^8/(a^9*x) - (b^9*Log[x])/a^10 + (b^9*Log[a + b*x])/a^1
0
```

Maple [A] time = 0.016, size = 119, normalized size = 0.9

$$-\frac{1}{9\,ax^9}+\frac{b}{8\,a^2x^8}-\frac{b^2}{7\,a^3x^7}+\frac{b^3}{6\,a^4x^6}-\frac{b^4}{5\,a^5x^5}+\frac{b^5}{4\,a^6x^4}-\frac{b^6}{3\,a^7x^3}+\frac{b^7}{2\,a^8x^2}-\frac{b^8}{a^9x}-\frac{b^9\ln(x)}{a^{10}}+\frac{b^9\ln(bx+a)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^10/(b*x+a),x)
```

```
[Out] -1/9/a/x^9+1/8*b/a^2/x^8-1/7*b^2/a^3/x^7+1/6*b^3/a^4/x^6-1/5*b^4/
a^5/x^5+1/4*b^5/a^6/x^4-1/3*b^6/a^7/x^3+1/2*b^7/a^8/x^2-b^8/a^9/x
-b^9*ln(x)/a^10+b^9*ln(b*x+a)/a^10
```

Maxima [A] time = 1.35016, size = 158, normalized size = 1.18

$$\frac{b^9\log(bx+a)}{a^{10}}-\frac{b^9\log(x)}{a^{10}}-\frac{2520\,b^8x^8-1260\,ab^7x^7+840\,a^2b^6x^6-630\,a^3b^5x^5+504\,a^4b^4x^4-420\,a^5b^3x^3+360\,a^6b^2x^2-315\,a^7bx+280\,a^8}{2520\,a^9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^10),x, algorithm="maxima")
```

```
[Out] b^9*log(b*x + a)/a^10 - b^9*log(x)/a^10 - 1/2520*(2520*b^8*x^8 -
1260*a*b^7*x^7 + 840*a^2*b^6*x^6 - 630*a^3*b^5*x^5 + 504*a^4*b^4*
x^4 - 420*a^5*b^3*x^3 + 360*a^6*b^2*x^2 - 315*a^7*b*x + 280*a^8)/
(a^9*x^9)
```

Fricas [A] time = 0.21854, size = 162, normalized size = 1.21

$$\frac{2520\, b^{9} x^{9} \log\left(bx + a\right) - 2520\, b^{9} x^{9} \log\left(x\right) - 2520\, ab^{8} x^{8} + 1260\, a^{2} b^{7} x^{7} - 840\, a^{3} b^{6} x^{6} + 630\, a^{4} b^{5} x^{5} - 504\, a^{5} b^{4} x^{4} + 420\, a^{6} b^{3} x^{3}}{2520\, a^{10} x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^10),x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*b^9*x^9*log(b*x + a) - 2520*b^9*x^9*log(x) - 2520*a*
b^8*x^8 + 1260*a^2*b^7*x^7 - 840*a^3*b^6*x^6 + 630*a^4*b^5*x^5 -
504*a^5*b^4*x^4 + 420*a^6*b^3*x^3 - 360*a^7*b^2*x^2 + 315*a^8*b*x
 - 280*a^9)/(a^10*x^9)
```

Sympy [A] time = 2.8164, size = 116, normalized size = 0.87

$$-\frac{280a^{8} - 315a^{7}bx + 360a^{6}b^{2}x^{2} - 420a^{5}b^{3}x^{3} + 504a^{4}b^{4}x^{4} - 630a^{3}b^{5}x^{5} + 840a^{2}b^{6}x^{6} - 1260ab^{7}x^{7} + 2520b^{8}x^{8}}{2520a^{9}x^{9}} + \frac{b^{9}\left(-\log\left(x\right) + \log\left(\frac{a}{b} + x\right)\right)}{a^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**10/(b*x+a),x)
```

```
[Out] -(280*a**8 - 315*a**7*b*x + 360*a**6*b**2*x**2 - 420*a**5*b**3*x*
*3 + 504*a**4*b**4*x**4 - 630*a**3*b**5*x**5 + 840*a**2*b**6*x**6
 - 1260*a*b**7*x**7 + 2520*b**8*x**8)/(2520*a**9*x**9) + b**9*(-l
og(x) + log(a/b + x))/a**10
```

GIAC/XCAS [A] time = 0.204695, size = 165, normalized size = 1.23

$$\frac{b^{9}\ln\left(|bx + a|\right)}{a^{10}} - \frac{b^{9}\ln\left(|x|\right)}{a^{10}} - \frac{2520\, ab^{8} x^{8} - 1260\, a^{2} b^{7} x^{7} + 840\, a^{3} b^{6} x^{6} - 630\, a^{4} b^{5} x^{5} + 504\, a^{5} b^{4} x^{4} - 420\, a^{6} b^{3} x^{3} + 360\, a^{7} b^{2} x^{2} - 315\, a^{8} bx + 280\, a^{9}}{2520\, a^{10} x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^10),x, algorithm="giac")
```

```
[Out] b^9*ln(abs(b*x + a))/a^10 - b^9*ln(abs(x))/a^10 - 1/2520*(2520*a*
b^8*x^8 - 1260*a^2*b^7*x^7 + 840*a^3*b^6*x^6 - 630*a^4*b^5*x^5 +
504*a^5*b^4*x^4 - 420*a^6*b^3*x^3 + 360*a^7*b^2*x^2 - 315*a^8*b*x
 + 280*a^9)/(a^10*x^9)
```

3.253 $\int \frac{1}{x^{10}(a+bx)^2} dx$

Optimal. Leaf size=146

$$-\frac{10b^9\log(x)}{a^{11}}+\frac{10b^9\log(a+bx)}{a^{11}}-\frac{b^9}{a^{10}(a+bx)}-\frac{9b^8}{a^{10}x}+\frac{4b^7}{a^9x^2}-\frac{7b^6}{3a^8x^3}+\frac{3b^5}{2a^7x^4}-\frac{b^4}{a^6x^5}+\frac{2b^3}{3a^5x^6}-\frac{3b^2}{7a^4x^7}+\frac{b}{4a^3x^8}-\frac{1}{9a^2x^9}$$

```
[Out] -1/(9*a^2*x^9) + b/(4*a^3*x^8) - (3*b^2)/(7*a^4*x^7) + (2*b^3)/(3
*a^5*x^6) - b^4/(a^6*x^5) + (3*b^5)/(2*a^7*x^4) - (7*b^6)/(3*a^8*
x^3) + (4*b^7)/(a^9*x^2) - (9*b^8)/(a^10*x) - b^9/(a^10*(a + b*x)
) - (10*b^9*Log[x])/a^11 + (10*b^9*Log[a + b*x])/a^11
```

Rubi [A] time = 0.193148, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{10b^9\log(x)}{a^{11}}+\frac{10b^9\log(a+bx)}{a^{11}}-\frac{b^9}{a^{10}(a+bx)}-\frac{9b^8}{a^{10}x}+\frac{4b^7}{a^9x^2}-\frac{7b^6}{3a^8x^3}+\frac{3b^5}{2a^7x^4}-\frac{b^4}{a^6x^5}+\frac{2b^3}{3a^5x^6}-\frac{3b^2}{7a^4x^7}+\frac{b}{4a^3x^8}-\frac{1}{9a^2x^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^10*(a + b*x)^2),x]
```

```
[Out] -1/(9*a^2*x^9) + b/(4*a^3*x^8) - (3*b^2)/(7*a^4*x^7) + (2*b^3)/(3
*a^5*x^6) - b^4/(a^6*x^5) + (3*b^5)/(2*a^7*x^4) - (7*b^6)/(3*a^8*
x^3) + (4*b^7)/(a^9*x^2) - (9*b^8)/(a^10*x) - b^9/(a^10*(a + b*x)
) - (10*b^9*Log[x])/a^11 + (10*b^9*Log[a + b*x])/a^11
```

Rubi in Sympy [A] time = 37.0389, size = 144, normalized size = 0.99

$$-\frac{1}{9a^2x^9}+\frac{b}{4a^3x^8}-\frac{3b^2}{7a^4x^7}+\frac{2b^3}{3a^5x^6}-\frac{b^4}{a^6x^5}+\frac{3b^5}{2a^7x^4}-\frac{7b^6}{3a^8x^3}+\frac{4b^7}{a^9x^2}-\frac{b^9}{a^{10}\left(a+bx\right)}-\frac{9b^8}{a^{10}x}-\frac{10b^9\log\left(x\right)}{a^{11}}+\frac{10b^9\log\left(a+bx\right)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**10/(b*x+a)**2,x)
```

```
[Out] -1/(9*a**2*x**9) + b/(4*a**3*x**8) - 3*b**2/(7*a**4*x**7) + 2*b**
3/(3*a**5*x**6) - b**4/(a**6*x**5) + 3*b**5/(2*a**7*x**4) - 7*b**
```

```
6/(3*a**8*x**3) + 4*b**7/(a**9*x**2) - b**9/(a**10*(a + b*x)) - 9
*b**8/(a**10*x) - 10*b**9*log(x)/a**11 + 10*b**9*log(a + b*x)/a**
11
```

Mathematica [A] time = 0.160876, size = 134, normalized size = 0.92

$$-\frac{\frac{a\left(28a^9-35a^8bx+45a^7b^2x^2-60a^6b^3x^3+84a^5b^4x^4-126a^4b^5x^5+210a^3b^6x^6-420a^2b^7x^7+1260ab^8x^8+2520b^9x^9\right)}{x^9(a+bx)}-2520b^9\log(a+bx)+2520b^9\log(x}{252a^{11}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^10*(a + b*x)^2),x]
```

```
[Out] -((a*(28*a^9 - 35*a^8*b*x + 45*a^7*b^2*x^2 - 60*a^6*b^3*x^3 + 84*
a^5*b^4*x^4 - 126*a^4*b^5*x^5 + 210*a^3*b^6*x^6 - 420*a^2*b^7*x^7
 + 1260*a*b^8*x^8 + 2520*b^9*x^9))/(x^9*(a + b*x)) + 2520*b^9*Log
[x] - 2520*b^9*Log[a + b*x])/(252*a^11)
```

Maple [A] time = 0.018, size = 135, normalized size = 0.9

$$-\frac{1}{9\,a^2x^9}+\frac{b}{4\,a^3x^8}-\frac{3\,b^2}{7\,a^4x^7}+\frac{2\,b^3}{3\,a^5x^6}-\frac{b^4}{a^6x^5}+\frac{3\,b^5}{2\,a^7x^4}-\frac{7\,b^6}{3\,a^8x^3}+4\,\frac{b^7}{a^9x^2}-9\,\frac{b^8}{a^{10}x}-\frac{b^9}{a^{10}\,(bx+a)}-10\,\frac{b^9\ln(x)}{a^{11}}+10\,\frac{b^9\ln(bx+a)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^10/(b*x+a)^2,x)
```

```
[Out] -1/9/a^2/x^9+1/4*b/a^3/x^8-3/7*b^2/a^4/x^7+2/3*b^3/a^5/x^6-b^4/a^
6/x^5+3/2*b^5/a^7/x^4-7/3*b^6/a^8/x^3+4*b^7/a^9/x^2-9*b^8/a^10/x-
b^9/a^10/(b*x+a)-10*b^9*ln(x)/a^11+10*b^9*ln(b*x+a)/a^11
```

Maxima [A] time = 1.3528, size = 190, normalized size = 1.3

$$-\frac{2520\,b^9x^9+1260\,ab^8x^8-420\,a^2b^7x^7+210\,a^3b^6x^6-126\,a^4b^5x^5+84\,a^5b^4x^4-60\,a^6b^3x^3+45\,a^7b^2x^2-35\,a^8bx+28\,a^9}{252\,(a^{10}bx^{10}+a^{11}x^9)}+\frac{10\,b^9\log(bx+a)}{a^{11}}-\frac{10\,b^9\log(x)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^10),x, algorithm="maxima")
```

```
[Out] -1/252*(2520*b^9*x^9 + 1260*a*b^8*x^8 - 420*a^2*b^7*x^7 + 210*a^3
*b^6*x^6 - 126*a^4*b^5*x^5 + 84*a^5*b^4*x^4 - 60*a^6*b^3*x^3 + 45
*a^7*b^2*x^2 - 35*a^8*b*x + 28*a^9)/(a^10*b*x^10 + a^11*x^9) + 10
*b^9*log(b*x + a)/a^11 - 10*b^9*log(x)/a^11
```

Fricas [A] time = 0.216964, size = 220, normalized size = 1.51

$$-\frac{2520\,ab^9x^9 + 1260\,a^2b^8x^8 - 420\,a^3b^7x^7 + 210\,a^4b^6x^6 - 126\,a^5b^5x^5 + 84\,a^6b^4x^4 - 60\,a^7b^3x^3 + 45\,a^8b^2x^2 - 35\,a^9bx + 28\,a^{10}}{252\,(a^{11}bx^{10} + a^{12}x^9)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^10),x, algorithm="fricas")
```

```
[Out] -1/252*(2520*a*b^9*x^9 + 1260*a^2*b^8*x^8 - 420*a^3*b^7*x^7 + 210
*a^4*b^6*x^6 - 126*a^5*b^5*x^5 + 84*a^6*b^4*x^4 - 60*a^7*b^3*x^3
+ 45*a^8*b^2*x^2 - 35*a^9*b*x + 28*a^10 - 2520*(b^10*x^10 + a*b^9
*x^9)*log(b*x + a) + 2520*(b^10*x^10 + a*b^9*x^9)*log(x))/(a^11*b
*x^10 + a^12*x^9)
```

Sympy [A] time = 3.72881, size = 139, normalized size = 0.95

$$-\frac{28a^9 - 35a^8bx + 45a^7b^2x^2 - 60a^6b^3x^3 + 84a^5b^4x^4 - 126a^4b^5x^5 + 210a^3b^6x^6 - 420a^2b^7x^7 + 1260ab^8x^8 + 2520b^9x^9}{252a^{11}x^9 + 252a^{10}bx^{10}} + \frac{10b^9\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**10/(b*x+a)**2,x)
```

```
[Out] -(28*a**9 - 35*a**8*b*x + 45*a**7*b**2*x**2 - 60*a**6*b**3*x**3 +
 84*a**5*b**4*x**4 - 126*a**4*b**5*x**5 + 210*a**3*b**6*x**6 - 42
0*a**2*b**7*x**7 + 1260*a*b**8*x**8 + 2520*b**9*x**9)/(252*a**11*
x**9 + 252*a**10*b*x**10) + 10*b**9*(-log(x) + log(a/b + x))/a**1
1
```

GIAC/XCAS [A] time = 0.206102, size = 243, normalized size = 1.66

$$-\frac{10\,b^9\ln\left(\left|-\frac{a}{bx+a}+1\right|\right)}{a^{11}}-\frac{b^9}{(bx+a)a^{10}}-\frac{\frac{41481\,ab^9}{bx+a}-\frac{155844\,a^2b^9}{(bx+a)^2}+\frac{337176\,a^3b^9}{(bx+a)^3}-\frac{460404\,a^4b^9}{(bx+a)^4}+\frac{407484\,a^5b^9}{(bx+a)^5}-\frac{229320\,a^6b^9}{(bx+a)^6}+\frac{75600\,a^7b^9}{(bx+a)^7}-\frac{11340\,a^8b^9}{(bx+a)^8}-4861\,b^9}{252\,a^{11}\left(\frac{a}{bx+a}-1\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^10),x, algorithm="giac")
```

```
[Out] -10*b^9*ln(abs(-a/(b*x + a) + 1))/a^11 - b^9/((b*x + a)*a^10) - 1
/252*(41481*a*b^9/(b*x + a) - 155844*a^2*b^9/(b*x + a)^2 + 337176
*a^3*b^9/(b*x + a)^3 - 460404*a^4*b^9/(b*x + a)^4 + 407484*a^5*b^
9/(b*x + a)^5 - 229320*a^6*b^9/(b*x + a)^6 + 75600*a^7*b^9/(b*x +
 a)^7 - 11340*a^8*b^9/(b*x + a)^8 - 4861*b^9)/(a^11*(a/(b*x + a)
- 1)^9)
```

3.254 $\int \frac{1}{x^{10}(a+bx)^3}\,dx$

Optimal. Leaf size=163

$$-\frac{55b^9\log(x)}{a^{12}}+\frac{55b^9\log(a+bx)}{a^{12}}-\frac{10b^9}{a^{11}(a+bx)}-\frac{45b^8}{a^{11}x}-\frac{b^9}{2a^{10}(a+bx)^2}+\frac{18b^7}{a^{10}x^2}-\frac{28b^6}{3a^9x^3}+\frac{21b^5}{4a^8x^4}-\frac{3b^4}{a^7x^5}+\frac{5b^3}{3a^6x^6}-\frac{6b^2}{7a^5x^7}+\frac{3b}{8a^4x^8}-\frac{1}{9a^3x^9}$$

```
[Out] -1/(9*a^3*x^9) + (3*b)/(8*a^4*x^8) - (6*b^2)/(7*a^5*x^7) + (5*b^3
)/(3*a^6*x^6) - (3*b^4)/(a^7*x^5) + (21*b^5)/(4*a^8*x^4) - (28*b^
6)/(3*a^9*x^3) + (18*b^7)/(a^10*x^2) - (45*b^8)/(a^11*x) - b^9/(2
*a^10*(a + b*x)^2) - (10*b^9)/(a^11*(a + b*x)) - (55*b^9*Log[x])/
a^12 + (55*b^9*Log[a + b*x])/a^12
```

Rubi [A] time = 0.237747, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{55b^9\log(x)}{a^{12}}+\frac{55b^9\log(a+bx)}{a^{12}}-\frac{10b^9}{a^{11}(a+bx)}-\frac{45b^8}{a^{11}x}-\frac{b^9}{2a^{10}(a+bx)^2}+\frac{18b^7}{a^{10}x^2}-\frac{28b^6}{3a^9x^3}+\frac{21b^5}{4a^8x^4}-\frac{3b^4}{a^7x^5}+\frac{5b^3}{3a^6x^6}-\frac{6b^2}{7a^5x^7}+\frac{3b}{8a^4x^8}-\frac{1}{9a^3x^9}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^10*(a + b*x)^3),x]
```

```
[Out] -1/(9*a^3*x^9) + (3*b)/(8*a^4*x^8) - (6*b^2)/(7*a^5*x^7) + (5*b^3
)/(3*a^6*x^6) - (3*b^4)/(a^7*x^5) + (21*b^5)/(4*a^8*x^4) - (28*b^
6)/(3*a^9*x^3) + (18*b^7)/(a^10*x^2) - (45*b^8)/(a^11*x) - b^9/(2
*a^10*(a + b*x)^2) - (10*b^9)/(a^11*(a + b*x)) - (55*b^9*Log[x])/
a^12 + (55*b^9*Log[a + b*x])/a^12
```

Rubi in Sympy [A] time = 171.036, size = 165, normalized size = 1.01

$$-\frac{1}{9a^3x^9}+\frac{3b}{8a^4x^8}-\frac{6b^2}{7a^5x^7}+\frac{5b^3}{3a^6x^6}-\frac{3b^4}{a^7x^5}+\frac{21b^5}{4a^8x^4}-\frac{28b^6}{3a^9x^3}-\frac{b^9}{2a^{10}\left(a+bx\right)^2}+\frac{18b^7}{a^{10}x^2}-\frac{10b^9}{a^{11}\left(a+bx\right)}-\frac{45b^8}{a^{11}x}-\frac{55b^9\log\left(x\right)}{a^{12}}+\frac{55b^9\log\left(a+bx\right)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**10/(b*x+a)**3,x)
```

```
[Out] -1/(9*a**3*x**9) + 3*b/(8*a**4*x**8) - 6*b**2/(7*a**5*x**7) + 5*b
**3/(3*a**6*x**6) - 3*b**4/(a**7*x**5) + 21*b**5/(4*a**8*x**4) -
28*b**6/(3*a**9*x**3) - b**9/(2*a**10*(a + b*x)**2) + 18*b**7/(a*
*10*x**2) - 10*b**9/(a**11*(a + b*x)) - 45*b**8/(a**11*x) - 55*b*
*9*log(x)/a**12 + 55*b**9*log(a + b*x)/a**12
```

Mathematica [A] time = 0.185171, size = 145, normalized size = 0.89

$$-\frac{\frac{a\left(56a^{10}-77a^9bx+110a^8b^2x^2-165a^7b^3x^3+264a^6b^4x^4-462a^5b^5x^5+924a^4b^6x^6-2310a^3b^7x^7+9240a^2b^8x^8+41580ab^9x^9+27720b^{10}x^{10}\right)}{x^9(a+bx)^2}-27720b^9\log(a+}{504a^{12}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^10*(a + b*x)^3),x]
```

```
[Out] -((a*(56*a^10 - 77*a^9*b*x + 110*a^8*b^2*x^2 - 165*a^7*b^3*x^3 +
264*a^6*b^4*x^4 - 462*a^5*b^5*x^5 + 924*a^4*b^6*x^6 - 2310*a^3*b^
7*x^7 + 9240*a^2*b^8*x^8 + 41580*a*b^9*x^9 + 27720*b^10*x^10))/(x
^9*(a + b*x)^2) + 27720*b^9*Log[x] - 27720*b^9*Log[a + b*x])/(504
*a^12)
```

Maple [A] time = 0.02, size = 150, normalized size = 0.9

$$-\frac{1}{9\,a^3x^9}+\frac{3\,b}{8\,a^4x^8}-\frac{6\,b^2}{7\,a^5x^7}+\frac{5\,b^3}{3\,a^6x^6}-3\,\frac{b^4}{a^7x^5}+\frac{21\,b^5}{4\,a^8x^4}-\frac{28\,b^6}{3\,a^9x^3}+18\,\frac{b^7}{a^{10}x^2}-45\,\frac{b^8}{a^{11}x}-\frac{b^9}{2\,a^{10}\,(bx+a)^2}-10\,\frac{b^9}{a^{11}\,(bx+a)}-55\,\frac{b^9\ln(x)}{a^{12}}+55\,\frac{b^9\ln(bx+a)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^10/(b*x+a)^3,x)
```

```
[Out] -1/9/a^3/x^9+3/8*b/a^4/x^8-6/7*b^2/a^5/x^7+5/3*b^3/a^6/x^6-3*b^4/
a^7/x^5+21/4*b^5/a^8/x^4-28/3*b^6/a^9/x^3+18*b^7/a^10/x^2-45*b^8/
a^11/x-1/2*b^9/a^10/(b*x+a)^2-10*b^9/a^11/(b*x+a)-55*b^9*ln(x)/a^
12+55*b^9*ln(b*x+a)/a^12
```

Maxima [A] time = 1.35824, size = 220, normalized size = 1.35

$$-\frac{27720\,b^{10}x^{10}+41580\,ab^9x^9+9240\,a^2b^8x^8-2310\,a^3b^7x^7+924\,a^4b^6x^6-462\,a^5b^5x^5+264\,a^6b^4x^4-165\,a^7b^3x^3+110\,a^8b^2}{504\left(a^{11}b^2x^{11}+2\,a^{12}bx^{10}+a^{13}x^9\right)}+\frac{55\,b^9\log(bx+a)}{a^{12}}-\frac{55\,b^9\log(x)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^10),x, algorithm="maxima")
```

```
[Out] -1/504*(27720*b^10*x^10 + 41580*a*b^9*x^9 + 9240*a^2*b^8*x^8 - 23
10*a^3*b^7*x^7 + 924*a^4*b^6*x^6 - 462*a^5*b^5*x^5 + 264*a^6*b^4*
x^4 - 165*a^7*b^3*x^3 + 110*a^8*b^2*x^2 - 77*a^9*b*x + 56*a^10)/(
a^11*b^2*x^11 + 2*a^12*b*x^10 + a^13*x^9) + 55*b^9*log(b*x + a)/a
^12 - 55*b^9*log(x)/a^12
```

Fricas [A] time = 0.213946, size = 279, normalized size = 1.71

$$-\frac{27720\,ab^{10}x^{10} + 41580\,a^2b^9x^9 + 9240\,a^3b^8x^8 - 2310\,a^4b^7x^7 + 924\,a^5b^6x^6 - 462\,a^6b^5x^5 + 264\,a^7b^4x^4 - 165\,a^8b^3x^3 + 110\,a^9}{504\,(a^{12}b^2x^{11} + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^10),x, algorithm="fricas")
```

```
[Out] -1/504*(27720*a*b^10*x^10 + 41580*a^2*b^9*x^9 + 9240*a^3*b^8*x^8
- 2310*a^4*b^7*x^7 + 924*a^5*b^6*x^6 - 462*a^6*b^5*x^5 + 264*a^7*
b^4*x^4 - 165*a^8*b^3*x^3 + 110*a^9*b^2*x^2 - 77*a^10*b*x + 56*a^
11 - 27720*(b^11*x^11 + 2*a*b^10*x^10 + a^2*b^9*x^9)*log(b*x + a)
 + 27720*(b^11*x^11 + 2*a*b^10*x^10 + a^2*b^9*x^9)*log(x))/(a^12*
b^2*x^11 + 2*a^13*b*x^10 + a^14*x^9)
```

Sympy [A] time = 4.93325, size = 163, normalized size = 1.

$$-\frac{56a^{10} - 77a^9bx + 110a^8b^2x^2 - 165a^7b^3x^3 + 264a^6b^4x^4 - 462a^5b^5x^5 + 924a^4b^6x^6 - 2310a^3b^7x^7 + 9240a^2b^8x^8 + 41580ab^9}{504a^{13}x^9 + 1008a^{12}bx^{10} + 504a^{11}b^2x^{11}}$$
$$+\frac{55b^9\left(-\log(x) + \log\left(\frac{a}{b} + x\right)\right)}{a^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**10/(b*x+a)**3,x)
```

```
[Out] -(56*a**10 - 77*a**9*b*x + 110*a**8*b**2*x**2 - 165*a**7*b**3*x**
3 + 264*a**6*b**4*x**4 - 462*a**5*b**5*x**5 + 924*a**4*b**6*x**6
- 2310*a**3*b**7*x**7 + 9240*a**2*b**8*x**8 + 41580*a*b**9*x**9 +
 27720*b**10*x**10)/(504*a**13*x**9 + 1008*a**12*b*x**10 + 504*a*
*11*b**2*x**11) + 55*b**9*(-log(x) + log(a/b + x))/a**12
```

GIAC/XCAS [A] time = 0.205784, size = 205, normalized size = 1.26

$$\frac{55\,b^9\ln\left(|bx+a|\right)}{a^{12}}-\frac{55\,b^9\ln\left(|x|\right)}{a^{12}}-\frac{27720\,ab^{10}x^{10}+41580\,a^2b^9x^9+9240\,a^3b^8x^8-2310\,a^4b^7x^7+924\,a^5b^6x^6-462\,a^6b^5x^5+264\,a^7b^4x^4-165\,a^8b^3x^3+110\,a^9}{504\,(bx+a)^2a^{12}x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^10),x, algorithm="giac")
```

```
[Out] 55*b^9*ln(abs(b*x + a))/a^12 - 55*b^9*ln(abs(x))/a^12 - 1/504*(27
720*a*b^10*x^10 + 41580*a^2*b^9*x^9 + 9240*a^3*b^8*x^8 - 2310*a^4
*b^7*x^7 + 924*a^5*b^6*x^6 - 462*a^6*b^5*x^5 + 264*a^7*b^4*x^4 -
165*a^8*b^3*x^3 + 110*a^9*b^2*x^2 - 77*a^10*b*x + 56*a^11)/((b*x
+ a)^2*a^12*x^9)
```

3.255 $\int \frac{1}{x(2+3x)}\,dx$

Optimal. Leaf size=17

$$\frac{\log(x)}{2} - \frac{1}{2}\log(3x+2)$$

```
[Out] Log[x]/2 - Log[2 + 3*x]/2
```

Rubi [A] time = 0.0105639, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$

$$\frac{\log(x)}{2} - \frac{1}{2}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(2 + 3*x)),x]

[Out] Log[x]/2 - Log[2 + 3*x]/2
```

Rubi in Sympy [A] time = 2.22471, size = 12, normalized size = 0.71

$$\frac{\log(x)}{2} - \frac{\log(3x+2)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(2+3*x),x)

[Out] log(x)/2 - log(3*x + 2)/2
```

Mathematica [A] time = 0.00360877, size = 17, normalized size = 1.

$$\frac{\log(x)}{2} - \frac{1}{2}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(2 + 3*x)),x]
```

```
[Out] Log[x]/2 - Log[2 + 3*x]/2
```

Maple [A] time = 0.009, size = 14, normalized size = 0.8

$$\frac{\ln(x)}{2} - \frac{\ln(2+3x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(2+3*x),x)
```

```
[Out] 1/2*ln(x)-1/2*ln(2+3*x)
```

Maxima [A] time = 1.34183, size = 18, normalized size = 1.06

$$-\frac{1}{2}\log(3x+2) + \frac{1}{2}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((3*x + 2)*x),x, algorithm="maxima")
```

```
[Out] -1/2*log(3*x + 2) + 1/2*log(x)
```

Fricas [A] time = 0.214597, size = 18, normalized size = 1.06

$$-\frac{1}{2}\log(3x+2) + \frac{1}{2}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((3*x + 2)*x),x, algorithm="fricas")
```

```
[Out] -1/2*log(3*x + 2) + 1/2*log(x)
```

Sympy [A] time = 0.16962, size = 12, normalized size = 0.71

$$\frac{\log(x)}{2} - \frac{\log\left(x + \frac{2}{3}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(2+3*x),x)
```

```
[Out] log(x)/2 - log(x + 2/3)/2
```

GIAC/XCAS [A] time = 0.202598, size = 20, normalized size = 1.18

$$-\frac{1}{2}\ln\left(|3x+2|\right)+\frac{1}{2}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((3*x + 2)*x),x, algorithm="giac")
```

```
[Out] -1/2*ln(abs(3*x + 2)) + 1/2*ln(abs(x))
```

3.256 $\int \frac{1}{x(4+6x)}\,dx$

Optimal. Leaf size=17

$$\frac{\log(x)}{4}-\frac{1}{4}\log(3x+2)$$

```
[Out] Log[x]/4 - Log[2 + 3*x]/4
```

Rubi [A] time = 0.010587, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\frac{\log(x)}{4}-\frac{1}{4}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(4 + 6*x)),x]

[Out] Log[x]/4 - Log[2 + 3*x]/4
```

Rubi in Sympy [A] time = 2.24698, size = 12, normalized size = 0.71

$$\frac{\log(x)}{4}-\frac{\log(3x+2)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(4+6*x),x)

[Out] log(x)/4 - log(3*x + 2)/4
```

Mathematica [A] time = 0.00380492, size = 17, normalized size = 1.

$$\frac{\log(x)}{4}-\frac{1}{4}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(4 + 6*x)),x]
```

```
[Out] Log[x]/4 - Log[2 + 3*x]/4
```

Maple [A] time = 0., size = 14, normalized size = 0.8

$$\frac{\ln(x)}{4} - \frac{\ln(2+3x)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(4+6*x),x)
```

```
[Out] 1/4*ln(x)-1/4*ln(2+3*x)
```

Maxima [A] time = 1.34242, size = 18, normalized size = 1.06

$$-\frac{1}{4}\log(3x+2) + \frac{1}{4}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x),x, algorithm="maxima")
```

```
[Out] -1/4*log(3*x + 2) + 1/4*log(x)
```

Fricas [A] time = 0.205888, size = 18, normalized size = 1.06

$$-\frac{1}{4}\log(3x+2) + \frac{1}{4}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x),x, algorithm="fricas")
```

```
[Out] -1/4*log(3*x + 2) + 1/4*log(x)
```

Sympy [A] time = 0.187333, size = 12, normalized size = 0.71

$$\frac{\log(x)}{4} - \frac{\log\left(x+\frac{2}{3}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(4+6*x),x)
```

```
[Out] log(x)/4 - log(x + 2/3)/4
```

GIAC/XCAS [A] time = 0.202029, size = 20, normalized size = 1.18

$$-\frac{1}{4}\ln\left(|3x+2|\right)+\frac{1}{4}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x),x, algorithm="giac")
```

```
[Out] -1/4*ln(abs(3*x + 2)) + 1/4*ln(abs(x))
```

3.257 $\int \frac{1}{x^2(4+6x)}\,dx$

Optimal. Leaf size=24

$$-\frac{1}{4x}-\frac{3\log(x)}{8}+\frac{3}{8}\log(3x+2)$$

```
[Out] -1/(4*x) - (3*Log[x])/8 + (3*Log[2 + 3*x])/8
```

Rubi [A] time = 0.0216753, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{4x}-\frac{3\log(x)}{8}+\frac{3}{8}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(4 + 6*x)),x]

[Out] -1/(4*x) - (3*Log[x])/8 + (3*Log[2 + 3*x])/8
```

Rubi in Sympy [A] time = 3.58562, size = 20, normalized size = 0.83

$$-\frac{3\log(x)}{8}+\frac{3\log(3x+2)}{8}-\frac{1}{4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(4+6*x),x)

[Out] -3*log(x)/8 + 3*log(3*x + 2)/8 - 1/(4*x)
```

Mathematica [A] time = 0.00391467, size = 24, normalized size = 1.

$$-\frac{1}{4x}-\frac{3\log(x)}{8}+\frac{3}{8}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(4 + 6*x)),x]
```

```
[Out] -1/(4*x) - (3*Log[x])/8 + (3*Log[2 + 3*x])/8
```

Maple [A] time = 0.01, size = 19, normalized size = 0.8

$$-\frac{1}{4x} - \frac{3\ln(x)}{8} + \frac{3\ln(2+3x)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(4+6*x),x)

[Out] -1/4/x-3/8*ln(x)+3/8*ln(2+3*x)
```

Maxima [A] time = 1.34301, size = 24, normalized size = 1.

$$-\frac{1}{4x} + \frac{3}{8}\log(3x+2) - \frac{3}{8}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2/((3*x + 2)*x^2),x, algorithm="maxima")

[Out] -1/4/x + 3/8*log(3*x + 2) - 3/8*log(x)
```

Fricas [A] time = 0.211774, size = 28, normalized size = 1.17

$$\frac{3x\log(3x+2) - 3x\log(x) - 2}{8x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2/((3*x + 2)*x^2),x, algorithm="fricas")

[Out] 1/8*(3*x*log(3*x + 2) - 3*x*log(x) - 2)/x
```

Sympy [A] time = 0.210732, size = 20, normalized size = 0.83

$$-\frac{3\log(x)}{8} + \frac{3\log\left(x+\frac{2}{3}\right)}{8} - \frac{1}{4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(4+6*x),x)
```

```
[Out] -3*log(x)/8 + 3*log(x + 2/3)/8 - 1/(4*x)
```

GIAC/XCAS [A] time = 0.207361, size = 27, normalized size = 1.12

$$-\frac{1}{4\,x}+\frac{3}{8}\,\ln\left(|3\,x+2|\right)-\frac{3}{8}\,\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^2),x, algorithm="giac")
```

```
[Out] -1/4/x + 3/8*ln(abs(3*x + 2)) - 3/8*ln(abs(x))
```

3.258 $\int \frac{1}{x^3(4+6x)}\,dx$

Optimal. Leaf size=31

$$-\frac{1}{8x^2}+\frac{3}{8x}+\frac{9\log(x)}{16}-\frac{9}{16}\log(3x+2)$$

```
[Out] -1/(8*x^2) + 3/(8*x) + (9*Log[x])/16 - (9*Log[2 + 3*x])/16
```

Rubi [A] time = 0.0238058, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{8x^2}+\frac{3}{8x}+\frac{9\log(x)}{16}-\frac{9}{16}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[1/(x^3*(4 + 6*x)),x]
```

```
[Out] -1/(8*x^2) + 3/(8*x) + (9*Log[x])/16 - (9*Log[2 + 3*x])/16
```

Rubi in Sympy [A] time = 4.08248, size = 27, normalized size = 0.87

$$\frac{9\log(x)}{16}-\frac{9\log(3x+2)}{16}+\frac{3}{8x}-\frac{1}{8x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/x**3/(4+6*x),x)
```

```
[Out] 9*log(x)/16 - 9*log(3*x + 2)/16 + 3/(8*x) - 1/(8*x**2)
```

Mathematica [A] time = 0.00393771, size = 31, normalized size = 1.

$$-\frac{1}{8x^2}+\frac{3}{8x}+\frac{9\log(x)}{16}-\frac{9}{16}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(x^3*(4 + 6*x)),x]
```

```
[Out] -1/(8*x^2) + 3/(8*x) + (9*Log[x])/16 - (9*Log[2 + 3*x])/16
```

Maple [A] time = 0.011, size = 24, normalized size = 0.8

$$-\frac{1}{8\,x^2}+\frac{3}{8\,x}+\frac{9\,\ln(x)}{16}-\frac{9\,\ln(2+3\,x)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(4+6*x),x)
```

```
[Out] -1/8/x^2+3/8/x+9/16*ln(x)-9/16*ln(2+3*x)
```

Maxima [A] time = 1.33352, size = 31, normalized size = 1.

$$\frac{3\,x-1}{8\,x^2}-\frac{9}{16}\,\log(3\,x+2)+\frac{9}{16}\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^3),x, algorithm="maxima")
```

```
[Out] 1/8*(3*x - 1)/x^2 - 9/16*log(3*x + 2) + 9/16*log(x)
```

Fricas [A] time = 0.206109, size = 38, normalized size = 1.23

$$-\frac{9\,x^2\log(3\,x+2)-9\,x^2\log(x)-6\,x+2}{16\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^3),x, algorithm="fricas")
```

```
[Out] -1/16*(9*x^2*log(3*x + 2) - 9*x^2*log(x) - 6*x + 2)/x^2
```

Sympy [A] time = 0.243409, size = 26, normalized size = 0.84

$$\frac{9\log(x)}{16}-\frac{9\log\left(x+\frac{2}{3}\right)}{16}+\frac{3x-1}{8x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(4+6*x),x)

[Out] 9*log(x)/16 - 9*log(x + 2/3)/16 + (3*x - 1)/(8*x**2)
```

GIAC/XCAS [A] time = 0.204247, size = 34, normalized size = 1.1

$$\frac{3\,x-1}{8\,x^{2}}-\frac{9}{16}\ln\left(|3\,x+2|\right)+\frac{9}{16}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^3),x, algorithm="giac")

[Out] 1/8*(3*x - 1)/x^2 - 9/16*ln(abs(3*x + 2)) + 9/16*ln(abs(x))
```

3.259 $\int \frac{1}{x^4(4+6x)}\,dx$

Optimal. Leaf size=38

$$-\frac{1}{12x^3}+\frac{3}{16x^2}-\frac{9}{16x}-\frac{27\log(x)}{32}+\frac{27}{32}\log(3x+2)$$

```
[Out] -1/(12*x^3) + 3/(16*x^2) - 9/(16*x) - (27*Log[x])/32 + (27*Log[2
+ 3*x])/32
```

Rubi [A] time = 0.0267183, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{12x^3}+\frac{3}{16x^2}-\frac{9}{16x}-\frac{27\log(x)}{32}+\frac{27}{32}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(4 + 6*x)),x]
```

```
[Out] -1/(12*x^3) + 3/(16*x^2) - 9/(16*x) - (27*Log[x])/32 + (27*Log[2
+ 3*x])/32
```

Rubi in Sympy [A] time = 4.38979, size = 34, normalized size = 0.89

$$-\frac{27\log(x)}{32}+\frac{27\log(3x+2)}{32}-\frac{9}{16x}+\frac{3}{16x^2}-\frac{1}{12x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(4+6*x),x)
```

```
[Out] -27*log(x)/32 + 27*log(3*x + 2)/32 - 9/(16*x) + 3/(16*x**2) - 1/(
12*x**3)
```

Mathematica [A] time = 0.0048551, size = 38, normalized size = 1.

$$-\frac{1}{12x^3}+\frac{3}{16x^2}-\frac{9}{16x}-\frac{27\log(x)}{32}+\frac{27}{32}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(4 + 6*x)),x]

[Out] -1/(12*x^3) + 3/(16*x^2) - 9/(16*x) - (27*Log[x])/32 + (27*Log[2
+ 3*x])/32
```

Maple [A] time = 0.012, size = 29, normalized size = 0.8

$$-\frac{1}{12\,x^{3}}+\frac{3}{16\,x^{2}}-\frac{9}{16\,x}-\frac{27\,\ln\left(x\right)}{32}+\frac{27\,\ln\left(2+3\,x\right)}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(4+6*x),x)

[Out] -1/12/x^3+3/16/x^2-9/16/x-27/32*ln(x)+27/32*ln(2+3*x)
```

Maxima [A] time = 1.38841, size = 38, normalized size = 1.

$$-\frac{27\,x^{2}-9\,x+4}{48\,x^{3}}+\frac{27}{32}\,\log\left(3\,x+2\right)-\frac{27}{32}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^4),x, algorithm="maxima")

[Out] -1/48*(27*x^2 - 9*x + 4)/x^3 + 27/32*log(3*x + 2) - 27/32*log(x)
```

Fricas [A] time = 0.207803, size = 45, normalized size = 1.18

$$\frac{81\,x^{3}\log\left(3\,x+2\right)-81\,x^{3}\log\left(x\right)-54\,x^{2}+18\,x-8}{96\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^4),x, algorithm="fricas")

[Out] 1/96*(81*x^3*log(3*x + 2) - 81*x^3*log(x) - 54*x^2 + 18*x - 8)/x^
3
```

Sympy [A] time = 0.278805, size = 31, normalized size = 0.82

$$-\frac{27\log(x)}{32} + \frac{27\log\left(x + \frac{2}{3}\right)}{32} - \frac{27x^2 - 9x + 4}{48x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(4+6*x),x)
```

```
[Out] -27*log(x)/32 + 27*log(x + 2/3)/32 - (27*x**2 - 9*x + 4)/(48*x**3
)
```

GIAC/XCAS [A] time = 0.205128, size = 41, normalized size = 1.08

$$-\frac{27\,x^2 - 9\,x + 4}{48\,x^3} + \frac{27}{32}\ln\left(|3\,x + 2|\right) - \frac{27}{32}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^4),x, algorithm="giac")
```

```
[Out] -1/48*(27*x^2 - 9*x + 4)/x^3 + 27/32*ln(abs(3*x + 2)) - 27/32*ln(
abs(x))
```

3.260 $\int \frac{1}{x^5(4+6x)} dx$

Optimal. Leaf size=45

$$-\frac{1}{16x^4}+\frac{1}{8x^3}-\frac{9}{32x^2}+\frac{27}{32x}+\frac{81\log(x)}{64}-\frac{81}{64}\log(3x+2)$$

```
[Out] -1/(16*x^4) + 1/(8*x^3) - 9/(32*x^2) + 27/(32*x) + (81*Log[x])/64
 - (81*Log[2 + 3*x])/64
```

Rubi [A] time = 0.03064, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{1}{16x^4}+\frac{1}{8x^3}-\frac{9}{32x^2}+\frac{27}{32x}+\frac{81\log(x)}{64}-\frac{81}{64}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(4 + 6*x)),x]
```

```
[Out] -1/(16*x^4) + 1/(8*x^3) - 9/(32*x^2) + 27/(32*x) + (81*Log[x])/64
 - (81*Log[2 + 3*x])/64
```

Rubi in Sympy [A] time = 4.85974, size = 41, normalized size = 0.91

$$\frac{81\log{(x)}}{64}-\frac{81\log{(3x+2)}}{64}+\frac{27}{32x}-\frac{9}{32x^2}+\frac{1}{8x^3}-\frac{1}{16x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(4+6*x),x)
```

```
[Out] 81*log(x)/64 - 81*log(3*x + 2)/64 + 27/(32*x) - 9/(32*x**2) + 1/(
8*x**3) - 1/(16*x**4)
```

Mathematica [A] time = 0.00414986, size = 45, normalized size = 1.

$$-\frac{1}{16x^4}+\frac{1}{8x^3}-\frac{9}{32x^2}+\frac{27}{32x}+\frac{81\log(x)}{64}-\frac{81}{64}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(4 + 6*x)),x]
```

```
[Out] -1/(16*x^4) + 1/(8*x^3) - 9/(32*x^2) + 27/(32*x) + (81*Log[x])/64
 - (81*Log[2 + 3*x])/64
```

Maple [A] time = 0.01, size = 34, normalized size = 0.8

$$-\frac{1}{16\,x^{4}}+\frac{1}{8\,x^{3}}-\frac{9}{32\,x^{2}}+\frac{27}{32\,x}+\frac{81\,\ln\left(x\right)}{64}-\frac{81\,\ln\left(2+3\,x\right)}{64}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(4+6*x),x)
```

```
[Out] -1/16/x^4+1/8/x^3-9/32/x^2+27/32/x+81/64*ln(x)-81/64*ln(2+3*x)
```

Maxima [A] time = 1.34691, size = 45, normalized size = 1.

$$\frac{27\,x^{3}-9\,x^{2}+4\,x-2}{32\,x^{4}}-\frac{81}{64}\,\log\left(3\,x+2\right)+\frac{81}{64}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^5),x, algorithm="maxima")
```

```
[Out] 1/32*(27*x^3 - 9*x^2 + 4*x - 2)/x^4 - 81/64*log(3*x + 2) + 81/64*
log(x)
```

Fricas [A] time = 0.212699, size = 51, normalized size = 1.13

$$-\frac{81\,x^{4}\log\left(3\,x+2\right)-81\,x^{4}\log\left(x\right)-54\,x^{3}+18\,x^{2}-8\,x+4}{64\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^5),x, algorithm="fricas")
```

```
[Out] -1/64*(81*x^4*log(3*x + 2) - 81*x^4*log(x) - 54*x^3 + 18*x^2 - 8*
x + 4)/x^4
```

Sympy [A] time = 0.298061, size = 36, normalized size = 0.8

$$\frac{81\log{(x)}}{64} - \frac{81\log{\left(x + \frac{2}{3}\right)}}{64} + \frac{27x^3 - 9x^2 + 4x - 2}{32x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(4+6*x),x)
```

```
[Out] 81*log(x)/64 - 81*log(x + 2/3)/64 + (27*x**3 - 9*x**2 + 4*x - 2)/
(32*x**4)
```

GIAC/XCAS [A] time = 0.203864, size = 47, normalized size = 1.04

$$\frac{27\,x^3 - 9\,x^2 + 4\,x - 2}{32\,x^4} - \frac{81}{64}\ln\left(|3\,x + 2|\right) + \frac{81}{64}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/((3*x + 2)*x^5),x, algorithm="giac")
```

```
[Out] 1/32*(27*x^3 - 9*x^2 + 4*x - 2)/x^4 - 81/64*ln(abs(3*x + 2)) + 81
/64*ln(abs(x))
```

3.261 $\int \frac{1}{x(4+6x)^2} dx$

Optimal. Leaf size=28

$$\frac{1}{8(3x+2)} + \frac{\log(x)}{16} - \frac{1}{16}\log(3x+2)$$

```
[Out] 1/(8*(2 + 3*x)) + Log[x]/16 - Log[2 + 3*x]/16
```

Rubi [A] time = 0.0227729, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{1}{8(3x+2)} + \frac{\log(x)}{16} - \frac{1}{16}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(4 + 6*x)^2),x]
```

```
[Out] 1/(8*(2 + 3*x)) + Log[x]/16 - Log[2 + 3*x]/16
```

Rubi in Sympy [A] time = 4.28877, size = 19, normalized size = 0.68

$$\frac{\log(x)}{16} - \frac{\log(3x+2)}{16} + \frac{1}{8(3x+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(4+6*x)**2,x)
```

```
[Out] log(x)/16 - log(3*x + 2)/16 + 1/(8*(3*x + 2))
```

Mathematica [A] time = 0.018728, size = 26, normalized size = 0.93

$$\frac{1}{16}\left(\frac{2}{3x+2} + \log(-6x) - \log(6x+4)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(4 + 6*x)^2),x]
```

```
[Out] (2/(2 + 3*x) + Log[-6*x] - Log[4 + 6*x])/16
```

Maple [A] time = 0.01, size = 23, normalized size = 0.8

$$\frac{1}{16+24\,x}+\frac{\ln\left(x\right)}{16}-\frac{\ln\left(2+3\,x\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(4+6*x)^2,x)
```

```
[Out] 1/8/(2+3*x)+1/16*ln(x)-1/16*ln(2+3*x)
```

Maxima [A] time = 1.34038, size = 30, normalized size = 1.07

$$\frac{1}{8\left(3\,x+2\right)}-\frac{1}{16}\,\log\left(3\,x+2\right)+\frac{1}{16}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x),x, algorithm="maxima")
```

```
[Out] 1/8/(3*x + 2) - 1/16*log(3*x + 2) + 1/16*log(x)
```

Fricas [A] time = 0.220735, size = 43, normalized size = 1.54

$$-\frac{\left(3\,x+2\right)\log\left(3\,x+2\right)-\left(3\,x+2\right)\log\left(x\right)-2}{16\left(3\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x),x, algorithm="fricas")
```

```
[Out] -1/16*((3*x + 2)*log(3*x + 2) - (3*x + 2)*log(x) - 2)/(3*x + 2)
```

Sympy [A] time = 0.2366, size = 19, normalized size = 0.68

$$\frac{\log\left(x\right)}{16}-\frac{\log\left(x+\frac{2}{3}\right)}{16}+\frac{1}{24x+16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(4+6*x)**2,x)
```

```
[Out] log(x)/16 - log(x + 2/3)/16 + 1/(24*x + 16)
```

GIAC/XCAS [A] time = 0.204729, size = 34, normalized size = 1.21

$$\frac{1}{8\,(3\,x+2)}+\frac{1}{16}\ln\left(\left|-\frac{2}{3\,x+2}+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x),x, algorithm="giac")
```

```
[Out] 1/8/(3*x + 2) + 1/16*ln(abs(-2/(3*x + 2) + 1))
```

3.262 $\int \frac{1}{x^2(4+6x)^2}\,dx$

Optimal. Leaf size=35

$$-\frac{1}{16x}-\frac{3}{16(3x+2)}-\frac{3\log(x)}{16}+\frac{3}{16}\log(3x+2)$$

```
[Out] -1/(16*x) - 3/(16*(2 + 3*x)) - (3*Log[x])/16 + (3*Log[2 + 3*x])/1
6
```

Rubi [A] time = 0.0253209, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{16x}-\frac{3}{16(3x+2)}-\frac{3\log(x)}{16}+\frac{3}{16}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(4 + 6*x)^2),x]

[Out] -1/(16*x) - 3/(16*(2 + 3*x)) - (3*Log[x])/16 + (3*Log[2 + 3*x])/1
6
```

Rubi in Sympy [A] time = 4.48447, size = 27, normalized size = 0.77

$$-\frac{3\log(x)}{16}+\frac{3\log(3x+2)}{16}-\frac{3}{16(3x+2)}-\frac{1}{16x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(4+6*x)**2,x)

[Out] -3*log(x)/16 + 3*log(3*x + 2)/16 - 3/(16*(3*x + 2)) - 1/(16*x)
```

Mathematica [A] time = 0.0218254, size = 31, normalized size = 0.89

$$\frac{1}{16}\left(-\frac{1}{x}-\frac{3}{3x+2}-3\log(x)+3\log(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(4 + 6*x)^2),x]

[Out] (-x^(-1) - 3/(2 + 3*x) - 3*Log[x] + 3*Log[2 + 3*x])/16
```

Maple [A] time = 0.014, size = 28, normalized size = 0.8

$$-\frac{1}{16\,x}-\frac{3}{32+48\,x}-\frac{3\,\ln\left(x\right)}{16}+\frac{3\,\ln\left(2+3\,x\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(4+6*x)^2,x)

[Out] -1/16/x-3/16/(2+3*x)-3/16*ln(x)+3/16*ln(2+3*x)
```

Maxima [A] time = 1.31772, size = 42, normalized size = 1.2

$$-\frac{3\,x+1}{8\,\left(3\,x^{2}+2\,x\right)}+\frac{3}{16}\,\log\left(3\,x+2\right)-\frac{3}{16}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^2),x, algorithm="maxima")

[Out] -1/8*(3*x + 1)/(3*x^2 + 2*x) + 3/16*log(3*x + 2) - 3/16*log(x)
```

Fricas [A] time = 0.208669, size = 65, normalized size = 1.86

$$\frac{3\,\left(3\,x^{2}+2\,x\right)\,\log\left(3\,x+2\right)-3\,\left(3\,x^{2}+2\,x\right)\,\log\left(x\right)-6\,x-2}{16\,\left(3\,x^{2}+2\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^2),x, algorithm="fricas")

[Out] 1/16*(3*(3*x^2 + 2*x)*log(3*x + 2) - 3*(3*x^2 + 2*x)*log(x) - 6*x
 - 2)/(3*x^2 + 2*x)
```

Sympy [A] time = 0.264752, size = 29, normalized size = 0.83

$$-\frac{3x+1}{24x^2+16x}-\frac{3\log(x)}{16}+\frac{3\log\left(x+\frac{2}{3}\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(4+6*x)**2,x)
```

```
[Out] -(3*x + 1)/(24*x**2 + 16*x) - 3*log(x)/16 + 3*log(x + 2/3)/16
```

GIAC/XCAS [A] time = 0.2062, size = 54, normalized size = 1.54

$$-\frac{3}{16\,(3\,x+2)}+\frac{3}{32\,\left(\frac{2}{3\,x+2}-1\right)}-\frac{3}{16}\,\ln\left(\left|-\frac{2}{3\,x+2}+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^2),x, algorithm="giac")
```

```
[Out] -3/16/(3*x + 2) + 3/32/(2/(3*x + 2) - 1) - 3/16*ln(abs(-2/(3*x +
2) + 1))
```

3.263 $\int \frac{1}{x^3(4+6x)^2} \, dx$

Optimal. Leaf size=42

$$-\frac{1}{32x^2}+\frac{3}{16x}+\frac{9}{32(3x+2)}+\frac{27\log(x)}{64}-\frac{27}{64}\log(3x+2)$$

```
[Out] -1/(32*x^2) + 3/(16*x) + 9/(32*(2 + 3*x)) + (27*Log[x])/64 - (27*
Log[2 + 3*x])/64
```

Rubi [A] time = 0.0318018, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{32x^2}+\frac{3}{16x}+\frac{9}{32(3x+2)}+\frac{27\log(x)}{64}-\frac{27}{64}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(4 + 6*x)^2),x]
```

```
[Out] -1/(32*x^2) + 3/(16*x) + 9/(32*(2 + 3*x)) + (27*Log[x])/64 - (27*
Log[2 + 3*x])/64
```

Rubi in Sympy [A] time = 5.14411, size = 34, normalized size = 0.81

$$\frac{27\log(x)}{64}-\frac{27\log(3x+2)}{64}+\frac{9}{32(3x+2)}+\frac{3}{16x}-\frac{1}{32x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(4+6*x)**2,x)
```

```
[Out] 27*log(x)/64 - 27*log(3*x + 2)/64 + 9/(32*(3*x + 2)) + 3/(16*x) -
 1/(32*x**2)
```

Mathematica [A] time = 0.0209013, size = 36, normalized size = 0.86

$$\frac{1}{64}\left(-\frac{2}{x^2}+\frac{12}{x}+\frac{18}{3x+2}+27\log(x)-27\log(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(4 + 6*x)^2),x]

[Out] (-2/x^2 + 12/x + 18/(2 + 3*x) + 27*Log[x] - 27*Log[2 + 3*x])/64
```

Maple [A] time = 0.016, size = 33, normalized size = 0.8

$$-\frac{1}{32\,x^2}+\frac{3}{16\,x}+\frac{9}{64+96\,x}+\frac{27\,\ln(x)}{64}-\frac{27\,\ln(2+3\,x)}{64}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(4+6*x)^2,x)

[Out] -1/32/x^2+3/16/x+9/32/(2+3*x)+27/64*ln(x)-27/64*ln(2+3*x)
```

Maxima [A] time = 1.32895, size = 51, normalized size = 1.21

$$\frac{27\,x^2+9\,x-2}{32\,(3\,x^3+2\,x^2)}-\frac{27}{64}\,\log(3\,x+2)+\frac{27}{64}\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^3),x, algorithm="maxima")

[Out] 1/32*(27*x^2 + 9*x - 2)/(3*x^3 + 2*x^2) - 27/64*log(3*x + 2) + 27
/64*log(x)
```

Fricas [A] time = 0.210257, size = 80, normalized size = 1.9

$$\frac{54\,x^2-27\,\left(3\,x^3+2\,x^2\right)\,\log(3\,x+2)+27\,\left(3\,x^3+2\,x^2\right)\,\log(x)+18\,x-4}{64\,(3\,x^3+2\,x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^3),x, algorithm="fricas")

[Out] 1/64*(54*x^2 - 27*(3*x^3 + 2*x^2)*log(3*x + 2) + 27*(3*x^3 + 2*x^
2)*log(x) + 18*x - 4)/(3*x^3 + 2*x^2)
```

Sympy [A] time = 0.308357, size = 36, normalized size = 0.86

$$\frac{27\log\left(x\right)}{64} - \frac{27\log\left(x+\frac{2}{3}\right)}{64} + \frac{27x^{2}+9x-2}{96x^{3}+64x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(4+6*x)**2,x)
```

```
[Out] 27*log(x)/64 - 27*log(x + 2/3)/64 + (27*x**2 + 9*x - 2)/(96*x**3
+ 64*x**2)
```

GIAC/XCAS [A] time = 0.203874, size = 69, normalized size = 1.64

$$\frac{9}{32\left(3\,x+2\right)} - \frac{9\left(\frac{12}{3\,x+2}-5\right)}{128\left(\frac{2}{3\,x+2}-1\right)^{2}} + \frac{27}{64}\ln\left(\left|-\frac{2}{3\,x+2}+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^3),x, algorithm="giac")
```

```
[Out] 9/32/(3*x + 2) - 9/128*(12/(3*x + 2) - 5)/(2/(3*x + 2) - 1)^2 + 2
7/64*ln(abs(-2/(3*x + 2) + 1))
```

3.264 $\int \frac{1}{x^4(4+6x)^2}\,dx$

Optimal. Leaf size=49

$$-\frac{1}{48x^3}+\frac{3}{32x^2}-\frac{27}{64x}-\frac{27}{64(3x+2)}-\frac{27\log(x)}{32}+\frac{27}{32}\log(3x+2)$$

```
[Out] -1/(48*x^3) + 3/(32*x^2) - 27/(64*x) - 27/(64*(2 + 3*x)) - (27*Lo
g[x])/32 + (27*Log[2 + 3*x])/32
```

Rubi [A] time = 0.0344682, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{48x^3}+\frac{3}{32x^2}-\frac{27}{64x}-\frac{27}{64(3x+2)}-\frac{27\log(x)}{32}+\frac{27}{32}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(4 + 6*x)^2),x]
```

```
[Out] -1/(48*x^3) + 3/(32*x^2) - 27/(64*x) - 27/(64*(2 + 3*x)) - (27*Lo
g[x])/32 + (27*Log[2 + 3*x])/32
```

Rubi in Sympy [A] time = 5.47702, size = 41, normalized size = 0.84

$$-\frac{27\log(x)}{32}+\frac{27\log(3x+2)}{32}-\frac{27}{64(3x+2)}-\frac{27}{64x}+\frac{3}{32x^2}-\frac{1}{48x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(4+6*x)**2,x)
```

```
[Out] -27*log(x)/32 + 27*log(3*x + 2)/32 - 27/(64*(3*x + 2)) - 27/(64*x
) + 3/(32*x**2) - 1/(48*x**3)
```

Mathematica [A] time = 0.0522731, size = 44, normalized size = 0.9

$$\frac{1}{192}\left(-\frac{4\left(81x^3+27x^2-6x+2\right)}{x^3(3x+2)}-162\log(x)+162\log(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(4 + 6*x)^2),x]
```

```
[Out] ((-4*(2 - 6*x + 27*x^2 + 81*x^3))/(x^3*(2 + 3*x)) - 162*Log[x] +
162*Log[2 + 3*x])/192
```

Maple [A] time = 0.014, size = 38, normalized size = 0.8

$$-\frac{1}{48\,x^{3}}+\frac{3}{32\,x^{2}}-\frac{27}{64\,x}-\frac{27}{128+192\,x}-\frac{27\,\ln\left(x\right)}{32}+\frac{27\,\ln\left(2+3\,x\right)}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(4+6*x)^2,x)
```

```
[Out] -1/48/x^3+3/32/x^2-27/64/x-27/64/(2+3*x)-27/32*ln(x)+27/32*ln(2+3
*x)
```

Maxima [A] time = 1.34659, size = 58, normalized size = 1.18

$$-\frac{81\,x^{3}+27\,x^{2}-6\,x+2}{48\,(3\,x^{4}+2\,x^{3})}+\frac{27}{32}\,\log\left(3\,x+2\right)-\frac{27}{32}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^4),x, algorithm="maxima")
```

```
[Out] -1/48*(81*x^3 + 27*x^2 - 6*x + 2)/(3*x^4 + 2*x^3) + 27/32*log(3*x
 + 2) - 27/32*log(x)
```

Fricas [A] time = 0.208656, size = 86, normalized size = 1.76

$$-\frac{162\,x^{3}+54\,x^{2}-81\left(3\,x^{4}+2\,x^{3}\right)\log\left(3\,x+2\right)+81\left(3\,x^{4}+2\,x^{3}\right)\log\left(x\right)-12\,x+4}{96\,(3\,x^{4}+2\,x^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^4),x, algorithm="fricas")
```

```
[Out] -1/96*(162*x^3 + 54*x^2 - 81*(3*x^4 + 2*x^3)*log(3*x + 2) + 81*(3
*x^4 + 2*x^3)*log(x) - 12*x + 4)/(3*x^4 + 2*x^3)
```

Sympy [A] time = 0.332184, size = 41, normalized size = 0.84

$$-\frac{27\log{(x)}}{32}+\frac{27\log{\left(x+\frac{2}{3}\right)}}{32}-\frac{81x^3+27x^2-6x+2}{144x^4+96x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(4+6*x)**2,x)
```

```
[Out] -27*log(x)/32 + 27*log(x + 2/3)/32 - (81*x**3 + 27*x**2 - 6*x + 2
)/(144*x**4 + 96*x**3)
```

GIAC/XCAS [A] time = 0.203514, size = 81, normalized size = 1.65

$$-\frac{27}{64\,(3\,x+2)}-\frac{9\left(\frac{60}{3\,x+2}-\frac{72}{(3\,x+2)^2}-13\right)}{128\left(\frac{2}{3\,x+2}-1\right)^3}-\frac{27}{32}\ln\left(\left|-\frac{2}{3\,x+2}+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^4),x, algorithm="giac")
```

```
[Out] -27/64/(3*x + 2) - 9/128*(60/(3*x + 2) - 72/(3*x + 2)^2 - 13)/(2/
(3*x + 2) - 1)^3 - 27/32*ln(abs(-2/(3*x + 2) + 1))
```

3.265 $\int \frac{1}{x^5(4+6x)^2}\,dx$

Optimal. Leaf size=56

$$-\frac{1}{64x^4}+\frac{1}{16x^3}-\frac{27}{128x^2}+\frac{27}{32x}+\frac{81}{128(3x+2)}+\frac{405\log(x)}{256}-\frac{405}{256}\log(3x+2)$$

```
[Out] -1/(64*x^4) + 1/(16*x^3) - 27/(128*x^2) + 27/(32*x) + 81/(128*(2
+ 3*x)) + (405*Log[x])/256 - (405*Log[2 + 3*x])/256
```

Rubi [A] time = 0.0429881, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{64x^4}+\frac{1}{16x^3}-\frac{27}{128x^2}+\frac{27}{32x}+\frac{81}{128(3x+2)}+\frac{405\log(x)}{256}-\frac{405}{256}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(4 + 6*x)^2),x]
```

```
[Out] -1/(64*x^4) + 1/(16*x^3) - 27/(128*x^2) + 27/(32*x) + 81/(128*(2
+ 3*x)) + (405*Log[x])/256 - (405*Log[2 + 3*x])/256
```

Rubi in Sympy [A] time = 6.1991, size = 48, normalized size = 0.86

$$\frac{405\log(x)}{256}-\frac{405\log(3x+2)}{256}+\frac{81}{128(3x+2)}+\frac{27}{32x}-\frac{27}{128x^2}+\frac{1}{16x^3}-\frac{1}{64x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(4+6*x)**2,x)
```

```
[Out] 405*log(x)/256 - 405*log(3*x + 2)/256 + 81/(128*(3*x + 2)) + 27/(
32*x) - 27/(128*x**2) + 1/(16*x**3) - 1/(64*x**4)
```

Mathematica [A] time = 0.0174682, size = 56, normalized size = 1.

$$-\frac{1}{64x^4}+\frac{1}{16x^3}-\frac{27}{128x^2}+\frac{27}{32x}+\frac{81}{128(3x+2)}+\frac{405\log(x)}{256}-\frac{405}{256}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(4 + 6*x)^2),x]
```

```
[Out] -1/(64*x^4) + 1/(16*x^3) - 27/(128*x^2) + 27/(32*x) + 81/(128*(2
+ 3*x)) + (405*Log[x])/256 - (405*Log[2 + 3*x])/256
```

Maple [A] time = 0.013, size = 43, normalized size = 0.8

$$-\frac{1}{64\,x^{4}}+\frac{1}{16\,x^{3}}-\frac{27}{128\,x^{2}}+\frac{27}{32\,x}+\frac{81}{256+384\,x}+\frac{405\,\ln\left(x\right)}{256}-\frac{405\,\ln\left(2+3\,x\right)}{256}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(4+6*x)^2,x)
```

```
[Out] -1/64/x^4+1/16/x^3-27/128/x^2+27/32/x+81/128/(2+3*x)+405/256*ln(x
)-405/256*ln(2+3*x)
```

Maxima [A] time = 1.34782, size = 65, normalized size = 1.16

$$\frac{405\,x^{4}+135\,x^{3}-30\,x^{2}+10\,x-4}{128\,(3\,x^{5}+2\,x^{4})}-\frac{405}{256}\,\log\left(3\,x+2\right)+\frac{405}{256}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^5),x, algorithm="maxima")
```

```
[Out] 1/128*(405*x^4 + 135*x^3 - 30*x^2 + 10*x - 4)/(3*x^5 + 2*x^4) - 4
05/256*log(3*x + 2) + 405/256*log(x)
```

Fricas [A] time = 0.210006, size = 93, normalized size = 1.66

$$\frac{810\,x^{4}+270\,x^{3}-60\,x^{2}-405\,\left(3\,x^{5}+2\,x^{4}\right)\,\log\left(3\,x+2\right)+405\,\left(3\,x^{5}+2\,x^{4}\right)\,\log\left(x\right)+20\,x-8}{256\,(3\,x^{5}+2\,x^{4})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^5),x, algorithm="fricas")
```

```
[Out] 1/256*(810*x^4 + 270*x^3 - 60*x^2 - 405*(3*x^5 + 2*x^4)*log(3*x +
 2) + 405*(3*x^5 + 2*x^4)*log(x) + 20*x - 8)/(3*x^5 + 2*x^4)
```

Sympy [A] time = 0.362168, size = 46, normalized size = 0.82

$$\frac{405\log(x)}{256} - \frac{405\log\left(x+\frac{2}{3}\right)}{256} + \frac{405x^4+135x^3-30x^2+10x-4}{384x^5+256x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(4+6*x)**2,x)
```

```
[Out] 405*log(x)/256 - 405*log(x + 2/3)/256 + (405*x**4 + 135*x**3 - 30
*x**2 + 10*x - 4)/(384*x**5 + 256*x**4)
```

GIAC/XCAS [A] time = 0.203676, size = 93, normalized size = 1.66

$$\frac{81}{128\,(3\,x+2)} - \frac{27\left(\frac{520}{3\,x+2} - \frac{1200}{(3\,x+2)^2} + \frac{960}{(3\,x+2)^3} - 77\right)}{1024\left(\frac{2}{3\,x+2} - 1\right)^4} + \frac{405}{256}\ln\left(\left|-\frac{2}{3\,x+2} + 1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/4/((3*x + 2)^2*x^5),x, algorithm="giac")
```

```
[Out] 81/128/(3*x + 2) - 27/1024*(520/(3*x + 2) - 1200/(3*x + 2)^2 + 96
0/(3*x + 2)^3 - 77)/(2/(3*x + 2) - 1)^4 + 405/256*ln(abs(-2/(3*x
+ 2) + 1))
```

3.266 $\int \frac{1}{x(4+6x)^3} dx$

Optimal. Leaf size=39

$$\frac{1}{32(3x+2)}+\frac{1}{32(3x+2)^2}+\frac{\log(x)}{64}-\frac{1}{64}\log(3x+2)$$

```
[Out] 1/(32*(2 + 3*x)^2) + 1/(32*(2 + 3*x)) + Log[x]/64 - Log[2 + 3*x]/
64
```

Rubi [A] time = 0.0281361, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{1}{32(3x+2)}+\frac{1}{32(3x+2)^2}+\frac{\log(x)}{64}-\frac{1}{64}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(4 + 6*x)^3),x]
```

```
[Out] 1/(32*(2 + 3*x)^2) + 1/(32*(2 + 3*x)) + Log[x]/64 - Log[2 + 3*x]/
64
```

Rubi in Sympy [A] time = 5.34267, size = 29, normalized size = 0.74

$$\frac{\log(x)}{64}-\frac{\log(3x+2)}{64}+\frac{1}{32(3x+2)}+\frac{1}{32(3x+2)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(4+6*x)**3,x)
```

```
[Out] log(x)/64 - log(3*x + 2)/64 + 1/(32*(3*x + 2)) + 1/(32*(3*x + 2)*
*2)
```

Mathematica [A] time = 0.0307152, size = 29, normalized size = 0.74

$$\frac{1}{64}\left(\frac{6(x+1)}{(3x+2)^2}+\log(-6x)-\log(6x+4)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(4 + 6*x)^3),x]
```

```
[Out] ((6*(1 + x))/(2 + 3*x)^2 + Log[-6*x] - Log[4 + 6*x])/64
```

Maple [A] time = 0.01, size = 32, normalized size = 0.8

$$\frac{1}{32\,(2+3\,x)^2}+\frac{1}{64+96\,x}+\frac{\ln(x)}{64}-\frac{\ln(2+3\,x)}{64}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(4+6*x)^3,x)
```

```
[Out] 1/32/(2+3*x)^2+1/32/(2+3*x)+1/64*ln(x)-1/64*ln(2+3*x)
```

Maxima [A] time = 1.32844, size = 41, normalized size = 1.05

$$\frac{3\,(x+1)}{32\,(9\,x^2+12\,x+4)}-\frac{1}{64}\,\log(3\,x+2)+\frac{1}{64}\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x),x, algorithm="maxima")
```

```
[Out] 3/32*(x + 1)/(9*x^2 + 12*x + 4) - 1/64*log(3*x + 2) + 1/64*log(x)
```

Fricas [A] time = 0.212966, size = 68, normalized size = 1.74

$$-\frac{\left(9\,x^2+12\,x+4\right)\log(3\,x+2)-\left(9\,x^2+12\,x+4\right)\log(x)-6\,x-6}{64\,(9\,x^2+12\,x+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x),x, algorithm="fricas")
```

```
[Out] -1/64*((9*x^2 + 12*x + 4)*log(3*x + 2) - (9*x^2 + 12*x + 4)*log(x
) - 6*x - 6)/(9*x^2 + 12*x + 4)
```

Sympy [A] time = 0.291737, size = 27, normalized size = 0.69

$$\frac{3x+3}{288x^2+384x+128}+\frac{\log(x)}{64}-\frac{\log\left(x+\frac{2}{3}\right)}{64}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(4+6*x)**3,x)
```

```
[Out] (3*x + 3)/(288*x**2 + 384*x + 128) + log(x)/64 - log(x + 2/3)/64
```

GIAC/XCAS [A] time = 0.204996, size = 36, normalized size = 0.92

$$\frac{3\,(x+1)}{32\,(3\,x+2)^2}-\frac{1}{64}\ln\left(|3\,x+2|\right)+\frac{1}{64}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x),x, algorithm="giac")
```

```
[Out] 3/32*(x + 1)/(3*x + 2)^2 - 1/64*ln(abs(3*x + 2)) + 1/64*ln(abs(x)
)
```

3.267 $\int \frac{1}{x^2(4+6x)^3}\,dx$

Optimal. Leaf size=46

$$-\frac{1}{64x}-\frac{3}{32(3x+2)}-\frac{3}{64(3x+2)^2}-\frac{9\log(x)}{128}+\frac{9}{128}\log(3x+2)$$

```
[Out] -1/(64*x) - 3/(64*(2 + 3*x)^2) - 3/(32*(2 + 3*x)) - (9*Log[x])/12
8 + (9*Log[2 + 3*x])/128
```

Rubi [A] time = 0.0341278, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{1}{64x}-\frac{3}{32(3x+2)}-\frac{3}{64(3x+2)^2}-\frac{9\log(x)}{128}+\frac{9}{128}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(4 + 6*x)^3),x]
```

```
[Out] -1/(64*x) - 3/(64*(2 + 3*x)^2) - 3/(32*(2 + 3*x)) - (9*Log[x])/12
8 + (9*Log[2 + 3*x])/128
```

Rubi in Sympy [A] time = 5.48438, size = 37, normalized size = 0.8

$$-\frac{9\log(x)}{128}+\frac{9\log(3x+2)}{128}-\frac{3}{32(3x+2)}-\frac{3}{64(3x+2)^2}-\frac{1}{64x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(4+6*x)**3,x)
```

```
[Out] -9*log(x)/128 + 9*log(3*x + 2)/128 - 3/(32*(3*x + 2)) - 3/(64*(3*
x + 2)**2) - 1/(64*x)
```

Mathematica [A] time = 0.0381593, size = 39, normalized size = 0.85

$$\frac{1}{128}\left(-\frac{2\left(27x^2+27x+4\right)}{x(3x+2)^2}-9\log(x)+9\log(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(4 + 6*x)^3),x]
```

```
[Out] ((-2*(4 + 27*x + 27*x^2))/(x*(2 + 3*x)^2) - 9*Log[x] + 9*Log[2 +
3*x])/128
```

Maple [A] time = 0.016, size = 37, normalized size = 0.8

$$-\frac{1}{64\,x}-\frac{3}{64\,\left(2+3\,x\right)^{2}}-\frac{3}{64+96\,x}-\frac{9\,\ln\left(x\right)}{128}+\frac{9\,\ln\left(2+3\,x\right)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(4+6*x)^3,x)
```

```
[Out] -1/64/x-3/64/(2+3*x)^2-3/32/(2+3*x)-9/128*ln(x)+9/128*ln(2+3*x)
```

Maxima [A] time = 1.34845, size = 55, normalized size = 1.2

$$-\frac{27\,x^{2}+27\,x+4}{64\,\left(9\,x^{3}+12\,x^{2}+4\,x\right)}+\frac{9}{128}\,\log\left(3\,x+2\right)-\frac{9}{128}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^2),x, algorithm="maxima")
```

```
[Out] -1/64*(27*x^2 + 27*x + 4)/(9*x^3 + 12*x^2 + 4*x) + 9/128*log(3*x
+ 2) - 9/128*log(x)
```

Fricas [A] time = 0.214243, size = 92, normalized size = 2.

$$-\frac{54\,x^{2}-9\,\left(9\,x^{3}+12\,x^{2}+4\,x\right)\,\log\left(3\,x+2\right)+9\,\left(9\,x^{3}+12\,x^{2}+4\,x\right)\,\log\left(x\right)+54\,x+8}{128\,\left(9\,x^{3}+12\,x^{2}+4\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^2),x, algorithm="fricas")
```

```
[Out] -1/128*(54*x^2 - 9*(9*x^3 + 12*x^2 + 4*x)*log(3*x + 2) + 9*(9*x^3
 + 12*x^2 + 4*x)*log(x) + 54*x + 8)/(9*x^3 + 12*x^2 + 4*x)
```

Sympy [A] time = 0.343376, size = 39, normalized size = 0.85

$$-\frac{27x^2+27x+4}{576x^3+768x^2+256x}-\frac{9\log(x)}{128}+\frac{9\log\left(x+\frac{2}{3}\right)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(4+6*x)**3,x)
```

```
[Out] -(27*x**2 + 27*x + 4)/(576*x**3 + 768*x**2 + 256*x) - 9*log(x)/12
8 + 9*log(x + 2/3)/128
```

GIAC/XCAS [A] time = 0.205316, size = 50, normalized size = 1.09

$$-\frac{27\,x^2+27\,x+4}{64\,(3\,x+2)^2x}+\frac{9}{128}\ln\left(|3\,x+2|\right)-\frac{9}{128}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^2),x, algorithm="giac")
```

```
[Out] -1/64*(27*x^2 + 27*x + 4)/((3*x + 2)^2*x) + 9/128*ln(abs(3*x + 2)
) - 9/128*ln(abs(x))
```

3.268 $\int \frac{1}{x^3(4+6x)^3}\,dx$

Optimal. Leaf size=53

$$-\frac{1}{128x^2}+\frac{9}{128x}+\frac{27}{128(3x+2)}+\frac{9}{128(3x+2)^2}+\frac{27\log(x)}{128}-\frac{27}{128}\log(3x+2)$$

```
[Out] -1/(128*x^2) + 9/(128*x) + 9/(128*(2 + 3*x)^2) + 27/(128*(2 + 3*x
)) + (27*Log[x])/128 - (27*Log[2 + 3*x])/128
```

Rubi [A] time = 0.0387912, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{128x^2}+\frac{9}{128x}+\frac{27}{128(3x+2)}+\frac{9}{128(3x+2)^2}+\frac{27\log(x)}{128}-\frac{27}{128}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(4 + 6*x)^3),x]
```

```
[Out] -1/(128*x^2) + 9/(128*x) + 9/(128*(2 + 3*x)^2) + 27/(128*(2 + 3*x
)) + (27*Log[x])/128 - (27*Log[2 + 3*x])/128
```

Rubi in Sympy [A] time = 6.18605, size = 44, normalized size = 0.83

$$\frac{27\log(x)}{128}-\frac{27\log(3x+2)}{128}+\frac{27}{128(3x+2)}+\frac{9}{128(3x+2)^2}+\frac{9}{128x}-\frac{1}{128x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(4+6*x)**3,x)
```

```
[Out] 27*log(x)/128 - 27*log(3*x + 2)/128 + 27/(128*(3*x + 2)) + 9/(128
*(3*x + 2)**2) + 9/(128*x) - 1/(128*x**2)
```

Mathematica [A] time = 0.0438466, size = 44, normalized size = 0.83

$$\frac{1}{128}\left(\frac{2\left(81x^3+81x^2+12x-2\right)}{x^2(3x+2)^2}+27\log(x)-27\log(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(4 + 6*x)^3),x]
```

```
[Out] ((2*(-2 + 12*x + 81*x^2 + 81*x^3))/(x^2*(2 + 3*x)^2) + 27*Log[x]
- 27*Log[2 + 3*x])/128
```

Maple [A] time = 0.013, size = 42, normalized size = 0.8

$$-\frac{1}{128\,x^{2}}+\frac{9}{128\,x}+\frac{9}{128\,\left(2+3\,x\right)^{2}}+\frac{27}{256+384\,x}+\frac{27\,\ln\left(x\right)}{128}-\frac{27\,\ln\left(2+3\,x\right)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(4+6*x)^3,x)
```

```
[Out] -1/128/x^2+9/128/x+9/128/(2+3*x)^2+27/128/(2+3*x)+27/128*ln(x)-27
/128*ln(2+3*x)
```

Maxima [A] time = 1.31641, size = 65, normalized size = 1.23

$$\frac{81\,x^{3}+81\,x^{2}+12\,x-2}{64\,(9\,x^{4}+12\,x^{3}+4\,x^{2})}-\frac{27}{128}\,\log\left(3\,x+2\right)+\frac{27}{128}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^3),x, algorithm="maxima")
```

```
[Out] 1/64*(81*x^3 + 81*x^2 + 12*x - 2)/(9*x^4 + 12*x^3 + 4*x^2) - 27/1
28*log(3*x + 2) + 27/128*log(x)
```

Fricas [A] time = 0.209024, size = 107, normalized size = 2.02

$$\frac{162\,x^{3}+162\,x^{2}-27\,\left(9\,x^{4}+12\,x^{3}+4\,x^{2}\right)\,\log\left(3\,x+2\right)+27\,\left(9\,x^{4}+12\,x^{3}+4\,x^{2}\right)\,\log\left(x\right)+24\,x-4}{128\,(9\,x^{4}+12\,x^{3}+4\,x^{2})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^3),x, algorithm="fricas")
```

```
[Out] 1/128*(162*x^3 + 162*x^2 - 27*(9*x^4 + 12*x^3 + 4*x^2)*log(3*x +
2) + 27*(9*x^4 + 12*x^3 + 4*x^2)*log(x) + 24*x - 4)/(9*x^4 + 12*x
^3 + 4*x^2)
```

Sympy [A] time = 0.380459, size = 46, normalized size = 0.87

$$\frac{27\log(x)}{128} - \frac{27\log\left(x+\frac{2}{3}\right)}{128} + \frac{81x^3+81x^2+12x-2}{576x^4+768x^3+256x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(4+6*x)**3,x)
```

```
[Out] 27*log(x)/128 - 27*log(x + 2/3)/128 + (81*x**3 + 81*x**2 + 12*x -
 2)/(576*x**4 + 768*x**3 + 256*x**2)
```

GIAC/XCAS [A] time = 0.204958, size = 58, normalized size = 1.09

$$\frac{81\,x^3+81\,x^2+12\,x-2}{64\,(3\,x^2+2\,x)^2} - \frac{27}{128}\ln(|3\,x+2|) + \frac{27}{128}\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^3),x, algorithm="giac")
```

```
[Out] 1/64*(81*x^3 + 81*x^2 + 12*x - 2)/(3*x^2 + 2*x)^2 - 27/128*ln(abs
(3*x + 2)) + 27/128*ln(abs(x))
```

3.269 $\int \frac{1}{x^4(4+6x)^3}\,dx$

Optimal. Leaf size=60

$$-\frac{1}{192x^3}+\frac{9}{256x^2}-\frac{27}{128x}-\frac{27}{64(3x+2)}-\frac{27}{256(3x+2)^2}-\frac{135\log(x)}{256}+\frac{135}{256}\log(3x+2)$$

```
[Out] -1/(192*x^3) + 9/(256*x^2) - 27/(128*x) - 27/(256*(2 + 3*x)^2) -
27/(64*(2 + 3*x)) - (135*Log[x])/256 + (135*Log[2 + 3*x])/256
```

Rubi [A] time = 0.045339, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{1}{192x^3}+\frac{9}{256x^2}-\frac{27}{128x}-\frac{27}{64(3x+2)}-\frac{27}{256(3x+2)^2}-\frac{135\log(x)}{256}+\frac{135}{256}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*(4 + 6*x)^3),x]
```

```
[Out] -1/(192*x^3) + 9/(256*x^2) - 27/(128*x) - 27/(256*(2 + 3*x)^2) -
27/(64*(2 + 3*x)) - (135*Log[x])/256 + (135*Log[2 + 3*x])/256
```

Rubi in Sympy [A] time = 6.4939, size = 51, normalized size = 0.85

$$-\frac{135\log(x)}{256}+\frac{135\log(3x+2)}{256}-\frac{27}{64(3x+2)}-\frac{27}{256(3x+2)^2}-\frac{27}{128x}+\frac{9}{256x^2}-\frac{1}{192x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(4+6*x)**3,x)
```

```
[Out] -135*log(x)/256 + 135*log(3*x + 2)/256 - 27/(64*(3*x + 2)) - 27/(
256*(3*x + 2)**2) - 27/(128*x) + 9/(256*x**2) - 1/(192*x**3)
```

Mathematica [A] time = 0.031535, size = 49, normalized size = 0.82

$$\frac{1}{768}\left(-\frac{2\left(1215x^4+1215x^3+180x^2-30x+8\right)}{x^3(3x+2)^2}-405\log(x)+405\log(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*(4 + 6*x)^3),x]
```

```
[Out] ((-2*(8 - 30*x + 180*x^2 + 1215*x^3 + 1215*x^4))/(x^3*(2 + 3*x)^2
) - 405*Log[x] + 405*Log[2 + 3*x])/768
```

Maple [A] time = 0.014, size = 47, normalized size = 0.8

$$-\frac{1}{192x^{3}}+\frac{9}{256x^{2}}-\frac{27}{128x}-\frac{27}{256\ (2+3x)^{2}}-\frac{27}{128+192x}-\frac{135\ \ln(x)}{256}+\frac{135\ \ln(2+3x)}{256}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(4+6*x)^3,x)
```

```
[Out] -1/192/x^3+9/256/x^2-27/128/x-27/256/(2+3*x)^2-27/64/(2+3*x)-135/
256*ln(x)+135/256*ln(2+3*x)
```

Maxima [A] time = 1.33025, size = 72, normalized size = 1.2

$$-\frac{1215\,x^4+1215\,x^3+180\,x^2-30\,x+8}{384\,(9\,x^5+12\,x^4+4\,x^3)}+\frac{135}{256}\log(3\,x+2)-\frac{135}{256}\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^4),x, algorithm="maxima")
```

```
[Out] -1/384*(1215*x^4 + 1215*x^3 + 180*x^2 - 30*x + 8)/(9*x^5 + 12*x^4
 + 4*x^3) + 135/256*log(3*x + 2) - 135/256*log(x)
```

Fricas [A] time = 0.20478, size = 113, normalized size = 1.88

$$-\frac{2430\,x^4+2430\,x^3+360\,x^2-405\,\left(9\,x^5+12\,x^4+4\,x^3\right)\log(3\,x+2)+405\,\left(9\,x^5+12\,x^4+4\,x^3\right)\log(x)-60\,x+16}{768\,(9\,x^5+12\,x^4+4\,x^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^4),x, algorithm="fricas")
```

```
[Out] -1/768*(2430*x^4 + 2430*x^3 + 360*x^2 - 405*(9*x^5 + 12*x^4 + 4*x
^3)*log(3*x + 2) + 405*(9*x^5 + 12*x^4 + 4*x^3)*log(x) - 60*x + 1
6)/(9*x^5 + 12*x^4 + 4*x^3)
```

Sympy [A] time = 0.397955, size = 51, normalized size = 0.85

$$-\frac{135\log(x)}{256}+\frac{135\log\left(x+\frac{2}{3}\right)}{256}-\frac{1215x^4+1215x^3+180x^2-30x+8}{3456x^5+4608x^4+1536x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(4+6*x)**3,x)
```

```
[Out] -135*log(x)/256 + 135*log(x + 2/3)/256 - (1215*x**4 + 1215*x**3 +
 180*x**2 - 30*x + 8)/(3456*x**5 + 4608*x**4 + 1536*x**3)
```

GIAC/XCAS [A] time = 0.204242, size = 63, normalized size = 1.05

$$-\frac{1215\,x^4+1215\,x^3+180\,x^2-30\,x+8}{384\,(3\,x+2)^2x^3}+\frac{135}{256}\ln\left(|3\,x+2|\right)-\frac{135}{256}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^4),x, algorithm="giac")
```

```
[Out] -1/384*(1215*x^4 + 1215*x^3 + 180*x^2 - 30*x + 8)/((3*x + 2)^2*x^
3) + 135/256*ln(abs(3*x + 2)) - 135/256*ln(abs(x))
```

3.270 $\int \frac{1}{x^5(4+6x)^3} \, dx$

Optimal. Leaf size=67

$$-\frac{1}{256x^4}+\frac{3}{128x^3}-\frac{27}{256x^2}+\frac{135}{256x}+\frac{405}{512(3x+2)}+\frac{81}{512(3x+2)^2}+\frac{1215\log(x)}{1024}-\frac{1215\log(3x+2)}{1024}$$

```
[Out] -1/(256*x^4) + 3/(128*x^3) - 27/(256*x^2) + 135/(256*x) + 81/(512
*(2 + 3*x)^2) + 405/(512*(2 + 3*x)) + (1215*Log[x])/1024 - (1215*
Log[2 + 3*x])/1024
```

Rubi [A] time = 0.051691, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{1}{256x^4}+\frac{3}{128x^3}-\frac{27}{256x^2}+\frac{135}{256x}+\frac{405}{512(3x+2)}+\frac{81}{512(3x+2)^2}+\frac{1215\log(x)}{1024}-\frac{1215\log(3x+2)}{1024}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^5*(4 + 6*x)^3),x]
```

```
[Out] -1/(256*x^4) + 3/(128*x^3) - 27/(256*x^2) + 135/(256*x) + 81/(512
*(2 + 3*x)^2) + 405/(512*(2 + 3*x)) + (1215*Log[x])/1024 - (1215*
Log[2 + 3*x])/1024
```

Rubi in Sympy [A] time = 7.46379, size = 58, normalized size = 0.87

$$\frac{1215\log(x)}{1024}-\frac{1215\log(3x+2)}{1024}+\frac{405}{512(3x+2)}+\frac{81}{512(3x+2)^2}+\frac{135}{256x}-\frac{27}{256x^2}+\frac{3}{128x^3}-\frac{1}{256x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5/(4+6*x)**3,x)
```

```
[Out] 1215*log(x)/1024 - 1215*log(3*x + 2)/1024 + 405/(512*(3*x + 2)) +
 81/(512*(3*x + 2)**2) + 135/(256*x) - 27/(256*x**2) + 3/(128*x**
3) - 1/(256*x**4)
```

Mathematica [A] time = 0.0325532, size = 54, normalized size = 0.81

$$\frac{\frac{2(3645x^5+3645x^4+540x^3-90x^2+24x-8)}{x^4(3x+2)^2}+1215\log(x)-1215\log(3x+2)}{1024}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^5*(4 + 6*x)^3),x]
```

```
[Out] ((2*(-8 + 24*x - 90*x^2 + 540*x^3 + 3645*x^4 + 3645*x^5))/(x^4*(2
 + 3*x)^2) + 1215*Log[x] - 1215*Log[2 + 3*x])/1024
```

Maple [A] time = 0.013, size = 52, normalized size = 0.8

$$-\frac{1}{256\,x^{4}}+\frac{3}{128\,x^{3}}-\frac{27}{256\,x^{2}}+\frac{135}{256\,x}+\frac{81}{512\,\left(2+3\,x\right)^{2}}+\frac{405}{1024+1536\,x}+\frac{1215\,\ln\left(x\right)}{1024}-\frac{1215\,\ln\left(2+3\,x\right)}{1024}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5/(4+6*x)^3,x)
```

```
[Out] -1/256/x^4+3/128/x^3-27/256/x^2+135/256/x+81/512/(2+3*x)^2+405/51
2/(2+3*x)+1215/1024*ln(x)-1215/1024*ln(2+3*x)
```

Maxima [A] time = 1.33411, size = 78, normalized size = 1.16

$$\frac{3645\,x^{5}+3645\,x^{4}+540\,x^{3}-90\,x^{2}+24\,x-8}{512\,\left(9\,x^{6}+12\,x^{5}+4\,x^{4}\right)}-\frac{1215}{1024}\,\log\left(3\,x+2\right)+\frac{1215}{1024}\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^5),x, algorithm="maxima")
```

```
[Out] 1/512*(3645*x^5 + 3645*x^4 + 540*x^3 - 90*x^2 + 24*x - 8)/(9*x^6
+ 12*x^5 + 4*x^4) - 1215/1024*log(3*x + 2) + 1215/1024*log(x)
```

Fricas [A] time = 0.20994, size = 120, normalized size = 1.79

$$\frac{7290\,x^{5}+7290\,x^{4}+1080\,x^{3}-180\,x^{2}-1215\,\left(9\,x^{6}+12\,x^{5}+4\,x^{4}\right)\log\left(3\,x+2\right)+1215\,\left(9\,x^{6}+12\,x^{5}+4\,x^{4}\right)\log\left(x\right)+48\,x-1}{1024\,\left(9\,x^{6}+12\,x^{5}+4\,x^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^5),x, algorithm="fricas")
```

```
[Out] 1/1024*(7290*x^5 + 7290*x^4 + 1080*x^3 - 180*x^2 - 1215*(9*x^6 +
12*x^5 + 4*x^4)*log(3*x + 2) + 1215*(9*x^6 + 12*x^5 + 4*x^4)*log(
```

```
x) + 48*x - 16)/(9*x^6 + 12*x^5 + 4*x^4)
```

Sympy [A] time = 0.443629, size = 56, normalized size = 0.84

$$\frac{1215\log\left(x\right)}{1024}-\frac{1215\log\left(x+\frac{2}{3}\right)}{1024}+\frac{3645x^5+3645x^4+540x^3-90x^2+24x-8}{4608x^6+6144x^5+2048x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5/(4+6*x)**3,x)
```

```
[Out] 1215*log(x)/1024 - 1215*log(x + 2/3)/1024 + (3645*x**5 + 3645*x**
4 + 540*x**3 - 90*x**2 + 24*x - 8)/(4608*x**6 + 6144*x**5 + 2048*
x**4)
```

GIAC/XCAS [A] time = 0.20539, size = 70, normalized size = 1.04

$$\frac{3645\,x^5+3645\,x^4+540\,x^3-90\,x^2+24\,x-8}{512\,(3\,x+2)^2x^4}-\frac{1215}{1024}\ln\left(|3\,x+2|\right)+\frac{1215}{1024}\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/8/((3*x + 2)^3*x^5),x, algorithm="giac")
```

```
[Out] 1/512*(3645*x^5 + 3645*x^4 + 540*x^3 - 90*x^2 + 24*x - 8)/((3*x +
 2)^2*x^4) - 1215/1024*ln(abs(3*x + 2)) + 1215/1024*ln(abs(x))
```

3.271 $\int \frac{1}{2+2x}\,dx$

Optimal. Leaf size=8

$$\frac{1}{2}\log(x+1)$$

```
[Out] Log[1 + x]/2
```

Rubi [A] time = 0.00474695, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{1}{2}\log(x+1)$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + 2*x)^(-1),x]

[Out] Log[1 + x]/2
```

Rubi in Sympy [A] time = 1.04575, size = 5, normalized size = 0.62

$$\frac{\log(x+1)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(2+2*x),x)

[Out] log(x + 1)/2
```

Mathematica [A] time = 0.00142296, size = 10, normalized size = 1.25

$$\frac{1}{2}\log(2x+2)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + 2*x)^(-1),x]

[Out] Log[2 + 2*x]/2
```

Maple [A] time = 0.001, size = 9, normalized size = 1.1

$$\frac{\ln (2+2 x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(2+2*x),x)
```

```
[Out] 1/2*ln(2+2*x)
```

Maxima [A] time = 1.33907, size = 8, normalized size = 1.

$$\frac{1}{2} \log (x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/(x + 1),x, algorithm="maxima")
```

```
[Out] 1/2*log(x + 1)
```

Fricas [A] time = 0.208046, size = 8, normalized size = 1.

$$\frac{1}{2} \log (x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/(x + 1),x, algorithm="fricas")
```

```
[Out] 1/2*log(x + 1)
```

Sympy [A] time = 0.066099, size = 7, normalized size = 0.88

$$\frac{\log (2x+2)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2+2*x),x)
```

```
[Out] log(2*x + 2)/2
```

GIAC/XCAS [A] time = 0.205084, size = 9, normalized size = 1.12

$$\frac{1}{2}\ln\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/(x + 1),x, algorithm="giac")
```

```
[Out] 1/2*ln(abs(x + 1))
```

3.272 $\int \frac{1}{4-6x} dx$

Optimal. Leaf size=10

$$-\frac{1}{6}\log(2-3x)$$

```
[Out] -Log[2 - 3*x]/6
```

Rubi [A] time = 0.00502437, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{1}{6}\log(2-3x)$$

Antiderivative was successfully verified.

```
[In]  Int[(4 - 6*x)^(-1),x]

[Out] -Log[2 - 3*x]/6
```

Rubi in Sympy [A] time = 1.05086, size = 8, normalized size = 0.8

$$-\frac{\log(-3x+2)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(4-6*x),x)

[Out] -log(-3*x + 2)/6
```

Mathematica [A] time = 0.00156408, size = 10, normalized size = 1.

$$-\frac{1}{6}\log(4-6x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(4 - 6*x)^(-1),x]

[Out] -Log[4 - 6*x]/6
```

Maple [A] time = 0.002, size = 9, normalized size = 0.9

$$-\frac{\ln(4-6x)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(4-6*x),x)
```

```
[Out] -1/6*ln(4-6*x)
```

Maxima [A] time = 1.34124, size = 11, normalized size = 1.1

$$-\frac{1}{6}\log(3x-2)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2/(3*x - 2),x, algorithm="maxima")
```

```
[Out] -1/6*log(3*x - 2)
```

Fricas [A] time = 0.207151, size = 11, normalized size = 1.1

$$-\frac{1}{6}\log(3x-2)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2/(3*x - 2),x, algorithm="fricas")
```

```
[Out] -1/6*log(3*x - 2)
```

Sympy [A] time = 0.076162, size = 8, normalized size = 0.8

$$-\frac{\log(6x-4)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(4-6*x),x)
```

```
[Out] -log(6*x - 4)/6
```

GIAC/XCAS [A] time = 0.209037, size = 12, normalized size = 1.2

$$-\frac{1}{6}\ln\left(|3x-2|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2/(3*x - 2),x, algorithm="giac")
```

```
[Out] -1/6*ln(abs(3*x - 2))
```

3.273 $\int \frac{1}{a+\sqrt{a}x} \, dx$

Optimal. Leaf size=14

$$\frac{\log\left(\sqrt{a}+x\right)}{\sqrt{a}}$$

```
[Out] Log[Sqrt[a] + x]/Sqrt[a]
```

Rubi [A] time = 0.00783638, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{\log\left(\sqrt{a}+x\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + Sqrt[a]*x)^(-1),x]

[Out] Log[Sqrt[a] + x]/Sqrt[a]
```

Rubi in Sympy [A] time = 1.25852, size = 12, normalized size = 0.86

$$\frac{\log\left(\sqrt{a}+x\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+x*a**(1/2)),x)

[Out] log(sqrt(a) + x)/sqrt(a)
```

Mathematica [A] time = 0.00512005, size = 16, normalized size = 1.14

$$\frac{\log\left(\sqrt{a}x+a\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + Sqrt[a]*x)^(-1),x]
```

```
[Out] Log[a + Sqrt[a]*x]/Sqrt[a]
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$1\ln\left(a + x\sqrt{a}\right)\frac{1}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a+x*a^(1/2)),x)
```

```
[Out] ln(a+x*a^(1/2))/a^(1/2)
```

Maxima [A] time = 1.35896, size = 16, normalized size = 1.14

$$\frac{\log\left(\sqrt{a}x + a\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(a)*x + a),x, algorithm="maxima")
```

```
[Out] log(sqrt(a)*x + a)/sqrt(a)
```

Fricas [A] time = 0.218018, size = 16, normalized size = 1.14

$$\frac{\log\left(\sqrt{a}x + a\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(a)*x + a),x, algorithm="fricas")
```

```
[Out] log(sqrt(a)*x + a)/sqrt(a)
```

Sympy [A] time = 0.084568, size = 14, normalized size = 1.

$$\frac{\log\left(\sqrt{a}x + a\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+x*a**(1/2)),x)
```

```
[Out] log(sqrt(a)*x + a)/sqrt(a)
```

GIAC/XCAS [A] time = 0.204295, size = 18, normalized size = 1.29

$$\frac{\ln\left(\left|\sqrt{a}x + a\right|\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(a)*x + a),x, algorithm="giac")
```

```
[Out] ln(abs(sqrt(a)*x + a))/sqrt(a)
```

3.274 $\int \frac{1}{a+\sqrt{-a}x}\,dx$

Optimal. Leaf size=20

$$\frac{\log\left(\sqrt{-a}x+a\right)}{\sqrt{-a}}$$

```
[Out] Log[a + Sqrt[-a]*x]/Sqrt[-a]
```

Rubi [A] time = 0.0179456, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{\log\left(\sqrt{-a}x+a\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + Sqrt[-a]*x)^(-1),x]
```

```
[Out] Log[a + Sqrt[-a]*x]/Sqrt[-a]
```

Rubi in Sympy [A] time = 1.67653, size = 17, normalized size = 0.85

$$\frac{\log\left(a+x\sqrt{-a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a+x*(-a)**(1/2)),x)
```

```
[Out] log(a + x*sqrt(-a))/sqrt(-a)
```

Mathematica [A] time = 0.00722106, size = 20, normalized size = 1.

$$\frac{\log\left(\sqrt{-a}x+a\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + Sqrt[-a]*x)^(-1),x]
```

```
[Out] Log[a + Sqrt[-a]*x]/Sqrt[-a]
```

Maple [A] time = 0.002, size = 17, normalized size = 0.9

$$1\ln\left(a+x\sqrt{-a}\right)\frac{1}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a+x*(-a)^(1/2)),x)
```

```
[Out] ln(a+x*(-a)^(1/2))/(-a)^(1/2)
```

Maxima [A] time = 1.34102, size = 22, normalized size = 1.1

$$\frac{\log\left(\sqrt{-a}x+a\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + a),x, algorithm="maxima")
```

```
[Out] log(sqrt(-a)*x + a)/sqrt(-a)
```

Fricas [A] time = 0.218946, size = 22, normalized size = 1.1

$$\frac{\log\left(\sqrt{-a}x+a\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + a),x, algorithm="fricas")
```

```
[Out] log(sqrt(-a)*x + a)/sqrt(-a)
```

Sympy [A] time = 0.089785, size = 17, normalized size = 0.85

$$\frac{\log\left(a+x\sqrt{-a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a+x*(-a)**(1/2)),x)
```

```
[Out] log(a + x*sqrt(-a))/sqrt(-a)
```

GIAC/XCAS [A] time = 0.203512, size = 23, normalized size = 1.15

$$\frac{\ln\left(\left|\sqrt{-a}x+a\right|\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + a),x, algorithm="giac")
```

```
[Out] ln(abs(sqrt(-a)*x + a))/sqrt(-a)
```

3.275 $\int \frac{1}{a^2+\sqrt{-a}x}\,dx$

Optimal. Leaf size=22

$$\frac{\log\left(a^2+\sqrt{-a}\,x\right)}{\sqrt{-a}}$$

```
[Out] Log[a^2 + Sqrt[-a]*x]/Sqrt[-a]
```

Rubi [A] time = 0.00991595, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{\log\left(a^2+\sqrt{-a}\,x\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a^2 + Sqrt[-a]*x)^(-1),x]

[Out] Log[a^2 + Sqrt[-a]*x]/Sqrt[-a]
```

Rubi in Sympy [A] time = 1.6672, size = 19, normalized size = 0.86

$$\frac{\log\left(a^2+x\sqrt{-a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a**2+x*(-a)**(1/2)),x)

[Out] log(a**2 + x*sqrt(-a))/sqrt(-a)
```

Mathematica [A] time = 0.00491398, size = 22, normalized size = 1.

$$\frac{\log\left(a^2+\sqrt{-a}\,x\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^2 + Sqrt[-a]*x)^(-1),x]
```

```
[Out] Log[a^2 + Sqrt[-a]*x]/Sqrt[-a]
```

Maple [A] time = 0.002, size = 19, normalized size = 0.9

$$1\ln\left(a^2+x\sqrt{-a}\right)\frac{1}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a^2+x*(-a)^(1/2)),x)
```

```
[Out] ln(a^2+x*(-a)^(1/2))/(-a)^(1/2)
```

Maxima [A] time = 1.3482, size = 24, normalized size = 1.09

$$\frac{\log\left(a^2+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a^2 + sqrt(-a)*x),x, algorithm="maxima")
```

```
[Out] log(a^2 + sqrt(-a)*x)/sqrt(-a)
```

Fricas [A] time = 0.222037, size = 24, normalized size = 1.09

$$\frac{\log\left(a^2+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a^2 + sqrt(-a)*x),x, algorithm="fricas")
```

```
[Out] log(a^2 + sqrt(-a)*x)/sqrt(-a)
```

Sympy [A] time = 0.095477, size = 19, normalized size = 0.86

$$\frac{\log\left(a^2+x\sqrt{-a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a**2+x*(-a)**(1/2)),x)
```

```
[Out] log(a**2 + x*sqrt(-a))/sqrt(-a)
```

GIAC/XCAS [A] time = 0.208048, size = 26, normalized size = 1.18

$$\frac{\ln\left(\left|a^2 + \sqrt{-a}x\right|\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a^2 + sqrt(-a)*x),x, algorithm="giac")
```

```
[Out] ln(abs(a^2 + sqrt(-a)*x))/sqrt(-a)
```

3.276 $\int \frac{1}{a^3+\sqrt{-a}x}\,dx$

Optimal. Leaf size=22

$$\frac{\log\left(a^3+\sqrt{-a}x\right)}{\sqrt{-a}}$$

```
[Out] Log[a^3 + Sqrt[-a]*x]/Sqrt[-a]
```

Rubi [A] time = 0.00953325, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{\log\left(a^3+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a^3 + Sqrt[-a]*x)^(-1),x]

[Out] Log[a^3 + Sqrt[-a]*x]/Sqrt[-a]
```

Rubi in Sympy [A] time = 1.65951, size = 19, normalized size = 0.86

$$\frac{\log\left(a^3+x\sqrt{-a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a**3+x*(-a)**(1/2)),x)

[Out] log(a**3 + x*sqrt(-a))/sqrt(-a)
```

Mathematica [A] time = 0.0049367, size = 22, normalized size = 1.

$$\frac{\log\left(a^3+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^3 + Sqrt[-a]*x)^(-1),x]
```

```
[Out] Log[a^3 + Sqrt[-a]*x]/Sqrt[-a]
```

Maple [A] time = 0.002, size = 19, normalized size = 0.9

$$1 \ln\left(a^{3}+x\sqrt{-a}\right) \frac{1}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a^3+x*(-a)^(1/2)),x)
```

```
[Out] ln(a^3+x*(-a)^(1/2))/(-a)^(1/2)
```

Maxima [A] time = 1.32613, size = 24, normalized size = 1.09

$$\frac{\log\left(a^{3}+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a^3 + sqrt(-a)*x),x, algorithm="maxima")
```

```
[Out] log(a^3 + sqrt(-a)*x)/sqrt(-a)
```

Fricas [A] time = 0.2227, size = 24, normalized size = 1.09

$$\frac{\log\left(a^{3}+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a^3 + sqrt(-a)*x),x, algorithm="fricas")
```

```
[Out] log(a^3 + sqrt(-a)*x)/sqrt(-a)
```

Sympy [A] time = 0.097969, size = 19, normalized size = 0.86

$$\frac{\log\left(a^{3}+x\sqrt{-a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a**3+x*(-a)**(1/2)),x)

[Out] log(a**3 + x*sqrt(-a))/sqrt(-a)
```

GIAC/XCAS [A] time = 0.2042, size = 26, normalized size = 1.18

$$\frac{\ln\left(\left|a^3 + \sqrt{-a}x\right|\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a^3 + sqrt(-a)*x),x, algorithm="giac")

[Out] ln(abs(a^3 + sqrt(-a)*x))/sqrt(-a)
```

3.277 $\int \frac{1}{\frac{1}{a}+\sqrt{-a}x}\,dx$

Optimal. Leaf size=21

$$\frac{\log\left(1-(-a)^{3/2}x\right)}{\sqrt{-a}}$$

```
[Out] Log[1 - (-a)^(3/2)*x]/Sqrt[-a]
```

Rubi [A] time = 0.0125565, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{\log\left(1-(-a)^{3/2}x\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a^(-1) + Sqrt[-a]*x)^(-1),x]

[Out] Log[1 - (-a)^(3/2)*x]/Sqrt[-a]
```

Rubi in Sympy [A] time = 1.86478, size = 17, normalized size = 0.81

$$\frac{\log\left(-x(-a)^{\frac{3}{2}}+1\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1/a+x*(-a)**(1/2)),x)

[Out] log(-x*(-a)**(3/2) + 1)/sqrt(-a)
```

Mathematica [A] time = 0.00974668, size = 21, normalized size = 1.

$$\frac{\log\left(\sqrt{-a}ax+1\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^(-1) + Sqrt[-a]*x)^(-1),x]
```

```
[Out] Log[1 + Sqrt[-a]*a*x]/Sqrt[-a]
```

Maple [A] time = 0.001, size = 19, normalized size = 0.9

$$1\ln\left(a^{-1}+x\sqrt{-a}\right)\frac{1}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1/a+x*(-a)^(1/2)),x)
```

```
[Out] ln(1/a+x*(-a)^(1/2))/(-a)^(1/2)
```

Maxima [A] time = 1.34056, size = 24, normalized size = 1.14

$$\frac{\log\left(\sqrt{-a}x+\frac{1}{a}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + 1/a),x, algorithm="maxima")
```

```
[Out] log(sqrt(-a)*x + 1/a)/sqrt(-a)
```

Fricas [A] time = 0.217417, size = 23, normalized size = 1.1

$$\frac{\log\left(\sqrt{-a}ax+1\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + 1/a),x, algorithm="fricas")
```

```
[Out] log(sqrt(-a)*a*x + 1)/sqrt(-a)
```

Sympy [A] time = 0.113746, size = 19, normalized size = 0.9

$$\frac{\log\left(ax\sqrt{-a}+1\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1/a+x*(-a)**(1/2)),x)

[Out] log(a*x*sqrt(-a) + 1)/sqrt(-a)
```

GIAC/XCAS [A] time = 0.206434, size = 26, normalized size = 1.24

$$\frac{\ln\left(\left|\sqrt{-a}x+\frac{1}{a}\right|\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + 1/a),x, algorithm="giac")

[Out] ln(abs(sqrt(-a)*x + 1/a))/sqrt(-a)
```

3.278 $\int \frac{1}{\frac{1}{a^2}+\sqrt{-a}x}\,dx$

Optimal. Leaf size=20

$$\frac{\log\left((-a)^{5/2}x+1\right)}{\sqrt{-a}}$$

```
[Out] Log[1 + (-a)^(5/2)*x]/Sqrt[-a]
```

Rubi [A] time = 0.0152459, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{\log\left((-a)^{5/2}x+1\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a^(-2) + Sqrt[-a]*x)^(-1),x]
```

```
[Out] Log[1 + (-a)^(5/2)*x]/Sqrt[-a]
```

Rubi in Sympy [A] time = 2.12812, size = 17, normalized size = 0.85

$$\frac{\log\left(x\left(-a\right)^{\frac{5}{2}}+1\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1/a**2+x*(-a)**(1/2)),x)
```

```
[Out] log(x*(-a)**(5/2) + 1)/sqrt(-a)
```

Mathematica [A] time = 0.0132575, size = 22, normalized size = 1.1

$$\frac{\log\left(\frac{1}{a^2}+\sqrt{-a}x\right)}{\sqrt{-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a^(-2) + Sqrt[-a]*x)^(-1),x]

[Out] Log[a^(-2) + Sqrt[-a]*x]/Sqrt[-a]
```

Maple [A] time = 0.002, size = 19, normalized size = 1.

$$1\ln\left(a^{-2}+x\sqrt{-a}\right)\frac{1}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1/a^2+x*(-a)^(1/2)),x)

[Out] ln(1/a^2+x*(-a)^(1/2))/(-a)^(1/2)
```

Maxima [A] time = 1.50498, size = 24, normalized size = 1.2

$$\frac{\log\left(\sqrt{-a}x+\frac{1}{a^2}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + 1/a^2),x, algorithm="maxima")

[Out] log(sqrt(-a)*x + 1/a^2)/sqrt(-a)
```

Fricas [A] time = 0.218365, size = 26, normalized size = 1.3

$$\frac{\log\left(\sqrt{-a}a^2x+1\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + 1/a^2),x, algorithm="fricas")

[Out] log(sqrt(-a)*a^2*x + 1)/sqrt(-a)
```

Sympy [A] time = 0.124067, size = 20, normalized size = 1.

$$\frac{\log\left(a^2x\sqrt{-a}+1\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1/a**2+x*(-a)**(1/2)),x)
```

```
[Out] log(a**2*x*sqrt(-a) + 1)/sqrt(-a)
```

GIAC/XCAS [A] time = 0.205269, size = 26, normalized size = 1.3

$$\frac{\ln\left(\left|\sqrt{-a}x+\frac{1}{a^2}\right|\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-a)*x + 1/a^2),x, algorithm="giac")
```

```
[Out] ln(abs(sqrt(-a)*x + 1/a^2))/sqrt(-a)
```

3.279 $\int \frac{1}{x(1+bx)} dx$

Optimal. Leaf size=11

$$\log(x) - \log(bx + 1)$$

```
[Out] Log[x] - Log[1 + b*x]
```

Rubi [A] time = 0.010675, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$

$$\log(x) - \log(bx + 1)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(1 + b*x)),x]

[Out] Log[x] - Log[1 + b*x]
```

Rubi in Sympy [A] time = 2.5427, size = 8, normalized size = 0.73

$$\log(x) - \log(bx + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+1),x)

[Out] log(x) - log(b*x + 1)
```

Mathematica [A] time = 0.00457928, size = 11, normalized size = 1.

$$\log(x) - \log(bx + 1)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(1 + b*x)),x]

[Out] Log[x] - Log[1 + b*x]
```

Maple [A] time = 0.008, size = 12, normalized size = 1.1

$$\ln(x) - \ln(bx + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+1),x)
```

```
[Out] ln(x)-ln(b*x+1)
```

Maxima [A] time = 1.33773, size = 15, normalized size = 1.36

$$-\log(bx + 1) + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 1)*x),x, algorithm="maxima")
```

```
[Out] -log(b*x + 1) + log(x)
```

Fricas [A] time = 0.213913, size = 15, normalized size = 1.36

$$-\log(bx + 1) + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 1)*x),x, algorithm="fricas")
```

```
[Out] -log(b*x + 1) + log(x)
```

Sympy [A] time = 0.215326, size = 8, normalized size = 0.73

$$\log(x) - \log\left(x + \frac{1}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+1),x)
```

```
[Out] log(x) - log(x + 1/b)
```

GIAC/XCAS [A] time = 0.203601, size = 18, normalized size = 1.64

$$-\ln(|bx+1|)+\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 1)*x),x, algorithm="giac")
```

```
[Out] -ln(abs(b*x + 1)) + ln(abs(x))
```

3.280 $\int \frac{1}{x(-1+bx)}\,dx$

Optimal. Leaf size=12

$$\log(1-bx)-\log(x)$$

```
[Out] -Log[x] + Log[1 - b*x]
```

Rubi [A] time = 0.0113802, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273

$$\log(1-bx)-\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-1 + b*x)),x]

[Out] -Log[x] + Log[1 - b*x]
```

Rubi in Sympy [A] time = 2.48967, size = 8, normalized size = 0.67

$$-\log(x)+\log(-bx+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x-1),x)

[Out] -log(x) + log(-b*x + 1)
```

Mathematica [A] time = 0.00361037, size = 12, normalized size = 1.

$$\log(1-bx)-\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-1 + b*x)),x]

[Out] -Log[x] + Log[1 - b*x]
```

Maple [A] time = 0.009, size = 12, normalized size = 1.

$$-\ln(x) + \ln(bx - 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x-1),x)

[Out] -ln(x)+ln(b*x-1)
```

Maxima [A] time = 1.34284, size = 15, normalized size = 1.25

$$\log(bx - 1) - \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - 1)*x),x, algorithm="maxima")

[Out] log(b*x - 1) - log(x)
```

Fricas [A] time = 0.212492, size = 15, normalized size = 1.25

$$\log(bx - 1) - \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - 1)*x),x, algorithm="fricas")

[Out] log(b*x - 1) - log(x)
```

Sympy [A] time = 0.227036, size = 8, normalized size = 0.67

$$-\log(x) + \log\left(x - \frac{1}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x-1),x)

[Out] -log(x) + log(x - 1/b)
```

GIAC/XCAS [A] time = 0.208412, size = 18, normalized size = 1.5

$$\ln(|bx - 1|) - \ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - 1)*x),x, algorithm="giac")
```

```
[Out] ln(abs(b*x - 1)) - ln(abs(x))
```

3.281 $\int \frac{1}{x^2(1+bx)}\,dx$

Optimal. Leaf size=19

$$-b\log(x) + b\log(bx+1) - \frac{1}{x}$$

```
[Out] -x^(-1) - b*Log[x] + b*Log[1 + b*x]
```

Rubi [A] time = 0.0221505, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-b\log(x) + b\log(bx+1) - \frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(1 + b*x)),x]

[Out] -x^(-1) - b*Log[x] + b*Log[1 + b*x]
```

Rubi in Sympy [A] time = 3.66987, size = 15, normalized size = 0.79

$$-b\log(x) + b\log(bx+1) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+1),x)

[Out] -b*log(x) + b*log(b*x + 1) - 1/x
```

Mathematica [A] time = 0.00548739, size = 19, normalized size = 1.

$$-b\log(x) + b\log(bx+1) - \frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(1 + b*x)),x]
```

```
[Out] -x^(-1) - b*Log[x] + b*Log[1 + b*x]
```

Maple [A] time = 0.01, size = 20, normalized size = 1.1

$$-x^{-1} - b\ln(x) + b\ln(bx+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^2/(b*x+1),x)
```

```
[Out] -1/x-b*ln(x)+b*ln(b*x+1)
```

Maxima [A] time = 1.33624, size = 26, normalized size = 1.37

$$b\log(bx+1) - b\log(x) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 1)*x^2),x, algorithm="maxima")
```

```
[Out] b*log(b*x + 1) - b*log(x) - 1/x
```

Fricas [A] time = 0.212271, size = 28, normalized size = 1.47

$$\frac{bx\log(bx+1) - bx\log(x) - 1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 1)*x^2),x, algorithm="fricas")
```

```
[Out] (b*x*log(b*x + 1) - b*x*log(x) - 1)/x
```

Sympy [A] time = 1.12722, size = 14, normalized size = 0.74

$$b\left(-\log(x) + \log\left(x + \frac{1}{b}\right)\right) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+1),x)
```

```
[Out] b*(-log(x) + log(x + 1/b)) - 1/x
```

GIAC/XCAS [A] time = 0.209177, size = 28, normalized size = 1.47

$$b\ln(|bx+1|) - b\ln(|x|) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 1)*x^2),x, algorithm="giac")
```

```
[Out] b*ln(abs(b*x + 1)) - b*ln(abs(x)) - 1/x
```

3.282 $\int \frac{1}{x^2(-1+bx)}\,dx$

Optimal. Leaf size=18

$$-b\log(x) + b\log(1 - bx) + \frac{1}{x}$$

```
[Out] x^(-1) - b*Log[x] + b*Log[1 - b*x]
```

Rubi [A] time = 0.0231498, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-b\log(x) + b\log(1 - bx) + \frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(-1 + b*x)),x]

[Out] x^(-1) - b*Log[x] + b*Log[1 - b*x]
```

Rubi in Sympy [A] time = 3.78813, size = 15, normalized size = 0.83

$$-b\log(x) + b\log(-bx + 1) + \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x-1),x)

[Out] -b*log(x) + b*log(-b*x + 1) + 1/x
```

Mathematica [A] time = 0.00434249, size = 18, normalized size = 1.

$$-b\log(x) + b\log(1 - bx) + \frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(-1 + b*x)),x]
```

```
[Out] x^(-1) - b*Log[x] + b*Log[1 - b*x]
```

Maple [A] time = 0.013, size = 18, normalized size = 1.

$$x^{-1} - b\ln(x) + b\ln(bx - 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x-1),x)
```

```
[Out] 1/x-b*ln(x)+b*ln(b*x-1)
```

Maxima [A] time = 1.33982, size = 23, normalized size = 1.28

$$b\log(bx - 1) - b\log(x) + \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - 1)*x^2),x, algorithm="maxima")
```

```
[Out] b*log(b*x - 1) - b*log(x) + 1/x
```

Fricas [A] time = 0.218869, size = 28, normalized size = 1.56

$$\frac{bx\log(bx - 1) - bx\log(x) + 1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - 1)*x^2),x, algorithm="fricas")
```

```
[Out] (b*x*log(b*x - 1) - b*x*log(x) + 1)/x
```

Sympy [A] time = 0.314871, size = 14, normalized size = 0.78

$$b\left(-\log(x) + \log\left(x - \frac{1}{b}\right)\right) + \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x-1),x)
```

```
[Out] b*(-log(x) + log(x - 1/b)) + 1/x
```

GIAC/XCAS [A] time = 0.207142, size = 26, normalized size = 1.44

$$b\ln(|bx-1|) - b\ln(|x|) + \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - 1)*x^2),x, algorithm="giac")
```

```
[Out] b*ln(abs(b*x - 1)) - b*ln(abs(x)) + 1/x
```

3.283 $\int \left(\frac{b}{x}+\frac{1}{x^2(1+bx)}\right)\,dx$

Optimal. Leaf size=14

$$b\log(bx+1)-\frac{1}{x}$$

```
[Out] -x^(-1) + b*Log[1 + b*x]
```

Rubi [A] time = 0.0236048, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$b\log(bx+1)-\frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[b/x + 1/(x^2*(1 + b*x)),x]

[Out] -x^(-1) + b*Log[1 + b*x]
```

Rubi in Sympy [A] time = 3.75086, size = 10, normalized size = 0.71

$$b\log\left(bx+1\right)-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(b/x+1/x**2/(b*x+1),x)

[Out] b*log(b*x + 1) - 1/x
```

Mathematica [A] time = 0.00696411, size = 14, normalized size = 1.

$$b\log(bx+1)-\frac{1}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[b/x + 1/(x^2*(1 + b*x)),x]
```

```
[Out] -x^(-1) + b*Log[1 + b*x]
```

Maple [A] time = 0.003, size = 15, normalized size = 1.1

$$-x^{-1} + b\ln(bx + 1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(b/x+1/x^2/(b*x+1),x)

[Out] -1/x+b*ln(b*x+1)
```

Maxima [A] time = 1.34128, size = 19, normalized size = 1.36

$$b\log(bx + 1) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b/x + 1/((b*x + 1)*x^2),x, algorithm="maxima")

[Out] b*log(b*x + 1) - 1/x
```

Fricas [A] time = 0.208525, size = 20, normalized size = 1.43

$$\frac{bx\log(bx + 1) - 1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b/x + 1/((b*x + 1)*x^2),x, algorithm="fricas")

[Out] (b*x*log(b*x + 1) - 1)/x
```

Sympy [A] time = 1.11623, size = 10, normalized size = 0.71

$$b\log(bx + 1) - \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b/x+1/x**2/(b*x+1),x)
```

```
[Out] b*log(b*x + 1) - 1/x
```

GIAC/XCAS [A] time = 0.208019, size = 20, normalized size = 1.43

$$b\ln\left(|bx+1|\right)-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b/x + 1/((b*x + 1)*x^2),x, algorithm="giac")
```

```
[Out] b*ln(abs(b*x + 1)) - 1/x
```

3.284 $\int x^3\sqrt{a+bx}\,dx$

Optimal. Leaf size=72

$$-\frac{2a^3(a+bx)^{3/2}}{3b^4}+\frac{6a^2(a+bx)^{5/2}}{5b^4}+\frac{2(a+bx)^{9/2}}{9b^4}-\frac{6a(a+bx)^{7/2}}{7b^4}$$

```
[Out] (-2*a^3*(a + b*x)^(3/2))/(3*b^4) + (6*a^2*(a + b*x)^(5/2))/(5*b^4
) - (6*a*(a + b*x)^(7/2))/(7*b^4) + (2*(a + b*x)^(9/2))/(9*b^4)
```

Rubi [A] time = 0.0525457, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3(a+bx)^{3/2}}{3b^4}+\frac{6a^2(a+bx)^{5/2}}{5b^4}+\frac{2(a+bx)^{9/2}}{9b^4}-\frac{6a(a+bx)^{7/2}}{7b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*Sqrt[a + b*x],x]
```

```
[Out] (-2*a^3*(a + b*x)^(3/2))/(3*b^4) + (6*a^2*(a + b*x)^(5/2))/(5*b^4
) - (6*a*(a + b*x)^(7/2))/(7*b^4) + (2*(a + b*x)^(9/2))/(9*b^4)
```

Rubi in Sympy [A] time = 10.9926, size = 68, normalized size = 0.94

$$-\frac{2a^3\left(a+bx\right)^{\frac{3}{2}}}{3b^4}+\frac{6a^2\left(a+bx\right)^{\frac{5}{2}}}{5b^4}-\frac{6a\left(a+bx\right)^{\frac{7}{2}}}{7b^4}+\frac{2\left(a+bx\right)^{\frac{9}{2}}}{9b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(1/2),x)
```

```
[Out] -2*a**3*(a + b*x)**(3/2)/(3*b**4) + 6*a**2*(a + b*x)**(5/2)/(5*b*
*4) - 6*a*(a + b*x)**(7/2)/(7*b**4) + 2*(a + b*x)**(9/2)/(9*b**4)
```

Mathematica [A] time = 0.0214309, size = 57, normalized size = 0.79

$$\frac{2\sqrt{a+bx}\left(-16a^4+8a^3bx-6a^2b^2x^2+5ab^3x^3+35b^4x^4\right)}{315b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x]*(-16*a^4 + 8*a^3*b*x - 6*a^2*b^2*x^2 + 5*a*b^3*x
^3 + 35*b^4*x^4))/(315*b^4)
```

Maple [A] time = 0.111, size = 43, normalized size = 0.6

$$-\frac{-70\,b^3x^3+60\,ab^2x^2-48\,a^2bx+32\,a^3}{315\,b^4}\,(bx+a)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(1/2),x)
```

```
[Out] -2/315*(b*x+a)^(3/2)*(-35*b^3*x^3+30*a*b^2*x^2-24*a^2*b*x+16*a^3)
/b^4
```

Maxima [A] time = 1.34636, size = 76, normalized size = 1.06

$$\frac{2\,(bx+a)^{\frac{9}{2}}}{9\,b^4}-\frac{6\,(bx+a)^{\frac{7}{2}}a}{7\,b^4}+\frac{6\,(bx+a)^{\frac{5}{2}}a^2}{5\,b^4}-\frac{2\,(bx+a)^{\frac{3}{2}}a^3}{3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^3,x, algorithm="maxima")
```

```
[Out] 2/9*(b*x + a)^(9/2)/b^4 - 6/7*(b*x + a)^(7/2)*a/b^4 + 6/5*(b*x +
a)^(5/2)*a^2/b^4 - 2/3*(b*x + a)^(3/2)*a^3/b^4
```

Fricas [A] time = 0.207083, size = 72, normalized size = 1.

$$\frac{2\left(35\,b^4x^4+5\,ab^3x^3-6\,a^2b^2x^2+8\,a^3bx-16\,a^4\right)\sqrt{bx+a}}{315\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^3,x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^4*x^4 + 5*a*b^3*x^3 - 6*a^2*b^2*x^2 + 8*a^3*b*x - 16*
a^4)*sqrt(b*x + a)/b^4
```

Sympy [A] time = 8.24817, size = 1742, normalized size = 24.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**(1/2),x)
```

```
[Out] -32*a**(49/2)*sqrt(1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x
 + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*
x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x**6) + 32*a**(49/2
)/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6*x**2 + 63
00*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*b**9*x**5
+ 315*a**14*b**10*x**6) - 176*a**(47/2)*b*x*sqrt(1 + b*x/a)/(315*
a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6*x**2 + 6300*a**1
7*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*b**9*x**5 + 315*a
**14*b**10*x**6) + 192*a**(47/2)*b*x/(315*a**20*b**4 + 1890*a**19
*b**5*x + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**1
6*b**8*x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x**6) - 396*
a**(45/2)*b**2*x**2*sqrt(1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*
b**5*x + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16
*b**8*x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x**6) + 480*a
**(45/2)*b**2*x**2/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**
18*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890
*a**15*b**9*x**5 + 315*a**14*b**10*x**6) - 462*a**(43/2)*b**3*x**
3*sqrt(1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**1
8*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*
a**15*b**9*x**5 + 315*a**14*b**10*x**6) + 640*a**(43/2)*b**3*x**3
/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6*x**2 + 630
0*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*b**9*x**5 +
 315*a**14*b**10*x**6) - 210*a**(41/2)*b**4*x**4*sqrt(1 + b*x/a)/
(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6*x**2 + 6300
*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*b**9*x**5 +
315*a**14*b**10*x**6) + 480*a**(41/2)*b**4*x**4/(315*a**20*b**4 +
 1890*a**19*b**5*x + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3
+ 4725*a**16*b**8*x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x
**6) + 378*a**(39/2)*b**5*x**5*sqrt(1 + b*x/a)/(315*a**20*b**4 +
1890*a**19*b**5*x + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3 +
 4725*a**16*b**8*x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x*
*6) + 192*a**(39/2)*b**5*x**5/(315*a**20*b**4 + 1890*a**19*b**5*x
 + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*
x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x**6) + 1134*a**(37
/2)*b**6*x**6*sqrt(1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x
 + 4725*a**18*b**6*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*
x**4 + 1890*a**15*b**9*x**5 + 315*a**14*b**10*x**6) + 32*a**(37/2
)*b**6*x**6/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6
*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*
b**9*x**5 + 315*a**14*b**10*x**6) + 1494*a**(35/2)*b**7*x**7*sqrt
(1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6
*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*
b**9*x**5 + 315*a**14*b**10*x**6) + 1098*a**(33/2)*b**8*x**8*sqrt
(1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6
*x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*
```

```
b**9*x**5 + 315*a**14*b**10*x**6) + 430*a**(31/2)*b**9*x**9*sqrt(
1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6*
x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*b
**9*x**5 + 315*a**14*b**10*x**6) + 70*a**(29/2)*b**10*x**10*sqrt(
1 + b*x/a)/(315*a**20*b**4 + 1890*a**19*b**5*x + 4725*a**18*b**6*
x**2 + 6300*a**17*b**7*x**3 + 4725*a**16*b**8*x**4 + 1890*a**15*b
**9*x**5 + 315*a**14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.210544, size = 82, normalized size = 1.14

$$\frac{2\left(35\,(bx+a)^{\frac{9}{2}}b^{24}-135\,(bx+a)^{\frac{7}{2}}ab^{24}+189\,(bx+a)^{\frac{5}{2}}a^{2}b^{24}-105\,(bx+a)^{\frac{3}{2}}a^{3}b^{24}\right)}{315\,b^{28}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^3,x, algorithm="giac")
```

```
[Out] 2/315*(35*(b*x + a)^(9/2)*b^24 - 135*(b*x + a)^(7/2)*a*b^24 + 189
*(b*x + a)^(5/2)*a^2*b^24 - 105*(b*x + a)^(3/2)*a^3*b^24)/b^28
```

3.285 $\int x^2\sqrt{a+bx}\,dx$

Optimal. Leaf size=53

$$\frac{2a^2(a+bx)^{3/2}}{3b^3}+\frac{2(a+bx)^{7/2}}{7b^3}-\frac{4a(a+bx)^{5/2}}{5b^3}$$

```
[Out] (2*a^2*(a + b*x)^(3/2))/(3*b^3) - (4*a*(a + b*x)^(5/2))/(5*b^3) +
 (2*(a + b*x)^(7/2))/(7*b^3)
```

Rubi [A] time = 0.0395406, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^2(a+bx)^{3/2}}{3b^3}+\frac{2(a+bx)^{7/2}}{7b^3}-\frac{4a(a+bx)^{5/2}}{5b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*Sqrt[a + b*x],x]
```

```
[Out] (2*a^2*(a + b*x)^(3/2))/(3*b^3) - (4*a*(a + b*x)^(5/2))/(5*b^3) +
 (2*(a + b*x)^(7/2))/(7*b^3)
```

Rubi in Sympy [A] time = 7.96769, size = 49, normalized size = 0.92

$$\frac{2a^2\left(a+bx\right)^{\frac{3}{2}}}{3b^3}-\frac{4a\left(a+bx\right)^{\frac{5}{2}}}{5b^3}+\frac{2\left(a+bx\right)^{\frac{7}{2}}}{7b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**(1/2),x)
```

```
[Out] 2*a**2*(a + b*x)**(3/2)/(3*b**3) - 4*a*(a + b*x)**(5/2)/(5*b**3)
+ 2*(a + b*x)**(7/2)/(7*b**3)
```

Mathematica [A] time = 0.0166926, size = 46, normalized size = 0.87

$$\frac{2\sqrt{a+bx}\left(8a^3-4a^2bx+3ab^2x^2+15b^3x^3\right)}{105b^3}$$

Antiderivative was successfully verified.

```
[In]   Integrate[x^2*Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x]*(8*a^3 - 4*a^2*b*x + 3*a*b^2*x^2 + 15*b^3*x^3))/
(105*b^3)
```

Maple [A] time = 0.006, size = 32, normalized size = 0.6

$$\frac{30\,b^2x^2 - 24\,abx + 16\,a^2}{105\,b^3}\,(bx + a)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int(x^2*(b*x+a)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)^(3/2)*(15*b^2*x^2-12*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.34614, size = 55, normalized size = 1.04

$$\frac{2\,(bx + a)^{\frac{7}{2}}}{7\,b^3} - \frac{4\,(bx + a)^{\frac{5}{2}}a}{5\,b^3} + \frac{2\,(bx + a)^{\frac{3}{2}}a^2}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(sqrt(b*x + a)*x^2,x, algorithm="maxima")
```

```
[Out] 2/7*(b*x + a)^(7/2)/b^3 - 4/5*(b*x + a)^(5/2)*a/b^3 + 2/3*(b*x +
a)^(3/2)*a^2/b^3
```

Fricas [A] time = 0.207955, size = 57, normalized size = 1.08

$$\frac{2\left(15\,b^3x^3 + 3\,ab^2x^2 - 4\,a^2bx + 8\,a^3\right)\sqrt{bx + a}}{105\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   integrate(sqrt(b*x + a)*x^2,x, algorithm="fricas")
```

```
[Out] 2/105*(15*b^3*x^3 + 3*a*b^2*x^2 - 4*a^2*b*x + 8*a^3)*sqrt(b*x + a
)/b^3
```

Sympy [A] time = 5.60274, size = 666, normalized size = 12.57

$$\frac{16a^{\frac{23}{2}}\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} - \frac{16a^{\frac{23}{2}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} + \frac{40a^{\frac{21}{2}}bx\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} - \frac{48a^{\frac{21}{2}}bx}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} + \frac{30a^{\frac{19}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} - \frac{48a^{\frac{19}{2}}b^2x^2}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} + \frac{40a^{\frac{17}{2}}b^3x^3\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} - \frac{16a^{\frac{17}{2}}b^3x^3}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} + \frac{100a^{\frac{15}{2}}b^4x^4\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} + \frac{96a^{\frac{13}{2}}b^5x^5\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3} + \frac{30a^{\frac{11}{2}}b^6x^6\sqrt{1+\frac{bx}{a}}}{105a^8b^3+315a^7b^4x+315a^6b^5x^2+105a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(1/2),x)
```

```
[Out] 16*a**(23/2)*sqrt(1 + b*x/a)/(105*a**8*b**3 + 315*a**7*b**4*x + 3
15*a**6*b**5*x**2 + 105*a**5*b**6*x**3) - 16*a**(23/2)/(105*a**8*
b**3 + 315*a**7*b**4*x + 315*a**6*b**5*x**2 + 105*a**5*b**6*x**3)
 + 40*a**(21/2)*b*x*sqrt(1 + b*x/a)/(105*a**8*b**3 + 315*a**7*b**
4*x + 315*a**6*b**5*x**2 + 105*a**5*b**6*x**3) - 48*a**(21/2)*b*x
/(105*a**8*b**3 + 315*a**7*b**4*x + 315*a**6*b**5*x**2 + 105*a**5
*b**6*x**3) + 30*a**(19/2)*b**2*x**2*sqrt(1 + b*x/a)/(105*a**8*b*
*3 + 315*a**7*b**4*x + 315*a**6*b**5*x**2 + 105*a**5*b**6*x**3) -
 48*a**(19/2)*b**2*x**2/(105*a**8*b**3 + 315*a**7*b**4*x + 315*a*
*6*b**5*x**2 + 105*a**5*b**6*x**3) + 40*a**(17/2)*b**3*x**3*sqrt(
1 + b*x/a)/(105*a**8*b**3 + 315*a**7*b**4*x + 315*a**6*b**5*x**2
+ 105*a**5*b**6*x**3) - 16*a**(17/2)*b**3*x**3/(105*a**8*b**3 + 3
15*a**7*b**4*x + 315*a**6*b**5*x**2 + 105*a**5*b**6*x**3) + 100*a
**(15/2)*b**4*x**4*sqrt(1 + b*x/a)/(105*a**8*b**3 + 315*a**7*b**4
*x + 315*a**6*b**5*x**2 + 105*a**5*b**6*x**3) + 96*a**(13/2)*b**5
*x**5*sqrt(1 + b*x/a)/(105*a**8*b**3 + 315*a**7*b**4*x + 315*a**6
*b**5*x**2 + 105*a**5*b**6*x**3) + 30*a**(11/2)*b**6*x**6*sqrt(1
```

```
+ b*x/a)/(105*a**8*b**3 + 315*a**7*b**4*x + 315*a**6*b**5*x**2 +
105*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.212106, size = 62, normalized size = 1.17

$$\frac{2\left(15\,(bx+a)^{\frac{7}{2}}b^{12}-42\,(bx+a)^{\frac{5}{2}}ab^{12}+35\,(bx+a)^{\frac{3}{2}}a^{2}b^{12}\right)}{105\,b^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^2,x, algorithm="giac")
```

```
[Out] 2/105*(15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12 + 35*(
b*x + a)^(3/2)*a^2*b^12)/b^15
```

3.286 $\int x\sqrt{a+bx}\,dx$

Optimal. Leaf size=34

$$\frac{2(a+bx)^{5/2}}{5b^2}-\frac{2a(a+bx)^{3/2}}{3b^2}$$

```
[Out] (-2*a*(a + b*x)^(3/2))/(3*b^2) + (2*(a + b*x)^(5/2))/(5*b^2)
```

Rubi [A] time = 0.0252694, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2(a+bx)^{5/2}}{5b^2}-\frac{2a(a+bx)^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*Sqrt[a + b*x],x]

[Out] (-2*a*(a + b*x)^(3/2))/(3*b^2) + (2*(a + b*x)^(5/2))/(5*b^2)
```

Rubi in Sympy [A] time = 4.90233, size = 31, normalized size = 0.91

$$-\frac{2a\left(a+bx\right)^{\frac{3}{2}}}{3b^2}+\frac{2\left(a+bx\right)^{\frac{5}{2}}}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(1/2),x)

[Out] -2*a*(a + b*x)**(3/2)/(3*b**2) + 2*(a + b*x)**(5/2)/(5*b**2)
```

Mathematica [A] time = 0.0123373, size = 34, normalized size = 1.

$$\frac{2\sqrt{a+bx}\left(-2a^2+abx+3b^2x^2\right)}{15b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x]*(-2*a^2 + a*b*x + 3*b^2*x^2))/(15*b^2)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$-\frac{-6\,bx+4\,a}{15\,b^2}\,(bx+a)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(1/2),x)
```

```
[Out] -2/15*(b*x+a)^(3/2)*(-3*b*x+2*a)/b^2
```

Maxima [A] time = 1.34206, size = 35, normalized size = 1.03

$$\frac{2\,(bx+a)^{\frac{5}{2}}}{5\,b^2}-\frac{2\,(bx+a)^{\frac{3}{2}}a}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*x,x, algorithm="maxima")
```

```
[Out] 2/5*(b*x + a)^(5/2)/b^2 - 2/3*(b*x + a)^(3/2)*a/b^2
```

Fricas [A] time = 0.212928, size = 41, normalized size = 1.21

$$\frac{2\left(3\,b^2x^2+abx-2\,a^2\right)\sqrt{bx+a}}{15\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + a)*x,x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^2*x^2 + a*b*x - 2*a^2)*sqrt(b*x + a)/b^2
```

Sympy [A] time = 3.65861, size = 202, normalized size = 5.94

$$-\frac{4a^{\frac{9}{2}}\sqrt{1+\frac{bx}{a}}}{15a^2b^2+15ab^3x}+\frac{4a^{\frac{9}{2}}}{15a^2b^2+15ab^3x}-\frac{2a^{\frac{7}{2}}bx\sqrt{1+\frac{bx}{a}}}{15a^2b^2+15ab^3x}+\frac{4a^{\frac{7}{2}}bx}{15a^2b^2+15ab^3x}+\frac{8a^{\frac{5}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{15a^2b^2+15ab^3x}+\frac{6a^{\frac{3}{2}}b^3x^3\sqrt{1+\frac{bx}{a}}}{15a^2b^2+15ab^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(1/2),x)
```

```
[Out] -4*a**(9/2)*sqrt(1 + b*x/a)/(15*a**2*b**2 + 15*a*b**3*x) + 4*a**(
9/2)/(15*a**2*b**2 + 15*a*b**3*x) - 2*a**(7/2)*b*x*sqrt(1 + b*x/a
)/(15*a**2*b**2 + 15*a*b**3*x) + 4*a**(7/2)*b*x/(15*a**2*b**2 + 1
5*a*b**3*x) + 8*a**(5/2)*b**2*x**2*sqrt(1 + b*x/a)/(15*a**2*b**2
+ 15*a*b**3*x) + 6*a**(3/2)*b**3*x**3*sqrt(1 + b*x/a)/(15*a**2*b*
*2 + 15*a*b**3*x)
```

GIAC/XCAS [A] time = 0.202955, size = 34, normalized size = 1.

$$\frac{2\left(3\,(bx+a)^{\frac{5}{2}}-5\,(bx+a)^{\frac{3}{2}}a\right)}{15\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x,x, algorithm="giac")
```

```
[Out] 2/15*(3*(b*x + a)^(5/2) - 5*(b*x + a)^(3/2)*a)/b^2
```

3.287 $\int \sqrt{a+bx}\,dx$

Optimal. Leaf size=16

$$\frac{2(a+bx)^{3/2}}{3b}$$

```
[Out] (2*(a + b*x)^(3/2))/(3*b)
```

Rubi [A] time = 0.00681596, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2(a+bx)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x],x]

[Out] (2*(a + b*x)^(3/2))/(3*b)
```

Rubi in Sympy [A] time = 1.28, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2),x)

[Out] 2*(a + b*x)**(3/2)/(3*b)
```

Mathematica [A] time = 0.0060128, size = 16, normalized size = 1.

$$\frac{2(a+bx)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x],x]
```

```
[Out] (2*(a + b*x)^(3/2))/(3*b)
```

Maple [A] time = 0.004, size = 13, normalized size = 0.8

$$\frac{2}{3\,b}\,(bx+a)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)^(3/2)/b
```

Maxima [A] time = 1.33909, size = 16, normalized size = 1.

$$\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] 2/3*(b*x + a)^(3/2)/b
```

Fricas [A] time = 0.211715, size = 16, normalized size = 1.

$$\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] 2/3*(b*x + a)^(3/2)/b
```

Sympy [A] time = 0.068173, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2),x)
```

```
[Out] 2*(a + b*x)**(3/2)/(3*b)
```

GIAC/XCAS [A] time = 0.21175, size = 16, normalized size = 1.

$$\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] 2/3*(b*x + a)^(3/2)/b
```

3.288 $\int \frac{\sqrt{a+bx}}{x}\,dx$

Optimal. Leaf size=35

$$2\sqrt{a+bx}-2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

```
[Out] 2*Sqrt[a + b*x] - 2*Sqrt[a]*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0346436, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$2\sqrt{a+bx}-2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x,x]

[Out] 2*Sqrt[a + b*x] - 2*Sqrt[a]*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 4.70595, size = 31, normalized size = 0.89

$$-2\sqrt{a}\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2\sqrt{a+bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x,x)

[Out] -2*sqrt(a)*atanh(sqrt(a + b*x)/sqrt(a)) + 2*sqrt(a + b*x)
```

Mathematica [A] time = 0.0171722, size = 35, normalized size = 1.

$$2\sqrt{a+bx}-2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x,x]

[Out] 2*Sqrt[a + b*x] - 2*Sqrt[a]*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.022, size = 28, normalized size = 0.8

$$-2\,Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\sqrt{a}+2\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x,x)

[Out] -2*arctanh((b*x+a)^(1/2)/a^(1/2))*a^(1/2)+2*(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224733, size = 1, normalized size = 0.03

$$\left[\sqrt{a}\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\sqrt{bx+a},-2\sqrt{-a}\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)+2\sqrt{bx+a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x,x, algorithm="fricas")

[Out] [sqrt(a)*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2*sqrt(b*
x + a), -2*sqrt(-a)*arctan(sqrt(b*x + a)/sqrt(-a)) + 2*sqrt(b*x +
 a)]
```

Sympy [A] time = 4.84184, size = 68, normalized size = 1.94

$$-2\sqrt{a}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)+\frac{2a}{\sqrt{b}\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{2\sqrt{b}\sqrt{x}}{\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x,x)
```

```
[Out] -2*sqrt(a)*asinh(sqrt(a)/(sqrt(b)*sqrt(x))) + 2*a/(sqrt(b)*sqrt(x
)*sqrt(a/(b*x) + 1)) + 2*sqrt(b)*sqrt(x)/sqrt(a/(b*x) + 1)
```

GIAC/XCAS [A] time = 0.205686, size = 43, normalized size = 1.23

$$\frac{2\,a\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+2\,\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x,x, algorithm="giac")
```

```
[Out] 2*a*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 2*sqrt(b*x + a)
```

3.289 $\int \frac{\sqrt{a+bx}}{x^2}\,dx$

Optimal. Leaf size=39

$$-\frac{\sqrt{a+bx}}{x}-\frac{b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

```
[Out] -(Sqrt[a + b*x]/x) - (b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi [A] time = 0.0353946, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{\sqrt{a+bx}}{x}-\frac{b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^2,x]

[Out] -(Sqrt[a + b*x]/x) - (b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi in Sympy [A] time = 4.89768, size = 32, normalized size = 0.82

$$-\frac{\sqrt{a+bx}}{x}-\frac{b\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**2,x)

[Out] -sqrt(a + b*x)/x - b*atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a)
```

Mathematica [A] time = 0.0337476, size = 39, normalized size = 1.

$$-\frac{\sqrt{a+bx}}{x}-\frac{b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^2,x]

[Out] -(Sqrt[a + b*x]/x) - (b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Maple [A] time = 0.017, size = 37, normalized size = 1.

$$2\,b\left(-1/2\,\frac{\sqrt{bx+a}}{bx}-1/2\,\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^2,x)

[Out] 2*b*(-1/2*(b*x+a)^(1/2)/x/b-1/2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^
(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^2,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224269, size = 1, normalized size = 0.03

$$\left[\frac{bx\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)-2\,\sqrt{bx+a}\sqrt{a}}{2\,\sqrt{a}x},\ \frac{bx\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)-\sqrt{bx+a}\sqrt{-a}}{\sqrt{-a}x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^2,x, algorithm="fricas")

[Out] [1/2*(b*x*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x) - 2*sq
rt(b*x + a)*sqrt(a))/(sqrt(a)*x), (b*x*arctan(a/(sqrt(b*x + a)*sq
rt(-a))) - sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)*x)]
```

Sympy [A] time = 6.34325, size = 44, normalized size = 1.13

$$-\frac{\sqrt{b}\sqrt{\frac{a}{bx}+1}}{\sqrt{x}}-\frac{b\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**2,x)
```

```
[Out] -sqrt(b)*sqrt(a/(b*x) + 1)/sqrt(x) - b*asinh(sqrt(a)/(sqrt(b)*sqr
t(x)))/sqrt(a)
```

GIAC/XCAS [A] time = 0.223131, size = 55, normalized size = 1.41

$$\frac{\frac{b^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{\sqrt{bx+a}b}{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^2,x, algorithm="giac")
```

```
[Out] (b^2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) - sqrt(b*x + a)*b/x)
/b
```

3.290 $\int \frac{\sqrt{a+bx}}{x^3} \, dx$

Optimal. Leaf size=65

$$\frac{b^2 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{3/2}} - \frac{\sqrt{a+bx}}{2x^2} - \frac{b\sqrt{a+bx}}{4ax}$$

```
[Out] -Sqrt[a + b*x]/(2*x^2) - (b*Sqrt[a + b*x])/(4*a*x) + (b^2*ArcTanh
[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(3/2))
```

Rubi [A] time = 0.0575851, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$\frac{b^2 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{3/2}} - \frac{\sqrt{a+bx}}{2x^2} - \frac{b\sqrt{a+bx}}{4ax}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^3,x]
```

```
[Out] -Sqrt[a + b*x]/(2*x^2) - (b*Sqrt[a + b*x])/(4*a*x) + (b^2*ArcTanh
[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(3/2))
```

Rubi in Sympy [A] time = 7.15407, size = 53, normalized size = 0.82

$$-\frac{\sqrt{a+bx}}{2x^2} - \frac{b\sqrt{a+bx}}{4ax} + \frac{b^2 \operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**3,x)
```

```
[Out] -sqrt(a + b*x)/(2*x**2) - b*sqrt(a + b*x)/(4*a*x) + b**2*atanh(sq
rt(a + b*x)/sqrt(a))/(4*a**(3/2))
```

Mathematica [A] time = 0.0435298, size = 55, normalized size = 0.85

$$\frac{b^2 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{3/2}} - \frac{\sqrt{a+bx}(2a+bx)}{4ax^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^3,x]
```

```
[Out] -(Sqrt[a + b*x]*(2*a + b*x))/(4*a*x^2) + (b^2*ArcTanh[Sqrt[a + b*
x]/Sqrt[a]])/(4*a^(3/2))
```

Maple [A] time = 0.017, size = 53, normalized size = 0.8

$$2\,b^2\left(\frac{1}{b^2x^2}\left(-1/8\,\frac{(bx+a)^{3/2}}{a}-1/8\,\sqrt{bx+a}\right)+1/8\,\frac{1}{a^{3/2}}\mathit{Artanh}\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^3,x)
```

```
[Out] 2*b^2*((-1/8/a*(b*x+a)^(3/2)-1/8*(b*x+a)^(1/2))/x^2/b^2+1/8*arcta
nh((b*x+a)^(1/2)/a^(1/2))/a^(3/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227193, size = 1, normalized size = 0.02

$$\left[\frac{b^2x^2\log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right)-2\,(bx+2\,a)\sqrt{bx+a}\sqrt{a}}{8\,a^{\frac{3}{2}}x^2},-\frac{b^2x^2\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+(bx+2\,a)\sqrt{bx+a}\sqrt{-a}}{4\,\sqrt{-a}ax^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(b^2*x^2*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x + a)*a)/x) -
2*(b*x + 2*a)*sqrt(b*x + a)*sqrt(a))/(a^(3/2)*x^2), -1/4*(b^2*x^2
```

```
*arctan(a/(sqrt(b*x + a)*sqrt(-a))) + (b*x + 2*a)*sqrt(b*x + a)*s
qrt(-a))/(sqrt(-a)*a*x^2)]
```

Sympy [A] time = 11.6594, size = 97, normalized size = 1.49

$$-\frac{a}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{3\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{b^{\frac{3}{2}}}{4a\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{b^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**3,x)
```

```
[Out] -a/(2*sqrt(b)*x**(5/2)*sqrt(a/(b*x) + 1)) - 3*sqrt(b)/(4*x**(3/2)
*sqrt(a/(b*x) + 1)) - b**(3/2)/(4*a*sqrt(x)*sqrt(a/(b*x) + 1)) +
b**2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*a**(3/2))
```

GIAC/XCAS [A] time = 0.207896, size = 89, normalized size = 1.37

$$-\frac{\frac{b^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a}+\frac{(bx+a)^{\frac{3}{2}}b^3+\sqrt{bx+a}ab^3}{ab^2x^2}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^3,x, algorithm="giac")
```

```
[Out] -1/4*(b^3*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a) + ((b*x + a
)^(3/2)*b^3 + sqrt(b*x + a)*a*b^3)/(a*b^2*x^2))/b
```

3.291 $\int \frac{\sqrt{a+bx}}{x^4} dx$

Optimal. Leaf size=87

$$-\frac{b^3 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{b^2\sqrt{a+bx}}{8a^2x}-\frac{\sqrt{a+bx}}{3x^3}-\frac{b\sqrt{a+bx}}{12ax^2}$$

```
[Out] -Sqrt[a + b*x]/(3*x^3) - (b*Sqrt[a + b*x])/(12*a*x^2) + (b^2*Sqrt
[a + b*x])/(8*a^2*x) - (b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^
(5/2))
```

Rubi [A] time = 0.0787507, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{b^3 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{b^2\sqrt{a+bx}}{8a^2x}-\frac{\sqrt{a+bx}}{3x^3}-\frac{b\sqrt{a+bx}}{12ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^4,x]
```

```
[Out] -Sqrt[a + b*x]/(3*x^3) - (b*Sqrt[a + b*x])/(12*a*x^2) + (b^2*Sqrt
[a + b*x])/(8*a^2*x) - (b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^
(5/2))
```

Rubi in Sympy [A] time = 10.093, size = 73, normalized size = 0.84

$$-\frac{\sqrt{a+bx}}{3x^3}-\frac{b\sqrt{a+bx}}{12ax^2}+\frac{b^2\sqrt{a+bx}}{8a^2x}-\frac{b^3 \operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**4,x)
```

```
[Out] -sqrt(a + b*x)/(3*x**3) - b*sqrt(a + b*x)/(12*a*x**2) + b**2*sqrt
(a + b*x)/(8*a**2*x) - b**3*atanh(sqrt(a + b*x)/sqrt(a))/(8*a**(5
/2))
```

Mathematica [A] time = 0.0674847, size = 67, normalized size = 0.77

$$-\frac{b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{5/2}}-\frac{\sqrt{a+bx}\,(8a^2+2abx-3b^2x^2)}{24a^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^4,x]
```

```
[Out] -(Sqrt[a + b*x]*(8*a^2 + 2*a*b*x - 3*b^2*x^2))/(24*a^2*x^3) - (b^
3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^(5/2))
```

Maple [A] time = 0.018, size = 65, normalized size = 0.8

$$2\,b^3\left(\frac{1}{b^3x^3}\left(1/16\,\frac{(bx+a)^{5/2}}{a^2}-1/6\,\frac{(bx+a)^{3/2}}{a}-1/16\,\sqrt{bx+a}\right)-1/16\,\frac{1}{a^{5/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^4,x)
```

```
[Out] 2*b^3*((1/16/a^2*(b*x+a)^(5/2)-1/6/a*(b*x+a)^(3/2)-1/16*(b*x+a)^(
1/2))/x^3/b^3-1/16*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(5/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.234233, size = 1, normalized size = 0.01

$$\left[\frac{3\,b^3x^3\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)+2\,\left(3\,b^2x^2-2\,abx-8\,a^2\right)\sqrt{bx+a}\sqrt{a}}{48\,a^{\frac{5}{2}}x^3},\frac{3\,b^3x^3\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\left(3\,b^2x^2-2\,abx-8\,a\right.}{24\,\sqrt{-a}a^2x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^4,x, algorithm="fricas")
```

```
[Out] [1/48*(3*b^3*x^3*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x)
 + 2*(3*b^2*x^2 - 2*a*b*x - 8*a^2)*sqrt(b*x + a)*sqrt(a))/(a^(5/2
)*x^3), 1/24*(3*b^3*x^3*arctan(a/(sqrt(b*x + a)*sqrt(-a))) + (3*b
^2*x^2 - 2*a*b*x - 8*a^2)*sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)*a^2*x
^3)]
```

Sympy [A] time = 18.5323, size = 122, normalized size = 1.4

$$-\frac{a}{3\sqrt{b}x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{5\sqrt{b}}{12x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{b^{\frac{3}{2}}}{24ax^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{b^{\frac{5}{2}}}{8a^2\sqrt{x}\sqrt{\frac{a}{bx}+1}}-\frac{b^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{8a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**4,x)
```

```
[Out] -a/(3*sqrt(b)*x**(7/2)*sqrt(a/(b*x) + 1)) - 5*sqrt(b)/(12*x**(5/2
)*sqrt(a/(b*x) + 1)) + b**(3/2)/(24*a*x**(3/2)*sqrt(a/(b*x) + 1))
 + b**(5/2)/(8*a**2*sqrt(x)*sqrt(a/(b*x) + 1)) - b**3*asinh(sqrt(
a)/(sqrt(b)*sqrt(x)))/(8*a**(5/2))
```

GIAC/XCAS [A] time = 0.209479, size = 113, normalized size = 1.3

$$\frac{\frac{3\,b^4\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^2}+\frac{3\,(bx+a)^{\frac{5}{2}}b^4-8\,(bx+a)^{\frac{3}{2}}ab^4-3\,\sqrt{bx+a}a^2b^4}{a^2b^3x^3}}{24\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^4,x, algorithm="giac")
```

```
[Out] 1/24*(3*b^4*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^2) + (3*(b
*x + a)^(5/2)*b^4 - 8*(b*x + a)^(3/2)*a*b^4 - 3*sqrt(b*x + a)*a^2
*b^4)/(a^2*b^3*x^3))/b
```

3.292 $\int x^3(a+bx)^{3/2}\,dx$

Optimal. Leaf size=72

$$-\frac{2a^3(a+bx)^{5/2}}{5b^4}+\frac{6a^2(a+bx)^{7/2}}{7b^4}+\frac{2(a+bx)^{11/2}}{11b^4}-\frac{2a(a+bx)^{9/2}}{3b^4}$$

```
[Out] (-2*a^3*(a + b*x)^(5/2))/(5*b^4) + (6*a^2*(a + b*x)^(7/2))/(7*b^4
) - (2*a*(a + b*x)^(9/2))/(3*b^4) + (2*(a + b*x)^(11/2))/(11*b^4)
```

Rubi [A] time = 0.0507967, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3(a+bx)^{5/2}}{5b^4}+\frac{6a^2(a+bx)^{7/2}}{7b^4}+\frac{2(a+bx)^{11/2}}{11b^4}-\frac{2a(a+bx)^{9/2}}{3b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^(3/2),x]
```

```
[Out] (-2*a^3*(a + b*x)^(5/2))/(5*b^4) + (6*a^2*(a + b*x)^(7/2))/(7*b^4
) - (2*a*(a + b*x)^(9/2))/(3*b^4) + (2*(a + b*x)^(11/2))/(11*b^4)
```

Rubi in Sympy [A] time = 11.1589, size = 68, normalized size = 0.94

$$-\frac{2a^3\left(a+bx\right)^{\frac{5}{2}}}{5b^4}+\frac{6a^2\left(a+bx\right)^{\frac{7}{2}}}{7b^4}-\frac{2a\left(a+bx\right)^{\frac{9}{2}}}{3b^4}+\frac{2\left(a+bx\right)^{\frac{11}{2}}}{11b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(3/2),x)
```

```
[Out] -2*a**3*(a + b*x)**(5/2)/(5*b**4) + 6*a**2*(a + b*x)**(7/2)/(7*b*
*4) - 2*a*(a + b*x)**(9/2)/(3*b**4) + 2*(a + b*x)**(11/2)/(11*b**
4)
```

Mathematica [A] time = 0.035504, size = 46, normalized size = 0.64

$$\frac{2(a+bx)^{5/2}\left(-16a^3+40a^2bx-70ab^2x^2+105b^3x^3\right)}{1155b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^(5/2)*(-16*a^3 + 40*a^2*b*x - 70*a*b^2*x^2 + 105*b^3
*x^3))/(1155*b^4)
```

Maple [A] time = 0.009, size = 43, normalized size = 0.6

$$-\frac{-210\,b^3x^3+140\,ab^2x^2-80\,a^2bx+32\,a^3}{1155\,b^4}\,(bx+a)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(3/2),x)
```

```
[Out] -2/1155*(b*x+a)^(5/2)*(-105*b^3*x^3+70*a*b^2*x^2-40*a^2*b*x+16*a^
3)/b^4
```

Maxima [A] time = 1.34908, size = 76, normalized size = 1.06

$$\frac{2\,(bx+a)^{\frac{11}{2}}}{11\,b^4}-\frac{2\,(bx+a)^{\frac{9}{2}}a}{3\,b^4}+\frac{6\,(bx+a)^{\frac{7}{2}}a^2}{7\,b^4}-\frac{2\,(bx+a)^{\frac{5}{2}}a^3}{5\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^3,x, algorithm="maxima")
```

```
[Out] 2/11*(b*x + a)^(11/2)/b^4 - 2/3*(b*x + a)^(9/2)*a/b^4 + 6/7*(b*x
+ a)^(7/2)*a^2/b^4 - 2/5*(b*x + a)^(5/2)*a^3/b^4
```

Fricas [A] time = 0.215592, size = 86, normalized size = 1.19

$$\frac{2\left(105\,b^5x^5+140\,ab^4x^4+5\,a^2b^3x^3-6\,a^3b^2x^2+8\,a^4bx-16\,a^5\right)\sqrt{bx+a}}{1155\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^3,x, algorithm="fricas")
```

```
[Out] 2/1155*(105*b^5*x^5 + 140*a*b^4*x^4 + 5*a^2*b^3*x^3 - 6*a^3*b^2*x
^2 + 8*a^4*b*x - 16*a^5)*sqrt(b*x + a)/b^4
```

Sympy [A] time = 9.47027, size = 1742, normalized size = 24.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**(3/2),x)
```

```
[Out] -32*a**(51/2)*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*
x + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b
**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 32*a**
(51/2)/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17325*a**18*b**6*x*
*2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4 + 6930*a**15*b
**9*x**5 + 1155*a**14*b**10*x**6) - 176*a**(49/2)*b*x*sqrt(1 + b*
x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17325*a**18*b**6*x**2
 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4 + 6930*a**15*b**
9*x**5 + 1155*a**14*b**10*x**6) + 192*a**(49/2)*b*x/(1155*a**20*b
**4 + 6930*a**19*b**5*x + 17325*a**18*b**6*x**2 + 23100*a**17*b**
7*x**3 + 17325*a**16*b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**1
4*b**10*x**6) - 396*a**(47/2)*b**2*x**2*sqrt(1 + b*x/a)/(1155*a**
20*b**4 + 6930*a**19*b**5*x + 17325*a**18*b**6*x**2 + 23100*a**17
*b**7*x**3 + 17325*a**16*b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*
a**14*b**10*x**6) + 480*a**(47/2)*b**2*x**2/(1155*a**20*b**4 + 69
30*a**19*b**5*x + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 +
 17325*a**16*b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*
x**6) - 462*a**(45/2)*b**3*x**3*sqrt(1 + b*x/a)/(1155*a**20*b**4
+ 6930*a**19*b**5*x + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x*
*3 + 17325*a**16*b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b*
*10*x**6) + 640*a**(45/2)*b**3*x**3/(1155*a**20*b**4 + 6930*a**19
*b**5*x + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a
**16*b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) +
480*a**(43/2)*b**4*x**4/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17
325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x*
*4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 1848*a**(41/
2)*b**5*x**5*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*x
 + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b*
*8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 192*a**
(41/2)*b**5*x**5/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17325*a**
18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4 + 69
30*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 5544*a**(39/2)*b**6
*x**6*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*x + 1732
5*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4
 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 32*a**(39/2)*b
**6*x**6/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17325*a**18*b**6*
x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4 + 6930*a**15
*b**9*x**5 + 1155*a**14*b**10*x**6) + 8844*a**(37/2)*b**7*x**7*sq
rt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17325*a**18*
b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4 + 6930*
a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 8448*a**(35/2)*b**8*x*
*8*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17325*a
**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x**4 +
6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 4840*a**(33/2)*b*
*9*x**9*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5*x + 17
```

```
325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*b**8*x*
*4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 1540*a**(31/
2)*b**10*x**10*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**19*b**5
*x + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*a**16*
b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6) + 210*a
**(29/2)*b**11*x**11*sqrt(1 + b*x/a)/(1155*a**20*b**4 + 6930*a**1
9*b**5*x + 17325*a**18*b**6*x**2 + 23100*a**17*b**7*x**3 + 17325*
a**16*b**8*x**4 + 6930*a**15*b**9*x**5 + 1155*a**14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.213821, size = 193, normalized size = 2.68

$$\frac{2\left(\frac{11\left(35\,(bx+a)^{\frac{9}{2}}b^{24}-135\,(bx+a)^{\frac{7}{2}}ab^{24}+189\,(bx+a)^{\frac{5}{2}}a^{2}b^{24}-105\,(bx+a)^{\frac{3}{2}}a^{3}b^{24}\right)a}{b^{27}}+\frac{315\,(bx+a)^{\frac{11}{2}}b^{40}-1540\,(bx+a)^{\frac{9}{2}}ab^{40}+2970\,(bx+a)^{\frac{7}{2}}a^{2}b^{40}-2772\,(bx+a)}{b^{43}}\right.}{3465\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^3,x, algorithm="giac")
```

```
[Out] 2/3465*(11*(35*(b*x + a)^(9/2)*b^24 - 135*(b*x + a)^(7/2)*a*b^24
+ 189*(b*x + a)^(5/2)*a^2*b^24 - 105*(b*x + a)^(3/2)*a^3*b^24)*a/
b^27 + (315*(b*x + a)^(11/2)*b^40 - 1540*(b*x + a)^(9/2)*a*b^40 +
 2970*(b*x + a)^(7/2)*a^2*b^40 - 2772*(b*x + a)^(5/2)*a^3*b^40 +
1155*(b*x + a)^(3/2)*a^4*b^40)/b^43)/b
```

3.293 $\int x^2(a+bx)^{3/2}\,dx$

Optimal. Leaf size=53

$$\frac{2a^2(a+bx)^{5/2}}{5b^3}+\frac{2(a+bx)^{9/2}}{9b^3}-\frac{4a(a+bx)^{7/2}}{7b^3}$$

```
[Out] (2*a^2*(a + b*x)^(5/2))/(5*b^3) - (4*a*(a + b*x)^(7/2))/(7*b^3) +
 (2*(a + b*x)^(9/2))/(9*b^3)
```

Rubi [A] time = 0.0381957, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^2(a+bx)^{5/2}}{5b^3}+\frac{2(a+bx)^{9/2}}{9b^3}-\frac{4a(a+bx)^{7/2}}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*x)^(3/2),x]
```

```
[Out] (2*a^2*(a + b*x)^(5/2))/(5*b^3) - (4*a*(a + b*x)^(7/2))/(7*b^3) +
 (2*(a + b*x)^(9/2))/(9*b^3)
```

Rubi in Sympy [A] time = 8.0538, size = 49, normalized size = 0.92

$$\frac{2a^2\left(a+bx\right)^{\frac{5}{2}}}{5b^3}-\frac{4a\left(a+bx\right)^{\frac{7}{2}}}{7b^3}+\frac{2\left(a+bx\right)^{\frac{9}{2}}}{9b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(b*x+a)**(3/2),x)
```

```
[Out] 2*a**2*(a + b*x)**(5/2)/(5*b**3) - 4*a*(a + b*x)**(7/2)/(7*b**3)
+ 2*(a + b*x)**(9/2)/(9*b**3)
```

Mathematica [A] time = 0.025047, size = 35, normalized size = 0.66

$$\frac{2(a+bx)^{5/2}\left(8a^2-20abx+35b^2x^2\right)}{315b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^(5/2)*(8*a^2 - 20*a*b*x + 35*b^2*x^2))/(315*b^3)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$\frac{70\,b^2x^2 - 40\,abx + 16\,a^2}{315\,b^3}\,(bx + a)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^(3/2),x)
```

```
[Out] 2/315*(b*x+a)^(5/2)*(35*b^2*x^2-20*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.34642, size = 55, normalized size = 1.04

$$\frac{2\,(bx + a)^{\frac{9}{2}}}{9\,b^3} - \frac{4\,(bx + a)^{\frac{7}{2}}\,a}{7\,b^3} + \frac{2\,(bx + a)^{\frac{5}{2}}\,a^2}{5\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^2,x, algorithm="maxima")
```

```
[Out] 2/9*(b*x + a)^(9/2)/b^3 - 4/7*(b*x + a)^(7/2)*a/b^3 + 2/5*(b*x +
a)^(5/2)*a^2/b^3
```

Fricas [A] time = 0.21479, size = 72, normalized size = 1.36

$$\frac{2\left(35\,b^4x^4 + 50\,ab^3x^3 + 3\,a^2b^2x^2 - 4\,a^3bx + 8\,a^4\right)\sqrt{bx + a}}{315\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^2,x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^4*x^4 + 50*a*b^3*x^3 + 3*a^2*b^2*x^2 - 4*a^3*b*x + 8*
a^4)*sqrt(b*x + a)/b^3
```

Sympy [A] time = 6.68273, size = 733, normalized size = 13.83

$$\frac{16a^{\frac{25}{2}}\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} - \frac{16a^{\frac{25}{2}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{40a^{\frac{23}{2}}bx\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} - \frac{48a^{\frac{23}{2}}bx}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{30a^{\frac{21}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} - \frac{48a^{\frac{21}{2}}b^2x^2}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{110a^{\frac{19}{2}}b^3x^3\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} - \frac{16a^{\frac{19}{2}}b^3x^3}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{380a^{\frac{17}{2}}b^4x^4\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{516a^{\frac{15}{2}}b^5x^5\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{310a^{\frac{13}{2}}b^6x^6\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3} + \frac{70a^{\frac{11}{2}}b^7x^7\sqrt{1+\frac{bx}{a}}}{315a^8b^3+945a^7b^4x+945a^6b^5x^2+315a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(3/2),x)
```

```
[Out] 16*a**(25/2)*sqrt(1 + b*x/a)/(315*a**8*b**3 + 945*a**7*b**4*x + 9
45*a**6*b**5*x**2 + 315*a**5*b**6*x**3) - 16*a**(25/2)/(315*a**8*
b**3 + 945*a**7*b**4*x + 945*a**6*b**5*x**2 + 315*a**5*b**6*x**3)
 + 40*a**(23/2)*b*x*sqrt(1 + b*x/a)/(315*a**8*b**3 + 945*a**7*b**
4*x + 945*a**6*b**5*x**2 + 315*a**5*b**6*x**3) - 48*a**(23/2)*b*x
/(315*a**8*b**3 + 945*a**7*b**4*x + 945*a**6*b**5*x**2 + 315*a**5
*b**6*x**3) + 30*a**(21/2)*b**2*x**2*sqrt(1 + b*x/a)/(315*a**8*b*
*3 + 945*a**7*b**4*x + 945*a**6*b**5*x**2 + 315*a**5*b**6*x**3) -
 48*a**(21/2)*b**2*x**2/(315*a**8*b**3 + 945*a**7*b**4*x + 945*a*
*6*b**5*x**2 + 315*a**5*b**6*x**3) + 110*a**(19/2)*b**3*x**3*sqrt
(1 + b*x/a)/(315*a**8*b**3 + 945*a**7*b**4*x + 945*a**6*b**5*x**2
 + 315*a**5*b**6*x**3) - 16*a**(19/2)*b**3*x**3/(315*a**8*b**3 +
945*a**7*b**4*x + 945*a**6*b**5*x**2 + 315*a**5*b**6*x**3) + 380*
a**(17/2)*b**4*x**4*sqrt(1 + b*x/a)/(315*a**8*b**3 + 945*a**7*b**
```

```
4*x + 945*a**6*b**5*x**2 + 315*a**5*b**6*x**3) + 516*a**(15/2)*b*
*5*x**5*sqrt(1 + b*x/a)/(315*a**8*b**3 + 945*a**7*b**4*x + 945*a*
*6*b**5*x**2 + 315*a**5*b**6*x**3) + 310*a**(13/2)*b**6*x**6*sqrt
(1 + b*x/a)/(315*a**8*b**3 + 945*a**7*b**4*x + 945*a**6*b**5*x**2
 + 315*a**5*b**6*x**3) + 70*a**(11/2)*b**7*x**7*sqrt(1 + b*x/a)/(
315*a**8*b**3 + 945*a**7*b**4*x + 945*a**6*b**5*x**2 + 315*a**5*b
**6*x**3)
```

GIAC/XCAS [A] time = 0.236799, size = 153, normalized size = 2.89

$$\frac{2\left(\frac{3\left(15\,(bx+a)^{\frac{7}{2}}b^{12}-42\,(bx+a)^{\frac{5}{2}}ab^{12}+35\,(bx+a)^{\frac{3}{2}}a^2b^{12}\right)a}{b^{14}}+\frac{35\,(bx+a)^{\frac{9}{2}}b^{24}-135\,(bx+a)^{\frac{7}{2}}ab^{24}+189\,(bx+a)^{\frac{5}{2}}a^2b^{24}-105\,(bx+a)^{\frac{3}{2}}a^3b^{24}}{b^{26}}\right)}{315\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^2,x, algorithm="giac")
```

```
[Out] 2/315*(3*(15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12 + 3
5*(b*x + a)^(3/2)*a^2*b^12)*a/b^14 + (35*(b*x + a)^(9/2)*b^24 - 1
35*(b*x + a)^(7/2)*a*b^24 + 189*(b*x + a)^(5/2)*a^2*b^24 - 105*(b
*x + a)^(3/2)*a^3*b^24)/b^26)/b
```

3.294 $\int x(a+bx)^{3/2}\,dx$

Optimal. Leaf size=34

$$\frac{2(a+bx)^{7/2}}{7b^2}-\frac{2a(a+bx)^{5/2}}{5b^2}$$

```
[Out] (-2*a*(a + b*x)^(5/2))/(5*b^2) + (2*(a + b*x)^(7/2))/(7*b^2)
```

Rubi [A] time = 0.0248236, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2(a+bx)^{7/2}}{7b^2}-\frac{2a(a+bx)^{5/2}}{5b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^(3/2),x]

[Out] (-2*a*(a + b*x)^(5/2))/(5*b^2) + (2*(a + b*x)^(7/2))/(7*b^2)
```

Rubi in Sympy [A] time = 4.94087, size = 31, normalized size = 0.91

$$-\frac{2a\left(a+bx\right)^{\frac{5}{2}}}{5b^2}+\frac{2\left(a+bx\right)^{\frac{7}{2}}}{7b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(3/2),x)

[Out] -2*a*(a + b*x)**(5/2)/(5*b**2) + 2*(a + b*x)**(7/2)/(7*b**2)
```

Mathematica [A] time = 0.0227082, size = 24, normalized size = 0.71

$$\frac{2(a+bx)^{5/2}(5bx-2a)}{35b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^(5/2)*(-2*a + 5*b*x))/(35*b^2)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$-\frac{-10\,bx+4\,a}{35\,b^2}(bx+a)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(3/2),x)
```

```
[Out] -2/35*(b*x+a)^(5/2)*(-5*b*x+2*a)/b^2
```

Maxima [A] time = 1.34162, size = 35, normalized size = 1.03

$$\frac{2\,(bx+a)^{\frac{7}{2}}}{7\,b^2}-\frac{2\,(bx+a)^{\frac{5}{2}}a}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2)*x,x, algorithm="maxima")
```

```
[Out] 2/7*(b*x + a)^(7/2)/b^2 - 2/5*(b*x + a)^(5/2)*a/b^2
```

Fricas [A] time = 0.219235, size = 55, normalized size = 1.62

$$\frac{2\left(5\,b^3x^3+8\,ab^2x^2+a^2bx-2\,a^3\right)\sqrt{bx+a}}{35\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2)*x,x, algorithm="fricas")
```

```
[Out] 2/35*(5*b^3*x^3 + 8*a*b^2*x^2 + a^2*b*x - 2*a^3)*sqrt(b*x + a)/b^
2
```

Sympy [A] time = 1.71991, size = 80, normalized size = 2.35

$$\begin{cases} -\frac{4a^3\sqrt{a+bx}}{35b^2}+\frac{2a^2x\sqrt{a+bx}}{35b}+\frac{16ax^2\sqrt{a+bx}}{35}+\frac{2bx^3\sqrt{a+bx}}{7} & \text{for } b\neq 0 \\ \frac{a^{\frac{3}{2}}x^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(3/2),x)
```

```
[Out] Piecewise((-4*a**3*sqrt(a + b*x)/(35*b**2) + 2*a**2*x*sqrt(a + b*
x)/(35*b) + 16*a*x**2*sqrt(a + b*x)/35 + 2*b*x**3*sqrt(a + b*x)/7
, Ne(b, 0)), (a**(3/2)*x**2/2, True))
```

GIAC/XCAS [A] time = 0.218844, size = 104, normalized size = 3.06

$$\frac{2\left(\frac{7\left(3\,(bx+a)^{\frac{5}{2}}-5\,(bx+a)^{\frac{3}{2}}\,a\right)a}{b}+\frac{15\,(bx+a)^{\frac{7}{2}}\,b^{12}-42\,(bx+a)^{\frac{5}{2}}\,ab^{12}+35\,(bx+a)^{\frac{3}{2}}\,a^{2}b^{12}}{b^{13}}\right)}{105\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x,x, algorithm="giac")
```

```
[Out] 2/105*(7*(3*(b*x + a)^(5/2) - 5*(b*x + a)^(3/2)*a)*a/b + (15*(b*x
 + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12 + 35*(b*x + a)^(3/2)
*a^2*b^12)/b^13)/b
```

3.295 $\int (a+bx)^{3/2}\,dx$

Optimal. Leaf size=16

$$\frac{2(a+bx)^{5/2}}{5b}$$

```
[Out] (2*(a + b*x)^(5/2))/(5*b)
```

Rubi [A] time = 0.00691899, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2(a+bx)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^(5/2))/(5*b)
```

Rubi in Sympy [A] time = 1.25623, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2),x)
```

```
[Out] 2*(a + b*x)**(5/2)/(5*b)
```

Mathematica [A] time = 0.00716154, size = 16, normalized size = 1.

$$\frac{2(a+bx)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^(5/2))/(5*b)
```

Maple [A] time = 0.004, size = 13, normalized size = 0.8

$$\frac{2}{5\,b}\,(bx+a)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(3/2),x)
```

```
[Out] 2/5*(b*x+a)^(5/2)/b
```

Maxima [A] time = 1.3379, size = 16, normalized size = 1.

$$\frac{2\,(bx+a)^{\frac{5}{2}}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(b*x + a)^(5/2)/b
```

Fricas [A] time = 0.216995, size = 38, normalized size = 2.38

$$\frac{2\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/b
```

Sympy [A] time = 0.071451, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2),x)
```

```
[Out] 2*(a + b*x)**(5/2)/(5*b)
```

GIAC/XCAS [A] time = 0.217825, size = 16, normalized size = 1.

$$\frac{2\,(bx + a)^{\frac{5}{2}}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*(b*x + a)^(5/2)/b
```

3.296 $\int \frac{(a+bx)^{3/2}}{x}\,dx$

Optimal. Leaf size=49

$$-2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a\sqrt{a+bx}+\frac{2}{3}(a+bx)^{3/2}$$

```
[Out] 2*a*Sqrt[a + b*x] + (2*(a + b*x)^(3/2))/3 - 2*a^(3/2)*ArcTanh[Sqr
t[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0485088, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a\sqrt{a+bx}+\frac{2}{3}(a+bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/x,x]
```

```
[Out] 2*a*Sqrt[a + b*x] + (2*(a + b*x)^(3/2))/3 - 2*a^(3/2)*ArcTanh[Sqr
t[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 6.47086, size = 44, normalized size = 0.9

$$-2a^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a\sqrt{a+bx}+\frac{2\,(a+bx)^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x,x)
```

```
[Out] -2*a**(3/2)*atanh(sqrt(a + b*x)/sqrt(a)) + 2*a*sqrt(a + b*x) + 2*
(a + b*x)**(3/2)/3
```

Mathematica [A] time = 0.0281831, size = 46, normalized size = 0.94

$$\left(\frac{8a}{3}+\frac{2bx}{3}\right)\sqrt{a+bx}-2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/x,x]
```

```
[Out] ((8*a)/3 + (2*b*x)/3)*Sqrt[a + b*x] - 2*a^(3/2)*ArcTanh[Sqrt[a +
b*x]/Sqrt[a]]
```

Maple [A] time = 0.008, size = 38, normalized size = 0.8

$$\frac{2}{3}(bx+a)^{\frac{3}{2}} - 2a^{3/2}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right) + 2a\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x,x)
```

```
[Out] 2/3*(b*x+a)^(3/2)-2*a^(3/2)*arctanh((b*x+a)^(1/2)/a^(1/2))+2*a*(b
*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.234987, size = 1, normalized size = 0.02

$$\left[a^{\frac{3}{2}}\log\left(\frac{bx - 2\sqrt{bx+a}\sqrt{a} + 2a}{x}\right) + \frac{2}{3}(bx+4a)\sqrt{bx+a}, -2\sqrt{-a}a\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right) + \frac{2}{3}(bx+4a)\sqrt{bx+a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [a^(3/2)*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2/3*(b*x
+ 4*a)*sqrt(b*x + a), -2*sqrt(-a)*a*arctan(sqrt(b*x + a)/sqrt(-a)
```

```
) + 2/3*(b*x + 4*a)*sqrt(b*x + a)]
```

Sympy [A] time = 6.95833, size = 71, normalized size = 1.45

$$\frac{8a^{\frac{3}{2}}\sqrt{1+\frac{bx}{a}}}{3}+a^{\frac{3}{2}}\log\left(\frac{bx}{a}\right)-2a^{\frac{3}{2}}\log\left(\sqrt{1+\frac{bx}{a}}+1\right)+\frac{2\sqrt{a}bx\sqrt{1+\frac{bx}{a}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x,x)
```

```
[Out] 8*a**(3/2)*sqrt(1 + b*x/a)/3 + a**(3/2)*log(b*x/a) - 2*a**(3/2)*l
og(sqrt(1 + b*x/a) + 1) + 2*sqrt(a)*b*x*sqrt(1 + b*x/a)/3
```

GIAC/XCAS [A] time = 0.209605, size = 59, normalized size = 1.2

$$\frac{2\,a^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+\frac{2}{3}\,(bx+a)^{\frac{3}{2}}+2\,\sqrt{bx+a}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 2*a^2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 2/3*(b*x + a)^(3/
2) + 2*sqrt(b*x + a)*a
```

3.297 $\int \frac{(a+bx)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=51

$$-\frac{(a+bx)^{3/2}}{x}+3b\sqrt{a+bx}-3\sqrt{a}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

```
[Out] 3*b*Sqrt[a + b*x] - (a + b*x)^(3/2)/x - 3*Sqrt[a]*b*ArcTanh[Sqrt[
a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0499279, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{(a+bx)^{3/2}}{x}+3b\sqrt{a+bx}-3\sqrt{a}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/x^2,x]
```

```
[Out] 3*b*Sqrt[a + b*x] - (a + b*x)^(3/2)/x - 3*Sqrt[a]*b*ArcTanh[Sqrt[
a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 6.72651, size = 44, normalized size = 0.86

$$-3\sqrt{a}b\,\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+3b\sqrt{a+bx}-\frac{(a+bx)^{\frac{3}{2}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x**2,x)
```

```
[Out] -3*sqrt(a)*b*atanh(sqrt(a + b*x)/sqrt(a)) + 3*b*sqrt(a + b*x) - (
a + b*x)**(3/2)/x
```

Mathematica [A] time = 0.0376969, size = 45, normalized size = 0.88

$$\left(2b-\frac{a}{x}\right)\sqrt{a+bx}-3\sqrt{a}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/x^2,x]
```

```
[Out] (2*b - a/x)*Sqrt[a + b*x] - 3*Sqrt[a]*b*ArcTanh[Sqrt[a + b*x]/Sqr
t[a]]
```

Maple [A] time = 0.014, size = 47, normalized size = 0.9

$$2\,b\left(\sqrt{bx+a}+a\left(-1/2\,{\frac{\sqrt{bx+a}}{bx}}-3/2\,{\frac{1}{\sqrt{a}}{\it Artanh}\left({\frac{\sqrt{bx+a}}{\sqrt{a}}}\right)}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x^2,x)
```

```
[Out] 2*b*((b*x+a)^(1/2)+a*(-1/2*(b*x+a)^(1/2)/x/b-3/2*arctanh((b*x+a)^
(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.236167, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{a}bx\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\,(2\,bx-a)\sqrt{bx+a}}{2\,x},-\frac{3\,\sqrt{-a}bx\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-(2\,bx-a)\sqrt{bx+a}}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/2*(3*sqrt(a)*b*x*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x)
+ 2*(2*b*x - a)*sqrt(b*x + a))/x, -(3*sqrt(-a)*b*x*arctan(sqrt(b*
```

```
x + a)/sqrt(-a)) - (2*b*x - a)*sqrt(b*x + a))/x]
```

Sympy [A] time = 8.54782, size = 92, normalized size = 1.8

$$-3\sqrt{a}b\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)-\frac{a^2}{\sqrt{b}x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{a\sqrt{b}}{\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{2b^{\frac{3}{2}}\sqrt{x}}{\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x**2,x)
```

```
[Out] -3*sqrt(a)*b*asinh(sqrt(a)/(sqrt(b)*sqrt(x))) - a**2/(sqrt(b)*x**
(3/2)*sqrt(a/(b*x) + 1)) + a*sqrt(b)/(sqrt(x)*sqrt(a/(b*x) + 1))
+ 2*b**(3/2)*sqrt(x)/sqrt(a/(b*x) + 1)
```

GIAC/XCAS [A] time = 0.207331, size = 76, normalized size = 1.49

$$\frac{\frac{3\,ab^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+2\,\sqrt{bx+a}b^2-\frac{\sqrt{bx+a}ab}{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] (3*a*b^2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 2*sqrt(b*x + a
)*b^2 - sqrt(b*x + a)*a*b/x)/b
```

3.298 $\int \frac{(a+bx)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=62

$$-\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4\sqrt{a}}-\frac{(a+bx)^{3/2}}{2x^2}-\frac{3b\sqrt{a+bx}}{4x}$$

```
[Out] (-3*b*Sqrt[a + b*x])/(4*x) - (a + b*x)^(3/2)/(2*x^2) - (3*b^2*Arc
Tanh[Sqrt[a + b*x]/Sqrt[a]])/(4*Sqrt[a])
```

Rubi [A] time = 0.053313, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4\sqrt{a}}-\frac{(a+bx)^{3/2}}{2x^2}-\frac{3b\sqrt{a+bx}}{4x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/x^3,x]
```

```
[Out] (-3*b*Sqrt[a + b*x])/(4*x) - (a + b*x)^(3/2)/(2*x^2) - (3*b^2*Arc
Tanh[Sqrt[a + b*x]/Sqrt[a]])/(4*Sqrt[a])
```

Rubi in Sympy [A] time = 7.05687, size = 56, normalized size = 0.9

$$-\frac{3b\sqrt{a+bx}}{4x}-\frac{(a+bx)^{\frac{3}{2}}}{2x^2}-\frac{3b^2\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x**3,x)
```

```
[Out] -3*b*sqrt(a + b*x)/(4*x) - (a + b*x)**(3/2)/(2*x**2) - 3*b**2*ata
nh(sqrt(a + b*x)/sqrt(a))/(4*sqrt(a))
```

Mathematica [A] time = 0.0521713, size = 53, normalized size = 0.85

$$-\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4\sqrt{a}}-\frac{\sqrt{a+bx}(2a+5bx)}{4x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/x^3,x]
```

```
[Out] -(Sqrt[a + b*x]*(2*a + 5*b*x))/(4*x^2) - (3*b^2*ArcTanh[Sqrt[a +
b*x]/Sqrt[a]])/(4*Sqrt[a])
```

Maple [A] time = 0.016, size = 51, normalized size = 0.8

$$2\,b^{2}\left(\frac{-5/8\,\left(bx+a\right)^{3/2}+3/8\,a\sqrt{bx+a}}{b^{2}x^{2}}-3/8\,\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x^3,x)
```

```
[Out] 2*b^2*((-5/8*(b*x+a)^(3/2)+3/8*a*(b*x+a)^(1/2))/x^2/b^2-3/8*arcta
nh((b*x+a)^(1/2)/a^(1/2))/a^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.236093, size = 1, normalized size = 0.02

$$\left[\frac{3\,b^{2}x^{2}\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)-2\,(5\,bx+2\,a)\sqrt{bx+a}\sqrt{a}}{8\,\sqrt{a}x^{2}},\ \frac{3\,b^{2}x^{2}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)-(5\,bx+2\,a)\sqrt{bx+a}\sqrt{-a}}{4\,\sqrt{-a}x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*x^2*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x)
- 2*(5*b*x + 2*a)*sqrt(b*x + a)*sqrt(a))/(sqrt(a)*x^2), 1/4*(3*b^
```

```
2*x^2*arctan(a/(sqrt(b*x + a)*sqrt(-a))) - (5*b*x + 2*a)*sqrt(b*x
 + a)*sqrt(-a))/(sqrt(-a)*x^2)]
```

Sympy [A] time = 10.1924, size = 76, normalized size = 1.23

$$-\frac{a\sqrt{b}\sqrt{\frac{a}{bx}+1}}{2x^{\frac{3}{2}}}-\frac{5b^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{4\sqrt{x}}-\frac{3b^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x**3,x)
```

```
[Out] -a*sqrt(b)*sqrt(a/(b*x) + 1)/(2*x**(3/2)) - 5*b**(3/2)*sqrt(a/(b*
x) + 1)/(4*sqrt(x)) - 3*b**2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*
sqrt(a))
```

GIAC/XCAS [A] time = 0.206905, size = 86, normalized size = 1.39

$$\frac{\frac{3\,b^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{5\,(bx+a)^{\frac{3}{2}}b^3-3\,\sqrt{bx+a}ab^3}{b^2x^2}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*(3*b^3*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) - (5*(b*x + a)
^(3/2)*b^3 - 3*sqrt(b*x + a)*a*b^3)/(b^2*x^2))/b
```

3.299 $\int \frac{(a+bx)^{3/2}}{x^4} \, dx$

Optimal. Leaf size=84

$$\frac{b^3 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{3/2}} - \frac{b^2\sqrt{a+bx}}{8ax} - \frac{(a+bx)^{3/2}}{3x^3} - \frac{b\sqrt{a+bx}}{4x^2}$$

```
[Out] -(b*Sqrt[a + b*x])/(4*x^2) - (b^2*Sqrt[a + b*x])/(8*a*x) - (a + b
*x)^(3/2)/(3*x^3) + (b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^(3/
2))
```

Rubi [A] time = 0.073046, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$\frac{b^3 \tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{3/2}} - \frac{b^2\sqrt{a+bx}}{8ax} - \frac{(a+bx)^{3/2}}{3x^3} - \frac{b\sqrt{a+bx}}{4x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/x^4,x]
```

```
[Out] -(b*Sqrt[a + b*x])/(4*x^2) - (b^2*Sqrt[a + b*x])/(8*a*x) - (a + b
*x)^(3/2)/(3*x^3) + (b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^(3/
2))
```

Rubi in Sympy [A] time = 9.8589, size = 70, normalized size = 0.83

$$-\frac{b\sqrt{a+bx}}{4x^2} - \frac{(a+bx)^{\frac{3}{2}}}{3x^3} - \frac{b^2\sqrt{a+bx}}{8ax} + \frac{b^3 \operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x**4,x)
```

```
[Out] -b*sqrt(a + b*x)/(4*x**2) - (a + b*x)**(3/2)/(3*x**3) - b**2*sqrt
(a + b*x)/(8*a*x) + b**3*atanh(sqrt(a + b*x)/sqrt(a))/(8*a**(3/2)
)
```

Mathematica [A] time = 0.0590449, size = 69, normalized size = 0.82

$$\frac{b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{3/2}}+\left(-\frac{b^2}{8ax}-\frac{a}{3x^3}-\frac{7b}{12x^2}\right)\sqrt{a+bx}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/x^4,x]
```

```
[Out] (-a/(3*x^3) - (7*b)/(12*x^2) - b^2/(8*a*x))*Sqrt[a + b*x] + (b^3*
ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^(3/2))
```

Maple [A] time = 0.016, size = 63, normalized size = 0.8

$$2\,b^3\left(\frac{1}{b^3x^3}\left(-1/16\,\frac{(bx+a)^{5/2}}{a}-1/6\,(bx+a)^{3/2}+1/16\,a\sqrt{bx+a}\right)+1/16\,\frac{1}{a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x^4,x)
```

```
[Out] 2*b^3*((-1/16/a*(b*x+a)^(5/2)-1/6*(b*x+a)^(3/2)+1/16*a*(b*x+a)^(1
/2))/x^3/b^3+1/16*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(3/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.235629, size = 1, normalized size = 0.01

$$\left[\frac{3\,b^{3}x^{3}\log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right)-2\,\left(3\,b^{2}x^{2}+14\,abx+8\,a^{2}\right)\sqrt{bx+a}\sqrt{a}}{48\,a^{\frac{3}{2}}x^{3}},\right.$$
$$\left.-\frac{3\,b^{3}x^{3}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\left(3\,b^{2}x^{2}+14\,abx+8\,a^{2}\right)\sqrt{bx+a}\sqrt{-a}}{24\,\sqrt{-a}ax^{3}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/48*(3*b^3*x^3*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x + a)*a)/x)
 - 2*(3*b^2*x^2 + 14*a*b*x + 8*a^2)*sqrt(b*x + a)*sqrt(a))/(a^(3/
2)*x^3), -1/24*(3*b^3*x^3*arctan(a/(sqrt(b*x + a)*sqrt(-a))) + (3
*b^2*x^2 + 14*a*b*x + 8*a^2)*sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)*a*
x^3)]
```

Sympy [A] time = 17.2758, size = 124, normalized size = 1.48

$$-\frac{a^{2}}{3\sqrt{b}x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{11a\sqrt{b}}{12x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{17b^{\frac{3}{2}}}{24x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{b^{\frac{5}{2}}}{8a\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{b^{3}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{8a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x**4,x)
```

```
[Out] -a**2/(3*sqrt(b)*x**(7/2)*sqrt(a/(b*x) + 1)) - 11*a*sqrt(b)/(12*x
**(5/2)*sqrt(a/(b*x) + 1)) - 17*b**(3/2)/(24*x**(3/2)*sqrt(a/(b*x
) + 1)) - b**(5/2)/(8*a*sqrt(x)*sqrt(a/(b*x) + 1)) + b**3*asinh(s
qrt(a)/(sqrt(b)*sqrt(x)))/(8*a**(3/2))
```

GIAC/XCAS [A] time = 0.208784, size = 113, normalized size = 1.35

$$-\frac{\frac{3\,b^{4}\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a}+\frac{3\,(bx+a)^{\frac{5}{2}}b^{4}+8\,(bx+a)^{\frac{3}{2}}ab^{4}-3\,\sqrt{bx+a}a^{2}b^{4}}{ab^{3}x^{3}}}{24\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] -1/24*(3*b^4*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a) + (3*(b*
x + a)^(5/2)*b^4 + 8*(b*x + a)^(3/2)*a*b^4 - 3*sqrt(b*x + a)*a^2*
b^4)/(a*b^3*x^3))/b
```

3.300 $\int x^3(a+bx)^{5/2}\,dx$

Optimal. Leaf size=72

$$-\frac{2a^3(a+bx)^{7/2}}{7b^4}+\frac{2a^2(a+bx)^{9/2}}{3b^4}+\frac{2(a+bx)^{13/2}}{13b^4}-\frac{6a(a+bx)^{11/2}}{11b^4}$$

```
[Out] (-2*a^3*(a + b*x)^(7/2))/(7*b^4) + (2*a^2*(a + b*x)^(9/2))/(3*b^4
) - (6*a*(a + b*x)^(11/2))/(11*b^4) + (2*(a + b*x)^(13/2))/(13*b^
4)
```

Rubi [A] time = 0.0505628, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3(a+bx)^{7/2}}{7b^4}+\frac{2a^2(a+bx)^{9/2}}{3b^4}+\frac{2(a+bx)^{13/2}}{13b^4}-\frac{6a(a+bx)^{11/2}}{11b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^(5/2),x]
```

```
[Out] (-2*a^3*(a + b*x)^(7/2))/(7*b^4) + (2*a^2*(a + b*x)^(9/2))/(3*b^4
) - (6*a*(a + b*x)^(11/2))/(11*b^4) + (2*(a + b*x)^(13/2))/(13*b^
4)
```

Rubi in Sympy [A] time = 11.2714, size = 68, normalized size = 0.94

$$-\frac{2a^3\left(a+bx\right)^{\frac{7}{2}}}{7b^4}+\frac{2a^2\left(a+bx\right)^{\frac{9}{2}}}{3b^4}-\frac{6a\left(a+bx\right)^{\frac{11}{2}}}{11b^4}+\frac{2\left(a+bx\right)^{\frac{13}{2}}}{13b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(5/2),x)
```

```
[Out] -2*a**3*(a + b*x)**(7/2)/(7*b**4) + 2*a**2*(a + b*x)**(9/2)/(3*b*
*4) - 6*a*(a + b*x)**(11/2)/(11*b**4) + 2*(a + b*x)**(13/2)/(13*b
**4)
```

Mathematica [A] time = 0.0417677, size = 46, normalized size = 0.64

$$\frac{2(a+bx)^{7/2}\left(-16a^3+56a^2bx-126ab^2x^2+231b^3x^3\right)}{3003b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(7/2)*(-16*a^3 + 56*a^2*b*x - 126*a*b^2*x^2 + 231*b^
3*x^3))/(3003*b^4)
```

Maple [A] time = 0.007, size = 43, normalized size = 0.6

$$-\frac{-462\,b^3x^3+252\,ab^2x^2-112\,a^2bx+32\,a^3}{3003\,b^4}\,(bx+a)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(5/2),x)
```

```
[Out] -2/3003*(b*x+a)^(7/2)*(-231*b^3*x^3+126*a*b^2*x^2-56*a^2*b*x+16*a
^3)/b^4
```

Maxima [A] time = 1.33702, size = 76, normalized size = 1.06

$$\frac{2\,(bx+a)^{\frac{13}{2}}}{13\,b^4}-\frac{6\,(bx+a)^{\frac{11}{2}}a}{11\,b^4}+\frac{2\,(bx+a)^{\frac{9}{2}}a^2}{3\,b^4}-\frac{2\,(bx+a)^{\frac{7}{2}}a^3}{7\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^3,x, algorithm="maxima")
```

```
[Out] 2/13*(b*x + a)^(13/2)/b^4 - 6/11*(b*x + a)^(11/2)*a/b^4 + 2/3*(b*
x + a)^(9/2)*a^2/b^4 - 2/7*(b*x + a)^(7/2)*a^3/b^4
```

Fricas [A] time = 0.227565, size = 101, normalized size = 1.4

$$\frac{2\,\left(231\,b^6x^6+567\,ab^5x^5+371\,a^2b^4x^4+5\,a^3b^3x^3-6\,a^4b^2x^2+8\,a^5bx-16\,a^6\right)\sqrt{bx+a}}{3003\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^3,x, algorithm="fricas")
```

```
[Out] 2/3003*(231*b^6*x^6 + 567*a*b^5*x^5 + 371*a^2*b^4*x^4 + 5*a^3*b^3
*x^3 - 6*a^4*b^2*x^2 + 8*a^5*b*x - 16*a^6)*sqrt(b*x + a)/b^4
```

Sympy [A] time = 11.7951, size = 146, normalized size = 2.03

$$\begin{cases} -\frac{32a^6\sqrt{a+bx}}{3003b^4} + \frac{16a^5x\sqrt{a+bx}}{3003b^3} - \frac{4a^4x^2\sqrt{a+bx}}{1001b^2} + \frac{10a^3x^3\sqrt{a+bx}}{3003b} + \frac{106a^2x^4\sqrt{a+bx}}{429} + \frac{54abx^5\sqrt{a+bx}}{143} + \frac{2b^2x^6\sqrt{a+bx}}{13} & \text{for } b \neq 0 \\ \frac{a^{\frac{5}{2}}x^4}{4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-32*a**6*sqrt(a + b*x)/(3003*b**4) + 16*a**5*x*sqrt(a
+ b*x)/(3003*b**3) - 4*a**4*x**2*sqrt(a + b*x)/(1001*b**2) + 10*a
**3*x**3*sqrt(a + b*x)/(3003*b) + 106*a**2*x**4*sqrt(a + b*x)/429
 + 54*a*b*x**5*sqrt(a + b*x)/143 + 2*b**2*x**6*sqrt(a + b*x)/13,
Ne(b, 0)), (a**(5/2)*x**4/4, True))
```

GIAC/XCAS [A] time = 0.209442, size = 321, normalized size = 4.46

$$2\left(\frac{143\left(35\,(bx+a)^{\frac{9}{2}}\,b^{24}-135\,(bx+a)^{\frac{7}{2}}\,ab^{24}+189\,(bx+a)^{\frac{5}{2}}\,a^2b^{24}-105\,(bx+a)^{\frac{3}{2}}\,a^3b^{24}\right)a^2}{b^{27}}+\frac{26\left(315\,(bx+a)^{\frac{11}{2}}\,b^{40}-1540\,(bx+a)^{\frac{9}{2}}\,ab^{40}+2970\,(bx+a)^{\frac{7}{2}}\,a^2b^{40}-2772\,(b\right.}{b^{43}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^3,x, algorithm="giac")
```

```
[Out] 2/45045*(143*(35*(b*x + a)^(9/2)*b^24 - 135*(b*x + a)^(7/2)*a*b^2
4 + 189*(b*x + a)^(5/2)*a^2*b^24 - 105*(b*x + a)^(3/2)*a^3*b^24)*
a^2/b^27 + 26*(315*(b*x + a)^(11/2)*b^40 - 1540*(b*x + a)^(9/2)*a
*b^40 + 2970*(b*x + a)^(7/2)*a^2*b^40 - 2772*(b*x + a)^(5/2)*a^3*
b^40 + 1155*(b*x + a)^(3/2)*a^4*b^40)*a/b^43 + 5*(693*(b*x + a)^(
13/2)*b^60 - 4095*(b*x + a)^(11/2)*a*b^60 + 10010*(b*x + a)^(9/2)
*a^2*b^60 - 12870*(b*x + a)^(7/2)*a^3*b^60 + 9009*(b*x + a)^(5/2)
*a^4*b^60 - 3003*(b*x + a)^(3/2)*a^5*b^60)/b^63)/b
```

3.301 $\int x^2(a+bx)^{5/2}\,dx$

Optimal. Leaf size=53

$$\frac{2a^2(a+bx)^{7/2}}{7b^3}+\frac{2(a+bx)^{11/2}}{11b^3}-\frac{4a(a+bx)^{9/2}}{9b^3}$$

```
[Out] (2*a^2*(a + b*x)^(7/2))/(7*b^3) - (4*a*(a + b*x)^(9/2))/(9*b^3) +
 (2*(a + b*x)^(11/2))/(11*b^3)
```

Rubi [A] time = 0.0382252, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^2(a+bx)^{7/2}}{7b^3}+\frac{2(a+bx)^{11/2}}{11b^3}-\frac{4a(a+bx)^{9/2}}{9b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^(5/2),x]
```

```
[Out] (2*a^2*(a + b*x)^(7/2))/(7*b^3) - (4*a*(a + b*x)^(9/2))/(9*b^3) +
 (2*(a + b*x)^(11/2))/(11*b^3)
```

Rubi in Sympy [A] time = 8.09474, size = 49, normalized size = 0.92

$$\frac{2a^2\left(a+bx\right)^{\frac{7}{2}}}{7b^3}-\frac{4a\left(a+bx\right)^{\frac{9}{2}}}{9b^3}+\frac{2\left(a+bx\right)^{\frac{11}{2}}}{11b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**(5/2),x)
```

```
[Out] 2*a**2*(a + b*x)**(7/2)/(7*b**3) - 4*a*(a + b*x)**(9/2)/(9*b**3)
+ 2*(a + b*x)**(11/2)/(11*b**3)
```

Mathematica [A] time = 0.0304784, size = 35, normalized size = 0.66

$$\frac{2(a+bx)^{7/2}\left(8a^2-28abx+63b^2x^2\right)}{693b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(7/2)*(8*a^2 - 28*a*b*x + 63*b^2*x^2))/(693*b^3)
```

Maple [A] time = 0.008, size = 32, normalized size = 0.6

$$\frac{126\,b^2x^2 - 56\,abx + 16\,a^2}{693\,b^3}\,(bx+a)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^(5/2),x)
```

```
[Out] 2/693*(b*x+a)^(7/2)*(63*b^2*x^2-28*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.34435, size = 55, normalized size = 1.04

$$\frac{2\,(bx+a)^{\frac{11}{2}}}{11\,b^3} - \frac{4\,(bx+a)^{\frac{9}{2}}\,a}{9\,b^3} + \frac{2\,(bx+a)^{\frac{7}{2}}\,a^2}{7\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^2,x, algorithm="maxima")
```

```
[Out] 2/11*(b*x + a)^(11/2)/b^3 - 4/9*(b*x + a)^(9/2)*a/b^3 + 2/7*(b*x
+ a)^(7/2)*a^2/b^3
```

Fricas [A] time = 0.215194, size = 86, normalized size = 1.62

$$\frac{2\left(63\,b^5x^5 + 161\,ab^4x^4 + 113\,a^2b^3x^3 + 3\,a^3b^2x^2 - 4\,a^4bx + 8\,a^5\right)\sqrt{bx+a}}{693\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^2,x, algorithm="fricas")
```

```
[Out] 2/693*(63*b^5*x^5 + 161*a*b^4*x^4 + 113*a^2*b^3*x^3 + 3*a^3*b^2*x
^2 - 4*a^4*b*x + 8*a^5)*sqrt(b*x + a)/b^3
```

Sympy [A] time = 9.33297, size = 124, normalized size = 2.34

$$\begin{cases} \frac{16a^5\sqrt{a+bx}}{693b^3} - \frac{8a^4x\sqrt{a+bx}}{693b^2} + \frac{2a^3x^2\sqrt{a+bx}}{231b} + \frac{226a^2x^3\sqrt{a+bx}}{693} + \frac{46abx^4\sqrt{a+bx}}{99} + \frac{2b^2x^5\sqrt{a+bx}}{11} & \text{for } b \neq 0 \\ \frac{a^{\frac{5}{2}}x^3}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(5/2),x)
```

```
[Out] Piecewise((16*a**5*sqrt(a + b*x)/(693*b**3) - 8*a**4*x*sqrt(a + b
*x)/(693*b**2) + 2*a**3*x**2*sqrt(a + b*x)/(231*b) + 226*a**2*x**
3*sqrt(a + b*x)/693 + 46*a*b*x**4*sqrt(a + b*x)/99 + 2*b**2*x**5*
sqrt(a + b*x)/11, Ne(b, 0)), (a**(5/2)*x**3/3, True))
```

GIAC/XCAS [A] time = 0.208088, size = 259, normalized size = 4.89

$$\frac{2\left(\frac{33\left(15(bx+a)^{\frac{7}{2}}b^{12}-42(bx+a)^{\frac{5}{2}}ab^{12}+35(bx+a)^{\frac{3}{2}}a^2b^{12}\right)a^2}{b^{14}}+\frac{22\left(35(bx+a)^{\frac{9}{2}}b^{24}-135(bx+a)^{\frac{7}{2}}ab^{24}+189(bx+a)^{\frac{5}{2}}a^2b^{24}-105(bx+a)^{\frac{3}{2}}a^3b^{24}\right)a}{b^{26}}+\frac{315(bx+\cdots}{}\right.}{3465\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^2,x, algorithm="giac")
```

```
[Out] 2/3465*(33*(15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12 +
 35*(b*x + a)^(3/2)*a^2*b^12)*a^2/b^14 + 22*(35*(b*x + a)^(9/2)*b
^24 - 135*(b*x + a)^(7/2)*a*b^24 + 189*(b*x + a)^(5/2)*a^2*b^24 -
 105*(b*x + a)^(3/2)*a^3*b^24)*a/b^26 + (315*(b*x + a)^(11/2)*b^4
0 - 1540*(b*x + a)^(9/2)*a*b^40 + 2970*(b*x + a)^(7/2)*a^2*b^40 -
 2772*(b*x + a)^(5/2)*a^3*b^40 + 1155*(b*x + a)^(3/2)*a^4*b^40)/b
^42)/b
```

3.302 $\int x(a+bx)^{5/2}\,dx$

Optimal. Leaf size=34

$$\frac{2(a+bx)^{9/2}}{9b^2}-\frac{2a(a+bx)^{7/2}}{7b^2}$$

```
[Out] (-2*a*(a + b*x)^(7/2))/(7*b^2) + (2*(a + b*x)^(9/2))/(9*b^2)
```

Rubi [A] time = 0.025166, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2(a+bx)^{9/2}}{9b^2}-\frac{2a(a+bx)^{7/2}}{7b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^(5/2),x]

[Out] (-2*a*(a + b*x)^(7/2))/(7*b^2) + (2*(a + b*x)^(9/2))/(9*b^2)
```

Rubi in Sympy [A] time = 4.99331, size = 31, normalized size = 0.91

$$-\frac{2a\left(a+bx\right)^{\frac{7}{2}}}{7b^2}+\frac{2\left(a+bx\right)^{\frac{9}{2}}}{9b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(5/2),x)

[Out] -2*a*(a + b*x)**(7/2)/(7*b**2) + 2*(a + b*x)**(9/2)/(9*b**2)
```

Mathematica [A] time = 0.0287287, size = 24, normalized size = 0.71

$$\frac{2(a+bx)^{7/2}(7bx-2a)}{63b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(7/2)*(-2*a + 7*b*x))/(63*b^2)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$-\frac{-14\,bx+4\,a}{63\,b^{2}}\left(bx+a\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(5/2),x)
```

```
[Out] -2/63*(b*x+a)^(7/2)*(-7*b*x+2*a)/b^2
```

Maxima [A] time = 1.33876, size = 35, normalized size = 1.03

$$\frac{2\,\left(bx+a\right)^{\frac{9}{2}}}{9\,b^{2}}-\frac{2\,\left(bx+a\right)^{\frac{7}{2}}a}{7\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(5/2)*x,x, algorithm="maxima")
```

```
[Out] 2/9*(b*x + a)^(9/2)/b^2 - 2/7*(b*x + a)^(7/2)*a/b^2
```

Fricas [A] time = 0.207403, size = 70, normalized size = 2.06

$$\frac{2\,\left(7\,b^{4}x^{4}+19\,ab^{3}x^{3}+15\,a^{2}b^{2}x^{2}+a^{3}bx-2\,a^{4}\right)\sqrt{bx+a}}{63\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(5/2)*x,x, algorithm="fricas")
```

```
[Out] 2/63*(7*b^4*x^4 + 19*a*b^3*x^3 + 15*a^2*b^2*x^2 + a^3*b*x - 2*a^4
)*sqrt(b*x + a)/b^2
```

Sympy [A] time = 6.3445, size = 102, normalized size = 3.

$$\begin{cases} -\frac{4a^{4}\sqrt{a+bx}}{63b^{2}}+\frac{2a^{3}x\sqrt{a+bx}}{63b}+\frac{10a^{2}x^{2}\sqrt{a+bx}}{21}+\frac{38abx^{3}\sqrt{a+bx}}{63}+\frac{2b^{2}x^{4}\sqrt{a+bx}}{9} & \text{for}\ b\neq 0\\ \frac{a^{\frac{5}{2}}x^{2}}{2} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-4*a**4*sqrt(a + b*x)/(63*b**2) + 2*a**3*x*sqrt(a + b*
x)/(63*b) + 10*a**2*x**2*sqrt(a + b*x)/21 + 38*a*b*x**3*sqrt(a +
b*x)/63 + 2*b**2*x**4*sqrt(a + b*x)/9, Ne(b, 0)), (a**(5/2)*x**2/
2, True))
```

GIAC/XCAS [A] time = 0.207686, size = 190, normalized size = 5.59

$$\frac{2\left(\frac{21\left(3\,(bx+a)^{\frac{5}{2}}-5\,(bx+a)^{\frac{3}{2}}a\right)a^{2}}{b}+\frac{6\left(15\,(bx+a)^{\frac{7}{2}}b^{12}-42\,(bx+a)^{\frac{5}{2}}ab^{12}+35\,(bx+a)^{\frac{3}{2}}a^{2}b^{12}\right)a}{b^{13}}+\frac{35\,(bx+a)^{\frac{9}{2}}b^{24}-135\,(bx+a)^{\frac{7}{2}}ab^{24}+189\,(bx+a)^{\frac{5}{2}}a^{2}b^{24}-105\,(\cdots}{b^{25}}\right.}{315\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x,x, algorithm="giac")
```

```
[Out] 2/315*(21*(3*(b*x + a)^(5/2) - 5*(b*x + a)^(3/2)*a)*a^2/b + 6*(15
*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12 + 35*(b*x + a)^
(3/2)*a^2*b^12)*a/b^13 + (35*(b*x + a)^(9/2)*b^24 - 135*(b*x + a)
^(7/2)*a*b^24 + 189*(b*x + a)^(5/2)*a^2*b^24 - 105*(b*x + a)^(3/2
)*a^3*b^24)/b^25)/b
```

3.303 $\int (a+bx)^{5/2}\,dx$

Optimal. Leaf size=16

$$\frac{2(a+bx)^{7/2}}{7b}$$

```
[Out] (2*(a + b*x)^(7/2))/(7*b)
```

Rubi [A] time = 0.00683132, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2(a+bx)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(7/2))/(7*b)
```

Rubi in Sympy [A] time = 1.26961, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{7}{2}}}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2),x)
```

```
[Out] 2*(a + b*x)**(7/2)/(7*b)
```

Mathematica [A] time = 0.00735577, size = 16, normalized size = 1.

$$\frac{2(a+bx)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(7/2))/(7*b)
```

Maple [A] time = 0.006, size = 13, normalized size = 0.8

$$\frac{2}{7\,b}\,(bx+a)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2),x)
```

```
[Out] 2/7*(b*x+a)^(7/2)/b
```

Maxima [A] time = 1.34122, size = 16, normalized size = 1.

$$\frac{2\,(bx+a)^{\frac{7}{2}}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(b*x + a)^(7/2)/b
```

Fricas [A] time = 0.21242, size = 53, normalized size = 3.31

$$\frac{2\,\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)\sqrt{bx+a}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*sqrt(b*x + a)/b
```

Sympy [A] time = 0.092839, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{7}{2}}}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2),x)
```

```
[Out] 2*(a + b*x)**(7/2)/(7*b)
```

GIAC/XCAS [A] time = 0.217145, size = 116, normalized size = 7.25

$$\frac{2\left(35\,(bx+a)^{\frac{3}{2}}a^{2}+14\left(3\,(bx+a)^{\frac{5}{2}}-5\,(bx+a)^{\frac{3}{2}}a\right)a+\frac{15\,(bx+a)^{\frac{7}{2}}b^{12}-42\,(bx+a)^{\frac{5}{2}}ab^{12}+35\,(bx+a)^{\frac{3}{2}}a^{2}b^{12}}{b^{12}}\right)}{105\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*(b*x + a)^(3/2)*a^2 + 14*(3*(b*x + a)^(5/2) - 5*(b*x +
a)^(3/2)*a)*a + (15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b
^12 + 35*(b*x + a)^(3/2)*a^2*b^12)/b^12)/b
```

3.304 $\int \frac{(a+bx)^{5/2}}{x}\,dx$

Optimal. Leaf size=65

$$-2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a^2\sqrt{a+bx}+\frac{2}{3}a(a+bx)^{3/2}+\frac{2}{5}(a+bx)^{5/2}$$

```
[Out] 2*a^2*Sqrt[a + b*x] + (2*a*(a + b*x)^(3/2))/3 + (2*(a + b*x)^(5/2
))/5 - 2*a^(5/2)*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0628168, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a^2\sqrt{a+bx}+\frac{2}{3}a(a+bx)^{3/2}+\frac{2}{5}(a+bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x,x]
```

```
[Out] 2*a^2*Sqrt[a + b*x] + (2*a*(a + b*x)^(3/2))/3 + (2*(a + b*x)^(5/2
))/5 - 2*a^(5/2)*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 8.56877, size = 60, normalized size = 0.92

$$-2a^{\frac{5}{2}}\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a^2\sqrt{a+bx}+\frac{2a\,(a+bx)^{\frac{3}{2}}}{3}+\frac{2\,(a+bx)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x,x)
```

```
[Out] -2*a**(5/2)*atanh(sqrt(a + b*x)/sqrt(a)) + 2*a**2*sqrt(a + b*x) +
 2*a*(a + b*x)**(3/2)/3 + 2*(a + b*x)**(5/2)/5
```

Mathematica [A] time = 0.0361136, size = 56, normalized size = 0.86

$$\frac{2}{15}\sqrt{a+bx}\left(23a^2+11abx+3b^2x^2\right)-2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x,x]
```

```
[Out] (2*Sqrt[a + b*x]*(23*a^2 + 11*a*b*x + 3*b^2*x^2))/15 - 2*a^(5/2)*
ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.011, size = 50, normalized size = 0.8

$$\frac{2a}{3}(bx+a)^{\frac{3}{2}}+\frac{2}{5}(bx+a)^{\frac{5}{2}}-2a^{5/2}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)+2a^2\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x,x)
```

```
[Out] 2/3*a*(b*x+a)^(3/2)+2/5*(b*x+a)^(5/2)-2*a^(5/2)*arctanh((b*x+a)^(
1/2)/a^(1/2))+2*a^2*(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220695, size = 1, normalized size = 0.02

$$\left[a^{\frac{5}{2}}\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{a}+2a}{x}\right)+\frac{2}{15}\left(3b^2x^2+11abx+23a^2\right)\sqrt{bx+a},\right.$$
$$\left.-2\sqrt{-a}a^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)+\frac{2}{15}\left(3b^2x^2+11abx+23a^2\right)\sqrt{bx+a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [a^(5/2)*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2/15*(3*b
^2*x^2 + 11*a*b*x + 23*a^2)*sqrt(b*x + a), -2*sqrt(-a)*a^2*arctan
(sqrt(b*x + a)/sqrt(-a)) + 2/15*(3*b^2*x^2 + 11*a*b*x + 23*a^2)*s
qrt(b*x + a)]
```

Sympy [A] time = 11.7631, size = 97, normalized size = 1.49

$$\frac{46a^{\frac{5}{2}}\sqrt{1+\frac{bx}{a}}}{15}+a^{\frac{5}{2}}\log\left(\frac{bx}{a}\right)-2a^{\frac{5}{2}}\log\left(\sqrt{1+\frac{bx}{a}}+1\right)+\frac{22a^{\frac{3}{2}}bx\sqrt{1+\frac{bx}{a}}}{15}+\frac{2\sqrt{a}b^2x^2\sqrt{1+\frac{bx}{a}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x,x)
```

```
[Out] 46*a**(5/2)*sqrt(1 + b*x/a)/15 + a**(5/2)*log(b*x/a) - 2*a**(5/2)
*log(sqrt(1 + b*x/a) + 1) + 22*a**(3/2)*b*x*sqrt(1 + b*x/a)/15 +
2*sqrt(a)*b**2*x**2*sqrt(1 + b*x/a)/5
```

GIAC/XCAS [A] time = 0.208983, size = 76, normalized size = 1.17

$$\frac{2\,a^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+\frac{2}{5}\,(bx+a)^{\frac{5}{2}}+\frac{2}{3}\,(bx+a)^{\frac{3}{2}}a+2\,\sqrt{bx+a}a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 2*a^3*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 2/5*(b*x + a)^(5/
2) + 2/3*(b*x + a)^(3/2)*a + 2*sqrt(b*x + a)*a^2
```

3.305 $\int \frac{(a+bx)^{5/2}}{x^2} \, dx$

Optimal. Leaf size=66

$$-5a^{3/2}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)-\frac{(a+bx)^{5/2}}{x}+\frac{5}{3}b(a+bx)^{3/2}+5ab\sqrt{a+bx}$$

```
[Out] 5*a*b*Sqrt[a + b*x] + (5*b*(a + b*x)^(3/2))/3 - (a + b*x)^(5/2)/x
 - 5*a^(3/2)*b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0650279, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$-5a^{3/2}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)-\frac{(a+bx)^{5/2}}{x}+\frac{5}{3}b(a+bx)^{3/2}+5ab\sqrt{a+bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x^2,x]
```

```
[Out] 5*a*b*Sqrt[a + b*x] + (5*b*(a + b*x)^(3/2))/3 - (a + b*x)^(5/2)/x
 - 5*a^(3/2)*b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 8.69868, size = 60, normalized size = 0.91

$$-5a^{\frac{3}{2}}b\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+5ab\sqrt{a+bx}+\frac{5b\,(a+bx)^{\frac{3}{2}}}{3}-\frac{(a+bx)^{\frac{5}{2}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**2,x)
```

```
[Out] -5*a**(3/2)*b*atanh(sqrt(a + b*x)/sqrt(a)) + 5*a*b*sqrt(a + b*x)
+ 5*b*(a + b*x)**(3/2)/3 - (a + b*x)**(5/2)/x
```

Mathematica [A] time = 0.0521342, size = 58, normalized size = 0.88

$$\sqrt{a+bx}\left(-\frac{a^2}{x}+\frac{14ab}{3}+\frac{2b^2x}{3}\right)-5a^{3/2}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x^2,x]
```

```
[Out] Sqrt[a + b*x]*((14*a*b)/3 - a^2/x + (2*b^2*x)/3) - 5*a^(3/2)*b*Ar
cTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.017, size = 61, normalized size = 0.9

$$2\,b\left(1/3\,\left(bx+a\right)^{3/2}+2\,a\sqrt{bx+a}+a^{2}\left(-1/2\,\frac{\sqrt{bx+a}}{bx}-5/2\,\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^2,x)
```

```
[Out] 2*b*(1/3*(b*x+a)^(3/2)+2*a*(b*x+a)^(1/2)+a^2*(-1/2*(b*x+a)^(1/2)/
x/b-5/2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226943, size = 1, normalized size = 0.02

$$\left[\frac{15\,a^{\frac{3}{2}}bx\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\,\left(2\,b^{2}x^{2}+14\,abx-3\,a^{2}\right)\sqrt{bx+a}}{6\,x},\right.$$
$$\left.-\frac{15\,\sqrt{-a}abx\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(2\,b^{2}x^{2}+14\,abx-3\,a^{2}\right)\sqrt{bx+a}}{3\,x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/6*(15*a^(3/2)*b*x*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x)
 + 2*(2*b^2*x^2 + 14*a*b*x - 3*a^2)*sqrt(b*x + a))/x, -1/3*(15*sq
rt(-a)*a*b*x*arctan(sqrt(b*x + a)/sqrt(-a)) - (2*b^2*x^2 + 14*a*b
*x - 3*a^2)*sqrt(b*x + a))/x]
```

Sympy [A] time = 11.5672, size = 99, normalized size = 1.5

$$-\frac{a^{\frac{5}{2}}\sqrt{1+\frac{bx}{a}}}{x}+\frac{14a^{\frac{3}{2}}b\sqrt{1+\frac{bx}{a}}}{3}+\frac{5a^{\frac{3}{2}}b\log\left(\frac{bx}{a}\right)}{2}-5a^{\frac{3}{2}}b\log\left(\sqrt{1+\frac{bx}{a}}+1\right)+\frac{2\sqrt{a}b^2x\sqrt{1+\frac{bx}{a}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**2,x)
```

```
[Out] -a**(5/2)*sqrt(1 + b*x/a)/x + 14*a**(3/2)*b*sqrt(1 + b*x/a)/3 + 5
*a**(3/2)*b*log(b*x/a)/2 - 5*a**(3/2)*b*log(sqrt(1 + b*x/a) + 1)
+ 2*sqrt(a)*b**2*x*sqrt(1 + b*x/a)/3
```

GIAC/XCAS [A] time = 0.207939, size = 100, normalized size = 1.52

$$\frac{\frac{15\,a^2b^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+2\,(bx+a)^{\frac{3}{2}}b^2+12\,\sqrt{bx+a}ab^2-\frac{3\,\sqrt{bx+a}a^2b}{x}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/3*(15*a^2*b^2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 2*(b*x
+ a)^(3/2)*b^2 + 12*sqrt(b*x + a)*a*b^2 - 3*sqrt(b*x + a)*a^2*b/x
)/b
```

3.306 $\int \frac{(a+bx)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=78

$$\frac{15}{4}b^2\sqrt{a+bx}-\frac{15}{4}\sqrt{a}b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)-\frac{(a+bx)^{5/2}}{2x^2}-\frac{5b(a+bx)^{3/2}}{4x}$$

```
[Out] (15*b^2*Sqrt[a + b*x])/4 - (5*b*(a + b*x)^(3/2))/(4*x) - (a + b*x
)^(5/2)/(2*x^2) - (15*Sqrt[a]*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])
/4
```

Rubi [A] time = 0.0678662, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{15}{4}b^2\sqrt{a+bx}-\frac{15}{4}\sqrt{a}b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)-\frac{(a+bx)^{5/2}}{2x^2}-\frac{5b(a+bx)^{3/2}}{4x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x^3,x]
```

```
[Out] (15*b^2*Sqrt[a + b*x])/4 - (5*b*(a + b*x)^(3/2))/(4*x) - (a + b*x
)^(5/2)/(2*x^2) - (15*Sqrt[a]*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])
/4
```

Rubi in Sympy [A] time = 9.47812, size = 70, normalized size = 0.9

$$-\frac{15\sqrt{a}b^2\,\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4}+\frac{15b^2\sqrt{a+bx}}{4}-\frac{5b\,(a+bx)^{\frac{3}{2}}}{4x}-\frac{(a+bx)^{\frac{5}{2}}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**3,x)
```

```
[Out] -15*sqrt(a)*b**2*atanh(sqrt(a + b*x)/sqrt(a))/4 + 15*b**2*sqrt(a
+ b*x)/4 - 5*b*(a + b*x)**(3/2)/(4*x) - (a + b*x)**(5/2)/(2*x**2)
```

Mathematica [A] time = 0.0643627, size = 64, normalized size = 0.82

$$\left(-\frac{a^2}{2x^2}-\frac{9ab}{4x}+2b^2\right)\sqrt{a+bx}-\frac{15}{4}\sqrt{a}b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x^3,x]
```

```
[Out] (2*b^2 - a^2/(2*x^2) - (9*a*b)/(4*x))*Sqrt[a + b*x] - (15*Sqrt[a]
*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/4
```

Maple [A] time = 0.018, size = 61, normalized size = 0.8

$$2\,b^{2}\left(\sqrt{bx+a}+a\left(\frac{1}{b^{2}x^{2}}\left(-\frac{9\,(bx+a)^{3/2}}{8}+\frac{7\,a\sqrt{bx+a}}{8}\right)-\frac{15}{8\,\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^3,x)
```

```
[Out] 2*b^2*((b*x+a)^(1/2)+a*((-9/8*(b*x+a)^(3/2)+7/8*a*(b*x+a)^(1/2))/
x^2/b^2-15/8*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.241503, size = 1, normalized size = 0.01

$$\left[\frac{15\,\sqrt{a}b^{2}x^{2}\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\left(8\,b^{2}x^{2}-9\,abx-2\,a^{2}\right)\sqrt{bx+a}}{8\,x^{2}},\right.$$
$$\left.-\frac{15\,\sqrt{-a}b^{2}x^{2}\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(8\,b^{2}x^{2}-9\,abx-2\,a^{2}\right)\sqrt{bx+a}}{4\,x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(15*sqrt(a)*b^2*x^2*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a
)/x) + 2*(8*b^2*x^2 - 9*a*b*x - 2*a^2)*sqrt(b*x + a))/x^2, -1/4*(
15*sqrt(-a)*b^2*x^2*arctan(sqrt(b*x + a)/sqrt(-a)) - (8*b^2*x^2 -
 9*a*b*x - 2*a^2)*sqrt(b*x + a))/x^2]
```

Sympy [A] time = 13.3024, size = 126, normalized size = 1.62

$$-\frac{15\sqrt{a}b^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4}-\frac{a^3}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{11a^2\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{ab^{\frac{3}{2}}}{4\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{2b^{\frac{5}{2}}\sqrt{x}}{\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**3,x)
```

```
[Out] -15*sqrt(a)*b**2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/4 - a**3/(2*sqr
t(b)*x**(5/2)*sqrt(a/(b*x) + 1)) - 11*a**2*sqrt(b)/(4*x**(3/2)*sq
rt(a/(b*x) + 1)) - a*b**(3/2)/(4*sqrt(x)*sqrt(a/(b*x) + 1)) + 2*b
**(5/2)*sqrt(x)/sqrt(a/(b*x) + 1)
```

GIAC/XCAS [A] time = 0.211816, size = 108, normalized size = 1.38

$$\frac{\frac{15\,ab^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+8\sqrt{bx+a}b^3-\frac{9\,(bx+a)^{\frac{3}{2}}ab^3-7\sqrt{bx+a}a^2b^3}{b^2x^2}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*(15*a*b^3*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 8*sqrt(b*
x + a)*b^3 - (9*(b*x + a)^(3/2)*a*b^3 - 7*sqrt(b*x + a)*a^2*b^3)/
(b^2*x^2))/b
```

3.307 $\int \frac{(a+bx)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=81

$$-\frac{5b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{5b^2\sqrt{a+bx}}{8x}-\frac{(a+bx)^{5/2}}{3x^3}-\frac{5b(a+bx)^{3/2}}{12x^2}$$

```
[Out] (-5*b^2*Sqrt[a + b*x])/(8*x) - (5*b*(a + b*x)^(3/2))/(12*x^2) - (
a + b*x)^(5/2)/(3*x^3) - (5*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(
8*Sqrt[a])
```

Rubi [A] time = 0.0690277, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{5b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{5b^2\sqrt{a+bx}}{8x}-\frac{(a+bx)^{5/2}}{3x^3}-\frac{5b(a+bx)^{3/2}}{12x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x^4,x]
```

```
[Out] (-5*b^2*Sqrt[a + b*x])/(8*x) - (5*b*(a + b*x)^(3/2))/(12*x^2) - (
a + b*x)^(5/2)/(3*x^3) - (5*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(
8*Sqrt[a])
```

Rubi in Sympy [A] time = 9.6991, size = 75, normalized size = 0.93

$$-\frac{5b^2\sqrt{a+bx}}{8x}-\frac{5b\,(a+bx)^{\frac{3}{2}}}{12x^2}-\frac{(a+bx)^{\frac{5}{2}}}{3x^3}-\frac{5b^3\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**4,x)
```

```
[Out] -5*b**2*sqrt(a + b*x)/(8*x) - 5*b*(a + b*x)**(3/2)/(12*x**2) - (a
 + b*x)**(5/2)/(3*x**3) - 5*b**3*atanh(sqrt(a + b*x)/sqrt(a))/(8*
sqrt(a))
```

Mathematica [A] time = 0.0677906, size = 64, normalized size = 0.79

$$-\frac{\sqrt{a+bx}\left(8a^2+26abx+33b^2x^2\right)}{24x^3}-\frac{5b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x^4,x]
```

```
[Out] -(Sqrt[a + b*x]*(8*a^2 + 26*a*b*x + 33*b^2*x^2))/(24*x^3) - (5*b^
3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*Sqrt[a])
```

Maple [A] time = 0.016, size = 63, normalized size = 0.8

$$2\,b^3\left(\frac{1}{b^3x^3}\left(-\frac{11\,(bx+a)^{5/2}}{16}+5/6\,a\,(bx+a)^{3/2}-\frac{5\,a^2\sqrt{bx+a}}{16}\right)-\frac{5}{16\,\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^4,x)
```

```
[Out] 2*b^3*((-11/16*(b*x+a)^(5/2)+5/6*a*(b*x+a)^(3/2)-5/16*a^2*(b*x+a)
^(1/2))/x^3/b^3-5/16*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220229, size = 1, normalized size = 0.01

$$\left[\frac{15\,b^3x^3\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)-2\left(33\,b^2x^2+26\,abx+8\,a^2\right)\sqrt{bx+a}\sqrt{a}}{48\,\sqrt{a}x^3},\frac{15\,b^3x^3\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)-\left(33\,b^2x^2+26\,ab\right.}{24\,\sqrt{-a}x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/48*(15*b^3*x^3*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x
) - 2*(33*b^2*x^2 + 26*a*b*x + 8*a^2)*sqrt(b*x + a)*sqrt(a))/(sqr
t(a)*x^3), 1/24*(15*b^3*x^3*arctan(a/(sqrt(b*x + a)*sqrt(-a))) -
(33*b^2*x^2 + 26*a*b*x + 8*a^2)*sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)
*x^3)]
```

Sympy [A] time = 15.01, size = 104, normalized size = 1.28

$$-\frac{a^2\sqrt{b}\sqrt{\frac{a}{bx}+1}}{3x^{\frac{5}{2}}}-\frac{13ab^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{12x^{\frac{3}{2}}}-\frac{11b^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}{8\sqrt{x}}-\frac{5b^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{8\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**4,x)
```

```
[Out] -a**2*sqrt(b)*sqrt(a/(b*x) + 1)/(3*x**(5/2)) - 13*a*b**(3/2)*sqrt
(a/(b*x) + 1)/(12*x**(3/2)) - 11*b**(5/2)*sqrt(a/(b*x) + 1)/(8*sq
rt(x)) - 5*b**3*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(8*sqrt(a))
```

GIAC/XCAS [A] time = 0.209423, size = 107, normalized size = 1.32

$$\frac{\frac{15\,b^4\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{33\,(bx+a)^{\frac{5}{2}}\,b^4-40\,(bx+a)^{\frac{3}{2}}\,ab^4+15\,\sqrt{bx+a}a^2b^4}{b^3x^3}}{24\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 1/24*(15*b^4*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) - (33*(b*x +
 a)^(5/2)*b^4 - 40*(b*x + a)^(3/2)*a*b^4 + 15*sqrt(b*x + a)*a^2*b
^4)/(b^3*x^3))/b
```

3.308 $\int \frac{(a+bx)^{5/2}}{x^5}\,dx$

Optimal. Leaf size=103

$$\frac{5b^4\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{64a^{3/2}}-\frac{5b^3\sqrt{a+bx}}{64ax}-\frac{5b^2\sqrt{a+bx}}{32x^2}-\frac{(a+bx)^{5/2}}{4x^4}-\frac{5b(a+bx)^{3/2}}{24x^3}$$

```
[Out] (-5*b^2*Sqrt[a + b*x])/(32*x^2) - (5*b^3*Sqrt[a + b*x])/(64*a*x)
- (5*b*(a + b*x)^(3/2))/(24*x^3) - (a + b*x)^(5/2)/(4*x^4) + (5*b
^4*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(64*a^(3/2))
```

Rubi [A] time = 0.0938721, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{5b^4\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{64a^{3/2}}-\frac{5b^3\sqrt{a+bx}}{64ax}-\frac{5b^2\sqrt{a+bx}}{32x^2}-\frac{(a+bx)^{5/2}}{4x^4}-\frac{5b(a+bx)^{3/2}}{24x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x^5,x]
```

```
[Out] (-5*b^2*Sqrt[a + b*x])/(32*x^2) - (5*b^3*Sqrt[a + b*x])/(64*a*x)
- (5*b*(a + b*x)^(3/2))/(24*x^3) - (a + b*x)^(5/2)/(4*x^4) + (5*b
^4*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(64*a^(3/2))
```

Rubi in Sympy [A] time = 12.9515, size = 94, normalized size = 0.91

$$-\frac{5b^2\sqrt{a+bx}}{32x^2}-\frac{5b\left(a+bx\right)^{\frac{3}{2}}}{24x^3}-\frac{\left(a+bx\right)^{\frac{5}{2}}}{4x^4}-\frac{5b^3\sqrt{a+bx}}{64ax}+\frac{5b^4\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{64a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**5,x)
```

```
[Out] -5*b**2*sqrt(a + b*x)/(32*x**2) - 5*b*(a + b*x)**(3/2)/(24*x**3)
- (a + b*x)**(5/2)/(4*x**4) - 5*b**3*sqrt(a + b*x)/(64*a*x) + 5*b
**4*atanh(sqrt(a + b*x)/sqrt(a))/(64*a**(3/2))
```

Mathematica [A] time = 0.0718778, size = 78, normalized size = 0.76

$$\frac{5b^4\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{64a^{3/2}}-\frac{\sqrt{a+bx}\,(48a^3+136a^2bx+118ab^2x^2+15b^3x^3)}{192ax^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x^5,x]
```

```
[Out] -(Sqrt[a + b*x]*(48*a^3 + 136*a^2*b*x + 118*a*b^2*x^2 + 15*b^3*x^
3))/(192*a*x^4) + (5*b^4*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(64*a^(3
/2))
```

Maple [A] time = 0.016, size = 75, normalized size = 0.7

$$2\,b^4\left(\frac{1}{x^4b^4}\left(-\frac{5\,(bx+a)^{7/2}}{128\,a}-\frac{73\,(bx+a)^{5/2}}{384}+\frac{55\,a\,(bx+a)^{3/2}}{384}-\frac{5\,a^2\sqrt{bx+a}}{128}\right)+\frac{5}{128\,a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^5,x)
```

```
[Out] 2*b^4*((-5/128/a*(b*x+a)^(7/2)-73/384*(b*x+a)^(5/2)+55/384*a*(b*x
+a)^(3/2)-5/128*a^2*(b*x+a)^(1/2))/x^4/b^4+5/128*arctanh((b*x+a)^
(1/2)/a^(1/2))/a^(3/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220604, size = 1, normalized size = 0.01

$$\left[\frac{15\, b^{4} x^{4} \log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right) - 2\left(15\, b^{3} x^{3} + 118\, ab^{2} x^{2} + 136\, a^{2} bx + 48\, a^{3}\right)\sqrt{bx+a}\sqrt{a}}{384\, a^{\frac{3}{2}} x^{4}},\right.$$
$$\left. -\frac{15\, b^{4} x^{4} \arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right) + \left(15\, b^{3} x^{3} + 118\, ab^{2} x^{2} + 136\, a^{2} bx + 48\, a^{3}\right)\sqrt{bx+a}\sqrt{-a}}{192\,\sqrt{-a} a x^{4}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/384*(15*b^4*x^4*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x + a)*a)/
x) - 2*(15*b^3*x^3 + 118*a*b^2*x^2 + 136*a^2*b*x + 48*a^3)*sqrt(b
*x + a)*sqrt(a))/(a^(3/2)*x^4), -1/192*(15*b^4*x^4*arctan(a/(sqrt
(b*x + a)*sqrt(-a))) + (15*b^3*x^3 + 118*a*b^2*x^2 + 136*a^2*b*x
+ 48*a^3)*sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)*a*x^4)]
```

Sympy [A] time = 24.5519, size = 155, normalized size = 1.5

$$-\frac{a^{3}}{4\sqrt{b}x^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{23a^{2}\sqrt{b}}{24x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{127ab^{\frac{3}{2}}}{96x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{133b^{\frac{5}{2}}}{192x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{5b^{\frac{7}{2}}}{64a\sqrt{x}\sqrt{\frac{a}{bx}+1}} + \frac{5b^{4}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{64a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**5,x)
```

```
[Out] -a**3/(4*sqrt(b)*x**(9/2)*sqrt(a/(b*x) + 1)) - 23*a**2*sqrt(b)/(2
4*x**(7/2)*sqrt(a/(b*x) + 1)) - 127*a*b**(3/2)/(96*x**(5/2)*sqrt(
a/(b*x) + 1)) - 133*b**(5/2)/(192*x**(3/2)*sqrt(a/(b*x) + 1)) - 5
*b**(7/2)/(64*a*sqrt(x)*sqrt(a/(b*x) + 1)) + 5*b**4*asinh(sqrt(a)
/(sqrt(b)*sqrt(x)))/(64*a**(3/2))
```

GIAC/XCAS [A] time = 0.208096, size = 134, normalized size = 1.3

$$-\frac{\frac{15\, b^{5} \arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a} + \frac{15\,(bx+a)^{\frac{7}{2}} b^{5} + 73\,(bx+a)^{\frac{5}{2}} ab^{5} - 55\,(bx+a)^{\frac{3}{2}} a^{2} b^{5} + 15\,\sqrt{bx+a}a^{3} b^{5}}{ab^{4} x^{4}}}{192\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] -1/192*(15*b^5*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a) + (15*
(b*x + a)^(7/2)*b^5 + 73*(b*x + a)^(5/2)*a*b^5 - 55*(b*x + a)^(3/
2)*a^2*b^5 + 15*sqrt(b*x + a)*a^3*b^5)/(a*b^4*x^4))/b
```

3.309 $\int x^7(a+bx)^{9/2}\,dx$

Optimal. Leaf size=146

$$-\frac{2a^7(a+bx)^{11/2}}{11b^8}+\frac{14a^6(a+bx)^{13/2}}{13b^8}-\frac{14a^5(a+bx)^{15/2}}{5b^8}+\frac{70a^4(a+bx)^{17/2}}{17b^8}-\frac{70a^3(a+bx)^{19/2}}{19b^8}+\frac{2a^2(a+bx)^{21/2}}{b^8}+\frac{2(a+bx)^{25/2}}{25b^8}-\frac{14a(a+bx)^{23/2}}{23b^8}$$

```
[Out] (-2*a^7*(a + b*x)^(11/2))/(11*b^8) + (14*a^6*(a + b*x)^(13/2))/(1
3*b^8) - (14*a^5*(a + b*x)^(15/2))/(5*b^8) + (70*a^4*(a + b*x)^(1
7/2))/(17*b^8) - (70*a^3*(a + b*x)^(19/2))/(19*b^8) + (2*a^2*(a +
 b*x)^(21/2))/b^8 - (14*a*(a + b*x)^(23/2))/(23*b^8) + (2*(a + b*
x)^(25/2))/(25*b^8)
```

Rubi [A] time = 0.103377, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^7(a+bx)^{11/2}}{11b^8}+\frac{14a^6(a+bx)^{13/2}}{13b^8}-\frac{14a^5(a+bx)^{15/2}}{5b^8}+\frac{70a^4(a+bx)^{17/2}}{17b^8}-\frac{70a^3(a+bx)^{19/2}}{19b^8}+\frac{2a^2(a+bx)^{21/2}}{b^8}+\frac{2(a+bx)^{25/2}}{25b^8}-\frac{14a(a+bx)^{23/2}}{23b^8}$$

Antiderivative was successfully verified.

```
[In]  Int[x^7*(a + b*x)^(9/2),x]
```

```
[Out] (-2*a^7*(a + b*x)^(11/2))/(11*b^8) + (14*a^6*(a + b*x)^(13/2))/(1
3*b^8) - (14*a^5*(a + b*x)^(15/2))/(5*b^8) + (70*a^4*(a + b*x)^(1
7/2))/(17*b^8) - (70*a^3*(a + b*x)^(19/2))/(19*b^8) + (2*a^2*(a +
 b*x)^(21/2))/b^8 - (14*a*(a + b*x)^(23/2))/(23*b^8) + (2*(a + b*
x)^(25/2))/(25*b^8)
```

Rubi in Sympy [A] time = 24.394, size = 141, normalized size = 0.97

$$-\frac{2a^7\left(a+bx\right)^{\frac{11}{2}}}{11b^8}+\frac{14a^6\left(a+bx\right)^{\frac{13}{2}}}{13b^8}-\frac{14a^5\left(a+bx\right)^{\frac{15}{2}}}{5b^8}+\frac{70a^4\left(a+bx\right)^{\frac{17}{2}}}{17b^8}-\frac{70a^3\left(a+bx\right)^{\frac{19}{2}}}{19b^8}+\frac{2a^2\left(a+bx\right)^{\frac{21}{2}}}{b^8}-\frac{14a\left(a+bx\right)^{\frac{23}{2}}}{23b^8}+\frac{2\left(a+bx\right)^{\frac{25}{2}}}{25b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(b*x+a)**(9/2),x)
```

```
[Out] -2*a**7*(a + b*x)**(11/2)/(11*b**8) + 14*a**6*(a + b*x)**(13/2)/(
13*b**8) - 14*a**5*(a + b*x)**(15/2)/(5*b**8) + 70*a**4*(a + b*x)
**(17/2)/(17*b**8) - 70*a**3*(a + b*x)**(19/2)/(19*b**8) + 2*a**2
*(a + b*x)**(21/2)/b**8 - 14*a*(a + b*x)**(23/2)/(23*b**8) + 2*(a
 + b*x)**(25/2)/(25*b**8)
```

Mathematica [A] time = 0.07308, size = 90, normalized size = 0.62

$$\frac{2(a+bx)^{11/2}\left(-2048a^7+11264a^6bx-36608a^5b^2x^2+91520a^4b^3x^3-194480a^3b^4x^4+369512a^2b^5x^5-646646ab^6x^6+1062\right.}{26558675b^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^7*(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2)*(-2048*a^7 + 11264*a^6*b*x - 36608*a^5*b^2*x^
2 + 91520*a^4*b^3*x^3 - 194480*a^3*b^4*x^4 + 369512*a^2*b^5*x^5 -
 646646*a*b^6*x^6 + 1062347*b^7*x^7))/(26558675*b^8)
```

Maple [A] time = 0.01, size = 87, normalized size = 0.6

$$-\frac{-2124694\,b^7x^7+1293292\,ab^6x^6-739024\,a^2b^5x^5+388960\,a^3b^4x^4-183040\,a^4b^3x^3+73216\,a^5b^2x^2-22528\,a^6bx+4096\,a}{26558675\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(b*x+a)^(9/2),x)
```

```
[Out] -2/26558675*(b*x+a)^(11/2)*(-1062347*b^7*x^7+646646*a*b^6*x^6-369
512*a^2*b^5*x^5+194480*a^3*b^4*x^4-91520*a^4*b^3*x^3+36608*a^5*b^
2*x^2-11264*a^6*b*x+2048*a^7)/b^8
```

Maxima [A] time = 1.34133, size = 157, normalized size = 1.08

$$\frac{2\,(bx+a)^{\frac{25}{2}}}{25\,b^8}-\frac{14\,(bx+a)^{\frac{23}{2}}\,a}{23\,b^8}+\frac{2\,(bx+a)^{\frac{21}{2}}\,a^2}{b^8}-\frac{70\,(bx+a)^{\frac{19}{2}}\,a^3}{19\,b^8}+\frac{70\,(bx+a)^{\frac{17}{2}}\,a^4}{17\,b^8}-\frac{14\,(bx+a)^{\frac{15}{2}}\,a^5}{5\,b^8}+\frac{14\,(bx+a)^{\frac{13}{2}}\,a^6}{13\,b^8}-\frac{2\,(bx+a)^{\frac{11}{2}}\,a^7}{11\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^7,x, algorithm="maxima")
```

```
[Out] 2/25*(b*x + a)^(25/2)/b^8 - 14/23*(b*x + a)^(23/2)*a/b^8 + 2*(b*x
 + a)^(21/2)*a^2/b^8 - 70/19*(b*x + a)^(19/2)*a^3/b^8 + 70/17*(b*
x + a)^(17/2)*a^4/b^8 - 14/5*(b*x + a)^(15/2)*a^5/b^8 + 14/13*(b*
x + a)^(13/2)*a^6/b^8 - 2/11*(b*x + a)^(11/2)*a^7/b^8
```

Fricas [A] time = 0.20902, size = 190, normalized size = 1.3

$$\frac{2\left(1062347\,b^{12}x^{12} + 4665089\,ab^{11}x^{11} + 7759752\,a^2b^{10}x^{10} + 5810090\,a^3b^9x^9 + 1659515\,a^4b^8x^8 + 429\,a^5b^7x^7 - 462\,a^6b^6x^6 + 5\right.}{26558675\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^7,x, algorithm="fricas")
```

```
[Out] 2/26558675*(1062347*b^12*x^12 + 4665089*a*b^11*x^11 + 7759752*a^2
*b^10*x^10 + 5810090*a^3*b^9*x^9 + 1659515*a^4*b^8*x^8 + 429*a^5*
b^7*x^7 - 462*a^6*b^6*x^6 + 504*a^7*b^5*x^5 - 560*a^8*b^4*x^4 + 6
40*a^9*b^3*x^3 - 768*a^10*b^2*x^2 + 1024*a^11*b*x - 2048*a^12)*sq
rt(b*x + a)/b^8
```

Sympy [A] time = 115.681, size = 279, normalized size = 1.91

$$\begin{cases} -\frac{4096a^{12}\sqrt{a+bx}}{26558675b^8} + \frac{2048a^{11}x\sqrt{a+bx}}{26558675b^7} - \frac{1536a^{10}x^2\sqrt{a+bx}}{26558675b^6} + \frac{256a^9x^3\sqrt{a+bx}}{5311735b^5} - \frac{224a^8x^4\sqrt{a+bx}}{5311735b^4} + \frac{1008a^7x^5\sqrt{a+bx}}{26558675b^3} - \frac{84a^6x^6\sqrt{a+bx}}{2414425b^2} + \frac{6a^5x^7\sqrt{a+bx}}{185725b} \\ \frac{a^{\frac{9}{2}}x^8}{8} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((-4096*a**12*sqrt(a + b*x)/(26558675*b**8) + 2048*a**11
*x*sqrt(a + b*x)/(26558675*b**7) - 1536*a**10*x**2*sqrt(a + b*x)/
(26558675*b**6) + 256*a**9*x**3*sqrt(a + b*x)/(5311735*b**5) - 22
4*a**8*x**4*sqrt(a + b*x)/(5311735*b**4) + 1008*a**7*x**5*sqrt(a
+ b*x)/(26558675*b**3) - 84*a**6*x**6*sqrt(a + b*x)/(2414425*b**2
) + 6*a**5*x**7*sqrt(a + b*x)/(185725*b) + 4642*a**4*x**8*sqrt(a
+ b*x)/37145 + 956*a**3*b*x**9*sqrt(a + b*x)/2185 + 336*a**2*b**2
*x**10*sqrt(a + b*x)/575 + 202*a*b**3*x**11*sqrt(a + b*x)/575 + 2
*b**4*x**12*sqrt(a + b*x)/25, Ne(b, 0)), (a**(9/2)*x**8/8, True))
```

GIAC/XCAS [A] time = 0.217403, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^7,x, algorithm="giac")
```

```
[Out] Done
```

3.310 $\int x^6(a+bx)^{9/2}\,dx$

Optimal. Leaf size=127

$$\frac{2a^6(a+bx)^{11/2}}{11b^7}-\frac{12a^5(a+bx)^{13/2}}{13b^7}+\frac{2a^4(a+bx)^{15/2}}{b^7}-\frac{40a^3(a+bx)^{17/2}}{17b^7}+\frac{30a^2(a+bx)^{19/2}}{19b^7}+\frac{2(a+bx)^{23/2}}{23b^7}-\frac{4a(a+bx)^{21/2}}{7b^7}$$

```
[Out] (2*a^6*(a + b*x)^(11/2))/(11*b^7) - (12*a^5*(a + b*x)^(13/2))/(13
*b^7) + (2*a^4*(a + b*x)^(15/2))/b^7 - (40*a^3*(a + b*x)^(17/2))/
(17*b^7) + (30*a^2*(a + b*x)^(19/2))/(19*b^7) - (4*a*(a + b*x)^(2
1/2))/(7*b^7) + (2*(a + b*x)^(23/2))/(23*b^7)
```

Rubi [A] time = 0.0898762, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^6(a+bx)^{11/2}}{11b^7}-\frac{12a^5(a+bx)^{13/2}}{13b^7}+\frac{2a^4(a+bx)^{15/2}}{b^7}-\frac{40a^3(a+bx)^{17/2}}{17b^7}+\frac{30a^2(a+bx)^{19/2}}{19b^7}+\frac{2(a+bx)^{23/2}}{23b^7}-\frac{4a(a+bx)^{21/2}}{7b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6*(a + b*x)^(9/2),x]
```

```
[Out] (2*a^6*(a + b*x)^(11/2))/(11*b^7) - (12*a^5*(a + b*x)^(13/2))/(13
*b^7) + (2*a^4*(a + b*x)^(15/2))/b^7 - (40*a^3*(a + b*x)^(17/2))/
(17*b^7) + (30*a^2*(a + b*x)^(19/2))/(19*b^7) - (4*a*(a + b*x)^(2
1/2))/(7*b^7) + (2*(a + b*x)^(23/2))/(23*b^7)
```

Rubi in Sympy [A] time = 20.8355, size = 122, normalized size = 0.96

$$\frac{2a^6\,(a+bx)^{\frac{11}{2}}}{11b^7}-\frac{12a^5\,(a+bx)^{\frac{13}{2}}}{13b^7}+\frac{2a^4\,(a+bx)^{\frac{15}{2}}}{b^7}-\frac{40a^3\,(a+bx)^{\frac{17}{2}}}{17b^7}+\frac{30a^2\,(a+bx)^{\frac{19}{2}}}{19b^7}-\frac{4a\,(a+bx)^{\frac{21}{2}}}{7b^7}+\frac{2\,(a+bx)^{\frac{23}{2}}}{23b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(b*x+a)**(9/2),x)
```

```
[Out] 2*a**6*(a + b*x)**(11/2)/(11*b**7) - 12*a**5*(a + b*x)**(13/2)/(1
3*b**7) + 2*a**4*(a + b*x)**(15/2)/b**7 - 40*a**3*(a + b*x)**(17/
```

```
2)/(17*b**7) + 30*a**2*(a + b*x)**(19/2)/(19*b**7) - 4*a*(a + b*x
)**(21/2)/(7*b**7) + 2*(a + b*x)**(23/2)/(23*b**7)
```

Mathematica [A] time = 0.0554012, size = 79, normalized size = 0.62

$$\frac{2(a+bx)^{11/2}\left(1024a^6-5632a^5bx+18304a^4b^2x^2-45760a^3b^3x^3+97240a^2b^4x^4-184756ab^5x^5+323323b^6x^6\right)}{7436429b^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6*(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2)*(1024*a^6 - 5632*a^5*b*x + 18304*a^4*b^2*x^2
- 45760*a^3*b^3*x^3 + 97240*a^2*b^4*x^4 - 184756*a*b^5*x^5 + 3233
23*b^6*x^6))/(7436429*b^7)
```

Maple [A] time = 0.01, size = 76, normalized size = 0.6

$$\frac{646646\,x^6b^6-369512\,ax^5b^5+194480\,a^2x^4b^4-91520\,a^3x^3b^3+36608\,a^4x^2b^2-11264\,a^5xb+2048\,a^6}{7436429\,b^7}(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(b*x+a)^(9/2),x)
```

```
[Out] 2/7436429*(b*x+a)^(11/2)*(323323*b^6*x^6-184756*a*b^5*x^5+97240*a
^2*b^4*x^4-45760*a^3*b^3*x^3+18304*a^4*b^2*x^2-5632*a^5*b*x+1024*
a^6)/b^7
```

Maxima [A] time = 1.32669, size = 136, normalized size = 1.07

$$\frac{2\,(bx+a)^{\frac{23}{2}}}{23\,b^7}-\frac{4\,(bx+a)^{\frac{21}{2}}a}{7\,b^7}+\frac{30\,(bx+a)^{\frac{19}{2}}a^2}{19\,b^7}-\frac{40\,(bx+a)^{\frac{17}{2}}a^3}{17\,b^7}+\frac{2\,(bx+a)^{\frac{15}{2}}a^4}{b^7}-\frac{12\,(bx+a)^{\frac{13}{2}}a^5}{13\,b^7}+\frac{2\,(bx+a)^{\frac{11}{2}}a^6}{11\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^6,x, algorithm="maxima")
```

```
[Out] 2/23*(b*x + a)^(23/2)/b^7 - 4/7*(b*x + a)^(21/2)*a/b^7 + 30/19*(b
*x + a)^(19/2)*a^2/b^7 - 40/17*(b*x + a)^(17/2)*a^3/b^7 + 2*(b*x
```

```
+ a)^(15/2)*a^4/b^7 - 12/13*(b*x + a)^(13/2)*a^5/b^7 + 2/11*(b*x
+ a)^(11/2)*a^6/b^7
```

Fricas [A] time = 0.206692, size = 176, normalized size = 1.39

$$\frac{2\left(323323\,b^{11}x^{11} + 1431859\,ab^{10}x^{10} + 2406690\,a^{2}b^{9}x^{9} + 1826110\,a^{3}b^{8}x^{8} + 530959\,a^{4}b^{7}x^{7} + 231\,a^{5}b^{6}x^{6} - 252\,a^{6}b^{5}x^{5} + 280\,a\right.}{7436429\,b^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^6,x, algorithm="fricas")
```

```
[Out] 2/7436429*(323323*b^11*x^11 + 1431859*a*b^10*x^10 + 2406690*a^2*b
^9*x^9 + 1826110*a^3*b^8*x^8 + 530959*a^4*b^7*x^7 + 231*a^5*b^6*x
^6 - 252*a^6*b^5*x^5 + 280*a^7*b^4*x^4 - 320*a^8*b^3*x^3 + 384*a^
9*b^2*x^2 - 512*a^10*b*x + 1024*a^11)*sqrt(b*x + a)/b^7
```

Sympy [A] time = 99.8002, size = 257, normalized size = 2.02

$$\begin{cases} \frac{2048a^{11}\sqrt{a+bx}}{7436429b^{7}} - \frac{1024a^{10}x\sqrt{a+bx}}{7436429b^{6}} + \frac{768a^{9}x^{2}\sqrt{a+bx}}{7436429b^{5}} - \frac{640a^{8}x^{3}\sqrt{a+bx}}{7436429b^{4}} + \frac{80a^{7}x^{4}\sqrt{a+bx}}{1062347b^{3}} - \frac{72a^{6}x^{5}\sqrt{a+bx}}{1062347b^{2}} + \frac{6a^{5}x^{6}\sqrt{a+bx}}{96577b} + \frac{7426a^{4}x^{7}\sqrt{a+bx}}{52003} + \\ \frac{a^{\frac{9}{2}}x^{7}}{7} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((2048*a**11*sqrt(a + b*x)/(7436429*b**7) - 1024*a**10*x
*sqrt(a + b*x)/(7436429*b**6) + 768*a**9*x**2*sqrt(a + b*x)/(7436
429*b**5) - 640*a**8*x**3*sqrt(a + b*x)/(7436429*b**4) + 80*a**7*
x**4*sqrt(a + b*x)/(1062347*b**3) - 72*a**6*x**5*sqrt(a + b*x)/(1
062347*b**2) + 6*a**5*x**6*sqrt(a + b*x)/(96577*b) + 7426*a**4*x*
*7*sqrt(a + b*x)/52003 + 25540*a**3*b*x**8*sqrt(a + b*x)/52003 +
1980*a**2*b**2*x**9*sqrt(a + b*x)/3059 + 62*a*b**3*x**10*sqrt(a +
 b*x)/161 + 2*b**4*x**11*sqrt(a + b*x)/23, Ne(b, 0)), (a**(9/2)*x
**7/7, True))
```

GIAC/XCAS [A] time = 0.214811, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^6,x, algorithm="giac")

[Out] Done
```

3.311 $\int x^5(a+bx)^{9/2}\,dx$

Optimal. Leaf size=110

$$-\frac{2a^5(a+bx)^{11/2}}{11b^6}+\frac{10a^4(a+bx)^{13/2}}{13b^6}-\frac{4a^3(a+bx)^{15/2}}{3b^6}+\frac{20a^2(a+bx)^{17/2}}{17b^6}+\frac{2(a+bx)^{21/2}}{21b^6}-\frac{10a(a+bx)^{19/2}}{19b^6}$$

```
[Out] (-2*a^5*(a + b*x)^(11/2))/(11*b^6) + (10*a^4*(a + b*x)^(13/2))/(1
3*b^6) - (4*a^3*(a + b*x)^(15/2))/(3*b^6) + (20*a^2*(a + b*x)^(17
/2))/(17*b^6) - (10*a*(a + b*x)^(19/2))/(19*b^6) + (2*(a + b*x)^(
21/2))/(21*b^6)
```

Rubi [A] time = 0.0786845, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^5(a+bx)^{11/2}}{11b^6}+\frac{10a^4(a+bx)^{13/2}}{13b^6}-\frac{4a^3(a+bx)^{15/2}}{3b^6}+\frac{20a^2(a+bx)^{17/2}}{17b^6}+\frac{2(a+bx)^{21/2}}{21b^6}-\frac{10a(a+bx)^{19/2}}{19b^6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5*(a + b*x)^(9/2),x]
```

```
[Out] (-2*a^5*(a + b*x)^(11/2))/(11*b^6) + (10*a^4*(a + b*x)^(13/2))/(1
3*b^6) - (4*a^3*(a + b*x)^(15/2))/(3*b^6) + (20*a^2*(a + b*x)^(17
/2))/(17*b^6) - (10*a*(a + b*x)^(19/2))/(19*b^6) + (2*(a + b*x)^(
21/2))/(21*b^6)
```

Rubi in Sympy [A] time = 17.7991, size = 105, normalized size = 0.95

$$-\frac{2a^5\left(a+bx\right)^{\frac{11}{2}}}{11b^6}+\frac{10a^4\left(a+bx\right)^{\frac{13}{2}}}{13b^6}-\frac{4a^3\left(a+bx\right)^{\frac{15}{2}}}{3b^6}+\frac{20a^2\left(a+bx\right)^{\frac{17}{2}}}{17b^6}-\frac{10a\left(a+bx\right)^{\frac{19}{2}}}{19b^6}+\frac{2\left(a+bx\right)^{\frac{21}{2}}}{21b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(b*x+a)**(9/2),x)
```

```
[Out] -2*a**5*(a + b*x)**(11/2)/(11*b**6) + 10*a**4*(a + b*x)**(13/2)/(
13*b**6) - 4*a**3*(a + b*x)**(15/2)/(3*b**6) + 20*a**2*(a + b*x)*
*(17/2)/(17*b**6) - 10*a*(a + b*x)**(19/2)/(19*b**6) + 2*(a + b*x
)**(21/2)/(21*b**6)
```

Mathematica [A] time = 0.0572699, size = 68, normalized size = 0.62

$$\frac{2(a+bx)^{11/2}\left(-256a^5+1408a^4bx-4576a^3b^2x^2+11440a^2b^3x^3-24310ab^4x^4+46189b^5x^5\right)}{969969b^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5*(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2)*(-256*a^5 + 1408*a^4*b*x - 4576*a^3*b^2*x^2 +
 11440*a^2*b^3*x^3 - 24310*a*b^4*x^4 + 46189*b^5*x^5))/(969969*b^
6)
```

Maple [A] time = 0.009, size = 65, normalized size = 0.6

$$-\frac{-92378\,b^5x^5+48620\,ab^4x^4-22880\,a^2b^3x^3+9152\,a^3b^2x^2-2816\,a^4bx+512\,a^5}{969969\,b^6}(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(b*x+a)^(9/2),x)
```

```
[Out] -2/969969*(b*x+a)^(11/2)*(-46189*b^5*x^5+24310*a*b^4*x^4-11440*a^
2*b^3*x^3+4576*a^3*b^2*x^2-1408*a^4*b*x+256*a^5)/b^6
```

Maxima [A] time = 1.34494, size = 116, normalized size = 1.05

$$\frac{2\,(bx+a)^{\frac{21}{2}}}{21\,b^6}-\frac{10\,(bx+a)^{\frac{19}{2}}a}{19\,b^6}+\frac{20\,(bx+a)^{\frac{17}{2}}a^2}{17\,b^6}-\frac{4\,(bx+a)^{\frac{15}{2}}a^3}{3\,b^6}+\frac{10\,(bx+a)^{\frac{13}{2}}a^4}{13\,b^6}-\frac{2\,(bx+a)^{\frac{11}{2}}a^5}{11\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^5,x, algorithm="maxima")
```

```
[Out] 2/21*(b*x + a)^(21/2)/b^6 - 10/19*(b*x + a)^(19/2)*a/b^6 + 20/17*
(b*x + a)^(17/2)*a^2/b^6 - 4/3*(b*x + a)^(15/2)*a^3/b^6 + 10/13*(
b*x + a)^(13/2)*a^4/b^6 - 2/11*(b*x + a)^(11/2)*a^5/b^6
```

Fricas [A] time = 0.208456, size = 161, normalized size = 1.46

$$\frac{2\left(46189\,b^{10}x^{10}+206635\,ab^9x^9+351780\,a^2b^8x^8+271414\,a^3b^7x^7+80773\,a^4b^6x^6+63\,a^5b^5x^5-70\,a^6b^4x^4+80\,a^7b^3x^3-96\right.}{969969\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^5,x, algorithm="fricas")
```

```
[Out] 2/969969*(46189*b^10*x^10 + 206635*a*b^9*x^9 + 351780*a^2*b^8*x^8
 + 271414*a^3*b^7*x^7 + 80773*a^4*b^6*x^6 + 63*a^5*b^5*x^5 - 70*a
^6*b^4*x^4 + 80*a^7*b^3*x^3 - 96*a^8*b^2*x^2 + 128*a^9*b*x - 256*
a^10)*sqrt(b*x + a)/b^6
```

Sympy [A] time = 82.6622, size = 235, normalized size = 2.14

$$\begin{cases} -\frac{512a^{10}\sqrt{a+bx}}{969969b^6} + \frac{256a^9x\sqrt{a+bx}}{969969b^5} - \frac{64a^8x^2\sqrt{a+bx}}{323323b^4} + \frac{160a^7x^3\sqrt{a+bx}}{969969b^3} - \frac{20a^6x^4\sqrt{a+bx}}{138567b^2} + \frac{6a^5x^5\sqrt{a+bx}}{46189b} + \frac{2098a^4x^6\sqrt{a+bx}}{12597} + \frac{3796a^3bx^7\sqrt{a+bx}}{6783} + \\ \frac{a^{\frac{9}{2}}x^6}{6} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((-512*a**10*sqrt(a + b*x)/(969969*b**6) + 256*a**9*x*sq
rt(a + b*x)/(969969*b**5) - 64*a**8*x**2*sqrt(a + b*x)/(323323*b*
*4) + 160*a**7*x**3*sqrt(a + b*x)/(969969*b**3) - 20*a**6*x**4*sq
rt(a + b*x)/(138567*b**2) + 6*a**5*x**5*sqrt(a + b*x)/(46189*b) +
 2098*a**4*x**6*sqrt(a + b*x)/12597 + 3796*a**3*b*x**7*sqrt(a + b
*x)/6783 + 1640*a**2*b**2*x**8*sqrt(a + b*x)/2261 + 170*a*b**3*x*
*9*sqrt(a + b*x)/399 + 2*b**4*x**10*sqrt(a + b*x)/21, Ne(b, 0)),
(a**(9/2)*x**6/6, True))
```

GIAC/XCAS [A] time = 0.215117, size = 1, normalized size = 0.01

$$\mathit{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^5,x, algorithm="giac")
```

```
[Out] Done
```

3.312 $\int x^4(a+bx)^{9/2}\,dx$

Optimal. Leaf size=91

$$\frac{2a^4(a+bx)^{11/2}}{11b^5}-\frac{8a^3(a+bx)^{13/2}}{13b^5}+\frac{4a^2(a+bx)^{15/2}}{5b^5}+\frac{2(a+bx)^{19/2}}{19b^5}-\frac{8a(a+bx)^{17/2}}{17b^5}$$

```
[Out] (2*a^4*(a + b*x)^(11/2))/(11*b^5) - (8*a^3*(a + b*x)^(13/2))/(13*
b^5) + (4*a^2*(a + b*x)^(15/2))/(5*b^5) - (8*a*(a + b*x)^(17/2))/
(17*b^5) + (2*(a + b*x)^(19/2))/(19*b^5)
```

Rubi [A] time = 0.0652333, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^4(a+bx)^{11/2}}{11b^5}-\frac{8a^3(a+bx)^{13/2}}{13b^5}+\frac{4a^2(a+bx)^{15/2}}{5b^5}+\frac{2(a+bx)^{19/2}}{19b^5}-\frac{8a(a+bx)^{17/2}}{17b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4*(a + b*x)^(9/2),x]
```

```
[Out] (2*a^4*(a + b*x)^(11/2))/(11*b^5) - (8*a^3*(a + b*x)^(13/2))/(13*
b^5) + (4*a^2*(a + b*x)^(15/2))/(5*b^5) - (8*a*(a + b*x)^(17/2))/
(17*b^5) + (2*(a + b*x)^(19/2))/(19*b^5)
```

Rubi in Sympy [A] time = 14.3959, size = 87, normalized size = 0.96

$$\frac{2a^4\left(a+bx\right)^{\frac{11}{2}}}{11b^5}-\frac{8a^3\left(a+bx\right)^{\frac{13}{2}}}{13b^5}+\frac{4a^2\left(a+bx\right)^{\frac{15}{2}}}{5b^5}-\frac{8a\left(a+bx\right)^{\frac{17}{2}}}{17b^5}+\frac{2\left(a+bx\right)^{\frac{19}{2}}}{19b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**(9/2),x)
```

```
[Out] 2*a**4*(a + b*x)**(11/2)/(11*b**5) - 8*a**3*(a + b*x)**(13/2)/(13
*b**5) + 4*a**2*(a + b*x)**(15/2)/(5*b**5) - 8*a*(a + b*x)**(17/2
)/(17*b**5) + 2*(a + b*x)**(19/2)/(19*b**5)
```

Mathematica [A] time = 0.0492351, size = 57, normalized size = 0.63

$$\frac{2(a+bx)^{11/2}\left(128a^4-704a^3bx+2288a^2b^2x^2-5720ab^3x^3+12155b^4x^4\right)}{230945b^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4*(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2)*(128*a^4 - 704*a^3*b*x + 2288*a^2*b^2*x^2 - 5
720*a*b^3*x^3 + 12155*b^4*x^4))/(230945*b^5)
```

Maple [A] time = 0.008, size = 54, normalized size = 0.6

$$\frac{24310\,x^4b^4 - 11440\,ax^3b^3 + 4576\,a^2x^2b^2 - 1408\,a^3xb + 256\,a^4}{230945\,b^5}\,(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^(9/2),x)
```

```
[Out] 2/230945*(b*x+a)^(11/2)*(12155*b^4*x^4-5720*a*b^3*x^3+2288*a^2*b^
2*x^2-704*a^3*b*x+128*a^4)/b^5
```

Maxima [A] time = 1.33386, size = 96, normalized size = 1.05

$$\frac{2\,(bx+a)^{\frac{19}{2}}}{19\,b^5} - \frac{8\,(bx+a)^{\frac{17}{2}}a}{17\,b^5} + \frac{4\,(bx+a)^{\frac{15}{2}}a^2}{5\,b^5} - \frac{8\,(bx+a)^{\frac{13}{2}}a^3}{13\,b^5} + \frac{2\,(bx+a)^{\frac{11}{2}}a^4}{11\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^4,x, algorithm="maxima")
```

```
[Out] 2/19*(b*x + a)^(19/2)/b^5 - 8/17*(b*x + a)^(17/2)*a/b^5 + 4/5*(b*
x + a)^(15/2)*a^2/b^5 - 8/13*(b*x + a)^(13/2)*a^3/b^5 + 2/11*(b*x
 + a)^(11/2)*a^4/b^5
```

Fricas [A] time = 0.206351, size = 146, normalized size = 1.6

$$\frac{2\left(12155\,b^9x^9 + 55055\,ab^8x^8 + 95238\,a^2b^7x^7 + 75086\,a^3b^6x^6 + 23063\,a^4b^5x^5 + 35\,a^5b^4x^4 - 40\,a^6b^3x^3 + 48\,a^7b^2x^2 - 64\,a^8bx\right.}{230945\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^4,x, algorithm="fricas")
```

```
[Out] 2/230945*(12155*b^9*x^9 + 55055*a*b^8*x^8 + 95238*a^2*b^7*x^7 + 7
5086*a^3*b^6*x^6 + 23063*a^4*b^5*x^5 + 35*a^5*b^4*x^4 - 40*a^6*b^
3*x^3 + 48*a^7*b^2*x^2 - 64*a^8*b*x + 128*a^9)*sqrt(b*x + a)/b^5
```

Sympy [A] time = 71.4464, size = 212, normalized size = 2.33

$$\begin{cases} \frac{256a^9\sqrt{a+bx}}{230945b^5} - \frac{128a^8x\sqrt{a+bx}}{230945b^4} + \frac{96a^7x^2\sqrt{a+bx}}{230945b^3} - \frac{16a^6x^3\sqrt{a+bx}}{46189b^2} + \frac{14a^5x^4\sqrt{a+bx}}{46189b} + \frac{46126a^4x^5\sqrt{a+bx}}{230945} + \frac{13652a^3bx^6\sqrt{a+bx}}{20995} + \frac{1332a^2b^2x^7\sqrt{a+bx}}{1615} \\ \frac{a^{\frac{9}{2}}x^5}{5} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((256*a**9*sqrt(a + b*x)/(230945*b**5) - 128*a**8*x*sqrt
(a + b*x)/(230945*b**4) + 96*a**7*x**2*sqrt(a + b*x)/(230945*b**3
) - 16*a**6*x**3*sqrt(a + b*x)/(46189*b**2) + 14*a**5*x**4*sqrt(a
 + b*x)/(46189*b) + 46126*a**4*x**5*sqrt(a + b*x)/230945 + 13652*
a**3*b*x**6*sqrt(a + b*x)/20995 + 1332*a**2*b**2*x**7*sqrt(a + b*
x)/1615 + 154*a*b**3*x**8*sqrt(a + b*x)/323 + 2*b**4*x**9*sqrt(a
+ b*x)/19, Ne(b, 0)), (a**(9/2)*x**5/5, True))
```

GIAC/XCAS [A] time = 0.214609, size = 737, normalized size = 8.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^4,x, algorithm="giac")
```

```
[Out] 2/14549535*(4199*(315*(b*x + a)^(11/2)*b^40 - 1540*(b*x + a)^(9/2
)*a*b^40 + 2970*(b*x + a)^(7/2)*a^2*b^40 - 2772*(b*x + a)^(5/2)*a
^3*b^40 + 1155*(b*x + a)^(3/2)*a^4*b^40)*a^4/b^44 + 6460*(693*(b*
x + a)^(13/2)*b^60 - 4095*(b*x + a)^(11/2)*a*b^60 + 10010*(b*x +
a)^(9/2)*a^2*b^60 - 12870*(b*x + a)^(7/2)*a^3*b^60 + 9009*(b*x +
a)^(5/2)*a^4*b^60 - 3003*(b*x + a)^(3/2)*a^5*b^60)*a^3/b^64 + 193
8*(3003*(b*x + a)^(15/2)*b^84 - 20790*(b*x + a)^(13/2)*a*b^84 + 6
1425*(b*x + a)^(11/2)*a^2*b^84 - 100100*(b*x + a)^(9/2)*a^3*b^84
+ 96525*(b*x + a)^(7/2)*a^4*b^84 - 54054*(b*x + a)^(5/2)*a^5*b^84
 + 15015*(b*x + a)^(3/2)*a^6*b^84)*a^2/b^88 + 532*(6435*(b*x + a)
^(17/2)*b^112 - 51051*(b*x + a)^(15/2)*a*b^112 + 176715*(b*x + a)
^(13/2)*a^2*b^112 - 348075*(b*x + a)^(11/2)*a^3*b^112 + 425425*(b
*x + a)^(9/2)*a^4*b^112 - 328185*(b*x + a)^(7/2)*a^5*b^112 + 1531
53*(b*x + a)^(5/2)*a^6*b^112 - 36465*(b*x + a)^(3/2)*a^7*b^112)*a
/b^116 + 7*(109395*(b*x + a)^(19/2)*b^144 - 978120*(b*x + a)^(17/
2)*a*b^144 + 3879876*(b*x + a)^(15/2)*a^2*b^144 - 8953560*(b*x +
a)^(13/2)*a^3*b^144 + 13226850*(b*x + a)^(11/2)*a^4*b^144 - 12932
```

```
920*(b*x + a)^(9/2)*a^5*b^144 + 8314020*(b*x + a)^(7/2)*a^6*b^144
 - 3325608*(b*x + a)^(5/2)*a^7*b^144 + 692835*(b*x + a)^(3/2)*a^8
*b^144)/b^148)/b
```

3.313 $\int x^3(a+bx)^{9/2}\,dx$

Optimal. Leaf size=72

$$-\frac{2a^3(a+bx)^{11/2}}{11b^4}+\frac{6a^2(a+bx)^{13/2}}{13b^4}+\frac{2(a+bx)^{17/2}}{17b^4}-\frac{2a(a+bx)^{15/2}}{5b^4}$$

```
[Out] (-2*a^3*(a + b*x)^(11/2))/(11*b^4) + (6*a^2*(a + b*x)^(13/2))/(13
*b^4) - (2*a*(a + b*x)^(15/2))/(5*b^4) + (2*(a + b*x)^(17/2))/(17
*b^4)
```

Rubi [A] time = 0.0531783, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3(a+bx)^{11/2}}{11b^4}+\frac{6a^2(a+bx)^{13/2}}{13b^4}+\frac{2(a+bx)^{17/2}}{17b^4}-\frac{2a(a+bx)^{15/2}}{5b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^(9/2),x]
```

```
[Out] (-2*a^3*(a + b*x)^(11/2))/(11*b^4) + (6*a^2*(a + b*x)^(13/2))/(13
*b^4) - (2*a*(a + b*x)^(15/2))/(5*b^4) + (2*(a + b*x)^(17/2))/(17
*b^4)
```

Rubi in Sympy [A] time = 11.4983, size = 68, normalized size = 0.94

$$-\frac{2a^3\left(a+bx\right)^{\frac{11}{2}}}{11b^4}+\frac{6a^2\left(a+bx\right)^{\frac{13}{2}}}{13b^4}-\frac{2a\left(a+bx\right)^{\frac{15}{2}}}{5b^4}+\frac{2\left(a+bx\right)^{\frac{17}{2}}}{17b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(9/2),x)
```

```
[Out] -2*a**3*(a + b*x)**(11/2)/(11*b**4) + 6*a**2*(a + b*x)**(13/2)/(1
3*b**4) - 2*a*(a + b*x)**(15/2)/(5*b**4) + 2*(a + b*x)**(17/2)/(1
7*b**4)
```

Mathematica [A] time = 0.0494118, size = 46, normalized size = 0.64

$$\frac{2(a+bx)^{11/2}\left(-16a^3+88a^2bx-286ab^2x^2+715b^3x^3\right)}{12155b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2)*(-16*a^3 + 88*a^2*b*x - 286*a*b^2*x^2 + 715*b
^3*x^3))/(12155*b^4)
```

Maple [A] time = 0.008, size = 43, normalized size = 0.6

$$-\frac{-1430\,b^3x^3+572\,ab^2x^2-176\,a^2bx+32\,a^3}{12155\,b^4}\,(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(9/2),x)
```

```
[Out] -2/12155*(b*x+a)^(11/2)*(-715*b^3*x^3+286*a*b^2*x^2-88*a^2*b*x+16
*a^3)/b^4
```

Maxima [A] time = 1.32096, size = 76, normalized size = 1.06

$$\frac{2\,(bx+a)^{\frac{17}{2}}}{17\,b^4}-\frac{2\,(bx+a)^{\frac{15}{2}}a}{5\,b^4}+\frac{6\,(bx+a)^{\frac{13}{2}}a^2}{13\,b^4}-\frac{2\,(bx+a)^{\frac{11}{2}}a^3}{11\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^3,x, algorithm="maxima")
```

```
[Out] 2/17*(b*x + a)^(17/2)/b^4 - 2/5*(b*x + a)^(15/2)*a/b^4 + 6/13*(b*
x + a)^(13/2)*a^2/b^4 - 2/11*(b*x + a)^(11/2)*a^3/b^4
```

Fricas [A] time = 0.207994, size = 131, normalized size = 1.82

$$\frac{2\left(715\,b^8x^8+3289\,ab^7x^7+5808\,a^2b^6x^6+4714\,a^3b^5x^5+1515\,a^4b^4x^4+5\,a^5b^3x^3-6\,a^6b^2x^2+8\,a^7bx-16\,a^8\right)\sqrt{bx+a}}{12155\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^3,x, algorithm="fricas")
```

```
[Out] 2/12155*(715*b^8*x^8 + 3289*a*b^7*x^7 + 5808*a^2*b^6*x^6 + 4714*a
^3*b^5*x^5 + 1515*a^4*b^4*x^4 + 5*a^5*b^3*x^3 - 6*a^6*b^2*x^2 + 8
```

```
*a^7*b*x - 16*a^8)*sqrt(b*x + a)/b^4
```

Sympy [A] time = 61.0621, size = 190, normalized size = 2.64

$$\begin{cases} -\frac{32a^{8}\sqrt{a+bx}}{12155b^{4}} + \frac{16a^{7}x\sqrt{a+bx}}{12155b^{3}} - \frac{12a^{6}x^{2}\sqrt{a+bx}}{12155b^{2}} + \frac{2a^{5}x^{3}\sqrt{a+bx}}{2431b} + \frac{606a^{4}x^{4}\sqrt{a+bx}}{2431} + \frac{9428a^{3}bx^{5}\sqrt{a+bx}}{12155} + \frac{1056a^{2}b^{2}x^{6}\sqrt{a+bx}}{1105} + \frac{46ab^{3}x^{7}\sqrt{a+bx}}{85} + \\ \frac{a^{\frac{9}{2}}x^{4}}{4} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((-32*a**8*sqrt(a + b*x)/(12155*b**4) + 16*a**7*x*sqrt(a
 + b*x)/(12155*b**3) - 12*a**6*x**2*sqrt(a + b*x)/(12155*b**2) +
2*a**5*x**3*sqrt(a + b*x)/(2431*b) + 606*a**4*x**4*sqrt(a + b*x)/
2431 + 9428*a**3*b*x**5*sqrt(a + b*x)/12155 + 1056*a**2*b**2*x**6
*sqrt(a + b*x)/1105 + 46*a*b**3*x**7*sqrt(a + b*x)/85 + 2*b**4*x*
*8*sqrt(a + b*x)/17, Ne(b, 0)), (a**(9/2)*x**4/4, True))
```

GIAC/XCAS [A] time = 0.214271, size = 636, normalized size = 8.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^3,x, algorithm="giac")
```

```
[Out] 2/765765*(2431*(35*(b*x + a)^(9/2)*b^24 - 135*(b*x + a)^(7/2)*a*b
^24 + 189*(b*x + a)^(5/2)*a^2*b^24 - 105*(b*x + a)^(3/2)*a^3*b^24
)*a^4/b^27 + 884*(315*(b*x + a)^(11/2)*b^40 - 1540*(b*x + a)^(9/2
)*a*b^40 + 2970*(b*x + a)^(7/2)*a^2*b^40 - 2772*(b*x + a)^(5/2)*a
^3*b^40 + 1155*(b*x + a)^(3/2)*a^4*b^40)*a^3/b^43 + 510*(693*(b*x
 + a)^(13/2)*b^60 - 4095*(b*x + a)^(11/2)*a*b^60 + 10010*(b*x + a
)^(9/2)*a^2*b^60 - 12870*(b*x + a)^(7/2)*a^3*b^60 + 9009*(b*x + a
)^(5/2)*a^4*b^60 - 3003*(b*x + a)^(3/2)*a^5*b^60)*a^2/b^63 + 68*(
3003*(b*x + a)^(15/2)*b^84 - 20790*(b*x + a)^(13/2)*a*b^84 + 6142
5*(b*x + a)^(11/2)*a^2*b^84 - 100100*(b*x + a)^(9/2)*a^3*b^84 + 9
6525*(b*x + a)^(7/2)*a^4*b^84 - 54054*(b*x + a)^(5/2)*a^5*b^84 +
15015*(b*x + a)^(3/2)*a^6*b^84)*a/b^87 + 7*(6435*(b*x + a)^(17/2)
*b^112 - 51051*(b*x + a)^(15/2)*a*b^112 + 176715*(b*x + a)^(13/2)
*a^2*b^112 - 348075*(b*x + a)^(11/2)*a^3*b^112 + 425425*(b*x + a)
^(9/2)*a^4*b^112 - 328185*(b*x + a)^(7/2)*a^5*b^112 + 153153*(b*x
 + a)^(5/2)*a^6*b^112 - 36465*(b*x + a)^(3/2)*a^7*b^112)/b^115)/b
```

3.314 $\int x^2(a+bx)^{9/2}\,dx$

Optimal. Leaf size=53

$$\frac{2a^2(a+bx)^{11/2}}{11b^3}+\frac{2(a+bx)^{15/2}}{15b^3}-\frac{4a(a+bx)^{13/2}}{13b^3}$$

```
[Out] (2*a^2*(a + b*x)^(11/2))/(11*b^3) - (4*a*(a + b*x)^(13/2))/(13*b^
3) + (2*(a + b*x)^(15/2))/(15*b^3)
```

Rubi [A] time = 0.0395838, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^2(a+bx)^{11/2}}{11b^3}+\frac{2(a+bx)^{15/2}}{15b^3}-\frac{4a(a+bx)^{13/2}}{13b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^(9/2),x]
```

```
[Out] (2*a^2*(a + b*x)^(11/2))/(11*b^3) - (4*a*(a + b*x)^(13/2))/(13*b^
3) + (2*(a + b*x)^(15/2))/(15*b^3)
```

Rubi in Sympy [A] time = 8.25347, size = 49, normalized size = 0.92

$$\frac{2a^2\left(a+bx\right)^{\frac{11}{2}}}{11b^3}-\frac{4a\left(a+bx\right)^{\frac{13}{2}}}{13b^3}+\frac{2\left(a+bx\right)^{\frac{15}{2}}}{15b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**(9/2),x)
```

```
[Out] 2*a**2*(a + b*x)**(11/2)/(11*b**3) - 4*a*(a + b*x)**(13/2)/(13*b*
*3) + 2*(a + b*x)**(15/2)/(15*b**3)
```

Mathematica [A] time = 0.04009, size = 35, normalized size = 0.66

$$\frac{2(a+bx)^{11/2}\left(8a^2-44abx+143b^2x^2\right)}{2145b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^(9/2),x]

[Out] (2*(a + b*x)^(11/2)*(8*a^2 - 44*a*b*x + 143*b^2*x^2))/(2145*b^3)
```

Maple [A] time = 0.009, size = 32, normalized size = 0.6

$$\frac{286\,b^2x^2-88\,abx+16\,a^2}{2145\,b^3}\,(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^(9/2),x)

[Out] 2/2145*(b*x+a)^(11/2)*(143*b^2*x^2-44*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.33317, size = 55, normalized size = 1.04

$$\frac{2\,(bx+a)^{\frac{15}{2}}}{15\,b^3}-\frac{4\,(bx+a)^{\frac{13}{2}}\,a}{13\,b^3}+\frac{2\,(bx+a)^{\frac{11}{2}}\,a^2}{11\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^2,x, algorithm="maxima")

[Out] 2/15*(b*x + a)^(15/2)/b^3 - 4/13*(b*x + a)^(13/2)*a/b^3 + 2/11*(b
*x + a)^(11/2)*a^2/b^3
```

Fricas [A] time = 0.206907, size = 116, normalized size = 2.19

$$\frac{2\left(143\,b^7x^7+671\,ab^6x^6+1218\,a^2b^5x^5+1030\,a^3b^4x^4+355\,a^4b^3x^3+3\,a^5b^2x^2-4\,a^6bx+8\,a^7\right)\sqrt{bx+a}}{2145\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^2,x, algorithm="fricas")

[Out] 2/2145*(143*b^7*x^7 + 671*a*b^6*x^6 + 1218*a^2*b^5*x^5 + 1030*a^3
*b^4*x^4 + 355*a^4*b^3*x^3 + 3*a^5*b^2*x^2 - 4*a^6*b*x + 8*a^7)*s
qrt(b*x + a)/b^3
```

Sympy [A] time = 51.5458, size = 168, normalized size = 3.17

$$\begin{cases} \frac{16a^7\sqrt{a+bx}}{2145b^3} - \frac{8a^6x\sqrt{a+bx}}{2145b^2} + \frac{2a^5x^2\sqrt{a+bx}}{715b} + \frac{142a^4x^3\sqrt{a+bx}}{429} + \frac{412a^3bx^4\sqrt{a+bx}}{429} + \frac{812a^2b^2x^5\sqrt{a+bx}}{715} + \frac{122ab^3x^6\sqrt{a+bx}}{195} + \frac{2b^4x^7\sqrt{a+bx}}{15} & \text{for } b \\ \frac{a^{\frac{9}{2}}x^3}{3} & \text{othe} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((16*a**7*sqrt(a + b*x)/(2145*b**3) - 8*a**6*x*sqrt(a +
b*x)/(2145*b**2) + 2*a**5*x**2*sqrt(a + b*x)/(715*b) + 142*a**4*x
**3*sqrt(a + b*x)/429 + 412*a**3*b*x**4*sqrt(a + b*x)/429 + 812*a
**2*b**2*x**5*sqrt(a + b*x)/715 + 122*a*b**3*x**6*sqrt(a + b*x)/1
95 + 2*b**4*x**7*sqrt(a + b*x)/15, Ne(b, 0)), (a**(9/2)*x**3/3, T
rue))
```

GIAC/XCAS [A] time = 0.232028, size = 533, normalized size = 10.06

$$\frac{2\left(\frac{429\left(15(bx+a)^{\frac{7}{2}}b^{12}-42(bx+a)^{\frac{5}{2}}ab^{12}+35(bx+a)^{\frac{3}{2}}a^2b^{12}\right)a^4}{b^{14}}+\frac{572\left(35(bx+a)^{\frac{9}{2}}b^{24}-135(bx+a)^{\frac{7}{2}}ab^{24}+189(bx+a)^{\frac{5}{2}}a^2b^{24}-105(bx+a)^{\frac{3}{2}}a^3b^{24}\right)a^3}{b^{26}}+\frac{78\left(31\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x^2,x, algorithm="giac")
```

```
[Out] 2/45045*(429*(15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12
 + 35*(b*x + a)^(3/2)*a^2*b^12)*a^4/b^14 + 572*(35*(b*x + a)^(9/2
)*b^24 - 135*(b*x + a)^(7/2)*a*b^24 + 189*(b*x + a)^(5/2)*a^2*b^2
4 - 105*(b*x + a)^(3/2)*a^3*b^24)*a^3/b^26 + 78*(315*(b*x + a)^(1
1/2)*b^40 - 1540*(b*x + a)^(9/2)*a*b^40 + 2970*(b*x + a)^(7/2)*a^
2*b^40 - 2772*(b*x + a)^(5/2)*a^3*b^40 + 1155*(b*x + a)^(3/2)*a^4
*b^40)*a^2/b^42 + 20*(693*(b*x + a)^(13/2)*b^60 - 4095*(b*x + a)^
(11/2)*a*b^60 + 10010*(b*x + a)^(9/2)*a^2*b^60 - 12870*(b*x + a)^
(7/2)*a^3*b^60 + 9009*(b*x + a)^(5/2)*a^4*b^60 - 3003*(b*x + a)^(
3/2)*a^5*b^60)*a/b^62 + (3003*(b*x + a)^(15/2)*b^84 - 20790*(b*x
+ a)^(13/2)*a*b^84 + 61425*(b*x + a)^(11/2)*a^2*b^84 - 100100*(b*
x + a)^(9/2)*a^3*b^84 + 96525*(b*x + a)^(7/2)*a^4*b^84 - 54054*(b
*x + a)^(5/2)*a^5*b^84 + 15015*(b*x + a)^(3/2)*a^6*b^84)/b^86)/b
```

3.315 $\int x(a+bx)^{9/2}\,dx$

Optimal. Leaf size=34

$$\frac{2(a+bx)^{13/2}}{13b^2}-\frac{2a(a+bx)^{11/2}}{11b^2}$$

```
[Out] (-2*a*(a + b*x)^(11/2))/(11*b^2) + (2*(a + b*x)^(13/2))/(13*b^2)
```

Rubi [A] time = 0.0250732, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2(a+bx)^{13/2}}{13b^2}-\frac{2a(a+bx)^{11/2}}{11b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^(9/2),x]

[Out] (-2*a*(a + b*x)^(11/2))/(11*b^2) + (2*(a + b*x)^(13/2))/(13*b^2)
```

Rubi in Sympy [A] time = 5.0806, size = 31, normalized size = 0.91

$$-\frac{2a\left(a+bx\right)^{\frac{11}{2}}}{11b^2}+\frac{2\left(a+bx\right)^{\frac{13}{2}}}{13b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(9/2),x)

[Out] -2*a*(a + b*x)**(11/2)/(11*b**2) + 2*(a + b*x)**(13/2)/(13*b**2)
```

Mathematica [A] time = 0.0390475, size = 24, normalized size = 0.71

$$\frac{2(a+bx)^{11/2}(11bx-2a)}{143b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2)*(-2*a + 11*b*x))/(143*b^2)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$-\frac{-22\,bx+4\,a}{143\,b^2}\,(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(9/2),x)
```

```
[Out] -2/143*(b*x+a)^(11/2)*(-11*b*x+2*a)/b^2
```

Maxima [A] time = 1.34264, size = 35, normalized size = 1.03

$$\frac{2\,(bx+a)^{\frac{13}{2}}}{13\,b^2}-\frac{2\,(bx+a)^{\frac{11}{2}}\,a}{11\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(9/2)*x,x, algorithm="maxima")
```

```
[Out] 2/13*(b*x + a)^(13/2)/b^2 - 2/11*(b*x + a)^(11/2)*a/b^2
```

Fricas [A] time = 0.207456, size = 100, normalized size = 2.94

$$\frac{2\left(11\,b^6x^6+53\,ab^5x^5+100\,a^2b^4x^4+90\,a^3b^3x^3+35\,a^4b^2x^2+a^5bx-2\,a^6\right)\sqrt{bx+a}}{143\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(9/2)*x,x, algorithm="fricas")
```

```
[Out] 2/143*(11*b^6*x^6 + 53*a*b^5*x^5 + 100*a^2*b^4*x^4 + 90*a^3*b^3*x
^3 + 35*a^4*b^2*x^2 + a^5*b*x - 2*a^6)*sqrt(b*x + a)/b^2
```

Sympy [A] time = 42.0332, size = 146, normalized size = 4.29

$$\begin{cases} -\frac{4a^6\sqrt{a+bx}}{143b^2}+\frac{2a^5x\sqrt{a+bx}}{143b}+\frac{70a^4x^2\sqrt{a+bx}}{143}+\frac{180a^3bx^3\sqrt{a+bx}}{143}+\frac{200a^2b^2x^4\sqrt{a+bx}}{143}+\frac{106ab^3x^5\sqrt{a+bx}}{143}+\frac{2b^4x^6\sqrt{a+bx}}{13} & \text{for}\ b\neq 0 \\ \frac{a^{\frac{9}{2}}x^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(9/2),x)
```

```
[Out] Piecewise((-4*a**6*sqrt(a + b*x)/(143*b**2) + 2*a**5*x*sqrt(a + b
*x)/(143*b) + 70*a**4*x**2*sqrt(a + b*x)/143 + 180*a**3*b*x**3*sq
rt(a + b*x)/143 + 200*a**2*b**2*x**4*sqrt(a + b*x)/143 + 106*a*b*
*3*x**5*sqrt(a + b*x)/143 + 2*b**4*x**6*sqrt(a + b*x)/13, Ne(b, 0
)), (a**(9/2)*x**2/2, True))
```

GIAC/XCAS [A] time = 0.212004, size = 425, normalized size = 12.5

$$2\left(\frac{3003\left(3\,(bx+a)^{\frac{5}{2}}-5\,(bx+a)^{\frac{3}{2}}\,a\right)a^4}{b}+\frac{1716\left(15\,(bx+a)^{\frac{7}{2}}\,b^{12}-42\,(bx+a)^{\frac{5}{2}}\,ab^{12}+35\,(bx+a)^{\frac{3}{2}}\,a^2b^{12}\right)a^3}{b^{13}}+\frac{858\left(35\,(bx+a)^{\frac{9}{2}}\,b^{24}-135\,(bx+a)^{\frac{7}{2}}\,ab^{24}+189\,(bx+a)^{\frac{5}{2}}\right.}{b^{25}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)*x,x, algorithm="giac")
```

```
[Out] 2/45045*(3003*(3*(b*x + a)^(5/2) - 5*(b*x + a)^(3/2)*a)*a^4/b + 1
716*(15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)^(5/2)*a*b^12 + 35*(b*
x + a)^(3/2)*a^2*b^12)*a^3/b^13 + 858*(35*(b*x + a)^(9/2)*b^24 -
135*(b*x + a)^(7/2)*a*b^24 + 189*(b*x + a)^(5/2)*a^2*b^24 - 105*(
b*x + a)^(3/2)*a^3*b^24)*a^2/b^25 + 52*(315*(b*x + a)^(11/2)*b^40
 - 1540*(b*x + a)^(9/2)*a*b^40 + 2970*(b*x + a)^(7/2)*a^2*b^40 -
2772*(b*x + a)^(5/2)*a^3*b^40 + 1155*(b*x + a)^(3/2)*a^4*b^40)*a/
b^41 + 5*(693*(b*x + a)^(13/2)*b^60 - 4095*(b*x + a)^(11/2)*a*b^6
0 + 10010*(b*x + a)^(9/2)*a^2*b^60 - 12870*(b*x + a)^(7/2)*a^3*b^
60 + 9009*(b*x + a)^(5/2)*a^4*b^60 - 3003*(b*x + a)^(3/2)*a^5*b^6
0)/b^61)/b
```

3.316 $\int (a+bx)^{9/2}\,dx$

Optimal. Leaf size=16

$$\frac{2(a+bx)^{11/2}}{11b}$$

```
[Out] (2*(a + b*x)^(11/2))/(11*b)
```

Rubi [A] time = 0.00695355, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2(a+bx)^{11/2}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2),x]

[Out] (2*(a + b*x)^(11/2))/(11*b)
```

Rubi in Sympy [A] time = 1.26444, size = 12, normalized size = 0.75

$$\frac{2\left(a+bx\right)^{\frac{11}{2}}}{11b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2),x)

[Out] 2*(a + b*x)**(11/2)/(11*b)
```

Mathematica [A] time = 0.0102769, size = 16, normalized size = 1.

$$\frac{2(a+bx)^{11/2}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)^(11/2))/(11*b)
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$\frac{2}{11\,b}\,(bx+a)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2),x)
```

```
[Out] 2/11*(b*x+a)^(11/2)/b
```

Maxima [A] time = 1.32456, size = 16, normalized size = 1.

$$\frac{2\,(bx+a)^{\frac{11}{2}}}{11\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/11*(b*x + a)^(11/2)/b
```

Fricas [A] time = 0.209376, size = 82, normalized size = 5.12

$$\frac{2\left(b^5x^5+5\,ab^4x^4+10\,a^2b^3x^3+10\,a^3b^2x^2+5\,a^4bx+a^5\right)\sqrt{bx+a}}{11\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/11*(b^5*x^5 + 5*a*b^4*x^4 + 10*a^2*b^3*x^3 + 10*a^3*b^2*x^2 + 5
*a^4*b*x + a^5)*sqrt(b*x + a)/b
```

Sympy [A] time = 0.102526, size = 12, normalized size = 0.75

$$\frac{2\,(a+bx)^{\frac{11}{2}}}{11b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2),x)
```

```
[Out] 2*(a + b*x)**(11/2)/(11*b)
```

GIAC/XCAS [A] time = 0.210457, size = 309, normalized size = 19.31

$$\frac{2\left(1155\,(bx+a)^{\frac{3}{2}}a^4 + 924\left(3\,(bx+a)^{\frac{5}{2}} - 5\,(bx+a)^{\frac{3}{2}}a\right)a^3 + \frac{198\left(15\,(bx+a)^{\frac{7}{2}}b^{12} - 42\,(bx+a)^{\frac{5}{2}}ab^{12} + 35\,(bx+a)^{\frac{3}{2}}a^2b^{12}\right)a^2}{b^{12}} + \frac{44\left(35\,(bx+a)^{\frac{9}{2}}b^{24}\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*(b*x + a)^(3/2)*a^4 + 924*(3*(b*x + a)^(5/2) - 5*(b*
x + a)^(3/2)*a)*a^3 + 198*(15*(b*x + a)^(7/2)*b^12 - 42*(b*x + a)
^(5/2)*a*b^12 + 35*(b*x + a)^(3/2)*a^2*b^12)*a^2/b^12 + 44*(35*(b
*x + a)^(9/2)*b^24 - 135*(b*x + a)^(7/2)*a*b^24 + 189*(b*x + a)^(
5/2)*a^2*b^24 - 105*(b*x + a)^(3/2)*a^3*b^24)*a/b^24 + (315*(b*x
+ a)^(11/2)*b^40 - 1540*(b*x + a)^(9/2)*a*b^40 + 2970*(b*x + a)^(
7/2)*a^2*b^40 - 2772*(b*x + a)^(5/2)*a^3*b^40 + 1155*(b*x + a)^(3
/2)*a^4*b^40)/b^40)/b
```

3.317 $\int \frac{(a+bx)^{9/2}}{x}\, dx$

Optimal. Leaf size=97

$$-2a^{9/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a^4\sqrt{a+bx}+\frac{2}{3}a^3(a+bx)^{3/2}+\frac{2}{5}a^2(a+bx)^{5/2}+\frac{2}{7}a(a+bx)^{7/2}+\frac{2}{9}(a+bx)^{9/2}$$

```
[Out] 2*a^4*Sqrt[a + b*x] + (2*a^3*(a + b*x)^(3/2))/3 + (2*a^2*(a + b*x
)^(5/2))/5 + (2*a*(a + b*x)^(7/2))/7 + (2*(a + b*x)^(9/2))/9 - 2*
a^(9/2)*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.102232, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$

$$-2a^{9/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a^4\sqrt{a+bx}+\frac{2}{3}a^3(a+bx)^{3/2}+\frac{2}{5}a^2(a+bx)^{5/2}+\frac{2}{7}a(a+bx)^{7/2}+\frac{2}{9}(a+bx)^{9/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x,x]
```

```
[Out] 2*a^4*Sqrt[a + b*x] + (2*a^3*(a + b*x)^(3/2))/3 + (2*a^2*(a + b*x
)^(5/2))/5 + (2*a*(a + b*x)^(7/2))/7 + (2*(a + b*x)^(9/2))/9 - 2*
a^(9/2)*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 13.6862, size = 90, normalized size = 0.93

$$-2a^{\frac{9}{2}}\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+2a^4\sqrt{a+bx}+\frac{2a^3\left(a+bx\right)^{\frac{3}{2}}}{3}+\frac{2a^2\left(a+bx\right)^{\frac{5}{2}}}{5}+\frac{2a\left(a+bx\right)^{\frac{7}{2}}}{7}+\frac{2\left(a+bx\right)^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x,x)
```

```
[Out] -2*a**(9/2)*atanh(sqrt(a + b*x)/sqrt(a)) + 2*a**4*sqrt(a + b*x) +
 2*a**3*(a + b*x)**(3/2)/3 + 2*a**2*(a + b*x)**(5/2)/5 + 2*a*(a +
 b*x)**(7/2)/7 + 2*(a + b*x)**(9/2)/9
```

Mathematica [A] time = 0.0525345, size = 78, normalized size = 0.8

$$\frac{2}{315}\sqrt{a+bx}\left(563a^4+506a^3bx+408a^2b^2x^2+185ab^3x^3+35b^4x^4\right)-2a^{9/2}\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x,x]
```

```
[Out] (2*Sqrt[a + b*x]*(563*a^4 + 506*a^3*b*x + 408*a^2*b^2*x^2 + 185*a
*b^3*x^3 + 35*b^4*x^4))/315 - 2*a^(9/2)*ArcTanh[Sqrt[a + b*x]/Sqr
t[a]]
```

Maple [A] time = 0.009, size = 74, normalized size = 0.8

$$\frac{2\,a^3}{3}(bx+a)^{\frac{3}{2}}+\frac{2\,a^2}{5}(bx+a)^{\frac{5}{2}}+\frac{2\,a}{7}(bx+a)^{\frac{7}{2}}+\frac{2}{9}(bx+a)^{\frac{9}{2}}-2\,a^{9/2}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)+2\,a^4\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x,x)
```

```
[Out] 2/3*a^3*(b*x+a)^(3/2)+2/5*a^2*(b*x+a)^(5/2)+2/7*a*(b*x+a)^(7/2)+2
/9*(b*x+a)^(9/2)-2*a^(9/2)*arctanh((b*x+a)^(1/2)/a^(1/2))+2*a^4*(
b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221988, size = 1, normalized size = 0.01

$$\left[a^{\frac{9}{2}}\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+\frac{2}{315}\left(35\,b^4x^4+185\,ab^3x^3+408\,a^2b^2x^2+506\,a^3bx+563\,a^4\right)\sqrt{bx+a},\right.$$
$$\left.-2\sqrt{-a}a^4\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)+\frac{2}{315}\left(35\,b^4x^4+185\,ab^3x^3+408\,a^2b^2x^2+506\,a^3bx+563\,a^4\right)\sqrt{bx+a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x,x, algorithm="fricas")
```

```
[Out] [a^(9/2)*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/x) + 2/315*(35
*b^4*x^4 + 185*a*b^3*x^3 + 408*a^2*b^2*x^2 + 506*a^3*b*x + 563*a^
4)*sqrt(b*x + a), -2*sqrt(-a)*a^4*arctan(sqrt(b*x + a)/sqrt(-a))
+ 2/315*(35*b^4*x^4 + 185*a*b^3*x^3 + 408*a^2*b^2*x^2 + 506*a^3*b
*x + 563*a^4)*sqrt(b*x + a)]
```

Sympy [A] time = 35.2355, size = 148, normalized size = 1.53

$$\frac{1126a^{\frac{9}{2}}\sqrt{1+\frac{bx}{a}}}{315}+a^{\frac{9}{2}}\log\left(\frac{bx}{a}\right)-2a^{\frac{9}{2}}\log\left(\sqrt{1+\frac{bx}{a}}+1\right)+\frac{1012a^{\frac{7}{2}}bx\sqrt{1+\frac{bx}{a}}}{315}+\frac{272a^{\frac{5}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{105}+\frac{74a^{\frac{3}{2}}b^3x^3\sqrt{1+\frac{bx}{a}}}{63}+\frac{2\sqrt{a}b^4x^4\sqrt{1+\frac{bx}{a}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x,x)
```

```
[Out] 1126*a**(9/2)*sqrt(1 + b*x/a)/315 + a**(9/2)*log(b*x/a) - 2*a**(9
/2)*log(sqrt(1 + b*x/a) + 1) + 1012*a**(7/2)*b*x*sqrt(1 + b*x/a)/
315 + 272*a**(5/2)*b**2*x**2*sqrt(1 + b*x/a)/105 + 74*a**(3/2)*b*
*3*x**3*sqrt(1 + b*x/a)/63 + 2*sqrt(a)*b**4*x**4*sqrt(1 + b*x/a)/
9
```

GIAC/XCAS [A] time = 0.209386, size = 108, normalized size = 1.11

$$\frac{2\,a^5\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+\frac{2}{9}\,(bx+a)^{\frac{9}{2}}+\frac{2}{7}\,(bx+a)^{\frac{7}{2}}a+\frac{2}{5}\,(bx+a)^{\frac{5}{2}}a^2+\frac{2}{3}\,(bx+a)^{\frac{3}{2}}a^3+2\sqrt{bx+a}a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x,x, algorithm="giac")
```

```
[Out] 2*a^5*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 2/9*(b*x + a)^(9/
2) + 2/7*(b*x + a)^(7/2)*a + 2/5*(b*x + a)^(5/2)*a^2 + 2/3*(b*x +
 a)^(3/2)*a^3 + 2*sqrt(b*x + a)*a^4
```

3.318 $\int \frac{(a+bx)^{9/2}}{x^2}\,dx$

Optimal. Leaf size=98

$$-9a^{7/2}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+9a^3b\sqrt{a+bx}+3a^2b(a+bx)^{3/2}-\frac{(a+bx)^{9/2}}{x}+\frac{9}{7}b(a+bx)^{7/2}+\frac{9}{5}ab(a+bx)^{5/2}$$

```
[Out] 9*a^3*b*Sqrt[a + b*x] + 3*a^2*b*(a + b*x)^(3/2) + (9*a*b*(a + b*x
)^(5/2))/5 + (9*b*(a + b*x)^(7/2))/7 - (a + b*x)^(9/2)/x - 9*a^(7
/2)*b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.106727, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$-9a^{7/2}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+9a^3b\sqrt{a+bx}+3a^2b(a+bx)^{3/2}-\frac{(a+bx)^{9/2}}{x}+\frac{9}{7}b(a+bx)^{7/2}+\frac{9}{5}ab(a+bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^2,x]
```

```
[Out] 9*a^3*b*Sqrt[a + b*x] + 3*a^2*b*(a + b*x)^(3/2) + (9*a*b*(a + b*x
)^(5/2))/5 + (9*b*(a + b*x)^(7/2))/7 - (a + b*x)^(9/2)/x - 9*a^(7
/2)*b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 13.8358, size = 92, normalized size = 0.94

$$-9a^{\frac{7}{2}}b\,\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+9a^3b\sqrt{a+bx}+3a^2b\left(a+bx\right)^{\frac{3}{2}}+\frac{9ab\left(a+bx\right)^{\frac{5}{2}}}{5}+\frac{9b\left(a+bx\right)^{\frac{7}{2}}}{7}-\frac{\left(a+bx\right)^{\frac{9}{2}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**2,x)
```

```
[Out] -9*a**(7/2)*b*atanh(sqrt(a + b*x)/sqrt(a)) + 9*a**3*b*sqrt(a + b*
x) + 3*a**2*b*(a + b*x)**(3/2) + 9*a*b*(a + b*x)**(5/2)/5 + 9*b*(
a + b*x)**(7/2)/7 - (a + b*x)**(9/2)/x
```

Mathematica [A] time = 0.0832858, size = 84, normalized size = 0.86

$$\sqrt{a+bx}\left(-\frac{a^4}{x}+\frac{388a^3b}{35}+\frac{156}{35}a^2b^2x+\frac{58}{35}ab^3x^2+\frac{2b^4x^3}{7}\right)-9a^{7/2}b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^2,x]
```

```
[Out] Sqrt[a + b*x]*((388*a^3*b)/35 - a^4/x + (156*a^2*b^2*x)/35 + (58*
a*b^3*x^2)/35 + (2*b^4*x^3)/7) - 9*a^(7/2)*b*ArcTanh[Sqrt[a + b*x
]/Sqrt[a]]
```

Maple [A] time = 0.016, size = 84, normalized size = 0.9

$$2\,b\left(1/7\,(bx+a)^{7/2}+2/5\,a\,(bx+a)^{5/2}+a^2\,(bx+a)^{3/2}+4\,\sqrt{bx+a}a^3+a^4\left(-1/2\,\frac{\sqrt{bx+a}}{bx}-9/2\,\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^2,x)
```

```
[Out] 2*b*(1/7*(b*x+a)^(7/2)+2/5*a*(b*x+a)^(5/2)+a^2*(b*x+a)^(3/2)+4*(b
*x+a)^(1/2)*a^3+a^4*(-1/2*(b*x+a)^(1/2)/x/b-9/2*arctanh((b*x+a)^(
1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219487, size = 1, normalized size = 0.01

$$\left[\frac{315\,a^{\frac{7}{2}}bx\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\left(10\,b^4x^4+58\,ab^3x^3+156\,a^2b^2x^2+388\,a^3bx-35\,a^4\right)\sqrt{bx+a}}{70\,x},\right.$$
$$\left.-\frac{315\,\sqrt{-a}a^3bx\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(10\,b^4x^4+58\,ab^3x^3+156\,a^2b^2x^2+388\,a^3bx-35\,a^4\right)\sqrt{bx+a}}{35\,x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/70*(315*a^(7/2)*b*x*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2*a)/
x) + 2*(10*b^4*x^4 + 58*a*b^3*x^3 + 156*a^2*b^2*x^2 + 388*a^3*b*x
 - 35*a^4)*sqrt(b*x + a))/x, -1/35*(315*sqrt(-a)*a^3*b*x*arctan(s
qrt(b*x + a)/sqrt(-a)) - (10*b^4*x^4 + 58*a*b^3*x^3 + 156*a^2*b^2
*x^2 + 388*a^3*b*x - 35*a^4)*sqrt(b*x + a))/x]
```

Sympy [A] time = 36.3084, size = 150, normalized size = 1.53

$$-\frac{a^{\frac{9}{2}}\sqrt{1+\frac{bx}{a}}}{x}+\frac{388a^{\frac{7}{2}}b\sqrt{1+\frac{bx}{a}}}{35}+\frac{9a^{\frac{7}{2}}b\log\left(\frac{bx}{a}\right)}{2}-9a^{\frac{7}{2}}b\log\left(\sqrt{1+\frac{bx}{a}}+1\right)+\frac{156a^{\frac{5}{2}}b^2x\sqrt{1+\frac{bx}{a}}}{35}+\frac{58a^{\frac{3}{2}}b^3x^2\sqrt{1+\frac{bx}{a}}}{35}+\frac{2\sqrt{a}b^4x^3\sqrt{1+\frac{bx}{a}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**2,x)
```

```
[Out] -a**(9/2)*sqrt(1 + b*x/a)/x + 388*a**(7/2)*b*sqrt(1 + b*x/a)/35 +
 9*a**(7/2)*b*log(b*x/a)/2 - 9*a**(7/2)*b*log(sqrt(1 + b*x/a) + 1
) + 156*a**(5/2)*b**2*x*sqrt(1 + b*x/a)/35 + 58*a**(3/2)*b**3*x**
2*sqrt(1 + b*x/a)/35 + 2*sqrt(a)*b**4*x**3*sqrt(1 + b*x/a)/7
```

GIAC/XCAS [A] time = 0.211838, size = 140, normalized size = 1.43

$$\frac{\frac{315\,a^4b^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+10\,(bx+a)^{\frac{7}{2}}b^2+28\,(bx+a)^{\frac{5}{2}}ab^2+70\,(bx+a)^{\frac{3}{2}}a^2b^2+280\,\sqrt{bx+a}a^3b^2-\frac{35\,\sqrt{bx+a}a^4b}{x}}{35\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/35*(315*a^4*b^2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 10*(b
*x + a)^(7/2)*b^2 + 28*(b*x + a)^(5/2)*a*b^2 + 70*(b*x + a)^(3/2)
*a^2*b^2 + 280*sqrt(b*x + a)*a^3*b^2 - 35*sqrt(b*x + a)*a^4*b/x)/
b
```

3.319 $\int \frac{(a+bx)^{9/2}}{x^3}\,dx$

Optimal. Leaf size=114

$$-\frac{63}{4}a^{5/2}b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{63}{4}a^2b^2\sqrt{a+bx}+\frac{63}{20}b^2(a+bx)^{5/2}+\frac{21}{4}ab^2(a+bx)^{3/2}-\frac{(a+bx)^{9/2}}{2x^2}-\frac{9b(a+bx)^{7/2}}{4x}$$

```
[Out] (63*a^2*b^2*Sqrt[a + b*x])/4 + (21*a*b^2*(a + b*x)^(3/2))/4 + (63
*b^2*(a + b*x)^(5/2))/20 - (9*b*(a + b*x)^(7/2))/(4*x) - (a + b*x
)^(9/2)/(2*x^2) - (63*a^(5/2)*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])
/4
```

Rubi [A] time = 0.110132, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{63}{4}a^{5/2}b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{63}{4}a^2b^2\sqrt{a+bx}+\frac{63}{20}b^2(a+bx)^{5/2}+\frac{21}{4}ab^2(a+bx)^{3/2}-\frac{(a+bx)^{9/2}}{2x^2}-\frac{9b(a+bx)^{7/2}}{4x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^3,x]
```

```
[Out] (63*a^2*b^2*Sqrt[a + b*x])/4 + (21*a*b^2*(a + b*x)^(3/2))/4 + (63
*b^2*(a + b*x)^(5/2))/20 - (9*b*(a + b*x)^(7/2))/(4*x) - (a + b*x
)^(9/2)/(2*x^2) - (63*a^(5/2)*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])
/4
```

Rubi in Sympy [A] time = 14.6117, size = 105, normalized size = 0.92

$$-\frac{63a^{\frac{5}{2}}b^2\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4}+\frac{63a^2b^2\sqrt{a+bx}}{4}+\frac{21ab^2\left(a+bx\right)^{\frac{3}{2}}}{4}+\frac{63b^2\left(a+bx\right)^{\frac{5}{2}}}{20}-\frac{9b\left(a+bx\right)^{\frac{7}{2}}}{4x}-\frac{\left(a+bx\right)^{\frac{9}{2}}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**3,x)
```

```
[Out] -63*a**(5/2)*b**2*atanh(sqrt(a + b*x)/sqrt(a))/4 + 63*a**2*b**2*s
qrt(a + b*x)/4 + 21*a*b**2*(a + b*x)**(3/2)/4 + 63*b**2*(a + b*x)
```

```
**(5/2)/20 - 9*b*(a + b*x)**(7/2)/(4*x) - (a + b*x)**(9/2)/(2*x**
2)
```

Mathematica [A] time = 0.0851843, size = 86, normalized size = 0.75

$$\frac{\sqrt{a+bx}\left(-10a^4-85a^3bx+288a^2b^2x^2+56ab^3x^3+8b^4x^4\right)}{20x^2}-\frac{63}{4}a^{5/2}b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^3,x]
```

```
[Out] (Sqrt[a + b*x]*(-10*a^4 - 85*a^3*b*x + 288*a^2*b^2*x^2 + 56*a*b^3
*x^3 + 8*b^4*x^4))/(20*x^2) - (63*a^(5/2)*b^2*ArcTanh[Sqrt[a + b*
x]/Sqrt[a]])/4
```

Maple [A] time = 0.019, size = 86, normalized size = 0.8

$$2\,b^2\left(1/5\,(bx+a)^{5/2}\right.$$
$$\left.+a\,(bx+a)^{3/2}+6\,a^2\sqrt{bx+a}+a^3\left(\frac{1}{b^2x^2}\left(-\frac{17\,(bx+a)^{3/2}}{8}+\frac{15\,a\sqrt{bx+a}}{8}\right)-\frac{63}{8\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^3,x)
```

```
[Out] 2*b^2*(1/5*(b*x+a)^(5/2)+a*(b*x+a)^(3/2)+6*a^2*(b*x+a)^(1/2)+a^3*
((-17/8*(b*x+a)^(3/2)+15/8*a*(b*x+a)^(1/2))/x^2/b^2-63/8*arctanh(
(b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221428, size = 1, normalized size = 0.01

$$\left[\frac{315\, a^{\frac{5}{2}} b^{2} x^{2} \log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right) + 2\,\left(8\, b^{4} x^{4} + 56\, a b^{3} x^{3} + 288\, a^{2} b^{2} x^{2} - 85\, a^{3} b x - 10\, a^{4}\right) \sqrt{bx + a}}{40\, x^{2}}, -\frac{315\, \sqrt{-a} a^{2} b^{2} x^{2} \arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right) - \left(8\, b^{4} x^{4} + 56\, a b^{3} x^{3} + 288\, a^{2} b^{2} x^{2} - 85\, a^{3} b x - 10\, a^{4}\right) \sqrt{bx + a}}{20\, x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/40*(315*a^(5/2)*b^2*x^2*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2
*a)/x) + 2*(8*b^4*x^4 + 56*a*b^3*x^3 + 288*a^2*b^2*x^2 - 85*a^3*b
*x - 10*a^4)*sqrt(b*x + a))/x^2, -1/20*(315*sqrt(-a)*a^2*b^2*x^2*
arctan(sqrt(b*x + a)/sqrt(-a)) - (8*b^4*x^4 + 56*a*b^3*x^3 + 288*
a^2*b^2*x^2 - 85*a^3*b*x - 10*a^4)*sqrt(b*x + a))/x^2]
```

Sympy [A] time = 34.7085, size = 184, normalized size = 1.61

$$-\frac{63a^{\frac{5}{2}}b^{2}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4} - \frac{a^{5}}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{19a^{4}\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}} + \frac{203a^{3}b^{\frac{3}{2}}}{20\sqrt{x}\sqrt{\frac{a}{bx}+1}} + \frac{86a^{2}b^{\frac{5}{2}}\sqrt{x}}{5\sqrt{\frac{a}{bx}+1}} + \frac{16ab^{\frac{7}{2}}x^{\frac{3}{2}}}{5\sqrt{\frac{a}{bx}+1}} + \frac{2b^{\frac{9}{2}}x^{\frac{5}{2}}}{5\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**3,x)
```

```
[Out] -63*a**(5/2)*b**2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/4 - a**5/(2*sq
rt(b)*x**(5/2)*sqrt(a/(b*x) + 1)) - 19*a**4*sqrt(b)/(4*x**(3/2)*s
qrt(a/(b*x) + 1)) + 203*a**3*b**(3/2)/(20*sqrt(x)*sqrt(a/(b*x) +
1)) + 86*a**2*b**(5/2)*sqrt(x)/(5*sqrt(a/(b*x) + 1)) + 16*a*b**(7
/2)*x**(3/2)/(5*sqrt(a/(b*x) + 1)) + 2*b**(9/2)*x**(5/2)/(5*sqrt(
a/(b*x) + 1))
```

GIAC/XCAS [A] time = 0.210761, size = 151, normalized size = 1.32

$$\frac{\frac{315\, a^{3} b^{3} \arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} + 8\,(bx + a)^{\frac{5}{2}} b^{3} + 40\,(bx + a)^{\frac{3}{2}} a b^{3} + 240\, \sqrt{bx + a} a^{2} b^{3} - \frac{5\left(17\,(bx+a)^{\frac{3}{2}} a^{3} b^{3} - 15\, \sqrt{bx+a} a^{4} b^{3}\right)}{b^{2} x^{2}}}{20\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/20*(315*a^3*b^3*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 8*(b*
x + a)^(5/2)*b^3 + 40*(b*x + a)^(3/2)*a*b^3 + 240*sqrt(b*x + a)*a
^2*b^3 - 5*(17*(b*x + a)^(3/2)*a^3*b^3 - 15*sqrt(b*x + a)*a^4*b^3
)/(b^2*x^2))/b
```

3.320 $\int \frac{(a+bx)^{9/2}}{x^4}\,dx$

Optimal. Leaf size=114

$$-\frac{105}{8}a^{3/2}b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{35}{8}b^3(a+bx)^{3/2}+\frac{105}{8}ab^3\sqrt{a+bx}-\frac{21b^2(a+bx)^{5/2}}{8x}-\frac{(a+bx)^{9/2}}{3x^3}-\frac{3b(a+bx)^{7/2}}{4x^2}$$

```
[Out] (105*a*b^3*Sqrt[a + b*x])/8 + (35*b^3*(a + b*x)^(3/2))/8 - (21*b^
2*(a + b*x)^(5/2))/(8*x) - (3*b*(a + b*x)^(7/2))/(4*x^2) - (a + b
*x)^(9/2)/(3*x^3) - (105*a^(3/2)*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a
]])/8
```

Rubi [A] time = 0.109339, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{105}{8}a^{3/2}b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)+\frac{35}{8}b^3(a+bx)^{3/2}+\frac{105}{8}ab^3\sqrt{a+bx}-\frac{21b^2(a+bx)^{5/2}}{8x}-\frac{(a+bx)^{9/2}}{3x^3}-\frac{3b(a+bx)^{7/2}}{4x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^4,x]
```

```
[Out] (105*a*b^3*Sqrt[a + b*x])/8 + (35*b^3*(a + b*x)^(3/2))/8 - (21*b^
2*(a + b*x)^(5/2))/(8*x) - (3*b*(a + b*x)^(7/2))/(4*x^2) - (a + b
*x)^(9/2)/(3*x^3) - (105*a^(3/2)*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a
]])/8
```

Rubi in Sympy [A] time = 14.7823, size = 105, normalized size = 0.92

$$-\frac{105a^{\frac{3}{2}}b^3\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8}+\frac{105ab^3\sqrt{a+bx}}{8}+\frac{35b^3\,(a+bx)^{\frac{3}{2}}}{8}-\frac{21b^2\,(a+bx)^{\frac{5}{2}}}{8x}-\frac{3b\,(a+bx)^{\frac{7}{2}}}{4x^2}-\frac{(a+bx)^{\frac{9}{2}}}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**4,x)
```

```
[Out] -105*a**(3/2)*b**3*atanh(sqrt(a + b*x)/sqrt(a))/8 + 105*a*b**3*sq
rt(a + b*x)/8 + 35*b**3*(a + b*x)**(3/2)/8 - 21*b**2*(a + b*x)**(
```

```
5/2)/(8*x) - 3*b*(a + b*x)**(7/2)/(4*x**2) - (a + b*x)**(9/2)/(3*
x**3)
```

Mathematica [A] time = 0.0833607, size = 85, normalized size = 0.75

$$\frac{1}{24}\left(\frac{\sqrt{a+bx}\left(-8a^4-50a^3bx-165a^2b^2x^2+208ab^3x^3+16b^4x^4\right)}{x^3}-315a^{3/2}b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^4,x]
```

```
[Out] ((Sqrt[a + b*x]*(-8*a^4 - 50*a^3*b*x - 165*a^2*b^2*x^2 + 208*a*b^
3*x^3 + 16*b^4*x^4))/x^3 - 315*a^(3/2)*b^3*ArcTanh[Sqrt[a + b*x]/
Sqrt[a]])/24
```

Maple [A] time = 0.016, size = 87, normalized size = 0.8

$$2\,b^3\left(1/3\,\left(bx+a\right)^{3/2}+4\,a\sqrt{bx+a}+a^2\left(\frac{1}{b^3x^3}\left(-\frac{55\,\left(bx+a\right)^{5/2}}{16}+\frac{35\,a\left(bx+a\right)^{3/2}}{6}-\frac{41\,a^2\sqrt{bx+a}}{16}\right)-\frac{105}{16\,\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^4,x)
```

```
[Out] 2*b^3*(1/3*(b*x+a)^(3/2)+4*a*(b*x+a)^(1/2)+a^2*((-55/16*(b*x+a)^(
5/2)+35/6*a*(b*x+a)^(3/2)-41/16*a^2*(b*x+a)^(1/2))/x^3/b^3-105/16
*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21845, size = 1, normalized size = 0.01

$$\left[\frac{315\,a^{\frac{3}{2}}b^3x^3\log\left(\frac{bx-2\,\sqrt{bx+a}\sqrt{a}+2\,a}{x}\right)+2\left(16\,b^4x^4+208\,ab^3x^3-165\,a^2b^2x^2-50\,a^3bx-8\,a^4\right)\sqrt{bx+a}}{48\,x^3},\ -\frac{315\,\sqrt{-a}ab^3x^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(16\,b^4x^4+208\,ab^3x^3-165\,a^2b^2x^2-50\,a^3bx-8\,a^4\right)\sqrt{bx+a}}{24\,x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/48*(315*a^(3/2)*b^3*x^3*log((b*x - 2*sqrt(b*x + a)*sqrt(a) + 2
*a)/x) + 2*(16*b^4*x^4 + 208*a*b^3*x^3 - 165*a^2*b^2*x^2 - 50*a^3
*b*x - 8*a^4)*sqrt(b*x + a))/x^3, -1/24*(315*sqrt(-a)*a*b^3*x^3*a
rctan(sqrt(b*x + a)/sqrt(-a)) - (16*b^4*x^4 + 208*a*b^3*x^3 - 165
*a^2*b^2*x^2 - 50*a^3*b*x - 8*a^4)*sqrt(b*x + a))/x^3]
```

Sympy [A] time = 31.8207, size = 184, normalized size = 1.61

$$-\frac{105a^{\frac{3}{2}}b^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{8}-\frac{a^5}{3\sqrt{b}x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{29a^4\sqrt{b}}{12x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{215a^3b^{\frac{3}{2}}}{24x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{43a^2b^{\frac{5}{2}}}{24\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{28ab^{\frac{7}{2}}\sqrt{x}}{3\sqrt{\frac{a}{bx}+1}}+\frac{2b^{\frac{9}{2}}x^{\frac{3}{2}}}{3\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**4,x)
```

```
[Out] -105*a**(3/2)*b**3*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/8 - a**5/(3*s
qrt(b)*x**(7/2)*sqrt(a/(b*x) + 1)) - 29*a**4*sqrt(b)/(12*x**(5/2)
*sqrt(a/(b*x) + 1)) - 215*a**3*b**(3/2)/(24*x**(3/2)*sqrt(a/(b*x)
 + 1)) + 43*a**2*b**(5/2)/(24*sqrt(x)*sqrt(a/(b*x) + 1)) + 28*a*b
**(7/2)*sqrt(x)/(3*sqrt(a/(b*x) + 1)) + 2*b**(9/2)*x**(3/2)/(3*sq
rt(a/(b*x) + 1))
```

GIAC/XCAS [A] time = 0.213985, size = 151, normalized size = 1.32

$$\frac{\frac{315\,a^2b^4\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+16\,(bx+a)^{\frac{3}{2}}b^4+192\,\sqrt{bx+a}ab^4-\frac{165\,(bx+a)^{\frac{5}{2}}a^2b^4-280\,(bx+a)^{\frac{3}{2}}a^3b^4+123\,\sqrt{bx+a}a^4b^4}{b^3x^3}}{24\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^4,x, algorithm="giac")
```

```
[Out] 1/24*(315*a^2*b^4*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 16*(b
*x + a)^(3/2)*b^4 + 192*sqrt(b*x + a)*a*b^4 - (165*(b*x + a)^(5/2
)*a^2*b^4 - 280*(b*x + a)^(3/2)*a^3*b^4 + 123*sqrt(b*x + a)*a^4*b
^4)/(b^3*x^3))/b
```

3.321 $\int \frac{(a+bx)^{9/2}}{x^5}\,dx$

Optimal. Leaf size=116

$$\frac{315}{64}b^4\sqrt{a+bx}-\frac{315}{64}\sqrt{a}b^4\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)-\frac{105b^3(a+bx)^{3/2}}{64x}-\frac{21b^2(a+bx)^{5/2}}{32x^2}-\frac{(a+bx)^{9/2}}{4x^4}-\frac{3b(a+bx)^{7/2}}{8x^3}$$

```
[Out] (315*b^4*Sqrt[a + b*x])/64 - (105*b^3*(a + b*x)^(3/2))/(64*x) - (
21*b^2*(a + b*x)^(5/2))/(32*x^2) - (3*b*(a + b*x)^(7/2))/(8*x^3)
- (a + b*x)^(9/2)/(4*x^4) - (315*Sqrt[a]*b^4*ArcTanh[Sqrt[a + b*x
]/Sqrt[a]])/64
```

Rubi [A] time = 0.111505, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{315}{64}b^4\sqrt{a+bx}-\frac{315}{64}\sqrt{a}b^4\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)-\frac{105b^3(a+bx)^{3/2}}{64x}-\frac{21b^2(a+bx)^{5/2}}{32x^2}-\frac{(a+bx)^{9/2}}{4x^4}-\frac{3b(a+bx)^{7/2}}{8x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^5,x]
```

```
[Out] (315*b^4*Sqrt[a + b*x])/64 - (105*b^3*(a + b*x)^(3/2))/(64*x) - (
21*b^2*(a + b*x)^(5/2))/(32*x^2) - (3*b*(a + b*x)^(7/2))/(8*x^3)
- (a + b*x)^(9/2)/(4*x^4) - (315*Sqrt[a]*b^4*ArcTanh[Sqrt[a + b*x
]/Sqrt[a]])/64
```

Rubi in Sympy [A] time = 15.2699, size = 107, normalized size = 0.92

$$-\frac{315\sqrt{a}b^4\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{64}+\frac{315b^4\sqrt{a+bx}}{64}-\frac{105b^3\left(a+bx\right)^{\frac{3}{2}}}{64x}-\frac{21b^2\left(a+bx\right)^{\frac{5}{2}}}{32x^2}-\frac{3b\left(a+bx\right)^{\frac{7}{2}}}{8x^3}-\frac{\left(a+bx\right)^{\frac{9}{2}}}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**5,x)
```

```
[Out] -315*sqrt(a)*b**4*atanh(sqrt(a + b*x)/sqrt(a))/64 + 315*b**4*sqrt
(a + b*x)/64 - 105*b**3*(a + b*x)**(3/2)/(64*x) - 21*b**2*(a + b*
```

```
x)**(5/2)/(32*x**2) - 3*b*(a + b*x)**(7/2)/(8*x**3) - (a + b*x)**
(9/2)/(4*x**4)
```

Mathematica [A] time = 0.0800793, size = 86, normalized size = 0.74

$$\frac{1}{64}\left(-\frac{\sqrt{a+bx}\left(16a^4+88a^3bx+210a^2b^2x^2+325ab^3x^3-128b^4x^4\right)}{x^4}-315\sqrt{a}b^4\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^5,x]
```

```
[Out] (-((Sqrt[a + b*x]*(16*a^4 + 88*a^3*b*x + 210*a^2*b^2*x^2 + 325*a*
b^3*x^3 - 128*b^4*x^4))/x^4) - 315*Sqrt[a]*b^4*ArcTanh[Sqrt[a + b
*x]/Sqrt[a]])/64
```

Maple [A] time = 0.021, size = 85, normalized size = 0.7

$$2\,b^4\left(\sqrt{bx+a}+a\left(\frac{1}{x^4b^4}\left(-\frac{325\,(bx+a)^{7/2}}{128}+\frac{765\,a\,(bx+a)^{5/2}}{128}-\frac{643\,a^2\,(bx+a)^{3/2}}{128}+\frac{187\,\sqrt{bx+a}a^3}{128}\right)-\frac{315}{128\,\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^5,x)
```

```
[Out] 2*b^4*((b*x+a)^(1/2)+a*((-325/128*(b*x+a)^(7/2)+765/128*a*(b*x+a)
^(5/2)-643/128*a^2*(b*x+a)^(3/2)+187/128*(b*x+a)^(1/2)*a^3)/x^4/b
^4-315/128*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221874, size = 1, normalized size = 0.01

$$\left[\frac{315\sqrt{a}b^4x^4\log\left(\frac{bx-2\sqrt{bx+a}\sqrt{a}+2a}{x}\right)+2\left(128b^4x^4-325ab^3x^3-210a^2b^2x^2-88a^3bx-16a^4\right)\sqrt{bx+a}}{128x^4},\right.$$
$$\left.-\frac{315\sqrt{-a}b^4x^4\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)-\left(128b^4x^4-325ab^3x^3-210a^2b^2x^2-88a^3bx-16a^4\right)\sqrt{bx+a}}{64x^4}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/128*(315*sqrt(a)*b^4*x^4*log((b*x - 2*sqrt(b*x + a)*sqrt(a) +
2*a)/x) + 2*(128*b^4*x^4 - 325*a*b^3*x^3 - 210*a^2*b^2*x^2 - 88*a
^3*b*x - 16*a^4)*sqrt(b*x + a))/x^4, -1/64*(315*sqrt(-a)*b^4*x^4*
arctan(sqrt(b*x + a)/sqrt(-a)) - (128*b^4*x^4 - 325*a*b^3*x^3 - 2
10*a^2*b^2*x^2 - 88*a^3*b*x - 16*a^4)*sqrt(b*x + a))/x^4]
```

Sympy [A] time = 33.399, size = 182, normalized size = 1.57

$$-\frac{315\sqrt{a}b^4\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{64}-\frac{a^5}{4\sqrt{b}x^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{13a^4\sqrt{b}}{8x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{149a^3b^{\frac{3}{2}}}{32x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{535a^2b^{\frac{5}{2}}}{64x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{197ab^{\frac{7}{2}}}{64\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{2b^{\frac{9}{2}}\sqrt{x}}{\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**5,x)
```

```
[Out] -315*sqrt(a)*b**4*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/64 - a**5/(4*s
qrt(b)*x**(9/2)*sqrt(a/(b*x) + 1)) - 13*a**4*sqrt(b)/(8*x**(7/2)*
sqrt(a/(b*x) + 1)) - 149*a**3*b**(3/2)/(32*x**(5/2)*sqrt(a/(b*x)
+ 1)) - 535*a**2*b**(5/2)/(64*x**(3/2)*sqrt(a/(b*x) + 1)) - 197*a
*b**(7/2)/(64*sqrt(x)*sqrt(a/(b*x) + 1)) + 2*b**(9/2)*sqrt(x)/sqr
t(a/(b*x) + 1)
```

GIAC/XCAS [A] time = 0.213852, size = 149, normalized size = 1.28

$$\frac{\frac{315\,ab^5\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+128\,\sqrt{bx+a}b^5-\frac{325\,(bx+a)^{\frac{7}{2}}\,ab^5-765\,(bx+a)^{\frac{5}{2}}\,a^2b^5+643\,(bx+a)^{\frac{3}{2}}\,a^3b^5-187\,\sqrt{bx+a}a^4b^5}{b^4x^4}}{64\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/64*(315*a*b^5*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) + 128*sqr
t(b*x + a)*b^5 - (325*(b*x + a)^(7/2)*a*b^5 - 765*(b*x + a)^(5/2)
*a^2*b^5 + 643*(b*x + a)^(3/2)*a^3*b^5 - 187*sqrt(b*x + a)*a^4*b^
5)/(b^4*x^4))/b
```

3.322 $\int \frac{(a+bx)^{9/2}}{x^6}\,dx$

Optimal. Leaf size=119

$$-\frac{63b^5\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{128\sqrt{a}}-\frac{63b^4\sqrt{a+bx}}{128x}-\frac{21b^3(a+bx)^{3/2}}{64x^2}-\frac{21b^2(a+bx)^{5/2}}{80x^3}-\frac{(a+bx)^{9/2}}{5x^5}-\frac{9b(a+bx)^{7/2}}{40x^4}$$

```
[Out] (-63*b^4*Sqrt[a + b*x])/(128*x) - (21*b^3*(a + b*x)^(3/2))/(64*x^
2) - (21*b^2*(a + b*x)^(5/2))/(80*x^3) - (9*b*(a + b*x)^(7/2))/(4
0*x^4) - (a + b*x)^(9/2)/(5*x^5) - (63*b^5*ArcTanh[Sqrt[a + b*x]/
Sqrt[a]])/(128*Sqrt[a])
```

Rubi [A] time = 0.117539, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{63b^5\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{128\sqrt{a}}-\frac{63b^4\sqrt{a+bx}}{128x}-\frac{21b^3(a+bx)^{3/2}}{64x^2}-\frac{21b^2(a+bx)^{5/2}}{80x^3}-\frac{(a+bx)^{9/2}}{5x^5}-\frac{9b(a+bx)^{7/2}}{40x^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^6,x]
```

```
[Out] (-63*b^4*Sqrt[a + b*x])/(128*x) - (21*b^3*(a + b*x)^(3/2))/(64*x^
2) - (21*b^2*(a + b*x)^(5/2))/(80*x^3) - (9*b*(a + b*x)^(7/2))/(4
0*x^4) - (a + b*x)^(9/2)/(5*x^5) - (63*b^5*ArcTanh[Sqrt[a + b*x]/
Sqrt[a]])/(128*Sqrt[a])
```

Rubi in Sympy [A] time = 15.7766, size = 112, normalized size = 0.94

$$-\frac{63b^4\sqrt{a+bx}}{128x}-\frac{21b^3\left(a+bx\right)^{\frac{3}{2}}}{64x^2}-\frac{21b^2\left(a+bx\right)^{\frac{5}{2}}}{80x^3}-\frac{9b\left(a+bx\right)^{\frac{7}{2}}}{40x^4}-\frac{\left(a+bx\right)^{\frac{9}{2}}}{5x^5}-\frac{63b^5\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{128\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**6,x)
```

```
[Out] -63*b**4*sqrt(a + b*x)/(128*x) - 21*b**3*(a + b*x)**(3/2)/(64*x**
2) - 21*b**2*(a + b*x)**(5/2)/(80*x**3) - 9*b*(a + b*x)**(7/2)/(4
0*x**4) - (a + b*x)**(9/2)/(5*x**5) - 63*b**5*atanh(sqrt(a + b*x)
/sqrt(a))/(128*sqrt(a))
```

Mathematica [A] time = 0.0906934, size = 86, normalized size = 0.72

$$\frac{1}{640}\left(-\frac{\sqrt{a+bx}\,(128a^4+656a^3bx+1368a^2b^2x^2+1490ab^3x^3+965b^4x^4)}{x^5}-\frac{315b^5\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^6,x]
```

```
[Out] (-((Sqrt[a + b*x]*(128*a^4 + 656*a^3*b*x + 1368*a^2*b^2*x^2 + 149
0*a*b^3*x^3 + 965*b^4*x^4))/x^5) - (315*b^5*ArcTanh[Sqrt[a + b*x]
/Sqrt[a]])/Sqrt[a])/640
```

Maple [A] time = 0.018, size = 87, normalized size = 0.7

$$2\,b^5\left(\frac{1}{b^5x^5}\left(-\frac{193\,(bx+a)^{9/2}}{256}+\frac{237\,a\,(bx+a)^{7/2}}{128}-\frac{21\,a^2\,(bx+a)^{5/2}}{10}+\frac{147\,a^3\,(bx+a)^{3/2}}{128}-\frac{63\,a^4\sqrt{bx+a}}{256}\right)-\frac{63}{256\,\sqrt{a}}\mathit{Artanh}\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^6,x)
```

```
[Out] 2*b^5*((-193/256*(b*x+a)^(9/2)+237/128*a*(b*x+a)^(7/2)-21/10*a^2*
(b*x+a)^(5/2)+147/128*a^3*(b*x+a)^(3/2)-63/256*a^4*(b*x+a)^(1/2))
/x^5/b^5-63/256*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222017, size = 1, normalized size = 0.01

$$\left[\frac{315\, b^{5} x^{5} \log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right) - 2\,\left(965\, b^{4} x^{4} + 1490\, ab^{3} x^{3} + 1368\, a^{2} b^{2} x^{2} + 656\, a^{3} bx + 128\, a^{4}\right)\sqrt{bx+a}\sqrt{a}}{1280\,\sqrt{a}x^{5}}, \frac{315\, b^{5} x^{5} \text{ar}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/1280*(315*b^5*x^5*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a
)/x) - 2*(965*b^4*x^4 + 1490*a*b^3*x^3 + 1368*a^2*b^2*x^2 + 656*a
^3*b*x + 128*a^4)*sqrt(b*x + a)*sqrt(a))/(sqrt(a)*x^5), 1/640*(31
5*b^5*x^5*arctan(a/(sqrt(b*x + a)*sqrt(-a))) - (965*b^4*x^4 + 149
0*a*b^3*x^3 + 1368*a^2*b^2*x^2 + 656*a^3*b*x + 128*a^4)*sqrt(b*x
+ a)*sqrt(-a))/(sqrt(-a)*x^5)]
```

Sympy [A] time = 36.351, size = 158, normalized size = 1.33

$$-\frac{a^{4}\sqrt{b}\sqrt{\frac{a}{bx}+1}}{5x^{\frac{9}{2}}} - \frac{41a^{3}b^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{40x^{\frac{7}{2}}} - \frac{171a^{2}b^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}{80x^{\frac{5}{2}}} - \frac{149ab^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}{64x^{\frac{3}{2}}} - \frac{193b^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}}{128\sqrt{x}} - \frac{63b^{5}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{128\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**6,x)
```

```
[Out] -a**4*sqrt(b)*sqrt(a/(b*x) + 1)/(5*x**(9/2)) - 41*a**3*b**(3/2)*s
qrt(a/(b*x) + 1)/(40*x**(7/2)) - 171*a**2*b**(5/2)*sqrt(a/(b*x) +
 1)/(80*x**(5/2)) - 149*a*b**(7/2)*sqrt(a/(b*x) + 1)/(64*x**(3/2)
) - 193*b**(9/2)*sqrt(a/(b*x) + 1)/(128*sqrt(x)) - 63*b**5*asinh(
sqrt(a)/(sqrt(b)*sqrt(x)))/(128*sqrt(a))
```

GIAC/XCAS [A] time = 0.215548, size = 147, normalized size = 1.24

$$\frac{\frac{315\, b^{6} \arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} - \frac{965\,(bx+a)^{\frac{9}{2}} b^{6} - 2370\,(bx+a)^{\frac{7}{2}} ab^{6} + 2688\,(bx+a)^{\frac{5}{2}} a^{2} b^{6} - 1470\,(bx+a)^{\frac{3}{2}} a^{3} b^{6} + 315\,\sqrt{bx+a}a^{4} b^{6}}{b^{5} x^{5}}}{640\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^6,x, algorithm="giac")
```

```
[Out] 1/640*(315*b^6*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a) - (965*(b*
x + a)^(9/2)*b^6 - 2370*(b*x + a)^(7/2)*a*b^6 + 2688*(b*x + a)^(5
/2)*a^2*b^6 - 1470*(b*x + a)^(3/2)*a^3*b^6 + 315*sqrt(b*x + a)*a^
4*b^6)/(b^5*x^5))/b
```

3.323 $\int \frac{(a+bx)^{9/2}}{x^7}\,dx$

Optimal. Leaf size=141

$$\frac{21b^6\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{512a^{3/2}}-\frac{21b^5\sqrt{a+bx}}{512ax}-\frac{21b^4\sqrt{a+bx}}{256x^2}-\frac{7b^3(a+bx)^{3/2}}{64x^3}-\frac{21b^2(a+bx)^{5/2}}{160x^4}-\frac{(a+bx)^{9/2}}{6x^6}-\frac{3b(a+bx)^{7/2}}{20x^5}$$

```
[Out] (-21*b^4*Sqrt[a + b*x])/(256*x^2) - (21*b^5*Sqrt[a + b*x])/(512*a
*x) - (7*b^3*(a + b*x)^(3/2))/(64*x^3) - (21*b^2*(a + b*x)^(5/2))
/(160*x^4) - (3*b*(a + b*x)^(7/2))/(20*x^5) - (a + b*x)^(9/2)/(6*
x^6) + (21*b^6*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(512*a^(3/2))
```

Rubi [A] time = 0.145196, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{21b^6\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{512a^{3/2}}-\frac{21b^5\sqrt{a+bx}}{512ax}-\frac{21b^4\sqrt{a+bx}}{256x^2}-\frac{7b^3(a+bx)^{3/2}}{64x^3}-\frac{21b^2(a+bx)^{5/2}}{160x^4}-\frac{(a+bx)^{9/2}}{6x^6}-\frac{3b(a+bx)^{7/2}}{20x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^7,x]
```

```
[Out] (-21*b^4*Sqrt[a + b*x])/(256*x^2) - (21*b^5*Sqrt[a + b*x])/(512*a
*x) - (7*b^3*(a + b*x)^(3/2))/(64*x^3) - (21*b^2*(a + b*x)^(5/2))
/(160*x^4) - (3*b*(a + b*x)^(7/2))/(20*x^5) - (a + b*x)^(9/2)/(6*
x^6) + (21*b^6*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(512*a^(3/2))
```

Rubi in Sympy [A] time = 20.0939, size = 131, normalized size = 0.93

$$-\frac{21b^4\sqrt{a+bx}}{256x^2}-\frac{7b^3\left(a+bx\right)^{\frac{3}{2}}}{64x^3}-\frac{21b^2\left(a+bx\right)^{\frac{5}{2}}}{160x^4}-\frac{3b\left(a+bx\right)^{\frac{7}{2}}}{20x^5}-\frac{\left(a+bx\right)^{\frac{9}{2}}}{6x^6}-\frac{21b^5\sqrt{a+bx}}{512ax}+\frac{21b^6\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{512a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**7,x)
```

```
[Out] -21*b**4*sqrt(a + b*x)/(256*x**2) - 7*b**3*(a + b*x)**(3/2)/(64*x
**3) - 21*b**2*(a + b*x)**(5/2)/(160*x**4) - 3*b*(a + b*x)**(7/2)
/(20*x**5) - (a + b*x)**(9/2)/(6*x**6) - 21*b**5*sqrt(a + b*x)/(5
12*a*x) + 21*b**6*atanh(sqrt(a + b*x)/sqrt(a))/(512*a**(3/2))
```

Mathematica [A] time = 0.0970179, size = 100, normalized size = 0.71

$$\frac{21b^6\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{512a^{3/2}}-\frac{\sqrt{a+bx}\left(1280a^5+6272a^4bx+12144a^3b^2x^2+11432a^2b^3x^3+4910ab^4x^4+315b^5x^5\right)}{7680ax^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^7,x]
```

```
[Out] -(Sqrt[a + b*x]*(1280*a^5 + 6272*a^4*b*x + 12144*a^3*b^2*x^2 + 11
432*a^2*b^3*x^3 + 4910*a*b^4*x^4 + 315*b^5*x^5))/(7680*a*x^6) + (
21*b^6*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(512*a^(3/2))
```

Maple [A] time = 0.02, size = 99, normalized size = 0.7

$$2\,b^6\left(\frac{1}{x^6b^6}\left(-\frac{21\,(bx+a)^{11/2}}{1024\,a}-\frac{667\,(bx+a)^{9/2}}{3072}+\frac{843\,a\,(bx+a)^{7/2}}{2560}-\frac{693\,a^2\,(bx+a)^{5/2}}{2560}+\frac{119\,a^3\,(bx+a)^{3/2}}{1024}-\frac{21\,a^4\sqrt{bx+}}{1024}\right.\right.$$
$$\left.\left.+\frac{21}{1024\,a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^7,x)
```

```
[Out] 2*b^6*((-21/1024/a*(b*x+a)^(11/2)-667/3072*(b*x+a)^(9/2)+843/2560
*a*(b*x+a)^(7/2)-693/2560*a^2*(b*x+a)^(5/2)+119/1024*a^3*(b*x+a)^
(3/2)-21/1024*a^4*(b*x+a)^(1/2))/x^6/b^6+21/1024*arctanh((b*x+a)^
(1/2)/a^(1/2))/a^(3/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.231354, size = 1, normalized size = 0.01

$$\left[\frac{315\,b^{6}x^{6}\log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right)-2\,\left(315\,b^{5}x^{5}+4910\,ab^{4}x^{4}+11432\,a^{2}b^{3}x^{3}+12144\,a^{3}b^{2}x^{2}+6272\,a^{4}bx+1280\,a^{5}\right)\sqrt{bx}}{15360\,a^{\frac{3}{2}}x^{6}}\right.$$

$$-\frac{315\,b^{6}x^{6}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\left(315\,b^{5}x^{5}+4910\,ab^{4}x^{4}+11432\,a^{2}b^{3}x^{3}+12144\,a^{3}b^{2}x^{2}+6272\,a^{4}bx+1280\,a^{5}\right)\sqrt{bx+a}\sqrt{-}}{7680\,\sqrt{-a}ax^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/15360*(315*b^6*x^6*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x + a)*
a)/x) - 2*(315*b^5*x^5 + 4910*a*b^4*x^4 + 11432*a^2*b^3*x^3 + 121
44*a^3*b^2*x^2 + 6272*a^4*b*x + 1280*a^5)*sqrt(b*x + a)*sqrt(a))/
(a^(3/2)*x^6), -1/7680*(315*b^6*x^6*arctan(a/(sqrt(b*x + a)*sqrt(
-a))) + (315*b^5*x^5 + 4910*a*b^4*x^4 + 11432*a^2*b^3*x^3 + 12144
*a^3*b^2*x^2 + 6272*a^4*b*x + 1280*a^5)*sqrt(b*x + a)*sqrt(-a))/(
sqrt(-a)*a*x^6)]
```

Sympy [A] time = 52.0609, size = 209, normalized size = 1.48

$$-\frac{a^{5}}{6\sqrt{b}x^{\frac{13}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{59a^{4}\sqrt{b}}{60x^{\frac{11}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{1151a^{3}b^{\frac{3}{2}}}{480x^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{2947a^{2}b^{\frac{5}{2}}}{960x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{8171ab^{\frac{7}{2}}}{3840x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{1045b^{\frac{9}{2}}}{1536x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{21b^{\frac{11}{2}}}{512a\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{21b^{6}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{512a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**7,x)
```

```
[Out] -a**5/(6*sqrt(b)*x**(13/2)*sqrt(a/(b*x) + 1)) - 59*a**4*sqrt(b)/(
60*x**(11/2)*sqrt(a/(b*x) + 1)) - 1151*a**3*b**(3/2)/(480*x**(9/2
)*sqrt(a/(b*x) + 1)) - 2947*a**2*b**(5/2)/(960*x**(7/2)*sqrt(a/(b
*x) + 1)) - 8171*a*b**(7/2)/(3840*x**(5/2)*sqrt(a/(b*x) + 1)) - 1
045*b**(9/2)/(1536*x**(3/2)*sqrt(a/(b*x) + 1)) - 21*b**(11/2)/(51
2*a*sqrt(x)*sqrt(a/(b*x) + 1)) + 21*b**6*asinh(sqrt(a)/(sqrt(b)*s
qrt(x)))/(512*a**(3/2))
```

GIAC/XCAS [A] time = 0.214301, size = 174, normalized size = 1.23

$$-\frac{\frac{315\, b^{7} \arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a} + \frac{315\, (bx+a)^{\frac{11}{2}} b^{7} + 3335\, (bx+a)^{\frac{9}{2}} ab^{7} - 5058\, (bx+a)^{\frac{7}{2}} a^{2} b^{7} + 4158\, (bx+a)^{\frac{5}{2}} a^{3} b^{7} - 1785\, (bx+a)^{\frac{3}{2}} a^{4} b^{7} + 315\, \sqrt{bx+a} a^{5} b^{7}}{ab^{6} x^{6}}}{7680\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^7,x, algorithm="giac")
```

```
[Out] -1/7680*(315*b^7*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a) + (3
15*(b*x + a)^(11/2)*b^7 + 3335*(b*x + a)^(9/2)*a*b^7 - 5058*(b*x
+ a)^(7/2)*a^2*b^7 + 4158*(b*x + a)^(5/2)*a^3*b^7 - 1785*(b*x + a
)^(3/2)*a^4*b^7 + 315*sqrt(b*x + a)*a^5*b^7)/(a*b^6*x^6))/b
```

3.324 $\int \frac{(a+bx)^{9/2}}{x^8}\,dx$

Optimal. Leaf size=163

$$-\frac{9b^7\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{1024a^{5/2}}+\frac{9b^6\sqrt{a+bx}}{1024a^2x}-\frac{3b^5\sqrt{a+bx}}{512ax^2}-\frac{3b^4\sqrt{a+bx}}{128x^3}-\frac{3b^3(a+bx)^{3/2}}{64x^4}-\frac{3b^2(a+bx)^{5/2}}{40x^5}-\frac{(a+bx)^{9/2}}{7x^7}-\frac{3b(a+bx)^{7/2}}{28x^6}$$

```
[Out] (-3*b^4*Sqrt[a + b*x])/(128*x^3) - (3*b^5*Sqrt[a + b*x])/(512*a*x
^2) + (9*b^6*Sqrt[a + b*x])/(1024*a^2*x) - (3*b^3*(a + b*x)^(3/2)
)/(64*x^4) - (3*b^2*(a + b*x)^(5/2))/(40*x^5) - (3*b*(a + b*x)^(7
/2))/(28*x^6) - (a + b*x)^(9/2)/(7*x^7) - (9*b^7*ArcTanh[Sqrt[a +
 b*x]/Sqrt[a]])/(1024*a^(5/2))
```

Rubi [A] time = 0.181111, antiderivative size = 163, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{9b^7\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{1024a^{5/2}}+\frac{9b^6\sqrt{a+bx}}{1024a^2x}-\frac{3b^5\sqrt{a+bx}}{512ax^2}-\frac{3b^4\sqrt{a+bx}}{128x^3}-\frac{3b^3(a+bx)^{3/2}}{64x^4}-\frac{3b^2(a+bx)^{5/2}}{40x^5}-\frac{(a+bx)^{9/2}}{7x^7}-\frac{3b(a+bx)^{7/2}}{28x^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/x^8,x]
```

```
[Out] (-3*b^4*Sqrt[a + b*x])/(128*x^3) - (3*b^5*Sqrt[a + b*x])/(512*a*x
^2) + (9*b^6*Sqrt[a + b*x])/(1024*a^2*x) - (3*b^3*(a + b*x)^(3/2)
)/(64*x^4) - (3*b^2*(a + b*x)^(5/2))/(40*x^5) - (3*b*(a + b*x)^(7
/2))/(28*x^6) - (a + b*x)^(9/2)/(7*x^7) - (9*b^7*ArcTanh[Sqrt[a +
 b*x]/Sqrt[a]])/(1024*a^(5/2))
```

Rubi in Sympy [A] time = 25.4724, size = 153, normalized size = 0.94

$$-\frac{3b^4\sqrt{a+bx}}{128x^3}-\frac{3b^3\left(a+bx\right)^{\frac{3}{2}}}{64x^4}-\frac{3b^2\left(a+bx\right)^{\frac{5}{2}}}{40x^5}-\frac{3b\left(a+bx\right)^{\frac{7}{2}}}{28x^6}-\frac{\left(a+bx\right)^{\frac{9}{2}}}{7x^7}-\frac{3b^5\sqrt{a+bx}}{512ax^2}+\frac{9b^6\sqrt{a+bx}}{1024a^2x}-\frac{9b^7\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{1024a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/x**8,x)
```

```
[Out] -3*b**4*sqrt(a + b*x)/(128*x**3) - 3*b**3*(a + b*x)**(3/2)/(64*x*
*4) - 3*b**2*(a + b*x)**(5/2)/(40*x**5) - 3*b*(a + b*x)**(7/2)/(2
8*x**6) - (a + b*x)**(9/2)/(7*x**7) - 3*b**5*sqrt(a + b*x)/(512*a
*x**2) + 9*b**6*sqrt(a + b*x)/(1024*a**2*x) - 9*b**7*atanh(sqrt(a
 + b*x)/sqrt(a))/(1024*a**(5/2))
```

Mathematica [A] time = 0.118012, size = 111, normalized size = 0.68

$$-\frac{9b^7\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{1024a^{5/2}}-\frac{\sqrt{a+bx}\left(5120a^6+24320a^5bx+44928a^4b^2x^2+39056a^3b^3x^3+14168a^2b^4x^4+210ab^5x^5-315b^6x^6\right)}{35840a^2x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/x^8,x]
```

```
[Out] -(Sqrt[a + b*x]*(5120*a^6 + 24320*a^5*b*x + 44928*a^4*b^2*x^2 + 3
9056*a^3*b^3*x^3 + 14168*a^2*b^4*x^4 + 210*a*b^5*x^5 - 315*b^6*x^
6))/(35840*a^2*x^7) - (9*b^7*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(102
4*a^(5/2))
```

Maple [A] time = 0.022, size = 111, normalized size = 0.7

$$2\,b^7\left(\frac{1}{b^7x^7}\left(\frac{9\,(bx+a)^{13/2}}{2048\,a^2}-\frac{15\,(bx+a)^{11/2}}{512\,a}-\frac{1199\,(bx+a)^{9/2}}{10240}+\frac{9\,a\,(bx+a)^{7/2}}{70}-\frac{849\,a^2\,(bx+a)^{5/2}}{10240}+\frac{15\,a^3\,(bx+a)^{3/2}}{512}-\right.\right.$$
$$\left.\left.-\frac{9}{2048\,a^{5/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/x^8,x)
```

```
[Out] 2*b^7*((9/2048/a^2*(b*x+a)^(13/2)-15/512/a*(b*x+a)^(11/2)-1199/10
240*(b*x+a)^(9/2)+9/70*a*(b*x+a)^(7/2)-849/10240*a^2*(b*x+a)^(5/2
)+15/512*a^3*(b*x+a)^(3/2)-9/2048*a^4*(b*x+a)^(1/2))/x^7/b^7-9/20
48*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(5/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221069, size = 1, normalized size = 0.01

$$\left[\frac{315\, b^7 x^7 \log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right) + 2\left(315\, b^6 x^6 - 210\, ab^5 x^5 - 14168\, a^2 b^4 x^4 - 39056\, a^3 b^3 x^3 - 44928\, a^4 b^2 x^2 - 24320\, a^5 bx\right.}{71680\, a^{\frac{5}{2}} x^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/71680*(315*b^7*x^7*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*
a)/x) + 2*(315*b^6*x^6 - 210*a*b^5*x^5 - 14168*a^2*b^4*x^4 - 3905
6*a^3*b^3*x^3 - 44928*a^4*b^2*x^2 - 24320*a^5*b*x - 5120*a^6)*sqr
t(b*x + a)*sqrt(a))/(a^(5/2)*x^7), 1/35840*(315*b^7*x^7*arctan(a/
(sqrt(b*x + a)*sqrt(-a))) + (315*b^6*x^6 - 210*a*b^5*x^5 - 14168*
a^2*b^4*x^4 - 39056*a^3*b^3*x^3 - 44928*a^4*b^2*x^2 - 24320*a^5*b
*x - 5120*a^6)*sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)*a^2*x^7)]
```

Sympy [A] time = 69.2434, size = 236, normalized size = 1.45

$$-\frac{a^5}{7\sqrt{b}x^{\frac{15}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{23a^4\sqrt{b}}{28x^{\frac{13}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{541a^3b^{\frac{3}{2}}}{280x^{\frac{11}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{5249a^2b^{\frac{5}{2}}}{2240x^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{6653ab^{\frac{7}{2}}}{4480x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}} - \frac{1027b^{\frac{9}{2}}}{2560x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}} + \frac{3b^{\frac{11}{2}}}{1024ax^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}} + \frac{9b^{\frac{13}{2}}}{1024a^2\sqrt{x}\sqrt{\frac{a}{bx}+1}} - \frac{9b^7\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{1024a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/x**8,x)
```

```
[Out] -a**5/(7*sqrt(b)*x**(15/2)*sqrt(a/(b*x) + 1)) - 23*a**4*sqrt(b)/(
28*x**(13/2)*sqrt(a/(b*x) + 1)) - 541*a**3*b**(3/2)/(280*x**(11/2
)*sqrt(a/(b*x) + 1)) - 5249*a**2*b**(5/2)/(2240*x**(9/2)*sqrt(a/(
```

```
b*x) + 1)) - 6653*a*b**(7/2)/(4480*x**(7/2)*sqrt(a/(b*x) + 1)) -
1027*b**(9/2)/(2560*x**(5/2)*sqrt(a/(b*x) + 1)) + 3*b**(11/2)/(10
24*a*x**(3/2)*sqrt(a/(b*x) + 1)) + 9*b**(13/2)/(1024*a**2*sqrt(x)
*sqrt(a/(b*x) + 1)) - 9*b**7*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(10
24*a**(5/2))
```

GIAC/XCAS [A] time = 0.213173, size = 194, normalized size = 1.19

$$\frac{\frac{315\,b^{8}\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^{2}}+\frac{315\,(bx+a)^{\frac{13}{2}}b^{8}-2100\,(bx+a)^{\frac{11}{2}}ab^{8}-8393\,(bx+a)^{\frac{9}{2}}a^{2}b^{8}+9216\,(bx+a)^{\frac{7}{2}}a^{3}b^{8}-5943\,(bx+a)^{\frac{5}{2}}a^{4}b^{8}+2100\,(bx+a)^{\frac{3}{2}}a^{5}b^{8}-315\,\sqrt{bx+a}a^{6}b^{8}}{a^{2}b^{7}x^{7}}}{35840\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/x^8,x, algorithm="giac")
```

```
[Out] 1/35840*(315*b^8*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^2) +
(315*(b*x + a)^(13/2)*b^8 - 2100*(b*x + a)^(11/2)*a*b^8 - 8393*(b
*x + a)^(9/2)*a^2*b^8 + 9216*(b*x + a)^(7/2)*a^3*b^8 - 5943*(b*x
+ a)^(5/2)*a^4*b^8 + 2100*(b*x + a)^(3/2)*a^5*b^8 - 315*sqrt(b*x
+ a)*a^6*b^8)/(a^2*b^7*x^7))/b
```

3.325 $\int \frac{\sqrt{-a+bx}}{x}\, dx$

Optimal. Leaf size=39

$$2\sqrt{bx-a} - 2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

```
[Out] 2*Sqrt[-a + b*x] - 2*Sqrt[a]*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0361587, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$2\sqrt{bx-a} - 2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[-a + b*x]/x,x]

[Out] 2*Sqrt[-a + b*x] - 2*Sqrt[a]*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 5.13146, size = 31, normalized size = 0.79

$$-2\sqrt{a}\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right) + 2\sqrt{-a+bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(1/2)/x,x)

[Out] -2*sqrt(a)*atan(sqrt(-a + b*x)/sqrt(a)) + 2*sqrt(-a + b*x)
```

Mathematica [A] time = 0.0203416, size = 39, normalized size = 1.

$$2\sqrt{bx-a} - 2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[-a + b*x]/x,x]
```

```
[Out] 2*Sqrt[-a + b*x] - 2*Sqrt[a]*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.01, size = 32, normalized size = 0.8

$$-2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)\sqrt{a}+2\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(1/2)/x,x)
```

```
[Out] -2*arctan((b*x-a)^(1/2)/a^(1/2))*a^(1/2)+2*(b*x-a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230187, size = 1, normalized size = 0.03

$$\left[\sqrt{-a}\log\left(\frac{bx-2\sqrt{bx-a}\sqrt{-a}-2a}{x}\right)+2\sqrt{bx-a},-2\sqrt{a}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+2\sqrt{bx-a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x,x, algorithm="fricas")
```

```
[Out] [sqrt(-a)*log((b*x - 2*sqrt(b*x - a)*sqrt(-a) - 2*a)/x) + 2*sqrt(
b*x - a), -2*sqrt(a)*arctan(sqrt(b*x - a)/sqrt(a)) + 2*sqrt(b*x -
 a)]
```

Sympy [A] time = 5.43088, size = 148, normalized size = 3.79

$$\begin{cases} -2i\sqrt{a}\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) + \frac{2ia}{\sqrt{b}\sqrt{x}\sqrt{\frac{a}{bx}-1}} - \frac{2i\sqrt{b}\sqrt{x}}{\sqrt{\frac{a}{bx}-1}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ 2\sqrt{a}\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) - \frac{2a}{\sqrt{b}\sqrt{x}\sqrt{-\frac{a}{bx}+1}} + \frac{2\sqrt{b}\sqrt{x}}{\sqrt{-\frac{a}{bx}+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(1/2)/x,x)
```

```
[Out] Piecewise((-2*I*sqrt(a)*acosh(sqrt(a)/(sqrt(b)*sqrt(x))) + 2*I*a/
(sqrt(b)*sqrt(x)*sqrt(a/(b*x) - 1)) - 2*I*sqrt(b)*sqrt(x)/sqrt(a/
(b*x) - 1), Abs(a/(b*x)) > 1), (2*sqrt(a)*asin(sqrt(a)/(sqrt(b)*s
qrt(x))) - 2*a/(sqrt(b)*sqrt(x)*sqrt(-a/(b*x) + 1)) + 2*sqrt(b)*s
qrt(x)/sqrt(-a/(b*x) + 1), True))
```

GIAC/XCAS [A] time = 0.207293, size = 42, normalized size = 1.08

$$-2\sqrt{a}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) + 2\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x,x, algorithm="giac")
```

```
[Out] -2*sqrt(a)*arctan(sqrt(b*x - a)/sqrt(a)) + 2*sqrt(b*x - a)
```

3.326 $\int \frac{\sqrt{-a+bx}}{x^2}\,dx$

Optimal. Leaf size=42

$$\frac{b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}-\frac{\sqrt{bx-a}}{x}$$

```
[Out] -(Sqrt[-a + b*x]/x) + (b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi [A] time = 0.0371955, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}-\frac{\sqrt{bx-a}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[-a + b*x]/x^2,x]

[Out] -(Sqrt[-a + b*x]/x) + (b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi in Sympy [A] time = 5.27163, size = 31, normalized size = 0.74

$$-\frac{\sqrt{-a+bx}}{x}+\frac{b\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(1/2)/x**2,x)

[Out] -sqrt(-a + b*x)/x + b*atan(sqrt(-a + b*x)/sqrt(a))/sqrt(a)
```

Mathematica [A] time = 0.0258018, size = 42, normalized size = 1.

$$\frac{b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}-\frac{\sqrt{bx-a}}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[-a + b*x]/x^2,x]

[Out] -(Sqrt[-a + b*x]/x) + (b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/Sqrt[a]
```

Maple [A] time = 0.012, size = 35, normalized size = 0.8

$$b\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)\frac{1}{\sqrt{a}}-\frac{1}{x}\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(1/2)/x^2,x)

[Out] b*arctan((b*x-a)^(1/2)/a^(1/2))/a^(1/2)-(b*x-a)^(1/2)/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x^2,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227303, size = 1, normalized size = 0.02

$$\left[\frac{bx\log\left(\frac{(bx-2a)\sqrt{-a}+2\sqrt{bx-a}a}{x}\right)-2\sqrt{bx-a}\sqrt{-a}}{2\sqrt{-a}x}, -\frac{bx\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)+\sqrt{bx-a}\sqrt{a}}{\sqrt{a}x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x^2,x, algorithm="fricas")

[Out] [1/2*(b*x*log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x - a)*a)/x) - 2*s
qrt(b*x - a)*sqrt(-a))/(sqrt(-a)*x), -(b*x*arctan(sqrt(a)/sqrt(b*
x - a)) + sqrt(b*x - a)*sqrt(a))/(sqrt(a)*x)]
```

Sympy [A] time = 6.71264, size = 121, normalized size = 2.88

$$\begin{cases} -\frac{ia}{\sqrt{b}x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{i\sqrt{b}}{\sqrt{x}\sqrt{\frac{a}{bx}-1}} + \frac{ib\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{\sqrt{b}\sqrt{-\frac{a}{bx}+1}}{\sqrt{x}} - \frac{b\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(1/2)/x**2,x)
```

```
[Out] Piecewise((-I*a/(sqrt(b)*x**(3/2)*sqrt(a/(b*x) - 1)) + I*sqrt(b)/
(sqrt(x)*sqrt(a/(b*x) - 1)) + I*b*acosh(sqrt(a)/(sqrt(b)*sqrt(x))
)/sqrt(a), Abs(a/(b*x)) > 1), (-sqrt(b)*sqrt(-a/(b*x) + 1)/sqrt(x
) - b*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/sqrt(a), True))
```

GIAC/XCAS [A] time = 0.211147, size = 55, normalized size = 1.31

$$\frac{\frac{b^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{\sqrt{bx-a}b}{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x^2,x, algorithm="giac")
```

```
[Out] (b^2*arctan(sqrt(b*x - a)/sqrt(a))/sqrt(a) - sqrt(b*x - a)*b/x)/b
```

3.327 $\int \frac{\sqrt{-a+bx}}{x^3} dx$

Optimal. Leaf size=71

$$\frac{b^2 \tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{3/2}} - \frac{\sqrt{bx-a}}{2x^2} + \frac{b\sqrt{bx-a}}{4ax}$$

```
[Out] -Sqrt[-a + b*x]/(2*x^2) + (b*Sqrt[-a + b*x])/(4*a*x) + (b^2*ArcTa
n[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(3/2))
```

Rubi [A] time = 0.059832, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{b^2 \tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{3/2}} - \frac{\sqrt{bx-a}}{2x^2} + \frac{b\sqrt{bx-a}}{4ax}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[-a + b*x]/x^3,x]
```

```
[Out] -Sqrt[-a + b*x]/(2*x^2) + (b*Sqrt[-a + b*x])/(4*a*x) + (b^2*ArcTa
n[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(3/2))
```

Rubi in Sympy [A] time = 7.70987, size = 53, normalized size = 0.75

$$-\frac{\sqrt{-a+bx}}{2x^2} + \frac{b\sqrt{-a+bx}}{4ax} + \frac{b^2 \operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{4a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(1/2)/x**3,x)
```

```
[Out] -sqrt(-a + b*x)/(2*x**2) + b*sqrt(-a + b*x)/(4*a*x) + b**2*atan(s
qrt(-a + b*x)/sqrt(a))/(4*a**(3/2))
```

Mathematica [A] time = 0.062901, size = 59, normalized size = 0.83

$$\frac{b^2 \tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) + \frac{\sqrt{a}(bx-2a)\sqrt{bx-a}}{x^2}}{4a^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[-a + b*x]/x^3,x]
```

```
[Out] ((Sqrt[a]*(-2*a + b*x)*Sqrt[-a + b*x])/x^2 + b^2*ArcTan[Sqrt[-a +
 b*x]/Sqrt[a]])/(4*a^(3/2))
```

Maple [A] time = 0.016, size = 55, normalized size = 0.8

$$\frac{1}{4\,a{x}^{2}} \left(bx-a \right) ^{\frac{3}{2}}-\frac{1}{4\,{x}^{2}}\sqrt{bx-a}+\frac{{b}^{2}}{4}\arctan \left(1\sqrt{bx-a}\frac{1}{\sqrt{a}} \right) {a}^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(1/2)/x^3,x)
```

```
[Out] 1/4/x^2/a*(b*x-a)^(3/2)-1/4*(b*x-a)^(1/2)/x^2+1/4*b^2*arctan((b*x
-a)^(1/2)/a^(1/2))/a^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.249057, size = 1, normalized size = 0.01

$$\left[\frac{b^{2} x^{2} \log\left(\frac{{\left(b x - 2 \, a\right)} \sqrt{-a} + 2 \, \sqrt{b x - a} a}{x}\right) + 2 \, \sqrt{b x - a}{\left(b x - 2 \, a\right)} \sqrt{-a}}{8 \, \sqrt{-a} a x^{2}}, -\frac{b^{2} x^{2} \arctan\left(\frac{\sqrt{a}}{\sqrt{b x - a}}\right) - \sqrt{b x - a}{\left(b x - 2 \, a\right)} \sqrt{a}}{4 \, a^{\frac{3}{2}} x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(b^2*x^2*log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x - a)*a)/x) +
 2*sqrt(b*x - a)*(b*x - 2*a)*sqrt(-a))/(sqrt(-a)*a*x^2), -1/4*(b^
```

```
2*x^2*arctan(sqrt(a)/sqrt(b*x - a)) - sqrt(b*x - a)*(b*x - 2*a)*s
qrt(a))/(a^(3/2)*x^2)]
```

Sympy [A] time = 8.71517, size = 207, normalized size = 2.92

$$\begin{cases} -\frac{ia}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{3i\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} - \frac{ib^{\frac{3}{2}}}{4a\sqrt{x}\sqrt{\frac{a}{bx}-1}} + \frac{ib^2 \operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{3}{2}}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{a}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{-\frac{a}{bx}+1}} - \frac{3\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} + \frac{b^{\frac{3}{2}}}{4a\sqrt{x}\sqrt{-\frac{a}{bx}+1}} - \frac{b^2 \operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(1/2)/x**3,x)
```

```
[Out] Piecewise((-I*a/(2*sqrt(b)*x**(5/2)*sqrt(a/(b*x) - 1)) + 3*I*sqrt
(b)/(4*x**(3/2)*sqrt(a/(b*x) - 1)) - I*b**(3/2)/(4*a*sqrt(x)*sqrt
(a/(b*x) - 1)) + I*b**2*acosh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*a**(3
/2)), Abs(a/(b*x)) > 1), (a/(2*sqrt(b)*x**(5/2)*sqrt(-a/(b*x) + 1
)) - 3*sqrt(b)/(4*x**(3/2)*sqrt(-a/(b*x) + 1)) + b**(3/2)/(4*a*sq
rt(x)*sqrt(-a/(b*x) + 1)) - b**2*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/
(4*a**(3/2)), True))
```

GIAC/XCAS [A] time = 0.234942, size = 89, normalized size = 1.25

$$\frac{\frac{b^3 \arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}} + \frac{(bx-a)^{\frac{3}{2}}b^3 - \sqrt{bx-a}ab^3}{ab^2x^2}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x - a)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*(b^3*arctan(sqrt(b*x - a)/sqrt(a))/a^(3/2) + ((b*x - a)^(3/2)
*b^3 - sqrt(b*x - a)*a*b^3)/(a*b^2*x^2))/b
```

3.328 $\int \frac{(-a+bx)^{3/2}}{x} dx$

Optimal. Leaf size=55

$$2a^{3/2}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-2a\sqrt{bx-a}+\frac{2}{3}(bx-a)^{3/2}$$

```
[Out] -2*a*Sqrt[-a + b*x] + (2*(-a + b*x)^(3/2))/3 + 2*a^(3/2)*ArcTan[S
qrt[-a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0519876, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2a^{3/2}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-2a\sqrt{bx-a}+\frac{2}{3}(bx-a)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(-a + b*x)^(3/2)/x,x]
```

```
[Out] -2*a*Sqrt[-a + b*x] + (2*(-a + b*x)^(3/2))/3 + 2*a^(3/2)*ArcTan[S
qrt[-a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 7.16547, size = 44, normalized size = 0.8

$$2a^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)-2a\sqrt{-a+bx}+\frac{2\left(-a+bx\right)^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(3/2)/x,x)
```

```
[Out] 2*a**(3/2)*atan(sqrt(-a + b*x)/sqrt(a)) - 2*a*sqrt(-a + b*x) + 2*
(-a + b*x)**(3/2)/3
```

Mathematica [A] time = 0.0564319, size = 48, normalized size = 0.87

$$2a^{3/2}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+\frac{2}{3}(bx-4a)\sqrt{bx-a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(3/2)/x,x]
```

```
[Out] (2*(-4*a + b*x)*Sqrt[-a + b*x])/3 + 2*a^(3/2)*ArcTan[Sqrt[-a + b*
x]/Sqrt[a]]
```

Maple [A] time = 0.01, size = 44, normalized size = 0.8

$$\frac{2}{3}(bx-a)^{\frac{3}{2}}+2a^{3/2}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-2a\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(3/2)/x,x)
```

```
[Out] 2/3*(b*x-a)^(3/2)+2*a^(3/2)*arctan((b*x-a)^(1/2)/a^(1/2))-2*a*(b*
x-a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.231098, size = 1, normalized size = 0.02

$$\left[\sqrt{-a}a\log\left(\frac{bx+2\sqrt{bx-a}\sqrt{-a}-2a}{x}\right)+\frac{2}{3}\sqrt{bx-a}(bx-4a),2a^{\frac{3}{2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+\frac{2}{3}\sqrt{bx-a}(bx-4a)\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [sqrt(-a)*a*log((b*x + 2*sqrt(b*x - a)*sqrt(-a) - 2*a)/x) + 2/3*s
qrt(b*x - a)*(b*x - 4*a), 2*a^(3/2)*arctan(sqrt(b*x - a)/sqrt(a))
 + 2/3*sqrt(b*x - a)*(b*x - 4*a)]
```

Sympy [A] time = 3.70401, size = 187, normalized size = 3.4

$$\begin{cases} -\frac{8a^{\frac{3}{2}}\sqrt{-1+\frac{bx}{a}}}{3} - ia^{\frac{3}{2}}\log\left(\frac{bx}{a}\right) + 2ia^{\frac{3}{2}}\log\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) - 2a^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) + \frac{2\sqrt{a}bx\sqrt{-1+\frac{bx}{a}}}{3} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{8ia^{\frac{3}{2}}\sqrt{1-\frac{bx}{a}}}{3} - ia^{\frac{3}{2}}\log\left(\frac{bx}{a}\right) + 2ia^{\frac{3}{2}}\log\left(\sqrt{1-\frac{bx}{a}}+1\right) + \frac{2i\sqrt{a}bx\sqrt{1-\frac{bx}{a}}}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(3/2)/x,x)
```

```
[Out] Piecewise((-8*a**(3/2)*sqrt(-1 + b*x/a)/3 - I*a**(3/2)*log(b*x/a)
 + 2*I*a**(3/2)*log(sqrt(b)*sqrt(x)/sqrt(a)) - 2*a**(3/2)*asin(sq
rt(a)/(sqrt(b)*sqrt(x))) + 2*sqrt(a)*b*x*sqrt(-1 + b*x/a)/3, Abs(
b*x/a) > 1), (-8*I*a**(3/2)*sqrt(1 - b*x/a)/3 - I*a**(3/2)*log(b*
x/a) + 2*I*a**(3/2)*log(sqrt(1 - b*x/a) + 1) + 2*I*sqrt(a)*b*x*sq
rt(1 - b*x/a)/3, True))
```

GIAC/XCAS [A] time = 0.204355, size = 58, normalized size = 1.05

$$2\,a^{\frac{3}{2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) + \frac{2}{3}\,(bx-a)^{\frac{3}{2}} - 2\,\sqrt{bx-a}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 2*a^(3/2)*arctan(sqrt(b*x - a)/sqrt(a)) + 2/3*(b*x - a)^(3/2) - 2
*sqrt(b*x - a)*a
```

3.329 $\int \frac{(-a+bx)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=57

$$-\frac{(bx-a)^{3/2}}{x}+3b\sqrt{bx-a}-3\sqrt{a}b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

```
[Out] 3*b*Sqrt[-a + b*x] - (-a + b*x)^(3/2)/x - 3*Sqrt[a]*b*ArcTan[Sqrt
[-a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0532976, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{(bx-a)^{3/2}}{x}+3b\sqrt{bx-a}-3\sqrt{a}b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(-a + b*x)^(3/2)/x^2,x]
```

```
[Out] 3*b*Sqrt[-a + b*x] - (-a + b*x)^(3/2)/x - 3*Sqrt[a]*b*ArcTan[Sqrt
[-a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 7.29777, size = 44, normalized size = 0.77

$$-3\sqrt{a}b\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)+3b\sqrt{-a+bx}-\frac{(-a+bx)^{\frac{3}{2}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x-a)**(3/2)/x**2,x)
```

```
[Out] -3*sqrt(a)*b*atan(sqrt(-a + b*x)/sqrt(a)) + 3*b*sqrt(-a + b*x) -
(-a + b*x)**(3/2)/x
```

Mathematica [A] time = 0.0429193, size = 48, normalized size = 0.84

$$\left(\frac{a}{x}+2b\right)\sqrt{bx-a}-3\sqrt{a}b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(3/2)/x^2,x]
```

```
[Out] (2*b + a/x)*Sqrt[-a + b*x] - 3*Sqrt[a]*b*ArcTan[Sqrt[-a + b*x]/Sq
rt[a]]
```

Maple [A] time = 0.014, size = 48, normalized size = 0.8

$$2\,b\sqrt{bx-a}+\frac{a}{x}\sqrt{bx-a}-3\,b\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)\sqrt{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(3/2)/x^2,x)
```

```
[Out] 2*b*(b*x-a)^(1/2)+a*(b*x-a)^(1/2)/x-3*b*arctan((b*x-a)^(1/2)/a^(1
/2))*a^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22475, size = 1, normalized size = 0.02

$$\left[\frac{3\sqrt{-a}bx\log\left(\frac{bx-2\sqrt{bx-a}\sqrt{-a}-2\,a}{x}\right)+2\,(2\,bx+a)\sqrt{bx-a}}{2\,x},-\frac{3\sqrt{a}bx\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-(2\,bx+a)\sqrt{bx-a}}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/2*(3*sqrt(-a)*b*x*log((b*x - 2*sqrt(b*x - a)*sqrt(-a) - 2*a)/x
) + 2*(2*b*x + a)*sqrt(b*x - a))/x, -(3*sqrt(a)*b*x*arctan(sqrt(b
```

```
*x - a)/sqrt(a)) - (2*b*x + a)*sqrt(b*x - a))/x]
```

Sympy [A] time = 4.43917, size = 197, normalized size = 3.46

$$\begin{cases} -3i\sqrt{a}b\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) + \frac{ia^2}{\sqrt{b}x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{ia\sqrt{b}}{\sqrt{x}\sqrt{\frac{a}{bx}-1}} - \frac{2ib^{\frac{3}{2}}\sqrt{x}}{\sqrt{\frac{a}{bx}-1}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ 3\sqrt{a}b\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) - \frac{a^2}{\sqrt{b}x^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} - \frac{a\sqrt{b}}{\sqrt{x}\sqrt{-\frac{a}{bx}+1}} + \frac{2b^{\frac{3}{2}}\sqrt{x}}{\sqrt{-\frac{a}{bx}+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(3/2)/x**2,x)
```

```
[Out] Piecewise((-3*I*sqrt(a)*b*acosh(sqrt(a)/(sqrt(b)*sqrt(x))) + I*a*
*2/(sqrt(b)*x**(3/2)*sqrt(a/(b*x) - 1)) + I*a*sqrt(b)/(sqrt(x)*sq
rt(a/(b*x) - 1)) - 2*I*b**(3/2)*sqrt(x)/sqrt(a/(b*x) - 1), Abs(a/
(b*x)) > 1), (3*sqrt(a)*b*asin(sqrt(a)/(sqrt(b)*sqrt(x))) - a**2/
(sqrt(b)*x**(3/2)*sqrt(-a/(b*x) + 1)) - a*sqrt(b)/(sqrt(x)*sqrt(-
a/(b*x) + 1)) + 2*b**(3/2)*sqrt(x)/sqrt(-a/(b*x) + 1), True))
```

GIAC/XCAS [A] time = 0.20393, size = 78, normalized size = 1.37

$$-\frac{3\sqrt{a}b^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) - 2\sqrt{bx-a}b^2 - \frac{\sqrt{bx-a}ab}{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] -(3*sqrt(a)*b^2*arctan(sqrt(b*x - a)/sqrt(a)) - 2*sqrt(b*x - a)*b
^2 - sqrt(b*x - a)*a*b/x)/b
```

3.330 $\int \frac{(-a+bx)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=68

$$\frac{3b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4\sqrt{a}}-\frac{(bx-a)^{3/2}}{2x^2}-\frac{3b\sqrt{bx-a}}{4x}$$

```
[Out] (-3*b*Sqrt[-a + b*x])/(4*x) - (-a + b*x)^(3/2)/(2*x^2) + (3*b^2*A
rcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*Sqrt[a])
```

Rubi [A] time = 0.0531137, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4\sqrt{a}}-\frac{(bx-a)^{3/2}}{2x^2}-\frac{3b\sqrt{bx-a}}{4x}$$

Antiderivative was successfully verified.

```
[In]  Int[(-a + b*x)^(3/2)/x^3,x]
```

```
[Out] (-3*b*Sqrt[-a + b*x])/(4*x) - (-a + b*x)^(3/2)/(2*x^2) + (3*b^2*A
rcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*Sqrt[a])
```

Rubi in Sympy [A] time = 7.74488, size = 54, normalized size = 0.79

$$-\frac{3b\sqrt{-a+bx}}{4x}-\frac{(-a+bx)^{\frac{3}{2}}}{2x^2}+\frac{3b^2\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{4\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(3/2)/x**3,x)
```

```
[Out] -3*b*sqrt(-a + b*x)/(4*x) - (-a + b*x)**(3/2)/(2*x**2) + 3*b**2*a
tan(sqrt(-a + b*x)/sqrt(a))/(4*sqrt(a))
```

Mathematica [A] time = 0.0612377, size = 56, normalized size = 0.82

$$\frac{1}{4}\left(\frac{3b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}+\frac{(2a-5bx)\sqrt{bx-a}}{x^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(3/2)/x^3,x]
```

```
[Out] (((2*a - 5*b*x)*Sqrt[-a + b*x])/x^2 + (3*b^2*ArcTan[Sqrt[-a + b*x
]/Sqrt[a]])/Sqrt[a])/4
```

Maple [A] time = 0.015, size = 53, normalized size = 0.8

$$-\frac{5}{4\,x^{2}}\left(bx-a\right)^{\frac{3}{2}}-\frac{3\,a}{4\,x^{2}}\sqrt{bx-a}+\frac{3\,b^{2}}{4}\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)\frac{1}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(3/2)/x^3,x)
```

```
[Out] -5/4*(b*x-a)^(3/2)/x^2-3/4/x^2*(b*x-a)^(1/2)*a+3/4*b^2*arctan((b*
x-a)^(1/2)/a^(1/2))/a^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.257003, size = 1, normalized size = 0.01

$$\left[\frac{3\,b^{2}x^{2}\log\left(\frac{(bx-2\,a)\sqrt{-a}+2\,\sqrt{bx-a}a}{x}\right)-2\,(5\,bx-2\,a)\sqrt{bx-a}\sqrt{-a}}{8\,\sqrt{-a}x^{2}},\right.$$
$$\left.-\frac{3\,b^{2}x^{2}\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)+(5\,bx-2\,a)\sqrt{bx-a}\sqrt{a}}{4\,\sqrt{a}x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*x^2*log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x - a)*a)/x)
 - 2*(5*b*x - 2*a)*sqrt(b*x - a)*sqrt(-a))/(sqrt(-a)*x^2), -1/4*(
3*b^2*x^2*arctan(sqrt(a)/sqrt(b*x - a)) + (5*b*x - 2*a)*sqrt(b*x
- a)*sqrt(a))/(sqrt(a)*x^2)]
```

Sympy [A] time = 5.11389, size = 190, normalized size = 2.79

$$\begin{cases} \frac{ia^2}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}-1}} - \frac{7ia\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{5ib^{\frac{3}{2}}}{4\sqrt{x}\sqrt{\frac{a}{bx}-1}} + \frac{3ib^2\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4\sqrt{a}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{a\sqrt{b}\sqrt{-\frac{a}{bx}+1}}{2x^{\frac{3}{2}}} - \frac{5b^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{4\sqrt{x}} - \frac{3b^2\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4\sqrt{a}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(3/2)/x**3,x)
```

```
[Out] Piecewise((I*a**2/(2*sqrt(b)*x**(5/2)*sqrt(a/(b*x) - 1)) - 7*I*a*
sqrt(b)/(4*x**(3/2)*sqrt(a/(b*x) - 1)) + 5*I*b**(3/2)/(4*sqrt(x)*
sqrt(a/(b*x) - 1)) + 3*I*b**2*acosh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4
*sqrt(a)), Abs(a/(b*x)) > 1), (a*sqrt(b)*sqrt(-a/(b*x) + 1)/(2*x*
*(3/2)) - 5*b**(3/2)*sqrt(-a/(b*x) + 1)/(4*sqrt(x)) - 3*b**2*asin
(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*sqrt(a)), True))
```

GIAC/XCAS [A] time = 0.205394, size = 89, normalized size = 1.31

$$\frac{\frac{3\,b^3\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{5\,(bx-a)^{\frac{3}{2}}\,b^3+3\,\sqrt{bx-a}ab^3}{b^2x^2}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*(3*b^3*arctan(sqrt(b*x - a)/sqrt(a))/sqrt(a) - (5*(b*x - a)^(
3/2)*b^3 + 3*sqrt(b*x - a)*a*b^3)/(b^2*x^2))/b
```

3.331 $\int \frac{(-a+bx)^{5/2}}{x} \, dx$

Optimal. Leaf size=73

$$-2a^{5/2}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+2a^2\sqrt{bx-a}-\frac{2}{3}a(bx-a)^{3/2}+\frac{2}{5}(bx-a)^{5/2}$$

```
[Out] 2*a^2*Sqrt[-a + b*x] - (2*a*(-a + b*x)^(3/2))/3 + (2*(-a + b*x)^(
5/2))/5 - 2*a^(5/2)*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.0673964, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-2a^{5/2}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+2a^2\sqrt{bx-a}-\frac{2}{3}a(bx-a)^{3/2}+\frac{2}{5}(bx-a)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(-a + b*x)^(5/2)/x,x]
```

```
[Out] 2*a^2*Sqrt[-a + b*x] - (2*a*(-a + b*x)^(3/2))/3 + (2*(-a + b*x)^(
5/2))/5 - 2*a^(5/2)*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 9.57803, size = 60, normalized size = 0.82

$$-2a^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)+2a^2\sqrt{-a+bx}-\frac{2a\left(-a+bx\right)^{\frac{3}{2}}}{3}+\frac{2\left(-a+bx\right)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(5/2)/x,x)
```

```
[Out] -2*a**(5/2)*atan(sqrt(-a + b*x)/sqrt(a)) + 2*a**2*sqrt(-a + b*x)
- 2*a*(-a + b*x)**(3/2)/3 + 2*(-a + b*x)**(5/2)/5
```

Mathematica [A] time = 0.0419299, size = 60, normalized size = 0.82

$$\frac{2}{15}\sqrt{bx-a}\left(23a^2-11abx+3b^2x^2\right)-2a^{5/2}\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(5/2)/x,x]
```

```
[Out] (2*Sqrt[-a + b*x]*(23*a^2 - 11*a*b*x + 3*b^2*x^2))/15 - 2*a^(5/2)
*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.009, size = 58, normalized size = 0.8

$$-\frac{2a}{3}(bx-a)^{\frac{3}{2}}+\frac{2}{5}(bx-a)^{\frac{5}{2}}-2a^{5/2}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+2a^{2}\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(5/2)/x,x)
```

```
[Out] -2/3*a*(b*x-a)^(3/2)+2/5*(b*x-a)^(5/2)-2*a^(5/2)*arctan((b*x-a)^(
1/2)/a^(1/2))+2*a^2*(b*x-a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.235498, size = 1, normalized size = 0.01

$$\left[\sqrt{-a}a^{2}\log\left(\frac{bx-2\sqrt{bx-a}\sqrt{-a}-2a}{x}\right)+\frac{2}{15}\left(3b^{2}x^{2}-11abx+23a^{2}\right)\sqrt{bx-a},\right.$$
$$\left.-2a^{\frac{5}{2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+\frac{2}{15}\left(3b^{2}x^{2}-11abx+23a^{2}\right)\sqrt{bx-a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [sqrt(-a)*a^2*log((b*x - 2*sqrt(b*x - a)*sqrt(-a) - 2*a)/x) + 2/1
5*(3*b^2*x^2 - 11*a*b*x + 23*a^2)*sqrt(b*x - a), -2*a^(5/2)*arcta
n(sqrt(b*x - a)/sqrt(a)) + 2/15*(3*b^2*x^2 - 11*a*b*x + 23*a^2)*s
qrt(b*x - a)]
```

Sympy [A] time = 6.22501, size = 240, normalized size = 3.29

$$\begin{cases} \frac{46a^{\frac{5}{2}}\sqrt{-1+\frac{bx}{a}}}{15} + ia^{\frac{5}{2}}\log\left(\frac{bx}{a}\right) - 2ia^{\frac{5}{2}}\log\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) + 2a^{\frac{5}{2}}\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) - \frac{22a^{\frac{3}{2}}bx\sqrt{-1+\frac{bx}{a}}}{15} + \frac{2\sqrt{a}b^2x^2\sqrt{-1+\frac{bx}{a}}}{5} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ \frac{46ia^{\frac{5}{2}}\sqrt{1-\frac{bx}{a}}}{15} + ia^{\frac{5}{2}}\log\left(\frac{bx}{a}\right) - 2ia^{\frac{5}{2}}\log\left(\sqrt{1-\frac{bx}{a}}+1\right) - \frac{22ia^{\frac{3}{2}}bx\sqrt{1-\frac{bx}{a}}}{15} + \frac{2i\sqrt{a}b^2x^2\sqrt{1-\frac{bx}{a}}}{5} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(5/2)/x,x)
```

```
[Out] Piecewise((46*a**(5/2)*sqrt(-1 + b*x/a)/15 + I*a**(5/2)*log(b*x/a
) - 2*I*a**(5/2)*log(sqrt(b)*sqrt(x)/sqrt(a)) + 2*a**(5/2)*asin(s
qrt(a)/(sqrt(b)*sqrt(x))) - 22*a**(3/2)*b*x*sqrt(-1 + b*x/a)/15 +
 2*sqrt(a)*b**2*x**2*sqrt(-1 + b*x/a)/5, Abs(b*x/a) > 1), (46*I*a
**(5/2)*sqrt(1 - b*x/a)/15 + I*a**(5/2)*log(b*x/a) - 2*I*a**(5/2)
*log(sqrt(1 - b*x/a) + 1) - 22*I*a**(3/2)*b*x*sqrt(1 - b*x/a)/15
+ 2*I*sqrt(a)*b**2*x**2*sqrt(1 - b*x/a)/5, True))
```

GIAC/XCAS [A] time = 0.207043, size = 77, normalized size = 1.05

$$-2\,a^{\frac{5}{2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) + \frac{2}{5}\,(bx-a)^{\frac{5}{2}} - \frac{2}{3}\,(bx-a)^{\frac{3}{2}}a + 2\,\sqrt{bx-a}a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x,x, algorithm="giac")
```

```
[Out] -2*a^(5/2)*arctan(sqrt(b*x - a)/sqrt(a)) + 2/5*(b*x - a)^(5/2) -
2/3*(b*x - a)^(3/2)*a + 2*sqrt(b*x - a)*a^2
```

3.332 $\int \frac{(-a+bx)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=74

$$5a^{3/2}b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-\frac{(bx-a)^{5/2}}{x}+\frac{5}{3}b(bx-a)^{3/2}-5ab\sqrt{bx-a}$$

```
[Out] -5*a*b*Sqrt[-a + b*x] + (5*b*(-a + b*x)^(3/2))/3 - (-a + b*x)^(5/
2)/x + 5*a^(3/2)*b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Rubi [A] time = 0.068749, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.267$

$$5a^{3/2}b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-\frac{(bx-a)^{5/2}}{x}+\frac{5}{3}b(bx-a)^{3/2}-5ab\sqrt{bx-a}$$

Antiderivative was successfully verified.

```
[In]  Int[(-a + b*x)^(5/2)/x^2,x]
```

```
[Out] -5*a*b*Sqrt[-a + b*x] + (5*b*(-a + b*x)^(3/2))/3 - (-a + b*x)^(5/
2)/x + 5*a^(3/2)*b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Rubi in Sympy [A] time = 9.64859, size = 60, normalized size = 0.81

$$5a^{\frac{3}{2}}b\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)-5ab\sqrt{-a+bx}+\frac{5b\,(-a+bx)^{\frac{3}{2}}}{3}-\frac{(-a+bx)^{\frac{5}{2}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(5/2)/x**2,x)
```

```
[Out] 5*a**(3/2)*b*atan(sqrt(-a + b*x)/sqrt(a)) - 5*a*b*sqrt(-a + b*x)
+ 5*b*(-a + b*x)**(3/2)/3 - (-a + b*x)**(5/2)/x
```

Mathematica [A] time = 0.0592013, size = 62, normalized size = 0.84

$$5a^{3/2}b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+\sqrt{bx-a}\left(-\frac{a^2}{x}-\frac{14ab}{3}+\frac{2b^2x}{3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(5/2)/x^2,x]
```

```
[Out] Sqrt[-a + b*x]*((-14*a*b)/3 - a^2/x + (2*b^2*x)/3) + 5*a^(3/2)*b*
ArcTan[Sqrt[-a + b*x]/Sqrt[a]]
```

Maple [A] time = 0.015, size = 64, normalized size = 0.9

$$\frac{2b}{3}(bx-a)^{\frac{3}{2}}-4ab\sqrt{bx-a}-\frac{a^2}{x}\sqrt{bx-a}+5a^{3/2}b\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(5/2)/x^2,x)
```

```
[Out] 2/3*b*(b*x-a)^(3/2)-4*a*b*(b*x-a)^(1/2)-a^2*(b*x-a)^(1/2)/x+5*a^(
3/2)*b*arctan((b*x-a)^(1/2)/a^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225348, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{-a}abx\log\left(\frac{bx+2\sqrt{bx-a}\sqrt{-a}-2a}{x}\right)+2\left(2b^2x^2-14abx-3a^2\right)\sqrt{bx-a}}{6x}, \frac{15a^{\frac{3}{2}}bx\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+\left(2b^2x^2-14abx-3\right.}{3x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/6*(15*sqrt(-a)*a*b*x*log((b*x + 2*sqrt(b*x - a)*sqrt(-a) - 2*a
)/x) + 2*(2*b^2*x^2 - 14*a*b*x - 3*a^2)*sqrt(b*x - a))/x, 1/3*(15
```

```
*a^(3/2)*b*x*arctan(sqrt(b*x - a)/sqrt(a)) + (2*b^2*x^2 - 14*a*b*
x - 3*a^2)*sqrt(b*x - a))/x]
```

Sympy [A] time = 6.12416, size = 245, normalized size = 3.31

$$\begin{cases} -\frac{a^{\frac{5}{2}}\sqrt{-1+\frac{bx}{a}}}{x} - \frac{14a^{\frac{3}{2}}b\sqrt{-1+\frac{bx}{a}}}{3} - \frac{5ia^{\frac{3}{2}}b\log\left(\frac{bx}{a}\right)}{2} + 5ia^{\frac{3}{2}}b\log\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) - 5a^{\frac{3}{2}}b\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) + \frac{2\sqrt{a}b^2x\sqrt{-1+\frac{bx}{a}}}{3} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{ia^{\frac{5}{2}}\sqrt{1-\frac{bx}{a}}}{x} - \frac{14ia^{\frac{3}{2}}b\sqrt{1-\frac{bx}{a}}}{3} - \frac{5ia^{\frac{3}{2}}b\log\left(\frac{bx}{a}\right)}{2} + 5ia^{\frac{3}{2}}b\log\left(\sqrt{1-\frac{bx}{a}}+1\right) + \frac{2i\sqrt{a}b^2x\sqrt{1-\frac{bx}{a}}}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(5/2)/x**2,x)
```

```
[Out] Piecewise((-a**(5/2)*sqrt(-1 + b*x/a)/x - 14*a**(3/2)*b*sqrt(-1 +
 b*x/a)/3 - 5*I*a**(3/2)*b*log(b*x/a)/2 + 5*I*a**(3/2)*b*log(sqrt
(b)*sqrt(x)/sqrt(a)) - 5*a**(3/2)*b*asin(sqrt(a)/(sqrt(b)*sqrt(x)
)) + 2*sqrt(a)*b**2*x*sqrt(-1 + b*x/a)/3, Abs(b*x/a) > 1), (-I*a*
*(5/2)*sqrt(1 - b*x/a)/x - 14*I*a**(3/2)*b*sqrt(1 - b*x/a)/3 - 5*
I*a**(3/2)*b*log(b*x/a)/2 + 5*I*a**(3/2)*b*log(sqrt(1 - b*x/a) +
1) + 2*I*sqrt(a)*b**2*x*sqrt(1 - b*x/a)/3, True))
```

GIAC/XCAS [A] time = 0.207501, size = 101, normalized size = 1.36

$$\frac{15\,a^{\frac{3}{2}}b^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) + 2\,(bx-a)^{\frac{3}{2}}b^2 - 12\,\sqrt{bx-a}ab^2 - \frac{3\,\sqrt{bx-a}a^2b}{x}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/3*(15*a^(3/2)*b^2*arctan(sqrt(b*x - a)/sqrt(a)) + 2*(b*x - a)^(
3/2)*b^2 - 12*sqrt(b*x - a)*a*b^2 - 3*sqrt(b*x - a)*a^2*b/x)/b
```

3.333 $\int \frac{(-a+bx)^{5/2}}{x^3} \, dx$

Optimal. Leaf size=86

$$\frac{15}{4}b^2\sqrt{bx-a}-\frac{15}{4}\sqrt{a}b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-\frac{(bx-a)^{5/2}}{2x^2}-\frac{5b(bx-a)^{3/2}}{4x}$$

```
[Out] (15*b^2*Sqrt[-a + b*x])/4 - (5*b*(-a + b*x)^(3/2))/(4*x) - (-a +
b*x)^(5/2)/(2*x^2) - (15*Sqrt[a]*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a
]])/4
```

Rubi [A] time = 0.0726893, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{15}{4}b^2\sqrt{bx-a}-\frac{15}{4}\sqrt{a}b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-\frac{(bx-a)^{5/2}}{2x^2}-\frac{5b(bx-a)^{3/2}}{4x}$$

Antiderivative was successfully verified.

```
[In]  Int[(-a + b*x)^(5/2)/x^3,x]
```

```
[Out] (15*b^2*Sqrt[-a + b*x])/4 - (5*b*(-a + b*x)^(3/2))/(4*x) - (-a +
b*x)^(5/2)/(2*x^2) - (15*Sqrt[a]*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a
]])/4
```

Rubi in Sympy [A] time = 10.0026, size = 70, normalized size = 0.81

$$-\frac{15\sqrt{a}b^2\,\operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{4}+\frac{15b^2\sqrt{-a+bx}}{4}-\frac{5b\left(-a+bx\right)^{\frac{3}{2}}}{4x}-\frac{\left(-a+bx\right)^{\frac{5}{2}}}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x-a)**(5/2)/x**3,x)
```

```
[Out] -15*sqrt(a)*b**2*atan(sqrt(-a + b*x)/sqrt(a))/4 + 15*b**2*sqrt(-a
 + b*x)/4 - 5*b*(-a + b*x)**(3/2)/(4*x) - (-a + b*x)**(5/2)/(2*x*
*2)
```

Mathematica [A] time = 0.0728761, size = 68, normalized size = 0.79

$$\left(-\frac{a^2}{2x^2}+\frac{9ab}{4x}+2b^2\right)\sqrt{bx-a}-\frac{15}{4}\sqrt{a}b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(5/2)/x^3,x]
```

```
[Out] (2*b^2 - a^2/(2*x^2) + (9*a*b)/(4*x))*Sqrt[-a + b*x] - (15*Sqrt[a
]*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/4
```

Maple [A] time = 0.015, size = 70, normalized size = 0.8

$$2\,b^2\sqrt{bx-a}+\frac{9\,a}{4\,x^2}\,(bx-a)^{\frac{3}{2}}+\frac{7\,a^2}{4\,x^2}\sqrt{bx-a}-\frac{15\,b^2}{4}\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)\sqrt{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x-a)^(5/2)/x^3,x)
```

```
[Out] 2*b^2*(b*x-a)^(1/2)+9/4*a/x^2*(b*x-a)^(3/2)+7/4/x^2*(b*x-a)^(1/2)
*a^2-15/4*b^2*arctan((b*x-a)^(1/2)/a^(1/2))*a^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218083, size = 1, normalized size = 0.01

$$\left[\frac{15\,\sqrt{-a}b^2x^2\log\left(\frac{bx-2\,\sqrt{bx-a}\sqrt{-a}-2\,a}{x}\right)+2\left(8\,b^2x^2+9\,abx-2\,a^2\right)\sqrt{bx-a}}{8\,x^2},\right.$$
$$\left.-\frac{15\,\sqrt{a}b^2x^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-\left(8\,b^2x^2+9\,abx-2\,a^2\right)\sqrt{bx-a}}{4\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(15*sqrt(-a)*b^2*x^2*log((b*x - 2*sqrt(b*x - a)*sqrt(-a) - 2
*a)/x) + 2*(8*b^2*x^2 + 9*a*b*x - 2*a^2)*sqrt(b*x - a))/x^2, -1/4
*(15*sqrt(a)*b^2*x^2*arctan(sqrt(b*x - a)/sqrt(a)) - (8*b^2*x^2 +
 9*a*b*x - 2*a^2)*sqrt(b*x - a))/x^2]
```

Sympy [A] time = 6.73167, size = 267, normalized size = 3.1

$$\begin{cases} -\frac{15i\sqrt{a}b^2\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4} - \frac{ia^3}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{11ia^2\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} - \frac{iab^{\frac{3}{2}}}{4\sqrt{x}\sqrt{\frac{a}{bx}-1}} - \frac{2ib^{\frac{5}{2}}\sqrt{x}}{\sqrt{\frac{a}{bx}-1}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{15\sqrt{a}b^2\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4} + \frac{a^3}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{-\frac{a}{bx}+1}} - \frac{11a^2\sqrt{b}}{4x^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} + \frac{ab^{\frac{3}{2}}}{4\sqrt{x}\sqrt{-\frac{a}{bx}+1}} + \frac{2b^{\frac{5}{2}}\sqrt{x}}{\sqrt{-\frac{a}{bx}+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x-a)**(5/2)/x**3,x)
```

```
[Out] Piecewise((-15*I*sqrt(a)*b**2*acosh(sqrt(a)/(sqrt(b)*sqrt(x)))/4
- I*a**3/(2*sqrt(b)*x**(5/2)*sqrt(a/(b*x) - 1)) + 11*I*a**2*sqrt(
b)/(4*x**(3/2)*sqrt(a/(b*x) - 1)) - I*a*b**(3/2)/(4*sqrt(x)*sqrt(
a/(b*x) - 1)) - 2*I*b**(5/2)*sqrt(x)/sqrt(a/(b*x) - 1), Abs(a/(b*
x)) > 1), (15*sqrt(a)*b**2*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/4 + a*
*3/(2*sqrt(b)*x**(5/2)*sqrt(-a/(b*x) + 1)) - 11*a**2*sqrt(b)/(4*x
**(3/2)*sqrt(-a/(b*x) + 1)) + a*b**(3/2)/(4*sqrt(x)*sqrt(-a/(b*x)
 + 1)) + 2*b**(5/2)*sqrt(x)/sqrt(-a/(b*x) + 1), True))
```

GIAC/XCAS [A] time = 0.20907, size = 112, normalized size = 1.3

$$-\frac{15\sqrt{a}b^3\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right) - 8\sqrt{bx-a}b^3 - \frac{9(bx-a)^{\frac{3}{2}}ab^3 + 7\sqrt{bx-a}a^2b^3}{b^2x^2}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] -1/4*(15*sqrt(a)*b^3*arctan(sqrt(b*x - a)/sqrt(a)) - 8*sqrt(b*x -
 a)*b^3 - (9*(b*x - a)^(3/2)*a*b^3 + 7*sqrt(b*x - a)*a^2*b^3)/(b^
2*x^2))/b
```

3.334 $\int \frac{x^4}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=89

$$\frac{2a^4\sqrt{a+bx}}{b^5}-\frac{8a^3(a+bx)^{3/2}}{3b^5}+\frac{12a^2(a+bx)^{5/2}}{5b^5}+\frac{2(a+bx)^{9/2}}{9b^5}-\frac{8a(a+bx)^{7/2}}{7b^5}$$

```
[Out] (2*a^4*Sqrt[a + b*x])/b^5 - (8*a^3*(a + b*x)^(3/2))/(3*b^5) + (12
*a^2*(a + b*x)^(5/2))/(5*b^5) - (8*a*(a + b*x)^(7/2))/(7*b^5) + (
2*(a + b*x)^(9/2))/(9*b^5)
```

Rubi [A] time = 0.0620837, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^4\sqrt{a+bx}}{b^5}-\frac{8a^3(a+bx)^{3/2}}{3b^5}+\frac{12a^2(a+bx)^{5/2}}{5b^5}+\frac{2(a+bx)^{9/2}}{9b^5}-\frac{8a(a+bx)^{7/2}}{7b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/Sqrt[a + b*x],x]
```

```
[Out] (2*a^4*Sqrt[a + b*x])/b^5 - (8*a^3*(a + b*x)^(3/2))/(3*b^5) + (12
*a^2*(a + b*x)^(5/2))/(5*b^5) - (8*a*(a + b*x)^(7/2))/(7*b^5) + (
2*(a + b*x)^(9/2))/(9*b^5)
```

Rubi in Sympy [A] time = 13.7062, size = 85, normalized size = 0.96

$$\frac{2a^4\sqrt{a+bx}}{b^5}-\frac{8a^3\left(a+bx\right)^{\frac{3}{2}}}{3b^5}+\frac{12a^2\left(a+bx\right)^{\frac{5}{2}}}{5b^5}-\frac{8a\left(a+bx\right)^{\frac{7}{2}}}{7b^5}+\frac{2\left(a+bx\right)^{\frac{9}{2}}}{9b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**(1/2),x)
```

```
[Out] 2*a**4*sqrt(a + b*x)/b**5 - 8*a**3*(a + b*x)**(3/2)/(3*b**5) + 12
*a**2*(a + b*x)**(5/2)/(5*b**5) - 8*a*(a + b*x)**(7/2)/(7*b**5) +
 2*(a + b*x)**(9/2)/(9*b**5)
```

Mathematica [A] time = 0.0258089, size = 57, normalized size = 0.64

$$\frac{2\sqrt{a+bx}\left(128a^4-64a^3bx+48a^2b^2x^2-40ab^3x^3+35b^4x^4\right)}{315b^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x]*(128*a^4 - 64*a^3*b*x + 48*a^2*b^2*x^2 - 40*a*b^
3*x^3 + 35*b^4*x^4))/(315*b^5)
```

Maple [A] time = 0.01, size = 54, normalized size = 0.6

$$\frac{70\,x^4b^4-80\,ax^3b^3+96\,a^2x^2b^2-128\,a^3xb+256\,a^4}{315\,b^5}\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^(1/2),x)
```

```
[Out] 2/315*(b*x+a)^(1/2)*(35*b^4*x^4-40*a*b^3*x^3+48*a^2*b^2*x^2-64*a^
3*b*x+128*a^4)/b^5
```

Maxima [A] time = 1.34814, size = 96, normalized size = 1.08

$$\frac{2\,(bx+a)^{\frac{9}{2}}}{9\,b^5}-\frac{8\,(bx+a)^{\frac{7}{2}}a}{7\,b^5}+\frac{12\,(bx+a)^{\frac{5}{2}}a^2}{5\,b^5}-\frac{8\,(bx+a)^{\frac{3}{2}}a^3}{3\,b^5}+\frac{2\,\sqrt{bx+a}a^4}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] 2/9*(b*x + a)^(9/2)/b^5 - 8/7*(b*x + a)^(7/2)*a/b^5 + 12/5*(b*x +
 a)^(5/2)*a^2/b^5 - 8/3*(b*x + a)^(3/2)*a^3/b^5 + 2*sqrt(b*x + a)
*a^4/b^5
```

Fricas [A] time = 0.219371, size = 72, normalized size = 0.81

$$\frac{2\,\left(35\,b^4x^4-40\,ab^3x^3+48\,a^2b^2x^2-64\,a^3bx+128\,a^4\right)\sqrt{bx+a}}{315\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^4*x^4 - 40*a*b^3*x^3 + 48*a^2*b^2*x^2 - 64*a^3*b*x +
128*a^4)*sqrt(b*x + a)/b^5
```

Sympy [A] time = 7.07812, size = 3755, normalized size = 42.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**(1/2),x)
```

```
[Out] 256*a**(89/2)*sqrt(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x
 + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b*
*9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800
*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**
9 + 315*a**30*b**15*x**10) - 256*a**(89/2)/(315*a**40*b**5 + 3150
*a**39*b**6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 6
6150*a**36*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11
*x**6 + 37800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a*
*31*b**14*x**9 + 315*a**30*b**15*x**10) + 2432*a**(87/2)*b*x*sqrt
(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**
7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a*
*35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7
+ 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**1
5*x**10) - 2560*a**(87/2)*b*x/(315*a**40*b**5 + 3150*a**39*b**6*x
 + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b*
*9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800
*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**
9 + 315*a**30*b**15*x**10) + 10336*a**(85/2)*b**2*x**2*sqrt(1 + b
*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*x**2
 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**35*b*
*10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 + 1417
5*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*x**1
0) - 11520*a**(85/2)*b**2*x**2/(315*a**40*b**5 + 3150*a**39*b**6*
x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b
**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 3780
0*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x*
*9 + 315*a**30*b**15*x**10) + 25840*a**(83/2)*b**3*x**3*sqrt(1 +
b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*x**
2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**35*b
**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 + 141
75*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*x**
10) - 30720*a**(83/2)*b**3*x**3/(315*a**40*b**5 + 3150*a**39*b**6
*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*
b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 378
00*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x
**9 + 315*a**30*b**15*x**10) + 41990*a**(81/2)*b**4*x**4*sqrt(1 +
 b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*x*
*2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**35*
b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 + 14
175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*x*
*10) - 53760*a**(81/2)*b**4*x**4/(315*a**40*b**5 + 3150*a**39*b**
```

```
6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36
*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37
800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*
x**9 + 315*a**30*b**15*x**10) + 46252*a**(79/2)*b**5*x**5*sqrt(1
+ b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*x
**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**35
*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 + 1
4175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*x
**10) - 64512*a**(79/2)*b**5*x**5/(315*a**40*b**5 + 3150*a**39*b*
*6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**3
6*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 3
7800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14
*x**9 + 315*a**30*b**15*x**10) + 35214*a**(77/2)*b**6*x**6*sqrt(1
 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*
x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**3
5*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 +
14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*
x**10) - 53760*a**(77/2)*b**6*x**6/(315*a**40*b**5 + 3150*a**39*b
**6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**
36*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 +
37800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**1
4*x**9 + 315*a**30*b**15*x**10) + 19632*a**(75/2)*b**7*x**7*sqrt(
1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7
*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**
35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 +
 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15
*x**10) - 30720*a**(75/2)*b**7*x**7/(315*a**40*b**5 + 3150*a**39*
b**6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a*
*36*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 +
 37800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**
14*x**9 + 315*a**30*b**15*x**10) + 10860*a**(73/2)*b**8*x**8*sqrt
(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**
7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a*
*35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7
+ 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**1
5*x**10) - 11520*a**(73/2)*b**8*x**8/(315*a**40*b**5 + 3150*a**39
*b**6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a
**36*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6
+ 37800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b*
*14*x**9 + 315*a**30*b**15*x**10) + 9160*a**(71/2)*b**9*x**9*sqrt
(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**
7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a*
*35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7
+ 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**1
5*x**10) - 2560*a**(71/2)*b**9*x**9/(315*a**40*b**5 + 3150*a**39*
b**6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a*
*36*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 +
 37800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**
14*x**9 + 315*a**30*b**15*x**10) + 8396*a**(69/2)*b**10*x**10*sqr
t(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b*
*7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a
**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7
 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**
15*x**10) - 256*a**(69/2)*b**10*x**10/(315*a**40*b**5 + 3150*a**3
9*b**6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*
a**36*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6
```

```
 + 37800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b
**14*x**9 + 315*a**30*b**15*x**10) + 5632*a**(67/2)*b**11*x**11*s
qrt(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*
b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380
*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x*
*7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b
**15*x**10) + 2446*a**(65/2)*b**12*x**12*sqrt(1 + b*x/a)/(315*a**
40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*x**2 + 37800*a**37
*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**35*b**10*x**5 + 661
50*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 + 14175*a**32*b**13*
x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*x**10) + 620*a**(6
3/2)*b**13*x**13*sqrt(1 + b*x/a)/(315*a**40*b**5 + 3150*a**39*b**
6*x + 14175*a**38*b**7*x**2 + 37800*a**37*b**8*x**3 + 66150*a**36
*b**9*x**4 + 79380*a**35*b**10*x**5 + 66150*a**34*b**11*x**6 + 37
800*a**33*b**12*x**7 + 14175*a**32*b**13*x**8 + 3150*a**31*b**14*
x**9 + 315*a**30*b**15*x**10) + 70*a**(61/2)*b**14*x**14*sqrt(1 +
 b*x/a)/(315*a**40*b**5 + 3150*a**39*b**6*x + 14175*a**38*b**7*x*
*2 + 37800*a**37*b**8*x**3 + 66150*a**36*b**9*x**4 + 79380*a**35*
b**10*x**5 + 66150*a**34*b**11*x**6 + 37800*a**33*b**12*x**7 + 14
175*a**32*b**13*x**8 + 3150*a**31*b**14*x**9 + 315*a**30*b**15*x*
*10)
```

GIAC/XCAS [A] time = 0.208835, size = 103, normalized size = 1.16

$$\frac{2\left(35\,(bx+a)^{\frac{9}{2}}b^{32}-180\,(bx+a)^{\frac{7}{2}}ab^{32}+378\,(bx+a)^{\frac{5}{2}}a^{2}b^{32}-420\,(bx+a)^{\frac{3}{2}}a^{3}b^{32}+315\,\sqrt{bx+a}a^{4}b^{32}\right)}{315\,b^{37}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] 2/315*(35*(b*x + a)^(9/2)*b^32 - 180*(b*x + a)^(7/2)*a*b^32 + 378
*(b*x + a)^(5/2)*a^2*b^32 - 420*(b*x + a)^(3/2)*a^3*b^32 + 315*sq
rt(b*x + a)*a^4*b^32)/b^37
```

3.335 $\int \frac{x^3}{\sqrt{a+bx}} dx$

Optimal. Leaf size=68

$$-\frac{2a^3\sqrt{a+bx}}{b^4}+\frac{2a^2(a+bx)^{3/2}}{b^4}+\frac{2(a+bx)^{7/2}}{7b^4}-\frac{6a(a+bx)^{5/2}}{5b^4}$$

```
[Out] (-2*a^3*Sqrt[a + b*x])/b^4 + (2*a^2*(a + b*x)^(3/2))/b^4 - (6*a*(
a + b*x)^(5/2))/(5*b^4) + (2*(a + b*x)^(7/2))/(7*b^4)
```

Rubi [A] time = 0.0507547, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3\sqrt{a+bx}}{b^4}+\frac{2a^2(a+bx)^{3/2}}{b^4}+\frac{2(a+bx)^{7/2}}{7b^4}-\frac{6a(a+bx)^{5/2}}{5b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/Sqrt[a + b*x],x]
```

```
[Out] (-2*a^3*Sqrt[a + b*x])/b^4 + (2*a^2*(a + b*x)^(3/2))/b^4 - (6*a*(
a + b*x)^(5/2))/(5*b^4) + (2*(a + b*x)^(7/2))/(7*b^4)
```

Rubi in Sympy [A] time = 10.9907, size = 65, normalized size = 0.96

$$-\frac{2a^3\sqrt{a+bx}}{b^4}+\frac{2a^2\left(a+bx\right)^{\frac{3}{2}}}{b^4}-\frac{6a\left(a+bx\right)^{\frac{5}{2}}}{5b^4}+\frac{2\left(a+bx\right)^{\frac{7}{2}}}{7b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**(1/2),x)
```

```
[Out] -2*a**3*sqrt(a + b*x)/b**4 + 2*a**2*(a + b*x)**(3/2)/b**4 - 6*a*(
a + b*x)**(5/2)/(5*b**4) + 2*(a + b*x)**(7/2)/(7*b**4)
```

Mathematica [A] time = 0.0211253, size = 46, normalized size = 0.68

$$\frac{2\sqrt{a+bx}\left(-16a^3+8a^2bx-6ab^2x^2+5b^3x^3\right)}{35b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x]*(-16*a^3 + 8*a^2*b*x - 6*a*b^2*x^2 + 5*b^3*x^3))
/(35*b^4)
```

Maple [A] time = 0.009, size = 43, normalized size = 0.6

$$-\frac{-10\,b^3x^3+12\,ab^2x^2-16\,a^2bx+32\,a^3}{35\,b^4}\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^(1/2),x)
```

```
[Out] -2/35*(b*x+a)^(1/2)*(-5*b^3*x^3+6*a*b^2*x^2-8*a^2*b*x+16*a^3)/b^4
```

Maxima [A] time = 1.35091, size = 76, normalized size = 1.12

$$\frac{2\,(bx+a)^{\frac{7}{2}}}{7\,b^4}-\frac{6\,(bx+a)^{\frac{5}{2}}a}{5\,b^4}+\frac{2\,(bx+a)^{\frac{3}{2}}a^2}{b^4}-\frac{2\,\sqrt{bx+a}a^3}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] 2/7*(b*x + a)^(7/2)/b^4 - 6/5*(b*x + a)^(5/2)*a/b^4 + 2*(b*x + a)
^(3/2)*a^2/b^4 - 2*sqrt(b*x + a)*a^3/b^4
```

Fricas [A] time = 0.231927, size = 57, normalized size = 0.84

$$\frac{2\left(5\,b^3x^3-6\,ab^2x^2+8\,a^2bx-16\,a^3\right)\sqrt{bx+a}}{35\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] 2/35*(5*b^3*x^3 - 6*a*b^2*x^2 + 8*a^2*b*x - 16*a^3)*sqrt(b*x + a)
/b^4
```

Sympy [A] time = 4.21008, size = 1640, normalized size = 24.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**(1/2),x)
```

```
[Out] -32*a**(47/2)*sqrt(1 + b*x/a)/(35*a**20*b**4 + 210*a**19*b**5*x +
 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4
+ 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) + 32*a**(47/2)/(35*a
**20*b**4 + 210*a**19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b*
*7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b*
*10*x**6) - 176*a**(45/2)*b*x*sqrt(1 + b*x/a)/(35*a**20*b**4 + 21
0*a**19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 525*
a**16*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) + 19
2*a**(45/2)*b*x/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**18*b**
6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b*
*9*x**5 + 35*a**14*b**10*x**6) - 396*a**(43/2)*b**2*x**2*sqrt(1 +
 b*x/a)/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**18*b**6*x**2 +
 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b**9*x**5
+ 35*a**14*b**10*x**6) + 480*a**(43/2)*b**2*x**2/(35*a**20*b**4 +
 210*a**19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 5
25*a**16*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) -
 462*a**(41/2)*b**3*x**3*sqrt(1 + b*x/a)/(35*a**20*b**4 + 210*a**
19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 525*a**16
*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) + 640*a**
(41/2)*b**3*x**3/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**18*b*
*6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b
**9*x**5 + 35*a**14*b**10*x**6) - 280*a**(39/2)*b**4*x**4*sqrt(1
+ b*x/a)/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**18*b**6*x**2
+ 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b**9*x**5
 + 35*a**14*b**10*x**6) + 480*a**(39/2)*b**4*x**4/(35*a**20*b**4
+ 210*a**19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 +
525*a**16*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6)
- 42*a**(37/2)*b**5*x**5*sqrt(1 + b*x/a)/(35*a**20*b**4 + 210*a**
19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 525*a**16
*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) + 192*a**
(37/2)*b**5*x**5/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**18*b*
*6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b
**9*x**5 + 35*a**14*b**10*x**6) + 84*a**(35/2)*b**6*x**6*sqrt(1 +
 b*x/a)/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**18*b**6*x**2 +
 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**15*b**9*x**5
+ 35*a**14*b**10*x**6) + 32*a**(35/2)*b**6*x**6/(35*a**20*b**4 +
210*a**19*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 52
5*a**16*b**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) +
94*a**(33/2)*b**7*x**7*sqrt(1 + b*x/a)/(35*a**20*b**4 + 210*a**19
*b**5*x + 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b
**8*x**4 + 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) + 48*a**(31
/2)*b**8*x**8*sqrt(1 + b*x/a)/(35*a**20*b**4 + 210*a**19*b**5*x +
 525*a**18*b**6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4
+ 210*a**15*b**9*x**5 + 35*a**14*b**10*x**6) + 10*a**(29/2)*b**9*
x**9*sqrt(1 + b*x/a)/(35*a**20*b**4 + 210*a**19*b**5*x + 525*a**1
8*b**6*x**2 + 700*a**17*b**7*x**3 + 525*a**16*b**8*x**4 + 210*a**
```

```
15*b**9*x**5 + 35*a**14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.20902, size = 82, normalized size = 1.21

$$\frac{2\left(5\,(bx+a)^{\frac{7}{2}}b^{18}-21\,(bx+a)^{\frac{5}{2}}ab^{18}+35\,(bx+a)^{\frac{3}{2}}a^{2}b^{18}-35\,\sqrt{bx+a}a^{3}b^{18}\right)}{35\,b^{22}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] 2/35*(5*(b*x + a)^(7/2)*b^18 - 21*(b*x + a)^(5/2)*a*b^18 + 35*(b*
x + a)^(3/2)*a^2*b^18 - 35*sqrt(b*x + a)*a^3*b^18)/b^22
```

3.336 $\int \frac{x^2}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=51

$$\frac{2a^2\sqrt{a+bx}}{b^3}+\frac{2(a+bx)^{5/2}}{5b^3}-\frac{4a(a+bx)^{3/2}}{3b^3}$$

```
[Out] (2*a^2*Sqrt[a + b*x])/b^3 - (4*a*(a + b*x)^(3/2))/(3*b^3) + (2*(a
 + b*x)^(5/2))/(5*b^3)
```

Rubi [A] time = 0.0389682, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^2\sqrt{a+bx}}{b^3}+\frac{2(a+bx)^{5/2}}{5b^3}-\frac{4a(a+bx)^{3/2}}{3b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/Sqrt[a + b*x],x]
```

```
[Out] (2*a^2*Sqrt[a + b*x])/b^3 - (4*a*(a + b*x)^(3/2))/(3*b^3) + (2*(a
 + b*x)^(5/2))/(5*b^3)
```

Rubi in Sympy [A] time = 7.93041, size = 48, normalized size = 0.94

$$\frac{2a^2\sqrt{a+bx}}{b^3}-\frac{4a\left(a+bx\right)^{\frac{3}{2}}}{3b^3}+\frac{2\left(a+bx\right)^{\frac{5}{2}}}{5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**(1/2),x)
```

```
[Out] 2*a**2*sqrt(a + b*x)/b**3 - 4*a*(a + b*x)**(3/2)/(3*b**3) + 2*(a
+ b*x)**(5/2)/(5*b**3)
```

Mathematica [A] time = 0.0165262, size = 35, normalized size = 0.69

$$\frac{2\sqrt{a+bx}\left(8a^2-4abx+3b^2x^2\right)}{15b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x]*(8*a^2 - 4*a*b*x + 3*b^2*x^2))/(15*b^3)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$\frac{6\,b^2x^2-8\,abx+16\,a^2}{15\,b^3}\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^(1/2),x)
```

```
[Out] 2/15*(b*x+a)^(1/2)*(3*b^2*x^2-4*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.33882, size = 55, normalized size = 1.08

$$\frac{2\,(bx+a)^{\frac{5}{2}}}{5\,b^3}-\frac{4\,(bx+a)^{\frac{3}{2}}a}{3\,b^3}+\frac{2\,\sqrt{bx+a}a^2}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] 2/5*(b*x + a)^(5/2)/b^3 - 4/3*(b*x + a)^(3/2)*a/b^3 + 2*sqrt(b*x
+ a)*a^2/b^3
```

Fricas [A] time = 0.231636, size = 42, normalized size = 0.82

$$\frac{2\left(3\,b^2x^2-4\,abx+8\,a^2\right)\sqrt{bx+a}}{15\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^2*x^2 - 4*a*b*x + 8*a^2)*sqrt(b*x + a)/b^3
```

Sympy [A] time = 2.73924, size = 600, normalized size = 11.76

$$\frac{16a^{\frac{21}{2}}\sqrt{1+\frac{bx}{a}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}-\frac{16a^{\frac{21}{2}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}+\frac{40a^{\frac{19}{2}}bx\sqrt{1+\frac{bx}{a}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}-\frac{48a^{\frac{19}{2}}bx}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}+\frac{30a^{\frac{17}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}-\frac{48a^{\frac{17}{2}}b^2x^2}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}+\frac{10a^{\frac{15}{2}}b^3x^3\sqrt{1+\frac{bx}{a}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}-\frac{16a^{\frac{15}{2}}b^3x^3}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}+\frac{10a^{\frac{13}{2}}b^4x^4\sqrt{1+\frac{bx}{a}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}+\frac{6a^{\frac{11}{2}}b^5x^5\sqrt{1+\frac{bx}{a}}}{15a^8b^3+45a^7b^4x+45a^6b^5x^2+15a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**(1/2),x)
```

```
[Out] 16*a**(21/2)*sqrt(1 + b*x/a)/(15*a**8*b**3 + 45*a**7*b**4*x + 45*
a**6*b**5*x**2 + 15*a**5*b**6*x**3) - 16*a**(21/2)/(15*a**8*b**3
+ 45*a**7*b**4*x + 45*a**6*b**5*x**2 + 15*a**5*b**6*x**3) + 40*a*
*(19/2)*b*x*sqrt(1 + b*x/a)/(15*a**8*b**3 + 45*a**7*b**4*x + 45*a
**6*b**5*x**2 + 15*a**5*b**6*x**3) - 48*a**(19/2)*b*x/(15*a**8*b*
*3 + 45*a**7*b**4*x + 45*a**6*b**5*x**2 + 15*a**5*b**6*x**3) + 30
*a**(17/2)*b**2*x**2*sqrt(1 + b*x/a)/(15*a**8*b**3 + 45*a**7*b**4
*x + 45*a**6*b**5*x**2 + 15*a**5*b**6*x**3) - 48*a**(17/2)*b**2*x
**2/(15*a**8*b**3 + 45*a**7*b**4*x + 45*a**6*b**5*x**2 + 15*a**5*
b**6*x**3) + 10*a**(15/2)*b**3*x**3*sqrt(1 + b*x/a)/(15*a**8*b**3
 + 45*a**7*b**4*x + 45*a**6*b**5*x**2 + 15*a**5*b**6*x**3) - 16*a
**(15/2)*b**3*x**3/(15*a**8*b**3 + 45*a**7*b**4*x + 45*a**6*b**5*
x**2 + 15*a**5*b**6*x**3) + 10*a**(13/2)*b**4*x**4*sqrt(1 + b*x/a
)/(15*a**8*b**3 + 45*a**7*b**4*x + 45*a**6*b**5*x**2 + 15*a**5*b*
*6*x**3) + 6*a**(11/2)*b**5*x**5*sqrt(1 + b*x/a)/(15*a**8*b**3 +
45*a**7*b**4*x + 45*a**6*b**5*x**2 + 15*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.20821, size = 62, normalized size = 1.22

$$\frac{2\left(3\,(bx+a)^{\frac{5}{2}}b^8-10\,(bx+a)^{\frac{3}{2}}ab^8+15\,\sqrt{bx+a}a^2b^8\right)}{15\,b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] 2/15*(3*(b*x + a)^(5/2)*b^8 - 10*(b*x + a)^(3/2)*a*b^8 + 15*sqrt(
b*x + a)*a^2*b^8)/b^11
```

3.337 $\int \frac{x}{\sqrt{a+bx}} dx$

Optimal. Leaf size=32

$$\frac{2(a+bx)^{3/2}}{3b^2} - \frac{2a\sqrt{a+bx}}{b^2}$$

```
[Out] (-2*a*Sqrt[a + b*x])/b^2 + (2*(a + b*x)^(3/2))/(3*b^2)
```

Rubi [A] time = 0.0252409, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2(a+bx)^{3/2}}{3b^2} - \frac{2a\sqrt{a+bx}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/Sqrt[a + b*x],x]
```

```
[Out] (-2*a*Sqrt[a + b*x])/b^2 + (2*(a + b*x)^(3/2))/(3*b^2)
```

Rubi in Sympy [A] time = 4.87291, size = 29, normalized size = 0.91

$$-\frac{2a\sqrt{a+bx}}{b^2} + \frac{2\left(a+bx\right)^{\frac{3}{2}}}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**(1/2),x)
```

```
[Out] -2*a*sqrt(a + b*x)/b**2 + 2*(a + b*x)**(3/2)/(3*b**2)
```

Mathematica [A] time = 0.0123686, size = 23, normalized size = 0.72

$$\frac{2(bx-2a)\sqrt{a+bx}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/Sqrt[a + b*x],x]
```

```
[Out] (2*(-2*a + b*x)*Sqrt[a + b*x])/(3*b^2)
```

Maple [A] time = 0.003, size = 21, normalized size = 0.7

$$-\frac{-2\,bx+4\,a}{3\,b^2}\sqrt{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a)^(1/2),x)
```

```
[Out] -2/3*(b*x+a)^(1/2)*(-b*x+2*a)/b^2
```

Maxima [A] time = 1.34679, size = 35, normalized size = 1.09

$$\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,b^2}-\frac{2\,\sqrt{bx+a}a}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] 2/3*(b*x + a)^(3/2)/b^2 - 2*sqrt(b*x + a)*a/b^2
```

Fricas [A] time = 0.230085, size = 26, normalized size = 0.81

$$\frac{2\,\sqrt{bx+a}(bx-2\,a)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(b*x + a)*(b*x - 2*a)/b^2
```

Sympy [A] time = 1.79893, size = 162, normalized size = 5.06

$$-\frac{4a^{\frac{7}{2}}\sqrt{1+\frac{bx}{a}}}{3a^2b^2+3ab^3x}+\frac{4a^{\frac{7}{2}}}{3a^2b^2+3ab^3x}-\frac{2a^{\frac{5}{2}}bx\sqrt{1+\frac{bx}{a}}}{3a^2b^2+3ab^3x}+\frac{4a^{\frac{5}{2}}bx}{3a^2b^2+3ab^3x}+\frac{2a^{\frac{3}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{3a^2b^2+3ab^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**(1/2),x)
```

```
[Out] -4*a**(7/2)*sqrt(1 + b*x/a)/(3*a**2*b**2 + 3*a*b**3*x) + 4*a**(7/
2)/(3*a**2*b**2 + 3*a*b**3*x) - 2*a**(5/2)*b*x*sqrt(1 + b*x/a)/(3
*a**2*b**2 + 3*a*b**3*x) + 4*a**(5/2)*b*x/(3*a**2*b**2 + 3*a*b**3
*x) + 2*a**(3/2)*b**2*x**2*sqrt(1 + b*x/a)/(3*a**2*b**2 + 3*a*b**
3*x)
```

GIAC/XCAS [A] time = 0.211079, size = 31, normalized size = 0.97

$$\frac{2\left((bx+a)^{\frac{3}{2}}-3\sqrt{bx+a}a\right)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] 2/3*((b*x + a)^(3/2) - 3*sqrt(b*x + a)*a)/b^2
```

3.338 $\int \frac{1}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=14

$$\frac{2\sqrt{a+bx}}{b}$$

```
[Out] (2*Sqrt[a + b*x])/b
```

Rubi [A] time = 0.00693339, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2\sqrt{a+bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x])/b
```

Rubi in Sympy [A] time = 1.27376, size = 10, normalized size = 0.71

$$\frac{2\sqrt{a+bx}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2),x)
```

```
[Out] 2*sqrt(a + b*x)/b
```

Mathematica [A] time = 0.00267762, size = 14, normalized size = 1.

$$\frac{2\sqrt{a+bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/Sqrt[a + b*x],x]
```

```
[Out] (2*Sqrt[a + b*x])/b
```

Maple [A] time = 0.005, size = 13, normalized size = 0.9

$$2\,\frac{\sqrt{bx+a}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2),x)
```

```
[Out] 2*(b*x+a)^(1/2)/b
```

Maxima [A] time = 1.34534, size = 16, normalized size = 1.14

$$\frac{2\,\sqrt{bx+a}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] 2*sqrt(b*x + a)/b
```

Fricas [A] time = 0.230638, size = 16, normalized size = 1.14

$$\frac{2\,\sqrt{bx+a}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] 2*sqrt(b*x + a)/b
```

Sympy [A] time = 0.038876, size = 10, normalized size = 0.71

$$\frac{2\sqrt{a+bx}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2),x)
```

```
[Out] 2*sqrt(a + b*x)/b
```

GIAC/XCAS [A] time = 0.21186, size = 16, normalized size = 1.14

$$\frac{2\sqrt{bx+a}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] 2*sqrt(b*x + a)/b
```

3.339 $\int \frac{1}{x\sqrt{a+bx}}\,dx$

Optimal. Leaf size=23

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

```
[Out] (-2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi [A] time = 0.0223988, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*Sqrt[a + b*x]),x]

[Out] (-2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi in Sympy [A] time = 3.26187, size = 22, normalized size = 0.96

$$-\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**(1/2),x)

[Out] -2*atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a)
```

Mathematica [A] time = 0.0115325, size = 23, normalized size = 1.

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*Sqrt[a + b*x]),x]

[Out] (-2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Maple [A] time = 0.006, size = 18, normalized size = 0.8

$$-2\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(1/2),x)

[Out] -2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.243632, size = 1, normalized size = 0.04

$$\left[\frac{\log\left(\frac{(bx+2a)\sqrt{a}-2\sqrt{bx+a}a}{x}\right)}{\sqrt{a}}, \frac{2\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)}{\sqrt{-a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x),x, algorithm="fricas")

[Out] [log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x)/sqrt(a), 2*arct
an(a/(sqrt(b*x + a)*sqrt(-a)))/sqrt(-a)]
```

Sympy [A] time = 1.8331, size = 24, normalized size = 1.04

$$-\frac{2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(1/2),x)
```

```
[Out] -2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/sqrt(a)
```

GIAC/XCAS [A] time = 0.207748, size = 28, normalized size = 1.22

$$\frac{2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a)
```

3.340 $\int \frac{1}{x^2\sqrt{a+bx}}\,dx$

Optimal. Leaf size=41

$$\frac{b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{\sqrt{a+bx}}{ax}$$

```
[Out] -(Sqrt[a + b*x]/(a*x)) + (b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(3/
2)
```

Rubi [A] time = 0.0365597, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{\sqrt{a+bx}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*Sqrt[a + b*x]),x]
```

```
[Out] -(Sqrt[a + b*x]/(a*x)) + (b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(3/
2)
```

Rubi in Sympy [A] time = 4.7774, size = 32, normalized size = 0.78

$$-\frac{\sqrt{a+bx}}{ax}+\frac{b\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**(1/2),x)
```

```
[Out] -sqrt(a + b*x)/(a*x) + b*atanh(sqrt(a + b*x)/sqrt(a))/a**(3/2)
```

Mathematica [A] time = 0.0293872, size = 41, normalized size = 1.

$$\frac{b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{\sqrt{a+bx}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*Sqrt[a + b*x]),x]
```

```
[Out] -(Sqrt[a + b*x]/(a*x)) + (b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(3/
2)
```

Maple [A] time = 0.011, size = 40, normalized size = 1.

$$2\,b\left(-1/2\,\frac{\sqrt{bx+a}}{abx}+1/2\,\frac{1}{a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^(1/2),x)
```

```
[Out] 2*b*(-1/2*(b*x+a)^(1/2)/a/x/b+1/2*arctanh((b*x+a)^(1/2)/a^(1/2))/
a^(3/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.231054, size = 1, normalized size = 0.02

$$\left[\frac{bx\log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right)-2\,\sqrt{bx+a}\sqrt{a}}{2\,a^{\frac{3}{2}}x},-\frac{bx\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\sqrt{bx+a}\sqrt{-a}}{\sqrt{-a}ax}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^2),x, algorithm="fricas")
```

```
[Out] [1/2*(b*x*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x + a)*a)/x) - 2*sq
rt(b*x + a)*sqrt(a))/(a^(3/2)*x), -(b*x*arctan(a/(sqrt(b*x + a)*s
qrt(-a))) + sqrt(b*x + a)*sqrt(-a))/(sqrt(-a)*a*x)]
```

Sympy [A] time = 3.76167, size = 44, normalized size = 1.07

$$-\frac{\sqrt{b}\sqrt{\frac{a}{bx}+1}}{a\sqrt{x}}+\frac{b\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**(1/2),x)
```

```
[Out] -sqrt(b)*sqrt(a/(b*x) + 1)/(a*sqrt(x)) + b*asinh(sqrt(a)/(sqrt(b)
*sqrt(x)))/a**(3/2)
```

GIAC/XCAS [A] time = 0.210811, size = 63, normalized size = 1.54

$$-\frac{\frac{b^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a}+\frac{\sqrt{bx+a}b}{ax}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^2),x, algorithm="giac")
```

```
[Out] -(b^2*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a) + sqrt(b*x + a)
*b/(a*x))/b
```

3.341 $\int \frac{1}{x^3\sqrt{a+bx}}\,dx$

Optimal. Leaf size=68

$$-\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{3b\sqrt{a+bx}}{4a^2x}-\frac{\sqrt{a+bx}}{2ax^2}$$

```
[Out] -Sqrt[a + b*x]/(2*a*x^2) + (3*b*Sqrt[a + b*x])/(4*a^2*x) - (3*b^2
*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(5/2))
```

Rubi [A] time = 0.0554351, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{3b\sqrt{a+bx}}{4a^2x}-\frac{\sqrt{a+bx}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*Sqrt[a + b*x]),x]
```

```
[Out] -Sqrt[a + b*x]/(2*a*x^2) + (3*b*Sqrt[a + b*x])/(4*a^2*x) - (3*b^2
*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(5/2))
```

Rubi in Sympy [A] time = 7.21041, size = 60, normalized size = 0.88

$$-\frac{\sqrt{a+bx}}{2ax^2}+\frac{3b\sqrt{a+bx}}{4a^2x}-\frac{3b^2\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**(1/2),x)
```

```
[Out] -sqrt(a + b*x)/(2*a*x**2) + 3*b*sqrt(a + b*x)/(4*a**2*x) - 3*b**2
*atanh(sqrt(a + b*x)/sqrt(a))/(4*a**(5/2))
```

Mathematica [A] time = 0.0537338, size = 56, normalized size = 0.82

$$\frac{\sqrt{a+bx}(3bx-2a)}{4a^2x^2}-\frac{3b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*Sqrt[a + b*x]),x]
```

```
[Out] (Sqrt[a + b*x]*(-2*a + 3*b*x))/(4*a^2*x^2) - (3*b^2*ArcTanh[Sqrt[
a + b*x]/Sqrt[a]])/(4*a^(5/2))
```

Maple [A] time = 0.011, size = 66, normalized size = 1.

$$2\,b^{2}\left(-1/4\,\frac{\sqrt{bx+a}}{ab^{2}x^{2}}-3/4\,\frac{1}{a}\left(-1/2\,\frac{\sqrt{bx+a}}{abx}+1/2\,\frac{1}{a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^(1/2),x)
```

```
[Out] 2*b^2*(-1/4*(b*x+a)^(1/2)/a/x^2/b^2-3/4/a*(-1/2*(b*x+a)^(1/2)/a/x
/b+1/2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(3/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230155, size = 1, normalized size = 0.01

$$\left[\frac{3\,b^{2}x^{2}\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)+2\,(3\,bx-2\,a)\sqrt{bx+a}\sqrt{a}}{8\,a^{\frac{5}{2}}x^{2}},\ \frac{3\,b^{2}x^{2}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+(3\,bx-2\,a)\sqrt{bx+a}\sqrt{-a}}{4\,\sqrt{-a}a^{2}x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^3),x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*x^2*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x)
+ 2*(3*b*x - 2*a)*sqrt(b*x + a)*sqrt(a))/(a^(5/2)*x^2), 1/4*(3*b^
```

```
2*x^2*arctan(a/(sqrt(b*x + a)*sqrt(-a))) + (3*b*x - 2*a)*sqrt(b*x
 + a)*sqrt(-a))/(sqrt(-a)*a^2*x^2)]
```

Sympy [A] time = 6.6488, size = 102, normalized size = 1.5

$$-\frac{1}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{\sqrt{b}}{4ax^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{3b^{\frac{3}{2}}}{4a^2\sqrt{x}\sqrt{\frac{a}{bx}+1}}-\frac{3b^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**(1/2),x)
```

```
[Out] -1/(2*sqrt(b)*x**(5/2)*sqrt(a/(b*x) + 1)) + sqrt(b)/(4*a*x**(3/2)
*sqrt(a/(b*x) + 1)) + 3*b**(3/2)/(4*a**2*sqrt(x)*sqrt(a/(b*x) + 1
)) - 3*b**2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*a**(5/2))
```

GIAC/XCAS [A] time = 0.204445, size = 93, normalized size = 1.37

$$\frac{\frac{3\,b^3\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^2}+\frac{3\,(bx+a)^{\frac{3}{2}}\,b^3-5\,\sqrt{bx+a}ab^3}{a^2b^2x^2}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^3),x, algorithm="giac")
```

```
[Out] 1/4*(3*b^3*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^2) + (3*(b*
x + a)^(3/2)*b^3 - 5*sqrt(b*x + a)*a*b^3)/(a^2*b^2*x^2))/b
```

3.342 $\int \frac{1}{x^4\sqrt{a+bx}}\,dx$

Optimal. Leaf size=90

$$\frac{5b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{7/2}}-\frac{5b^2\sqrt{a+bx}}{8a^3x}+\frac{5b\sqrt{a+bx}}{12a^2x^2}-\frac{\sqrt{a+bx}}{3ax^3}$$

```
[Out] -Sqrt[a + b*x]/(3*a*x^3) + (5*b*Sqrt[a + b*x])/(12*a^2*x^2) - (5*
b^2*Sqrt[a + b*x])/(8*a^3*x) + (5*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[
a]])/(8*a^(7/2))
```

Rubi [A] time = 0.0794137, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{5b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{7/2}}-\frac{5b^2\sqrt{a+bx}}{8a^3x}+\frac{5b\sqrt{a+bx}}{12a^2x^2}-\frac{\sqrt{a+bx}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^4*Sqrt[a + b*x]),x]
```

```
[Out] -Sqrt[a + b*x]/(3*a*x^3) + (5*b*Sqrt[a + b*x])/(12*a^2*x^2) - (5*
b^2*Sqrt[a + b*x])/(8*a^3*x) + (5*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[
a]])/(8*a^(7/2))
```

Rubi in Sympy [A] time = 10.2058, size = 82, normalized size = 0.91

$$-\frac{\sqrt{a+bx}}{3ax^3}+\frac{5b\sqrt{a+bx}}{12a^2x^2}-\frac{5b^2\sqrt{a+bx}}{8a^3x}+\frac{5b^3\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**4/(b*x+a)**(1/2),x)
```

```
[Out] -sqrt(a + b*x)/(3*a*x**3) + 5*b*sqrt(a + b*x)/(12*a**2*x**2) - 5*
b**2*sqrt(a + b*x)/(8*a**3*x) + 5*b**3*atanh(sqrt(a + b*x)/sqrt(a
))/(8*a**(7/2))
```

Mathematica [A] time = 0.0782442, size = 67, normalized size = 0.74

$$\frac{5b^3\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{8a^{7/2}}-\frac{\sqrt{a+bx}\,(8a^2-10abx+15b^2x^2)}{24a^3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^4*Sqrt[a + b*x]),x]
```

```
[Out] -(Sqrt[a + b*x]*(8*a^2 - 10*a*b*x + 15*b^2*x^2))/(24*a^3*x^3) + (
5*b^3*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(8*a^(7/2))
```

Maple [A] time = 0.01, size = 90, normalized size = 1.

$$2\,b^3\left(-1/6\,\frac{\sqrt{bx+a}}{ax^3b^3}-5/6\,\frac{1}{a}\left(-1/4\,\frac{\sqrt{bx+a}}{ab^2x^2}-3/4\,\frac{1}{a}\left(-1/2\,\frac{\sqrt{bx+a}}{abx}+1/2\,\frac{1}{a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^4/(b*x+a)^(1/2),x)
```

```
[Out] 2*b^3*(-1/6*(b*x+a)^(1/2)/a/x^3/b^3-5/6/a*(-1/4*(b*x+a)^(1/2)/a/x
^2/b^2-3/4/a*(-1/2*(b*x+a)^(1/2)/a/x/b+1/2*arctanh((b*x+a)^(1/2)/
a^(1/2))/a^(3/2))))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^4),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240065, size = 1, normalized size = 0.01

$$\left[\frac{15\, b^3x^3\log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right)-2\left(15\, b^2x^2-10\, abx+8\, a^2\right)\sqrt{bx+a}\sqrt{a}}{48\, a^{\frac{7}{2}}x^3},\; -\frac{15\, b^3x^3\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\left(15\, b^2x^2-10\, abx+8\, a^2\right)\sqrt{bx+a}\sqrt{-a}}{24\,\sqrt{-a}a^3x^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^4),x, algorithm="fricas")
```

```
[Out] [1/48*(15*b^3*x^3*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x + a)*a)/x
) - 2*(15*b^2*x^2 - 10*a*b*x + 8*a^2)*sqrt(b*x + a)*sqrt(a))/(a^(
7/2)*x^3), -1/24*(15*b^3*x^3*arctan(a/(sqrt(b*x + a)*sqrt(-a))) +
 (15*b^2*x^2 - 10*a*b*x + 8*a^2)*sqrt(b*x + a)*sqrt(-a))/(sqrt(-a
)*a^3*x^3)]
```

Sympy [A] time = 10.3305, size = 129, normalized size = 1.43

$$-\frac{1}{3\sqrt{b}x^{\frac{7}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{\sqrt{b}}{12ax^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{5b^{\frac{3}{2}}}{24a^2x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{5b^{\frac{5}{2}}}{8a^3\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{5b^3\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{8a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**4/(b*x+a)**(1/2),x)
```

```
[Out] -1/(3*sqrt(b)*x**(7/2)*sqrt(a/(b*x) + 1)) + sqrt(b)/(12*a*x**(5/2
)*sqrt(a/(b*x) + 1)) - 5*b**(3/2)/(24*a**2*x**(3/2)*sqrt(a/(b*x)
+ 1)) - 5*b**(5/2)/(8*a**3*sqrt(x)*sqrt(a/(b*x) + 1)) + 5*b**3*as
inh(sqrt(a)/(sqrt(b)*sqrt(x)))/(8*a**(7/2))
```

GIAC/XCAS [A] time = 0.205175, size = 113, normalized size = 1.26

$$-\frac{\frac{15\, b^4\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^3}+\frac{15\,(bx+a)^{\frac{5}{2}}b^4-40\,(bx+a)^{\frac{3}{2}}ab^4+33\,\sqrt{bx+a}a^2b^4}{a^3b^3x^3}}{24\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^4),x, algorithm="giac")
```

```
[Out] -1/24*(15*b^4*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^3) + (15
*(b*x + a)^(5/2)*b^4 - 40*(b*x + a)^(3/2)*a*b^4 + 33*sqrt(b*x + a
)*a^2*b^4)/(a^3*b^3*x^3))/b
```

3.343 $\int \frac{x^4}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=85

$$-\frac{2a^4}{b^5\sqrt{a+bx}}-\frac{8a^3\sqrt{a+bx}}{b^5}+\frac{4a^2(a+bx)^{3/2}}{b^5}-\frac{8a(a+bx)^{5/2}}{5b^5}+\frac{2(a+bx)^{7/2}}{7b^5}$$

```
[Out] (-2*a^4)/(b^5*Sqrt[a + b*x]) - (8*a^3*Sqrt[a + b*x])/b^5 + (4*a^2
*(a + b*x)^(3/2))/b^5 - (8*a*(a + b*x)^(5/2))/(5*b^5) + (2*(a + b
*x)^(7/2))/(7*b^5)
```

Rubi [A] time = 0.060735, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^4}{b^5\sqrt{a+bx}}-\frac{8a^3\sqrt{a+bx}}{b^5}+\frac{4a^2(a+bx)^{3/2}}{b^5}-\frac{8a(a+bx)^{5/2}}{5b^5}+\frac{2(a+bx)^{7/2}}{7b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^(3/2),x]
```

```
[Out] (-2*a^4)/(b^5*Sqrt[a + b*x]) - (8*a^3*Sqrt[a + b*x])/b^5 + (4*a^2
*(a + b*x)^(3/2))/b^5 - (8*a*(a + b*x)^(5/2))/(5*b^5) + (2*(a + b
*x)^(7/2))/(7*b^5)
```

Rubi in Sympy [A] time = 13.6587, size = 82, normalized size = 0.96

$$-\frac{2a^4}{b^5\sqrt{a+bx}}-\frac{8a^3\sqrt{a+bx}}{b^5}+\frac{4a^2\left(a+bx\right)^{\frac{3}{2}}}{b^5}-\frac{8a\left(a+bx\right)^{\frac{5}{2}}}{5b^5}+\frac{2\left(a+bx\right)^{\frac{7}{2}}}{7b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**(3/2),x)
```

```
[Out] -2*a**4/(b**5*sqrt(a + b*x)) - 8*a**3*sqrt(a + b*x)/b**5 + 4*a**2
*(a + b*x)**(3/2)/b**5 - 8*a*(a + b*x)**(5/2)/(5*b**5) + 2*(a + b
*x)**(7/2)/(7*b**5)
```

Mathematica [A] time = 0.0322296, size = 57, normalized size = 0.67

$$\frac{2\left(-128a^4-64a^3bx+16a^2b^2x^2-8ab^3x^3+5b^4x^4\right)}{35b^5\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^(3/2),x]
```

```
[Out] (2*(-128*a^4 - 64*a^3*b*x + 16*a^2*b^2*x^2 - 8*a*b^3*x^3 + 5*b^4*
x^4))/(35*b^5*Sqrt[a + b*x])
```

Maple [A] time = 0.008, size = 54, normalized size = 0.6

$$-\frac{-10\,x^4b^4+16\,ax^3b^3-32\,a^2x^2b^2+128\,a^3xb+256\,a^4}{35\,b^5}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^(3/2),x)
```

```
[Out] -2/35/(b*x+a)^(1/2)*(-5*b^4*x^4+8*a*b^3*x^3-16*a^2*b^2*x^2+64*a^3
*b*x+128*a^4)/b^5
```

Maxima [A] time = 1.3431, size = 96, normalized size = 1.13

$$\frac{2\,(bx+a)^{\frac{7}{2}}}{7\,b^5}-\frac{8\,(bx+a)^{\frac{5}{2}}a}{5\,b^5}+\frac{4\,(bx+a)^{\frac{3}{2}}a^2}{b^5}-\frac{8\,\sqrt{bx+a}a^3}{b^5}-\frac{2\,a^4}{\sqrt{bx+a}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/7*(b*x + a)^(7/2)/b^5 - 8/5*(b*x + a)^(5/2)*a/b^5 + 4*(b*x + a)
^(3/2)*a^2/b^5 - 8*sqrt(b*x + a)*a^3/b^5 - 2*a^4/(sqrt(b*x + a)*b
^5)
```

Fricas [A] time = 0.210502, size = 72, normalized size = 0.85

$$\frac{2\left(5\,b^4x^4-8\,ab^3x^3+16\,a^2b^2x^2-64\,a^3bx-128\,a^4\right)}{35\,\sqrt{bx+a}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*b^4*x^4 - 8*a*b^3*x^3 + 16*a^2*b^2*x^2 - 64*a^3*b*x - 128
*a^4)/(sqrt(b*x + a)*b^5)
```

Sympy [A] time = 7.64992, size = 3606, normalized size = 42.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**(3/2),x)
```

```
[Out] -256*a**(87/2)*sqrt(1 + b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x
+ 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x
**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*
b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a*
*30*b**15*x**10) + 256*a**(87/2)/(35*a**40*b**5 + 350*a**39*b**6*
x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9
*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**3
3*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*
a**30*b**15*x**10) - 2432*a**(85/2)*b*x*sqrt(1 + b*x/a)/(35*a**40
*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8
*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34
*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350
*a**31*b**14*x**9 + 35*a**30*b**15*x**10) + 2560*a**(85/2)*b*x/(3
5*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**
37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 735
0*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**
8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) - 10336*a**(83/2
)*b**2*x**2*sqrt(1 + b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x + 1
575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4
 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**
12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30
*b**15*x**10) + 11520*a**(83/2)*b**2*x**2/(35*a**40*b**5 + 350*a*
*39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a
**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 +
4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x
**9 + 35*a**30*b**15*x**10) - 25840*a**(81/2)*b**3*x**3*sqrt(1 +
b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 +
 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x
**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*
b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) + 30720
*a**(81/2)*b**3*x**3/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**
38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820
*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7
 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*
x**10) - 41990*a**(79/2)*b**4*x**4*sqrt(1 + b*x/a)/(35*a**40*b**5
 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3
 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**1
1*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**3
1*b**14*x**9 + 35*a**30*b**15*x**10) + 53760*a**(79/2)*b**4*x**4/
(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a
**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7
```

```
350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x
**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) - 46182*a**(77
/2)*b**5*x**5*sqrt(1 + b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x +
 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x*
*4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b
**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**
30*b**15*x**10) + 64512*a**(77/2)*b**5*x**5/(35*a**40*b**5 + 350*
a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350
*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6
+ 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14
*x**9 + 35*a**30*b**15*x**10) - 34584*a**(75/2)*b**6*x**6*sqrt(1
+ b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2
 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10
*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**3
2*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) + 537
60*a**(75/2)*b**6*x**6/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a
**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 88
20*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x*
*7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**1
5*x**10) - 17112*a**(73/2)*b**7*x**7*sqrt(1 + b*x/a)/(35*a**40*b*
*5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x*
*3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b*
*11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a*
*31*b**14*x**9 + 35*a**30*b**15*x**10) + 30720*a**(73/2)*b**7*x**
7/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200
*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 +
 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13
*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) - 4980*a**(7
1/2)*b**8*x**8*sqrt(1 + b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x
+ 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x
**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*
b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a*
*30*b**15*x**10) + 11520*a**(71/2)*b**8*x**8/(35*a**40*b**5 + 350
*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 735
0*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6
 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**1
4*x**9 + 35*a**30*b**15*x**10) - 340*a**(69/2)*b**9*x**9*sqrt(1 +
 b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2
+ 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*
x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32
*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) + 2560
*a**(69/2)*b**9*x**9/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**
38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820
*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7
 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*
x**10) + 424*a**(67/2)*b**10*x**10*sqrt(1 + b*x/a)/(35*a**40*b**5
 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3
 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**1
1*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**3
1*b**14*x**9 + 35*a**30*b**15*x**10) + 256*a**(67/2)*b**10*x**10/
(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a
**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7
350*a**34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x
**8 + 350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) + 248*a**(65/2
)*b**11*x**11*sqrt(1 + b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x +
 1575*a**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x*
```

```
*4 + 8820*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b
**12*x**7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**
30*b**15*x**10) + 74*a**(63/2)*b**12*x**12*sqrt(1 + b*x/a)/(35*a*
*40*b**5 + 350*a**39*b**6*x + 1575*a**38*b**7*x**2 + 4200*a**37*b
**8*x**3 + 7350*a**36*b**9*x**4 + 8820*a**35*b**10*x**5 + 7350*a*
*34*b**11*x**6 + 4200*a**33*b**12*x**7 + 1575*a**32*b**13*x**8 +
350*a**31*b**14*x**9 + 35*a**30*b**15*x**10) + 10*a**(61/2)*b**13
*x**13*sqrt(1 + b*x/a)/(35*a**40*b**5 + 350*a**39*b**6*x + 1575*a
**38*b**7*x**2 + 4200*a**37*b**8*x**3 + 7350*a**36*b**9*x**4 + 88
20*a**35*b**10*x**5 + 7350*a**34*b**11*x**6 + 4200*a**33*b**12*x*
*7 + 1575*a**32*b**13*x**8 + 350*a**31*b**14*x**9 + 35*a**30*b**1
5*x**10)
```

GIAC/XCAS [A] time = 0.203407, size = 104, normalized size = 1.22

$$-\frac{2\,a^4}{\sqrt{bx+a}b^5}+\frac{2\left(5\,(bx+a)^{\frac{7}{2}}b^{30}-28\,(bx+a)^{\frac{5}{2}}ab^{30}+70\,(bx+a)^{\frac{3}{2}}a^2b^{30}-140\,\sqrt{bx+a}a^3b^{30}\right)}{35\,b^{35}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*a^4/(sqrt(b*x + a)*b^5) + 2/35*(5*(b*x + a)^(7/2)*b^30 - 28*(b
*x + a)^(5/2)*a*b^30 + 70*(b*x + a)^(3/2)*a^2*b^30 - 140*sqrt(b*x
 + a)*a^3*b^30)/b^35
```

3.344 $\int \frac{x^3}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=66

$$\frac{2a^3}{b^4\sqrt{a+bx}}+\frac{6a^2\sqrt{a+bx}}{b^4}-\frac{2a(a+bx)^{3/2}}{b^4}+\frac{2(a+bx)^{5/2}}{5b^4}$$

```
[Out] (2*a^3)/(b^4*Sqrt[a + b*x]) + (6*a^2*Sqrt[a + b*x])/b^4 - (2*a*(a
 + b*x)^(3/2))/b^4 + (2*(a + b*x)^(5/2))/(5*b^4)
```

Rubi [A] time = 0.0495814, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^3}{b^4\sqrt{a+bx}}+\frac{6a^2\sqrt{a+bx}}{b^4}-\frac{2a(a+bx)^{3/2}}{b^4}+\frac{2(a+bx)^{5/2}}{5b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^(3/2),x]
```

```
[Out] (2*a^3)/(b^4*Sqrt[a + b*x]) + (6*a^2*Sqrt[a + b*x])/b^4 - (2*a*(a
 + b*x)^(3/2))/b^4 + (2*(a + b*x)^(5/2))/(5*b^4)
```

Rubi in Sympy [A] time = 10.9244, size = 63, normalized size = 0.95

$$\frac{2a^3}{b^4\sqrt{a+bx}}+\frac{6a^2\sqrt{a+bx}}{b^4}-\frac{2a\,(a+bx)^{\frac{3}{2}}}{b^4}+\frac{2\,(a+bx)^{\frac{5}{2}}}{5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**(3/2),x)
```

```
[Out] 2*a**3/(b**4*sqrt(a + b*x)) + 6*a**2*sqrt(a + b*x)/b**4 - 2*a*(a
+ b*x)**(3/2)/b**4 + 2*(a + b*x)**(5/2)/(5*b**4)
```

Mathematica [A] time = 0.0239952, size = 45, normalized size = 0.68

$$\frac{2\left(16a^3+8a^2bx-2ab^2x^2+b^3x^3\right)}{5b^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^(3/2),x]
```

```
[Out] (2*(16*a^3 + 8*a^2*b*x - 2*a*b^2*x^2 + b^3*x^3))/(5*b^4*Sqrt[a +
b*x])
```

Maple [A] time = 0.009, size = 42, normalized size = 0.6

$$\frac{2\,b^3x^3-4\,ab^2x^2+16\,a^2bx+32\,a^3}{5\,b^4}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^(3/2),x)
```

```
[Out] 2/5/(b*x+a)^(1/2)*(b^3*x^3-2*a*b^2*x^2+8*a^2*b*x+16*a^3)/b^4
```

Maxima [A] time = 1.34211, size = 76, normalized size = 1.15

$$\frac{2\,(bx+a)^{\frac{5}{2}}}{5\,b^4}-\frac{2\,(bx+a)^{\frac{3}{2}}a}{b^4}+\frac{6\,\sqrt{bx+a}a^2}{b^4}+\frac{2\,a^3}{\sqrt{bx+a}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(b*x + a)^(5/2)/b^4 - 2*(b*x + a)^(3/2)*a/b^4 + 6*sqrt(b*x +
a)*a^2/b^4 + 2*a^3/(sqrt(b*x + a)*b^4)
```

Fricas [A] time = 0.209178, size = 55, normalized size = 0.83

$$\frac{2\,\left(b^3x^3-2\,ab^2x^2+8\,a^2bx+16\,a^3\right)}{5\,\sqrt{bx+a}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(b^3*x^3 - 2*a*b^2*x^2 + 8*a^2*b*x + 16*a^3)/(sqrt(b*x + a)*b
^4)
```

Sympy [A] time = 8.93163, size = 1538, normalized size = 23.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**(3/2),x)
```

```
[Out] 32*a**(45/2)*sqrt(1 + b*x/a)/(5*a**20*b**4 + 30*a**19*b**5*x + 75
*a**18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4 + 30*
a**15*b**9*x**5 + 5*a**14*b**10*x**6) - 32*a**(45/2)/(5*a**20*b**
4 + 30*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**17*b**7*x**3 +
75*a**16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**10*x**6) + 1
76*a**(43/2)*b*x*sqrt(1 + b*x/a)/(5*a**20*b**4 + 30*a**19*b**5*x
+ 75*a**18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4 +
 30*a**15*b**9*x**5 + 5*a**14*b**10*x**6) - 192*a**(43/2)*b*x/(5*
a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**17*b**
7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**10*
x**6) + 396*a**(41/2)*b**2*x**2*sqrt(1 + b*x/a)/(5*a**20*b**4 + 3
0*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a*
*16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**10*x**6) - 480*a*
*(41/2)*b**2*x**2/(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6
*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*
x**5 + 5*a**14*b**10*x**6) + 462*a**(39/2)*b**3*x**3*sqrt(1 + b*x
/a)/(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a*
*17*b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14
*b**10*x**6) - 640*a**(39/2)*b**3*x**3/(5*a**20*b**4 + 30*a**19*b
**5*x + 75*a**18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*
x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**10*x**6) + 290*a**(37/2)*b
**4*x**4*sqrt(1 + b*x/a)/(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**
18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**1
5*b**9*x**5 + 5*a**14*b**10*x**6) - 480*a**(37/2)*b**4*x**4/(5*a*
*20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**17*b**7*
x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**10*x*
*6) + 92*a**(35/2)*b**5*x**5*sqrt(1 + b*x/a)/(5*a**20*b**4 + 30*a
**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a**16
*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**10*x**6) - 192*a**(3
5/2)*b**5*x**5/(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6*x*
*2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*x**
5 + 5*a**14*b**10*x**6) + 16*a**(33/2)*b**6*x**6*sqrt(1 + b*x/a)/
(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**17*
b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b**
10*x**6) - 32*a**(33/2)*b**6*x**6/(5*a**20*b**4 + 30*a**19*b**5*x
 + 75*a**18*b**6*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4
+ 30*a**15*b**9*x**5 + 5*a**14*b**10*x**6) + 6*a**(31/2)*b**7*x**
7*sqrt(1 + b*x/a)/(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6
*x**2 + 100*a**17*b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*
x**5 + 5*a**14*b**10*x**6) + 2*a**(29/2)*b**8*x**8*sqrt(1 + b*x/a
)/(5*a**20*b**4 + 30*a**19*b**5*x + 75*a**18*b**6*x**2 + 100*a**1
7*b**7*x**3 + 75*a**16*b**8*x**4 + 30*a**15*b**9*x**5 + 5*a**14*b
**10*x**6)
```

GIAC/XCAS [A] time = 0.204771, size = 82, normalized size = 1.24

$$\frac{2\,a^{3}}{\sqrt{bx+a}b^{4}}+\frac{2\left((bx+a)^{\frac{5}{2}}b^{16}-5\,(bx+a)^{\frac{3}{2}}ab^{16}+15\,\sqrt{bx+a}a^{2}b^{16}\right)}{5\,b^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*a^3/(sqrt(b*x + a)*b^4) + 2/5*((b*x + a)^(5/2)*b^16 - 5*(b*x +
a)^(3/2)*a*b^16 + 15*sqrt(b*x + a)*a^2*b^16)/b^20
```

3.345 $\int \frac{x^2}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=49

$$-\frac{2a^2}{b^3\sqrt{a+bx}}-\frac{4a\sqrt{a+bx}}{b^3}+\frac{2(a+bx)^{3/2}}{3b^3}$$

```
[Out] (-2*a^2)/(b^3*Sqrt[a + b*x]) - (4*a*Sqrt[a + b*x])/b^3 + (2*(a +
b*x)^(3/2))/(3*b^3)
```

Rubi [A] time = 0.0382472, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{2a^2}{b^3\sqrt{a+bx}}-\frac{4a\sqrt{a+bx}}{b^3}+\frac{2(a+bx)^{3/2}}{3b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^(3/2),x]
```

```
[Out] (-2*a^2)/(b^3*Sqrt[a + b*x]) - (4*a*Sqrt[a + b*x])/b^3 + (2*(a +
b*x)^(3/2))/(3*b^3)
```

Rubi in Sympy [A] time = 7.88459, size = 46, normalized size = 0.94

$$-\frac{2a^2}{b^3\sqrt{a+bx}}-\frac{4a\sqrt{a+bx}}{b^3}+\frac{2\left(a+bx\right)^{\frac{3}{2}}}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**(3/2),x)
```

```
[Out] -2*a**2/(b**3*sqrt(a + b*x)) - 4*a*sqrt(a + b*x)/b**3 + 2*(a + b*
x)**(3/2)/(3*b**3)
```

Mathematica [A] time = 0.0207877, size = 34, normalized size = 0.69

$$\frac{2\left(-8a^2-4abx+b^2x^2\right)}{3b^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^(3/2),x]

[Out] (2*(-8*a^2 - 4*a*b*x + b^2*x^2))/(3*b^3*Sqrt[a + b*x])
```

Maple [A] time = 0.009, size = 32, normalized size = 0.7

$$-\frac{-2\,b^2x^2+8\,abx+16\,a^2}{3\,b^3}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^(3/2),x)

[Out] -2/3/(b*x+a)^(1/2)*(-b^2*x^2+4*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.34362, size = 55, normalized size = 1.12

$$\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,b^3}-\frac{4\,\sqrt{bx+a}a}{b^3}-\frac{2\,a^2}{\sqrt{bx+a}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(3/2),x, algorithm="maxima")

[Out] 2/3*(b*x + a)^(3/2)/b^3 - 4*sqrt(b*x + a)*a/b^3 - 2*a^2/(sqrt(b*x
 + a)*b^3)
```

Fricas [A] time = 0.224363, size = 41, normalized size = 0.84

$$\frac{2\left(b^2x^2-4\,abx-8\,a^2\right)}{3\,\sqrt{bx+a}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(3/2),x, algorithm="fricas")

[Out] 2/3*(b^2*x^2 - 4*a*b*x - 8*a^2)/(sqrt(b*x + a)*b^3)
```

Sympy [A] time = 5.53629, size = 534, normalized size = 10.9

$$-\frac{16a^{\frac{19}{2}}\sqrt{1+\frac{bx}{a}}}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}+\frac{16a^{\frac{19}{2}}}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}-\frac{40a^{\frac{17}{2}}bx\sqrt{1+\frac{bx}{a}}}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}+\frac{48a^{\frac{17}{2}}bx}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}-\frac{30a^{\frac{15}{2}}b^2x^2\sqrt{1+\frac{bx}{a}}}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}+\frac{48a^{\frac{15}{2}}b^2x^2}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}-\frac{4a^{\frac{13}{2}}b^3x^3\sqrt{1+\frac{bx}{a}}}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}+\frac{16a^{\frac{13}{2}}b^3x^3}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}+\frac{2a^{\frac{11}{2}}b^4x^4\sqrt{1+\frac{bx}{a}}}{3a^8b^3+9a^7b^4x+9a^6b^5x^2+3a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**(3/2),x)
```

```
[Out] -16*a**(19/2)*sqrt(1 + b*x/a)/(3*a**8*b**3 + 9*a**7*b**4*x + 9*a*
*6*b**5*x**2 + 3*a**5*b**6*x**3) + 16*a**(19/2)/(3*a**8*b**3 + 9*
a**7*b**4*x + 9*a**6*b**5*x**2 + 3*a**5*b**6*x**3) - 40*a**(17/2)
*b*x*sqrt(1 + b*x/a)/(3*a**8*b**3 + 9*a**7*b**4*x + 9*a**6*b**5*x
**2 + 3*a**5*b**6*x**3) + 48*a**(17/2)*b*x/(3*a**8*b**3 + 9*a**7*
b**4*x + 9*a**6*b**5*x**2 + 3*a**5*b**6*x**3) - 30*a**(15/2)*b**2
*x**2*sqrt(1 + b*x/a)/(3*a**8*b**3 + 9*a**7*b**4*x + 9*a**6*b**5*
x**2 + 3*a**5*b**6*x**3) + 48*a**(15/2)*b**2*x**2/(3*a**8*b**3 +
9*a**7*b**4*x + 9*a**6*b**5*x**2 + 3*a**5*b**6*x**3) - 4*a**(13/2
)*b**3*x**3*sqrt(1 + b*x/a)/(3*a**8*b**3 + 9*a**7*b**4*x + 9*a**6
*b**5*x**2 + 3*a**5*b**6*x**3) + 16*a**(13/2)*b**3*x**3/(3*a**8*b
**3 + 9*a**7*b**4*x + 9*a**6*b**5*x**2 + 3*a**5*b**6*x**3) + 2*a*
*(11/2)*b**4*x**4*sqrt(1 + b*x/a)/(3*a**8*b**3 + 9*a**7*b**4*x +
9*a**6*b**5*x**2 + 3*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.204529, size = 62, normalized size = 1.27

$$-\frac{2\,a^2}{\sqrt{bx+a}b^3}+\frac{2\left((bx+a)^{\frac{3}{2}}b^6-6\,\sqrt{bx+a}ab^6\right)}{3\,b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*a^2/(sqrt(b*x + a)*b^3) + 2/3*((b*x + a)^(3/2)*b^6 - 6*sqrt(b*
x + a)*a*b^6)/b^9
```

3.346 $\int \frac{x}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=30

$$\frac{2a}{b^2\sqrt{a+bx}}+\frac{2\sqrt{a+bx}}{b^2}$$

```
[Out] (2*a)/(b^2*Sqrt[a + b*x]) + (2*Sqrt[a + b*x])/b^2
```

Rubi [A] time = 0.0247017, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2a}{b^2\sqrt{a+bx}}+\frac{2\sqrt{a+bx}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^(3/2),x]

[Out] (2*a)/(b^2*Sqrt[a + b*x]) + (2*Sqrt[a + b*x])/b^2
```

Rubi in Sympy [A] time = 4.91127, size = 27, normalized size = 0.9

$$\frac{2a}{b^2\sqrt{a+bx}}+\frac{2\sqrt{a+bx}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**(3/2),x)

[Out] 2*a/(b**2*sqrt(a + b*x)) + 2*sqrt(a + b*x)/b**2
```

Mathematica [A] time = 0.0146373, size = 21, normalized size = 0.7

$$\frac{2(2a+bx)}{b^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^(3/2),x]
```

```
[Out] (2*(2*a + b*x))/(b^2*Sqrt[a + b*x])
```

Maple [A] time = 0.006, size = 20, normalized size = 0.7

$$2\,{\frac{bx+2\,a}{{b}^{2}\sqrt{bx+a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a)^(3/2),x)
```

```
[Out] 2/(b*x+a)^(1/2)*(b*x+2*a)/b^2
```

Maxima [A] time = 1.33926, size = 35, normalized size = 1.17

$$\frac{2\,\sqrt{bx+a}}{b^{2}}+\frac{2\,a}{\sqrt{bx+a}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(b*x + a)/b^2 + 2*a/(sqrt(b*x + a)*b^2)
```

Fricas [A] time = 0.222025, size = 26, normalized size = 0.87

$$\frac{2\,{\left(bx+2\,a\right)}}{\sqrt{bx+a}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*(b*x + 2*a)/(sqrt(b*x + a)*b^2)
```

Sympy [A] time = 2.01795, size = 37, normalized size = 1.23

$$\begin{cases} \frac{4a}{b^{2}\sqrt{a+bx}}+\frac{2x}{b\sqrt{a+bx}} & \text{for}\: b \neq 0 \\ \frac{x^{2}}{2a^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**(3/2),x)
```

```
[Out] Piecewise((4*a/(b**2*sqrt(a + b*x)) + 2*x/(b*sqrt(a + b*x)), Ne(b
, 0)), (x**2/(2*a**(3/2)), True))
```

GIAC/XCAS [A] time = 0.204764, size = 39, normalized size = 1.3

$$\frac{2\left(\frac{\sqrt{bx+a}}{b}+\frac{a}{\sqrt{bx+a}b}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(sqrt(b*x + a)/b + a/(sqrt(b*x + a)*b))/b
```

3.347 $\int \frac{1}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=14

$$-\frac{2}{b\sqrt{a+bx}}$$

```
[Out] -2/(b*Sqrt[a + b*x])
```

Rubi [A] time = 0.00670844, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{2}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-3/2),x]

[Out] -2/(b*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 1.28241, size = 12, normalized size = 0.86

$$-\frac{2}{b\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2),x)

[Out] -2/(b*sqrt(a + b*x))
```

Mathematica [A] time = 0.00421834, size = 14, normalized size = 1.

$$-\frac{2}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-3/2),x]
```

```
[Out] -2/(b*Sqrt[a + b*x])
```

Maple [A] time = 0.003, size = 13, normalized size = 0.9

$$-2\,\frac{1}{b\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(3/2),x)
```

```
[Out] -2/b/(b*x+a)^(1/2)
```

Maxima [A] time = 1.3345, size = 16, normalized size = 1.14

$$-\frac{2}{\sqrt{bx+a}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-3/2),x, algorithm="maxima")
```

```
[Out] -2/(sqrt(b*x + a)*b)
```

Fricas [A] time = 0.216789, size = 16, normalized size = 1.14

$$-\frac{2}{\sqrt{bx+a}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-3/2),x, algorithm="fricas")
```

```
[Out] -2/(sqrt(b*x + a)*b)
```

Sympy [A] time = 0.077346, size = 12, normalized size = 0.86

$$-\frac{2}{b\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2),x)

[Out] -2/(b*sqrt(a + b*x))
```

GIAC/XCAS [A] time = 0.204708, size = 16, normalized size = 1.14

$$-\frac{2}{\sqrt{bx+a}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-3/2),x, algorithm="giac")

[Out] -2/(sqrt(b*x + a)*b)
```

3.348 $\int \frac{1}{x(a+bx)^{3/2}} dx$

Optimal. Leaf size=38

$$\frac{2}{a\sqrt{a+bx}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{3/2}}$$

```
[Out] 2/(a*Sqrt[a + b*x]) - (2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(3/2)
```

Rubi [A] time = 0.0357687, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{2}{a\sqrt{a+bx}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^(3/2)),x]

[Out] 2/(a*Sqrt[a + b*x]) - (2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(3/2)
```

Rubi in Sympy [A] time = 5.04108, size = 32, normalized size = 0.84

$$\frac{2}{a\sqrt{a+bx}} - \frac{2\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**(3/2),x)

[Out] 2/(a*sqrt(a + b*x)) - 2*atanh(sqrt(a + b*x)/sqrt(a))/a**(3/2)
```

Mathematica [A] time = 0.0331102, size = 38, normalized size = 1.

$$\frac{2}{a\sqrt{a+bx}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^(3/2)),x]
```

```
[Out] 2/(a*Sqrt[a + b*x]) - (2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(3/2)
```

Maple [A] time = 0.012, size = 31, normalized size = 0.8

$$-2\frac{1}{a^{3/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)+2\frac{1}{a\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(3/2),x)
```

```
[Out] -2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(3/2)+2/a/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230624, size = 1, normalized size = 0.03

$$\left[\frac{\sqrt{bx+a}\log\left(\frac{(bx+2a)\sqrt{a}-2\sqrt{bx+a}a}{x}\right)+2\sqrt{a}}{\sqrt{bx+a}a^{\frac{3}{2}}}, \frac{2\left(\sqrt{bx+a}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\sqrt{-a}\right)}{\sqrt{bx+a}\sqrt{-a}a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*x + a)*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x)
+ 2*sqrt(a))/(sqrt(b*x + a)*a^(3/2)), 2*(sqrt(b*x + a)*arctan(a/(
sqrt(b*x + a)*sqrt(-a))) + sqrt(-a))/(sqrt(b*x + a)*sqrt(-a)*a)]
```

Sympy [A] time = 5.84359, size = 146, normalized size = 3.84

$$\frac{2a^3\sqrt{1+\frac{bx}{a}}}{a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{a^3\log\left(\frac{bx}{a}\right)}{a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{2a^3\log\left(\sqrt{1+\frac{bx}{a}}+1\right)}{a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{a^2bx\log\left(\frac{bx}{a}\right)}{a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{2a^2bx\log\left(\sqrt{1+\frac{bx}{a}}+1\right)}{a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(3/2),x)
```

```
[Out] 2*a**3*sqrt(1 + b*x/a)/(a**(9/2) + a**(7/2)*b*x) + a**3*log(b*x/a
)/(a**(9/2) + a**(7/2)*b*x) - 2*a**3*log(sqrt(1 + b*x/a) + 1)/(a*
*(9/2) + a**(7/2)*b*x) + a**2*b*x*log(b*x/a)/(a**(9/2) + a**(7/2)
*b*x) - 2*a**2*b*x*log(sqrt(1 + b*x/a) + 1)/(a**(9/2) + a**(7/2)*
b*x)
```

GIAC/XCAS [A] time = 0.201086, size = 50, normalized size = 1.32

$$\frac{2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a}+\frac{2}{\sqrt{bx+a}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a) + 2/(sqrt(b*x + a)*
a)
```

3.349 $\int \frac{1}{x^2(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=59

$$\frac{3b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3\sqrt{a+bx}}{a^2x}+\frac{2}{ax\sqrt{a+bx}}$$

```
[Out] 2/(a*x*Sqrt[a + b*x]) - (3*Sqrt[a + b*x])/(a^2*x) + (3*b*ArcTanh[
Sqrt[a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0537651, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{3b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3\sqrt{a+bx}}{a^2x}+\frac{2}{ax\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^(3/2)),x]
```

```
[Out] 2/(a*x*Sqrt[a + b*x]) - (3*Sqrt[a + b*x])/(a^2*x) + (3*b*ArcTanh[
Sqrt[a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 7.29956, size = 51, normalized size = 0.86

$$\frac{2}{ax\sqrt{a+bx}}-\frac{3\sqrt{a+bx}}{a^2x}+\frac{3b\,\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**(3/2),x)
```

```
[Out] 2/(a*x*sqrt(a + b*x)) - 3*sqrt(a + b*x)/(a**2*x) + 3*b*atanh(sqrt
(a + b*x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.0791913, size = 48, normalized size = 0.81

$$\frac{3b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{a+3bx}{a^2x\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^(3/2)),x]
```

```
[Out] -((a + 3*b*x)/(a^2*x*Sqrt[a + b*x])) + (3*b*ArcTanh[Sqrt[a + b*x]
/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.02, size = 55, normalized size = 0.9

$$2\,b\left(-\frac{1}{a^{2}\sqrt{bx+a}}-\frac{1}{a^{2}}\left(1/2\,\frac{\sqrt{bx+a}}{bx}-3/2\,\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^(3/2),x)
```

```
[Out] 2*b*(-1/a^2/(b*x+a)^(1/2)-1/a^2*(1/2*(b*x+a)^(1/2)/x/b-3/2*arctan
h((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233278, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{bx+a}bx\log\left(\frac{(bx+2\,a)\sqrt{a}+2\,\sqrt{bx+a}a}{x}\right)-2\,(3\,bx+a)\sqrt{a}}{2\,\sqrt{bx+a}a^{\frac{5}{2}}x},-\frac{3\,\sqrt{bx+a}bx\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+(3\,bx+a)\sqrt{-a}}{\sqrt{bx+a}\sqrt{-a}a^{2}x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^2),x, algorithm="fricas")
```

```
[Out] [1/2*(3*sqrt(b*x + a)*b*x*log(((b*x + 2*a)*sqrt(a) + 2*sqrt(b*x +
 a)*a)/x) - 2*(3*b*x + a)*sqrt(a))/(sqrt(b*x + a)*a^(5/2)*x), -(3
```

```
*sqrt(b*x + a)*b*x*arctan(a/(sqrt(b*x + a)*sqrt(-a))) + (3*b*x +
a)*sqrt(-a))/(sqrt(b*x + a)*sqrt(-a)*a^2*x)]
```

Sympy [A] time = 12.6608, size = 73, normalized size = 1.24

$$-\frac{1}{a\sqrt{b}x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{3\sqrt{b}}{a^2\sqrt{x}\sqrt{\frac{a}{bx}+1}}+\frac{3b\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**(3/2),x)
```

```
[Out] -1/(a*sqrt(b)*x**(3/2)*sqrt(a/(b*x) + 1)) - 3*sqrt(b)/(a**2*sqrt(
x)*sqrt(a/(b*x) + 1)) + 3*b*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/a**(
5/2)
```

GIAC/XCAS [A] time = 0.205489, size = 86, normalized size = 1.46

$$-\frac{3\,b\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^2}-\frac{3\,(bx+a)b-2\,ab}{\left((bx+a)^{\frac{3}{2}}-\sqrt{bx+a}a\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^2),x, algorithm="giac")
```

```
[Out] -3*b*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^2) - (3*(b*x + a)
*b - 2*a*b)/(((b*x + a)^(3/2) - sqrt(b*x + a)*a)*a^2)
```

3.350 $\int \frac{1}{x^3(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=85

$$-\frac{15b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{7/2}}+\frac{15b\sqrt{a+bx}}{4a^3x}-\frac{5\sqrt{a+bx}}{2a^2x^2}+\frac{2}{ax^2\sqrt{a+bx}}$$

```
[Out] 2/(a*x^2*Sqrt[a + b*x]) - (5*Sqrt[a + b*x])/(2*a^2*x^2) + (15*b*S
qrt[a + b*x])/(4*a^3*x) - (15*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])
/(4*a^(7/2))
```

Rubi [A] time = 0.0754344, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{15b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{7/2}}+\frac{15b\sqrt{a+bx}}{4a^3x}-\frac{5\sqrt{a+bx}}{2a^2x^2}+\frac{2}{ax^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^(3/2)),x]
```

```
[Out] 2/(a*x^2*Sqrt[a + b*x]) - (5*Sqrt[a + b*x])/(2*a^2*x^2) + (15*b*S
qrt[a + b*x])/(4*a^3*x) - (15*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])
/(4*a^(7/2))
```

Rubi in Sympy [A] time = 10.4421, size = 78, normalized size = 0.92

$$\frac{2}{ax^2\sqrt{a+bx}}-\frac{5\sqrt{a+bx}}{2a^2x^2}+\frac{15b\sqrt{a+bx}}{4a^3x}-\frac{15b^2\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**(3/2),x)
```

```
[Out] 2/(a*x**2*sqrt(a + b*x)) - 5*sqrt(a + b*x)/(2*a**2*x**2) + 15*b*s
qrt(a + b*x)/(4*a**3*x) - 15*b**2*atanh(sqrt(a + b*x)/sqrt(a))/(4
*a**(7/2))
```

Mathematica [A] time = 0.0956186, size = 67, normalized size = 0.79

$$\frac{-2a^2+5abx+15b^2x^2}{4a^3x^2\sqrt{a+bx}}-\frac{15b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^(3/2)),x]
```

```
[Out] (-2*a^2 + 5*a*b*x + 15*b^2*x^2)/(4*a^3*x^2*Sqrt[a + b*x]) - (15*b
^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(7/2))
```

Maple [A] time = 0.02, size = 67, normalized size = 0.8

$$2\,b^2\left(\frac{1}{\sqrt{bx+a}a^3}+\frac{1}{a^3}\left(\frac{1}{b^2x^2}\left(\frac{7\,(bx+a)^{3/2}}{8}-\frac{9\,a\sqrt{bx+a}}{8}\right)-\frac{15}{8\,\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^(3/2),x)
```

```
[Out] 2*b^2*(1/a^3/(b*x+a)^(1/2)+1/a^3*((7/8*(b*x+a)^(3/2)-9/8*a*(b*x+a
)^(1/2))/x^2/b^2-15/8*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.281535, size = 1, normalized size = 0.01

$$\left[\frac{15\,\sqrt{bx+a}b^2x^2\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)+2\left(15\,b^2x^2+5\,abx-2\,a^2\right)\sqrt{a}}{8\,\sqrt{bx+a}a^{\frac{7}{2}}x^2},\frac{15\,\sqrt{bx+a}b^2x^2\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\left(15\,b^2x^2\right.}{4\,\sqrt{bx+a}\sqrt{-a}a^3x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^3),x, algorithm="fricas")
```

```
[Out] [1/8*(15*sqrt(b*x + a)*b^2*x^2*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(
b*x + a)*a)/x) + 2*(15*b^2*x^2 + 5*a*b*x - 2*a^2)*sqrt(a))/(sqrt(
b*x + a)*a^(7/2)*x^2), 1/4*(15*sqrt(b*x + a)*b^2*x^2*arctan(a/(sq
rt(b*x + a)*sqrt(-a))) + (15*b^2*x^2 + 5*a*b*x - 2*a^2)*sqrt(-a))
/(sqrt(b*x + a)*sqrt(-a)*a^3*x^2)]
```

Sympy [A] time = 19.274, size = 107, normalized size = 1.26

$$-\frac{1}{2a\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{5\sqrt{b}}{4a^2x^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{15b^{\frac{3}{2}}}{4a^3\sqrt{x}\sqrt{\frac{a}{bx}+1}}-\frac{15b^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**(3/2),x)
```

```
[Out] -1/(2*a*sqrt(b)*x**(5/2)*sqrt(a/(b*x) + 1)) + 5*sqrt(b)/(4*a**2*x
**(3/2)*sqrt(a/(b*x) + 1)) + 15*b**(3/2)/(4*a**3*sqrt(x)*sqrt(a/(
b*x) + 1)) - 15*b**2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*a**(7/2)
)
```

GIAC/XCAS [A] time = 0.205279, size = 108, normalized size = 1.27

$$\frac{15\,b^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}a^3}+\frac{2\,b^2}{\sqrt{bx+a}a^3}+\frac{7\,(bx+a)^{\frac{3}{2}}b^2-9\,\sqrt{bx+a}ab^2}{4\,a^3b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^3),x, algorithm="giac")
```

```
[Out] 15/4*b^2*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^3) + 2*b^2/(s
qrt(b*x + a)*a^3) + 1/4*(7*(b*x + a)^(3/2)*b^2 - 9*sqrt(b*x + a)*
a*b^2)/(a^3*b^2*x^2)
```

3.351 $\int \frac{x^4}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=87

$$-\frac{2a^4}{3b^5(a+bx)^{3/2}}+\frac{8a^3}{b^5\sqrt{a+bx}}+\frac{12a^2\sqrt{a+bx}}{b^5}-\frac{8a(a+bx)^{3/2}}{3b^5}+\frac{2(a+bx)^{5/2}}{5b^5}$$

```
[Out] (-2*a^4)/(3*b^5*(a + b*x)^(3/2)) + (8*a^3)/(b^5*Sqrt[a + b*x]) +
(12*a^2*Sqrt[a + b*x])/b^5 - (8*a*(a + b*x)^(3/2))/(3*b^5) + (2*(
a + b*x)^(5/2))/(5*b^5)
```

Rubi [A] time = 0.0613193, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^4}{3b^5(a+bx)^{3/2}}+\frac{8a^3}{b^5\sqrt{a+bx}}+\frac{12a^2\sqrt{a+bx}}{b^5}-\frac{8a(a+bx)^{3/2}}{3b^5}+\frac{2(a+bx)^{5/2}}{5b^5}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(a + b*x)^(5/2),x]
```

```
[Out] (-2*a^4)/(3*b^5*(a + b*x)^(3/2)) + (8*a^3)/(b^5*Sqrt[a + b*x]) +
(12*a^2*Sqrt[a + b*x])/b^5 - (8*a*(a + b*x)^(3/2))/(3*b^5) + (2*(
a + b*x)^(5/2))/(5*b^5)
```

Rubi in Sympy [A] time = 13.7147, size = 83, normalized size = 0.95

$$-\frac{2a^4}{3b^5\left(a+bx\right)^{\frac{3}{2}}}+\frac{8a^3}{b^5\sqrt{a+bx}}+\frac{12a^2\sqrt{a+bx}}{b^5}-\frac{8a\left(a+bx\right)^{\frac{3}{2}}}{3b^5}+\frac{2\left(a+bx\right)^{\frac{5}{2}}}{5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**(5/2),x)
```

```
[Out] -2*a**4/(3*b**5*(a + b*x)**(3/2)) + 8*a**3/(b**5*sqrt(a + b*x)) +
 12*a**2*sqrt(a + b*x)/b**5 - 8*a*(a + b*x)**(3/2)/(3*b**5) + 2*(
a + b*x)**(5/2)/(5*b**5)
```

Mathematica [A] time = 0.032893, size = 57, normalized size = 0.66

$$\frac{2\left(128a^4+192a^3bx+48a^2b^2x^2-8ab^3x^3+3b^4x^4\right)}{15b^5(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(a + b*x)^(5/2),x]
```

```
[Out] (2*(128*a^4 + 192*a^3*b*x + 48*a^2*b^2*x^2 - 8*a*b^3*x^3 + 3*b^4*
x^4))/(15*b^5*(a + b*x)^(3/2))
```

Maple [A] time = 0.009, size = 54, normalized size = 0.6

$$\frac{6\,x^4b^4 - 16\,ax^3b^3 + 96\,a^2x^2b^2 + 384\,a^3xb + 256\,a^4}{15\,b^5}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^(5/2),x)
```

```
[Out] 2/15/(b*x+a)^(3/2)*(3*b^4*x^4-8*a*b^3*x^3+48*a^2*b^2*x^2+192*a^3*
b*x+128*a^4)/b^5
```

Maxima [A] time = 1.34497, size = 96, normalized size = 1.1

$$\frac{2\,(bx+a)^{\frac{5}{2}}}{5\,b^5} - \frac{8\,(bx+a)^{\frac{3}{2}}\,a}{3\,b^5} + \frac{12\,\sqrt{bx+a}a^2}{b^5} + \frac{8\,a^3}{\sqrt{bx+a}b^5} - \frac{2\,a^4}{3\,(bx+a)^{\frac{3}{2}}\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/5*(b*x + a)^(5/2)/b^5 - 8/3*(b*x + a)^(3/2)*a/b^5 + 12*sqrt(b*x
 + a)*a^2/b^5 + 8*a^3/(sqrt(b*x + a)*b^5) - 2/3*a^4/((b*x + a)^(3
/2)*b^5)
```

Fricas [A] time = 0.232976, size = 85, normalized size = 0.98

$$\frac{2\left(3\,b^4x^4 - 8\,ab^3x^3 + 48\,a^2b^2x^2 + 192\,a^3bx + 128\,a^4\right)}{15\,(b^6x + ab^5)\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^4*x^4 - 8*a*b^3*x^3 + 48*a^2*b^2*x^2 + 192*a^3*b*x + 12
8*a^4)/((b^6*x + a*b^5)*sqrt(b*x + a))
```

Sympy [A] time = 13.9165, size = 3456, normalized size = 39.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**(5/2),x)
```

```
[Out] 256*a**(85/2)*sqrt(1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b**6*x +
 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**
4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b*
*12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30
*b**15*x**10) - 256*a**(85/2)/(15*a**40*b**5 + 150*a**39*b**6*x +
 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**
4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b*
*12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30
*b**15*x**10) + 2432*a**(83/2)*b*x*sqrt(1 + b*x/a)/(15*a**40*b**5
 + 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3
+ 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11
*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*
b**14*x**9 + 15*a**30*b**15*x**10) - 2560*a**(83/2)*b*x/(15*a**40
*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*
x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*
b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a
**31*b**14*x**9 + 15*a**30*b**15*x**10) + 10336*a**(81/2)*b**2*x*
*2*sqrt(1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*
b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a*
*35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 +
675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x**1
0) - 11520*a**(81/2)*b**2*x**2/(15*a**40*b**5 + 150*a**39*b**6*x
+ 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x*
*4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b
**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**3
0*b**15*x**10) + 25840*a**(79/2)*b**3*x**3*sqrt(1 + b*x/a)/(15*a*
*40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b*
*8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**
34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 15
0*a**31*b**14*x**9 + 15*a**30*b**15*x**10) - 30720*a**(79/2)*b**3
*x**3/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1
800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**
5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**
13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x**10) + 41990*a*
*(77/2)*b**4*x**4*sqrt(1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b**6
*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9
*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**3
3*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a
**30*b**15*x**10) - 53760*a**(77/2)*b**4*x**4/(15*a**40*b**5 + 15
0*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 315
0*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6
```

```
 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14
*x**9 + 15*a**30*b**15*x**10) + 46192*a**(75/2)*b**5*x**5*sqrt(1
+ b*x/a)/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2
+ 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10*
x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*
b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x**10) - 64512
*a**(75/2)*b**5*x**5/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**3
8*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*
a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7
+ 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x*
*10) + 34664*a**(73/2)*b**6*x**6*sqrt(1 + b*x/a)/(15*a**40*b**5 +
 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 +
3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x
**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b*
*14*x**9 + 15*a**30*b**15*x**10) - 53760*a**(73/2)*b**6*x**6/(15*
a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*
b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a
**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 +
150*a**31*b**14*x**9 + 15*a**30*b**15*x**10) + 17392*a**(71/2)*b*
*7*x**7*sqrt(1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a
**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 37
80*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x*
*7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15
*x**10) - 30720*a**(71/2)*b**7*x**7/(15*a**40*b**5 + 150*a**39*b*
*6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b*
*9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a*
*33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15
*a**30*b**15*x**10) + 5540*a**(69/2)*b**8*x**8*sqrt(1 + b*x/a)/(1
5*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**3
7*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150
*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8
+ 150*a**31*b**14*x**9 + 15*a**30*b**15*x**10) - 11520*a**(69/2)*
b**8*x**8/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**2
 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**10
*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**32
*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x**10) + 1040
*a**(67/2)*b**9*x**9*sqrt(1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b
**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b
**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a
**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 1
5*a**30*b**15*x**10) - 2560*a**(67/2)*b**9*x**9/(15*a**40*b**5 +
150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3
150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*x*
*6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b**
14*x**9 + 15*a**30*b**15*x**10) + 136*a**(65/2)*b**10*x**10*sqrt(
1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**
2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**1
0*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**3
2*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x**10) - 256
*a**(65/2)*b**10*x**10/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a*
*38*b**7*x**2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 378
0*a**35*b**10*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**
7 + 675*a**32*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*
x**10) + 32*a**(63/2)*b**11*x**11*sqrt(1 + b*x/a)/(15*a**40*b**5
+ 150*a**39*b**6*x + 675*a**38*b**7*x**2 + 1800*a**37*b**8*x**3 +
 3150*a**36*b**9*x**4 + 3780*a**35*b**10*x**5 + 3150*a**34*b**11*
```

```
x**6 + 1800*a**33*b**12*x**7 + 675*a**32*b**13*x**8 + 150*a**31*b
**14*x**9 + 15*a**30*b**15*x**10) + 6*a**(61/2)*b**12*x**12*sqrt(
1 + b*x/a)/(15*a**40*b**5 + 150*a**39*b**6*x + 675*a**38*b**7*x**
2 + 1800*a**37*b**8*x**3 + 3150*a**36*b**9*x**4 + 3780*a**35*b**1
0*x**5 + 3150*a**34*b**11*x**6 + 1800*a**33*b**12*x**7 + 675*a**3
2*b**13*x**8 + 150*a**31*b**14*x**9 + 15*a**30*b**15*x**10)
```

GIAC/XCAS [A] time = 0.206116, size = 101, normalized size = 1.16

$$\frac{2\left(12\,(bx+a)a^3-a^4\right)}{3\,(bx+a)^{\frac{3}{2}}b^5}+\frac{2\left(3\,(bx+a)^{\frac{5}{2}}b^{20}-20\,(bx+a)^{\frac{3}{2}}ab^{20}+90\,\sqrt{bx+a}a^2b^{20}\right)}{15\,b^{25}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(12*(b*x + a)*a^3 - a^4)/((b*x + a)^(3/2)*b^5) + 2/15*(3*(b*x
 + a)^(5/2)*b^20 - 20*(b*x + a)^(3/2)*a*b^20 + 90*sqrt(b*x + a)*a
^2*b^20)/b^25
```

3.352 $\int \frac{x^3}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=68

$$\frac{2a^3}{3b^4(a+bx)^{3/2}}-\frac{6a^2}{b^4\sqrt{a+bx}}-\frac{6a\sqrt{a+bx}}{b^4}+\frac{2(a+bx)^{3/2}}{3b^4}$$

```
[Out] (2*a^3)/(3*b^4*(a + b*x)^(3/2)) - (6*a^2)/(b^4*Sqrt[a + b*x]) - (
6*a*Sqrt[a + b*x])/b^4 + (2*(a + b*x)^(3/2))/(3*b^4)
```

Rubi [A] time = 0.0515173, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2a^3}{3b^4(a+bx)^{3/2}}-\frac{6a^2}{b^4\sqrt{a+bx}}-\frac{6a\sqrt{a+bx}}{b^4}+\frac{2(a+bx)^{3/2}}{3b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^(5/2),x]
```

```
[Out] (2*a^3)/(3*b^4*(a + b*x)^(3/2)) - (6*a^2)/(b^4*Sqrt[a + b*x]) - (
6*a*Sqrt[a + b*x])/b^4 + (2*(a + b*x)^(3/2))/(3*b^4)
```

Rubi in Sympy [A] time = 10.9518, size = 65, normalized size = 0.96

$$\frac{2a^3}{3b^4\left(a+bx\right)^{\frac{3}{2}}}-\frac{6a^2}{b^4\sqrt{a+bx}}-\frac{6a\sqrt{a+bx}}{b^4}+\frac{2\left(a+bx\right)^{\frac{3}{2}}}{3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**(5/2),x)
```

```
[Out] 2*a**3/(3*b**4*(a + b*x)**(3/2)) - 6*a**2/(b**4*sqrt(a + b*x)) -
6*a*sqrt(a + b*x)/b**4 + 2*(a + b*x)**(3/2)/(3*b**4)
```

Mathematica [A] time = 0.03258, size = 45, normalized size = 0.66

$$\frac{2\left(-16a^3-24a^2bx-6ab^2x^2+b^3x^3\right)}{3b^4(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^(5/2),x]
```

```
[Out] (2*(-16*a^3 - 24*a^2*b*x - 6*a*b^2*x^2 + b^3*x^3))/(3*b^4*(a + b*
x)^(3/2))
```

Maple [A] time = 0.009, size = 43, normalized size = 0.6

$$-\frac{-2\,b^3x^3+12\,ab^2x^2+48\,a^2bx+32\,a^3}{3\,b^4}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^(5/2),x)
```

```
[Out] -2/3/(b*x+a)^(3/2)*(-b^3*x^3+6*a*b^2*x^2+24*a^2*b*x+16*a^3)/b^4
```

Maxima [A] time = 1.61575, size = 76, normalized size = 1.12

$$\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,b^4}-\frac{6\,\sqrt{bx+a}a}{b^4}-\frac{6\,a^2}{\sqrt{bx+a}b^4}+\frac{2\,a^3}{3\,(bx+a)^{\frac{3}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*x + a)^(3/2)/b^4 - 6*sqrt(b*x + a)*a/b^4 - 6*a^2/(sqrt(b*x
 + a)*b^4) + 2/3*a^3/((b*x + a)^(3/2)*b^4)
```

Fricas [A] time = 0.216634, size = 69, normalized size = 1.01

$$\frac{2\,\left(b^3x^3-6\,ab^2x^2-24\,a^2bx-16\,a^3\right)}{3\,(b^5x+ab^4)\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b^3*x^3 - 6*a*b^2*x^2 - 24*a^2*b*x - 16*a^3)/((b^5*x + a*b^4
)*sqrt(b*x + a))
```

Sympy [A] time = 3.6753, size = 163, normalized size = 2.4

$$\begin{cases} -\frac{32a^3}{3ab^4\sqrt{a+bx}+3b^5x\sqrt{a+bx}} - \frac{48a^2bx}{3ab^4\sqrt{a+bx}+3b^5x\sqrt{a+bx}} - \frac{12ab^2x^2}{3ab^4\sqrt{a+bx}+3b^5x\sqrt{a+bx}} + \frac{2b^3x^3}{3ab^4\sqrt{a+bx}+3b^5x\sqrt{a+bx}} & \text{for } b \neq 0 \\ \frac{x^4}{4a^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-32*a**3/(3*a*b**4*sqrt(a + b*x) + 3*b**5*x*sqrt(a + b
*x)) - 48*a**2*b*x/(3*a*b**4*sqrt(a + b*x) + 3*b**5*x*sqrt(a + b*
x)) - 12*a*b**2*x**2/(3*a*b**4*sqrt(a + b*x) + 3*b**5*x*sqrt(a +
b*x)) + 2*b**3*x**3/(3*a*b**4*sqrt(a + b*x) + 3*b**5*x*sqrt(a + b
*x)), Ne(b, 0)), (x**4/(4*a**(5/2)), True))
```

GIAC/XCAS [A] time = 0.20662, size = 80, normalized size = 1.18

$$-\frac{2\left(9\,(bx+a)a^2 - a^3\right)}{3\,(bx+a)^{\frac{3}{2}}b^4} + \frac{2\left((bx+a)^{\frac{3}{2}}b^8 - 9\,\sqrt{bx+a}ab^8\right)}{3\,b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(9*(b*x + a)*a^2 - a^3)/((b*x + a)^(3/2)*b^4) + 2/3*((b*x +
a)^(3/2)*b^8 - 9*sqrt(b*x + a)*a*b^8)/b^12
```

3.353 $\int \frac{x^2}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=49

$$-\frac{2a^2}{3b^3(a+bx)^{3/2}}+\frac{4a}{b^3\sqrt{a+bx}}+\frac{2\sqrt{a+bx}}{b^3}$$

```
[Out] (-2*a^2)/(3*b^3*(a + b*x)^(3/2)) + (4*a)/(b^3*Sqrt[a + b*x]) + (2
*Sqrt[a + b*x])/b^3
```

Rubi [A] time = 0.0386187, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{2a^2}{3b^3(a+bx)^{3/2}}+\frac{4a}{b^3\sqrt{a+bx}}+\frac{2\sqrt{a+bx}}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^(5/2),x]
```

```
[Out] (-2*a^2)/(3*b^3*(a + b*x)^(3/2)) + (4*a)/(b^3*Sqrt[a + b*x]) + (2
*Sqrt[a + b*x])/b^3
```

Rubi in Sympy [A] time = 7.96574, size = 46, normalized size = 0.94

$$-\frac{2a^2}{3b^3\left(a+bx\right)^{\frac{3}{2}}}+\frac{4a}{b^3\sqrt{a+bx}}+\frac{2\sqrt{a+bx}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**(5/2),x)
```

```
[Out] -2*a**2/(3*b**3*(a + b*x)**(3/2)) + 4*a/(b**3*sqrt(a + b*x)) + 2*
sqrt(a + b*x)/b**3
```

Mathematica [A] time = 0.0244345, size = 35, normalized size = 0.71

$$\frac{2\left(8a^2+12abx+3b^2x^2\right)}{3b^3(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^(5/2),x]
```

```
[Out] (2*(8*a^2 + 12*a*b*x + 3*b^2*x^2))/(3*b^3*(a + b*x)^(3/2))
```

Maple [A] time = 0.009, size = 32, normalized size = 0.7

$$\frac{6\,b^2x^2+24\,abx+16\,a^2}{3\,b^3}\left(bx+a\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^(5/2),x)
```

```
[Out] 2/3/(b*x+a)^(3/2)*(3*b^2*x^2+12*a*b*x+8*a^2)/b^3
```

Maxima [A] time = 1.72629, size = 55, normalized size = 1.12

$$\frac{2\,\sqrt{bx+a}}{b^3}+\frac{4\,a}{\sqrt{bx+a}b^3}-\frac{2\,a^2}{3\,(bx+a)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(b*x + a)/b^3 + 4*a/(sqrt(b*x + a)*b^3) - 2/3*a^2/((b*x + a
)^(3/2)*b^3)
```

Fricas [A] time = 0.225132, size = 55, normalized size = 1.12

$$\frac{2\left(3\,b^2x^2+12\,abx+8\,a^2\right)}{3\,(b^4x+ab^3)\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*b^2*x^2 + 12*a*b*x + 8*a^2)/((b^4*x + a*b^3)*sqrt(b*x + a)
)
```

Sympy [A] time = 3.58932, size = 121, normalized size = 2.47

$$\begin{cases} \frac{16a^2}{3ab^3\sqrt{a+bx}+3b^4x\sqrt{a+bx}} + \frac{24abx}{3ab^3\sqrt{a+bx}+3b^4x\sqrt{a+bx}} + \frac{6b^2x^2}{3ab^3\sqrt{a+bx}+3b^4x\sqrt{a+bx}} & \text{for } b \neq 0 \\ \frac{x^3}{3a^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**(5/2),x)
```

```
[Out] Piecewise((16*a**2/(3*a*b**3*sqrt(a + b*x) + 3*b**4*x*sqrt(a + b*
x)) + 24*a*b*x/(3*a*b**3*sqrt(a + b*x) + 3*b**4*x*sqrt(a + b*x))
+ 6*b**2*x**2/(3*a*b**3*sqrt(a + b*x) + 3*b**4*x*sqrt(a + b*x)),
Ne(b, 0)), (x**3/(3*a**(5/2)), True))
```

GIAC/XCAS [A] time = 0.204343, size = 53, normalized size = 1.08

$$\frac{2\sqrt{bx+a}}{b^3} + \frac{2\left(6\,(bx+a)a - a^2\right)}{3\,(bx+a)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(b*x + a)/b^3 + 2/3*(6*(b*x + a)*a - a^2)/((b*x + a)^(3/2)*
b^3)
```

3.354 $\int \frac{x}{(a+bx)^{5/2}} dx$

Optimal. Leaf size=32

$$\frac{2a}{3b^2(a+bx)^{3/2}} - \frac{2}{b^2\sqrt{a+bx}}$$

```
[Out] (2*a)/(3*b^2*(a + b*x)^(3/2)) - 2/(b^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.0249004, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2a}{3b^2(a+bx)^{3/2}} - \frac{2}{b^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^(5/2),x]
```

```
[Out] (2*a)/(3*b^2*(a + b*x)^(3/2)) - 2/(b^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 4.98279, size = 29, normalized size = 0.91

$$\frac{2a}{3b^2\left(a+bx\right)^{\frac{3}{2}}} - \frac{2}{b^2\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**(5/2),x)
```

```
[Out] 2*a/(3*b**2*(a + b*x)**(3/2)) - 2/(b**2*sqrt(a + b*x))
```

Mathematica [A] time = 0.0175843, size = 24, normalized size = 0.75

$$-\frac{2(2a+3bx)}{3b^2(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^(5/2),x]
```

```
[Out] (-2*(2*a + 3*b*x))/(3*b^2*(a + b*x)^(3/2))
```

Maple [A] time = 0.004, size = 21, normalized size = 0.7

$$-\frac{6\,bx+4\,a}{3\,b^{2}}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^(5/2),x)

[Out] -2/3/(b*x+a)^(3/2)*(3*b*x+2*a)/b^2
```

Maxima [A] time = 1.34625, size = 35, normalized size = 1.09

$$-\frac{2}{\sqrt{bx+a}b^{2}}+\frac{2\,a}{3\,(bx+a)^{\frac{3}{2}}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(5/2),x, algorithm="maxima")

[Out] -2/(sqrt(b*x + a)*b^2) + 2/3*a/((b*x + a)^(3/2)*b^2)
```

Fricas [A] time = 0.213969, size = 41, normalized size = 1.28

$$-\frac{2\,(3\,bx+2\,a)}{3\,(b^{3}x+ab^{2})\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(5/2),x, algorithm="fricas")

[Out] -2/3*(3*b*x + 2*a)/((b^3*x + a*b^2)*sqrt(b*x + a))
```

Sympy [A] time = 3.43473, size = 80, normalized size = 2.5

$$\begin{cases}-\frac{4a}{3ab^{2}\sqrt{a+bx}+3b^{3}x\sqrt{a+bx}}-\frac{6bx}{3ab^{2}\sqrt{a+bx}+3b^{3}x\sqrt{a+bx}} & \text{for } b\neq 0\\ \frac{x^{2}}{2a^{\frac{5}{2}}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-4*a/(3*a*b**2*sqrt(a + b*x) + 3*b**3*x*sqrt(a + b*x))
 - 6*b*x/(3*a*b**2*sqrt(a + b*x) + 3*b**3*x*sqrt(a + b*x)), Ne(b,
 0)), (x**2/(2*a**(5/2)), True))
```

GIAC/XCAS [A] time = 0.202811, size = 27, normalized size = 0.84

$$-\frac{2\,(3\,bx+2\,a)}{3\,(bx+a)^{\frac{3}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(3*b*x + 2*a)/((b*x + a)^(3/2)*b^2)
```

3.355 $\int \frac{1}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=16

$$-\frac{2}{3b(a+bx)^{3/2}}$$

```
[Out] -2/(3*b*(a + b*x)^(3/2))
```

Rubi [A] time = 0.006783, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$-\frac{2}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-5/2),x]

[Out] -2/(3*b*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 1.26758, size = 14, normalized size = 0.88

$$-\frac{2}{3b\left(a+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2),x)

[Out] -2/(3*b*(a + b*x)**(3/2))
```

Mathematica [A] time = 0.00522468, size = 16, normalized size = 1.

$$-\frac{2}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-5/2),x]
```

```
[Out] -2/(3*b*(a + b*x)^(3/2))
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$-\frac{2}{3\,b}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2),x)
```

```
[Out] -2/3/b/(b*x+a)^(3/2)
```

Maxima [A] time = 1.35057, size = 16, normalized size = 1.

$$-\frac{2}{3\,(bx+a)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-5/2),x, algorithm="maxima")
```

```
[Out] -2/3/((b*x + a)^(3/2)*b)
```

Fricas [A] time = 0.219945, size = 27, normalized size = 1.69

$$-\frac{2}{3\,(b^2x+ab)\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-5/2),x, algorithm="fricas")
```

```
[Out] -2/3/((b^2*x + a*b)*sqrt(b*x + a))
```

Sympy [A] time = 0.09668, size = 14, normalized size = 0.88

$$-\frac{2}{3b\,(a+bx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2),x)
```

```
[Out] -2/(3*b*(a + b*x)**(3/2))
```

GIAC/XCAS [A] time = 0.202279, size = 16, normalized size = 1.

$$-\frac{2}{3\,(bx+a)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-5/2),x, algorithm="giac")
```

```
[Out] -2/3/((b*x + a)^(3/2)*b)
```

3.356 $\int \frac{1}{x(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=54

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2}{a^2\sqrt{a+bx}}+\frac{2}{3a(a+bx)^{3/2}}$$

```
[Out] 2/(3*a*(a + b*x)^(3/2)) + 2/(a^2*Sqrt[a + b*x]) - (2*ArcTanh[Sqrt
[a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0516485, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2}{a^2\sqrt{a+bx}}+\frac{2}{3a(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*(a + b*x)^(3/2)) + 2/(a^2*Sqrt[a + b*x]) - (2*ArcTanh[Sqrt
[a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 7.36236, size = 48, normalized size = 0.89

$$\frac{2}{3a\left(a+bx\right)^{\frac{3}{2}}}+\frac{2}{a^2\sqrt{a+bx}}-\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*(a + b*x)**(3/2)) + 2/(a**2*sqrt(a + b*x)) - 2*atanh(sqrt(
a + b*x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.103332, size = 48, normalized size = 0.89

$$\frac{2(4a+3bx)}{3a^2(a+bx)^{3/2}}-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^(5/2)),x]
```

```
[Out] (2*(4*a + 3*b*x))/(3*a^2*(a + b*x)^(3/2)) - (2*ArcTanh[Sqrt[a + b
*x]/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.015, size = 43, normalized size = 0.8

$$\frac{2}{3\,a}\left(bx+a\right)^{-\frac{3}{2}}-2\,\frac{1}{a^{5/2}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)+2\,\frac{1}{a^{2}\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(5/2),x)
```

```
[Out] 2/3/a/(b*x+a)^(3/2)-2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(5/2)+2/a^
2/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.254567, size = 1, normalized size = 0.02

$$\left[\frac{3\,(bx+a)^{\frac{3}{2}}\log\left(\frac{(bx+2\,a)\sqrt{a}-2\,\sqrt{bx+a}a}{x}\right)+2\,(3\,bx+4\,a)\sqrt{a}}{3\,(a^{2}bx+a^{3})\sqrt{bx+a}\sqrt{a}},\ \frac{2\left(3\,(bx+a)^{\frac{3}{2}}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+(3\,bx+4\,a)\sqrt{-a}\right)}{3\,(a^{2}bx+a^{3})\sqrt{bx+a}\sqrt{-a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(b*x + a)^(3/2)*log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a
)*a)/x) + 2*(3*b*x + 4*a)*sqrt(a))/((a^2*b*x + a^3)*sqrt(b*x + a)
```

```
*sqrt(a)), 2/3*(3*(b*x + a)^(3/2)*arctan(a/(sqrt(b*x + a)*sqrt(-a
))) + (3*b*x + 4*a)*sqrt(-a))/((a^2*b*x + a^3)*sqrt(b*x + a)*sqrt
(-a))]
```

Sympy [A] time = 9.69957, size = 697, normalized size = 12.91

$$\frac{8a^7\sqrt{1+\frac{bx}{a}}}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}+\frac{3a^7\log\left(\frac{bx}{a}\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}-\frac{6a^7\log\left(\sqrt{1+\frac{bx}{a}}+1\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}+\frac{14a^6bx\sqrt{1+\frac{bx}{a}}}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}+\frac{9a^6bx\log\left(\frac{bx}{a}\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}-\frac{18a^6bx\log\left(\sqrt{1+\frac{bx}{a}}+1\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}+\frac{6a^5b^2x^2\sqrt{1+\frac{bx}{a}}}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}+\frac{9a^5b^2x^2\log\left(\frac{bx}{a}\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}-\frac{18a^5b^2x^2\log\left(\sqrt{1+\frac{bx}{a}}+1\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}+\frac{3a^4b^3x^3\log\left(\frac{bx}{a}\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}-\frac{6a^4b^3x^3\log\left(\sqrt{1+\frac{bx}{a}}+1\right)}{3a^{\frac{19}{2}}+9a^{\frac{17}{2}}bx+9a^{\frac{15}{2}}b^2x^2+3a^{\frac{13}{2}}b^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(5/2),x)
```

```
[Out] 8*a**7*sqrt(1 + b*x/a)/(3*a**(19/2) + 9*a**(17/2)*b*x + 9*a**(15/
2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 3*a**7*log(b*x/a)/(3*a**(
19/2) + 9*a**(17/2)*b*x + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**
3*x**3) - 6*a**7*log(sqrt(1 + b*x/a) + 1)/(3*a**(19/2) + 9*a**(17
/2)*b*x + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 14*a**
6*b*x*sqrt(1 + b*x/a)/(3*a**(19/2) + 9*a**(17/2)*b*x + 9*a**(15/2
)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 9*a**6*b*x*log(b*x/a)/(3*a
**(19/2) + 9*a**(17/2)*b*x + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*
b**3*x**3) - 18*a**6*b*x*log(sqrt(1 + b*x/a) + 1)/(3*a**(19/2) +
9*a**(17/2)*b*x + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3)
+ 6*a**5*b**2*x**2*sqrt(1 + b*x/a)/(3*a**(19/2) + 9*a**(17/2)*b*x
 + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 9*a**5*b**2*x
**2*log(b*x/a)/(3*a**(19/2) + 9*a**(17/2)*b*x + 9*a**(15/2)*b**2*
x**2 + 3*a**(13/2)*b**3*x**3) - 18*a**5*b**2*x**2*log(sqrt(1 + b*
x/a) + 1)/(3*a**(19/2) + 9*a**(17/2)*b*x + 9*a**(15/2)*b**2*x**2
+ 3*a**(13/2)*b**3*x**3) + 3*a**4*b**3*x**3*log(b*x/a)/(3*a**(19/
2) + 9*a**(17/2)*b*x + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x
**3) - 6*a**4*b**3*x**3*log(sqrt(1 + b*x/a) + 1)/(3*a**(19/2) + 9
*a**(17/2)*b*x + 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3)
```

GIAC/XCAS [A] time = 0.20546, size = 61, normalized size = 1.13

$$\frac{2 \arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^2} + \frac{2\,(3\,bx + 4\,a)}{3\,(bx + a)^{\frac{3}{2}}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^2) + 2/3*(3*b*x + 4*
a)/((b*x + a)^(3/2)*a^2)
```

3.357 $\int \frac{1}{x^2(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=80

$$\frac{5b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{5\sqrt{a+bx}}{a^3x}+\frac{10}{3a^2x\sqrt{a+bx}}+\frac{2}{3ax(a+bx)^{3/2}}$$

```
[Out] 2/(3*a*x*(a + b*x)^(3/2)) + 10/(3*a^2*x*Sqrt[a + b*x]) - (5*Sqrt[
a + b*x])/(a^3*x) + (5*b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(7/2)
```

Rubi [A] time = 0.0740405, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{5b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{5\sqrt{a+bx}}{a^3x}+\frac{10}{3a^2x\sqrt{a+bx}}+\frac{2}{3ax(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*x*(a + b*x)^(3/2)) + 10/(3*a^2*x*Sqrt[a + b*x]) - (5*Sqrt[
a + b*x])/(a^3*x) + (5*b*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(7/2)
```

Rubi in Sympy [A] time = 10.2861, size = 70, normalized size = 0.88

$$\frac{2}{3ax\,(a+bx)^{\frac{3}{2}}}+\frac{10}{3a^2x\sqrt{a+bx}}-\frac{5\sqrt{a+bx}}{a^3x}+\frac{5b\,\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*x*(a + b*x)**(3/2)) + 10/(3*a**2*x*sqrt(a + b*x)) - 5*sqrt
(a + b*x)/(a**3*x) + 5*b*atanh(sqrt(a + b*x)/sqrt(a))/a**(7/2)
```

Mathematica [A] time = 0.119019, size = 63, normalized size = 0.79

$$\frac{5b\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{3a^2+20abx+15b^2x^2}{3a^3x(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^(5/2)),x]
```

```
[Out] -(3*a^2 + 20*a*b*x + 15*b^2*x^2)/(3*a^3*x*(a + b*x)^(3/2)) + (5*b
*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/a^(7/2)
```

Maple [A] time = 0.023, size = 67, normalized size = 0.8

$$2b\left(-1/3\,\frac{1}{a^2(bx+a)^{3/2}}-2\,\frac{1}{\sqrt{bx+a}a^3}-\frac{1}{a^3}\left(1/2\,\frac{\sqrt{bx+a}}{bx}-5/2\,\frac{1}{\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^(5/2),x)
```

```
[Out] 2*b*(-1/3/a^2/(b*x+a)^(3/2)-2/a^3/(b*x+a)^(1/2)-1/a^3*(1/2*(b*x+a
)^(1/2)/x/b-5/2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225345, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^2x^2+abx\right)\sqrt{bx+a}\log\left(\frac{(bx+2a)\sqrt{a}+2\sqrt{bx+a}a}{x}\right)-2\left(15b^2x^2+20abx+3a^2\right)\sqrt{a}}{6\left(a^3bx^2+a^4x\right)\sqrt{bx+a}\sqrt{a}},\right.$$
$$\left.-\frac{15\left(b^2x^2+abx\right)\sqrt{bx+a}\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)+\left(15b^2x^2+20abx+3a^2\right)\sqrt{-a}}{3\left(a^3bx^2+a^4x\right)\sqrt{bx+a}\sqrt{-a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^2),x, algorithm="fricas")
```

```
[Out] [1/6*(15*(b^2*x^2 + a*b*x)*sqrt(b*x + a)*log(((b*x + 2*a)*sqrt(a)
 + 2*sqrt(b*x + a)*a)/x) - 2*(15*b^2*x^2 + 20*a*b*x + 3*a^2)*sqrt
(a))/((a^3*b*x^2 + a^4*x)*sqrt(b*x + a)*sqrt(a)), -1/3*(15*(b^2*x
^2 + a*b*x)*sqrt(b*x + a)*arctan(a/(sqrt(b*x + a)*sqrt(-a))) + (1
5*b^2*x^2 + 20*a*b*x + 3*a^2)*sqrt(-a))/((a^3*b*x^2 + a^4*x)*sqrt
(b*x + a)*sqrt(-a))]
```

Sympy [A] time = 17.2188, size = 818, normalized size = 10.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**(5/2),x)
```

```
[Out] -6*a**17*sqrt(1 + b*x/a)/(6*a**(39/2)*x + 18*a**(37/2)*b*x**2 + 1
8*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 46*a**16*b*x*sqr
t(1 + b*x/a)/(6*a**(39/2)*x + 18*a**(37/2)*b*x**2 + 18*a**(35/2)*
b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 15*a**16*b*x*log(b*x/a)/(6*a
**(39/2)*x + 18*a**(37/2)*b*x**2 + 18*a**(35/2)*b**2*x**3 + 6*a**
(33/2)*b**3*x**4) + 30*a**16*b*x*log(sqrt(1 + b*x/a) + 1)/(6*a**(
39/2)*x + 18*a**(37/2)*b*x**2 + 18*a**(35/2)*b**2*x**3 + 6*a**(33
/2)*b**3*x**4) - 70*a**15*b**2*x**2*sqrt(1 + b*x/a)/(6*a**(39/2)*
x + 18*a**(37/2)*b*x**2 + 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b*
*3*x**4) - 45*a**15*b**2*x**2*log(b*x/a)/(6*a**(39/2)*x + 18*a**(
37/2)*b*x**2 + 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) +
90*a**15*b**2*x**2*log(sqrt(1 + b*x/a) + 1)/(6*a**(39/2)*x + 18*a
**(37/2)*b*x**2 + 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4)
 - 30*a**14*b**3*x**3*sqrt(1 + b*x/a)/(6*a**(39/2)*x + 18*a**(37/
2)*b*x**2 + 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 45*
a**14*b**3*x**3*log(b*x/a)/(6*a**(39/2)*x + 18*a**(37/2)*b*x**2 +
 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 90*a**14*b**3*
x**3*log(sqrt(1 + b*x/a) + 1)/(6*a**(39/2)*x + 18*a**(37/2)*b*x**
2 + 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 15*a**13*b*
*4*x**4*log(b*x/a)/(6*a**(39/2)*x + 18*a**(37/2)*b*x**2 + 18*a**(
35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 30*a**13*b**4*x**4*log
(sqrt(1 + b*x/a) + 1)/(6*a**(39/2)*x + 18*a**(37/2)*b*x**2 + 18*a
**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4)
```

GIAC/XCAS [A] time = 0.204755, size = 88, normalized size = 1.1

$$-\frac{5\,b\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}a^{3}}-\frac{2\,(6\,(bx+a)b+ab)}{3\,(bx+a)^{\frac{3}{2}}a^{3}}-\frac{\sqrt{bx+a}}{a^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^2),x, algorithm="giac")

[Out] -5*b*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^3) - 2/3*(6*(b*x
+ a)*b + a*b)/((b*x + a)^(3/2)*a^3) - sqrt(b*x + a)/(a^3*x)
```

3.358 $\int \frac{1}{x^3(a+bx)^{5/2}}\, dx$

Optimal. Leaf size=106

$$-\frac{35b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b\sqrt{a+bx}}{4a^4x}-\frac{35\sqrt{a+bx}}{6a^3x^2}+\frac{14}{3a^2x^2\sqrt{a+bx}}+\frac{2}{3ax^2(a+bx)^{3/2}}$$

```
[Out] 2/(3*a*x^2*(a + b*x)^(3/2)) + 14/(3*a^2*x^2*Sqrt[a + b*x]) - (35*
Sqrt[a + b*x])/(6*a^3*x^2) + (35*b*Sqrt[a + b*x])/(4*a^4*x) - (35
*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(9/2))
```

Rubi [A] time = 0.0997253, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{35b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b\sqrt{a+bx}}{4a^4x}-\frac{35\sqrt{a+bx}}{6a^3x^2}+\frac{14}{3a^2x^2\sqrt{a+bx}}+\frac{2}{3ax^2(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*x^2*(a + b*x)^(3/2)) + 14/(3*a^2*x^2*Sqrt[a + b*x]) - (35*
Sqrt[a + b*x])/(6*a^3*x^2) + (35*b*Sqrt[a + b*x])/(4*a^4*x) - (35
*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(9/2))
```

Rubi in Sympy [A] time = 14.0794, size = 99, normalized size = 0.93

$$\frac{2}{3ax^2\,(a+bx)^{\frac{3}{2}}}+\frac{14}{3a^2x^2\sqrt{a+bx}}-\frac{35\sqrt{a+bx}}{6a^3x^2}+\frac{35b\sqrt{a+bx}}{4a^4x}-\frac{35b^2\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*x**2*(a + b*x)**(3/2)) + 14/(3*a**2*x**2*sqrt(a + b*x)) -
35*sqrt(a + b*x)/(6*a**3*x**2) + 35*b*sqrt(a + b*x)/(4*a**4*x) -
35*b**2*atanh(sqrt(a + b*x)/sqrt(a))/(4*a**(9/2))
```

Mathematica [A] time = 0.136505, size = 78, normalized size = 0.74

$$\frac{-6a^3+21a^2bx+140ab^2x^2+105b^3x^3}{12a^4x^2(a+bx)^{3/2}}-\frac{35b^2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{4a^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^(5/2)),x]
```

```
[Out] (-6*a^3 + 21*a^2*b*x + 140*a*b^2*x^2 + 105*b^3*x^3)/(12*a^4*x^2*(
a + b*x)^(3/2)) - (35*b^2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/(4*a^(9
/2))
```

Maple [A] time = 0.02, size = 80, normalized size = 0.8

$$2b^2\left(3\frac{1}{a^4\sqrt{bx+a}}+1/3\frac{1}{a^3(bx+a)^{3/2}}+\frac{1}{a^4}\left(\frac{1}{b^2x^2}\left(\frac{11(bx+a)^{3/2}}{8}-\frac{13a\sqrt{bx+a}}{8}\right)-\frac{35}{8\sqrt{a}}Artanh\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^(5/2),x)
```

```
[Out] 2*b^2*(3/a^4/(b*x+a)^(1/2)+1/3/a^3/(b*x+a)^(3/2)+1/a^4*((11/8*(b*
x+a)^(3/2)-13/8*a*(b*x+a)^(1/2))/x^2/b^2-35/8*arctanh((b*x+a)^(1/
2)/a^(1/2))/a^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227876, size = 1, normalized size = 0.01

$$\left[\frac{105\left(b^3x^3+ab^2x^2\right)\sqrt{bx+a}\log\left(\frac{(bx+2a)\sqrt{a}-2\sqrt{bx+a}a}{x}\right)+2\left(105b^3x^3+140ab^2x^2+21a^2bx-6a^3\right)\sqrt{a}}{24\left(a^4bx^3+a^5x^2\right)\sqrt{bx+a}\sqrt{a}}, \frac{105\left(b^3x^3+ab^2x^2\right)\sqrt{\ldots}}{\ldots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^3),x, algorithm="fricas")
```

```
[Out] [1/24*(105*(b^3*x^3 + a*b^2*x^2)*sqrt(b*x + a)*log(((b*x + 2*a)*s
qrt(a) - 2*sqrt(b*x + a)*a)/x) + 2*(105*b^3*x^3 + 140*a*b^2*x^2 +
 21*a^2*b*x - 6*a^3)*sqrt(a))/((a^4*b*x^3 + a^5*x^2)*sqrt(b*x + a
)*sqrt(a)), 1/12*(105*(b^3*x^3 + a*b^2*x^2)*sqrt(b*x + a)*arctan(
a/(sqrt(b*x + a)*sqrt(-a))) + (105*b^3*x^3 + 140*a*b^2*x^2 + 21*a
^2*b*x - 6*a^3)*sqrt(-a))/((a^4*b*x^3 + a^5*x^2)*sqrt(b*x + a)*sq
rt(-a))]
```

Sympy [A] time = 27.2254, size = 464, normalized size = 4.38

$$-\frac{6a^{\frac{89}{2}}b^{75}x^{75}}{12a^{\frac{93}{2}}b^{\frac{151}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}+12a^{\frac{91}{2}}b^{\frac{153}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{21a^{\frac{87}{2}}b^{76}x^{76}}{12a^{\frac{93}{2}}b^{\frac{151}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}+12a^{\frac{91}{2}}b^{\frac{153}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{140a^{\frac{85}{2}}b^{77}x^{77}}{12a^{\frac{93}{2}}b^{\frac{151}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}+12a^{\frac{91}{2}}b^{\frac{153}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}}+\frac{105a^{\frac{83}{2}}b^{78}x^{78}}{12a^{\frac{93}{2}}b^{\frac{151}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}+12a^{\frac{91}{2}}b^{\frac{153}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{105a^{42}b^{\frac{155}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{12a^{\frac{93}{2}}b^{\frac{151}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}+12a^{\frac{91}{2}}b^{\frac{153}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}}-\frac{105a^{41}b^{\frac{157}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{12a^{\frac{93}{2}}b^{\frac{151}{2}}x^{\frac{155}{2}}\sqrt{\frac{a}{bx}+1}+12a^{\frac{91}{2}}b^{\frac{153}{2}}x^{\frac{157}{2}}\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**(5/2),x)
```

```
[Out] -6*a**(89/2)*b**75*x**75/(12*a**(93/2)*b**(151/2)*x**(155/2)*sqrt
(a/(b*x) + 1) + 12*a**(91/2)*b**(153/2)*x**(157/2)*sqrt(a/(b*x) +
 1)) + 21*a**(87/2)*b**76*x**76/(12*a**(93/2)*b**(151/2)*x**(155/
2)*sqrt(a/(b*x) + 1) + 12*a**(91/2)*b**(153/2)*x**(157/2)*sqrt(a/
(b*x) + 1)) + 140*a**(85/2)*b**77*x**77/(12*a**(93/2)*b**(151/2)*
x**(155/2)*sqrt(a/(b*x) + 1) + 12*a**(91/2)*b**(153/2)*x**(157/2)
*sqrt(a/(b*x) + 1)) + 105*a**(83/2)*b**78*x**78/(12*a**(93/2)*b**
(151/2)*x**(155/2)*sqrt(a/(b*x) + 1) + 12*a**(91/2)*b**(153/2)*x*
*(157/2)*sqrt(a/(b*x) + 1)) - 105*a**42*b**(155/2)*x**(155/2)*sqr
t(a/(b*x) + 1)*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(12*a**(93/2)*b**
(151/2)*x**(155/2)*sqrt(a/(b*x) + 1) + 12*a**(91/2)*b**(153/2)*x*
*(157/2)*sqrt(a/(b*x) + 1)) - 105*a**41*b**(157/2)*x**(157/2)*sqr
t(a/(b*x) + 1)*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/(12*a**(93/2)*b**
(151/2)*x**(155/2)*sqrt(a/(b*x) + 1) + 12*a**(91/2)*b**(153/2)*x*
```

```
*(157/2)*sqrt(a/(b*x) + 1))
```

GIAC/XCAS [A] time = 0.205667, size = 126, normalized size = 1.19

$$\frac{35\,b^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}a^4}+\frac{2\,\left(9\,(bx+a)b^2+ab^2\right)}{3\,(bx+a)^{\frac{3}{2}}a^4}+\frac{11\,(bx+a)^{\frac{3}{2}}b^2-13\,\sqrt{bx+a}ab^2}{4\,a^4b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^3),x, algorithm="giac")
```

```
[Out] 35/4*b^2*arctan(sqrt(b*x + a)/sqrt(-a))/(sqrt(-a)*a^4) + 2/3*(9*(
b*x + a)*b^2 + a*b^2)/((b*x + a)^(3/2)*a^4) + 1/4*(11*(b*x + a)^(
3/2)*b^2 - 13*sqrt(b*x + a)*a*b^2)/(a^4*b^2*x^2)
```

3.359 $\int \frac{1}{x\sqrt{-a+bx}}\,dx$

Optimal. Leaf size=25

$$\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}$$

```
[Out] (2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi [A] time = 0.0231124, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*Sqrt[-a + b*x]),x]

[Out] (2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/Sqrt[a]
```

Rubi in Sympy [A] time = 3.3348, size = 20, normalized size = 0.8

$$\frac{2\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x-a)**(1/2),x)

[Out] 2*atan(sqrt(-a + b*x)/sqrt(a))/sqrt(a)
```

Mathematica [A] time = 0.00896176, size = 25, normalized size = 1.

$$\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*Sqrt[-a + b*x]),x]

[Out] (2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/Sqrt[a]
```

Maple [A] time = 0.006, size = 20, normalized size = 0.8

$$2\frac{1}{\sqrt{a}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x-a)^(1/2),x)

[Out] 2*arctan((b*x-a)^(1/2)/a^(1/2))/a^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222722, size = 1, normalized size = 0.04

$$\left[\frac{\log\left(\frac{(bx-2\,a)\sqrt{-a}+2\,\sqrt{bx-a}a}{x}\right)}{\sqrt{-a}}, -\frac{2\,\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)}{\sqrt{a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x),x, algorithm="fricas")

[Out] [log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x - a)*a)/x)/sqrt(-a), -2*a
rctan(sqrt(a)/sqrt(b*x - a))/sqrt(a)]
```

Sympy [A] time = 3.79274, size = 54, normalized size = 2.16

$$\begin{cases} \frac{2i\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{2\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x-a)**(1/2),x)
```

```
[Out] Piecewise((2*I*acosh(sqrt(a)/(sqrt(b)*sqrt(x)))/sqrt(a), Abs(a/(b
*x)) > 1), (-2*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/sqrt(a), True))
```

GIAC/XCAS [A] time = 0.205221, size = 26, normalized size = 1.04

$$\frac{2 \arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*x - a)/sqrt(a))/sqrt(a)
```

3.360 $\int \frac{1}{x^2\sqrt{-a+bx}}\,dx$

Optimal. Leaf size=44

$$\frac{b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{\sqrt{bx-a}}{ax}$$

```
[Out] Sqrt[-a + b*x]/(a*x) + (b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(3/2)
```

Rubi [A] time = 0.0391154, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{\sqrt{bx-a}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*Sqrt[-a + b*x]),x]

[Out] Sqrt[-a + b*x]/(a*x) + (b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(3/2)
```

Rubi in Sympy [A] time = 5.03688, size = 32, normalized size = 0.73

$$\frac{\sqrt{-a+bx}}{ax}+\frac{b\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x-a)**(1/2),x)

[Out] sqrt(-a + b*x)/(a*x) + b*atan(sqrt(-a + b*x)/sqrt(a))/a**(3/2)
```

Mathematica [A] time = 0.03095, size = 44, normalized size = 1.

$$\frac{b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{\sqrt{bx-a}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*Sqrt[-a + b*x]),x]

[Out] Sqrt[-a + b*x]/(a*x) + (b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(3/2)
```

Maple [A] time = 0.01, size = 37, normalized size = 0.8

$$b\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)a^{-\frac{3}{2}}+\frac{1}{ax}\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x-a)^(1/2),x)

[Out] b*arctan((b*x-a)^(1/2)/a^(1/2))/a^(3/2)+(b*x-a)^(1/2)/a/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x^2),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229834, size = 1, normalized size = 0.02

$$\left[\frac{bx\log\left(\frac{(bx-2a)\sqrt{-a}+2\sqrt{bx-a}a}{x}\right)+2\sqrt{bx-a}\sqrt{-a}}{2\sqrt{-a}ax},-\frac{bx\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-\sqrt{bx-a}\sqrt{a}}{a^{\frac{3}{2}}x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x^2),x, algorithm="fricas")

[Out] [1/2*(b*x*log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x - a)*a)/x) + 2*s
qrt(b*x - a)*sqrt(-a))/(sqrt(-a)*a*x), -(b*x*arctan(sqrt(a)/sqrt(
b*x - a)) - sqrt(b*x - a)*sqrt(a))/(a^(3/2)*x)]
```

Sympy [A] time = 7.60306, size = 121, normalized size = 2.75

$$\begin{cases} \frac{i\sqrt{b}\sqrt{\frac{a}{bx}-1}}{a\sqrt{x}} + \frac{ib\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{a^{\frac{3}{2}}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{1}{\sqrt{b}x^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} + \frac{\sqrt{b}}{a\sqrt{x}\sqrt{-\frac{a}{bx}+1}} - \frac{b\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{a^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x-a)**(1/2),x)
```

```
[Out] Piecewise((I*sqrt(b)*sqrt(a/(b*x) - 1)/(a*sqrt(x)) + I*b*acosh(sq
rt(a)/(sqrt(b)*sqrt(x)))/a**(3/2), Abs(a/(b*x)) > 1), (-1/(sqrt(b
)*x**(3/2)*sqrt(-a/(b*x) + 1)) + sqrt(b)/(a*sqrt(x)*sqrt(-a/(b*x)
 + 1)) - b*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/a**(3/2), True))
```

GIAC/XCAS [A] time = 0.205496, size = 58, normalized size = 1.32

$$\frac{\frac{b^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}} + \frac{\sqrt{bx-a}b}{ax}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x^2),x, algorithm="giac")
```

```
[Out] (b^2*arctan(sqrt(b*x - a)/sqrt(a))/a^(3/2) + sqrt(b*x - a)*b/(a*x
))/b
```

3.361 $\int \frac{1}{x^3\sqrt{-a+bx}}\,dx$

Optimal. Leaf size=74

$$\frac{3b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{3b\sqrt{bx-a}}{4a^2x}+\frac{\sqrt{bx-a}}{2ax^2}$$

```
[Out] Sqrt[-a + b*x]/(2*a*x^2) + (3*b*Sqrt[-a + b*x])/(4*a^2*x) + (3*b^
2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(5/2))
```

Rubi [A] time = 0.0590983, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{3b\sqrt{bx-a}}{4a^2x}+\frac{\sqrt{bx-a}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*Sqrt[-a + b*x]),x]
```

```
[Out] Sqrt[-a + b*x]/(2*a*x^2) + (3*b*Sqrt[-a + b*x])/(4*a^2*x) + (3*b^
2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(5/2))
```

Rubi in Sympy [A] time = 7.69543, size = 60, normalized size = 0.81

$$\frac{\sqrt{-a+bx}}{2ax^2}+\frac{3b\sqrt{-a+bx}}{4a^2x}+\frac{3b^2\operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x-a)**(1/2),x)
```

```
[Out] sqrt(-a + b*x)/(2*a*x**2) + 3*b*sqrt(-a + b*x)/(4*a**2*x) + 3*b**
2*atan(sqrt(-a + b*x)/sqrt(a))/(4*a**(5/2))
```

Mathematica [A] time = 0.0519115, size = 60, normalized size = 0.81

$$\frac{3b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{5/2}}+\frac{\sqrt{bx-a}(2a+3bx)}{4a^2x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*Sqrt[-a + b*x]),x]
```

```
[Out] (Sqrt[-a + b*x]*(2*a + 3*b*x))/(4*a^2*x^2) + (3*b^2*ArcTan[Sqrt[-
a + b*x]/Sqrt[a]])/(4*a^(5/2))
```

Maple [A] time = 0.012, size = 59, normalized size = 0.8

$$\frac{3\,b^2}{4}\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)a^{-\frac{5}{2}}+\frac{1}{2\,ax^2}\sqrt{bx-a}+\frac{3\,b}{4\,a^2x}\sqrt{bx-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x-a)^(1/2),x)
```

```
[Out] 3/4*b^2*arctan((b*x-a)^(1/2)/a^(1/2))/a^(5/2)+1/2*(b*x-a)^(1/2)/a
/x^2+3/4*b*(b*x-a)^(1/2)/a^2/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.234958, size = 1, normalized size = 0.01

$$\left[\frac{3\,b^2x^2\log\left(\frac{(bx-2\,a)\sqrt{-a}+2\,\sqrt{bx-a}a}{x}\right)+2\,(3\,bx+2\,a)\sqrt{bx-a}\sqrt{-a}}{8\,\sqrt{-a}a^2x^2},\right.$$
$$\left.-\frac{3\,b^2x^2\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-(3\,bx+2\,a)\sqrt{bx-a}\sqrt{a}}{4\,a^{\frac{5}{2}}x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x^3),x, algorithm="fricas")
```

```
[Out] [1/8*(3*b^2*x^2*log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x - a)*a)/x)
 + 2*(3*b*x + 2*a)*sqrt(b*x - a)*sqrt(-a))/(sqrt(-a)*a^2*x^2), -1
/4*(3*b^2*x^2*arctan(sqrt(a)/sqrt(b*x - a)) - (3*b*x + 2*a)*sqrt(
b*x - a)*sqrt(a))/(a^(5/2)*x^2)]
```

Sympy [A] time = 13.1118, size = 216, normalized size = 2.92

$$\begin{cases} \frac{i}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{i\sqrt{b}}{4ax^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} - \frac{3ib^{\frac{3}{2}}}{4a^2\sqrt{x}\sqrt{\frac{a}{bx}-1}} + \frac{3ib^2\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{5}{2}}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{1}{2\sqrt{b}x^{\frac{5}{2}}\sqrt{-\frac{a}{bx}+1}} - \frac{\sqrt{b}}{4ax^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} + \frac{3b^{\frac{3}{2}}}{4a^2\sqrt{x}\sqrt{-\frac{a}{bx}+1}} - \frac{3b^2\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x-a)**(1/2),x)
```

```
[Out] Piecewise((I/(2*sqrt(b)*x**(5/2)*sqrt(a/(b*x) - 1)) + I*sqrt(b)/(
4*a*x**(3/2)*sqrt(a/(b*x) - 1)) - 3*I*b**(3/2)/(4*a**2*sqrt(x)*sq
rt(a/(b*x) - 1)) + 3*I*b**2*acosh(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*a
**(5/2)), Abs(a/(b*x)) > 1), (-1/(2*sqrt(b)*x**(5/2)*sqrt(-a/(b*x
) + 1)) - sqrt(b)/(4*a*x**(3/2)*sqrt(-a/(b*x) + 1)) + 3*b**(3/2)/
(4*a**2*sqrt(x)*sqrt(-a/(b*x) + 1)) - 3*b**2*asin(sqrt(a)/(sqrt(b
)*sqrt(x)))/(4*a**(5/2)), True))
```

GIAC/XCAS [A] time = 0.204652, size = 92, normalized size = 1.24

$$\frac{\frac{3\,b^3\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}} + \frac{3\,(bx-a)^{\frac{3}{2}}b^3+5\,\sqrt{bx-a}ab^3}{a^2b^2x^2}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x - a)*x^3),x, algorithm="giac")
```

```
[Out] 1/4*(3*b^3*arctan(sqrt(b*x - a)/sqrt(a))/a^(5/2) + (3*(b*x - a)^(
3/2)*b^3 + 5*sqrt(b*x - a)*a*b^3)/(a^2*b^2*x^2))/b
```

3.362 $\int \frac{1}{x(-a+bx)^{3/2}}\,dx$

Optimal. Leaf size=42

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2}{a\sqrt{bx-a}}$$

```
[Out] -2/(a*Sqrt[-a + b*x]) - (2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(3/2
)
```

Rubi [A] time = 0.0386399, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2}{a\sqrt{bx-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a + b*x)^(3/2)),x]
```

```
[Out] -2/(a*Sqrt[-a + b*x]) - (2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(3/2
)
```

Rubi in Sympy [A] time = 5.4836, size = 34, normalized size = 0.81

$$-\frac{2}{a\sqrt{-a+bx}}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x-a)**(3/2),x)
```

```
[Out] -2/(a*sqrt(-a + b*x)) - 2*atan(sqrt(-a + b*x)/sqrt(a))/a**(3/2)
```

Mathematica [A] time = 0.0304384, size = 42, normalized size = 1.

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2}{a\sqrt{bx-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a + b*x)^(3/2)),x]
```

```
[Out] -2/(a*Sqrt[-a + b*x]) - (2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(3/2
)
```

Maple [A] time = 0.012, size = 35, normalized size = 0.8

$$-2\frac{1}{a^{3/2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)-2\frac{1}{a\sqrt{bx-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x-a)^(3/2),x)
```

```
[Out] -2*arctan((b*x-a)^(1/2)/a^(1/2))/a^(3/2)-2/a/(b*x-a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233242, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{bx-a}\log\left(\frac{(bx-2a)\sqrt{-a}-2\sqrt{bx-a}a}{x}\right)-2\sqrt{-a}}{\sqrt{bx-a}\sqrt{-a}a}, \frac{2\left(\sqrt{bx-a}\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-\sqrt{a}\right)}{\sqrt{bx-a}a^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*x - a)*log(((b*x - 2*a)*sqrt(-a) - 2*sqrt(b*x - a)*a)/x)
 - 2*sqrt(-a))/(sqrt(b*x - a)*sqrt(-a)*a), 2*(sqrt(b*x - a)*arcta
```

```
n(sqrt(a)/sqrt(b*x - a)) - sqrt(a))/(sqrt(b*x - a)*a^(3/2))]
```

Sympy [A] time = 6.40331, size = 437, normalized size = 10.4

$$\begin{cases} -\frac{2a^{3}\sqrt{-1+\frac{bx}{a}}}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{ia^{3}\log\left(\frac{bx}{a}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{2ia^{3}\log\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{2a^{3}\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{ia^{2}bx\log\left(\frac{bx}{a}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{2ia^{2}bx\log\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{2a^{2}bx\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx} & \text{for } \left|\frac{bx}{a}\right| > \\ -\frac{2ia^{3}\sqrt{1-\frac{bx}{a}}}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{ia^{3}\log\left(\frac{bx}{a}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{2ia^{3}\log\left(\sqrt{1-\frac{bx}{a}}+1\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{\pi a^{3}}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{ia^{2}bx\log\left(\frac{bx}{a}\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}-\frac{2ia^{2}bx\log\left(\sqrt{1-\frac{bx}{a}}+1\right)}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx}+\frac{\pi a^{2}bx}{-a^{\frac{9}{2}}+a^{\frac{7}{2}}bx} & \text{otherwis} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x-a)**(3/2),x)
```

```
[Out] Piecewise((-2*a**3*sqrt(-1 + b*x/a)/(-a**(9/2) + a**(7/2)*b*x) -
I*a**3*log(b*x/a)/(-a**(9/2) + a**(7/2)*b*x) + 2*I*a**3*log(sqrt(
b)*sqrt(x)/sqrt(a))/(-a**(9/2) + a**(7/2)*b*x) - 2*a**3*asin(sqrt
(a)/(sqrt(b)*sqrt(x)))/(-a**(9/2) + a**(7/2)*b*x) + I*a**2*b*x*lo
g(b*x/a)/(-a**(9/2) + a**(7/2)*b*x) - 2*I*a**2*b*x*log(sqrt(b)*sq
rt(x)/sqrt(a))/(-a**(9/2) + a**(7/2)*b*x) + 2*a**2*b*x*asin(sqrt(
a)/(sqrt(b)*sqrt(x)))/(-a**(9/2) + a**(7/2)*b*x), Abs(b*x/a) > 1)
, (-2*I*a**3*sqrt(1 - b*x/a)/(-a**(9/2) + a**(7/2)*b*x) - I*a**3*
log(b*x/a)/(-a**(9/2) + a**(7/2)*b*x) + 2*I*a**3*log(sqrt(1 - b*x
/a) + 1)/(-a**(9/2) + a**(7/2)*b*x) - pi*a**3/(-a**(9/2) + a**(7/
2)*b*x) + I*a**2*b*x*log(b*x/a)/(-a**(9/2) + a**(7/2)*b*x) - 2*I*
a**2*b*x*log(sqrt(1 - b*x/a) + 1)/(-a**(9/2) + a**(7/2)*b*x) + pi
*a**2*b*x/(-a**(9/2) + a**(7/2)*b*x), True))
```

GIAC/XCAS [A] time = 0.203799, size = 46, normalized size = 1.1

$$-\frac{2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}-\frac{2}{\sqrt{bx-a}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x),x, algorithm="giac")
```

```
[Out] -2*arctan(sqrt(b*x - a)/sqrt(a))/a^(3/2) - 2/(sqrt(b*x - a)*a)
```

3.363 $\int \frac{1}{x^2(-a+bx)^{3/2}}\,dx$

Optimal. Leaf size=65

$$-\frac{3b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3\sqrt{bx-a}}{a^2x}-\frac{2}{ax\sqrt{bx-a}}$$

```
[Out] -2/(a*x*Sqrt[-a + b*x]) - (3*Sqrt[-a + b*x])/(a^2*x) - (3*b*ArcTa
n[Sqrt[-a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0578993, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{3b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3\sqrt{bx-a}}{a^2x}-\frac{2}{ax\sqrt{bx-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(-a + b*x)^(3/2)),x]
```

```
[Out] -2/(a*x*Sqrt[-a + b*x]) - (3*Sqrt[-a + b*x])/(a^2*x) - (3*b*ArcTa
n[Sqrt[-a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 7.68354, size = 53, normalized size = 0.82

$$-\frac{2}{ax\sqrt{-a+bx}}-\frac{3\sqrt{-a+bx}}{a^2x}-\frac{3b\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x-a)**(3/2),x)
```

```
[Out] -2/(a*x*sqrt(-a + b*x)) - 3*sqrt(-a + b*x)/(a**2*x) - 3*b*atan(sq
rt(-a + b*x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.077273, size = 51, normalized size = 0.78

$$\frac{a-3bx}{a^2x\sqrt{bx-a}}-\frac{3b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(-a + b*x)^(3/2)),x]
```

```
[Out] (a - 3*b*x)/(a^2*x*Sqrt[-a + b*x]) - (3*b*ArcTan[Sqrt[-a + b*x]/S
qrt[a]])/a^(5/2)
```

Maple [A] time = 0.016, size = 54, normalized size = 0.8

$$-2\,\frac{b}{a^2\sqrt{bx-a}}-\frac{1}{a^2x}\sqrt{bx-a}-3\,\frac{b}{a^{5/2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x-a)^(3/2),x)
```

```
[Out] -2*b/a^2/(b*x-a)^(1/2)-(b*x-a)^(1/2)/a^2/x-3*b*arctan((b*x-a)^(1/
2)/a^(1/2))/a^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223917, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{bx-a}bx\log\left(\frac{(bx-2\,a)\sqrt{-a}-2\,\sqrt{bx-a}a}{x}\right)-2\,(3\,bx-a)\sqrt{-a}}{2\,\sqrt{bx-a}\sqrt{-a}a^2x},\frac{3\,\sqrt{bx-a}bx\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-(3\,bx-a)\sqrt{a}}{\sqrt{bx-a}a^{\frac{5}{2}}x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x^2),x, algorithm="fricas")
```

```
[Out] [1/2*(3*sqrt(b*x - a)*b*x*log(((b*x - 2*a)*sqrt(-a) - 2*sqrt(b*x
- a)*a)/x) - 2*(3*b*x - a)*sqrt(-a))/(sqrt(b*x - a)*sqrt(-a)*a^2*
```

```
x), (3*sqrt(b*x - a)*b*x*arctan(sqrt(a)/sqrt(b*x - a)) - (3*b*x -
 a)*sqrt(a))/(sqrt(b*x - a)*a^(5/2)*x)]
```

Sympy [A] time = 11.3383, size = 156, normalized size = 2.4

$$\begin{cases} -\frac{i}{a\sqrt{b}x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{3i\sqrt{b}}{a^2\sqrt{x}\sqrt{\frac{a}{bx}-1}} - \frac{3ib\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{a^{\frac{5}{2}}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{1}{a\sqrt{b}x^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} - \frac{3\sqrt{b}}{a^2\sqrt{x}\sqrt{-\frac{a}{bx}+1}} + \frac{3b\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{a^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x-a)**(3/2),x)
```

```
[Out] Piecewise((-I/(a*sqrt(b)*x**(3/2)*sqrt(a/(b*x) - 1)) + 3*I*sqrt(b
)/(a**2*sqrt(x)*sqrt(a/(b*x) - 1)) - 3*I*b*acosh(sqrt(a)/(sqrt(b)
*sqrt(x)))/a**(5/2), Abs(a/(b*x)) > 1), (1/(a*sqrt(b)*x**(3/2)*sq
rt(-a/(b*x) + 1)) - 3*sqrt(b)/(a**2*sqrt(x)*sqrt(-a/(b*x) + 1)) +
 3*b*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/a**(5/2), True))
```

GIAC/XCAS [A] time = 0.205793, size = 86, normalized size = 1.32

$$-\frac{3\,b\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}} - \frac{3\,(bx-a)b + 2\,ab}{\left((bx-a)^{\frac{3}{2}} + \sqrt{bx-a}a\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x^2),x, algorithm="giac")
```

```
[Out] -3*b*arctan(sqrt(b*x - a)/sqrt(a))/a^(5/2) - (3*(b*x - a)*b + 2*a
*b)/(((b*x - a)^(3/2) + sqrt(b*x - a)*a)*a^2)
```

3.364 $\int \frac{1}{x^3(-a+bx)^{3/2}}\,dx$

Optimal. Leaf size=93

$$-\frac{15b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{7/2}}-\frac{15b\sqrt{bx-a}}{4a^3x}-\frac{5\sqrt{bx-a}}{2a^2x^2}-\frac{2}{ax^2\sqrt{bx-a}}$$

```
[Out] -2/(a*x^2*Sqrt[-a + b*x]) - (5*Sqrt[-a + b*x])/(2*a^2*x^2) - (15*
b*Sqrt[-a + b*x])/(4*a^3*x) - (15*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[
a]])/(4*a^(7/2))
```

Rubi [A] time = 0.0797001, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{15b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{7/2}}-\frac{15b\sqrt{bx-a}}{4a^3x}-\frac{5\sqrt{bx-a}}{2a^2x^2}-\frac{2}{ax^2\sqrt{bx-a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(-a + b*x)^(3/2)),x]
```

```
[Out] -2/(a*x^2*Sqrt[-a + b*x]) - (5*Sqrt[-a + b*x])/(2*a^2*x^2) - (15*
b*Sqrt[-a + b*x])/(4*a^3*x) - (15*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[
a]])/(4*a^(7/2))
```

Rubi in Sympy [A] time = 11.0034, size = 80, normalized size = 0.86

$$-\frac{2}{ax^2\sqrt{-a+bx}}-\frac{5\sqrt{-a+bx}}{2a^2x^2}-\frac{15b\sqrt{-a+bx}}{4a^3x}-\frac{15b^2\operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{4a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x-a)**(3/2),x)
```

```
[Out] -2/(a*x**2*sqrt(-a + b*x)) - 5*sqrt(-a + b*x)/(2*a**2*x**2) - 15*
b*sqrt(-a + b*x)/(4*a**3*x) - 15*b**2*atan(sqrt(-a + b*x)/sqrt(a)
)/(4*a**(7/2))
```

Mathematica [A] time = 0.0987135, size = 71, normalized size = 0.76

$$\frac{2a^2+5abx-15b^2x^2}{4a^3x^2\sqrt{bx-a}}-\frac{15b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(-a + b*x)^(3/2)),x]
```

```
[Out] (2*a^2 + 5*a*b*x - 15*b^2*x^2)/(4*a^3*x^2*Sqrt[-a + b*x]) - (15*b
^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(7/2))
```

Maple [A] time = 0.017, size = 75, normalized size = 0.8

$$-2\,\frac{b^2}{a^3\sqrt{bx-a}}-\frac{7}{4\,a^3x^2}(bx-a)^{\frac{3}{2}}-\frac{9}{4\,a^2x^2}\sqrt{bx-a}-\frac{15\,b^2}{4}\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)a^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x-a)^(3/2),x)
```

```
[Out] -2*b^2/a^3/(b*x-a)^(1/2)-7/4/a^3/x^2*(b*x-a)^(3/2)-9/4*(b*x-a)^(1
/2)/a^2/x^2-15/4*b^2*arctan((b*x-a)^(1/2)/a^(1/2))/a^(7/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.243475, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{bx-a}b^2x^2\log\left(\frac{(bx-2\,a)\sqrt{-a}-2\sqrt{bx-a}a}{x}\right)-2\left(15\,b^2x^2-5\,abx-2\,a^2\right)\sqrt{-a}}{8\sqrt{bx-a}\sqrt{-a}a^3x^2},\frac{15\sqrt{bx-a}b^2x^2\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-\left(15\,b^2x^2\right.}{4\sqrt{bx-a}a^{\frac{7}{2}}x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x^3),x, algorithm="fricas")
```

```
[Out] [1/8*(15*sqrt(b*x - a)*b^2*x^2*log(((b*x - 2*a)*sqrt(-a) - 2*sqrt
(b*x - a)*a)/x) - 2*(15*b^2*x^2 - 5*a*b*x - 2*a^2)*sqrt(-a))/(sqr
t(b*x - a)*sqrt(-a)*a^3*x^2), 1/4*(15*sqrt(b*x - a)*b^2*x^2*arcta
n(sqrt(a)/sqrt(b*x - a)) - (15*b^2*x^2 - 5*a*b*x - 2*a^2)*sqrt(a)
)/(sqrt(b*x - a)*a^(7/2)*x^2)]
```

Sympy [A] time = 18.5893, size = 226, normalized size = 2.43

$$\begin{cases} -\frac{i}{2a\sqrt{b}x^{\frac{5}{2}}\sqrt{\frac{a}{bx}-1}} - \frac{5i\sqrt{b}}{4a^2x^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}} + \frac{15ib^{\frac{3}{2}}}{4a^3\sqrt{x}\sqrt{\frac{a}{bx}-1}} - \frac{15ib^2\operatorname{acosh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{7}{2}}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{1}{2a\sqrt{b}x^{\frac{5}{2}}\sqrt{-\frac{a}{bx}+1}} + \frac{5\sqrt{b}}{4a^2x^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}} - \frac{15b^{\frac{3}{2}}}{4a^3\sqrt{x}\sqrt{-\frac{a}{bx}+1}} + \frac{15b^2\operatorname{asin}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{4a^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x-a)**(3/2),x)
```

```
[Out] Piecewise((-I/(2*a*sqrt(b)*x**(5/2)*sqrt(a/(b*x) - 1)) - 5*I*sqrt
(b)/(4*a**2*x**(3/2)*sqrt(a/(b*x) - 1)) + 15*I*b**(3/2)/(4*a**3*s
qrt(x)*sqrt(a/(b*x) - 1)) - 15*I*b**2*acosh(sqrt(a)/(sqrt(b)*sqrt
(x)))/(4*a**(7/2)), Abs(a/(b*x)) > 1), (1/(2*a*sqrt(b)*x**(5/2)*s
qrt(-a/(b*x) + 1)) + 5*sqrt(b)/(4*a**2*x**(3/2)*sqrt(-a/(b*x) + 1
)) - 15*b**(3/2)/(4*a**3*sqrt(x)*sqrt(-a/(b*x) + 1)) + 15*b**2*as
in(sqrt(a)/(sqrt(b)*sqrt(x)))/(4*a**(7/2)), True))
```

GIAC/XCAS [A] time = 0.205313, size = 109, normalized size = 1.17

$$-\frac{15\,b^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4\,a^{\frac{7}{2}}} - \frac{2\,b^2}{\sqrt{bx-a}a^3} - \frac{7\,(bx-a)^{\frac{3}{2}}b^2 + 9\,\sqrt{bx-a}ab^2}{4\,a^3b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(3/2)*x^3),x, algorithm="giac")
```

```
[Out] -15/4*b^2*arctan(sqrt(b*x - a)/sqrt(a))/a^(7/2) - 2*b^2/(sqrt(b*x
 - a)*a^3) - 1/4*(7*(b*x - a)^(3/2)*b^2 + 9*sqrt(b*x - a)*a*b^2)/
(a^3*b^2*x^2)
```

3.365 $\int \frac{1}{x(-a+bx)^{5/2}}\,dx$

Optimal. Leaf size=60

$$\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2}{a^2\sqrt{bx-a}}-\frac{2}{3a(bx-a)^{3/2}}$$

```
[Out] -2/(3*a*(-a + b*x)^(3/2)) + 2/(a^2*Sqrt[-a + b*x]) + (2*ArcTan[Sq
rt[-a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0558207, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2}{a^2\sqrt{bx-a}}-\frac{2}{3a(bx-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a + b*x)^(5/2)),x]
```

```
[Out] -2/(3*a*(-a + b*x)^(3/2)) + 2/(a^2*Sqrt[-a + b*x]) + (2*ArcTan[Sq
rt[-a + b*x]/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 8.22088, size = 48, normalized size = 0.8

$$-\frac{2}{3a\left(-a+bx\right)^{\frac{3}{2}}}+\frac{2}{a^2\sqrt{-a+bx}}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x-a)**(5/2),x)
```

```
[Out] -2/(3*a*(-a + b*x)**(3/2)) + 2/(a**2*sqrt(-a + b*x)) + 2*atan(sqr
t(-a + b*x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.0844067, size = 52, normalized size = 0.87

$$\frac{2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{8a-6bx}{3a^2(bx-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a + b*x)^(5/2)),x]
```

```
[Out] -(8*a - 6*b*x)/(3*a^2*(-a + b*x)^(3/2)) + (2*ArcTan[Sqrt[-a + b*x
]/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.014, size = 49, normalized size = 0.8

$$-\frac{2}{3a}(bx-a)^{-\frac{3}{2}}+2\frac{1}{a^{5/2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)+2\frac{1}{a^2\sqrt{bx-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x-a)^(5/2),x)
```

```
[Out] -2/3/a/(b*x-a)^(3/2)+2*arctan((b*x-a)^(1/2)/a^(1/2))/a^(5/2)+2/a^
2/(b*x-a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230968, size = 1, normalized size = 0.02

$$\left[\frac{3(bx-a)^{\frac{3}{2}}\log\left(\frac{(bx-2a)\sqrt{-a}+2\sqrt{bx-a}a}{x}\right)+2(3bx-4a)\sqrt{-a}}{3(a^2bx-a^3)\sqrt{bx-a}\sqrt{-a}},\right.$$
$$\left.-\frac{2\left(3(bx-a)^{\frac{3}{2}}\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-(3bx-4a)\sqrt{a}\right)}{3(a^2bx-a^3)\sqrt{bx-a}\sqrt{a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(b*x - a)^(3/2)*log(((b*x - 2*a)*sqrt(-a) + 2*sqrt(b*x -
a)*a)/x) + 2*(3*b*x - 4*a)*sqrt(-a))/((a^2*b*x - a^3)*sqrt(b*x -
a)*sqrt(-a)), -2/3*(3*(b*x - a)^(3/2)*arctan(sqrt(a)/sqrt(b*x - a
)) - (3*b*x - 4*a)*sqrt(a))/((a^2*b*x - a^3)*sqrt(b*x - a)*sqrt(a
))]
```

Sympy [A] time = 10.6633, size = 1950, normalized size = 32.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x-a)**(5/2),x)
```

```
[Out] Piecewise((8*a**7*sqrt(-1 + b*x/a)/(-3*a**(19/2) + 9*a**(17/2)*b*
x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 3*I*a**7*log
(b*x/a)/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 +
 3*a**(13/2)*b**3*x**3) - 6*I*a**7*log(sqrt(b)*sqrt(x)/sqrt(a))/(
-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13
/2)*b**3*x**3) + 6*a**7*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/(-3*a**(1
9/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3
*x**3) - 14*a**6*b*x*sqrt(-1 + b*x/a)/(-3*a**(19/2) + 9*a**(17/2)
*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) - 9*I*a**6*
b*x*log(b*x/a)/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2
*x**2 + 3*a**(13/2)*b**3*x**3) + 18*I*a**6*b*x*log(sqrt(b)*sqrt(x
)/sqrt(a))/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**
2 + 3*a**(13/2)*b**3*x**3) - 18*a**6*b*x*asin(sqrt(a)/(sqrt(b)*sq
rt(x)))/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 +
 3*a**(13/2)*b**3*x**3) + 6*a**5*b**2*x**2*sqrt(-1 + b*x/a)/(-3*a
**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*
b**3*x**3) + 9*I*a**5*b**2*x**2*log(b*x/a)/(-3*a**(19/2) + 9*a**(
17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) - 18*I
*a**5*b**2*x**2*log(sqrt(b)*sqrt(x)/sqrt(a))/(-3*a**(19/2) + 9*a*
*(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 18
*a**5*b**2*x**2*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/(-3*a**(19/2) + 9
*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) -
 3*I*a**4*b**3*x**3*log(b*x/a)/(-3*a**(19/2) + 9*a**(17/2)*b*x -
9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 6*I*a**4*b**3*x*
*3*log(sqrt(b)*sqrt(x)/sqrt(a))/(-3*a**(19/2) + 9*a**(17/2)*b*x -
 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) - 6*a**4*b**3*x**
3*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/(-3*a**(19/2) + 9*a**(17/2)*b*x
 - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3), Abs(b*x/a) > 1
), (8*I*a**7*sqrt(1 - b*x/a)/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*
a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 3*I*a**7*log(b*x/a
)/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**
(13/2)*b**3*x**3) - 6*I*a**7*log(sqrt(1 - b*x/a) + 1)/(-3*a**(19/
2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x
**3) + 3*pi*a**7/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b*
*2*x**2 + 3*a**(13/2)*b**3*x**3) - 14*I*a**6*b*x*sqrt(1 - b*x/a)/
```

```
(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(1
3/2)*b**3*x**3) - 9*I*a**6*b*x*log(b*x/a)/(-3*a**(19/2) + 9*a**(1
7/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 18*I*
a**6*b*x*log(sqrt(1 - b*x/a) + 1)/(-3*a**(19/2) + 9*a**(17/2)*b*x
 - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) - 9*pi*a**6*b*x
/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(
13/2)*b**3*x**3) + 6*I*a**5*b**2*x**2*sqrt(1 - b*x/a)/(-3*a**(19/
2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x
**3) + 9*I*a**5*b**2*x**2*log(b*x/a)/(-3*a**(19/2) + 9*a**(17/2)*
b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) - 18*I*a**5*
b**2*x**2*log(sqrt(1 - b*x/a) + 1)/(-3*a**(19/2) + 9*a**(17/2)*b*
x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3) + 9*pi*a**5*b*
*2*x**2/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 +
 3*a**(13/2)*b**3*x**3) - 3*I*a**4*b**3*x**3*log(b*x/a)/(-3*a**(1
9/2) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3
*x**3) + 6*I*a**4*b**3*x**3*log(sqrt(1 - b*x/a) + 1)/(-3*a**(19/2
) + 9*a**(17/2)*b*x - 9*a**(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x*
*3) - 3*pi*a**4*b**3*x**3/(-3*a**(19/2) + 9*a**(17/2)*b*x - 9*a**
(15/2)*b**2*x**2 + 3*a**(13/2)*b**3*x**3), True))
```

GIAC/XCAS [A] time = 0.206596, size = 57, normalized size = 0.95

$$\frac{2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}} + \frac{2\,(3\,bx - 4\,a)}{3\,(bx - a)^{\frac{3}{2}}\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*x - a)/sqrt(a))/a^(5/2) + 2/3*(3*b*x - 4*a)/((b*x
 - a)^(3/2)*a^2)
```

3.366 $\int \frac{1}{x^2(-a+bx)^{5/2}}\,dx$

Optimal. Leaf size=88

$$\frac{5b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{5\sqrt{bx-a}}{a^3x}+\frac{10}{3a^2x\sqrt{bx-a}}-\frac{2}{3ax(bx-a)^{3/2}}$$

```
[Out] -2/(3*a*x*(-a + b*x)^(3/2)) + 10/(3*a^2*x*Sqrt[-a + b*x]) + (5*Sq
rt[-a + b*x])/(a^3*x) + (5*b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(7
/2)
```

Rubi [A] time = 0.0774951, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{5b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{5\sqrt{bx-a}}{a^3x}+\frac{10}{3a^2x\sqrt{bx-a}}-\frac{2}{3ax(bx-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(-a + b*x)^(5/2)),x]
```

```
[Out] -2/(3*a*x*(-a + b*x)^(3/2)) + 10/(3*a^2*x*Sqrt[-a + b*x]) + (5*Sq
rt[-a + b*x])/(a^3*x) + (5*b*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(7
/2)
```

Rubi in Sympy [A] time = 10.7394, size = 70, normalized size = 0.8

$$-\frac{2}{3ax\left(-a+bx\right)^{\frac{3}{2}}}+\frac{10}{3a^2x\sqrt{-a+bx}}+\frac{5\sqrt{-a+bx}}{a^3x}+\frac{5b\,\mathrm{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x-a)**(5/2),x)
```

```
[Out] -2/(3*a*x*(-a + b*x)**(3/2)) + 10/(3*a**2*x*sqrt(-a + b*x)) + 5*s
qrt(-a + b*x)/(a**3*x) + 5*b*atan(sqrt(-a + b*x)/sqrt(a))/a**(7/2
)
```

Mathematica [A] time = 0.130028, size = 67, normalized size = 0.76

$$\frac{5b\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{3a^2-20abx+15b^2x^2}{3a^3x(bx-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(-a + b*x)^(5/2)),x]
```

```
[Out] (3*a^2 - 20*a*b*x + 15*b^2*x^2)/(3*a^3*x*(-a + b*x)^(3/2)) + (5*b
*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/a^(7/2)
```

Maple [A] time = 0.021, size = 68, normalized size = 0.8

$$-\frac{2\,b}{3\,a^2}(bx-a)^{-\frac{3}{2}}+4\,\frac{b}{a^3\sqrt{bx-a}}+\frac{1}{a^3x}\sqrt{bx-a}+5\,\frac{b}{a^{7/2}}\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x-a)^(5/2),x)
```

```
[Out] -2/3*b/a^2/(b*x-a)^(3/2)+4*b/a^3/(b*x-a)^(1/2)+(b*x-a)^(1/2)/a^3/
x+5*b*arctan((b*x-a)^(1/2)/a^(1/2))/a^(7/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228455, size = 1, normalized size = 0.01

$$\left[\frac{15\,\left(b^{2}x^{2}-abx\right)\sqrt{bx-a}\log\left(\frac{(bx-2\,a)\sqrt{-a}+2\,\sqrt{bx-a}a}{x}\right)+2\,\left(15\,b^{2}x^{2}-20\,abx+3\,a^{2}\right)\sqrt{-a}}{6\,(a^{3}bx^{2}-a^{4}x)\sqrt{bx-a}\sqrt{-a}},\right.$$
$$\left.-\frac{15\,\left(b^{2}x^{2}-abx\right)\sqrt{bx-a}\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-\left(15\,b^{2}x^{2}-20\,abx+3\,a^{2}\right)\sqrt{a}}{3\,(a^{3}bx^{2}-a^{4}x)\sqrt{bx-a}\sqrt{a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x^2),x, algorithm="fricas")
```

```
[Out] [1/6*(15*(b^2*x^2 - a*b*x)*sqrt(b*x - a)*log(((b*x - 2*a)*sqrt(-a
) + 2*sqrt(b*x - a)*a)/x) + 2*(15*b^2*x^2 - 20*a*b*x + 3*a^2)*sqr
t(-a))/((a^3*b*x^2 - a^4*x)*sqrt(b*x - a)*sqrt(-a)), -1/3*(15*(b^
2*x^2 - a*b*x)*sqrt(b*x - a)*arctan(sqrt(a)/sqrt(b*x - a)) - (15*
b^2*x^2 - 20*a*b*x + 3*a^2)*sqrt(a))/((a^3*b*x^2 - a^4*x)*sqrt(b*
x - a)*sqrt(a))]
```

Sympy [A] time = 18.4644, size = 2234, normalized size = 25.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x-a)**(5/2),x)
```

```
[Out] Piecewise((-6*a**17*sqrt(-1 + b*x/a)/(-6*a**(39/2)*x + 18*a**(37/
2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 46*
a**16*b*x*sqrt(-1 + b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2
- 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 15*I*a**16*b*
x*log(b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)
*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 30*I*a**16*b*x*log(sqrt(b)*
sqrt(x)/sqrt(a))/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(3
5/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 30*a**16*b*x*asin(sqrt(
a)/(sqrt(b)*sqrt(x)))/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*
a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 70*a**15*b**2*x**2
*sqrt(-1 + b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(
35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 45*I*a**15*b**2*x**2*l
og(b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b*
*2*x**3 + 6*a**(33/2)*b**3*x**4) + 90*I*a**15*b**2*x**2*log(sqrt(
b)*sqrt(x)/sqrt(a))/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a*
*(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 90*a**15*b**2*x**2*a
sin(sqrt(a)/(sqrt(b)*sqrt(x)))/(-6*a**(39/2)*x + 18*a**(37/2)*b*x
**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 30*a**14*
b**3*x**3*sqrt(-1 + b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2
- 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 45*I*a**14*b*
```

```
*3*x**3*log(b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**
(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 90*I*a**14*b**3*x**3*
log(sqrt(b)*sqrt(x)/sqrt(a))/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**
2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 90*a**14*b*
*3*x**3*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/(-6*a**(39/2)*x + 18*a**(
37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) -
15*I*a**13*b**4*x**4*log(b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*
x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 30*I*a**
13*b**4*x**4*log(sqrt(b)*sqrt(x)/sqrt(a))/(-6*a**(39/2)*x + 18*a*
*(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4)
- 30*a**13*b**4*x**4*asin(sqrt(a)/(sqrt(b)*sqrt(x)))/(-6*a**(39/2
)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*
b**3*x**4), Abs(b*x/a) > 1), (-6*I*a**17*sqrt(1 - b*x/a)/(-6*a**(
39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33
/2)*b**3*x**4) + 46*I*a**16*b*x*sqrt(1 - b*x/a)/(-6*a**(39/2)*x +
 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*
x**4) + 15*I*a**16*b*x*log(b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*
b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 30*I*a
**16*b*x*log(sqrt(1 - b*x/a) + 1)/(-6*a**(39/2)*x + 18*a**(37/2)*
b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 15*pi*
a**16*b*x/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b*
*2*x**3 + 6*a**(33/2)*b**3*x**4) - 70*I*a**15*b**2*x**2*sqrt(1 -
b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*
x**3 + 6*a**(33/2)*b**3*x**4) - 45*I*a**15*b**2*x**2*log(b*x/a)/(
-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6
*a**(33/2)*b**3*x**4) + 90*I*a**15*b**2*x**2*log(sqrt(1 - b*x/a)
+ 1)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x*
*3 + 6*a**(33/2)*b**3*x**4) - 45*pi*a**15*b**2*x**2/(-6*a**(39/2)
*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b
**3*x**4) + 30*I*a**14*b**3*x**3*sqrt(1 - b*x/a)/(-6*a**(39/2)*x
+ 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3
*x**4) + 45*I*a**14*b**3*x**3*log(b*x/a)/(-6*a**(39/2)*x + 18*a**
(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) -
 90*I*a**14*b**3*x**3*log(sqrt(1 - b*x/a) + 1)/(-6*a**(39/2)*x +
18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x
**4) + 45*pi*a**14*b**3*x**3/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**
2 - 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 15*I*a**13*
b**4*x**4*log(b*x/a)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a
**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) + 30*I*a**13*b**4*x**
4*log(sqrt(1 - b*x/a) + 1)/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2
- 18*a**(35/2)*b**2*x**3 + 6*a**(33/2)*b**3*x**4) - 15*pi*a**13*b
**4*x**4/(-6*a**(39/2)*x + 18*a**(37/2)*b*x**2 - 18*a**(35/2)*b**
2*x**3 + 6*a**(33/2)*b**3*x**4), True))
```

GIAC/XCAS [A] time = 0.209397, size = 89, normalized size = 1.01

$$\frac{5\,b\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}+\frac{2\,(6\,(bx-a)b-ab)}{3\,(bx-a)^{\frac{3}{2}}a^{3}}+\frac{\sqrt{bx-a}}{a^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x^2),x, algorithm="giac")
```

```
[Out] 5*b*arctan(sqrt(b*x - a)/sqrt(a))/a^(7/2) + 2/3*(6*(b*x - a)*b -
a*b)/((b*x - a)^(3/2)*a^3) + sqrt(b*x - a)/(a^3*x)
```

3.367 $\int \frac{1}{x^3(-a+bx)^{5/2}}\,dx$

Optimal. Leaf size=116

$$\frac{35b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b\sqrt{bx-a}}{4a^4x}+\frac{35\sqrt{bx-a}}{6a^3x^2}+\frac{14}{3a^2x^2\sqrt{bx-a}}-\frac{2}{3ax^2(bx-a)^{3/2}}$$

```
[Out] -2/(3*a*x^2*(-a + b*x)^(3/2)) + 14/(3*a^2*x^2*Sqrt[-a + b*x]) + (
35*Sqrt[-a + b*x])/(6*a^3*x^2) + (35*b*Sqrt[-a + b*x])/(4*a^4*x)
+ (35*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(9/2))
```

Rubi [A] time = 0.102769, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{35b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b\sqrt{bx-a}}{4a^4x}+\frac{35\sqrt{bx-a}}{6a^3x^2}+\frac{14}{3a^2x^2\sqrt{bx-a}}-\frac{2}{3ax^2(bx-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(-a + b*x)^(5/2)),x]
```

```
[Out] -2/(3*a*x^2*(-a + b*x)^(3/2)) + 14/(3*a^2*x^2*Sqrt[-a + b*x]) + (
35*Sqrt[-a + b*x])/(6*a^3*x^2) + (35*b*Sqrt[-a + b*x])/(4*a^4*x)
+ (35*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(9/2))
```

Rubi in Sympy [A] time = 14.7226, size = 99, normalized size = 0.85

$$-\frac{2}{3ax^2\left(-a+bx\right)^{\frac{3}{2}}}+\frac{14}{3a^2x^2\sqrt{-a+bx}}+\frac{35\sqrt{-a+bx}}{6a^3x^2}+\frac{35b\sqrt{-a+bx}}{4a^4x}+\frac{35b^2\operatorname{atan}\left(\frac{\sqrt{-a+bx}}{\sqrt{a}}\right)}{4a^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x-a)**(5/2),x)
```

```
[Out] -2/(3*a*x**2*(-a + b*x)**(3/2)) + 14/(3*a**2*x**2*sqrt(-a + b*x))
 + 35*sqrt(-a + b*x)/(6*a**3*x**2) + 35*b*sqrt(-a + b*x)/(4*a**4*
x) + 35*b**2*atan(sqrt(-a + b*x)/sqrt(a))/(4*a**(9/2))
```

Mathematica [A] time = 0.153095, size = 82, normalized size = 0.71

$$\frac{35b^2\tan^{-1}\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{6a^3+21a^2bx-140ab^2x^2+105b^3x^3}{12a^4x^2(bx-a)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(-a + b*x)^(5/2)),x]
```

```
[Out] (6*a^3 + 21*a^2*b*x - 140*a*b^2*x^2 + 105*b^3*x^3)/(12*a^4*x^2*(-
a + b*x)^(3/2)) + (35*b^2*ArcTan[Sqrt[-a + b*x]/Sqrt[a]])/(4*a^(9
/2))
```

Maple [A] time = 0.022, size = 92, normalized size = 0.8

$$-\frac{2\,b^2}{3\,a^3}\left(bx-a\right)^{-\frac{3}{2}}+6\,\frac{b^2}{a^4\sqrt{bx-a}}+\frac{11}{4\,a^4x^2}\left(bx-a\right)^{\frac{3}{2}}+\frac{13}{4\,a^3x^2}\sqrt{bx-a}+\frac{35\,b^2}{4}\arctan\left(1\sqrt{bx-a}\frac{1}{\sqrt{a}}\right)a^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x-a)^(5/2),x)
```

```
[Out] -2/3*b^2/a^3/(b*x-a)^(3/2)+6*b^2/a^4/(b*x-a)^(1/2)+11/4/a^4/x^2*(
b*x-a)^(3/2)+13/4*(b*x-a)^(1/2)/a^3/x^2+35/4*b^2*arctan((b*x-a)^(
1/2)/a^(1/2))/a^(9/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224972, size = 1, normalized size = 0.01

$$\left[\frac{105\,\left(b^3x^3-ab^2x^2\right)\sqrt{bx-a}\log\left(\frac{(bx-2\,a)\sqrt{-a}+2\,\sqrt{bx-a}a}{x}\right)+2\,\left(105\,b^3x^3-140\,ab^2x^2+21\,a^2bx+6\,a^3\right)\sqrt{-a}}{24\,(a^4bx^3-a^5x^2)\sqrt{bx-a}\sqrt{-a}},\right.$$
$$\left.-\frac{105\,\left(b^3x^3-ab^2x^2\right)\sqrt{bx-a}\arctan\left(\frac{\sqrt{a}}{\sqrt{bx-a}}\right)-\left(105\,b^3x^3-140\,ab^2x^2+21\,a^2bx+6\,a^3\right)\sqrt{a}}{12\,(a^4bx^3-a^5x^2)\sqrt{bx-a}\sqrt{a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x^3),x, algorithm="fricas")
```

```
[Out] [1/24*(105*(b^3*x^3 - a*b^2*x^2)*sqrt(b*x - a)*log(((b*x - 2*a)*s
qrt(-a) + 2*sqrt(b*x - a)*a)/x) + 2*(105*b^3*x^3 - 140*a*b^2*x^2
+ 21*a^2*b*x + 6*a^3)*sqrt(-a))/((a^4*b*x^3 - a^5*x^2)*sqrt(b*x -
 a)*sqrt(-a)), -1/12*(105*(b^3*x^3 - a*b^2*x^2)*sqrt(b*x - a)*arc
tan(sqrt(a)/sqrt(b*x - a)) - (105*b^3*x^3 - 140*a*b^2*x^2 + 21*a^
2*b*x + 6*a^3)*sqrt(a))/((a^4*b*x^3 - a^5*x^2)*sqrt(b*x - a)*sqrt
(a))]
```

Sympy [A] time = 30.5453, size = 1108, normalized size = 9.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x-a)**(5/2),x)
```

```
[Out] Piecewise((12*I*a**(89/2)*b**75*x**75/(24*a**(93/2)*b**(151/2)*x*
*(155/2)*sqrt(a/(b*x) - 1) - 24*a**(91/2)*b**(153/2)*x**(157/2)*s
qrt(a/(b*x) - 1)) + 42*I*a**(87/2)*b**76*x**76/(24*a**(93/2)*b**(
151/2)*x**(155/2)*sqrt(a/(b*x) - 1) - 24*a**(91/2)*b**(153/2)*x**
(157/2)*sqrt(a/(b*x) - 1)) - 280*I*a**(85/2)*b**77*x**77/(24*a**(
93/2)*b**(151/2)*x**(155/2)*sqrt(a/(b*x) - 1) - 24*a**(91/2)*b**(
153/2)*x**(157/2)*sqrt(a/(b*x) - 1)) + 210*I*a**(83/2)*b**78*x**7
8/(24*a**(93/2)*b**(151/2)*x**(155/2)*sqrt(a/(b*x) - 1) - 24*a**(
91/2)*b**(153/2)*x**(157/2)*sqrt(a/(b*x) - 1)) + 210*I*a**42*b**(
155/2)*x**(155/2)*sqrt(a/(b*x) - 1)*acosh(sqrt(a)/(sqrt(b)*sqrt(x
)))/(24*a**(93/2)*b**(151/2)*x**(155/2)*sqrt(a/(b*x) - 1) - 24*a*
*(91/2)*b**(153/2)*x**(157/2)*sqrt(a/(b*x) - 1)) - 105*pi*a**42*b
**(155/2)*x**(155/2)*sqrt(a/(b*x) - 1)/(24*a**(93/2)*b**(151/2)*x
**(155/2)*sqrt(a/(b*x) - 1) - 24*a**(91/2)*b**(153/2)*x**(157/2)*
sqrt(a/(b*x) - 1)) - 210*I*a**41*b**(157/2)*x**(157/2)*sqrt(a/(b*
x) - 1)*acosh(sqrt(a)/(sqrt(b)*sqrt(x)))/(24*a**(93/2)*b**(151/2)
*x**(155/2)*sqrt(a/(b*x) - 1) - 24*a**(91/2)*b**(153/2)*x**(157/2
)*sqrt(a/(b*x) - 1)) + 105*pi*a**41*b**(157/2)*x**(157/2)*sqrt(a/
(b*x) - 1)/(24*a**(93/2)*b**(151/2)*x**(155/2)*sqrt(a/(b*x) - 1)
```

```
- 24*a**(91/2)*b**(153/2)*x**(157/2)*sqrt(a/(b*x) - 1)), Abs(a/(b
*x)) > 1), (-6*a**(89/2)*b**75*x**75/(12*a**(93/2)*b**(151/2)*x**
(155/2)*sqrt(-a/(b*x) + 1) - 12*a**(91/2)*b**(153/2)*x**(157/2)*s
qrt(-a/(b*x) + 1)) - 21*a**(87/2)*b**76*x**76/(12*a**(93/2)*b**(1
51/2)*x**(155/2)*sqrt(-a/(b*x) + 1) - 12*a**(91/2)*b**(153/2)*x**
(157/2)*sqrt(-a/(b*x) + 1)) + 140*a**(85/2)*b**77*x**77/(12*a**(9
3/2)*b**(151/2)*x**(155/2)*sqrt(-a/(b*x) + 1) - 12*a**(91/2)*b**(
153/2)*x**(157/2)*sqrt(-a/(b*x) + 1)) - 105*a**(83/2)*b**78*x**78
/(12*a**(93/2)*b**(151/2)*x**(155/2)*sqrt(-a/(b*x) + 1) - 12*a**(
91/2)*b**(153/2)*x**(157/2)*sqrt(-a/(b*x) + 1)) - 105*a**42*b**(1
55/2)*x**(155/2)*sqrt(-a/(b*x) + 1)*asin(sqrt(a)/(sqrt(b)*sqrt(x)
))/(12*a**(93/2)*b**(151/2)*x**(155/2)*sqrt(-a/(b*x) + 1) - 12*a*
*(91/2)*b**(153/2)*x**(157/2)*sqrt(-a/(b*x) + 1)) + 105*a**41*b**
(157/2)*x**(157/2)*sqrt(-a/(b*x) + 1)*asin(sqrt(a)/(sqrt(b)*sqrt(
x)))/(12*a**(93/2)*b**(151/2)*x**(155/2)*sqrt(-a/(b*x) + 1) - 12*
a**(91/2)*b**(153/2)*x**(157/2)*sqrt(-a/(b*x) + 1)), True))
```

GIAC/XCAS [A] time = 0.213355, size = 131, normalized size = 1.13

$$\frac{35\,b^2\arctan\left(\frac{\sqrt{bx-a}}{\sqrt{a}}\right)}{4\,a^{\frac{9}{2}}}+\frac{2\left(9\,(bx-a)b^2-ab^2\right)}{3\,(bx-a)^{\frac{3}{2}}\,a^4}+\frac{11\,(bx-a)^{\frac{3}{2}}\,b^2+13\,\sqrt{bx-a}ab^2}{4\,a^4b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(5/2)*x^3),x, algorithm="giac")
```

```
[Out] 35/4*b^2*arctan(sqrt(b*x - a)/sqrt(a))/a^(9/2) + 2/3*(9*(b*x - a)
*b^2 - a*b^2)/((b*x - a)^(3/2)*a^4) + 1/4*(11*(b*x - a)^(3/2)*b^2
 + 13*sqrt(b*x - a)*a*b^2)/(a^4*b^2*x^2)
```

3.368 $\int \frac{x^{-1+m}(2am+b(-1+2m)x)}{2(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=13

$$\frac{x^m}{\sqrt{a+bx}}$$

```
[Out] x^m/Sqrt[a + b*x]
```

Rubi [A] time = 0.0199807, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$

$$\frac{x^m}{\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^(-1 + m)*(2*a*m + b*(-1 + 2*m)*x))/(2*(a + b*x)^(3/2)),x]
```

```
[Out] x^m/Sqrt[a + b*x]
```

Rubi in Sympy [A] time = 4.31975, size = 10, normalized size = 0.77

$$\frac{x^m}{\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/2*x**(-1+m)*(2*a*m+b*(-1+2*m)*x)/(b*x+a)**(3/2),x)
```

```
[Out] x**m/sqrt(a + b*x)
```

Mathematica [C] time = 0.151444, size = 100, normalized size = 7.69

$$\frac{x^m\sqrt{a+bx}\left(2a(m+1)\,{}_2F_1\left(-\frac{1}{2},m;m+1;-\frac{bx}{a}\right)-bx\left(2m\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)+{}_2F_1\left(\frac{3}{2},m+1;m+2;-\frac{bx}{a}\right)\right)\right)}{2a^2(m+1)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(-1 + m)*(2*a*m + b*(-1 + 2*m)*x))/(2*(a + b*x)^(3/2)),x]
```

```
[Out] (x^m*Sqrt[a + b*x]*(2*a*(1 + m)*Hypergeometric2F1[-1/2, m, 1 + m,
 -((b*x)/a)] - b*x*(2*m*Hypergeometric2F1[1/2, 1 + m, 2 + m, -((b
*x)/a)] + Hypergeometric2F1[3/2, 1 + m, 2 + m, -((b*x)/a)])))/(2*
a^2*(1 + m)*Sqrt[1 + (b*x)/a])
```

Maple [A] time = 0.01, size = 12, normalized size = 0.9

$$x^{m}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/2*x^(-1+m)*(2*a*m+b*(-1+2*m)*x)/(b*x+a)^(3/2),x)
```

```
[Out] x^m/(b*x+a)^(1/2)
```

Maxima [A] time = 1.69125, size = 15, normalized size = 1.15

$$\frac{x^{m}}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*(b*(2*m - 1)*x + 2*a*m)*x^(m - 1)/(b*x + a)^(3/2),x, algorithm="max
```

```
[Out] x^m/sqrt(b*x + a)
```

Fricas [A] time = 0.228145, size = 19, normalized size = 1.46

$$\frac{xx^{m-1}}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*(b*(2*m - 1)*x + 2*a*m)*x^(m - 1)/(b*x + a)^(3/2),x, algorithm="fri
```

```
[Out] x*x^(m - 1)/sqrt(b*x + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2*x**(-1+m)*(2*a*m+b*(-1+2*m)*x)/(b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(b(2\,m-1)x+2\,am)x^{m-1}}{2\,(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/2*(b*(2*m - 1)*x + 2*a*m)*x^(m - 1)/(b*x + a)^(3/2),x, algorithm="gia
```

```
[Out] integrate(1/2*(b*(2*m - 1)*x + 2*a*m)*x^(m - 1)/(b*x + a)^(3/2),
x)
```

3.369 $\int \left(-\frac{bx^m}{2(a+bx)^{3/2}}+\frac{mx^{-1+m}}{\sqrt{a+bx}}\right)\,dx$

Optimal. Leaf size=13

$$\frac{x^m}{\sqrt{a+bx}}$$

```
[Out] x^m/Sqrt[a + b*x]
```

Rubi [C] time = 0.111998, antiderivative size = 92, normalized size of antiderivative = 7.08, number of steps used = 5, number of rules used = 2, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{x^m\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(-\frac{1}{2},-m;\frac{1}{2};\frac{bx}{a}+1\right)}{\sqrt{a+bx}}-\frac{2mx^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},1-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[-(b*x^m)/(2*(a + b*x)^(3/2)) + (m*x^(-1 + m))/Sqrt[a + b*x],x]
```

```
[Out] (x^m*Hypergeometric2F1[-1/2, -m, 1/2, 1 + (b*x)/a])/((-((b*x)/a))
^m*Sqrt[a + b*x]) - (2*m*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2,
 1 - m, 3/2, 1 + (b*x)/a])/(a*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 14.4416, size = 73, normalized size = 5.62

$$\frac{x^m\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\begin{matrix}-m,-\frac{1}{2}\\ \frac{1}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{\sqrt{a+bx}}-\frac{2mx^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m+1,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-1/2*b*x**m/(b*x+a)**(3/2)+m*x**(-1+m)/(b*x+a)**(1/2),x)
```

```
[Out] x**m*(-b*x/a)**(-m)*hyper((-m, -1/2), (1/2,), 1 + b*x/a)/sqrt(a +
 b*x) - 2*m*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m + 1, 1/2)
, (3/2,), 1 + b*x/a)/a
```

Mathematica [C] time = 0.0474768, size = 100, normalized size = 7.69

$$\frac{x^m\sqrt{a+bx}\left(2a(m+1)\,_2F_1\left(-\frac{1}{2},m;m+1;-\frac{bx}{a}\right)-bx\left(2m\,_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)+\,_2F_1\left(\frac{3}{2},m+1;m+2;-\frac{bx}{a}\right)\right)\right)}{2a^2(m+1)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[-(b*x^m)/(2*(a + b*x)^(3/2)) + (m*x^(-1 + m))/Sqrt[a + b*x],x]
```

```
[Out] (x^m*Sqrt[a + b*x]*(2*a*(1 + m)*Hypergeometric2F1[-1/2, m, 1 + m,
 -((b*x)/a)] - b*x*(2*m*Hypergeometric2F1[1/2, 1 + m, 2 + m, -((b
*x)/a)] + Hypergeometric2F1[3/2, 1 + m, 2 + m, -((b*x)/a)])))/(2*
a^2*(1 + m)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.15, size = 0, normalized size = 0.

$$\int -\frac{bx^m}{2}(bx+a)^{-\frac{3}{2}}+mx^{-1+m}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-1/2*b*x^m/(b*x+a)^(3/2)+m*x^(-1+m)/(b*x+a)^(1/2),x)
```

```
[Out] int(-1/2*b*x^m/(b*x+a)^(3/2)+m*x^(-1+m)/(b*x+a)^(1/2),x)
```

Maxima [A] time = 1.53198, size = 15, normalized size = 1.15

$$\frac{x^m}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(m*x^(m - 1)/sqrt(b*x + a) - 1/2*b*x^m/(b*x + a)^(3/2),x, algorithm="max
```

```
[Out] x^m/sqrt(b*x + a)
```

Fricas [A] time = 0.227745, size = 15, normalized size = 1.15

$$\frac{x^m}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(m*x^(m - 1)/sqrt(b*x + a) - 1/2*b*x^m/(b*x + a)^(3/2),x, algorithm="fri
```

```
[Out] x^m/sqrt(b*x + a)
```

Sympy [A] time = 28.0152, size = 73, normalized size = 5.62

$$\frac{mx^m\,(m)\,{}_2F_1\left(\begin{matrix}\frac{1}{2},m\\m+1\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\,(m+1)}-\frac{bxx^m\,(m+1)\,{}_2F_1\left(\begin{matrix}\frac{3}{2},m+1\\m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2*b*x**m/(b*x+a)**(3/2)+m*x**(-1+m)/(b*x+a)**(1/2),x)
```

```
[Out] m*x**m*gamma(m)*hyper((1/2, m), (m + 1,), b*x*exp_polar(I*pi)/a)/
(sqrt(a)*gamma(m + 1)) - b*x*x**m*gamma(m + 1)*hyper((3/2, m + 1)
, (m + 2,), b*x*exp_polar(I*pi)/a)/(2*a**(3/2)*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{mx^{m-1}}{\sqrt{bx+a}}-\frac{bx^m}{2\,(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(m*x^(m - 1)/sqrt(b*x + a) - 1/2*b*x^m/(b*x + a)^(3/2),x, algorithm="gia
```

```
[Out] integrate(m*x^(m - 1)/sqrt(b*x + a) - 1/2*b*x^m/(b*x + a)^(3/2),
x)
```

3.370 $\int \frac{x^{\frac{1-n}{2}+\frac{1}{2}(-3+n)}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=23

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

[Out] (-2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]

Rubi [A] time = 0.0240003, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

[In] Int[x^((1 - n)/2 + (-3 + n)/2)/Sqrt[a + b*x],x]

[Out] (-2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]

Rubi in Sympy [A] time = 3.24478, size = 22, normalized size = 0.96

$$-\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(1/x/(b*x+a)**(1/2),x)

[Out] -2*atanh(sqrt(a + b*x)/sqrt(a))/sqrt(a)

Mathematica [A] time = 0.0118643, size = 23, normalized size = 1.

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{a+bx}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^((1 - n)/2 + (-3 + n)/2)/Sqrt[a + b*x],x]

[Out] (-2*ArcTanh[Sqrt[a + b*x]/Sqrt[a]])/Sqrt[a]
```

Maple [A] time = 0., size = 18, normalized size = 0.8

$$-2\frac{1}{\sqrt{a}}\mathit{Artanh}\left(\frac{\sqrt{bx+a}}{\sqrt{a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(1/2),x)

[Out] -2*arctanh((b*x+a)^(1/2)/a^(1/2))/a^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220482, size = 1, normalized size = 0.04

$$\left[\frac{\log\left(\frac{(bx+2a)\sqrt{a}-2\sqrt{bx+a}a}{x}\right)}{\sqrt{a}}, \frac{2\arctan\left(\frac{a}{\sqrt{bx+a}\sqrt{-a}}\right)}{\sqrt{-a}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x),x, algorithm="fricas")

[Out] [log(((b*x + 2*a)*sqrt(a) - 2*sqrt(b*x + a)*a)/x)/sqrt(a), 2*arct
an(a/(sqrt(b*x + a)*sqrt(-a)))/sqrt(-a)]
```

Sympy [A] time = 3.58393, size = 24, normalized size = 1.04

$$-\frac{2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(1/2),x)
```

```
[Out] -2*asinh(sqrt(a)/(sqrt(b)*sqrt(x)))/sqrt(a)
```

GIAC/XCAS [A] time = 0.201821, size = 28, normalized size = 1.22

$$\frac{2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(b*x + a)/sqrt(-a))/sqrt(-a)
```

3.371 $\int x^3\sqrt[3]{a+bx}\,dx$

Optimal. Leaf size=72

$$-\frac{3a^3(a+bx)^{4/3}}{4b^4}+\frac{9a^2(a+bx)^{7/3}}{7b^4}+\frac{3(a+bx)^{13/3}}{13b^4}-\frac{9a(a+bx)^{10/3}}{10b^4}$$

```
[Out] (-3*a^3*(a + b*x)^(4/3))/(4*b^4) + (9*a^2*(a + b*x)^(7/3))/(7*b^4
) - (9*a*(a + b*x)^(10/3))/(10*b^4) + (3*(a + b*x)^(13/3))/(13*b^
4)
```

Rubi [A] time = 0.0530509, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^3(a+bx)^{4/3}}{4b^4}+\frac{9a^2(a+bx)^{7/3}}{7b^4}+\frac{3(a+bx)^{13/3}}{13b^4}-\frac{9a(a+bx)^{10/3}}{10b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^(1/3),x]
```

```
[Out] (-3*a^3*(a + b*x)^(4/3))/(4*b^4) + (9*a^2*(a + b*x)^(7/3))/(7*b^4
) - (9*a*(a + b*x)^(10/3))/(10*b^4) + (3*(a + b*x)^(13/3))/(13*b^
4)
```

Rubi in Sympy [A] time = 11.048, size = 68, normalized size = 0.94

$$-\frac{3a^3\left(a+bx\right)^{\frac{4}{3}}}{4b^4}+\frac{9a^2\left(a+bx\right)^{\frac{7}{3}}}{7b^4}-\frac{9a\left(a+bx\right)^{\frac{10}{3}}}{10b^4}+\frac{3\left(a+bx\right)^{\frac{13}{3}}}{13b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(1/3),x)
```

```
[Out] -3*a**3*(a + b*x)**(4/3)/(4*b**4) + 9*a**2*(a + b*x)**(7/3)/(7*b*
*4) - 9*a*(a + b*x)**(10/3)/(10*b**4) + 3*(a + b*x)**(13/3)/(13*b
**4)
```

Mathematica [A] time = 0.021053, size = 57, normalized size = 0.79

$$\frac{3\sqrt[3]{a+bx}\left(-81a^4+27a^3bx-18a^2b^2x^2+14ab^3x^3+140b^4x^4\right)}{1820b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(-81*a^4 + 27*a^3*b*x - 18*a^2*b^2*x^2 + 14*a*
b^3*x^3 + 140*b^4*x^4))/(1820*b^4)
```

Maple [A] time = 0.009, size = 43, normalized size = 0.6

$$-\frac{-420\,b^{3}x^{3}+378\,ab^{2}x^{2}-324\,a^{2}bx+243\,a^{3}}{1820\,b^{4}}\left(bx+a\right)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(1/3),x)
```

```
[Out] -3/1820*(b*x+a)^(4/3)*(-140*b^3*x^3+126*a*b^2*x^2-108*a^2*b*x+81*
a^3)/b^4
```

Maxima [A] time = 1.34008, size = 76, normalized size = 1.06

$$\frac{3\left(bx+a\right)^{\frac{13}{3}}}{13\,b^{4}}-\frac{9\left(bx+a\right)^{\frac{10}{3}}a}{10\,b^{4}}+\frac{9\left(bx+a\right)^{\frac{7}{3}}a^{2}}{7\,b^{4}}-\frac{3\left(bx+a\right)^{\frac{4}{3}}a^{3}}{4\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x^3,x, algorithm="maxima")
```

```
[Out] 3/13*(b*x + a)^(13/3)/b^4 - 9/10*(b*x + a)^(10/3)*a/b^4 + 9/7*(b*
x + a)^(7/3)*a^2/b^4 - 3/4*(b*x + a)^(4/3)*a^3/b^4
```

Fricas [A] time = 0.20959, size = 72, normalized size = 1.

$$\frac{3\left(140\,b^{4}x^{4}+14\,ab^{3}x^{3}-18\,a^{2}b^{2}x^{2}+27\,a^{3}bx-81\,a^{4}\right)\left(bx+a\right)^{\frac{1}{3}}}{1820\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x^3,x, algorithm="fricas")
```

```
[Out] 3/1820*(140*b^4*x^4 + 14*a*b^3*x^3 - 18*a^2*b^2*x^2 + 27*a^3*b*x
- 81*a^4)*(b*x + a)^(1/3)/b^4
```

Sympy [A] time = 8.37901, size = 1742, normalized size = 24.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**(1/3),x)
```

```
[Out] -243*a**(73/3)*(1 + b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*
b**5*x + 27300*a**18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a*
*16*b**8*x**4 + 10920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) +
243*a**(73/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18
*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 1092
0*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) - 1377*a**(70/3)*b*x*(
1 + b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a
**18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 +
10920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 1458*a**(70/3)*b
*x/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*b**6*x**2
+ 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920*a**15*b**
9*x**5 + 1820*a**14*b**10*x**6) - 3213*a**(67/3)*b**2*x**2*(1 + b
*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*
b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920
*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 3645*a**(67/3)*b**2*x
**2/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*b**6*x**2
 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920*a**15*b*
*9*x**5 + 1820*a**14*b**10*x**6) - 3927*a**(64/3)*b**3*x**3*(1 +
b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18
*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 1092
0*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 4860*a**(64/3)*b**3*
x**3/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*b**6*x**
2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920*a**15*b
**9*x**5 + 1820*a**14*b**10*x**6) - 2163*a**(61/3)*b**4*x**4*(1 +
 b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**1
8*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 109
20*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 3645*a**(61/3)*b**4
*x**4/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*b**6*x*
*2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920*a**15*
b**9*x**5 + 1820*a**14*b**10*x**6) + 1827*a**(58/3)*b**5*x**5*(1
+ b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**
18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10
920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 1458*a**(58/3)*b**
5*x**5/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*b**6*x
**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920*a**15
*b**9*x**5 + 1820*a**14*b**10*x**6) + 6573*a**(55/3)*b**6*x**6*(1
 + b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a*
*18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 1
0920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 243*a**(55/3)*b**
6*x**6/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a**18*b**6*x
**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 10920*a**15
```

```
*b**9*x**5 + 1820*a**14*b**10*x**6) + 8787*a**(52/3)*b**7*x**7*(1
 + b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x + 27300*a*
*18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**8*x**4 + 1
0920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 6498*a**(49/3)*b*
*8*x**8*(1 + b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**19*b**5*x
+ 27300*a**18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300*a**16*b**
8*x**4 + 10920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6) + 2562*a*
*(46/3)*b**9*x**9*(1 + b*x/a)**(1/3)/(1820*a**20*b**4 + 10920*a**
19*b**5*x + 27300*a**18*b**6*x**2 + 36400*a**17*b**7*x**3 + 27300
*a**16*b**8*x**4 + 10920*a**15*b**9*x**5 + 1820*a**14*b**10*x**6)
 + 420*a**(43/3)*b**10*x**10*(1 + b*x/a)**(1/3)/(1820*a**20*b**4
+ 10920*a**19*b**5*x + 27300*a**18*b**6*x**2 + 36400*a**17*b**7*x
**3 + 27300*a**16*b**8*x**4 + 10920*a**15*b**9*x**5 + 1820*a**14*
b**10*x**6)
```

GIAC/XCAS [A] time = 0.205932, size = 82, normalized size = 1.14

$$\frac{3\left(140\,(bx+a)^{\frac{13}{3}}b^{36}-546\,(bx+a)^{\frac{10}{3}}ab^{36}+780\,(bx+a)^{\frac{7}{3}}a^{2}b^{36}-455\,(bx+a)^{\frac{4}{3}}a^{3}b^{36}\right)}{1820\,b^{40}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x^3,x, algorithm="giac")
```

```
[Out] 3/1820*(140*(b*x + a)^(13/3)*b^36 - 546*(b*x + a)^(10/3)*a*b^36 +
 780*(b*x + a)^(7/3)*a^2*b^36 - 455*(b*x + a)^(4/3)*a^3*b^36)/b^4
0
```

3.372 $\int x^2\sqrt[3]{a+bx}\,dx$

Optimal. Leaf size=53

$$\frac{3a^2(a+bx)^{4/3}}{4b^3}+\frac{3(a+bx)^{10/3}}{10b^3}-\frac{6a(a+bx)^{7/3}}{7b^3}$$

```
[Out] (3*a^2*(a + b*x)^(4/3))/(4*b^3) - (6*a*(a + b*x)^(7/3))/(7*b^3) +
 (3*(a + b*x)^(10/3))/(10*b^3)
```

Rubi [A] time = 0.0403399, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3a^2(a+bx)^{4/3}}{4b^3}+\frac{3(a+bx)^{10/3}}{10b^3}-\frac{6a(a+bx)^{7/3}}{7b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^(1/3),x]
```

```
[Out] (3*a^2*(a + b*x)^(4/3))/(4*b^3) - (6*a*(a + b*x)^(7/3))/(7*b^3) +
 (3*(a + b*x)^(10/3))/(10*b^3)
```

Rubi in Sympy [A] time = 7.89742, size = 49, normalized size = 0.92

$$\frac{3a^2\left(a+bx\right)^{\frac{4}{3}}}{4b^3}-\frac{6a\left(a+bx\right)^{\frac{7}{3}}}{7b^3}+\frac{3\left(a+bx\right)^{\frac{10}{3}}}{10b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**(1/3),x)
```

```
[Out] 3*a**2*(a + b*x)**(4/3)/(4*b**3) - 6*a*(a + b*x)**(7/3)/(7*b**3)
+ 3*(a + b*x)**(10/3)/(10*b**3)
```

Mathematica [A] time = 0.0163483, size = 46, normalized size = 0.87

$$\frac{3\sqrt[3]{a+bx}\left(9a^3-3a^2bx+2ab^2x^2+14b^3x^3\right)}{140b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(9*a^3 - 3*a^2*b*x + 2*a*b^2*x^2 + 14*b^3*x^3)
)/(140*b^3)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$\frac{42\,b^2x^2 - 36\,abx + 27\,a^2}{140\,b^3}\,(bx+a)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^(1/3),x)
```

```
[Out] 3/140*(b*x+a)^(4/3)*(14*b^2*x^2-12*a*b*x+9*a^2)/b^3
```

Maxima [A] time = 1.34139, size = 55, normalized size = 1.04

$$\frac{3\,(bx+a)^{\frac{10}{3}}}{10\,b^3} - \frac{6\,(bx+a)^{\frac{7}{3}}\,a}{7\,b^3} + \frac{3\,(bx+a)^{\frac{4}{3}}\,a^2}{4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x^2,x, algorithm="maxima")
```

```
[Out] 3/10*(b*x + a)^(10/3)/b^3 - 6/7*(b*x + a)^(7/3)*a/b^3 + 3/4*(b*x
+ a)^(4/3)*a^2/b^3
```

Fricas [A] time = 0.209624, size = 57, normalized size = 1.08

$$\frac{3\left(14\,b^3x^3 + 2\,ab^2x^2 - 3\,a^2bx + 9\,a^3\right)(bx+a)^{\frac{1}{3}}}{140\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x^2,x, algorithm="fricas")
```

```
[Out] 3/140*(14*b^3*x^3 + 2*a*b^2*x^2 - 3*a^2*b*x + 9*a^3)*(b*x + a)^(1
/3)/b^3
```

Sympy [A] time = 5.62068, size = 666, normalized size = 12.57

$$\frac{27a^{\frac{34}{3}}\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} - \frac{27a^{\frac{34}{3}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} + \frac{72a^{\frac{31}{3}}bx\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} - \frac{81a^{\frac{31}{3}}bx}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} + \frac{60a^{\frac{28}{3}}b^2x^2\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} - \frac{81a^{\frac{28}{3}}b^2x^2}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} + \frac{60a^{\frac{25}{3}}b^3x^3\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} - \frac{27a^{\frac{25}{3}}b^3x^3}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} + \frac{135a^{\frac{22}{3}}b^4x^4\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} + \frac{132a^{\frac{19}{3}}b^5x^5\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3} + \frac{42a^{\frac{16}{3}}b^6x^6\sqrt[3]{1+\frac{bx}{a}}}{140a^8b^3+420a^7b^4x+420a^6b^5x^2+140a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(1/3),x)
```

```
[Out] 27*a**(34/3)*(1 + b*x/a)**(1/3)/(140*a**8*b**3 + 420*a**7*b**4*x
+ 420*a**6*b**5*x**2 + 140*a**5*b**6*x**3) - 27*a**(34/3)/(140*a*
*8*b**3 + 420*a**7*b**4*x + 420*a**6*b**5*x**2 + 140*a**5*b**6*x*
*3) + 72*a**(31/3)*b*x*(1 + b*x/a)**(1/3)/(140*a**8*b**3 + 420*a*
*7*b**4*x + 420*a**6*b**5*x**2 + 140*a**5*b**6*x**3) - 81*a**(31/
3)*b*x/(140*a**8*b**3 + 420*a**7*b**4*x + 420*a**6*b**5*x**2 + 14
0*a**5*b**6*x**3) + 60*a**(28/3)*b**2*x**2*(1 + b*x/a)**(1/3)/(14
0*a**8*b**3 + 420*a**7*b**4*x + 420*a**6*b**5*x**2 + 140*a**5*b**
6*x**3) - 81*a**(28/3)*b**2*x**2/(140*a**8*b**3 + 420*a**7*b**4*x
 + 420*a**6*b**5*x**2 + 140*a**5*b**6*x**3) + 60*a**(25/3)*b**3*x
**3*(1 + b*x/a)**(1/3)/(140*a**8*b**3 + 420*a**7*b**4*x + 420*a**
6*b**5*x**2 + 140*a**5*b**6*x**3) - 27*a**(25/3)*b**3*x**3/(140*a
**8*b**3 + 420*a**7*b**4*x + 420*a**6*b**5*x**2 + 140*a**5*b**6*x
```

```
**3) + 135*a**(22/3)*b**4*x**4*(1 + b*x/a)**(1/3)/(140*a**8*b**3
+ 420*a**7*b**4*x + 420*a**6*b**5*x**2 + 140*a**5*b**6*x**3) + 13
2*a**(19/3)*b**5*x**5*(1 + b*x/a)**(1/3)/(140*a**8*b**3 + 420*a**
7*b**4*x + 420*a**6*b**5*x**2 + 140*a**5*b**6*x**3) + 42*a**(16/3
)*b**6*x**6*(1 + b*x/a)**(1/3)/(140*a**8*b**3 + 420*a**7*b**4*x +
 420*a**6*b**5*x**2 + 140*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.205553, size = 62, normalized size = 1.17

$$\frac{3\left(14\,(bx+a)^{\frac{10}{3}}b^{18}-40\,(bx+a)^{\frac{7}{3}}ab^{18}+35\,(bx+a)^{\frac{4}{3}}a^{2}b^{18}\right)}{140\,b^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x^2,x, algorithm="giac")
```

```
[Out] 3/140*(14*(b*x + a)^(10/3)*b^18 - 40*(b*x + a)^(7/3)*a*b^18 + 35*
(b*x + a)^(4/3)*a^2*b^18)/b^21
```

3.373 $\int x\sqrt[3]{a+bx}\,dx$

Optimal. Leaf size=34

$$\frac{3(a+bx)^{7/3}}{7b^2}-\frac{3a(a+bx)^{4/3}}{4b^2}$$

```
[Out] (-3*a*(a + b*x)^(4/3))/(4*b^2) + (3*(a + b*x)^(7/3))/(7*b^2)
```

Rubi [A] time = 0.0252399, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3(a+bx)^{7/3}}{7b^2}-\frac{3a(a+bx)^{4/3}}{4b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^(1/3),x]

[Out] (-3*a*(a + b*x)^(4/3))/(4*b^2) + (3*(a + b*x)^(7/3))/(7*b^2)
```

Rubi in Sympy [A] time = 4.89396, size = 31, normalized size = 0.91

$$-\frac{3a\left(a+bx\right)^{\frac{4}{3}}}{4b^2}+\frac{3\left(a+bx\right)^{\frac{7}{3}}}{7b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(1/3),x)

[Out] -3*a*(a + b*x)**(4/3)/(4*b**2) + 3*(a + b*x)**(7/3)/(7*b**2)
```

Mathematica [A] time = 0.0129513, size = 34, normalized size = 1.

$$\frac{3\sqrt[3]{a+bx}\left(-3a^2+abx+4b^2x^2\right)}{28b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(-3*a^2 + a*b*x + 4*b^2*x^2))/(28*b^2)
```

Maple [A] time = 0.003, size = 21, normalized size = 0.6

$$-\frac{-12\,bx+9\,a}{28\,b^2}\,(bx+a)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(1/3),x)
```

```
[Out] -3/28*(b*x+a)^(4/3)*(-4*b*x+3*a)/b^2
```

Maxima [A] time = 1.35778, size = 35, normalized size = 1.03

$$\frac{3\,(bx+a)^{\frac{7}{3}}}{7\,b^2}-\frac{3\,(bx+a)^{\frac{4}{3}}a}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(1/3)*x,x, algorithm="maxima")
```

```
[Out] 3/7*(b*x + a)^(7/3)/b^2 - 3/4*(b*x + a)^(4/3)*a/b^2
```

Fricas [A] time = 0.204301, size = 41, normalized size = 1.21

$$\frac{3\left(4\,b^2x^2+abx-3\,a^2\right)(bx+a)^{\frac{1}{3}}}{28\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(1/3)*x,x, algorithm="fricas")
```

```
[Out] 3/28*(4*b^2*x^2 + a*b*x - 3*a^2)*(b*x + a)^(1/3)/b^2
```

Sympy [A] time = 3.70959, size = 202, normalized size = 5.94

$$-\frac{9a^{\frac{13}{3}}\sqrt[3]{1+\frac{bx}{a}}}{28a^2b^2+28ab^3x}+\frac{9a^{\frac{13}{3}}}{28a^2b^2+28ab^3x}-\frac{6a^{\frac{10}{3}}bx\sqrt[3]{1+\frac{bx}{a}}}{28a^2b^2+28ab^3x}+\frac{9a^{\frac{10}{3}}bx}{28a^2b^2+28ab^3x}+\frac{15a^{\frac{7}{3}}b^2x^2\sqrt[3]{1+\frac{bx}{a}}}{28a^2b^2+28ab^3x}+\frac{12a^{\frac{4}{3}}b^3x^3\sqrt[3]{1+\frac{bx}{a}}}{28a^2b^2+28ab^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(1/3),x)
```

```
[Out] -9*a**(13/3)*(1 + b*x/a)**(1/3)/(28*a**2*b**2 + 28*a*b**3*x) + 9*
a**(13/3)/(28*a**2*b**2 + 28*a*b**3*x) - 6*a**(10/3)*b*x*(1 + b*x
/a)**(1/3)/(28*a**2*b**2 + 28*a*b**3*x) + 9*a**(10/3)*b*x/(28*a**
2*b**2 + 28*a*b**3*x) + 15*a**(7/3)*b**2*x**2*(1 + b*x/a)**(1/3)/
(28*a**2*b**2 + 28*a*b**3*x) + 12*a**(4/3)*b**3*x**3*(1 + b*x/a)*
*(1/3)/(28*a**2*b**2 + 28*a*b**3*x)
```

GIAC/XCAS [A] time = 0.204856, size = 34, normalized size = 1.

$$\frac{3\left(4\,(bx+a)^{\frac{7}{3}}-7\,(bx+a)^{\frac{4}{3}}a\right)}{28\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*x,x, algorithm="giac")
```

```
[Out] 3/28*(4*(b*x + a)^(7/3) - 7*(b*x + a)^(4/3)*a)/b^2
```

3.374 $\int \sqrt[3]{a+bx}\,dx$

Optimal. Leaf size=16

$$\frac{3(a+bx)^{4/3}}{4b}$$

```
[Out] (3*(a + b*x)^(4/3))/(4*b)
```

Rubi [A] time = 0.00698395, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{3(a+bx)^{4/3}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/3),x]

[Out] (3*(a + b*x)^(4/3))/(4*b)
```

Rubi in Sympy [A] time = 1.24992, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{4}{3}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3),x)

[Out] 3*(a + b*x)**(4/3)/(4*b)
```

Mathematica [A] time = 0.00599008, size = 16, normalized size = 1.

$$\frac{3(a+bx)^{4/3}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(4/3))/(4*b)
```

Maple [A] time = 0.004, size = 13, normalized size = 0.8

$$\frac{3}{4\,b}\,(bx+a)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3),x)
```

```
[Out] 3/4*(b*x+a)^(4/3)/b
```

Maxima [A] time = 1.34548, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{4}{3}}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3),x, algorithm="maxima")
```

```
[Out] 3/4*(b*x + a)^(4/3)/b
```

Fricas [A] time = 0.204896, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{4}{3}}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/4*(b*x + a)^(4/3)/b
```

Sympy [A] time = 0.079205, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{4}{3}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3),x)
```

```
[Out] 3*(a + b*x)**(4/3)/(4*b)
```

GIAC/XCAS [A] time = 0.203688, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{4}{3}}}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/4*(b*x + a)^(4/3)/b
```

3.375 $\int \frac{\sqrt[3]{a+bx}}{x}\,dx$

Optimal. Leaf size=91

$$3\sqrt[3]{a+bx}+\frac{3}{2}\sqrt[3]{a}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\sqrt{3}\sqrt[3]{a}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)-\frac{1}{2}\sqrt[3]{a}\log(x)$$

```
[Out] 3*(a + b*x)^(1/3) - Sqrt[3]*a^(1/3)*ArcTan[(a^(1/3) + 2*(a + b*x)
^(1/3))/(Sqrt[3]*a^(1/3))] - (a^(1/3)*Log[x])/2 + (3*a^(1/3)*Log[
a^(1/3) - (a + b*x)^(1/3)])/2
```

Rubi [A] time = 0.104962, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$3\sqrt[3]{a+bx}+\frac{3}{2}\sqrt[3]{a}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\sqrt{3}\sqrt[3]{a}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)-\frac{1}{2}\sqrt[3]{a}\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/3)/x,x]
```

```
[Out] 3*(a + b*x)^(1/3) - Sqrt[3]*a^(1/3)*ArcTan[(a^(1/3) + 2*(a + b*x)
^(1/3))/(Sqrt[3]*a^(1/3))] - (a^(1/3)*Log[x])/2 + (3*a^(1/3)*Log[
a^(1/3) - (a + b*x)^(1/3)])/2
```

Rubi in Sympy [A] time = 7.08659, size = 83, normalized size = 0.91

$$-\frac{\sqrt[3]{a}\log(x)}{2}+\frac{3\sqrt[3]{a}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2}-\sqrt{3}\sqrt[3]{a}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)+3\sqrt[3]{a+bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)/x,x)
```

```
[Out] -a**(1/3)*log(x)/2 + 3*a**(1/3)*log(a**(1/3) - (a + b*x)**(1/3))/
2 - sqrt(3)*a**(1/3)*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3
)/3)/a**(1/3)) + 3*(a + b*x)**(1/3)
```

Mathematica [C] time = 0.0376313, size = 57, normalized size = 0.63

$$\frac{6(a+bx)-3a\left(\frac{a}{bx}+1\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)}{2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)/x,x]
```

```
[Out] (6*(a + b*x) - 3*a*(1 + a/(b*x))^(2/3)*Hypergeometric2F1[2/3, 2/3
, 5/3, -(a/(b*x))])/(2*(a + b*x)^(2/3))
```

Maple [A] time = 0.02, size = 85, normalized size = 0.9

$$3\sqrt[3]{bx+a}+\sqrt[3]{a}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)-\frac{1}{2}\sqrt[3]{a}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)\\-\sqrt[3]{a}\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)/x,x)
```

```
[Out] 3*(b*x+a)^(1/3)+a^(1/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/2*a^(1/3)*ln(
(b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))-a^(1/3)*3^(1/2)*arct
an(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.216207, size = 116, normalized size = 1.27

$$-\sqrt{3}a^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)-\frac{1}{2}\,a^{\frac{1}{3}}\log\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)+a^{\frac{1}{3}}\log\left((bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right)+3\,(bx+a)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x,x, algorithm="fricas")
```

```
[Out] -sqrt(3)*a^(1/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))
/a^(1/3)) - 1/2*a^(1/3)*log((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(
1/3) + a^(2/3)) + a^(1/3)*log((b*x + a)^(1/3) - a^(1/3)) + 3*(b*x
 + a)^(1/3)
```

Sympy [A] time = 5.8349, size = 180, normalized size = 1.98

$$\frac{4\sqrt[3]{a}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{4}{3}\right)}{3\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{a}e^{\frac{4i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{2i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{4}{3}\right)}{3\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{a}e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{4i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{4}{3}\right)}{3\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}\,\Gamma\left(\frac{4}{3}\right)}{\Gamma\left(\frac{7}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)/x,x)
```

```
[Out] 4*a**(1/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(4/3)
/(3*gamma(7/3)) + 4*a**(1/3)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b
+ x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(4/3)/(3*gamma(7/3
)) + 4*a**(1/3)*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*e
xp_polar(4*I*pi/3)/a**(1/3))*gamma(4/3)/(3*gamma(7/3)) + 4*b**(1/
3)*(a/b + x)**(1/3)*gamma(4/3)/gamma(7/3)
```

GIAC/XCAS [A] time = 0.511469, size = 117, normalized size = 1.29

$$-\sqrt{3}a^{\frac{1}{3}} \arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)-\frac{1}{2}\,a^{\frac{1}{3}}\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)$$
$$+a^{\frac{1}{3}}\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)+3\,(bx+a)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x,x, algorithm="giac")
```

```
[Out] -sqrt(3)*a^(1/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))
/a^(1/3)) - 1/2*a^(1/3)*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1
/3) + a^(2/3)) + a^(1/3)*ln(abs((b*x + a)^(1/3) - a^(1/3))) + 3*(
b*x + a)^(1/3)
```

3.376 $\int \frac{\sqrt[3]{a+bx}}{x^2}\,dx$

Optimal. Leaf size=97

$$-\frac{b\log(x)}{6a^{2/3}}+\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{2/3}}-\frac{b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{2/3}}-\frac{\sqrt[3]{a+bx}}{x}$$

```
[Out] -((a + b*x)^(1/3)/x) - (b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(S
qrt[3]*a^(1/3))])/(Sqrt[3]*a^(2/3)) - (b*Log[x])/(6*a^(2/3)) + (b
*Log[a^(1/3) - (a + b*x)^(1/3)])/(2*a^(2/3))
```

Rubi [A] time = 0.0882571, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{b\log(x)}{6a^{2/3}}+\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{2/3}}-\frac{b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{2/3}}-\frac{\sqrt[3]{a+bx}}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/3)/x^2,x]
```

```
[Out] -((a + b*x)^(1/3)/x) - (b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(S
qrt[3]*a^(1/3))])/(Sqrt[3]*a^(2/3)) - (b*Log[x])/(6*a^(2/3)) + (b
*Log[a^(1/3) - (a + b*x)^(1/3)])/(2*a^(2/3))
```

Rubi in Sympy [A] time = 7.42704, size = 88, normalized size = 0.91

$$-\frac{\sqrt[3]{a+bx}}{x}-\frac{b\log\left(x\right)}{6a^{\frac{2}{3}}}+\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{\frac{2}{3}}}-\frac{\sqrt{3}b\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)/x**2,x)
```

```
[Out] -(a + b*x)**(1/3)/x - b*log(x)/(6*a**(2/3)) + b*log(a**(1/3) - (a
 + b*x)**(1/3))/(2*a**(2/3)) - sqrt(3)*b*atan(sqrt(3)*(a**(1/3)/3
 + 2*(a + b*x)**(1/3)/3)/a**(1/3))/(3*a**(2/3))
```

Mathematica [C] time = 0.0329435, size = 61, normalized size = 0.63

$$\frac{-bx\left(\frac{a}{bx}+1\right)^{2/3}\,{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)-2(a+bx)}{2x(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)/x^2,x]
```

```
[Out] (-2*(a + b*x) - b*(1 + a/(b*x))^(2/3)*x*Hypergeometric2F1[2/3, 2/
3, 5/3, -(a/(b*x))])/(2*x*(a + b*x)^(2/3))
```

Maple [A] time = 0.014, size = 92, normalized size = 1.

$$-\frac{1}{x}\sqrt[3]{bx+a}+\frac{b}{3}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{2}{3}}-\frac{b}{6}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{2}{3}}$$
$$-\frac{b\sqrt{3}}{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)/x^2,x)
```

```
[Out] -(b*x+a)^(1/3)/x+1/3*b/a^(2/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/6*b/a^
(2/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))-1/3*b/a^(2/
3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223554, size = 171, normalized size = 1.76

$$-\frac{\sqrt{3}\left(\sqrt{3}bx\log\left(a^2+\left(a^2\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}a+\left(a^2\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}\right)-2\sqrt{3}bx\log\left(-a+\left(a^2\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}\right)+6\,bx\arctan\left(\frac{\sqrt{3}a+2\sqrt{3}\left(a^2\right)^{\frac{1}{3}}(}{3\,a}\right.\right.}{18\left(a^2\right)^{\frac{1}{3}}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x^2,x, algorithm="fricas")
```

```
[Out] -1/18*sqrt(3)*(sqrt(3)*b*x*log(a^2 + (a^2)^(1/3)*(b*x + a)^(1/3)*
a + (a^2)^(2/3)*(b*x + a)^(2/3)) - 2*sqrt(3)*b*x*log(-a + (a^2)^(
1/3)*(b*x + a)^(1/3)) + 6*b*x*arctan(1/3*(sqrt(3)*a + 2*sqrt(3)*(
a^2)^(1/3)*(b*x + a)^(1/3))/a) + 6*sqrt(3)*(a^2)^(1/3)*(b*x + a)^
(1/3))/((a^2)^(1/3)*x)
```

Sympy [A] time = 6.55475, size = 515, normalized size = 5.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)/x**2,x)
```

```
[Out] 4*a**(7/3)*b*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(4/
3)/(9*a**3*gamma(7/3) - 9*a**2*b*(a/b + x)*gamma(7/3)) + 4*a**(7/
3)*b*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*
I*pi/3)/a**(1/3))*gamma(4/3)/(9*a**3*gamma(7/3) - 9*a**2*b*(a/b +
 x)*gamma(7/3)) + 4*a**(7/3)*b*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/
b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(4/3)/(9*a**3*ga
mma(7/3) - 9*a**2*b*(a/b + x)*gamma(7/3)) - 4*a**(4/3)*b**2*(a/b
+ x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(4/3)/(9*a*
*3*gamma(7/3) - 9*a**2*b*(a/b + x)*gamma(7/3)) - 4*a**(4/3)*b**2*
(a/b + x)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_pol
ar(2*I*pi/3)/a**(1/3))*gamma(4/3)/(9*a**3*gamma(7/3) - 9*a**2*b*(
a/b + x)*gamma(7/3)) - 4*a**(4/3)*b**2*(a/b + x)*exp(2*I*pi/3)*lo
g(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gam
ma(4/3)/(9*a**3*gamma(7/3) - 9*a**2*b*(a/b + x)*gamma(7/3)) + 12*
a**2*b**(4/3)*(a/b + x)**(1/3)*gamma(4/3)/(9*a**3*gamma(7/3) - 9*
a**2*b*(a/b + x)*gamma(7/3))
```

GIAC/XCAS [A] time = 0.527125, size = 142, normalized size = 1.46

$$-\frac{\frac{2\sqrt{3}b^2\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{a^{\frac{2}{3}}}+\frac{b^2\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{2}{3}}}-\frac{2\,b^2\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{2}{3}}}+\frac{6\,(bx+a)^{\frac{1}{3}}b}{x}}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x^2,x, algorithm="giac")
```

```
[Out] -1/6*(2*sqrt(3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/
3))/a^(1/3))/a^(2/3) + b^2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a
^(1/3) + a^(2/3))/a^(2/3) - 2*b^2*ln(abs((b*x + a)^(1/3) - a^(1/3
)))/a^(2/3) + 6*(b*x + a)^(1/3)*b/x)/b
```

3.377 $\int \frac{\sqrt[3]{a+bx}}{x^3}\,dx$

Optimal. Leaf size=127

$$\frac{b^2\log(x)}{18a^{5/3}}-\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{5/3}}+\frac{b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{5/3}}-\frac{\sqrt[3]{a+bx}}{2x^2}-\frac{b\sqrt[3]{a+bx}}{6ax}$$

```
[Out] -(a + b*x)^(1/3)/(2*x^2) - (b*(a + b*x)^(1/3))/(6*a*x) + (b^2*Arc
Tan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*
a^(5/3)) + (b^2*Log[x])/(18*a^(5/3)) - (b^2*Log[a^(1/3) - (a + b*
x)^(1/3)])/(6*a^(5/3))
```

Rubi [A] time = 0.121913, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$\frac{b^2\log(x)}{18a^{5/3}}-\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{5/3}}+\frac{b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{5/3}}-\frac{\sqrt[3]{a+bx}}{2x^2}-\frac{b\sqrt[3]{a+bx}}{6ax}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/3)/x^3,x]
```

```
[Out] -(a + b*x)^(1/3)/(2*x^2) - (b*(a + b*x)^(1/3))/(6*a*x) + (b^2*Arc
Tan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*
a^(5/3)) + (b^2*Log[x])/(18*a^(5/3)) - (b^2*Log[a^(1/3) - (a + b*
x)^(1/3)])/(6*a^(5/3))
```

Rubi in Sympy [A] time = 11.1332, size = 112, normalized size = 0.88

$$-\frac{\sqrt[3]{a+bx}}{2x^2}-\frac{b\sqrt[3]{a+bx}}{6ax}+\frac{b^2\log(x)}{18a^{\frac{5}{3}}}-\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{\frac{5}{3}}}+\frac{\sqrt{3}b^2\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)/x**3,x)
```

```
[Out] -(a + b*x)**(1/3)/(2*x**2) - b*(a + b*x)**(1/3)/(6*a*x) + b**2*lo
g(x)/(18*a**(5/3)) - b**2*log(a**(1/3) - (a + b*x)**(1/3))/(6*a**
```

```
(5/3)) + sqrt(3)*b**2*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/
3)/3)/a**(1/3))/(9*a**(5/3))
```

Mathematica [C] time = 0.0381378, size = 78, normalized size = 0.61

$$\frac{-3a^2+b^2x^2\left(\frac{a}{bx}+1\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)-4abx-b^2x^2}{6ax^2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)/x^3,x]
```

```
[Out] (-3*a^2 - 4*a*b*x - b^2*x^2 + b^2*(1 + a/(b*x))^(2/3)*x^2*Hyperge
ometric2F1[2/3, 2/3, 5/3, -(a/(b*x))])/(6*a*x^2*(a + b*x)^(2/3))
```

Maple [A] time = 0.016, size = 113, normalized size = 0.9

$$-\frac{1}{6\,ax^2}(bx+a)^{\frac{4}{3}}-\frac{1}{3\,x^2}\sqrt[3]{bx+a}-\frac{b^2}{9}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{5}{3}}+\frac{b^2}{18}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{5}{3}}+\frac{b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)/x^3,x)
```

```
[Out] -1/6/x^2/a*(b*x+a)^(4/3)-1/3*(b*x+a)^(1/3)/x^2-1/9*b^2/a^(5/3)*ln
((b*x+a)^(1/3)-a^(1/3))+1/18*b^2/a^(5/3)*ln((b*x+a)^(2/3)+(b*x+a)
^(1/3)*a^(1/3)+a^(2/3))+1/9*b^2/a^(5/3)*3^(1/2)*arctan(1/3*3^(1/2
)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219531, size = 216, normalized size = 1.7

$$-\frac{\sqrt{3}\left(\sqrt{3}b^2x^2\log\left(a^2-\left(-a^2\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}a+\left(-a^2\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}\right)-2\sqrt{3}b^2x^2\log\left(a+\left(-a^2\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}\right)-6b^2x^2\arctan\left(-\right.\right.}{54\left(-a^2\right)^{\frac{1}{3}}ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x^3,x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(sqrt(3)*b^2*x^2*log(a^2 - (-a^2)^(1/3)*(b*x + a)^(
1/3)*a + (-a^2)^(2/3)*(b*x + a)^(2/3)) - 2*sqrt(3)*b^2*x^2*log(a
+ (-a^2)^(1/3)*(b*x + a)^(1/3)) - 6*b^2*x^2*arctan(-1/3*(sqrt(3)*
a - 2*sqrt(3)*(-a^2)^(1/3)*(b*x + a)^(1/3))/a) + 3*sqrt(3)*(-a^2)
^(1/3)*(b*x + 3*a)*(b*x + a)^(1/3))/((-a^2)^(1/3)*a*x^2)
```

Sympy [A] time = 8.00036, size = 1731, normalized size = 13.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)/x**3,x)
```

```
[Out] -4*a**(16/3)*b**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gam
ma(4/3)/(27*a**7*gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81
*a**5*b**2*(a/b + x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*ga
mma(7/3)) - 4*a**(16/3)*b**2*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b
+ x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*gam
ma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b + x)
**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) - 4*a**(16
/3)*b**2*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_pola
r(4*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*gamma(7/3) - 81*a**6*b*
(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b + x)**2*gamma(7/3) - 27*
a**4*b**3*(a/b + x)**3*gamma(7/3)) + 12*a**(13/3)*b**3*(a/b + x)*
log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(4/3)/(27*a**7*g
amma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b +
x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) + 12*a**
(13/3)*b**3*(a/b + x)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(
1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*gamma(7/3)
 - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b + x)**2*gam
ma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) + 12*a**(13/3)*b*
*3*(a/b + x)*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_
polar(4*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*gamma(7/3) - 81*a**
6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b + x)**2*gamma(7/3) -
 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) - 12*a**(10/3)*b**4*(a/b +
 x)**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(4/3)/(27
```

```
*a**7*gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*
(a/b + x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) -
 12*a**(10/3)*b**4*(a/b + x)**2*exp(4*I*pi/3)*log(1 - b**(1/3)*(a
/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*
gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b +
 x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) - 12*a*
*(10/3)*b**4*(a/b + x)**2*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x
)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*gamma(
7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b + x)**2
*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) + 4*a**(7/3)*
b**5*(a/b + x)**3*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gam
ma(4/3)/(27*a**7*gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81
*a**5*b**2*(a/b + x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*ga
mma(7/3)) + 4*a**(7/3)*b**5*(a/b + x)**3*exp(4*I*pi/3)*log(1 - b*
*(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(4/3)/
(27*a**7*gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b*
*2*(a/b + x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)
) + 4*a**(7/3)*b**5*(a/b + x)**3*exp(2*I*pi/3)*log(1 - b**(1/3)*(
a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7
*gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b
+ x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) - 12*a
**5*b**(7/3)*(a/b + x)**(1/3)*gamma(4/3)/(27*a**7*gamma(7/3) - 81
*a**6*b*(a/b + x)*gamma(7/3) + 81*a**5*b**2*(a/b + x)**2*gamma(7/
3) - 27*a**4*b**3*(a/b + x)**3*gamma(7/3)) + 6*a**4*b**(10/3)*(a/
b + x)**(4/3)*gamma(4/3)/(27*a**7*gamma(7/3) - 81*a**6*b*(a/b + x
)*gamma(7/3) + 81*a**5*b**2*(a/b + x)**2*gamma(7/3) - 27*a**4*b**
3*(a/b + x)**3*gamma(7/3)) + 6*a**3*b**(13/3)*(a/b + x)**(7/3)*ga
mma(4/3)/(27*a**7*gamma(7/3) - 81*a**6*b*(a/b + x)*gamma(7/3) + 8
1*a**5*b**2*(a/b + x)**2*gamma(7/3) - 27*a**4*b**3*(a/b + x)**3*g
amma(7/3))
```

GIAC/XCAS [A] time = 0.535527, size = 173, normalized size = 1.36

$$\frac{\frac{2\sqrt{3}b^3\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3a^{\frac{1}{3}}}\right)}{a^{\frac{5}{3}}}+\frac{b^3\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{5}{3}}}-\frac{2b^3\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{5}{3}}}-\frac{3\left((bx+a)^{\frac{4}{3}}b^3+2(bx+a)^{\frac{1}{3}}ab^3\right)}{ab^2x^2}}{18b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/x^3,x, algorithm="giac")
```

```
[Out] 1/18*(2*sqrt(3)*b^3*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/
3))/a^(1/3))/a^(5/3) + b^3*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a
^(1/3) + a^(2/3))/a^(5/3) - 2*b^3*ln(abs((b*x + a)^(1/3) - a^(1/3
)))/a^(5/3) - 3*((b*x + a)^(4/3)*b^3 + 2*(b*x + a)^(1/3)*a*b^3)/(
a*b^2*x^2))/b
```

3.378 $\int x^3(a+bx)^{2/3}\,dx$

Optimal. Leaf size=72

$$-\frac{3a^3(a+bx)^{5/3}}{5b^4}+\frac{9a^2(a+bx)^{8/3}}{8b^4}+\frac{3(a+bx)^{14/3}}{14b^4}-\frac{9a(a+bx)^{11/3}}{11b^4}$$

```
[Out] (-3*a^3*(a + b*x)^(5/3))/(5*b^4) + (9*a^2*(a + b*x)^(8/3))/(8*b^4
) - (9*a*(a + b*x)^(11/3))/(11*b^4) + (3*(a + b*x)^(14/3))/(14*b^
4)
```

Rubi [A] time = 0.0526865, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^3(a+bx)^{5/3}}{5b^4}+\frac{9a^2(a+bx)^{8/3}}{8b^4}+\frac{3(a+bx)^{14/3}}{14b^4}-\frac{9a(a+bx)^{11/3}}{11b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^(2/3),x]
```

```
[Out] (-3*a^3*(a + b*x)^(5/3))/(5*b^4) + (9*a^2*(a + b*x)^(8/3))/(8*b^4
) - (9*a*(a + b*x)^(11/3))/(11*b^4) + (3*(a + b*x)^(14/3))/(14*b^
4)
```

Rubi in Sympy [A] time = 11.1939, size = 68, normalized size = 0.94

$$-\frac{3a^3\left(a+bx\right)^{\frac{5}{3}}}{5b^4}+\frac{9a^2\left(a+bx\right)^{\frac{8}{3}}}{8b^4}-\frac{9a\left(a+bx\right)^{\frac{11}{3}}}{11b^4}+\frac{3\left(a+bx\right)^{\frac{14}{3}}}{14b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(2/3),x)
```

```
[Out] -3*a**3*(a + b*x)**(5/3)/(5*b**4) + 9*a**2*(a + b*x)**(8/3)/(8*b*
*4) - 9*a*(a + b*x)**(11/3)/(11*b**4) + 3*(a + b*x)**(14/3)/(14*b
**4)
```

Mathematica [A] time = 0.0226996, size = 57, normalized size = 0.79

$$\frac{3(a+bx)^{2/3}\left(-81a^4+54a^3bx-45a^2b^2x^2+40ab^3x^3+220b^4x^4\right)}{3080b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^(2/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(-81*a^4 + 54*a^3*b*x - 45*a^2*b^2*x^2 + 40*a*
b^3*x^3 + 220*b^4*x^4))/(3080*b^4)
```

Maple [A] time = 0.007, size = 43, normalized size = 0.6

$$-\frac{-660\,b^3x^3+540\,ab^2x^2-405\,a^2bx+243\,a^3}{3080\,b^4}(bx+a)^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(2/3),x)
```

```
[Out] -3/3080*(b*x+a)^(5/3)*(-220*b^3*x^3+180*a*b^2*x^2-135*a^2*b*x+81*
a^3)/b^4
```

Maxima [A] time = 1.34062, size = 76, normalized size = 1.06

$$\frac{3\,(bx+a)^{\frac{14}{3}}}{14\,b^4}-\frac{9\,(bx+a)^{\frac{11}{3}}a}{11\,b^4}+\frac{9\,(bx+a)^{\frac{8}{3}}a^2}{8\,b^4}-\frac{3\,(bx+a)^{\frac{5}{3}}a^3}{5\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x^3,x, algorithm="maxima")
```

```
[Out] 3/14*(b*x + a)^(14/3)/b^4 - 9/11*(b*x + a)^(11/3)*a/b^4 + 9/8*(b*
x + a)^(8/3)*a^2/b^4 - 3/5*(b*x + a)^(5/3)*a^3/b^4
```

Fricas [A] time = 0.208001, size = 72, normalized size = 1.

$$\frac{3\left(220\,b^4x^4+40\,ab^3x^3-45\,a^2b^2x^2+54\,a^3bx-81\,a^4\right)(bx+a)^{\frac{2}{3}}}{3080\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x^3,x, algorithm="fricas")
```

```
[Out] 3/3080*(220*b^4*x^4 + 40*a*b^3*x^3 - 45*a^2*b^2*x^2 + 54*a^3*b*x
- 81*a^4)*(b*x + a)^(2/3)/b^4
```

Sympy [A] time = 8.92595, size = 1742, normalized size = 24.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(b*x+a)**(2/3),x)
```

```
[Out] -243*a**(74/3)*(1 + b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*
b**5*x + 46200*a**18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a*
*16*b**8*x**4 + 18480*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) +
243*a**(74/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18
*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 1848
0*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) - 1296*a**(71/3)*b*x*(
1 + b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a
**18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 +
18480*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 1458*a**(71/3)*b
*x/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*b**6*x**2
+ 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**15*b**
9*x**5 + 3080*a**14*b**10*x**6) - 2808*a**(68/3)*b**2*x**2*(1 + b
*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*
b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480
*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 3645*a**(68/3)*b**2*x
**2/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*b**6*x**2
 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**15*b*
*9*x**5 + 3080*a**14*b**10*x**6) - 3120*a**(65/3)*b**3*x**3*(1 +
b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18
*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 1848
0*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 4860*a**(65/3)*b**3*
x**3/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*b**6*x**
2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**15*b
**9*x**5 + 3080*a**14*b**10*x**6) - 1050*a**(62/3)*b**4*x**4*(1 +
 b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**1
8*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 184
80*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 3645*a**(62/3)*b**4
*x**4/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*b**6*x*
*2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**15*
b**9*x**5 + 3080*a**14*b**10*x**6) + 4032*a**(59/3)*b**5*x**5*(1
+ b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**
18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18
480*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 1458*a**(59/3)*b**
5*x**5/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*b**6*x
**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**15
*b**9*x**5 + 3080*a**14*b**10*x**6) + 11004*a**(56/3)*b**6*x**6*(
1 + b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a
**18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 +
18480*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 243*a**(56/3)*b*
*6*x**6/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*a**18*b**6*
x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**1
```

```
5*b**9*x**5 + 3080*a**14*b**10*x**6) + 14352*a**(53/3)*b**7*x**7*
(1 + b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5*x + 46200*
a**18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*b**8*x**4 +
 18480*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 10485*a**(50/3)
*b**8*x**8*(1 + b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*a**19*b**5
*x + 46200*a**18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46200*a**16*
b**8*x**4 + 18480*a**15*b**9*x**5 + 3080*a**14*b**10*x**6) + 4080
*a**(47/3)*b**9*x**9*(1 + b*x/a)**(2/3)/(3080*a**20*b**4 + 18480*
a**19*b**5*x + 46200*a**18*b**6*x**2 + 61600*a**17*b**7*x**3 + 46
200*a**16*b**8*x**4 + 18480*a**15*b**9*x**5 + 3080*a**14*b**10*x*
*6) + 660*a**(44/3)*b**10*x**10*(1 + b*x/a)**(2/3)/(3080*a**20*b*
*4 + 18480*a**19*b**5*x + 46200*a**18*b**6*x**2 + 61600*a**17*b**
7*x**3 + 46200*a**16*b**8*x**4 + 18480*a**15*b**9*x**5 + 3080*a**
14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.220525, size = 82, normalized size = 1.14

$$\frac{3\left(220\,(bx+a)^{\frac{14}{3}}b^{39}-840\,(bx+a)^{\frac{11}{3}}ab^{39}+1155\,(bx+a)^{\frac{8}{3}}a^{2}b^{39}-616\,(bx+a)^{\frac{5}{3}}a^{3}b^{39}\right)}{3080\,b^{43}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x^3,x, algorithm="giac")
```

```
[Out] 3/3080*(220*(b*x + a)^(14/3)*b^39 - 840*(b*x + a)^(11/3)*a*b^39 +
 1155*(b*x + a)^(8/3)*a^2*b^39 - 616*(b*x + a)^(5/3)*a^3*b^39)/b^
43
```

3.379 $\int x^2(a+bx)^{2/3}\,dx$

Optimal. Leaf size=53

$$\frac{3a^2(a+bx)^{5/3}}{5b^3}+\frac{3(a+bx)^{11/3}}{11b^3}-\frac{3a(a+bx)^{8/3}}{4b^3}$$

```
[Out] (3*a^2*(a + b*x)^(5/3))/(5*b^3) - (3*a*(a + b*x)^(8/3))/(4*b^3) +
 (3*(a + b*x)^(11/3))/(11*b^3)
```

Rubi [A] time = 0.0393378, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3a^2(a+bx)^{5/3}}{5b^3}+\frac{3(a+bx)^{11/3}}{11b^3}-\frac{3a(a+bx)^{8/3}}{4b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^(2/3),x]
```

```
[Out] (3*a^2*(a + b*x)^(5/3))/(5*b^3) - (3*a*(a + b*x)^(8/3))/(4*b^3) +
 (3*(a + b*x)^(11/3))/(11*b^3)
```

Rubi in Sympy [A] time = 7.93304, size = 49, normalized size = 0.92

$$\frac{3a^2\left(a+bx\right)^{\frac{5}{3}}}{5b^3}-\frac{3a\left(a+bx\right)^{\frac{8}{3}}}{4b^3}+\frac{3\left(a+bx\right)^{\frac{11}{3}}}{11b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**(2/3),x)
```

```
[Out] 3*a**2*(a + b*x)**(5/3)/(5*b**3) - 3*a*(a + b*x)**(8/3)/(4*b**3)
+ 3*(a + b*x)**(11/3)/(11*b**3)
```

Mathematica [A] time = 0.0175047, size = 46, normalized size = 0.87

$$\frac{3(a+bx)^{2/3}\left(9a^3-6a^2bx+5ab^2x^2+20b^3x^3\right)}{220b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^(2/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(9*a^3 - 6*a^2*b*x + 5*a*b^2*x^2 + 20*b^3*x^3)
)/(220*b^3)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$\frac{60\,b^2x^2 - 45\,abx + 27\,a^2}{220\,b^3}\,(bx + a)^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^(2/3),x)
```

```
[Out] 3/220*(b*x+a)^(5/3)*(20*b^2*x^2-15*a*b*x+9*a^2)/b^3
```

Maxima [A] time = 1.34847, size = 55, normalized size = 1.04

$$\frac{3\,(bx + a)^{\frac{11}{3}}}{11\,b^3} - \frac{3\,(bx + a)^{\frac{8}{3}}a}{4\,b^3} + \frac{3\,(bx + a)^{\frac{5}{3}}a^2}{5\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x^2,x, algorithm="maxima")
```

```
[Out] 3/11*(b*x + a)^(11/3)/b^3 - 3/4*(b*x + a)^(8/3)*a/b^3 + 3/5*(b*x
+ a)^(5/3)*a^2/b^3
```

Fricas [A] time = 0.207486, size = 57, normalized size = 1.08

$$\frac{3\left(20\,b^3x^3 + 5\,ab^2x^2 - 6\,a^2bx + 9\,a^3\right)(bx + a)^{\frac{2}{3}}}{220\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x^2,x, algorithm="fricas")
```

```
[Out] 3/220*(20*b^3*x^3 + 5*a*b^2*x^2 - 6*a^2*b*x + 9*a^3)*(b*x + a)^(2
/3)/b^3
```

Sympy [A] time = 5.92255, size = 666, normalized size = 12.57

$$\frac{27a^{\frac{35}{3}}\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} - \frac{27a^{\frac{35}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} + \frac{63a^{\frac{32}{3}}bx\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} - \frac{81a^{\frac{32}{3}}bx}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} + \frac{42a^{\frac{29}{3}}b^2x^2\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} - \frac{81a^{\frac{29}{3}}b^2x^2}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} + \frac{78a^{\frac{26}{3}}b^3x^3\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} - \frac{27a^{\frac{26}{3}}b^3x^3}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} + \frac{207a^{\frac{23}{3}}b^4x^4\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} + \frac{195a^{\frac{20}{3}}b^5x^5\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3} + \frac{60a^{\frac{17}{3}}b^6x^6\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{220a^8b^3+660a^7b^4x+660a^6b^5x^2+220a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(2/3),x)
```

```
[Out] 27*a**(35/3)*(1 + b*x/a)**(2/3)/(220*a**8*b**3 + 660*a**7*b**4*x
+ 660*a**6*b**5*x**2 + 220*a**5*b**6*x**3) - 27*a**(35/3)/(220*a*
*8*b**3 + 660*a**7*b**4*x + 660*a**6*b**5*x**2 + 220*a**5*b**6*x*
*3) + 63*a**(32/3)*b*x*(1 + b*x/a)**(2/3)/(220*a**8*b**3 + 660*a*
*7*b**4*x + 660*a**6*b**5*x**2 + 220*a**5*b**6*x**3) - 81*a**(32/
3)*b*x/(220*a**8*b**3 + 660*a**7*b**4*x + 660*a**6*b**5*x**2 + 22
0*a**5*b**6*x**3) + 42*a**(29/3)*b**2*x**2*(1 + b*x/a)**(2/3)/(22
0*a**8*b**3 + 660*a**7*b**4*x + 660*a**6*b**5*x**2 + 220*a**5*b**
6*x**3) - 81*a**(29/3)*b**2*x**2/(220*a**8*b**3 + 660*a**7*b**4*x
 + 660*a**6*b**5*x**2 + 220*a**5*b**6*x**3) + 78*a**(26/3)*b**3*x
**3*(1 + b*x/a)**(2/3)/(220*a**8*b**3 + 660*a**7*b**4*x + 660*a**
6*b**5*x**2 + 220*a**5*b**6*x**3) - 27*a**(26/3)*b**3*x**3/(220*a
**8*b**3 + 660*a**7*b**4*x + 660*a**6*b**5*x**2 + 220*a**5*b**6*x
**3) + 207*a**(23/3)*b**4*x**4*(1 + b*x/a)**(2/3)/(220*a**8*b**3
+ 660*a**7*b**4*x + 660*a**6*b**5*x**2 + 220*a**5*b**6*x**3) + 19
```

```
5*a**(20/3)*b**5*x**5*(1 + b*x/a)**(2/3)/(220*a**8*b**3 + 660*a**
7*b**4*x + 660*a**6*b**5*x**2 + 220*a**5*b**6*x**3) + 60*a**(17/3
)*b**6*x**6*(1 + b*x/a)**(2/3)/(220*a**8*b**3 + 660*a**7*b**4*x +
 660*a**6*b**5*x**2 + 220*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.223572, size = 62, normalized size = 1.17

$$\frac{3\left(20\,(bx+a)^{\frac{11}{3}}b^{20}-55\,(bx+a)^{\frac{8}{3}}ab^{20}+44\,(bx+a)^{\frac{5}{3}}a^2b^{20}\right)}{220\,b^{23}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x^2,x, algorithm="giac")
```

```
[Out] 3/220*(20*(b*x + a)^(11/3)*b^20 - 55*(b*x + a)^(8/3)*a*b^20 + 44*
(b*x + a)^(5/3)*a^2*b^20)/b^23
```

3.380 $\int x(a+bx)^{2/3}\,dx$

Optimal. Leaf size=34

$$\frac{3(a+bx)^{8/3}}{8b^2}-\frac{3a(a+bx)^{5/3}}{5b^2}$$

```
[Out] (-3*a*(a + b*x)^(5/3))/(5*b^2) + (3*(a + b*x)^(8/3))/(8*b^2)
```

Rubi [A] time = 0.0255698, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3(a+bx)^{8/3}}{8b^2}-\frac{3a(a+bx)^{5/3}}{5b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^(2/3),x]
```

```
[Out] (-3*a*(a + b*x)^(5/3))/(5*b^2) + (3*(a + b*x)^(8/3))/(8*b^2)
```

Rubi in Sympy [A] time = 4.94114, size = 31, normalized size = 0.91

$$-\frac{3a\,(a+bx)^{\frac{5}{3}}}{5b^2}+\frac{3\,(a+bx)^{\frac{8}{3}}}{8b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(2/3),x)
```

```
[Out] -3*a*(a + b*x)**(5/3)/(5*b**2) + 3*(a + b*x)**(8/3)/(8*b**2)
```

Mathematica [A] time = 0.0138223, size = 37, normalized size = 1.09

$$(a+bx)^{2/3}\left(-\frac{9a^2}{40b^2}+\frac{3ax}{20b}+\frac{3x^2}{8}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^(2/3),x]
```

```
[Out] (a + b*x)^(2/3)*((-9*a^2)/(40*b^2) + (3*a*x)/(20*b) + (3*x^2)/8)
```

Maple [A] time = 0.006, size = 21, normalized size = 0.6

$$-\frac{-15\,bx+9\,a}{40\,b^2}(bx+a)^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(2/3),x)
```

```
[Out] -3/40*(b*x+a)^(5/3)*(-5*b*x+3*a)/b^2
```

Maxima [A] time = 1.34762, size = 35, normalized size = 1.03

$$\frac{3\,(bx+a)^{\frac{8}{3}}}{8\,b^2}-\frac{3\,(bx+a)^{\frac{5}{3}}a}{5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(2/3)*x,x, algorithm="maxima")
```

```
[Out] 3/8*(b*x + a)^(8/3)/b^2 - 3/5*(b*x + a)^(5/3)*a/b^2
```

Fricas [A] time = 0.206669, size = 42, normalized size = 1.24

$$\frac{3\left(5\,b^2x^2+2\,abx-3\,a^2\right)(bx+a)^{\frac{2}{3}}}{40\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(2/3)*x,x, algorithm="fricas")
```

```
[Out] 3/40*(5*b^2*x^2 + 2*a*b*x - 3*a^2)*(b*x + a)^(2/3)/b^2
```

Sympy [A] time = 3.88778, size = 202, normalized size = 5.94

$$-\frac{9a^{\frac{14}{3}}\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^2b^2+40ab^3x}+\frac{9a^{\frac{14}{3}}}{40a^2b^2+40ab^3x}-\frac{3a^{\frac{11}{3}}bx\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^2b^2+40ab^3x}+\frac{9a^{\frac{11}{3}}bx}{40a^2b^2+40ab^3x}+\frac{21a^{\frac{8}{3}}b^2x^2\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^2b^2+40ab^3x}+\frac{15a^{\frac{5}{3}}b^3x^3\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^2b^2+40ab^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(2/3),x)
```

```
[Out] -9*a**(14/3)*(1 + b*x/a)**(2/3)/(40*a**2*b**2 + 40*a*b**3*x) + 9*
a**(14/3)/(40*a**2*b**2 + 40*a*b**3*x) - 3*a**(11/3)*b*x*(1 + b*x
/a)**(2/3)/(40*a**2*b**2 + 40*a*b**3*x) + 9*a**(11/3)*b*x/(40*a**
2*b**2 + 40*a*b**3*x) + 21*a**(8/3)*b**2*x**2*(1 + b*x/a)**(2/3)/
(40*a**2*b**2 + 40*a*b**3*x) + 15*a**(5/3)*b**3*x**3*(1 + b*x/a)*
*(2/3)/(40*a**2*b**2 + 40*a*b**3*x)
```

GIAC/XCAS [A] time = 0.210603, size = 34, normalized size = 1.

$$\frac{3\left(5\,(bx+a)^{\frac{8}{3}}-8\,(bx+a)^{\frac{5}{3}}a\right)}{40\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*x,x, algorithm="giac")
```

```
[Out] 3/40*(5*(b*x + a)^(8/3) - 8*(b*x + a)^(5/3)*a)/b^2
```

3.381 $\int (a+bx)^{2/3}\,dx$

Optimal. Leaf size=16

$$\frac{3(a+bx)^{5/3}}{5b}$$

[Out] (3*(a + b*x)^(5/3))/(5*b)

Rubi [A] time = 0.00700091, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{3(a+bx)^{5/3}}{5b}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)^(2/3),x]

[Out] (3*(a + b*x)^(5/3))/(5*b)

Rubi in Sympy [A] time = 1.27511, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{5}{3}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((b*x+a)**(2/3),x)

[Out] 3*(a + b*x)**(5/3)/(5*b)

Mathematica [A] time = 0.00709114, size = 16, normalized size = 1.

$$\frac{3(a+bx)^{5/3}}{5b}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)^(2/3),x]

```
[Out] (3*(a + b*x)^(5/3))/(5*b)
```

Maple [A] time = 0.005, size = 13, normalized size = 0.8

$$\frac{3}{5\,b}\,(bx+a)^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(2/3),x)
```

```
[Out] 3/5*(b*x+a)^(5/3)/b
```

Maxima [A] time = 1.34417, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{5}{3}}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(2/3),x, algorithm="maxima")
```

```
[Out] 3/5*(b*x + a)^(5/3)/b
```

Fricas [A] time = 0.205498, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{5}{3}}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(2/3),x, algorithm="fricas")
```

```
[Out] 3/5*(b*x + a)^(5/3)/b
```

Sympy [A] time = 0.073061, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{5}{3}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3),x)

[Out] 3*(a + b*x)**(5/3)/(5*b)
```

GIAC/XCAS [A] time = 0.201909, size = 16, normalized size = 1.

$$\frac{3\,{\left(bx + a\right)}^{\frac{5}{3}}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3),x, algorithm="giac")

[Out] 3/5*(b*x + a)^(5/3)/b
```

3.382 $\int \frac{(a+bx)^{2/3}}{x}\,dx$

Optimal. Leaf size=92

$$\frac{3}{2}a^{2/3}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)+\sqrt{3}a^{2/3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)-\frac{1}{2}a^{2/3}\log(x)+\frac{3}{2}(a+bx)^{2/3}$$

```
[Out] (3*(a + b*x)^(2/3))/2 + Sqrt[3]*a^(2/3)*ArcTan[(a^(1/3) + 2*(a +
b*x)^(1/3))/(Sqrt[3]*a^(1/3))] - (a^(2/3)*Log[x])/2 + (3*a^(2/3)*
Log[a^(1/3) - (a + b*x)^(1/3)])/2
```

Rubi [A] time = 0.0843098, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{3}{2}a^{2/3}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)+\sqrt{3}a^{2/3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)-\frac{1}{2}a^{2/3}\log(x)+\frac{3}{2}(a+bx)^{2/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(2/3)/x,x]
```

```
[Out] (3*(a + b*x)^(2/3))/2 + Sqrt[3]*a^(2/3)*ArcTan[(a^(1/3) + 2*(a +
b*x)^(1/3))/(Sqrt[3]*a^(1/3))] - (a^(2/3)*Log[x])/2 + (3*a^(2/3)*
Log[a^(1/3) - (a + b*x)^(1/3)])/2
```

Rubi in Sympy [A] time = 6.93584, size = 85, normalized size = 0.92

$$-\frac{a^{\frac{2}{3}}\log(x)}{2}+\frac{3a^{\frac{2}{3}}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2}+\sqrt{3}a^{\frac{2}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)+\frac{3(a+bx)^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)/x,x)
```

```
[Out] -a**(2/3)*log(x)/2 + 3*a**(2/3)*log(a**(1/3) - (a + b*x)**(1/3))/
2 + sqrt(3)*a**(2/3)*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3
)/3)/a**(1/3)) + 3*(a + b*x)**(2/3)/2
```

Mathematica [C] time = 0.0320994, size = 57, normalized size = 0.62

$$\frac{3(a+bx)-6a\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)}{2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)/x,x]
```

```
[Out] (3*(a + b*x) - 6*a*(1 + a/(b*x))^(1/3)*Hypergeometric2F1[1/3, 1/3
, 4/3, -(a/(b*x))])/(2*(a + b*x)^(1/3))
```

Maple [A] time = 0.008, size = 84, normalized size = 0.9

$$\frac{3}{2}(bx+a)^{\frac{2}{3}}+a^{\frac{2}{3}}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)-\frac{1}{2}a^{\frac{2}{3}}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)+a^{\frac{2}{3}}\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)/x,x)
```

```
[Out] 3/2*(b*x+a)^(2/3)+a^(2/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/2*a^(2/3)*l
n((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))+a^(2/3)*3^(1/2)*ar
ctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220759, size = 146, normalized size = 1.59

$$\sqrt{3}\left(a^{2}\right)^{\frac{1}{3}} \arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}a+\left(a^{2}\right)^{\frac{2}{3}}\right)}{3\,(a^{2})^{\frac{2}{3}}}\right)-\frac{1}{2}\left(a^{2}\right)^{\frac{1}{3}}\log\left((bx+a)^{\frac{2}{3}}a+\left(a^{2}\right)^{\frac{1}{3}}a+\left(a^{2}\right)^{\frac{2}{3}}(bx+a)^{\frac{1}{3}}\right)+\left(a^{2}\right)^{\frac{1}{3}}\log\left((bx+a)^{\frac{1}{3}}a-\left(a^{2}\right)^{\frac{2}{3}}\right)+\frac{3}{2}\,(bx+a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x,x, algorithm="fricas")
```

```
[Out] sqrt(3)*(a^2)^(1/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3)*a + (a^
2)^(2/3))/(a^2)^(2/3)) - 1/2*(a^2)^(1/3)*log((b*x + a)^(2/3)*a +
(a^2)^(1/3)*a + (a^2)^(2/3)*(b*x + a)^(1/3)) + (a^2)^(1/3)*log((b
*x + a)^(1/3)*a - (a^2)^(2/3)) + 3/2*(b*x + a)^(2/3)
```

Sympy [A] time = 5.93644, size = 182, normalized size = 1.98

$$\frac{5a^{\frac{2}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{3\,\Gamma\left(\frac{8}{3}\right)}+\frac{5a^{\frac{2}{3}}e^{\frac{8i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{2i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{3\,\Gamma\left(\frac{8}{3}\right)}+\frac{5a^{\frac{2}{3}}e^{\frac{4i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{4i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{3\,\Gamma\left(\frac{8}{3}\right)}+\frac{5b^{\frac{2}{3}}\left(\frac{a}{b}+x\right)^{\frac{2}{3}}\Gamma\left(\frac{5}{3}\right)}{2\,\Gamma\left(\frac{8}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)/x,x)
```

```
[Out] 5*a**(2/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(5/3)
/(3*gamma(8/3)) + 5*a**(2/3)*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b
+ x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(5/3)/(3*gamma(8/3
)) + 5*a**(2/3)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*e
xp_polar(4*I*pi/3)/a**(1/3))*gamma(5/3)/(3*gamma(8/3)) + 5*b**(2/
3)*(a/b + x)**(2/3)*gamma(5/3)/(2*gamma(8/3))
```

GIAC/XCAS [A] time = 0.506473, size = 116, normalized size = 1.26

$$\sqrt{3}a^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)-\frac{1}{2}\,a^{\frac{2}{3}}\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)+a^{\frac{2}{3}}\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)+\frac{3}{2}\,(bx+a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x,x, algorithm="giac")
```

```
[Out] sqrt(3)*a^(2/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))/
a^(1/3)) - 1/2*a^(2/3)*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1/
3) + a^(2/3)) + a^(2/3)*ln(abs((b*x + a)^(1/3) - a^(1/3))) + 3/2*
(b*x + a)^(2/3)
```

3.383 $\int \frac{(a+bx)^{2/3}}{x^2}\,dx$

Optimal. Leaf size=94

$$-\frac{(a+bx)^{2/3}}{x}-\frac{b\log(x)}{3\sqrt[3]{a}}+\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{\sqrt[3]{a}}+\frac{2b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}\sqrt[3]{a}}$$

```
[Out] -((a + b*x)^(2/3)/x) + (2*b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/
(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(1/3)) - (b*Log[x])/(3*a^(1/3)) +
(b*Log[a^(1/3) - (a + b*x)^(1/3)])/a^(1/3)
```

Rubi [A] time = 0.0833412, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{(a+bx)^{2/3}}{x}-\frac{b\log(x)}{3\sqrt[3]{a}}+\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{\sqrt[3]{a}}+\frac{2b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}\sqrt[3]{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(2/3)/x^2,x]
```

```
[Out] -((a + b*x)^(2/3)/x) + (2*b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/
(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(1/3)) - (b*Log[x])/(3*a^(1/3)) +
(b*Log[a^(1/3) - (a + b*x)^(1/3)])/a^(1/3)
```

Rubi in Sympy [A] time = 7.23257, size = 88, normalized size = 0.94

$$-\frac{(a+bx)^{\frac{2}{3}}}{x}-\frac{b\log(x)}{3\sqrt[3]{a}}+\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{\sqrt[3]{a}}+\frac{2\sqrt{3}b\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3\sqrt[3]{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)/x**2,x)
```

```
[Out] -(a + b*x)**(2/3)/x - b*log(x)/(3*a**(1/3)) + b*log(a**(1/3) - (a
 + b*x)**(1/3))/a**(1/3) + 2*sqrt(3)*b*atan(sqrt(3)*(a**(1/3)/3 +
 2*(a + b*x)**(1/3)/3)/a**(1/3))/(3*a**(1/3))
```

Mathematica [C] time = 0.0320066, size = 58, normalized size = 0.62

$$\frac{-2bx\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)-a-bx}{x\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)/x^2,x]
```

```
[Out] (-a - b*x - 2*b*(1 + a/(b*x))^(1/3)*x*Hypergeometric2F1[1/3, 1/3,
 4/3, -(a/(b*x))])/(x*(a + b*x)^(1/3))
```

Maple [A] time = 0.013, size = 92, normalized size = 1.

$$-\frac{1}{x}(bx+a)^{\frac{2}{3}}+\frac{2b}{3}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)\frac{1}{\sqrt[3]{a}}-\frac{b}{3}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{a}}+\frac{2b\sqrt{3}}{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)\frac{1}{\sqrt[3]{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)/x^2,x)
```

```
[Out] -(b*x+a)^(2/3)/x+2/3*b/a^(1/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/3*b/a^
(1/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))+2/3*b*3^(1/
2)/a^(1/3)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220503, size = 151, normalized size = 1.61

$$-\frac{\sqrt{3}\left(\sqrt{3}bx\log\left((bx+a)^{\frac{2}{3}}a^{\frac{1}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)-2\sqrt{3}bx\log\left((bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}-a\right)-6\,bx\arctan\left(\frac{2\sqrt{3}(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+\sqrt{3}a}{3\,a}\right)+3\sqrt{3}(\ldots}{9\,a^{\frac{1}{3}}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x^2,x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(sqrt(3)*b*x*log((b*x + a)^(2/3)*a^(1/3) + (b*x + a)
^(1/3)*a^(2/3) + a) - 2*sqrt(3)*b*x*log((b*x + a)^(1/3)*a^(2/3) -
 a) - 6*b*x*arctan(1/3*(2*sqrt(3)*(b*x + a)^(1/3)*a^(2/3) + sqrt(
3)*a)/a) + 3*sqrt(3)*(b*x + a)^(2/3)*a^(1/3))/(a^(1/3)*x)
```

Sympy [A] time = 6.65429, size = 515, normalized size = 5.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)/x**2,x)
```

```
[Out] 10*a**(8/3)*b*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(5
/3)/(9*a**3*gamma(8/3) - 9*a**2*b*(a/b + x)*gamma(8/3)) + 10*a**(
8/3)*b*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(
2*I*pi/3)/a**(1/3))*gamma(5/3)/(9*a**3*gamma(8/3) - 9*a**2*b*(a/b
 + x)*gamma(8/3)) + 10*a**(8/3)*b*exp(4*I*pi/3)*log(1 - b**(1/3)*
(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(5/3)/(9*a**3
*gamma(8/3) - 9*a**2*b*(a/b + x)*gamma(8/3)) - 10*a**(5/3)*b**2*(
a/b + x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(5/3)/(
9*a**3*gamma(8/3) - 9*a**2*b*(a/b + x)*gamma(8/3)) - 10*a**(5/3)*
b**2*(a/b + x)*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*ex
p_polar(2*I*pi/3)/a**(1/3))*gamma(5/3)/(9*a**3*gamma(8/3) - 9*a**
2*b*(a/b + x)*gamma(8/3)) - 10*a**(5/3)*b**2*(a/b + x)*exp(4*I*pi
/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3
))*gamma(5/3)/(9*a**3*gamma(8/3) - 9*a**2*b*(a/b + x)*gamma(8/3))
 + 15*a**2*b**(5/3)*(a/b + x)**(2/3)*gamma(5/3)/(9*a**3*gamma(8/3
) - 9*a**2*b*(a/b + x)*gamma(8/3))
```

GIAC/XCAS [A] time = 0.528342, size = 143, normalized size = 1.52

$$\frac{\frac{2\sqrt{3}b^{2}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{a^{\frac{1}{3}}}-\frac{b^{2}\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{1}{3}}}+\frac{2\,b^{2}\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{1}{3}}}-\frac{3\,(bx+a)^{\frac{2}{3}}b}{x}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x^2,x, algorithm="giac")
```

```
[Out] 1/3*(2*sqrt(3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3
))/a^(1/3))/a^(1/3) - b^2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^
(1/3) + a^(2/3))/a^(1/3) + 2*b^2*ln(abs((b*x + a)^(1/3) - a^(1/3)
))/a^(1/3) - 3*(b*x + a)^(2/3)*b/x)/b
```

3.384 $\int \frac{(a+bx)^{2/3}}{x^3}\,dx$

Optimal. Leaf size=127

$$\frac{b^2\log(x)}{18a^{4/3}}-\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{4/3}}-\frac{b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{4/3}}-\frac{(a+bx)^{2/3}}{2x^2}-\frac{b(a+bx)^{2/3}}{3ax}$$

```
[Out] -(a + b*x)^(2/3)/(2*x^2) - (b*(a + b*x)^(2/3))/(3*a*x) - (b^2*Arc
Tan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*
a^(4/3)) + (b^2*Log[x])/(18*a^(4/3)) - (b^2*Log[a^(1/3) - (a + b*
x)^(1/3)])/(6*a^(4/3))
```

Rubi [A] time = 0.117023, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$\frac{b^2\log(x)}{18a^{4/3}}-\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{4/3}}-\frac{b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{4/3}}-\frac{(a+bx)^{2/3}}{2x^2}-\frac{b(a+bx)^{2/3}}{3ax}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(2/3)/x^3,x]
```

```
[Out] -(a + b*x)^(2/3)/(2*x^2) - (b*(a + b*x)^(2/3))/(3*a*x) - (b^2*Arc
Tan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*
a^(4/3)) + (b^2*Log[x])/(18*a^(4/3)) - (b^2*Log[a^(1/3) - (a + b*
x)^(1/3)])/(6*a^(4/3))
```

Rubi in Sympy [A] time = 10.909, size = 112, normalized size = 0.88

$$-\frac{(a+bx)^{\frac{2}{3}}}{2x^2}-\frac{b\,(a+bx)^{\frac{2}{3}}}{3ax}+\frac{b^2\log\left(x\right)}{18a^{\frac{4}{3}}}-\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{\frac{4}{3}}}-\frac{\sqrt{3}b^2\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)/x**3,x)
```

```
[Out] -(a + b*x)**(2/3)/(2*x**2) - b*(a + b*x)**(2/3)/(3*a*x) + b**2*lo
g(x)/(18*a**(4/3)) - b**2*log(a**(1/3) - (a + b*x)**(1/3))/(6*a**
```

```
(4/3)) - sqrt(3)*b**2*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/
3)/3)/a**(1/3))/(9*a**(4/3))
```

Mathematica [C] time = 0.042503, size = 79, normalized size = 0.62

$$\frac{-3a^2 + 2b^2x^2\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right) - 5abx - 2b^2x^2}{6ax^2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)/x^3,x]
```

```
[Out] (-3*a^2 - 5*a*b*x - 2*b^2*x^2 + 2*b^2*(1 + a/(b*x))^(1/3)*x^2*Hyp
ergeometric2F1[1/3, 1/3, 4/3, -(a/(b*x))])/(6*a*x^2*(a + b*x)^(1/
3))
```

Maple [A] time = 0.018, size = 113, normalized size = 0.9

$$-\frac{1}{3\,ax^2}(bx+a)^{\frac{5}{3}} - \frac{1}{6\,x^2}(bx+a)^{\frac{2}{3}} - \frac{b^2}{9}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{4}{3}} + \frac{b^2}{18}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{4}{3}} - \frac{b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)/x^3,x)
```

```
[Out] -1/3/x^2/a*(b*x+a)^(5/3)-1/6*(b*x+a)^(2/3)/x^2-1/9*b^2/a^(4/3)*ln
((b*x+a)^(1/3)-a^(1/3))+1/18*b^2/a^(4/3)*ln((b*x+a)^(2/3)+(b*x+a)
^(1/3)*a^(1/3)+a^(2/3))-1/9*b^2/a^(4/3)*3^(1/2)*arctan(1/3*3^(1/2
)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22099, size = 203, normalized size = 1.6

$$-\frac{\sqrt{3}\left(\sqrt{3}b^2x^2\log\left((bx+a)^{\frac{2}{3}}(-a)^{\frac{1}{3}}-(bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-2\sqrt{3}b^2x^2\log\left((bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-6b^2x^2\arctan\left(\frac{2\sqrt{3}(bx+a)}{3}\right.\right.}{54(-a)^{\frac{1}{3}}ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x^3,x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(sqrt(3)*b^2*x^2*log((b*x + a)^(2/3)*(-a)^(1/3) - (
b*x + a)^(1/3)*(-a)^(2/3) - a) - 2*sqrt(3)*b^2*x^2*log((b*x + a)^
(1/3)*(-a)^(2/3) - a) - 6*b^2*x^2*arctan(1/3*(2*sqrt(3)*(b*x + a)
^(1/3)*(-a)^(2/3) + sqrt(3)*a)/a) + 3*sqrt(3)*(2*b*x + 3*a)*(b*x
+ a)^(2/3)*(-a)^(1/3))/((-a)^(1/3)*a*x^2)
```

Sympy [A] time = 8.23414, size = 1731, normalized size = 13.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)/x**3,x)
```

```
[Out] -10*a**(17/3)*b**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*ga
mma(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) +
162*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3
*gamma(8/3)) - 10*a**(17/3)*b**2*exp(8*I*pi/3)*log(1 - b**(1/3)*(
a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7
*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b**2*(a/
b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3)) - 10
*a**(17/3)*b**2*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*e
xp_polar(4*I*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7*gamma(8/3) - 162
*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b**2*(a/b + x)**2*gamma(8
/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3)) + 30*a**(14/3)*b**3*(
a/b + x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(5/3)/(
54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b
**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3
)) + 30*a**(14/3)*b**3*(a/b + x)*exp(8*I*pi/3)*log(1 - b**(1/3)*(
a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7
*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b**2*(a/
b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3)) + 30
*a**(14/3)*b**3*(a/b + x)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x
)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7*gamma(
```

```
8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b**2*(a/b + x)*
*2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3)) - 30*a**(11
/3)*b**4*(a/b + x)**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))
*gamma(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3)
 + 162*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)
**3*gamma(8/3)) - 30*a**(11/3)*b**4*(a/b + x)**2*exp(8*I*pi/3)*lo
g(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gam
ma(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 1
62*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*
gamma(8/3)) - 30*a**(11/3)*b**4*(a/b + x)**2*exp(4*I*pi/3)*log(1
- b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(5
/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a
**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamm
a(8/3)) + 10*a**(8/3)*b**5*(a/b + x)**3*log(1 - b**(1/3)*(a/b + x
)**(1/3)/a**(1/3))*gamma(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a
/b + x)*gamma(8/3) + 162*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a
**4*b**3*(a/b + x)**3*gamma(8/3)) + 10*a**(8/3)*b**5*(a/b + x)**3
*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi
/3)/a**(1/3))*gamma(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b +
x)*gamma(8/3) + 162*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b
**3*(a/b + x)**3*gamma(8/3)) + 10*a**(8/3)*b**5*(a/b + x)**3*exp(
4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a
**(1/3))*gamma(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*ga
mma(8/3) + 162*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(
a/b + x)**3*gamma(8/3)) - 15*a**5*b**(8/3)*(a/b + x)**(2/3)*gamma
(5/3)/(54*a**7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162
*a**5*b**2*(a/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*ga
mma(8/3)) - 15*a**4*b**(11/3)*(a/b + x)**(5/3)*gamma(5/3)/(54*a**
7*gamma(8/3) - 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b**2*(a
/b + x)**2*gamma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3)) + 3
0*a**3*b**(14/3)*(a/b + x)**(8/3)*gamma(5/3)/(54*a**7*gamma(8/3)
- 162*a**6*b*(a/b + x)*gamma(8/3) + 162*a**5*b**2*(a/b + x)**2*ga
mma(8/3) - 54*a**4*b**3*(a/b + x)**3*gamma(8/3))
```

GIAC/XCAS [A] time = 0.534028, size = 174, normalized size = 1.37

$$-\frac{\frac{2\,\sqrt{3}b^{3}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{a^{\frac{4}{3}}}-\frac{b^{3}\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{4}{3}}}+\frac{2\,b^{3}\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{4}{3}}}+\frac{3\left(2\,(bx+a)^{\frac{5}{3}}b^{3}+(bx+a)^{\frac{2}{3}}ab^{3}\right)}{ab^{2}x^{2}}}{18\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/x^3,x, algorithm="giac")
```

```
[Out] -1/18*(2*sqrt(3)*b^3*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1
/3))/a^(1/3))/a^(4/3) - b^3*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*
a^(1/3) + a^(2/3))/a^(4/3) + 2*b^3*ln(abs((b*x + a)^(1/3) - a^(1/
3)))/a^(4/3) + 3*(2*(b*x + a)^(5/3)*b^3 + (b*x + a)^(2/3)*a*b^3)/
(a*b^2*x^2))/b
```

3.385 $\int x^3(a+bx)^{4/3}\,dx$

Optimal. Leaf size=72

$$-\frac{3a^3(a+bx)^{7/3}}{7b^4}+\frac{9a^2(a+bx)^{10/3}}{10b^4}+\frac{3(a+bx)^{16/3}}{16b^4}-\frac{9a(a+bx)^{13/3}}{13b^4}$$

```
[Out] (-3*a^3*(a + b*x)^(7/3))/(7*b^4) + (9*a^2*(a + b*x)^(10/3))/(10*b
^4) - (9*a*(a + b*x)^(13/3))/(13*b^4) + (3*(a + b*x)^(16/3))/(16*
b^4)
```

Rubi [A] time = 0.0520196, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{3a^3(a+bx)^{7/3}}{7b^4}+\frac{9a^2(a+bx)^{10/3}}{10b^4}+\frac{3(a+bx)^{16/3}}{16b^4}-\frac{9a(a+bx)^{13/3}}{13b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^(4/3),x]
```

```
[Out] (-3*a^3*(a + b*x)^(7/3))/(7*b^4) + (9*a^2*(a + b*x)^(10/3))/(10*b
^4) - (9*a*(a + b*x)^(13/3))/(13*b^4) + (3*(a + b*x)^(16/3))/(16*
b^4)
```

Rubi in Sympy [A] time = 11.1801, size = 68, normalized size = 0.94

$$-\frac{3a^3\left(a+bx\right)^{\frac{7}{3}}}{7b^4}+\frac{9a^2\left(a+bx\right)^{\frac{10}{3}}}{10b^4}-\frac{9a\left(a+bx\right)^{\frac{13}{3}}}{13b^4}+\frac{3\left(a+bx\right)^{\frac{16}{3}}}{16b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**(4/3),x)
```

```
[Out] -3*a**3*(a + b*x)**(7/3)/(7*b**4) + 9*a**2*(a + b*x)**(10/3)/(10*
b**4) - 9*a*(a + b*x)**(13/3)/(13*b**4) + 3*(a + b*x)**(16/3)/(16
*b**4)
```

Mathematica [A] time = 0.0353949, size = 46, normalized size = 0.64

$$\frac{3(a+bx)^{7/3}\left(-81a^3+189a^2bx-315ab^2x^2+455b^3x^3\right)}{7280b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^(4/3),x]
```

```
[Out] (3*(a + b*x)^(7/3)*(-81*a^3 + 189*a^2*b*x - 315*a*b^2*x^2 + 455*b
^3*x^3))/(7280*b^4)
```

Maple [A] time = 0.007, size = 43, normalized size = 0.6

$$-\frac{-1365\,b^3x^3+945\,ab^2x^2-567\,a^2bx+243\,a^3}{7280\,b^4}\,(bx+a)^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^(4/3),x)
```

```
[Out] -3/7280*(b*x+a)^(7/3)*(-455*b^3*x^3+315*a*b^2*x^2-189*a^2*b*x+81*
a^3)/b^4
```

Maxima [A] time = 1.34938, size = 76, normalized size = 1.06

$$\frac{3\,(bx+a)^{\frac{16}{3}}}{16\,b^4}-\frac{9\,(bx+a)^{\frac{13}{3}}a}{13\,b^4}+\frac{9\,(bx+a)^{\frac{10}{3}}a^2}{10\,b^4}-\frac{3\,(bx+a)^{\frac{7}{3}}a^3}{7\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x^3,x, algorithm="maxima")
```

```
[Out] 3/16*(b*x + a)^(16/3)/b^4 - 9/13*(b*x + a)^(13/3)*a/b^4 + 9/10*(b
*x + a)^(10/3)*a^2/b^4 - 3/7*(b*x + a)^(7/3)*a^3/b^4
```

Fricas [A] time = 0.207629, size = 86, normalized size = 1.19

$$\frac{3\left(455\,b^5x^5+595\,ab^4x^4+14\,a^2b^3x^3-18\,a^3b^2x^2+27\,a^4bx-81\,a^5\right)(bx+a)^{\frac{1}{3}}}{7280\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x^3,x, algorithm="fricas")
```

```
[Out] 3/7280*(455*b^5*x^5 + 595*a*b^4*x^4 + 14*a^2*b^3*x^3 - 18*a^3*b^2
*x^2 + 27*a^4*b*x - 81*a^5)*(b*x + a)^(1/3)/b^4
```

Sympy [A] time = 11.5084, size = 1844, normalized size = 25.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**(4/3),x)
```

```
[Out] -243*a**(76/3)*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a**19*
b**5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200
*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6)
 + 243*a**(76/3)/(7280*a**20*b**4 + 43680*a**19*b**5*x + 109200*a
**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b**8*x**4
+ 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) - 1377*a**(73/3)
*b*x*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a**19*b**5*x + 1
09200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b**
8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) + 1458*a*
*(73/3)*b*x/(7280*a**20*b**4 + 43680*a**19*b**5*x + 109200*a**18*
b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b**8*x**4 + 436
80*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) - 3213*a**(70/3)*b**2
*x**2*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a**19*b**5*x +
109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b*
*8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) + 3645*a
**(70/3)*b**2*x**2/(7280*a**20*b**4 + 43680*a**19*b**5*x + 109200
*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b**8*x**
4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) - 3927*a**(67/
3)*b**3*x**3*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a**19*b*
*5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a
**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) +
 4860*a**(67/3)*b**3*x**3/(7280*a**20*b**4 + 43680*a**19*b**5*x +
 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b
**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) - 798*a
**(64/3)*b**4*x**4*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a*
*19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 10
9200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x
**6) + 3645*a**(64/3)*b**4*x**4/(7280*a**20*b**4 + 43680*a**19*b*
*5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a
**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) +
 11382*a**(61/3)*b**5*x**5*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 +
43680*a**19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x
**3 + 109200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14
*b**10*x**6) + 1458*a**(61/3)*b**5*x**5/(7280*a**20*b**4 + 43680*
a**19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 +
109200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10
*x**6) + 35238*a**(58/3)*b**6*x**6*(1 + b*x/a)**(1/3)/(7280*a**20
*b**4 + 43680*a**19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**1
7*b**7*x**3 + 109200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 72
80*a**14*b**10*x**6) + 243*a**(58/3)*b**6*x**6/(7280*a**20*b**4 +
 43680*a**19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*
```

```
x**3 + 109200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**1
4*b**10*x**6) + 56562*a**(55/3)*b**7*x**7*(1 + b*x/a)**(1/3)/(728
0*a**20*b**4 + 43680*a**19*b**5*x + 109200*a**18*b**6*x**2 + 1456
00*a**17*b**7*x**3 + 109200*a**16*b**8*x**4 + 43680*a**15*b**9*x*
*5 + 7280*a**14*b**10*x**6) + 54273*a**(52/3)*b**8*x**8*(1 + b*x/
a)**(1/3)/(7280*a**20*b**4 + 43680*a**19*b**5*x + 109200*a**18*b*
*6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b**8*x**4 + 43680
*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) + 31227*a**(49/3)*b**9*
x**9*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a**19*b**5*x + 1
09200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 109200*a**16*b**
8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*x**6) + 9975*a*
*(46/3)*b**10*x**10*(1 + b*x/a)**(1/3)/(7280*a**20*b**4 + 43680*a
**19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**17*b**7*x**3 + 1
09200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 7280*a**14*b**10*
x**6) + 1365*a**(43/3)*b**11*x**11*(1 + b*x/a)**(1/3)/(7280*a**20
*b**4 + 43680*a**19*b**5*x + 109200*a**18*b**6*x**2 + 145600*a**1
7*b**7*x**3 + 109200*a**16*b**8*x**4 + 43680*a**15*b**9*x**5 + 72
80*a**14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.204392, size = 193, normalized size = 2.68

$$\frac{3\left(\frac{4\left(140\,(bx+a)^{\frac{13}{3}}b^{36}-546\,(bx+a)^{\frac{10}{3}}ab^{36}+780\,(bx+a)^{\frac{7}{3}}a^2b^{36}-455\,(bx+a)^{\frac{4}{3}}a^3b^{36}\right)a}{b^{39}}+\frac{455\,(bx+a)^{\frac{16}{3}}b^{60}-2240\,(bx+a)^{\frac{13}{3}}ab^{60}+4368\,(bx+a)^{\frac{10}{3}}a^2b^{60}-4160\,(bx+\cdots}{b^{63}}\right.}{7280\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x^3,x, algorithm="giac")
```

```
[Out] 3/7280*(4*(140*(b*x + a)^(13/3)*b^36 - 546*(b*x + a)^(10/3)*a*b^3
6 + 780*(b*x + a)^(7/3)*a^2*b^36 - 455*(b*x + a)^(4/3)*a^3*b^36)*
a/b^39 + (455*(b*x + a)^(16/3)*b^60 - 2240*(b*x + a)^(13/3)*a*b^6
0 + 4368*(b*x + a)^(10/3)*a^2*b^60 - 4160*(b*x + a)^(7/3)*a^3*b^6
0 + 1820*(b*x + a)^(4/3)*a^4*b^60)/b^63)/b
```

3.386 $\int x^2(a+bx)^{4/3}\,dx$

Optimal. Leaf size=53

$$\frac{3a^2(a+bx)^{7/3}}{7b^3}+\frac{3(a+bx)^{13/3}}{13b^3}-\frac{3a(a+bx)^{10/3}}{5b^3}$$

```
[Out] (3*a^2*(a + b*x)^(7/3))/(7*b^3) - (3*a*(a + b*x)^(10/3))/(5*b^3)
+ (3*(a + b*x)^(13/3))/(13*b^3)
```

Rubi [A] time = 0.0390974, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{3a^2(a+bx)^{7/3}}{7b^3}+\frac{3(a+bx)^{13/3}}{13b^3}-\frac{3a(a+bx)^{10/3}}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(a + b*x)^(4/3),x]
```

```
[Out] (3*a^2*(a + b*x)^(7/3))/(7*b^3) - (3*a*(a + b*x)^(10/3))/(5*b^3)
+ (3*(a + b*x)^(13/3))/(13*b^3)
```

Rubi in Sympy [A] time = 8.10867, size = 49, normalized size = 0.92

$$\frac{3a^2\left(a+bx\right)^{\frac{7}{3}}}{7b^3}-\frac{3a\left(a+bx\right)^{\frac{10}{3}}}{5b^3}+\frac{3\left(a+bx\right)^{\frac{13}{3}}}{13b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(b*x+a)**(4/3),x)
```

```
[Out] 3*a**2*(a + b*x)**(7/3)/(7*b**3) - 3*a*(a + b*x)**(10/3)/(5*b**3)
 + 3*(a + b*x)**(13/3)/(13*b**3)
```

Mathematica [A] time = 0.0257638, size = 35, normalized size = 0.66

$$\frac{3(a+bx)^{7/3}\left(9a^2-21abx+35b^2x^2\right)}{455b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^(4/3),x]
```

```
[Out] (3*(a + b*x)^(7/3)*(9*a^2 - 21*a*b*x + 35*b^2*x^2))/(455*b^3)
```

Maple [A] time = 0.008, size = 32, normalized size = 0.6

$$\frac{105\,b^2x^2-63\,abx+27\,a^2}{455\,b^3}(bx+a)^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^(4/3),x)
```

```
[Out] 3/455*(b*x+a)^(7/3)*(35*b^2*x^2-21*a*b*x+9*a^2)/b^3
```

Maxima [A] time = 1.34436, size = 55, normalized size = 1.04

$$\frac{3\,(bx+a)^{\frac{13}{3}}}{13\,b^3}-\frac{3\,(bx+a)^{\frac{10}{3}}a}{5\,b^3}+\frac{3\,(bx+a)^{\frac{7}{3}}a^2}{7\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x^2,x, algorithm="maxima")
```

```
[Out] 3/13*(b*x + a)^(13/3)/b^3 - 3/5*(b*x + a)^(10/3)*a/b^3 + 3/7*(b*x
 + a)^(7/3)*a^2/b^3
```

Fricas [A] time = 0.207027, size = 72, normalized size = 1.36

$$\frac{3\left(35\,b^4x^4+49\,ab^3x^3+2\,a^2b^2x^2-3\,a^3bx+9\,a^4\right)(bx+a)^{\frac{1}{3}}}{455\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x^2,x, algorithm="fricas")
```

```
[Out] 3/455*(35*b^4*x^4 + 49*a*b^3*x^3 + 2*a^2*b^2*x^2 - 3*a^3*b*x + 9*
a^4)*(b*x + a)^(1/3)/b^3
```

Sympy [A] time = 7.9238, size = 733, normalized size = 13.83

$$\frac{27a^{\frac{37}{3}}\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} - \frac{27a^{\frac{37}{3}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{72a^{\frac{34}{3}}bx\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} - \frac{81a^{\frac{34}{3}}bx}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{60a^{\frac{31}{3}}b^2x^2\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} - \frac{81a^{\frac{31}{3}}b^2x^2}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{165a^{\frac{28}{3}}b^3x^3\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} - \frac{27a^{\frac{28}{3}}b^3x^3}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{555a^{\frac{25}{3}}b^4x^4\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{762a^{\frac{22}{3}}b^5x^5\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{462a^{\frac{19}{3}}b^6x^6\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3} + \frac{105a^{\frac{16}{3}}b^7x^7\sqrt[3]{1+\frac{bx}{a}}}{455a^8b^3+1365a^7b^4x+1365a^6b^5x^2+455a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**(4/3),x)
```

```
[Out] 27*a**(37/3)*(1 + b*x/a)**(1/3)/(455*a**8*b**3 + 1365*a**7*b**4*x
 + 1365*a**6*b**5*x**2 + 455*a**5*b**6*x**3) - 27*a**(37/3)/(455*
a**8*b**3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**
6*x**3) + 72*a**(34/3)*b*x*(1 + b*x/a)**(1/3)/(455*a**8*b**3 + 13
65*a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**6*x**3) - 81*a
**(34/3)*b*x/(455*a**8*b**3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x
**2 + 455*a**5*b**6*x**3) + 60*a**(31/3)*b**2*x**2*(1 + b*x/a)**(
1/3)/(455*a**8*b**3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x**2 + 45
5*a**5*b**6*x**3) - 81*a**(31/3)*b**2*x**2/(455*a**8*b**3 + 1365*
```

```
a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**6*x**3) + 165*a**
(28/3)*b**3*x**3*(1 + b*x/a)**(1/3)/(455*a**8*b**3 + 1365*a**7*b*
*4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**6*x**3) - 27*a**(28/3)*b
**3*x**3/(455*a**8*b**3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x**2
+ 455*a**5*b**6*x**3) + 555*a**(25/3)*b**4*x**4*(1 + b*x/a)**(1/3
)/(455*a**8*b**3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a
**5*b**6*x**3) + 762*a**(22/3)*b**5*x**5*(1 + b*x/a)**(1/3)/(455*
a**8*b**3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**
6*x**3) + 462*a**(19/3)*b**6*x**6*(1 + b*x/a)**(1/3)/(455*a**8*b*
*3 + 1365*a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**6*x**3)
 + 105*a**(16/3)*b**7*x**7*(1 + b*x/a)**(1/3)/(455*a**8*b**3 + 13
65*a**7*b**4*x + 1365*a**6*b**5*x**2 + 455*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.208892, size = 153, normalized size = 2.89

$$\frac{3\left(\frac{13\left(14\,(bx+a)^{\frac{10}{3}}\,b^{18}-40\,(bx+a)^{\frac{7}{3}}\,ab^{18}+35\,(bx+a)^{\frac{4}{3}}\,a^{2}b^{18}\right)a}{b^{20}}+\frac{140\,(bx+a)^{\frac{13}{3}}\,b^{36}-546\,(bx+a)^{\frac{10}{3}}\,ab^{36}+780\,(bx+a)^{\frac{7}{3}}\,a^{2}b^{36}-455\,(bx+a)^{\frac{4}{3}}\,a^{3}b^{36}}{b^{38}}\right)}{1820\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x^2,x, algorithm="giac")
```

```
[Out] 3/1820*(13*(14*(b*x + a)^(10/3)*b^18 - 40*(b*x + a)^(7/3)*a*b^18
+ 35*(b*x + a)^(4/3)*a^2*b^18)*a/b^20 + (140*(b*x + a)^(13/3)*b^3
6 - 546*(b*x + a)^(10/3)*a*b^36 + 780*(b*x + a)^(7/3)*a^2*b^36 -
455*(b*x + a)^(4/3)*a^3*b^36)/b^38)/b
```

3.387 $\int x(a+bx)^{4/3}\,dx$

Optimal. Leaf size=34

$$\frac{3(a+bx)^{10/3}}{10b^2}-\frac{3a(a+bx)^{7/3}}{7b^2}$$

```
[Out] (-3*a*(a + b*x)^(7/3))/(7*b^2) + (3*(a + b*x)^(10/3))/(10*b^2)
```

Rubi [A] time = 0.0252099, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3(a+bx)^{10/3}}{10b^2}-\frac{3a(a+bx)^{7/3}}{7b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^(4/3),x]
```

```
[Out] (-3*a*(a + b*x)^(7/3))/(7*b^2) + (3*(a + b*x)^(10/3))/(10*b^2)
```

Rubi in Sympy [A] time = 4.93912, size = 31, normalized size = 0.91

$$-\frac{3a\left(a+bx\right)^{\frac{7}{3}}}{7b^2}+\frac{3\left(a+bx\right)^{\frac{10}{3}}}{10b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**(4/3),x)
```

```
[Out] -3*a*(a + b*x)**(7/3)/(7*b**2) + 3*(a + b*x)**(10/3)/(10*b**2)
```

Mathematica [A] time = 0.0234679, size = 24, normalized size = 0.71

$$\frac{3(a+bx)^{7/3}(7bx-3a)}{70b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^(4/3),x]
```

```
[Out] (3*(a + b*x)^(7/3)*(-3*a + 7*b*x))/(70*b^2)
```

Maple [A] time = 0.006, size = 21, normalized size = 0.6

$$-\frac{-21\,bx+9\,a}{70\,b^2}\,(bx+a)^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)^(4/3),x)
```

```
[Out] -3/70*(b*x+a)^(7/3)*(-7*b*x+3*a)/b^2
```

Maxima [A] time = 1.34715, size = 35, normalized size = 1.03

$$\frac{3\,(bx+a)^{\frac{10}{3}}}{10\,b^2}-\frac{3\,(bx+a)^{\frac{7}{3}}a}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(4/3)*x,x, algorithm="maxima")
```

```
[Out] 3/10*(b*x + a)^(10/3)/b^2 - 3/7*(b*x + a)^(7/3)*a/b^2
```

Fricas [A] time = 0.20991, size = 55, normalized size = 1.62

$$\frac{3\left(7\,b^3x^3+11\,ab^2x^2+a^2bx-3\,a^3\right)(bx+a)^{\frac{1}{3}}}{70\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(4/3)*x,x, algorithm="fricas")
```

```
[Out] 3/70*(7*b^3*x^3 + 11*a*b^2*x^2 + a^2*b*x - 3*a^3)*(b*x + a)^(1/3)
/b^2
```

Sympy [A] time = 4.06726, size = 80, normalized size = 2.35

$$\begin{cases} -\frac{9a^3\sqrt[3]{a+bx}}{70b^2}+\frac{3a^2x\sqrt[3]{a+bx}}{70b}+\frac{33ax^2\sqrt[3]{a+bx}}{70}+\frac{3bx^3\sqrt[3]{a+bx}}{10} & \text{for } b\neq 0 \\ \frac{a^{\frac{4}{3}}x^2}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**(4/3),x)
```

```
[Out] Piecewise((-9*a**3*(a + b*x)**(1/3)/(70*b**2) + 3*a**2*x*(a + b*x
)**(1/3)/(70*b) + 33*a*x**2*(a + b*x)**(1/3)/70 + 3*b*x**3*(a + b
*x)**(1/3)/10, Ne(b, 0)), (a**(4/3)*x**2/2, True))
```

GIAC/XCAS [A] time = 0.208219, size = 104, normalized size = 3.06

$$\frac{3\left(\frac{5\left(4\,(bx+a)^{\frac{7}{3}}-7\,(bx+a)^{\frac{4}{3}}\,a\right)a}{b}+\frac{14\,(bx+a)^{\frac{10}{3}}\,b^{18}-40\,(bx+a)^{\frac{7}{3}}\,ab^{18}+35\,(bx+a)^{\frac{4}{3}}\,a^{2}b^{18}}{b^{19}}\right)}{140\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*x,x, algorithm="giac")
```

```
[Out] 3/140*(5*(4*(b*x + a)^(7/3) - 7*(b*x + a)^(4/3)*a)*a/b + (14*(b*x
 + a)^(10/3)*b^18 - 40*(b*x + a)^(7/3)*a*b^18 + 35*(b*x + a)^(4/3
)*a^2*b^18)/b^19)/b
```

3.388 $\int (a+bx)^{4/3}\,dx$

Optimal. Leaf size=16

$$\frac{3(a+bx)^{7/3}}{7b}$$

```
[Out] (3*(a + b*x)^(7/3))/(7*b)
```

Rubi [A] time = 0.00707226, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{3(a+bx)^{7/3}}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^(4/3),x]

[Out] (3*(a + b*x)^(7/3))/(7*b)
```

Rubi in Sympy [A] time = 1.25948, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{7}{3}}}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**(4/3),x)

[Out] 3*(a + b*x)**(7/3)/(7*b)
```

Mathematica [A] time = 0.00606176, size = 16, normalized size = 1.

$$\frac{3(a+bx)^{7/3}}{7b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^(4/3),x]
```

```
[Out] (3*(a + b*x)^(7/3))/(7*b)
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$\frac{3}{7\,b}\,(bx+a)^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(4/3),x)
```

```
[Out] 3/7*(b*x+a)^(7/3)/b
```

Maxima [A] time = 1.33476, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{7}{3}}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(4/3),x, algorithm="maxima")
```

```
[Out] 3/7*(b*x + a)^(7/3)/b
```

Fricas [A] time = 0.223173, size = 38, normalized size = 2.38

$$\frac{3\,\left(b^2x^2+2\,abx+a^2\right)(bx+a)^{\frac{1}{3}}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(4/3),x, algorithm="fricas")
```

```
[Out] 3/7*(b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(1/3)/b
```

Sympy [A] time = 0.070843, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{7}{3}}}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3),x)

[Out] 3*(a + b*x)**(7/3)/(7*b)
```

GIAC/XCAS [A] time = 0.203049, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{7}{3}}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3),x, algorithm="giac")

[Out] 3/7*(b*x + a)^(7/3)/b
```

3.389 $\int \frac{(a+bx)^{4/3}}{x} dx$

Optimal. Leaf size=105

$$\frac{3}{2}a^{4/3}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\sqrt{3}a^{4/3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)-\frac{1}{2}a^{4/3}\log(x)+3a\sqrt[3]{a+bx}+\frac{3}{4}(a+bx)^{4/3}$$

```
[Out] 3*a*(a + b*x)^(1/3) + (3*(a + b*x)^(4/3))/4 - Sqrt[3]*a^(4/3)*Arc
Tan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))] - (a^(4/3)*L
og[x])/2 + (3*a^(4/3)*Log[a^(1/3) - (a + b*x)^(1/3)])/2
```

Rubi [A] time = 0.103591, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{3}{2}a^{4/3}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\sqrt{3}a^{4/3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)-\frac{1}{2}a^{4/3}\log(x)+3a\sqrt[3]{a+bx}+\frac{3}{4}(a+bx)^{4/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(4/3)/x,x]
```

```
[Out] 3*a*(a + b*x)^(1/3) + (3*(a + b*x)^(4/3))/4 - Sqrt[3]*a^(4/3)*Arc
Tan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))] - (a^(4/3)*L
og[x])/2 + (3*a^(4/3)*Log[a^(1/3) - (a + b*x)^(1/3)])/2
```

Rubi in Sympy [A] time = 9.63422, size = 97, normalized size = 0.92

$$-\frac{a^{\frac{4}{3}}\log(x)}{2}+\frac{3a^{\frac{4}{3}}\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2}-\sqrt{3}a^{\frac{4}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)+3a\sqrt[3]{a+bx}+\frac{3(a+bx)^{\frac{4}{3}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)/x,x)
```

```
[Out] -a**(4/3)*log(x)/2 + 3*a**(4/3)*log(a**(1/3) - (a + b*x)**(1/3))/
2 - sqrt(3)*a**(4/3)*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3
)/3)/a**(1/3)) + 3*a*(a + b*x)**(1/3) + 3*(a + b*x)**(4/3)/4
```

Mathematica [C] time = 0.0373007, size = 74, normalized size = 0.7

$$\left(\frac{15a}{4}+\frac{3bx}{4}\right)\sqrt[3]{a+bx}-\frac{3a^2\left(\frac{a+bx}{bx}\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)}{2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)/x,x]
```

```
[Out] ((15*a)/4 + (3*b*x)/4)*(a + b*x)^(1/3) - (3*a^2*((a + b*x)/(b*x))
^(2/3)*Hypergeometric2F1[2/3, 2/3, 5/3, -(a/(b*x))])/(2*(a + b*x)
^(2/3))
```

Maple [A] time = 0.007, size = 95, normalized size = 0.9

$$\frac{3}{4}(bx+a)^{\frac{4}{3}}+3\,a\sqrt[3]{bx+a}+a^{\frac{4}{3}}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)-\frac{1}{2}a^{\frac{4}{3}}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)-a^{\frac{4}{3}}\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)/x,x)
```

```
[Out] 3/4*(b*x+a)^(4/3)+3*a*(b*x+a)^(1/3)+a^(4/3)*ln((b*x+a)^(1/3)-a^(1
/3))-1/2*a^(4/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))-
a^(4/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.236972, size = 126, normalized size = 1.2

$$-\sqrt{3}a^{\frac{4}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)-\frac{1}{2}\,a^{\frac{4}{3}}\log\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)+a^{\frac{4}{3}}\log\left((bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right)+\frac{3}{4}\,(bx+5\,a)(bx+a)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x,x, algorithm="fricas")
```

```
[Out] -sqrt(3)*a^(4/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))
/a^(1/3)) - 1/2*a^(4/3)*log((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(
1/3) + a^(2/3)) + a^(4/3)*log((b*x + a)^(1/3) - a^(1/3)) + 3/4*(b
*x + 5*a)*(b*x + a)^(1/3)
```

Sympy [A] time = 7.56517, size = 209, normalized size = 1.99

$$\frac{7a^{\frac{4}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{7}{3}\right)}{3\,\Gamma\left(\frac{10}{3}\right)}+\frac{7a^{\frac{4}{3}}e^{\frac{4i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{2i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{7}{3}\right)}{3\,\Gamma\left(\frac{10}{3}\right)}+\frac{7a^{\frac{4}{3}}e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{4i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{7}{3}\right)}{3\,\Gamma\left(\frac{10}{3}\right)}+\frac{7a\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}\,\Gamma\left(\frac{7}{3}\right)}{\Gamma\left(\frac{10}{3}\right)}+\frac{7b^{\frac{4}{3}}\left(\frac{a}{b}+x\right)^{\frac{4}{3}}\Gamma\left(\frac{7}{3}\right)}{4\,\Gamma\left(\frac{10}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)/x,x)
```

```
[Out] 7*a**(4/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(7/3)
/(3*gamma(10/3)) + 7*a**(4/3)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b
 + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(7/3)/(3*gamma(10
/3)) + 7*a**(4/3)*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)
*exp_polar(4*I*pi/3)/a**(1/3))*gamma(7/3)/(3*gamma(10/3)) + 7*a*b
**(1/3)*(a/b + x)**(1/3)*gamma(7/3)/gamma(10/3) + 7*b**(4/3)*(a/b
 + x)**(4/3)*gamma(7/3)/(4*gamma(10/3))
```

GIAC/XCAS [A] time = 0.510789, size = 131, normalized size = 1.25

$$-\sqrt{3}a^{\frac{4}{3}} \arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)-\frac{1}{2}\,a^{\frac{4}{3}}\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)+a^{\frac{4}{3}}\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)+\frac{3}{4}\,(bx+a)^{\frac{4}{3}}+3\,(bx+a)^{\frac{1}{3}}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x,x, algorithm="giac")
```

```
[Out] -sqrt(3)*a^(4/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))
/a^(1/3)) - 1/2*a^(4/3)*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1
/3) + a^(2/3)) + a^(4/3)*ln(abs((b*x + a)^(1/3) - a^(1/3))) + 3/4
*(b*x + a)^(4/3) + 3*(b*x + a)^(1/3)*a
```

3.390 $\int \frac{(a+bx)^{4/3}}{x^2}\,dx$

Optimal. Leaf size=107

$$-\frac{(a+bx)^{4/3}}{x}+4b\sqrt[3]{a+bx}-\frac{2}{3}\sqrt[3]{a}b\log(x)+2\sqrt[3]{a}b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\frac{4\sqrt[3]{a}b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}}$$

```
[Out] 4*b*(a + b*x)^(1/3) - (a + b*x)^(4/3)/x - (4*a^(1/3)*b*ArcTan[(a^
(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/Sqrt[3] - (2*a^(1/
3)*b*Log[x])/3 + 2*a^(1/3)*b*Log[a^(1/3) - (a + b*x)^(1/3)]
```

Rubi [A] time = 0.106421, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$-\frac{(a+bx)^{4/3}}{x}+4b\sqrt[3]{a+bx}-\frac{2}{3}\sqrt[3]{a}b\log(x)+2\sqrt[3]{a}b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\frac{4\sqrt[3]{a}b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(4/3)/x^2,x]
```

```
[Out] 4*b*(a + b*x)^(1/3) - (a + b*x)^(4/3)/x - (4*a^(1/3)*b*ArcTan[(a^
(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/Sqrt[3] - (2*a^(1/
3)*b*Log[x])/3 + 2*a^(1/3)*b*Log[a^(1/3) - (a + b*x)^(1/3)]
```

Rubi in Sympy [A] time = 9.85682, size = 104, normalized size = 0.97

$$-\frac{2\sqrt[3]{a}b\log(x)}{3}+2\sqrt[3]{a}b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)-\frac{4\sqrt{3}\sqrt[3]{a}b\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3}+4b\sqrt[3]{a+bx}-\frac{(a+bx)^{\frac{4}{3}}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)/x**2,x)
```

```
[Out] -2*a**(1/3)*b*log(x)/3 + 2*a**(1/3)*b*log(a**(1/3) - (a + b*x)**(
1/3)) - 4*sqrt(3)*a**(1/3)*b*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*
x)**(1/3)/3)/a**(1/3))/3 + 4*b*(a + b*x)**(1/3) - (a + b*x)**(4/3
)/x
```

Mathematica [C] time = 0.0541158, size = 64, normalized size = 0.6

$$\frac{\left(3b-\frac{a}{x}\right)(a+bx)-2ab\left(\frac{a}{bx}+1\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)}{(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)/x^2,x]
```

```
[Out] ((3*b - a/x)*(a + b*x) - 2*a*b*(1 + a/(b*x))^(2/3)*Hypergeometric
2F1[2/3, 2/3, 5/3, -(a/(b*x))])/(a + b*x)^(2/3)
```

Maple [A] time = 0.016, size = 103, normalized size = 1.

$$3\,b\sqrt[3]{bx+a}-\frac{a}{x}\sqrt[3]{bx+a}+\frac{4\,b}{3}\sqrt[3]{a}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)$$
$$-\frac{2\,b}{3}\sqrt[3]{a}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)-\frac{4\,b\sqrt{3}}{3}\sqrt[3]{a}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)/x^2,x)
```

```
[Out] 3*b*(b*x+a)^(1/3)-a*(b*x+a)^(1/3)/x+4/3*b*a^(1/3)*ln((b*x+a)^(1/3
)-a^(1/3))-2/3*b*a^(1/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a
^(2/3))-4/3*b*a^(1/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+
a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.231903, size = 161, normalized size = 1.5

$$-\frac{\sqrt{3}\left(2\sqrt{3}a^{\frac{1}{3}}bx\log\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)-4\sqrt{3}a^{\frac{1}{3}}bx\log\left((bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right)+12\,a^{\frac{1}{3}}bx\arctan\left(\frac{2\sqrt{3}(bx+a)^{\frac{1}{3}}+\sqrt{3}a^{\frac{1}{3}}}{3\,a^{\frac{1}{3}}}\right)\cdots}{9\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x^2,x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(2*sqrt(3)*a^(1/3)*b*x*log((b*x + a)^(2/3) + (b*x +
a)^(1/3)*a^(1/3) + a^(2/3)) - 4*sqrt(3)*a^(1/3)*b*x*log((b*x + a)
^(1/3) - a^(1/3)) + 12*a^(1/3)*b*x*arctan(1/3*(2*sqrt(3)*(b*x + a
)^(1/3) + sqrt(3)*a^(1/3))/a^(1/3)) - 3*sqrt(3)*(3*b*x - a)*(b*x
+ a)^(1/3))/x
```

Sympy [A] time = 8.66931, size = 566, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)/x**2,x)
```

```
[Out] 28*a**(10/3)*b*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(
7/3)/(9*a**3*gamma(10/3) - 9*a**2*b*(a/b + x)*gamma(10/3)) + 28*a
**(10/3)*b*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_po
lar(2*I*pi/3)/a**(1/3))*gamma(7/3)/(9*a**3*gamma(10/3) - 9*a**2*b
*(a/b + x)*gamma(10/3)) + 28*a**(10/3)*b*exp(2*I*pi/3)*log(1 - b*
*(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(7/3)/
(9*a**3*gamma(10/3) - 9*a**2*b*(a/b + x)*gamma(10/3)) - 28*a**(7/
3)*b**2*(a/b + x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gam
ma(7/3)/(9*a**3*gamma(10/3) - 9*a**2*b*(a/b + x)*gamma(10/3)) - 2
8*a**(7/3)*b**2*(a/b + x)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x
)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(7/3)/(9*a**3*gamma(1
0/3) - 9*a**2*b*(a/b + x)*gamma(10/3)) - 28*a**(7/3)*b**2*(a/b +
x)*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*
pi/3)/a**(1/3))*gamma(7/3)/(9*a**3*gamma(10/3) - 9*a**2*b*(a/b +
x)*gamma(10/3)) + 84*a**3*b**(4/3)*(a/b + x)**(1/3)*gamma(7/3)/(9
*a**3*gamma(10/3) - 9*a**2*b*(a/b + x)*gamma(10/3)) - 63*a**2*b**
(7/3)*(a/b + x)**(4/3)*gamma(7/3)/(9*a**3*gamma(10/3) - 9*a**2*b*
(a/b + x)*gamma(10/3))
```

GIAC/XCAS [A] time = 0.526513, size = 161, normalized size = 1.5

$$-\frac{4\sqrt{3}a^{\frac{1}{3}}b^{2}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)+2\,a^{\frac{1}{3}}b^{2}\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)-4\,a^{\frac{1}{3}}b^{2}\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)-9\,(bx+a)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x^2,x, algorithm="giac")
```

```
[Out] -1/3*(4*sqrt(3)*a^(1/3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3)
 + a^(1/3))/a^(1/3)) + 2*a^(1/3)*b^2*ln((b*x + a)^(2/3) + (b*x +
a)^(1/3)*a^(1/3) + a^(2/3)) - 4*a^(1/3)*b^2*ln(abs((b*x + a)^(1/3
) - a^(1/3))) - 9*(b*x + a)^(1/3)*b^2 + 3*(b*x + a)^(1/3)*a*b/x)/
b
```

3.391 $\int \frac{(a+bx)^{4/3}}{x^3}\,dx$

Optimal. Leaf size=124

$$-\frac{b^2\log(x)}{9a^{2/3}}+\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{2/3}}-\frac{2b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{2/3}}-\frac{(a+bx)^{4/3}}{2x^2}-\frac{2b\sqrt[3]{a+bx}}{3x}$$

```
[Out] (-2*b*(a + b*x)^(1/3))/(3*x) - (a + b*x)^(4/3)/(2*x^2) - (2*b^2*A
rcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3
]*a^(2/3)) - (b^2*Log[x])/(9*a^(2/3)) + (b^2*Log[a^(1/3) - (a + b
*x)^(1/3)])/(3*a^(2/3))
```

Rubi [A] time = 0.113236, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{b^2\log(x)}{9a^{2/3}}+\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{2/3}}-\frac{2b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{2/3}}-\frac{(a+bx)^{4/3}}{2x^2}-\frac{2b\sqrt[3]{a+bx}}{3x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(4/3)/x^3,x]
```

```
[Out] (-2*b*(a + b*x)^(1/3))/(3*x) - (a + b*x)^(4/3)/(2*x^2) - (2*b^2*A
rcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3
]*a^(2/3)) - (b^2*Log[x])/(9*a^(2/3)) + (b^2*Log[a^(1/3) - (a + b
*x)^(1/3)])/(3*a^(2/3))
```

Rubi in Sympy [A] time = 10.7195, size = 114, normalized size = 0.92

$$-\frac{2b\sqrt[3]{a+bx}}{3x}-\frac{(a+bx)^{\frac{4}{3}}}{2x^2}-\frac{b^2\log(x)}{9a^{\frac{2}{3}}}+\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{\frac{2}{3}}}-\frac{2\sqrt{3}b^2\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)/x**3,x)
```

```
[Out] -2*b*(a + b*x)**(1/3)/(3*x) - (a + b*x)**(4/3)/(2*x**2) - b**2*lo
g(x)/(9*a**(2/3)) + b**2*log(a**(1/3) - (a + b*x)**(1/3))/(3*a**(
```

```
2/3)) - 2*sqrt(3)*b**2*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1
/3)/3)/a**(1/3))/(9*a**(2/3))
```

Mathematica [C] time = 0.0355968, size = 76, normalized size = 0.61

$$\frac{-3a^2 - 2b^2x^2\left(\frac{a}{bx}+1\right)^{2/3} {}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right) - 10abx - 7b^2x^2}{6x^2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)/x^3,x]
```

```
[Out] (-3*a^2 - 10*a*b*x - 7*b^2*x^2 - 2*b^2*(1 + a/(b*x))^(2/3)*x^2*Hy
pergeometric2F1[2/3, 2/3, 5/3, -(a/(b*x))])/(6*x^2*(a + b*x)^(2/3
))
```

Maple [A] time = 0.017, size = 111, normalized size = 0.9

$$-\frac{7}{6\,x^2}(bx+a)^{\frac{4}{3}} + \frac{2\,a}{3\,x^2}\sqrt[3]{bx+a} + \frac{2\,b^2}{9}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{2}{3}} - \frac{b^2}{9}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{2}{3}} - \frac{2\,b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)/x^3,x)
```

```
[Out] -7/6*(b*x+a)^(4/3)/x^2+2/3/x^2*(b*x+a)^(1/3)*a+2/9*b^2/a^(2/3)*ln
((b*x+a)^(1/3)-a^(1/3))-1/9*b^2/a^(2/3)*ln((b*x+a)^(2/3)+(b*x+a)^
(1/3)*a^(1/3)+a^(2/3))-2/9*b^2/a^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)
*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.238549, size = 200, normalized size = 1.61

$$-\frac{\sqrt{3}\left(2\sqrt{3}b^{2}x^{2}\log\left(a^{2}+\left(a^{2}\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}a+\left(a^{2}\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}\right)-4\sqrt{3}b^{2}x^{2}\log\left(-a+\left(a^{2}\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}\right)+12\,b^{2}x^{2}\arctan\left(\frac{\sqrt{3}a+\cdots}{\cdots}\right)\cdots}{54\left(a^{2}\right)^{\frac{1}{3}}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x^3,x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(2*sqrt(3)*b^2*x^2*log(a^2 + (a^2)^(1/3)*(b*x + a)^
(1/3)*a + (a^2)^(2/3)*(b*x + a)^(2/3)) - 4*sqrt(3)*b^2*x^2*log(-a
 + (a^2)^(1/3)*(b*x + a)^(1/3)) + 12*b^2*x^2*arctan(1/3*(sqrt(3)*
a + 2*sqrt(3)*(a^2)^(1/3)*(b*x + a)^(1/3))/a) + 3*sqrt(3)*(a^2)^(
1/3)*(7*b*x + 3*a)*(b*x + a)^(1/3))/((a^2)^(1/3)*x^2)
```

Sympy [A] time = 9.56438, size = 1731, normalized size = 13.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)/x**3,x)
```

```
[Out] 28*a**(19/3)*b**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gam
ma(7/3)/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) +
 162*a**5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)*
*3*gamma(10/3)) + 28*a**(19/3)*b**2*exp(4*I*pi/3)*log(1 - b**(1/3
)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a
**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**
2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3
)) + 28*a**(19/3)*b**2*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**
(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*gamma(10/
3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a/b + x)**
2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3)) - 84*a**(1
6/3)*b**3*(a/b + x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*g
amma(7/3)/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3)
 + 162*a**5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x
)**3*gamma(10/3)) - 84*a**(16/3)*b**3*(a/b + x)*exp(4*I*pi/3)*log
(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamm
a(7/3)/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) +
162*a**5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**
3*gamma(10/3)) - 84*a**(16/3)*b**3*(a/b + x)*exp(2*I*pi/3)*log(1
- b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(7
/3)/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162
*a**5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*g
amma(10/3)) + 84*a**(13/3)*b**4*(a/b + x)**2*log(1 - b**(1/3)*(a/
```

```
b + x)**(1/3)/a**(1/3))*gamma(7/3)/(54*a**7*gamma(10/3) - 162*a**
6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a/b + x)**2*gamma(10/3
) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3)) + 84*a**(13/3)*b**4*(a
/b + x)**2*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_po
lar(2*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*gamma(10/3) - 162*a**
6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a/b + x)**2*gamma(10/3
) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3)) + 84*a**(13/3)*b**4*(a
/b + x)**2*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_po
lar(4*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*gamma(10/3) - 162*a**
6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a/b + x)**2*gamma(10/3
) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3)) - 28*a**(10/3)*b**5*(a
/b + x)**3*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(7/3)
/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a*
*5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamm
a(10/3)) - 28*a**(10/3)*b**5*(a/b + x)**3*exp(4*I*pi/3)*log(1 - b
**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(7/3)
/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a*
*5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamm
a(10/3)) - 28*a**(10/3)*b**5*(a/b + x)**3*exp(2*I*pi/3)*log(1 - b
**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(7/3)
/(54*a**7*gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a*
*5*b**2*(a/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamm
a(10/3)) + 84*a**6*b**(7/3)*(a/b + x)**(1/3)*gamma(7/3)/(54*a**7*
gamma(10/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a
/b + x)**2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3)) -
 231*a**5*b**(10/3)*(a/b + x)**(4/3)*gamma(7/3)/(54*a**7*gamma(10
/3) - 162*a**6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a/b + x)*
*2*gamma(10/3) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3)) + 147*a**
4*b**(13/3)*(a/b + x)**(7/3)*gamma(7/3)/(54*a**7*gamma(10/3) - 16
2*a**6*b*(a/b + x)*gamma(10/3) + 162*a**5*b**2*(a/b + x)**2*gamma
(10/3) - 54*a**4*b**3*(a/b + x)**3*gamma(10/3))
```

GIAC/XCAS [A] time = 0.588976, size = 171, normalized size = 1.38

$$-\frac{\frac{4\sqrt{3}b^3\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3a^{\frac{1}{3}}}\right)}{a^{\frac{2}{3}}}+\frac{2b^3\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{2}{3}}}-\frac{4b^3\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{2}{3}}}+\frac{3\left(7(bx+a)^{\frac{4}{3}}b^3-4(bx+a)^{\frac{1}{3}}ab^3\right)}{b^2x^2}}{18b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/x^3,x, algorithm="giac")
```

```
[Out] -1/18*(4*sqrt(3)*b^3*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1
/3))/a^(1/3))/a^(2/3) + 2*b^3*ln((b*x + a)^(2/3) + (b*x + a)^(1/3
)*a^(1/3) + a^(2/3))/a^(2/3) - 4*b^3*ln(abs((b*x + a)^(1/3) - a^(
1/3)))/a^(2/3) + 3*(7*(b*x + a)^(4/3)*b^3 - 4*(b*x + a)^(1/3)*a*b
^3)/(b^2*x^2))/b
```

3.392 $\int \frac{x^3}{\sqrt[3]{a+bx}} \, dx$

Optimal. Leaf size=72

$$-\frac{3a^3(a+bx)^{2/3}}{2b^4}+\frac{9a^2(a+bx)^{5/3}}{5b^4}+\frac{3(a+bx)^{11/3}}{11b^4}-\frac{9a(a+bx)^{8/3}}{8b^4}$$

```
[Out] (-3*a^3*(a + b*x)^(2/3))/(2*b^4) + (9*a^2*(a + b*x)^(5/3))/(5*b^4
) - (9*a*(a + b*x)^(8/3))/(8*b^4) + (3*(a + b*x)^(11/3))/(11*b^4)
```

Rubi [A] time = 0.0513634, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{3a^3(a+bx)^{2/3}}{2b^4}+\frac{9a^2(a+bx)^{5/3}}{5b^4}+\frac{3(a+bx)^{11/3}}{11b^4}-\frac{9a(a+bx)^{8/3}}{8b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^(1/3),x]
```

```
[Out] (-3*a^3*(a + b*x)^(2/3))/(2*b^4) + (9*a^2*(a + b*x)^(5/3))/(5*b^4
) - (9*a*(a + b*x)^(8/3))/(8*b^4) + (3*(a + b*x)^(11/3))/(11*b^4)
```

Rubi in Sympy [A] time = 10.9982, size = 68, normalized size = 0.94

$$-\frac{3a^3\left(a+bx\right)^{\frac{2}{3}}}{2b^4}+\frac{9a^2\left(a+bx\right)^{\frac{5}{3}}}{5b^4}-\frac{9a\left(a+bx\right)^{\frac{8}{3}}}{8b^4}+\frac{3\left(a+bx\right)^{\frac{11}{3}}}{11b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**(1/3),x)
```

```
[Out] -3*a**3*(a + b*x)**(2/3)/(2*b**4) + 9*a**2*(a + b*x)**(5/3)/(5*b*
*4) - 9*a*(a + b*x)**(8/3)/(8*b**4) + 3*(a + b*x)**(11/3)/(11*b**
4)
```

Mathematica [A] time = 0.0245081, size = 46, normalized size = 0.64

$$\frac{3(a+bx)^{2/3}\left(-81a^3+54a^2bx-45ab^2x^2+40b^3x^3\right)}{440b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(-81*a^3 + 54*a^2*b*x - 45*a*b^2*x^2 + 40*b^3*
x^3))/(440*b^4)
```

Maple [A] time = 0.007, size = 43, normalized size = 0.6

$$-\frac{-120\,b^3x^3+135\,ab^2x^2-162\,a^2bx+243\,a^3}{440\,b^4}(bx+a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^(1/3),x)
```

```
[Out] -3/440*(b*x+a)^(2/3)*(-40*b^3*x^3+45*a*b^2*x^2-54*a^2*b*x+81*a^3)
/b^4
```

Maxima [A] time = 1.3479, size = 76, normalized size = 1.06

$$\frac{3\,(bx+a)^{\frac{11}{3}}}{11\,b^4}-\frac{9\,(bx+a)^{\frac{8}{3}}a}{8\,b^4}+\frac{9\,(bx+a)^{\frac{5}{3}}a^2}{5\,b^4}-\frac{3\,(bx+a)^{\frac{2}{3}}a^3}{2\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(1/3),x, algorithm="maxima")
```

```
[Out] 3/11*(b*x + a)^(11/3)/b^4 - 9/8*(b*x + a)^(8/3)*a/b^4 + 9/5*(b*x
+ a)^(5/3)*a^2/b^4 - 3/2*(b*x + a)^(2/3)*a^3/b^4
```

Fricas [A] time = 0.220721, size = 57, normalized size = 0.79

$$\frac{3\left(40\,b^3x^3-45\,ab^2x^2+54\,a^2bx-81\,a^3\right)(bx+a)^{\frac{2}{3}}}{440\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/440*(40*b^3*x^3 - 45*a*b^2*x^2 + 54*a^2*b*x - 81*a^3)*(b*x + a)
^(2/3)/b^4
```

Sympy [A] time = 8.29501, size = 1640, normalized size = 22.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**(1/3),x)
```

```
[Out] -243*a**(71/3)*(1 + b*x/a)**(2/3)/(440*a**20*b**4 + 2640*a**19*b*
*5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 + 6600*a**16*b
**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 243*a**
(71/3)/(440*a**20*b**4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**2
 + 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*
x**5 + 440*a**14*b**10*x**6) - 1296*a**(68/3)*b*x*(1 + b*x/a)**(2
/3)/(440*a**20*b**4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 +
8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**
5 + 440*a**14*b**10*x**6) + 1458*a**(68/3)*b*x/(440*a**20*b**4 +
2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 +
 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*x*
*6) - 2808*a**(65/3)*b**2*x**2*(1 + b*x/a)**(2/3)/(440*a**20*b**4
 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**
3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10
*x**6) + 3645*a**(65/3)*b**2*x**2/(440*a**20*b**4 + 2640*a**19*b*
*5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 + 6600*a**16*b
**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 3120*a*
*(62/3)*b**3*x**3*(1 + b*x/a)**(2/3)/(440*a**20*b**4 + 2640*a**19
*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 + 6600*a**1
6*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 4860
*a**(62/3)*b**3*x**3/(440*a**20*b**4 + 2640*a**19*b**5*x + 6600*a
**18*b**6*x**2 + 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 + 26
40*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 1710*a**(59/3)*b**4*
x**4*(1 + b*x/a)**(2/3)/(440*a**20*b**4 + 2640*a**19*b**5*x + 660
0*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 +
 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 3645*a**(59/3)*b*
*4*x**4/(440*a**20*b**4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**
2 + 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9
*x**5 + 440*a**14*b**10*x**6) + 72*a**(56/3)*b**5*x**5*(1 + b*x/a
)**(2/3)/(440*a**20*b**4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x*
*2 + 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**
9*x**5 + 440*a**14*b**10*x**6) + 1458*a**(56/3)*b**5*x**5/(440*a*
*20*b**4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*
b**7*x**3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**
14*b**10*x**6) + 1104*a**(53/3)*b**6*x**6*(1 + b*x/a)**(2/3)/(440
*a**20*b**4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**
17*b**7*x**3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*
a**14*b**10*x**6) + 243*a**(53/3)*b**6*x**6/(440*a**20*b**4 + 264
0*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 + 66
00*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6)
 + 1152*a**(50/3)*b**7*x**7*(1 + b*x/a)**(2/3)/(440*a**20*b**4 +
```

```
2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3 +
 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*x*
*6) + 585*a**(47/3)*b**8*x**8*(1 + b*x/a)**(2/3)/(440*a**20*b**4
+ 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x**3
 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**10*
x**6) + 120*a**(44/3)*b**9*x**9*(1 + b*x/a)**(2/3)/(440*a**20*b**
4 + 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 + 8800*a**17*b**7*x*
*3 + 6600*a**16*b**8*x**4 + 2640*a**15*b**9*x**5 + 440*a**14*b**1
0*x**6)
```

GIAC/XCAS [A] time = 0.211391, size = 82, normalized size = 1.14

$$\frac{3\left(40\,(bx+a)^{\frac{11}{3}}b^{30}-165\,(bx+a)^{\frac{8}{3}}ab^{30}+264\,(bx+a)^{\frac{5}{3}}a^{2}b^{30}-220\,(bx+a)^{\frac{2}{3}}a^{3}b^{30}\right)}{440\,b^{34}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/440*(40*(b*x + a)^(11/3)*b^30 - 165*(b*x + a)^(8/3)*a*b^30 + 26
4*(b*x + a)^(5/3)*a^2*b^30 - 220*(b*x + a)^(2/3)*a^3*b^30)/b^34
```

3.393 $\int \frac{x^2}{\sqrt[3]{a+bx}}\,dx$

Optimal. Leaf size=53

$$\frac{3a^2(a+bx)^{2/3}}{2b^3}+\frac{3(a+bx)^{8/3}}{8b^3}-\frac{6a(a+bx)^{5/3}}{5b^3}$$

```
[Out] (3*a^2*(a + b*x)^(2/3))/(2*b^3) - (6*a*(a + b*x)^(5/3))/(5*b^3) +
 (3*(a + b*x)^(8/3))/(8*b^3)
```

Rubi [A] time = 0.0386107, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3a^2(a+bx)^{2/3}}{2b^3}+\frac{3(a+bx)^{8/3}}{8b^3}-\frac{6a(a+bx)^{5/3}}{5b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^(1/3),x]
```

```
[Out] (3*a^2*(a + b*x)^(2/3))/(2*b^3) - (6*a*(a + b*x)^(5/3))/(5*b^3) +
 (3*(a + b*x)^(8/3))/(8*b^3)
```

Rubi in Sympy [A] time = 7.85877, size = 49, normalized size = 0.92

$$\frac{3a^2\left(a+bx\right)^{\frac{2}{3}}}{2b^3}-\frac{6a\left(a+bx\right)^{\frac{5}{3}}}{5b^3}+\frac{3\left(a+bx\right)^{\frac{8}{3}}}{8b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**(1/3),x)
```

```
[Out] 3*a**2*(a + b*x)**(2/3)/(2*b**3) - 6*a*(a + b*x)**(5/3)/(5*b**3)
+ 3*(a + b*x)**(8/3)/(8*b**3)
```

Mathematica [A] time = 0.018934, size = 35, normalized size = 0.66

$$\frac{3(a+bx)^{2/3}\left(9a^2-6abx+5b^2x^2\right)}{40b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^(1/3),x]

[Out] (3*(a + b*x)^(2/3)*(9*a^2 - 6*a*b*x + 5*b^2*x^2))/(40*b^3)
```

Maple [A] time = 0.006, size = 32, normalized size = 0.6

$$\frac{15\,b^2x^2 - 18\,abx + 27\,a^2}{40\,b^3}\,(bx + a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^(1/3),x)

[Out] 3/40*(b*x+a)^(2/3)*(5*b^2*x^2-6*a*b*x+9*a^2)/b^3
```

Maxima [A] time = 1.35349, size = 55, normalized size = 1.04

$$\frac{3\,(bx + a)^{\frac{8}{3}}}{8\,b^3} - \frac{6\,(bx + a)^{\frac{5}{3}}a}{5\,b^3} + \frac{3\,(bx + a)^{\frac{2}{3}}a^2}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(1/3),x, algorithm="maxima")

[Out] 3/8*(b*x + a)^(8/3)/b^3 - 6/5*(b*x + a)^(5/3)*a/b^3 + 3/2*(b*x +
a)^(2/3)*a^2/b^3
```

Fricas [A] time = 0.227355, size = 42, normalized size = 0.79

$$\frac{3\left(5\,b^2x^2 - 6\,abx + 9\,a^2\right)(bx + a)^{\frac{2}{3}}}{40\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(1/3),x, algorithm="fricas")

[Out] 3/40*(5*b^2*x^2 - 6*a*b*x + 9*a^2)*(b*x + a)^(2/3)/b^3
```

Sympy [A] time = 5.33341, size = 600, normalized size = 11.32

$$\frac{27a^{\frac{32}{3}}\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}-\frac{27a^{\frac{32}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}+\frac{63a^{\frac{29}{3}}bx\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}-\frac{81a^{\frac{29}{3}}bx}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}+\frac{42a^{\frac{26}{3}}b^2x^2\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}-\frac{81a^{\frac{26}{3}}b^2x^2}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}+\frac{18a^{\frac{23}{3}}b^3x^3\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}-\frac{27a^{\frac{23}{3}}b^3x^3}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}+\frac{27a^{\frac{20}{3}}b^4x^4\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}+\frac{15a^{\frac{17}{3}}b^5x^5\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{40a^8b^3+120a^7b^4x+120a^6b^5x^2+40a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**(1/3),x)
```

```
[Out] 27*a**(32/3)*(1 + b*x/a)**(2/3)/(40*a**8*b**3 + 120*a**7*b**4*x +
 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) - 27*a**(32/3)/(40*a**8*
b**3 + 120*a**7*b**4*x + 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3)
+ 63*a**(29/3)*b*x*(1 + b*x/a)**(2/3)/(40*a**8*b**3 + 120*a**7*b*
*4*x + 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) - 81*a**(29/3)*b*x
/(40*a**8*b**3 + 120*a**7*b**4*x + 120*a**6*b**5*x**2 + 40*a**5*b
**6*x**3) + 42*a**(26/3)*b**2*x**2*(1 + b*x/a)**(2/3)/(40*a**8*b*
*3 + 120*a**7*b**4*x + 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) -
81*a**(26/3)*b**2*x**2/(40*a**8*b**3 + 120*a**7*b**4*x + 120*a**6
*b**5*x**2 + 40*a**5*b**6*x**3) + 18*a**(23/3)*b**3*x**3*(1 + b*x
/a)**(2/3)/(40*a**8*b**3 + 120*a**7*b**4*x + 120*a**6*b**5*x**2 +
 40*a**5*b**6*x**3) - 27*a**(23/3)*b**3*x**3/(40*a**8*b**3 + 120*
a**7*b**4*x + 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 27*a**(20
/3)*b**4*x**4*(1 + b*x/a)**(2/3)/(40*a**8*b**3 + 120*a**7*b**4*x
+ 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 15*a**(17/3)*b**5*x**
5*(1 + b*x/a)**(2/3)/(40*a**8*b**3 + 120*a**7*b**4*x + 120*a**6*b
**5*x**2 + 40*a**5*b**6*x**3)
```

GIAC/XCAS [A] time = 0.207548, size = 62, normalized size = 1.17

$$\frac{3\left(5\left(bx+a\right)^{\frac{8}{3}}b^{14}-16\left(bx+a\right)^{\frac{5}{3}}ab^{14}+20\left(bx+a\right)^{\frac{2}{3}}a^2b^{14}\right)}{40\,b^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/40*(5*(b*x + a)^(8/3)*b^14 - 16*(b*x + a)^(5/3)*a*b^14 + 20*(b*
x + a)^(2/3)*a^2*b^14)/b^17
```

3.394 $\int \frac{x}{\sqrt[3]{a+bx}} \, dx$

Optimal. Leaf size=34

$$\frac{3(a+bx)^{5/3}}{5b^2} - \frac{3a(a+bx)^{2/3}}{2b^2}$$

```
[Out] (-3*a*(a + b*x)^(2/3))/(2*b^2) + (3*(a + b*x)^(5/3))/(5*b^2)
```

Rubi [A] time = 0.0256476, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{3(a+bx)^{5/3}}{5b^2} - \frac{3a(a+bx)^{2/3}}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*x)^(1/3),x]
```

```
[Out] (-3*a*(a + b*x)^(2/3))/(2*b^2) + (3*(a + b*x)^(5/3))/(5*b^2)
```

Rubi in Sympy [A] time = 4.87635, size = 31, normalized size = 0.91

$$-\frac{3a\left(a+bx\right)^{\frac{2}{3}}}{2b^2} + \frac{3\left(a+bx\right)^{\frac{5}{3}}}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x/(b*x+a)**(1/3),x)
```

```
[Out] -3*a*(a + b*x)**(2/3)/(2*b**2) + 3*(a + b*x)**(5/3)/(5*b**2)
```

Mathematica [A] time = 0.0144399, size = 24, normalized size = 0.71

$$\frac{3(a+bx)^{2/3}(2bx-3a)}{10b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + b*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(-3*a + 2*b*x))/(10*b^2)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$-\frac{-6\,bx+9\,a}{10\,b^{2}}\,(bx+a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^(1/3),x)
```

```
[Out] -3/10*(b*x+a)^(2/3)*(-2*b*x+3*a)/b^2
```

Maxima [A] time = 1.34877, size = 35, normalized size = 1.03

$$\frac{3\,(bx+a)^{\frac{5}{3}}}{5\,b^{2}}-\frac{3\,(bx+a)^{\frac{2}{3}}a}{2\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(1/3),x, algorithm="maxima")
```

```
[Out] 3/5*(b*x + a)^(5/3)/b^2 - 3/2*(b*x + a)^(2/3)*a/b^2
```

Fricas [A] time = 0.228616, size = 27, normalized size = 0.79

$$\frac{3\,(2\,bx-3\,a)(bx+a)^{\frac{2}{3}}}{10\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/10*(2*b*x - 3*a)*(b*x + a)^(2/3)/b^2
```

Sympy [A] time = 3.59229, size = 162, normalized size = 4.76

$$-\frac{9a^{\frac{11}{3}}\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{10a^{2}b^{2}+10ab^{3}x}+\frac{9a^{\frac{11}{3}}}{10a^{2}b^{2}+10ab^{3}x}-\frac{3a^{\frac{8}{3}}bx\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{10a^{2}b^{2}+10ab^{3}x}+\frac{9a^{\frac{8}{3}}bx}{10a^{2}b^{2}+10ab^{3}x}+\frac{6a^{\frac{5}{3}}b^{2}x^{2}\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{10a^{2}b^{2}+10ab^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**(1/3),x)
```

```
[Out] -9*a**(11/3)*(1 + b*x/a)**(2/3)/(10*a**2*b**2 + 10*a*b**3*x) + 9*
a**(11/3)/(10*a**2*b**2 + 10*a*b**3*x) - 3*a**(8/3)*b*x*(1 + b*x/
a)**(2/3)/(10*a**2*b**2 + 10*a*b**3*x) + 9*a**(8/3)*b*x/(10*a**2*
b**2 + 10*a*b**3*x) + 6*a**(5/3)*b**2*x**2*(1 + b*x/a)**(2/3)/(10
*a**2*b**2 + 10*a*b**3*x)
```

GIAC/XCAS [A] time = 0.205411, size = 34, normalized size = 1.

$$\frac{3\left(2\,(bx+a)^{\frac{5}{3}}-5\,(bx+a)^{\frac{2}{3}}a\right)}{10\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/10*(2*(b*x + a)^(5/3) - 5*(b*x + a)^(2/3)*a)/b^2
```

3.395 $\int \frac{1}{\sqrt[3]{a+bx}}\,dx$

Optimal. Leaf size=16

$$\frac{3(a+bx)^{2/3}}{2b}$$

```
[Out] (3*(a + b*x)^(2/3))/(2*b)
```

Rubi [A] time = 0.00684316, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{3(a+bx)^{2/3}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-1/3),x]
```

```
[Out] (3*(a + b*x)^(2/3))/(2*b)
```

Rubi in Sympy [A] time = 1.26921, size = 12, normalized size = 0.75

$$\frac{3\,(a+bx)^{\frac{2}{3}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/3),x)
```

```
[Out] 3*(a + b*x)**(2/3)/(2*b)
```

Mathematica [A] time = 0.00376652, size = 16, normalized size = 1.

$$\frac{3(a+bx)^{2/3}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-1/3),x]
```

```
[Out] (3*(a + b*x)^(2/3))/(2*b)
```

Maple [A] time = 0.005, size = 13, normalized size = 0.8

$$\frac{3}{2\,b}\left(bx+a\right)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/3),x)
```

```
[Out] 3/2*(b*x+a)^(2/3)/b
```

Maxima [A] time = 1.36915, size = 16, normalized size = 1.

$$\frac{3\left(bx+a\right)^{\frac{2}{3}}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-1/3),x, algorithm="maxima")
```

```
[Out] 3/2*(b*x + a)^(2/3)/b
```

Fricas [A] time = 0.23147, size = 16, normalized size = 1.

$$\frac{3\left(bx+a\right)^{\frac{2}{3}}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-1/3),x, algorithm="fricas")
```

```
[Out] 3/2*(b*x + a)^(2/3)/b
```

Sympy [A] time = 0.070173, size = 12, normalized size = 0.75

$$\frac{3\left(a+bx\right)^{\frac{2}{3}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/3),x)

[Out] 3*(a + b*x)**(2/3)/(2*b)
```

GIAC/XCAS [A] time = 0.205395, size = 16, normalized size = 1.

$$\frac{3\,(bx+a)^{\frac{2}{3}}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-1/3),x, algorithm="giac")

[Out] 3/2*(b*x + a)^(2/3)/b
```

3.396 $\int \frac{1}{x\sqrt[3]{a+bx}}\,dx$

Optimal. Leaf size=79

$$\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2\sqrt[3]{a}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{a}}-\frac{\log(x)}{2\sqrt[3]{a}}$$

```
[Out] (Sqrt[3]*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])
/a^(1/3) - Log[x]/(2*a^(1/3)) + (3*Log[a^(1/3) - (a + b*x)^(1/3)]
)/(2*a^(1/3))
```

Rubi [A] time = 0.061366, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2\sqrt[3]{a}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{a}}-\frac{\log(x)}{2\sqrt[3]{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^(1/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])
/a^(1/3) - Log[x]/(2*a^(1/3)) + (3*Log[a^(1/3) - (a + b*x)^(1/3)]
)/(2*a^(1/3))
```

Rubi in Sympy [A] time = 4.73856, size = 73, normalized size = 0.92

$$-\frac{\log(x)}{2\sqrt[3]{a}}+\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2\sqrt[3]{a}}+\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{\sqrt[3]{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**(1/3),x)
```

```
[Out] -log(x)/(2*a**(1/3)) + 3*log(a**(1/3) - (a + b*x)**(1/3))/(2*a**(
1/3)) + sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3)/3)/
a**(1/3))/a**(1/3)
```

Mathematica [C] time = 0.0231178, size = 46, normalized size = 0.58

$$-\frac{3\sqrt[3]{\frac{a+bx}{bx}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)}{\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^(1/3)),x]
```

```
[Out] (-3*((a + b*x)/(b*x))^(1/3)*Hypergeometric2F1[1/3, 1/3, 4/3, -(a/
(b*x))])/(a + b*x)^(1/3)
```

Maple [A] time = 0.007, size = 75, normalized size = 1.

$$1\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)\frac{1}{\sqrt[3]{a}}-\frac{1}{2}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{a}}+\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)\frac{1}{\sqrt[3]{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(1/3),x)
```

```
[Out] 1/a^(1/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/2/a^(1/3)*ln((b*x+a)^(2/3)+
(b*x+a)^(1/3)*a^(1/3)+a^(2/3))+3^(1/2)/a^(1/3)*arctan(1/3*3^(1/2)
*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.246092, size = 107, normalized size = 1.35

$$\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)}{3a}\right)-\log\left((bx+a)^{\frac{2}{3}}a^{\frac{1}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)+2\log\left((bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}-a\right)}{2a^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3)*a^(2/3) + a)
/a) - log((b*x + a)^(2/3)*a^(1/3) + (b*x + a)^(1/3)*a^(2/3) + a)
+ 2*log((b*x + a)^(1/3)*a^(2/3) - a))/a^(1/3)
```

Sympy [A] time = 5.27841, size = 155, normalized size = 1.96

$$\frac{2\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}\,\Gamma\left(\frac{5}{3}\right)}+\frac{2e^{\frac{8i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{2i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}\,\Gamma\left(\frac{5}{3}\right)}+\frac{2e^{\frac{4i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{4i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}\,\Gamma\left(\frac{5}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(1/3),x)
```

```
[Out] 2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(2/3)/(3*a**(1
/3)*gamma(5/3)) + 2*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/
3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(2/3)/(3*a**(1/3)*gamma(5/3
)) + 2*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(
4*I*pi/3)/a**(1/3))*gamma(2/3)/(3*a**(1/3)*gamma(5/3))
```

GIAC/XCAS [A] time = 0.503283, size = 104, normalized size = 1.32

$$\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{a^{\frac{1}{3}}}-\frac{\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{2\,a^{\frac{1}{3}}}+\frac{\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))/a^(1/3))
/a^(1/3) - 1/2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1/3) + a^(
2/3))/a^(1/3) + ln(abs((b*x + a)^(1/3) - a^(1/3)))/a^(1/3)
```

3.397 $\int \frac{1}{x^2 \sqrt[3]{a+bx}} \, dx$

Optimal. Leaf size=100

$$\frac{b\log(x)}{6a^{4/3}} - \frac{b\log\left(\sqrt[3]{a} - \sqrt[3]{a+bx}\right)}{2a^{4/3}} - \frac{b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{4/3}} - \frac{(a+bx)^{2/3}}{ax}$$

```
[Out] -((a + b*x)^(2/3)/(a*x)) - (b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3)
)/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(4/3)) + (b*Log[x])/(6*a^(4/3))
- (b*Log[a^(1/3) - (a + b*x)^(1/3)])/(2*a^(4/3))
```

Rubi [A] time = 0.0830081, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{b\log(x)}{6a^{4/3}} - \frac{b\log\left(\sqrt[3]{a} - \sqrt[3]{a+bx}\right)}{2a^{4/3}} - \frac{b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{4/3}} - \frac{(a+bx)^{2/3}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^(1/3)),x]
```

```
[Out] -((a + b*x)^(2/3)/(a*x)) - (b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3)
)/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(4/3)) + (b*Log[x])/(6*a^(4/3))
- (b*Log[a^(1/3) - (a + b*x)^(1/3)])/(2*a^(4/3))
```

Rubi in Sympy [A] time = 7.37747, size = 90, normalized size = 0.9

$$-\frac{(a+bx)^{\frac{2}{3}}}{ax} + \frac{b\log(x)}{6a^{\frac{4}{3}}} - \frac{b\log\left(\sqrt[3]{a} - \sqrt[3]{a+bx}\right)}{2a^{\frac{4}{3}}} - \frac{\sqrt{3}b\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**(1/3),x)
```

```
[Out] -(a + b*x)**(2/3)/(a*x) + b*log(x)/(6*a**(4/3)) - b*log(a**(1/3)
- (a + b*x)**(1/3))/(2*a**(4/3)) - sqrt(3)*b*atan(sqrt(3)*(a**(1/
3)/3 + 2*(a + b*x)**(1/3)/3)/a**(1/3))/(3*a**(4/3))
```

Mathematica [C] time = 0.0367206, size = 60, normalized size = 0.6

$$\frac{bx\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)-a-bx}{ax\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^(1/3)),x]
```

```
[Out] (-a - b*x + b*(1 + a/(b*x))^(1/3)*x*Hypergeometric2F1[1/3, 1/3, 4
/3, -(a/(b*x))])/(a*x*(a + b*x)^(1/3))
```

Maple [A] time = 0.01, size = 95, normalized size = 1.

$$-\frac{1}{ax}(bx+a)^{\frac{2}{3}}-\frac{b}{3}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{4}{3}}+\frac{b}{6}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{4}{3}}-\frac{b\sqrt{3}}{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^(1/3),x)
```

```
[Out] -(b*x+a)^(2/3)/a/x-1/3*b/a^(4/3)*ln((b*x+a)^(1/3)-a^(1/3))+1/6*b/
a^(4/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))-1/3*b/a^(
4/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.247529, size = 176, normalized size = 1.76

$$-\frac{\sqrt{3}\left(\sqrt{3}bx\log\left((bx+a)^{\frac{2}{3}}(-a)^{\frac{1}{3}}-(bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-2\sqrt{3}bx\log\left((bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-6\,bx\arctan\left(\frac{2\sqrt{3}(bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}}{3\,a}\right.\right.}{18\,(-a)^{\frac{1}{3}}\,ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x^2),x, algorithm="fricas")
```

```
[Out] -1/18*sqrt(3)*(sqrt(3)*b*x*log((b*x + a)^(2/3)*(-a)^(1/3) - (b*x
+ a)^(1/3)*(-a)^(2/3) - a) - 2*sqrt(3)*b*x*log((b*x + a)^(1/3)*(-
a)^(2/3) - a) - 6*b*x*arctan(1/3*(2*sqrt(3)*(b*x + a)^(1/3)*(-a)^
(2/3) + sqrt(3)*a)/a) + 6*sqrt(3)*(b*x + a)^(2/3)*(-a)^(1/3))/((-
a)^(1/3)*a*x)
```

Sympy [A] time = 6.5314, size = 639, normalized size = 6.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**(1/3),x)
```

```
[Out] 2*a**(5/3)*b**3*(a/b + x)**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/a*
*(1/3))*gamma(2/3)/(-9*a**3*b**2*(a/b + x)**2*gamma(5/3) + 9*a**2
*b**3*(a/b + x)**3*gamma(5/3)) + 2*a**(5/3)*b**3*(a/b + x)**2*exp
(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/
a**(1/3))*gamma(2/3)/(-9*a**3*b**2*(a/b + x)**2*gamma(5/3) + 9*a*
*2*b**3*(a/b + x)**3*gamma(5/3)) + 2*a**(5/3)*b**3*(a/b + x)**2*e
xp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3
)/a**(1/3))*gamma(2/3)/(-9*a**3*b**2*(a/b + x)**2*gamma(5/3) + 9*
a**2*b**3*(a/b + x)**3*gamma(5/3)) - 2*a**(2/3)*b**4*(a/b + x)**3
*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(2/3)/(-9*a**3*
b**2*(a/b + x)**2*gamma(5/3) + 9*a**2*b**3*(a/b + x)**3*gamma(5/3
)) - 2*a**(2/3)*b**4*(a/b + x)**3*exp(8*I*pi/3)*log(1 - b**(1/3)*
(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(2/3)/(-9*a**
3*b**2*(a/b + x)**2*gamma(5/3) + 9*a**2*b**3*(a/b + x)**3*gamma(5
/3)) - 2*a**(2/3)*b**4*(a/b + x)**3*exp(4*I*pi/3)*log(1 - b**(1/3
)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(2/3)/(-9*a
**3*b**2*(a/b + x)**2*gamma(5/3) + 9*a**2*b**3*(a/b + x)**3*gamma
(5/3)) - 6*a*b**(11/3)*(a/b + x)**(8/3)*gamma(2/3)/(-9*a**3*b**2*
(a/b + x)**2*gamma(5/3) + 9*a**2*b**3*(a/b + x)**3*gamma(5/3))
```

GIAC/XCAS [A] time = 0.532262, size = 147, normalized size = 1.47

$$-\frac{\frac{2\sqrt{3}b^2\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3a^{\frac{1}{3}}}\right)}{a^{\frac{4}{3}}}-\frac{b^2\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{4}{3}}}+\frac{2b^2\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{4}{3}}}+\frac{6(bx+a)^{\frac{2}{3}}b}{ax}}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x^2),x, algorithm="giac")
```

```
[Out] -1/6*(2*sqrt(3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/
3))/a^(1/3))/a^(4/3) - b^2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a
^(1/3) + a^(2/3))/a^(4/3) + 2*b^2*ln(abs((b*x + a)^(1/3) - a^(1/3
)))/a^(4/3) + 6*(b*x + a)^(2/3)*b/(a*x))/b
```

3.398 $\int \frac{1}{x^3 \sqrt[3]{a+bx}}\,dx$

Optimal. Leaf size=130

$$-\frac{b^2\log(x)}{9a^{7/3}}+\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{7/3}}+\frac{2b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{7/3}}+\frac{2b(a+bx)^{2/3}}{3a^2x}-\frac{(a+bx)^{2/3}}{2ax^2}$$

```
[Out] -(a + b*x)^(2/3)/(2*a*x^2) + (2*b*(a + b*x)^(2/3))/(3*a^2*x) + (2
*b^2*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*
Sqrt[3]*a^(7/3)) - (b^2*Log[x])/(9*a^(7/3)) + (b^2*Log[a^(1/3) -
(a + b*x)^(1/3)])/(3*a^(7/3))
```

Rubi [A] time = 0.116627, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{b^2\log(x)}{9a^{7/3}}+\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{7/3}}+\frac{2b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{7/3}}+\frac{2b(a+bx)^{2/3}}{3a^2x}-\frac{(a+bx)^{2/3}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^(1/3)),x]
```

```
[Out] -(a + b*x)^(2/3)/(2*a*x^2) + (2*b*(a + b*x)^(2/3))/(3*a^2*x) + (2
*b^2*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*
Sqrt[3]*a^(7/3)) - (b^2*Log[x])/(9*a^(7/3)) + (b^2*Log[a^(1/3) -
(a + b*x)^(1/3)])/(3*a^(7/3))
```

Rubi in Sympy [A] time = 11.2055, size = 119, normalized size = 0.92

$$-\frac{(a+bx)^{\frac{2}{3}}}{2ax^2}+\frac{2b\,(a+bx)^{\frac{2}{3}}}{3a^2x}-\frac{b^2\log(x)}{9a^{\frac{7}{3}}}+\frac{b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{\frac{7}{3}}}+\frac{2\sqrt{3}b^2\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{7}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**(1/3),x)
```

```
[Out] -(a + b*x)**(2/3)/(2*a*x**2) + 2*b*(a + b*x)**(2/3)/(3*a**2*x) -
b**2*log(x)/(9*a**(7/3)) + b**2*log(a**(1/3) - (a + b*x)**(1/3))/
```

```
(3*a**(7/3)) + 2*sqrt(3)*b**2*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b
*x)**(1/3)/3)/a**(1/3))/(9*a**(7/3))
```

Mathematica [C] time = 0.042607, size = 78, normalized size = 0.6

$$\frac{-3a^2-4b^2x^2\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)+abx+4b^2x^2}{6a^2x^2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^(1/3)),x]
```

```
[Out] (-3*a^2 + a*b*x + 4*b^2*x^2 - 4*b^2*(1 + a/(b*x))^(1/3)*x^2*Hyper
geometric2F1[1/3, 1/3, 4/3, -(a/(b*x))])/(6*a^2*x^2*(a + b*x)^(1/
3))
```

Maple [A] time = 0.01, size = 117, normalized size = 0.9

$$-\frac{1}{2\,ax^2}(bx+a)^{\frac{2}{3}}+\frac{2\,b}{3\,a^2x}(bx+a)^{\frac{2}{3}}+\frac{2\,b^2}{9}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{7}{3}}$$
$$-\frac{b^2}{9}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{7}{3}}+\frac{2\,b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^(1/3),x)
```

```
[Out] -1/2*(b*x+a)^(2/3)/a/x^2+2/3*b*(b*x+a)^(2/3)/a^2/x+2/9*b^2/a^(7/3
)*ln((b*x+a)^(1/3)-a^(1/3))-1/9*b^2/a^(7/3)*ln((b*x+a)^(2/3)+(b*x
+a)^(1/3)*a^(1/3)+a^(2/3))+2/9*b^2/a^(7/3)*3^(1/2)*arctan(1/3*3^(
1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224825, size = 180, normalized size = 1.38

$$-\frac{\sqrt{3}\left(2\,\sqrt{3}b^{2}x^{2}\log\left((bx+a)^{\frac{2}{3}}a^{\frac{1}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)-4\,\sqrt{3}b^{2}x^{2}\log\left((bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}-a\right)-12\,b^{2}x^{2}\arctan\left(\frac{2\,\sqrt{3}(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+\sqrt{3}a}{3\,a}\right)}{54\,a^{\frac{7}{3}}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x^3),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(2*sqrt(3)*b^2*x^2*log((b*x + a)^(2/3)*a^(1/3) + (b
*x + a)^(1/3)*a^(2/3) + a) - 4*sqrt(3)*b^2*x^2*log((b*x + a)^(1/3
)*a^(2/3) - a) - 12*b^2*x^2*arctan(1/3*(2*sqrt(3)*(b*x + a)^(1/3)
*a^(2/3) + sqrt(3)*a)/a) - 3*sqrt(3)*(4*b*x - 3*a)*(b*x + a)^(2/3
)*a^(1/3))/(a^(7/3)*x^2)
```

Sympy [A] time = 7.99383, size = 1960, normalized size = 15.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**(1/3),x)
```

```
[Out] -4*a**(14/3)*b**4*(a/b + x)**2*log(1 - b**(1/3)*(a/b + x)**(1/3)/
a**(1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*
a**6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gam
ma(5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3)) - 4*a**(14/3)*b**
4*(a/b + x)**2*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*ex
p_polar(2*I*pi/3)/a**(1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**
2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**
4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3))
 - 4*a**(14/3)*b**4*(a/b + x)**2*exp(4*I*pi/3)*log(1 - b**(1/3)*(
a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(2/3)/(-27*a**
7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3*gamma(
5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a/b +
 x)**5*gamma(5/3)) + 12*a**(11/3)*b**5*(a/b + x)**3*log(1 - b**(1
/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x
)**2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*
b**4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/
3)) + 12*a**(11/3)*b**5*(a/b + x)**3*exp(8*I*pi/3)*log(1 - b**(1/
3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(2/3)/(-27
*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3*ga
mma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a
/b + x)**5*gamma(5/3)) + 12*a**(11/3)*b**5*(a/b + x)**3*exp(4*I*p
```

```
i/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/
3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6*b
**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5/3
) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3)) - 12*a**(8/3)*b**6*(a/b
 + x)**4*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(2/3)/(
-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3
*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5
*(a/b + x)**5*gamma(5/3)) - 12*a**(8/3)*b**6*(a/b + x)**4*exp(8*I
*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(
1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6
*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5
/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3)) - 12*a**(8/3)*b**6*(a
/b + x)**4*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_po
lar(4*I*pi/3)/a**(1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*ga
mma(5/3) + 81*a**6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a
/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3)) + 4
*a**(5/3)*b**7*(a/b + x)**5*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**
(1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**
6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(
5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3)) + 4*a**(5/3)*b**7*(a
/b + x)**5*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_po
lar(2*I*pi/3)/a**(1/3))*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*ga
mma(5/3) + 81*a**6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a
/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3)) + 4
*a**(5/3)*b**7*(a/b + x)**5*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b +
 x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(2/3)/(-27*a**7*b**
2*(a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3*gamma(5/3)
- 81*a**5*b**4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(a/b + x)**
5*gamma(5/3)) + 21*a**4*b**(14/3)*(a/b + x)**(8/3)*gamma(2/3)/(-2
7*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(a/b + x)**3*g
amma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(
a/b + x)**5*gamma(5/3)) - 33*a**3*b**(17/3)*(a/b + x)**(11/3)*gam
ma(2/3)/(-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(a/
b + x)**3*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma(5/3) + 27*
a**4*b**5*(a/b + x)**5*gamma(5/3)) + 12*a**2*b**(20/3)*(a/b + x)*
*(14/3)*gamma(2/3)/(-27*a**7*b**2*(a/b + x)**2*gamma(5/3) + 81*a*
*6*b**3*(a/b + x)**3*gamma(5/3) - 81*a**5*b**4*(a/b + x)**4*gamma
(5/3) + 27*a**4*b**5*(a/b + x)**5*gamma(5/3))
```

GIAC/XCAS [A] time = 0.556506, size = 176, normalized size = 1.35

$$\frac{\frac{4\sqrt{3}b^3\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3a^{\frac{1}{3}}}\right)}{a^{\frac{7}{3}}}-\frac{2b^3\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{7}{3}}}+\frac{4b^3\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{7}{3}}}+\frac{3\left(4(bx+a)^{\frac{5}{3}}b^3-7(bx+a)^{\frac{2}{3}}ab^3\right)}{a^2b^2x^2}}{18b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*x^3),x, algorithm="giac")
```

```
[Out] 1/18*(4*sqrt(3)*b^3*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/
3))/a^(1/3))/a^(7/3) - 2*b^3*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)
```

```
*a^(1/3) + a^(2/3))/a^(7/3) + 4*b^3*ln(abs((b*x + a)^(1/3) - a^(1
/3)))/a^(7/3) + 3*(4*(b*x + a)^(5/3)*b^3 - 7*(b*x + a)^(2/3)*a*b^
3)/(a^2*b^2*x^2))/b
```

3.399 $\int \frac{x^3}{\sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=80

$$\frac{3a^3(bx-a)^{2/3}}{2b^4}+\frac{9a^2(bx-a)^{5/3}}{5b^4}+\frac{3(bx-a)^{11/3}}{11b^4}+\frac{9a(bx-a)^{8/3}}{8b^4}$$

```
[Out] (3*a^3*(-a + b*x)^(2/3))/(2*b^4) + (9*a^2*(-a + b*x)^(5/3))/(5*b^
4) + (9*a*(-a + b*x)^(8/3))/(8*b^4) + (3*(-a + b*x)^(11/3))/(11*b
^4)
```

Rubi [A] time = 0.0546035, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{3a^3(bx-a)^{2/3}}{2b^4}+\frac{9a^2(bx-a)^{5/3}}{5b^4}+\frac{3(bx-a)^{11/3}}{11b^4}+\frac{9a(bx-a)^{8/3}}{8b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(-a + b*x)^(1/3),x]
```

```
[Out] (3*a^3*(-a + b*x)^(2/3))/(2*b^4) + (9*a^2*(-a + b*x)^(5/3))/(5*b^
4) + (9*a*(-a + b*x)^(8/3))/(8*b^4) + (3*(-a + b*x)^(11/3))/(11*b
^4)
```

Rubi in Sympy [A] time = 11.8143, size = 68, normalized size = 0.85

$$\frac{3a^3\left(-a+bx\right)^{\frac{2}{3}}}{2b^4}+\frac{9a^2\left(-a+bx\right)^{\frac{5}{3}}}{5b^4}+\frac{9a\left(-a+bx\right)^{\frac{8}{3}}}{8b^4}+\frac{3\left(-a+bx\right)^{\frac{11}{3}}}{11b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x-a)**(1/3),x)
```

```
[Out] 3*a**3*(-a + b*x)**(2/3)/(2*b**4) + 9*a**2*(-a + b*x)**(5/3)/(5*b
**4) + 9*a*(-a + b*x)**(8/3)/(8*b**4) + 3*(-a + b*x)**(11/3)/(11*
b**4)
```

Mathematica [A] time = 0.0263676, size = 48, normalized size = 0.6

$$\frac{3(bx-a)^{2/3}\left(81a^3+54a^2bx+45ab^2x^2+40b^3x^3\right)}{440b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(-a + b*x)^(1/3),x]
```

```
[Out] (3*(-a + b*x)^(2/3)*(81*a^3 + 54*a^2*b*x + 45*a*b^2*x^2 + 40*b^3*
x^3))/(440*b^4)
```

Maple [A] time = 0.009, size = 45, normalized size = 0.6

$$\frac{120\,b^3x^3+135\,ab^2x^2+162\,a^2bx+243\,a^3}{440\,b^4}(bx-a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x-a)^(1/3),x)
```

```
[Out] 3/440*(40*b^3*x^3+45*a*b^2*x^2+54*a^2*b*x+81*a^3)/b^4*(b*x-a)^(2/
3)
```

Maxima [A] time = 1.32771, size = 86, normalized size = 1.08

$$\frac{3\,(bx-a)^{\frac{11}{3}}}{11\,b^4}+\frac{9\,(bx-a)^{\frac{8}{3}}a}{8\,b^4}+\frac{9\,(bx-a)^{\frac{5}{3}}a^2}{5\,b^4}+\frac{3\,(bx-a)^{\frac{2}{3}}a^3}{2\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x - a)^(1/3),x, algorithm="maxima")
```

```
[Out] 3/11*(b*x - a)^(11/3)/b^4 + 9/8*(b*x - a)^(8/3)*a/b^4 + 9/5*(b*x
- a)^(5/3)*a^2/b^4 + 3/2*(b*x - a)^(2/3)*a^3/b^4
```

Fricas [A] time = 0.207886, size = 59, normalized size = 0.74

$$\frac{3\left(40\,b^3x^3+45\,ab^2x^2+54\,a^2bx+81\,a^3\right)(bx-a)^{\frac{2}{3}}}{440\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x - a)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/440*(40*b^3*x^3 + 45*a*b^2*x^2 + 54*a^2*b*x + 81*a^3)*(b*x - a)
^(2/3)/b^4
```

Sympy [A] time = 9.38045, size = 3492, normalized size = 43.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3/(b*x-a)**(1/3),x)
```

```
[Out] Piecewise((243*a**(71/3)*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 26
40*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6
600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6
) + 243*a**(71/3)*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**
5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b*
*8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 1296*a**
(68/3)*b*x*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a**19*b**5*
x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8
*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 1458*a**(6
8/3)*b*x*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 660
0*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 -
 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 2808*a**(65/3)*b*
*2*x**2*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a**19*b**5*x +
 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x*
*4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 3645*a**(65/3
)*b**2*x**2*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x +
6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**
4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 3120*a**(62/3)
*b**3*x**3*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a**19*b**5*
x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8
*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 4860*a**(6
2/3)*b**3*x**3*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x
 + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*
x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 1710*a**(59
/3)*b**4*x**4*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a**19*b*
*5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b
**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 3645*a*
*(59/3)*b**4*x**4*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**
5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b*
*8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 72*a**(5
6/3)*b**5*x**5*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a**19*b
**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*
b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 1458*a
**(56/3)*b**5*x**5*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b*
*5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b
**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 1104*a*
*(53/3)*b**6*x**6*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a**1
9*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**
16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 243
*a**(53/3)*b**6*x**6*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*
b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16
```

```
*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 1152*
a**(50/3)*b**7*x**7*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640*a*
*19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a
**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 5
85*a**(47/3)*b**8*x**8*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2640
*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 660
0*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6)
+ 120*a**(44/3)*b**9*x**9*(-1 + b*x/a)**(2/3)/(440*a**20*b**4 - 2
640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 +
6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**
6), Abs(b*x/a) > 1), (-243*a**(71/3)*(1 - b*x/a)**(2/3)*exp(11*I*
pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2
- 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x
**5 + 440*a**14*b**10*x**6) + 243*a**(71/3)*exp(11*I*pi/3)/(440*a
**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17
*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a*
*14*b**10*x**6) + 1296*a**(68/3)*b*x*(1 - b*x/a)**(2/3)*exp(11*I*
pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2
- 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x
**5 + 440*a**14*b**10*x**6) - 1458*a**(68/3)*b*x*exp(11*I*pi/3)/(
440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*
a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 4
40*a**14*b**10*x**6) - 2808*a**(65/3)*b**2*x**2*(1 - b*x/a)**(2/3
)*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18
*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a
**15*b**9*x**5 + 440*a**14*b**10*x**6) + 3645*a**(65/3)*b**2*x**2
*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*
b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a*
*15*b**9*x**5 + 440*a**14*b**10*x**6) + 3120*a**(62/3)*b**3*x**3*
(1 - b*x/a)**(2/3)*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b*
*5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b
**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 4860*a*
*(62/3)*b**3*x**3*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**
5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b*
*8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) - 1710*a**
(59/3)*b**4*x**4*(1 - b*x/a)**(2/3)*exp(11*I*pi/3)/(440*a**20*b**
4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x*
*3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**1
0*x**6) + 3645*a**(59/3)*b**4*x**4*exp(11*I*pi/3)/(440*a**20*b**4
 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**
3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10
*x**6) - 72*a**(56/3)*b**5*x**5*(1 - b*x/a)**(2/3)*exp(11*I*pi/3)
/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 880
0*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 +
 440*a**14*b**10*x**6) - 1458*a**(56/3)*b**5*x**5*exp(11*I*pi/3)/
(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800
*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 +
440*a**14*b**10*x**6) + 1104*a**(53/3)*b**6*x**6*(1 - b*x/a)**(2/
3)*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**1
8*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*
a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 243*a**(53/3)*b**6*x**6
*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*
b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a*
*15*b**9*x**5 + 440*a**14*b**10*x**6) - 1152*a**(50/3)*b**7*x**7*
(1 - b*x/a)**(2/3)*exp(11*I*pi/3)/(440*a**20*b**4 - 2640*a**19*b*
*5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x**3 + 6600*a**16*b
```

```
**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**10*x**6) + 585*a**
(47/3)*b**8*x**8*(1 - b*x/a)**(2/3)*exp(11*I*pi/3)/(440*a**20*b**
4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8800*a**17*b**7*x*
*3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5 + 440*a**14*b**1
0*x**6) - 120*a**(44/3)*b**9*x**9*(1 - b*x/a)**(2/3)*exp(11*I*pi/
3)/(440*a**20*b**4 - 2640*a**19*b**5*x + 6600*a**18*b**6*x**2 - 8
800*a**17*b**7*x**3 + 6600*a**16*b**8*x**4 - 2640*a**15*b**9*x**5
 + 440*a**14*b**10*x**6), True))
```

GIAC/XCAS [A] time = 0.20657, size = 93, normalized size = 1.16

$$\frac{3\left(40\,(bx-a)^{\frac{11}{3}}b^{30}+165\,(bx-a)^{\frac{8}{3}}ab^{30}+264\,(bx-a)^{\frac{5}{3}}a^{2}b^{30}+220\,(bx-a)^{\frac{2}{3}}a^{3}b^{30}\right)}{440\,b^{34}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x - a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/440*(40*(b*x - a)^(11/3)*b^30 + 165*(b*x - a)^(8/3)*a*b^30 + 26
4*(b*x - a)^(5/3)*a^2*b^30 + 220*(b*x - a)^(2/3)*a^3*b^30)/b^34
```

3.400 $\int \frac{x^2}{\sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=59

$$\frac{3a^2(bx-a)^{2/3}}{2b^3}+\frac{3(bx-a)^{8/3}}{8b^3}+\frac{6a(bx-a)^{5/3}}{5b^3}$$

```
[Out] (3*a^2*(-a + b*x)^(2/3))/(2*b^3) + (6*a*(-a + b*x)^(5/3))/(5*b^3)
 + (3*(-a + b*x)^(8/3))/(8*b^3)
```

Rubi [A] time = 0.0417991, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{3a^2(bx-a)^{2/3}}{2b^3}+\frac{3(bx-a)^{8/3}}{8b^3}+\frac{6a(bx-a)^{5/3}}{5b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(-a + b*x)^(1/3),x]
```

```
[Out] (3*a^2*(-a + b*x)^(2/3))/(2*b^3) + (6*a*(-a + b*x)^(5/3))/(5*b^3)
 + (3*(-a + b*x)^(8/3))/(8*b^3)
```

Rubi in Sympy [A] time = 8.67808, size = 49, normalized size = 0.83

$$\frac{3a^2\left(-a+bx\right)^{\frac{2}{3}}}{2b^3}+\frac{6a\left(-a+bx\right)^{\frac{5}{3}}}{5b^3}+\frac{3\left(-a+bx\right)^{\frac{8}{3}}}{8b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x-a)**(1/3),x)
```

```
[Out] 3*a**2*(-a + b*x)**(2/3)/(2*b**3) + 6*a*(-a + b*x)**(5/3)/(5*b**3
) + 3*(-a + b*x)**(8/3)/(8*b**3)
```

Mathematica [A] time = 0.0200665, size = 37, normalized size = 0.63

$$\frac{3(bx-a)^{2/3}\left(9a^2+6abx+5b^2x^2\right)}{40b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(-a + b*x)^(1/3),x]

[Out] (3*(-a + b*x)^(2/3)*(9*a^2 + 6*a*b*x + 5*b^2*x^2))/(40*b^3)
```

Maple [A] time = 0.007, size = 34, normalized size = 0.6

$$\frac{15 b^2x^2 + 18 abx + 27 a^2}{40 b^3} (bx - a)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x-a)^(1/3),x)

[Out] 3/40*(5*b^2*x^2+6*a*b*x+9*a^2)/b^3*(b*x-a)^(2/3)
```

Maxima [A] time = 1.33124, size = 63, normalized size = 1.07

$$\frac{3 (bx - a)^{\frac{8}{3}}}{8 b^3} + \frac{6 (bx - a)^{\frac{5}{3}} a}{5 b^3} + \frac{3 (bx - a)^{\frac{2}{3}} a^2}{2 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x - a)^(1/3),x, algorithm="maxima")

[Out] 3/8*(b*x - a)^(8/3)/b^3 + 6/5*(b*x - a)^(5/3)*a/b^3 + 3/2*(b*x -
a)^(2/3)*a^2/b^3
```

Fricas [A] time = 0.245096, size = 45, normalized size = 0.76

$$\frac{3 \left(5 b^2x^2 + 6 abx + 9 a^2\right) (bx - a)^{\frac{2}{3}}}{40 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x - a)^(1/3),x, algorithm="fricas")

[Out] 3/40*(5*b^2*x^2 + 6*a*b*x + 9*a^2)*(b*x - a)^(2/3)/b^3
```

Sympy [A] time = 5.87803, size = 1326, normalized size = 22.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x-a)**(1/3),x)
```

```
[Out] Piecewise((-27*a**(32/3)*(-1 + b*x/a)**(2/3)/(-40*a**8*b**3 + 120
*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 27*a**(3
2/3)*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*b*
*5*x**2 + 40*a**5*b**6*x**3) + 63*a**(29/3)*b*x*(-1 + b*x/a)**(2/
3)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**
5*b**6*x**3) - 81*a**(29/3)*b*x*exp(8*I*pi/3)/(-40*a**8*b**3 + 12
0*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) - 42*a**(
26/3)*b**2*x**2*(-1 + b*x/a)**(2/3)/(-40*a**8*b**3 + 120*a**7*b**
4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 81*a**(26/3)*b**2
*x**2*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*b
**5*x**2 + 40*a**5*b**6*x**3) + 18*a**(23/3)*b**3*x**3*(-1 + b*x/
a)**(2/3)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 +
 40*a**5*b**6*x**3) - 27*a**(23/3)*b**3*x**3*exp(8*I*pi/3)/(-40*a
**8*b**3 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x*
*3) - 27*a**(20/3)*b**4*x**4*(-1 + b*x/a)**(2/3)/(-40*a**8*b**3 +
 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 15*a
**(17/3)*b**5*x**5*(-1 + b*x/a)**(2/3)/(-40*a**8*b**3 + 120*a**7*
b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3), Abs(b*x/a) > 1)
, (-27*a**(32/3)*(1 - b*x/a)**(2/3)*exp(8*I*pi/3)/(-40*a**8*b**3
+ 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 27*
a**(32/3)*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a*
*6*b**5*x**2 + 40*a**5*b**6*x**3) + 63*a**(29/3)*b*x*(1 - b*x/a)*
*(2/3)*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*
b**5*x**2 + 40*a**5*b**6*x**3) - 81*a**(29/3)*b*x*exp(8*I*pi/3)/(
-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b*
*6*x**3) - 42*a**(26/3)*b**2*x**2*(1 - b*x/a)**(2/3)*exp(8*I*pi/3
)/(-40*a**8*b**3 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5
*b**6*x**3) + 81*a**(26/3)*b**2*x**2*exp(8*I*pi/3)/(-40*a**8*b**3
 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 18
*a**(23/3)*b**3*x**3*(1 - b*x/a)**(2/3)*exp(8*I*pi/3)/(-40*a**8*b
**3 + 120*a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) -
 27*a**(23/3)*b**3*x**3*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*a**7*b
**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) - 27*a**(20/3)*b*
*4*x**4*(1 - b*x/a)**(2/3)*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*a**
7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3) + 15*a**(17/3)
*b**5*x**5*(1 - b*x/a)**(2/3)*exp(8*I*pi/3)/(-40*a**8*b**3 + 120*
a**7*b**4*x - 120*a**6*b**5*x**2 + 40*a**5*b**6*x**3), True))
```

GIAC/XCAS [A] time = 0.206796, size = 70, normalized size = 1.19

$$\frac{3\left(5\,(bx-a)^{\frac{8}{3}}b^{14}+16\,(bx-a)^{\frac{5}{3}}ab^{14}+20\,(bx-a)^{\frac{2}{3}}a^{2}b^{14}\right)}{40\,b^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x - a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/40*(5*(b*x - a)^(8/3)*b^14 + 16*(b*x - a)^(5/3)*a*b^14 + 20*(b*
x - a)^(2/3)*a^2*b^14)/b^17
```

3.401 $\int \frac{x}{\sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=38

$$\frac{3(bx-a)^{5/3}}{5b^2}+\frac{3a(bx-a)^{2/3}}{2b^2}$$

```
[Out] (3*a*(-a + b*x)^(2/3))/(2*b^2) + (3*(-a + b*x)^(5/3))/(5*b^2)
```

Rubi [A] time = 0.0273403, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3(bx-a)^{5/3}}{5b^2}+\frac{3a(bx-a)^{2/3}}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(-a + b*x)^(1/3),x]
```

```
[Out] (3*a*(-a + b*x)^(2/3))/(2*b^2) + (3*(-a + b*x)^(5/3))/(5*b^2)
```

Rubi in Sympy [A] time = 5.19663, size = 31, normalized size = 0.82

$$\frac{3a\left(-a+bx\right)^{\frac{2}{3}}}{2b^2}+\frac{3\left(-a+bx\right)^{\frac{5}{3}}}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x/(b*x-a)**(1/3),x)
```

```
[Out] 3*a*(-a + b*x)**(2/3)/(2*b**2) + 3*(-a + b*x)**(5/3)/(5*b**2)
```

Mathematica [A] time = 0.0133036, size = 26, normalized size = 0.68

$$\frac{3(bx-a)^{2/3}(3a+2bx)}{10b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(-a + b*x)^(1/3),x]
```

```
[Out] (3*(-a + b*x)^(2/3)*(3*a + 2*b*x))/(10*b^2)
```

Maple [A] time = 0.004, size = 23, normalized size = 0.6

$$\frac{6\,bx+9\,a}{10\,b^{2}}\left(bx-a\right)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x-a)^(1/3),x)
```

```
[Out] 3/10*(2*b*x+3*a)/b^2*(b*x-a)^(2/3)
```

Maxima [A] time = 1.33791, size = 41, normalized size = 1.08

$$\frac{3\,(bx-a)^{\frac{5}{3}}}{5\,b^{2}}+\frac{3\,(bx-a)^{\frac{2}{3}}a}{2\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x - a)^(1/3),x, algorithm="maxima")
```

```
[Out] 3/5*(b*x - a)^(5/3)/b^2 + 3/2*(b*x - a)^(2/3)*a/b^2
```

Fricas [A] time = 0.20897, size = 30, normalized size = 0.79

$$\frac{3\,(2\,bx+3\,a)(bx-a)^{\frac{2}{3}}}{10\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(b*x - a)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/10*(2*b*x + 3*a)*(b*x - a)^(2/3)/b^2
```

Sympy [A] time = 3.92547, size = 389, normalized size = 10.24

$$\begin{cases} -\frac{9a^{\frac{11}{3}}\left(-1+\frac{bx}{a}\right)^{\frac{2}{3}}}{-10a^{2}b^{2}+10ab^{3}x}-\frac{9a^{\frac{11}{3}}e^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x}+\frac{3a^{\frac{8}{3}}bx\left(-1+\frac{bx}{a}\right)^{\frac{2}{3}}}{-10a^{2}b^{2}+10ab^{3}x}+\frac{9a^{\frac{8}{3}}bxe^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x}+\frac{6a^{\frac{5}{3}}b^{2}x^{2}\left(-1+\frac{bx}{a}\right)^{\frac{2}{3}}}{-10a^{2}b^{2}+10ab^{3}x} & \text{for}\ \left|\frac{bx}{a}\right|>1 \\ \frac{9a^{\frac{11}{3}}\left(1-\frac{bx}{a}\right)^{\frac{2}{3}}e^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x}-\frac{9a^{\frac{11}{3}}e^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x}-\frac{3a^{\frac{8}{3}}bx\left(1-\frac{bx}{a}\right)^{\frac{2}{3}}e^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x}+\frac{9a^{\frac{8}{3}}bxe^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x}-\frac{6a^{\frac{5}{3}}b^{2}x^{2}\left(1-\frac{bx}{a}\right)^{\frac{2}{3}}e^{\frac{5i\pi}{3}}}{-10a^{2}b^{2}+10ab^{3}x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x-a)**(1/3),x)
```

```
[Out] Piecewise((-9*a**(11/3)*(-1 + b*x/a)**(2/3)/(-10*a**2*b**2 + 10*a
*b**3*x) - 9*a**(11/3)*exp(5*I*pi/3)/(-10*a**2*b**2 + 10*a*b**3*x
) + 3*a**(8/3)*b*x*(-1 + b*x/a)**(2/3)/(-10*a**2*b**2 + 10*a*b**3
*x) + 9*a**(8/3)*b*x*exp(5*I*pi/3)/(-10*a**2*b**2 + 10*a*b**3*x)
+ 6*a**(5/3)*b**2*x**2*(-1 + b*x/a)**(2/3)/(-10*a**2*b**2 + 10*a*
b**3*x), Abs(b*x/a) > 1), (9*a**(11/3)*(1 - b*x/a)**(2/3)*exp(5*I
*pi/3)/(-10*a**2*b**2 + 10*a*b**3*x) - 9*a**(11/3)*exp(5*I*pi/3)/
(-10*a**2*b**2 + 10*a*b**3*x) - 3*a**(8/3)*b*x*(1 - b*x/a)**(2/3)
*exp(5*I*pi/3)/(-10*a**2*b**2 + 10*a*b**3*x) + 9*a**(8/3)*b*x*exp
(5*I*pi/3)/(-10*a**2*b**2 + 10*a*b**3*x) - 6*a**(5/3)*b**2*x**2*(
1 - b*x/a)**(2/3)*exp(5*I*pi/3)/(-10*a**2*b**2 + 10*a*b**3*x), Tr
ue))
```

GIAC/XCAS [A] time = 0.204289, size = 39, normalized size = 1.03

$$\frac{3\left(2\,(bx-a)^{\frac{5}{3}}+5\,(bx-a)^{\frac{2}{3}}a\right)}{10\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x - a)^(1/3),x, algorithm="giac")
```

```
[Out] 3/10*(2*(b*x - a)^(5/3) + 5*(b*x - a)^(2/3)*a)/b^2
```

3.402 $\int \frac{1}{\sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=18

$$\frac{3(bx-a)^{2/3}}{2b}$$

```
[Out] (3*(-a + b*x)^(2/3))/(2*b)
```

Rubi [A] time = 0.00718682, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{3(bx-a)^{2/3}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(-a + b*x)^(-1/3),x]
```

```
[Out] (3*(-a + b*x)^(2/3))/(2*b)
```

Rubi in Sympy [A] time = 1.22866, size = 12, normalized size = 0.67

$$\frac{3\,(-a+bx)^{\frac{2}{3}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-a)**(1/3),x)
```

```
[Out] 3*(-a + b*x)**(2/3)/(2*b)
```

Mathematica [A] time = 0.00288401, size = 18, normalized size = 1.

$$\frac{3(bx-a)^{2/3}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-a + b*x)^(-1/3),x]
```

```
[Out] (3*(-a + b*x)^(2/3))/(2*b)
```

Maple [A] time = 0.004, size = 15, normalized size = 0.8

$$\frac{3}{2\,b}\left(bx-a\right)^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x-a)^(1/3),x)
```

```
[Out] 3/2*(b*x-a)^(2/3)/b
```

Maxima [A] time = 1.34011, size = 19, normalized size = 1.06

$$\frac{3\,{\left(bx-a\right)}^{\frac{2}{3}}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x - a)^(-1/3),x, algorithm="maxima")
```

```
[Out] 3/2*(b*x - a)^(2/3)/b
```

Fricas [A] time = 0.207001, size = 19, normalized size = 1.06

$$\frac{3\,{\left(bx-a\right)}^{\frac{2}{3}}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x - a)^(-1/3),x, algorithm="fricas")
```

```
[Out] 3/2*(b*x - a)^(2/3)/b
```

Sympy [A] time = 0.075599, size = 12, normalized size = 0.67

$$\frac{3\left(-a+bx\right)^{\frac{2}{3}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-a)**(1/3),x)
```

```
[Out] 3*(-a + b*x)**(2/3)/(2*b)
```

GIAC/XCAS [A] time = 0.206458, size = 19, normalized size = 1.06

$$\frac{3\,(bx-a)^{\frac{2}{3}}}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x - a)^(-1/3),x, algorithm="giac")
```

```
[Out] 3/2*(b*x - a)^(2/3)/b
```

3.403 $\int \frac{1}{x\sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=82

$$-\frac{3\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)}{2\sqrt[3]{a}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{bx-a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{a}}+\frac{\log(x)}{2\sqrt[3]{a}}$$

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) - 2*(-a + b*x)^(1/3))/(Sqrt[3]*a^(1/3)
)])/a^(1/3)) + Log[x]/(2*a^(1/3)) - (3*Log[a^(1/3) + (-a + b*x)^(
1/3)])/(2*a^(1/3))
```

Rubi [A] time = 0.073957, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{3\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)}{2\sqrt[3]{a}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{bx-a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{a}}+\frac{\log(x)}{2\sqrt[3]{a}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a + b*x)^(1/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) - 2*(-a + b*x)^(1/3))/(Sqrt[3]*a^(1/3)
)])/a^(1/3)) + Log[x]/(2*a^(1/3)) - (3*Log[a^(1/3) + (-a + b*x)^(
1/3)])/(2*a^(1/3))
```

Rubi in Sympy [A] time = 4.85057, size = 73, normalized size = 0.89

$$\frac{\log(x)}{2\sqrt[3]{a}}-\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{-a+bx}\right)}{2\sqrt[3]{a}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{-a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{\sqrt[3]{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x-a)**(1/3),x)
```

```
[Out] log(x)/(2*a**(1/3)) - 3*log(a**(1/3) + (-a + b*x)**(1/3))/(2*a**(
1/3)) - sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 - 2*(-a + b*x)**(1/3)/3)
/a**(1/3))/a**(1/3)
```

Mathematica [A] time = 0.0747954, size = 100, normalized size = 1.22

$$\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{bx-a}+(bx-a)^{2/3}\right)-2\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)-2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{bx-a}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2\sqrt[3]{a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a + b*x)^(1/3)),x]
```

```
[Out] (-2*Sqrt[3]*ArcTan[(1 - (2*(-a + b*x)^(1/3))/a^(1/3))/Sqrt[3]] -
2*Log[a^(1/3) + (-a + b*x)^(1/3)] + Log[a^(2/3) - a^(1/3)*(-a + b
*x)^(1/3) + (-a + b*x)^(2/3)])/(2*a^(1/3))
```

Maple [A] time = 0.01, size = 83, normalized size = 1.

$$-1\ln\left(\sqrt[3]{a}+\sqrt[3]{bx-a}\right)\frac{1}{\sqrt[3]{a}}+\frac{1}{2}\ln\left((bx-a)^{\frac{2}{3}}-\sqrt[3]{bx-a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{a}}+\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx-a}}{\sqrt[3]{a}}-1\right)\right)\frac{1}{\sqrt[3]{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x-a)^(1/3),x)
```

```
[Out] -ln(a^(1/3)+(b*x-a)^(1/3))/a^(1/3)+1/2/a^(1/3)*ln((b*x-a)^(2/3)-(
b*x-a)^(1/3)*a^(1/3)+a^(2/3))+3^(1/2)/a^(1/3)*arctan(1/3*3^(1/2)*
(2/a^(1/3)*(b*x-a)^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219363, size = 131, normalized size = 1.6

$$-\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(2\,(bx-a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)}{3\,a}\right)+\log\left((bx-a)^{\frac{2}{3}}\,(-a)^{\frac{1}{3}}+(bx-a)^{\frac{1}{3}}\,(-a)^{\frac{2}{3}}-a\right)-2\,\log\left((bx-a)^{\frac{1}{3}}\,(-a)^{\frac{2}{3}}+a\right)}{2\,(-a)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(2*(b*x - a)^(1/3)*(-a)^(2/3)
- a)/a) + log((b*x - a)^(2/3)*(-a)^(1/3) + (b*x - a)^(1/3)*(-a)^(
2/3) - a) - 2*log((b*x - a)^(1/3)*(-a)^(2/3) + a))/(-a)^(1/3)
```

Sympy [A] time = 5.30774, size = 160, normalized size = 1.95

$$-\frac{2e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{-\frac{a}{b}+x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}\,\Gamma\left(\frac{5}{3}\right)}-\frac{2\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{-\frac{a}{b}+x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}\,\Gamma\left(\frac{5}{3}\right)}-\frac{2e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{-\frac{a}{b}+x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}\,\Gamma\left(\frac{5}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x-a)**(1/3),x)
```

```
[Out] -2*exp(10*I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**(1/3)*exp_polar(I*
pi/3)/a**(1/3))*gamma(2/3)/(3*a**(1/3)*gamma(5/3)) - 2*log(1 - b*
*(1/3)*(-a/b + x)**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(3*
a**(1/3)*gamma(5/3)) - 2*exp(2*I*pi/3)*log(1 - b**(1/3)*(-a/b + x
)**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(3*a**(1/3)*gam
ma(5/3))
```

GIAC/XCAS [A] time = 0.538719, size = 151, normalized size = 1.84

$$-\frac{\sqrt{3}\,(-a)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(bx-a)^{\frac{1}{3}}+(-a)^{\frac{1}{3}}\right)}{3\,(-a)^{\frac{1}{3}}}\right)}{a}+\frac{(-a)^{\frac{2}{3}}\ln\left((bx-a)^{\frac{2}{3}}+(bx-a)^{\frac{1}{3}}\,(-a)^{\frac{1}{3}}+(-a)^{\frac{2}{3}}\right)}{2\,a}-\frac{(-a)^{\frac{2}{3}}\ln\left(\left|(bx-a)^{\frac{1}{3}}-(-a)^{\frac{1}{3}}\right|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x),x, algorithm="giac")
```

```
[Out] -sqrt(3)*(-a)^(2/3)*arctan(1/3*sqrt(3)*(2*(b*x - a)^(1/3) + (-a)^
(1/3))/(-a)^(1/3))/a + 1/2*(-a)^(2/3)*ln((b*x - a)^(2/3) + (b*x -
 a)^(1/3)*(-a)^(1/3) + (-a)^(2/3))/a - (-a)^(2/3)*ln(abs((b*x - a
)^(1/3) - (-a)^(1/3)))/a
```

3.404 $\int \frac{1}{x^2 \sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=103

$$\frac{b\log(x)}{6a^{4/3}}-\frac{b\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)}{2a^{4/3}}-\frac{b\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{bx-a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{4/3}}+\frac{(bx-a)^{2/3}}{ax}$$

```
[Out] (-a + b*x)^(2/3)/(a*x) - (b*ArcTan[(a^(1/3) - 2*(-a + b*x)^(1/3))
/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(4/3)) + (b*Log[x])/(6*a^(4/3)) -
 (b*Log[a^(1/3) + (-a + b*x)^(1/3)])/(2*a^(4/3))
```

Rubi [A] time = 0.0872958, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$\frac{b\log(x)}{6a^{4/3}}-\frac{b\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)}{2a^{4/3}}-\frac{b\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{bx-a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{4/3}}+\frac{(bx-a)^{2/3}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(-a + b*x)^(1/3)),x]
```

```
[Out] (-a + b*x)^(2/3)/(a*x) - (b*ArcTan[(a^(1/3) - 2*(-a + b*x)^(1/3))
/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(4/3)) + (b*Log[x])/(6*a^(4/3)) -
 (b*Log[a^(1/3) + (-a + b*x)^(1/3)])/(2*a^(4/3))
```

Rubi in Sympy [A] time = 7.66705, size = 90, normalized size = 0.87

$$\frac{(-a+bx)^{\frac{2}{3}}}{ax}+\frac{b\log(x)}{6a^{\frac{4}{3}}}-\frac{b\log\left(\sqrt[3]{a}+\sqrt[3]{-a+bx}\right)}{2a^{\frac{4}{3}}}-\frac{\sqrt{3}b\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{-a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x-a)**(1/3),x)
```

```
[Out] (-a + b*x)**(2/3)/(a*x) + b*log(x)/(6*a**(4/3)) - b*log(a**(1/3)
+ (-a + b*x)**(1/3))/(2*a**(4/3)) - sqrt(3)*b*atan(sqrt(3)*(a**(1
/3)/3 - 2*(-a + b*x)**(1/3)/3)/a**(1/3))/(3*a**(4/3))
```

Mathematica [C] time = 0.0431539, size = 62, normalized size = 0.6

$$\frac{-bx\sqrt[3]{1-\frac{a}{bx}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{a}{bx}\right)-a+bx}{ax\sqrt[3]{bx-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(-a + b*x)^(1/3)),x]
```

```
[Out] (-a + b*x - b*(1 - a/(b*x))^(1/3)*x*Hypergeometric2F1[1/3, 1/3, 4
/3, a/(b*x)])/(a*x*(-a + b*x)^(1/3))
```

Maple [A] time = 0.01, size = 103, normalized size = 1.

$$\frac{1}{ax}(bx-a)^{\frac{2}{3}}-\frac{b}{3}\ln\left(\sqrt[3]{a}+\sqrt[3]{bx-a}\right)a^{-\frac{4}{3}}+\frac{b}{6}\ln\left((bx-a)^{\frac{2}{3}}-\sqrt[3]{bx-a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{4}{3}}+\frac{b\sqrt{3}}{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx-a}}{\sqrt[3]{a}}-1\right)\right)a^{-\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x-a)^(1/3),x)
```

```
[Out] (b*x-a)^(2/3)/a/x-1/3*b*ln(a^(1/3)+(b*x-a)^(1/3))/a^(4/3)+1/6*b/a
^(4/3)*ln((b*x-a)^(2/3)-(b*x-a)^(1/3)*a^(1/3)+a^(2/3))+1/3*b/a^(4
/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x-a)^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221938, size = 186, normalized size = 1.81

$$-\frac{\sqrt{3}\left(\sqrt{3}bx\log\left((bx-a)^{\frac{2}{3}}(-a)^{\frac{1}{3}}+(bx-a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-2\sqrt{3}bx\log\left((bx-a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}+a\right)+6\,bx\arctan\left(\frac{2\sqrt{3}(bx-a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}}{3\,a}\right.\right.}{18\,(-a)^{\frac{1}{3}}\,ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x^2),x, algorithm="fricas")
```

```
[Out] -1/18*sqrt(3)*(sqrt(3)*b*x*log((b*x - a)^(2/3)*(-a)^(1/3) + (b*x
- a)^(1/3)*(-a)^(2/3) - a) - 2*sqrt(3)*b*x*log((b*x - a)^(1/3)*(-
a)^(2/3) + a) + 6*b*x*arctan(1/3*(2*sqrt(3)*(b*x - a)^(1/3)*(-a)^
(2/3) - sqrt(3)*a)/a) - 6*sqrt(3)*(b*x - a)^(2/3)*(-a)^(1/3))/((-
a)^(1/3)*a*x)
```

Sympy [A] time = 6.57654, size = 646, normalized size = 6.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x-a)**(1/3),x)
```

```
[Out] -2*a**(5/3)*b**3*(-a/b + x)**2*exp(10*I*pi/3)*log(1 - b**(1/3)*(-
a/b + x)**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(9*a**3*b*
*2*(-a/b + x)**2*gamma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3
)) - 2*a**(5/3)*b**3*(-a/b + x)**2*log(1 - b**(1/3)*(-a/b + x)**(
1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*(-a/b + x)
**2*gamma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3)) - 2*a**(5/
3)*b**3*(-a/b + x)**2*exp(2*I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**
(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*(-a/b
 + x)**2*gamma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3)) - 2*a
**(2/3)*b**4*(-a/b + x)**3*exp(10*I*pi/3)*log(1 - b**(1/3)*(-a/b
+ x)**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*(
-a/b + x)**2*gamma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3)) -
 2*a**(2/3)*b**4*(-a/b + x)**3*log(1 - b**(1/3)*(-a/b + x)**(1/3)
*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*(-a/b + x)**2*
gamma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3)) - 2*a**(2/3)*b
**4*(-a/b + x)**3*exp(2*I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**(1/3
)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*(-a/b + x
)**2*gamma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3)) + 6*a*b**
(11/3)*(-a/b + x)**(8/3)*gamma(2/3)/(9*a**3*b**2*(-a/b + x)**2*ga
mma(5/3) + 9*a**2*b**3*(-a/b + x)**3*gamma(5/3))
```

GIAC/XCAS [A] time = 0.599703, size = 194, normalized size = 1.88

$$-\frac{\frac{2\sqrt{3}(-a)^{\frac{2}{3}}b^{2}\arctan\left(\frac{\sqrt{3}\left(2(bx-a)^{\frac{1}{3}}+(-a)^{\frac{1}{3}}\right)}{3(-a)^{\frac{1}{3}}}\right)}{a^{2}}-\frac{(-a)^{\frac{2}{3}}b^{2}\ln\left((bx-a)^{\frac{2}{3}}+(bx-a)^{\frac{1}{3}}(-a)^{\frac{1}{3}}+(-a)^{\frac{2}{3}}\right)}{a^{2}}+\frac{2(-a)^{\frac{2}{3}}b^{2}\ln\left(\left|(bx-a)^{\frac{1}{3}}-(-a)^{\frac{1}{3}}\right|\right)}{a^{2}}-\frac{6(bx-a)^{\frac{2}{3}}b}{ax}}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x^2),x, algorithm="giac")
```

```
[Out] -1/6*(2*sqrt(3)*(-a)^(2/3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x - a)^(1
/3) + (-a)^(1/3))/(-a)^(1/3))/a^2 - (-a)^(2/3)*b^2*ln((b*x - a)^(
2/3) + (b*x - a)^(1/3)*(-a)^(1/3) + (-a)^(2/3))/a^2 + 2*(-a)^(2/3
)*b^2*ln(abs((b*x - a)^(1/3) - (-a)^(1/3)))/a^2 - 6*(b*x - a)^(2/
3)*b/(a*x))/b
```

3.405 $\int \frac{1}{x^3 \sqrt[3]{-a+bx}}\,dx$

Optimal. Leaf size=136

$$\frac{b^2\log(x)}{9a^{7/3}}-\frac{b^2\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)}{3a^{7/3}}-\frac{2b^2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{bx-a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{7/3}}+\frac{2b(bx-a)^{2/3}}{3a^2x}+\frac{(bx-a)^{2/3}}{2ax^2}$$

```
[Out] (-a + b*x)^(2/3)/(2*a*x^2) + (2*b*(-a + b*x)^(2/3))/(3*a^2*x) - (
2*b^2*ArcTan[(a^(1/3) - 2*(-a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(
3*Sqrt[3]*a^(7/3)) + (b^2*Log[x])/(9*a^(7/3)) - (b^2*Log[a^(1/3)
+ (-a + b*x)^(1/3)])/(3*a^(7/3))
```

Rubi [A] time = 0.118111, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.333$

$$\frac{b^2\log(x)}{9a^{7/3}}-\frac{b^2\log\left(\sqrt[3]{bx-a}+\sqrt[3]{a}\right)}{3a^{7/3}}-\frac{2b^2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{bx-a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{7/3}}+\frac{2b(bx-a)^{2/3}}{3a^2x}+\frac{(bx-a)^{2/3}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(-a + b*x)^(1/3)),x]
```

```
[Out] (-a + b*x)^(2/3)/(2*a*x^2) + (2*b*(-a + b*x)^(2/3))/(3*a^2*x) - (
2*b^2*ArcTan[(a^(1/3) - 2*(-a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(
3*Sqrt[3]*a^(7/3)) + (b^2*Log[x])/(9*a^(7/3)) - (b^2*Log[a^(1/3)
+ (-a + b*x)^(1/3)])/(3*a^(7/3))
```

Rubi in Sympy [A] time = 11.6461, size = 119, normalized size = 0.88

$$\frac{(-a+bx)^{\frac{2}{3}}}{2ax^2}+\frac{2b(-a+bx)^{\frac{2}{3}}}{3a^2x}+\frac{b^2\log(x)}{9a^{\frac{7}{3}}}-\frac{b^2\log\left(\sqrt[3]{a}+\sqrt[3]{-a+bx}\right)}{3a^{\frac{7}{3}}}-\frac{2\sqrt{3}b^2\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{-a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{7}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x-a)**(1/3),x)
```

```
[Out] (-a + b*x)**(2/3)/(2*a*x**2) + 2*b*(-a + b*x)**(2/3)/(3*a**2*x) +
 b**2*log(x)/(9*a**(7/3)) - b**2*log(a**(1/3) + (-a + b*x)**(1/3)
```

```
)/(3*a**(7/3)) - 2*sqrt(3)*b**2*atan(sqrt(3)*(a**(1/3)/3 - 2*(-a
+ b*x)**(1/3)/3)/a**(1/3))/(9*a**(7/3))
```

Mathematica [C] time = 0.0436306, size = 81, normalized size = 0.6

$$\frac{-3a^2-4b^2x^2\sqrt[3]{1-\frac{a}{bx}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{a}{bx}\right)-abx+4b^2x^2}{6a^2x^2\sqrt[3]{bx-a}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(-a + b*x)^(1/3)),x]
```

```
[Out] (-3*a^2 - a*b*x + 4*b^2*x^2 - 4*b^2*(1 - a/(b*x))^(1/3)*x^2*Hyper
geometric2F1[1/3, 1/3, 4/3, a/(b*x)])/(6*a^2*x^2*(-a + b*x)^(1/3)
)
```

Maple [A] time = 0.011, size = 128, normalized size = 0.9

$$\frac{1}{2\,ax^2}(bx-a)^{\frac{2}{3}}+\frac{2\,b}{3\,a^2x}(bx-a)^{\frac{2}{3}}-\frac{2\,b^2}{9}\ln\left(\sqrt[3]{a}+\sqrt[3]{bx-a}\right)a^{-\frac{7}{3}}+\frac{b^2}{9}\ln\left((bx-a)^{\frac{2}{3}}-\sqrt[3]{bx-a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{7}{3}}+\frac{2\,b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx-a}}{\sqrt[3]{a}}-1\right)\right)a^{-\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x-a)^(1/3),x)
```

```
[Out] 1/2*(b*x-a)^(2/3)/a/x^2+2/3*b*(b*x-a)^(2/3)/a^2/x-2/9*b^2*ln(a^(1
/3)+(b*x-a)^(1/3))/a^(7/3)+1/9*b^2/a^(7/3)*ln((b*x-a)^(2/3)-(b*x-
a)^(1/3)*a^(1/3)+a^(2/3))+2/9*b^2/a^(7/3)*3^(1/2)*arctan(1/3*3^(1
/2)*(2/a^(1/3)*(b*x-a)^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220906, size = 215, normalized size = 1.58

$$-\frac{\sqrt{3}\left(2\sqrt{3}b^2x^2\log\left((bx-a)^{\frac{2}{3}}(-a)^{\frac{1}{3}}+(bx-a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-4\sqrt{3}b^2x^2\log\left((bx-a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}+a\right)+12\,b^2x^2\arctan\left(\frac{2\sqrt{3}(bx\cdots}{}\right.\right.}{54\,(-a)^{\frac{1}{3}}a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x^3),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(2*sqrt(3)*b^2*x^2*log((b*x - a)^(2/3)*(-a)^(1/3) +
 (b*x - a)^(1/3)*(-a)^(2/3) - a) - 4*sqrt(3)*b^2*x^2*log((b*x - a
)^(1/3)*(-a)^(2/3) + a) + 12*b^2*x^2*arctan(1/3*(2*sqrt(3)*(b*x -
 a)^(1/3)*(-a)^(2/3) - sqrt(3)*a)/a) - 3*sqrt(3)*(4*b*x + 3*a)*(b
*x - a)^(2/3)*(-a)^(1/3))/((-a)^(1/3)*a^2*x^2)
```

Sympy [A] time = 8.00714, size = 1974, normalized size = 14.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x-a)**(1/3),x)
```

```
[Out] -4*a**(14/3)*b**4*(-a/b + x)**2*exp(10*I*pi/3)*log(1 - b**(1/3)*(
-a/b + x)**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*
b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma(
5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b
 + x)**5*gamma(5/3)) - 4*a**(14/3)*b**4*(-a/b + x)**2*log(1 - b**
(1/3)*(-a/b + x)**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(27*
a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*g
amma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*
(-a/b + x)**5*gamma(5/3)) - 4*a**(14/3)*b**4*(-a/b + x)**2*exp(2*
I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**(1/3)*exp_polar(5*I*pi/3)/a*
*(1/3))*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a*
*6*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gam
ma(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/3)) - 12*a**(11/3)*b
**5*(-a/b + x)**3*exp(10*I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**(1/
3)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*(-a/b + x
)**2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5
*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma
(5/3)) - 12*a**(11/3)*b**5*(-a/b + x)**3*log(1 - b**(1/3)*(-a/b +
 x)**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*(-a
/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma(5/3) + 8
```

```
1*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b + x)**5
*gamma(5/3)) - 12*a**(11/3)*b**5*(-a/b + x)**3*exp(2*I*pi/3)*log(
1 - b**(1/3)*(-a/b + x)**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamm
a(2/3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/
b + x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27
*a**4*b**5*(-a/b + x)**5*gamma(5/3)) - 12*a**(8/3)*b**6*(-a/b + x
)**4*exp(10*I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**(1/3)*exp_polar(
I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/
3) + 81*a**6*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b +
 x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/3)) - 12*a
**(8/3)*b**6*(-a/b + x)**4*log(1 - b**(1/3)*(-a/b + x)**(1/3)*exp
_polar(I*pi)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**2*gam
ma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b**4*(-
a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/3)) -
 12*a**(8/3)*b**6*(-a/b + x)**4*exp(2*I*pi/3)*log(1 - b**(1/3)*(-
a/b + x)**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7
*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma
(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/
b + x)**5*gamma(5/3)) - 4*a**(5/3)*b**7*(-a/b + x)**5*exp(10*I*pi
/3)*log(1 - b**(1/3)*(-a/b + x)**(1/3)*exp_polar(I*pi/3)/a**(1/3)
)*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**
3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3
) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/3)) - 4*a**(5/3)*b**7*(-a/
b + x)**5*log(1 - b**(1/3)*(-a/b + x)**(1/3)*exp_polar(I*pi)/a**(
1/3))*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6
*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma
(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/3)) - 4*a**(5/3)*b**7*
(-a/b + x)**5*exp(2*I*pi/3)*log(1 - b**(1/3)*(-a/b + x)**(1/3)*ex
p_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**
2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b*
*4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/
3)) + 21*a**4*b**(14/3)*(-a/b + x)**(8/3)*gamma(2/3)/(27*a**7*b**
2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/b + x)**3*gamma(5/3
) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**4*b**5*(-a/b +
x)**5*gamma(5/3)) + 33*a**3*b**(17/3)*(-a/b + x)**(11/3)*gamma(2/
3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**6*b**3*(-a/b +
x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamma(5/3) + 27*a**
4*b**5*(-a/b + x)**5*gamma(5/3)) + 12*a**2*b**(20/3)*(-a/b + x)**
(14/3)*gamma(2/3)/(27*a**7*b**2*(-a/b + x)**2*gamma(5/3) + 81*a**
6*b**3*(-a/b + x)**3*gamma(5/3) + 81*a**5*b**4*(-a/b + x)**4*gamm
a(5/3) + 27*a**4*b**5*(-a/b + x)**5*gamma(5/3))
```

GIAC/XCAS [A] time = 0.542139, size = 225, normalized size = 1.65

$$-\frac{\frac{4\sqrt{3}(-a)^{\frac{2}{3}}b^{3}\arctan\left(\frac{\sqrt{3}\left(2(bx-a)^{\frac{1}{3}}+(-a)^{\frac{1}{3}}\right)}{3(-a)^{\frac{1}{3}}}\right)}{a^{3}}-\frac{2(-a)^{\frac{2}{3}}b^{3}\ln\left((bx-a)^{\frac{2}{3}}+(bx-a)^{\frac{1}{3}}(-a)^{\frac{1}{3}}+(-a)^{\frac{2}{3}}\right)}{a^{3}}+\frac{4(-a)^{\frac{2}{3}}b^{3}\ln\left(\left|(bx-a)^{\frac{1}{3}}-(-a)^{\frac{1}{3}}\right|\right)}{a^{3}}-\frac{3\left(4(bx-a)^{\frac{5}{3}}b^{3}+7(bx\cdots\right.}{a^{2}b^{2}x^{2}}}{18\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^(1/3)*x^3),x, algorithm="giac")
```

```
[Out] -1/18*(4*sqrt(3)*(-a)^(2/3)*b^3*arctan(1/3*sqrt(3)*(2*(b*x - a)^(
1/3) + (-a)^(1/3))/(-a)^(1/3))/a^3 - 2*(-a)^(2/3)*b^3*ln((b*x - a
)^(2/3) + (b*x - a)^(1/3)*(-a)^(1/3) + (-a)^(2/3))/a^3 + 4*(-a)^(
2/3)*b^3*ln(abs((b*x - a)^(1/3) - (-a)^(1/3)))/a^3 - 3*(4*(b*x -
a)^(5/3)*b^3 + 7*(b*x - a)^(2/3)*a*b^3)/(a^2*b^2*x^2))/b
```

3.406 $\int \frac{x^3}{(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=70

$$-\frac{3a^3\sqrt[3]{a+bx}}{b^4}+\frac{9a^2(a+bx)^{4/3}}{4b^4}+\frac{3(a+bx)^{10/3}}{10b^4}-\frac{9a(a+bx)^{7/3}}{7b^4}$$

```
[Out] (-3*a^3*(a + b*x)^(1/3))/b^4 + (9*a^2*(a + b*x)^(4/3))/(4*b^4) -
(9*a*(a + b*x)^(7/3))/(7*b^4) + (3*(a + b*x)^(10/3))/(10*b^4)
```

Rubi [A] time = 0.0524753, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^3\sqrt[3]{a+bx}}{b^4}+\frac{9a^2(a+bx)^{4/3}}{4b^4}+\frac{3(a+bx)^{10/3}}{10b^4}-\frac{9a(a+bx)^{7/3}}{7b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^(2/3),x]
```

```
[Out] (-3*a^3*(a + b*x)^(1/3))/b^4 + (9*a^2*(a + b*x)^(4/3))/(4*b^4) -
(9*a*(a + b*x)^(7/3))/(7*b^4) + (3*(a + b*x)^(10/3))/(10*b^4)
```

Rubi in Sympy [A] time = 11.0077, size = 66, normalized size = 0.94

$$-\frac{3a^3\sqrt[3]{a+bx}}{b^4}+\frac{9a^2\left(a+bx\right)^{\frac{4}{3}}}{4b^4}-\frac{9a\left(a+bx\right)^{\frac{7}{3}}}{7b^4}+\frac{3\left(a+bx\right)^{\frac{10}{3}}}{10b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**(2/3),x)
```

```
[Out] -3*a**3*(a + b*x)**(1/3)/b**4 + 9*a**2*(a + b*x)**(4/3)/(4*b**4)
- 9*a*(a + b*x)**(7/3)/(7*b**4) + 3*(a + b*x)**(10/3)/(10*b**4)
```

Mathematica [A] time = 0.0229735, size = 46, normalized size = 0.66

$$\frac{3\sqrt[3]{a+bx}\left(-81a^3+27a^2bx-18ab^2x^2+14b^3x^3\right)}{140b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^(2/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(-81*a^3 + 27*a^2*b*x - 18*a*b^2*x^2 + 14*b^3*
x^3))/(140*b^4)
```

Maple [A] time = 0.007, size = 43, normalized size = 0.6

$$-\frac{-42\,b^3x^3+54\,ab^2x^2-81\,a^2bx+243\,a^3}{140\,b^4}\sqrt[3]{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^(2/3),x)
```

```
[Out] -3/140*(b*x+a)^(1/3)*(-14*b^3*x^3+18*a*b^2*x^2-27*a^2*b*x+81*a^3)
/b^4
```

Maxima [A] time = 1.34226, size = 76, normalized size = 1.09

$$\frac{3\,(bx+a)^{\frac{10}{3}}}{10\,b^4}-\frac{9\,(bx+a)^{\frac{7}{3}}a}{7\,b^4}+\frac{9\,(bx+a)^{\frac{4}{3}}a^2}{4\,b^4}-\frac{3\,(bx+a)^{\frac{1}{3}}a^3}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(2/3),x, algorithm="maxima")
```

```
[Out] 3/10*(b*x + a)^(10/3)/b^4 - 9/7*(b*x + a)^(7/3)*a/b^4 + 9/4*(b*x
+ a)^(4/3)*a^2/b^4 - 3*(b*x + a)^(1/3)*a^3/b^4
```

Fricas [A] time = 0.206901, size = 57, normalized size = 0.81

$$\frac{3\,\left(14\,b^3x^3-18\,ab^2x^2+27\,a^2bx-81\,a^3\right)(bx+a)^{\frac{1}{3}}}{140\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(2/3),x, algorithm="fricas")
```

```
[Out] 3/140*(14*b^3*x^3 - 18*a*b^2*x^2 + 27*a^2*b*x - 81*a^3)*(b*x + a)
^(1/3)/b^4
```

Sympy [A] time = 8.24214, size = 1640, normalized size = 23.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**(2/3),x)
```

```
[Out] -243*a**(70/3)*(1 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a**19*b**
5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b*
*8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) + 243*a**(7
0/3)/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18*b**6*x**2 +
2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a**15*b**9*x**5
 + 140*a**14*b**10*x**6) - 1377*a**(67/3)*b*x*(1 + b*x/a)**(1/3)/
(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18*b**6*x**2 + 2800*
a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a**15*b**9*x**5 + 14
0*a**14*b**10*x**6) + 1458*a**(67/3)*b*x/(140*a**20*b**4 + 840*a*
*19*b**5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a
**16*b**8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) - 32
13*a**(64/3)*b**2*x**2*(1 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a
**19*b**5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*
a**16*b**8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) + 3
645*a**(64/3)*b**2*x**2/(140*a**20*b**4 + 840*a**19*b**5*x + 2100
*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 +
840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) - 3927*a**(61/3)*b**3
*x**3*(1 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a**19*b**5*x + 210
0*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 +
 840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) + 4860*a**(61/3)*b**
3*x**3/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18*b**6*x**2
+ 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a**15*b**9*x*
*5 + 140*a**14*b**10*x**6) - 2583*a**(58/3)*b**4*x**4*(1 + b*x/a)
**(1/3)/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18*b**6*x**2
 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a**15*b**9*x
**5 + 140*a**14*b**10*x**6) + 3645*a**(58/3)*b**4*x**4/(140*a**20
*b**4 + 840*a**19*b**5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7
*x**3 + 2100*a**16*b**8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b*
*10*x**6) - 693*a**(55/3)*b**5*x**5*(1 + b*x/a)**(1/3)/(140*a**20
*b**4 + 840*a**19*b**5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7
*x**3 + 2100*a**16*b**8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b*
*10*x**6) + 1458*a**(55/3)*b**5*x**5/(140*a**20*b**4 + 840*a**19*
b**5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16
*b**8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) + 273*a*
*(52/3)*b**6*x**6*(1 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a**19*
b**5*x + 2100*a**18*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16
*b**8*x**4 + 840*a**15*b**9*x**5 + 140*a**14*b**10*x**6) + 243*a*
*(52/3)*b**6*x**6/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18
*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a*
*15*b**9*x**5 + 140*a**14*b**10*x**6) + 387*a**(49/3)*b**7*x**7*(
1 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18
*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a*
*15*b**9*x**5 + 140*a**14*b**10*x**6) + 198*a**(46/3)*b**8*x**8*(
1 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18
*b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a*
```

```
*15*b**9*x**5 + 140*a**14*b**10*x**6) + 42*a**(43/3)*b**9*x**9*(1
 + b*x/a)**(1/3)/(140*a**20*b**4 + 840*a**19*b**5*x + 2100*a**18*
b**6*x**2 + 2800*a**17*b**7*x**3 + 2100*a**16*b**8*x**4 + 840*a**
15*b**9*x**5 + 140*a**14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.204861, size = 82, normalized size = 1.17

$$\frac{3\left(14\,(bx+a)^{\frac{10}{3}}b^{27}-60\,(bx+a)^{\frac{7}{3}}ab^{27}+105\,(bx+a)^{\frac{4}{3}}a^{2}b^{27}-140\,(bx+a)^{\frac{1}{3}}a^{3}b^{27}\right)}{140\,b^{31}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(2/3),x, algorithm="giac")
```

```
[Out] 3/140*(14*(b*x + a)^(10/3)*b^27 - 60*(b*x + a)^(7/3)*a*b^27 + 105
*(b*x + a)^(4/3)*a^2*b^27 - 140*(b*x + a)^(1/3)*a^3*b^27)/b^31
```

3.407 $\int \frac{x^2}{(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=51

$$\frac{3a^2\sqrt[3]{a+bx}}{b^3}+\frac{3(a+bx)^{7/3}}{7b^3}-\frac{3a(a+bx)^{4/3}}{2b^3}$$

```
[Out] (3*a^2*(a + b*x)^(1/3))/b^3 - (3*a*(a + b*x)^(4/3))/(2*b^3) + (3*
(a + b*x)^(7/3))/(7*b^3)
```

Rubi [A] time = 0.0382485, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3a^2\sqrt[3]{a+bx}}{b^3}+\frac{3(a+bx)^{7/3}}{7b^3}-\frac{3a(a+bx)^{4/3}}{2b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^(2/3),x]
```

```
[Out] (3*a^2*(a + b*x)^(1/3))/b^3 - (3*a*(a + b*x)^(4/3))/(2*b^3) + (3*
(a + b*x)^(7/3))/(7*b^3)
```

Rubi in Sympy [A] time = 7.84987, size = 48, normalized size = 0.94

$$\frac{3a^2\sqrt[3]{a+bx}}{b^3}-\frac{3a\left(a+bx\right)^{\frac{4}{3}}}{2b^3}+\frac{3\left(a+bx\right)^{\frac{7}{3}}}{7b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**(2/3),x)
```

```
[Out] 3*a**2*(a + b*x)**(1/3)/b**3 - 3*a*(a + b*x)**(4/3)/(2*b**3) + 3*
(a + b*x)**(7/3)/(7*b**3)
```

Mathematica [A] time = 0.0182218, size = 35, normalized size = 0.69

$$\frac{3\sqrt[3]{a+bx}\left(9a^2-3abx+2b^2x^2\right)}{14b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^(2/3),x]

[Out] (3*(a + b*x)^(1/3)*(9*a^2 - 3*a*b*x + 2*b^2*x^2))/(14*b^3)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$\frac{6\,b^2x^2-9\,abx+27\,a^2}{14\,b^3}\sqrt[3]{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^(2/3),x)

[Out] 3/14*(b*x+a)^(1/3)*(2*b^2*x^2-3*a*b*x+9*a^2)/b^3
```

Maxima [A] time = 1.34147, size = 55, normalized size = 1.08

$$\frac{3\,(bx+a)^{\frac{7}{3}}}{7\,b^3}-\frac{3\,(bx+a)^{\frac{4}{3}}a}{2\,b^3}+\frac{3\,(bx+a)^{\frac{1}{3}}a^2}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(2/3),x, algorithm="maxima")

[Out] 3/7*(b*x + a)^(7/3)/b^3 - 3/2*(b*x + a)^(4/3)*a/b^3 + 3*(b*x + a)
^(1/3)*a^2/b^3
```

Fricas [A] time = 0.207488, size = 42, normalized size = 0.82

$$\frac{3\left(2\,b^2x^2-3\,abx+9\,a^2\right)(bx+a)^{\frac{1}{3}}}{14\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(2/3),x, algorithm="fricas")

[Out] 3/14*(2*b^2*x^2 - 3*a*b*x + 9*a^2)*(b*x + a)^(1/3)/b^3
```

Sympy [A] time = 5.42302, size = 600, normalized size = 11.76

$$\frac{27a^{\frac{31}{3}}\sqrt[3]{1+\frac{bx}{a}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}-\frac{27a^{\frac{31}{3}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}+\frac{72a^{\frac{28}{3}}bx\sqrt[3]{1+\frac{bx}{a}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}-\frac{81a^{\frac{28}{3}}bx}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}+\frac{60a^{\frac{25}{3}}b^2x^2\sqrt[3]{1+\frac{bx}{a}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}-\frac{81a^{\frac{25}{3}}b^2x^2}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}+\frac{18a^{\frac{22}{3}}b^3x^3\sqrt[3]{1+\frac{bx}{a}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}-\frac{27a^{\frac{22}{3}}b^3x^3}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}+\frac{9a^{\frac{19}{3}}b^4x^4\sqrt[3]{1+\frac{bx}{a}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}+\frac{6a^{\frac{16}{3}}b^5x^5\sqrt[3]{1+\frac{bx}{a}}}{14a^8b^3+42a^7b^4x+42a^6b^5x^2+14a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**(2/3),x)
```

```
[Out] 27*a**(31/3)*(1 + b*x/a)**(1/3)/(14*a**8*b**3 + 42*a**7*b**4*x +
42*a**6*b**5*x**2 + 14*a**5*b**6*x**3) - 27*a**(31/3)/(14*a**8*b*
*3 + 42*a**7*b**4*x + 42*a**6*b**5*x**2 + 14*a**5*b**6*x**3) + 72
*a**(28/3)*b*x*(1 + b*x/a)**(1/3)/(14*a**8*b**3 + 42*a**7*b**4*x
+ 42*a**6*b**5*x**2 + 14*a**5*b**6*x**3) - 81*a**(28/3)*b*x/(14*a
**8*b**3 + 42*a**7*b**4*x + 42*a**6*b**5*x**2 + 14*a**5*b**6*x**3
) + 60*a**(25/3)*b**2*x**2*(1 + b*x/a)**(1/3)/(14*a**8*b**3 + 42*
a**7*b**4*x + 42*a**6*b**5*x**2 + 14*a**5*b**6*x**3) - 81*a**(25/
3)*b**2*x**2/(14*a**8*b**3 + 42*a**7*b**4*x + 42*a**6*b**5*x**2 +
 14*a**5*b**6*x**3) + 18*a**(22/3)*b**3*x**3*(1 + b*x/a)**(1/3)/(
14*a**8*b**3 + 42*a**7*b**4*x + 42*a**6*b**5*x**2 + 14*a**5*b**6*
x**3) - 27*a**(22/3)*b**3*x**3/(14*a**8*b**3 + 42*a**7*b**4*x + 4
2*a**6*b**5*x**2 + 14*a**5*b**6*x**3) + 9*a**(19/3)*b**4*x**4*(1
+ b*x/a)**(1/3)/(14*a**8*b**3 + 42*a**7*b**4*x + 42*a**6*b**5*x**
2 + 14*a**5*b**6*x**3) + 6*a**(16/3)*b**5*x**5*(1 + b*x/a)**(1/3)
/(14*a**8*b**3 + 42*a**7*b**4*x + 42*a**6*b**5*x**2 + 14*a**5*b**
6*x**3)
```

GIAC/XCAS [A] time = 0.203474, size = 62, normalized size = 1.22

$$\frac{3\left(2\,(bx+a)^{\frac{7}{3}}b^{12}-7\,(bx+a)^{\frac{4}{3}}ab^{12}+14\,(bx+a)^{\frac{1}{3}}a^2b^{12}\right)}{14\,b^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(2/3),x, algorithm="giac")
```

```
[Out] 3/14*(2*(b*x + a)^(7/3)*b^12 - 7*(b*x + a)^(4/3)*a*b^12 + 14*(b*x
 + a)^(1/3)*a^2*b^12)/b^15
```

3.408 $\int \frac{x}{(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=32

$$\frac{3(a+bx)^{4/3}}{4b^2}-\frac{3a\sqrt[3]{a+bx}}{b^2}$$

```
[Out] (-3*a*(a + b*x)^(1/3))/b^2 + (3*(a + b*x)^(4/3))/(4*b^2)
```

Rubi [A] time = 0.0252886, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3(a+bx)^{4/3}}{4b^2}-\frac{3a\sqrt[3]{a+bx}}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[x/(a + b*x)^(2/3),x]
```

```
[Out] (-3*a*(a + b*x)^(1/3))/b^2 + (3*(a + b*x)^(4/3))/(4*b^2)
```

Rubi in Sympy [A] time = 4.93823, size = 29, normalized size = 0.91

$$-\frac{3a\sqrt[3]{a+bx}}{b^2}+\frac{3\left(a+bx\right)^{\frac{4}{3}}}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x/(b*x+a)**(2/3),x)
```

```
[Out] -3*a*(a + b*x)**(1/3)/b**2 + 3*(a + b*x)**(4/3)/(4*b**2)
```

Mathematica [A] time = 0.0133343, size = 23, normalized size = 0.72

$$\frac{3(bx-3a)\sqrt[3]{a+bx}}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x/(a + b*x)^(2/3),x]
```

```
[Out] (3*(-3*a + b*x)*(a + b*x)^(1/3))/(4*b^2)
```

Maple [A] time = 0.005, size = 21, normalized size = 0.7

$$-\frac{-3\,bx+9\,a}{4\,b^{2}}\sqrt[3]{bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^(2/3),x)
```

```
[Out] -3/4*(b*x+a)^(1/3)*(-b*x+3*a)/b^2
```

Maxima [A] time = 1.33157, size = 35, normalized size = 1.09

$$\frac{3\,(bx+a)^{\frac{4}{3}}}{4\,b^{2}}-\frac{3\,(bx+a)^{\frac{1}{3}}a}{b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(2/3),x, algorithm="maxima")
```

```
[Out] 3/4*(b*x + a)^(4/3)/b^2 - 3*(b*x + a)^(1/3)*a/b^2
```

Fricas [A] time = 0.209765, size = 26, normalized size = 0.81

$$\frac{3\,(bx+a)^{\frac{1}{3}}(bx-3\,a)}{4\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(2/3),x, algorithm="fricas")
```

```
[Out] 3/4*(b*x + a)^(1/3)*(b*x - 3*a)/b^2
```

Sympy [A] time = 3.6257, size = 162, normalized size = 5.06

$$-\frac{9a^{\frac{10}{3}}\sqrt[3]{1+\frac{bx}{a}}}{4a^{2}b^{2}+4ab^{3}x}+\frac{9a^{\frac{10}{3}}}{4a^{2}b^{2}+4ab^{3}x}-\frac{6a^{\frac{7}{3}}bx\sqrt[3]{1+\frac{bx}{a}}}{4a^{2}b^{2}+4ab^{3}x}+\frac{9a^{\frac{7}{3}}bx}{4a^{2}b^{2}+4ab^{3}x}+\frac{3a^{\frac{4}{3}}b^{2}x^{2}\sqrt[3]{1+\frac{bx}{a}}}{4a^{2}b^{2}+4ab^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**(2/3),x)
```

```
[Out] -9*a**(10/3)*(1 + b*x/a)**(1/3)/(4*a**2*b**2 + 4*a*b**3*x) + 9*a*
*(10/3)/(4*a**2*b**2 + 4*a*b**3*x) - 6*a**(7/3)*b*x*(1 + b*x/a)**
(1/3)/(4*a**2*b**2 + 4*a*b**3*x) + 9*a**(7/3)*b*x/(4*a**2*b**2 +
4*a*b**3*x) + 3*a**(4/3)*b**2*x**2*(1 + b*x/a)**(1/3)/(4*a**2*b**
2 + 4*a*b**3*x)
```

GIAC/XCAS [A] time = 0.202691, size = 31, normalized size = 0.97

$$\frac{3\left((bx+a)^{\frac{4}{3}} - 4\,(bx+a)^{\frac{1}{3}}a\right)}{4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(2/3),x, algorithm="giac")
```

```
[Out] 3/4*((b*x + a)^(4/3) - 4*(b*x + a)^(1/3)*a)/b^2
```

3.409 $\int \frac{1}{(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=14

$$\frac{3\sqrt[3]{a+bx}}{b}$$

```
[Out] (3*(a + b*x)^(1/3))/b
```

Rubi [A] time = 0.00675388, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{3\sqrt[3]{a+bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-2/3),x]

[Out] (3*(a + b*x)^(1/3))/b
```

Rubi in Sympy [A] time = 1.26887, size = 10, normalized size = 0.71

$$\frac{3\sqrt[3]{a+bx}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(2/3),x)

[Out] 3*(a + b*x)**(1/3)/b
```

Mathematica [A] time = 0.00382252, size = 14, normalized size = 1.

$$\frac{3\sqrt[3]{a+bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-2/3),x]
```

```
[Out] (3*(a + b*x)^(1/3))/b
```

Maple [A] time = 0.003, size = 13, normalized size = 0.9

$$3\,\frac{\sqrt[3]{bx+a}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(2/3),x)

[Out] 3*(b*x+a)^(1/3)/b
```

Maxima [A] time = 1.33316, size = 16, normalized size = 1.14

$$\frac{3\,(bx+a)^{\frac{1}{3}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-2/3),x, algorithm="maxima")

[Out] 3*(b*x + a)^(1/3)/b
```

Fricas [A] time = 0.211522, size = 16, normalized size = 1.14

$$\frac{3\,(bx+a)^{\frac{1}{3}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-2/3),x, algorithm="fricas")

[Out] 3*(b*x + a)^(1/3)/b
```

Sympy [A] time = 0.069901, size = 10, normalized size = 0.71

$$\frac{3\sqrt[3]{a+bx}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(2/3),x)

[Out] 3*(a + b*x)**(1/3)/b
```

GIAC/XCAS [A] time = 0.203657, size = 16, normalized size = 1.14

$$\frac{3\,(bx+a)^{\frac{1}{3}}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-2/3),x, algorithm="giac")

[Out] 3*(b*x + a)^(1/3)/b
```

3.410 $\int \frac{1}{x(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=80

$$\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{2/3}}-\frac{\log(x)}{2a^{2/3}}$$

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))
])/a^(2/3)) - Log[x]/(2*a^(2/3)) + (3*Log[a^(1/3) - (a + b*x)^(1/
3)])/(2*a^(2/3))
```

Rubi [A] time = 0.0639694, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{2/3}}-\frac{\log(x)}{2a^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))
])/a^(2/3)) - Log[x]/(2*a^(2/3)) + (3*Log[a^(1/3) - (a + b*x)^(1/
3)])/(2*a^(2/3))
```

Rubi in Sympy [A] time = 4.91084, size = 73, normalized size = 0.91

$$-\frac{\log(x)}{2a^{\frac{2}{3}}}+\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{\frac{2}{3}}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{a^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**(2/3),x)
```

```
[Out] -log(x)/(2*a**(2/3)) + 3*log(a**(1/3) - (a + b*x)**(1/3))/(2*a**(
2/3)) - sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3)/3)/
a**(1/3))/a**(2/3)
```

Mathematica [C] time = 0.0260645, size = 48, normalized size = 0.6

$$-\frac{3\left(\frac{a+bx}{bx}\right)^{2/3}\,{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)}{2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^(2/3)),x]
```

```
[Out] (-3*((a + b*x)/(b*x))^(2/3)*Hypergeometric2F1[2/3, 2/3, 5/3, -(a/
(b*x))])/(2*(a + b*x)^(2/3))
```

Maple [A] time = 0.007, size = 76, normalized size = 1.

$$1\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{2}{3}}-\frac{1}{2}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{2}{3}}-\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(2/3),x)
```

```
[Out] 1/a^(2/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/2/a^(2/3)*ln((b*x+a)^(2/3)+
(b*x+a)^(1/3)*a^(1/3)+a^(2/3))-1/a^(2/3)*3^(1/2)*arctan(1/3*3^(1/
2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217864, size = 122, normalized size = 1.52

$$-\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(a^{2}\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}\right)}{3a}\right)+\log\left(a^{2}+\left(a^{2}\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}a+\left(a^{2}\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}\right)-2\log\left(-a+\left(a^{2}\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}\right)}{2\left(a^{2}\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(a^2)^(1/3)*(b*x + a)^(
1/3))/a) + log(a^2 + (a^2)^(1/3)*(b*x + a)^(1/3)*a + (a^2)^(2/3)*
(b*x + a)^(2/3)) - 2*log(-a + (a^2)^(1/3)*(b*x + a)^(1/3)))/(a^2)
^(1/3)
```

Sympy [A] time = 5.38623, size = 150, normalized size = 1.88

$$\frac{\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{\frac{2}{3}}\Gamma\left(\frac{4}{3}\right)}+\frac{e^{\frac{4i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{2i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{\frac{2}{3}}\Gamma\left(\frac{4}{3}\right)}+\frac{e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{4i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{\frac{2}{3}}\Gamma\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(2/3),x)
```

```
[Out] log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(1/3)/(3*a**(2/3
)*gamma(4/3)) + exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*e
xp_polar(2*I*pi/3)/a**(1/3))*gamma(1/3)/(3*a**(2/3)*gamma(4/3)) +
 exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi
/3)/a**(1/3))*gamma(1/3)/(3*a**(2/3)*gamma(4/3))
```

GIAC/XCAS [A] time = 0.524042, size = 105, normalized size = 1.31

$$-\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3a^{\frac{1}{3}}}\right)}{a^{\frac{2}{3}}}-\frac{\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{2a^{\frac{2}{3}}}+\frac{\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x),x, algorithm="giac")
```

```
[Out] -sqrt(3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))/a^(1/3)
)/a^(2/3) - 1/2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1/3) + a^
(2/3))/a^(2/3) + ln(abs((b*x + a)^(1/3) - a^(1/3)))/a^(2/3)
```

3.411 $\int \frac{1}{x^2(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=98

$$\frac{b\log(x)}{3a^{5/3}}-\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{a^{5/3}}+\frac{2b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{5/3}}-\frac{\sqrt[3]{a+bx}}{ax}$$

```
[Out] -((a + b*x)^(1/3)/(a*x)) + (2*b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/
3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(5/3)) + (b*Log[x])/(3*a^(5/3)
) - (b*Log[a^(1/3) - (a + b*x)^(1/3)])/a^(5/3)
```

Rubi [A] time = 0.0834813, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{b\log(x)}{3a^{5/3}}-\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{a^{5/3}}+\frac{2b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{5/3}}-\frac{\sqrt[3]{a+bx}}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^(2/3)),x]
```

```
[Out] -((a + b*x)^(1/3)/(a*x)) + (2*b*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/
3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(5/3)) + (b*Log[x])/(3*a^(5/3)
) - (b*Log[a^(1/3) - (a + b*x)^(1/3)])/a^(5/3)
```

Rubi in Sympy [A] time = 7.62188, size = 90, normalized size = 0.92

$$-\frac{\sqrt[3]{a+bx}}{ax}+\frac{b\log\left(x\right)}{3a^{\frac{5}{3}}}-\frac{b\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{a^{\frac{5}{3}}}+\frac{2\sqrt{3}b\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**(2/3),x)
```

```
[Out] -(a + b*x)**(1/3)/(a*x) + b*log(x)/(3*a**(5/3)) - b*log(a**(1/3)
- (a + b*x)**(1/3))/a**(5/3) + 2*sqrt(3)*b*atan(sqrt(3)*(a**(1/3)
/3 + 2*(a + b*x)**(1/3)/3)/a**(1/3))/(3*a**(5/3))
```

Mathematica [C] time = 0.0370604, size = 60, normalized size = 0.61

$$\frac{bx\left(\frac{a}{bx}+1\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)-a-bx}{ax(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^(2/3)),x]
```

```
[Out] (-a - b*x + b*(1 + a/(b*x))^(2/3)*x*Hypergeometric2F1[2/3, 2/3, 5
/3, -(a/(b*x))])/(a*x*(a + b*x)^(2/3))
```

Maple [A] time = 0.012, size = 95, normalized size = 1.

$$-\frac{1}{ax}\sqrt[3]{bx+a}-\frac{2\,b}{3}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{5}{3}}+\frac{b}{3}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{5}{3}}+\frac{2\,b\sqrt{3}}{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^(2/3),x)
```

```
[Out] -(b*x+a)^(1/3)/a/x-2/3*b/a^(5/3)*ln((b*x+a)^(1/3)-a^(1/3))+1/3*b/
a^(5/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))+2/3*b/a^(
5/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.246412, size = 190, normalized size = 1.94

$$-\frac{\sqrt{3}\left(\sqrt{3}bx\log\left(a^2-\left(-a^2\right)^{\frac{1}{3}}\left(bx+a\right)^{\frac{1}{3}}a+\left(-a^2\right)^{\frac{2}{3}}\left(bx+a\right)^{\frac{2}{3}}\right)-2\sqrt{3}bx\log\left(a+\left(-a^2\right)^{\frac{1}{3}}\left(bx+a\right)^{\frac{1}{3}}\right)-6\,bx\arctan\left(-\frac{\sqrt{3}a-2\sqrt{3}\cdots}{\cdots}\right.\cdots}{9\left(-a^2\right)^{\frac{1}{3}}ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x^2),x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(sqrt(3)*b*x*log(a^2 - (-a^2)^(1/3)*(b*x + a)^(1/3)*
a + (-a^2)^(2/3)*(b*x + a)^(2/3)) - 2*sqrt(3)*b*x*log(a + (-a^2)^
(1/3)*(b*x + a)^(1/3)) - 6*b*x*arctan(-1/3*(sqrt(3)*a - 2*sqrt(3)
*(-a^2)^(1/3)*(b*x + a)^(1/3))/a) + 3*sqrt(3)*(-a^2)^(1/3)*(b*x +
 a)^(1/3))/((-a^2)^(1/3)*a*x)
```

Sympy [A] time = 6.67593, size = 610, normalized size = 6.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**(2/3),x)
```

```
[Out] 2*a**(4/3)*b**2*(a/b + x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1
/3))*gamma(1/3)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*a**2*b**2*(a/
b + x)**2*gamma(4/3)) + 2*a**(4/3)*b**2*(a/b + x)*exp(4*I*pi/3)*l
og(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*ga
mma(1/3)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*a**2*b**2*(a/b + x)*
*2*gamma(4/3)) + 2*a**(4/3)*b**2*(a/b + x)*exp(2*I*pi/3)*log(1 -
b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(1/3
)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*a**2*b**2*(a/b + x)**2*gamm
a(4/3)) - 2*a**(1/3)*b**3*(a/b + x)**2*log(1 - b**(1/3)*(a/b + x)
**(1/3)/a**(1/3))*gamma(1/3)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*
a**2*b**2*(a/b + x)**2*gamma(4/3)) - 2*a**(1/3)*b**3*(a/b + x)**2
*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi
/3)/a**(1/3))*gamma(1/3)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*a**2
*b**2*(a/b + x)**2*gamma(4/3)) - 2*a**(1/3)*b**3*(a/b + x)**2*exp
(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/
a**(1/3))*gamma(1/3)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*a**2*b**
2*(a/b + x)**2*gamma(4/3)) - 3*a*b**(7/3)*(a/b + x)**(4/3)*gamma(
1/3)/(-9*a**3*b*(a/b + x)*gamma(4/3) + 9*a**2*b**2*(a/b + x)**2*g
amma(4/3))
```

GIAC/XCAS [A] time = 0.554939, size = 146, normalized size = 1.49

$$\frac{\frac{2\sqrt{3}b^2\arctan\left(\frac{\sqrt{3}\left(2(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3a^{\frac{1}{3}}}\right)}{a^{\frac{5}{3}}}+\frac{b^2\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{5}{3}}}-\frac{2b^2\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{5}{3}}}-\frac{3(bx+a)^{\frac{1}{3}}b}{ax}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x^2),x, algorithm="giac")
```

```
[Out] 1/3*(2*sqrt(3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3
))/a^(1/3))/a^(5/3) + b^2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^
(1/3) + a^(2/3))/a^(5/3) - 2*b^2*ln(abs((b*x + a)^(1/3) - a^(1/3)
))/a^(5/3) - 3*(b*x + a)^(1/3)*b/(a*x))/b
```

3.412 $\int \frac{1}{x^3(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=130

$$-\frac{5b^2\log(x)}{18a^{8/3}}+\frac{5b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{8/3}}-\frac{5b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{8/3}}+\frac{5b\sqrt[3]{a+bx}}{6a^2x}-\frac{\sqrt[3]{a+bx}}{2ax^2}$$

```
[Out] -(a + b*x)^(1/3)/(2*a*x^2) + (5*b*(a + b*x)^(1/3))/(6*a^2*x) - (5
*b^2*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*
Sqrt[3]*a^(8/3)) - (5*b^2*Log[x])/(18*a^(8/3)) + (5*b^2*Log[a^(1/
3) - (a + b*x)^(1/3)])/(6*a^(8/3))
```

Rubi [A] time = 0.116346, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{5b^2\log(x)}{18a^{8/3}}+\frac{5b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{6a^{8/3}}-\frac{5b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{8/3}}+\frac{5b\sqrt[3]{a+bx}}{6a^2x}-\frac{\sqrt[3]{a+bx}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^(2/3)),x]
```

```
[Out] -(a + b*x)^(1/3)/(2*a*x^2) + (5*b*(a + b*x)^(1/3))/(6*a^2*x) - (5
*b^2*ArcTan[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*
Sqrt[3]*a^(8/3)) - (5*b^2*Log[x])/(18*a^(8/3)) + (5*b^2*Log[a^(1/
3) - (a + b*x)^(1/3)])/(6*a^(8/3))
```

Rubi in Sympy [A] time = 11.3346, size = 122, normalized size = 0.94

$$-\frac{\sqrt[3]{a+bx}}{2ax^2}+\frac{5b\sqrt[3]{a+bx}}{6a^2x}-\frac{5b^2\log{(x)}}{18a^{\frac{8}{3}}}+\frac{5b^2\log{\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}}{6a^{\frac{8}{3}}}-\frac{5\sqrt{3}b^2\operatorname{atan}{\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}}{9a^{\frac{8}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**(2/3),x)
```

```
[Out] -(a + b*x)**(1/3)/(2*a*x**2) + 5*b*(a + b*x)**(1/3)/(6*a**2*x) -
5*b**2*log(x)/(18*a**(8/3)) + 5*b**2*log(a**(1/3) - (a + b*x)**(1
```

```
/3))/(6*a**(8/3)) - 5*sqrt(3)*b**2*atan(sqrt(3)*(a**(1/3)/3 + 2*(
a + b*x)**(1/3)/3)/a**(1/3))/(9*a**(8/3))
```

Mathematica [C] time = 0.0396424, size = 79, normalized size = 0.61

$$\frac{-3a^2-5b^2x^2\left(\frac{a}{bx}+1\right)^{2/3}\,{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};-\frac{a}{bx}\right)+2abx+5b^2x^2}{6a^2x^2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^(2/3)),x]
```

```
[Out] (-3*a^2 + 2*a*b*x + 5*b^2*x^2 - 5*b^2*(1 + a/(b*x))^(2/3)*x^2*Hyp
ergeometric2F1[2/3, 2/3, 5/3, -(a/(b*x))])/(6*a^2*x^2*(a + b*x)^(
2/3))
```

Maple [A] time = 0.01, size = 117, normalized size = 0.9

$$-\frac{1}{2\,ax^2}\sqrt[3]{bx+a}+\frac{5\,b}{6\,a^2x}\sqrt[3]{bx+a}+\frac{5\,b^2}{9}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{8}{3}}-\frac{5\,b^2}{18}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{8}{3}}-\frac{5\,b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^(2/3),x)
```

```
[Out] -1/2*(b*x+a)^(1/3)/a/x^2+5/6*b*(b*x+a)^(1/3)/a^2/x+5/9*b^2/a^(8/3
)*ln((b*x+a)^(1/3)-a^(1/3))-5/18*b^2/a^(8/3)*ln((b*x+a)^(2/3)+(b*
x+a)^(1/3)*a^(1/3)+a^(2/3))-5/9*b^2/a^(8/3)*3^(1/2)*arctan(1/3*3^
(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220784, size = 204, normalized size = 1.57

$$-\frac{\sqrt{3}\left(5\sqrt{3}b^2x^2\log\left(a^2+\left(a^2\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}a+\left(a^2\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}\right)-10\sqrt{3}b^2x^2\log\left(-a+\left(a^2\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}\right)+30\,b^2x^2\arctan\left(\frac{\sqrt{3}a}{}\right.\right.}{54\left(a^2\right)^{\frac{1}{3}}a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x^3),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(5*sqrt(3)*b^2*x^2*log(a^2 + (a^2)^(1/3)*(b*x + a)^
(1/3)*a + (a^2)^(2/3)*(b*x + a)^(2/3)) - 10*sqrt(3)*b^2*x^2*log(-
a + (a^2)^(1/3)*(b*x + a)^(1/3)) + 30*b^2*x^2*arctan(1/3*(sqrt(3)
*a + 2*sqrt(3)*(a^2)^(1/3)*(b*x + a)^(1/3))/a) - 3*sqrt(3)*(a^2)^
(1/3)*(5*b*x - 3*a)*(b*x + a)^(1/3))/((a^2)^(1/3)*a^2*x^2)
```

Sympy [A] time = 8.21233, size = 1904, normalized size = 14.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**(2/3),x)
```

```
[Out] -10*a**(13/3)*b**3*(a/b + x)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a*
*(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) + 162*a**6*b*
*2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a/b + x)**3*gamma(4/3
) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3)) - 10*a**(13/3)*b**3*(a/
b + x)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(
2*I*pi/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) +
 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a/b + x)*
*3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3)) - 10*a**(13
/3)*b**3*(a/b + x)*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3
)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*
gamma(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**
3*(a/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3))
 + 30*a**(10/3)*b**4*(a/b + x)**2*log(1 - b**(1/3)*(a/b + x)**(1/
3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) + 162*a*
*6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a/b + x)**3*gamm
a(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3)) + 30*a**(10/3)*b**
4*(a/b + x)**2*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*ex
p_polar(2*I*pi/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamm
a(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a
/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3)) + 3
0*a**(10/3)*b**4*(a/b + x)**2*exp(2*I*pi/3)*log(1 - b**(1/3)*(a/b
 + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b
*(a/b + x)*gamma(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 1
```

```
62*a**5*b**3*(a/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*
gamma(4/3)) - 30*a**(7/3)*b**5*(a/b + x)**3*log(1 - b**(1/3)*(a/b
 + x)**(1/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3
) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a/b +
x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3)) - 30*a**
(7/3)*b**5*(a/b + x)**3*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)*
*(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b
+ x)*gamma(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**
5*b**3*(a/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(
4/3)) - 30*a**(7/3)*b**5*(a/b + x)**3*exp(2*I*pi/3)*log(1 - b**(1
/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(1/3)/(-5
4*a**7*b*(a/b + x)*gamma(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(
4/3) - 162*a**5*b**3*(a/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b
+ x)**4*gamma(4/3)) + 10*a**(4/3)*b**6*(a/b + x)**4*log(1 - b**(1
/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(1/3)/(-54*a**7*b*(a/b + x)*g
amma(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3
*(a/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3))
+ 10*a**(4/3)*b**6*(a/b + x)**4*exp(4*I*pi/3)*log(1 - b**(1/3)*(a
/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(1/3)/(-54*a**7
*b*(a/b + x)*gamma(4/3) + 162*a**6*b**2*(a/b + x)**2*gamma(4/3) -
 162*a**5*b**3*(a/b + x)**3*gamma(4/3) + 54*a**4*b**4*(a/b + x)**
4*gamma(4/3)) + 10*a**(4/3)*b**6*(a/b + x)**4*exp(2*I*pi/3)*log(1
 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(
1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) + 162*a**6*b**2*(a/b + x)**
2*gamma(4/3) - 162*a**5*b**3*(a/b + x)**3*gamma(4/3) + 54*a**4*b*
*4*(a/b + x)**4*gamma(4/3)) + 24*a**4*b**(10/3)*(a/b + x)**(4/3)*
gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) + 162*a**6*b**2*(a/b
+ x)**2*gamma(4/3) - 162*a**5*b**3*(a/b + x)**3*gamma(4/3) + 54*a
**4*b**4*(a/b + x)**4*gamma(4/3)) - 39*a**3*b**(13/3)*(a/b + x)**
(7/3)*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) + 162*a**6*b**2
*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a/b + x)**3*gamma(4/3)
+ 54*a**4*b**4*(a/b + x)**4*gamma(4/3)) + 15*a**2*b**(16/3)*(a/b
+ x)**(10/3)*gamma(1/3)/(-54*a**7*b*(a/b + x)*gamma(4/3) + 162*a*
*6*b**2*(a/b + x)**2*gamma(4/3) - 162*a**5*b**3*(a/b + x)**3*gamm
a(4/3) + 54*a**4*b**4*(a/b + x)**4*gamma(4/3))
```

GIAC/XCAS [A] time = 0.558353, size = 176, normalized size = 1.35

$$-\frac{\frac{10\,\sqrt{3}b^3\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{a^{\frac{8}{3}}}+\frac{5\,b^3\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{a^{\frac{8}{3}}}-\frac{10\,b^3\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{8}{3}}}-\frac{3\left(5\,(bx+a)^{\frac{4}{3}}b^3-8\,(bx+a)^{\frac{1}{3}}ab^3\right)}{a^2b^2x^2}}{18\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*x^3),x, algorithm="giac")
```

```
[Out] -1/18*(10*sqrt(3)*b^3*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(
1/3))/a^(1/3))/a^(8/3) + 5*b^3*ln((b*x + a)^(2/3) + (b*x + a)^(1/
3)*a^(1/3) + a^(2/3))/a^(8/3) - 10*b^3*ln(abs((b*x + a)^(1/3) - a
^(1/3)))/a^(8/3) - 3*(5*(b*x + a)^(4/3)*b^3 - 8*(b*x + a)^(1/3)*a
```

```
*b^3)/(a^2*b^2*x^2))/b
```

3.413 $\int \frac{x^3}{(a+bx)^{4/3}}\,dx$

Optimal. Leaf size=70

$$\frac{3a^3}{b^4\sqrt[3]{a+bx}}+\frac{9a^2(a+bx)^{2/3}}{2b^4}-\frac{9a(a+bx)^{5/3}}{5b^4}+\frac{3(a+bx)^{8/3}}{8b^4}$$

```
[Out] (3*a^3)/(b^4*(a + b*x)^(1/3)) + (9*a^2*(a + b*x)^(2/3))/(2*b^4) -
 (9*a*(a + b*x)^(5/3))/(5*b^4) + (3*(a + b*x)^(8/3))/(8*b^4)
```

Rubi [A] time = 0.0516654, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3a^3}{b^4\sqrt[3]{a+bx}}+\frac{9a^2(a+bx)^{2/3}}{2b^4}-\frac{9a(a+bx)^{5/3}}{5b^4}+\frac{3(a+bx)^{8/3}}{8b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(a + b*x)^(4/3),x]
```

```
[Out] (3*a^3)/(b^4*(a + b*x)^(1/3)) + (9*a^2*(a + b*x)^(2/3))/(2*b^4) -
 (9*a*(a + b*x)^(5/3))/(5*b^4) + (3*(a + b*x)^(8/3))/(8*b^4)
```

Rubi in Sympy [A] time = 10.9331, size = 66, normalized size = 0.94

$$\frac{3a^3}{b^4\sqrt[3]{a+bx}}+\frac{9a^2\left(a+bx\right)^{\frac{2}{3}}}{2b^4}-\frac{9a\left(a+bx\right)^{\frac{5}{3}}}{5b^4}+\frac{3\left(a+bx\right)^{\frac{8}{3}}}{8b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**(4/3),x)
```

```
[Out] 3*a**3/(b**4*(a + b*x)**(1/3)) + 9*a**2*(a + b*x)**(2/3)/(2*b**4)
 - 9*a*(a + b*x)**(5/3)/(5*b**4) + 3*(a + b*x)**(8/3)/(8*b**4)
```

Mathematica [A] time = 0.0264444, size = 46, normalized size = 0.66

$$\frac{3\left(81a^3+27a^2bx-9ab^2x^2+5b^3x^3\right)}{40b^4\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(a + b*x)^(4/3),x]
```

```
[Out] (3*(81*a^3 + 27*a^2*b*x - 9*a*b^2*x^2 + 5*b^3*x^3))/(40*b^4*(a +
b*x)^(1/3))
```

Maple [A] time = 0.007, size = 43, normalized size = 0.6

$$\frac{15\,b^3x^3-27\,ab^2x^2+81\,a^2bx+243\,a^3}{40\,b^4}\frac{1}{\sqrt[3]{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^(4/3),x)
```

```
[Out] 3/40/(b*x+a)^(1/3)*(5*b^3*x^3-9*a*b^2*x^2+27*a^2*b*x+81*a^3)/b^4
```

Maxima [A] time = 1.32441, size = 76, normalized size = 1.09

$$\frac{3\,(bx+a)^{\frac{8}{3}}}{8\,b^4}-\frac{9\,(bx+a)^{\frac{5}{3}}a}{5\,b^4}+\frac{9\,(bx+a)^{\frac{2}{3}}a^2}{2\,b^4}+\frac{3\,a^3}{(bx+a)^{\frac{1}{3}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(4/3),x, algorithm="maxima")
```

```
[Out] 3/8*(b*x + a)^(8/3)/b^4 - 9/5*(b*x + a)^(5/3)*a/b^4 + 9/2*(b*x +
a)^(2/3)*a^2/b^4 + 3*a^3/((b*x + a)^(1/3)*b^4)
```

Fricas [A] time = 0.207542, size = 57, normalized size = 0.81

$$\frac{3\left(5\,b^3x^3-9\,ab^2x^2+27\,a^2bx+81\,a^3\right)}{40\,(bx+a)^{\frac{1}{3}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(4/3),x, algorithm="fricas")
```

```
[Out] 3/40*(5*b^3*x^3 - 9*a*b^2*x^2 + 27*a^2*b*x + 81*a^3)/((b*x + a)^(
1/3)*b^4)
```

Sympy [A] time = 8.7926, size = 1538, normalized size = 21.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**(4/3),x)
```

```
[Out] 243*a**(68/3)*(1 + b*x/a)**(2/3)/(40*a**20*b**4 + 240*a**19*b**5*
x + 600*a**18*b**6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*b**8*x*
*4 + 240*a**15*b**9*x**5 + 40*a**14*b**10*x**6) - 243*a**(68/3)/(
40*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2 + 800*a**1
7*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40*a**1
4*b**10*x**6) + 1296*a**(65/3)*b*x*(1 + b*x/a)**(2/3)/(40*a**20*b
**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2 + 800*a**17*b**7*x**
3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40*a**14*b**10*x*
*6) - 1458*a**(65/3)*b*x/(40*a**20*b**4 + 240*a**19*b**5*x + 600*
a**18*b**6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240
*a**15*b**9*x**5 + 40*a**14*b**10*x**6) + 2808*a**(62/3)*b**2*x**
2*(1 + b*x/a)**(2/3)/(40*a**20*b**4 + 240*a**19*b**5*x + 600*a**1
8*b**6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**
15*b**9*x**5 + 40*a**14*b**10*x**6) - 3645*a**(62/3)*b**2*x**2/(4
0*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2 + 800*a**17
*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40*a**14
*b**10*x**6) + 3120*a**(59/3)*b**3*x**3*(1 + b*x/a)**(2/3)/(40*a*
*20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2 + 800*a**17*b**
7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40*a**14*b**
10*x**6) - 4860*a**(59/3)*b**3*x**3/(40*a**20*b**4 + 240*a**19*b*
*5*x + 600*a**18*b**6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*b**8
*x**4 + 240*a**15*b**9*x**5 + 40*a**14*b**10*x**6) + 1830*a**(56/
3)*b**4*x**4*(1 + b*x/a)**(2/3)/(40*a**20*b**4 + 240*a**19*b**5*x
 + 600*a**18*b**6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*b**8*x**
4 + 240*a**15*b**9*x**5 + 40*a**14*b**10*x**6) - 3645*a**(56/3)*b
**4*x**4/(40*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2
+ 800*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5
 + 40*a**14*b**10*x**6) + 528*a**(53/3)*b**5*x**5*(1 + b*x/a)**(2
/3)/(40*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2 + 800
*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40
*a**14*b**10*x**6) - 1458*a**(53/3)*b**5*x**5/(40*a**20*b**4 + 24
0*a**19*b**5*x + 600*a**18*b**6*x**2 + 800*a**17*b**7*x**3 + 600*
a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40*a**14*b**10*x**6) + 96
*a**(50/3)*b**6*x**6*(1 + b*x/a)**(2/3)/(40*a**20*b**4 + 240*a**1
9*b**5*x + 600*a**18*b**6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*
b**8*x**4 + 240*a**15*b**9*x**5 + 40*a**14*b**10*x**6) - 243*a**(
50/3)*b**6*x**6/(40*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**
6*x**2 + 800*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b*
*9*x**5 + 40*a**14*b**10*x**6) + 48*a**(47/3)*b**7*x**7*(1 + b*x/
a)**(2/3)/(40*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2
 + 800*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**
5 + 40*a**14*b**10*x**6) + 15*a**(44/3)*b**8*x**8*(1 + b*x/a)**(2
/3)/(40*a**20*b**4 + 240*a**19*b**5*x + 600*a**18*b**6*x**2 + 800
*a**17*b**7*x**3 + 600*a**16*b**8*x**4 + 240*a**15*b**9*x**5 + 40
```

```
*a**14*b**10*x**6)
```

GIAC/XCAS [A] time = 0.2417, size = 84, normalized size = 1.2

$$\frac{3\,a^{3}}{(bx+a)^{\frac{1}{3}}\,b^{4}}+\frac{3\left(5\,(bx+a)^{\frac{8}{3}}\,b^{28}-24\,(bx+a)^{\frac{5}{3}}\,ab^{28}+60\,(bx+a)^{\frac{2}{3}}\,a^{2}b^{28}\right)}{40\,b^{32}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(b*x + a)^(4/3),x, algorithm="giac")
```

```
[Out] 3*a^3/((b*x + a)^(1/3)*b^4) + 3/40*(5*(b*x + a)^(8/3)*b^28 - 24*(
b*x + a)^(5/3)*a*b^28 + 60*(b*x + a)^(2/3)*a^2*b^28)/b^32
```

3.414 $\int \frac{x^2}{(a+bx)^{4/3}}\,dx$

Optimal. Leaf size=49

$$-\frac{3a^2}{b^3\sqrt[3]{a+bx}}-\frac{3a(a+bx)^{2/3}}{b^3}+\frac{3(a+bx)^{5/3}}{5b^3}$$

```
[Out] (-3*a^2)/(b^3*(a + b*x)^(1/3)) - (3*a*(a + b*x)^(2/3))/b^3 + (3*(
a + b*x)^(5/3))/(5*b^3)
```

Rubi [A] time = 0.0388706, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^2}{b^3\sqrt[3]{a+bx}}-\frac{3a(a+bx)^{2/3}}{b^3}+\frac{3(a+bx)^{5/3}}{5b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(a + b*x)^(4/3),x]
```

```
[Out] (-3*a^2)/(b^3*(a + b*x)^(1/3)) - (3*a*(a + b*x)^(2/3))/b^3 + (3*(
a + b*x)^(5/3))/(5*b^3)
```

Rubi in Sympy [A] time = 7.86509, size = 46, normalized size = 0.94

$$-\frac{3a^2}{b^3\sqrt[3]{a+bx}}-\frac{3a\left(a+bx\right)^{\frac{2}{3}}}{b^3}+\frac{3\left(a+bx\right)^{\frac{5}{3}}}{5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**(4/3),x)
```

```
[Out] -3*a**2/(b**3*(a + b*x)**(1/3)) - 3*a*(a + b*x)**(2/3)/b**3 + 3*(
a + b*x)**(5/3)/(5*b**3)
```

Mathematica [A] time = 0.0215493, size = 34, normalized size = 0.69

$$\frac{3\left(-9a^2-3abx+b^2x^2\right)}{5b^3\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(a + b*x)^(4/3),x]
```

```
[Out] (3*(-9*a^2 - 3*a*b*x + b^2*x^2))/(5*b^3*(a + b*x)^(1/3))
```

Maple [A] time = 0.007, size = 32, normalized size = 0.7

$$-\frac{-3\,b^2x^2+9\,abx+27\,a^2}{5\,b^3}\frac{1}{\sqrt[3]{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^(4/3),x)
```

```
[Out] -3/5/(b*x+a)^(1/3)*(-b^2*x^2+3*a*b*x+9*a^2)/b^3
```

Maxima [A] time = 1.35337, size = 55, normalized size = 1.12

$$\frac{3\,(bx+a)^{\frac{5}{3}}}{5\,b^3}-\frac{3\,(bx+a)^{\frac{2}{3}}a}{b^3}-\frac{3\,a^2}{(bx+a)^{\frac{1}{3}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(4/3),x, algorithm="maxima")
```

```
[Out] 3/5*(b*x + a)^(5/3)/b^3 - 3*(b*x + a)^(2/3)*a/b^3 - 3*a^2/((b*x +
 a)^(1/3)*b^3)
```

Fricas [A] time = 0.203969, size = 41, normalized size = 0.84

$$\frac{3\left(b^2x^2-3\,abx-9\,a^2\right)}{5\,(bx+a)^{\frac{1}{3}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(4/3),x, algorithm="fricas")
```

```
[Out] 3/5*(b^2*x^2 - 3*a*b*x - 9*a^2)/((b*x + a)^(1/3)*b^3)
```

Sympy [A] time = 5.76842, size = 534, normalized size = 10.9

$$-\frac{27a^{\frac{29}{3}}\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}+\frac{27a^{\frac{29}{3}}}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}-\frac{63a^{\frac{26}{3}}bx\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}+\frac{81a^{\frac{26}{3}}bx}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}-\frac{42a^{\frac{23}{3}}b^2x^2\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}+\frac{81a^{\frac{23}{3}}b^2x^2}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}-\frac{3a^{\frac{20}{3}}b^3x^3\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}+\frac{27a^{\frac{20}{3}}b^3x^3}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}+\frac{3a^{\frac{17}{3}}b^4x^4\left(1+\frac{bx}{a}\right)^{\frac{2}{3}}}{5a^8b^3+15a^7b^4x+15a^6b^5x^2+5a^5b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**(4/3),x)
```

```
[Out] -27*a**(29/3)*(1 + b*x/a)**(2/3)/(5*a**8*b**3 + 15*a**7*b**4*x +
15*a**6*b**5*x**2 + 5*a**5*b**6*x**3) + 27*a**(29/3)/(5*a**8*b**3
 + 15*a**7*b**4*x + 15*a**6*b**5*x**2 + 5*a**5*b**6*x**3) - 63*a*
*(26/3)*b*x*(1 + b*x/a)**(2/3)/(5*a**8*b**3 + 15*a**7*b**4*x + 15
*a**6*b**5*x**2 + 5*a**5*b**6*x**3) + 81*a**(26/3)*b*x/(5*a**8*b*
*3 + 15*a**7*b**4*x + 15*a**6*b**5*x**2 + 5*a**5*b**6*x**3) - 42*
a**(23/3)*b**2*x**2*(1 + b*x/a)**(2/3)/(5*a**8*b**3 + 15*a**7*b**
4*x + 15*a**6*b**5*x**2 + 5*a**5*b**6*x**3) + 81*a**(23/3)*b**2*x
**2/(5*a**8*b**3 + 15*a**7*b**4*x + 15*a**6*b**5*x**2 + 5*a**5*b*
*6*x**3) - 3*a**(20/3)*b**3*x**3*(1 + b*x/a)**(2/3)/(5*a**8*b**3
+ 15*a**7*b**4*x + 15*a**6*b**5*x**2 + 5*a**5*b**6*x**3) + 27*a**
(20/3)*b**3*x**3/(5*a**8*b**3 + 15*a**7*b**4*x + 15*a**6*b**5*x**
2 + 5*a**5*b**6*x**3) + 3*a**(17/3)*b**4*x**4*(1 + b*x/a)**(2/3)/
(5*a**8*b**3 + 15*a**7*b**4*x + 15*a**6*b**5*x**2 + 5*a**5*b**6*x
**3)
```

GIAC/XCAS [A] time = 0.215462, size = 62, normalized size = 1.27

$$-\frac{3\,a^2}{(bx+a)^{\frac{1}{3}}b^3}+\frac{3\left((bx+a)^{\frac{5}{3}}b^{12}-5\,(bx+a)^{\frac{2}{3}}ab^{12}\right)}{5\,b^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(b*x + a)^(4/3),x, algorithm="giac")
```

```
[Out] -3*a^2/((b*x + a)^(1/3)*b^3) + 3/5*((b*x + a)^(5/3)*b^12 - 5*(b*x
 + a)^(2/3)*a*b^12)/b^15
```

3.415 $\int \frac{x}{(a+bx)^{4/3}} dx$

Optimal. Leaf size=32

$$\frac{3a}{b^2\sqrt[3]{a+bx}}+\frac{3(a+bx)^{2/3}}{2b^2}$$

```
[Out] (3*a)/(b^2*(a + b*x)^(1/3)) + (3*(a + b*x)^(2/3))/(2*b^2)
```

Rubi [A] time = 0.0253238, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3a}{b^2\sqrt[3]{a+bx}}+\frac{3(a+bx)^{2/3}}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(a + b*x)^(4/3),x]

[Out] (3*a)/(b^2*(a + b*x)^(1/3)) + (3*(a + b*x)^(2/3))/(2*b^2)
```

Rubi in Sympy [A] time = 4.89355, size = 29, normalized size = 0.91

$$\frac{3a}{b^2\sqrt[3]{a+bx}}+\frac{3\left(a+bx\right)^{\frac{2}{3}}}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**(4/3),x)

[Out] 3*a/(b**2*(a + b*x)**(1/3)) + 3*(a + b*x)**(2/3)/(2*b**2)
```

Mathematica [A] time = 0.0154273, size = 23, normalized size = 0.72

$$\frac{3(3a+bx)}{2b^2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(a + b*x)^(4/3),x]
```

```
[Out] (3*(3*a + b*x))/(2*b^2*(a + b*x)^(1/3))
```

Maple [A] time = 0.006, size = 20, normalized size = 0.6

$$\frac{3\,bx+9\,a}{2\,b^{2}}\frac{1}{\sqrt[3]{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(b*x+a)^(4/3),x)
```

```
[Out] 3/2/(b*x+a)^(1/3)*(b*x+3*a)/b^2
```

Maxima [A] time = 1.34281, size = 35, normalized size = 1.09

$$\frac{3\,(bx+a)^{\frac{2}{3}}}{2\,b^{2}}+\frac{3\,a}{(bx+a)^{\frac{1}{3}}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(4/3),x, algorithm="maxima")
```

```
[Out] 3/2*(b*x + a)^(2/3)/b^2 + 3*a/((b*x + a)^(1/3)*b^2)
```

Fricas [A] time = 0.205389, size = 26, normalized size = 0.81

$$\frac{3\,(bx+3\,a)}{2\,(bx+a)^{\frac{1}{3}}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(4/3),x, algorithm="fricas")
```

```
[Out] 3/2*(b*x + 3*a)/((b*x + a)^(1/3)*b^2)
```

Sympy [A] time = 2.32081, size = 41, normalized size = 1.28

$$\begin{cases} \frac{9a}{2b^{2}\sqrt[3]{a+bx}}+\frac{3x}{2b\sqrt[3]{a+bx}} & \text{for } b\neq 0\\ \frac{x^{2}}{2a^{\frac{4}{3}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**(4/3),x)
```

```
[Out] Piecewise((9*a/(2*b**2*(a + b*x)**(1/3)) + 3*x/(2*b*(a + b*x)**(1
/3)), Ne(b, 0)), (x**2/(2*a**(4/3)), True))
```

GIAC/XCAS [A] time = 0.205788, size = 41, normalized size = 1.28

$$\frac{3\left(\frac{(bx+a)^{\frac{2}{3}}}{b} + \frac{2\,a}{(bx+a)^{\frac{1}{3}}\,b}\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x + a)^(4/3),x, algorithm="giac")
```

```
[Out] 3/2*((b*x + a)^(2/3)/b + 2*a/((b*x + a)^(1/3)*b))/b
```

3.416 $\int \frac{1}{(a+bx)^{4/3}} dx$

Optimal. Leaf size=14

$$-\frac{3}{b\sqrt[3]{a+bx}}$$

[Out] -3/(b*(a + b*x)^(1/3))

Rubi [A] time = 0.00679388, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{3}{b\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)^(-4/3),x]

[Out] -3/(b*(a + b*x)^(1/3))

Rubi in Sympy [A] time = 1.2656, size = 12, normalized size = 0.86

$$-\frac{3}{b\sqrt[3]{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(1/(b*x+a)**(4/3),x)

[Out] -3/(b*(a + b*x)**(1/3))

Mathematica [A] time = 0.00422314, size = 14, normalized size = 1.

$$-\frac{3}{b\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)^(-4/3),x]

```
[Out] -3/(b*(a + b*x)^(1/3))
```

Maple [A] time = 0.003, size = 13, normalized size = 0.9

$$-3\frac{1}{b\sqrt[3]{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(4/3),x)

[Out] -3/b/(b*x+a)^(1/3)
```

Maxima [A] time = 1.34028, size = 16, normalized size = 1.14

$$-\frac{3}{(bx+a)^{\frac{1}{3}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-4/3),x, algorithm="maxima")

[Out] -3/((b*x + a)^(1/3)*b)
```

Fricas [A] time = 0.204796, size = 16, normalized size = 1.14

$$-\frac{3}{(bx+a)^{\frac{1}{3}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-4/3),x, algorithm="fricas")

[Out] -3/((b*x + a)^(1/3)*b)
```

Sympy [A] time = 0.075135, size = 12, normalized size = 0.86

$$-\frac{3}{b\sqrt[3]{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(4/3),x)
```

```
[Out] -3/(b*(a + b*x)**(1/3))
```

GIAC/XCAS [A] time = 0.202968, size = 16, normalized size = 1.14

$$-\frac{3}{(bx+a)^{\frac{1}{3}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-4/3),x, algorithm="giac")
```

```
[Out] -3/((b*x + a)^(1/3)*b)
```

3.417 $\int \frac{1}{x(a+bx)^{4/3}}\,dx$

Optimal. Leaf size=93

$$\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{4/3}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{4/3}}-\frac{\log(x)}{2a^{4/3}}+\frac{3}{a\sqrt[3]{a+bx}}$$

```
[Out] 3/(a*(a + b*x)^(1/3)) + (Sqrt[3]*ArcTan[(a^(1/3) + 2*(a + b*x)^(1
/3))/(Sqrt[3]*a^(1/3))])/a^(4/3) - Log[x]/(2*a^(4/3)) + (3*Log[a^
(1/3) - (a + b*x)^(1/3)])/(2*a^(4/3))
```

Rubi [A] time = 0.0843766, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{4/3}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{4/3}}-\frac{\log(x)}{2a^{4/3}}+\frac{3}{a\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a + b*x)^(4/3)),x]
```

```
[Out] 3/(a*(a + b*x)^(1/3)) + (Sqrt[3]*ArcTan[(a^(1/3) + 2*(a + b*x)^(1
/3))/(Sqrt[3]*a^(1/3))])/a^(4/3) - Log[x]/(2*a^(4/3)) + (3*Log[a^
(1/3) - (a + b*x)^(1/3)])/(2*a^(4/3))
```

Rubi in Sympy [A] time = 7.49621, size = 85, normalized size = 0.91

$$\frac{3}{a\sqrt[3]{a+bx}}-\frac{\log(x)}{2a^{\frac{4}{3}}}+\frac{3\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{2a^{\frac{4}{3}}}+\frac{\sqrt{3}\,\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{a^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**(4/3),x)
```

```
[Out] 3/(a*(a + b*x)**(1/3)) - log(x)/(2*a**(4/3)) + 3*log(a**(1/3) - (
a + b*x)**(1/3))/(2*a**(4/3)) + sqrt(3)*atan(sqrt(3)*(a**(1/3)/3
+ 2*(a + b*x)**(1/3)/3)/a**(1/3))/a**(4/3)
```

Mathematica [C] time = 0.0357555, size = 50, normalized size = 0.54

$$\frac{3-3\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)}{a\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a + b*x)^(4/3)),x]
```

```
[Out] (3 - 3*(1 + a/(b*x))^(1/3)*Hypergeometric2F1[1/3, 1/3, 4/3, -(a/(
b*x))])/(a*(a + b*x)^(1/3))
```

Maple [A] time = 0.011, size = 87, normalized size = 0.9

$$1\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{4}{3}}-\frac{1}{2}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{4}{3}}+\sqrt{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{4}{3}}+3\frac{1}{a\sqrt[3]{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^(4/3),x)
```

```
[Out] 1/a^(4/3)*ln((b*x+a)^(1/3)-a^(1/3))-1/2/a^(4/3)*ln((b*x+a)^(2/3)+
(b*x+a)^(1/3)*a^(1/3)+a^(2/3))+1/a^(4/3)*3^(1/2)*arctan(1/3*3^(1/
2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))+3/a/(b*x+a)^(1/3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218735, size = 151, normalized size = 1.62

$$\frac{2\,\sqrt{3}(bx+a)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)}{3\,a}\right)-(bx+a)^{\frac{1}{3}}\log\left((bx+a)^{\frac{2}{3}}a^{\frac{1}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)+2\,(bx+a)^{\frac{1}{3}}\log\left((bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}-\right.}{2\,(bx+a)^{\frac{1}{3}}a^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*(b*x + a)^(1/3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1
/3)*a^(2/3) + a)/a) - (b*x + a)^(1/3)*log((b*x + a)^(2/3)*a^(1/3)
 + (b*x + a)^(1/3)*a^(2/3) + a) + 2*(b*x + a)^(1/3)*log((b*x + a)
^(1/3)*a^(2/3) - a) + 6*a^(1/3))/((b*x + a)^(1/3)*a^(4/3))
```

Sympy [A] time = 6.2152, size = 184, normalized size = 1.98

$$-\frac{\Gamma\left(-\frac{1}{3}\right)}{a\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}\,\Gamma\left(\frac{2}{3}\right)}-\frac{\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}}{\sqrt[3]{a}}\right)\Gamma\left(-\frac{1}{3}\right)}{3a^{\frac{4}{3}}\,\Gamma\left(\frac{2}{3}\right)}-\frac{e^{\frac{8i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{2i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(-\frac{1}{3}\right)}{3a^{\frac{4}{3}}\,\Gamma\left(\frac{2}{3}\right)}-\frac{e^{\frac{4i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{\frac{a}{b}+x}e^{\frac{4i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(-\frac{1}{3}\right)}{3a^{\frac{4}{3}}\,\Gamma\left(\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**(4/3),x)
```

```
[Out] -gamma(-1/3)/(a*b**(1/3)*(a/b + x)**(1/3)*gamma(2/3)) - log(1 - b
**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(-1/3)/(3*a**(4/3)*gamma(
2/3)) - exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar
(2*I*pi/3)/a**(1/3))*gamma(-1/3)/(3*a**(4/3)*gamma(2/3)) - exp(4*
I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**
(1/3))*gamma(-1/3)/(3*a**(4/3)*gamma(2/3))
```

GIAC/XCAS [A] time = 0.507363, size = 120, normalized size = 1.29

$$\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{a^{\frac{4}{3}}}-\frac{\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{2\,a^{\frac{4}{3}}}+\frac{\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{a^{\frac{4}{3}}}+\frac{3}{(bx+a)^{\frac{1}{3}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))/a^(1/3))
/a^(4/3) - 1/2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1/3) + a^(
2/3))/a^(4/3) + ln(abs((b*x + a)^(1/3) - a^(1/3)))/a^(4/3) + 3/((
b*x + a)^(1/3)*a)
```

3.418 $\int \frac{1}{x^2(a+bx)^{4/3}} \, dx$

Optimal. Leaf size=115

$$\frac{2b\log(x)}{3a^{7/3}} - \frac{2b\log\left(\sqrt[3]{a} - \sqrt[3]{a+bx}\right)}{a^{7/3}} - \frac{4b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{7/3}} - \frac{4(a+bx)^{2/3}}{a^2x} + \frac{3}{ax\sqrt[3]{a+bx}}$$

```
[Out] 3/(a*x*(a + b*x)^(1/3)) - (4*(a + b*x)^(2/3))/(a^2*x) - (4*b*ArcT
an[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(
7/3)) + (2*b*Log[x])/(3*a^(7/3)) - (2*b*Log[a^(1/3) - (a + b*x)^(
1/3)])/a^(7/3)
```

Rubi [A] time = 0.108373, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{2b\log(x)}{3a^{7/3}} - \frac{2b\log\left(\sqrt[3]{a} - \sqrt[3]{a+bx}\right)}{a^{7/3}} - \frac{4b\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{7/3}} - \frac{4(a+bx)^{2/3}}{a^2x} + \frac{3}{ax\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*(a + b*x)^(4/3)),x]
```

```
[Out] 3/(a*x*(a + b*x)^(1/3)) - (4*(a + b*x)^(2/3))/(a^2*x) - (4*b*ArcT
an[(a^(1/3) + 2*(a + b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(
7/3)) + (2*b*Log[x])/(3*a^(7/3)) - (2*b*Log[a^(1/3) - (a + b*x)^(
1/3)])/a^(7/3)
```

Rubi in Sympy [A] time = 11.0953, size = 110, normalized size = 0.96

$$\frac{3}{ax\sqrt[3]{a+bx}} - \frac{4\left(a+bx\right)^{\frac{2}{3}}}{a^2x} + \frac{2b\log\left(x\right)}{3a^{\frac{7}{3}}} - \frac{2b\log\left(\sqrt[3]{a} - \sqrt[3]{a+bx}\right)}{a^{\frac{7}{3}}} - \frac{4\sqrt{3}b\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3} + \frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{7}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**(4/3),x)
```

```
[Out] 3/(a*x*(a + b*x)**(1/3)) - 4*(a + b*x)**(2/3)/(a**2*x) + 2*b*log(
x)/(3*a**(7/3)) - 2*b*log(a**(1/3) - (a + b*x)**(1/3))/a**(7/3) -
```

```
 4*sqrt(3)*b*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3)/3)/a**
(1/3))/(3*a**(7/3))
```

Mathematica [C] time = 0.0387122, size = 61, normalized size = 0.53

$$\frac{4bx\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)-a-4bx}{a^2x\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*(a + b*x)^(4/3)),x]
```

```
[Out] (-a - 4*b*x + 4*b*(1 + a/(b*x))^(1/3)*x*Hypergeometric2F1[1/3, 1/
3, 4/3, -(a/(b*x))])/(a^2*x*(a + b*x)^(1/3))
```

Maple [A] time = 0.019, size = 108, normalized size = 0.9

$$-3\,\frac{b}{a^2\sqrt[3]{bx+a}}-\frac{1}{a^2x}\,(bx+a)^{\frac{2}{3}}-\frac{4\,b}{3}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{7}{3}}+\frac{2\,b}{3}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{7}{3}}-\frac{4\,b\sqrt{3}}{3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^(4/3),x)
```

```
[Out] -3*b/a^2/(b*x+a)^(1/3)-(b*x+a)^(2/3)/a^2/x-4/3*b/a^(7/3)*ln((b*x+
a)^(1/3)-a^(1/3))+2/3*b/a^(7/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^
(1/3)+a^(2/3))-4/3*b/a^(7/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3
)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223195, size = 213, normalized size = 1.85

$$-\frac{\sqrt{3}\left(2\sqrt{3}(bx+a)^{\frac{1}{3}}bx\log\left((bx+a)^{\frac{2}{3}}(-a)^{\frac{1}{3}}-(bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-4\sqrt{3}(bx+a)^{\frac{1}{3}}bx\log\left((bx+a)^{\frac{1}{3}}(-a)^{\frac{2}{3}}-a\right)-12(bx+\right.}{9(bx+a)^{\frac{1}{3}}(-a)^{\frac{1}{3}}a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x^2),x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(2*sqrt(3)*(b*x + a)^(1/3)*b*x*log((b*x + a)^(2/3)*(
-a)^(1/3) - (b*x + a)^(1/3)*(-a)^(2/3) - a) - 4*sqrt(3)*(b*x + a)
^(1/3)*b*x*log((b*x + a)^(1/3)*(-a)^(2/3) - a) - 12*(b*x + a)^(1/
3)*b*x*arctan(1/3*(2*sqrt(3)*(b*x + a)^(1/3)*(-a)^(2/3) + sqrt(3)
*a)/a) + 3*sqrt(3)*(4*b*x + a)*(-a)^(1/3))/((b*x + a)^(1/3)*(-a)^
(1/3)*a^2*x)
```

Sympy [A] time = 7.67848, size = 704, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**(4/3),x)
```

```
[Out] -9*a**(4/3)*b**(2/3)*gamma(-1/3)/(-9*a**(10/3)*(a/b + x)**(1/3)*g
amma(2/3) + 9*a**(7/3)*b*(a/b + x)**(4/3)*gamma(2/3)) + 12*a**(1/
3)*b**(5/3)*(a/b + x)*gamma(-1/3)/(-9*a**(10/3)*(a/b + x)**(1/3)*
gamma(2/3) + 9*a**(7/3)*b*(a/b + x)**(4/3)*gamma(2/3)) - 4*a*b*(a
/b + x)**(1/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(
-1/3)/(-9*a**(10/3)*(a/b + x)**(1/3)*gamma(2/3) + 9*a**(7/3)*b*(a
/b + x)**(4/3)*gamma(2/3)) - 4*a*b*(a/b + x)**(1/3)*exp(8*I*pi/3)
*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*
gamma(-1/3)/(-9*a**(10/3)*(a/b + x)**(1/3)*gamma(2/3) + 9*a**(7/3
)*b*(a/b + x)**(4/3)*gamma(2/3)) - 4*a*b*(a/b + x)**(1/3)*exp(4*I
*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(
1/3))*gamma(-1/3)/(-9*a**(10/3)*(a/b + x)**(1/3)*gamma(2/3) + 9*a
**(7/3)*b*(a/b + x)**(4/3)*gamma(2/3)) + 4*b**2*(a/b + x)**(4/3)*
log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(-1/3)/(-9*a**(1
0/3)*(a/b + x)**(1/3)*gamma(2/3) + 9*a**(7/3)*b*(a/b + x)**(4/3)*
gamma(2/3)) + 4*b**2*(a/b + x)**(4/3)*exp(8*I*pi/3)*log(1 - b**(1
/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(-1/3)/(-
9*a**(10/3)*(a/b + x)**(1/3)*gamma(2/3) + 9*a**(7/3)*b*(a/b + x)*
*(4/3)*gamma(2/3)) + 4*b**2*(a/b + x)**(4/3)*exp(4*I*pi/3)*log(1
- b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(-
1/3)/(-9*a**(10/3)*(a/b + x)**(1/3)*gamma(2/3) + 9*a**(7/3)*b*(a/
b + x)**(4/3)*gamma(2/3))
```

GIAC/XCAS [A] time = 0.524059, size = 162, normalized size = 1.41

$$-\frac{4\,\sqrt{3}b\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{3\,a^{\frac{7}{3}}}+\frac{2\,b\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{3\,a^{\frac{7}{3}}}-\frac{4\,b\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{3\,a^{\frac{7}{3}}}-\frac{4\,(bx+a)b-3\,ab}{\left((bx+a)^{\frac{4}{3}}-(bx+a)^{\frac{1}{3}}a\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x^2),x, algorithm="giac")
```

```
[Out] -4/3*sqrt(3)*b*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))/a
^(1/3))/a^(7/3) + 2/3*b*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)*a^(1
/3) + a^(2/3))/a^(7/3) - 4/3*b*ln(abs((b*x + a)^(1/3) - a^(1/3)))
/a^(7/3) - (4*(b*x + a)*b - 3*a*b)/(((b*x + a)^(4/3) - (b*x + a)^
(1/3)*a)*a^2)
```

3.419 $\int \frac{1}{x^3(a+bx)^{4/3}}\,dx$

Optimal. Leaf size=147

$$-\frac{7b^2\log(x)}{9a^{10/3}}+\frac{7b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{10/3}}+\frac{14b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{10/3}}+\frac{14b(a+bx)^{2/3}}{3a^3x}-\frac{7(a+bx)^{2/3}}{2a^2x^2}+\frac{3}{ax^2\sqrt[3]{a+bx}}$$

```
[Out] 3/(a*x^2*(a + b*x)^(1/3)) - (7*(a + b*x)^(2/3))/(2*a^2*x^2) + (14
*b*(a + b*x)^(2/3))/(3*a^3*x) + (14*b^2*ArcTan[(a^(1/3) + 2*(a +
b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*a^(10/3)) - (7*b^2*Log
[x])/(9*a^(10/3)) + (7*b^2*Log[a^(1/3) - (a + b*x)^(1/3)])/(3*a^(
10/3))
```

Rubi [A] time = 0.14832, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{7b^2\log(x)}{9a^{10/3}}+\frac{7b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{10/3}}+\frac{14b^2\tan^{-1}\left(\frac{2\sqrt[3]{a+bx}+\sqrt[3]{a}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{10/3}}+\frac{14b(a+bx)^{2/3}}{3a^3x}-\frac{7(a+bx)^{2/3}}{2a^2x^2}+\frac{3}{ax^2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*(a + b*x)^(4/3)),x]
```

```
[Out] 3/(a*x^2*(a + b*x)^(1/3)) - (7*(a + b*x)^(2/3))/(2*a^2*x^2) + (14
*b*(a + b*x)^(2/3))/(3*a^3*x) + (14*b^2*ArcTan[(a^(1/3) + 2*(a +
b*x)^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*a^(10/3)) - (7*b^2*Log
[x])/(9*a^(10/3)) + (7*b^2*Log[a^(1/3) - (a + b*x)^(1/3)])/(3*a^(
10/3))
```

Rubi in Sympy [A] time = 15.75, size = 141, normalized size = 0.96

$$\frac{3}{ax^2\sqrt[3]{a+bx}}-\frac{7\left(a+bx\right)^{\frac{2}{3}}}{2a^2x^2}+\frac{14b\left(a+bx\right)^{\frac{2}{3}}}{3a^3x}-\frac{7b^2\log\left(x\right)}{9a^{\frac{10}{3}}}+\frac{7b^2\log\left(\sqrt[3]{a}-\sqrt[3]{a+bx}\right)}{3a^{\frac{10}{3}}}+\frac{14\sqrt{3}b^2\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}+\frac{2\sqrt[3]{a+bx}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{10}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)**(4/3),x)
```

```
[Out] 3/(a*x**2*(a + b*x)**(1/3)) - 7*(a + b*x)**(2/3)/(2*a**2*x**2) +
14*b*(a + b*x)**(2/3)/(3*a**3*x) - 7*b**2*log(x)/(9*a**(10/3)) +
7*b**2*log(a**(1/3) - (a + b*x)**(1/3))/(3*a**(10/3)) + 14*sqrt(3
)*b**2*atan(sqrt(3)*(a**(1/3)/3 + 2*(a + b*x)**(1/3)/3)/a**(1/3))
/(9*a**(10/3))
```

Mathematica [C] time = 0.0490377, size = 79, normalized size = 0.54

$$\frac{-3a^2-28b^2x^2\sqrt[3]{\frac{a}{bx}+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};-\frac{a}{bx}\right)+7abx+28b^2x^2}{6a^3x^2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*(a + b*x)^(4/3)),x]
```

```
[Out] (-3*a^2 + 7*a*b*x + 28*b^2*x^2 - 28*b^2*(1 + a/(b*x))^(1/3)*x^2*H
ypergeometric2F1[1/3, 1/3, 4/3, -(a/(b*x))])/(6*a^3*x^2*(a + b*x)
^(1/3))
```

Maple [A] time = 0.02, size = 131, normalized size = 0.9

$$3\,\frac{b^2}{a^3\sqrt[3]{bx+a}}+\frac{5}{3\,a^3x^2}\,(bx+a)^{\frac{5}{3}}-\frac{13}{6\,a^2x^2}\,(bx+a)^{\frac{2}{3}}+\frac{14\,b^2}{9}\ln\left(\sqrt[3]{bx+a}-\sqrt[3]{a}\right)a^{-\frac{10}{3}}$$
$$-\frac{7\,b^2}{9}\ln\left((bx+a)^{\frac{2}{3}}+\sqrt[3]{bx+a}\sqrt[3]{a}+a^{\frac{2}{3}}\right)a^{-\frac{10}{3}}+\frac{14\,b^2\sqrt{3}}{9}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{a}}+1\right)\right)a^{-\frac{10}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)^(4/3),x)
```

```
[Out] 3*b^2/a^3/(b*x+a)^(1/3)+5/3/a^3/x^2*(b*x+a)^(5/3)-13/6*(b*x+a)^(2
/3)/a^2/x^2+14/9*b^2/a^(10/3)*ln((b*x+a)^(1/3)-a^(1/3))-7/9*b^2/a
^(10/3)*ln((b*x+a)^(2/3)+(b*x+a)^(1/3)*a^(1/3)+a^(2/3))+14/9*b^2/
a^(10/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/a^(1/3)*(b*x+a)^(1/3)+1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224075, size = 223, normalized size = 1.52

$$-\frac{\sqrt{3}\Big(14\sqrt{3}(bx+a)^{\frac{1}{3}}b^2x^2\log\left((bx+a)^{\frac{2}{3}}a^{\frac{1}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}+a\right)-28\sqrt{3}(bx+a)^{\frac{1}{3}}b^2x^2\log\left((bx+a)^{\frac{1}{3}}a^{\frac{2}{3}}-a\right)-84\,(bx+a)^{\frac{1}{3}}b}{54\,(bx+a)^{\frac{1}{3}}a^{\frac{10}{3}}x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x^3),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(14*sqrt(3)*(b*x + a)^(1/3)*b^2*x^2*log((b*x + a)^(
2/3)*a^(1/3) + (b*x + a)^(1/3)*a^(2/3) + a) - 28*sqrt(3)*(b*x + a
)^(1/3)*b^2*x^2*log((b*x + a)^(1/3)*a^(2/3) - a) - 84*(b*x + a)^(
1/3)*b^2*x^2*arctan(1/3*(2*sqrt(3)*(b*x + a)^(1/3)*a^(2/3) + sqrt
(3)*a)/a) - 3*sqrt(3)*(28*b^2*x^2 + 7*a*b*x - 3*a^2)*a^(1/3))/((b
*x + a)^(1/3)*a^(10/3)*x^2)
```

Sympy [A] time = 9.49656, size = 2215, normalized size = 15.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)**(4/3),x)
```

```
[Out] 54*a**(13/3)*b**(5/3)*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)
*gamma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a
**(16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/
b + x)**(10/3)*gamma(2/3)) - 201*a**(10/3)*b**(8/3)*(a/b + x)*gam
ma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/
3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**
(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)
) + 231*a**(7/3)*b**(11/3)*(a/b + x)**2*gamma(-1/3)/(-54*a**(22/3
)*(a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*
gamma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*
a**(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) - 84*a**(4/3)*b**(14
/3)*(a/b + x)**3*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*gamm
a(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(16
/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b + x
```

```
)**(10/3)*gamma(2/3)) + 28*a**4*b**2*(a/b + x)**(1/3)*log(1 - b**
(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(-1/3)/(-54*a**(22/3)*(a/b
+ x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2
/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**(13/
3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) + 28*a**4*b**2*(a/b + x)**(
1/3)*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*
I*pi/3)/a**(1/3))*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*gam
ma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(1
6/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b +
x)**(10/3)*gamma(2/3)) + 28*a**4*b**2*(a/b + x)**(1/3)*exp(4*I*pi
/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3
))*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162*a
**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/b
+ x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*gamm
a(2/3)) - 84*a**3*b**3*(a/b + x)**(4/3)*log(1 - b**(1/3)*(a/b + x
)**(1/3)/a**(1/3))*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*ga
mma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(
16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b +
 x)**(10/3)*gamma(2/3)) - 84*a**3*b**3*(a/b + x)**(4/3)*exp(8*I*p
i/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/
3))*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162*
a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/b
 + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*gam
ma(2/3)) - 84*a**3*b**3*(a/b + x)**(4/3)*exp(4*I*pi/3)*log(1 - b*
*(1/3)*(a/b + x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(-1/3)
/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a/
b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*ga
mma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) + 84*a
**2*b**4*(a/b + x)**(7/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1
/3))*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162
*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/
b + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*ga
mma(2/3)) + 84*a**2*b**4*(a/b + x)**(7/3)*exp(8*I*pi/3)*log(1 - b
**(1/3)*(a/b + x)**(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(-1/3
)/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a
/b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*g
amma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) + 84*
a**2*b**4*(a/b + x)**(7/3)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b +
x)**(1/3)*exp_polar(4*I*pi/3)/a**(1/3))*gamma(-1/3)/(-54*a**(22/3
)*(a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*
gamma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*
a**(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) - 28*a*b**5*(a/b + x
)**(10/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)/a**(1/3))*gamma(-1/3)
/(-54*a**(22/3)*(a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a/
b + x)**(4/3)*gamma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*ga
mma(2/3) + 54*a**(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) - 28*a
*b**5*(a/b + x)**(10/3)*exp(8*I*pi/3)*log(1 - b**(1/3)*(a/b + x)*
*(1/3)*exp_polar(2*I*pi/3)/a**(1/3))*gamma(-1/3)/(-54*a**(22/3)*(
a/b + x)**(1/3)*gamma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gam
ma(2/3) - 162*a**(16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**
(13/3)*b**3*(a/b + x)**(10/3)*gamma(2/3)) - 28*a*b**5*(a/b + x)**
(10/3)*exp(4*I*pi/3)*log(1 - b**(1/3)*(a/b + x)**(1/3)*exp_polar(
4*I*pi/3)/a**(1/3))*gamma(-1/3)/(-54*a**(22/3)*(a/b + x)**(1/3)*g
amma(2/3) + 162*a**(19/3)*b*(a/b + x)**(4/3)*gamma(2/3) - 162*a**
(16/3)*b**2*(a/b + x)**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*(a/b
+ x)**(10/3)*gamma(2/3))
```

GIAC/XCAS [A] time = 0.5252, size = 189, normalized size = 1.29

$$\frac{14\sqrt{3}b^2\arctan\left(\frac{\sqrt{3}\left(2\,(bx+a)^{\frac{1}{3}}+a^{\frac{1}{3}}\right)}{3\,a^{\frac{1}{3}}}\right)}{9\,a^{\frac{10}{3}}}-\frac{7\,b^2\ln\left((bx+a)^{\frac{2}{3}}+(bx+a)^{\frac{1}{3}}a^{\frac{1}{3}}+a^{\frac{2}{3}}\right)}{9\,a^{\frac{10}{3}}}+\frac{14\,b^2\ln\left(\left|(bx+a)^{\frac{1}{3}}-a^{\frac{1}{3}}\right|\right)}{9\,a^{\frac{10}{3}}}+\frac{3\,b^2}{(bx+a)^{\frac{1}{3}}a^3}+\frac{10\,(bx+a)^{\frac{5}{3}}b^2-13\,(bx+a)^{\frac{2}{3}}ab^2}{6\,a^3b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*x^3),x, algorithm="giac")
```

```
[Out] 14/9*sqrt(3)*b^2*arctan(1/3*sqrt(3)*(2*(b*x + a)^(1/3) + a^(1/3))
/a^(1/3))/a^(10/3) - 7/9*b^2*ln((b*x + a)^(2/3) + (b*x + a)^(1/3)
*a^(1/3) + a^(2/3))/a^(10/3) + 14/9*b^2*ln(abs((b*x + a)^(1/3) -
a^(1/3)))/a^(10/3) + 3*b^2/((b*x + a)^(1/3)*a^3) + 1/6*(10*(b*x +
 a)^(5/3)*b^2 - 13*(b*x + a)^(2/3)*a*b^2)/(a^3*b^2*x^2)
```

3.420 $\int \frac{1}{x\sqrt[3]{a^3+b^3x}}\,dx$

Optimal. Leaf size=71

$$\frac{3\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{2a}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3+b^3x}+a}{\sqrt{3}a}\right)}{a}-\frac{\log(x)}{2a}$$

```
[Out] (Sqrt[3]*ArcTan[(a + 2*(a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a - Log
[x]/(2*a) + (3*Log[a - (a^3 + b^3*x)^(1/3)])/(2*a)
```

Rubi [A] time = 0.0730796, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{3\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{2a}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3+b^3x}+a}{\sqrt{3}a}\right)}{a}-\frac{\log(x)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a^3 + b^3*x)^(1/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(a + 2*(a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a - Log
[x]/(2*a) + (3*Log[a - (a^3 + b^3*x)^(1/3)])/(2*a)
```

Rubi in Sympy [A] time = 5.1693, size = 60, normalized size = 0.85

$$-\frac{\log(x)}{2a}+\frac{3\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{2a}+\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}+\frac{2\sqrt[3]{a^3+b^3x}}{3}\right)}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b**3*x+a**3)**(1/3),x)
```

```
[Out] -log(x)/(2*a) + 3*log(a - (a**3 + b**3*x)**(1/3))/(2*a) + sqrt(3)
*atan(sqrt(3)*(a/3 + 2*(a**3 + b**3*x)**(1/3)/3)/a)/a
```

Mathematica [A] time = 0.0472896, size = 99, normalized size = 1.39

$$\frac{\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{a}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3+b^3x}+a}{\sqrt{3}a}\right)}{a}-\frac{\log\left(a\sqrt[3]{a^3+b^3x}+\left(a^3+b^3x\right)^{2/3}+a^2\right)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a^3 + b^3*x)^(1/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(a + 2*(a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a + Log
[a - (a^3 + b^3*x)^(1/3)]/a - Log[a^2 + a*(a^3 + b^3*x)^(1/3) + (
a^3 + b^3*x)^(2/3)]/(2*a)
```

Maple [A] time = 0.017, size = 87, normalized size = 1.2

$$\frac{1}{a}\ln\left(\sqrt[3]{b^3x+a^3}-a\right)-\frac{1}{2a}\ln\left(\left(b^3x+a^3\right)^{\frac{2}{3}}+\sqrt[3]{b^3x+a^3}a+a^2\right)+\frac{\sqrt{3}}{a}\arctan\left(\frac{\sqrt{3}}{3a}\left(a+2\sqrt[3]{b^3x+a^3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b^3*x+a^3)^(1/3),x)
```

```
[Out] 1/a*ln((b^3*x+a^3)^(1/3)-a)-1/2/a*ln((b^3*x+a^3)^(2/3)+(b^3*x+a^3
)^(1/3)*a+a^2)+arctan(1/3*(a+2*(b^3*x+a^3)^(1/3))/a*3^(1/2))*3^(1
/2)/a
```

Maxima [A] time = 1.49259, size = 116, normalized size = 1.63

$$\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}-\frac{\log\left(a^2+\left(b^3x+a^3\right)^{\frac{1}{3}}a+\left(b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a}+\frac{\log\left(-a+\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x + a^3)^(1/3)*x),x, algorithm="maxima")
```

```
[Out] sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(b^3*x + a^3)^(1/3))/a)/a - 1/2
*log(a^2 + (b^3*x + a^3)^(1/3)*a + (b^3*x + a^3)^(2/3))/a + log(-
a + (b^3*x + a^3)^(1/3))/a
```

Fricas [A] time = 0.225366, size = 113, normalized size = 1.59

$$\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)-\log\left(a^2+\left(b^3x+a^3\right)^{\frac{1}{3}}a+\left(b^3x+a^3\right)^{\frac{2}{3}}\right)+2\log\left(-a+\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x + a^3)^(1/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(b^3*x + a^3)^(1/3))/a)
- log(a^2 + (b^3*x + a^3)^(1/3)*a + (b^3*x + a^3)^(2/3)) + 2*log(
-a + (b^3*x + a^3)^(1/3)))/a
```

Sympy [A] time = 5.28944, size = 139, normalized size = 1.96

$$-\frac{e^{\frac{4i\pi}{3}}\log\left(-\frac{ae^{\frac{2i\pi}{3}}}{b\sqrt[3]{\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}+\frac{e^{-\frac{i\pi}{3}}\log\left(-\frac{ae^{\frac{4i\pi}{3}}}{b\sqrt[3]{\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}-\frac{\log\left(-\frac{ae^{2i\pi}}{b\sqrt[3]{\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b**3*x+a**3)**(1/3),x)
```

```
[Out] -exp(4*I*pi/3)*log(-a*exp_polar(2*I*pi/3)/(b*(a**3/b**3 + x)**(1/
3)) + 1)*gamma(-1/3)/(3*a*gamma(2/3)) + exp(-I*pi/3)*log(-a*exp_p
olar(4*I*pi/3)/(b*(a**3/b**3 + x)**(1/3)) + 1)*gamma(-1/3)/(3*a*g
amma(2/3)) - log(-a*exp_polar(2*I*pi)/(b*(a**3/b**3 + x)**(1/3))
+ 1)*gamma(-1/3)/(3*a*gamma(2/3))
```

GIAC/XCAS [A] time = 0.224434, size = 117, normalized size = 1.65

$$\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}-\frac{\ln\left(a^2+\left(b^3x+a^3\right)^{\frac{1}{3}}a+\left(b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a}+\frac{\ln\left(\left|-a+\left(b^3x+a^3\right)^{\frac{1}{3}}\right|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x + a^3)^(1/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(b^3*x + a^3)^(1/3))/a)/a - 1/2
*ln(a^2 + (b^3*x + a^3)^(1/3)*a + (b^3*x + a^3)^(2/3))/a + ln(abs
(-a + (b^3*x + a^3)^(1/3)))/a
```

3.421 $\int \frac{1}{x\sqrt[3]{a^3-b^3x}}\,dx$

Optimal. Leaf size=73

$$\frac{3\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{2a}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3-b^3x}+a}{\sqrt{3}a}\right)}{a}-\frac{\log(x)}{2a}$$

```
[Out] (Sqrt[3]*ArcTan[(a + 2*(a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a - Log
[x]/(2*a) + (3*Log[a - (a^3 - b^3*x)^(1/3)])/(2*a)
```

Rubi [A] time = 0.0705633, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$\frac{3\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{2a}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3-b^3x}+a}{\sqrt{3}a}\right)}{a}-\frac{\log(x)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a^3 - b^3*x)^(1/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(a + 2*(a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a - Log
[x]/(2*a) + (3*Log[a - (a^3 - b^3*x)^(1/3)])/(2*a)
```

Rubi in Sympy [A] time = 5.50241, size = 60, normalized size = 0.82

$$-\frac{\log(x)}{2a}+\frac{3\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{2a}+\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}+\frac{2\sqrt[3]{a^3-b^3x}}{3}\right)}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(-b**3*x+a**3)**(1/3),x)
```

```
[Out] -log(x)/(2*a) + 3*log(a - (a**3 - b**3*x)**(1/3))/(2*a) + sqrt(3)
*atan(sqrt(3)*(a/3 + 2*(a**3 - b**3*x)**(1/3)/3)/a)/a
```

Mathematica [A] time = 0.051939, size = 103, normalized size = 1.41

$$\frac{\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{a}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3-b^3x}+a}{\sqrt{3}a}\right)}{a}-\frac{\log\left(a\sqrt[3]{a^3-b^3x}+\left(a^3-b^3x\right)^{2/3}+a^2\right)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a^3 - b^3*x)^(1/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(a + 2*(a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a + Log
[a - (a^3 - b^3*x)^(1/3)]/a - Log[a^2 + a*(a^3 - b^3*x)^(1/3) + (
a^3 - b^3*x)^(2/3)]/(2*a)
```

Maple [A] time = 0.008, size = 91, normalized size = 1.3

$$\frac{1}{a}\ln\left(\sqrt[3]{-b^3x+a^3}-a\right)-\frac{1}{2a}\ln\left(\left(-b^3x+a^3\right)^{\frac{2}{3}}+\sqrt[3]{-b^3x+a^3}a+a^2\right)+\frac{\sqrt{3}}{a}\arctan\left(\frac{\sqrt{3}}{3a}\left(a+2\sqrt[3]{-b^3x+a^3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(-b^3*x+a^3)^(1/3),x)
```

```
[Out] 1/a*ln((-b^3*x+a^3)^(1/3)-a)-1/2/a*ln((-b^3*x+a^3)^(2/3)+(-b^3*x+
a^3)^(1/3)*a+a^2)+arctan(1/3*(a+2*(-b^3*x+a^3)^(1/3))/a*3^(1/2))*
3^(1/2)/a
```

Maxima [A] time = 1.49084, size = 122, normalized size = 1.67

$$\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}-\frac{\log\left(a^2+\left(-b^3x+a^3\right)^{\frac{1}{3}}a+\left(-b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a}+\frac{\log\left(-a+\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x + a^3)^(1/3)*x),x, algorithm="maxima")
```

```
[Out] sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(-b^3*x + a^3)^(1/3))/a)/a - 1/
2*log(a^2 + (-b^3*x + a^3)^(1/3)*a + (-b^3*x + a^3)^(2/3))/a + lo
g(-a + (-b^3*x + a^3)^(1/3))/a
```

Fricas [A] time = 0.219629, size = 119, normalized size = 1.63

$$\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)-\log\left(a^2+\left(-b^3x+a^3\right)^{\frac{1}{3}}a+\left(-b^3x+a^3\right)^{\frac{2}{3}}\right)+2\log\left(-a+\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x + a^3)^(1/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(-b^3*x + a^3)^(1/3))/a)
 - log(a^2 + (-b^3*x + a^3)^(1/3)*a + (-b^3*x + a^3)^(2/3)) + 2*l
og(-a + (-b^3*x + a^3)^(1/3)))/a
```

Sympy [A] time = 5.34102, size = 136, normalized size = 1.86

$$-\frac{e^{\frac{4i\pi}{3}}\log\left(-\frac{ae^{\frac{i\pi}{3}}}{b\sqrt[3]{-\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}+\frac{e^{-\frac{i\pi}{3}}\log\left(-\frac{ae^{i\pi}}{b\sqrt[3]{-\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}-\frac{\log\left(-\frac{ae^{\frac{5i\pi}{3}}}{b\sqrt[3]{-\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(-b**3*x+a**3)**(1/3),x)
```

```
[Out] -exp(4*I*pi/3)*log(-a*exp_polar(I*pi/3)/(b*(-a**3/b**3 + x)**(1/3
)) + 1)*gamma(-1/3)/(3*a*gamma(2/3)) + exp(-I*pi/3)*log(-a*exp_po
lar(I*pi)/(b*(-a**3/b**3 + x)**(1/3)) + 1)*gamma(-1/3)/(3*a*gamma
(2/3)) - log(-a*exp_polar(5*I*pi/3)/(b*(-a**3/b**3 + x)**(1/3)) +
 1)*gamma(-1/3)/(3*a*gamma(2/3))
```

GIAC/XCAS [A] time = 0.215581, size = 123, normalized size = 1.68

$$\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}-\frac{\ln\left(a^2+\left(-b^3x+a^3\right)^{\frac{1}{3}}a+\left(-b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a}+\frac{\ln\left(\left|-a+\left(-b^3x+a^3\right)^{\frac{1}{3}}\right|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x + a^3)^(1/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(-b^3*x + a^3)^(1/3))/a)/a - 1/
2*ln(a^2 + (-b^3*x + a^3)^(1/3)*a + (-b^3*x + a^3)^(2/3))/a + ln(
abs(-a + (-b^3*x + a^3)^(1/3)))/a
```

3.422 $\int \frac{1}{x\sqrt[3]{-a^3+b^3x}}\,dx$

Optimal. Leaf size=74

$$-\frac{3\log\left(\sqrt[3]{b^3x-a^3}+a\right)}{2a}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{b^3x-a^3}}{\sqrt{3}a}\right)}{a}+\frac{\log(x)}{2a}$$

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a) +
 Log[x]/(2*a) - (3*Log[a + (-a^3 + b^3*x)^(1/3)])/(2*a)
```

Rubi [A] time = 0.0727993, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$-\frac{3\log\left(\sqrt[3]{b^3x-a^3}+a\right)}{2a}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{b^3x-a^3}}{\sqrt{3}a}\right)}{a}+\frac{\log(x)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a^3 + b^3*x)^(1/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a) +
 Log[x]/(2*a) - (3*Log[a + (-a^3 + b^3*x)^(1/3)])/(2*a)
```

Rubi in Sympy [A] time = 5.37005, size = 60, normalized size = 0.81

$$\frac{\log(x)}{2a}-\frac{3\log\left(a+\sqrt[3]{-a^3+b^3x}\right)}{2a}-\frac{\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}-\frac{2\sqrt[3]{-a^3+b^3x}}{3}\right)}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b**3*x-a**3)**(1/3),x)
```

```
[Out] log(x)/(2*a) - 3*log(a + (-a**3 + b**3*x)**(1/3))/(2*a) - sqrt(3)
*atan(sqrt(3)*(a/3 - 2*(-a**3 + b**3*x)**(1/3)/3)/a)/a
```

Mathematica [A] time = 0.0495817, size = 104, normalized size = 1.41

$$\frac{-2\log\left(\sqrt[3]{b^3x-a^3}+a\right)+2\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{b^3x-a^3}-a}{\sqrt{3}a}\right)+\log\left(-a\sqrt[3]{b^3x-a^3}+\left(b^3x-a^3\right)^{2/3}+a^2\right)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a^3 + b^3*x)^(1/3)),x]
```

```
[Out] (2*Sqrt[3]*ArcTan[(-a + 2*(-a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)] - 2*
Log[a + (-a^3 + b^3*x)^(1/3)] + Log[a^2 - a*(-a^3 + b^3*x)^(1/3)
+ (-a^3 + b^3*x)^(2/3)])/(2*a)
```

Maple [A] time = 0.015, size = 97, normalized size = 1.3

$$\frac{1}{2\,a}\ln\left(\left(b^3x-a^3\right)^{\frac{2}{3}}-\sqrt[3]{b^3x-a^3}a+a^2\right)+\frac{\sqrt{3}}{a}\arctan\left(\frac{\sqrt{3}}{3\,a}\left(2\,\sqrt[3]{b^3x-a^3}-a\right)\right)-\frac{1}{a}\ln\left(a+\sqrt[3]{b^3x-a^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b^3*x-a^3)^(1/3),x)
```

```
[Out] 1/2/a*ln((b^3*x-a^3)^(2/3)-(b^3*x-a^3)^(1/3)*a+a^2)+1/a*3^(1/2)*a
rctan(1/3*(2*(b^3*x-a^3)^(1/3)-a)*3^(1/2)/a)-ln(a+(b^3*x-a^3)^(1/
3))/a
```

Maxima [A] time = 1.49919, size = 127, normalized size = 1.72

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{3\,a}\right)}{a}+\frac{\log\left(a^2-\left(b^3x-a^3\right)^{\frac{1}{3}}a+\left(b^3x-a^3\right)^{\frac{2}{3}}\right)}{2\,a}-\frac{\log\left(a+\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x - a^3)^(1/3)*x),x, algorithm="maxima")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(b^3*x - a^3)^(1/3))/a)/a + 1/
2*log(a^2 - (b^3*x - a^3)^(1/3)*a + (b^3*x - a^3)^(2/3))/a - log(
a + (b^3*x - a^3)^(1/3))/a
```

Fricas [A] time = 0.221076, size = 120, normalized size = 1.62

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)+\log\left(a^2-\left(b^3x-a^3\right)^{\frac{1}{3}}a+\left(b^3x-a^3\right)^{\frac{2}{3}}\right)-2\log\left(a+\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x - a^3)^(1/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(b^3*x - a^3)^(1/3))/a)
 + log(a^2 - (b^3*x - a^3)^(1/3)*a + (b^3*x - a^3)^(2/3)) - 2*log
(a + (b^3*x - a^3)^(1/3)))/a
```

Sympy [A] time = 5.29304, size = 136, normalized size = 1.84

$$-\frac{e^{\frac{5i\pi}{3}}\log\left(-\frac{ae^{\frac{i\pi}{3}}}{b\sqrt[3]{-\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}+\frac{\log\left(-\frac{ae^{i\pi}}{b\sqrt[3]{-\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}-\frac{e^{\frac{i\pi}{3}}\log\left(-\frac{ae^{\frac{5i\pi}{3}}}{b\sqrt[3]{-\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b**3*x-a**3)**(1/3),x)
```

```
[Out] -exp(5*I*pi/3)*log(-a*exp_polar(I*pi/3)/(b*(-a**3/b**3 + x)**(1/3
)) + 1)*gamma(-1/3)/(3*a*gamma(2/3)) + log(-a*exp_polar(I*pi)/(b*
(-a**3/b**3 + x)**(1/3)) + 1)*gamma(-1/3)/(3*a*gamma(2/3)) - exp(
I*pi/3)*log(-a*exp_polar(5*I*pi/3)/(b*(-a**3/b**3 + x)**(1/3)) +
1)*gamma(-1/3)/(3*a*gamma(2/3))
```

GIAC/XCAS [A] time = 0.222041, size = 128, normalized size = 1.73

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}+\frac{\ln\left(a^2-\left(b^3x-a^3\right)^{\frac{1}{3}}a+\left(b^3x-a^3\right)^{\frac{2}{3}}\right)}{2a}-\frac{\ln\left(\left|a+\left(b^3x-a^3\right)^{\frac{1}{3}}\right|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x - a^3)^(1/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(b^3*x - a^3)^(1/3))/a)/a + 1/
2*ln(a^2 - (b^3*x - a^3)^(1/3)*a + (b^3*x - a^3)^(2/3))/a - ln(ab
s(a + (b^3*x - a^3)^(1/3)))/a
```

3.423 $\int \frac{1}{x\sqrt[3]{-a^3-b^3x}}\,dx$

Optimal. Leaf size=76

$$-\frac{3\log\left(\sqrt[3]{-a^3-b^3x}+a\right)}{2a}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{-a^3-b^3x}}{\sqrt{3}a}\right)}{a}+\frac{\log(x)}{2a}$$

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a) +
 Log[x]/(2*a) - (3*Log[a + (-a^3 - b^3*x)^(1/3)])/(2*a)
```

Rubi [A] time = 0.0709022, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{3\log\left(\sqrt[3]{-a^3-b^3x}+a\right)}{2a}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{-a^3-b^3x}}{\sqrt{3}a}\right)}{a}+\frac{\log(x)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a^3 - b^3*x)^(1/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a) +
 Log[x]/(2*a) - (3*Log[a + (-a^3 - b^3*x)^(1/3)])/(2*a)
```

Rubi in Sympy [A] time = 5.80699, size = 63, normalized size = 0.83

$$\frac{\log(x)}{2a}-\frac{3\log\left(a+\sqrt[3]{-a^3-b^3x}\right)}{2a}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}-\frac{2\sqrt[3]{-a^3-b^3x}}{3}\right)}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(-b**3*x-a**3)**(1/3),x)
```

```
[Out] log(x)/(2*a) - 3*log(a + (-a**3 - b**3*x)**(1/3))/(2*a) - sqrt(3)
*atan(sqrt(3)*(a/3 - 2*(-a**3 - b**3*x)**(1/3)/3)/a)/a
```

Mathematica [A] time = 0.0496431, size = 108, normalized size = 1.42

$$\frac{-2\log\left(\sqrt[3]{-a^3-b^3x}+a\right)+2\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{-a^3-b^3x}-a}{\sqrt{3}a}\right)+\log\left(-a\sqrt[3]{-a^3-b^3x}+\left(-a^3-b^3x\right)^{2/3}+a^2\right)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a^3 - b^3*x)^(1/3)),x]
```

```
[Out] (2*Sqrt[3]*ArcTan[(-a + 2*(-a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)] - 2*
Log[a + (-a^3 - b^3*x)^(1/3)] + Log[a^2 - a*(-a^3 - b^3*x)^(1/3)
+ (-a^3 - b^3*x)^(2/3)])/(2*a)
```

Maple [A] time = 0.01, size = 101, normalized size = 1.3

$$\frac{1}{2a}\ln\left(\left(-b^3x-a^3\right)^{\frac{2}{3}}-\sqrt[3]{-b^3x-a^3}a+a^2\right)+\frac{\sqrt{3}}{a}\arctan\left(\frac{\sqrt{3}}{3a}\left(2\sqrt[3]{-b^3x-a^3}-a\right)\right)-\frac{1}{a}\ln\left(a+\sqrt[3]{-b^3x-a^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(-b^3*x-a^3)^(1/3),x)
```

```
[Out] 1/2/a*ln((-b^3*x-a^3)^(2/3)-(-b^3*x-a^3)^(1/3)*a+a^2)+1/a*3^(1/2)
*arctan(1/3*(2*(-b^3*x-a^3)^(1/3)-a)*3^(1/2)/a)-ln(a+(-b^3*x-a^3)
^(1/3))/a
```

Maxima [A] time = 1.50924, size = 132, normalized size = 1.74

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}+\frac{\log\left(a^2-\left(-b^3x-a^3\right)^{\frac{1}{3}}a+\left(-b^3x-a^3\right)^{\frac{2}{3}}\right)}{2a}-\frac{\log\left(a+\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x - a^3)^(1/3)*x),x, algorithm="maxima")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(-b^3*x - a^3)^(1/3))/a)/a + 1
/2*log(a^2 - (-b^3*x - a^3)^(1/3)*a + (-b^3*x - a^3)^(2/3))/a - l
og(a + (-b^3*x - a^3)^(1/3))/a
```

Fricas [A] time = 0.219406, size = 126, normalized size = 1.66

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)+\log\left(a^2-\left(-b^3x-a^3\right)^{\frac{1}{3}}a+\left(-b^3x-a^3\right)^{\frac{2}{3}}\right)-2\log\left(a+\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x - a^3)^(1/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(-b^3*x - a^3)^(1/3))/a
) + log(a^2 - (-b^3*x - a^3)^(1/3)*a + (-b^3*x - a^3)^(2/3)) - 2*
log(a + (-b^3*x - a^3)^(1/3)))/a
```

Sympy [A] time = 5.37178, size = 139, normalized size = 1.83

$$\frac{\log\left(-\frac{ae^{\frac{2i\pi}{3}}}{b\sqrt[3]{\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}+\frac{e^{-\frac{2i\pi}{3}}\log\left(-\frac{ae^{\frac{4i\pi}{3}}}{b\sqrt[3]{\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}-\frac{e^{-\frac{i\pi}{3}}\log\left(-\frac{ae^{2i\pi}}{b\sqrt[3]{\frac{a^3}{b^3}+x}}+1\right)\Gamma\left(-\frac{1}{3}\right)}{3a\Gamma\left(\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(-b**3*x-a**3)**(1/3),x)
```

```
[Out] log(-a*exp_polar(2*I*pi/3)/(b*(a**3/b**3 + x)**(1/3)) + 1)*gamma(
-1/3)/(3*a*gamma(2/3)) + exp(-2*I*pi/3)*log(-a*exp_polar(4*I*pi/3
)/(b*(a**3/b**3 + x)**(1/3)) + 1)*gamma(-1/3)/(3*a*gamma(2/3)) -
exp(-I*pi/3)*log(-a*exp_polar(2*I*pi)/(b*(a**3/b**3 + x)**(1/3))
+ 1)*gamma(-1/3)/(3*a*gamma(2/3))
```

GIAC/XCAS [A] time = 0.216275, size = 134, normalized size = 1.76

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a}+\frac{\ln\left(a^2-\left(-b^3x-a^3\right)^{\frac{1}{3}}a+\left(-b^3x-a^3\right)^{\frac{2}{3}}\right)}{2a}-\frac{\ln\left(\left|a+\left(-b^3x-a^3\right)^{\frac{1}{3}}\right|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x - a^3)^(1/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(-b^3*x - a^3)^(1/3))/a)/a + 1
/2*ln(a^2 - (-b^3*x - a^3)^(1/3)*a + (-b^3*x - a^3)^(2/3))/a - ln
(abs(a + (-b^3*x - a^3)^(1/3)))/a
```

3.424 $\int \frac{1}{x(a^3+b^3x)^{2/3}}\,dx$

Optimal. Leaf size=72

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3+b^3x}+a}{\sqrt{3}a}\right)}{a^2}$$

```
[Out] -((Sqrt[3]*ArcTan[(a + 2*(a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
- Log[x]/(2*a^2) + (3*Log[a - (a^3 + b^3*x)^(1/3)])/(2*a^2)
```

Rubi [A] time = 0.0621119, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3+b^3x}+a}{\sqrt{3}a}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a^3 + b^3*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a + 2*(a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
- Log[x]/(2*a^2) + (3*Log[a - (a^3 + b^3*x)^(1/3)])/(2*a^2)
```

Rubi in Sympy [A] time = 5.37111, size = 65, normalized size = 0.9

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a-\sqrt[3]{a^3+b^3x}\right)}{2a^2}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}+\frac{2\sqrt[3]{a^3+b^3x}}{3}\right)}{a}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b**3*x+a**3)**(2/3),x)
```

```
[Out] -log(x)/(2*a**2) + 3*log(a - (a**3 + b**3*x)**(1/3))/(2*a**2) - s
qrt(3)*atan(sqrt(3)*(a/3 + 2*(a**3 + b**3*x)**(1/3)/3)/a)/a**2
```

Mathematica [A] time = 0.0285316, size = 95, normalized size = 1.32

$$-\frac{-2\log\left(a-\sqrt[3]{a^3+b^3x}\right)+2\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3+b^3x}+a}{\sqrt{3}a}\right)+\log\left(a\sqrt[3]{a^3+b^3x}+\left(a^3+b^3x\right)^{2/3}+a^2\right)}{2a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a^3 + b^3*x)^(2/3)),x]
```

```
[Out] -(2*Sqrt[3]*ArcTan[(a + 2*(a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)] - 2*L
og[a - (a^3 + b^3*x)^(1/3)] + Log[a^2 + a*(a^3 + b^3*x)^(1/3) + (
a^3 + b^3*x)^(2/3)])/(2*a^2)
```

Maple [A] time = 0.013, size = 88, normalized size = 1.2

$$\frac{1}{a^2}\ln\left(\sqrt[3]{b^3x+a^3}-a\right)-\frac{1}{2a^2}\ln\left(\left(b^3x+a^3\right)^{\frac{2}{3}}+\sqrt[3]{b^3x+a^3}a+a^2\right)-\frac{\sqrt{3}}{a^2}\arctan\left(\frac{\sqrt{3}}{3a}\left(a+2\sqrt[3]{b^3x+a^3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b^3*x+a^3)^(2/3),x)
```

```
[Out] 1/a^2*ln((b^3*x+a^3)^(1/3)-a)-1/2/a^2*ln((b^3*x+a^3)^(2/3)+(b^3*x
+a^3)^(1/3)*a+a^2)-arctan(1/3*(a+2*(b^3*x+a^3)^(1/3))/a*3^(1/2))*
3^(1/2)/a^2
```

Maxima [A] time = 1.47607, size = 117, normalized size = 1.62

$$-\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a^2}-\frac{\log\left(a^2+\left(b^3x+a^3\right)^{\frac{1}{3}}a+\left(b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a^2}+\frac{\log\left(-a+\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x + a^3)^(2/3)*x),x, algorithm="maxima")
```

```
[Out] -sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(b^3*x + a^3)^(1/3))/a)/a^2 -
1/2*log(a^2 + (b^3*x + a^3)^(1/3)*a + (b^3*x + a^3)^(2/3))/a^2 +
log(-a + (b^3*x + a^3)^(1/3))/a^2
```

Fricas [A] time = 0.22109, size = 111, normalized size = 1.54

$$-\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)+\log\left(a^2+\left(b^3x+a^3\right)^{\frac{1}{3}}a+\left(b^3x+a^3\right)^{\frac{2}{3}}\right)-2\log\left(-a+\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x + a^3)^(2/3)*x),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(b^3*x + a^3)^(1/3))/a)
 + log(a^2 + (b^3*x + a^3)^(1/3)*a + (b^3*x + a^3)^(2/3)) - 2*log
(-a + (b^3*x + a^3)^(1/3)))/a^2
```

Sympy [A] time = 5.37894, size = 134, normalized size = 1.86

$$\frac{\log\left(1-\frac{b\sqrt[3]{\frac{a^3}{b^3}+x}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}+\frac{e^{\frac{4i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{\frac{a^3}{b^3}+x}e^{\frac{2i\pi}{3}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}+\frac{e^{\frac{2i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{\frac{a^3}{b^3}+x}e^{\frac{4i\pi}{3}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b**3*x+a**3)**(2/3),x)
```

```
[Out] log(1 - b*(a**3/b**3 + x)**(1/3)/a)*gamma(1/3)/(3*a**2*gamma(4/3)
) + exp(4*I*pi/3)*log(1 - b*(a**3/b**3 + x)**(1/3)*exp_polar(2*I*
pi/3)/a)*gamma(1/3)/(3*a**2*gamma(4/3)) + exp(2*I*pi/3)*log(1 - b
*(a**3/b**3 + x)**(1/3)*exp_polar(4*I*pi/3)/a)*gamma(1/3)/(3*a**2
*gamma(4/3))
```

GIAC/XCAS [A] time = 0.230379, size = 119, normalized size = 1.65

$$-\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a^2}-\frac{\ln\left(a^2+\left(b^3x+a^3\right)^{\frac{1}{3}}a+\left(b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a^2}+\frac{\ln\left(\left|-a+\left(b^3x+a^3\right)^{\frac{1}{3}}\right|\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x + a^3)^(2/3)*x),x, algorithm="giac")
```

```
[Out] -sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(b^3*x + a^3)^(1/3))/a)/a^2 -
1/2*ln(a^2 + (b^3*x + a^3)^(1/3)*a + (b^3*x + a^3)^(2/3))/a^2 + l
n(abs(-a + (b^3*x + a^3)^(1/3)))/a^2
```

3.425 $\int \frac{1}{x(a^3-b^3x)^{2/3}}\,dx$

Optimal. Leaf size=74

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3-b^3x}+a}{\sqrt{3}a}\right)}{a^2}$$

```
[Out] -((Sqrt[3]*ArcTan[(a + 2*(a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
- Log[x]/(2*a^2) + (3*Log[a - (a^3 - b^3*x)^(1/3)])/(2*a^2)
```

Rubi [A] time = 0.0611289, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3-b^3x}+a}{\sqrt{3}a}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(a^3 - b^3*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a + 2*(a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
- Log[x]/(2*a^2) + (3*Log[a - (a^3 - b^3*x)^(1/3)])/(2*a^2)
```

Rubi in Sympy [A] time = 5.76233, size = 65, normalized size = 0.88

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a-\sqrt[3]{a^3-b^3x}\right)}{2a^2}-\frac{\sqrt{3}\,\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}+\frac{2\sqrt[3]{a^3-b^3x}}{3}\right)}{a}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(-b**3*x+a**3)**(2/3),x)
```

```
[Out] -log(x)/(2*a**2) + 3*log(a - (a**3 - b**3*x)**(1/3))/(2*a**2) - s
qrt(3)*atan(sqrt(3)*(a/3 + 2*(a**3 - b**3*x)**(1/3)/3)/a)/a**2
```

Mathematica [A] time = 0.0376495, size = 99, normalized size = 1.34

$$-\frac{-2\log\left(a-\sqrt[3]{a^3-b^3x}\right)+2\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{a^3-b^3x}+a}{\sqrt{3}a}\right)+\log\left(a\sqrt[3]{a^3-b^3x}+\left(a^3-b^3x\right)^{2/3}+a^2\right)}{2a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(a^3 - b^3*x)^(2/3)),x]
```

```
[Out] -(2*Sqrt[3]*ArcTan[(a + 2*(a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)] - 2*L
og[a - (a^3 - b^3*x)^(1/3)] + Log[a^2 + a*(a^3 - b^3*x)^(1/3) + (
a^3 - b^3*x)^(2/3)])/(2*a^2)
```

Maple [A] time = 0.007, size = 92, normalized size = 1.2

$$\frac{1}{a^2}\ln\left(\sqrt[3]{-b^3x+a^3}-a\right)-\frac{1}{2a^2}\ln\left(\left(-b^3x+a^3\right)^{\frac{2}{3}}+\sqrt[3]{-b^3x+a^3}a+a^2\right)-\frac{\sqrt{3}}{a^2}\arctan\left(\frac{\sqrt{3}}{3a}\left(a+2\sqrt[3]{-b^3x+a^3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(-b^3*x+a^3)^(2/3),x)
```

```
[Out] 1/a^2*ln((-b^3*x+a^3)^(1/3)-a)-1/2/a^2*ln((-b^3*x+a^3)^(2/3)+(-b^
3*x+a^3)^(1/3)*a+a^2)-arctan(1/3*(a+2*(-b^3*x+a^3)^(1/3))/a*3^(1/
2))*3^(1/2)/a^2
```

Maxima [A] time = 1.50169, size = 123, normalized size = 1.66

$$-\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a^2}-\frac{\log\left(a^2+\left(-b^3x+a^3\right)^{\frac{1}{3}}a+\left(-b^3x+a^3\right)^{\frac{2}{3}}\right)}{2a^2}+\frac{\log\left(-a+\left(-b^3x+a^3\right)^{\frac{1}{3}}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x + a^3)^(2/3)*x),x, algorithm="maxima")
```

```
[Out] -sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(-b^3*x + a^3)^(1/3))/a)/a^2 -
 1/2*log(a^2 + (-b^3*x + a^3)^(1/3)*a + (-b^3*x + a^3)^(2/3))/a^2
 + log(-a + (-b^3*x + a^3)^(1/3))/a^2
```

Fricas [A] time = 0.219842, size = 116, normalized size = 1.57

$$-\frac{2\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(-b^{3}x+a^{3}\right)^{\frac{1}{3}}\right)}{3a}\right)+\log\left(a^{2}+\left(-b^{3}x+a^{3}\right)^{\frac{1}{3}}a+\left(-b^{3}x+a^{3}\right)^{\frac{2}{3}}\right)-2\log\left(-a+\left(-b^{3}x+a^{3}\right)^{\frac{1}{3}}\right)}{2a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x + a^3)^(2/3)*x),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(-b^3*x + a^3)^(1/3))/a
) + log(a^2 + (-b^3*x + a^3)^(1/3)*a + (-b^3*x + a^3)^(2/3)) - 2*
log(-a + (-b^3*x + a^3)^(1/3)))/a^2
```

Sympy [A] time = 5.42713, size = 136, normalized size = 1.84

$$\frac{\log\left(1-\frac{b\sqrt[3]{-\frac{a^{3}}{b^{3}}+x}e^{\frac{i\pi}{3}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{2}\Gamma\left(\frac{4}{3}\right)}+\frac{e^{-\frac{2i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{-\frac{a^{3}}{b^{3}}+x}e^{i\pi}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{2}\Gamma\left(\frac{4}{3}\right)}-\frac{e^{-\frac{i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{-\frac{a^{3}}{b^{3}}+x}e^{\frac{5i\pi}{3}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{2}\Gamma\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(-b**3*x+a**3)**(2/3),x)
```

```
[Out] log(1 - b*(-a**3/b**3 + x)**(1/3)*exp_polar(I*pi/3)/a)*gamma(1/3)
/(3*a**2*gamma(4/3)) + exp(-2*I*pi/3)*log(1 - b*(-a**3/b**3 + x)*
*(1/3)*exp_polar(I*pi)/a)*gamma(1/3)/(3*a**2*gamma(4/3)) - exp(-I
*pi/3)*log(1 - b*(-a**3/b**3 + x)**(1/3)*exp_polar(5*I*pi/3)/a)*g
amma(1/3)/(3*a**2*gamma(4/3))
```

GIAC/XCAS [A] time = 0.216656, size = 124, normalized size = 1.68

$$-\frac{\sqrt{3}\arctan\left(\frac{\sqrt{3}\left(a+2\left(-b^{3}x+a^{3}\right)^{\frac{1}{3}}\right)}{3a}\right)}{a^{2}}-\frac{\ln\left(a^{2}+\left(-b^{3}x+a^{3}\right)^{\frac{1}{3}}a+\left(-b^{3}x+a^{3}\right)^{\frac{2}{3}}\right)}{2a^{2}}+\frac{\ln\left(\left|-a+\left(-b^{3}x+a^{3}\right)^{\frac{1}{3}}\right|\right)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x + a^3)^(2/3)*x),x, algorithm="giac")
```

```
[Out] -sqrt(3)*arctan(1/3*sqrt(3)*(a + 2*(-b^3*x + a^3)^(1/3))/a)/a^2 -
 1/2*ln(a^2 + (-b^3*x + a^3)^(1/3)*a + (-b^3*x + a^3)^(2/3))/a^2
+ ln(abs(-a + (-b^3*x + a^3)^(1/3)))/a^2
```

3.426 $\int \frac{1}{x(-a^3+b^3x)^{2/3}}\,dx$

Optimal. Leaf size=74

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(\sqrt[3]{b^3x-a^3}+a\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{b^3x-a^3}}{\sqrt{3}a}\right)}{a^2}$$

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
 - Log[x]/(2*a^2) + (3*Log[a + (-a^3 + b^3*x)^(1/3)])/(2*a^2)
```

Rubi [A] time = 0.0622796, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(\sqrt[3]{b^3x-a^3}+a\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{b^3x-a^3}}{\sqrt{3}a}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a^3 + b^3*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
 - Log[x]/(2*a^2) + (3*Log[a + (-a^3 + b^3*x)^(1/3)])/(2*a^2)
```

Rubi in Sympy [A] time = 5.5518, size = 65, normalized size = 0.88

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a+\sqrt[3]{-a^3+b^3x}\right)}{2a^2}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}-\frac{2\sqrt[3]{-a^3+b^3x}}{3}\right)}{a}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b**3*x-a**3)**(2/3),x)
```

```
[Out] -log(x)/(2*a**2) + 3*log(a + (-a**3 + b**3*x)**(1/3))/(2*a**2) -
sqrt(3)*atan(sqrt(3)*(a/3 - 2*(-a**3 + b**3*x)**(1/3)/3)/a)/a**2
```

Mathematica [A] time = 0.0319084, size = 108, normalized size = 1.46

$$\frac{\log\left(\sqrt[3]{b^3x-a^3}+a\right)}{a^2}-\frac{\log\left(-a\sqrt[3]{b^3x-a^3}+\left(b^3x-a^3\right)^{2/3}+a^2\right)}{2a^2}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{b^3x-a^3}-a}{\sqrt{3}a}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a^3 + b^3*x)^(2/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(-a + 2*(-a^3 + b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2 +
 Log[a + (-a^3 + b^3*x)^(1/3)]/a^2 - Log[a^2 - a*(-a^3 + b^3*x)^(
1/3) + (-a^3 + b^3*x)^(2/3)]/(2*a^2)
```

Maple [A] time = 0.013, size = 96, normalized size = 1.3

$$-\frac{1}{2\,a^2}\ln\left(\left(b^3x-a^3\right)^{\frac{2}{3}}-\sqrt[3]{b^3x-a^3}a+a^2\right)+\frac{\sqrt{3}}{a^2}\arctan\left(\frac{\sqrt{3}}{3\,a}\left(2\sqrt[3]{b^3x-a^3}-a\right)\right)+\frac{1}{a^2}\ln\left(a+\sqrt[3]{b^3x-a^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b^3*x-a^3)^(2/3),x)
```

```
[Out] -1/2/a^2*ln((b^3*x-a^3)^(2/3)-(b^3*x-a^3)^(1/3)*a+a^2)+1/a^2*3^(1
/2)*arctan(1/3*(2*(b^3*x-a^3)^(1/3)-a)*3^(1/2)/a)+ln(a+(b^3*x-a^3
)^(1/3))/a^2
```

Maxima [A] time = 1.50162, size = 126, normalized size = 1.7

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{3\,a}\right)}{a^2}-\frac{\log\left(a^2-\left(b^3x-a^3\right)^{\frac{1}{3}}a+\left(b^3x-a^3\right)^{\frac{2}{3}}\right)}{2\,a^2}+\frac{\log\left(a+\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x - a^3)^(2/3)*x),x, algorithm="maxima")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(b^3*x - a^3)^(1/3))/a)/a^2 -
1/2*log(a^2 - (b^3*x - a^3)^(1/3)*a + (b^3*x - a^3)^(2/3))/a^2 +
log(a + (b^3*x - a^3)^(1/3))/a^2
```

Fricas [A] time = 0.221163, size = 123, normalized size = 1.66

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)-\log\left(a^2-\left(b^3x-a^3\right)^{\frac{1}{3}}a+\left(b^3x-a^3\right)^{\frac{2}{3}}\right)+2\log\left(a+\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x - a^3)^(2/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(b^3*x - a^3)^(1/3))/a)
 - log(a^2 - (b^3*x - a^3)^(1/3)*a + (b^3*x - a^3)^(2/3)) + 2*log
(a + (b^3*x - a^3)^(1/3)))/a^2
```

Sympy [A] time = 5.43489, size = 136, normalized size = 1.84

$$-\frac{e^{\frac{5i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{-\frac{a^3}{b^3}+xe^{\frac{i\pi}{3}}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}+\frac{\log\left(1-\frac{b\sqrt[3]{-\frac{a^3}{b^3}+xe^{i\pi}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}-\frac{e^{\frac{i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{-\frac{a^3}{b^3}+xe^{\frac{5i\pi}{3}}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b**3*x-a**3)**(2/3),x)
```

```
[Out] -exp(5*I*pi/3)*log(1 - b*(-a**3/b**3 + x)**(1/3)*exp_polar(I*pi/3
)/a)*gamma(1/3)/(3*a**2*gamma(4/3)) + log(1 - b*(-a**3/b**3 + x)*
*(1/3)*exp_polar(I*pi)/a)*gamma(1/3)/(3*a**2*gamma(4/3)) - exp(I*
pi/3)*log(1 - b*(-a**3/b**3 + x)**(1/3)*exp_polar(5*I*pi/3)/a)*ga
mma(1/3)/(3*a**2*gamma(4/3))
```

GIAC/XCAS [A] time = 0.229349, size = 127, normalized size = 1.72

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a^2}-\frac{\ln\left(a^2-\left(b^3x-a^3\right)^{\frac{1}{3}}a+\left(b^3x-a^3\right)^{\frac{2}{3}}\right)}{2a^2}+\frac{\ln\left(\left|a+\left(b^3x-a^3\right)^{\frac{1}{3}}\right|\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b^3*x - a^3)^(2/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(b^3*x - a^3)^(1/3))/a)/a^2 -
1/2*ln(a^2 - (b^3*x - a^3)^(1/3)*a + (b^3*x - a^3)^(2/3))/a^2 + l
n(abs(a + (b^3*x - a^3)^(1/3)))/a^2
```

3.427 $\int \frac{1}{x(-a^3-b^3x)^{2/3}}\,dx$

Optimal. Leaf size=76

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(\sqrt[3]{-a^3-b^3x}+a\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{-a^3-b^3x}}{\sqrt{3}a}\right)}{a^2}$$

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
 - Log[x]/(2*a^2) + (3*Log[a + (-a^3 - b^3*x)^(1/3)])/(2*a^2)
```

Rubi [A] time = 0.0626767, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(\sqrt[3]{-a^3-b^3x}+a\right)}{2a^2}-\frac{\sqrt{3}\tan^{-1}\left(\frac{a-2\sqrt[3]{-a^3-b^3x}}{\sqrt{3}a}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(-a^3 - b^3*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a - 2*(-a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2)
 - Log[x]/(2*a^2) + (3*Log[a + (-a^3 - b^3*x)^(1/3)])/(2*a^2)
```

Rubi in Sympy [A] time = 6.0539, size = 68, normalized size = 0.89

$$-\frac{\log(x)}{2a^2}+\frac{3\log\left(a+\sqrt[3]{-a^3-b^3x}\right)}{2a^2}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{a}{3}-\frac{2\sqrt[3]{-a^3-b^3x}}{3}\right)}{a}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(-b**3*x-a**3)**(2/3),x)
```

```
[Out] -log(x)/(2*a**2) + 3*log(a + (-a**3 - b**3*x)**(1/3))/(2*a**2) -
sqrt(3)*atan(sqrt(3)*(a/3 - 2*(-a**3 - b**3*x)**(1/3)/3)/a)/a**2
```

Mathematica [A] time = 0.0167553, size = 112, normalized size = 1.47

$$\frac{\log\left(\sqrt[3]{-a^3-b^3x}+a\right)}{a^2}-\frac{\log\left(-a\sqrt[3]{-a^3-b^3x}+\left(-a^3-b^3x\right)^{2/3}+a^2\right)}{2a^2}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{-a^3-b^3x}-a}{\sqrt{3}a}\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(-a^3 - b^3*x)^(2/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(-a + 2*(-a^3 - b^3*x)^(1/3))/(Sqrt[3]*a)])/a^2 +
 Log[a + (-a^3 - b^3*x)^(1/3)]/a^2 - Log[a^2 - a*(-a^3 - b^3*x)^(
1/3) + (-a^3 - b^3*x)^(2/3)]/(2*a^2)
```

Maple [A] time = 0.005, size = 100, normalized size = 1.3

$$-\frac{1}{2\,a^2}\ln\left(\left(-b^3x-a^3\right)^{\frac{2}{3}}-\sqrt[3]{-b^3x-a^3}a+a^2\right)+\frac{\sqrt{3}}{a^2}\arctan\left(\frac{\sqrt{3}}{3\,a}\left(2\sqrt[3]{-b^3x-a^3}-a\right)\right)+\frac{1}{a^2}\ln\left(a+\sqrt[3]{-b^3x-a^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(-b^3*x-a^3)^(2/3),x)
```

```
[Out] -1/2/a^2*ln((-b^3*x-a^3)^(2/3)-(-b^3*x-a^3)^(1/3)*a+a^2)+1/a^2*3^
(1/2)*arctan(1/3*(2*(-b^3*x-a^3)^(1/3)-a)*3^(1/2)/a)+ln(a+(-b^3*x
-a^3)^(1/3))/a^2
```

Maxima [A] time = 1.49841, size = 131, normalized size = 1.72

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{3\,a}\right)}{a^2}-\frac{\log\left(a^2-\left(-b^3x-a^3\right)^{\frac{1}{3}}a+\left(-b^3x-a^3\right)^{\frac{2}{3}}\right)}{2\,a^2}+\frac{\log\left(a+\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x - a^3)^(2/3)*x),x, algorithm="maxima")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(-b^3*x - a^3)^(1/3))/a)/a^2 -
 1/2*log(a^2 - (-b^3*x - a^3)^(1/3)*a + (-b^3*x - a^3)^(2/3))/a^2
 + log(a + (-b^3*x - a^3)^(1/3))/a^2
```

Fricas [A] time = 0.220257, size = 128, normalized size = 1.68

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)-\log\left(a^2-\left(-b^3x-a^3\right)^{\frac{1}{3}}a+\left(-b^3x-a^3\right)^{\frac{2}{3}}\right)+2\log\left(a+\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x - a^3)^(2/3)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(-b^3*x - a^3)^(1/3))/a
) - log(a^2 - (-b^3*x - a^3)^(1/3)*a + (-b^3*x - a^3)^(2/3)) + 2*
log(a + (-b^3*x - a^3)^(1/3)))/a^2
```

Sympy [A] time = 5.44929, size = 133, normalized size = 1.75

$$-\frac{e^{\frac{i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{\frac{a^3}{b^3}+x}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}-\frac{e^{\frac{5i\pi}{3}}\log\left(1-\frac{b\sqrt[3]{\frac{a^3}{b^3}+x}e^{\frac{2i\pi}{3}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}+\frac{\log\left(1-\frac{b\sqrt[3]{\frac{a^3}{b^3}+x}e^{\frac{4i\pi}{3}}}{a}\right)\Gamma\left(\frac{1}{3}\right)}{3a^2\Gamma\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(-b**3*x-a**3)**(2/3),x)
```

```
[Out] -exp(I*pi/3)*log(1 - b*(a**3/b**3 + x)**(1/3)/a)*gamma(1/3)/(3*a*
*2*gamma(4/3)) - exp(5*I*pi/3)*log(1 - b*(a**3/b**3 + x)**(1/3)*e
xp_polar(2*I*pi/3)/a)*gamma(1/3)/(3*a**2*gamma(4/3)) + log(1 - b*
(a**3/b**3 + x)**(1/3)*exp_polar(4*I*pi/3)/a)*gamma(1/3)/(3*a**2*
gamma(4/3))
```

GIAC/XCAS [A] time = 0.221649, size = 132, normalized size = 1.74

$$\frac{\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(-b^3x-a^3\right)^{\frac{1}{3}}\right)}{3a}\right)}{a^2}-\frac{\ln\left(a^2-\left(-b^3x-a^3\right)^{\frac{1}{3}}a+\left(-b^3x-a^3\right)^{\frac{2}{3}}\right)}{2a^2}+\frac{\ln\left(\left|a+\left(-b^3x-a^3\right)^{\frac{1}{3}}\right|\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b^3*x - a^3)^(2/3)*x),x, algorithm="giac")
```

```
[Out] sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(-b^3*x - a^3)^(1/3))/a)/a^2 -
 1/2*ln(a^2 - (-b^3*x - a^3)^(1/3)*a + (-b^3*x - a^3)^(2/3))/a^2
+ ln(abs(a + (-b^3*x - a^3)^(1/3)))/a^2
```

3.428 $\int x^m(a+bx)\,dx$

Optimal. Leaf size=25

$$\frac{ax^{m+1}}{m+1}+\frac{bx^{m+2}}{m+2}$$

```
[Out] (a*x^(1 + m))/(1 + m) + (b*x^(2 + m))/(2 + m)
```

Rubi [A] time = 0.0217012, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{ax^{m+1}}{m+1}+\frac{bx^{m+2}}{m+2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x),x]

[Out] (a*x^(1 + m))/(1 + m) + (b*x^(2 + m))/(2 + m)
```

Rubi in Sympy [A] time = 3.50937, size = 19, normalized size = 0.76

$$\frac{ax^{m+1}}{m+1}+\frac{bx^{m+2}}{m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a),x)

[Out] a*x**(m + 1)/(m + 1) + b*x**(m + 2)/(m + 2)
```

Mathematica [A] time = 0.0191353, size = 23, normalized size = 0.92

$$x^m\left(\frac{ax}{m+1}+\frac{bx^2}{m+2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x),x]
```

```
[Out] x^m*((a*x)/(1 + m) + (b*x^2)/(2 + m))
```

Maple [A] time = 0.003, size = 31, normalized size = 1.2

$$\frac{x^{1+m}\left(bmx+am+bx+2\,a\right)}{\left(2+m\right)\left(1+m\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a),x)

[Out] x^(1+m)*(b*m*x+a*m+b*x+2*a)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^m,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222709, size = 45, normalized size = 1.8

$$\frac{\left((bm+b)x^{2}+(am+2\,a)x\right)x^{m}}{m^{2}+3\,m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^m,x, algorithm="fricas")

[Out] ((b*m + b)*x^2 + (a*m + 2*a)*x)*x^m/(m^2 + 3*m + 2)
```

Sympy [A] time = 0.724622, size = 87, normalized size = 3.48

$$\begin{cases} -\frac{a}{x}+b\log\left(x\right) & \text{for}\ m=-2 \\ a\log\left(x\right)+bx & \text{for}\ m=-1 \\ \frac{amxx^{m}}{m^{2}+3m+2}+\frac{2axx^{m}}{m^{2}+3m+2}+\frac{bmx^{2}x^{m}}{m^{2}+3m+2}+\frac{bx^{2}x^{m}}{m^{2}+3m+2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a),x)
```

```
[Out] Piecewise((-a/x + b*log(x), Eq(m, -2)), (a*log(x) + b*x, Eq(m, -1
)), (a*m*x*x**m/(m**2 + 3*m + 2) + 2*a*x*x**m/(m**2 + 3*m + 2) +
b*m*x**2*x**m/(m**2 + 3*m + 2) + b*x**2*x**m/(m**2 + 3*m + 2), Tr
ue))
```

GIAC/XCAS [A] time = 0.213178, size = 69, normalized size = 2.76

$$\frac{bmx^2e^{(m\ln(x))} + amxe^{(m\ln(x))} + bx^2e^{(m\ln(x))} + 2\,axe^{(m\ln(x))}}{m^2 + 3\,m + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^m,x, algorithm="giac")
```

```
[Out] (b*m*x^2*e^(m*ln(x)) + a*m*x*e^(m*ln(x)) + b*x^2*e^(m*ln(x)) + 2*
a*x*e^(m*ln(x)))/(m^2 + 3*m + 2)
```

3.429 $\int x^{5/2}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{2}{7}ax^{7/2}+\frac{2}{9}bx^{9/2}$$

```
[Out] (2*a*x^(7/2))/7 + (2*b*x^(9/2))/9
```

Rubi [A] time = 0.0130214, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2}{7}ax^{7/2}+\frac{2}{9}bx^{9/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a + b*x),x]

[Out] (2*a*x^(7/2))/7 + (2*b*x^(9/2))/9
```

Rubi in Sympy [A] time = 2.31223, size = 19, normalized size = 0.9

$$\frac{2ax^{\frac{7}{2}}}{7}+\frac{2bx^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+a),x)

[Out] 2*a*x**(7/2)/7 + 2*b*x**(9/2)/9
```

Mathematica [A] time = 0.00515333, size = 17, normalized size = 0.81

$$\frac{2}{63}x^{7/2}(9a+7bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a + b*x),x]
```

```
[Out] (2*x^(7/2)*(9*a + 7*b*x))/63
```

Maple [A] time = 0.005, size = 14, normalized size = 0.7

$$\frac{14\,bx+18\,a}{63}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+a),x)
```

```
[Out] 2/63*x^(7/2)*(7*b*x+9*a)
```

Maxima [A] time = 1.33965, size = 18, normalized size = 0.86

$$\frac{2}{9}\,bx^{\frac{9}{2}}+\frac{2}{7}\,ax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/9*b*x^(9/2) + 2/7*a*x^(7/2)
```

Fricas [A] time = 0.208, size = 24, normalized size = 1.14

$$\frac{2}{63}\left(7\,bx^{4}+9\,ax^{3}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/63*(7*b*x^4 + 9*a*x^3)*sqrt(x)
```

Sympy [A] time = 3.57118, size = 19, normalized size = 0.9

$$\frac{2ax^{\frac{7}{2}}}{7}+\frac{2bx^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+a),x)
```

```
[Out] 2*a*x**(7/2)/7 + 2*b*x**(9/2)/9
```

GIAC/XCAS [A] time = 0.201264, size = 18, normalized size = 0.86

$$\frac{2}{9} b x^{\frac{9}{2}} + \frac{2}{7} a x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(5/2),x, algorithm="giac")
```

```
[Out] 2/9*b*x^(9/2) + 2/7*a*x^(7/2)
```

3.430 $\int x^{3/2}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{2}{5}ax^{5/2}+\frac{2}{7}bx^{7/2}$$

```
[Out] (2*a*x^(5/2))/5 + (2*b*x^(7/2))/7
```

Rubi [A] time = 0.0131158, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2}{5}ax^{5/2}+\frac{2}{7}bx^{7/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a + b*x),x]

[Out] (2*a*x^(5/2))/5 + (2*b*x^(7/2))/7
```

Rubi in Sympy [A] time = 2.32616, size = 19, normalized size = 0.9

$$\frac{2ax^{\frac{5}{2}}}{5}+\frac{2bx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+a),x)

[Out] 2*a*x**(5/2)/5 + 2*b*x**(7/2)/7
```

Mathematica [A] time = 0.00503557, size = 17, normalized size = 0.81

$$\frac{2}{35}x^{5/2}(7a+5bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a + b*x),x]
```

```
[Out] (2*x^(5/2)*(7*a + 5*b*x))/35
```

Maple [A] time = 0.004, size = 14, normalized size = 0.7

$$\frac{10\,bx+14\,a}{35}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x+a),x)
```

```
[Out] 2/35*x^(5/2)*(5*b*x+7*a)
```

Maxima [A] time = 1.34405, size = 18, normalized size = 0.86

$$\frac{2}{7}\,bx^{\frac{7}{2}}+\frac{2}{5}\,ax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/7*b*x^(7/2) + 2/5*a*x^(5/2)
```

Fricas [A] time = 0.207841, size = 24, normalized size = 1.14

$$\frac{2}{35}\left(5\,bx^{3}+7\,ax^{2}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*b*x^3 + 7*a*x^2)*sqrt(x)
```

Sympy [A] time = 1.02849, size = 19, normalized size = 0.9

$$\frac{2ax^{\frac{5}{2}}}{5}+\frac{2bx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a),x)
```

```
[Out] 2*a*x**(5/2)/5 + 2*b*x**(7/2)/7
```

GIAC/XCAS [A] time = 0.200362, size = 18, normalized size = 0.86

$$\frac{2}{7}\,bx^{\frac{7}{2}} + \frac{2}{5}\,ax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(3/2),x, algorithm="giac")
```

```
[Out] 2/7*b*x^(7/2) + 2/5*a*x^(5/2)
```

3.431 $\int \sqrt{x}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{2}{3}ax^{3/2}+\frac{2}{5}bx^{5/2}$$

```
[Out] (2*a*x^(3/2))/3 + (2*b*x^(5/2))/5
```

Rubi [A] time = 0.0124579, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{2}{3}ax^{3/2}+\frac{2}{5}bx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(a + b*x),x]
```

```
[Out] (2*a*x^(3/2))/3 + (2*b*x^(5/2))/5
```

Rubi in Sympy [A] time = 2.33767, size = 19, normalized size = 0.9

$$\frac{2ax^{\frac{3}{2}}}{3}+\frac{2bx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)*x**(1/2),x)
```

```
[Out] 2*a*x**(3/2)/3 + 2*b*x**(5/2)/5
```

Mathematica [A] time = 0.00488006, size = 17, normalized size = 0.81

$$\frac{2}{15}x^{3/2}(5a+3bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(a + b*x),x]
```

```
[Out] (2*x^(3/2)*(5*a + 3*b*x))/15
```

Maple [A] time = 0.004, size = 14, normalized size = 0.7

$$\frac{6\,bx+10\,a}{15}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*x^(1/2),x)

[Out] 2/15*x^(3/2)*(3*b*x+5*a)
```

Maxima [A] time = 1.34221, size = 18, normalized size = 0.86

$$\frac{2}{5}\,bx^{\frac{5}{2}}+\frac{2}{3}\,ax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(x),x, algorithm="maxima")

[Out] 2/5*b*x^(5/2) + 2/3*a*x^(3/2)
```

Fricas [A] time = 0.207749, size = 22, normalized size = 1.05

$$\frac{2}{15}\left(3\,bx^2+5\,ax\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(x),x, algorithm="fricas")

[Out] 2/15*(3*b*x^2 + 5*a*x)*sqrt(x)
```

Sympy [A] time = 1.6827, size = 19, normalized size = 0.9

$$\frac{2ax^{\frac{3}{2}}}{3}+\frac{2bx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*x**(1/2),x)
```

```
[Out] 2*a*x**(3/2)/3 + 2*b*x**(5/2)/5
```

GIAC/XCAS [A] time = 0.201202, size = 18, normalized size = 0.86

$$\frac{2}{5}\,bx^{\frac{5}{2}} + \frac{2}{3}\,ax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(x),x, algorithm="giac")
```

```
[Out] 2/5*b*x^(5/2) + 2/3*a*x^(3/2)
```

3.432 $\int \frac{a+bx}{\sqrt{x}}\,dx$

Optimal. Leaf size=19

$$2a\sqrt{x}+\frac{2}{3}bx^{3/2}$$

```
[Out] 2*a*Sqrt[x] + (2*b*x^(3/2))/3
```

Rubi [A] time = 0.0124329, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$2a\sqrt{x}+\frac{2}{3}bx^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/Sqrt[x],x]
```

```
[Out] 2*a*Sqrt[x] + (2*b*x^(3/2))/3
```

Rubi in Sympy [A] time = 2.33129, size = 17, normalized size = 0.89

$$2a\sqrt{x}+\frac{2bx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**(1/2),x)
```

```
[Out] 2*a*sqrt(x) + 2*b*x**(3/2)/3
```

Mathematica [A] time = 0.00439433, size = 16, normalized size = 0.84

$$\frac{2}{3}\sqrt{x}(3a+bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(3*a + b*x))/3
```

Maple [A] time = 0.003, size = 13, normalized size = 0.7

$$\frac{2\,bx+6\,a}{3}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^(1/2),x)
```

```
[Out] 2/3*x^(1/2)*(b*x+3*a)
```

Maxima [A] time = 1.34081, size = 18, normalized size = 0.95

$$\frac{2}{3}\,bx^{\frac{3}{2}}+2\,a\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/3*b*x^(3/2) + 2*a*sqrt(x)
```

Fricas [A] time = 0.209845, size = 16, normalized size = 0.84

$$\frac{2}{3}\,(bx+3\,a)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/3*(b*x + 3*a)*sqrt(x)
```

Sympy [A] time = 1.53528, size = 17, normalized size = 0.89

$$2a\sqrt{x}+\frac{2bx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(1/2),x)
```

```
[Out] 2*a*sqrt(x) + 2*b*x**(3/2)/3
```

GIAC/XCAS [A] time = 0.205173, size = 18, normalized size = 0.95

$$\frac{2}{3}\, bx^{\frac{3}{2}} + 2\, a\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(x),x, algorithm="giac")
```

```
[Out] 2/3*b*x^(3/2) + 2*a*sqrt(x)
```

3.433 $\int \frac{a+bx}{x^{3/2}}\,dx$

Optimal. Leaf size=17

$$2b\sqrt{x}-\frac{2a}{\sqrt{x}}$$

```
[Out] (-2*a)/Sqrt[x] + 2*b*Sqrt[x]
```

Rubi [A] time = 0.012567, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$2b\sqrt{x}-\frac{2a}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^(3/2),x]

[Out] (-2*a)/Sqrt[x] + 2*b*Sqrt[x]
```

Rubi in Sympy [A] time = 2.31643, size = 15, normalized size = 0.88

$$-\frac{2a}{\sqrt{x}}+2b\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**(3/2),x)

[Out] -2*a/sqrt(x) + 2*b*sqrt(x)
```

Mathematica [A] time = 0.00537955, size = 14, normalized size = 0.82

$$\frac{2(bx-a)}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^(3/2),x]
```

```
[Out] (2*(-a + b*x))/Sqrt[x]
```

Maple [A] time = 0.004, size = 12, normalized size = 0.7

$$-2\,\frac{-bx+a}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^(3/2),x)

[Out] -2*(-b*x+a)/x^(1/2)
```

Maxima [A] time = 1.3457, size = 18, normalized size = 1.06

$$2\,b\sqrt{x}-\frac{2\,a}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(3/2),x, algorithm="maxima")

[Out] 2*b*sqrt(x) - 2*a/sqrt(x)
```

Fricas [A] time = 0.210057, size = 16, normalized size = 0.94

$$\frac{2\,(bx-a)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(3/2),x, algorithm="fricas")

[Out] 2*(b*x - a)/sqrt(x)
```

Sympy [A] time = 1.31541, size = 15, normalized size = 0.88

$$-\frac{2a}{\sqrt{x}}+2b\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(3/2),x)
```

```
[Out] -2*a/sqrt(x) + 2*b*sqrt(x)
```

GIAC/XCAS [A] time = 0.202568, size = 18, normalized size = 1.06

$$2\,b\sqrt{x} - \frac{2\,a}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2*b*sqrt(x) - 2*a/sqrt(x)
```

3.434 $\int \frac{a+bx}{x^{5/2}} dx$

Optimal. Leaf size=19

$$-\frac{2a}{3x^{3/2}} - \frac{2b}{\sqrt{x}}$$

```
[Out] (-2*a)/(3*x^(3/2)) - (2*b)/Sqrt[x]
```

Rubi [A] time = 0.0131644, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{2a}{3x^{3/2}} - \frac{2b}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^(5/2),x]

[Out] (-2*a)/(3*x^(3/2)) - (2*b)/Sqrt[x]
```

Rubi in Sympy [A] time = 2.3363, size = 19, normalized size = 1.

$$-\frac{2a}{3x^{\frac{3}{2}}} - \frac{2b}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**(5/2),x)

[Out] -2*a/(3*x**(3/2)) - 2*b/sqrt(x)
```

Mathematica [A] time = 0.00556482, size = 15, normalized size = 0.79

$$-\frac{2(a+3bx)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^(5/2),x]
```

```
[Out] (-2*(a + 3*b*x))/(3*x^(3/2))
```

Maple [A] time = 0.003, size = 12, normalized size = 0.6

$$-\frac{6\,bx+2\,a}{3}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^(5/2),x)
```

```
[Out] -2/3*(3*b*x+a)/x^(3/2)
```

Maxima [A] time = 1.34283, size = 15, normalized size = 0.79

$$-\frac{2\,(3\,bx+a)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*x + a)/x^(3/2)
```

Fricas [A] time = 0.206976, size = 15, normalized size = 0.79

$$-\frac{2\,(3\,bx+a)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/x^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(3*b*x + a)/x^(3/2)
```

Sympy [A] time = 2.06573, size = 19, normalized size = 1.

$$-\frac{2a}{3x^{\frac{3}{2}}}-\frac{2b}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(5/2),x)

[Out] -2*a/(3*x**(3/2)) - 2*b/sqrt(x)
```

GIAC/XCAS [A] time = 0.2063, size = 15, normalized size = 0.79

$$-\frac{2\,(3\,bx + a)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(5/2),x, algorithm="giac")

[Out] -2/3*(3*b*x + a)/x^(3/2)
```

3.435 $\int x^m(a+bx)^2\,dx$

Optimal. Leaf size=43

$$\frac{a^2x^{m+1}}{m+1}+\frac{2abx^{m+2}}{m+2}+\frac{b^2x^{m+3}}{m+3}$$

```
[Out] (a^2*x^(1 + m))/(1 + m) + (2*a*b*x^(2 + m))/(2 + m) + (b^2*x^(3 +
 m))/(3 + m)
```

Rubi [A] time = 0.0358976, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2x^{m+1}}{m+1}+\frac{2abx^{m+2}}{m+2}+\frac{b^2x^{m+3}}{m+3}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(a + b*x)^2,x]
```

```
[Out] (a^2*x^(1 + m))/(1 + m) + (2*a*b*x^(2 + m))/(2 + m) + (b^2*x^(3 +
 m))/(3 + m)
```

Rubi in Sympy [A] time = 6.53655, size = 36, normalized size = 0.84

$$\frac{a^2x^{m+1}}{m+1}+\frac{2abx^{m+2}}{m+2}+\frac{b^2x^{m+3}}{m+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**m*(b*x+a)**2,x)
```

```
[Out] a**2*x**(m + 1)/(m + 1) + 2*a*b*x**(m + 2)/(m + 2) + b**2*x**(m +
 3)/(m + 3)
```

Mathematica [A] time = 0.0256982, size = 39, normalized size = 0.91

$$x^m\left(\frac{a^2x}{m+1}+\frac{2abx^2}{m+2}+\frac{b^2x^3}{m+3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^2,x]
```

```
[Out] x^m*((a^2*x)/(1 + m) + (2*a*b*x^2)/(2 + m) + (b^2*x^3)/(3 + m))
```

Maple [A] time = 0.007, size = 87, normalized size = 2.

$$\frac{x^{1+m}\left(b^2m^2x^2+2\,abm^2x+3\,b^2mx^2+a^2m^2+8\,abmx+2\,b^2x^2+5\,a^2m+6\,abx+6\,a^2\right)}{(3+m)\,(2+m)\,(1+m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^2,x)
```

```
[Out] x^(1+m)*(b^2*m^2*x^2+2*a*b*m^2*x+3*b^2*m*x^2+a^2*m^2+8*a*b*m*x+2*
b^2*x^2+5*a^2*m+6*a*b*x+6*a^2)/(3+m)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221581, size = 115, normalized size = 2.67

$$\frac{\left(\left(b^2m^2+3\,b^2m+2\,b^2\right)x^3+2\,\left(abm^2+4\,abm+3\,ab\right)x^2+\left(a^2m^2+5\,a^2m+6\,a^2\right)x\right)x^m}{m^3+6\,m^2+11\,m+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^m,x, algorithm="fricas")
```

```
[Out] ((b^2*m^2 + 3*b^2*m + 2*b^2)*x^3 + 2*(a*b*m^2 + 4*a*b*m + 3*a*b)*
x^2 + (a^2*m^2 + 5*a^2*m + 6*a^2)*x)*x^m/(m^3 + 6*m^2 + 11*m + 6)
```

Sympy [A] time = 1.38984, size = 299, normalized size = 6.95

$$\begin{cases} -\frac{a^2}{2x^2} - \frac{2ab}{x} + b^2\log(x) \\ -\frac{a^2}{x} + 2ab\log(x) + b^2x \\ a^2\log(x) + 2abx + \frac{b^2x^2}{2} \\ \frac{a^2m^2xx^m}{m^3+6m^2+11m+6} + \frac{5a^2mxx^m}{m^3+6m^2+11m+6} + \frac{6a^2xx^m}{m^3+6m^2+11m+6} + \frac{2abm^2x^2x^m}{m^3+6m^2+11m+6} + \frac{8abmx^2x^m}{m^3+6m^2+11m+6} + \frac{6abx^2x^m}{m^3+6m^2+11m+6} + \frac{b^2m^2x^3x^m}{m^3+6m^2+11m+6} + \frac{3b^2mx^3}{m^3+6m^2+1} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**2,x)
```

```
[Out] Piecewise((-a**2/(2*x**2) - 2*a*b/x + b**2*log(x), Eq(m, -3)), (-
a**2/x + 2*a*b*log(x) + b**2*x, Eq(m, -2)), (a**2*log(x) + 2*a*b*
x + b**2*x**2/2, Eq(m, -1)), (a**2*m**2*x*x**m/(m**3 + 6*m**2 + 1
1*m + 6) + 5*a**2*m*x*x**m/(m**3 + 6*m**2 + 11*m + 6) + 6*a**2*x*
x**m/(m**3 + 6*m**2 + 11*m + 6) + 2*a*b*m**2*x**2*x**m/(m**3 + 6*
m**2 + 11*m + 6) + 8*a*b*m*x**2*x**m/(m**3 + 6*m**2 + 11*m + 6) +
 6*a*b*x**2*x**m/(m**3 + 6*m**2 + 11*m + 6) + b**2*m**2*x**3*x**m
/(m**3 + 6*m**2 + 11*m + 6) + 3*b**2*m*x**3*x**m/(m**3 + 6*m**2 +
 11*m + 6) + 2*b**2*x**3*x**m/(m**3 + 6*m**2 + 11*m + 6), True))
```

GIAC/XCAS [A] time = 0.25397, size = 182, normalized size = 4.23

$$\frac{b^2m^2x^3e^{(m\ln(x))} + 2\,abm^2x^2e^{(m\ln(x))} + 3\,b^2mx^3e^{(m\ln(x))} + a^2m^2xe^{(m\ln(x))} + 8\,abmx^2e^{(m\ln(x))} + 2\,b^2x^3e^{(m\ln(x))} + 5\,a^2mxe^{(m\ln(x))}}{m^3 + 6\,m^2 + 11\,m + 6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^m,x, algorithm="giac")
```

```
[Out] (b^2*m^2*x^3*e^(m*ln(x)) + 2*a*b*m^2*x^2*e^(m*ln(x)) + 3*b^2*m*x^
3*e^(m*ln(x)) + a^2*m^2*x*e^(m*ln(x)) + 8*a*b*m*x^2*e^(m*ln(x)) +
 2*b^2*x^3*e^(m*ln(x)) + 5*a^2*m*x*e^(m*ln(x)) + 6*a*b*x^2*e^(m*l
n(x)) + 6*a^2*x*e^(m*ln(x)))/(m^3 + 6*m^2 + 11*m + 6)
```

3.436 $\int x^{5/2}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{2}{7}a^2x^{7/2}+\frac{4}{9}abx^{9/2}+\frac{2}{11}b^2x^{11/2}$$

```
[Out] (2*a^2*x^(7/2))/7 + (4*a*b*x^(9/2))/9 + (2*b^2*x^(11/2))/11
```

Rubi [A] time = 0.0219416, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2}{7}a^2x^{7/2}+\frac{4}{9}abx^{9/2}+\frac{2}{11}b^2x^{11/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a + b*x)^2,x]

[Out] (2*a^2*x^(7/2))/7 + (4*a*b*x^(9/2))/9 + (2*b^2*x^(11/2))/11
```

Rubi in Sympy [A] time = 3.90524, size = 34, normalized size = 0.94

$$\frac{2a^2x^{\frac{7}{2}}}{7}+\frac{4abx^{\frac{9}{2}}}{9}+\frac{2b^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+a)**2,x)

[Out] 2*a**2*x**(7/2)/7 + 4*a*b*x**(9/2)/9 + 2*b**2*x**(11/2)/11
```

Mathematica [A] time = 0.00914127, size = 28, normalized size = 0.78

$$\frac{2}{693}x^{7/2}\left(99a^2+154abx+63b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a + b*x)^2,x]
```

```
[Out] (2*x^(7/2)*(99*a^2 + 154*a*b*x + 63*b^2*x^2))/693
```

Maple [A] time = 0.007, size = 25, normalized size = 0.7

$$\frac{126\,b^{2}x^{2}+308\,abx+198\,a^{2}}{693}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+a)^2,x)
```

```
[Out] 2/693*x^(7/2)*(63*b^2*x^2+154*a*b*x+99*a^2)
```

Maxima [A] time = 1.34051, size = 32, normalized size = 0.89

$$\frac{2}{11}\,b^{2}x^{\frac{11}{2}}+\frac{4}{9}\,abx^{\frac{9}{2}}+\frac{2}{7}\,a^{2}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*b^2*x^(11/2) + 4/9*a*b*x^(9/2) + 2/7*a^2*x^(7/2)
```

Fricas [A] time = 0.207593, size = 39, normalized size = 1.08

$$\frac{2}{693}\left(63\,b^{2}x^{5}+154\,abx^{4}+99\,a^{2}x^{3}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*b^2*x^5 + 154*a*b*x^4 + 99*a^2*x^3)*sqrt(x)
```

Sympy [A] time = 5.09984, size = 34, normalized size = 0.94

$$\frac{2a^{2}x^{\frac{7}{2}}}{7}+\frac{4abx^{\frac{9}{2}}}{9}+\frac{2b^{2}x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+a)**2,x)

[Out] 2*a**2*x**(7/2)/7 + 4*a*b*x**(9/2)/9 + 2*b**2*x**(11/2)/11
```

GIAC/XCAS [A] time = 0.203648, size = 32, normalized size = 0.89

$$\frac{2}{11}\,b^2x^{\frac{11}{2}} + \frac{4}{9}\,abx^{\frac{9}{2}} + \frac{2}{7}\,a^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(5/2),x, algorithm="giac")

[Out] 2/11*b^2*x^(11/2) + 4/9*a*b*x^(9/2) + 2/7*a^2*x^(7/2)
```

3.437 $\int x^{3/2}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{2}{5}a^2x^{5/2}+\frac{4}{7}abx^{7/2}+\frac{2}{9}b^2x^{9/2}$$

```
[Out] (2*a^2*x^(5/2))/5 + (4*a*b*x^(7/2))/7 + (2*b^2*x^(9/2))/9
```

Rubi [A] time = 0.0218126, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2}{5}a^2x^{5/2}+\frac{4}{7}abx^{7/2}+\frac{2}{9}b^2x^{9/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a + b*x)^2,x]
```

```
[Out] (2*a^2*x^(5/2))/5 + (4*a*b*x^(7/2))/7 + (2*b^2*x^(9/2))/9
```

Rubi in Sympy [A] time = 3.89319, size = 34, normalized size = 0.94

$$\frac{2a^2x^{\frac{5}{2}}}{5}+\frac{4abx^{\frac{7}{2}}}{7}+\frac{2b^2x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+a)**2,x)
```

```
[Out] 2*a**2*x**(5/2)/5 + 4*a*b*x**(7/2)/7 + 2*b**2*x**(9/2)/9
```

Mathematica [A] time = 0.00917807, size = 28, normalized size = 0.78

$$\frac{2}{315}x^{5/2}\left(63a^2+90abx+35b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a + b*x)^2,x]
```

```
[Out] (2*x^(5/2)*(63*a^2 + 90*a*b*x + 35*b^2*x^2))/315
```

Maple [A] time = 0.007, size = 25, normalized size = 0.7

$$\frac{70 b^2x^2 + 180 abx + 126 a^2}{315} x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x+a)^2,x)
```

```
[Out] 2/315*x^(5/2)*(35*b^2*x^2+90*a*b*x+63*a^2)
```

Maxima [A] time = 1.35093, size = 32, normalized size = 0.89

$$\frac{2}{9} b^2 x^{\frac{9}{2}} + \frac{4}{7} abx^{\frac{7}{2}} + \frac{2}{5} a^2 x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*b^2*x^(9/2) + 4/7*a*b*x^(7/2) + 2/5*a^2*x^(5/2)
```

Fricas [A] time = 0.205177, size = 39, normalized size = 1.08

$$\frac{2}{315} \left(35 b^2 x^4 + 90 abx^3 + 63 a^2 x^2\right) \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^2*x^4 + 90*a*b*x^3 + 63*a^2*x^2)*sqrt(x)
```

Sympy [A] time = 7.26339, size = 2033, normalized size = 56.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a)**2,x)
```

```
[Out] Piecewise((-16*a**(25/2)*sqrt(-1 + b*(a/b + x)/a)/(-315*a**8*b**(
5/2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)*
*2 + 315*a**5*b**(11/2)*(a/b + x)**3) + 16*I*a**(25/2)/(-315*a**8
*b**(5/2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b
+ x)**2 + 315*a**5*b**(11/2)*(a/b + x)**3) + 40*a**(23/2)*b*sqrt(
-1 + b*(a/b + x)/a)*(a/b + x)/(-315*a**8*b**(5/2) + 945*a**7*b**(
7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11
/2)*(a/b + x)**3) - 48*I*a**(23/2)*b*(a/b + x)/(-315*a**8*b**(5/2
) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2
+ 315*a**5*b**(11/2)*(a/b + x)**3) - 30*a**(21/2)*b**2*sqrt(-1 +
b*(a/b + x)/a)*(a/b + x)**2/(-315*a**8*b**(5/2) + 945*a**7*b**(7/
2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2
)*(a/b + x)**3) + 48*I*a**(21/2)*b**2*(a/b + x)**2/(-315*a**8*b**
(5/2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)
**2 + 315*a**5*b**(11/2)*(a/b + x)**3) + 110*a**(19/2)*b**3*sqrt(
-1 + b*(a/b + x)/a)*(a/b + x)**3/(-315*a**8*b**(5/2) + 945*a**7*b
**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**
(11/2)*(a/b + x)**3) - 16*I*a**(19/2)*b**3*(a/b + x)**3/(-315*a**
8*b**(5/2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b
 + x)**2 + 315*a**5*b**(11/2)*(a/b + x)**3) - 380*a**(17/2)*b**4*
sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**4/(-315*a**8*b**(5/2) + 945*a
**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**
5*b**(11/2)*(a/b + x)**3) + 516*a**(15/2)*b**5*sqrt(-1 + b*(a/b +
 x)/a)*(a/b + x)**5/(-315*a**8*b**(5/2) + 945*a**7*b**(7/2)*(a/b
+ x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2)*(a/b +
 x)**3) - 310*a**(13/2)*b**6*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**
6/(-315*a**8*b**(5/2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b*
*(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2)*(a/b + x)**3) + 70*a**(1
1/2)*b**7*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**7/(-315*a**8*b**(5/
2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2
 + 315*a**5*b**(11/2)*(a/b + x)**3), Abs(b*(a/b + x)/a) > 1), (-1
6*I*a**(25/2)*sqrt(1 - b*(a/b + x)/a)/(-315*a**8*b**(5/2) + 945*a
**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**
5*b**(11/2)*(a/b + x)**3) + 16*I*a**(25/2)/(-315*a**8*b**(5/2) +
945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 31
5*a**5*b**(11/2)*(a/b + x)**3) + 40*I*a**(23/2)*b*sqrt(1 - b*(a/b
 + x)/a)*(a/b + x)/(-315*a**8*b**(5/2) + 945*a**7*b**(7/2)*(a/b +
 x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2)*(a/b +
x)**3) - 48*I*a**(23/2)*b*(a/b + x)/(-315*a**8*b**(5/2) + 945*a**
7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*
b**(11/2)*(a/b + x)**3) - 30*I*a**(21/2)*b**2*sqrt(1 - b*(a/b + x
)/a)*(a/b + x)**2/(-315*a**8*b**(5/2) + 945*a**7*b**(7/2)*(a/b +
x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2)*(a/b + x
)**3) + 48*I*a**(21/2)*b**2*(a/b + x)**2/(-315*a**8*b**(5/2) + 94
5*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*
a**5*b**(11/2)*(a/b + x)**3) + 110*I*a**(19/2)*b**3*sqrt(1 - b*(a
/b + x)/a)*(a/b + x)**3/(-315*a**8*b**(5/2) + 945*a**7*b**(7/2)*(
a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2)*(a
/b + x)**3) - 16*I*a**(19/2)*b**3*(a/b + x)**3/(-315*a**8*b**(5/2
) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2
+ 315*a**5*b**(11/2)*(a/b + x)**3) - 380*I*a**(17/2)*b**4*sqrt(1
- b*(a/b + x)/a)*(a/b + x)**4/(-315*a**8*b**(5/2) + 945*a**7*b**(
7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11
```

```
/2)*(a/b + x)**3) + 516*I*a**(15/2)*b**5*sqrt(1 - b*(a/b + x)/a)*
(a/b + x)**5/(-315*a**8*b**(5/2) + 945*a**7*b**(7/2)*(a/b + x) -
945*a**6*b**(9/2)*(a/b + x)**2 + 315*a**5*b**(11/2)*(a/b + x)**3)
 - 310*I*a**(13/2)*b**6*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**6/(-31
5*a**8*b**(5/2) + 945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)
*(a/b + x)**2 + 315*a**5*b**(11/2)*(a/b + x)**3) + 70*I*a**(11/2)
*b**7*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**7/(-315*a**8*b**(5/2) +
945*a**7*b**(7/2)*(a/b + x) - 945*a**6*b**(9/2)*(a/b + x)**2 + 31
5*a**5*b**(11/2)*(a/b + x)**3), True))
```

GIAC/XCAS [A] time = 0.203815, size = 32, normalized size = 0.89

$$\frac{2}{9}\,b^{2}x^{\frac{9}{2}} + \frac{4}{7}\,abx^{\frac{7}{2}} + \frac{2}{5}\,a^{2}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*b^2*x^(9/2) + 4/7*a*b*x^(7/2) + 2/5*a^2*x^(5/2)
```

3.438 $\int \sqrt{x}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{2}{3}a^2x^{3/2}+\frac{4}{5}abx^{5/2}+\frac{2}{7}b^2x^{7/2}$$

```
[Out] (2*a^2*x^(3/2))/3 + (4*a*b*x^(5/2))/5 + (2*b^2*x^(7/2))/7
```

Rubi [A] time = 0.0213614, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{3}a^2x^{3/2}+\frac{4}{5}abx^{5/2}+\frac{2}{7}b^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a + b*x)^2,x]

[Out] (2*a^2*x^(3/2))/3 + (4*a*b*x^(5/2))/5 + (2*b^2*x^(7/2))/7
```

Rubi in Sympy [A] time = 3.89024, size = 34, normalized size = 0.94

$$\frac{2a^2x^{\frac{3}{2}}}{3}+\frac{4abx^{\frac{5}{2}}}{5}+\frac{2b^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*x**(1/2),x)

[Out] 2*a**2*x**(3/2)/3 + 4*a*b*x**(5/2)/5 + 2*b**2*x**(7/2)/7
```

Mathematica [A] time = 0.00923759, size = 28, normalized size = 0.78

$$\frac{2}{105}x^{3/2}\left(35a^2+42abx+15b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a + b*x)^2,x]
```

```
[Out] (2*x^(3/2)*(35*a^2 + 42*a*b*x + 15*b^2*x^2))/105
```

Maple [A] time = 0.007, size = 25, normalized size = 0.7

$$\frac{30\,b^{2}x^{2}+84\,abx+70\,a^{2}}{105}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*x^(1/2),x)
```

```
[Out] 2/105*x^(3/2)*(15*b^2*x^2+42*a*b*x+35*a^2)
```

Maxima [A] time = 1.34078, size = 32, normalized size = 0.89

$$\frac{2}{7}\,b^{2}x^{\frac{7}{2}}+\frac{4}{5}\,abx^{\frac{5}{2}}+\frac{2}{3}\,a^{2}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/7*b^2*x^(7/2) + 4/5*a*b*x^(5/2) + 2/3*a^2*x^(3/2)
```

Fricas [A] time = 0.204959, size = 36, normalized size = 1.

$$\frac{2}{105}\left(15\,b^{2}x^{3}+42\,abx^{2}+35\,a^{2}x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/105*(15*b^2*x^3 + 42*a*b*x^2 + 35*a^2*x)*sqrt(x)
```

Sympy [A] time = 6.37259, size = 1851, normalized size = 51.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*x**(1/2),x)
```

```
[Out] Piecewise((16*a**(23/2)*sqrt(-1 + b*(a/b + x)/a)/(-105*a**8*b**(3
/2) + 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**
2 + 105*a**5*b**(9/2)*(a/b + x)**3) - 16*I*a**(23/2)/(-105*a**8*b
**(3/2) + 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b +
x)**2 + 105*a**5*b**(9/2)*(a/b + x)**3) - 40*a**(21/2)*b*sqrt(-1
+ b*(a/b + x)/a)*(a/b + x)/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2
)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*
(a/b + x)**3) + 48*I*a**(21/2)*b*(a/b + x)/(-105*a**8*b**(3/2) +
315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 10
5*a**5*b**(9/2)*(a/b + x)**3) + 30*a**(19/2)*b**2*sqrt(-1 + b*(a/
b + x)/a)*(a/b + x)**2/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(a
/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/b
 + x)**3) - 48*I*a**(19/2)*b**2*(a/b + x)**2/(-105*a**8*b**(3/2)
+ 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 +
105*a**5*b**(9/2)*(a/b + x)**3) - 40*a**(17/2)*b**3*sqrt(-1 + b*(
a/b + x)/a)*(a/b + x)**3/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*
(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a
/b + x)**3) + 16*I*a**(17/2)*b**3*(a/b + x)**3/(-105*a**8*b**(3/2
) + 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2
+ 105*a**5*b**(9/2)*(a/b + x)**3) + 100*a**(15/2)*b**4*sqrt(-1 +
b*(a/b + x)/a)*(a/b + x)**4/(-105*a**8*b**(3/2) + 315*a**7*b**(5/
2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)
*(a/b + x)**3) - 96*a**(13/2)*b**5*sqrt(-1 + b*(a/b + x)/a)*(a/b
+ x)**5/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(a/b + x) - 315*a
**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/b + x)**3) + 30*
a**(11/2)*b**6*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**6/(-105*a**8*b
**(3/2) + 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b +
x)**2 + 105*a**5*b**(9/2)*(a/b + x)**3), Abs(b*(a/b + x)/a) > 1),
 (16*I*a**(23/2)*sqrt(1 - b*(a/b + x)/a)/(-105*a**8*b**(3/2) + 31
5*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*
a**5*b**(9/2)*(a/b + x)**3) - 16*I*a**(23/2)/(-105*a**8*b**(3/2)
+ 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 +
105*a**5*b**(9/2)*(a/b + x)**3) - 40*I*a**(21/2)*b*sqrt(1 - b*(a/
b + x)/a)*(a/b + x)/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(a/b
+ x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/b +
x)**3) + 48*I*a**(21/2)*b*(a/b + x)/(-105*a**8*b**(3/2) + 315*a**
7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*
b**(9/2)*(a/b + x)**3) + 30*I*a**(19/2)*b**2*sqrt(1 - b*(a/b + x)
/a)*(a/b + x)**2/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(a/b + x
) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/b + x)*
*3) - 48*I*a**(19/2)*b**2*(a/b + x)**2/(-105*a**8*b**(3/2) + 315*
a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a*
*5*b**(9/2)*(a/b + x)**3) - 40*I*a**(17/2)*b**3*sqrt(1 - b*(a/b +
 x)/a)*(a/b + x)**3/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(a/b
+ x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/b +
x)**3) + 16*I*a**(17/2)*b**3*(a/b + x)**3/(-105*a**8*b**(3/2) + 3
15*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105
*a**5*b**(9/2)*(a/b + x)**3) + 100*I*a**(15/2)*b**4*sqrt(1 - b*(a
/b + x)/a)*(a/b + x)**4/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(
a/b + x) - 315*a**6*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/
b + x)**3) - 96*I*a**(13/2)*b**5*sqrt(1 - b*(a/b + x)/a)*(a/b + x
)**5/(-105*a**8*b**(3/2) + 315*a**7*b**(5/2)*(a/b + x) - 315*a**6
*b**(7/2)*(a/b + x)**2 + 105*a**5*b**(9/2)*(a/b + x)**3) + 30*I*a
```

```
**(11/2)*b**6*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**6/(-105*a**8*b**
(3/2) + 315*a**7*b**(5/2)*(a/b + x) - 315*a**6*b**(7/2)*(a/b + x)
**2 + 105*a**5*b**(9/2)*(a/b + x)**3), True))
```

GIAC/XCAS [A] time = 0.201204, size = 32, normalized size = 0.89

$$\frac{2}{7}\,b^{2}x^{\frac{7}{2}} + \frac{4}{5}\,abx^{\frac{5}{2}} + \frac{2}{3}\,a^{2}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(x),x, algorithm="giac")
```

```
[Out] 2/7*b^2*x^(7/2) + 4/5*a*b*x^(5/2) + 2/3*a^2*x^(3/2)
```

3.439 $\int \frac{(a+bx)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=34

$$2a^2\sqrt{x}+\frac{4}{3}abx^{3/2}+\frac{2}{5}b^2x^{5/2}$$

```
[Out] 2*a^2*Sqrt[x] + (4*a*b*x^(3/2))/3 + (2*b^2*x^(5/2))/5
```

Rubi [A] time = 0.0212331, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$2a^2\sqrt{x}+\frac{4}{3}abx^{3/2}+\frac{2}{5}b^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/Sqrt[x],x]
```

```
[Out] 2*a^2*Sqrt[x] + (4*a*b*x^(3/2))/3 + (2*b^2*x^(5/2))/5
```

Rubi in Sympy [A] time = 3.94715, size = 32, normalized size = 0.94

$$2a^2\sqrt{x}+\frac{4abx^{\frac{3}{2}}}{3}+\frac{2b^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(1/2),x)
```

```
[Out] 2*a**2*sqrt(x) + 4*a*b*x**(3/2)/3 + 2*b**2*x**(5/2)/5
```

Mathematica [A] time = 0.00859762, size = 28, normalized size = 0.82

$$\frac{2}{15}\sqrt{x}\left(15a^2+10abx+3b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(15*a^2 + 10*a*b*x + 3*b^2*x^2))/15
```

Maple [A] time = 0.006, size = 25, normalized size = 0.7

$$\frac{6\,b^2x^2+20\,abx+30\,a^2}{15}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^(1/2),x)
```

```
[Out] 2/15*x^(1/2)*(3*b^2*x^2+10*a*b*x+15*a^2)
```

Maxima [A] time = 1.33937, size = 32, normalized size = 0.94

$$\frac{2}{5}\,b^2x^{\frac{5}{2}}+\frac{4}{3}\,abx^{\frac{3}{2}}+2\,a^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/5*b^2*x^(5/2) + 4/3*a*b*x^(3/2) + 2*a^2*sqrt(x)
```

Fricas [A] time = 0.206596, size = 32, normalized size = 0.94

$$\frac{2}{15}\left(3\,b^2x^2+10\,abx+15\,a^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^2*x^2 + 10*a*b*x + 15*a^2)*sqrt(x)
```

Sympy [A] time = 6.08306, size = 1669, normalized size = 49.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(1/2),x)
```

```
[Out] Piecewise((-16*a**(21/2)*sqrt(-1 + b*(a/b + x)/a)/(-15*a**8*sqrt(
b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 +
 15*a**5*b**(7/2)*(a/b + x)**3) + 16*I*a**(21/2)/(-15*a**8*sqrt(b
) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 +
15*a**5*b**(7/2)*(a/b + x)**3) + 40*a**(19/2)*b*sqrt(-1 + b*(a/b
+ x)/a)*(a/b + x)/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x)
- 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3)
- 48*I*a**(19/2)*b*(a/b + x)/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)
*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/
b + x)**3) - 30*a**(17/2)*b**2*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)
**2/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(
5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3) + 48*I*a**(17/
2)*b**2*(a/b + x)**2/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b +
x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**
3) + 10*a**(15/2)*b**3*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**3/(-15
*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/
b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3) - 16*I*a**(15/2)*b**3*
(a/b + x)**3/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*
a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3) - 10*
a**(13/2)*b**4*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**4/(-15*a**8*sq
rt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**
2 + 15*a**5*b**(7/2)*(a/b + x)**3) + 6*a**(11/2)*b**5*sqrt(-1 + b
*(a/b + x)/a)*(a/b + x)**5/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(
a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b
+ x)**3), Abs(b*(a/b + x)/a) > 1), (-16*I*a**(21/2)*sqrt(1 - b*(a
/b + x)/a)/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a*
*6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3) + 16*I*
a**(21/2)/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**
6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3) + 40*I*a
**(19/2)*b*sqrt(1 - b*(a/b + x)/a)*(a/b + x)/(-15*a**8*sqrt(b) +
45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a
**5*b**(7/2)*(a/b + x)**3) - 48*I*a**(19/2)*b*(a/b + x)/(-15*a**8
*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x
)**2 + 15*a**5*b**(7/2)*(a/b + x)**3) - 30*I*a**(17/2)*b**2*sqrt(
1 - b*(a/b + x)/a)*(a/b + x)**2/(-15*a**8*sqrt(b) + 45*a**7*b**(3
/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*
(a/b + x)**3) + 48*I*a**(17/2)*b**2*(a/b + x)**2/(-15*a**8*sqrt(b
) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 +
15*a**5*b**(7/2)*(a/b + x)**3) + 10*I*a**(15/2)*b**3*sqrt(1 - b*(
a/b + x)/a)*(a/b + x)**3/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/
b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b +
x)**3) - 16*I*a**(15/2)*b**3*(a/b + x)**3/(-15*a**8*sqrt(b) + 45*
a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5
*b**(7/2)*(a/b + x)**3) - 10*I*a**(13/2)*b**4*sqrt(1 - b*(a/b + x
)/a)*(a/b + x)**4/(-15*a**8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x)
- 45*a**6*b**(5/2)*(a/b + x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3)
+ 6*I*a**(11/2)*b**5*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**5/(-15*a*
*8*sqrt(b) + 45*a**7*b**(3/2)*(a/b + x) - 45*a**6*b**(5/2)*(a/b +
 x)**2 + 15*a**5*b**(7/2)*(a/b + x)**3), True))
```

GIAC/XCAS [A] time = 0.200805, size = 32, normalized size = 0.94

$$\frac{2}{5}\,b^{2}x^{\frac{5}{2}} + \frac{4}{3}\,abx^{\frac{3}{2}} + 2\,a^{2}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(x),x, algorithm="giac")
```

```
[Out] 2/5*b^2*x^(5/2) + 4/3*a*b*x^(3/2) + 2*a^2*sqrt(x)
```

3.440 $\int \frac{(a+bx)^2}{x^{3/2}} \, dx$

Optimal. Leaf size=32

$$-\frac{2a^2}{\sqrt{x}} + 4ab\sqrt{x} + \frac{2}{3}b^2x^{3/2}$$

```
[Out] (-2*a^2)/Sqrt[x] + 4*a*b*Sqrt[x] + (2*b^2*x^(3/2))/3
```

Rubi [A] time = 0.0214869, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{2a^2}{\sqrt{x}} + 4ab\sqrt{x} + \frac{2}{3}b^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^(3/2),x]

[Out] (-2*a^2)/Sqrt[x] + 4*a*b*Sqrt[x] + (2*b^2*x^(3/2))/3
```

Rubi in Sympy [A] time = 3.88684, size = 31, normalized size = 0.97

$$-\frac{2a^2}{\sqrt{x}} + 4ab\sqrt{x} + \frac{2b^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(3/2),x)

[Out] -2*a**2/sqrt(x) + 4*a*b*sqrt(x) + 2*b**2*x**(3/2)/3
```

Mathematica [A] time = 0.0100484, size = 27, normalized size = 0.84

$$\frac{2\left(-3a^2 + 6abx + b^2x^2\right)}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^(3/2),x]
```

```
[Out] (2*(-3*a^2 + 6*a*b*x + b^2*x^2))/(3*Sqrt[x])
```

Maple [A] time = 0.006, size = 25, normalized size = 0.8

$$-\frac{-2\,b^2x^2-12\,abx+6\,a^2}{3}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^(3/2),x)
```

```
[Out] -2/3*(-b^2*x^2-6*a*b*x+3*a^2)/x^(1/2)
```

Maxima [A] time = 1.36972, size = 32, normalized size = 1.

$$\frac{2}{3}\,b^2x^{\frac{3}{2}}+4\,ab\sqrt{x}-\frac{2\,a^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3*b^2*x^(3/2) + 4*a*b*sqrt(x) - 2*a^2/sqrt(x)
```

Fricas [A] time = 0.206447, size = 31, normalized size = 0.97

$$\frac{2\left(b^2x^2+6\,abx-3\,a^2\right)}{3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b^2*x^2 + 6*a*b*x - 3*a^2)/sqrt(x)
```

Sympy [A] time = 5.87073, size = 1324, normalized size = 41.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(3/2),x)
```

```
[Out] Piecewise((-16*a**(19/2)*sqrt(b)*sqrt(-1 + b*(a/b + x)/a)/(-3*a**
8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(
a/b + x)**3) + 16*I*a**(19/2)*sqrt(b)/(-3*a**8 + 9*a**7*b*(a/b +
x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3) + 40*a*
*(17/2)*b**(3/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)/(-3*a**8 + 9*
a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b +
x)**3) - 48*I*a**(17/2)*b**(3/2)*(a/b + x)/(-3*a**8 + 9*a**7*b*(a
/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3) -
30*a**(15/2)*b**(5/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**2/(-3*a
**8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3
*(a/b + x)**3) + 48*I*a**(15/2)*b**(5/2)*(a/b + x)**2/(-3*a**8 +
9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b
+ x)**3) + 4*a**(13/2)*b**(7/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x
)**3/(-3*a**8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3
*a**5*b**3*(a/b + x)**3) - 16*I*a**(13/2)*b**(7/2)*(a/b + x)**3/(
-3*a**8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*
b**3*(a/b + x)**3) + 2*a**(11/2)*b**(9/2)*sqrt(-1 + b*(a/b + x)/a
)*(a/b + x)**4/(-3*a**8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b +
 x)**2 + 3*a**5*b**3*(a/b + x)**3), Abs(b*(a/b + x)/a) > 1), (-16
*I*a**(19/2)*sqrt(b)*sqrt(1 - b*(a/b + x)/a)/(-3*a**8 + 9*a**7*b*
(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3)
+ 16*I*a**(19/2)*sqrt(b)/(-3*a**8 + 9*a**7*b*(a/b + x) - 9*a**6*b
**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3) + 40*I*a**(17/2)*b**
(3/2)*sqrt(1 - b*(a/b + x)/a)*(a/b + x)/(-3*a**8 + 9*a**7*b*(a/b
+ x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3) - 48*
I*a**(17/2)*b**(3/2)*(a/b + x)/(-3*a**8 + 9*a**7*b*(a/b + x) - 9*
a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3) - 30*I*a**(15/
2)*b**(5/2)*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**2/(-3*a**8 + 9*a**
7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)*
*3) + 48*I*a**(15/2)*b**(5/2)*(a/b + x)**2/(-3*a**8 + 9*a**7*b*(a
/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b + x)**3) +
4*I*a**(13/2)*b**(7/2)*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**3/(-3*a
**8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3
*(a/b + x)**3) - 16*I*a**(13/2)*b**(7/2)*(a/b + x)**3/(-3*a**8 +
9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 + 3*a**5*b**3*(a/b
+ x)**3) + 2*I*a**(11/2)*b**(9/2)*sqrt(1 - b*(a/b + x)/a)*(a/b +
x)**4/(-3*a**8 + 9*a**7*b*(a/b + x) - 9*a**6*b**2*(a/b + x)**2 +
3*a**5*b**3*(a/b + x)**3), True))
```

GIAC/XCAS [A] time = 0.203367, size = 32, normalized size = 1.

$$\frac{2}{3}\,b^2x^{\frac{3}{2}} + 4\,ab\sqrt{x} - \frac{2\,a^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*b^2*x^(3/2) + 4*a*b*sqrt(x) - 2*a^2/sqrt(x)
```

3.441 $\int \frac{(a+bx)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=32

$$-\frac{2a^2}{3x^{3/2}}-\frac{4ab}{\sqrt{x}}+2b^2\sqrt{x}$$

```
[Out] (-2*a^2)/(3*x^(3/2)) - (4*a*b)/Sqrt[x] + 2*b^2*Sqrt[x]
```

Rubi [A] time = 0.0213733, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^2}{3x^{3/2}}-\frac{4ab}{\sqrt{x}}+2b^2\sqrt{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^(5/2),x]

[Out] (-2*a^2)/(3*x^(3/2)) - (4*a*b)/Sqrt[x] + 2*b^2*Sqrt[x]
```

Rubi in Sympy [A] time = 3.93392, size = 31, normalized size = 0.97

$$-\frac{2a^2}{3x^{\frac{3}{2}}}-\frac{4ab}{\sqrt{x}}+2b^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(5/2),x)

[Out] -2*a**2/(3*x**(3/2)) - 4*a*b/sqrt(x) + 2*b**2*sqrt(x)
```

Mathematica [A] time = 0.0101265, size = 26, normalized size = 0.81

$$-\frac{2\left(a^2+6abx-3b^2x^2\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^(5/2),x]
```

```
[Out] (-2*(a^2 + 6*a*b*x - 3*b^2*x^2))/(3*x^(3/2))
```

Maple [A] time = 0.007, size = 23, normalized size = 0.7

$$-\frac{-6\,b^{2}x^{2}+12\,abx+2\,a^{2}}{3}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^(5/2),x)
```

```
[Out] -2/3*(-3*b^2*x^2+6*a*b*x+a^2)/x^(3/2)
```

Maxima [A] time = 1.33665, size = 31, normalized size = 0.97

$$2\,b^{2}\sqrt{x}-\frac{2\,\left(6\,abx+a^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2*b^2*sqrt(x) - 2/3*(6*a*b*x + a^2)/x^(3/2)
```

Fricas [A] time = 0.207454, size = 32, normalized size = 1.

$$\frac{2\,\left(3\,b^{2}x^{2}-6\,abx-a^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*b^2*x^2 - 6*a*b*x - a^2)/x^(3/2)
```

Sympy [A] time = 2.21081, size = 31, normalized size = 0.97

$$-\frac{2a^{2}}{3x^{\frac{3}{2}}}-\frac{4ab}{\sqrt{x}}+2b^{2}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(5/2),x)
```

```
[Out] -2*a**2/(3*x**(3/2)) - 4*a*b/sqrt(x) + 2*b**2*sqrt(x)
```

GIAC/XCAS [A] time = 0.210105, size = 31, normalized size = 0.97

$$2\,b^2\sqrt{x} - \frac{2\left(6\,abx + a^2\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2*b^2*sqrt(x) - 2/3*(6*a*b*x + a^2)/x^(3/2)
```

3.442 $\int x^m(a+bx)^3\,dx$

Optimal. Leaf size=61

$$\frac{a^3x^{m+1}}{m+1}+\frac{3a^2bx^{m+2}}{m+2}+\frac{3ab^2x^{m+3}}{m+3}+\frac{b^3x^{m+4}}{m+4}$$

```
[Out] (a^3*x^(1 + m))/(1 + m) + (3*a^2*b*x^(2 + m))/(2 + m) + (3*a*b^2*
x^(3 + m))/(3 + m) + (b^3*x^(4 + m))/(4 + m)
```

Rubi [A] time = 0.051404, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3x^{m+1}}{m+1}+\frac{3a^2bx^{m+2}}{m+2}+\frac{3ab^2x^{m+3}}{m+3}+\frac{b^3x^{m+4}}{m+4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^3,x]
```

```
[Out] (a^3*x^(1 + m))/(1 + m) + (3*a^2*b*x^(2 + m))/(2 + m) + (3*a*b^2*
x^(3 + m))/(3 + m) + (b^3*x^(4 + m))/(4 + m)
```

Rubi in Sympy [A] time = 9.31098, size = 53, normalized size = 0.87

$$\frac{a^3x^{m+1}}{m+1}+\frac{3a^2bx^{m+2}}{m+2}+\frac{3ab^2x^{m+3}}{m+3}+\frac{b^3x^{m+4}}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**3,x)
```

```
[Out] a**3*x**(m + 1)/(m + 1) + 3*a**2*b*x**(m + 2)/(m + 2) + 3*a*b**2*
x**(m + 3)/(m + 3) + b**3*x**(m + 4)/(m + 4)
```

Mathematica [A] time = 0.0388325, size = 55, normalized size = 0.9

$$x^m\left(\frac{a^3x}{m+1}+\frac{3a^2bx^2}{m+2}+\frac{3ab^2x^3}{m+3}+\frac{b^3x^4}{m+4}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^3,x]
```

```
[Out] x^m*((a^3*x)/(1 + m) + (3*a^2*b*x^2)/(2 + m) + (3*a*b^2*x^3)/(3 +
 m) + (b^3*x^4)/(4 + m))
```

Maple [B] time = 0.007, size = 170, normalized size = 2.8

$$\frac{x^{1+m}\left(b^3m^3x^3+3\,ab^2m^3x^2+6\,b^3m^2x^3+3\,a^2bm^3x+21\,ab^2m^2x^2+11\,b^3mx^3+a^3m^3+24\,a^2bm^2x+42\,ab^2mx^2+6\,b^3x^3+9\right.}{(4+m)\,(3+m)\,(2+m)\,(1+m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^3,x)
```

```
[Out] x^(1+m)*(b^3*m^3*x^3+3*a*b^2*m^3*x^2+6*b^3*m^2*x^3+3*a^2*b*m^3*x+
21*a*b^2*m^2*x^2+11*b^3*m*x^3+a^3*m^3+24*a^2*b*m^2*x+42*a*b^2*m*x
^2+6*b^3*x^3+9*a^3*m^2+57*a^2*b*m*x+24*a*b^2*x^2+26*a^3*m+36*a^2*
b*x+24*a^3)/(4+m)/(3+m)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221384, size = 212, normalized size = 3.48

$$\frac{\left(\left(b^3m^3+6\,b^3m^2+11\,b^3m+6\,b^3\right)x^4+3\,\left(ab^2m^3+7\,ab^2m^2+14\,ab^2m+8\,ab^2\right)x^3+3\,\left(a^2bm^3+8\,a^2bm^2+19\,a^2bm+12\,a^2b\right)\right.}{m^4+10\,m^3+35\,m^2+50\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^m,x, algorithm="fricas")
```

```
[Out] ((b^3*m^3 + 6*b^3*m^2 + 11*b^3*m + 6*b^3)*x^4 + 3*(a*b^2*m^3 + 7*
a*b^2*m^2 + 14*a*b^2*m + 8*a*b^2)*x^3 + 3*(a^2*b*m^3 + 8*a^2*b*m^
2 + 19*a^2*b*m + 12*a^2*b)*x^2 + (a^3*m^3 + 9*a^3*m^2 + 26*a^3*m
```

```
+ 24*a^3)*x)*x^m/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

Sympy [A] time = 2.31849, size = 663, normalized size = 10.87

$$\begin{cases} -\frac{a^3}{3x^3} - \frac{3a^2b}{2x^2} - \frac{3ab^2}{x} + b^3\log(x) \\ -\frac{a^3}{2x^2} - \frac{3a^2b}{x} + 3ab^2\log(x) + b^3x \\ -\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + \frac{b^3x^2}{2} \\ a^3\log(x) + 3a^2bx + \frac{3ab^2x^2}{2} + \frac{b^3x^3}{3} \\ \frac{a^3m^3xx^m}{m^4+10m^3+35m^2+50m+24} + \frac{9a^3m^2xx^m}{m^4+10m^3+35m^2+50m+24} + \frac{26a^3mxx^m}{m^4+10m^3+35m^2+50m+24} + \frac{24a^3xx^m}{m^4+10m^3+35m^2+50m+24} + \frac{3a^2bm^3x^2x^m}{m^4+10m^3+35m^2+50m+24} + \frac{24}{m^4+10m} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**3,x)
```

```
[Out] Piecewise((-a**3/(3*x**3) - 3*a**2*b/(2*x**2) - 3*a*b**2/x + b**3
*log(x), Eq(m, -4)), (-a**3/(2*x**2) - 3*a**2*b/x + 3*a*b**2*log(
x) + b**3*x, Eq(m, -3)), (-a**3/x + 3*a**2*b*log(x) + 3*a*b**2*x
+ b**3*x**2/2, Eq(m, -2)), (a**3*log(x) + 3*a**2*b*x + 3*a*b**2*x
**2/2 + b**3*x**3/3, Eq(m, -1)), (a**3*m**3*x*x**m/(m**4 + 10*m**
3 + 35*m**2 + 50*m + 24) + 9*a**3*m**2*x*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24) + 26*a**3*m*x*x**m/(m**4 + 10*m**3 + 35*m**2
+ 50*m + 24) + 24*a**3*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
24) + 3*a**2*b*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
24) + 24*a**2*b*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
 24) + 57*a**2*b*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 2
4) + 36*a**2*b*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
 3*a*b**2*m**3*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
 21*a*b**2*m**2*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24)
+ 42*a*b**2*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
24*a*b**2*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + b**3
*m**3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*b**3*m
**2*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*b**3*m*
x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*b**3*x**4*x*
*m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24), True))
```

GIAC/XCAS [A] time = 0.207705, size = 346, normalized size = 5.67

$$\frac{b^3m^3x^4e^{(m\ln(x))} + 3\,ab^2m^3x^3e^{(m\ln(x))} + 6\,b^3m^2x^4e^{(m\ln(x))} + 3\,a^2bm^3x^2e^{(m\ln(x))} + 21\,ab^2m^2x^3e^{(m\ln(x))} + 11\,b^3mx^4e^{(m\ln(x))} + a^3r}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^m,x, algorithm="giac")
```

```
[Out] (b^3*m^3*x^4*e^(m*ln(x)) + 3*a*b^2*m^3*x^3*e^(m*ln(x)) + 6*b^3*m^
2*x^4*e^(m*ln(x)) + 3*a^2*b*m^3*x^2*e^(m*ln(x)) + 21*a*b^2*m^2*x^
```

```
3*e^(m*ln(x)) + 11*b^3*m*x^4*e^(m*ln(x)) + a^3*m^3*x*e^(m*ln(x))
+ 24*a^2*b*m^2*x^2*e^(m*ln(x)) + 42*a*b^2*m*x^3*e^(m*ln(x)) + 6*b
^3*x^4*e^(m*ln(x)) + 9*a^3*m^2*x*e^(m*ln(x)) + 57*a^2*b*m*x^2*e^(
m*ln(x)) + 24*a*b^2*x^3*e^(m*ln(x)) + 26*a^3*m*x*e^(m*ln(x)) + 36
*a^2*b*x^2*e^(m*ln(x)) + 24*a^3*x*e^(m*ln(x)))/(m^4 + 10*m^3 + 35
*m^2 + 50*m + 24)
```

3.443 $\int x^{5/2}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{2}{7}a^3x^{7/2}+\frac{2}{3}a^2bx^{9/2}+\frac{6}{11}ab^2x^{11/2}+\frac{2}{13}b^3x^{13/2}$$

```
[Out] (2*a^3*x^(7/2))/7 + (2*a^2*b*x^(9/2))/3 + (6*a*b^2*x^(11/2))/11 +
 (2*b^3*x^(13/2))/13
```

Rubi [A] time = 0.0310032, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{7}a^3x^{7/2}+\frac{2}{3}a^2bx^{9/2}+\frac{6}{11}ab^2x^{11/2}+\frac{2}{13}b^3x^{13/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a + b*x)^3,x]
```

```
[Out] (2*a^3*x^(7/2))/7 + (2*a^2*b*x^(9/2))/3 + (6*a*b^2*x^(11/2))/11 +
 (2*b^3*x^(13/2))/13
```

Rubi in Sympy [A] time = 5.16145, size = 49, normalized size = 0.96

$$\frac{2a^3x^{\frac{7}{2}}}{7}+\frac{2a^2bx^{\frac{9}{2}}}{3}+\frac{6ab^2x^{\frac{11}{2}}}{11}+\frac{2b^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+a)**3,x)
```

```
[Out] 2*a**3*x**(7/2)/7 + 2*a**2*b*x**(9/2)/3 + 6*a*b**2*x**(11/2)/11 +
 2*b**3*x**(13/2)/13
```

Mathematica [A] time = 0.0113069, size = 39, normalized size = 0.76

$$\frac{2x^{7/2}\left(429a^3+1001a^2bx+819ab^2x^2+231b^3x^3\right)}{3003}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a + b*x)^3,x]
```

```
[Out] (2*x^(7/2)*(429*a^3 + 1001*a^2*b*x + 819*a*b^2*x^2 + 231*b^3*x^3)
)/3003
```

Maple [A] time = 0.006, size = 36, normalized size = 0.7

$$\frac{462 b^3 x^3 + 1638 a b^2 x^2 + 2002 a^2 b x + 858 a^3}{3003} x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+a)^3,x)
```

```
[Out] 2/3003*x^(7/2)*(231*b^3*x^3+819*a*b^2*x^2+1001*a^2*b*x+429*a^3)
```

Maxima [A] time = 1.33094, size = 47, normalized size = 0.92

$$\frac{2}{13} b^3 x^{\frac{13}{2}} + \frac{6}{11} a b^2 x^{\frac{11}{2}} + \frac{2}{3} a^2 b x^{\frac{9}{2}} + \frac{2}{7} a^3 x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/13*b^3*x^(13/2) + 6/11*a*b^2*x^(11/2) + 2/3*a^2*b*x^(9/2) + 2/7
*a^3*x^(7/2)
```

Fricas [A] time = 0.204472, size = 54, normalized size = 1.06

$$\frac{2}{3003} \left(231 b^3 x^6 + 819 a b^2 x^5 + 1001 a^2 b x^4 + 429 a^3 x^3\right) \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3003*(231*b^3*x^6 + 819*a*b^2*x^5 + 1001*a^2*b*x^4 + 429*a^3*x^
3)*sqrt(x)
```

Sympy [A] time = 6.71063, size = 49, normalized size = 0.96

$$\frac{2a^3x^{\frac{7}{2}}}{7} + \frac{2a^2bx^{\frac{9}{2}}}{3} + \frac{6ab^2x^{\frac{11}{2}}}{11} + \frac{2b^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+a)**3,x)
```

```
[Out] 2*a**3*x**(7/2)/7 + 2*a**2*b*x**(9/2)/3 + 6*a*b**2*x**(11/2)/11 +
 2*b**3*x**(13/2)/13
```

GIAC/XCAS [A] time = 0.206502, size = 47, normalized size = 0.92

$$\frac{2}{13}\,b^3x^{\frac{13}{2}} + \frac{6}{11}\,ab^2x^{\frac{11}{2}} + \frac{2}{3}\,a^2bx^{\frac{9}{2}} + \frac{2}{7}\,a^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(5/2),x, algorithm="giac")
```

```
[Out] 2/13*b^3*x^(13/2) + 6/11*a*b^2*x^(11/2) + 2/3*a^2*b*x^(9/2) + 2/7
*a^3*x^(7/2)
```

3.444 $\int x^{3/2}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{2}{5}a^3x^{5/2}+\frac{6}{7}a^2bx^{7/2}+\frac{2}{3}ab^2x^{9/2}+\frac{2}{11}b^3x^{11/2}$$

```
[Out] (2*a^3*x^(5/2))/5 + (6*a^2*b*x^(7/2))/7 + (2*a*b^2*x^(9/2))/3 + (
2*b^3*x^(11/2))/11
```

Rubi [A] time = 0.030871, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{5}a^3x^{5/2}+\frac{6}{7}a^2bx^{7/2}+\frac{2}{3}ab^2x^{9/2}+\frac{2}{11}b^3x^{11/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a + b*x)^3,x]
```

```
[Out] (2*a^3*x^(5/2))/5 + (6*a^2*b*x^(7/2))/7 + (2*a*b^2*x^(9/2))/3 + (
2*b^3*x^(11/2))/11
```

Rubi in Sympy [A] time = 5.17647, size = 49, normalized size = 0.96

$$\frac{2a^3x^{\frac{5}{2}}}{5}+\frac{6a^2bx^{\frac{7}{2}}}{7}+\frac{2ab^2x^{\frac{9}{2}}}{3}+\frac{2b^3x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+a)**3,x)
```

```
[Out] 2*a**3*x**(5/2)/5 + 6*a**2*b*x**(7/2)/7 + 2*a*b**2*x**(9/2)/3 + 2
*b**3*x**(11/2)/11
```

Mathematica [A] time = 0.0110749, size = 39, normalized size = 0.76

$$\frac{2x^{5/2}\left(231a^3+495a^2bx+385ab^2x^2+105b^3x^3\right)}{1155}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a + b*x)^3,x]
```

```
[Out] (2*x^(5/2)*(231*a^3 + 495*a^2*b*x + 385*a*b^2*x^2 + 105*b^3*x^3))
/1155
```

Maple [A] time = 0.008, size = 36, normalized size = 0.7

$$\frac{210\,b^{3}x^{3}+770\,ab^{2}x^{2}+990\,a^{2}bx+462\,a^{3}}{1155}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+a)^3,x)
```

```
[Out] 2/1155*x^(5/2)*(105*b^3*x^3+385*a*b^2*x^2+495*a^2*b*x+231*a^3)
```

Maxima [A] time = 1.33407, size = 47, normalized size = 0.92

$$\frac{2}{11}\,b^{3}x^{\frac{11}{2}}+\frac{2}{3}\,ab^{2}x^{\frac{9}{2}}+\frac{6}{7}\,a^{2}bx^{\frac{7}{2}}+\frac{2}{5}\,a^{3}x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/11*b^3*x^(11/2) + 2/3*a*b^2*x^(9/2) + 6/7*a^2*b*x^(7/2) + 2/5*a
^3*x^(5/2)
```

Fricas [A] time = 0.207018, size = 54, normalized size = 1.06

$$\frac{2}{1155}\left(105\,b^{3}x^{5}+385\,ab^{2}x^{4}+495\,a^{2}bx^{3}+231\,a^{3}x^{2}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/1155*(105*b^3*x^5 + 385*a*b^2*x^4 + 495*a^2*b*x^3 + 231*a^3*x^2
)*sqrt(x)
```

Sympy [A] time = 10.6865, size = 4884, normalized size = 95.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a)**3,x)
```

```
[Out] Piecewise((32*a**(51/2)*sqrt(-1 + b*(a/b + x)/a)/(1155*a**20*b**(
5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b
+ x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13
/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14
*b**(17/2)*(a/b + x)**6) - 32*I*a**(51/2)/(1155*a**20*b**(5/2) -
6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2
 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/
b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17
/2)*(a/b + x)**6) - 176*a**(49/2)*b*sqrt(-1 + b*(a/b + x)/a)*(a/b
 + x)/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 1732
5*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**
3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/
b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) + 192*I*a**(49/2)*
b*(a/b + x)/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x)
+ 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b
+ x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/
2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) + 396*a**(47
/2)*b**2*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**2/(1155*a**20*b**(5/
2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b +
x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2
)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b
**(17/2)*(a/b + x)**6) - 480*I*a**(47/2)*b**2*(a/b + x)**2/(1155*
a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(
9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a*
*16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 +
1155*a**14*b**(17/2)*(a/b + x)**6) - 462*a**(45/2)*b**3*sqrt(-1 +
 b*(a/b + x)/a)*(a/b + x)**3/(1155*a**20*b**(5/2) - 6930*a**19*b*
*(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**1
7*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6
930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)
**6) + 640*I*a**(45/2)*b**3*(a/b + x)**3/(1155*a**20*b**(5/2) - 6
930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2
- 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b
 + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/
2)*(a/b + x)**6) - 480*I*a**(43/2)*b**4*(a/b + x)**4/(1155*a**20*
b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(
a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b*
*(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a
**14*b**(17/2)*(a/b + x)**6) + 1848*a**(41/2)*b**5*sqrt(-1 + b*(a
/b + x)/a)*(a/b + x)**5/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2
)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**
(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a
**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6)
+ 192*I*a**(41/2)*b**5*(a/b + x)**5/(1155*a**20*b**(5/2) - 6930*a
**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 231
00*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)
```

```
**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a
/b + x)**6) - 5544*a**(39/2)*b**6*sqrt(-1 + b*(a/b + x)/a)*(a/b +
 x)**6/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 173
25*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)*
*3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a
/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) - 32*I*a**(39/2)*
b**6*(a/b + x)**6/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b
 + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)
*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b
**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) + 8844
*a**(37/2)*b**7*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**7/(1155*a**20
*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*
(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b
**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*
a**14*b**(17/2)*(a/b + x)**6) - 8448*a**(35/2)*b**8*sqrt(-1 + b*(
a/b + x)/a)*(a/b + x)**8/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/
2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b*
*(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*
a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6)
 + 4840*a**(33/2)*b**9*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**9/(115
5*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b*
*(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*
a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5
+ 1155*a**14*b**(17/2)*(a/b + x)**6) - 1540*a**(31/2)*b**10*sqrt(
-1 + b*(a/b + x)/a)*(a/b + x)**10/(1155*a**20*b**(5/2) - 6930*a**
19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100
*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**
4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b
 + x)**6) + 210*a**(29/2)*b**11*sqrt(-1 + b*(a/b + x)/a)*(a/b + x
)**11/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 1732
5*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**
3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/
b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6), Abs(b*(a/b + x)/a
) > 1), (32*I*a**(51/2)*sqrt(1 - b*(a/b + x)/a)/(1155*a**20*b**(5
/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b +
 x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/
2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*
b**(17/2)*(a/b + x)**6) - 32*I*a**(51/2)/(1155*a**20*b**(5/2) - 6
930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2
- 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b
 + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/
2)*(a/b + x)**6) - 176*I*a**(49/2)*b*sqrt(1 - b*(a/b + x)/a)*(a/b
 + x)/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 1732
5*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**
3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/
b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) + 192*I*a**(49/2)*
b*(a/b + x)/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x)
+ 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b
+ x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/
2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) + 396*I*a**(
47/2)*b**2*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**2/(1155*a**20*b**(5
/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b +
 x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/
2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*
b**(17/2)*(a/b + x)**6) - 480*I*a**(47/2)*b**2*(a/b + x)**2/(1155
*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**
```

```
(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a
**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 +
 1155*a**14*b**(17/2)*(a/b + x)**6) - 462*I*a**(45/2)*b**3*sqrt(1
 - b*(a/b + x)/a)*(a/b + x)**3/(1155*a**20*b**(5/2) - 6930*a**19*
b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a*
*17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 -
 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b +
x)**6) + 640*I*a**(45/2)*b**3*(a/b + x)**3/(1155*a**20*b**(5/2) -
 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**
2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a
/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(1
7/2)*(a/b + x)**6) - 480*I*a**(43/2)*b**4*(a/b + x)**4/(1155*a**2
0*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)
*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*
b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155
*a**14*b**(17/2)*(a/b + x)**6) + 1848*I*a**(41/2)*b**5*sqrt(1 - b
*(a/b + x)/a)*(a/b + x)**5/(1155*a**20*b**(5/2) - 6930*a**19*b**(
7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*
b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 693
0*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**
6) + 192*I*a**(41/2)*b**5*(a/b + x)**5/(1155*a**20*b**(5/2) - 693
0*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 -
23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b +
 x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)
*(a/b + x)**6) - 5544*I*a**(39/2)*b**6*sqrt(1 - b*(a/b + x)/a)*(a
/b + x)**6/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) +
 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b +
 x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2
)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) - 32*I*a**(39
/2)*b**6*(a/b + x)**6/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*
(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(1
1/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**
15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) +
8844*I*a**(37/2)*b**7*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**7/(1155*
a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(
9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a*
*16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 +
1155*a**14*b**(17/2)*(a/b + x)**6) - 8448*I*a**(35/2)*b**8*sqrt(1
 - b*(a/b + x)/a)*(a/b + x)**8/(1155*a**20*b**(5/2) - 6930*a**19*
b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a*
*17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 -
 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b +
x)**6) + 4840*I*a**(33/2)*b**9*sqrt(1 - b*(a/b + x)/a)*(a/b + x)*
*9/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b + x) + 17325*a
**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a/b + x)**3 +
 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(15/2)*(a/b +
 x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6) - 1540*I*a**(31/2)*b*
*10*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**10/(1155*a**20*b**(5/2) -
6930*a**19*b**(7/2)*(a/b + x) + 17325*a**18*b**(9/2)*(a/b + x)**2
 - 23100*a**17*b**(11/2)*(a/b + x)**3 + 17325*a**16*b**(13/2)*(a/
b + x)**4 - 6930*a**15*b**(15/2)*(a/b + x)**5 + 1155*a**14*b**(17
/2)*(a/b + x)**6) + 210*I*a**(29/2)*b**11*sqrt(1 - b*(a/b + x)/a)
*(a/b + x)**11/(1155*a**20*b**(5/2) - 6930*a**19*b**(7/2)*(a/b +
x) + 17325*a**18*b**(9/2)*(a/b + x)**2 - 23100*a**17*b**(11/2)*(a
/b + x)**3 + 17325*a**16*b**(13/2)*(a/b + x)**4 - 6930*a**15*b**(
15/2)*(a/b + x)**5 + 1155*a**14*b**(17/2)*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.210594, size = 47, normalized size = 0.92

$$\frac{2}{11}\, b^3 x^{\frac{11}{2}} + \frac{2}{3}\, a b^2 x^{\frac{9}{2}} + \frac{6}{7}\, a^2 b x^{\frac{7}{2}} + \frac{2}{5}\, a^3 x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(3/2),x, algorithm="giac")
```

```
[Out] 2/11*b^3*x^(11/2) + 2/3*a*b^2*x^(9/2) + 6/7*a^2*b*x^(7/2) + 2/5*a
^3*x^(5/2)
```

3.445 $\int \sqrt{x}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{2}{3}a^3x^{3/2}+\frac{6}{5}a^2bx^{5/2}+\frac{6}{7}ab^2x^{7/2}+\frac{2}{9}b^3x^{9/2}$$

```
[Out] (2*a^3*x^(3/2))/3 + (6*a^2*b*x^(5/2))/5 + (6*a*b^2*x^(7/2))/7 + (
2*b^3*x^(9/2))/9
```

Rubi [A] time = 0.0297821, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{2}{3}a^3x^{3/2}+\frac{6}{5}a^2bx^{5/2}+\frac{6}{7}ab^2x^{7/2}+\frac{2}{9}b^3x^{9/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a + b*x)^3,x]
```

```
[Out] (2*a^3*x^(3/2))/3 + (6*a^2*b*x^(5/2))/5 + (6*a*b^2*x^(7/2))/7 + (
2*b^3*x^(9/2))/9
```

Rubi in Sympy [A] time = 5.19748, size = 49, normalized size = 0.96

$$\frac{2a^3x^{\frac{3}{2}}}{3}+\frac{6a^2bx^{\frac{5}{2}}}{5}+\frac{6ab^2x^{\frac{7}{2}}}{7}+\frac{2b^3x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*x**(1/2),x)
```

```
[Out] 2*a**3*x**(3/2)/3 + 6*a**2*b*x**(5/2)/5 + 6*a*b**2*x**(7/2)/7 + 2
*b**3*x**(9/2)/9
```

Mathematica [A] time = 0.010714, size = 39, normalized size = 0.76

$$\frac{2}{315}x^{3/2}\left(105a^3+189a^2bx+135ab^2x^2+35b^3x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a + b*x)^3,x]
```

```
[Out] (2*x^(3/2)*(105*a^3 + 189*a^2*b*x + 135*a*b^2*x^2 + 35*b^3*x^3))/
315
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$\frac{70\,b^3x^3+270\,ab^2x^2+378\,a^2bx+210\,a^3}{315}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*b^3*x^3+135*a*b^2*x^2+189*a^2*b*x+105*a^3)
```

Maxima [A] time = 1.34857, size = 47, normalized size = 0.92

$$\frac{2}{9}\,b^3x^{\frac{9}{2}}+\frac{6}{7}\,ab^2x^{\frac{7}{2}}+\frac{6}{5}\,a^2bx^{\frac{5}{2}}+\frac{2}{3}\,a^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*sqrt(x),x, algorithm="maxima")
```

```
[Out] 2/9*b^3*x^(9/2) + 6/7*a*b^2*x^(7/2) + 6/5*a^2*b*x^(5/2) + 2/3*a^3
*x^(3/2)
```

Fricas [A] time = 0.206178, size = 51, normalized size = 1.

$$\frac{2}{315}\left(35\,b^3x^4+135\,ab^2x^3+189\,a^2bx^2+105\,a^3x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*sqrt(x),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^3*x^4 + 135*a*b^2*x^3 + 189*a^2*b*x^2 + 105*a^3*x)*sq
rt(x)
```

Sympy [A] time = 9.47301, size = 4884, normalized size = 95.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*x**(1/2),x)
```

```
[Out] Piecewise((-32*a**(49/2)*sqrt(-1 + b*(a/b + x)/a)/(315*a**20*b**(
3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b +
 x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*
(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(
15/2)*(a/b + x)**6) + 32*I*a**(49/2)/(315*a**20*b**(3/2) - 1890*a
**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300
*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4
- 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b +
x)**6) + 176*a**(47/2)*b*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)/(315*
a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7
/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*
b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*
a**14*b**(15/2)*(a/b + x)**6) - 192*I*a**(47/2)*b*(a/b + x)/(315*
a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7
/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*
b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*
a**14*b**(15/2)*(a/b + x)**6) - 396*a**(45/2)*b**2*sqrt(-1 + b*(a
/b + x)/a)*(a/b + x)**2/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)
*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/
2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*
b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) + 480*
I*a**(45/2)*b**2*(a/b + x)**2/(315*a**20*b**(3/2) - 1890*a**19*b*
*(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*
b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*
a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6)
+ 462*a**(43/2)*b**3*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**3/(315*a
**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/
2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b
**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a
**14*b**(15/2)*(a/b + x)**6) - 640*I*a**(43/2)*b**3*(a/b + x)**3/
(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*
b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a
**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 +
 315*a**14*b**(15/2)*(a/b + x)**6) - 210*a**(41/2)*b**4*sqrt(-1 +
 b*(a/b + x)/a)*(a/b + x)**4/(315*a**20*b**(3/2) - 1890*a**19*b**
(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b
**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a
**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) +
 480*I*a**(41/2)*b**4*(a/b + x)**4/(315*a**20*b**(3/2) - 1890*a**
19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a
**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 -
1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)
**6) - 378*a**(39/2)*b**5*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**5/(
315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b
**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a*
*16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 +
```

```
315*a**14*b**(15/2)*(a/b + x)**6) - 192*I*a**(39/2)*b**5*(a/b + x
)**5/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a
**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4
725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)
**5 + 315*a**14*b**(15/2)*(a/b + x)**6) + 1134*a**(37/2)*b**6*sqr
t(-1 + b*(a/b + x)/a)*(a/b + x)**6/(315*a**20*b**(3/2) - 1890*a**
19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a
**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 -
1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)
**6) + 32*I*a**(37/2)*b**6*(a/b + x)**6/(315*a**20*b**(3/2) - 189
0*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6
300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)*
*4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b
 + x)**6) - 1494*a**(35/2)*b**7*sqrt(-1 + b*(a/b + x)/a)*(a/b + x
)**7/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a
**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4
725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)
**5 + 315*a**14*b**(15/2)*(a/b + x)**6) + 1098*a**(33/2)*b**8*sqr
t(-1 + b*(a/b + x)/a)*(a/b + x)**8/(315*a**20*b**(3/2) - 1890*a**
19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a
**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 -
1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)
**6) - 430*a**(31/2)*b**9*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**9/(
315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b
**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a*
*16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 +
315*a**14*b**(15/2)*(a/b + x)**6) + 70*a**(29/2)*b**10*sqrt(-1 +
b*(a/b + x)/a)*(a/b + x)**10/(315*a**20*b**(3/2) - 1890*a**19*b**
(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b
**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a
**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6),
Abs(b*(a/b + x)/a) > 1), (-32*I*a**(49/2)*sqrt(1 - b*(a/b + x)/a)
/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18
*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*
a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5
+ 315*a**14*b**(15/2)*(a/b + x)**6) + 32*I*a**(49/2)/(315*a**20*b
**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/
b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/
2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b
**(15/2)*(a/b + x)**6) + 176*I*a**(47/2)*b*sqrt(1 - b*(a/b + x)/a
)*(a/b + x)/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) +
 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)
**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a
/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) - 192*I*a**(47/2)*
b*(a/b + x)/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) +
 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)
**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a
/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) - 396*I*a**(45/2)*
b**2*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**2/(315*a**20*b**(3/2) - 1
890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 -
 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x
)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a
/b + x)**6) + 480*I*a**(45/2)*b**2*(a/b + x)**2/(315*a**20*b**(3/
2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x
)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a
/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15
```

```
/2)*(a/b + x)**6) + 462*I*a**(43/2)*b**3*sqrt(1 - b*(a/b + x)/a)*
(a/b + x)**3/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x)
+ 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x
)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(
a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) - 640*I*a**(43/2)
*b**3*(a/b + x)**3/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b
 + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a
/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(1
3/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) - 210*I*a**
(41/2)*b**4*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**4/(315*a**20*b**(3
/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b +
x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(
a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(1
5/2)*(a/b + x)**6) + 480*I*a**(41/2)*b**4*(a/b + x)**4/(315*a**20
*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(
a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(1
1/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14
*b**(15/2)*(a/b + x)**6) - 378*I*a**(39/2)*b**5*sqrt(1 - b*(a/b +
 x)/a)*(a/b + x)**5/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/
b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(
a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(
13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) - 192*I*a*
*(39/2)*b**5*(a/b + x)**5/(315*a**20*b**(3/2) - 1890*a**19*b**(5/
2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(
9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**1
5*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) + 11
34*I*a**(37/2)*b**6*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**6/(315*a**
20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)
*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**
(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**
14*b**(15/2)*(a/b + x)**6) + 32*I*a**(37/2)*b**6*(a/b + x)**6/(31
5*a**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**
(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**1
6*b**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 31
5*a**14*b**(15/2)*(a/b + x)**6) - 1494*I*a**(35/2)*b**7*sqrt(1 -
b*(a/b + x)/a)*(a/b + x)**7/(315*a**20*b**(3/2) - 1890*a**19*b**(
5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b*
*(9/2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a*
*15*b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) +
1098*I*a**(33/2)*b**8*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**8/(315*a
**20*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/
2)*(a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b
**(11/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a
**14*b**(15/2)*(a/b + x)**6) - 430*I*a**(31/2)*b**9*sqrt(1 - b*(a
/b + x)/a)*(a/b + x)**9/(315*a**20*b**(3/2) - 1890*a**19*b**(5/2)
*(a/b + x) + 4725*a**18*b**(7/2)*(a/b + x)**2 - 6300*a**17*b**(9/
2)*(a/b + x)**3 + 4725*a**16*b**(11/2)*(a/b + x)**4 - 1890*a**15*
b**(13/2)*(a/b + x)**5 + 315*a**14*b**(15/2)*(a/b + x)**6) + 70*I
*a**(29/2)*b**10*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**10/(315*a**20
*b**(3/2) - 1890*a**19*b**(5/2)*(a/b + x) + 4725*a**18*b**(7/2)*(
a/b + x)**2 - 6300*a**17*b**(9/2)*(a/b + x)**3 + 4725*a**16*b**(1
1/2)*(a/b + x)**4 - 1890*a**15*b**(13/2)*(a/b + x)**5 + 315*a**14
*b**(15/2)*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.202835, size = 47, normalized size = 0.92

$$\frac{2}{9}\,b^3x^{\frac{9}{2}} + \frac{6}{7}\,ab^2x^{\frac{7}{2}} + \frac{6}{5}\,a^2bx^{\frac{5}{2}} + \frac{2}{3}\,a^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*sqrt(x),x, algorithm="giac")
```

```
[Out] 2/9*b^3*x^(9/2) + 6/7*a*b^2*x^(7/2) + 6/5*a^2*b*x^(5/2) + 2/3*a^3
*x^(3/2)
```

3.446 $\int \frac{(a+bx)^3}{\sqrt{x}}\, dx$

Optimal. Leaf size=47

$$2a^3\sqrt{x} + 2a^2bx^{3/2} + \frac{6}{5}ab^2x^{5/2} + \frac{2}{7}b^3x^{7/2}$$

```
[Out] 2*a^3*Sqrt[x] + 2*a^2*b*x^(3/2) + (6*a*b^2*x^(5/2))/5 + (2*b^3*x^
(7/2))/7
```

Rubi [A] time = 0.0297594, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$2a^3\sqrt{x} + 2a^2bx^{3/2} + \frac{6}{5}ab^2x^{5/2} + \frac{2}{7}b^3x^{7/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/Sqrt[x],x]
```

```
[Out] 2*a^3*Sqrt[x] + 2*a^2*b*x^(3/2) + (6*a*b^2*x^(5/2))/5 + (2*b^3*x^
(7/2))/7
```

Rubi in Sympy [A] time = 5.1725, size = 46, normalized size = 0.98

$$2a^3\sqrt{x} + 2a^2bx^{\frac{3}{2}} + \frac{6ab^2x^{\frac{5}{2}}}{5} + \frac{2b^3x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**(1/2),x)
```

```
[Out] 2*a**3*sqrt(x) + 2*a**2*b*x**(3/2) + 6*a*b**2*x**(5/2)/5 + 2*b**3
*x**(7/2)/7
```

Mathematica [A] time = 0.0101665, size = 39, normalized size = 0.83

$$\frac{2}{35}\sqrt{x}\left(35a^3 + 35a^2bx + 21ab^2x^2 + 5b^3x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/Sqrt[x],x]

[Out] (2*Sqrt[x]*(35*a^3 + 35*a^2*b*x + 21*a*b^2*x^2 + 5*b^3*x^3))/35
```

Maple [A] time = 0.006, size = 36, normalized size = 0.8

$$\frac{10\,b^3x^3+42\,ab^2x^2+70\,a^2bx+70\,a^3}{35}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(1/2),x)

[Out] 2/35*x^(1/2)*(5*b^3*x^3+21*a*b^2*x^2+35*a^2*b*x+35*a^3)
```

Maxima [A] time = 1.31838, size = 47, normalized size = 1.

$$\frac{2}{7}\,b^3x^{\frac{7}{2}}+\frac{6}{5}\,ab^2x^{\frac{5}{2}}+2\,a^2bx^{\frac{3}{2}}+2\,a^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/sqrt(x),x, algorithm="maxima")

[Out] 2/7*b^3*x^(7/2) + 6/5*a*b^2*x^(5/2) + 2*a^2*b*x^(3/2) + 2*a^3*sqr
t(x)
```

Fricas [A] time = 0.205526, size = 47, normalized size = 1.

$$\frac{2}{35}\left(5\,b^3x^3+21\,ab^2x^2+35\,a^2bx+35\,a^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/sqrt(x),x, algorithm="fricas")

[Out] 2/35*(5*b^3*x^3 + 21*a*b^2*x^2 + 35*a^2*b*x + 35*a^3)*sqrt(x)
```

Sympy [A] time = 9.37274, size = 4600, normalized size = 97.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(1/2),x)
```

```
[Out] Piecewise((32*a**(47/2)*sqrt(-1 + b*(a/b + x)/a)/(35*a**20*sqrt(b
) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**
2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x
)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b
 + x)**6) - 32*I*a**(47/2)/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)
*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)
*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(1
1/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) - 176*a**(45
/2)*b*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)/(35*a**20*sqrt(b) - 210*
a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*
a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 2
10*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6
) + 192*I*a**(45/2)*b*(a/b + x)/(35*a**20*sqrt(b) - 210*a**19*b**
(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**
(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*
b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) + 396*a
**(43/2)*b**2*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**2/(35*a**20*sqr
t(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x
)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b
+ x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(
a/b + x)**6) - 480*I*a**(43/2)*b**2*(a/b + x)**2/(35*a**20*sqrt(b
) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**
2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x
)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b
 + x)**6) - 462*a**(41/2)*b**3*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)
**3/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*
b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**
16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*
a**14*b**(13/2)*(a/b + x)**6) + 640*I*a**(41/2)*b**3*(a/b + x)**3
/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**
(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*
b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**
14*b**(13/2)*(a/b + x)**6) + 280*a**(39/2)*b**4*sqrt(-1 + b*(a/b
+ x)/a)*(a/b + x)**4/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b
+ x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b
+ x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(
a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) - 480*I*a**(39/2)*
b**4*(a/b + x)**4/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x
) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x
)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b
 + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) - 42*a**(37/2)*b**5*s
qrt(-1 + b*(a/b + x)/a)*(a/b + x)**5/(35*a**20*sqrt(b) - 210*a**1
9*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**1
7*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a
**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) +
192*I*a**(37/2)*b**5*(a/b + x)**5/(35*a**20*sqrt(b) - 210*a**19*b
**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b
**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**1
5*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) - 84*
a**(35/2)*b**6*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**6/(35*a**20*sq
rt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b +
```

```
x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b
 + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*
(a/b + x)**6) - 32*I*a**(35/2)*b**6*(a/b + x)**6/(35*a**20*sqrt(b
) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**
2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x
)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b
 + x)**6) + 94*a**(33/2)*b**7*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)*
*7/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b
**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**1
6*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a
**14*b**(13/2)*(a/b + x)**6) - 48*a**(31/2)*b**8*sqrt(-1 + b*(a/b
 + x)/a)*(a/b + x)**8/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b
 + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b
 + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*
(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) + 10*a**(29/2)*b*
*9*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**9/(35*a**20*sqrt(b) - 210*
a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*
a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 2
10*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6
), Abs(b*(a/b + x)/a) > 1), (32*I*a**(47/2)*sqrt(1 - b*(a/b + x)/
a)/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b
**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**1
6*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a
**14*b**(13/2)*(a/b + x)**6) - 32*I*a**(47/2)/(35*a**20*sqrt(b) -
 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 -
 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**
4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b +
x)**6) - 176*I*a**(45/2)*b*sqrt(1 - b*(a/b + x)/a)*(a/b + x)/(35*
a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)
*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9
/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b*
*(13/2)*(a/b + x)**6) + 192*I*a**(45/2)*b*(a/b + x)/(35*a**20*sqr
t(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x
)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b
+ x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(
a/b + x)**6) + 396*I*a**(43/2)*b**2*sqrt(1 - b*(a/b + x)/a)*(a/b
+ x)**2/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a*
*18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525
*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 +
 35*a**14*b**(13/2)*(a/b + x)**6) - 480*I*a**(43/2)*b**2*(a/b + x
)**2/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18
*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a*
*16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35
*a**14*b**(13/2)*(a/b + x)**6) - 462*I*a**(41/2)*b**3*sqrt(1 - b*
(a/b + x)/a)*(a/b + x)**3/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*
(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*
(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11
/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) + 640*I*a**(4
1/2)*b**3*(a/b + x)**3/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/
b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/
b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)
*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) + 280*I*a**(39/2
)*b**4*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**4/(35*a**20*sqrt(b) - 2
10*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 7
00*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4
- 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)
```

```
**6) - 480*I*a**(39/2)*b**4*(a/b + x)**4/(35*a**20*sqrt(b) - 210*
a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*
a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 2
10*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6
) - 42*I*a**(37/2)*b**5*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**5/(35*
a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)
*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9
/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b*
*(13/2)*(a/b + x)**6) + 192*I*a**(37/2)*b**5*(a/b + x)**5/(35*a**
20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a
/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)
*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(1
3/2)*(a/b + x)**6) - 84*I*a**(35/2)*b**6*sqrt(1 - b*(a/b + x)/a)*
(a/b + x)**6/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 5
25*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3
+ 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)
**5 + 35*a**14*b**(13/2)*(a/b + x)**6) - 32*I*a**(35/2)*b**6*(a/b
 + x)**6/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a
**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 52
5*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5
+ 35*a**14*b**(13/2)*(a/b + x)**6) + 94*I*a**(33/2)*b**7*sqrt(1 -
 b*(a/b + x)/a)*(a/b + x)**7/(35*a**20*sqrt(b) - 210*a**19*b**(3/
2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/
2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**
(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b + x)**6) - 48*I*a**
(31/2)*b**8*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**8/(35*a**20*sqrt(b
) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*b**(5/2)*(a/b + x)**
2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**16*b**(9/2)*(a/b + x
)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*a**14*b**(13/2)*(a/b
 + x)**6) + 10*I*a**(29/2)*b**9*sqrt(1 - b*(a/b + x)/a)*(a/b + x)
**9/(35*a**20*sqrt(b) - 210*a**19*b**(3/2)*(a/b + x) + 525*a**18*
b**(5/2)*(a/b + x)**2 - 700*a**17*b**(7/2)*(a/b + x)**3 + 525*a**
16*b**(9/2)*(a/b + x)**4 - 210*a**15*b**(11/2)*(a/b + x)**5 + 35*
a**14*b**(13/2)*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.202563, size = 47, normalized size = 1.

$$\frac{2}{7}\,b^{3}x^{\frac{7}{2}} + \frac{6}{5}\,ab^{2}x^{\frac{5}{2}} + 2\,a^{2}bx^{\frac{3}{2}} + 2\,a^{3}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/sqrt(x),x, algorithm="giac")
```

```
[Out] 2/7*b^3*x^(7/2) + 6/5*a*b^2*x^(5/2) + 2*a^2*b*x^(3/2) + 2*a^3*sqr
t(x)
```

3.447 $\int \frac{(a+bx)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=45

$$-\frac{2a^3}{\sqrt{x}}+6a^2b\sqrt{x}+2ab^2x^{3/2}+\frac{2}{5}b^3x^{5/2}$$

```
[Out] (-2*a^3)/Sqrt[x] + 6*a^2*b*Sqrt[x] + 2*a*b^2*x^(3/2) + (2*b^3*x^(
5/2))/5
```

Rubi [A] time = 0.0298119, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3}{\sqrt{x}}+6a^2b\sqrt{x}+2ab^2x^{3/2}+\frac{2}{5}b^3x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^3/x^(3/2),x]
```

```
[Out] (-2*a^3)/Sqrt[x] + 6*a^2*b*Sqrt[x] + 2*a*b^2*x^(3/2) + (2*b^3*x^(
5/2))/5
```

Rubi in Sympy [A] time = 5.16791, size = 44, normalized size = 0.98

$$-\frac{2a^3}{\sqrt{x}}+6a^2b\sqrt{x}+2ab^2x^{\frac{3}{2}}+\frac{2b^3x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**3/x**(3/2),x)
```

```
[Out] -2*a**3/sqrt(x) + 6*a**2*b*sqrt(x) + 2*a*b**2*x**(3/2) + 2*b**3*x
**(5/2)/5
```

Mathematica [A] time = 0.0114352, size = 38, normalized size = 0.84

$$\frac{2\left(-5a^3+15a^2bx+5ab^2x^2+b^3x^3\right)}{5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^(3/2),x]

[Out] (2*(-5*a^3 + 15*a^2*b*x + 5*a*b^2*x^2 + b^3*x^3))/(5*Sqrt[x])
```

Maple [A] time = 0.006, size = 36, normalized size = 0.8

$$-\frac{-2\,b^3x^3-10\,ab^2x^2-30\,a^2bx+10\,a^3}{5}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(3/2),x)

[Out] -2/5*(-b^3*x^3-5*a*b^2*x^2-15*a^2*b*x+5*a^3)/x^(1/2)
```

Maxima [A] time = 1.36576, size = 47, normalized size = 1.04

$$\frac{2}{5}\,b^3x^{\frac{5}{2}}+2\,ab^2x^{\frac{3}{2}}+6\,a^2b\sqrt{x}-\frac{2\,a^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(3/2),x, algorithm="maxima")

[Out] 2/5*b^3*x^(5/2) + 2*a*b^2*x^(3/2) + 6*a^2*b*sqrt(x) - 2*a^3/sqrt(
x)
```

Fricas [A] time = 0.206739, size = 46, normalized size = 1.02

$$\frac{2\left(b^3x^3+5\,ab^2x^2+15\,a^2bx-5\,a^3\right)}{5\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(3/2),x, algorithm="fricas")

[Out] 2/5*(b^3*x^3 + 5*a*b^2*x^2 + 15*a^2*b*x - 5*a^3)/sqrt(x)
```

Sympy [A] time = 9.37383, size = 3847, normalized size = 85.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(3/2),x)
```

```
[Out] Piecewise((32*a**(45/2)*sqrt(b)*sqrt(-1 + b*(a/b + x)/a)/(5*a**20
 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*
b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a
/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 32*I*a**(45/2)*sqrt(b)/
(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 10
0*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15
*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 176*a**(43/2)*b
**(3/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)/(5*a**20 - 30*a**19*b*
(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)
**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5
*a**14*b**6*(a/b + x)**6) + 192*I*a**(43/2)*b**(3/2)*(a/b + x)/(5
*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*
a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b
**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) + 396*a**(41/2)*b**
(5/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**2/(5*a**20 - 30*a**19*b
*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x
)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 +
5*a**14*b**6*(a/b + x)**6) - 480*I*a**(41/2)*b**(5/2)*(a/b + x)**
2/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 -
100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**
15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 462*a**(39/2)
*b**(7/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**3/(5*a**20 - 30*a**
19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b
 + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**
5 + 5*a**14*b**6*(a/b + x)**6) + 640*I*a**(39/2)*b**(7/2)*(a/b +
x)**3/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**
2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30
*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) + 290*a**(3
7/2)*b**(9/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**4/(5*a**20 - 30
*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*
(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b +
x)**5 + 5*a**14*b**6*(a/b + x)**6) - 480*I*a**(37/2)*b**(9/2)*(a/
b + x)**4/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b +
x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4
- 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 92*a*
*(35/2)*b**(11/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**5/(5*a**20
- 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b
**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/
b + x)**5 + 5*a**14*b**6*(a/b + x)**6) + 192*I*a**(35/2)*b**(11/2
)*(a/b + x)**5/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a
/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x
)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) +
16*a**(33/2)*b**(13/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**6/(5*a
**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a*
*17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**
5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 32*I*a**(33/2)*b**(
```

```
13/2)*(a/b + x)**6/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**
2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b
 + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6
) - 6*a**(31/2)*b**(15/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**7/(
5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100
*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*
b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) + 2*a**(29/2)*b**(
17/2)*sqrt(-1 + b*(a/b + x)/a)*(a/b + x)**8/(5*a**20 - 30*a**19*b
*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x
)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 +
5*a**14*b**6*(a/b + x)**6), Abs(b*(a/b + x)/a) > 1), (32*I*a**(45
/2)*sqrt(b)*sqrt(1 - b*(a/b + x)/a)/(5*a**20 - 30*a**19*b*(a/b +
x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 7
5*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*
b**6*(a/b + x)**6) - 32*I*a**(45/2)*sqrt(b)/(5*a**20 - 30*a**19*b
*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x
)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 +
5*a**14*b**6*(a/b + x)**6) - 176*I*a**(43/2)*b**(3/2)*sqrt(1 - b*
(a/b + x)/a)*(a/b + x)/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18
*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*
(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x
)**6) + 192*I*a**(43/2)*b**(3/2)*(a/b + x)/(5*a**20 - 30*a**19*b*
(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)
**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5
*a**14*b**6*(a/b + x)**6) + 396*I*a**(41/2)*b**(5/2)*sqrt(1 - b*(
a/b + x)/a)*(a/b + x)**2/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**
18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**
4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b +
 x)**6) - 480*I*a**(41/2)*b**(5/2)*(a/b + x)**2/(5*a**20 - 30*a**
19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b
 + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**
5 + 5*a**14*b**6*(a/b + x)**6) - 462*I*a**(39/2)*b**(7/2)*sqrt(1
- b*(a/b + x)/a)*(a/b + x)**3/(5*a**20 - 30*a**19*b*(a/b + x) + 7
5*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**1
6*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(
a/b + x)**6) + 640*I*a**(39/2)*b**(7/2)*(a/b + x)**3/(5*a**20 - 3
0*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3
*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b +
 x)**5 + 5*a**14*b**6*(a/b + x)**6) + 290*I*a**(37/2)*b**(9/2)*sq
rt(1 - b*(a/b + x)/a)*(a/b + x)**4/(5*a**20 - 30*a**19*b*(a/b + x
) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75
*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b
**6*(a/b + x)**6) - 480*I*a**(37/2)*b**(9/2)*(a/b + x)**4/(5*a**2
0 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17
*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(
a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 92*I*a**(35/2)*b**(11/
2)*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**5/(5*a**20 - 30*a**19*b*(a/
b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3
 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a*
*14*b**6*(a/b + x)**6) + 192*I*a**(35/2)*b**(11/2)*(a/b + x)**5/(
5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100
*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*
b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) + 16*I*a**(33/2)*b
**(13/2)*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**6/(5*a**20 - 30*a**19
*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b +
 x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5
```

```
+ 5*a**14*b**6*(a/b + x)**6) - 32*I*a**(33/2)*b**(13/2)*(a/b + x)
**6/(5*a**20 - 30*a**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2
- 100*a**17*b**3*(a/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a
**15*b**5*(a/b + x)**5 + 5*a**14*b**6*(a/b + x)**6) - 6*I*a**(31/
2)*b**(15/2)*sqrt(1 - b*(a/b + x)/a)*(a/b + x)**7/(5*a**20 - 30*a
**19*b*(a/b + x) + 75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a
/b + x)**3 + 75*a**16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)
**5 + 5*a**14*b**6*(a/b + x)**6) + 2*I*a**(29/2)*b**(17/2)*sqrt(1
 - b*(a/b + x)/a)*(a/b + x)**8/(5*a**20 - 30*a**19*b*(a/b + x) +
75*a**18*b**2*(a/b + x)**2 - 100*a**17*b**3*(a/b + x)**3 + 75*a**
16*b**4*(a/b + x)**4 - 30*a**15*b**5*(a/b + x)**5 + 5*a**14*b**6*
(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.203137, size = 47, normalized size = 1.04

$$\frac{2}{5}\,b^3x^{\frac{5}{2}} + 2\,ab^2x^{\frac{3}{2}} + 6\,a^2b\sqrt{x} - \frac{2\,a^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*b^3*x^(5/2) + 2*a*b^2*x^(3/2) + 6*a^2*b*sqrt(x) - 2*a^3/sqrt(
x)
```

3.448 $\int \frac{(a+bx)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=47

$$-\frac{2a^3}{3x^{3/2}}-\frac{6a^2b}{\sqrt{x}}+6ab^2\sqrt{x}+\frac{2}{3}b^3x^{3/2}$$

```
[Out] (-2*a^3)/(3*x^(3/2)) - (6*a^2*b)/Sqrt[x] + 6*a*b^2*Sqrt[x] + (2*b
^3*x^(3/2))/3
```

Rubi [A] time = 0.0305014, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{2a^3}{3x^{3/2}}-\frac{6a^2b}{\sqrt{x}}+6ab^2\sqrt{x}+\frac{2}{3}b^3x^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^(5/2),x]
```

```
[Out] (-2*a^3)/(3*x^(3/2)) - (6*a^2*b)/Sqrt[x] + 6*a*b^2*Sqrt[x] + (2*b
^3*x^(3/2))/3
```

Rubi in Sympy [A] time = 5.24496, size = 46, normalized size = 0.98

$$-\frac{2a^3}{3x^{\frac{3}{2}}}-\frac{6a^2b}{\sqrt{x}}+6ab^2\sqrt{x}+\frac{2b^3x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**(5/2),x)
```

```
[Out] -2*a**3/(3*x**(3/2)) - 6*a**2*b/sqrt(x) + 6*a*b**2*sqrt(x) + 2*b*
*3*x**(3/2)/3
```

Mathematica [A] time = 0.0129769, size = 38, normalized size = 0.81

$$\frac{2\left(-a^3-9a^2bx+9ab^2x^2+b^3x^3\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^(5/2),x]

[Out] (2*(-a^3 - 9*a^2*b*x + 9*a*b^2*x^2 + b^3*x^3))/(3*x^(3/2))
```

Maple [A] time = 0.007, size = 34, normalized size = 0.7

$$-\frac{-2\,b^3x^3-18\,ab^2x^2+18\,a^2bx+2\,a^3}{3}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(5/2),x)

[Out] -2/3*(-b^3*x^3-9*a*b^2*x^2+9*a^2*b*x+a^3)/x^(3/2)
```

Maxima [A] time = 1.35102, size = 46, normalized size = 0.98

$$\frac{2}{3}\,b^3x^{\frac{3}{2}}+6\,ab^2\sqrt{x}-\frac{2\left(9\,a^2bx+a^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(5/2),x, algorithm="maxima")

[Out] 2/3*b^3*x^(3/2) + 6*a*b^2*sqrt(x) - 2/3*(9*a^2*b*x + a^3)/x^(3/2)
```

Fricas [A] time = 0.208721, size = 46, normalized size = 0.98

$$\frac{2\left(b^3x^3+9\,ab^2x^2-9\,a^2bx-a^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(5/2),x, algorithm="fricas")

[Out] 2/3*(b^3*x^3 + 9*a*b^2*x^2 - 9*a^2*b*x - a^3)/x^(3/2)
```

Sympy [A] time = 2.32839, size = 46, normalized size = 0.98

$$-\frac{2a^3}{3x^{\frac{3}{2}}}-\frac{6a^2b}{\sqrt{x}}+6ab^2\sqrt{x}+\frac{2b^3x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(5/2),x)
```

```
[Out] -2*a**3/(3*x**(3/2)) - 6*a**2*b/sqrt(x) + 6*a*b**2*sqrt(x) + 2*b*
*3*x**(3/2)/3
```

GIAC/XCAS [A] time = 0.201015, size = 46, normalized size = 0.98

$$\frac{2}{3}\,b^3x^{\frac{3}{2}}+6\,ab^2\sqrt{x}-\frac{2\left(9\,a^2bx+a^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*b^3*x^(3/2) + 6*a*b^2*sqrt(x) - 2/3*(9*a^2*b*x + a^3)/x^(3/2)
```

3.449 $\int \frac{x^{5/2}}{a+bx} \, dx$

Optimal. Leaf size=68

$$-\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{2a^2\sqrt{x}}{b^3}-\frac{2ax^{3/2}}{3b^2}+\frac{2x^{5/2}}{5b}$$

```
[Out] (2*a^2*Sqrt[x])/b^3 - (2*a*x^(3/2))/(3*b^2) + (2*x^(5/2))/(5*b) -
 (2*a^(5/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi [A] time = 0.0755205, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{2a^2\sqrt{x}}{b^3}-\frac{2ax^{3/2}}{3b^2}+\frac{2x^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(a + b*x),x]
```

```
[Out] (2*a^2*Sqrt[x])/b^3 - (2*a*x^(3/2))/(3*b^2) + (2*x^(5/2))/(5*b) -
 (2*a^(5/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi in Sympy [A] time = 11.8358, size = 65, normalized size = 0.96

$$-\frac{2a^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{7}{2}}}+\frac{2a^2\sqrt{x}}{b^3}-\frac{2ax^{\frac{3}{2}}}{3b^2}+\frac{2x^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+a),x)
```

```
[Out] -2*a**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(7/2) + 2*a**2*sqrt(
x)/b**3 - 2*a*x**(3/2)/(3*b**2) + 2*x**(5/2)/(5*b)
```

Mathematica [A] time = 0.0425411, size = 61, normalized size = 0.9

$$\frac{2\sqrt{x}\left(15a^2-5abx+3b^2x^2\right)}{15b^3}-\frac{2a^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a + b*x),x]
```

```
[Out] (2*Sqrt[x]*(15*a^2 - 5*a*b*x + 3*b^2*x^2))/(15*b^3) - (2*a^(5/2)*
ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Maple [A] time = 0.013, size = 54, normalized size = 0.8

$$\frac{2}{5\,b}x^{\frac{5}{2}}-\frac{2\,a}{3\,b^{2}}x^{\frac{3}{2}}+2\,\frac{a^{2}\sqrt{x}}{b^{3}}-2\,\frac{a^{3}}{b^{3}\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+a),x)
```

```
[Out] 2/5*x^(5/2)/b-2/3*a*x^(3/2)/b^2+2*a^2*x^(1/2)/b^3-2*a^3/b^3/(a*b)
^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222259, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^{2}\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\,\left(3\,b^{2}x^{2}-5\,abx+15\,a^{2}\right)\sqrt{x}}{15\,b^{3}},\right.$$
$$\left.-\frac{2\,\left(15\,a^{2}\sqrt{\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{\frac{a}{b}}}\right)-\left(3\,b^{2}x^{2}-5\,abx+15\,a^{2}\right)\sqrt{x}\right)}{15\,b^{3}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/15*(15*a^2*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(
b*x + a)) + 2*(3*b^2*x^2 - 5*a*b*x + 15*a^2)*sqrt(x))/b^3, -2/15*
(15*a^2*sqrt(a/b)*arctan(sqrt(x)/sqrt(a/b)) - (3*b^2*x^2 - 5*a*b*
x + 15*a^2)*sqrt(x))/b^3]
```

Sympy [A] time = 10.3598, size = 65, normalized size = 0.96

$$-\frac{2a^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{7}{2}}}+\frac{2a^2\sqrt{x}}{b^3}-\frac{2ax^{\frac{3}{2}}}{3b^2}+\frac{2x^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+a),x)
```

```
[Out] -2*a**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(7/2) + 2*a**2*sqrt(
x)/b**3 - 2*a*x**(3/2)/(3*b**2) + 2*x**(5/2)/(5*b)
```

GIAC/XCAS [A] time = 0.201378, size = 80, normalized size = 1.18

$$-\frac{2\,a^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}b^3}+\frac{2\left(3\,b^4x^{\frac{5}{2}}-5\,ab^3x^{\frac{3}{2}}+15\,a^2b^2\sqrt{x}\right)}{15\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a),x, algorithm="giac")
```

```
[Out] -2*a^3*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) + 2/15*(3*b^4*
x^(5/2) - 5*a*b^3*x^(3/2) + 15*a^2*b^2*sqrt(x))/b^5
```

3.450 $\int \frac{x^{3/2}}{a+bx}\,dx$

Optimal. Leaf size=53

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}-\frac{2a\sqrt{x}}{b^2}+\frac{2x^{3/2}}{3b}$$

```
[Out] (-2*a*Sqrt[x])/b^2 + (2*x^(3/2))/(3*b) + (2*a^(3/2)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi [A] time = 0.0452411, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}-\frac{2a\sqrt{x}}{b^2}+\frac{2x^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a + b*x),x]
```

```
[Out] (-2*a*Sqrt[x])/b^2 + (2*x^(3/2))/(3*b) + (2*a^(3/2)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.7056, size = 49, normalized size = 0.92

$$\frac{2a^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}}-\frac{2a\sqrt{x}}{b^2}+\frac{2x^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+a),x)
```

```
[Out] 2*a**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) - 2*a*sqrt(x)/b
**2 + 2*x**(3/2)/(3*b)
```

Mathematica [A] time = 0.0306921, size = 49, normalized size = 0.92

$$\frac{2a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}+\frac{2\sqrt{x}(bx-3a)}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a + b*x),x]
```

```
[Out] (2*Sqrt[x]*(-3*a + b*x))/(3*b^2) + (2*a^(3/2)*ArcTan[(Sqrt[b]*Sqr
t[x])/Sqrt[a]])/b^(5/2)
```

Maple [A] time = 0.009, size = 43, normalized size = 0.8

$$\frac{2}{3\,b}x^{\frac{3}{2}}-2\,\frac{a\sqrt{x}}{b^{2}}+2\,\frac{a^{2}}{b^{2}\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+a),x)
```

```
[Out] 2/3*x^(3/2)/b-2*a*x^(1/2)/b^2+2*a^2/b^2/(a*b)^(1/2)*arctan(x^(1/2
)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221336, size = 1, normalized size = 0.02

$$\left[\frac{3\,a\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\,(bx-3\,a)\sqrt{x}}{3\,b^{2}},\ \frac{2\left(3\,a\sqrt{\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{\frac{a}{b}}}\right)+(bx-3\,a)\sqrt{x}\right)}{3\,b^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/3*(3*a*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x
+ a)) + 2*(b*x - 3*a)*sqrt(x))/b^2, 2/3*(3*a*sqrt(a/b)*arctan(sqr
t(x)/sqrt(a/b)) + (b*x - 3*a)*sqrt(x))/b^2]
```

Sympy [A] time = 5.45422, size = 49, normalized size = 0.92

$$\frac{2a^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}} - \frac{2a\sqrt{x}}{b^2} + \frac{2x^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+a),x)
```

```
[Out] 2*a**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) - 2*a*sqrt(x)/b
**2 + 2*x**(3/2)/(3*b)
```

GIAC/XCAS [A] time = 0.205621, size = 61, normalized size = 1.15

$$\frac{2\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}b^2} + \frac{2\left(b^2x^{\frac{3}{2}} - 3\,ab\sqrt{x}\right)}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a),x, algorithm="giac")
```

```
[Out] 2*a^2*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2) + 2/3*(b^2*x^(3
/2) - 3*a*b*sqrt(x))/b^3
```

3.451 $\int \frac{\sqrt{x}}{a+bx}\,dx$

Optimal. Leaf size=40

$$\frac{2\sqrt{x}}{b}-\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{3/2}}$$

```
[Out] (2*Sqrt[x])/b - (2*Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(
3/2)
```

Rubi [A] time = 0.0319913, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{2\sqrt{x}}{b}-\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a + b*x),x]
```

```
[Out] (2*Sqrt[x])/b - (2*Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(
3/2)
```

Rubi in Sympy [A] time = 6.25855, size = 36, normalized size = 0.9

$$-\frac{2\sqrt{a}\,\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}}+\frac{2\sqrt{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+a),x)
```

```
[Out] -2*sqrt(a)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(3/2) + 2*sqrt(x)/b
```

Mathematica [A] time = 0.0164958, size = 40, normalized size = 1.

$$\frac{2\sqrt{x}}{b}-\frac{2\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a + b*x),x]
```

```
[Out] (2*Sqrt[x])/b - (2*Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(
3/2)
```

Maple [A] time = 0.009, size = 32, normalized size = 0.8

$$2\,\frac{\sqrt{x}}{b}-2\,\frac{a}{b\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+a),x)
```

```
[Out] 2*x^(1/2)/b-2*a/b/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220579, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\sqrt{x}}{b},-\frac{2\left(\sqrt{\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{\frac{a}{b}}}\right)-\sqrt{x}\right)}{b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a),x, algorithm="fricas")
```

```
[Out] [(sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) +
2*sqrt(x))/b, -2*(sqrt(a/b)*arctan(sqrt(x)/sqrt(a/b)) - sqrt(x))/
```

```
b]
```

Sympy [A] time = 2.85297, size = 36, normalized size = 0.9

$$-\frac{2\sqrt{a}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}}+\frac{2\sqrt{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+a),x)
```

```
[Out] -2*sqrt(a)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(3/2) + 2*sqrt(x)/b
```

GIAC/XCAS [A] time = 0.207195, size = 42, normalized size = 1.05

$$-\frac{2\,a\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}b}+\frac{2\,\sqrt{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a),x, algorithm="giac")
```

```
[Out] -2*a*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b) + 2*sqrt(x)/b
```

3.452 $\int \frac{1}{\sqrt{x}(a+bx)} \, dx$

Optimal. Leaf size=29

$$\frac{2 \tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

```
[Out] (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*Sqrt[b])
```

Rubi [A] time = 0.0230938, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2 \tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(a + b*x)),x]

[Out] (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*Sqrt[b])
```

Rubi in Sympy [A] time = 4.33888, size = 27, normalized size = 0.93

$$\frac{2 \operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/x**(1/2),x)

[Out] 2*atan(sqrt(b)*sqrt(x)/sqrt(a))/(sqrt(a)*sqrt(b))
```

Mathematica [A] time = 0.00760952, size = 29, normalized size = 1.

$$\frac{2 \tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(a + b*x)),x]
```

```
[Out] (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*Sqrt[b])
```

Maple [A] time = 0.007, size = 19, normalized size = 0.7

$$2\frac{1}{\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/x^(1/2),x)
```

```
[Out] 2/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233418, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(\frac{2\,ab\sqrt{x}+\sqrt{-ab}(bx-a)}{bx+a}\right)}{\sqrt{-ab}},-\frac{2\,\arctan\left(\frac{a}{\sqrt{ab}\sqrt{x}}\right)}{\sqrt{ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [log((2*a*b*sqrt(x) + sqrt(-a*b)*(b*x - a))/(b*x + a))/sqrt(-a*b)
, -2*arctan(a/(sqrt(a*b)*sqrt(x)))/sqrt(a*b)]
```

Sympy [A] time = 1.7167, size = 27, normalized size = 0.93

$$\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/x**(1/2),x)
```

```
[Out] 2*atan(sqrt(b)*sqrt(x)/sqrt(a))/(sqrt(a)*sqrt(b))
```

GIAC/XCAS [A] time = 0.204735, size = 24, normalized size = 0.83

$$\frac{2\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 2*arctan(b*sqrt(x)/sqrt(a*b))/sqrt(a*b)
```

3.453 $\int \frac{1}{x^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=40

$$-\frac{2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2}{a\sqrt{x}}$$

```
[Out] -2/(a*Sqrt[x]) - (2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^
(3/2)
```

Rubi [A] time = 0.0335752, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a + b*x)),x]
```

```
[Out] -2/(a*Sqrt[x]) - (2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^
(3/2)
```

Rubi in Sympy [A] time = 6.2403, size = 37, normalized size = 0.92

$$-\frac{2}{a\sqrt{x}}-\frac{2\sqrt{b}\,\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+a),x)
```

```
[Out] -2/(a*sqrt(x)) - 2*sqrt(b)*atan(sqrt(b)*sqrt(x)/sqrt(a))/a**(3/2)
```

Mathematica [A] time = 0.0197599, size = 40, normalized size = 1.

$$-\frac{2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a + b*x)),x]
```

```
[Out] -2/(a*Sqrt[x]) - (2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^
(3/2)
```

Maple [A] time = 0.012, size = 32, normalized size = 0.8

$$-2\,\frac{1}{a\sqrt{x}}-2\,\frac{b}{a\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+a),x)
```

```
[Out] -2/a/x^(1/2)-2/a*b/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219406, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{x}\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)-2}{a\sqrt{x}},\frac{2\left(\sqrt{x}\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-1\right)}{a\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] [(sqrt(x)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x
+ a)) - 2)/(a*sqrt(x)), 2*(sqrt(x)*sqrt(b/a)*arctan(a*sqrt(b/a)/(
b*sqrt(x))) - 1)/(a*sqrt(x))]
```

Sympy [A] time = 3.0093, size = 37, normalized size = 0.92

$$-\frac{2}{a\sqrt{x}}-\frac{2\sqrt{b}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+a),x)
```

```
[Out] -2/(a*sqrt(x)) - 2*sqrt(b)*atan(sqrt(b)*sqrt(x)/sqrt(a))/a**(3/2)
```

GIAC/XCAS [A] time = 0.202624, size = 42, normalized size = 1.05

$$-\frac{2\,b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}a}-\frac{2}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -2*b*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a) - 2/(a*sqrt(x))
```

3.454 $\int \frac{1}{x^{5/2}(a+bx)} dx$

Optimal. Leaf size=53

$$\frac{2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2b}{a^2\sqrt{x}}-\frac{2}{3ax^{3/2}}$$

```
[Out] -2/(3*a*x^(3/2)) + (2*b)/(a^2*Sqrt[x]) + (2*b^(3/2)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0457125, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2b}{a^2\sqrt{x}}-\frac{2}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a + b*x)),x]
```

```
[Out] -2/(3*a*x^(3/2)) + (2*b)/(a^2*Sqrt[x]) + (2*b^(3/2)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 8.722, size = 49, normalized size = 0.92

$$-\frac{2}{3ax^{\frac{3}{2}}}+\frac{2b}{a^2\sqrt{x}}+\frac{2b^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+a),x)
```

```
[Out] -2/(3*a*x**(3/2)) + 2*b/(a**2*sqrt(x)) + 2*b**(3/2)*atan(sqrt(b)*
sqrt(x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.0414288, size = 50, normalized size = 0.94

$$\frac{2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2(3bx-a)}{3a^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a + b*x)),x]
```

```
[Out] (2*(-a + 3*b*x))/(3*a^2*x^(3/2)) + (2*b^(3/2)*ArcTan[(Sqrt[b]*Sqr
t[x])/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.013, size = 43, normalized size = 0.8

$$-\frac{2}{3\,a}x^{-\frac{3}{2}}+2\,\frac{b}{a^2\sqrt{x}}+2\,\frac{b^2}{a^2\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+a),x)
```

```
[Out] -2/3/a/x^(3/2)+2*b/a^2/x^(1/2)+2/a^2*b^2/(a*b)^(1/2)*arctan(x^(1/
2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228294, size = 1, normalized size = 0.02

$$\left[\frac{3\,bx^{\frac{3}{2}}\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+6\,bx-2\,a}{3\,a^2x^{\frac{3}{2}}},-\frac{2\left(3\,bx^{\frac{3}{2}}\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-3\,bx+a\right)}{3\,a^2x^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/3*(3*b*x^(3/2)*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) -
a)/(b*x + a)) + 6*b*x - 2*a)/(a^2*x^(3/2)), -2/3*(3*b*x^(3/2)*sqr
t(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - 3*b*x + a)/(a^2*x^(3/2))
]
```

Sympy [A] time = 5.96103, size = 49, normalized size = 0.92

$$-\frac{2}{3ax^{\frac{3}{2}}}+\frac{2b}{a^2\sqrt{x}}+\frac{2b^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+a),x)
```

```
[Out] -2/(3*a*x**(3/2)) + 2*b/(a**2*sqrt(x)) + 2*b**(3/2)*atan(sqrt(b)*
sqrt(x)/sqrt(a))/a**(5/2)
```

GIAC/XCAS [A] time = 0.202737, size = 55, normalized size = 1.04

$$\frac{2\,b^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}a^2}+\frac{2\,(3\,bx-a)}{3\,a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(5/2)),x, algorithm="giac")
```

```
[Out] 2*b^2*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) + 2/3*(3*b*x -
a)/(a^2*x^(3/2))
```

3.455 $\int \frac{1}{x^{7/2}(a+bx)}\,dx$

Optimal. Leaf size=68

$$-\frac{2b^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{2b^2}{a^3\sqrt{x}}+\frac{2b}{3a^2x^{3/2}}-\frac{2}{5ax^{5/2}}$$

```
[Out] -2/(5*a*x^(5/2)) + (2*b)/(3*a^2*x^(3/2)) - (2*b^2)/(a^3*Sqrt[x])
- (2*b^(5/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi [A] time = 0.0589313, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$-\frac{2b^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{2b^2}{a^3\sqrt{x}}+\frac{2b}{3a^2x^{3/2}}-\frac{2}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(7/2)*(a + b*x)),x]
```

```
[Out] -2/(5*a*x^(5/2)) + (2*b)/(3*a^2*x^(3/2)) - (2*b^2)/(a^3*Sqrt[x])
- (2*b^(5/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi in Sympy [A] time = 11.8811, size = 65, normalized size = 0.96

$$-\frac{2}{5ax^{\frac{5}{2}}}+\frac{2b}{3a^2x^{\frac{3}{2}}}-\frac{2b^2}{a^3\sqrt{x}}-\frac{2b^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(7/2)/(b*x+a),x)
```

```
[Out] -2/(5*a*x**(5/2)) + 2*b/(3*a**2*x**(3/2)) - 2*b**2/(a**3*sqrt(x))
 - 2*b**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/a**(7/2)
```

Mathematica [A] time = 0.0449019, size = 61, normalized size = 0.9

$$-\frac{2b^{5/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{2\left(3a^2-5abx+15b^2x^2\right)}{15a^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(7/2)*(a + b*x)),x]
```

```
[Out] (-2*(3*a^2 - 5*a*b*x + 15*b^2*x^2))/(15*a^3*x^(5/2)) - (2*b^(5/2)
*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Maple [A] time = 0.014, size = 54, normalized size = 0.8

$$-\frac{2}{5a}x^{-\frac{5}{2}} - 2\frac{b^2}{a^3\sqrt{x}} + \frac{2b}{3a^2}x^{-\frac{3}{2}} - 2\frac{b^3}{a^3\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(7/2)/(b*x+a),x)
```

```
[Out] -2/5/a/x^(5/2)-2*b^2/a^3/x^(1/2)+2/3*b/a^2/x^(3/2)-2/a^3*b^3/(a*b
)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(7/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227736, size = 1, normalized size = 0.01

$$\left[\frac{15\,b^2x^{\frac{5}{2}}\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right) - 30\,b^2x^2 + 10\,abx - 6\,a^2}{15\,a^3x^{\frac{5}{2}}}, \frac{2\left(15\,b^2x^{\frac{5}{2}}\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right) - 15\,b^2x^2 + 5\,abx - 3\,a^2\right)}{15\,a^3x^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] [1/15*(15*b^2*x^(5/2)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a
) - a)/(b*x + a)) - 30*b^2*x^2 + 10*a*b*x - 6*a^2)/(a^3*x^(5/2)),
 2/15*(15*b^2*x^(5/2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) -
 15*b^2*x^2 + 5*a*b*x - 3*a^2)/(a^3*x^(5/2))]
```

Sympy [A] time = 12.2853, size = 65, normalized size = 0.96

$$-\frac{2}{5ax^{\frac{5}{2}}}+\frac{2b}{3a^2x^{\frac{3}{2}}}-\frac{2b^2}{a^3\sqrt{x}}-\frac{2b^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(7/2)/(b*x+a),x)
```

```
[Out] -2/(5*a*x**(5/2)) + 2*b/(3*a**2*x**(3/2)) - 2*b**2/(a**3*sqrt(x))
 - 2*b**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/a**(7/2)
```

GIAC/XCAS [A] time = 0.203083, size = 70, normalized size = 1.03

$$-\frac{2\,b^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}a^3}-\frac{2\left(15\,b^2x^2-5\,abx+3\,a^2\right)}{15\,a^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(7/2)),x, algorithm="giac")
```

```
[Out] -2*b^3*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) - 2/15*(15*b^2
*x^2 - 5*a*b*x + 3*a^2)/(a^3*x^(5/2))
```

3.456 $\int \frac{x^{5/2}}{(a+bx)^2} dx$

Optimal. Leaf size=70

$$\frac{5a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}-\frac{5a\sqrt{x}}{b^3}-\frac{x^{5/2}}{b(a+bx)}+\frac{5x^{3/2}}{3b^2}$$

```
[Out] (-5*a*Sqrt[x])/b^3 + (5*x^(3/2))/(3*b^2) - x^(5/2)/(b*(a + b*x))
+ (5*a^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi [A] time = 0.0594221, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{5a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}-\frac{5a\sqrt{x}}{b^3}-\frac{x^{5/2}}{b(a+bx)}+\frac{5x^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(a + b*x)^2,x]
```

```
[Out] (-5*a*Sqrt[x])/b^3 + (5*x^(3/2))/(3*b^2) - x^(5/2)/(b*(a + b*x))
+ (5*a^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi in Sympy [A] time = 11.9204, size = 63, normalized size = 0.9

$$\frac{5a^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{7}{2}}}-\frac{5a\sqrt{x}}{b^3}-\frac{x^{\frac{5}{2}}}{b\,(a+bx)}+\frac{5x^{\frac{3}{2}}}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+a)**2,x)
```

```
[Out] 5*a**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(7/2) - 5*a*sqrt(x)/b
**3 - x**(5/2)/(b*(a + b*x)) + 5*x**(3/2)/(3*b**2)
```

Mathematica [A] time = 0.0666243, size = 68, normalized size = 0.97

$$\frac{5a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{\sqrt{x}\left(-15a^2-10abx+2b^2x^2\right)}{3b^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a + b*x)^2,x]
```

```
[Out] (Sqrt[x]*(-15*a^2 - 10*a*b*x + 2*b^2*x^2))/(3*b^3*(a + b*x)) + (5
*a^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Maple [A] time = 0.018, size = 61, normalized size = 0.9

$$\frac{2}{3\,b^{2}}x^{\frac{3}{2}}-4\,\frac{a\sqrt{x}}{b^{3}}-\frac{a^{2}}{b^{3}\left(bx+a\right)}\sqrt{x}+5\,\frac{a^{2}}{b^{3}\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+a)^2,x)
```

```
[Out] 2/3*x^(3/2)/b^2-4*a*x^(1/2)/b^3-1/b^3*a^2*x^(1/2)/(b*x+a)+5/b^3*a
^2/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227829, size = 1, normalized size = 0.01

$$\left[\frac{15\left(abx+a^{2}\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\left(2\,b^{2}x^{2}-10\,abx-15\,a^{2}\right)\sqrt{x}}{6\left(b^{4}x+ab^{3}\right)},\frac{15\left(abx+a^{2}\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{\frac{a}{b}}}\right)+\left(2\,b^{2}x^{2}-10\right.}{3\left(b^{4}x+ab^{3}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] [1/6*(15*(a*b*x + a^2)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/
b) - a)/(b*x + a)) + 2*(2*b^2*x^2 - 10*a*b*x - 15*a^2)*sqrt(x))/(
b^4*x + a*b^3), 1/3*(15*(a*b*x + a^2)*sqrt(a/b)*arctan(sqrt(x)/sq
rt(a/b)) + (2*b^2*x^2 - 10*a*b*x - 15*a^2)*sqrt(x))/(b^4*x + a*b^
3)]
```

Sympy [A] time = 12.3633, size = 257, normalized size = 3.67

$$\frac{15a^{\frac{61}{2}}b^{17}x^{\frac{41}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{3a^{29}b^{\frac{41}{2}}x^{\frac{41}{2}}+3a^{28}b^{\frac{43}{2}}x^{\frac{43}{2}}}+\frac{15a^{\frac{59}{2}}b^{18}x^{\frac{43}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{3a^{29}b^{\frac{41}{2}}x^{\frac{41}{2}}+3a^{28}b^{\frac{43}{2}}x^{\frac{43}{2}}}-\frac{15a^{30}b^{\frac{35}{2}}x^{21}}{3a^{29}b^{\frac{41}{2}}x^{\frac{41}{2}}+3a^{28}b^{\frac{43}{2}}x^{\frac{43}{2}}}-\frac{10a^{29}b^{\frac{37}{2}}x^{22}}{3a^{29}b^{\frac{41}{2}}x^{\frac{41}{2}}+3a^{28}b^{\frac{43}{2}}x^{\frac{43}{2}}}+\frac{2a^{28}b^{\frac{39}{2}}x^{23}}{3a^{29}b^{\frac{41}{2}}x^{\frac{41}{2}}+3a^{28}b^{\frac{43}{2}}x^{\frac{43}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+a)**2,x)
```

```
[Out] 15*a**(61/2)*b**17*x**(41/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**
29*b**(41/2)*x**(41/2) + 3*a**28*b**(43/2)*x**(43/2)) + 15*a**(59
/2)*b**18*x**(43/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**29*b**(41
/2)*x**(41/2) + 3*a**28*b**(43/2)*x**(43/2)) - 15*a**30*b**(35/2)
*x**21/(3*a**29*b**(41/2)*x**(41/2) + 3*a**28*b**(43/2)*x**(43/2)
) - 10*a**29*b**(37/2)*x**22/(3*a**29*b**(41/2)*x**(41/2) + 3*a**
28*b**(43/2)*x**(43/2)) + 2*a**28*b**(39/2)*x**23/(3*a**29*b**(41
/2)*x**(41/2) + 3*a**28*b**(43/2)*x**(43/2))
```

GIAC/XCAS [A] time = 0.205941, size = 88, normalized size = 1.26

$$\frac{5\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}b^3}-\frac{a^2\sqrt{x}}{(bx+a)b^3}+\frac{2\left(b^4x^{\frac{3}{2}}-6\,ab^3\sqrt{x}\right)}{3\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 5*a^2*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) - a^2*sqrt(x)/(
(b*x + a)*b^3) + 2/3*(b^4*x^(3/2) - 6*a*b^3*sqrt(x))/b^6
```

3.457 $\int \frac{x^{3/2}}{(a+bx)^2}\, dx$

Optimal. Leaf size=57

$$-\frac{3\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}-\frac{x^{3/2}}{b(a+bx)}+\frac{3\sqrt{x}}{b^2}$$

```
[Out] (3*Sqrt[x])/b^2 - x^(3/2)/(b*(a + b*x)) - (3*Sqrt[a]*ArcTan[(Sqrt
[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi [A] time = 0.0461128, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$-\frac{3\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}-\frac{x^{3/2}}{b(a+bx)}+\frac{3\sqrt{x}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a + b*x)^2,x]
```

```
[Out] (3*Sqrt[x])/b^2 - x^(3/2)/(b*(a + b*x)) - (3*Sqrt[a]*ArcTan[(Sqrt
[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi in Sympy [A] time = 9.13102, size = 49, normalized size = 0.86

$$-\frac{3\sqrt{a}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}}-\frac{x^{\frac{3}{2}}}{b\,(a+bx)}+\frac{3\sqrt{x}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+a)**2,x)
```

```
[Out] -3*sqrt(a)*atan(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) - x**(3/2)/(b*(
a + b*x)) + 3*sqrt(x)/b**2
```

Mathematica [A] time = 0.0516494, size = 54, normalized size = 0.95

$$\frac{\sqrt{x}(3a+2bx)}{b^2(a+bx)}-\frac{3\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a + b*x)^2,x]
```

```
[Out] (Sqrt[x]*(3*a + 2*b*x))/(b^2*(a + b*x)) - (3*Sqrt[a]*ArcTan[(Sqrt
[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Maple [A] time = 0.016, size = 47, normalized size = 0.8

$$2\,\frac{\sqrt{x}}{b^{2}}+\frac{a}{b^{2}\left(bx+a\right)}\sqrt{x}-3\,\frac{a}{b^{2}\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+a)^2,x)
```

```
[Out] 2*x^(1/2)/b^2+1/b^2*a*x^(1/2)/(b*x+a)-3/b^2*a/(a*b)^(1/2)*arctan(
x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.234073, size = 1, normalized size = 0.02

$$\left[\frac{3\,(bx+a)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\,(2\,bx+3\,a)\sqrt{x}}{2\,(b^{3}x+ab^{2})},\,-\frac{3\,(bx+a)\sqrt{\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{\frac{a}{b}}}\right)-(2\,bx+3\,a)\sqrt{x}}{b^{3}x+ab^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(3*(b*x + a)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) -
a)/(b*x + a)) + 2*(2*b*x + 3*a)*sqrt(x))/(b^3*x + a*b^2), -(3*(b*
x + a)*sqrt(a/b)*arctan(sqrt(x)/sqrt(a/b)) - (2*b*x + 3*a)*sqrt(x
))/(b^3*x + a*b^2)]
```

Sympy [A] time = 5.86463, size = 199, normalized size = 3.49

$$-\frac{3a^{\frac{17}{2}}b^{4}x^{\frac{13}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{8}b^{\frac{13}{2}}x^{\frac{13}{2}}+a^{7}b^{\frac{15}{2}}x^{\frac{15}{2}}}-\frac{3a^{\frac{15}{2}}b^{5}x^{\frac{15}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{8}b^{\frac{13}{2}}x^{\frac{13}{2}}+a^{7}b^{\frac{15}{2}}x^{\frac{15}{2}}}+\frac{3a^{8}b^{\frac{9}{2}}x^{7}}{a^{8}b^{\frac{13}{2}}x^{\frac{13}{2}}+a^{7}b^{\frac{15}{2}}x^{\frac{15}{2}}}+\frac{2a^{7}b^{\frac{11}{2}}x^{8}}{a^{8}b^{\frac{13}{2}}x^{\frac{13}{2}}+a^{7}b^{\frac{15}{2}}x^{\frac{15}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+a)**2,x)
```

```
[Out] -3*a**(17/2)*b**4*x**(13/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**8*b
**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2)) - 3*a**(15/2)*b**5
*x**(15/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**8*b**(13/2)*x**(13/2
) + a**7*b**(15/2)*x**(15/2)) + 3*a**8*b**(9/2)*x**7/(a**8*b**(13
/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2)) + 2*a**7*b**(11/2)*x**8
/(a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2))
```

GIAC/XCAS [A] time = 0.205131, size = 62, normalized size = 1.09

$$-\frac{3\,a\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}b^{2}}+\frac{a\sqrt{x}}{(bx+a)b^{2}}+\frac{2\,\sqrt{x}}{b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -3*a*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2) + a*sqrt(x)/((b*
x + a)*b^2) + 2*sqrt(x)/b^2
```

3.458 $\int \frac{\sqrt{x}}{(a+bx)^2} dx$

Optimal. Leaf size=46

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{3/2}}-\frac{\sqrt{x}}{b(a+bx)}$$

```
[Out] -(Sqrt[x]/(b*(a + b*x))) + ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(Sqr
t[a]*b^(3/2))
```

Rubi [A] time = 0.0349313, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{3/2}}-\frac{\sqrt{x}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a + b*x)^2,x]
```

```
[Out] -(Sqrt[x]/(b*(a + b*x))) + ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(Sqr
t[a]*b^(3/2))
```

Rubi in Sympy [A] time = 6.74403, size = 37, normalized size = 0.8

$$-\frac{\sqrt{x}}{b\,(a+bx)}+\frac{\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+a)**2,x)
```

```
[Out] -sqrt(x)/(b*(a + b*x)) + atan(sqrt(b)*sqrt(x)/sqrt(a))/(sqrt(a)*b
**(3/2))
```

Mathematica [A] time = 0.0302298, size = 46, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{3/2}}-\frac{\sqrt{x}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a + b*x)^2,x]
```

```
[Out] -(Sqrt[x]/(b*(a + b*x))) + ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(Sqr
t[a]*b^(3/2))
```

Maple [A] time = 0.014, size = 37, normalized size = 0.8

$$-\frac{1}{b(bx+a)}\sqrt{x}+\frac{1}{b}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+a)^2,x)
```

```
[Out] -x^(1/2)/b/(b*x+a)+1/b/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227038, size = 1, normalized size = 0.02

$$\left[\frac{(bx+a)\log\left(\frac{2ab\sqrt{x}+\sqrt{-ab}(bx-a)}{bx+a}\right)-2\sqrt{-ab}\sqrt{x}}{2(b^2x+ab)\sqrt{-ab}},-\frac{(bx+a)\arctan\left(\frac{a}{\sqrt{ab}\sqrt{x}}\right)+\sqrt{ab}\sqrt{x}}{(b^2x+ab)\sqrt{ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((b*x + a)*log((2*a*b*sqrt(x) + sqrt(-a*b)*(b*x - a))/(b*x +
 a)) - 2*sqrt(-a*b)*sqrt(x))/((b^2*x + a*b)*sqrt(-a*b)), -((b*x +
```

```
 a)*arctan(a/(sqrt(a*b)*sqrt(x))) + sqrt(a*b)*sqrt(x))/((b^2*x +
a*b)*sqrt(a*b))]
```

Sympy [A] time = 3.90145, size = 865, normalized size = 18.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+a)**2,x)
```

```
[Out] a**(21/2)*b**2*x**(7/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**11*b**(
7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)*x**(
11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2)) +
4*a**(19/2)*b**3*x**(9/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**11*b*
*(7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)*x*
*(11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2))
+ 6*a**(17/2)*b**4*x**(11/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**11
*b**(7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)
*x**(11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2
)) + 4*a**(15/2)*b**5*x**(13/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a*
*11*b**(7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11
/2)*x**(11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(1
5/2)) + a**(13/2)*b**6*x**(15/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a
**11*b**(7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(1
1/2)*x**(11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(
15/2)) - a**10*b**(5/2)*x**4/(a**11*b**(7/2)*x**(7/2) + 4*a**10*b
**(9/2)*x**(9/2) + 6*a**9*b**(11/2)*x**(11/2) + 4*a**8*b**(13/2)*
x**(13/2) + a**7*b**(15/2)*x**(15/2)) - 3*a**9*b**(7/2)*x**5/(a**
11*b**(7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/
2)*x**(11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15
/2)) - 3*a**8*b**(9/2)*x**6/(a**11*b**(7/2)*x**(7/2) + 4*a**10*b*
*(9/2)*x**(9/2) + 6*a**9*b**(11/2)*x**(11/2) + 4*a**8*b**(13/2)*x
**(13/2) + a**7*b**(15/2)*x**(15/2)) - a**7*b**(11/2)*x**7/(a**11
*b**(7/2)*x**(7/2) + 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)
*x**(11/2) + 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2
))
```

GIAC/XCAS [A] time = 0.205405, size = 49, normalized size = 1.07

$$\frac{\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}b} - \frac{\sqrt{x}}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b) - sqrt(x)/((b*x + a)*b)
```

3.459 $\int \frac{1}{\sqrt{x}(a+bx)^2}\,dx$

Optimal. Leaf size=45

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{x}}{a(a+bx)}$$

```
[Out] Sqrt[x]/(a*(a + b*x)) + ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(a^(3/2
)*Sqrt[b])
```

Rubi [A] time = 0.0348669, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{x}}{a(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(a + b*x)^2),x]
```

```
[Out] Sqrt[x]/(a*(a + b*x)) + ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(a^(3/2
)*Sqrt[b])
```

Rubi in Sympy [A] time = 6.6163, size = 37, normalized size = 0.82

$$\frac{\sqrt{x}}{a\,(a+bx)}+\frac{\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/x**(1/2),x)
```

```
[Out] sqrt(x)/(a*(a + b*x)) + atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**(3/2)*s
qrt(b))
```

Mathematica [A] time = 0.030017, size = 45, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{x}}{a(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(a + b*x)^2),x]
```

```
[Out] Sqrt[x]/(a*(a + b*x)) + ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(a^(3/2
)*Sqrt[b])
```

Maple [A] time = 0.012, size = 36, normalized size = 0.8

$$\frac{1}{a\left(bx+a\right)}\sqrt{x}+\frac{1}{a}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/x^(1/2),x)
```

```
[Out] x^(1/2)/a/(b*x+a)+1/a/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222124, size = 1, normalized size = 0.02

$$\left[\frac{(bx+a)\log\left(\frac{2\,ab\sqrt{x}+\sqrt{-ab}(bx-a)}{bx+a}\right)+2\,\sqrt{-ab}\sqrt{x}}{2\,(abx+a^2)\sqrt{-ab}},-\frac{(bx+a)\arctan\left(\frac{a}{\sqrt{ab}\sqrt{x}}\right)-\sqrt{ab}\sqrt{x}}{(abx+a^2)\sqrt{ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [1/2*((b*x + a)*log((2*a*b*sqrt(x) + sqrt(-a*b)*(b*x - a))/(b*x +
 a)) + 2*sqrt(-a*b)*sqrt(x))/((a*b*x + a^2)*sqrt(-a*b)), -((b*x +
```

```
 a)*arctan(a/(sqrt(a*b)*sqrt(x))) - sqrt(a*b)*sqrt(x))/((a*b*x +
a^2)*sqrt(a*b))]
```

Sympy [A] time = 3.45395, size = 144, normalized size = 3.2

$$\frac{a^{\frac{3}{2}}\sqrt{x}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3\sqrt{b}\sqrt{x}+a^2b^{\frac{3}{2}}x^{\frac{3}{2}}}+\frac{\sqrt{a}bx^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3\sqrt{b}\sqrt{x}+a^2b^{\frac{3}{2}}x^{\frac{3}{2}}}+\frac{a\sqrt{b}x}{a^3\sqrt{b}\sqrt{x}+a^2b^{\frac{3}{2}}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/x**(1/2),x)
```

```
[Out] a**(3/2)*sqrt(x)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**3*sqrt(b)*sqrt
(x) + a**2*b**(3/2)*x**(3/2)) + sqrt(a)*b*x**(3/2)*atan(sqrt(b)*s
qrt(x)/sqrt(a))/(a**3*sqrt(b)*sqrt(x) + a**2*b**(3/2)*x**(3/2)) +
 a*sqrt(b)*x/(a**3*sqrt(b)*sqrt(x) + a**2*b**(3/2)*x**(3/2))
```

GIAC/XCAS [A] time = 0.203456, size = 47, normalized size = 1.04

$$\frac{\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}a}+\frac{\sqrt{x}}{(bx+a)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*sqrt(x)),x, algorithm="giac")
```

```
[Out] arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a) + sqrt(x)/((b*x + a)*a)
```

3.460 $\int \frac{1}{x^{3/2}(a+bx)^2} dx$

Optimal. Leaf size=56

$$-\frac{3\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3}{a^2\sqrt{x}}+\frac{1}{a\sqrt{x}(a+bx)}$$

```
[Out] -3/(a^2*Sqrt[x]) + 1/(a*Sqrt[x]*(a + b*x)) - (3*Sqrt[b]*ArcTan[(S
qrt[b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0456107, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{3\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3}{a^2\sqrt{x}}+\frac{1}{a\sqrt{x}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a + b*x)^2),x]
```

```
[Out] -3/(a^2*Sqrt[x]) + 1/(a*Sqrt[x]*(a + b*x)) - (3*Sqrt[b]*ArcTan[(S
qrt[b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 9.12143, size = 51, normalized size = 0.91

$$\frac{1}{a\sqrt{x}\,(a+bx)}-\frac{3}{a^2\sqrt{x}}-\frac{3\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+a)**2,x)
```

```
[Out] 1/(a*sqrt(x)*(a + b*x)) - 3/(a**2*sqrt(x)) - 3*sqrt(b)*atan(sqrt(
b)*sqrt(x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.0538791, size = 54, normalized size = 0.96

$$\frac{-2a-3bx}{a^2\sqrt{x}(a+bx)}-\frac{3\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a + b*x)^2),x]
```

```
[Out] (-2*a - 3*b*x)/(a^2*Sqrt[x]*(a + b*x)) - (3*Sqrt[b]*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.019, size = 48, normalized size = 0.9

$$-2\,\frac{1}{a^2\sqrt{x}}-\frac{b}{a^2\left(bx+a\right)}\sqrt{x}-3\,\frac{b}{a^2\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+a)^2,x)
```

```
[Out] -2/a^2/x^(1/2)-1/a^2*b*x^(1/2)/(b*x+a)-3/a^2*b/(a*b)^(1/2)*arctan
(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.265427, size = 1, normalized size = 0.02

$$\left[\frac{3\,(bx+a)\sqrt{x}\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)-6\,bx-4\,a}{2\,(a^2bx+a^3)\sqrt{x}},\ \frac{3\,(bx+a)\sqrt{x}\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-3\,bx-2\,a}{(a^2bx+a^3)\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(3/2)),x, algorithm="fricas")
```

```
[Out] [1/2*(3*(b*x + a)*sqrt(x)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(
-b/a) - a)/(b*x + a)) - 6*b*x - 4*a)/((a^2*b*x + a^3)*sqrt(x)), (
3*(b*x + a)*sqrt(x)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - 3
*b*x - 2*a)/((a^2*b*x + a^3)*sqrt(x))]
```

Sympy [A] time = 6.06974, size = 595, normalized size = 10.62

$$-\frac{2a^{\frac{15}{2}}}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{7a^{\frac{13}{2}}bx}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{8a^{\frac{11}{2}}b^2x^2}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{3a^{\frac{9}{2}}b^3x^3}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{3a^7\sqrt{b}\sqrt{x}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{9a^6b^{\frac{3}{2}}x^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{9a^5b^{\frac{5}{2}}x^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}-\frac{3a^4b^{\frac{7}{2}}x^{\frac{7}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{19}{2}}\sqrt{x}+3a^{\frac{17}{2}}bx^{\frac{3}{2}}+3a^{\frac{15}{2}}b^2x^{\frac{5}{2}}+a^{\frac{13}{2}}b^3x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+a)**2,x)
```

```
[Out] -2*a**(15/2)/(a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) + 3*a**(
15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2)) - 7*a**(13/2)*b*x/
(a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) + 3*a**(15/2)*b**2*x*
*(5/2) + a**(13/2)*b**3*x**(7/2)) - 8*a**(11/2)*b**2*x**2/(a**(19
/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) + 3*a**(15/2)*b**2*x**(5/2)
+ a**(13/2)*b**3*x**(7/2)) - 3*a**(9/2)*b**3*x**3/(a**(19/2)*sqrt
(x) + 3*a**(17/2)*b*x**(3/2) + 3*a**(15/2)*b**2*x**(5/2) + a**(13
/2)*b**3*x**(7/2)) - 3*a**7*sqrt(b)*sqrt(x)*atan(sqrt(b)*sqrt(x)/
sqrt(a))/(a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) + 3*a**(15/2
)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2)) - 9*a**6*b**(3/2)*x**(
3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**(19/2)*sqrt(x) + 3*a**(17/
2)*b*x**(3/2) + 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/
2)) - 9*a**5*b**(5/2)*x**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(a**
(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) + 3*a**(15/2)*b**2*x**(5/
2) + a**(13/2)*b**3*x**(7/2)) - 3*a**4*b**(7/2)*x**(7/2)*atan(sqr
t(b)*sqrt(x)/sqrt(a))/(a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2)
 + 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2))
```

GIAC/XCAS [A] time = 0.203329, size = 66, normalized size = 1.18

$$-\frac{3\,b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}a^2}-\frac{3\,bx+2\,a}{\left(bx^{\frac{3}{2}}+a\sqrt{x}\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(3/2)),x, algorithm="giac")
```

```
[Out] -3*b*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) - (3*b*x + 2*a)/
((b*x^(3/2) + a*sqrt(x))*a^2)
```

3.461 $\int \frac{1}{x^{5/2}(a+bx)^2}\,dx$

Optimal. Leaf size=69

$$\frac{5b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{5b}{a^3\sqrt{x}}-\frac{5}{3a^2x^{3/2}}+\frac{1}{ax^{3/2}(a+bx)}$$

```
[Out] -5/(3*a^2*x^(3/2)) + (5*b)/(a^3*Sqrt[x]) + 1/(a*x^(3/2)*(a + b*x)
) + (5*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi [A] time = 0.0580196, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{5b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{5b}{a^3\sqrt{x}}-\frac{5}{3a^2x^{3/2}}+\frac{1}{ax^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a + b*x)^2),x]
```

```
[Out] -5/(3*a^2*x^(3/2)) + (5*b)/(a^3*Sqrt[x]) + 1/(a*x^(3/2)*(a + b*x)
) + (5*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi in Sympy [A] time = 11.9465, size = 65, normalized size = 0.94

$$\frac{1}{ax^{\frac{3}{2}}(a+bx)}-\frac{5}{3a^2x^{\frac{3}{2}}}+\frac{5b}{a^3\sqrt{x}}+\frac{5b^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+a)**2,x)
```

```
[Out] 1/(a*x**(3/2)*(a + b*x)) - 5/(3*a**2*x**(3/2)) + 5*b/(a**3*sqrt(x
)) + 5*b**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/a**(7/2)
```

Mathematica [A] time = 0.0654992, size = 68, normalized size = 0.99

$$\frac{5b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{-2a^2+10abx+15b^2x^2}{3a^3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a + b*x)^2),x]
```

```
[Out] (-2*a^2 + 10*a*b*x + 15*b^2*x^2)/(3*a^3*x^(3/2)*(a + b*x)) + (5*b
^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Maple [A] time = 0.022, size = 60, normalized size = 0.9

$$-\frac{2}{3\,a^{2}}x^{-\frac{3}{2}}+4\,\frac{b}{a^{3}\sqrt{x}}+\frac{b^{2}}{a^{3}\,(bx+a)}\sqrt{x}+5\,\frac{b^{2}}{a^{3}\sqrt{ab}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+a)^2,x)
```

```
[Out] -2/3/a^2/x^(3/2)+4*b/a^3/x^(1/2)+1/a^3*b^2*x^(1/2)/(b*x+a)+5/a^3*
b^2/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.25695, size = 1, normalized size = 0.01

$$\left[\frac{30\,b^{2}x^{2}+20\,abx+15\,\left(b^{2}x^{2}+abx\right)\sqrt{x}\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)-4\,a^{2}}{6\,(a^{3}bx^{2}+a^{4}x)\sqrt{x}},\frac{15\,b^{2}x^{2}+10\,abx-15\,\left(b^{2}x^{2}+abx\right)\sqrt{x}\sqrt{\frac{b}{a}}\,\text{arcta}}{3\,(a^{3}bx^{2}+a^{4}x)\sqrt{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/6*(30*b^2*x^2 + 20*a*b*x + 15*(b^2*x^2 + a*b*x)*sqrt(x)*sqrt(-
b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) - 4*a^2)/(
(a^3*b*x^2 + a^4*x)*sqrt(x)), 1/3*(15*b^2*x^2 + 10*a*b*x - 15*(b^
2*x^2 + a*b*x)*sqrt(x)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x)))
- 2*a^2)/((a^3*b*x^2 + a^4*x)*sqrt(x))]
```

Sympy [A] time = 11.6904, size = 991, normalized size = 14.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+a)**2,x)
```

```
[Out] 15*a**(27/2)*b**2*x**2*atan(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**17*sqr
t(b)*x**2 + 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 + 12*
a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) + 60*a**(25/2)*b**3*
x**3*atan(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**17*sqrt(b)*x**2 + 12*a**
16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 + 12*a**14*b**(7/2)*x**
5 + 3*a**13*b**(9/2)*x**6) + 90*a**(23/2)*b**4*x**4*atan(sqrt(b)*
sqrt(x)/sqrt(a))/(3*a**17*sqrt(b)*x**2 + 12*a**16*b**(3/2)*x**3 +
 18*a**15*b**(5/2)*x**4 + 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/
2)*x**6) + 60*a**(21/2)*b**5*x**5*atan(sqrt(b)*sqrt(x)/sqrt(a))/(
3*a**17*sqrt(b)*x**2 + 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)
*x**4 + 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) + 15*a**(
19/2)*b**6*x**6*atan(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**17*sqrt(b)*x*
*2 + 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 + 12*a**14*b
**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) - 2*a**15*sqrt(b)*sqrt(x)/(
3*a**17*sqrt(b)*x**2 + 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)
*x**4 + 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) + 4*a**14
*b**(3/2)*x**(3/2)/(3*a**17*sqrt(b)*x**2 + 12*a**16*b**(3/2)*x**3
 + 18*a**15*b**(5/2)*x**4 + 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(
9/2)*x**6) + 39*a**13*b**(5/2)*x**(5/2)/(3*a**17*sqrt(b)*x**2 + 1
2*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 + 12*a**14*b**(7/2
)*x**5 + 3*a**13*b**(9/2)*x**6) + 73*a**12*b**(7/2)*x**(7/2)/(3*a
**17*sqrt(b)*x**2 + 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x*
*4 + 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) + 55*a**11*b
**(9/2)*x**(9/2)/(3*a**17*sqrt(b)*x**2 + 12*a**16*b**(3/2)*x**3 +
 18*a**15*b**(5/2)*x**4 + 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/
2)*x**6) + 15*a**10*b**(11/2)*x**(11/2)/(3*a**17*sqrt(b)*x**2 + 1
2*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 + 12*a**14*b**(7/2
)*x**5 + 3*a**13*b**(9/2)*x**6)
```

GIAC/XCAS [A] time = 0.202231, size = 78, normalized size = 1.13

$$\frac{5\,b^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}a^3}+\frac{b^2\sqrt{x}}{(bx+a)a^3}+\frac{2\,(6\,bx-a)}{3\,a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(5/2)),x, algorithm="giac")

[Out] 5*b^2*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) + b^2*sqrt(x)/(
(b*x + a)*a^3) + 2/3*(6*b*x - a)/(a^3*x^(3/2))
```

3.462 $\int \frac{x^{7/2}}{(a+bx)^3} \, dx$

Optimal. Leaf size=95

$$\frac{35a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}-\frac{35a\sqrt{x}}{4b^4}-\frac{7x^{5/2}}{4b^2(a+bx)}-\frac{x^{7/2}}{2b(a+bx)^2}+\frac{35x^{3/2}}{12b^3}$$

```
[Out] (-35*a*Sqrt[x])/(4*b^4) + (35*x^(3/2))/(12*b^3) - x^(7/2)/(2*b*(a
 + b*x)^2) - (7*x^(5/2))/(4*b^2*(a + b*x)) + (35*a^(3/2)*ArcTan[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(9/2))
```

Rubi [A] time = 0.0768414, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{35a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}-\frac{35a\sqrt{x}}{4b^4}-\frac{7x^{5/2}}{4b^2(a+bx)}-\frac{x^{7/2}}{2b(a+bx)^2}+\frac{35x^{3/2}}{12b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(7/2)/(a + b*x)^3,x]
```

```
[Out] (-35*a*Sqrt[x])/(4*b^4) + (35*x^(3/2))/(12*b^3) - x^(7/2)/(2*b*(a
 + b*x)^2) - (7*x^(5/2))/(4*b^2*(a + b*x)) + (35*a^(3/2)*ArcTan[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(9/2))
```

Rubi in Sympy [A] time = 15.6919, size = 87, normalized size = 0.92

$$\frac{35a^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{9}{2}}}-\frac{35a\sqrt{x}}{4b^4}-\frac{x^{\frac{7}{2}}}{2b\left(a+bx\right)^2}-\frac{7x^{\frac{5}{2}}}{4b^2\left(a+bx\right)}+\frac{35x^{\frac{3}{2}}}{12b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)/(b*x+a)**3,x)
```

```
[Out] 35*a**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*b**(9/2)) - 35*a*sqr
t(x)/(4*b**4) - x**(7/2)/(2*b*(a + b*x)**2) - 7*x**(5/2)/(4*b**2*
(a + b*x)) + 35*x**(3/2)/(12*b**3)
```

Mathematica [A] time = 0.0691787, size = 81, normalized size = 0.85

$$\frac{35a^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}+\frac{\sqrt{x}\left(-105a^3-175a^2bx-56ab^2x^2+8b^3x^3\right)}{12b^4(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(7/2)/(a + b*x)^3,x]
```

```
[Out] (Sqrt[x]*(-105*a^3 - 175*a^2*b*x - 56*a*b^2*x^2 + 8*b^3*x^3))/(12
*b^4*(a + b*x)^2) + (35*a^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]
)/(4*b^(9/2))
```

Maple [A] time = 0.018, size = 79, normalized size = 0.8

$$\frac{2}{3\,b^3}x^{\frac{3}{2}}-6\,\frac{a\sqrt{x}}{b^4}-\frac{13\,a^2}{4\,b^3\,(bx+a)^2}x^{\frac{3}{2}}-\frac{11\,a^3}{4\,b^4\,(bx+a)^2}\sqrt{x}+\frac{35\,a^2}{4\,b^4}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)/(b*x+a)^3,x)
```

```
[Out] 2/3*x^(3/2)/b^3-6*a*x^(1/2)/b^4-13/4/b^3*a^2/(b*x+a)^2*x^(3/2)-11
/4/b^4*a^3/(b*x+a)^2*x^(1/2)+35/4/b^4*a^2/(a*b)^(1/2)*arctan(x^(1
/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(7/2)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.236324, size = 1, normalized size = 0.01

$$\left[\frac{105\left(ab^2x^2+2\,a^2bx+a^3\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx+2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\left(8\,b^3x^3-56\,ab^2x^2-175\,a^2bx-105\,a^3\right)\sqrt{x}}{24\left(b^6x^2+2\,ab^5x+a^2b^4\right)},\frac{105\left(ab^2x^2+2\,a^2bx\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(7/2)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [1/24*(105*(a*b^2*x^2 + 2*a^2*b*x + a^3)*sqrt(-a/b)*log((b*x + 2*
b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) + 2*(8*b^3*x^3 - 56*a*b^2*x^
2 - 175*a^2*b*x - 105*a^3)*sqrt(x))/(b^6*x^2 + 2*a*b^5*x + a^2*b^
4), 1/12*(105*(a*b^2*x^2 + 2*a^2*b*x + a^3)*sqrt(a/b)*arctan(sqrt
(x)/sqrt(a/b)) + (8*b^3*x^3 - 56*a*b^2*x^2 - 175*a^2*b*x - 105*a^
3)*sqrt(x))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)]
```

Sympy [A] time = 34.5948, size = 746, normalized size = 7.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(7/2)/(b*x+a)**3,x)
```

```
[Out] 105*a**(129/2)*b**27*x**(63/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*
a**63*b**(63/2)*x**(63/2) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**
61*b**(67/2)*x**(67/2) + 12*a**60*b**(69/2)*x**(69/2)) + 315*a**(
127/2)*b**28*x**(65/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**63*b*
*(63/2)*x**(63/2) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**61*b**(6
7/2)*x**(67/2) + 12*a**60*b**(69/2)*x**(69/2)) + 315*a**(125/2)*b
**29*x**(67/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**63*b**(63/2)*
x**(63/2) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**61*b**(67/2)*x**
(67/2) + 12*a**60*b**(69/2)*x**(69/2)) + 105*a**(123/2)*b**30*x**
(69/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**63*b**(63/2)*x**(63/2
) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**61*b**(67/2)*x**(67/2) +
 12*a**60*b**(69/2)*x**(69/2)) - 105*a**64*b**(55/2)*x**32/(12*a*
*63*b**(63/2)*x**(63/2) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**61
*b**(67/2)*x**(67/2) + 12*a**60*b**(69/2)*x**(69/2)) - 280*a**63*
b**(57/2)*x**33/(12*a**63*b**(63/2)*x**(63/2) + 36*a**62*b**(65/2
)*x**(65/2) + 36*a**61*b**(67/2)*x**(67/2) + 12*a**60*b**(69/2)*x
**(69/2)) - 231*a**62*b**(59/2)*x**34/(12*a**63*b**(63/2)*x**(63/
2) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**61*b**(67/2)*x**(67/2)
+ 12*a**60*b**(69/2)*x**(69/2)) - 48*a**61*b**(61/2)*x**35/(12*a*
*63*b**(63/2)*x**(63/2) + 36*a**62*b**(65/2)*x**(65/2) + 36*a**61
*b**(67/2)*x**(67/2) + 12*a**60*b**(69/2)*x**(69/2)) + 8*a**60*b*
*(63/2)*x**36/(12*a**63*b**(63/2)*x**(63/2) + 36*a**62*b**(65/2)*
x**(65/2) + 36*a**61*b**(67/2)*x**(67/2) + 12*a**60*b**(69/2)*x**
(69/2))
```

GIAC/XCAS [A] time = 0.205487, size = 104, normalized size = 1.09

$$\frac{35\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}b^4}-\frac{13\,a^2bx^{\frac{3}{2}}+11\,a^3\sqrt{x}}{4\,(bx+a)^2b^4}+\frac{2\,\left(b^6x^{\frac{3}{2}}-9\,ab^5\sqrt{x}\right)}{3\,b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(7/2)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 35/4*a^2*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) - 1/4*(13*a^
2*b*x^(3/2) + 11*a^3*sqrt(x))/((b*x + a)^2*b^4) + 2/3*(b^6*x^(3/2
) - 9*a*b^5*sqrt(x))/b^9
```

3.463 $\int \frac{x^{5/2}}{(a+bx)^3} dx$

Optimal. Leaf size=82

$$-\frac{15\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{7/2}}-\frac{5x^{3/2}}{4b^2(a+bx)}-\frac{x^{5/2}}{2b(a+bx)^2}+\frac{15\sqrt{x}}{4b^3}$$

```
[Out] (15*Sqrt[x])/(4*b^3) - x^(5/2)/(2*b*(a + b*x)^2) - (5*x^(3/2))/(4
*b^2*(a + b*x)) - (15*Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/
(4*b^(7/2))
```

Rubi [A] time = 0.0600618, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{15\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{7/2}}-\frac{5x^{3/2}}{4b^2(a+bx)}-\frac{x^{5/2}}{2b(a+bx)^2}+\frac{15\sqrt{x}}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)/(a + b*x)^3,x]
```

```
[Out] (15*Sqrt[x])/(4*b^3) - x^(5/2)/(2*b*(a + b*x)^2) - (5*x^(3/2))/(4
*b^2*(a + b*x)) - (15*Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/
(4*b^(7/2))
```

Rubi in Sympy [A] time = 12.422, size = 73, normalized size = 0.89

$$-\frac{15\sqrt{a}\,\text{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{7}{2}}}-\frac{x^{\frac{5}{2}}}{2b\,(a+bx)^2}-\frac{5x^{\frac{3}{2}}}{4b^2\,(a+bx)}+\frac{15\sqrt{x}}{4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(5/2)/(b*x+a)**3,x)
```

```
[Out] -15*sqrt(a)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*b**(7/2)) - x**(5/2)
/(2*b*(a + b*x)**2) - 5*x**(3/2)/(4*b**2*(a + b*x)) + 15*sqrt(x)/
(4*b**3)
```

Mathematica [A] time = 0.0596256, size = 70, normalized size = 0.85

$$\frac{\sqrt{x}\left(15a^2+25abx+8b^2x^2\right)}{4b^3(a+bx)^2}-\frac{15\sqrt{a}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a + b*x)^3,x]
```

```
[Out] (Sqrt[x]*(15*a^2 + 25*a*b*x + 8*b^2*x^2))/(4*b^3*(a + b*x)^2) - (
15*Sqrt[a]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(7/2))
```

Maple [A] time = 0.017, size = 66, normalized size = 0.8

$$2\,\frac{\sqrt{x}}{b^3}+\frac{9\,a}{4\,b^2\,(bx+a)^2}x^{\frac{3}{2}}+\frac{7\,a^2}{4\,b^3\,(bx+a)^2}\sqrt{x}-\frac{15\,a}{4\,b^3}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+a)^3,x)
```

```
[Out] 2*x^(1/2)/b^3+9/4/b^2*a/(b*x+a)^2*x^(3/2)+7/4/b^3*a^2/(b*x+a)^2*x
^(1/2)-15/4/b^3*a/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240404, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^{2}x^{2}+2\,abx+a^{2}\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)+2\left(8\,b^{2}x^{2}+25\,abx+15\,a^{2}\right)\sqrt{x}}{8\left(b^{5}x^{2}+2\,ab^{4}x+a^{2}b^{3}\right)},\ -\frac{15\left(b^{2}x^{2}+2\,abx+a^{2}\right)\sqrt{\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{\frac{a}{b}}}\right)-\left(8\,b^{2}x^{2}+25\,abx+15\,a^{2}\right)\sqrt{x}}{4\left(b^{5}x^{2}+2\,ab^{4}x+a^{2}b^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(15*(b^2*x^2 + 2*a*b*x + a^2)*sqrt(-a/b)*log((b*x - 2*b*sqrt
(x)*sqrt(-a/b) - a)/(b*x + a)) + 2*(8*b^2*x^2 + 25*a*b*x + 15*a^2
)*sqrt(x))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3), -1/4*(15*(b^2*x^2 + 2
*a*b*x + a^2)*sqrt(a/b)*arctan(sqrt(x)/sqrt(a/b)) - (8*b^2*x^2 +
25*a*b*x + 15*a^2)*sqrt(x))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3)]
```

Sympy [A] time = 15.4799, size = 672, normalized size = 8.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+a)**3,x)
```

```
[Out] -15*a**(53/2)*b**9*x**(25/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**
26*b**(25/2)*x**(25/2) + 12*a**25*b**(27/2)*x**(27/2) + 12*a**24*
b**(29/2)*x**(29/2) + 4*a**23*b**(31/2)*x**(31/2)) - 45*a**(51/2)
*b**10*x**(27/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**26*b**(25/2)
*x**(25/2) + 12*a**25*b**(27/2)*x**(27/2) + 12*a**24*b**(29/2)*x*
*(29/2) + 4*a**23*b**(31/2)*x**(31/2)) - 45*a**(49/2)*b**11*x**(2
9/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**26*b**(25/2)*x**(25/2) +
 12*a**25*b**(27/2)*x**(27/2) + 12*a**24*b**(29/2)*x**(29/2) + 4*
a**23*b**(31/2)*x**(31/2)) - 15*a**(47/2)*b**12*x**(31/2)*atan(sq
rt(b)*sqrt(x)/sqrt(a))/(4*a**26*b**(25/2)*x**(25/2) + 12*a**25*b*
*(27/2)*x**(27/2) + 12*a**24*b**(29/2)*x**(29/2) + 4*a**23*b**(31
/2)*x**(31/2)) + 15*a**26*b**(19/2)*x**13/(4*a**26*b**(25/2)*x**(
25/2) + 12*a**25*b**(27/2)*x**(27/2) + 12*a**24*b**(29/2)*x**(29/
2) + 4*a**23*b**(31/2)*x**(31/2)) + 40*a**25*b**(21/2)*x**14/(4*a
**26*b**(25/2)*x**(25/2) + 12*a**25*b**(27/2)*x**(27/2) + 12*a**2
4*b**(29/2)*x**(29/2) + 4*a**23*b**(31/2)*x**(31/2)) + 33*a**24*b
**(23/2)*x**15/(4*a**26*b**(25/2)*x**(25/2) + 12*a**25*b**(27/2)*
```

```
x**(27/2) + 12*a**24*b**(29/2)*x**(29/2) + 4*a**23*b**(31/2)*x**(
31/2)) + 8*a**23*b**(25/2)*x**16/(4*a**26*b**(25/2)*x**(25/2) + 1
2*a**25*b**(27/2)*x**(27/2) + 12*a**24*b**(29/2)*x**(29/2) + 4*a*
*23*b**(31/2)*x**(31/2))
```

GIAC/XCAS [A] time = 0.206419, size = 80, normalized size = 0.98

$$-\frac{15\, a \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}b^3} + \frac{2\,\sqrt{x}}{b^3} + \frac{9\, abx^{\frac{3}{2}} + 7\, a^2\sqrt{x}}{4\,(bx+a)^2 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -15/4*a*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) + 2*sqrt(x)/b
^3 + 1/4*(9*a*b*x^(3/2) + 7*a^2*sqrt(x))/((b*x + a)^2*b^3)
```

3.464 $\int \frac{x^{3/2}}{(a+bx)^3}\,dx$

Optimal. Leaf size=70

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{5/2}}-\frac{3\sqrt{x}}{4b^2(a+bx)}-\frac{x^{3/2}}{2b(a+bx)^2}$$

```
[Out] -x^(3/2)/(2*b*(a + b*x)^2) - (3*Sqrt[x])/(4*b^2*(a + b*x)) + (3*A
rcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(5/2))
```

Rubi [A] time = 0.0489203, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{5/2}}-\frac{3\sqrt{x}}{4b^2(a+bx)}-\frac{x^{3/2}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a + b*x)^3,x]
```

```
[Out] -x^(3/2)/(2*b*(a + b*x)^2) - (3*Sqrt[x])/(4*b^2*(a + b*x)) + (3*A
rcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(5/2))
```

Rubi in Sympy [A] time = 9.73278, size = 61, normalized size = 0.87

$$-\frac{x^{\frac{3}{2}}}{2b\,(a+bx)^2}-\frac{3\sqrt{x}}{4b^2\,(a+bx)}+\frac{3\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+a)**3,x)
```

```
[Out] -x**(3/2)/(2*b*(a + b*x)**2) - 3*sqrt(x)/(4*b**2*(a + b*x)) + 3*a
tan(sqrt(b)*sqrt(x)/sqrt(a))/(4*sqrt(a)*b**(5/2))
```

Mathematica [A] time = 0.0515227, size = 59, normalized size = 0.84

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{5/2}}-\frac{\sqrt{x}(3a+5bx)}{4b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a + b*x)^3,x]
```

```
[Out] -(Sqrt[x]*(3*a + 5*b*x))/(4*b^2*(a + b*x)^2) + (3*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(5/2))
```

Maple [A] time = 0.016, size = 50, normalized size = 0.7

$$2\frac{1}{(bx+a)^2}\left(-5/8\,\frac{x^{3/2}}{b}-3/8\,\frac{a\sqrt{x}}{b^2}\right)+\frac{3}{4\,b^2}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+a)^3,x)
```

```
[Out] 2*(-5/8*x^(3/2)/b-3/8*a*x^(1/2)/b^2)/(b*x+a)^2+3/4/b^2/(a*b)^(1/2
)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220482, size = 1, normalized size = 0.01

$$\left[-\frac{2\sqrt{-ab}(5\,bx+3\,a)\sqrt{x}-3\left(b^2x^2+2\,abx+a^2\right)\log\left(\frac{2\,ab\sqrt{x}+\sqrt{-ab}(bx-a)}{bx+a}\right)}{8\left(b^4x^2+2\,ab^3x+a^2b^2\right)\sqrt{-ab}},\ -\frac{\sqrt{ab}(5\,bx+3\,a)\sqrt{x}+3\left(b^2x^2+2\,abx+a^2\right)\arctan\left(\frac{a}{\sqrt{ab}\sqrt{x}}\right)}{4\left(b^4x^2+2\,ab^3x+a^2b^2\right)\sqrt{ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(2*sqrt(-a*b)*(5*b*x + 3*a)*sqrt(x) - 3*(b^2*x^2 + 2*a*b*x
+ a^2)*log((2*a*b*sqrt(x) + sqrt(-a*b)*(b*x - a))/(b*x + a)))/((b
^4*x^2 + 2*a*b^3*x + a^2*b^2)*sqrt(-a*b)), -1/4*(sqrt(a*b)*(5*b*x
 + 3*a)*sqrt(x) + 3*(b^2*x^2 + 2*a*b*x + a^2)*arctan(a/(sqrt(a*b)
*sqrt(x))))/((b^4*x^2 + 2*a*b^3*x + a^2*b^2)*sqrt(a*b))]
```

Sympy [A] time = 13.2768, size = 4758, normalized size = 67.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+a)**3,x)
```

```
[Out] 3*a**(83/2)*b**12*x**(29/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**4
2*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*
b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*
b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36
*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34
*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b
**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) + 33*a**(81/2)*
b**13*x**(31/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*
x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x*
*(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x*
*(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x
**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x
**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**
(49/2) + 4*a**31*b**(51/2)*x**(51/2)) + 165*a**(79/2)*b**14*x**(3
3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) +
 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 6
60*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1
848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) +
1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) +
220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*
a**31*b**(51/2)*x**(51/2)) + 495*a**(77/2)*b**15*x**(35/2)*atan(s
qrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b
**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b*
*(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b
**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*
b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b
**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(5
1/2)*x**(51/2)) + 990*a**(75/2)*b**16*x**(37/2)*atan(sqrt(b)*sqrt
(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x*
*(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**
(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x*
*(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x
**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x*
*(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51
/2)) + 1386*a**(73/2)*b**17*x**(39/2)*atan(sqrt(b)*sqrt(x)/sqrt(a
```

```
))/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) +
220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1
320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) +
1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) +
 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) +
44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) + 138
6*a**(71/2)*b**18*x**(41/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**4
2*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*
b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*
b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36
*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34
*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b
**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) + 990*a**(69/2)
*b**19*x**(43/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)
*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x
**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x
**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*
x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*
x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x*
*(49/2) + 4*a**31*b**(51/2)*x**(51/2)) + 495*a**(67/2)*b**20*x**(
45/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2)
 + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) +
660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) +
1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) +
 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) +
 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4
*a**31*b**(51/2)*x**(51/2)) + 165*a**(65/2)*b**21*x**(47/2)*atan(
sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*
b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b
**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*
b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35
*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*
b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(
51/2)*x**(51/2)) + 33*a**(63/2)*b**22*x**(49/2)*atan(sqrt(b)*sqrt
(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x*
*(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**
(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x*
*(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x
**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x*
*(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51
/2)) + 3*a**(61/2)*b**23*x**(51/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/
(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220
*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320
*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 184
8*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 66
0*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*
a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) - 3*a**4
1*b**(25/2)*x**15/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/
2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2
)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/
2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43
/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/
2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x
**(51/2)) - 32*a**40*b**(27/2)*x**16/(4*a**42*b**(29/2)*x**(29/2)
 + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) +
 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) +
```

1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2)
+ 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2)
+ 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) +
4*a**31*b**(51/2)*x**(51/2)) - 153*a**39*b**(29/2)*x**17/(4*a**42
*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b
(33/2)*x(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b
(37/2)*x(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*
b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*
b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b*
*(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) - 432*a**38*b**(
31/2)*x**18/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**
(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(
35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**
(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x*
*(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**
(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/
2)) - 798*a**37*b**(33/2)*x**19/(4*a**42*b**(29/2)*x**(29/2) + 44
*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*
a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848
*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 132
0*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220
*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**
31*b**(51/2)*x**(51/2)) - 1008*a**36*b**(35/2)*x**20/(4*a**42*b**
(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(3
3/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(3
7/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(
41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(
45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49
/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) - 882*a**35*b**(37/2
)*x**21/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/
2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2
) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/
2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43
/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/
2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2))
- 528*a**34*b**(39/2)*x**22/(4*a**42*b**(29/2)*x**(29/2) + 44*a**
41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**3
9*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**
37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a*
*35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**
33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b
(51/2)*x(51/2)) - 207*a**33*b**(41/2)*x**23/(4*a**42*b**(29/2
)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*
x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*
x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)
*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)
*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x
(49/2) + 4*a31*b**(51/2)*x**(51/2)) - 48*a**32*b**(43/2)*x**2
4/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(31/2)*x**(31/2) + 2
20*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35/2)*x**(35/2) + 13
20*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(39/2)*x**(39/2) + 1
848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(43/2)*x**(43/2) +
660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(47/2)*x**(47/2) + 4
4*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)*x**(51/2)) - 5*a*
*31*b**(45/2)*x**25/(4*a**42*b**(29/2)*x**(29/2) + 44*a**41*b**(3
1/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) + 660*a**39*b**(35

```
/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) + 1848*a**37*b**(3
9/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) + 1320*a**35*b**(
43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) + 220*a**33*b**(4
7/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) + 4*a**31*b**(51/2)
*x**(51/2))
```

GIAC/XCAS [A] time = 0.202725, size = 63, normalized size = 0.9

$$\frac{3 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}b^2} - \frac{5\,bx^{\frac{3}{2}} + 3\,a\sqrt{x}}{4\,(bx+a)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 3/4*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2) - 1/4*(5*b*x^(3/2
) + 3*a*sqrt(x))/((b*x + a)^2*b^2)
```

3.465 $\int \frac{\sqrt{x}}{(a+bx)^3}\,dx$

Optimal. Leaf size=73

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{3/2}}+\frac{\sqrt{x}}{4ab(a+bx)}-\frac{\sqrt{x}}{2b(a+bx)^2}$$

```
[Out] -Sqrt[x]/(2*b*(a + b*x)^2) + Sqrt[x]/(4*a*b*(a + b*x)) + ArcTan[(
Sqrt[b]*Sqrt[x])/Sqrt[a]]/(4*a^(3/2)*b^(3/2))
```

Rubi [A] time = 0.050461, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$\frac{\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{3/2}}+\frac{\sqrt{x}}{4ab(a+bx)}-\frac{\sqrt{x}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a + b*x)^3,x]
```

```
[Out] -Sqrt[x]/(2*b*(a + b*x)^2) + Sqrt[x]/(4*a*b*(a + b*x)) + ArcTan[(
Sqrt[b]*Sqrt[x])/Sqrt[a]]/(4*a^(3/2)*b^(3/2))
```

Rubi in Sympy [A] time = 9.84267, size = 58, normalized size = 0.79

$$-\frac{\sqrt{x}}{2b\left(a+bx\right)^{2}}+\frac{\sqrt{x}}{4ab\left(a+bx\right)}+\frac{\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{3}{2}}b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+a)**3,x)
```

```
[Out] -sqrt(x)/(2*b*(a + b*x)**2) + sqrt(x)/(4*a*b*(a + b*x)) + atan(sq
rt(b)*sqrt(x)/sqrt(a))/(4*a**(3/2)*b**(3/2))
```

Mathematica [A] time = 0.0500181, size = 62, normalized size = 0.85

$$\frac{\frac{\sqrt{a}\sqrt{b}\sqrt{x}(bx-a)}{(a+bx)^2}+\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a + b*x)^3,x]
```

```
[Out] ((Sqrt[a]*Sqrt[b]*Sqrt[x]*(-a + b*x))/(a + b*x)^2 + ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/(4*a^(3/2)*b^(3/2))
```

Maple [A] time = 0.018, size = 52, normalized size = 0.7

$$2\,\frac{1}{(bx+a)^2}\left(1/8\,\frac{x^{3/2}}{a}-1/8\,\frac{\sqrt{x}}{b}\right)+\frac{1}{4\,ab}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+a)^3,x)
```

```
[Out] 2*(1/8/a*x^(3/2)-1/8*x^(1/2)/b)/(b*x+a)^2+1/4/b/a/(a*b)^(1/2)*arc
tan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223944, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{-ab}(bx-a)\sqrt{x}+\left(b^2x^2+2\,abx+a^2\right)\log\left(\frac{2\,ab\sqrt{x}+\sqrt{-ab}(bx-a)}{bx+a}\right)}{8\left(ab^3x^2+2\,a^2b^2x+a^3b\right)\sqrt{-ab}},\frac{\sqrt{ab}(bx-a)\sqrt{x}-\left(b^2x^2+2\,abx+a^2\right)\arctan\left(\frac{a}{\sqrt{ab}\sqrt{x}}\right)}{4\left(ab^3x^2+2\,a^2b^2x+a^3b\right)\sqrt{ab}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(2*sqrt(-a*b)*(b*x - a)*sqrt(x) + (b^2*x^2 + 2*a*b*x + a^2)*
log((2*a*b*sqrt(x) + sqrt(-a*b)*(b*x - a))/(b*x + a)))/((a*b^3*x^
```

```
2 + 2*a^2*b^2*x + a^3*b)*sqrt(-a*b)), 1/4*(sqrt(a*b)*(b*x - a)*sq
rt(x) - (b^2*x^2 + 2*a*b*x + a^2)*arctan(a/(sqrt(a*b)*sqrt(x))))/
((a*b^3*x^2 + 2*a^2*b^2*x + a^3*b)*sqrt(a*b))]
```

Sympy [A] time = 7.64371, size = 2732, normalized size = 37.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+a)**3,x)
```

```
[Out] a**(47/2)*b**2*x**(7/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b*
*(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2
)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)
*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*
x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(
23/2)) + 8*a**(45/2)*b**3*x**(9/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/
(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**
23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**2
1*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19
*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**
(23/2)*x**(23/2)) + 28*a**(43/2)*b**4*x**(11/2)*atan(sqrt(b)*sqrt
(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9
/2) + 112*a**23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/
2) + 280*a**21*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2
) + 112*a**19*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2)
+ 4*a**17*b**(23/2)*x**(23/2)) + 56*a**(41/2)*b**5*x**(13/2)*atan
(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b
**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 224*a**22*b**(
13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 224*a**20*b**(1
7/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*a**18*b**(21/
2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) + 70*a**(39/2)*b**6*x
**(15/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2)
 + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 2
24*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 22
4*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*
a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) + 56*a**
(37/2)*b**7*x**(17/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(
7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*
x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x
**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x*
*(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23
/2)) + 28*a**(35/2)*b**8*x**(19/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/
(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**
23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**2
1*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19
*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**
(23/2)*x**(23/2)) + 8*a**(33/2)*b**9*x**(21/2)*atan(sqrt(b)*sqrt(
x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/
2) + 112*a**23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2
) + 280*a**21*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2)
```

```
 + 112*a**19*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) +
 4*a**17*b**(23/2)*x**(23/2)) + a**(31/2)*b**10*x**(23/2)*atan(sq
rt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(
9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/
2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2
)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*
x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) - a**23*b**(5/2)*x**4/(4
*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23
*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*
b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b
**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(2
3/2)*x**(23/2)) - 5*a**22*b**(7/2)*x**5/(4*a**25*b**(7/2)*x**(7/2
) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) +
224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 2
24*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32
*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) - 9*a**
21*b**(9/2)*x**6/(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x
**(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**
(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(
17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21
/2) + 4*a**17*b**(23/2)*x**(23/2)) - 5*a**20*b**(11/2)*x**7/(4*a*
*25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b*
*(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**
(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(
19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2
)*x**(23/2)) + 5*a**19*b**(13/2)*x**8/(4*a**25*b**(7/2)*x**(7/2)
+ 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 22
4*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 224
*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*a
**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) + 9*a**18
*b**(15/2)*x**9/(4*a**25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x*
*(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(
13/2) + 280*a**21*b**(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(1
7/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/
2) + 4*a**17*b**(23/2)*x**(23/2)) + 5*a**17*b**(17/2)*x**10/(4*a*
*25*b**(7/2)*x**(7/2) + 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b*
*(11/2)*x**(11/2) + 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**
(15/2)*x**(15/2) + 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(
19/2)*x**(19/2) + 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2
)*x**(23/2)) + a**16*b**(19/2)*x**11/(4*a**25*b**(7/2)*x**(7/2) +
 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) + 224
*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) + 224*
a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) + 32*a*
*18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2))
```

GIAC/XCAS [A] time = 0.204152, size = 70, normalized size = 0.96

$$\frac{\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}ab} + \frac{bx^{\frac{3}{2}} - a\sqrt{x}}{4\,(bx+a)^2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 1/4*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b) + 1/4*(b*x^(3/2)
- a*sqrt(x))/((b*x + a)^2*a*b)
```

3.466 $\int \frac{1}{\sqrt{x}(a+bx)^3}\,dx$

Optimal. Leaf size=70

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}}+\frac{3\sqrt{x}}{4a^2(a+bx)}+\frac{\sqrt{x}}{2a(a+bx)^2}$$

```
[Out] Sqrt[x]/(2*a*(a + b*x)^2) + (3*Sqrt[x])/(4*a^2*(a + b*x)) + (3*Ar
cTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*Sqrt[b])
```

Rubi [A] time = 0.0490012, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}}+\frac{3\sqrt{x}}{4a^2(a+bx)}+\frac{\sqrt{x}}{2a(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(a + b*x)^3),x]
```

```
[Out] Sqrt[x]/(2*a*(a + b*x)^2) + (3*Sqrt[x])/(4*a^2*(a + b*x)) + (3*Ar
cTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*Sqrt[b])
```

Rubi in Sympy [A] time = 9.62725, size = 61, normalized size = 0.87

$$\frac{\sqrt{x}}{2a\left(a+bx\right)^2}+\frac{3\sqrt{x}}{4a^2\left(a+bx\right)}+\frac{3\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/x**(1/2),x)
```

```
[Out] sqrt(x)/(2*a*(a + b*x)**2) + 3*sqrt(x)/(4*a**2*(a + b*x)) + 3*ata
n(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(5/2)*sqrt(b))
```

Mathematica [A] time = 0.0452043, size = 59, normalized size = 0.84

$$\frac{3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}}+\frac{\sqrt{x}(5a+3bx)}{4a^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(a + b*x)^3),x]
```

```
[Out] (Sqrt[x]*(5*a + 3*b*x))/(4*a^2*(a + b*x)^2) + (3*ArcTan[(Sqrt[b]*
Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*Sqrt[b])
```

Maple [A] time = 0.012, size = 53, normalized size = 0.8

$$\frac{1}{2\,a\left(bx+a\right)^{2}}\sqrt{x}+\frac{3}{4\,a^{2}\left(bx+a\right)}\sqrt{x}+\frac{3}{4\,a^{2}}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/x^(1/2),x)
```

```
[Out] 1/2*x^(1/2)/a/(b*x+a)^2+3/4*x^(1/2)/a^2/(b*x+a)+3/4/a^2/(a*b)^(1/
2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221775, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{-ab}(3\,bx+5\,a)\sqrt{x}+3\left(b^{2}x^{2}+2\,abx+a^{2}\right)\log\left(\frac{2\,ab\sqrt{x}+\sqrt{-ab}(bx-a)}{bx+a}\right)}{8\left(a^{2}b^{2}x^{2}+2\,a^{3}bx+a^{4}\right)\sqrt{-ab}},\ \frac{\sqrt{ab}(3\,bx+5\,a)\sqrt{x}-3\left(b^{2}x^{2}+2\,abx+a^{2}\right)\arctan}{4\left(a^{2}b^{2}x^{2}+2\,a^{3}bx+a^{4}\right)\sqrt{ab}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [1/8*(2*sqrt(-a*b)*(3*b*x + 5*a)*sqrt(x) + 3*(b^2*x^2 + 2*a*b*x +
 a^2)*log((2*a*b*sqrt(x) + sqrt(-a*b)*(b*x - a))/(b*x + a)))/((a^
```

```
2*b^2*x^2 + 2*a^3*b*x + a^4)*sqrt(-a*b)), 1/4*(sqrt(a*b)*(3*b*x +
 5*a)*sqrt(x) - 3*(b^2*x^2 + 2*a*b*x + a^2)*arctan(a/(sqrt(a*b)*s
qrt(x))))/((a^2*b^2*x^2 + 2*a^3*b*x + a^4)*sqrt(a*b))]
```

Sympy [A] time = 10.1117, size = 590, normalized size = 8.43

$$\frac{3a^{\frac{11}{2}}\sqrt{x}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}+\frac{9a^{\frac{9}{2}}bx^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}+\frac{9a^{\frac{7}{2}}b^2x^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}+\frac{3a^{\frac{5}{2}}b^3x^{\frac{7}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}+\frac{5a^5\sqrt{b}x}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}+\frac{8a^4b^{\frac{3}{2}}x^2}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}+\frac{3a^3b^{\frac{5}{2}}x^3}{4a^8\sqrt{b}\sqrt{x}+12a^7b^{\frac{3}{2}}x^{\frac{3}{2}}+12a^6b^{\frac{5}{2}}x^{\frac{5}{2}}+4a^5b^{\frac{7}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/x**(1/2),x)
```

```
[Out] 3*a**(11/2)*sqrt(x)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**8*sqrt(b)
*sqrt(x) + 12*a**7*b**(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2)
+ 4*a**5*b**(7/2)*x**(7/2)) + 9*a**(9/2)*b*x**(3/2)*atan(sqrt(b)*
sqrt(x)/sqrt(a))/(4*a**8*sqrt(b)*sqrt(x) + 12*a**7*b**(3/2)*x**(3
/2) + 12*a**6*b**(5/2)*x**(5/2) + 4*a**5*b**(7/2)*x**(7/2)) + 9*a
**(7/2)*b**2*x**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**8*sqrt(
b)*sqrt(x) + 12*a**7*b**(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2
) + 4*a**5*b**(7/2)*x**(7/2)) + 3*a**(5/2)*b**3*x**(7/2)*atan(sqr
t(b)*sqrt(x)/sqrt(a))/(4*a**8*sqrt(b)*sqrt(x) + 12*a**7*b**(3/2)*
x**(3/2) + 12*a**6*b**(5/2)*x**(5/2) + 4*a**5*b**(7/2)*x**(7/2))
+ 5*a**5*sqrt(b)*x/(4*a**8*sqrt(b)*sqrt(x) + 12*a**7*b**(3/2)*x**
(3/2) + 12*a**6*b**(5/2)*x**(5/2) + 4*a**5*b**(7/2)*x**(7/2)) + 8
*a**4*b**(3/2)*x**2/(4*a**8*sqrt(b)*sqrt(x) + 12*a**7*b**(3/2)*x*
*(3/2) + 12*a**6*b**(5/2)*x**(5/2) + 4*a**5*b**(7/2)*x**(7/2)) +
3*a**3*b**(5/2)*x**3/(4*a**8*sqrt(b)*sqrt(x) + 12*a**7*b**(3/2)*x
**(3/2) + 12*a**6*b**(5/2)*x**(5/2) + 4*a**5*b**(7/2)*x**(7/2))
```

GIAC/XCAS [A] time = 0.204984, size = 63, normalized size = 0.9

$$\frac{3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}a^2}+\frac{3\,bx^{\frac{3}{2}}+5\,a\sqrt{x}}{4\,(bx+a)^2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*sqrt(x)),x, algorithm="giac")

[Out] 3/4*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) + 1/4*(3*b*x^(3/2
) + 5*a*sqrt(x))/((b*x + a)^2*a^2)
```

3.467 $\int \frac{1}{x^{3/2}(a+bx)^3} dx$

Optimal. Leaf size=82

$$-\frac{15\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}}-\frac{15}{4a^3\sqrt{x}}+\frac{5}{4a^2\sqrt{x}(a+bx)}+\frac{1}{2a\sqrt{x}(a+bx)^2}$$

```
[Out] -15/(4*a^3*Sqrt[x]) + 1/(2*a*Sqrt[x]*(a + b*x)^2) + 5/(4*a^2*Sqrt
[x]*(a + b*x)) - (15*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
4*a^(7/2))
```

Rubi [A] time = 0.0615942, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{15\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}}-\frac{15}{4a^3\sqrt{x}}+\frac{5}{4a^2\sqrt{x}(a+bx)}+\frac{1}{2a\sqrt{x}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a + b*x)^3),x]
```

```
[Out] -15/(4*a^3*Sqrt[x]) + 1/(2*a*Sqrt[x]*(a + b*x)^2) + 5/(4*a^2*Sqrt
[x]*(a + b*x)) - (15*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
4*a^(7/2))
```

Rubi in Sympy [A] time = 12.3122, size = 75, normalized size = 0.91

$$\frac{1}{2a\sqrt{x}\,(a+bx)^2}+\frac{5}{4a^2\sqrt{x}\,(a+bx)}-\frac{15}{4a^3\sqrt{x}}-\frac{15\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+a)**3,x)
```

```
[Out] 1/(2*a*sqrt(x)*(a + b*x)**2) + 5/(4*a**2*sqrt(x)*(a + b*x)) - 15/
(4*a**3*sqrt(x)) - 15*sqrt(b)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a*
*(7/2))
```

Mathematica [A] time = 0.0600499, size = 70, normalized size = 0.85

$$-\frac{15\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}}-\frac{8a^2+25abx+15b^2x^2}{4a^3\sqrt{x}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a + b*x)^3),x]
```

```
[Out] -(8*a^2 + 25*a*b*x + 15*b^2*x^2)/(4*a^3*Sqrt[x]*(a + b*x)^2) - (1
5*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(7/2))
```

Maple [A] time = 0.019, size = 66, normalized size = 0.8

$$-2\,\frac{1}{a^3\sqrt{x}}-\frac{7\,b^2}{4\,a^3\,(bx+a)^2}x^{\frac{3}{2}}-\frac{9\,b}{4\,a^2\,(bx+a)^2}\sqrt{x}-\frac{15\,b}{4\,a^3}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+a)^3,x)
```

```
[Out] -2/a^3/x^(1/2)-7/4/a^3*b^2/(b*x+a)^2*x^(3/2)-9/4/a^2*b/(b*x+a)^2*
x^(1/2)-15/4/a^3*b/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225581, size = 1, normalized size = 0.01

$$\left[-\frac{30\,b^2x^2+50\,abx-15\,\left(b^2x^2+2\,abx+a^2\right)\sqrt{x}\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+16\,a^2}{8\,(a^3b^2x^2+2\,a^4bx+a^5)\sqrt{x}},\right.$$
$$\left.-\frac{15\,b^2x^2+25\,abx-15\,\left(b^2x^2+2\,abx+a^2\right)\sqrt{x}\sqrt{\frac{b}{a}}\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)+8\,a^2}{4\,(a^3b^2x^2+2\,a^4bx+a^5)\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(3/2)),x, algorithm="fricas")
```

```
[Out] [-1/8*(30*b^2*x^2 + 50*a*b*x - 15*(b^2*x^2 + 2*a*b*x + a^2)*sqrt(
x)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) +
 16*a^2)/((a^3*b^2*x^2 + 2*a^4*b*x + a^5)*sqrt(x)), -1/4*(15*b^2*
x^2 + 25*a*b*x - 15*(b^2*x^2 + 2*a*b*x + a^2)*sqrt(x)*sqrt(b/a)*a
rctan(a*sqrt(b/a)/(b*sqrt(x))) + 8*a^2)/((a^3*b^2*x^2 + 2*a^4*b*x
 + a^5)*sqrt(x))]
```

Sympy [A] time = 13.0209, size = 2790, normalized size = 34.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+a)**3,x)
```

```
[Out] -8*a**(45/2)/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112
*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(
43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2
)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8
*x**(17/2)) - 73*a**(43/2)*b*x/(4*a**(51/2)*sqrt(x) + 32*a**(49/2
)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x
**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11
/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2)
+ 4*a**(35/2)*b**8*x**(17/2)) - 285*a**(41/2)*b**2*x**2/(4*a**(51
/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/
2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) +
224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*
a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 625*a**(
39/2)*b**3*x**3/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) +
112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a
**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11/2) + 112*a**(3
```

```
9/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b
**8*x**(17/2)) - 845*a**(37/2)*b**4*x**4/(4*a**(51/2)*sqrt(x) + 3
2*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45
/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b
**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*
x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 723*a**(35/2)*b**5*x**5
/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b
**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x
**(9/2) + 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(1
3/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2))
- 383*a**(33/2)*b**6*x**6/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x
**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/
2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11/2) +
 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a
**(35/2)*b**8*x**(17/2)) - 115*a**(31/2)*b**7*x**7/(4*a**(51/2)*s
qrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) +
224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a
**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(3
7/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 15*a**(29/2)*
b**8*x**8/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a*
*(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/
2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b
**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x*
*(17/2)) - 15*a**22*sqrt(b)*sqrt(x)*atan(sqrt(b)*sqrt(x)/sqrt(a))
/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b
**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x
**(9/2) + 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(1
3/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2))
- 120*a**21*b**(3/2)*x**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a*
*(51/2)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x*
*(5/2) + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2
) + 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) +
 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 420*
a**20*b**(5/2)*x**(5/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2
)*sqrt(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2)
 + 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 22
4*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a*
*(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 840*a**19*
b**(7/2)*x**(7/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt
(x) + 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224
*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(
41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2
)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 1050*a**18*b**(9
/2)*x**(9/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) +
 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(
45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)
*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**
7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 840*a**17*b**(11/2)*x
**(11/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) + 32*
a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2
)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**
5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x*
*(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 420*a**16*b**(13/2)*x**(1
3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) + 32*a**(
49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b*
*3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x*
```

```
*(11/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15
/2) + 4*a**(35/2)*b**8*x**(17/2)) - 120*a**15*b**(15/2)*x**(15/2)
*atan(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) + 32*a**(49/2
)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x
**(7/2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11
/2) + 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2)
+ 4*a**(35/2)*b**8*x**(17/2)) - 15*a**14*b**(17/2)*x**(17/2)*atan
(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) + 32*a**(49/2)*b*x
**(3/2) + 112*a**(47/2)*b**2*x**(5/2) + 224*a**(45/2)*b**3*x**(7/
2) + 280*a**(43/2)*b**4*x**(9/2) + 224*a**(41/2)*b**5*x**(11/2) +
 112*a**(39/2)*b**6*x**(13/2) + 32*a**(37/2)*b**7*x**(15/2) + 4*a
**(35/2)*b**8*x**(17/2))
```

GIAC/XCAS [A] time = 0.205264, size = 80, normalized size = 0.98

$$-\frac{15\,b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}a^3}-\frac{2}{a^3\sqrt{x}}-\frac{7\,b^2x^{\frac{3}{2}}+9\,ab\sqrt{x}}{4\,(bx+a)^2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(3/2)),x, algorithm="giac")
```

```
[Out] -15/4*b*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) - 2/(a^3*sqrt
(x)) - 1/4*(7*b^2*x^(3/2) + 9*a*b*sqrt(x))/((b*x + a)^2*a^3)
```

3.468 $\int \frac{1}{x^{5/2}(a+bx)^3}\,dx$

Optimal. Leaf size=95

$$\frac{35b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b}{4a^4\sqrt{x}}-\frac{35}{12a^3x^{3/2}}+\frac{7}{4a^2x^{3/2}(a+bx)}+\frac{1}{2ax^{3/2}(a+bx)^2}$$

```
[Out] -35/(12*a^3*x^(3/2)) + (35*b)/(4*a^4*Sqrt[x]) + 1/(2*a*x^(3/2)*(a
 + b*x)^2) + 7/(4*a^2*x^(3/2)*(a + b*x)) + (35*b^(3/2)*ArcTan[(Sq
rt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(9/2))
```

Rubi [A] time = 0.0765092, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{35b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b}{4a^4\sqrt{x}}-\frac{35}{12a^3x^{3/2}}+\frac{7}{4a^2x^{3/2}(a+bx)}+\frac{1}{2ax^{3/2}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a + b*x)^3),x]
```

```
[Out] -35/(12*a^3*x^(3/2)) + (35*b)/(4*a^4*Sqrt[x]) + 1/(2*a*x^(3/2)*(a
 + b*x)^2) + 7/(4*a^2*x^(3/2)*(a + b*x)) + (35*b^(3/2)*ArcTan[(Sq
rt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(9/2))
```

Rubi in Sympy [A] time = 15.4907, size = 88, normalized size = 0.93

$$\frac{1}{2ax^{\frac{3}{2}}\left(a+bx\right)^2}+\frac{7}{4a^2x^{\frac{3}{2}}\left(a+bx\right)}-\frac{35}{12a^3x^{\frac{3}{2}}}+\frac{35b}{4a^4\sqrt{x}}+\frac{35b^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+a)**3,x)
```

```
[Out] 1/(2*a*x**(3/2)*(a + b*x)**2) + 7/(4*a**2*x**(3/2)*(a + b*x)) - 3
5/(12*a**3*x**(3/2)) + 35*b/(4*a**4*sqrt(x)) + 35*b**(3/2)*atan(s
qrt(b)*sqrt(x)/sqrt(a))/(4*a**(9/2))
```

Mathematica [A] time = 0.0693925, size = 81, normalized size = 0.85

$$\frac{35b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{-8a^3+56a^2bx+175ab^2x^2+105b^3x^3}{12a^4x^{3/2}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a + b*x)^3),x]
```

```
[Out] (-8*a^3 + 56*a^2*b*x + 175*a*b^2*x^2 + 105*b^3*x^3)/(12*a^4*x^(3/
2)*(a + b*x)^2) + (35*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/
(4*a^(9/2))
```

Maple [A] time = 0.024, size = 79, normalized size = 0.8

$$-\frac{2}{3\,a^3}x^{-\frac{3}{2}}+6\,\frac{b}{a^4\sqrt{x}}+\frac{11\,b^3}{4\,a^4\,(bx+a)^2}x^{\frac{3}{2}}+\frac{13\,b^2}{4\,a^3\,(bx+a)^2}\sqrt{x}+\frac{35\,b^2}{4\,a^4}\arctan\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+a)^3,x)
```

```
[Out] -2/3/a^3/x^(3/2)+6*b/a^4/x^(1/2)+11/4/a^4*b^3/(b*x+a)^2*x^(3/2)+1
3/4/a^3*b^2/(b*x+a)^2*x^(1/2)+35/4/a^4*b^2/(a*b)^(1/2)*arctan(x^(
1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225675, size = 1, normalized size = 0.01

$$\left[\frac{210\,b^3x^3+350\,ab^2x^2+112\,a^2bx-16\,a^3+105\,\left(b^3x^3+2\,ab^2x^2+a^2bx\right)\sqrt{x}\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)}{24\,(a^4b^2x^3+2\,a^5bx^2+a^6x)\sqrt{x}},\frac{105\,b^3x^3+175\,ab^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/24*(210*b^3*x^3 + 350*a*b^2*x^2 + 112*a^2*b*x - 16*a^3 + 105*(
b^3*x^3 + 2*a*b^2*x^2 + a^2*b*x)*sqrt(x)*sqrt(-b/a)*log((b*x + 2*
a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)))/((a^4*b^2*x^3 + 2*a^5*b*x^2
 + a^6*x)*sqrt(x)), 1/12*(105*b^3*x^3 + 175*a*b^2*x^2 + 56*a^2*b*
x - 8*a^3 - 105*(b^3*x^3 + 2*a*b^2*x^2 + a^2*b*x)*sqrt(x)*sqrt(b/
a)*arctan(a*sqrt(b/a)/(b*sqrt(x))))/((a^4*b^2*x^3 + 2*a^5*b*x^2 +
 a^6*x)*sqrt(x))]
```

Sympy [A] time = 24.8237, size = 3177, normalized size = 33.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+a)**3,x)
```

```
[Out] 105*a**(59/2)*b**2*x**2*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*s
qrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 +
 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29
*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)
*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 9
45*a**(57/2)*b**3*x**3*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*sq
rt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 +
1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29*
b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*
x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 37
80*a**(55/2)*b**4*x**4*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*sq
rt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 +
1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29*
b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*
x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 88
20*a**(53/2)*b**5*x**5*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*sq
rt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 +
1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29*
b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*
x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 13
230*a**(51/2)*b**6*x**6*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*s
qrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 +
 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29
*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)
*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 1
3230*a**(49/2)*b**7*x**7*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*
sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4
+ 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**2
9*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2
)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) +
8820*a**(47/2)*b**8*x**8*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*
```

```
sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4
+ 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**2
9*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2
)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) +
3780*a**(45/2)*b**9*x**9*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34*
sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4
+ 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**2
9*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2
)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) +
945*a**(43/2)*b**10*x**10*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**34
*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4
 + 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**
29*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/
2)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) +
 105*a**(41/2)*b**11*x**11*atan(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**3
4*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**
4 + 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a*
*29*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15
/2)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11)
- 8*a**31*sqrt(b)*sqrt(x)/(12*a**34*sqrt(b)*x**2 + 108*a**33*b**(
3/2)*x**3 + 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 +
1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 + 1008*a**28
*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 + 108*a**26*b**(17/2)*
x**10 + 12*a**25*b**(19/2)*x**11) + 399*a**29*b**(5/2)*x**(5/2)/(
12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5
/2)*x**4 + 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 +
1512*a**29*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27
*b**(15/2)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*
x**11) + 2226*a**28*b**(7/2)*x**(7/2)/(12*a**34*sqrt(b)*x**2 + 10
8*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(
7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7
+ 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 + 108*a**2
6*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 6090*a**27*b**(9/
2)*x**(9/2)/(12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 43
2*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**
(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**
8 + 432*a**27*b**(15/2)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**
25*b**(19/2)*x**11) + 10122*a**26*b**(11/2)*x**(11/2)/(12*a**34*s
qrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 +
 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29
*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)
*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 1
0920*a**25*b**(13/2)*x**(13/2)/(12*a**34*sqrt(b)*x**2 + 108*a**33
*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x*
*5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 + 1008*
a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 + 108*a**26*b**(1
7/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 7734*a**24*b**(15/2)*x**
(15/2)/(12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**
32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)
*x**6 + 1512*a**29*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 4
32*a**27*b**(15/2)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b*
*(19/2)*x**11) + 3486*a**23*b**(17/2)*x**(17/2)/(12*a**34*sqrt(b)
*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/2)*x**4 + 1008*
a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(1
1/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9
+ 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 910*a**
```

```
22*b**(19/2)*x**(19/2)/(12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2
)*x**3 + 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 + 151
2*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 + 1008*a**28*b*
*(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 + 108*a**26*b**(17/2)*x**
10 + 12*a**25*b**(19/2)*x**11) + 105*a**21*b**(21/2)*x**(21/2)/(1
2*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 + 432*a**32*b**(5/
2)*x**4 + 1008*a**31*b**(7/2)*x**5 + 1512*a**30*b**(9/2)*x**6 + 1
512*a**29*b**(11/2)*x**7 + 1008*a**28*b**(13/2)*x**8 + 432*a**27*
b**(15/2)*x**9 + 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x
**11)
```

GIAC/XCAS [A] time = 0.216417, size = 96, normalized size = 1.01

$$\frac{35\, b^2 \arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}a^4} + \frac{2\,(9\,bx - a)}{3\,a^4 x^{\frac{3}{2}}} + \frac{11\,b^3 x^{\frac{3}{2}} + 13\,ab^2\sqrt{x}}{4\,(bx + a)^2 a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(5/2)),x, algorithm="giac")
```

```
[Out] 35/4*b^2*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + 2/3*(9*b*x
 - a)/(a^4*x^(3/2)) + 1/4*(11*b^3*x^(3/2) + 13*a*b^2*sqrt(x))/((b
*x + a)^2*a^4)
```

3.469 $\int \frac{x^{5/2}}{-a+bx}\,dx$

Optimal. Leaf size=68

$$-\frac{2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{2a^2\sqrt{x}}{b^3}+\frac{2ax^{3/2}}{3b^2}+\frac{2x^{5/2}}{5b}$$

```
[Out] (2*a^2*Sqrt[x])/b^3 + (2*a*x^(3/2))/(3*b^2) + (2*x^(5/2))/(5*b) -
 (2*a^(5/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi [A] time = 0.0610089, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{2a^2\sqrt{x}}{b^3}+\frac{2ax^{3/2}}{3b^2}+\frac{2x^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(-a + b*x),x]
```

```
[Out] (2*a^2*Sqrt[x])/b^3 + (2*a*x^(3/2))/(3*b^2) + (2*x^(5/2))/(5*b) -
 (2*a^(5/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi in Sympy [A] time = 11.8964, size = 65, normalized size = 0.96

$$-\frac{2a^{\frac{5}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{7}{2}}}+\frac{2a^2\sqrt{x}}{b^3}+\frac{2ax^{\frac{3}{2}}}{3b^2}+\frac{2x^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x-a),x)
```

```
[Out] -2*a**(5/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/b**(7/2) + 2*a**2*sqrt
(x)/b**3 + 2*a*x**(3/2)/(3*b**2) + 2*x**(5/2)/(5*b)
```

Mathematica [A] time = 0.041448, size = 61, normalized size = 0.9

$$\frac{2\sqrt{x}\left(15a^2+5abx+3b^2x^2\right)}{15b^3}-\frac{2a^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(-a + b*x),x]
```

```
[Out] (2*Sqrt[x]*(15*a^2 + 5*a*b*x + 3*b^2*x^2))/(15*b^3) - (2*a^(5/2)*
ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Maple [A]   time = 0.01, size = 54, normalized size = 0.8

$$-2\,\frac{a^3}{b^3\sqrt{ab}}Artanh\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+2\,\frac{1/5\,b^2x^{5/2}+1/3\,abx^{3/2}+a^2\sqrt{x}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x-a),x)
```

```
[Out] -2*a^3/b^3/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))+2/b^3*(1/5*
b^2*x^(5/2)+1/3*a*b*x^(3/2)+a^2*x^(1/2))
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.222107, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^2\sqrt{\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{\frac{a}{b}}+a}{bx-a}\right)+2\left(3\,b^2x^2+5\,abx+15\,a^2\right)\sqrt{x}}{15\,b^3},\right.$$
$$\left.-\frac{2\left(15\,a^2\sqrt{-\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right)-\left(3\,b^2x^2+5\,abx+15\,a^2\right)\sqrt{x}\right)}{15\,b^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a),x, algorithm="fricas")
```

```
[Out] [1/15*(15*a^2*sqrt(a/b)*log((b*x - 2*b*sqrt(x)*sqrt(a/b) + a)/(b*
x - a)) + 2*(3*b^2*x^2 + 5*a*b*x + 15*a^2)*sqrt(x))/b^3, -2/15*(1
5*a^2*sqrt(-a/b)*arctan(sqrt(x)/sqrt(-a/b)) - (3*b^2*x^2 + 5*a*b*
x + 15*a^2)*sqrt(x))/b^3]
```

Sympy [A] time = 11.1197, size = 707, normalized size = 10.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x-a),x)
```

```
[Out] Piecewise((-30*a**(57/2)*b**16*x**(39/2)*acoth(sqrt(b)*sqrt(x)/sq
rt(a))/(15*a**26*b**(39/2)*x**(39/2) - 15*a**25*b**(41/2)*x**(41/
2)) - 15*I*pi*a**(57/2)*b**16*x**(39/2)/(15*a**26*b**(39/2)*x**(3
9/2) - 15*a**25*b**(41/2)*x**(41/2)) + 30*a**(55/2)*b**17*x**(41/
2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(15*a**26*b**(39/2)*x**(39/2) -
 15*a**25*b**(41/2)*x**(41/2)) + 15*I*pi*a**(55/2)*b**17*x**(41/2
)/(15*a**26*b**(39/2)*x**(39/2) - 15*a**25*b**(41/2)*x**(41/2)) +
 30*a**28*b**(33/2)*x**20/(15*a**26*b**(39/2)*x**(39/2) - 15*a**2
5*b**(41/2)*x**(41/2)) - 20*a**27*b**(35/2)*x**21/(15*a**26*b**(3
9/2)*x**(39/2) - 15*a**25*b**(41/2)*x**(41/2)) - 4*a**26*b**(37/2
)*x**22/(15*a**26*b**(39/2)*x**(39/2) - 15*a**25*b**(41/2)*x**(41
/2)) - 6*a**25*b**(39/2)*x**23/(15*a**26*b**(39/2)*x**(39/2) - 15
*a**25*b**(41/2)*x**(41/2)), Abs(b*x/a) > 1), (-30*a**(57/2)*b**1
6*x**(39/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(15*a**26*b**(39/2)*x*
*(39/2) - 15*a**25*b**(41/2)*x**(41/2)) + 30*a**(55/2)*b**17*x**(
41/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(15*a**26*b**(39/2)*x**(39/2
) - 15*a**25*b**(41/2)*x**(41/2)) + 30*a**28*b**(33/2)*x**20/(15*
a**26*b**(39/2)*x**(39/2) - 15*a**25*b**(41/2)*x**(41/2)) - 20*a*
*27*b**(35/2)*x**21/(15*a**26*b**(39/2)*x**(39/2) - 15*a**25*b**(
41/2)*x**(41/2)) - 4*a**26*b**(37/2)*x**22/(15*a**26*b**(39/2)*x*
*(39/2) - 15*a**25*b**(41/2)*x**(41/2)) - 6*a**25*b**(39/2)*x**23
/(15*a**26*b**(39/2)*x**(39/2) - 15*a**25*b**(41/2)*x**(41/2)), T
rue))
```

GIAC/XCAS [A] time = 0.222133, size = 82, normalized size = 1.21

$$\frac{2\,a^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}b^{3}}+\frac{2\left(3\,b^{4}x^{\frac{5}{2}}+5\,ab^{3}x^{\frac{3}{2}}+15\,a^{2}b^{2}\sqrt{x}\right)}{15\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a),x, algorithm="giac")

[Out] 2*a^3*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^3) + 2/15*(3*b^4
*x^(5/2) + 5*a*b^3*x^(3/2) + 15*a^2*b^2*sqrt(x))/b^5
```

3.470 $\int \frac{x^{3/2}}{-a+bx} \, dx$

Optimal. Leaf size=53

$$-\frac{2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}+\frac{2a\sqrt{x}}{b^2}+\frac{2x^{3/2}}{3b}$$

```
[Out] (2*a*Sqrt[x])/b^2 + (2*x^(3/2))/(3*b) - (2*a^(3/2)*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi [A] time = 0.0475495, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}+\frac{2a\sqrt{x}}{b^2}+\frac{2x^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(-a + b*x),x]
```

```
[Out] (2*a*Sqrt[x])/b^2 + (2*x^(3/2))/(3*b) - (2*a^(3/2)*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.94808, size = 49, normalized size = 0.92

$$-\frac{2a^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}}+\frac{2a\sqrt{x}}{b^2}+\frac{2x^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x-a),x)
```

```
[Out] -2*a**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) + 2*a*sqrt(x)
/b**2 + 2*x**(3/2)/(3*b)
```

Mathematica [A] time = 0.0314575, size = 49, normalized size = 0.92

$$\frac{2\sqrt{x}(3a+bx)}{3b^2}-\frac{2a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(-a + b*x),x]
```

```
[Out] (2*Sqrt[x]*(3*a + b*x))/(3*b^2) - (2*a^(3/2)*ArcTanh[(Sqrt[b]*Sqr
t[x])/Sqrt[a]])/b^(5/2)
```

Maple [A] time = 0.009, size = 43, normalized size = 0.8

$$2\,\frac{1/3\,bx^{3/2}+a\sqrt{x}}{b^2}-2\,\frac{a^2}{b^2\sqrt{ab}}Artanh\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x-a),x)
```

```
[Out] 2/b^2*(1/3*b*x^(3/2)+a*x^(1/2))-2*a^2/b^2/(a*b)^(1/2)*arctanh(x^(
1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228594, size = 1, normalized size = 0.02

$$\left[\frac{3\,a\sqrt{\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{\frac{a}{b}}+a}{bx-a}\right)+2\,(bx+3\,a)\sqrt{x}}{3\,b^2},\,-\frac{2\left(3\,a\sqrt{-\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right)-(bx+3\,a)\sqrt{x}\right)}{3\,b^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a),x, algorithm="fricas")
```

```
[Out] [1/3*(3*a*sqrt(a/b)*log((b*x - 2*b*sqrt(x)*sqrt(a/b) + a)/(b*x -
a)) + 2*(b*x + 3*a)*sqrt(x))/b^2, -2/3*(3*a*sqrt(-a/b)*arctan(sqr
t(x)/sqrt(-a/b)) - (b*x + 3*a)*sqrt(x))/b^2]
```

Sympy [A] time = 6.04124, size = 619, normalized size = 11.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x-a),x)
```

```
[Out] Piecewise((-6*a**(25/2)*b**5*x**(15/2)*acoth(sqrt(b)*sqrt(x)/sqrt
(a))/(3*a**11*b**(15/2)*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2))
- 3*I*pi*a**(25/2)*b**5*x**(15/2)/(3*a**11*b**(15/2)*x**(15/2) -
3*a**10*b**(17/2)*x**(17/2)) + 6*a**(23/2)*b**6*x**(17/2)*acoth(s
qrt(b)*sqrt(x)/sqrt(a))/(3*a**11*b**(15/2)*x**(15/2) - 3*a**10*b*
*(17/2)*x**(17/2)) + 3*I*pi*a**(23/2)*b**6*x**(17/2)/(3*a**11*b**
(15/2)*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2)) + 6*a**12*b**(11/
2)*x**8/(3*a**11*b**(15/2)*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2
)) - 4*a**11*b**(13/2)*x**9/(3*a**11*b**(15/2)*x**(15/2) - 3*a**1
0*b**(17/2)*x**(17/2)) - 2*a**10*b**(15/2)*x**10/(3*a**11*b**(15/
2)*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2)), Abs(b*x/a) > 1), (-6
*a**(25/2)*b**5*x**(15/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**11
*b**(15/2)*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2)) + 6*a**(23/2)
*b**6*x**(17/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**11*b**(15/2)
*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2)) + 6*a**12*b**(11/2)*x**
8/(3*a**11*b**(15/2)*x**(15/2) - 3*a**10*b**(17/2)*x**(17/2)) - 4
*a**11*b**(13/2)*x**9/(3*a**11*b**(15/2)*x**(15/2) - 3*a**10*b**(
17/2)*x**(17/2)) - 2*a**10*b**(15/2)*x**10/(3*a**11*b**(15/2)*x**
(15/2) - 3*a**10*b**(17/2)*x**(17/2)), True))
```

GIAC/XCAS [A] time = 0.223702, size = 63, normalized size = 1.19

$$\frac{2\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}b^2}+\frac{2\left(b^2x^{\frac{3}{2}}+3\,ab\sqrt{x}\right)}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a),x, algorithm="giac")
```

```
[Out] 2*a^2*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^2) + 2/3*(b^2*x^
(3/2) + 3*a*b*sqrt(x))/b^3
```

3.471 $\int \frac{\sqrt{x}}{-a+bx} \, dx$

Optimal. Leaf size=40

$$\frac{2\sqrt{x}}{b} - \frac{2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{3/2}}$$

```
[Out] (2*Sqrt[x])/b - (2*Sqrt[a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^
(3/2)
```

Rubi [A] time = 0.0353431, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sqrt{x}}{b} - \frac{2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(-a + b*x),x]
```

```
[Out] (2*Sqrt[x])/b - (2*Sqrt[a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^
(3/2)
```

Rubi in Sympy [A] time = 6.67053, size = 36, normalized size = 0.9

$$-\frac{2\sqrt{a}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}} + \frac{2\sqrt{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x-a),x)
```

```
[Out] -2*sqrt(a)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/b**(3/2) + 2*sqrt(x)/b
```

Mathematica [A] time = 0.0179738, size = 40, normalized size = 1.

$$\frac{2\sqrt{x}}{b} - \frac{2\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(-a + b*x),x]
```

```
[Out] (2*Sqrt[x])/b - (2*Sqrt[a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^
(3/2)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.8

$$2\,\frac{\sqrt{x}}{b}-2\,\frac{a}{b\sqrt{ab}}\mathit{Artanh}\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x-a),x)
```

```
[Out] 2*x^(1/2)/b-2*a/b/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225874, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{\frac{a}{b}}+a}{bx-a}\right)+2\,\sqrt{x}}{b},\,-\frac{2\left(\sqrt{-\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right)-\sqrt{x}\right)}{b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a),x, algorithm="fricas")
```

```
[Out] [(sqrt(a/b)*log((b*x - 2*b*sqrt(x)*sqrt(a/b) + a)/(b*x - a)) + 2*
sqrt(x))/b, -2*(sqrt(-a/b)*arctan(sqrt(x)/sqrt(-a/b)) - sqrt(x))/
```

b]

Sympy [A] time = 3.19233, size = 493, normalized size = 12.32

$$\begin{cases} -\frac{2a^{\frac{7}{2}}b^2x^{\frac{7}{2}}\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} - \frac{i\pi a^{\frac{7}{2}}b^2x^{\frac{7}{2}}}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} + \frac{2a^{\frac{5}{2}}b^3x^{\frac{9}{2}}\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} + \frac{i\pi a^{\frac{5}{2}}b^3x^{\frac{9}{2}}}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} + \frac{2a^3b^{\frac{5}{2}}x^4}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} - \frac{2a^2b^{\frac{7}{2}}x^5}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} & \text{for} \\ -\frac{2a^{\frac{7}{2}}b^2x^{\frac{7}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} + \frac{2a^{\frac{5}{2}}b^3x^{\frac{9}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} + \frac{2a^3b^{\frac{5}{2}}x^4}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} - \frac{2a^2b^{\frac{7}{2}}x^5}{a^3b^{\frac{7}{2}}x^{\frac{7}{2}}-a^2b^{\frac{9}{2}}x^{\frac{9}{2}}} & \text{oth} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x-a),x)
```

```
[Out] Piecewise((-2*a**(7/2)*b**2*x**(7/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2)) - I*pi*a**(7
/2)*b**2*x**(7/2)/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2
)) + 2*a**(5/2)*b**3*x**(9/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(a**
3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2)) + I*pi*a**(5/2)*b**
3*x**(9/2)/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2)) + 2*
a**3*b**(5/2)*x**4/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/
2)) - 2*a**2*b**(7/2)*x**5/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2
)*x**(9/2)), Abs(b*x/a) > 1), (-2*a**(7/2)*b**2*x**(7/2)*atanh(sq
rt(b)*sqrt(x)/sqrt(a))/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x*
*(9/2)) + 2*a**(5/2)*b**3*x**(9/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))
/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2)) + 2*a**3*b**(5
/2)*x**4/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2)) - 2*a*
*2*b**(7/2)*x**5/(a**3*b**(7/2)*x**(7/2) - a**2*b**(9/2)*x**(9/2)
), True))
```

GIAC/XCAS [A] time = 0.235243, size = 45, normalized size = 1.12

$$\frac{2\,a\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}b} + \frac{2\,\sqrt{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a),x, algorithm="giac")
```

```
[Out] 2*a*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b) + 2*sqrt(x)/b
```

3.472 $\int \frac{1}{\sqrt{x}(-a+bx)} dx$

Optimal. Leaf size=29

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*Sqrt[b])
```

Rubi [A] time = 0.025614, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(-a + b*x)),x]

[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*Sqrt[b])
```

Rubi in Sympy [A] time = 4.86987, size = 29, normalized size = 1.

$$-\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-a)/x**(1/2),x)

[Out] -2*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(sqrt(a)*sqrt(b))
```

Mathematica [A] time = 0.00796534, size = 29, normalized size = 1.

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(-a + b*x)),x]

[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*Sqrt[b])
```

Maple [A] time = 0.007, size = 19, normalized size = 0.7

$$-2\frac{1}{\sqrt{ab}}Artanh\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-a)/x^(1/2),x)

[Out] -2/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*sqrt(x)),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218475, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(-\frac{2\,ab\sqrt{x}-\sqrt{ab}(bx+a)}{bx-a}\right)}{\sqrt{ab}}, \frac{2\,\arctan\left(\frac{a}{\sqrt{-ab}\sqrt{x}}\right)}{\sqrt{-ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*sqrt(x)),x, algorithm="fricas")

[Out] [log(-(2*a*b*sqrt(x) - sqrt(a*b)*(b*x + a))/(b*x - a))/sqrt(a*b),
 2*arctan(a/(sqrt(-a*b)*sqrt(x)))/sqrt(-a*b)]
```

Sympy [A] time = 1.96851, size = 65, normalized size = 2.24

$$\begin{cases} -\frac{2\operatorname{acoth}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}\sqrt{b}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{2\operatorname{atanh}\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{a}\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-a)/x**(1/2),x)
```

```
[Out] Piecewise((-2*acoth(sqrt(a)/(sqrt(b)*sqrt(x)))/(sqrt(a)*sqrt(b)),
 Abs(a/(b*x)) > 1), (-2*atanh(sqrt(a)/(sqrt(b)*sqrt(x)))/(sqrt(a)
*sqrt(b)), True))
```

GIAC/XCAS [A] time = 0.215732, size = 27, normalized size = 0.93

$$\frac{2 \arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 2*arctan(b*sqrt(x)/sqrt(-a*b))/sqrt(-a*b)
```

3.473 $\int \frac{1}{x^{3/2}(-a+bx)}\,dx$

Optimal. Leaf size=40

$$\frac{2}{a\sqrt{x}}-\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}}$$

```
[Out] 2/(a*Sqrt[x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^
(3/2)
```

Rubi [A] time = 0.035425, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2}{a\sqrt{x}}-\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(-a + b*x)),x]
```

```
[Out] 2/(a*Sqrt[x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^
(3/2)
```

Rubi in Sympy [A] time = 6.7452, size = 36, normalized size = 0.9

$$\frac{2}{a\sqrt{x}}-\frac{2\sqrt{b}\,\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x-a),x)
```

```
[Out] 2/(a*sqrt(x)) - 2*sqrt(b)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/a**(3/2)
```

Mathematica [A] time = 0.0207675, size = 40, normalized size = 1.

$$\frac{2}{a\sqrt{x}}-\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(-a + b*x)),x]
```

```
[Out] 2/(a*Sqrt[x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^
(3/2)
```

Maple [A] time = 0.012, size = 32, normalized size = 0.8

$$-2\,{\frac {b}{a\sqrt {ab}}{\it Artanh} \left({\frac {b\sqrt {x}}{\sqrt {ab}}} \right) }+2\,{\frac {1}{a\sqrt {x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x-a),x)
```

```
[Out] -2/a*b/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))+2/a/x^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218691, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{x}\sqrt{\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{\frac{b}{a}}+a}{bx-a}\right)+2}{a\sqrt{x}},\ \frac{2\left(\sqrt{x}\sqrt{-\frac{b}{a}}\arctan\left(\frac{a\sqrt{-\frac{b}{a}}}{b\sqrt{x}}\right)+1\right)}{a\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] [(sqrt(x)*sqrt(b/a)*log((b*x - 2*a*sqrt(x)*sqrt(b/a) + a)/(b*x -
a)) + 2)/(a*sqrt(x)), 2*(sqrt(x)*sqrt(-b/a)*arctan(a*sqrt(-b/a)/(
b*sqrt(x))) + 1)/(a*sqrt(x))]
```

Sympy [A] time = 3.14282, size = 78, normalized size = 1.95

$$\begin{cases} \frac{2}{a\sqrt{x}} - \frac{2\sqrt{b}\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}} & \text{for}\ \left|\frac{bx}{a}\right| > 1 \\ \frac{2}{a\sqrt{x}} - \frac{2\sqrt{b}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x-a),x)
```

```
[Out] Piecewise((2/(a*sqrt(x)) - 2*sqrt(b)*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/a**(3/2), Abs(b*x/a) > 1), (2/(a*sqrt(x)) - 2*sqrt(b)*atanh(sq
rt(b)*sqrt(x)/sqrt(a))/a**(3/2), True))
```

GIAC/XCAS [A] time = 0.231607, size = 45, normalized size = 1.12

$$\frac{2\,b\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}a} + \frac{2}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(3/2)),x, algorithm="giac")
```

```
[Out] 2*b*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a) + 2/(a*sqrt(x))
```

3.474 $\int \frac{1}{x^{5/2}(-a+bx)}\,dx$

Optimal. Leaf size=53

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2b}{a^2\sqrt{x}}+\frac{2}{3ax^{3/2}}$$

```
[Out] 2/(3*a*x^(3/2)) + (2*b)/(a^2*Sqrt[x]) - (2*b^(3/2)*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0460443, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2b}{a^2\sqrt{x}}+\frac{2}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(-a + b*x)),x]
```

```
[Out] 2/(3*a*x^(3/2)) + (2*b)/(a^2*Sqrt[x]) - (2*b^(3/2)*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 9.08007, size = 49, normalized size = 0.92

$$\frac{2}{3ax^{\frac{3}{2}}}+\frac{2b}{a^2\sqrt{x}}-\frac{2b^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x-a),x)
```

```
[Out] 2/(3*a*x**(3/2)) + 2*b/(a**2*sqrt(x)) - 2*b**(3/2)*atanh(sqrt(b)*
sqrt(x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.042775, size = 48, normalized size = 0.91

$$\frac{2(a+3bx)}{3a^2x^{3/2}}-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(-a + b*x)),x]
```

```
[Out] (2*(a + 3*b*x))/(3*a^2*x^(3/2)) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqr
t[x])/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.013, size = 43, normalized size = 0.8

$$-2\,{\frac {{b}^{2}}{{a}^{2}\sqrt {ab}}{\it Artanh} \left({\frac {b\sqrt {x}}{\sqrt {ab}}} \right) }+{\frac {2}{3\,a}{x}^{-{\frac {3}{2}}}}+2\,{\frac {b}{{a}^{2}\sqrt {x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x-a),x)
```

```
[Out] -2/a^2*b^2/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))+2/3/a/x^(3/
2)+2*b/a^2/x^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219309, size = 1, normalized size = 0.02

$$\left[\frac{3\, b x^{\frac{3}{2}} \sqrt{\frac{b}{a}} \log\left(\frac{b x - 2\, a \sqrt{x} \sqrt{\frac{b}{a}} + a}{b x - a}\right) + 6\, b x + 2\, a}{3\, a^{2} x^{\frac{3}{2}}}, \frac{2\, \left(3\, b x^{\frac{3}{2}} \sqrt{-\frac{b}{a}} \arctan\left(\frac{a \sqrt{-\frac{b}{a}}}{b \sqrt{x}}\right) + 3\, b x + a\right)}{3\, a^{2} x^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/3*(3*b*x^(3/2)*sqrt(b/a)*log((b*x - 2*a*sqrt(x)*sqrt(b/a) + a)
/(b*x - a)) + 6*b*x + 2*a)/(a^2*x^(3/2)), 2/3*(3*b*x^(3/2)*sqrt(-
b/a)*arctan(a*sqrt(-b/a)/(b*sqrt(x))) + 3*b*x + a)/(a^2*x^(3/2))]
```

Sympy [A] time = 6.40469, size = 578, normalized size = 10.91

$$\begin{cases} \frac{6a^{\frac{11}{2}}b^2x^2 \operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} + \frac{3i\pi a^{\frac{11}{2}}b^2x^2}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{6a^{\frac{9}{2}}b^3x^3 \operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{3i\pi a^{\frac{9}{2}}b^3x^3}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{2a^7\sqrt{b}\sqrt{x}}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{4a^6b^{\frac{3}{2}}x^{\frac{3}{2}}}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} + \\ \frac{6a^{\frac{11}{2}}b^2x^2 \operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{6a^{\frac{9}{2}}b^3x^3 \operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{2a^7\sqrt{b}\sqrt{x}}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} - \frac{4a^6b^{\frac{3}{2}}x^{\frac{3}{2}}}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} + \frac{6a^5b^{\frac{5}{2}}x^{\frac{5}{2}}}{-3a^8\sqrt{b}x^2+3a^7b^{\frac{3}{2}}x^3} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x-a),x)
```

```
[Out] Piecewise((6*a**(11/2)*b**2*x**2*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(
-3*a**8*sqrt(b)*x**2 + 3*a**7*b**(3/2)*x**3) + 3*I*pi*a**(11/2)*b
**2*x**2/(-3*a**8*sqrt(b)*x**2 + 3*a**7*b**(3/2)*x**3) - 6*a**(9/
2)*b**3*x**3*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-3*a**8*sqrt(b)*x**2
 + 3*a**7*b**(3/2)*x**3) - 3*I*pi*a**(9/2)*b**3*x**3/(-3*a**8*sqr
t(b)*x**2 + 3*a**7*b**(3/2)*x**3) - 2*a**7*sqrt(b)*sqrt(x)/(-3*a*
*8*sqrt(b)*x**2 + 3*a**7*b**(3/2)*x**3) - 4*a**6*b**(3/2)*x**(3/2
)/(-3*a**8*sqrt(b)*x**2 + 3*a**7*b**(3/2)*x**3) + 6*a**5*b**(5/2)
*x**(5/2)/(-3*a**8*sqrt(b)*x**2 + 3*a**7*b**(3/2)*x**3), Abs(b*x/
a) > 1), (6*a**(11/2)*b**2*x**2*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-
3*a**8*sqrt(b)*x**2 + 3*a**7*b**(3/2)*x**3) - 6*a**(9/2)*b**3*x**
3*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-3*a**8*sqrt(b)*x**2 + 3*a**7*b
**(3/2)*x**3) - 2*a**7*sqrt(b)*sqrt(x)/(-3*a**8*sqrt(b)*x**2 + 3*
a**7*b**(3/2)*x**3) - 4*a**6*b**(3/2)*x**(3/2)/(-3*a**8*sqrt(b)*x
**2 + 3*a**7*b**(3/2)*x**3) + 6*a**5*b**(5/2)*x**(5/2)/(-3*a**8*s
qrt(b)*x**2 + 3*a**7*b**(3/2)*x**3), True))
```

GIAC/XCAS [A] time = 0.203179, size = 55, normalized size = 1.04

$$\frac{2\,b^2 \arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}a^2} + \frac{2\,(3\,bx + a)}{3\,a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(5/2)),x, algorithm="giac")
```

```
[Out] 2*b^2*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^2) + 2/3*(3*b*x
+ a)/(a^2*x^(3/2))
```

3.475 $\int \frac{1}{x^{7/2}(-a+bx)} \, dx$

Optimal. Leaf size=68

$$-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{2b^2}{a^3\sqrt{x}}+\frac{2b}{3a^2x^{3/2}}+\frac{2}{5ax^{5/2}}$$

```
[Out] 2/(5*a*x^(5/2)) + (2*b)/(3*a^2*x^(3/2)) + (2*b^2)/(a^3*Sqrt[x]) -
 (2*b^(5/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi [A] time = 0.0598528, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{2b^2}{a^3\sqrt{x}}+\frac{2b}{3a^2x^{3/2}}+\frac{2}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(7/2)*(-a + b*x)),x]
```

```
[Out] 2/(5*a*x^(5/2)) + (2*b)/(3*a^2*x^(3/2)) + (2*b^2)/(a^3*Sqrt[x]) -
 (2*b^(5/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi in Sympy [A] time = 11.959, size = 65, normalized size = 0.96

$$\frac{2}{5ax^{\frac{5}{2}}}+\frac{2b}{3a^2x^{\frac{3}{2}}}+\frac{2b^2}{a^3\sqrt{x}}-\frac{2b^{\frac{5}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(7/2)/(b*x-a),x)
```

```
[Out] 2/(5*a*x**(5/2)) + 2*b/(3*a**2*x**(3/2)) + 2*b**2/(a**3*sqrt(x))
- 2*b**(5/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/a**(7/2)
```

Mathematica [A] time = 0.0532023, size = 61, normalized size = 0.9

$$\frac{2\left(3a^2+5abx+15b^2x^2\right)}{15a^3x^{5/2}}-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(7/2)*(-a + b*x)),x]
```

```
[Out] (2*(3*a^2 + 5*a*b*x + 15*b^2*x^2))/(15*a^3*x^(5/2)) - (2*b^(5/2)*
ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Maple [A]   time = 0.016, size = 54, normalized size = 0.8

$$-2\,\frac{b^3}{a^3\sqrt{ab}}Artanh\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\frac{2}{5\,a}x^{-\frac{5}{2}}+2\,\frac{b^2}{a^3\sqrt{x}}+\frac{2\,b}{3\,a^2}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(7/2)/(b*x-a),x)
```

```
[Out] -2/a^3*b^3/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))+2/5/a/x^(5/
2)+2*b^2/a^3/x^(1/2)+2/3*b/a^2/x^(3/2)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(7/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.219019, size = 1, normalized size = 0.01

$$\left[\frac{15\,b^2x^{\frac{5}{2}}\sqrt{\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{\frac{b}{a}}+a}{bx-a}\right)+30\,b^2x^2+10\,abx+6\,a^2}{15\,a^3x^{\frac{5}{2}}},\frac{2\left(15\,b^2x^{\frac{5}{2}}\sqrt{-\frac{b}{a}}\arctan\left(\frac{a\sqrt{-\frac{b}{a}}}{b\sqrt{x}}\right)+15\,b^2x^2+5\,abx+3\,a^2\right)}{15\,a^3x^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] [1/15*(15*b^2*x^(5/2)*sqrt(b/a)*log((b*x - 2*a*sqrt(x)*sqrt(b/a)
+ a)/(b*x - a)) + 30*b^2*x^2 + 10*a*b*x + 6*a^2)/(a^3*x^(5/2)), 2
/15*(15*b^2*x^(5/2)*sqrt(-b/a)*arctan(a*sqrt(-b/a)/(b*sqrt(x))) +
 15*b^2*x^2 + 5*a*b*x + 3*a^2)/(a^3*x^(5/2))]
```

Sympy [A] time = 12.8273, size = 663, normalized size = 9.75

$$\begin{cases} \frac{30a^{\frac{31}{2}}b^3x^3\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} + \frac{15i\pi a^{\frac{31}{2}}b^3x^3}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{30a^{\frac{29}{2}}b^4x^4\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{15i\pi a^{\frac{29}{2}}b^4x^4}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{6a^{18}\sqrt{b}\sqrt{x}}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \cdots \\ \frac{30a^{\frac{31}{2}}b^3x^3\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{30a^{\frac{29}{2}}b^4x^4\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{6a^{18}\sqrt{b}\sqrt{x}}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{4a^{17}b^{\frac{3}{2}}x^{\frac{3}{2}}}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} - \frac{20a^{16}b^{\frac{5}{2}}x^{\frac{5}{2}}}{-15a^{19}\sqrt{b}x^3+15a^{18}b^{\frac{3}{2}}x^4} + \cdots \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(7/2)/(b*x-a),x)
```

```
[Out] Piecewise((30*a**(31/2)*b**3*x**3*acoth(sqrt(b)*sqrt(x)/sqrt(a))/
(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4) + 15*I*pi*a**(3
1/2)*b**3*x**3/(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4)
- 30*a**(29/2)*b**4*x**4*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-15*a**1
9*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4) - 15*I*pi*a**(29/2)*b**4
*x**4/(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4) - 6*a**18
*sqrt(b)*sqrt(x)/(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4
) - 4*a**17*b**(3/2)*x**(3/2)/(-15*a**19*sqrt(b)*x**3 + 15*a**18*
b**(3/2)*x**4) - 20*a**16*b**(5/2)*x**(5/2)/(-15*a**19*sqrt(b)*x*
*3 + 15*a**18*b**(3/2)*x**4) + 30*a**15*b**(7/2)*x**(7/2)/(-15*a*
*19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4), Abs(b*x/a) > 1), (30*
a**(31/2)*b**3*x**3*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-15*a**19*sqr
t(b)*x**3 + 15*a**18*b**(3/2)*x**4) - 30*a**(29/2)*b**4*x**4*atan
h(sqrt(b)*sqrt(x)/sqrt(a))/(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**
(3/2)*x**4) - 6*a**18*sqrt(b)*sqrt(x)/(-15*a**19*sqrt(b)*x**3 + 1
5*a**18*b**(3/2)*x**4) - 4*a**17*b**(3/2)*x**(3/2)/(-15*a**19*sqr
t(b)*x**3 + 15*a**18*b**(3/2)*x**4) - 20*a**16*b**(5/2)*x**(5/2)/
(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4) + 30*a**15*b**(
7/2)*x**(7/2)/(-15*a**19*sqrt(b)*x**3 + 15*a**18*b**(3/2)*x**4),
True))
```

GIAC/XCAS [A] time = 0.204051, size = 73, normalized size = 1.07

$$\frac{2\,b^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}a^3} + \frac{2\left(15\,b^2x^2 + 5\,abx + 3\,a^2\right)}{15\,a^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)*x^(7/2)),x, algorithm="giac")
```

```
[Out] 2*b^3*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^3) + 2/15*(15*b^
2*x^2 + 5*a*b*x + 3*a^2)/(a^3*x^(5/2))
```

3.476 $\int \frac{x^{5/2}}{(-a+bx)^2}\,dx$

Optimal. Leaf size=70

$$-\frac{5a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{5a\sqrt{x}}{b^3}+\frac{x^{5/2}}{b(a-bx)}+\frac{5x^{3/2}}{3b^2}$$

```
[Out] (5*a*Sqrt[x])/b^3 + (5*x^(3/2))/(3*b^2) + x^(5/2)/(b*(a - b*x)) -
 (5*a^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi [A] time = 0.0600947, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{5a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{5a\sqrt{x}}{b^3}+\frac{x^{5/2}}{b(a-bx)}+\frac{5x^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(-a + b*x)^2,x]
```

```
[Out] (5*a*Sqrt[x])/b^3 + (5*x^(3/2))/(3*b^2) + x^(5/2)/(b*(a - b*x)) -
 (5*a^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rubi in Sympy [A] time = 12.5414, size = 63, normalized size = 0.9

$$-\frac{5a^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{7}{2}}}+\frac{5a\sqrt{x}}{b^3}+\frac{x^{\frac{5}{2}}}{b\,(a-bx)}+\frac{5x^{\frac{3}{2}}}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x-a)**2,x)
```

```
[Out] -5*a**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/b**(7/2) + 5*a*sqrt(x)
/b**3 + x**(5/2)/(b*(a - b*x)) + 5*x**(3/2)/(3*b**2)
```

Mathematica [A] time = 0.0762452, size = 70, normalized size = 1.

$$\frac{\sqrt{x}\left(-15a^2+10abx+2b^2x^2\right)}{3b^3(bx-a)}-\frac{5a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(-a + b*x)^2,x]
```

```
[Out] (Sqrt[x]*(-15*a^2 + 10*a*b*x + 2*b^2*x^2))/(3*b^3*(-a + b*x)) - (
5*a^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Maple [A] time = 0.017, size = 61, normalized size = 0.9

$$2\,{\frac {{a}^{2}}{{b}^{3}} \left(-1/2\,{\frac {\sqrt {x}}{bx-a}}-5/2\,{\frac {1}{\sqrt {ab}}{\it Artanh} \left({\frac {b\sqrt {x}}{\sqrt {ab}}} \right) } \right) }+2\,{\frac {1/3\,b{x}^{3/2}+2\,a\sqrt {x}}{{b}^{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x-a)^2,x)
```

```
[Out] 2/b^3*a^2*(-1/2*x^(1/2)/(b*x-a)-5/2/(a*b)^(1/2)*arctanh(x^(1/2)*b
/(a*b)^(1/2)))+2/b^3*(1/3*b*x^(3/2)+2*a*x^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220413, size = 1, normalized size = 0.01

$$\left[\frac{15\,\left(abx-a^{2}\right)\sqrt{\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{\frac{a}{b}}+a}{bx-a}\right)+2\,\left(2\,b^{2}x^{2}+10\,abx-15\,a^{2}\right)\sqrt{x}}{6\,\left(b^{4}x-ab^{3}\right)},\right.$$
$$\left.-\frac{15\,\left(abx-a^{2}\right)\sqrt{-\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right)-\left(2\,b^{2}x^{2}+10\,abx-15\,a^{2}\right)\sqrt{x}}{3\,\left(b^{4}x-ab^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a)^2,x, algorithm="fricas")
```

```
[Out] [1/6*(15*(a*b*x - a^2)*sqrt(a/b)*log((b*x - 2*b*sqrt(x)*sqrt(a/b)
 + a)/(b*x - a)) + 2*(2*b^2*x^2 + 10*a*b*x - 15*a^2)*sqrt(x))/(b^
4*x - a*b^3), -1/3*(15*(a*b*x - a^2)*sqrt(-a/b)*arctan(sqrt(x)/sq
rt(-a/b)) - (2*b^2*x^2 + 10*a*b*x - 15*a^2)*sqrt(x))/(b^4*x - a*b
^3)]
```

Sympy [A] time = 13.4514, size = 1142, normalized size = 16.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x-a)**2,x)
```

```
[Out] Piecewise((-30*a**(65/2)*b**17*x**(41/2)*acoth(sqrt(b)*sqrt(x)/sq
rt(a))/(6*a**31*b**(41/2)*x**(41/2) - 12*a**30*b**(43/2)*x**(43/2
) + 6*a**29*b**(45/2)*x**(45/2)) - 15*I*pi*a**(65/2)*b**17*x**(41
/2)/(6*a**31*b**(41/2)*x**(41/2) - 12*a**30*b**(43/2)*x**(43/2) +
 6*a**29*b**(45/2)*x**(45/2)) + 60*a**(63/2)*b**18*x**(43/2)*acot
h(sqrt(b)*sqrt(x)/sqrt(a))/(6*a**31*b**(41/2)*x**(41/2) - 12*a**3
0*b**(43/2)*x**(43/2) + 6*a**29*b**(45/2)*x**(45/2)) + 30*I*pi*a*
*(63/2)*b**18*x**(43/2)/(6*a**31*b**(41/2)*x**(41/2) - 12*a**30*b
**(43/2)*x**(43/2) + 6*a**29*b**(45/2)*x**(45/2)) - 30*a**(61/2)*
b**19*x**(45/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(6*a**31*b**(41/2)
*x**(41/2) - 12*a**30*b**(43/2)*x**(43/2) + 6*a**29*b**(45/2)*x**
(45/2)) - 15*I*pi*a**(61/2)*b**19*x**(45/2)/(6*a**31*b**(41/2)*x*
*(41/2) - 12*a**30*b**(43/2)*x**(43/2) + 6*a**29*b**(45/2)*x**(45
/2)) + 30*a**32*b**(35/2)*x**21/(6*a**31*b**(41/2)*x**(41/2) - 12
*a**30*b**(43/2)*x**(43/2) + 6*a**29*b**(45/2)*x**(45/2)) - 50*a*
*31*b**(37/2)*x**22/(6*a**31*b**(41/2)*x**(41/2) - 12*a**30*b**(4
3/2)*x**(43/2) + 6*a**29*b**(45/2)*x**(45/2)) + 16*a**30*b**(39/2
)*x**23/(6*a**31*b**(41/2)*x**(41/2) - 12*a**30*b**(43/2)*x**(43/
2) + 6*a**29*b**(45/2)*x**(45/2)) + 4*a**29*b**(41/2)*x**24/(6*a*
*31*b**(41/2)*x**(41/2) - 12*a**30*b**(43/2)*x**(43/2) + 6*a**29*
b**(45/2)*x**(45/2)), Abs(b*x/a) > 1), (-15*a**(65/2)*b**17*x**(4
1/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**31*b**(41/2)*x**(41/2)
- 6*a**30*b**(43/2)*x**(43/2) + 3*a**29*b**(45/2)*x**(45/2)) + 30
*a**(63/2)*b**18*x**(43/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**3
1*b**(41/2)*x**(41/2) - 6*a**30*b**(43/2)*x**(43/2) + 3*a**29*b**
(45/2)*x**(45/2)) - 15*a**(61/2)*b**19*x**(45/2)*atanh(sqrt(b)*sq
rt(x)/sqrt(a))/(3*a**31*b**(41/2)*x**(41/2) - 6*a**30*b**(43/2)*x
**(43/2) + 3*a**29*b**(45/2)*x**(45/2)) + 15*a**32*b**(35/2)*x**2
1/(3*a**31*b**(41/2)*x**(41/2) - 6*a**30*b**(43/2)*x**(43/2) + 3*
a**29*b**(45/2)*x**(45/2)) - 25*a**31*b**(37/2)*x**22/(3*a**31*b*
*(41/2)*x**(41/2) - 6*a**30*b**(43/2)*x**(43/2) + 3*a**29*b**(45/
2)*x**(45/2)) + 8*a**30*b**(39/2)*x**23/(3*a**31*b**(41/2)*x**(41
/2) - 6*a**30*b**(43/2)*x**(43/2) + 3*a**29*b**(45/2)*x**(45/2))
```

```
+ 2*a**29*b**(41/2)*x**24/(3*a**31*b**(41/2)*x**(41/2) - 6*a**30*
b**(43/2)*x**(43/2) + 3*a**29*b**(45/2)*x**(45/2)), True))
```

GIAC/XCAS [A] time = 0.206269, size = 93, normalized size = 1.33

$$\frac{5\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}b^3} - \frac{a^2\sqrt{x}}{(bx-a)b^3} + \frac{2\left(b^4x^{\frac{3}{2}} + 6\,ab^3\sqrt{x}\right)}{3\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a)^2,x, algorithm="giac")
```

```
[Out] 5*a^2*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^3) - a^2*sqrt(x)
/((b*x - a)*b^3) + 2/3*(b^4*x^(3/2) + 6*a*b^3*sqrt(x))/b^6
```

3.477 $\int \frac{x^{3/2}}{(-a+bx)^2}\,dx$

Optimal. Leaf size=57

$$-\frac{3\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}+\frac{x^{3/2}}{b(a-bx)}+\frac{3\sqrt{x}}{b^2}$$

```
[Out] (3*Sqrt[x])/b^2 + x^(3/2)/(b*(a - b*x)) - (3*Sqrt[a]*ArcTanh[(Sqr
t[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi [A] time = 0.0485904, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{3\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}+\frac{x^{3/2}}{b(a-bx)}+\frac{3\sqrt{x}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(-a + b*x)^2,x]
```

```
[Out] (3*Sqrt[x])/b^2 + x^(3/2)/(b*(a - b*x)) - (3*Sqrt[a]*ArcTanh[(Sqr
t[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Rubi in Sympy [A] time = 9.75898, size = 49, normalized size = 0.86

$$-\frac{3\sqrt{a}\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}}+\frac{x^{\frac{3}{2}}}{b\,(a-bx)}+\frac{3\sqrt{x}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x-a)**2,x)
```

```
[Out] -3*sqrt(a)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) + x**(3/2)/(b*
(a - b*x)) + 3*sqrt(x)/b**2
```

Mathematica [A] time = 0.0606483, size = 56, normalized size = 0.98

$$\frac{\sqrt{x}(2bx-3a)}{b^2(bx-a)}-\frac{3\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(-a + b*x)^2,x]
```

```
[Out] (Sqrt[x]*(-3*a + 2*b*x))/(b^2*(-a + b*x)) - (3*Sqrt[a]*ArcTanh[(S
qrt[b]*Sqrt[x])/Sqrt[a]])/b^(5/2)
```

Maple [A] time = 0.016, size = 49, normalized size = 0.9

$$2\,{\frac {a}{{b}^{2}}\left(-1/2\,{\frac {\sqrt {x}}{bx-a}}-3/2\,{\frac {1}{\sqrt {ab}}{\it Artanh} \left({\frac {b\sqrt {x}}{\sqrt {ab}}} \right) } \right) }+2\,{\frac {\sqrt {x}}{{b}^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x-a)^2,x)
```

```
[Out] 2*a/b^2*(-1/2*x^(1/2)/(b*x-a)-3/2/(a*b)^(1/2)*arctanh(x^(1/2)*b/(
a*b)^(1/2)))+2*x^(1/2)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217812, size = 1, normalized size = 0.02

$$\left[\frac{3\,{\left(b x - a\right)} \sqrt{\frac{a}{b}} \log\left(\frac{b x - 2\, b \sqrt{x} \sqrt{\frac{a}{b}} + a}{b x - a}\right) + 2\,{\left(2\, b x - 3\, a\right)} \sqrt{x}}{2\,{\left(b^{3} x - a b^{2}\right)}}, -\frac{3\,{\left(b x - a\right)} \sqrt{-\frac{a}{b}} \arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right) - {\left(2\, b x - 3\, a\right)} \sqrt{x}}{b^{3} x - a b^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(3*(b*x - a)*sqrt(a/b)*log((b*x - 2*b*sqrt(x)*sqrt(a/b) + a)
/(b*x - a)) + 2*(2*b*x - 3*a)*sqrt(x))/(b^3*x - a*b^2), -(3*(b*x
- a)*sqrt(-a/b)*arctan(sqrt(x)/sqrt(-a/b)) - (2*b*x - 3*a)*sqrt(x
))/(b^3*x - a*b^2)]
```

Sympy [A] time = 6.49261, size = 1003, normalized size = 17.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x-a)**2,x)
```

```
[Out] Piecewise((-6*a**(23/2)*b**6*x**(17/2)*acoth(sqrt(b)*sqrt(x)/sqrt
(a))/(2*a**11*b**(17/2)*x**(17/2) - 4*a**10*b**(19/2)*x**(19/2) +
 2*a**9*b**(21/2)*x**(21/2)) - 3*I*pi*a**(23/2)*b**6*x**(17/2)/(2
*a**11*b**(17/2)*x**(17/2) - 4*a**10*b**(19/2)*x**(19/2) + 2*a**9
*b**(21/2)*x**(21/2)) + 12*a**(21/2)*b**7*x**(19/2)*acoth(sqrt(b)
*sqrt(x)/sqrt(a))/(2*a**11*b**(17/2)*x**(17/2) - 4*a**10*b**(19/2
)*x**(19/2) + 2*a**9*b**(21/2)*x**(21/2)) + 6*I*pi*a**(21/2)*b**7
*x**(19/2)/(2*a**11*b**(17/2)*x**(17/2) - 4*a**10*b**(19/2)*x**(1
9/2) + 2*a**9*b**(21/2)*x**(21/2)) - 6*a**(19/2)*b**8*x**(21/2)*a
coth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a**11*b**(17/2)*x**(17/2) - 4*a*
*10*b**(19/2)*x**(19/2) + 2*a**9*b**(21/2)*x**(21/2)) - 3*I*pi*a*
*(19/2)*b**8*x**(21/2)/(2*a**11*b**(17/2)*x**(17/2) - 4*a**10*b**
(19/2)*x**(19/2) + 2*a**9*b**(21/2)*x**(21/2)) + 6*a**11*b**(13/2
)*x**9/(2*a**11*b**(17/2)*x**(17/2) - 4*a**10*b**(19/2)*x**(19/2)
 + 2*a**9*b**(21/2)*x**(21/2)) - 10*a**10*b**(15/2)*x**10/(2*a**1
1*b**(17/2)*x**(17/2) - 4*a**10*b**(19/2)*x**(19/2) + 2*a**9*b**(
21/2)*x**(21/2)) + 4*a**9*b**(17/2)*x**11/(2*a**11*b**(17/2)*x**(
17/2) - 4*a**10*b**(19/2)*x**(19/2) + 2*a**9*b**(21/2)*x**(21/2))
, Abs(b*x/a) > 1), (-3*a**(23/2)*b**6*x**(17/2)*atanh(sqrt(b)*sqr
t(x)/sqrt(a))/(a**11*b**(17/2)*x**(17/2) - 2*a**10*b**(19/2)*x**(
19/2) + a**9*b**(21/2)*x**(21/2)) + 6*a**(21/2)*b**7*x**(19/2)*at
anh(sqrt(b)*sqrt(x)/sqrt(a))/(a**11*b**(17/2)*x**(17/2) - 2*a**10
*b**(19/2)*x**(19/2) + a**9*b**(21/2)*x**(21/2)) - 3*a**(19/2)*b*
*8*x**(21/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(a**11*b**(17/2)*x**(
17/2) - 2*a**10*b**(19/2)*x**(19/2) + a**9*b**(21/2)*x**(21/2)) +
 3*a**11*b**(13/2)*x**9/(a**11*b**(17/2)*x**(17/2) - 2*a**10*b**(
19/2)*x**(19/2) + a**9*b**(21/2)*x**(21/2)) - 5*a**10*b**(15/2)*x
**10/(a**11*b**(17/2)*x**(17/2) - 2*a**10*b**(19/2)*x**(19/2) + a
**9*b**(21/2)*x**(21/2)) + 2*a**9*b**(17/2)*x**11/(a**11*b**(17/2
)*x**(17/2) - 2*a**10*b**(19/2)*x**(19/2) + a**9*b**(21/2)*x**(21
/2)), True))
```

GIAC/XCAS [A] time = 0.205541, size = 69, normalized size = 1.21

$$\frac{3\,a\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}b^2} - \frac{a\sqrt{x}}{(bx-a)b^2} + \frac{2\,\sqrt{x}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a)^2,x, algorithm="giac")
```

```
[Out] 3*a*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^2) - a*sqrt(x)/((b
*x - a)*b^2) + 2*sqrt(x)/b^2
```

3.478 $\int \frac{\sqrt{x}}{(-a+bx)^2}\,dx$

Optimal. Leaf size=47

$$\frac{\sqrt{x}}{b(a-bx)}-\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{3/2}}$$

```
[Out] Sqrt[x]/(b*(a - b*x)) - ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(Sqrt[
a]*b^(3/2))
```

Rubi [A] time = 0.0374291, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\sqrt{x}}{b(a-bx)}-\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(-a + b*x)^2,x]
```

```
[Out] Sqrt[x]/(b*(a - b*x)) - ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(Sqrt[
a]*b^(3/2))
```

Rubi in Sympy [A] time = 7.50218, size = 37, normalized size = 0.79

$$\frac{\sqrt{x}}{b\,(a-bx)}-\frac{\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x-a)**2,x)
```

```
[Out] sqrt(x)/(b*(a - b*x)) - atanh(sqrt(b)*sqrt(x)/sqrt(a))/(sqrt(a)*b
**(3/2))
```

Mathematica [A] time = 0.039395, size = 49, normalized size = 1.04

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}b^{3/2}}-\frac{\sqrt{x}}{b(bx-a)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(-a + b*x)^2,x]
```

```
[Out] -(Sqrt[x]/(b*(-a + b*x))) - ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(S
qrt[a]*b^(3/2))
```

Maple [A] time = 0.014, size = 40, normalized size = 0.9

$$-\frac{1}{b(bx-a)}\sqrt{x}-\frac{1}{b}Artanh\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x-a)^2,x)
```

```
[Out] -1/b*x^(1/2)/(b*x-a)-1/b/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2
))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220169, size = 1, normalized size = 0.02

$$\left[\frac{(bx-a)\log\left(-\frac{2\,ab\sqrt{x}-\sqrt{ab}(bx+a)}{bx-a}\right)-2\,\sqrt{ab}\sqrt{x}}{2\,(b^2x-ab)\sqrt{ab}},\ \frac{(bx-a)\arctan\left(\frac{a}{\sqrt{-ab}\sqrt{x}}\right)-\sqrt{-ab}\sqrt{x}}{(b^2x-ab)\sqrt{-ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((b*x - a)*log(-(2*a*b*sqrt(x) - sqrt(a*b)*(b*x + a))/(b*x -
 a)) - 2*sqrt(a*b)*sqrt(x))/((b^2*x - a*b)*sqrt(a*b)), ((b*x - a)
```

```
*arctan(a/(sqrt(-a*b)*sqrt(x))) - sqrt(-a*b)*sqrt(x))/((b^2*x - a
*b)*sqrt(-a*b))]
```

Sympy [A] time = 4.6003, size = 2247, normalized size = 47.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x-a)**2,x)
```

```
[Out] Piecewise((-2*a**(21/2)*b**2*x**(7/2)*acoth(sqrt(b)*sqrt(x)/sqrt(
a))/(2*a**11*b**(7/2)*x**(7/2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a
**9*b**(11/2)*x**(11/2) - 8*a**8*b**(13/2)*x**(13/2) + 2*a**7*b**
(15/2)*x**(15/2)) - I*pi*a**(21/2)*b**2*x**(7/2)/(2*a**11*b**(7/2
)*x**(7/2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11
/2) - 8*a**8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)) +
8*a**(19/2)*b**3*x**(9/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a**11
*b**(7/2)*x**(7/2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2
)*x**(11/2) - 8*a**8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(1
5/2)) + 4*I*pi*a**(19/2)*b**3*x**(9/2)/(2*a**11*b**(7/2)*x**(7/2)
 - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a*
*8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)) - 12*a**(17/
2)*b**4*x**(11/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a**11*b**(7/2
)*x**(7/2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11
/2) - 8*a**8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)) -
6*I*pi*a**(17/2)*b**4*x**(11/2)/(2*a**11*b**(7/2)*x**(7/2) - 8*a*
*10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a**8*b**(
13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)) + 8*a**(15/2)*b**5*
x**(13/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a**11*b**(7/2)*x**(7/
2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*
a**8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)) + 4*I*pi*a
**(15/2)*b**5*x**(13/2)/(2*a**11*b**(7/2)*x**(7/2) - 8*a**10*b**(
9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a**8*b**(13/2)*x*
*(13/2) + 2*a**7*b**(15/2)*x**(15/2)) - 2*a**(13/2)*b**6*x**(15/2
)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a**11*b**(7/2)*x**(7/2) - 8*a
**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a**8*b**
(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)) - I*pi*a**(13/2)*b
**6*x**(15/2)/(2*a**11*b**(7/2)*x**(7/2) - 8*a**10*b**(9/2)*x**(9
/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a**8*b**(13/2)*x**(13/2) +
2*a**7*b**(15/2)*x**(15/2)) + 2*a**10*b**(5/2)*x**4/(2*a**11*b**(
7/2)*x**(7/2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**
(11/2) - 8*a**8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2))
 - 6*a**9*b**(7/2)*x**5/(2*a**11*b**(7/2)*x**(7/2) - 8*a**10*b**(
9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a**8*b**(13/2)*x*
*(13/2) + 2*a**7*b**(15/2)*x**(15/2)) + 6*a**8*b**(9/2)*x**6/(2*a
**11*b**(7/2)*x**(7/2) - 8*a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(
11/2)*x**(11/2) - 8*a**8*b**(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x
**(15/2)) - 2*a**7*b**(11/2)*x**7/(2*a**11*b**(7/2)*x**(7/2) - 8*
a**10*b**(9/2)*x**(9/2) + 12*a**9*b**(11/2)*x**(11/2) - 8*a**8*b*
*(13/2)*x**(13/2) + 2*a**7*b**(15/2)*x**(15/2)), Abs(b*x/a) > 1),
 (-a**(21/2)*b**2*x**(7/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(a**11*
```

```
b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)*
x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2)
) + 4*a**(19/2)*b**3*x**(9/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(a**
11*b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/
2)*x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15
/2)) - 6*a**(17/2)*b**4*x**(11/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/
(a**11*b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**
(11/2)*x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*x*
*(15/2)) + 4*a**(15/2)*b**5*x**(13/2)*atanh(sqrt(b)*sqrt(x)/sqrt(
a))/(a**11*b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a**9
*b**(11/2)*x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2
)*x**(15/2)) - a**(13/2)*b**6*x**(15/2)*atanh(sqrt(b)*sqrt(x)/sqr
t(a))/(a**11*b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a*
*9*b**(11/2)*x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15
/2)*x**(15/2)) + a**10*b**(5/2)*x**4/(a**11*b**(7/2)*x**(7/2) - 4
*a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)*x**(11/2) - 4*a**8*b*
*(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2)) - 3*a**9*b**(7/2)*x
**5/(a**11*b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a**9
*b**(11/2)*x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2
)*x**(15/2)) + 3*a**8*b**(9/2)*x**6/(a**11*b**(7/2)*x**(7/2) - 4*
a**10*b**(9/2)*x**(9/2) + 6*a**9*b**(11/2)*x**(11/2) - 4*a**8*b**
(13/2)*x**(13/2) + a**7*b**(15/2)*x**(15/2)) - a**7*b**(11/2)*x**
7/(a**11*b**(7/2)*x**(7/2) - 4*a**10*b**(9/2)*x**(9/2) + 6*a**9*b
**(11/2)*x**(11/2) - 4*a**8*b**(13/2)*x**(13/2) + a**7*b**(15/2)*
x**(15/2)), True))
```

GIAC/XCAS [A] time = 0.204542, size = 54, normalized size = 1.15

$$\frac{\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}b} - \frac{\sqrt{x}}{(bx-a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a)^2,x, algorithm="giac")
```

```
[Out] arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b) - sqrt(x)/((b*x - a)*
b)
```

3.479 $\int \frac{1}{\sqrt{x}(-a+bx)^2}\,dx$

Optimal. Leaf size=46

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{x}}{a(a-bx)}$$

```
[Out] Sqrt[x]/(a*(a - b*x)) + ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(a^(3/
2)*Sqrt[b])
```

Rubi [A] time = 0.0373235, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}+\frac{\sqrt{x}}{a(a-bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(-a + b*x)^2),x]
```

```
[Out] Sqrt[x]/(a*(a - b*x)) + ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(a^(3/
2)*Sqrt[b])
```

Rubi in Sympy [A] time = 7.32234, size = 37, normalized size = 0.8

$$\frac{\sqrt{x}}{a\left(a-bx\right)}+\frac{\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{3}{2}}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-a)**2/x**(1/2),x)
```

```
[Out] sqrt(x)/(a*(a - b*x)) + atanh(sqrt(b)*sqrt(x)/sqrt(a))/(a**(3/2)*
sqrt(b))
```

Mathematica [A] time = 0.0345886, size = 48, normalized size = 1.04

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}}-\frac{\sqrt{x}}{a(bx-a)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(-a + b*x)^2),x]
```

```
[Out] -(Sqrt[x]/(a*(-a + b*x))) + ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(a
^(3/2)*Sqrt[b])
```

Maple [A] time = 0.01, size = 39, normalized size = 0.9

$$-\frac{1}{a(bx-a)}\sqrt{x}+\frac{1}{a}Artanh\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-a)^2/x^(1/2),x)
```

```
[Out] -x^(1/2)/a/(b*x-a)+1/a/(a*b)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22026, size = 1, normalized size = 0.02

$$\left[\frac{(bx-a)\log\left(\frac{2\,ab\sqrt{x}+\sqrt{ab}(bx+a)}{bx-a}\right)-2\sqrt{ab}\sqrt{x}}{2\,(abx-a^2)\sqrt{ab}},-\frac{(bx-a)\arctan\left(\frac{a}{\sqrt{-ab}\sqrt{x}}\right)+\sqrt{-ab}\sqrt{x}}{(abx-a^2)\sqrt{-ab}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [1/2*((b*x - a)*log((2*a*b*sqrt(x) + sqrt(a*b)*(b*x + a))/(b*x -
a)) - 2*sqrt(a*b)*sqrt(x))/((a*b*x - a^2)*sqrt(a*b)), -((b*x - a)
```

```
*arctan(a/(sqrt(-a*b)*sqrt(x))) + sqrt(-a*b)*sqrt(x))/((a*b*x - a
^2)*sqrt(-a*b))]
```

Sympy [A] time = 3.74527, size = 401, normalized size = 8.72

$$\begin{cases} \frac{2a^{\frac{3}{2}}\sqrt{x}\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{2a^3\sqrt{b}\sqrt{x}-2a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} + \frac{i\pi a^{\frac{3}{2}}\sqrt{x}}{2a^3\sqrt{b}\sqrt{x}-2a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} - \frac{2\sqrt{a}bx^{\frac{3}{2}}\operatorname{acoth}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{2a^3\sqrt{b}\sqrt{x}-2a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} - \frac{i\pi\sqrt{a}bx^{\frac{3}{2}}}{2a^3\sqrt{b}\sqrt{x}-2a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} + \frac{2a\sqrt{b}x}{2a^3\sqrt{b}\sqrt{x}-2a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ \frac{a^{\frac{3}{2}}\sqrt{x}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3\sqrt{b}\sqrt{x}-a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} - \frac{\sqrt{a}bx^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^3\sqrt{b}\sqrt{x}-a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} + \frac{a\sqrt{b}x}{a^3\sqrt{b}\sqrt{x}-a^2b^{\frac{3}{2}}x^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-a)**2/x**(1/2),x)
```

```
[Out] Piecewise((2*a**(3/2)*sqrt(x)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a
**3*sqrt(b)*sqrt(x) - 2*a**2*b**(3/2)*x**(3/2)) + I*pi*a**(3/2)*s
qrt(x)/(2*a**3*sqrt(b)*sqrt(x) - 2*a**2*b**(3/2)*x**(3/2)) - 2*sq
rt(a)*b*x**(3/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(2*a**3*sqrt(b)*s
qrt(x) - 2*a**2*b**(3/2)*x**(3/2)) - I*pi*sqrt(a)*b*x**(3/2)/(2*a
**3*sqrt(b)*sqrt(x) - 2*a**2*b**(3/2)*x**(3/2)) + 2*a*sqrt(b)*x/(
2*a**3*sqrt(b)*sqrt(x) - 2*a**2*b**(3/2)*x**(3/2)), Abs(b*x/a) >
1), (a**(3/2)*sqrt(x)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(a**3*sqrt(b
)*sqrt(x) - a**2*b**(3/2)*x**(3/2)) - sqrt(a)*b*x**(3/2)*atanh(sq
rt(b)*sqrt(x)/sqrt(a))/(a**3*sqrt(b)*sqrt(x) - a**2*b**(3/2)*x**(
3/2)) + a*sqrt(b)*x/(a**3*sqrt(b)*sqrt(x) - a**2*b**(3/2)*x**(3/2
)), True))
```

GIAC/XCAS [A] time = 0.205496, size = 55, normalized size = 1.2

$$-\frac{\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}a} - \frac{\sqrt{x}}{(bx-a)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*sqrt(x)),x, algorithm="giac")
```

```
[Out] -arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a) - sqrt(x)/((b*x - a)
*a)
```

3.480 $\int \frac{1}{x^{3/2}(-a+bx)^2}\,dx$

Optimal. Leaf size=57

$$\frac{3\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3}{a^2\sqrt{x}}+\frac{1}{a\sqrt{x}(a-bx)}$$

```
[Out] -3/(a^2*Sqrt[x]) + 1/(a*Sqrt[x]*(a - b*x)) + (3*Sqrt[b]*ArcTanh[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi [A] time = 0.0504472, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{3\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{3}{a^2\sqrt{x}}+\frac{1}{a\sqrt{x}(a-bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(-a + b*x)^2),x]
```

```
[Out] -3/(a^2*Sqrt[x]) + 1/(a*Sqrt[x]*(a - b*x)) + (3*Sqrt[b]*ArcTanh[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Rubi in Sympy [A] time = 9.5616, size = 51, normalized size = 0.89

$$\frac{1}{a\sqrt{x}\,(a-bx)}-\frac{3}{a^2\sqrt{x}}+\frac{3\sqrt{b}\,\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x-a)**2,x)
```

```
[Out] 1/(a*sqrt(x)*(a - b*x)) - 3/(a**2*sqrt(x)) + 3*sqrt(b)*atanh(sqrt
(b)*sqrt(x)/sqrt(a))/a**(5/2)
```

Mathematica [A] time = 0.0711095, size = 56, normalized size = 0.98

$$\frac{3\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{2a-3bx}{a^2\sqrt{x}(bx-a)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(-a + b*x)^2),x]
```

```
[Out] (2*a - 3*b*x)/(a^2*Sqrt[x]*(-a + b*x)) + (3*Sqrt[b]*ArcTanh[(Sqrt
[b]*Sqrt[x])/Sqrt[a]])/a^(5/2)
```

Maple [A] time = 0.017, size = 49, normalized size = 0.9

$$-2\,{\frac {b}{{a}^{2}}\left(1/2\,{\frac {\sqrt {x}}{bx-a}}-3/2\,{\frac {1}{\sqrt {ab}}{\it Artanh} \left({\frac {b\sqrt {x}}{\sqrt {ab}}} \right) } \right) }-2\,{\frac {1}{{a}^{2}\sqrt {x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x-a)^2,x)
```

```
[Out] -2/a^2*b*(1/2*x^(1/2)/(b*x-a)-3/2/(a*b)^(1/2)*arctanh(x^(1/2)*b/(
a*b)^(1/2)))-2/a^2/x^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*x^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225481, size = 1, normalized size = 0.02

$$\left[\frac{3\,{\left(bx - a\right)}\sqrt{x}\sqrt{\frac{b}{a}}\log\left(\frac{bx + 2\,a\sqrt{x}\sqrt{\frac{b}{a}} + a}{bx - a}\right) - 6\,bx + 4\,a}{2\,{\left(a^{2}bx - a^{3}\right)}\sqrt{x}}, -\frac{3\,{\left(bx - a\right)}\sqrt{x}\sqrt{-\frac{b}{a}}\arctan\left(\frac{a\sqrt{-\frac{b}{a}}}{b\sqrt{x}}\right) + 3\,bx - 2\,a}{{\left(a^{2}bx - a^{3}\right)}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*x^(3/2)),x, algorithm="fricas")
```

```
[Out] [1/2*(3*(b*x - a)*sqrt(x)*sqrt(b/a)*log((b*x + 2*a*sqrt(x)*sqrt(b
/a) + a)/(b*x - a)) - 6*b*x + 4*a)/((a^2*b*x - a^3)*sqrt(x)), -(3
*(b*x - a)*sqrt(x)*sqrt(-b/a)*arctan(a*sqrt(-b/a)/(b*sqrt(x))) +
3*b*x - 2*a)/((a^2*b*x - a^3)*sqrt(x))]
```

Sympy [A] time = 6.50687, size = 1520, normalized size = 26.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x-a)**2,x)
```

```
[Out] Piecewise((4*a**(15/2)/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(
3/2) - 6*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2)) - 1
4*a**(13/2)*b*x/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(3/2) -
6*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2)) + 16*a**(1
1/2)*b**2*x**2/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(3/2) - 6
*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2)) - 6*a**(9/2
)*b**3*x**3/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(3/2) - 6*a*
*(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2)) - 6*a**7*sqrt(
b)*sqrt(x)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-2*a**(19/2)*sqrt(x) +
 6*a**(17/2)*b*x**(3/2) - 6*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)
*b**3*x**(7/2)) - 3*I*pi*a**7*sqrt(b)*sqrt(x)/(-2*a**(19/2)*sqrt(
x) + 6*a**(17/2)*b*x**(3/2) - 6*a**(15/2)*b**2*x**(5/2) + 2*a**(1
3/2)*b**3*x**(7/2)) + 18*a**6*b**(3/2)*x**(3/2)*acoth(sqrt(b)*sqr
t(x)/sqrt(a))/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(3/2) - 6*
a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2)) + 9*I*pi*a**
6*b**(3/2)*x**(3/2)/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(3/2
) - 6*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2)) - 18*a
**5*b**(5/2)*x**(5/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-2*a**(19/2
)*sqrt(x) + 6*a**(17/2)*b*x**(3/2) - 6*a**(15/2)*b**2*x**(5/2) +
2*a**(13/2)*b**3*x**(7/2)) - 9*I*pi*a**5*b**(5/2)*x**(5/2)/(-2*a*
*(19/2)*sqrt(x) + 6*a**(17/2)*b*x**(3/2) - 6*a**(15/2)*b**2*x**(5
/2) + 2*a**(13/2)*b**3*x**(7/2)) + 6*a**4*b**(7/2)*x**(7/2)*acoth
(sqrt(b)*sqrt(x)/sqrt(a))/(-2*a**(19/2)*sqrt(x) + 6*a**(17/2)*b*x
**(3/2) - 6*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(7/2))
+ 3*I*pi*a**4*b**(7/2)*x**(7/2)/(-2*a**(19/2)*sqrt(x) + 6*a**(17/
2)*b*x**(3/2) - 6*a**(15/2)*b**2*x**(5/2) + 2*a**(13/2)*b**3*x**(
7/2)), Abs(b*x/a) > 1), (2*a**(15/2)/(-a**(19/2)*sqrt(x) + 3*a**(
17/2)*b*x**(3/2) - 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**
(7/2)) - 7*a**(13/2)*b*x/(-a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(
3/2) - 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2)) + 8*a
**(11/2)*b**2*x**2/(-a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) -
 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2)) - 3*a**(9/2
)*b**3*x**3/(-a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) - 3*a**(
15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2)) - 3*a**7*sqrt(b)*s
qrt(x)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-a**(19/2)*sqrt(x) + 3*a**
(17/2)*b*x**(3/2) - 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x*
*(7/2)) + 9*a**6*b**(3/2)*x**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))
/(-a**(19/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) - 3*a**(15/2)*b**2*
x**(5/2) + a**(13/2)*b**3*x**(7/2)) - 9*a**5*b**(5/2)*x**(5/2)*at
```

```
anh(sqrt(b)*sqrt(x)/sqrt(a))/(-a**(19/2)*sqrt(x) + 3*a**(17/2)*b*
x**(3/2) - 3*a**(15/2)*b**2*x**(5/2) + a**(13/2)*b**3*x**(7/2)) +
 3*a**4*b**(7/2)*x**(7/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-a**(19
/2)*sqrt(x) + 3*a**(17/2)*b*x**(3/2) - 3*a**(15/2)*b**2*x**(5/2)
+ a**(13/2)*b**3*x**(7/2)), True))
```

GIAC/XCAS [A] time = 0.208988, size = 70, normalized size = 1.23

$$-\frac{3\,b\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}a^2} - \frac{3\,bx - 2\,a}{\left(bx^{\frac{3}{2}} - a\sqrt{x}\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*x^(3/2)),x, algorithm="giac")
```

```
[Out] -3*b*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^2) - (3*b*x - 2*a
)/((b*x^(3/2) - a*sqrt(x))*a^2)
```

3.481 $\int \frac{1}{x^{5/2}(-a+bx)^2} \, dx$

Optimal. Leaf size=70

$$\frac{5b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{5b}{a^3\sqrt{x}}-\frac{5}{3a^2x^{3/2}}+\frac{1}{ax^{3/2}(a-bx)}$$

```
[Out] -5/(3*a^2*x^(3/2)) - (5*b)/(a^3*Sqrt[x]) + 1/(a*x^(3/2)*(a - b*x)
) + (5*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi [A] time = 0.0622108, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{5b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}-\frac{5b}{a^3\sqrt{x}}-\frac{5}{3a^2x^{3/2}}+\frac{1}{ax^{3/2}(a-bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(-a + b*x)^2),x]
```

```
[Out] -5/(3*a^2*x^(3/2)) - (5*b)/(a^3*Sqrt[x]) + 1/(a*x^(3/2)*(a - b*x)
) + (5*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Rubi in Sympy [A] time = 12.4079, size = 65, normalized size = 0.93

$$\frac{1}{ax^{\frac{3}{2}}(a-bx)}-\frac{5}{3a^2x^{\frac{3}{2}}}-\frac{5b}{a^3\sqrt{x}}+\frac{5b^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x-a)**2,x)
```

```
[Out] 1/(a*x**(3/2)*(a - b*x)) - 5/(3*a**2*x**(3/2)) - 5*b/(a**3*sqrt(x
)) + 5*b**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/a**(7/2)
```

Mathematica [A] time = 0.0925964, size = 70, normalized size = 1.

$$\frac{5b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{2a^2+10abx-15b^2x^2}{3a^3x^{3/2}(bx-a)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(-a + b*x)^2),x]
```

```
[Out] (2*a^2 + 10*a*b*x - 15*b^2*x^2)/(3*a^3*x^(3/2)*(-a + b*x)) + (5*b
^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(7/2)
```

Maple [A] time = 0.022, size = 60, normalized size = 0.9

$$-2\,{\frac{{b}^{2}}{{a}^{3}}\left(1/2\,{\frac{\sqrt{x}}{bx-a}}-5/2\,{\frac{1}{\sqrt{ab}}{\it Artanh}\left({\frac{b\sqrt{x}}{\sqrt{ab}}}\right)}\right)}-{\frac{2}{3\,{a}^{2}}{x}^{-{\frac{3}{2}}}}-4\,{\frac{b}{{a}^{3}\sqrt{x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x-a)^2,x)
```

```
[Out] -2/a^3*b^2*(1/2*x^(1/2)/(b*x-a)-5/2/(a*b)^(1/2)*arctanh(x^(1/2)*b
/(a*b)^(1/2)))-2/3/a^2/x^(3/2)-4*b/a^3/x^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*x^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224514, size = 1, normalized size = 0.01

$$\left[-\frac{30\,b^{2}x^{2}-20\,abx-15\,\left(b^{2}x^{2}-abx\right)\sqrt{x}\sqrt{\frac{b}{a}}\log\left(\frac{bx+2\,a\sqrt{x}\sqrt{\frac{b}{a}}+a}{bx-a}\right)-4\,a^{2}}{6\,(a^{3}bx^{2}-a^{4}x)\sqrt{x}},\;-\frac{15\,b^{2}x^{2}-10\,abx+15\,\left(b^{2}x^{2}-abx\right)\sqrt{x}\sqrt{-\frac{b}{a}}\arctan\left(\frac{a\sqrt{-\frac{b}{a}}}{b\sqrt{x}}\right)-2\,a^{2}}{3\,(a^{3}bx^{2}-a^{4}x)\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*x^(5/2)),x, algorithm="fricas")
```

```
[Out] [-1/6*(30*b^2*x^2 - 20*a*b*x - 15*(b^2*x^2 - a*b*x)*sqrt(x)*sqrt(
b/a)*log((b*x + 2*a*sqrt(x)*sqrt(b/a) + a)/(b*x - a)) - 4*a^2)/((
a^3*b*x^2 - a^4*x)*sqrt(x)), -1/3*(15*b^2*x^2 - 10*a*b*x + 15*(b^
2*x^2 - a*b*x)*sqrt(x)*sqrt(-b/a)*arctan(a*sqrt(-b/a)/(b*sqrt(x))
) - 2*a^2)/((a^3*b*x^2 - a^4*x)*sqrt(x))]
```

Sympy [A] time = 12.4808, size = 2414, normalized size = 34.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x-a)**2,x)
```

```
[Out] Piecewise((30*a**(27/2)*b**2*x**2*acoth(sqrt(b)*sqrt(x)/sqrt(a))/
(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2
)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9/2)*x**6) + 15*I*p
i*a**(27/2)*b**2*x**2/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x
**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b
**(9/2)*x**6) - 120*a**(25/2)*b**3*x**3*acoth(sqrt(b)*sqrt(x)/sqr
t(a))/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3 + 36*a**15*b
**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9/2)*x**6) -
60*I*pi*a**(25/2)*b**3*x**3/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(
3/2)*x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a
**13*b**(9/2)*x**6) + 180*a**(23/2)*b**4*x**4*acoth(sqrt(b)*sqrt(
x)/sqrt(a))/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3 + 36*a
**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9/2)*x*
*6) + 90*I*pi*a**(23/2)*b**4*x**4/(6*a**17*sqrt(b)*x**2 - 24*a**1
6*b**(3/2)*x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5
 + 6*a**13*b**(9/2)*x**6) - 120*a**(21/2)*b**5*x**5*acoth(sqrt(b)
*sqrt(x)/sqrt(a))/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3
+ 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9
/2)*x**6) - 60*I*pi*a**(21/2)*b**5*x**5/(6*a**17*sqrt(b)*x**2 - 2
4*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2
)*x**5 + 6*a**13*b**(9/2)*x**6) + 30*a**(19/2)*b**6*x**6*acoth(sq
rt(b)*sqrt(x)/sqrt(a))/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*
x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*
b**(9/2)*x**6) + 15*I*pi*a**(19/2)*b**6*x**6/(6*a**17*sqrt(b)*x**
2 - 24*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b*
*(7/2)*x**5 + 6*a**13*b**(9/2)*x**6) - 4*a**15*sqrt(b)*sqrt(x)/(6
*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2)*
x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9/2)*x**6) - 8*a**14*
b**(3/2)*x**(3/2)/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3
+ 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9
/2)*x**6) + 78*a**13*b**(5/2)*x**(5/2)/(6*a**17*sqrt(b)*x**2 - 24
*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)
*x**5 + 6*a**13*b**(9/2)*x**6) - 146*a**12*b**(7/2)*x**(7/2)/(6*a
```

```
**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2)*x*
*4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9/2)*x**6) + 110*a**11*
b**(9/2)*x**(9/2)/(6*a**17*sqrt(b)*x**2 - 24*a**16*b**(3/2)*x**3
+ 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/2)*x**5 + 6*a**13*b**(9
/2)*x**6) - 30*a**10*b**(11/2)*x**(11/2)/(6*a**17*sqrt(b)*x**2 -
24*a**16*b**(3/2)*x**3 + 36*a**15*b**(5/2)*x**4 - 24*a**14*b**(7/
2)*x**5 + 6*a**13*b**(9/2)*x**6), Abs(b*x/a) > 1), (15*a**(27/2)*
b**2*x**2*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**17*sqrt(b)*x**2 -
12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 - 12*a**14*b**(7/
2)*x**5 + 3*a**13*b**(9/2)*x**6) - 60*a**(25/2)*b**3*x**3*atanh(s
qrt(b)*sqrt(x)/sqrt(a))/(3*a**17*sqrt(b)*x**2 - 12*a**16*b**(3/2)
*x**3 + 18*a**15*b**(5/2)*x**4 - 12*a**14*b**(7/2)*x**5 + 3*a**13
*b**(9/2)*x**6) + 90*a**(23/2)*b**4*x**4*atanh(sqrt(b)*sqrt(x)/sq
rt(a))/(3*a**17*sqrt(b)*x**2 - 12*a**16*b**(3/2)*x**3 + 18*a**15*
b**(5/2)*x**4 - 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) -
 60*a**(21/2)*b**5*x**5*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**17*s
qrt(b)*x**2 - 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 - 1
2*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) + 15*a**(19/2)*b**
6*x**6*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**17*sqrt(b)*x**2 - 12*
a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 - 12*a**14*b**(7/2)*
x**5 + 3*a**13*b**(9/2)*x**6) - 2*a**15*sqrt(b)*sqrt(x)/(3*a**17*
sqrt(b)*x**2 - 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 -
12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) - 4*a**14*b**(3/2
)*x**(3/2)/(3*a**17*sqrt(b)*x**2 - 12*a**16*b**(3/2)*x**3 + 18*a*
*15*b**(5/2)*x**4 - 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**
6) + 39*a**13*b**(5/2)*x**(5/2)/(3*a**17*sqrt(b)*x**2 - 12*a**16*
b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 - 12*a**14*b**(7/2)*x**5 +
 3*a**13*b**(9/2)*x**6) - 73*a**12*b**(7/2)*x**(7/2)/(3*a**17*sqr
t(b)*x**2 - 12*a**16*b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 - 12*
a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6) + 55*a**11*b**(9/2)*
x**(9/2)/(3*a**17*sqrt(b)*x**2 - 12*a**16*b**(3/2)*x**3 + 18*a**1
5*b**(5/2)*x**4 - 12*a**14*b**(7/2)*x**5 + 3*a**13*b**(9/2)*x**6)
 - 15*a**10*b**(11/2)*x**(11/2)/(3*a**17*sqrt(b)*x**2 - 12*a**16*
b**(3/2)*x**3 + 18*a**15*b**(5/2)*x**4 - 12*a**14*b**(7/2)*x**5 +
 3*a**13*b**(9/2)*x**6), True))
```

GIAC/XCAS [A] time = 0.204159, size = 82, normalized size = 1.17

$$-\frac{5\,b^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{\sqrt{-ab}a^3}-\frac{b^2\sqrt{x}}{(bx-a)a^3}-\frac{2\,(6\,bx+a)}{3\,a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^2*x^(5/2)),x, algorithm="giac")
```

```
[Out] -5*b^2*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^3) - b^2*sqrt(x
)/((b*x - a)*a^3) - 2/3*(6*b*x + a)/(a^3*x^(3/2))
```

3.482 $\int \frac{x^{7/2}}{(-a+bx)^3}\,dx$

Optimal. Leaf size=97

$$-\frac{35a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}+\frac{35a\sqrt{x}}{4b^4}+\frac{7x^{5/2}}{4b^2(a-bx)}-\frac{x^{7/2}}{2b(a-bx)^2}+\frac{35x^{3/2}}{12b^3}$$

```
[Out] (35*a*Sqrt[x])/(4*b^4) + (35*x^(3/2))/(12*b^3) - x^(7/2)/(2*b*(a
- b*x)^2) + (7*x^(5/2))/(4*b^2*(a - b*x)) - (35*a^(3/2)*ArcTanh[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(9/2))
```

Rubi [A] time = 0.0786096, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{35a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}+\frac{35a\sqrt{x}}{4b^4}+\frac{7x^{5/2}}{4b^2(a-bx)}-\frac{x^{7/2}}{2b(a-bx)^2}+\frac{35x^{3/2}}{12b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(7/2)/(-a + b*x)^3,x]
```

```
[Out] (35*a*Sqrt[x])/(4*b^4) + (35*x^(3/2))/(12*b^3) - x^(7/2)/(2*b*(a
- b*x)^2) + (7*x^(5/2))/(4*b^2*(a - b*x)) - (35*a^(3/2)*ArcTanh[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(9/2))
```

Rubi in Sympy [A] time = 16.4377, size = 87, normalized size = 0.9

$$-\frac{35a^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{9}{2}}}+\frac{35a\sqrt{x}}{4b^4}-\frac{x^{\frac{7}{2}}}{2b\left(a-bx\right)^2}+\frac{7x^{\frac{5}{2}}}{4b^2\left(a-bx\right)}+\frac{35x^{\frac{3}{2}}}{12b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(7/2)/(b*x-a)**3,x)
```

```
[Out] -35*a**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*b**(9/2)) + 35*a*s
qrt(x)/(4*b**4) - x**(7/2)/(2*b*(a - b*x)**2) + 7*x**(5/2)/(4*b**
2*(a - b*x)) + 35*x**(3/2)/(12*b**3)
```

Mathematica [A] time = 0.0719024, size = 82, normalized size = 0.85

$$\frac{\sqrt{x}\left(105a^3-175a^2bx+56ab^2x^2+8b^3x^3\right)}{12b^4(a-bx)^2}-\frac{35a^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(7/2)/(-a + b*x)^3,x]
```

```
[Out] (Sqrt[x]*(105*a^3 - 175*a^2*b*x + 56*a*b^2*x^2 + 8*b^3*x^3))/(12*
b^4*(a - b*x)^2) - (35*a^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]]
)/(4*b^(9/2))
```

Maple [A] time = 0.017, size = 70, normalized size = 0.7

$$2\,{\frac{a^2}{b^4}\left({\frac{1}{(bx-a)^2}\left(-{\frac{13\,bx^{3/2}}{8}}+{\frac{11\,a\sqrt{x}}{8}}\right)}-{\frac{35}{8\,\sqrt{ab}}{\it Artanh}\left({\frac{b\sqrt{x}}{\sqrt{ab}}}\right)}\right)}+2\,{\frac{1/3\,bx^{3/2}+3\,a\sqrt{x}}{b^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(7/2)/(b*x-a)^3,x)
```

```
[Out] 2/b^4*a^2*((-13/8*b*x^(3/2)+11/8*a*x^(1/2))/(b*x-a)^2-35/8/(a*b)^
(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2)))+2/b^4*(1/3*b*x^(3/2)+3*a*x^
(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(7/2)/(b*x - a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.247833, size = 1, normalized size = 0.01

$$\left[\frac{105\left(ab^{2}x^{2}-2\,a^{2}bx+a^{3}\right)\sqrt{\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{\frac{a}{b}}+a}{bx-a}\right)+2\left(8\,b^{3}x^{3}+56\,ab^{2}x^{2}-175\,a^{2}bx+105\,a^{3}\right)\sqrt{x}}{24\left(b^{6}x^{2}-2\,ab^{5}x+a^{2}b^{4}\right)},\right.$$
$$\left.-\frac{105\left(ab^{2}x^{2}-2\,a^{2}bx+a^{3}\right)\sqrt{-\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right)-\left(8\,b^{3}x^{3}+56\,ab^{2}x^{2}-175\,a^{2}bx+105\,a^{3}\right)\sqrt{x}}{12\left(b^{6}x^{2}-2\,ab^{5}x+a^{2}b^{4}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(7/2)/(b*x - a)^3,x, algorithm="fricas")
```

```
[Out] [1/24*(105*(a*b^2*x^2 - 2*a^2*b*x + a^3)*sqrt(a/b)*log((b*x - 2*b
*sqrt(x)*sqrt(a/b) + a)/(b*x - a)) + 2*(8*b^3*x^3 + 56*a*b^2*x^2
- 175*a^2*b*x + 105*a^3)*sqrt(x))/(b^6*x^2 - 2*a*b^5*x + a^2*b^4)
, -1/12*(105*(a*b^2*x^2 - 2*a^2*b*x + a^3)*sqrt(-a/b)*arctan(sqrt
(x)/sqrt(-a/b)) - (8*b^3*x^3 + 56*a*b^2*x^2 - 175*a^2*b*x + 105*a
^3)*sqrt(x))/(b^6*x^2 - 2*a*b^5*x + a^2*b^4)]
```

Sympy [A] time = 38.2364, size = 2649, normalized size = 27.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(7/2)/(b*x-a)**3,x)
```

```
[Out] Piecewise((-210*a**(133/2)*b**27*x**(63/2)*acoth(sqrt(b)*sqrt(x)/
sqrt(a))/(24*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(6
5/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/
2) + 24*a**61*b**(71/2)*x**(71/2)) - 105*I*pi*a**(133/2)*b**27*x*
*(63/2)/(24*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(65
/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/2
) + 24*a**61*b**(71/2)*x**(71/2)) + 840*a**(131/2)*b**28*x**(65/2
)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(24*a**65*b**(63/2)*x**(63/2) -
96*a**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2) - 96
*a**62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)) + 420*
I*pi*a**(131/2)*b**28*x**(65/2)/(24*a**65*b**(63/2)*x**(63/2) - 9
6*a**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*
a**62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)) - 1260*
a**(129/2)*b**29*x**(67/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(24*a**
65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a**63
*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/2) + 24*a**61*b*
```

```
*(71/2)*x**(71/2)) - 630*I*pi*a**(129/2)*b**29*x**(67/2)/(24*a**6
5*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a**63*
b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/2) + 24*a**61*b**
(71/2)*x**(71/2)) + 840*a**(127/2)*b**30*x**(69/2)*acoth(sqrt(b)*
sqrt(x)/sqrt(a))/(24*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/
2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)
*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)) + 420*I*pi*a**(127/2)*
b**30*x**(69/2)/(24*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2
)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*
x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)) - 210*a**(125/2)*b**31*
x**(71/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(24*a**65*b**(63/2)*x**(
63/2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67
/2) - 96*a**62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)
) - 105*I*pi*a**(125/2)*b**31*x**(71/2)/(24*a**65*b**(63/2)*x**(6
3/2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/
2) - 96*a**62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2))
 + 210*a**66*b**(55/2)*x**32/(24*a**65*b**(63/2)*x**(63/2) - 96*a
**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**
62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)) - 770*a**6
5*b**(57/2)*x**33/(24*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65
/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2
)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)) + 1022*a**64*b**(59/2
)*x**34/(24*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(65
/2) + 144*a**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/2
) + 24*a**61*b**(71/2)*x**(71/2)) - 558*a**63*b**(61/2)*x**35/(24
*a**65*b**(63/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a
**63*b**(67/2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/2) + 24*a**6
1*b**(71/2)*x**(71/2)) + 80*a**62*b**(63/2)*x**36/(24*a**65*b**(6
3/2)*x**(63/2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/
2)*x**(67/2) - 96*a**62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*
x**(71/2)) + 16*a**61*b**(65/2)*x**37/(24*a**65*b**(63/2)*x**(63/
2) - 96*a**64*b**(65/2)*x**(65/2) + 144*a**63*b**(67/2)*x**(67/2)
 - 96*a**62*b**(69/2)*x**(69/2) + 24*a**61*b**(71/2)*x**(71/2)),
Abs(b*x/a) > 1), (-105*a**(133/2)*b**27*x**(63/2)*atanh(sqrt(b)*s
qrt(x)/sqrt(a))/(12*a**65*b**(63/2)*x**(63/2) - 48*a**64*b**(65/2
)*x**(65/2) + 72*a**63*b**(67/2)*x**(67/2) - 48*a**62*b**(69/2)*x
**(69/2) + 12*a**61*b**(71/2)*x**(71/2)) + 420*a**(131/2)*b**28*x
**(65/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**65*b**(63/2)*x**(6
3/2) - 48*a**64*b**(65/2)*x**(65/2) + 72*a**63*b**(67/2)*x**(67/2
) - 48*a**62*b**(69/2)*x**(69/2) + 12*a**61*b**(71/2)*x**(71/2))
- 630*a**(129/2)*b**29*x**(67/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(
12*a**65*b**(63/2)*x**(63/2) - 48*a**64*b**(65/2)*x**(65/2) + 72*
a**63*b**(67/2)*x**(67/2) - 48*a**62*b**(69/2)*x**(69/2) + 12*a**
61*b**(71/2)*x**(71/2)) + 420*a**(127/2)*b**30*x**(69/2)*atanh(sq
rt(b)*sqrt(x)/sqrt(a))/(12*a**65*b**(63/2)*x**(63/2) - 48*a**64*b
**(65/2)*x**(65/2) + 72*a**63*b**(67/2)*x**(67/2) - 48*a**62*b**(
69/2)*x**(69/2) + 12*a**61*b**(71/2)*x**(71/2)) - 105*a**(125/2)*
b**31*x**(71/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(12*a**65*b**(63/2
)*x**(63/2) - 48*a**64*b**(65/2)*x**(65/2) + 72*a**63*b**(67/2)*x
**(67/2) - 48*a**62*b**(69/2)*x**(69/2) + 12*a**61*b**(71/2)*x**(
71/2)) + 105*a**66*b**(55/2)*x**32/(12*a**65*b**(63/2)*x**(63/2)
- 48*a**64*b**(65/2)*x**(65/2) + 72*a**63*b**(67/2)*x**(67/2) - 4
8*a**62*b**(69/2)*x**(69/2) + 12*a**61*b**(71/2)*x**(71/2)) - 385
*a**65*b**(57/2)*x**33/(12*a**65*b**(63/2)*x**(63/2) - 48*a**64*b
**(65/2)*x**(65/2) + 72*a**63*b**(67/2)*x**(67/2) - 48*a**62*b**(
69/2)*x**(69/2) + 12*a**61*b**(71/2)*x**(71/2)) + 511*a**64*b**(5
```

```
9/2)*x**34/(12*a**65*b**(63/2)*x**(63/2) - 48*a**64*b**(65/2)*x**
(65/2) + 72*a**63*b**(67/2)*x**(67/2) - 48*a**62*b**(69/2)*x**(69
/2) + 12*a**61*b**(71/2)*x**(71/2)) - 279*a**63*b**(61/2)*x**35/(
12*a**65*b**(63/2)*x**(63/2) - 48*a**64*b**(65/2)*x**(65/2) + 72*
a**63*b**(67/2)*x**(67/2) - 48*a**62*b**(69/2)*x**(69/2) + 12*a**
61*b**(71/2)*x**(71/2)) + 40*a**62*b**(63/2)*x**36/(12*a**65*b**(
63/2)*x**(63/2) - 48*a**64*b**(65/2)*x**(65/2) + 72*a**63*b**(67/
2)*x**(67/2) - 48*a**62*b**(69/2)*x**(69/2) + 12*a**61*b**(71/2)*
x**(71/2)) + 8*a**61*b**(65/2)*x**37/(12*a**65*b**(63/2)*x**(63/2
) - 48*a**64*b**(65/2)*x**(65/2) + 72*a**63*b**(67/2)*x**(67/2) -
 48*a**62*b**(69/2)*x**(69/2) + 12*a**61*b**(71/2)*x**(71/2)), Tr
ue))
```

GIAC/XCAS [A] time = 0.204808, size = 109, normalized size = 1.12

$$\frac{35\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\,\sqrt{-ab}b^4}-\frac{13\,a^2bx^{\frac{3}{2}}-11\,a^3\sqrt{x}}{4\,(bx-a)^2b^4}+\frac{2\,\left(b^6x^{\frac{3}{2}}+9\,ab^5\sqrt{x}\right)}{3\,b^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(7/2)/(b*x - a)^3,x, algorithm="giac")
```

```
[Out] 35/4*a^2*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^4) - 1/4*(13*
a^2*b*x^(3/2) - 11*a^3*sqrt(x))/((b*x - a)^2*b^4) + 2/3*(b^6*x^(3
/2) + 9*a*b^5*sqrt(x))/b^9
```

3.483 $\int \frac{x^{5/2}}{(-a+bx)^3} dx$

Optimal. Leaf size=84

$$-\frac{15\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{7/2}}+\frac{5x^{3/2}}{4b^2(a-bx)}-\frac{x^{5/2}}{2b(a-bx)^2}+\frac{15\sqrt{x}}{4b^3}$$

```
[Out] (15*Sqrt[x])/(4*b^3) - x^(5/2)/(2*b*(a - b*x)^2) + (5*x^(3/2))/(4
*b^2*(a - b*x)) - (15*Sqrt[a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])
/(4*b^(7/2))
```

Rubi [A] time = 0.064234, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{15\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{7/2}}+\frac{5x^{3/2}}{4b^2(a-bx)}-\frac{x^{5/2}}{2b(a-bx)^2}+\frac{15\sqrt{x}}{4b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(-a + b*x)^3,x]
```

```
[Out] (15*Sqrt[x])/(4*b^3) - x^(5/2)/(2*b*(a - b*x)^2) + (5*x^(3/2))/(4
*b^2*(a - b*x)) - (15*Sqrt[a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])
/(4*b^(7/2))
```

Rubi in Sympy [A] time = 13.3158, size = 73, normalized size = 0.87

$$-\frac{15\sqrt{a}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{7}{2}}}-\frac{x^{\frac{5}{2}}}{2b\left(a-bx\right)^2}+\frac{5x^{\frac{3}{2}}}{4b^2\left(a-bx\right)}+\frac{15\sqrt{x}}{4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x-a)**3,x)
```

```
[Out] -15*sqrt(a)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*b**(7/2)) - x**(5/2
)/(2*b*(a - b*x)**2) + 5*x**(3/2)/(4*b**2*(a - b*x)) + 15*sqrt(x)
/(4*b**3)
```

Mathematica [A] time = 0.0598567, size = 71, normalized size = 0.85

$$\frac{\sqrt{x}\left(15a^2-25abx+8b^2x^2\right)}{4b^3(a-bx)^2}-\frac{15\sqrt{a}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(-a + b*x)^3,x]
```

```
[Out] (Sqrt[x]*(15*a^2 - 25*a*b*x + 8*b^2*x^2))/(4*b^3*(a - b*x)^2) - (
15*Sqrt[a]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b^(7/2))
```

Maple [A] time = 0.017, size = 58, normalized size = 0.7

$$2\,\frac{a}{b^3}\left(\frac{1}{(bx-a)^2}\left(-\frac{9\,bx^{3/2}}{8}+\frac{7\,a\sqrt{x}}{8}\right)-\frac{15}{8\,\sqrt{ab}}Artanh\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)\right)+2\,\frac{\sqrt{x}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x-a)^3,x)
```

```
[Out] 2/b^3*a*((-9/8*b*x^(3/2)+7/8*a*x^(1/2))/(b*x-a)^2-15/8/(a*b)^(1/2
)*arctanh(x^(1/2)*b/(a*b)^(1/2)))+2*x^(1/2)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222187, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^{2}x^{2}-2\,abx+a^{2}\right)\sqrt{\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{\frac{a}{b}}+a}{bx-a}\right)+2\left(8\,b^{2}x^{2}-25\,abx+15\,a^{2}\right)\sqrt{x}}{8\left(b^{5}x^{2}-2\,ab^{4}x+a^{2}b^{3}\right)},\ -\frac{15\left(b^{2}x^{2}-2\,abx+a^{2}\right)\sqrt{-\frac{a}{b}}\arctan\left(\frac{\sqrt{x}}{\sqrt{-\frac{a}{b}}}\right)-\left(8\,b^{2}x^{2}-25\,abx+15\,a^{2}\right)\sqrt{x}}{4\left(b^{5}x^{2}-2\,ab^{4}x+a^{2}b^{3}\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(15*(b^2*x^2 - 2*a*b*x + a^2)*sqrt(a/b)*log((b*x - 2*b*sqrt(
x)*sqrt(a/b) + a)/(b*x - a)) + 2*(8*b^2*x^2 - 25*a*b*x + 15*a^2)*
sqrt(x))/(b^5*x^2 - 2*a*b^4*x + a^2*b^3), -1/4*(15*(b^2*x^2 - 2*a
*b*x + a^2)*sqrt(-a/b)*arctan(sqrt(x)/sqrt(-a/b)) - (8*b^2*x^2 -
25*a*b*x + 15*a^2)*sqrt(x))/(b^5*x^2 - 2*a*b^4*x + a^2*b^3)]
```

Sympy [A] time = 17.1137, size = 2468, normalized size = 29.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x-a)**3,x)
```

```
[Out] Piecewise((-30*a**(63/2)*b**12*x**(31/2)*acoth(sqrt(b)*sqrt(x)/sq
rt(a))/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2
) + 48*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) +
 8*a**27*b**(39/2)*x**(39/2)) - 15*I*pi*a**(63/2)*b**12*x**(31/2)
/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 48
*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**
27*b**(39/2)*x**(39/2)) + 120*a**(61/2)*b**13*x**(33/2)*acoth(sqr
t(b)*sqrt(x)/sqrt(a))/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**
(33/2)*x**(33/2) + 48*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37
/2)*x**(37/2) + 8*a**27*b**(39/2)*x**(39/2)) + 60*I*pi*a**(61/2)*
b**13*x**(33/2)/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2)
*x**(33/2) + 48*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x*
*(37/2) + 8*a**27*b**(39/2)*x**(39/2)) - 180*a**(59/2)*b**14*x**(
35/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**31*b**(31/2)*x**(31/2)
 - 32*a**30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/2)*x**(35/2) -
32*a**28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x**(39/2)) - 90*
I*pi*a**(59/2)*b**14*x**(35/2)/(8*a**31*b**(31/2)*x**(31/2) - 32*
```

a**30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/2)*x**(35/2) - 32*a**
28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x**(39/2)) + 120*a**(5
7/2)*b**15*x**(37/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**31*b**(
31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/
2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x
(39/2)) + 60*I*pi*a(57/2)*b**15*x**(37/2)/(8*a**31*b**(31/2)*
x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/2)*x**
(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x**(39/
2)) - 30*a**(55/2)*b**16*x**(39/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))
/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 48
*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**
27*b**(39/2)*x**(39/2)) - 15*I*pi*a**(55/2)*b**16*x**(39/2)/(8*a*
*31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 48*a**29
*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**27*b**
(39/2)*x**(39/2)) + 30*a**31*b**(25/2)*x**16/(8*a**31*b**(31/2)*x
(31/2) - 32*a30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/2)*x**(
35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x**(39/2
)) - 110*a**30*b**(27/2)*x**17/(8*a**31*b**(31/2)*x**(31/2) - 32*
a**30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/2)*x**(35/2) - 32*a**
28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x**(39/2)) + 146*a**29
*b**(29/2)*x**18/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2
)*x**(33/2) + 48*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x
(37/2) + 8*a27*b**(39/2)*x**(39/2)) - 82*a**28*b**(31/2)*x**1
9/(8*a**31*b**(31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 4
8*a**29*b**(35/2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a*
*27*b**(39/2)*x**(39/2)) + 16*a**27*b**(33/2)*x**20/(8*a**31*b**(
31/2)*x**(31/2) - 32*a**30*b**(33/2)*x**(33/2) + 48*a**29*b**(35/
2)*x**(35/2) - 32*a**28*b**(37/2)*x**(37/2) + 8*a**27*b**(39/2)*x
(39/2)), Abs(b*x/a) > 1), (-15*a(63/2)*b**12*x**(31/2)*atanh(
sqrt(b)*sqrt(x)/sqrt(a))/(4*a**31*b**(31/2)*x**(31/2) - 16*a**30*
b**(33/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(35/2) - 16*a**28*b**
(37/2)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2)) + 60*a**(61/2)*b*
*13*x**(33/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**31*b**(31/2)*x
(31/2) - 16*a30*b**(33/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(
35/2) - 16*a**28*b**(37/2)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2
)) - 90*a**(59/2)*b**14*x**(35/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/
(4*a**31*b**(31/2)*x**(31/2) - 16*a**30*b**(33/2)*x**(33/2) + 24*
a**29*b**(35/2)*x**(35/2) - 16*a**28*b**(37/2)*x**(37/2) + 4*a**2
7*b**(39/2)*x**(39/2)) + 60*a**(57/2)*b**15*x**(37/2)*atanh(sqrt(
b)*sqrt(x)/sqrt(a))/(4*a**31*b**(31/2)*x**(31/2) - 16*a**30*b**(3
3/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(35/2) - 16*a**28*b**(37/2
)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2)) - 15*a**(55/2)*b**16*x
(39/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a31*b**(31/2)*x**(31
/2) - 16*a**30*b**(33/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(35/2)
 - 16*a**28*b**(37/2)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2)) +
15*a**31*b**(25/2)*x**16/(4*a**31*b**(31/2)*x**(31/2) - 16*a**30*
b**(33/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(35/2) - 16*a**28*b**
(37/2)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2)) - 55*a**30*b**(27
/2)*x**17/(4*a**31*b**(31/2)*x**(31/2) - 16*a**30*b**(33/2)*x**(3
3/2) + 24*a**29*b**(35/2)*x**(35/2) - 16*a**28*b**(37/2)*x**(37/2
) + 4*a**27*b**(39/2)*x**(39/2)) + 73*a**29*b**(29/2)*x**18/(4*a*
*31*b**(31/2)*x**(31/2) - 16*a**30*b**(33/2)*x**(33/2) + 24*a**29
*b**(35/2)*x**(35/2) - 16*a**28*b**(37/2)*x**(37/2) + 4*a**27*b**
(39/2)*x**(39/2)) - 41*a**28*b**(31/2)*x**19/(4*a**31*b**(31/2)*x
(31/2) - 16*a30*b**(33/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(
35/2) - 16*a**28*b**(37/2)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2

```
)) + 8*a**27*b**(33/2)*x**20/(4*a**31*b**(31/2)*x**(31/2) - 16*a*
*30*b**(33/2)*x**(33/2) + 24*a**29*b**(35/2)*x**(35/2) - 16*a**28
*b**(37/2)*x**(37/2) + 4*a**27*b**(39/2)*x**(39/2)), True))
```

GIAC/XCAS [A] time = 0.208469, size = 85, normalized size = 1.01

$$\frac{15\,a\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\,\sqrt{-ab}b^3}+\frac{2\,\sqrt{x}}{b^3}-\frac{9\,abx^{\frac{3}{2}}-7\,a^2\sqrt{x}}{4\,(bx-a)^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x - a)^3,x, algorithm="giac")
```

```
[Out] 15/4*a*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^3) + 2*sqrt(x)/
b^3 - 1/4*(9*a*b*x^(3/2) - 7*a^2*sqrt(x))/((b*x - a)^2*b^3)
```

3.484 $\int \frac{x^{3/2}}{(-a+bx)^3} dx$

Optimal. Leaf size=72

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{5/2}}+\frac{3\sqrt{x}}{4b^2(a-bx)}-\frac{x^{3/2}}{2b(a-bx)^2}$$

```
[Out] -x^(3/2)/(2*b*(a - b*x)^2) + (3*Sqrt[x])/(4*b^2*(a - b*x)) - (3*A
rcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(5/2))
```

Rubi [A] time = 0.0549388, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{5/2}}+\frac{3\sqrt{x}}{4b^2(a-bx)}-\frac{x^{3/2}}{2b(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(-a + b*x)^3,x]
```

```
[Out] -x^(3/2)/(2*b*(a - b*x)^2) + (3*Sqrt[x])/(4*b^2*(a - b*x)) - (3*A
rcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(5/2))
```

Rubi in Sympy [A] time = 10.8165, size = 61, normalized size = 0.85

$$-\frac{x^{\frac{3}{2}}}{2b\left(a-bx\right)^2}+\frac{3\sqrt{x}}{4b^2\left(a-bx\right)}-\frac{3\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x-a)**3,x)
```

```
[Out] -x**(3/2)/(2*b*(a - b*x)**2) + 3*sqrt(x)/(4*b**2*(a - b*x)) - 3*a
tanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*sqrt(a)*b**(5/2))
```

Mathematica [A] time = 0.0555769, size = 60, normalized size = 0.83

$$\frac{\sqrt{x}(3a-5bx)}{4b^2(a-bx)^2}-\frac{3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(-a + b*x)^3,x]
```

```
[Out] (Sqrt[x]*(3*a - 5*b*x))/(4*b^2*(a - b*x)^2) - (3*ArcTanh[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(5/2))
```

Maple [A] time = 0.017, size = 52, normalized size = 0.7

$$2\,{\frac {1}{ \left(bx-a \right) ^{2}} \left(-5/8\,{\frac {{x}^{3/2}}{b}}+3/8\,{\frac {a\sqrt {x}}{{b}^{2}}} \right) }-{\frac {3}{4\,{b}^{2}}{\it Artanh} \left(b\sqrt {x}{\frac {1}{\sqrt {ab}}} \right) {\frac {1}{\sqrt {ab}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x-a)^3,x)
```

```
[Out] 2*(-5/8*x^(3/2)/b+3/8*a*x^(1/2)/b^2)/(b*x-a)^2-3/4/b^2/(a*b)^(1/2
)*arctanh(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220187, size = 1, normalized size = 0.01

$$\left[-\frac{2 \, \sqrt{a b}{\left(5 \, b x - 3 \, a\right)} \sqrt{x} - 3 \,{\left(b^{2} x^{2} - 2 \, a b x + a^{2}\right)} \log\left(-\frac{2 \, a b \sqrt{x} - \sqrt{a b}{\left(b x + a\right)}}{b x - a}\right)}{8 \,{\left(b^{4} x^{2} - 2 \, a b^{3} x + a^{2} b^{2}\right)} \sqrt{a b}}, -\frac{\sqrt{-a b}{\left(5 \, b x - 3 \, a\right)} \sqrt{x} - 3 \,{\left(b^{2} x^{2} - 2 \, a b x + a^{2}\right)} \arctan\left(\frac{a}{\sqrt{-a b} \sqrt{x}}\right)}{4 \,{\left(b^{4} x^{2} - 2 \, a b^{3} x + a^{2} b^{2}\right)} \sqrt{-a b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(2*sqrt(a*b)*(5*b*x - 3*a)*sqrt(x) - 3*(b^2*x^2 - 2*a*b*x +
 a^2)*log(-(2*a*b*sqrt(x) - sqrt(a*b)*(b*x + a))/(b*x - a)))/((b^
4*x^2 - 2*a*b^3*x + a^2*b^2)*sqrt(a*b)), -1/4*(sqrt(-a*b)*(5*b*x
- 3*a)*sqrt(x) - 3*(b^2*x^2 - 2*a*b*x + a^2)*arctan(a/(sqrt(-a*b)
*sqrt(x))))/((b^4*x^2 - 2*a*b^3*x + a^2*b^2)*sqrt(-a*b))]
```

Sympy [A] time = 18.6376, size = 11951, normalized size = 165.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x-a)**3,x)
```

```
[Out] Piecewise((-6*a**(83/2)*b**12*x**(29/2)*acoth(sqrt(b)*sqrt(x)/sqr
t(a))/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2)
 + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2)
 + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2
) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/
2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/
2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2))
- 3*I*pi*a**(83/2)*b**12*x**(29/2)/(8*a**42*b**(29/2)*x**(29/2) -
 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1
320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) -
3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) -
 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2)
- 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) -
8*a**31*b**(51/2)*x**(51/2)) + 66*a**(81/2)*b**13*x**(31/2)*acoth
(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41
*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39
*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**3
7*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**
35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**
33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b
**(51/2)*x**(51/2)) + 33*I*pi*a**(81/2)*b**13*x**(31/2)/(8*a**42*
b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b*
*(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b
**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*
b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34
*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b
**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) - 330*a**(79/2)
*b**14*x**(33/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**42*b**(29/2
)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*
x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)
*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2
)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/
2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)
*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) - 165*I*pi*a**(79/2)*b*
*14*x**(33/2)/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x
```

```
**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x
**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*
x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)
*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)
*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**
(51/2)) + 990*a**(77/2)*b**15*x**(35/2)*acoth(sqrt(b)*sqrt(x)/sqr
t(a))/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2)
 + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2)
 + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2
) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/
2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/
2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2))
+ 495*I*pi*a**(77/2)*b**15*x**(35/2)/(8*a**42*b**(29/2)*x**(29/2)
 - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) -
 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2)
- 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2)
 - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2
) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2)
- 8*a**31*b**(51/2)*x**(51/2)) - 1980*a**(75/2)*b**16*x**(37/2)*a
coth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**42*b**(29/2)*x**(29/2) - 88*a
**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a
**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*
a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640
*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440
*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**
31*b**(51/2)*x**(51/2)) - 990*I*pi*a**(75/2)*b**16*x**(37/2)/(8*a
**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**
40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a*
*38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a
**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*
a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a*
*32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) + 2772*a**
(73/2)*b**17*x**(39/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**42*b*
*(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(
33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**
(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b*
*(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b
**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**
(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) + 1386*I*pi*a**(7
3/2)*b**17*x**(39/2)/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(
31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(
35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**
(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b*
*(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b*
*(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51
/2)*x**(51/2)) - 2772*a**(71/2)*b**18*x**(41/2)*acoth(sqrt(b)*sqr
t(x)/sqrt(a))/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x
**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x
**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*
x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)
*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)
*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**
(51/2)) - 1386*I*pi*a**(71/2)*b**18*x**(41/2)/(8*a**42*b**(29/2)*
x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x*
*(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x
**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*
```

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x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)
*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x
**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) + 1980*a**(69/2)*b**19*x*
*(43/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**42*b**(29/2)*x**(29/
2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2)
 - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2
) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/
2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45
/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2
) - 8*a**31*b**(51/2)*x**(51/2)) + 990*I*pi*a**(69/2)*b**19*x**(4
3/2)/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2)
+ 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2)
+ 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2)
 + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2
) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2
) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) -
 990*a**(67/2)*b**20*x**(45/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*
a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a*
*40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a
**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*
a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320
*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a
**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) - 495*I*p
i*a**(67/2)*b**20*x**(45/2)/(8*a**42*b**(29/2)*x**(29/2) - 88*a**
41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**
39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a*
*37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a
**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a
**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31
*b**(51/2)*x**(51/2)) + 330*a**(65/2)*b**21*x**(47/2)*acoth(sqrt(
b)*sqrt(x)/sqrt(a))/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(3
1/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(3
5/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(
39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**
(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**
(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/
2)*x**(51/2)) + 165*I*pi*a**(65/2)*b**21*x**(47/2)/(8*a**42*b**(2
9/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/
2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37
/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(4
1/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(
45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49
/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) - 66*a**(63/2)*b**22
*x**(49/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**42*b**(29/2)*x**(
29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33
/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(3
7/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(
41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**
(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(4
9/2) - 8*a**31*b**(51/2)*x**(51/2)) - 33*I*pi*a**(63/2)*b**22*x**
(49/2)/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2
) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2
) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/
2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43
/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47
/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2))
```

+ 6*a**(61/2)*b**23*x**(51/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*
a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a*
*40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a
38*b(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*
a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320
*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a
32*b(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) + 3*I*pi*
a**(61/2)*b**23*x**(51/2)/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41
*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39
*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**3
7*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**
35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**
33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b
(51/2)*x(51/2)) + 6*a**41*b**(25/2)*x**15/(8*a**42*b**(29/2)*
x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x*
*(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x
(37/2) - 3696*a37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*
x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)
*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x
(49/2) - 8*a31*b**(51/2)*x**(51/2)) - 64*a**40*b**(27/2)*x**1
6/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 4
40*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2
640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) +
3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) +
1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) +
88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) + 30
6*a**39*b**(29/2)*x**17/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b
(31/2)*x(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b
(35/2)*x(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*
b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35
*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33
*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**
(51/2)*x**(51/2)) - 864*a**38*b**(31/2)*x**18/(8*a**42*b**(29/2)*
x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x*
*(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x
(37/2) - 3696*a37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*
x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)
*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x
(49/2) - 8*a31*b**(51/2)*x**(51/2)) + 1596*a**37*b**(33/2)*x*
*19/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) +
440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) +
2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2)
+ 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2)
+ 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2)
+ 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) -
2016*a**36*b**(35/2)*x**20/(8*a**42*b**(29/2)*x**(29/2) - 88*a**4
1*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**3
9*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**
37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a*
*35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a*
*33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*
b**(51/2)*x**(51/2)) + 1764*a**35*b**(37/2)*x**21/(8*a**42*b**(29
/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2
)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/
2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41
/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(4

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5/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/
2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) - 1056*a**34*b**(39/2
)*x**22/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/
2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/
2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39
/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(4
3/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(4
7/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)
) + 414*a**33*b**(41/2)*x**23/(8*a**42*b**(29/2)*x**(29/2) - 88*a
**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a
**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*
a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640
*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440
*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**
31*b**(51/2)*x**(51/2)) - 96*a**32*b**(43/2)*x**24/(8*a**42*b**(2
9/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2) + 440*a**40*b**(33/
2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2) + 2640*a**38*b**(37
/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/2) + 3696*a**36*b**(4
1/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43/2) + 1320*a**34*b**(
45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47/2) + 88*a**32*b**(49
/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2)) + 10*a**31*b**(45/2)
*x**25/(8*a**42*b**(29/2)*x**(29/2) - 88*a**41*b**(31/2)*x**(31/2
) + 440*a**40*b**(33/2)*x**(33/2) - 1320*a**39*b**(35/2)*x**(35/2
) + 2640*a**38*b**(37/2)*x**(37/2) - 3696*a**37*b**(39/2)*x**(39/
2) + 3696*a**36*b**(41/2)*x**(41/2) - 2640*a**35*b**(43/2)*x**(43
/2) + 1320*a**34*b**(45/2)*x**(45/2) - 440*a**33*b**(47/2)*x**(47
/2) + 88*a**32*b**(49/2)*x**(49/2) - 8*a**31*b**(51/2)*x**(51/2))
, Abs(b*x/a) > 1), (-3*a**(83/2)*b**12*x**(29/2)*atanh(sqrt(b)*sq
rt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*
x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x
**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*
x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)
*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*
x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(
51/2)) + 33*a**(81/2)*b**13*x**(31/2)*atanh(sqrt(b)*sqrt(x)/sqrt(
a))/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) +
 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) +
1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) +
 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2)
+ 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) +
 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) - 16
5*a**(79/2)*b**14*x**(33/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**
42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40
*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38
*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**3
6*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**3
4*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*
b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) + 495*a**(77/2
)*b**15*x**(35/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/
2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)
*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)
*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2
)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2
)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*
x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) - 990*a**(75/2)*b**16*x*
*(37/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/
```

2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2)
 - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2)
 - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2
) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2
) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2)
- 4*a**31*b**(51/2)*x**(51/2)) + 1386*a**(73/2)*b**17*x**(39/2)*a
tanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) - 44*a
41*b(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a*
*39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a
37*b(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*
a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a
33*b(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31
*b**(51/2)*x**(51/2)) - 1386*a**(71/2)*b**18*x**(41/2)*atanh(sqrt
(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(
31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(3
5/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(
39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**
(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(
47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2
)*x**(51/2)) + 990*a**(69/2)*b**19*x**(43/2)*atanh(sqrt(b)*sqrt(x
)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(
31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(3
5/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(
39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**
(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(
47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2
)) - 495*a**(67/2)*b**20*x**(45/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))
/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 22
0*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 132
0*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 18
48*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 6
60*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44
*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) + 165*a
(65/2)*b21*x**(47/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*
b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b*
*(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b*
*(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b
(41/2)*x(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b
(45/2)*x(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**
(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) - 33*a**(63/2)*b*
*22*x**(49/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x
(29/2) - 44*a41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**
(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**
(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x*
*(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x*
*(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(
49/2) - 4*a**31*b**(51/2)*x**(51/2)) + 3*a**(61/2)*b**23*x**(51/2
)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**42*b**(29/2)*x**(29/2) - 4
4*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660
*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 184
8*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 13
20*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 22
0*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a*
*31*b**(51/2)*x**(51/2)) + 3*a**41*b**(25/2)*x**15/(4*a**42*b**(2
9/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/
2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/

2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41
/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45
/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2
)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) - 32*a**40*b**(27/2)*x
16/(4*a42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2)
+ 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) +
1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2)
+ 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2)
+ 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2)
+ 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) + 1
53*a**39*b**(29/2)*x**17/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*
b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b
(35/2)*x(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*
b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35
*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*
b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(
51/2)*x**(51/2)) - 432*a**38*b**(31/2)*x**18/(4*a**42*b**(29/2)*x
(29/2) - 44*a41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**
(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**
(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x*
*(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x*
*(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(
49/2) - 4*a**31*b**(51/2)*x**(51/2)) + 798*a**37*b**(33/2)*x**19/
(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220
*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320
*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 184
8*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 66
0*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*
a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) - 1008*a
36*b(35/2)*x**20/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(
31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(3
5/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(
39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**
(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(
47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2
)*x**(51/2)) + 882*a**35*b**(37/2)*x**21/(4*a**42*b**(29/2)*x**(2
9/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/
2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/
2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41
/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45
/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2
) - 4*a**31*b**(51/2)*x**(51/2)) - 528*a**34*b**(39/2)*x**22/(4*a
42*b(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**
40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**
38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a*
*36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a*
*34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**3
2*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)) + 207*a**33*
b**(41/2)*x**23/(4*a**42*b**(29/2)*x**(29/2) - 44*a**41*b**(31/2)
*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 660*a**39*b**(35/2)*
x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1848*a**37*b**(39/2)
*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) - 1320*a**35*b**(43/2
)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) - 220*a**33*b**(47/2)
*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*a**31*b**(51/2)*x**
(51/2)) - 48*a**32*b**(43/2)*x**24/(4*a**42*b**(29/2)*x**(29/2) -
44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(33/2)*x**(33/2) - 6

```
60*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(37/2)*x**(37/2) - 1
848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(41/2)*x**(41/2) -
1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(45/2)*x**(45/2) -
220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49/2)*x**(49/2) - 4*
a**31*b**(51/2)*x**(51/2)) + 5*a**31*b**(45/2)*x**25/(4*a**42*b**
(29/2)*x**(29/2) - 44*a**41*b**(31/2)*x**(31/2) + 220*a**40*b**(3
3/2)*x**(33/2) - 660*a**39*b**(35/2)*x**(35/2) + 1320*a**38*b**(3
7/2)*x**(37/2) - 1848*a**37*b**(39/2)*x**(39/2) + 1848*a**36*b**(
41/2)*x**(41/2) - 1320*a**35*b**(43/2)*x**(43/2) + 660*a**34*b**(
45/2)*x**(45/2) - 220*a**33*b**(47/2)*x**(47/2) + 44*a**32*b**(49
/2)*x**(49/2) - 4*a**31*b**(51/2)*x**(51/2)), True))
```

GIAC/XCAS [A] time = 0.208014, size = 69, normalized size = 0.96

$$\frac{3\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\,\sqrt{-ab}b^2} - \frac{5\,bx^{\frac{3}{2}} - 3\,a\sqrt{x}}{4\,(bx-a)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x - a)^3,x, algorithm="giac")
```

```
[Out] 3/4*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*b^2) - 1/4*(5*b*x^(3
/2) - 3*a*sqrt(x))/((b*x - a)^2*b^2)
```

3.485 $\int \frac{\sqrt{x}}{(-a+bx)^3}\,dx$

Optimal. Leaf size=75

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{3/2}}+\frac{\sqrt{x}}{4ab(a-bx)}-\frac{\sqrt{x}}{2b(a-bx)^2}$$

```
[Out] -Sqrt[x]/(2*b*(a - b*x)^2) + Sqrt[x]/(4*a*b*(a - b*x)) + ArcTanh[
(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(4*a^(3/2)*b^(3/2))
```

Rubi [A] time = 0.0547101, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{3/2}}+\frac{\sqrt{x}}{4ab(a-bx)}-\frac{\sqrt{x}}{2b(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(-a + b*x)^3,x]
```

```
[Out] -Sqrt[x]/(2*b*(a - b*x)^2) + Sqrt[x]/(4*a*b*(a - b*x)) + ArcTanh[
(Sqrt[b]*Sqrt[x])/Sqrt[a]]/(4*a^(3/2)*b^(3/2))
```

Rubi in Sympy [A] time = 10.7141, size = 58, normalized size = 0.77

$$-\frac{\sqrt{x}}{2b\left(a-bx\right)^2}+\frac{\sqrt{x}}{4ab\left(a-bx\right)}+\frac{\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{3}{2}}b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x-a)**3,x)
```

```
[Out] -sqrt(x)/(2*b*(a - b*x)**2) + sqrt(x)/(4*a*b*(a - b*x)) + atanh(s
qrt(b)*sqrt(x)/sqrt(a))/(4*a**(3/2)*b**(3/2))
```

Mathematica [A] time = 0.0531354, size = 60, normalized size = 0.8

$$\frac{\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{3/2}}-\frac{\sqrt{x}(a+bx)}{4ab(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(-a + b*x)^3,x]
```

```
[Out] -(Sqrt[x]*(a + b*x))/(4*a*b*(a - b*x)^2) + ArcTanh[(Sqrt[b]*Sqrt[
x])/Sqrt[a]]/(4*a^(3/2)*b^(3/2))
```

Maple [A] time = 0.016, size = 54, normalized size = 0.7

$$2\,{\frac {1}{ \left(bx-a \right) ^{2}} \left(-1/8\,{\frac {{x}^{3/2}}{a}}-1/8\,{\frac {\sqrt {x}}{b}} \right) }+{\frac {1}{4\,ab}{\it Artanh} \left(b\sqrt {x}{\frac {1}{\sqrt {ab}}} \right) {\frac {1}{\sqrt {ab}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x-a)^3,x)
```

```
[Out] 2*(-1/8/a*x^(3/2)-1/8*x^(1/2)/b)/(b*x-a)^2+1/4/b/a/(a*b)^(1/2)*ar
ctanh(x^(1/2)*b/(a*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220302, size = 1, normalized size = 0.01

$$\left[-\frac{2 \, \sqrt{a b}{\left(b x + a\right)} \sqrt{x} - {\left(b^{2} x^{2} - 2 \, a b x + a^{2}\right)} \log\left(\frac{2 \, a b \sqrt{x} + \sqrt{a b}{\left(b x + a\right)}}{b x - a}\right)}{8 \, {\left(a b^{3} x^{2} - 2 \, a^{2} b^{2} x + a^{3} b\right)} \sqrt{a b}}, -\frac{\sqrt{-a b}{\left(b x + a\right)} \sqrt{x} + {\left(b^{2} x^{2} - 2 \, a b x + a^{2}\right)} \arctan\left(\frac{a}{\sqrt{-a b} \sqrt{x}}\right)}{4 \, {\left(a b^{3} x^{2} - 2 \, a^{2} b^{2} x + a^{3} b\right)} \sqrt{-a b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(2*sqrt(a*b)*(b*x + a)*sqrt(x) - (b^2*x^2 - 2*a*b*x + a^2)*
log((2*a*b*sqrt(x) + sqrt(a*b)*(b*x + a))/(b*x - a)))/((a*b^3*x^2
 - 2*a^2*b^2*x + a^3*b)*sqrt(a*b)), -1/4*(sqrt(-a*b)*(b*x + a)*sq
rt(x) + (b^2*x^2 - 2*a*b*x + a^2)*arctan(a/(sqrt(-a*b)*sqrt(x))))
/((a*b^3*x^2 - 2*a^2*b^2*x + a^3*b)*sqrt(-a*b))]
```

Sympy [A] time = 9.62246, size = 6882, normalized size = 91.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x-a)**3,x)
```

```
[Out] Piecewise((2*a**(47/2)*b**2*x**(7/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*
a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a
**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a*
*19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*
b**(23/2)*x**(23/2)) + I*pi*a**(47/2)*b**2*x**(7/2)/(8*a**25*b**(
7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11/2)*
x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/2)*x
**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2)*x*
*(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x**(23
/2)) - 16*a**(45/2)*b**3*x**(9/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/
(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**
23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**2
1*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19
*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**
(23/2)*x**(23/2)) - 8*I*pi*a**(45/2)*b**3*x**(9/2)/(8*a**25*b**(7
/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11/2)*x
**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/2)*x*
*(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2)*x**
(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x**(23/
2)) + 56*a**(43/2)*b**4*x**(11/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/
(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**
23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**2
1*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19
*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**
(23/2)*x**(23/2)) + 28*I*pi*a**(43/2)*b**4*x**(11/2)/(8*a**25*b**
(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11/2)
*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/2)*
x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2)*x
**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x**(2
3/2)) - 112*a**(41/2)*b**5*x**(13/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*
a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a
**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a*
*19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*
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b**(23/2)*x**(23/2)) - 56*I*pi*a**(41/2)*b**5*x**(13/2)/(8*a**25*
b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11
/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/
2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2
)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x*
*(23/2)) + 140*a**(39/2)*b**6*x**(15/2)*acoth(sqrt(b)*sqrt(x)/sqr
t(a))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 2
24*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 56
0*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224
*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**
17*b**(23/2)*x**(23/2)) + 70*I*pi*a**(39/2)*b**6*x**(15/2)/(8*a**
25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**
(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(
15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(1
9/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)
*x**(23/2)) - 112*a**(37/2)*b**7*x**(17/2)*acoth(sqrt(b)*sqrt(x)/
sqrt(a))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2)
+ 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) +
560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) +
224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*
a**17*b**(23/2)*x**(23/2)) - 56*I*pi*a**(37/2)*b**7*x**(17/2)/(8*
a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*
b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b
(15/2)*x(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b*
*(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23
/2)*x**(23/2)) + 56*a**(35/2)*b**8*x**(19/2)*acoth(sqrt(b)*sqrt(x
)/sqrt(a))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2
) + 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2)
+ 560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2)
+ 224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) +
8*a**17*b**(23/2)*x**(23/2)) + 28*I*pi*a**(35/2)*b**8*x**(19/2)/(
8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**2
3*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21
*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*
b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(
23/2)*x**(23/2)) - 16*a**(33/2)*b**9*x**(21/2)*acoth(sqrt(b)*sqrt
(x)/sqrt(a))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9
/2) + 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/
2) + 560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2
) + 224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2)
+ 8*a**17*b**(23/2)*x**(23/2)) - 8*I*pi*a**(33/2)*b**9*x**(21/2)/
(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**
23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**2
1*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19
*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**
(23/2)*x**(23/2)) + 2*a**(31/2)*b**10*x**(23/2)*acoth(sqrt(b)*sqr
t(x)/sqrt(a))/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(
9/2) + 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13
/2) + 560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/
2) + 224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2)
+ 8*a**17*b**(23/2)*x**(23/2)) + I*pi*a**(31/2)*b**10*x**(23/2)/
(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**
23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**2
1*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19
*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**
(23/2)*x**(23/2)) - 2*a**23*b**(5/2)*x**4/(8*a**25*b**(7/2)*x**(7

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/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11/2)*x**(11/2)
- 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/2)*x**(15/2) -
 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2)*x**(19/2) -
64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x**(23/2)) + 10*
a**22*b**(7/2)*x**5/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2
)*x**(9/2) + 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*
x**(13/2) + 560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x
**(17/2) + 224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**
(21/2) + 8*a**17*b**(23/2)*x**(23/2)) - 18*a**21*b**(9/2)*x**6/(8
*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23
*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*
b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b
**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(2
3/2)*x**(23/2)) + 10*a**20*b**(11/2)*x**7/(8*a**25*b**(7/2)*x**(7
/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11/2)*x**(11/2)
- 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/2)*x**(15/2) -
 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2)*x**(19/2) -
64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x**(23/2)) + 10*
a**19*b**(13/2)*x**8/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/
2)*x**(9/2) + 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)
*x**(13/2) + 560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*
x**(17/2) + 224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x*
*(21/2) + 8*a**17*b**(23/2)*x**(23/2)) - 18*a**18*b**(15/2)*x**9/
(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**
23*b**(11/2)*x**(11/2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**2
1*b**(15/2)*x**(15/2) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19
*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**
(23/2)*x**(23/2)) + 10*a**17*b**(17/2)*x**10/(8*a**25*b**(7/2)*x*
*(7/2) - 64*a**24*b**(9/2)*x**(9/2) + 224*a**23*b**(11/2)*x**(11/
2) - 448*a**22*b**(13/2)*x**(13/2) + 560*a**21*b**(15/2)*x**(15/2
) - 448*a**20*b**(17/2)*x**(17/2) + 224*a**19*b**(19/2)*x**(19/2)
 - 64*a**18*b**(21/2)*x**(21/2) + 8*a**17*b**(23/2)*x**(23/2)) -
2*a**16*b**(19/2)*x**11/(8*a**25*b**(7/2)*x**(7/2) - 64*a**24*b**
(9/2)*x**(9/2) + 224*a**23*b**(11/2)*x**(11/2) - 448*a**22*b**(13
/2)*x**(13/2) + 560*a**21*b**(15/2)*x**(15/2) - 448*a**20*b**(17/
2)*x**(17/2) + 224*a**19*b**(19/2)*x**(19/2) - 64*a**18*b**(21/2)
*x**(21/2) + 8*a**17*b**(23/2)*x**(23/2)), Abs(b*x/a) > 1), (a**(
47/2)*b**2*x**(7/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(7
/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x
**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x*
*(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**
(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/
2)) - 8*a**(45/2)*b**3*x**(9/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4
*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23
*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*
b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b
**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(2
3/2)*x**(23/2)) + 28*a**(43/2)*b**4*x**(11/2)*atanh(sqrt(b)*sqrt(
x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/
2) + 112*a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2
) + 280*a**21*b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2)
 + 112*a**19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) +
 4*a**17*b**(23/2)*x**(23/2)) - 56*a**(41/2)*b**5*x**(13/2)*atanh
(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b
**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(
13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) - 224*a**20*b**(1
```

7/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/
2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) + 70*a**(39/2)*b**6*x
(15/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a25*b**(7/2)*x**(7/2
) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) -
224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) - 2
24*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) - 32
*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) - 56*a*
*(37/2)*b**7*x**(17/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b*
*(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2
)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)
*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*
x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(
23/2)) + 28*a**(35/2)*b**8*x**(19/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a
))/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*
a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a
21*b(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a*
*19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*
b**(23/2)*x**(23/2)) - 8*a**(33/2)*b**9*x**(21/2)*atanh(sqrt(b)*s
qrt(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x*
*(9/2) + 112*a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(
13/2) + 280*a**21*b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(1
7/2) + 112*a**19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/
2) + 4*a**17*b**(23/2)*x**(23/2)) + a**(31/2)*b**10*x**(23/2)*ata
nh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24
*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) - 224*a**22*b*
*(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) - 224*a**20*b**
(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) - 32*a**18*b**(2
1/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) - a**23*b**(5/2)*x*
*4/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*
a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a
21*b(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a*
*19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*
b**(23/2)*x**(23/2)) + 5*a**22*b**(7/2)*x**5/(4*a**25*b**(7/2)*x*
*(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/
2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2
) - 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2)
 - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) -
9*a**21*b**(9/2)*x**6/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9
/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2
)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)
*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x
(21/2) + 4*a17*b**(23/2)*x**(23/2)) + 5*a**20*b**(11/2)*x**7/
(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**
23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a**2
1*b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a**19
*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**
(23/2)*x**(23/2)) + 5*a**19*b**(13/2)*x**8/(4*a**25*b**(7/2)*x**(
7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2)
 - 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2)
- 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) -
 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)) - 9*
a**18*b**(15/2)*x**9/(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/
2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)
*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)*
x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x*
*(21/2) + 4*a**17*b**(23/2)*x**(23/2)) + 5*a**17*b**(17/2)*x**10/

```
(4*a**25*b**(7/2)*x**(7/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**
23*b**(11/2)*x**(11/2) - 224*a**22*b**(13/2)*x**(13/2) + 280*a**2
1*b**(15/2)*x**(15/2) - 224*a**20*b**(17/2)*x**(17/2) + 112*a**19
*b**(19/2)*x**(19/2) - 32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**
(23/2)*x**(23/2)) - a**16*b**(19/2)*x**11/(4*a**25*b**(7/2)*x**(7
/2) - 32*a**24*b**(9/2)*x**(9/2) + 112*a**23*b**(11/2)*x**(11/2)
- 224*a**22*b**(13/2)*x**(13/2) + 280*a**21*b**(15/2)*x**(15/2) -
 224*a**20*b**(17/2)*x**(17/2) + 112*a**19*b**(19/2)*x**(19/2) -
32*a**18*b**(21/2)*x**(21/2) + 4*a**17*b**(23/2)*x**(23/2)), True
))
```

GIAC/XCAS [A] time = 0.207371, size = 74, normalized size = 0.99

$$-\frac{\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\sqrt{-ab}ab}-\frac{bx^{\frac{3}{2}}+a\sqrt{x}}{4\,(bx-a)^2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x - a)^3,x, algorithm="giac")
```

```
[Out] -1/4*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a*b) - 1/4*(b*x^(3/
2) + a*sqrt(x))/((b*x - a)^2*a*b)
```

3.486 $\int \frac{1}{\sqrt{x}(-a+bx)^3}\,dx$

Optimal. Leaf size=72

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}}-\frac{3\sqrt{x}}{4a^2(a-bx)}-\frac{\sqrt{x}}{2a(a-bx)^2}$$

```
[Out] -Sqrt[x]/(2*a*(a - b*x)^2) - (3*Sqrt[x])/(4*a^2*(a - b*x)) - (3*A
rcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*Sqrt[b])
```

Rubi [A] time = 0.0543917, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}}-\frac{3\sqrt{x}}{4a^2(a-bx)}-\frac{\sqrt{x}}{2a(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(-a + b*x)^3),x]
```

```
[Out] -Sqrt[x]/(2*a*(a - b*x)^2) - (3*Sqrt[x])/(4*a^2*(a - b*x)) - (3*A
rcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*Sqrt[b])
```

Rubi in Sympy [A] time = 10.3299, size = 63, normalized size = 0.88

$$-\frac{\sqrt{x}}{2a\left(a-bx\right)^2}-\frac{3\sqrt{x}}{4a^2\left(a-bx\right)}-\frac{3\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{5}{2}}\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-a)**3/x**(1/2),x)
```

```
[Out] -sqrt(x)/(2*a*(a - b*x)**2) - 3*sqrt(x)/(4*a**2*(a - b*x)) - 3*at
anh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(5/2)*sqrt(b))
```

Mathematica [A] time = 0.0487644, size = 60, normalized size = 0.83

$$\frac{\sqrt{x}(3bx-5a)}{4a^2(a-bx)^2}-\frac{3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(-a + b*x)^3),x]
```

```
[Out] (Sqrt[x]*(-5*a + 3*b*x))/(4*a^2*(a - b*x)^2) - (3*ArcTanh[(Sqrt[b
]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*Sqrt[b])
```

Maple [A] time = 0.011, size = 63, normalized size = 0.9

$$-\frac{1}{2\,a\,(bx-a)^{2}}\sqrt{x}-\frac{3}{2\,a}\left(-\frac{1}{2\,a\,(bx-a)}\sqrt{x}+\frac{1}{2\,a}\mathit{Artanh}\left(b\sqrt{x}\frac{1}{\sqrt{ab}}\right)\frac{1}{\sqrt{ab}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-a)^3/x^(1/2),x)
```

```
[Out] -1/2*x^(1/2)/a/(b*x-a)^2-3/2/a*(-1/2*x^(1/2)/a/(b*x-a)+1/2/a/(a*b
)^(1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219454, size = 1, normalized size = 0.01

$$\left[\frac{2\,\sqrt{ab}(3\,bx-5\,a)\sqrt{x}+3\,\left(b^{2}x^{2}-2\,abx+a^{2}\right)\log\left(-\frac{2\,ab\sqrt{x}-\sqrt{ab}(bx+a)}{bx-a}\right)}{8\,(a^{2}b^{2}x^{2}-2\,a^{3}bx+a^{4})\sqrt{ab}},\frac{\sqrt{-ab}(3\,bx-5\,a)\sqrt{x}+3\,\left(b^{2}x^{2}-2\,abx+a^{2}\right)\text{arctar}}{4\,(a^{2}b^{2}x^{2}-2\,a^{3}bx+a^{4})\sqrt{-ab}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [1/8*(2*sqrt(a*b)*(3*b*x - 5*a)*sqrt(x) + 3*(b^2*x^2 - 2*a*b*x +
a^2)*log(-(2*a*b*sqrt(x) - sqrt(a*b)*(b*x + a))/(b*x - a)))/((a^2
```

```
*b^2*x^2 - 2*a^3*b*x + a^4)*sqrt(a*b)), 1/4*(sqrt(-a*b)*(3*b*x -
5*a)*sqrt(x) + 3*(b^2*x^2 - 2*a*b*x + a^2)*arctan(a/(sqrt(-a*b)*s
qrt(x))))/((a^2*b^2*x^2 - 2*a^3*b*x + a^4)*sqrt(-a*b))]
```

Sympy [A] time = 10.597, size = 1501, normalized size = 20.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-a)**3/x**(1/2),x)
```

```
[Out] Piecewise((-6*a**(11/2)*sqrt(x)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8
*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a**6*b**(5
/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) - 3*I*pi*a**(11/2)*sqrt(
x)/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a**6*
b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) + 18*a**(9/2)*b*x**
(3/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**8*sqrt(b)*sqrt(x) - 24
*a**7*b**(3/2)*x**(3/2) + 24*a**6*b**(5/2)*x**(5/2) - 8*a**5*b**(
7/2)*x**(7/2)) + 9*I*pi*a**(9/2)*b*x**(3/2)/(8*a**8*sqrt(b)*sqrt(
x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a**6*b**(5/2)*x**(5/2) - 8*a*
*5*b**(7/2)*x**(7/2)) - 18*a**(7/2)*b**2*x**(5/2)*acoth(sqrt(b)*s
qrt(x)/sqrt(a))/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/
2) + 24*a**6*b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) - 9*I*
pi*a**(7/2)*b**2*x**(5/2)/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3
/2)*x**(3/2) + 24*a**6*b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/
2)) + 6*a**(5/2)*b**3*x**(7/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*
a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a**6*b**(5/
2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) + 3*I*pi*a**(5/2)*b**3*x*
*(7/2)/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a
**6*b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) - 10*a**5*sqrt(
b)*x/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a**
6*b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) + 16*a**4*b**(3/2
)*x**2/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*a
**6*b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)) - 6*a**3*b**(5/
2)*x**3/(8*a**8*sqrt(b)*sqrt(x) - 24*a**7*b**(3/2)*x**(3/2) + 24*
a**6*b**(5/2)*x**(5/2) - 8*a**5*b**(7/2)*x**(7/2)), Abs(b*x/a) >
1), (-3*a**(11/2)*sqrt(x)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**8*
sqrt(b)*sqrt(x) - 12*a**7*b**(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x*
*(5/2) - 4*a**5*b**(7/2)*x**(7/2)) + 9*a**(9/2)*b*x**(3/2)*atanh(
sqrt(b)*sqrt(x)/sqrt(a))/(4*a**8*sqrt(b)*sqrt(x) - 12*a**7*b**(3/
2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2) - 4*a**5*b**(7/2)*x**(7/2
)) - 9*a**(7/2)*b**2*x**(5/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a
**8*sqrt(b)*sqrt(x) - 12*a**7*b**(3/2)*x**(3/2) + 12*a**6*b**(5/2
)*x**(5/2) - 4*a**5*b**(7/2)*x**(7/2)) + 3*a**(5/2)*b**3*x**(7/2)
*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**8*sqrt(b)*sqrt(x) - 12*a**7
*b**(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2) - 4*a**5*b**(7/2)*
x**(7/2)) - 5*a**5*sqrt(b)*x/(4*a**8*sqrt(b)*sqrt(x) - 12*a**7*b*
*(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2) - 4*a**5*b**(7/2)*x**
(7/2)) + 8*a**4*b**(3/2)*x**2/(4*a**8*sqrt(b)*sqrt(x) - 12*a**7*b
**(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2) - 4*a**5*b**(7/2)*x*
*(7/2)) - 3*a**3*b**(5/2)*x**3/(4*a**8*sqrt(b)*sqrt(x) - 12*a**7*
```

```
b**(3/2)*x**(3/2) + 12*a**6*b**(5/2)*x**(5/2) - 4*a**5*b**(7/2)*x
**(7/2)), True))
```

GIAC/XCAS [A] time = 0.204877, size = 69, normalized size = 0.96

$$\frac{3\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\sqrt{-ab}a^2}+\frac{3\,bx^{\frac{3}{2}}-5\,a\sqrt{x}}{4\,(bx-a)^2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*sqrt(x)),x, algorithm="giac")
```

```
[Out] 3/4*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^2) + 1/4*(3*b*x^(3
/2) - 5*a*sqrt(x))/((b*x - a)^2*a^2)
```

3.487 $\int \frac{1}{x^{3/2}(-a+bx)^3}\,dx$

Optimal. Leaf size=84

$$-\frac{15\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}}+\frac{15}{4a^3\sqrt{x}}-\frac{5}{4a^2\sqrt{x}(a-bx)}-\frac{1}{2a\sqrt{x}(a-bx)^2}$$

```
[Out] 15/(4*a^3*Sqrt[x]) - 1/(2*a*Sqrt[x]*(a - b*x)^2) - 5/(4*a^2*Sqrt[
x]*(a - b*x)) - (15*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
4*a^(7/2))
```

Rubi [A] time = 0.0667619, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{15\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}}+\frac{15}{4a^3\sqrt{x}}-\frac{5}{4a^2\sqrt{x}(a-bx)}-\frac{1}{2a\sqrt{x}(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(-a + b*x)^3),x]
```

```
[Out] 15/(4*a^3*Sqrt[x]) - 1/(2*a*Sqrt[x]*(a - b*x)^2) - 5/(4*a^2*Sqrt[
x]*(a - b*x)) - (15*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
4*a^(7/2))
```

Rubi in Sympy [A] time = 12.9689, size = 75, normalized size = 0.89

$$-\frac{1}{2a\sqrt{x}\,(a-bx)^2}-\frac{5}{4a^2\sqrt{x}\,(a-bx)}+\frac{15}{4a^3\sqrt{x}}-\frac{15\sqrt{b}\,\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x-a)**3,x)
```

```
[Out] -1/(2*a*sqrt(x)*(a - b*x)**2) - 5/(4*a**2*sqrt(x)*(a - b*x)) + 15
/(4*a**3*sqrt(x)) - 15*sqrt(b)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*
a**(7/2))
```

Mathematica [A] time = 0.0682309, size = 71, normalized size = 0.85

$$\frac{8a^2-25abx+15b^2x^2}{4a^3\sqrt{x}(a-bx)^2}-\frac{15\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(-a + b*x)^3),x]
```

```
[Out] (8*a^2 - 25*a*b*x + 15*b^2*x^2)/(4*a^3*Sqrt[x]*(a - b*x)^2) - (15
*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(7/2))
```

Maple [A] time = 0.02, size = 58, normalized size = 0.7

$$2\,\frac{b}{a^3}\left(\frac{1}{(bx-a)^2}\left(\frac{7\,bx^{3/2}}{8}-\frac{9\,a\sqrt{x}}{8}\right)-\frac{15}{8\,\sqrt{ab}}Artanh\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)\right)+2\,\frac{1}{a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x-a)^3,x)
```

```
[Out] 2/a^3*b*((7/8*b*x^(3/2)-9/8*a*x^(1/2))/(b*x-a)^2-15/8/(a*b)^(1/2)
*arctanh(x^(1/2)*b/(a*b)^(1/2)))+2/a^3/x^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*x^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223698, size = 1, normalized size = 0.01

$$\left[\frac{30\,b^2x^2-50\,abx+15\left(b^2x^2-2\,abx+a^2\right)\sqrt{x}\sqrt{\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{\frac{b}{a}}+a}{bx-a}\right)+16\,a^2}{8\left(a^3b^2x^2-2\,a^4bx+a^5\right)\sqrt{x}},\frac{15\,b^2x^2-25\,abx+15\left(b^2x^2-2\,abx+a^2\right)\sqrt{}}{4\left(a^3b^2x^2-2\,a^4bx+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*x^(3/2)),x, algorithm="fricas")
```

```
[Out] [1/8*(30*b^2*x^2 - 50*a*b*x + 15*(b^2*x^2 - 2*a*b*x + a^2)*sqrt(x
)*sqrt(b/a)*log((b*x - 2*a*sqrt(x)*sqrt(b/a) + a)/(b*x - a)) + 16
*a^2)/((a^3*b^2*x^2 - 2*a^4*b*x + a^5)*sqrt(x)), 1/4*(15*b^2*x^2
- 25*a*b*x + 15*(b^2*x^2 - 2*a*b*x + a^2)*sqrt(x)*sqrt(-b/a)*arct
an(a*sqrt(-b/a)/(b*sqrt(x))) + 8*a^2)/((a^3*b^2*x^2 - 2*a^4*b*x +
 a^5)*sqrt(x))]
```

Sympy [A] time = 14.3891, size = 6944, normalized size = 82.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x-a)**3,x)
```

```
[Out] Piecewise((16*a**(45/2)/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**
(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2)
 + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 2
24*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**
(35/2)*b**8*x**(17/2)) - 146*a**(43/2)*b*x/(8*a**(51/2)*sqrt(x) -
 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(
45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)
*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**
7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 570*a**(41/2)*b**2*x*
*2/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)
*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4
*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**
(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)
) - 1250*a**(39/2)*b**3*x**3/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*
b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**
(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2
) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) +
8*a**(35/2)*b**8*x**(17/2)) + 1690*a**(37/2)*b**4*x**4/(8*a**(51/
2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2
) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 4
48*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a
**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)) - 1446*a**(
35/2)*b**5*x**5/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) +
224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a
**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(3
9/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b
**8*x**(17/2)) + 766*a**(33/2)*b**6*x**6/(8*a**(51/2)*sqrt(x) - 6
4*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45
/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b
**5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*
x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)) - 230*a**(31/2)*b**7*x**7
/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b
```

```
**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x
**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**(1
3/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2))
 + 30*a**(29/2)*b**8*x**8/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x*
*(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2
) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) +
224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a*
*(35/2)*b**8*x**(17/2)) - 30*a**22*sqrt(b)*sqrt(x)*acoth(sqrt(b)*
sqrt(x)/sqrt(a))/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) +
 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*
a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(
39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*
b**8*x**(17/2)) - 15*I*pi*a**22*sqrt(b)*sqrt(x)/(8*a**(51/2)*sqrt
(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448
*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(
41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2
)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 240*a**21*b**(3/
2)*x**(3/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**(51/2)*sqrt(x) -
 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(
45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)
*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**
7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 120*I*pi*a**21*b**(3/
2)*x**(3/2)/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*
a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(4
3/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)
*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*
x**(17/2)) - 840*a**20*b**(5/2)*x**(5/2)*acoth(sqrt(b)*sqrt(x)/sq
rt(a))/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(4
7/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*
b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6
*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(1
7/2)) - 420*I*pi*a**20*b**(5/2)*x**(5/2)/(8*a**(51/2)*sqrt(x) - 6
4*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45
/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b
**5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*
x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 1680*a**19*b**(7/2)*x**
(7/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**(51/2)*sqrt(x) - 64*a*
*(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*
b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*
x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(
15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 840*I*pi*a**19*b**(7/2)*x**
(7/2)/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47
/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b
**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*
x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17
/2)) - 2100*a**18*b**(9/2)*x**(9/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a)
)/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)*
b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4*
x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**(
13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2))
 - 1050*I*pi*a**18*b**(9/2)*x**(9/2)/(8*a**(51/2)*sqrt(x) - 64*a*
*(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*
b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*
x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(
15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 1680*a**17*b**(11/2)*x**(11
/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**(51/2)*sqrt(x) - 64*a**(
```

```
49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b*
*3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x*
*(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(15
/2) + 8*a**(35/2)*b**8*x**(17/2)) + 840*I*pi*a**17*b**(11/2)*x**(
11/2)/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47
/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b
**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*
x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17
/2)) - 840*a**16*b**(13/2)*x**(13/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)
*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4
*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**
(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)
) - 420*I*pi*a**16*b**(13/2)*x**(13/2)/(8*a**(51/2)*sqrt(x) - 64*
a**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2
)*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**
5*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x*
*(15/2) + 8*a**(35/2)*b**8*x**(17/2)) + 240*a**15*b**(15/2)*x**(1
5/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(8*a**(51/2)*sqrt(x) - 64*a**
(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)*b
**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5*x
**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**(1
5/2) + 8*a**(35/2)*b**8*x**(17/2)) + 120*I*pi*a**15*b**(15/2)*x**
(15/2)/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(4
7/2)*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*
b**4*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6
*x**(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(1
7/2)) - 30*a**14*b**(17/2)*x**(17/2)*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/(8*a**(51/2)*sqrt(x) - 64*a**(49/2)*b*x**(3/2) + 224*a**(47/2)
*b**2*x**(5/2) - 448*a**(45/2)*b**3*x**(7/2) + 560*a**(43/2)*b**4
*x**(9/2) - 448*a**(41/2)*b**5*x**(11/2) + 224*a**(39/2)*b**6*x**
(13/2) - 64*a**(37/2)*b**7*x**(15/2) + 8*a**(35/2)*b**8*x**(17/2)
) - 15*I*pi*a**14*b**(17/2)*x**(17/2)/(8*a**(51/2)*sqrt(x) - 64*a
**(49/2)*b*x**(3/2) + 224*a**(47/2)*b**2*x**(5/2) - 448*a**(45/2)
*b**3*x**(7/2) + 560*a**(43/2)*b**4*x**(9/2) - 448*a**(41/2)*b**5
*x**(11/2) + 224*a**(39/2)*b**6*x**(13/2) - 64*a**(37/2)*b**7*x**
(15/2) + 8*a**(35/2)*b**8*x**(17/2)), Abs(b*x/a) > 1), (8*a**(45/
2)/(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)
*b**2*x**(5/2) - 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4
*x**(9/2) - 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**
(13/2) - 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)
) - 73*a**(43/2)*b*x/(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/
2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*x**(7/2) +
280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x**(11/2) + 112*
a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35
/2)*b**8*x**(17/2)) + 285*a**(41/2)*b**2*x**2/(4*a**(51/2)*sqrt(x
) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a
**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41
/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*
b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 625*a**(39/2)*b**3
*x**3/(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47
/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b
**4*x**(9/2) - 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*
x**(13/2) - 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17
/2)) + 845*a**(37/2)*b**4*x**4/(4*a**(51/2)*sqrt(x) - 32*a**(49/2
)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*x
```

```
**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x**(11
/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15/2)
+ 4*a**(35/2)*b**8*x**(17/2)) - 723*a**(35/2)*b**5*x**5/(4*a**(51
/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/
2) - 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) -
224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*
a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) + 383*a**(
33/2)*b**6*x**6/(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/2) +
112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*x**(7/2) + 280*a
**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x**(11/2) + 112*a**(3
9/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b
**8*x**(17/2)) - 115*a**(31/2)*b**7*x**7/(4*a**(51/2)*sqrt(x) - 3
2*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45
/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b
**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*
x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) + 15*a**(29/2)*b**8*x**8/
(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b*
*2*x**(5/2) - 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x*
*(9/2) - 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13
/2) - 32*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) -
 15*a**22*sqrt(b)*sqrt(x)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(5
1/2)*sqrt(x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5
/2) - 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) -
 224*a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32
*a**(37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) + 120*a**
21*b**(3/2)*x**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*
sqrt(x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) -
 224*a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*
a**(41/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(
37/2)*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 420*a**20*b*
*(5/2)*x**(5/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(
x) - 32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*
a**(45/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(4
1/2)*b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)
*b**7*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) + 840*a**19*b**(7/2
)*x**(7/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) -
32*a**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(4
5/2)*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*
b**5*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7
*x**(15/2) + 4*a**(35/2)*b**8*x**(17/2)) - 1050*a**18*b**(9/2)*x*
*(9/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) - 32*a
**(49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)
*b**3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5
*x**(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**
(15/2) + 4*a**(35/2)*b**8*x**(17/2)) + 840*a**17*b**(11/2)*x**(11
/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) - 32*a**(
49/2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b*
*3*x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x*
*(11/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15
/2) + 4*a**(35/2)*b**8*x**(17/2)) - 420*a**16*b**(13/2)*x**(13/2)
*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) - 32*a**(49/
2)*b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*
x**(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x**(1
1/2) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15/2)
 + 4*a**(35/2)*b**8*x**(17/2)) + 120*a**15*b**(15/2)*x**(15/2)*at
anh(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*
```

```
b*x**(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*x**
(7/2) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x**(11/2
) + 112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15/2) +
4*a**(35/2)*b**8*x**(17/2)) - 15*a**14*b**(17/2)*x**(17/2)*atanh(
sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(51/2)*sqrt(x) - 32*a**(49/2)*b*x*
*(3/2) + 112*a**(47/2)*b**2*x**(5/2) - 224*a**(45/2)*b**3*x**(7/2
) + 280*a**(43/2)*b**4*x**(9/2) - 224*a**(41/2)*b**5*x**(11/2) +
112*a**(39/2)*b**6*x**(13/2) - 32*a**(37/2)*b**7*x**(15/2) + 4*a*
*(35/2)*b**8*x**(17/2)), True))
```

GIAC/XCAS [A] time = 0.210422, size = 85, normalized size = 1.01

$$\frac{15\, b \arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\, \sqrt{-ab} a^{3}} + \frac{2}{a^{3}\sqrt{x}} + \frac{7\, b^{2} x^{\frac{3}{2}} - 9\, ab\sqrt{x}}{4\, (bx - a)^{2} a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*x^(3/2)),x, algorithm="giac")
```

```
[Out] 15/4*b*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^3) + 2/(a^3*sqr
t(x)) + 1/4*(7*b^2*x^(3/2) - 9*a*b*sqrt(x))/((b*x - a)^2*a^3)
```

3.488 $\int \frac{1}{x^{5/2}(-a+bx)^3} dx$

Optimal. Leaf size=97

$$-\frac{35b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b}{4a^4\sqrt{x}}+\frac{35}{12a^3x^{3/2}}-\frac{7}{4a^2x^{3/2}(a-bx)}-\frac{1}{2ax^{3/2}(a-bx)^2}$$

```
[Out] 35/(12*a^3*x^(3/2)) + (35*b)/(4*a^4*Sqrt[x]) - 1/(2*a*x^(3/2)*(a
- b*x)^2) - 7/(4*a^2*x^(3/2)*(a - b*x)) - (35*b^(3/2)*ArcTanh[(Sq
rt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(9/2))
```

Rubi [A] time = 0.0812434, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{35b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}+\frac{35b}{4a^4\sqrt{x}}+\frac{35}{12a^3x^{3/2}}-\frac{7}{4a^2x^{3/2}(a-bx)}-\frac{1}{2ax^{3/2}(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(-a + b*x)^3),x]
```

```
[Out] 35/(12*a^3*x^(3/2)) + (35*b)/(4*a^4*Sqrt[x]) - 1/(2*a*x^(3/2)*(a
- b*x)^2) - 7/(4*a^2*x^(3/2)*(a - b*x)) - (35*b^(3/2)*ArcTanh[(Sq
rt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(9/2))
```

Rubi in Sympy [A] time = 16.0205, size = 88, normalized size = 0.91

$$-\frac{1}{2ax^{\frac{3}{2}}(a-bx)^2}-\frac{7}{4a^2x^{\frac{3}{2}}(a-bx)}+\frac{35}{12a^3x^{\frac{3}{2}}}+\frac{35b}{4a^4\sqrt{x}}-\frac{35b^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x-a)**3,x)
```

```
[Out] -1/(2*a*x**(3/2)*(a - b*x)**2) - 7/(4*a**2*x**(3/2)*(a - b*x)) +
35/(12*a**3*x**(3/2)) + 35*b/(4*a**4*sqrt(x)) - 35*b**(3/2)*atanh
(sqrt(b)*sqrt(x)/sqrt(a))/(4*a**(9/2))
```

Mathematica [A] time = 0.0731219, size = 82, normalized size = 0.85

$$\frac{8a^3+56a^2bx-175ab^2x^2+105b^3x^3}{12a^4x^{3/2}(a-bx)^2}-\frac{35b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(-a + b*x)^3),x]
```

```
[Out] (8*a^3 + 56*a^2*b*x - 175*a*b^2*x^2 + 105*b^3*x^3)/(12*a^4*x^(3/2
)*(a - b*x)^2) - (35*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/
(4*a^(9/2))
```

Maple [A] time = 0.023, size = 69, normalized size = 0.7

$$2\,{\frac{{b}^{2}}{{a}^{4}}\left({\frac{1}{\left(bx-a\right)^{2}}\left({\frac{11\,b{x}^{3/2}}{8}}-{\frac{13\,a\sqrt{x}}{8}}\right)}-{\frac{35}{8\,\sqrt{ab}}{\it Artanh}\left({\frac{b\sqrt{x}}{\sqrt{ab}}}\right)}\right)}+{\frac{2}{3\,{a}^{3}}{x}^{-{\frac{3}{2}}}}+6\,{\frac{b}{{a}^{4}\sqrt{x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x-a)^3,x)
```

```
[Out] 2/a^4*b^2*((11/8*b*x^(3/2)-13/8*a*x^(1/2))/(b*x-a)^2-35/8/(a*b)^(
1/2)*arctanh(x^(1/2)*b/(a*b)^(1/2)))+2/3/a^3/x^(3/2)+6*b/a^4/x^(1
/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*x^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225546, size = 1, normalized size = 0.01

$$\left[\frac{210\,b^{3}x^{3}-350\,ab^{2}x^{2}+112\,a^{2}bx+16\,a^{3}+105\left(b^{3}x^{3}-2\,ab^{2}x^{2}+a^{2}bx\right)\sqrt{x}\sqrt{\frac{b}{a}}\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{\frac{b}{a}}+a}{bx-a}\right)}{24\left(a^{4}b^{2}x^{3}-2\,a^{5}bx^{2}+a^{6}x\right)\sqrt{x}},\frac{105\,b^{3}x^{3}-175\,ab^{2}x^{2}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*x^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/24*(210*b^3*x^3 - 350*a*b^2*x^2 + 112*a^2*b*x + 16*a^3 + 105*(
b^3*x^3 - 2*a*b^2*x^2 + a^2*b*x)*sqrt(x)*sqrt(b/a)*log((b*x - 2*a
*sqrt(x)*sqrt(b/a) + a)/(b*x - a)))/((a^4*b^2*x^3 - 2*a^5*b*x^2 +
 a^6*x)*sqrt(x)), 1/12*(105*b^3*x^3 - 175*a*b^2*x^2 + 56*a^2*b*x
+ 8*a^3 + 105*(b^3*x^3 - 2*a*b^2*x^2 + a^2*b*x)*sqrt(x)*sqrt(-b/a
)*arctan(a*sqrt(-b/a)/(b*sqrt(x))))/((a^4*b^2*x^3 - 2*a^5*b*x^2 +
 a^6*x)*sqrt(x))]
```

Sympy [A] time = 27.7219, size = 7891, normalized size = 81.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x-a)**3,x)
```

```
[Out] Piecewise((210*a**(59/2)*b**2*x**2*acoth(sqrt(b)*sqrt(x)/sqrt(a))
/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b*
*(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6
 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a*
*27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/
2)*x**11) + 105*I*pi*a**(59/2)*b**2*x**2/(-24*a**34*sqrt(b)*x**2
+ 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*
b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x
**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*
a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 1890*a**(57/2
)*b**3*x**3*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-24*a**34*sqrt(b)*x**
2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**3
1*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)
*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 21
6*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 945*I*pi*a*
*(57/2)*b**3*x**3/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x*
*3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a*
*30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13
/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 +
 24*a**25*b**(19/2)*x**11) + 7560*a**(55/2)*b**4*x**4*acoth(sqrt(
b)*sqrt(x)/sqrt(a))/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*
x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*
a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(
13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10
 + 24*a**25*b**(19/2)*x**11) + 3780*I*pi*a**(55/2)*b**4*x**4/(-24
*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2
)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 30
24*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b
**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x*
*11) - 17640*a**(53/2)*b**5*x**5*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(
-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(
```

```
5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 +
 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**2
7*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)
*x**11) - 8820*I*pi*a**(53/2)*b**5*x**5/(-24*a**34*sqrt(b)*x**2 +
 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b
**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x*
*7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a
**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) + 26460*a**(51/2
)*b**6*x**6*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-24*a**34*sqrt(b)*x**
2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**3
1*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)
*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 21
6*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) + 13230*I*pi*
a**(51/2)*b**6*x**6/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*
x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*
a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(
13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10
 + 24*a**25*b**(19/2)*x**11) - 26460*a**(49/2)*b**7*x**7*acoth(sq
rt(b)*sqrt(x)/sqrt(a))/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/
2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 30
24*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b
**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x*
*10 + 24*a**25*b**(19/2)*x**11) - 13230*I*pi*a**(49/2)*b**7*x**7/
(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**
(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6
+ 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**
27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2
)*x**11) + 17640*a**(47/2)*b**8*x**8*acoth(sqrt(b)*sqrt(x)/sqrt(a
))/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*
b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x*
*6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*
a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(1
9/2)*x**11) + 8820*I*pi*a**(47/2)*b**8*x**8/(-24*a**34*sqrt(b)*x*
*2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**
31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2
)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 2
16*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 7560*a**(4
5/2)*b**9*x**9*acoth(sqrt(b)*sqrt(x)/sqrt(a))/(-24*a**34*sqrt(b)*
x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a
**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11
/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 -
 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 3780*I*p
i*a**(45/2)*b**9*x**9/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2
)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 302
4*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b*
*(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**
10 + 24*a**25*b**(19/2)*x**11) + 1890*a**(43/2)*b**10*x**10*acoth
(sqrt(b)*sqrt(x)/sqrt(a))/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**
(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 -
 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**2
8*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)
*x**10 + 24*a**25*b**(19/2)*x**11) + 945*I*pi*a**(43/2)*b**10*x**
10/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*
b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x*
*6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*
a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(1
```

```
9/2)*x**11) - 210*a**(41/2)*b**11*x**11*acoth(sqrt(b)*sqrt(x)/sqr
t(a))/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**
32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)
*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 8
64*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b*
*(19/2)*x**11) - 105*I*pi*a**(41/2)*b**11*x**11/(-24*a**34*sqrt(b
)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016
*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(
11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9
 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 16*a**
31*sqrt(b)*sqrt(x)/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x
**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a
**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(1
3/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10
+ 24*a**25*b**(19/2)*x**11) + 798*a**29*b**(5/2)*x**(5/2)/(-24*a*
*34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x
**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*
a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(
15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11
) - 4452*a**28*b**(7/2)*x**(7/2)/(-24*a**34*sqrt(b)*x**2 + 216*a*
*33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)
*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 20
16*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b*
*(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) + 12180*a**27*b**(9/2)*
x**(9/2)/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*
a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9
/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8
+ 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25
*b**(19/2)*x**11) - 20244*a**26*b**(11/2)*x**(11/2)/(-24*a**34*sq
rt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 +
2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*
b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*
x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) + 21
840*a**25*b**(13/2)*x**(13/2)/(-24*a**34*sqrt(b)*x**2 + 216*a**33
*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x*
*5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*
a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(1
7/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 15468*a**24*b**(15/2)*x*
*(15/2)/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a
**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/
2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 +
 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*
b**(19/2)*x**11) + 6972*a**23*b**(17/2)*x**(17/2)/(-24*a**34*sqrt
(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 20
16*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b*
*(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x*
*9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(19/2)*x**11) - 1820
*a**22*b**(19/2)*x**(19/2)/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b*
*(3/2)*x**3 - 864*a**32*b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5
- 3024*a**30*b**(9/2)*x**6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**
28*b**(13/2)*x**8 + 864*a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2
)*x**10 + 24*a**25*b**(19/2)*x**11) + 210*a**21*b**(21/2)*x**(21/
2)/(-24*a**34*sqrt(b)*x**2 + 216*a**33*b**(3/2)*x**3 - 864*a**32*
b**(5/2)*x**4 + 2016*a**31*b**(7/2)*x**5 - 3024*a**30*b**(9/2)*x*
*6 + 3024*a**29*b**(11/2)*x**7 - 2016*a**28*b**(13/2)*x**8 + 864*
a**27*b**(15/2)*x**9 - 216*a**26*b**(17/2)*x**10 + 24*a**25*b**(1
```

9/2)*x**11), Abs(b*x/a) > 1), (105*a**(59/2)*b**2*x**2*atanh(sqrt
(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)
*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 1512
*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b**
(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**1
0 + 12*a**25*b**(19/2)*x**11) - 945*a**(57/2)*b**3*x**3*atanh(sqr
t(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2
)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 151
2*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b*
*(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**
10 + 12*a**25*b**(19/2)*x**11) + 3780*a**(55/2)*b**4*x**4*atanh(s
qrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3
/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 1
512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*
b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x
10 + 12*a25*b**(19/2)*x**11) - 8820*a**(53/2)*b**5*x**5*atanh
(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**
(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 -
 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**2
8*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)
*x**10 + 12*a**25*b**(19/2)*x**11) + 13230*a**(51/2)*b**6*x**6*at
anh(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a**33*
b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**
5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a
28*b(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17
/2)*x**10 + 12*a**25*b**(19/2)*x**11) - 13230*a**(49/2)*b**7*x**7
*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a**
33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*
x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 100
8*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**
(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 8820*a**(47/2)*b**8*x*
*8*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108*a
33*b(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2
)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1
008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b
(17/2)*x10 + 12*a**25*b**(19/2)*x**11) - 3780*a**(45/2)*b**9*
x**9*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 + 108
*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7
/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 -
 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26
*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 945*a**(43/2)*b**1
0*x**10*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2 +
108*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b*
*(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**
7 - 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a*
*26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) - 105*a**(41/2)*b
11*x11*atanh(sqrt(b)*sqrt(x)/sqrt(a))/(-12*a**34*sqrt(b)*x**2
 + 108*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31
*b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*
x**7 - 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108
*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) - 8*a**31*sqrt
(b)*sqrt(x)/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 - 4
32*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 1512*a**30*b*
*(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b**(13/2)*x*
*8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**10 + 12*a*
*25*b**(19/2)*x**11) + 399*a**29*b**(5/2)*x**(5/2)/(-12*a**34*sqr

```
t(b)*x**2 + 108*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1
008*a**31*b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b
**(11/2)*x**7 - 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x
**9 - 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) - 222
6*a**28*b**(7/2)*x**(7/2)/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**
(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 -
 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**2
8*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)
*x**10 + 12*a**25*b**(19/2)*x**11) + 6090*a**27*b**(9/2)*x**(9/2)
/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 - 432*a**32*b*
*(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6
 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b**(13/2)*x**8 + 432*a*
*27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/
2)*x**11) - 10122*a**26*b**(11/2)*x**(11/2)/(-12*a**34*sqrt(b)*x*
*2 + 108*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**
31*b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2
)*x**7 - 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 1
08*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) + 10920*a**2
5*b**(13/2)*x**(13/2)/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2
)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 151
2*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b*
*(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**
10 + 12*a**25*b**(19/2)*x**11) - 7734*a**24*b**(15/2)*x**(15/2)/(
-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 - 432*a**32*b**(
5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 +
 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b**(13/2)*x**8 + 432*a**2
7*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)
*x**11) + 3486*a**23*b**(17/2)*x**(17/2)/(-12*a**34*sqrt(b)*x**2
+ 108*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*
b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x
**7 - 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*
a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11) - 910*a**22*b**
(19/2)*x**(19/2)/(-12*a**34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**
3 - 432*a**32*b**(5/2)*x**4 + 1008*a**31*b**(7/2)*x**5 - 1512*a**
30*b**(9/2)*x**6 + 1512*a**29*b**(11/2)*x**7 - 1008*a**28*b**(13/
2)*x**8 + 432*a**27*b**(15/2)*x**9 - 108*a**26*b**(17/2)*x**10 +
12*a**25*b**(19/2)*x**11) + 105*a**21*b**(21/2)*x**(21/2)/(-12*a*
*34*sqrt(b)*x**2 + 108*a**33*b**(3/2)*x**3 - 432*a**32*b**(5/2)*x
**4 + 1008*a**31*b**(7/2)*x**5 - 1512*a**30*b**(9/2)*x**6 + 1512*
a**29*b**(11/2)*x**7 - 1008*a**28*b**(13/2)*x**8 + 432*a**27*b**(
15/2)*x**9 - 108*a**26*b**(17/2)*x**10 + 12*a**25*b**(19/2)*x**11
), True))
```

GIAC/XCAS [A] time = 0.206188, size = 99, normalized size = 1.02

$$\frac{35\,b^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{-ab}}\right)}{4\,\sqrt{-ab}a^4}+\frac{2\,(9\,bx+a)}{3\,a^4x^{\frac{3}{2}}}+\frac{11\,b^3x^{\frac{3}{2}}-13\,ab^2\sqrt{x}}{4\,(bx-a)^2a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x - a)^3*x^(5/2)),x, algorithm="giac")
```

```
[Out] 35/4*b^2*arctan(b*sqrt(x)/sqrt(-a*b))/(sqrt(-a*b)*a^4) + 2/3*(9*b
*x + a)/(a^4*x^(3/2)) + 1/4*(11*b^3*x^(3/2) - 13*a*b^2*sqrt(x))/(
(b*x - a)^2*a^4)
```

3.489 $\int x^{5/2}\sqrt{a+bx}\,dx$

Optimal. Leaf size=122

$$-\frac{5a^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{7/2}}+\frac{5a^3\sqrt{x}\sqrt{a+bx}}{64b^3}-\frac{5a^2x^{3/2}\sqrt{a+bx}}{96b^2}+\frac{ax^{5/2}\sqrt{a+bx}}{24b}+\frac{1}{4}x^{7/2}\sqrt{a+bx}$$

```
[Out] (5*a^3*Sqrt[x]*Sqrt[a + b*x])/(64*b^3) - (5*a^2*x^(3/2)*Sqrt[a +
b*x])/(96*b^2) + (a*x^(5/2)*Sqrt[a + b*x])/(24*b) + (x^(7/2)*Sqrt
[a + b*x])/4 - (5*a^4*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(
64*b^(7/2))
```

Rubi [A] time = 0.106371, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5a^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{7/2}}+\frac{5a^3\sqrt{x}\sqrt{a+bx}}{64b^3}-\frac{5a^2x^{3/2}\sqrt{a+bx}}{96b^2}+\frac{ax^{5/2}\sqrt{a+bx}}{24b}+\frac{1}{4}x^{7/2}\sqrt{a+bx}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*Sqrt[a + b*x],x]
```

```
[Out] (5*a^3*Sqrt[x]*Sqrt[a + b*x])/(64*b^3) - (5*a^2*x^(3/2)*Sqrt[a +
b*x])/(96*b^2) + (a*x^(5/2)*Sqrt[a + b*x])/(24*b) + (x^(7/2)*Sqrt
[a + b*x])/4 - (5*a^4*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(
64*b^(7/2))
```

Rubi in Sympy [A] time = 14.98, size = 117, normalized size = 0.96

$$-\frac{5a^4\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{\frac{7}{2}}}-\frac{5a^3\sqrt{x}\sqrt{a+bx}}{64b^3}+\frac{5a^2\sqrt{x}\left(a+bx\right)^{\frac{3}{2}}}{32b^3}-\frac{5ax^{\frac{3}{2}}\left(a+bx\right)^{\frac{3}{2}}}{24b^2}+\frac{x^{\frac{5}{2}}\left(a+bx\right)^{\frac{3}{2}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+a)**(1/2),x)
```

```
[Out] -5*a**4*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(64*b**(7/2)) - 5*a*
*3*sqrt(x)*sqrt(a + b*x)/(64*b**3) + 5*a**2*sqrt(x)*(a + b*x)**(3
/2)/(32*b**3) - 5*a*x**(3/2)*(a + b*x)**(3/2)/(24*b**2) + x**(5/2
)*(a + b*x)**(3/2)/(4*b)
```

Mathematica [A] time = 0.0670688, size = 89, normalized size = 0.73

$$\frac{\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(15a^3-10a^2bx+8ab^2x^2+48b^3x^3\right)-15a^4\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{192b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(15*a^3 - 10*a^2*b*x + 8*a*b^2*x^2
 + 48*b^3*x^3) - 15*a^4*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(
192*b^(7/2))
```

Maple [A] time = 0.025, size = 120, normalized size = 1.

$$\frac{1}{4b}x^{\frac{5}{2}}(bx+a)^{\frac{3}{2}}-\frac{5a}{24b^2}x^{\frac{3}{2}}(bx+a)^{\frac{3}{2}}+\frac{5a^2}{32b^3}(bx+a)^{\frac{3}{2}}\sqrt{x}-\frac{5a^3}{64b^3}\sqrt{x}\sqrt{bx+a}-\frac{5a^4}{128}\sqrt{x(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+a)^(1/2),x)
```

```
[Out] 1/4/b*x^(5/2)*(b*x+a)^(3/2)-5/24*a/b^2*x^(3/2)*(b*x+a)^(3/2)+5/32
*a^2/b^3*x^(1/2)*(b*x+a)^(3/2)-5/64*a^3*x^(1/2)*(b*x+a)^(1/2)/b^3
-5/128*a^4/b^(7/2)*(x*(b*x+a))^(1/2)/(b*x+a)^(1/2)/x^(1/2)*ln((1/
2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224356, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^4\log\left(-2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\,\left(48\,b^3x^3+8\,ab^2x^2-10\,a^2bx+15\,a^3\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{384\,b^{\frac{7}{2}}},\right.$$
$$\left.-\frac{15\,a^4\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(48\,b^3x^3+8\,ab^2x^2-10\,a^2bx+15\,a^3\right)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{192\,\sqrt{-b}b^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/384*(15*a^4*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(
b)) + 2*(48*b^3*x^3 + 8*a*b^2*x^2 - 10*a^2*b*x + 15*a^3)*sqrt(b*x
 + a)*sqrt(b)*sqrt(x))/b^(7/2), -1/192*(15*a^4*arctan(sqrt(b*x +
a)*sqrt(-b)/(b*sqrt(x))) - (48*b^3*x^3 + 8*a*b^2*x^2 - 10*a^2*b*x
 + 15*a^3)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^3)]
```

Sympy [A] time = 106.69, size = 153, normalized size = 1.25

$$\frac{5a^{\frac{7}{2}}\sqrt{x}}{64b^3\sqrt{1+\frac{bx}{a}}}+\frac{5a^{\frac{5}{2}}x^{\frac{3}{2}}}{192b^2\sqrt{1+\frac{bx}{a}}}-\frac{a^{\frac{3}{2}}x^{\frac{5}{2}}}{96b\sqrt{1+\frac{bx}{a}}}+\frac{7\sqrt{a}x^{\frac{7}{2}}}{24\sqrt{1+\frac{bx}{a}}}-\frac{5a^4\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{7}{2}}}+\frac{bx^{\frac{9}{2}}}{4\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+a)**(1/2),x)
```

```
[Out] 5*a**(7/2)*sqrt(x)/(64*b**3*sqrt(1 + b*x/a)) + 5*a**(5/2)*x**(3/2
)/(192*b**2*sqrt(1 + b*x/a)) - a**(3/2)*x**(5/2)/(96*b*sqrt(1 + b
*x/a)) + 7*sqrt(a)*x**(7/2)/(24*sqrt(1 + b*x/a)) - 5*a**4*asinh(s
qrt(b)*sqrt(x)/sqrt(a))/(64*b**(7/2)) + b*x**(9/2)/(4*sqrt(a)*sqr
t(1 + b*x/a))
```

GIAC/XCAS [A] time = 12.6743, size = 4, normalized size = 0.03

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.490 $\int x^{3/2}\sqrt{a+bx}\,dx$

Optimal. Leaf size=98

$$\frac{a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{5/2}}-\frac{a^2\sqrt{x}\sqrt{a+bx}}{8b^2}+\frac{ax^{3/2}\sqrt{a+bx}}{12b}+\frac{1}{3}x^{5/2}\sqrt{a+bx}$$

```
[Out] -(a^2*Sqrt[x]*Sqrt[a + b*x])/(8*b^2) + (a*x^(3/2)*Sqrt[a + b*x])/
(12*b) + (x^(5/2)*Sqrt[a + b*x])/3 + (a^3*ArcTanh[(Sqrt[b]*Sqrt[x
])/Sqrt[a + b*x]])/(8*b^(5/2))
```

Rubi [A] time = 0.0775024, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{5/2}}-\frac{a^2\sqrt{x}\sqrt{a+bx}}{8b^2}+\frac{ax^{3/2}\sqrt{a+bx}}{12b}+\frac{1}{3}x^{5/2}\sqrt{a+bx}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*Sqrt[a + b*x],x]
```

```
[Out] -(a^2*Sqrt[x]*Sqrt[a + b*x])/(8*b^2) + (a*x^(3/2)*Sqrt[a + b*x])/
(12*b) + (x^(5/2)*Sqrt[a + b*x])/3 + (a^3*ArcTanh[(Sqrt[b]*Sqrt[x
])/Sqrt[a + b*x]])/(8*b^(5/2))
```

Rubi in Sympy [A] time = 10.855, size = 88, normalized size = 0.9

$$\frac{a^3\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{8b^{\frac{5}{2}}}+\frac{a^2\sqrt{x}\sqrt{a+bx}}{8b^2}-\frac{a\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{4b^2}+\frac{x^{\frac{3}{2}}\,(a+bx)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+a)**(1/2),x)
```

```
[Out] a**3*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/(8*b**(5/2)) + a**2*s
qrt(x)*sqrt(a + b*x)/(8*b**2) - a*sqrt(x)*(a + b*x)**(3/2)/(4*b**
2) + x**(3/2)*(a + b*x)**(3/2)/(3*b)
```

Mathematica [A] time = 0.0481184, size = 78, normalized size = 0.8

$$\frac{3a^3\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)+\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(-3a^2+2abx+8b^2x^2\right)}{24b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(-3*a^2 + 2*a*b*x + 8*b^2*x^2) + 3
*a^3*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(24*b^(5/2))
```

Maple [A] time = 0.007, size = 102, normalized size = 1.

$$\frac{1}{3\,b}x^{\frac{3}{2}}\left(bx+a\right)^{\frac{3}{2}}-\frac{a}{4\,b^2}\left(bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{a^2}{8\,b^2}\sqrt{x}\sqrt{bx+a}+\frac{a^3}{16}\sqrt{x\left(bx+a\right)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+a)^(1/2),x)
```

```
[Out] 1/3/b*x^(3/2)*(b*x+a)^(3/2)-1/4*a/b^2*x^(1/2)*(b*x+a)^(3/2)+1/8*a
^2*x^(1/2)*(b*x+a)^(1/2)/b^2+1/16*a^3/b^(5/2)*(x*(b*x+a))^(1/2)/(
b*x+a)^(1/2)/x^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221342, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^3\log\left(2\,\sqrt{bx+a}b\sqrt{x}+\left(2\,bx+a\right)\sqrt{b}\right)+2\left(8\,b^2x^2+2\,abx-3\,a^2\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{48\,b^{\frac{5}{2}}},\frac{3\,a^3\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)+\left(8\,b^2x^2+2\,a\right.}{24\,\sqrt{-b}b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/48*(3*a^3*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b))
 + 2*(8*b^2*x^2 + 2*a*b*x - 3*a^2)*sqrt(b*x + a)*sqrt(b)*sqrt(x))
/b^(5/2), 1/24*(3*a^3*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x)))
+ (8*b^2*x^2 + 2*a*b*x - 3*a^2)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))/(
sqrt(-b)*b^2)]
```

Sympy [A] time = 26.6423, size = 122, normalized size = 1.24

$$-\frac{a^{\frac{5}{2}}\sqrt{x}}{8b^2\sqrt{1+\frac{bx}{a}}}-\frac{a^{\frac{3}{2}}x^{\frac{3}{2}}}{24b\sqrt{1+\frac{bx}{a}}}+\frac{5\sqrt{a}x^{\frac{5}{2}}}{12\sqrt{1+\frac{bx}{a}}}+\frac{a^3\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{5}{2}}}+\frac{bx^{\frac{7}{2}}}{3\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a)**(1/2),x)
```

```
[Out] -a**(5/2)*sqrt(x)/(8*b**2*sqrt(1 + b*x/a)) - a**(3/2)*x**(3/2)/(2
4*b*sqrt(1 + b*x/a)) + 5*sqrt(a)*x**(5/2)/(12*sqrt(1 + b*x/a)) +
a**3*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(5/2)) + b*x**(7/2)/(3*
sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 12.4489, size = 4, normalized size = 0.04

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.491 $\int \sqrt{x}\sqrt{a+bx}\,dx$

Optimal. Leaf size=74

$$-\frac{a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{a+bx}+\frac{a\sqrt{x}\sqrt{a+bx}}{4b}$$

```
[Out] (a*Sqrt[x]*Sqrt[a + b*x])/(4*b) + (x^(3/2)*Sqrt[a + b*x])/2 - (a^
2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(4*b^(3/2))
```

Rubi [A] time = 0.0554198, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{a+bx}+\frac{a\sqrt{x}\sqrt{a+bx}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*Sqrt[a + b*x],x]
```

```
[Out] (a*Sqrt[x]*Sqrt[a + b*x])/(4*b) + (x^(3/2)*Sqrt[a + b*x])/2 - (a^
2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(4*b^(3/2))
```

Rubi in Sympy [A] time = 7.64583, size = 65, normalized size = 0.88

$$-\frac{a^2\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{\frac{3}{2}}}-\frac{a\sqrt{x}\sqrt{a+bx}}{4b}+\frac{\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)*(b*x+a)**(1/2),x)
```

```
[Out] -a**2*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(4*b**(3/2)) - a*sqrt(
x)*sqrt(a + b*x)/(4*b) + sqrt(x)*(a + b*x)**(3/2)/(2*b)
```

Mathematica [A] time = 0.0353239, size = 65, normalized size = 0.88

$$\frac{\sqrt{b}\sqrt{x}\sqrt{a+bx}(a+2bx)-a^2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{4b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(a + 2*b*x) - a^2*Log[b*Sqrt[x] +
Sqrt[b]*Sqrt[a + b*x]])/(4*b^(3/2))
```

Maple [A] time = 0.007, size = 81, normalized size = 1.1

$$\frac{1}{2}x^{\frac{3}{2}}\sqrt{bx+a}+\frac{a}{4b}\sqrt{x}\sqrt{bx+a}-\frac{a^2}{8}\sqrt{x(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)*(b*x+a)^(1/2),x)
```

```
[Out] 1/2*x^(3/2)*(b*x+a)^(1/2)+1/4*a*x^(1/2)*(b*x+a)^(1/2)/b-1/8*a^2/b
^(3/2)*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)*ln((1/2*a+b*x)/b^(
1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220622, size = 1, normalized size = 0.01

$$\left[\frac{a^2\log\left(-2\sqrt{bx+a}b\sqrt{x}+(2bx+a)\sqrt{b}\right)+2(2bx+a)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{8b^{\frac{3}{2}}},\right.$$
$$\left.-\frac{a^2\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-(2bx+a)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{4\sqrt{-b}b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/8*(a^2*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b)) +
 2*(2*b*x + a)*sqrt(b*x + a)*sqrt(b)*sqrt(x))/b^(3/2), -1/4*(a^2*
arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) - (2*b*x + a)*sqrt(b*x
 + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b)]
```

Sympy [A] time = 11.7171, size = 97, normalized size = 1.31

$$\frac{a^{\frac{3}{2}}\sqrt{x}}{4b\sqrt{1+\frac{bx}{a}}}+\frac{3\sqrt{a}x^{\frac{3}{2}}}{4\sqrt{1+\frac{bx}{a}}}-\frac{a^2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{3}{2}}}+\frac{bx^{\frac{5}{2}}}{2\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)*(b*x+a)**(1/2),x)
```

```
[Out] a**(3/2)*sqrt(x)/(4*b*sqrt(1 + b*x/a)) + 3*sqrt(a)*x**(3/2)/(4*sq
rt(1 + b*x/a)) - a**2*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(4*b**(3/2))
 + b*x**(5/2)/(2*sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 12.2479, size = 4, normalized size = 0.05

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*sqrt(x),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.492 $\int \frac{\sqrt{a+bx}}{\sqrt{x}}\,dx$

Optimal. Leaf size=44

$$\sqrt{x}\sqrt{a+bx}+\frac{a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{\sqrt{b}}$$

```
[Out] Sqrt[x]*Sqrt[a + b*x] + (a*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x
]])/Sqrt[b]
```

Rubi [A] time = 0.0366256, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\sqrt{x}\sqrt{a+bx}+\frac{a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[a + b*x] + (a*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x
]])/Sqrt[b]
```

Rubi in Sympy [A] time = 4.88176, size = 39, normalized size = 0.89

$$\frac{a\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}+\sqrt{x}\sqrt{a+bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**(1/2),x)
```

```
[Out] a*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/sqrt(b) + sqrt(x)*sqrt(a
 + b*x)
```

Mathematica [A] time = 0.0210274, size = 47, normalized size = 1.07

$$\sqrt{x}\sqrt{a+bx}+\frac{a\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[a + b*x] + (a*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]]
)/Sqrt[b]
```

Maple [A] time = 0.01, size = 62, normalized size = 1.4

$$\sqrt{x}\sqrt{bx+a}+\frac{a}{2}\sqrt{x\left(bx+a\right)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^{2}+ax}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^(1/2),x)
```

```
[Out] x^(1/2)*(b*x+a)^(1/2)+1/2*a*(x*(b*x+a))^(1/2)/(b*x+a)^(1/2)/x^(1/
2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))/b^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219783, size = 1, normalized size = 0.02

$$\left[\frac{a\log\left(2\sqrt{bx+a}b\sqrt{x}+\left(2bx+a\right)\sqrt{b}\right)+2\sqrt{bx+a}\sqrt{b}\sqrt{x}}{2\sqrt{b}},\frac{a\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)+\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{\sqrt{-b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/2*(a*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b)) + 2*
sqrt(b*x + a)*sqrt(b)*sqrt(x))/sqrt(b), (a*arctan(sqrt(b*x + a)*s
```

```
qrt(-b)/(b*sqrt(x))) + sqrt(b*x + a)*sqrt(-b)*sqrt(x))/sqrt(-b)]
```

Sympy [A] time = 6.49882, size = 42, normalized size = 0.95

$$\sqrt{a}\sqrt{x}\sqrt{1+\frac{bx}{a}}+\frac{a\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**(1/2),x)
```

```
[Out] sqrt(a)*sqrt(x)*sqrt(1 + b*x/a) + a*asinh(sqrt(b)*sqrt(x)/sqrt(a)
)/sqrt(b)
```

GIAC/XCAS [A] time = 12.3072, size = 4, normalized size = 0.09

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/sqrt(x),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.493 $\int \frac{\sqrt{a+bx}}{x^{3/2}} \, dx$

Optimal. Leaf size=45

$$2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2\sqrt{a+bx}}{\sqrt{x}}$$

```
[Out] (-2*Sqrt[a + b*x])/Sqrt[x] + 2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/
Sqrt[a + b*x]]
```

Rubi [A] time = 0.0355879, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2\sqrt{a+bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*x])/Sqrt[x] + 2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/
Sqrt[a + b*x]]
```

Rubi in Sympy [A] time = 5.06434, size = 41, normalized size = 0.91

$$2\sqrt{b}\,\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2\sqrt{a+bx}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**(3/2),x)
```

```
[Out] 2*sqrt(b)*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x)) - 2*sqrt(a + b*x)/
sqrt(x)
```

Mathematica [A] time = 0.0218209, size = 48, normalized size = 1.07

$$2\sqrt{b}\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)-\frac{2\sqrt{a+bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*x])/Sqrt[x] + 2*Sqrt[b]*Log[b*Sqrt[x] + Sqrt[b]*Sq
rt[a + b*x]]
```

Maple [A] time = 0.102, size = 61, normalized size = 1.4

$$-2\frac{\sqrt{bx+a}}{\sqrt{x}}+1\sqrt{b}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\sqrt{x\,(bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^(3/2),x)
```

```
[Out] -2*(b*x+a)^(1/2)/x^(1/2)+b^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*
x)^(1/2))*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.253428, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{b}x\log\left(2\,bx+2\,\sqrt{bx+a}\sqrt{b}\sqrt{x}+a\right)-2\,\sqrt{bx+a}\sqrt{x}}{x},\frac{2\left(\sqrt{-b}x\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-b}\sqrt{x}}\right)-\sqrt{bx+a}\sqrt{x}\right)}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b)*x*log(2*b*x + 2*sqrt(b*x + a)*sqrt(b)*sqrt(x) + a) - 2*
sqrt(b*x + a)*sqrt(x))/x, 2*(sqrt(-b)*x*arctan(sqrt(b*x + a)/(sqr
```

```
t(-b)*sqrt(x))) - sqrt(b*x + a)*sqrt(x))/x]
```

Sympy [A] time = 5.86608, size = 68, normalized size = 1.51

$$-\frac{2\sqrt{a}}{\sqrt{x}\sqrt{1+\frac{bx}{a}}}+2\sqrt{b}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)-\frac{2b\sqrt{x}}{\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**(3/2),x)
```

```
[Out] -2*sqrt(a)/(sqrt(x)*sqrt(1 + b*x/a)) + 2*sqrt(b)*asinh(sqrt(b)*sq
rt(x)/sqrt(a)) - 2*b*sqrt(x)/(sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 12.5019, size = 4, normalized size = 0.09

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.494 $\int \frac{\sqrt{a+bx}}{x^{5/2}} dx$

Optimal. Leaf size=21

$$-\frac{2(a+bx)^{3/2}}{3ax^{3/2}}$$

```
[Out] (-2*(a + b*x)^(3/2))/(3*a*x^(3/2))
```

Rubi [A] time = 0.0124835, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2(a+bx)^{3/2}}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^(5/2),x]
```

```
[Out] (-2*(a + b*x)^(3/2))/(3*a*x^(3/2))
```

Rubi in Sympy [A] time = 2.24457, size = 19, normalized size = 0.9

$$-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{3ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**(5/2),x)
```

```
[Out] -2*(a + b*x)**(3/2)/(3*a*x**(3/2))
```

Mathematica [A] time = 0.0148005, size = 21, normalized size = 1.

$$-\frac{2(a+bx)^{3/2}}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^(5/2),x]
```

```
[Out] (-2*(a + b*x)^(3/2))/(3*a*x^(3/2))
```

Maple [A] time = 0.006, size = 16, normalized size = 0.8

$$-\frac{2}{3\,a}\,(bx+a)^{\frac{3}{2}}\,x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^(5/2),x)
```

```
[Out] -2/3*(b*x+a)^(3/2)/a/x^(3/2)
```

Maxima [A] time = 1.3717, size = 20, normalized size = 0.95

$$-\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(b*x + a)^(3/2)/(a*x^(3/2))
```

Fricas [A] time = 0.231112, size = 20, normalized size = 0.95

$$-\frac{2\,(bx+a)^{\frac{3}{2}}}{3\,ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(b*x + a)^(3/2)/(a*x^(3/2))
```

Sympy [A] time = 13.258, size = 41, normalized size = 1.95

$$-\frac{2\sqrt{b}\sqrt{\frac{a}{bx}+1}}{3x}-\frac{2b^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**(5/2),x)
```

```
[Out] -2*sqrt(b)*sqrt(a/(b*x) + 1)/(3*x) - 2*b**(3/2)*sqrt(a/(b*x) + 1)
/(3*a)
```

GIAC/XCAS [A] time = 0.214084, size = 45, normalized size = 2.14

$$-\frac{2\,(bx+a)^{\frac{3}{2}}b^{4}}{3\,((bx+a)b-ab)^{\frac{3}{2}}a|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(b*x + a)^(3/2)*b^4/(((b*x + a)*b - a*b)^(3/2)*a*abs(b))
```

3.495 $\int \frac{\sqrt{a+bx}}{x^{7/2}}\,dx$

Optimal. Leaf size=44

$$\frac{4b(a+bx)^{3/2}}{15a^2x^{3/2}}-\frac{2(a+bx)^{3/2}}{5ax^{5/2}}$$

```
[Out] (-2*(a + b*x)^(3/2))/(5*a*x^(5/2)) + (4*b*(a + b*x)^(3/2))/(15*a^
2*x^(3/2))
```

Rubi [A] time = 0.0265544, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{4b(a+bx)^{3/2}}{15a^2x^{3/2}}-\frac{2(a+bx)^{3/2}}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^(7/2),x]
```

```
[Out] (-2*(a + b*x)^(3/2))/(5*a*x^(5/2)) + (4*b*(a + b*x)^(3/2))/(15*a^
2*x^(3/2))
```

Rubi in Sympy [A] time = 3.54827, size = 39, normalized size = 0.89

$$-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{5ax^{\frac{5}{2}}}+\frac{4b\left(a+bx\right)^{\frac{3}{2}}}{15a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**(7/2),x)
```

```
[Out] -2*(a + b*x)**(3/2)/(5*a*x**(5/2)) + 4*b*(a + b*x)**(3/2)/(15*a**
2*x**(3/2))
```

Mathematica [A] time = 0.01915, size = 39, normalized size = 0.89

$$-\frac{2\sqrt{a+bx}\left(3a^2+abx-2b^2x^2\right)}{15a^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^(7/2),x]
```

```
[Out] (-2*Sqrt[a + b*x]*(3*a^2 + a*b*x - 2*b^2*x^2))/(15*a^2*x^(5/2))
```

Maple [A] time = 0.006, size = 24, normalized size = 0.6

$$-\frac{-4\,bx+6\,a}{15\,a^{2}}\left(bx+a\right)^{\frac{3}{2}}x^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^(7/2),x)
```

```
[Out] -2/15*(b*x+a)^(3/2)*(-2*b*x+3*a)/x^(5/2)/a^2
```

Maxima [A] time = 1.34821, size = 42, normalized size = 0.95

$$\frac{2\left(\frac{5\,(bx+a)^{\frac{3}{2}}b}{x^{\frac{3}{2}}}-\frac{3\,(bx+a)^{\frac{5}{2}}}{x^{\frac{5}{2}}}\right)}{15\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*(5*(b*x + a)^(3/2)*b/x^(3/2) - 3*(b*x + a)^(5/2)/x^(5/2))/a^
2
```

Fricas [A] time = 0.208085, size = 46, normalized size = 1.05

$$\frac{2\left(2\,b^{2}x^{2}-abx-3\,a^{2}\right)\sqrt{bx+a}}{15\,a^{2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(2*b^2*x^2 - a*b*x - 3*a^2)*sqrt(b*x + a)/(a^2*x^(5/2))
```

Sympy [A] time = 140.216, size = 65, normalized size = 1.48

$$-\frac{2\sqrt{b}\sqrt{\frac{a}{bx}+1}}{5x^2}-\frac{2b^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{15ax}+\frac{4b^{\frac{5}{2}}\sqrt{\frac{a}{bx}+1}}{15a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**(7/2),x)
```

```
[Out] -2*sqrt(b)*sqrt(a/(b*x) + 1)/(5*x**2) - 2*b**(3/2)*sqrt(a/(b*x) +
 1)/(15*a*x) + 4*b**(5/2)*sqrt(a/(b*x) + 1)/(15*a**2)
```

GIAC/XCAS [A] time = 0.208339, size = 68, normalized size = 1.55

$$-\frac{(bx+a)^{\frac{3}{2}}b\left(\frac{2(bx+a)}{a^3b^4}-\frac{5}{a^2b^4}\right)}{480\left((bx+a)b-ab\right)^{\frac{5}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(7/2),x, algorithm="giac")
```

```
[Out] -1/480*(b*x + a)^(3/2)*b*(2*(b*x + a)/(a^3*b^4) - 5/(a^2*b^4))/((
(b*x + a)*b - a*b)^(5/2)*abs(b))
```

3.496 $\int \frac{\sqrt{a+bx}}{x^{9/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{16b^2(a+bx)^{3/2}}{105a^3x^{3/2}}+\frac{8b(a+bx)^{3/2}}{35a^2x^{5/2}}-\frac{2(a+bx)^{3/2}}{7ax^{7/2}}$$

```
[Out] (-2*(a + b*x)^(3/2))/(7*a*x^(7/2)) + (8*b*(a + b*x)^(3/2))/(35*a^
2*x^(5/2)) - (16*b^2*(a + b*x)^(3/2))/(105*a^3*x^(3/2))
```

Rubi [A] time = 0.042966, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{16b^2(a+bx)^{3/2}}{105a^3x^{3/2}}+\frac{8b(a+bx)^{3/2}}{35a^2x^{5/2}}-\frac{2(a+bx)^{3/2}}{7ax^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/x^(9/2),x]
```

```
[Out] (-2*(a + b*x)^(3/2))/(7*a*x^(7/2)) + (8*b*(a + b*x)^(3/2))/(35*a^
2*x^(5/2)) - (16*b^2*(a + b*x)^(3/2))/(105*a^3*x^(3/2))
```

Rubi in Sympy [A] time = 5.72931, size = 63, normalized size = 0.93

$$-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{7ax^{\frac{7}{2}}}+\frac{8b\left(a+bx\right)^{\frac{3}{2}}}{35a^2x^{\frac{5}{2}}}-\frac{16b^2\left(a+bx\right)^{\frac{3}{2}}}{105a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/x**(9/2),x)
```

```
[Out] -2*(a + b*x)**(3/2)/(7*a*x**(7/2)) + 8*b*(a + b*x)**(3/2)/(35*a**
2*x**(5/2)) - 16*b**2*(a + b*x)**(3/2)/(105*a**3*x**(3/2))
```

Mathematica [A] time = 0.02273, size = 51, normalized size = 0.75

$$-\frac{2\sqrt{a+bx}\left(15a^3+3a^2bx-4ab^2x^2+8b^3x^3\right)}{105a^3x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/x^(9/2),x]
```

```
[Out] (-2*Sqrt[a + b*x]*(15*a^3 + 3*a^2*b*x - 4*a*b^2*x^2 + 8*b^3*x^3))
/(105*a^3*x^(7/2))
```

Maple [A] time = 0.007, size = 35, normalized size = 0.5

$$-\frac{16\,b^{2}x^{2}-24\,abx+30\,a^{2}}{105\,a^{3}}\left(bx+a\right)^{\frac{3}{2}}x^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/x^(9/2),x)
```

```
[Out] -2/105*(b*x+a)^(3/2)*(8*b^2*x^2-12*a*b*x+15*a^2)/x^(7/2)/a^3
```

Maxima [A] time = 1.33094, size = 62, normalized size = 0.91

$$-\frac{2\left(\frac{35\,(bx+a)^{\frac{3}{2}}b^{2}}{x^{\frac{3}{2}}}-\frac{42\,(bx+a)^{\frac{5}{2}}b}{x^{\frac{5}{2}}}+\frac{15\,(bx+a)^{\frac{7}{2}}}{x^{\frac{7}{2}}}\right)}{105\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(35*(b*x + a)^(3/2)*b^2/x^(3/2) - 42*(b*x + a)^(5/2)*b/x^(
5/2) + 15*(b*x + a)^(7/2)/x^(7/2))/a^3
```

Fricas [A] time = 0.209236, size = 61, normalized size = 0.9

$$-\frac{2\left(8\,b^{3}x^{3}-4\,ab^{2}x^{2}+3\,a^{2}bx+15\,a^{3}\right)\sqrt{bx+a}}{105\,a^{3}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(8*b^3*x^3 - 4*a*b^2*x^2 + 3*a^2*b*x + 15*a^3)*sqrt(b*x +
a)/(a^3*x^(7/2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/x**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.213154, size = 89, normalized size = 1.31

$$\frac{(bx+a)^{\frac{3}{2}}\left(4\,(bx+a)\left(\frac{2\,(bx+a)}{a^4b^5}-\frac{7}{a^3b^5}\right)+\frac{35}{a^2b^5}\right)b}{40320\,((bx+a)b-ab)^{\frac{7}{2}}\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/40320*(b*x + a)^(3/2)*(4*(b*x + a)*(2*(b*x + a)/(a^4*b^5) - 7/(
a^3*b^5)) + 35/(a^2*b^5))*b/(((b*x + a)*b - a*b)^(7/2)*abs(b))
```

3.497 $\int x^{5/2}\sqrt{a-bx}\,dx$

Optimal. Leaf size=127

$$\frac{5a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{7/2}}-\frac{5a^3\sqrt{x}\sqrt{a-bx}}{64b^3}-\frac{5a^2x^{3/2}\sqrt{a-bx}}{96b^2}-\frac{ax^{5/2}\sqrt{a-bx}}{24b}+\frac{1}{4}x^{7/2}\sqrt{a-bx}$$

```
[Out] (-5*a^3*Sqrt[x]*Sqrt[a - b*x])/(64*b^3) - (5*a^2*x^(3/2)*Sqrt[a -
 b*x])/(96*b^2) - (a*x^(5/2)*Sqrt[a - b*x])/(24*b) + (x^(7/2)*Sqr
t[a - b*x])/4 + (5*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(
64*b^(7/2))
```

Rubi [A] time = 0.0999675, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{7/2}}-\frac{5a^3\sqrt{x}\sqrt{a-bx}}{64b^3}-\frac{5a^2x^{3/2}\sqrt{a-bx}}{96b^2}-\frac{ax^{5/2}\sqrt{a-bx}}{24b}+\frac{1}{4}x^{7/2}\sqrt{a-bx}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*Sqrt[a - b*x],x]
```

```
[Out] (-5*a^3*Sqrt[x]*Sqrt[a - b*x])/(64*b^3) - (5*a^2*x^(3/2)*Sqrt[a -
 b*x])/(96*b^2) - (a*x^(5/2)*Sqrt[a - b*x])/(24*b) + (x^(7/2)*Sqr
t[a - b*x])/4 + (5*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(
64*b^(7/2))
```

Rubi in Sympy [A] time = 14.7917, size = 117, normalized size = 0.92

$$\frac{5a^4\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{\frac{7}{2}}}+\frac{5a^3\sqrt{x}\sqrt{a-bx}}{64b^3}-\frac{5a^2\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{32b^3}-\frac{5ax^{\frac{3}{2}}\,(a-bx)^{\frac{3}{2}}}{24b^2}-\frac{x^{\frac{5}{2}}\,(a-bx)^{\frac{3}{2}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(-b*x+a)**(1/2),x)
```

```
[Out] 5*a**4*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(64*b**(7/2)) + 5*a**3
*sqrt(x)*sqrt(a - b*x)/(64*b**3) - 5*a**2*sqrt(x)*(a - b*x)**(3/2
)/(32*b**3) - 5*a*x**(3/2)*(a - b*x)**(3/2)/(24*b**2) - x**(5/2)*
(a - b*x)**(3/2)/(4*b)
```

Mathematica [A] time = 0.0738185, size = 88, normalized size = 0.69

$$\frac{15a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(-15a^3-10a^2bx-8ab^2x^2+48b^3x^3\right)}{192b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*Sqrt[a - b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-15*a^3 - 10*a^2*b*x - 8*a*b^2*x^
2 + 48*b^3*x^3) + 15*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])
/(192*b^(7/2))
```

Maple [A] time = 0.016, size = 127, normalized size = 1.

$$-\frac{1}{4\,b}x^{\frac{5}{2}}\left(-bx+a\right)^{\frac{3}{2}}-\frac{5\,a}{24\,b^2}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{3}{2}}-\frac{5\,a^2}{32\,b^3}\left(-bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{5\,a^3}{64\,b^3}\sqrt{x}\sqrt{-bx+a}+\frac{5\,a^4}{128}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(-b*x+a)^(1/2),x)
```

```
[Out] -1/4/b*x^(5/2)*(-b*x+a)^(3/2)-5/24*a/b^2*x^(3/2)*(-b*x+a)^(3/2)-5
/32*a^2/b^3*x^(1/2)*(-b*x+a)^(3/2)+5/64*a^3*x^(1/2)*(-b*x+a)^(1/2
)/b^3+5/128*a^4/b^(7/2)*(x*(-b*x+a))^(1/2)/(-b*x+a)^(1/2)/x^(1/2)
*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222881, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^4\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\left(48\,b^3x^3-8\,ab^2x^2-10\,a^2bx-15\,a^3\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{384\,\sqrt{-b}b^3},\right.$$
$$\left.-\frac{15\,a^4\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(48\,b^3x^3-8\,ab^2x^2-10\,a^2bx-15\,a^3\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{192\,b^{\frac{7}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/384*(15*a^4*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt
(-b)) + 2*(48*b^3*x^3 - 8*a*b^2*x^2 - 10*a^2*b*x - 15*a^3)*sqrt(-
b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^3), -1/192*(15*a^4*arctan(
sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (48*b^3*x^3 - 8*a*b^2*x^2 - 1
0*a^2*b*x - 15*a^3)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))/b^(7/2)]
```

Sympy [A] time = 107.23, size = 323, normalized size = 2.54

$$\begin{cases} \frac{5ia^{\frac{7}{2}}\sqrt{x}}{64b^3\sqrt{-1+\frac{bx}{a}}}-\frac{5ia^{\frac{5}{2}}x^{\frac{3}{2}}}{192b^2\sqrt{-1+\frac{bx}{a}}}-\frac{ia^{\frac{3}{2}}x^{\frac{5}{2}}}{96b\sqrt{-1+\frac{bx}{a}}}-\frac{7i\sqrt{a}x^{\frac{7}{2}}}{24\sqrt{-1+\frac{bx}{a}}}-\frac{5ia^4\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{7}{2}}}+\frac{ibx^{\frac{9}{2}}}{4\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right|>1 \\ -\frac{5a^{\frac{7}{2}}\sqrt{x}}{64b^3\sqrt{1-\frac{bx}{a}}}+\frac{5a^{\frac{5}{2}}x^{\frac{3}{2}}}{192b^2\sqrt{1-\frac{bx}{a}}}+\frac{a^{\frac{3}{2}}x^{\frac{5}{2}}}{96b\sqrt{1-\frac{bx}{a}}}+\frac{7\sqrt{a}x^{\frac{7}{2}}}{24\sqrt{1-\frac{bx}{a}}}+\frac{5a^4\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{7}{2}}}-\frac{bx^{\frac{9}{2}}}{4\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((5*I*a**(7/2)*sqrt(x)/(64*b**3*sqrt(-1 + b*x/a)) - 5*I*
a**(5/2)*x**(3/2)/(192*b**2*sqrt(-1 + b*x/a)) - I*a**(3/2)*x**(5/
2)/(96*b*sqrt(-1 + b*x/a)) - 7*I*sqrt(a)*x**(7/2)/(24*sqrt(-1 + b
*x/a)) - 5*I*a**4*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(64*b**(7/2)) +
I*b*x**(9/2)/(4*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1), (-5*a
**(7/2)*sqrt(x)/(64*b**3*sqrt(1 - b*x/a)) + 5*a**(5/2)*x**(3/2)/(
192*b**2*sqrt(1 - b*x/a)) + a**(3/2)*x**(5/2)/(96*b*sqrt(1 - b*x/
a)) + 7*sqrt(a)*x**(7/2)/(24*sqrt(1 - b*x/a)) + 5*a**4*asin(sqrt(
b)*sqrt(x)/sqrt(a))/(64*b**(7/2)) - b*x**(9/2)/(4*sqrt(a)*sqrt(1
- b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.498 $\int x^{3/2}\sqrt{a-bx}\,dx$

Optimal. Leaf size=102

$$\frac{a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{5/2}}-\frac{a^2\sqrt{x}\sqrt{a-bx}}{8b^2}-\frac{ax^{3/2}\sqrt{a-bx}}{12b}+\frac{1}{3}x^{5/2}\sqrt{a-bx}$$

```
[Out] -(a^2*Sqrt[x]*Sqrt[a - b*x])/(8*b^2) - (a*x^(3/2)*Sqrt[a - b*x])/
(12*b) + (x^(5/2)*Sqrt[a - b*x])/3 + (a^3*ArcTan[(Sqrt[b]*Sqrt[x]
)/Sqrt[a - b*x]])/(8*b^(5/2))
```

Rubi [A] time = 0.0754344, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{5/2}}-\frac{a^2\sqrt{x}\sqrt{a-bx}}{8b^2}-\frac{ax^{3/2}\sqrt{a-bx}}{12b}+\frac{1}{3}x^{5/2}\sqrt{a-bx}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*Sqrt[a - b*x],x]
```

```
[Out] -(a^2*Sqrt[x]*Sqrt[a - b*x])/(8*b^2) - (a*x^(3/2)*Sqrt[a - b*x])/
(12*b) + (x^(5/2)*Sqrt[a - b*x])/3 + (a^3*ArcTan[(Sqrt[b]*Sqrt[x]
)/Sqrt[a - b*x]])/(8*b^(5/2))
```

Rubi in Sympy [A] time = 11.0076, size = 88, normalized size = 0.86

$$-\frac{a^3\operatorname{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{8b^{\frac{5}{2}}}+\frac{a^2\sqrt{x}\sqrt{a-bx}}{8b^2}-\frac{a\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{4b^2}-\frac{x^{\frac{3}{2}}\,(a-bx)^{\frac{3}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(-b*x+a)**(1/2),x)
```

```
[Out] -a**3*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/(8*b**(5/2)) + a**2*s
qrt(x)*sqrt(a - b*x)/(8*b**2) - a*sqrt(x)*(a - b*x)**(3/2)/(4*b**
2) - x**(3/2)*(a - b*x)**(3/2)/(3*b)
```

Mathematica [A] time = 0.0548508, size = 77, normalized size = 0.75

$$\frac{3a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(-3a^2-2abx+8b^2x^2\right)}{24b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*Sqrt[a - b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-3*a^2 - 2*a*b*x + 8*b^2*x^2) + 3
*a^3*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(24*b^(5/2))
```

Maple [A] time = 0.007, size = 108, normalized size = 1.1

$$-\frac{1}{3\,b}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{3}{2}}-\frac{a}{4\,b^2}\left(-bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{a^2}{8\,b^2}\sqrt{x}\sqrt{-bx+a}\\+\frac{a^3}{16}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(-b*x+a)^(1/2),x)
```

```
[Out] -1/3/b*x^(3/2)*(-b*x+a)^(3/2)-1/4*a/b^2*x^(1/2)*(-b*x+a)^(3/2)+1/
8*a^2*x^(1/2)*(-b*x+a)^(1/2)/b^2+1/16*a^3/b^(5/2)*(x*(-b*x+a))^(1
/2)/(-b*x+a)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x
)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22113, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^{3}\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\left(8\,b^{2}x^{2}-2\,abx-3\,a^{2}\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{48\,\sqrt{-b}b^{2}},\right.$$
$$\left.-\frac{3\,a^{3}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(8\,b^{2}x^{2}-2\,abx-3\,a^{2}\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{24\,b^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/48*(3*a^3*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-
b)) + 2*(8*b^2*x^2 - 2*a*b*x - 3*a^2)*sqrt(-b*x + a)*sqrt(-b)*sqr
t(x))/(sqrt(-b)*b^2), -1/24*(3*a^3*arctan(sqrt(-b*x + a)/(sqrt(b)
*sqrt(x))) - (8*b^2*x^2 - 2*a*b*x - 3*a^2)*sqrt(-b*x + a)*sqrt(b)
*sqrt(x))/b^(5/2)]
```

Sympy [A] time = 27.1826, size = 260, normalized size = 2.55

$$\begin{cases} \frac{ia^{\frac{5}{2}}\sqrt{x}}{8b^{2}\sqrt{-1+\frac{bx}{a}}}-\frac{ia^{\frac{3}{2}}x^{\frac{3}{2}}}{24b\sqrt{-1+\frac{bx}{a}}}-\frac{5i\sqrt{a}x^{\frac{5}{2}}}{12\sqrt{-1+\frac{bx}{a}}}-\frac{ia^{3}\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{5}{2}}}+\frac{ibx^{\frac{7}{2}}}{3\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right|>1 \\ -\frac{a^{\frac{5}{2}}\sqrt{x}}{8b^{2}\sqrt{1-\frac{bx}{a}}}+\frac{a^{\frac{3}{2}}x^{\frac{3}{2}}}{24b\sqrt{1-\frac{bx}{a}}}+\frac{5\sqrt{a}x^{\frac{5}{2}}}{12\sqrt{1-\frac{bx}{a}}}+\frac{a^{3}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{5}{2}}}-\frac{bx^{\frac{7}{2}}}{3\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((I*a**(5/2)*sqrt(x)/(8*b**2*sqrt(-1 + b*x/a)) - I*a**(3
/2)*x**(3/2)/(24*b*sqrt(-1 + b*x/a)) - 5*I*sqrt(a)*x**(5/2)/(12*s
qrt(-1 + b*x/a)) - I*a**3*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(5
/2)) + I*b*x**(7/2)/(3*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1)
, (-a**(5/2)*sqrt(x)/(8*b**2*sqrt(1 - b*x/a)) + a**(3/2)*x**(3/2)
/(24*b*sqrt(1 - b*x/a)) + 5*sqrt(a)*x**(5/2)/(12*sqrt(1 - b*x/a))
 + a**3*asin(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(5/2)) - b*x**(7/2)/(
3*sqrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*x^(3/2),x, algorithm="giac")

[Out] Exception raised: NotImplementedError
```

3.499 $\int \sqrt{x}\sqrt{a-bx}\,dx$

Optimal. Leaf size=77

$$\frac{a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{a-bx}-\frac{a\sqrt{x}\sqrt{a-bx}}{4b}$$

```
[Out] -(a*Sqrt[x]*Sqrt[a - b*x])/(4*b) + (x^(3/2)*Sqrt[a - b*x])/2 + (a
^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(3/2))
```

Rubi [A] time = 0.0536221, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{a-bx}-\frac{a\sqrt{x}\sqrt{a-bx}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*Sqrt[a - b*x],x]
```

```
[Out] -(a*Sqrt[x]*Sqrt[a - b*x])/(4*b) + (x^(3/2)*Sqrt[a - b*x])/2 + (a
^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(3/2))
```

Rubi in Sympy [A] time = 7.71018, size = 65, normalized size = 0.84

$$\frac{a^2\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{\frac{3}{2}}}+\frac{a\sqrt{x}\sqrt{a-bx}}{4b}-\frac{\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)*(-b*x+a)**(1/2),x)
```

```
[Out] a**2*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(4*b**(3/2)) + a*sqrt(x)
*sqrt(a - b*x)/(4*b) - sqrt(x)*(a - b*x)**(3/2)/(2*b)
```

Mathematica [A] time = 0.0477632, size = 65, normalized size = 0.84

$$\frac{a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}(2bx-a)}{4b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*Sqrt[a - b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-a + 2*b*x) + a^2*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(3/2))
```

Maple [A] time = 0.007, size = 86, normalized size = 1.1

$$\frac{1}{2}x^{\frac{3}{2}}\sqrt{-bx+a}-\frac{a}{4b}\sqrt{x}\sqrt{-bx+a}+\frac{a^2}{8}\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)*(-b*x+a)^(1/2),x)
```

```
[Out] 1/2*x^(3/2)*(-b*x+a)^(1/2)-1/4*a*x^(1/2)*(-b*x+a)^(1/2)/b+1/8*a^2
/b^(3/2)*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)*arctan(b^(1/2)
*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224612, size = 1, normalized size = 0.01

$$\left[\frac{a^2\log\left(-2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)+2(2bx-a)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{8\sqrt{-b}b},\right.$$
$$\left.-\frac{a^2\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-(2bx-a)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{4b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/8*(a^2*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b))
 + 2*(2*b*x - a)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b), -
1/4*(a^2*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (2*b*x - a)*s
qrt(-b*x + a)*sqrt(b)*sqrt(x))/b^(3/2)]
```

Sympy [A] time = 11.8246, size = 207, normalized size = 2.69

$$\begin{cases} \frac{ia^{\frac{3}{2}}\sqrt{x}}{4b\sqrt{-1+\frac{bx}{a}}} - \frac{3i\sqrt{a}x^{\frac{3}{2}}}{4\sqrt{-1+\frac{bx}{a}}} - \frac{ia^2\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{3}{2}}} + \frac{ibx^{\frac{5}{2}}}{2\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{a^{\frac{3}{2}}\sqrt{x}}{4b\sqrt{1-\frac{bx}{a}}} + \frac{3\sqrt{a}x^{\frac{3}{2}}}{4\sqrt{1-\frac{bx}{a}}} + \frac{a^2\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{3}{2}}} - \frac{bx^{\frac{5}{2}}}{2\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)*(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((I*a**(3/2)*sqrt(x)/(4*b*sqrt(-1 + b*x/a)) - 3*I*sqrt(a
)*x**(3/2)/(4*sqrt(-1 + b*x/a)) - I*a**2*acosh(sqrt(b)*sqrt(x)/sq
rt(a))/(4*b**(3/2)) + I*b*x**(5/2)/(2*sqrt(a)*sqrt(-1 + b*x/a)),
Abs(b*x/a) > 1), (-a**(3/2)*sqrt(x)/(4*b*sqrt(1 - b*x/a)) + 3*sqr
t(a)*x**(3/2)/(4*sqrt(1 - b*x/a)) + a**2*asin(sqrt(b)*sqrt(x)/sqr
t(a))/(4*b**(3/2)) - b*x**(5/2)/(2*sqrt(a)*sqrt(1 - b*x/a)), True
))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.500 $\int \frac{\sqrt{a-bx}}{\sqrt{x}}\,dx$

Optimal. Leaf size=46

$$\sqrt{x}\sqrt{a-bx}+\frac{a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}$$

```
[Out] Sqrt[x]*Sqrt[a - b*x] + (a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]
])/Sqrt[b]
```

Rubi [A] time = 0.0350356, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\sqrt{x}\sqrt{a-bx}+\frac{a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a - b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[a - b*x] + (a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]
])/Sqrt[b]
```

Rubi in Sympy [A] time = 5.24705, size = 39, normalized size = 0.85

$$-\frac{a\,\text{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}+\sqrt{x}\sqrt{a-bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(1/2)/x**(1/2),x)
```

```
[Out] -a*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/sqrt(b) + sqrt(x)*sqrt(a
 - b*x)
```

Mathematica [A] time = 0.0259138, size = 46, normalized size = 1.

$$\sqrt{x}\sqrt{a-bx}+\frac{a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a - b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[a - b*x] + (a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]
])/Sqrt[b]
```

Maple [A] time = 0.007, size = 66, normalized size = 1.4

$$\sqrt{x}\sqrt{-bx+a}+\frac{a}{2}\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(1/2)/x^(1/2),x)
```

```
[Out] x^(1/2)*(-b*x+a)^(1/2)+1/2*a*(x*(-b*x+a))^(1/2)/(-b*x+a)^(1/2)/x^
(1/2)/b^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.231128, size = 1, normalized size = 0.02

$$\left[\frac{a\log\left(-2\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{2\sqrt{-b}},-\frac{a\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/2*(a*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b)) +
 2*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/sqrt(-b), -(a*arctan(sqrt(-b*
```

```
x + a)/(sqrt(b)*sqrt(x))) - sqrt(-b*x + a)*sqrt(b)*sqrt(x))/sqrt(
b)]
```

Sympy [A] time = 6.6744, size = 119, normalized size = 2.59

$$\begin{cases} -\frac{i\sqrt{a}\sqrt{x}}{\sqrt{-1+\frac{bx}{a}}} - \frac{ia\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{b}} + \frac{ibx^{\frac{3}{2}}}{\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ \sqrt{a}\sqrt{x}\sqrt{1-\frac{bx}{a}} + \frac{a\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(1/2)/x**(1/2),x)
```

```
[Out] Piecewise((-I*sqrt(a)*sqrt(x)/sqrt(-1 + b*x/a) - I*a*acosh(sqrt(b
)*sqrt(x)/sqrt(a))/sqrt(b) + I*b*x**(3/2)/(sqrt(a)*sqrt(-1 + b*x/
a)), Abs(b*x/a) > 1), (sqrt(a)*sqrt(x)*sqrt(1 - b*x/a) + a*asin(s
qrt(b)*sqrt(x)/sqrt(a))/sqrt(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.501 $\int \frac{\sqrt{a-bx}}{x^{3/2}}\,dx$

Optimal. Leaf size=47

$$-\frac{2\sqrt{a-bx}}{\sqrt{x}}-2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

```
[Out] (-2*Sqrt[a - b*x])/Sqrt[x] - 2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/S
qrt[a - b*x]]
```

Rubi [A] time = 0.0358243, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$-\frac{2\sqrt{a-bx}}{\sqrt{x}}-2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a - b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[a - b*x])/Sqrt[x] - 2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/S
qrt[a - b*x]]
```

Rubi in Sympy [A] time = 5.29828, size = 42, normalized size = 0.89

$$-2\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\frac{2\sqrt{a-bx}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(1/2)/x**(3/2),x)
```

```
[Out] -2*sqrt(b)*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x)) - 2*sqrt(a - b*x)/
sqrt(x)
```

Mathematica [A] time = 0.0298, size = 47, normalized size = 1.

$$-\frac{2\sqrt{a-bx}}{\sqrt{x}}-2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a - b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[a - b*x])/Sqrt[x] - 2*Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/S
qrt[a - b*x]]
```

Maple [A] time = 0.036, size = 66, normalized size = 1.4

$$-2\frac{\sqrt{-bx+a}}{\sqrt{x}}-1\sqrt{b}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\sqrt{x\,(-bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(1/2)/x^(3/2),x)
```

```
[Out] -2*(-b*x+a)^(1/2)/x^(1/2)-b^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*
x^2+a*x)^(1/2))*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22499, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-b}x\log\left(-2\,bx+2\,\sqrt{-bx+a}\sqrt{-b}\sqrt{x}+a\right)-2\,\sqrt{-bx+a}\sqrt{x}}{x},\frac{2\left(\sqrt{b}x\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\sqrt{-bx+a}\sqrt{x}\right)}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(-b)*x*log(-2*b*x + 2*sqrt(-b*x + a)*sqrt(-b)*sqrt(x) + a)
- 2*sqrt(-b*x + a)*sqrt(x))/x, 2*(sqrt(b)*x*arctan(sqrt(-b*x + a)
```

```
/(sqrt(b)*sqrt(x))) - sqrt(-b*x + a)*sqrt(x))/x]
```

Sympy [A] time = 6.32737, size = 148, normalized size = 3.15

$$\begin{cases} \frac{2i\sqrt{a}}{\sqrt{x}\sqrt{-1+\frac{bx}{a}}} + 2i\sqrt{b}\,\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) - \frac{2ib\sqrt{x}}{\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{2\sqrt{a}}{\sqrt{x}\sqrt{1-\frac{bx}{a}}} - 2\sqrt{b}\,\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) + \frac{2b\sqrt{x}}{\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(1/2)/x**(3/2),x)
```

```
[Out] Piecewise((2*I*sqrt(a)/(sqrt(x)*sqrt(-1 + b*x/a)) + 2*I*sqrt(b)*a
cosh(sqrt(b)*sqrt(x)/sqrt(a)) - 2*I*b*sqrt(x)/(sqrt(a)*sqrt(-1 +
b*x/a)), Abs(b*x/a) > 1), (-2*sqrt(a)/(sqrt(x)*sqrt(1 - b*x/a)) -
 2*sqrt(b)*asin(sqrt(b)*sqrt(x)/sqrt(a)) + 2*b*sqrt(x)/(sqrt(a)*s
qrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.502 $\int \frac{\sqrt{a-bx}}{x^{5/2}} \, dx$

Optimal. Leaf size=22

$$-\frac{2(a-bx)^{3/2}}{3ax^{3/2}}$$

```
[Out] (-2*(a - b*x)^(3/2))/(3*a*x^(3/2))
```

Rubi [A] time = 0.0127427, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$

$$-\frac{2(a-bx)^{3/2}}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a - b*x]/x^(5/2),x]

[Out] (-2*(a - b*x)^(3/2))/(3*a*x^(3/2))
```

Rubi in Sympy [A] time = 2.49294, size = 19, normalized size = 0.86

$$-\frac{2\left(a-bx\right)^{\frac{3}{2}}}{3ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(1/2)/x**(5/2),x)

[Out] -2*(a - b*x)**(3/2)/(3*a*x**(3/2))
```

Mathematica [A] time = 0.015396, size = 22, normalized size = 1.

$$-\frac{2(a-bx)^{3/2}}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a - b*x]/x^(5/2),x]
```

```
[Out] (-2*(a - b*x)^(3/2))/(3*a*x^(3/2))
```

Maple [A] time = 0.006, size = 17, normalized size = 0.8

$$-\frac{2}{3a}(-bx+a)^{\frac{3}{2}}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b*x+a)^(1/2)/x^(5/2),x)
```

```
[Out] -2/3*(-b*x+a)^(3/2)/a/x^(3/2)
```

Maxima [A] time = 1.33177, size = 22, normalized size = 1.

$$-\frac{2(-bx+a)^{\frac{3}{2}}}{3\,ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-b*x + a)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(-b*x + a)^(3/2)/(a*x^(3/2))
```

Fricas [A] time = 0.217469, size = 31, normalized size = 1.41

$$\frac{2(bx-a)\sqrt{-bx+a}}{3\,ax^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-b*x + a)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b*x - a)*sqrt(-b*x + a)/(a*x^(3/2))
```

Sympy [A] time = 13.7685, size = 88, normalized size = 4.

$$\begin{cases} -\frac{2\sqrt{b}\sqrt{\frac{a}{bx}-1}}{3x}+\frac{2b^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}}{3a} & \text{for } \left|\frac{a}{bx}\right|>1 \\ -\frac{2i\sqrt{b}\sqrt{-\frac{a}{bx}+1}}{3x}+\frac{2ib^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{3a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(1/2)/x**(5/2),x)
```

```
[Out] Piecewise((-2*sqrt(b)*sqrt(a/(b*x) - 1)/(3*x) + 2*b**(3/2)*sqrt(a
/(b*x) - 1)/(3*a), Abs(a/(b*x)) > 1), (-2*I*sqrt(b)*sqrt(-a/(b*x)
 + 1)/(3*x) + 2*I*b**(3/2)*sqrt(-a/(b*x) + 1)/(3*a), True))
```

GIAC/XCAS [A] time = 0.233474, size = 57, normalized size = 2.59

$$\frac{2(bx-a)\sqrt{-bx+a}b^4}{3((bx-a)b+ab)^{\frac{3}{2}}a|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(b*x - a)*sqrt(-b*x + a)*b^4/(((b*x - a)*b + a*b)^(3/2)*a*abs
(b))
```

3.503 $\int \frac{\sqrt{a-bx}}{x^{7/2}} dx$

Optimal. Leaf size=46

$$-\frac{4b(a-bx)^{3/2}}{15a^2x^{3/2}}-\frac{2(a-bx)^{3/2}}{5ax^{5/2}}$$

```
[Out] (-2*(a - b*x)^(3/2))/(5*a*x^(5/2)) - (4*b*(a - b*x)^(3/2))/(15*a^
2*x^(3/2))
```

Rubi [A] time = 0.0279227, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{4b(a-bx)^{3/2}}{15a^2x^{3/2}}-\frac{2(a-bx)^{3/2}}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a - b*x]/x^(7/2),x]
```

```
[Out] (-2*(a - b*x)^(3/2))/(5*a*x^(5/2)) - (4*b*(a - b*x)^(3/2))/(15*a^
2*x^(3/2))
```

Rubi in Sympy [A] time = 4.07434, size = 41, normalized size = 0.89

$$-\frac{2\left(a-bx\right)^{\frac{3}{2}}}{5ax^{\frac{5}{2}}}-\frac{4b\left(a-bx\right)^{\frac{3}{2}}}{15a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(1/2)/x**(7/2),x)
```

```
[Out] -2*(a - b*x)**(3/2)/(5*a*x**(5/2)) - 4*b*(a - b*x)**(3/2)/(15*a**
2*x**(3/2))
```

Mathematica [A] time = 0.0199157, size = 41, normalized size = 0.89

$$-\frac{2\sqrt{a-bx}\left(3a^2-abx-2b^2x^2\right)}{15a^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a - b*x]/x^(7/2),x]
```

```
[Out] (-2*Sqrt[a - b*x]*(3*a^2 - a*b*x - 2*b^2*x^2))/(15*a^2*x^(5/2))
```

Maple [A] time = 0.006, size = 25, normalized size = 0.5

$$-\frac{4\,bx+6\,a}{15\,a^{2}}\left(-bx+a\right)^{\frac{3}{2}}x^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(1/2)/x^(7/2),x)
```

```
[Out] -2/15*(-b*x+a)^(3/2)*(2*b*x+3*a)/x^(5/2)/a^2
```

Maxima [A] time = 1.32969, size = 45, normalized size = 0.98

$$-\frac{2\left(\frac{5\,(-bx+a)^{\frac{3}{2}}b}{x^{\frac{3}{2}}}+\frac{3\,(-bx+a)^{\frac{5}{2}}}{x^{\frac{5}{2}}}\right)}{15\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(7/2),x, algorithm="maxima")
```

```
[Out] -2/15*(5*(-b*x + a)^(3/2)*b/x^(3/2) + 3*(-b*x + a)^(5/2)/x^(5/2))
/a^2
```

Fricas [A] time = 0.219991, size = 46, normalized size = 1.

$$\frac{2\left(2\,b^{2}x^{2}+abx-3\,a^{2}\right)\sqrt{-bx+a}}{15\,a^{2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(2*b^2*x^2 + a*b*x - 3*a^2)*sqrt(-b*x + a)/(a^2*x^(5/2))
```

Sympy [A] time = 138.462, size = 241, normalized size = 5.24

$$\begin{cases} -\frac{2\sqrt{b}\sqrt{\frac{a}{bx}-1}}{5x^2}+\frac{2b^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}}{15ax}+\frac{4b^{\frac{5}{2}}\sqrt{\frac{a}{bx}-1}}{15a^2} & \text{for } \left|\frac{a}{bx}\right|>1 \\ \frac{6ia^3b^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{x(-15a^3bx+15a^2b^2x^2)}-\frac{8ia^2b^{\frac{5}{2}}\sqrt{-\frac{a}{bx}+1}}{-15a^3bx+15a^2b^2x^2}-\frac{2iab^{\frac{7}{2}}x\sqrt{-\frac{a}{bx}+1}}{-15a^3bx+15a^2b^2x^2}+\frac{4ib^{\frac{9}{2}}x^2\sqrt{-\frac{a}{bx}+1}}{-15a^3bx+15a^2b^2x^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(1/2)/x**(7/2),x)
```

```
[Out] Piecewise((-2*sqrt(b)*sqrt(a/(b*x) - 1)/(5*x**2) + 2*b**(3/2)*sqr
t(a/(b*x) - 1)/(15*a*x) + 4*b**(5/2)*sqrt(a/(b*x) - 1)/(15*a**2),
 Abs(a/(b*x)) > 1), (6*I*a**3*b**(3/2)*sqrt(-a/(b*x) + 1)/(x*(-15
*a**3*b*x + 15*a**2*b**2*x**2)) - 8*I*a**2*b**(5/2)*sqrt(-a/(b*x)
 + 1)/(-15*a**3*b*x + 15*a**2*b**2*x**2) - 2*I*a*b**(7/2)*x*sqrt(
-a/(b*x) + 1)/(-15*a**3*b*x + 15*a**2*b**2*x**2) + 4*I*b**(9/2)*x
**2*sqrt(-a/(b*x) + 1)/(-15*a**3*b*x + 15*a**2*b**2*x**2), True))
```

GIAC/XCAS [A] time = 0.21283, size = 82, normalized size = 1.78

$$-\frac{(bx-a)\sqrt{-bx+a}b\left(\frac{2(bx-a)}{a^3b^4}+\frac{5}{a^2b^4}\right)}{480\left((bx-a)b+ab\right)^{\frac{5}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(7/2),x, algorithm="giac")
```

```
[Out] -1/480*(b*x - a)*sqrt(-b*x + a)*b*(2*(b*x - a)/(a^3*b^4) + 5/(a^2
*b^4))/(((b*x - a)*b + a*b)^(5/2)*abs(b))
```

3.504 $\int \frac{\sqrt{a-bx}}{x^{9/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{16b^2(a-bx)^{3/2}}{105a^3x^{3/2}}-\frac{8b(a-bx)^{3/2}}{35a^2x^{5/2}}-\frac{2(a-bx)^{3/2}}{7ax^{7/2}}$$

```
[Out] (-2*(a - b*x)^(3/2))/(7*a*x^(7/2)) - (8*b*(a - b*x)^(3/2))/(35*a^
2*x^(5/2)) - (16*b^2*(a - b*x)^(3/2))/(105*a^3*x^(3/2))
```

Rubi [A] time = 0.0452699, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{16b^2(a-bx)^{3/2}}{105a^3x^{3/2}}-\frac{8b(a-bx)^{3/2}}{35a^2x^{5/2}}-\frac{2(a-bx)^{3/2}}{7ax^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a - b*x]/x^(9/2),x]
```

```
[Out] (-2*(a - b*x)^(3/2))/(7*a*x^(7/2)) - (8*b*(a - b*x)^(3/2))/(35*a^
2*x^(5/2)) - (16*b^2*(a - b*x)^(3/2))/(105*a^3*x^(3/2))
```

Rubi in Sympy [A] time = 6.43434, size = 65, normalized size = 0.92

$$-\frac{2\,(a-bx)^{\frac{3}{2}}}{7ax^{\frac{7}{2}}}-\frac{8b\,(a-bx)^{\frac{3}{2}}}{35a^2x^{\frac{5}{2}}}-\frac{16b^2\,(a-bx)^{\frac{3}{2}}}{105a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(1/2)/x**(9/2),x)
```

```
[Out] -2*(a - b*x)**(3/2)/(7*a*x**(7/2)) - 8*b*(a - b*x)**(3/2)/(35*a**
2*x**(5/2)) - 16*b**2*(a - b*x)**(3/2)/(105*a**3*x**(3/2))
```

Mathematica [A] time = 0.0230026, size = 52, normalized size = 0.73

$$-\frac{2\sqrt{a-bx}\left(15a^3-3a^2bx-4ab^2x^2-8b^3x^3\right)}{105a^3x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a - b*x]/x^(9/2),x]
```

```
[Out] (-2*Sqrt[a - b*x]*(15*a^3 - 3*a^2*b*x - 4*a*b^2*x^2 - 8*b^3*x^3))
/(105*a^3*x^(7/2))
```

Maple [A] time = 0.006, size = 36, normalized size = 0.5

$$-\frac{16\,b^2x^2+24\,abx+30\,a^2}{105\,a^3}\left(-bx+a\right)^{\frac{3}{2}}x^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(1/2)/x^(9/2),x)
```

```
[Out] -2/105*(-b*x+a)^(3/2)*(8*b^2*x^2+12*a*b*x+15*a^2)/x^(7/2)/a^3
```

Maxima [A] time = 1.33332, size = 66, normalized size = 0.93

$$-\frac{2\left(\frac{35\left(-bx+a\right)^{\frac{3}{2}}b^2}{x^{\frac{3}{2}}}+\frac{42\left(-bx+a\right)^{\frac{5}{2}}b}{x^{\frac{5}{2}}}+\frac{15\left(-bx+a\right)^{\frac{7}{2}}}{x^{\frac{7}{2}}}\right)}{105\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(35*(-b*x + a)^(3/2)*b^2/x^(3/2) + 42*(-b*x + a)^(5/2)*b/x
^(5/2) + 15*(-b*x + a)^(7/2)/x^(7/2))/a^3
```

Fricas [A] time = 0.2161, size = 62, normalized size = 0.87

$$\frac{2\left(8\,b^3x^3+4\,ab^2x^2+3\,a^2bx-15\,a^3\right)\sqrt{-bx+a}}{105\,a^3x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(8*b^3*x^3 + 4*a*b^2*x^2 + 3*a^2*b*x - 15*a^3)*sqrt(-b*x +
a)/(a^3*x^(7/2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(1/2)/x**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.212143, size = 107, normalized size = 1.51

$$\frac{(bx-a)\sqrt{-bx+a}\left(4\,(bx-a)\left(\frac{2\,(bx-a)}{a^4b^5}+\frac{7}{a^3b^5}\right)+\frac{35}{a^2b^5}\right)b}{40320\,((bx-a)b+ab)^{\frac{7}{2}}\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + a)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/40320*(b*x - a)*sqrt(-b*x + a)*(4*(b*x - a)*(2*(b*x - a)/(a^4*b
^5) + 7/(a^3*b^5)) + 35/(a^2*b^5))*b/(((b*x - a)*b + a*b)^(7/2)*a
bs(b))
```

3.505 $\int x^{5/2}\sqrt{2+bx}\,dx$

Optimal. Leaf size=108

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{8b^3}-\frac{5x^{3/2}\sqrt{bx+2}}{24b^2}+\frac{1}{4}x^{7/2}\sqrt{bx+2}+\frac{x^{5/2}\sqrt{bx+2}}{12b}$$

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(8*b^3) - (5*x^(3/2)*Sqrt[2 + b*x])/(24
*b^2) + (x^(5/2)*Sqrt[2 + b*x])/(12*b) + (x^(7/2)*Sqrt[2 + b*x])/
4 - (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(7/2))
```

Rubi [A] time = 0.0909795, antiderivative size = 108, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{8b^3}-\frac{5x^{3/2}\sqrt{bx+2}}{24b^2}+\frac{1}{4}x^{7/2}\sqrt{bx+2}+\frac{x^{5/2}\sqrt{bx+2}}{12b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*Sqrt[2 + b*x],x]
```

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(8*b^3) - (5*x^(3/2)*Sqrt[2 + b*x])/(24
*b^2) + (x^(5/2)*Sqrt[2 + b*x])/(12*b) + (x^(7/2)*Sqrt[2 + b*x])/
4 - (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 11.9085, size = 104, normalized size = 0.96

$$\frac{x^{\frac{5}{2}}\left(bx+2\right)^{\frac{3}{2}}}{4b}-\frac{5x^{\frac{3}{2}}\left(bx+2\right)^{\frac{3}{2}}}{12b^2}+\frac{5\sqrt{x}\left(bx+2\right)^{\frac{3}{2}}}{8b^3}-\frac{5\sqrt{x}\sqrt{bx+2}}{8b^3}-\frac{5\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+2)**(1/2),x)
```

```
[Out] x**(5/2)*(b*x + 2)**(3/2)/(4*b) - 5*x**(3/2)*(b*x + 2)**(3/2)/(12
*b**2) + 5*sqrt(x)*(b*x + 2)**(3/2)/(8*b**3) - 5*sqrt(x)*sqrt(b*x
 + 2)/(8*b**3) - 5*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(7/2))
```

Mathematica [A] time = 0.0738889, size = 70, normalized size = 0.65

$$\frac{\sqrt{x}\sqrt{bx+2}\left(6b^3x^3+2b^2x^2-5bx+15\right)}{24b^3}-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(15 - 5*b*x + 2*b^2*x^2 + 6*b^3*x^3))/(24*
b^3) - (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(7/2))
```

Maple [A] time = 0.011, size = 108, normalized size = 1.

$$\frac{1}{4\,b}x^{\frac{5}{2}}\left(bx+2\right)^{\frac{3}{2}}-\frac{5}{12\,b^{2}}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{3}{2}}+\frac{5}{8\,b^{3}}\left(bx+2\right)^{\frac{3}{2}}\sqrt{x}-\frac{5}{8\,b^{3}}\sqrt{x}\sqrt{bx+2}-\frac{5}{8}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^{2}+2\,x}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+2)^(1/2),x)
```

```
[Out] 1/4/b*x^(5/2)*(b*x+2)^(3/2)-5/12/b^2*x^(3/2)*(b*x+2)^(3/2)+5/8/b^
3*x^(1/2)*(b*x+2)^(3/2)-5/8*x^(1/2)*(b*x+2)^(1/2)/b^3-5/8/b^(7/2)
*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^
2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227665, size = 1, normalized size = 0.01

$$\left[\frac{\left(6\,b^{3}x^{3}+2\,b^{2}x^{2}-5\,bx+15\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\,\log\left(-\sqrt{bx+2}b\sqrt{x}+\left(bx+1\right)\sqrt{b}\right)}{24\,b^{\frac{7}{2}}},\frac{\left(6\,b^{3}x^{3}+2\,b^{2}x^{2}-5\,bx+15\right)\sqrt{bx+2}}{24\,\sqrt{-b}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/24*((6*b^3*x^3 + 2*b^2*x^2 - 5*b*x + 15)*sqrt(b*x + 2)*sqrt(b)
*sqrt(x) + 15*log(-sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/
b^(7/2), 1/24*((6*b^3*x^3 + 2*b^2*x^2 - 5*b*x + 15)*sqrt(b*x + 2)
*sqrt(-b)*sqrt(x) - 30*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x)))
)/(sqrt(-b)*b^3)]
```

Sympy [A] time = 101.496, size = 117, normalized size = 1.08

$$\frac{bx^{\frac{9}{2}}}{4\sqrt{bx+2}}+\frac{7x^{\frac{7}{2}}}{12\sqrt{bx+2}}-\frac{x^{\frac{5}{2}}}{24b\sqrt{bx+2}}+\frac{5x^{\frac{3}{2}}}{24b^2\sqrt{bx+2}}+\frac{5\sqrt{x}}{4b^3\sqrt{bx+2}}-\frac{5\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+2)**(1/2),x)
```

```
[Out] b*x**(9/2)/(4*sqrt(b*x + 2)) + 7*x**(7/2)/(12*sqrt(b*x + 2)) - x*
*(5/2)/(24*b*sqrt(b*x + 2)) + 5*x**(3/2)/(24*b**2*sqrt(b*x + 2))
+ 5*sqrt(x)/(4*b**3*sqrt(b*x + 2)) - 5*asinh(sqrt(2)*sqrt(b)*sqrt
(x)/2)/(4*b**(7/2))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.506 $\int x^{3/2}\sqrt{2+bx}\,dx$

Optimal. Leaf size=84

$$\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{\sqrt{x}\sqrt{bx+2}}{2b^2}+\frac{1}{3}x^{5/2}\sqrt{bx+2}+\frac{x^{3/2}\sqrt{bx+2}}{6b}$$

```
[Out] -(Sqrt[x]*Sqrt[2 + b*x])/(2*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(6*b)
+ (x^(5/2)*Sqrt[2 + b*x])/3 + ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/
b^(5/2)
```

Rubi [A] time = 0.0637336, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{\sqrt{x}\sqrt{bx+2}}{2b^2}+\frac{1}{3}x^{5/2}\sqrt{bx+2}+\frac{x^{3/2}\sqrt{bx+2}}{6b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*Sqrt[2 + b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 + b*x])/(2*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(6*b)
+ (x^(5/2)*Sqrt[2 + b*x])/3 + ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/
b^(5/2)
```

Rubi in Sympy [A] time = 9.00528, size = 76, normalized size = 0.9

$$\frac{x^{\frac{3}{2}}(bx+2)^{\frac{3}{2}}}{3b}-\frac{\sqrt{x}(bx+2)^{\frac{3}{2}}}{2b^2}+\frac{\sqrt{x}\sqrt{bx+2}}{2b^2}+\frac{\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+2)**(1/2),x)
```

```
[Out] x**(3/2)*(b*x + 2)**(3/2)/(3*b) - sqrt(x)*(b*x + 2)**(3/2)/(2*b**
2) + sqrt(x)*sqrt(b*x + 2)/(2*b**2) + asinh(sqrt(2)*sqrt(b)*sqrt(
x)/2)/b**(5/2)
```

Mathematica [A] time = 0.0558348, size = 58, normalized size = 0.69

$$\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{\sqrt{x}\sqrt{bx+2}\left(2b^2x^2+bx-3\right)}{6b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(-3 + b*x + 2*b^2*x^2))/(6*b^2) + ArcSinh[
(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(5/2)
```

Maple [A] time = 0.009, size = 93, normalized size = 1.1

$$\frac{1}{3\,b}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{3}{2}}-\frac{1}{2\,b^2}\left(bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{1}{2\,b^2}\sqrt{x}\sqrt{bx+2}+\frac{1}{2}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+2)^(1/2),x)
```

```
[Out] 1/3/b*x^(3/2)*(b*x+2)^(3/2)-1/2/b^2*x^(1/2)*(b*x+2)^(3/2)+1/2*x^(
1/2)*(b*x+2)^(1/2)/b^2+1/2/b^(5/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2
)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229867, size = 1, normalized size = 0.01

$$\left[\frac{\left(2\,b^2x^2+bx-3\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+3\,\log\left(\sqrt{bx+2}b\sqrt{x}+\left(bx+1\right)\sqrt{b}\right)}{6\,b^{\frac{5}{2}}},\frac{\left(2\,b^2x^2+bx-3\right)\sqrt{bx+2}\sqrt{-b}\sqrt{x}+6\,\arctan\left(\frac{\sqrt{bx+}}{b\sqrt{}}\right.}{6\,\sqrt{-b}b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/6*((2*b^2*x^2 + b*x - 3)*sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 3*log
(sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/b^(5/2), 1/6*((2*b
^2*x^2 + b*x - 3)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x) + 6*arctan(sqrt(
b*x + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b^2)]
```

Sympy [A] time = 22.9947, size = 90, normalized size = 1.07

$$\frac{bx^{\frac{7}{2}}}{3\sqrt{bx+2}} + \frac{5x^{\frac{5}{2}}}{6\sqrt{bx+2}} - \frac{x^{\frac{3}{2}}}{6b\sqrt{bx+2}} - \frac{\sqrt{x}}{b^2\sqrt{bx+2}} + \frac{\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+2)**(1/2),x)
```

```
[Out] b*x**(7/2)/(3*sqrt(b*x + 2)) + 5*x**(5/2)/(6*sqrt(b*x + 2)) - x**
(3/2)/(6*b*sqrt(b*x + 2)) - sqrt(x)/(b**2*sqrt(b*x + 2)) + asinh(
sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.507 $\int \sqrt{x}\sqrt{2+bx}\,dx$

Optimal. Leaf size=64

$$-\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{bx+2}+\frac{\sqrt{x}\sqrt{bx+2}}{2b}$$

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/(2*b) + (x^(3/2)*Sqrt[2 + b*x])/2 - ArcSi
nh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/2)
```

Rubi [A] time = 0.0450904, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{bx+2}+\frac{\sqrt{x}\sqrt{bx+2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/(2*b) + (x^(3/2)*Sqrt[2 + b*x])/2 - ArcSi
nh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/2)
```

Rubi in Sympy [A] time = 6.4283, size = 56, normalized size = 0.88

$$\frac{\sqrt{x}\,(bx+2)^{\frac{3}{2}}}{2b}-\frac{\sqrt{x}\sqrt{bx+2}}{2b}-\frac{\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)*(b*x+2)**(1/2),x)
```

```
[Out] sqrt(x)*(b*x + 2)**(3/2)/(2*b) - sqrt(x)*sqrt(b*x + 2)/(2*b) - as
inh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2)
```

Mathematica [A] time = 0.0440559, size = 51, normalized size = 0.8

$$\frac{\sqrt{x}(bx+1)\sqrt{bx+2}}{2b}-\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*(1 + b*x)*Sqrt[2 + b*x])/(2*b) - ArcSinh[(Sqrt[b]*Sqrt[x
])/Sqrt[2]]/b^(3/2)
```

Maple [A] time = 0.02, size = 75, normalized size = 1.2

$$\frac{1}{2}x^{\frac{3}{2}}\sqrt{bx+2}+\frac{1}{2b}\sqrt{x}\sqrt{bx+2}-\frac{1}{2}\sqrt{x(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)*(b*x+2)^(1/2),x)
```

```
[Out] 1/2*x^(3/2)*(b*x+2)^(1/2)+1/2*x^(1/2)*(b*x+2)^(1/2)/b-1/2/b^(3/2)
*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^
2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223674, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{bx+2}(bx+1)\sqrt{b}\sqrt{x}+\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{2b^{\frac{3}{2}}},\frac{\sqrt{bx+2}(bx+1)\sqrt{-b}\sqrt{x}-2\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)}{2\sqrt{-b}b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b*x + 2)*(b*x + 1)*sqrt(b)*sqrt(x) + log(-sqrt(b*x + 2
)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/b^(3/2), 1/2*(sqrt(b*x + 2)*(b*
x + 1)*sqrt(-b)*sqrt(x) - 2*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt
(x))))/(sqrt(-b)*b)]
```

Sympy [A] time = 9.69718, size = 71, normalized size = 1.11

$$\frac{bx^{\frac{5}{2}}}{2\sqrt{bx+2}} + \frac{3x^{\frac{3}{2}}}{2\sqrt{bx+2}} + \frac{\sqrt{x}}{b\sqrt{bx+2}} - \frac{\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)*(b*x+2)**(1/2),x)
```

```
[Out] b*x**(5/2)/(2*sqrt(b*x + 2)) + 3*x**(3/2)/(2*sqrt(b*x + 2)) + sqr
t(x)/(b*sqrt(b*x + 2)) - asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2
)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.508 $\int \frac{\sqrt{2+bx}}{\sqrt{x}}\,dx$

Optimal. Leaf size=40

$$\sqrt{x}\sqrt{bx+2}+\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] Sqrt[x]*Sqrt[2 + b*x] + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sq
rt[b]
```

Rubi [A] time = 0.0286932, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\sqrt{x}\sqrt{bx+2}+\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 + b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[2 + b*x] + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sq
rt[b]
```

Rubi in Sympy [A] time = 4.471, size = 37, normalized size = 0.92

$$\sqrt{x}\sqrt{bx+2}+\frac{2\,\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(1/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*sqrt(b*x + 2) + 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b
)
```

Mathematica [A] time = 0.0182589, size = 40, normalized size = 1.

$$\sqrt{x}\sqrt{bx+2}+\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 + b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[2 + b*x] + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sq
rt[b]
```

Maple [A]   time = 0.007, size = 58, normalized size = 1.5

$$\sqrt{x}\sqrt{bx+2}+1\sqrt{x\,(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(1/2)/x^(1/2),x)
```

```
[Out] x^(1/2)*(b*x+2)^(1/2)+(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln(
(b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))/b^(1/2)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.220883, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{bx+2}\sqrt{b}\sqrt{x}+\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{\sqrt{b}},\ \frac{\sqrt{bx+2}\sqrt{-b}\sqrt{x}+2\,\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)}{\sqrt{-b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*x + 2)*sqrt(b)*sqrt(x) + log(sqrt(b*x + 2)*b*sqrt(x) + (
b*x + 1)*sqrt(b)))/sqrt(b), (sqrt(b*x + 2)*sqrt(-b)*sqrt(x) + 2*a
```

```
rctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/sqrt(-b)]
```

Sympy [A] time = 5.76659, size = 37, normalized size = 0.92

$$\sqrt{x}\sqrt{bx+2}+\frac{2\,\text{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(1/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*sqrt(b*x + 2) + 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b
)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.509 $\int \frac{\sqrt{2+bx}}{x^{3/2}}\,dx$

Optimal. Leaf size=41

$$2\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2\sqrt{bx+2}}{\sqrt{x}}$$

```
[Out] (-2*Sqrt[2 + b*x])/Sqrt[x] + 2*Sqrt[b]*ArcSinh[(Sqrt[b]*Sqrt[x])/
Sqrt[2]]
```

Rubi [A] time = 0.0322514, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2\sqrt{bx+2}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 + b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[2 + b*x])/Sqrt[x] + 2*Sqrt[b]*ArcSinh[(Sqrt[b]*Sqrt[x])/
Sqrt[2]]
```

Rubi in Sympy [A] time = 4.85653, size = 39, normalized size = 0.95

$$2\sqrt{b}\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)-\frac{2\sqrt{bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(1/2)/x**(3/2),x)
```

```
[Out] 2*sqrt(b)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) - 2*sqrt(b*x + 2)/sqrt
(x)
```

Mathematica [A] time = 0.0228564, size = 41, normalized size = 1.

$$2\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2\sqrt{bx+2}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 + b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[2 + b*x])/Sqrt[x] + 2*Sqrt[b]*ArcSinh[(Sqrt[b]*Sqrt[x])/
Sqrt[2]]
```

Maple [A] time = 0.033, size = 59, normalized size = 1.4

$$-2\frac{\sqrt{bx+2}}{\sqrt{x}}+1\sqrt{b}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)\sqrt{x\,(bx+2)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(1/2)/x^(3/2),x)
```

```
[Out] -2*(b*x+2)^(1/2)/x^(1/2)+b^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(
1/2))*(x*(b*x+2))^(1/2)/x^(1/2)/(b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21834, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{b}x\log\left(bx+\sqrt{bx+2}\sqrt{b}\sqrt{x}+1\right)-2\sqrt{bx+2}\sqrt{x}}{x},\frac{2\left(\sqrt{-b}x\arctan\left(\frac{\sqrt{bx+2}}{\sqrt{-b}\sqrt{x}}\right)-\sqrt{bx+2}\sqrt{x}\right)}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b)*x*log(b*x + sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 1) - 2*sqrt
(b*x + 2)*sqrt(x))/x, 2*(sqrt(-b)*x*arctan(sqrt(b*x + 2)/(sqrt(-b
```

```
)*sqrt(x))) - sqrt(b*x + 2)*sqrt(x))/x]
```

Sympy [A] time = 5.46726, size = 48, normalized size = 1.17

$$-2\sqrt{b}\sqrt{1+\frac{2}{bx}}-\sqrt{b}\log\left(\frac{1}{bx}\right)+2\sqrt{b}\log\left(\sqrt{1+\frac{2}{bx}}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(1/2)/x**(3/2),x)
```

```
[Out] -2*sqrt(b)*sqrt(1 + 2/(b*x)) - sqrt(b)*log(1/(b*x)) + 2*sqrt(b)*l
og(sqrt(1 + 2/(b*x)) + 1)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.510 $\int \frac{\sqrt{2+bx}}{x^{5/2}}\,dx$

Optimal. Leaf size=18

$$-\frac{(bx+2)^{3/2}}{3x^{3/2}}$$

```
[Out] -(2 + b*x)^(3/2)/(3*x^(3/2))
```

Rubi [A] time = 0.0111847, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{(bx+2)^{3/2}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 + b*x]/x^(5/2),x]

[Out] -(2 + b*x)^(3/2)/(3*x^(3/2))
```

Rubi in Sympy [A] time = 2.04199, size = 15, normalized size = 0.83

$$-\frac{(bx+2)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(1/2)/x**(5/2),x)

[Out] -(b*x + 2)**(3/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0142626, size = 18, normalized size = 1.

$$-\frac{(bx+2)^{3/2}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 + b*x]/x^(5/2),x]
```

```
[Out] -(2 + b*x)^(3/2)/(3*x^(3/2))
```

Maple [A] time = 0.006, size = 13, normalized size = 0.7

$$-\frac{1}{3}\,(bx+2)^{\frac{3}{2}}\,x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(1/2)/x^(5/2),x)
```

```
[Out] -1/3*(b*x+2)^(3/2)/x^(3/2)
```

Maxima [A] time = 1.34038, size = 16, normalized size = 0.89

$$-\frac{(bx+2)^{\frac{3}{2}}}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*(b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.208409, size = 16, normalized size = 0.89

$$-\frac{(bx+2)^{\frac{3}{2}}}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3*(b*x + 2)^(3/2)/x^(3/2)
```

Sympy [A] time = 13.2402, size = 37, normalized size = 2.06

$$-\frac{b^{\frac{3}{2}}\sqrt{1+\frac{2}{bx}}}{3}-\frac{2\sqrt{b}\sqrt{1+\frac{2}{bx}}}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(1/2)/x**(5/2),x)
```

```
[Out] -b**(3/2)*sqrt(1 + 2/(b*x))/3 - 2*sqrt(b)*sqrt(1 + 2/(b*x))/(3*x)
```

GIAC/XCAS [A] time = 0.22684, size = 39, normalized size = 2.17

$$-\frac{(bx+2)^{\frac{3}{2}}b^4}{3\left((bx+2)b-2\,b\right)^{\frac{3}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(b*x + 2)^(3/2)*b^4/(((b*x + 2)*b - 2*b)^(3/2)*abs(b))
```

3.511 $\int \frac{\sqrt{2+bx}}{x^{7/2}} \, dx$

Optimal. Leaf size=38

$$\frac{b(bx+2)^{3/2}}{15x^{3/2}} - \frac{(bx+2)^{3/2}}{5x^{5/2}}$$

```
[Out] -(2 + b*x)^(3/2)/(5*x^(5/2)) + (b*(2 + b*x)^(3/2))/(15*x^(3/2))
```

Rubi [A] time = 0.0223227, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{b(bx+2)^{3/2}}{15x^{3/2}} - \frac{(bx+2)^{3/2}}{5x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 + b*x]/x^(7/2),x]
```

```
[Out] -(2 + b*x)^(3/2)/(5*x^(5/2)) + (b*(2 + b*x)^(3/2))/(15*x^(3/2))
```

Rubi in Sympy [A] time = 2.86492, size = 31, normalized size = 0.82

$$\frac{b\,(bx+2)^{\frac{3}{2}}}{15x^{\frac{3}{2}}} - \frac{(bx+2)^{\frac{3}{2}}}{5x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(1/2)/x**(7/2),x)
```

```
[Out] b*(b*x + 2)**(3/2)/(15*x**(3/2)) - (b*x + 2)**(3/2)/(5*x**(5/2))
```

Mathematica [A] time = 0.0151269, size = 31, normalized size = 0.82

$$\frac{\sqrt{bx+2}\,\left(b^2x^2 - bx - 6\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 + b*x]/x^(7/2),x]
```

```
[Out] (Sqrt[2 + b*x]*(-6 - b*x + b^2*x^2))/(15*x^(5/2))
```

Maple [A] time = 0.005, size = 18, normalized size = 0.5

$$\frac{bx-3}{15}(bx+2)^{\frac{3}{2}}x^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+2)^(1/2)/x^(7/2),x)

[Out] 1/15*(b*x+2)^(3/2)*(b*x-3)/x^(5/2)
```

Maxima [A] time = 1.34219, size = 35, normalized size = 0.92

$$\frac{(bx+2)^{\frac{3}{2}}b}{6\,x^{\frac{3}{2}}}-\frac{(bx+2)^{\frac{5}{2}}}{10\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + 2)/x^(7/2),x, algorithm="maxima")

[Out] 1/6*(b*x + 2)^(3/2)*b/x^(3/2) - 1/10*(b*x + 2)^(5/2)/x^(5/2)
```

Fricas [A] time = 0.209882, size = 34, normalized size = 0.89

$$\frac{\left(b^2x^2-bx-6\right)\sqrt{bx+2}}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*x + 2)/x^(7/2),x, algorithm="fricas")

[Out] 1/15*(b^2*x^2 - b*x - 6)*sqrt(b*x + 2)/x^(5/2)
```

Sympy [A] time = 140.378, size = 56, normalized size = 1.47

$$\frac{b^{\frac{5}{2}}\sqrt{1+\frac{2}{bx}}}{15}-\frac{b^{\frac{3}{2}}\sqrt{1+\frac{2}{bx}}}{15x}-\frac{2\sqrt{b}\sqrt{1+\frac{2}{bx}}}{5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(1/2)/x**(7/2),x)
```

```
[Out] b**(5/2)*sqrt(1 + 2/(b*x))/15 - b**(3/2)*sqrt(1 + 2/(b*x))/(15*x)
 - 2*sqrt(b)*sqrt(1 + 2/(b*x))/(5*x**2)
```

GIAC/XCAS [A] time = 0.208415, size = 57, normalized size = 1.5

$$\frac{\left((bx+2)b^5-5\,b^5\right)(bx+2)^{\frac{3}{2}}b}{15\,((bx+2)b-2\,b)^{\frac{5}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*((b*x + 2)*b^5 - 5*b^5)*(b*x + 2)^(3/2)*b/(((b*x + 2)*b - 2*
b)^(5/2)*abs(b))
```

3.512 $\int \frac{\sqrt{2+bx}}{x^{9/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2b^2(bx+2)^{3/2}}{105x^{3/2}}+\frac{2b(bx+2)^{3/2}}{35x^{5/2}}-\frac{(bx+2)^{3/2}}{7x^{7/2}}$$

```
[Out] -(2 + b*x)^(3/2)/(7*x^(7/2)) + (2*b*(2 + b*x)^(3/2))/(35*x^(5/2))
 - (2*b^2*(2 + b*x)^(3/2))/(105*x^(3/2))
```

Rubi [A] time = 0.0359808, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2b^2(bx+2)^{3/2}}{105x^{3/2}}+\frac{2b(bx+2)^{3/2}}{35x^{5/2}}-\frac{(bx+2)^{3/2}}{7x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 + b*x]/x^(9/2),x]
```

```
[Out] -(2 + b*x)^(3/2)/(7*x^(7/2)) + (2*b*(2 + b*x)^(3/2))/(35*x^(5/2))
 - (2*b^2*(2 + b*x)^(3/2))/(105*x^(3/2))
```

Rubi in Sympy [A] time = 4.11006, size = 53, normalized size = 0.9

$$-\frac{2b^2\left(bx+2\right)^{\frac{3}{2}}}{105x^{\frac{3}{2}}}+\frac{2b\left(bx+2\right)^{\frac{3}{2}}}{35x^{\frac{5}{2}}}-\frac{\left(bx+2\right)^{\frac{3}{2}}}{7x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(1/2)/x**(9/2),x)
```

```
[Out] -2*b**2*(b*x + 2)**(3/2)/(105*x**(3/2)) + 2*b*(b*x + 2)**(3/2)/(3
5*x**(5/2)) - (b*x + 2)**(3/2)/(7*x**(7/2))
```

Mathematica [A] time = 0.017793, size = 40, normalized size = 0.68

$$-\frac{\sqrt{bx+2}\left(2b^3x^3-2b^2x^2+3bx+30\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 + b*x]/x^(9/2),x]
```

```
[Out] -(Sqrt[2 + b*x]*(30 + 3*b*x - 2*b^2*x^2 + 2*b^3*x^3))/(105*x^(7/2
))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.5

$$-\frac{2b^2x^2 - 6bx + 15}{105}(bx+2)^{\frac{3}{2}}x^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(1/2)/x^(9/2),x)
```

```
[Out] -1/105*(b*x+2)^(3/2)*(2*b^2*x^2-6*b*x+15)/x^(7/2)
```

Maxima [A] time = 1.3399, size = 55, normalized size = 0.93

$$-\frac{(bx+2)^{\frac{3}{2}}b^2}{12x^{\frac{3}{2}}} + \frac{(bx+2)^{\frac{5}{2}}b}{10x^{\frac{5}{2}}} - \frac{(bx+2)^{\frac{7}{2}}}{28x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -1/12*(b*x + 2)^(3/2)*b^2/x^(3/2) + 1/10*(b*x + 2)^(5/2)*b/x^(5/2
) - 1/28*(b*x + 2)^(7/2)/x^(7/2)
```

Fricas [A] time = 0.209734, size = 46, normalized size = 0.78

$$-\frac{\left(2b^3x^3 - 2b^2x^2 + 3bx + 30\right)\sqrt{bx+2}}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -1/105*(2*b^3*x^3 - 2*b^2*x^2 + 3*b*x + 30)*sqrt(b*x + 2)/x^(7/2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(1/2)/x**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.208748, size = 74, normalized size = 1.25

$$-\frac{\left(35\,b^{7}+2\,\left((bx+2)b^{7}-7\,b^{7}\right)(bx+2)\right)(bx+2)^{\frac{3}{2}}b}{105\,((bx+2)b-2\,b)^{\frac{7}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + 2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -1/105*(35*b^7 + 2*((b*x + 2)*b^7 - 7*b^7)*(b*x + 2))*(b*x + 2)^(
3/2)*b/(((b*x + 2)*b - 2*b)^(7/2)*abs(b))
```

3.513 $\int x^{5/2}\sqrt{2-bx}\,dx$

Optimal. Leaf size=112

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{8b^3}-\frac{5x^{3/2}\sqrt{2-bx}}{24b^2}+\frac{1}{4}x^{7/2}\sqrt{2-bx}-\frac{x^{5/2}\sqrt{2-bx}}{12b}$$

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(8*b^3) - (5*x^(3/2)*Sqrt[2 - b*x])/(2
4*b^2) - (x^(5/2)*Sqrt[2 - b*x])/(12*b) + (x^(7/2)*Sqrt[2 - b*x])
/4 + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(7/2))
```

Rubi [A] time = 0.0879406, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{8b^3}-\frac{5x^{3/2}\sqrt{2-bx}}{24b^2}+\frac{1}{4}x^{7/2}\sqrt{2-bx}-\frac{x^{5/2}\sqrt{2-bx}}{12b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*Sqrt[2 - b*x],x]
```

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(8*b^3) - (5*x^(3/2)*Sqrt[2 - b*x])/(2
4*b^2) - (x^(5/2)*Sqrt[2 - b*x])/(12*b) + (x^(7/2)*Sqrt[2 - b*x])
/4 + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 12.2369, size = 104, normalized size = 0.93

$$-\frac{x^{\frac{5}{2}}\left(-bx+2\right)^{\frac{3}{2}}}{4b}-\frac{5x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{3}{2}}}{12b^2}-\frac{5\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{8b^3}+\frac{5\sqrt{x}\sqrt{-bx+2}}{8b^3}+\frac{5\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(-b*x+2)**(1/2),x)
```

```
[Out] -x**(5/2)*(-b*x + 2)**(3/2)/(4*b) - 5*x**(3/2)*(-b*x + 2)**(3/2)/
(12*b**2) - 5*sqrt(x)*(-b*x + 2)**(3/2)/(8*b**3) + 5*sqrt(x)*sqrt
(-b*x + 2)/(8*b**3) + 5*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(7/
2))
```

Mathematica [A] time = 0.0779655, size = 71, normalized size = 0.63

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}+\frac{\sqrt{x}\sqrt{2-bx}\left(6b^3x^3-2b^2x^2-5bx-15\right)}{24b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*Sqrt[2 - b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(-15 - 5*b*x - 2*b^2*x^2 + 6*b^3*x^3))/(24
*b^3) + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(7/2))
```

Maple [A] time = 0.015, size = 116, normalized size = 1.

$$-\frac{1}{4\,b}x^{\frac{5}{2}}\left(-bx+2\right)^{\frac{3}{2}}-\frac{5}{12\,b^2}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{3}{2}}-\frac{5}{8\,b^3}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{5}{8\,b^3}\sqrt{x}\sqrt{-bx+2}+\frac{5}{8}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(-b*x+2)^(1/2),x)
```

```
[Out] -1/4/b*x^(5/2)*(-b*x+2)^(3/2)-5/12/b^2*x^(3/2)*(-b*x+2)^(3/2)-5/8
/b^3*x^(1/2)*(-b*x+2)^(3/2)+5/8*x^(1/2)*(-b*x+2)^(1/2)/b^3+5/8/b^
(7/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x
-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223541, size = 1, normalized size = 0.01

$$\left[\frac{\left(6\,b^3x^3-2\,b^2x^2-5\,bx-15\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+15\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-\left(bx-1\right)\sqrt{-b}\right)}{24\,\sqrt{-b}b^3},\frac{\left(6\,b^3x^3-2\,b^2x^2-5\,bx-15\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/24*((6*b^3*x^3 - 2*b^2*x^2 - 5*b*x - 15)*sqrt(-b*x + 2)*sqrt(-
b)*sqrt(x) + 15*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b
)))/(sqrt(-b)*b^3), 1/24*((6*b^3*x^3 - 2*b^2*x^2 - 5*b*x - 15)*sq
rt(-b*x + 2)*sqrt(b)*sqrt(x) - 30*arctan(sqrt(-b*x + 2)/(sqrt(b)*
sqrt(x))))/b^(7/2)]
```

Sympy [A] time = 100.319, size = 252, normalized size = 2.25

$$\begin{cases} \frac{ibx^{\frac{9}{2}}}{4\sqrt{bx-2}} - \frac{7ix^{\frac{7}{2}}}{12\sqrt{bx-2}} - \frac{ix^{\frac{5}{2}}}{24b\sqrt{bx-2}} - \frac{5ix^{\frac{3}{2}}}{24b^2\sqrt{bx-2}} + \frac{5i\sqrt{x}}{4b^3\sqrt{bx-2}} - \frac{5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -\frac{bx^{\frac{9}{2}}}{4\sqrt{-bx+2}} + \frac{7x^{\frac{7}{2}}}{12\sqrt{-bx+2}} + \frac{x^{\frac{5}{2}}}{24b\sqrt{-bx+2}} + \frac{5x^{\frac{3}{2}}}{24b^2\sqrt{-bx+2}} - \frac{5\sqrt{x}}{4b^3\sqrt{-bx+2}} + \frac{5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((I*b*x**(9/2)/(4*sqrt(b*x - 2)) - 7*I*x**(7/2)/(12*sqrt
(b*x - 2)) - I*x**(5/2)/(24*b*sqrt(b*x - 2)) - 5*I*x**(3/2)/(24*b
**2*sqrt(b*x - 2)) + 5*I*sqrt(x)/(4*b**3*sqrt(b*x - 2)) - 5*I*aco
sh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(7/2)), Abs(b*x)/2 > 1), (-b*
x**(9/2)/(4*sqrt(-b*x + 2)) + 7*x**(7/2)/(12*sqrt(-b*x + 2)) + x*
*(5/2)/(24*b*sqrt(-b*x + 2)) + 5*x**(3/2)/(24*b**2*sqrt(-b*x + 2)
) - 5*sqrt(x)/(4*b**3*sqrt(-b*x + 2)) + 5*asin(sqrt(2)*sqrt(b)*sq
rt(x)/2)/(4*b**(7/2)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.514 $\int x^{3/2}\sqrt{2-bx}\,dx$

Optimal. Leaf size=87

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{\sqrt{x}\sqrt{2-bx}}{2b^2}+\frac{1}{3}x^{5/2}\sqrt{2-bx}-\frac{x^{3/2}\sqrt{2-bx}}{6b}$$

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x])/(2*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(6*b)
+ (x^(5/2)*Sqrt[2 - b*x])/3 + ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b
^(5/2)
```

Rubi [A] time = 0.0679356, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{\sqrt{x}\sqrt{2-bx}}{2b^2}+\frac{1}{3}x^{5/2}\sqrt{2-bx}-\frac{x^{3/2}\sqrt{2-bx}}{6b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*Sqrt[2 - b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x])/(2*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(6*b)
+ (x^(5/2)*Sqrt[2 - b*x])/3 + ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b
^(5/2)
```

Rubi in Sympy [A] time = 9.36174, size = 76, normalized size = 0.87

$$-\frac{x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{3}{2}}}{3b}-\frac{\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{2b^2}+\frac{\sqrt{x}\sqrt{-bx+2}}{2b^2}+\frac{\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(-b*x+2)**(1/2),x)
```

```
[Out] -x**(3/2)*(-b*x + 2)**(3/2)/(3*b) - sqrt(x)*(-b*x + 2)**(3/2)/(2*
b**2) + sqrt(x)*sqrt(-b*x + 2)/(2*b**2) + asin(sqrt(2)*sqrt(b)*sq
rt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.0610147, size = 60, normalized size = 0.69

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{\sqrt{x}\sqrt{2-bx}\left(2b^2x^2-bx-3\right)}{6b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*Sqrt[2 - b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(-3 - b*x + 2*b^2*x^2))/(6*b^2) + ArcSin[(
Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(5/2)
```

Maple [A] time = 0.007, size = 100, normalized size = 1.2

$$-\frac{1}{3\,b}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{3}{2}}-\frac{1}{2\,b^2}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{1}{2\,b^2}\sqrt{x}\sqrt{-bx+2}+\frac{1}{2}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(-b*x+2)^(1/2),x)
```

```
[Out] -1/3/b*x^(3/2)*(-b*x+2)^(3/2)-1/2/b^2*x^(1/2)*(-b*x+2)^(3/2)+1/2*
x^(1/2)*(-b*x+2)^(1/2)/b^2+1/2/b^(5/2)*((-b*x+2)*x)^(1/2)/(-b*x+2
)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219933, size = 1, normalized size = 0.01

$$\left[\frac{\left(2\,b^2x^2-bx-3\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+3\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{6\,\sqrt{-b}b^2},\frac{\left(2\,b^2x^2-bx-3\right)\sqrt{-bx+2}\sqrt{b}\sqrt{x}-6\,\text{arct}}{6\,b^{\frac{5}{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/6*((2*b^2*x^2 - b*x - 3)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) + 3*l
og(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/(sqrt(-b)*b^2
), 1/6*((2*b^2*x^2 - b*x - 3)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) - 6*
arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^(5/2)]
```

Sympy [A] time = 23.156, size = 196, normalized size = 2.25

$$\begin{cases} \frac{ibx^{\frac{7}{2}}}{3\sqrt{bx-2}} - \frac{5ix^{\frac{5}{2}}}{6\sqrt{bx-2}} - \frac{ix^{\frac{3}{2}}}{6b\sqrt{bx-2}} + \frac{i\sqrt{x}}{b^2\sqrt{bx-2}} - \frac{i\,\mathrm{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}} & \text{for } \frac{|bx|}{2} > 1 \\ -\frac{bx^{\frac{7}{2}}}{3\sqrt{-bx+2}} + \frac{5x^{\frac{5}{2}}}{6\sqrt{-bx+2}} + \frac{x^{\frac{3}{2}}}{6b\sqrt{-bx+2}} - \frac{\sqrt{x}}{b^2\sqrt{-bx+2}} + \frac{\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((I*b*x**(7/2)/(3*sqrt(b*x - 2)) - 5*I*x**(5/2)/(6*sqrt(
b*x - 2)) - I*x**(3/2)/(6*b*sqrt(b*x - 2)) + I*sqrt(x)/(b**2*sqrt
(b*x - 2)) - I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2), Abs(b*x
)/2 > 1), (-b*x**(7/2)/(3*sqrt(-b*x + 2)) + 5*x**(5/2)/(6*sqrt(-b
*x + 2)) + x**(3/2)/(6*b*sqrt(-b*x + 2)) - sqrt(x)/(b**2*sqrt(-b*
x + 2)) + asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.515 $\int \sqrt{x}\sqrt{2-bx}\,dx$

Optimal. Leaf size=65

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{2-bx}-\frac{\sqrt{x}\sqrt{2-bx}}{2b}$$

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x])/(2*b) + (x^(3/2)*Sqrt[2 - b*x])/2 + ArcS
in[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/2)
```

Rubi [A] time = 0.0490268, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{2}x^{3/2}\sqrt{2-bx}-\frac{\sqrt{x}\sqrt{2-bx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*Sqrt[2 - b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x])/(2*b) + (x^(3/2)*Sqrt[2 - b*x])/2 + ArcS
in[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/2)
```

Rubi in Sympy [A] time = 7.00149, size = 56, normalized size = 0.86

$$-\frac{\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{2b}+\frac{\sqrt{x}\sqrt{-bx+2}}{2b}+\frac{\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)*(-b*x+2)**(1/2),x)
```

```
[Out] -sqrt(x)*(-b*x + 2)**(3/2)/(2*b) + sqrt(x)*sqrt(-b*x + 2)/(2*b) +
 asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2)
```

Mathematica [A] time = 0.0512328, size = 51, normalized size = 0.78

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{\sqrt{x}\sqrt{2-bx}(bx-1)}{2b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*Sqrt[2 - b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(-1 + b*x))/(2*b) + ArcSin[(Sqrt[b]*Sqrt[x
])/Sqrt[2]]/b^(3/2)
```

Maple [A] time = 0.007, size = 81, normalized size = 1.3

$$\frac{1}{2}x^{\frac{3}{2}}\sqrt{-bx+2}-\frac{1}{2b}\sqrt{x}\sqrt{-bx+2}+\frac{1}{2}\sqrt{(-bx+2)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2x}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)*(-b*x+2)^(1/2),x)
```

```
[Out] 1/2*x^(3/2)*(-b*x+2)^(1/2)-1/2*x^(1/2)*(-b*x+2)^(1/2)/b+1/2/b^(3/
2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/
b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22221, size = 1, normalized size = 0.02

$$\left[\frac{(bx-1)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{2\sqrt{-b}b}, \frac{(bx-1)\sqrt{-bx+2}\sqrt{b}\sqrt{x}-2\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{2b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/2*((b*x - 1)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) + log(-sqrt(-b*x
+ 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/(sqrt(-b)*b), 1/2*((b*x - 1
)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) - 2*arctan(sqrt(-b*x + 2)/(sqrt(
b)*sqrt(x))))/b^(3/2)]
```

Sympy [A] time = 9.9855, size = 156, normalized size = 2.4

$$\begin{cases} \frac{ibx^{\frac{5}{2}}}{2\sqrt{bx-2}} - \frac{3ix^{\frac{3}{2}}}{2\sqrt{bx-2}} + \frac{i\sqrt{x}}{b\sqrt{bx-2}} - \frac{i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{for}\: \frac{|bx|}{2} > 1 \\ -\frac{bx^{\frac{5}{2}}}{2\sqrt{-bx+2}} + \frac{3x^{\frac{3}{2}}}{2\sqrt{-bx+2}} - \frac{\sqrt{x}}{b\sqrt{-bx+2}} + \frac{\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)*(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((I*b*x**(5/2)/(2*sqrt(b*x - 2)) - 3*I*x**(3/2)/(2*sqrt(
b*x - 2)) + I*sqrt(x)/(b*sqrt(b*x - 2)) - I*acosh(sqrt(2)*sqrt(b)
*sqrt(x)/2)/b**(3/2), Abs(b*x)/2 > 1), (-b*x**(5/2)/(2*sqrt(-b*x
+ 2)) + 3*x**(3/2)/(2*sqrt(-b*x + 2)) - sqrt(x)/(b*sqrt(-b*x + 2)
) + asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.516 $\int \frac{\sqrt{2-bx}}{\sqrt{x}} \, dx$

Optimal. Leaf size=41

$$\sqrt{x}\sqrt{2-bx}+\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] Sqrt[x]*Sqrt[2 - b*x] + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqr
t[b]
```

Rubi [A] time = 0.0295683, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\sqrt{x}\sqrt{2-bx}+\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[2 - b*x] + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqr
t[b]
```

Rubi in Sympy [A] time = 5.00571, size = 37, normalized size = 0.9

$$\sqrt{x}\sqrt{-bx+2}+\frac{2\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(1/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*sqrt(-b*x + 2) + 2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b
)
```

Mathematica [A] time = 0.0213109, size = 41, normalized size = 1.

$$\sqrt{x}\sqrt{2-bx}+\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - b*x]/Sqrt[x],x]
```

```
[Out] Sqrt[x]*Sqrt[2 - b*x] + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqr
t[b]
```

Maple [B] time = 0.007, size = 63, normalized size = 1.5

$$\sqrt{x}\sqrt{-bx+2}+1\sqrt{(-bx+2)\,x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(1/2)/x^(1/2),x)
```

```
[Out] x^(1/2)*(-b*x+2)^(1/2)+((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)/
b^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218371, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{\sqrt{-b}},\frac{\sqrt{-bx+2}\sqrt{b}\sqrt{x}-2\,\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [(sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) + log(-sqrt(-b*x + 2)*b*sqrt(x)
 - (b*x - 1)*sqrt(-b)))/sqrt(-b), (sqrt(-b*x + 2)*sqrt(b)*sqrt(x)
```

```
- 2*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/sqrt(b)]
```

Sympy [A] time = 6.05513, size = 121, normalized size = 2.95

$$\begin{cases} \frac{ibx^{\frac{3}{2}}}{\sqrt{bx-2}} - \frac{2i\sqrt{x}}{\sqrt{bx-2}} - \frac{2i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -\frac{bx^{\frac{3}{2}}}{\sqrt{-bx+2}} + \frac{2\sqrt{x}}{\sqrt{-bx+2}} + \frac{2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(1/2)/x**(1/2),x)
```

```
[Out] Piecewise((I*b*x**(3/2)/sqrt(b*x - 2) - 2*I*sqrt(x)/sqrt(b*x - 2)
 - 2*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b), Abs(b*x)/2 > 1),
 (-b*x**(3/2)/sqrt(-b*x + 2) + 2*sqrt(x)/sqrt(-b*x + 2) + 2*asin(
sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.517 $\int \frac{\sqrt{2-bx}}{x^{3/2}}\,dx$

Optimal. Leaf size=42

$$-\frac{2\sqrt{2-bx}}{\sqrt{x}}-2\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

```
[Out] (-2*Sqrt[2 - b*x])/Sqrt[x] - 2*Sqrt[b]*ArcSin[(Sqrt[b]*Sqrt[x])/S
qrt[2]]
```

Rubi [A] time = 0.0330862, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$-\frac{2\sqrt{2-bx}}{\sqrt{x}}-2\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[2 - b*x])/Sqrt[x] - 2*Sqrt[b]*ArcSin[(Sqrt[b]*Sqrt[x])/S
qrt[2]]
```

Rubi in Sympy [A] time = 5.43805, size = 41, normalized size = 0.98

$$-2\sqrt{b}\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)-\frac{2\sqrt{-bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(1/2)/x**(3/2),x)
```

```
[Out] -2*sqrt(b)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) - 2*sqrt(-b*x + 2)/sqr
t(x)
```

Mathematica [A] time = 0.0251087, size = 42, normalized size = 1.

$$-\frac{2\sqrt{2-bx}}{\sqrt{x}}-2\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - b*x]/x^(3/2),x]
```

```
[Out] (-2*Sqrt[2 - b*x])/Sqrt[x] - 2*Sqrt[b]*ArcSin[(Sqrt[b]*Sqrt[x])/S
qrt[2]]
```

Maple [B] time = 0.042, size = 90, normalized size = 2.1

$$2\,\frac{(bx-2)\sqrt{(-bx+2)\,x}}{\sqrt{-x\,(bx-2)}\sqrt{x}\sqrt{-bx+2}}-1\sqrt{b}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^{2}+2\,x}}\right)\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(1/2)/x^(3/2),x)
```

```
[Out] 2*(b*x-2)/(-x*(b*x-2))^(1/2)*((-b*x+2)*x)^(1/2)/x^(1/2)/(-b*x+2)^
(1/2)-b^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))*((-b*x+2
)*x)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220783, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-b}x\log\left(-bx+\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+1\right)-2\sqrt{-bx+2}\sqrt{x}}{x},\ \frac{2\left(\sqrt{b}x\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)-\sqrt{-bx+2}\sqrt{x}\right)}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(-b)*x*log(-b*x + sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) + 1) - 2*
sqrt(-b*x + 2)*sqrt(x))/x, 2*(sqrt(b)*x*arctan(sqrt(-b*x + 2)/(sq
rt(b)*sqrt(x))) - sqrt(-b*x + 2)*sqrt(x))/x]
```

Sympy [A] time = 6.03104, size = 138, normalized size = 3.29

$$\begin{cases} -2\sqrt{b}\sqrt{-1+\frac{2}{bx}} - i\sqrt{b}\log\left(\frac{1}{bx}\right) + 2i\sqrt{b}\log\left(\frac{1}{\sqrt{b}\sqrt{x}}\right) - 2\sqrt{b}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right) & \text{for } 2\left|\frac{1}{bx}\right| > 1 \\ -2i\sqrt{b}\sqrt{1-\frac{2}{bx}} - i\sqrt{b}\log\left(\frac{1}{bx}\right) + 2i\sqrt{b}\log\left(\sqrt{1-\frac{2}{bx}}+1\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(1/2)/x**(3/2),x)
```

```
[Out] Piecewise((-2*sqrt(b)*sqrt(-1 + 2/(b*x)) - I*sqrt(b)*log(1/(b*x))
 + 2*I*sqrt(b)*log(1/(sqrt(b)*sqrt(x))) - 2*sqrt(b)*asin(sqrt(2)*
sqrt(b)*sqrt(x)/2), 2*Abs(1/(b*x)) > 1), (-2*I*sqrt(b)*sqrt(1 - 2
/(b*x)) - I*sqrt(b)*log(1/(b*x)) + 2*I*sqrt(b)*log(sqrt(1 - 2/(b*
x)) + 1), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.518 $\int \frac{\sqrt{2-bx}}{x^{5/2}}\,dx$

Optimal. Leaf size=19

$$-\frac{(2-bx)^{3/2}}{3x^{3/2}}$$

```
[Out] -(2 - b*x)^(3/2)/(3*x^(3/2))
```

Rubi [A] time = 0.0115024, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$

$$-\frac{(2-bx)^{3/2}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - b*x]/x^(5/2),x]

[Out] -(2 - b*x)^(3/2)/(3*x^(3/2))
```

Rubi in Sympy [A] time = 2.29331, size = 15, normalized size = 0.79

$$-\frac{(-bx+2)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(1/2)/x**(5/2),x)

[Out] -(-b*x + 2)**(3/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0160436, size = 19, normalized size = 1.

$$-\frac{(2-bx)^{3/2}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - b*x]/x^(5/2),x]
```

```
[Out] -(2 - b*x)^(3/2)/(3*x^(3/2))
```

Maple [A] time = 0.004, size = 14, normalized size = 0.7

$$-\frac{1}{3}\left(-bx+2\right)^{\frac{3}{2}}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b*x+2)^(1/2)/x^(5/2),x)
```

```
[Out] -1/3*(-b*x+2)^(3/2)/x^(3/2)
```

Maxima [A] time = 1.34258, size = 18, normalized size = 0.95

$$-\frac{\left(-bx+2\right)^{\frac{3}{2}}}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-b*x + 2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*(-b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.209256, size = 24, normalized size = 1.26

$$\frac{(bx-2)\sqrt{-bx+2}}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-b*x + 2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(b*x - 2)*sqrt(-b*x + 2)/x^(3/2)
```

Sympy [A] time = 13.6694, size = 83, normalized size = 4.37

$$\begin{cases} \frac{b^{\frac{3}{2}}\sqrt{-1+\frac{2}{bx}}}{3} - \frac{2\sqrt{b}\sqrt{-1+\frac{2}{bx}}}{3x} & \text{for}\: 2\left|\frac{1}{bx}\right| > 1 \\ \frac{ib^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}}{3} - \frac{2i\sqrt{b}\sqrt{1-\frac{2}{bx}}}{3x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(1/2)/x**(5/2),x)
```

```
[Out] Piecewise((b**(3/2)*sqrt(-1 + 2/(b*x))/3 - 2*sqrt(b)*sqrt(-1 + 2/
(b*x))/(3*x), 2*Abs(1/(b*x)) > 1), (I*b**(3/2)*sqrt(1 - 2/(b*x))/
3 - 2*I*sqrt(b)*sqrt(1 - 2/(b*x))/(3*x), True))
```

GIAC/XCAS [A] time = 0.23504, size = 47, normalized size = 2.47

$$\frac{(bx-2)\sqrt{-bx+2}b^4}{3\left((bx-2)b+2\,b\right)^{\frac{3}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(b*x - 2)*sqrt(-b*x + 2)*b^4/(((b*x - 2)*b + 2*b)^(3/2)*abs(b
))
```

3.519 $\int \frac{\sqrt{2-bx}}{x^{7/2}} \, dx$

Optimal. Leaf size=40

$$-\frac{b(2-bx)^{3/2}}{15x^{3/2}}-\frac{(2-bx)^{3/2}}{5x^{5/2}}$$

```
[Out] -(2 - b*x)^(3/2)/(5*x^(5/2)) - (b*(2 - b*x)^(3/2))/(15*x^(3/2))
```

Rubi [A] time = 0.0241741, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{b(2-bx)^{3/2}}{15x^{3/2}}-\frac{(2-bx)^{3/2}}{5x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - b*x]/x^(7/2),x]
```

```
[Out] -(2 - b*x)^(3/2)/(5*x^(5/2)) - (b*(2 - b*x)^(3/2))/(15*x^(3/2))
```

Rubi in Sympy [A] time = 3.2404, size = 32, normalized size = 0.8

$$-\frac{b\left(-bx+2\right)^{\frac{3}{2}}}{15x^{\frac{3}{2}}}-\frac{\left(-bx+2\right)^{\frac{3}{2}}}{5x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(1/2)/x**(7/2),x)
```

```
[Out] -b*(-b*x + 2)**(3/2)/(15*x**(3/2)) - (-b*x + 2)**(3/2)/(5*x**(5/2
))
```

Mathematica [A] time = 0.0149605, size = 31, normalized size = 0.78

$$\frac{\sqrt{2-bx}\left(b^2x^2+bx-6\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - b*x]/x^(7/2),x]
```

```
[Out] (Sqrt[2 - b*x]*(-6 + b*x + b^2*x^2))/(15*x^(5/2))
```

Maple [A] time = 0.005, size = 19, normalized size = 0.5

$$-\frac{bx+3}{15}(-bx+2)^{\frac{3}{2}}x^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b*x+2)^(1/2)/x^(7/2),x)
```

```
[Out] -1/15*(b*x+3)*(-b*x+2)^(3/2)/x^(5/2)
```

Maxima [A] time = 1.34254, size = 38, normalized size = 0.95

$$-\frac{(-bx+2)^{\frac{3}{2}}b}{6x^{\frac{3}{2}}}-\frac{(-bx+2)^{\frac{5}{2}}}{10x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-b*x + 2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] -1/6*(-b*x + 2)^(3/2)*b/x^(3/2) - 1/10*(-b*x + 2)^(5/2)/x^(5/2)
```

Fricas [A] time = 0.212782, size = 34, normalized size = 0.85

$$\frac{(b^2x^2+bx-6)\sqrt{-bx+2}}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-b*x + 2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 1/15*(b^2*x^2 + b*x - 6)*sqrt(-b*x + 2)/x^(5/2)
```

Sympy [A] time = 138.413, size = 196, normalized size = 4.9

$$\begin{cases} \frac{b^{\frac{5}{2}}\sqrt{-1+\frac{2}{bx}}}{15}+\frac{b^{\frac{3}{2}}\sqrt{-1+\frac{2}{bx}}}{15x}-\frac{2\sqrt{b}\sqrt{-1+\frac{2}{bx}}}{5x^2} & \text{for } 2\left|\frac{1}{bx}\right|>1 \\ \frac{ib^{\frac{9}{2}}x^2\sqrt{1-\frac{2}{bx}}}{15b^2x^2-30bx}-\frac{ib^{\frac{7}{2}}x\sqrt{1-\frac{2}{bx}}}{15b^2x^2-30bx}-\frac{8ib^{\frac{5}{2}}\sqrt{1-\frac{2}{bx}}}{15b^2x^2-30bx}+\frac{12ib^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}}{x(15b^2x^2-30bx)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(1/2)/x**(7/2),x)
```

```
[Out] Piecewise((b**(5/2)*sqrt(-1 + 2/(b*x))/15 + b**(3/2)*sqrt(-1 + 2/
(b*x))/(15*x) - 2*sqrt(b)*sqrt(-1 + 2/(b*x))/(5*x**2), 2*Abs(1/(b
*x)) > 1), (I*b**(9/2)*x**2*sqrt(1 - 2/(b*x))/(15*b**2*x**2 - 30*
b*x) - I*b**(7/2)*x*sqrt(1 - 2/(b*x))/(15*b**2*x**2 - 30*b*x) - 8
*I*b**(5/2)*sqrt(1 - 2/(b*x))/(15*b**2*x**2 - 30*b*x) + 12*I*b**(
3/2)*sqrt(1 - 2/(b*x))/(x*(15*b**2*x**2 - 30*b*x)), True))
```

GIAC/XCAS [A] time = 0.221332, size = 65, normalized size = 1.62

$$\frac{\left((bx-2)b^5+5\,b^5\right)(bx-2)\sqrt{-bx+2}b}{15\left((bx-2)b+2\,b\right)^{\frac{5}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*((b*x - 2)*b^5 + 5*b^5)*(b*x - 2)*sqrt(-b*x + 2)*b/(((b*x -
2)*b + 2*b)^(5/2)*abs(b))
```

3.520 $\int \frac{\sqrt{2-bx}}{x^{9/2}}\,dx$

Optimal. Leaf size=62

$$-\frac{2b^2(2-bx)^{3/2}}{105x^{3/2}}-\frac{2b(2-bx)^{3/2}}{35x^{5/2}}-\frac{(2-bx)^{3/2}}{7x^{7/2}}$$

```
[Out] -(2 - b*x)^(3/2)/(7*x^(7/2)) - (2*b*(2 - b*x)^(3/2))/(35*x^(5/2))
 - (2*b^2*(2 - b*x)^(3/2))/(105*x^(3/2))
```

Rubi [A] time = 0.0381625, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$-\frac{2b^2(2-bx)^{3/2}}{105x^{3/2}}-\frac{2b(2-bx)^{3/2}}{35x^{5/2}}-\frac{(2-bx)^{3/2}}{7x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[2 - b*x]/x^(9/2),x]
```

```
[Out] -(2 - b*x)^(3/2)/(7*x^(7/2)) - (2*b*(2 - b*x)^(3/2))/(35*x^(5/2))
 - (2*b^2*(2 - b*x)^(3/2))/(105*x^(3/2))
```

Rubi in Sympy [A] time = 4.57495, size = 54, normalized size = 0.87

$$-\frac{2b^2\left(-bx+2\right)^{\frac{3}{2}}}{105x^{\frac{3}{2}}}-\frac{2b\left(-bx+2\right)^{\frac{3}{2}}}{35x^{\frac{5}{2}}}-\frac{\left(-bx+2\right)^{\frac{3}{2}}}{7x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(1/2)/x**(9/2),x)
```

```
[Out] -2*b**2*(-b*x + 2)**(3/2)/(105*x**(3/2)) - 2*b*(-b*x + 2)**(3/2)/
(35*x**(5/2)) - (-b*x + 2)**(3/2)/(7*x**(7/2))
```

Mathematica [A] time = 0.0174864, size = 41, normalized size = 0.66

$$\frac{\sqrt{2-bx}\left(2b^3x^3+2b^2x^2+3bx-30\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[2 - b*x]/x^(9/2),x]
```

```
[Out] (Sqrt[2 - b*x]*(-30 + 3*b*x + 2*b^2*x^2 + 2*b^3*x^3))/(105*x^(7/2
))
```

Maple [A] time = 0.007, size = 28, normalized size = 0.5

$$-\frac{2\,b^2x^2+6\,bx+15}{105}\left(-bx+2\right)^{\frac{3}{2}}x^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(1/2)/x^(9/2),x)
```

```
[Out] -1/105*(2*b^2*x^2+6*b*x+15)*(-b*x+2)^(3/2)/x^(7/2)
```

Maxima [A] time = 1.3474, size = 59, normalized size = 0.95

$$-\frac{\left(-bx+2\right)^{\frac{3}{2}}b^2}{12\,x^{\frac{3}{2}}}-\frac{\left(-bx+2\right)^{\frac{5}{2}}b}{10\,x^{\frac{5}{2}}}-\frac{\left(-bx+2\right)^{\frac{7}{2}}}{28\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -1/12*(-b*x + 2)^(3/2)*b^2/x^(3/2) - 1/10*(-b*x + 2)^(5/2)*b/x^(5
/2) - 1/28*(-b*x + 2)^(7/2)/x^(7/2)
```

Fricas [A] time = 0.213173, size = 47, normalized size = 0.76

$$\frac{\left(2\,b^3x^3+2\,b^2x^2+3\,bx-30\right)\sqrt{-bx+2}}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] 1/105*(2*b^3*x^3 + 2*b^2*x^2 + 3*b*x - 30)*sqrt(-b*x + 2)/x^(7/2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(1/2)/x**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223768, size = 82, normalized size = 1.32

$$\frac{\left(35\,b^7+2\,\left((bx-2)b^7+7\,b^7\right)(bx-2)\right)(bx-2)\sqrt{-bx+2}b}{105\,((bx-2)b+2\,b)^{\frac{7}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*x + 2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/105*(35*b^7 + 2*((b*x - 2)*b^7 + 7*b^7)*(b*x - 2))*(b*x - 2)*sq
rt(-b*x + 2)*b/(((b*x - 2)*b + 2*b)^(7/2)*abs(b))
```

3.521 $\int x^{5/2}(a+bx)^{3/2}\,dx$

Optimal. Leaf size=143

$$-\frac{3a^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{128b^{7/2}}+\frac{3a^4\sqrt{x}\sqrt{a+bx}}{128b^3}-\frac{a^3x^{3/2}\sqrt{a+bx}}{64b^2}+\frac{a^2x^{5/2}\sqrt{a+bx}}{80b}+\frac{3}{40}ax^{7/2}\sqrt{a+bx}+\frac{1}{5}x^{7/2}(a+bx)^{3/2}$$

```
[Out] (3*a^4*Sqrt[x]*Sqrt[a + b*x])/(128*b^3) - (a^3*x^(3/2)*Sqrt[a + b
*x])/(64*b^2) + (a^2*x^(5/2)*Sqrt[a + b*x])/(80*b) + (3*a*x^(7/2)
*Sqrt[a + b*x])/40 + (x^(7/2)*(a + b*x)^(3/2))/5 - (3*a^5*ArcTanh
[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(128*b^(7/2))
```

Rubi [A] time = 0.123035, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}=0.2$

$$-\frac{3a^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{128b^{7/2}}+\frac{3a^4\sqrt{x}\sqrt{a+bx}}{128b^3}-\frac{a^3x^{3/2}\sqrt{a+bx}}{64b^2}+\frac{a^2x^{5/2}\sqrt{a+bx}}{80b}+\frac{3}{40}ax^{7/2}\sqrt{a+bx}+\frac{1}{5}x^{7/2}(a+bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a + b*x)^(3/2),x]
```

```
[Out] (3*a^4*Sqrt[x]*Sqrt[a + b*x])/(128*b^3) - (a^3*x^(3/2)*Sqrt[a + b
*x])/(64*b^2) + (a^2*x^(5/2)*Sqrt[a + b*x])/(80*b) + (3*a*x^(7/2)
*Sqrt[a + b*x])/40 + (x^(7/2)*(a + b*x)^(3/2))/5 - (3*a^5*ArcTanh
[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(128*b^(7/2))
```

Rubi in Sympy [A] time = 19.395, size = 136, normalized size = 0.95

$$-\frac{3a^5\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{128b^{\frac{7}{2}}}-\frac{3a^4\sqrt{x}\sqrt{a+bx}}{128b^3}-\frac{a^3\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{64b^3}+\frac{a^2\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{16b^3}-\frac{ax^{\frac{3}{2}}\,(a+bx)^{\frac{5}{2}}}{8b^2}+\frac{x^{\frac{5}{2}}\,(a+bx)^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+a)**(3/2),x)
```

```
[Out] -3*a**5*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(128*b**(7/2)) - 3*a
**4*sqrt(x)*sqrt(a + b*x)/(128*b**3) - a**3*sqrt(x)*(a + b*x)**(3
```

```
/2)/(64*b**3) + a**2*sqrt(x)*(a + b*x)**(5/2)/(16*b**3) - a*x**(3
/2)*(a + b*x)**(5/2)/(8*b**2) + x**(5/2)*(a + b*x)**(5/2)/(5*b)
```

Mathematica [A] time = 0.0803081, size = 100, normalized size = 0.7

$$\frac{\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(15a^4-10a^3bx+8a^2b^2x^2+176ab^3x^3+128b^4x^4\right)-15a^5\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{640b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a + b*x)^(3/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(15*a^4 - 10*a^3*b*x + 8*a^2*b^2*x
^2 + 176*a*b^3*x^3 + 128*b^4*x^4) - 15*a^5*Log[b*Sqrt[x] + Sqrt[b
]*Sqrt[a + b*x]])/(640*b^(7/2))
```

Maple [A] time = 0.009, size = 138, normalized size = 1.

$$\frac{1}{5\,b}x^{\frac{5}{2}}\left(bx+a\right)^{\frac{5}{2}}-\frac{a}{8\,b^2}x^{\frac{3}{2}}\left(bx+a\right)^{\frac{5}{2}}+\frac{a^2}{16\,b^3}\left(bx+a\right)^{\frac{5}{2}}\sqrt{x}-\frac{a^3}{64\,b^3}\left(bx+a\right)^{\frac{3}{2}}\sqrt{x}$$
$$-\frac{3\,a^4}{128\,b^3}\sqrt{x}\sqrt{bx+a}-\frac{3\,a^5}{256}\sqrt{x\left(bx+a\right)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+a)^(3/2),x)
```

```
[Out] 1/5/b*x^(5/2)*(b*x+a)^(5/2)-1/8*a/b^2*x^(3/2)*(b*x+a)^(5/2)+1/16*
a^2/b^3*x^(1/2)*(b*x+a)^(5/2)-1/64*a^3/b^3*(b*x+a)^(3/2)*x^(1/2)-
3/128*a^4*x^(1/2)*(b*x+a)^(1/2)/b^3-3/256*a^5/b^(7/2)*(x*(b*x+a))
^(1/2)/(b*x+a)^(1/2)/x^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(
1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221467, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^5\log\left(-2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(128\,b^4x^4+176\,ab^3x^3+8\,a^2b^2x^2-10\,a^3bx+15\,a^4\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{1280\,b^{\frac{7}{2}}},\right.$$
$$\left.-\frac{15\,a^5\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(128\,b^4x^4+176\,ab^3x^3+8\,a^2b^2x^2-10\,a^3bx+15\,a^4\right)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{640\,\sqrt{-b}b^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/1280*(15*a^5*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt
(b)) + 2*(128*b^4*x^4 + 176*a*b^3*x^3 + 8*a^2*b^2*x^2 - 10*a^3*b*
x + 15*a^4)*sqrt(b*x + a)*sqrt(b)*sqrt(x))/b^(7/2), -1/640*(15*a^
5*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) - (128*b^4*x^4 + 176
*a*b^3*x^3 + 8*a^2*b^2*x^2 - 10*a^3*b*x + 15*a^4)*sqrt(b*x + a)*s
qrt(-b)*sqrt(x))/(sqrt(-b)*b^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.522 $\int x^{3/2}(a+bx)^{3/2}\,dx$

Optimal. Leaf size=119

$$\frac{3a^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{5/2}}-\frac{3a^3\sqrt{x}\sqrt{a+bx}}{64b^2}+\frac{a^2x^{3/2}\sqrt{a+bx}}{32b}+\frac{1}{8}ax^{5/2}\sqrt{a+bx}+\frac{1}{4}x^{5/2}(a+bx)^{3/2}$$

```
[Out] (-3*a^3*Sqrt[x]*Sqrt[a + b*x])/(64*b^2) + (a^2*x^(3/2)*Sqrt[a + b
*x])/(32*b) + (a*x^(5/2)*Sqrt[a + b*x])/8 + (x^(5/2)*(a + b*x)^(3
/2))/4 + (3*a^4*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(64*b^(
5/2))
```

Rubi [A] time = 0.0958295, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3a^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{5/2}}-\frac{3a^3\sqrt{x}\sqrt{a+bx}}{64b^2}+\frac{a^2x^{3/2}\sqrt{a+bx}}{32b}+\frac{1}{8}ax^{5/2}\sqrt{a+bx}+\frac{1}{4}x^{5/2}(a+bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a + b*x)^(3/2),x]
```

```
[Out] (-3*a^3*Sqrt[x]*Sqrt[a + b*x])/(64*b^2) + (a^2*x^(3/2)*Sqrt[a + b
*x])/(32*b) + (a*x^(5/2)*Sqrt[a + b*x])/8 + (x^(5/2)*(a + b*x)^(3
/2))/4 + (3*a^4*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(64*b^(
5/2))
```

Rubi in Sympy [A] time = 15.5962, size = 114, normalized size = 0.96

$$\frac{3a^4\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{64b^{\frac{5}{2}}}+\frac{3a^3\sqrt{x}\sqrt{a+bx}}{64b^2}+\frac{a^2\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{32b^2}-\frac{a\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{8b^2}+\frac{x^{\frac{3}{2}}\,(a+bx)^{\frac{5}{2}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+a)**(3/2),x)
```

```
[Out] 3*a**4*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/(64*b**(5/2)) + 3*a
**3*sqrt(x)*sqrt(a + b*x)/(64*b**2) + a**2*sqrt(x)*(a + b*x)**(3/
2)/(32*b**2) - a*sqrt(x)*(a + b*x)**(5/2)/(8*b**2) + x**(3/2)*(a
+ b*x)**(5/2)/(4*b)
```

Mathematica [A] time = 0.0648394, size = 89, normalized size = 0.75

$$\frac{3a^4\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)+\sqrt{b}\sqrt{x}\sqrt{a+bx}\,(-3a^3+2a^2bx+24ab^2x^2+16b^3x^3)}{64b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a + b*x)^(3/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(-3*a^3 + 2*a^2*b*x + 24*a*b^2*x^2
 + 16*b^3*x^3) + 3*a^4*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(6
4*b^(5/2))
```

Maple [A] time = 0.008, size = 120, normalized size = 1.

$$\frac{1}{4\,b}x^{\frac{3}{2}}\,(bx+a)^{\frac{5}{2}}-\frac{a}{8\,b^2}\,(bx+a)^{\frac{5}{2}}\,\sqrt{x}+\frac{a^2}{32\,b^2}\,(bx+a)^{\frac{3}{2}}\,\sqrt{x}+\frac{3\,a^3}{64\,b^2}\sqrt{x}\sqrt{bx+a}+\frac{3\,a^4}{128}\sqrt{x\,(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+a)^(3/2),x)
```

```
[Out] 1/4/b*x^(3/2)*(b*x+a)^(5/2)-1/8*a/b^2*x^(1/2)*(b*x+a)^(5/2)+1/32*
a^2/b^2*(b*x+a)^(3/2)*x^(1/2)+3/64*a^3*x^(1/2)*(b*x+a)^(1/2)/b^2+
3/128*a^4/b^(5/2)*(x*(b*x+a))^(1/2)/(b*x+a)^(1/2)/x^(1/2)*ln((1/2
*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22014, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^4\log\left(2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(16\,b^3x^3+24\,ab^2x^2+2\,a^2bx-3\,a^3\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{128\,b^{\frac{5}{2}}},\ \frac{3\,a^4\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)+\cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/128*(3*a^4*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b)
) + 2*(16*b^3*x^3 + 24*a*b^2*x^2 + 2*a^2*b*x - 3*a^3)*sqrt(b*x +
a)*sqrt(b)*sqrt(x))/b^(5/2), 1/64*(3*a^4*arctan(sqrt(b*x + a)*sqr
t(-b)/(b*sqrt(x))) + (16*b^3*x^3 + 24*a*b^2*x^2 + 2*a^2*b*x - 3*a
^3)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^2)]
```

Sympy [A] time = 54.1659, size = 153, normalized size = 1.29

$$-\frac{3a^{\frac{7}{2}}\sqrt{x}}{64b^2\sqrt{1+\frac{bx}{a}}}-\frac{a^{\frac{5}{2}}x^{\frac{3}{2}}}{64b\sqrt{1+\frac{bx}{a}}}+\frac{13a^{\frac{3}{2}}x^{\frac{5}{2}}}{32\sqrt{1+\frac{bx}{a}}}+\frac{5\sqrt{a}bx^{\frac{7}{2}}}{8\sqrt{1+\frac{bx}{a}}}+\frac{3a^4\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{5}{2}}}+\frac{b^2x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a)**(3/2),x)
```

```
[Out] -3*a**(7/2)*sqrt(x)/(64*b**2*sqrt(1 + b*x/a)) - a**(5/2)*x**(3/2)
/(64*b*sqrt(1 + b*x/a)) + 13*a**(3/2)*x**(5/2)/(32*sqrt(1 + b*x/a
)) + 5*sqrt(a)*b*x**(7/2)/(8*sqrt(1 + b*x/a)) + 3*a**4*asinh(sqrt
(b)*sqrt(x)/sqrt(a))/(64*b**(5/2)) + b**2*x**(9/2)/(4*sqrt(a)*sqr
t(1 + b*x/a))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.523 $\int \sqrt{x}(a+bx)^{3/2}\,dx$

Optimal. Leaf size=95

$$-\frac{a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{3/2}}+\frac{a^2\sqrt{x}\sqrt{a+bx}}{8b}+\frac{1}{4}ax^{3/2}\sqrt{a+bx}+\frac{1}{3}x^{3/2}(a+bx)^{3/2}$$

```
[Out] (a^2*Sqrt[x]*Sqrt[a + b*x])/(8*b) + (a*x^(3/2)*Sqrt[a + b*x])/4 +
 (x^(3/2)*(a + b*x)^(3/2))/3 - (a^3*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqr
t[a + b*x]])/(8*b^(3/2))
```

Rubi [A] time = 0.070938, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{3/2}}+\frac{a^2\sqrt{x}\sqrt{a+bx}}{8b}+\frac{1}{4}ax^{3/2}\sqrt{a+bx}+\frac{1}{3}x^{3/2}(a+bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a + b*x)^(3/2),x]
```

```
[Out] (a^2*Sqrt[x]*Sqrt[a + b*x])/(8*b) + (a*x^(3/2)*Sqrt[a + b*x])/4 +
 (x^(3/2)*(a + b*x)^(3/2))/3 - (a^3*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqr
t[a + b*x]])/(8*b^(3/2))
```

Rubi in Sympy [A] time = 11.472, size = 85, normalized size = 0.89

$$-\frac{a^3\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{8b^{\frac{3}{2}}}-\frac{a^2\sqrt{x}\sqrt{a+bx}}{8b}-\frac{a\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{12b}+\frac{\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*x**(1/2),x)
```

```
[Out] -a**3*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/(8*b**(3/2)) - a**2*
sqrt(x)*sqrt(a + b*x)/(8*b) - a*sqrt(x)*(a + b*x)**(3/2)/(12*b) +
 sqrt(x)*(a + b*x)**(5/2)/(3*b)
```

Mathematica [A] time = 0.0477117, size = 78, normalized size = 0.82

$$\frac{\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(3a^2+14abx+8b^2x^2\right)-3a^3\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{24b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a + b*x)^(3/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(3*a^2 + 14*a*b*x + 8*b^2*x^2) - 3
*a^3*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(24*b^(3/2))
```

Maple [A] time = 0.009, size = 96, normalized size = 1.

$$\frac{1}{3}x^{\frac{3}{2}}(bx+a)^{\frac{3}{2}}+\frac{a}{4}x^{\frac{3}{2}}\sqrt{bx+a}+\frac{a^2}{8\,b}\sqrt{x}\sqrt{bx+a}\\-\frac{a^3}{16}\sqrt{x\,(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*x^(1/2),x)
```

```
[Out] 1/3*x^(3/2)*(b*x+a)^(3/2)+1/4*a*x^(3/2)*(b*x+a)^(1/2)+1/8*a^2*x^(
1/2)*(b*x+a)^(1/2)/b-1/16*a^3/b^(3/2)*(x*(b*x+a))^(1/2)/x^(1/2)/(
b*x+a)^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221572, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^{3}\log\left(-2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\,\left(8\,b^{2}x^{2}+14\,abx+3\,a^{2}\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{48\,b^{\frac{3}{2}}},\right.$$
$$\left.-\frac{3\,a^{3}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(8\,b^{2}x^{2}+14\,abx+3\,a^{2}\right)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{24\,\sqrt{-b}b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/48*(3*a^3*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b)
) + 2*(8*b^2*x^2 + 14*a*b*x + 3*a^2)*sqrt(b*x + a)*sqrt(b)*sqrt(x
))/b^(3/2), -1/24*(3*a^3*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x)
)) - (8*b^2*x^2 + 14*a*b*x + 3*a^2)*sqrt(b*x + a)*sqrt(-b)*sqrt(x
))/(sqrt(-b)*b)]
```

Sympy [A] time = 24.9127, size = 124, normalized size = 1.31

$$\frac{a^{\frac{5}{2}}\sqrt{x}}{8b\sqrt{1+\frac{bx}{a}}}+\frac{17a^{\frac{3}{2}}x^{\frac{3}{2}}}{24\sqrt{1+\frac{bx}{a}}}+\frac{11\sqrt{a}bx^{\frac{5}{2}}}{12\sqrt{1+\frac{bx}{a}}}-\frac{a^{3}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{3}{2}}}+\frac{b^{2}x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*x**(1/2),x)
```

```
[Out] a**(5/2)*sqrt(x)/(8*b*sqrt(1 + b*x/a)) + 17*a**(3/2)*x**(3/2)/(24
*sqrt(1 + b*x/a)) + 11*sqrt(a)*b*x**(5/2)/(12*sqrt(1 + b*x/a)) -
a**3*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(3/2)) + b**2*x**(7/2)/
(3*sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Timed out
```

3.524 $\int \frac{(a+bx)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=71

$$\frac{3a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4\sqrt{b}}+\frac{3}{4}a\sqrt{x}\sqrt{a+bx}+\frac{1}{2}\sqrt{x}(a+bx)^{3/2}$$

```
[Out] (3*a*Sqrt[x]*Sqrt[a + b*x])/4 + (Sqrt[x]*(a + b*x)^(3/2))/2 + (3*
a^2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(4*Sqrt[b])
```

Rubi [A] time = 0.0508843, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{3a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4\sqrt{b}}+\frac{3}{4}a\sqrt{x}\sqrt{a+bx}+\frac{1}{2}\sqrt{x}(a+bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (3*a*Sqrt[x]*Sqrt[a + b*x])/4 + (Sqrt[x]*(a + b*x)^(3/2))/2 + (3*
a^2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(4*Sqrt[b])
```

Rubi in Sympy [A] time = 7.64219, size = 65, normalized size = 0.92

$$\frac{3a^2\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4\sqrt{b}}+\frac{3a\sqrt{x}\sqrt{a+bx}}{4}+\frac{\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x**(1/2),x)
```

```
[Out] 3*a**2*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(4*sqrt(b)) + 3*a*sqr
t(x)*sqrt(a + b*x)/4 + sqrt(x)*(a + b*x)**(3/2)/2
```

Mathematica [A] time = 0.0463771, size = 62, normalized size = 0.87

$$\frac{1}{4}\left(\frac{3a^2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{\sqrt{b}}+\sqrt{x}\sqrt{a+bx}(5a+2bx)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*Sqrt[a + b*x]*(5*a + 2*b*x) + (3*a^2*Log[b*Sqrt[x] + Sqr
t[b]*Sqrt[a + b*x]])/Sqrt[b])/4
```

Maple [A] time = 0.009, size = 78, normalized size = 1.1

$$\frac{1}{2}(bx+a)^{\frac{3}{2}}\sqrt{x}+\frac{3a}{4}\sqrt{x}\sqrt{bx+a}+\frac{3a^2}{8}\sqrt{x(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x^(1/2),x)
```

```
[Out] 1/2*(b*x+a)^(3/2)*x^(1/2)+3/4*a*x^(1/2)*(b*x+a)^(1/2)+3/8*a^2*(x*
(b*x+a))^(1/2)/(b*x+a)^(1/2)/x^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^
2+a*x)^(1/2))/b^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222859, size = 1, normalized size = 0.01

$$\left[\frac{3a^2\log\left(2\sqrt{bx+a}b\sqrt{x}+(2bx+a)\sqrt{b}\right)+2(2bx+5a)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{8\sqrt{b}},\frac{3a^2\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)+(2bx+5a)\sqrt{bx+a}\sqrt{-b}\cdots}{4\sqrt{-b}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/8*(3*a^2*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b))
+ 2*(2*b*x + 5*a)*sqrt(b*x + a)*sqrt(b)*sqrt(x))/sqrt(b), 1/4*(3*
a^2*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) + (2*b*x + 5*a)*sq
rt(b*x + a)*sqrt(-b)*sqrt(x))/sqrt(-b)]
```

Sympy [A] time = 15.2906, size = 75, normalized size = 1.06

$$\frac{5a^{\frac{3}{2}}\sqrt{x}\sqrt{1+\frac{bx}{a}}}{4}+\frac{\sqrt{a}bx^{\frac{3}{2}}\sqrt{1+\frac{bx}{a}}}{2}+\frac{3a^2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x**(1/2),x)
```

```
[Out] 5*a**(3/2)*sqrt(x)*sqrt(1 + b*x/a)/4 + sqrt(a)*b*x**(3/2)*sqrt(1
+ b*x/a)/2 + 3*a**2*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(4*sqrt(b))
```

GIAC/XCAS [A] time = 13.764, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.525 $\int \frac{(a+bx)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=63

$$-\frac{2(a+bx)^{3/2}}{\sqrt{x}}+3b\sqrt{x}\sqrt{a+bx}+3a\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)$$

```
[Out] 3*b*Sqrt[x]*Sqrt[a + b*x] - (2*(a + b*x)^(3/2))/Sqrt[x] + 3*a*Sqr
t[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]]
```

Rubi [A] time = 0.0503474, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{2(a+bx)^{3/2}}{\sqrt{x}}+3b\sqrt{x}\sqrt{a+bx}+3a\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/x^(3/2),x]
```

```
[Out] 3*b*Sqrt[x]*Sqrt[a + b*x] - (2*(a + b*x)^(3/2))/Sqrt[x] + 3*a*Sqr
t[b]*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]]
```

Rubi in Sympy [A] time = 7.92637, size = 60, normalized size = 0.95

$$3a\sqrt{b}\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)+3b\sqrt{x}\sqrt{a+bx}-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x**(3/2),x)
```

```
[Out] 3*a*sqrt(b)*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x))) + 3*b*sqrt(x)*
sqrt(a + b*x) - 2*(a + b*x)**(3/2)/sqrt(x)
```

Mathematica [A] time = 0.0476551, size = 55, normalized size = 0.87

$$\frac{\sqrt{a+bx}(bx-2a)}{\sqrt{x}}+3a\sqrt{b}\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/x^(3/2),x]
```

```
[Out] ((-2*a + b*x)*Sqrt[a + b*x])/Sqrt[x] + 3*a*Sqrt[b]*Log[b*Sqrt[x]
+ Sqrt[b]*Sqrt[a + b*x]]
```

Maple [A] time = 0.045, size = 71, normalized size = 1.1

$$-(-bx+2a)\sqrt{bx+a}\frac{1}{\sqrt{x}}+\frac{3a}{2}\sqrt{b}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\sqrt{x(bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x^(3/2),x)
```

```
[Out] -(b*x+a)^(1/2)*(-b*x+2*a)/x^(1/2)+3/2*a*b^(1/2)*ln((1/2*a+b*x)/b^
(1/2)+(b*x^2+a*x)^(1/2))*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220659, size = 1, normalized size = 0.02

$$\left[\frac{3a\sqrt{b}x\log\left(2bx+2\sqrt{bx+a}\sqrt{b}\sqrt{x}+a\right)+2\sqrt{bx+a}(bx-2a)\sqrt{x}}{2x}, \frac{3a\sqrt{-b}x\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-b}\sqrt{x}}\right)+\sqrt{bx+a}(bx-2a)\sqrt{x}}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(3*a*sqrt(b)*x*log(2*b*x + 2*sqrt(b*x + a)*sqrt(b)*sqrt(x) +
 a) + 2*sqrt(b*x + a)*(b*x - 2*a)*sqrt(x))/x, (3*a*sqrt(-b)*x*arc
```

```
tan(sqrt(b*x + a)/(sqrt(-b)*sqrt(x))) + sqrt(b*x + a)*(b*x - 2*a)
*sqrt(x))/x]
```

Sympy [A] time = 13.6099, size = 92, normalized size = 1.46

$$-\frac{2a^{\frac{3}{2}}}{\sqrt{x}\sqrt{1+\frac{bx}{a}}}-\frac{\sqrt{a}b\sqrt{x}}{\sqrt{1+\frac{bx}{a}}}+3a\sqrt{b}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)+\frac{b^2x^{\frac{3}{2}}}{\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x**(3/2),x)
```

```
[Out] -2*a**(3/2)/(sqrt(x)*sqrt(1 + b*x/a)) - sqrt(a)*b*sqrt(x)/sqrt(1
+ b*x/a) + 3*a*sqrt(b)*asinh(sqrt(b)*sqrt(x)/sqrt(a)) + b**2*x**(
3/2)/(sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 14.3209, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.526 $\int \frac{(a+bx)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=64

$$2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2(a+bx)^{3/2}}{3x^{3/2}}-\frac{2b\sqrt{a+bx}}{\sqrt{x}}$$

```
[Out] (-2*b*Sqrt[a + b*x])/Sqrt[x] - (2*(a + b*x)^(3/2))/(3*x^(3/2)) +
2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]]
```

Rubi [A] time = 0.0485427, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2(a+bx)^{3/2}}{3x^{3/2}}-\frac{2b\sqrt{a+bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (-2*b*Sqrt[a + b*x])/Sqrt[x] - (2*(a + b*x)^(3/2))/(3*x^(3/2)) +
2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]]
```

Rubi in Sympy [A] time = 8.03064, size = 60, normalized size = 0.94

$$2b^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2b\sqrt{a+bx}}{\sqrt{x}}-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/x**(5/2),x)
```

```
[Out] 2*b**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x)) - 2*b*sqrt(a + b*
x)/sqrt(x) - 2*(a + b*x)**(3/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0482045, size = 56, normalized size = 0.88

$$2b^{3/2}\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)-\frac{2\sqrt{a+bx}(a+4bx)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (-2*Sqrt[a + b*x]*(a + 4*b*x))/(3*x^(3/2)) + 2*b^(3/2)*Log[b*Sqrt
[x] + Sqrt[b]*Sqrt[a + b*x]]
```

Maple [A] time = 0.029, size = 67, normalized size = 1.1

$$-\frac{8\,bx+2\,a}{3}\sqrt{bx+a}x^{-\frac{3}{2}}+1b^{\frac{3}{2}}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\sqrt{x\,(bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/x^(5/2),x)
```

```
[Out] -2/3*(b*x+a)^(1/2)*(4*b*x+a)/x^(3/2)+b^(3/2)*ln((1/2*a+b*x)/b^(1/
2)+(b*x^2+a*x)^(1/2))*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220613, size = 1, normalized size = 0.02

$$\left[\frac{3\,b^{\frac{3}{2}}x^2\log\left(2\,bx+2\,\sqrt{bx+a}\sqrt{b}\sqrt{x}+a\right)-2\,(4\,bx+a)\sqrt{bx+a}\sqrt{x}}{3\,x^2},\frac{2\left(3\,\sqrt{-b}bx^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-b}\sqrt{x}}\right)-(4\,bx+a)\sqrt{bx+a}\sqrt{x}\right)}{3\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*b^(3/2)*x^2*log(2*b*x + 2*sqrt(b*x + a)*sqrt(b)*sqrt(x) +
 a) - 2*(4*b*x + a)*sqrt(b*x + a)*sqrt(x))/x^2, 2/3*(3*sqrt(-b)*b
```

```
*x^2*arctan(sqrt(b*x + a)/(sqrt(-b)*sqrt(x))) - (4*b*x + a)*sqrt(
b*x + a)*sqrt(x))/x^2]
```

Sympy [A] time = 27.8618, size = 71, normalized size = 1.11

$$-\frac{2a\sqrt{b}\sqrt{\frac{a}{bx}+1}}{3x}-\frac{8b^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{3}-b^{\frac{3}{2}}\log\left(\frac{a}{bx}\right)+2b^{\frac{3}{2}}\log\left(\sqrt{\frac{a}{bx}+1}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/x**(5/2),x)
```

```
[Out] -2*a*sqrt(b)*sqrt(a/(b*x) + 1)/(3*x) - 8*b**(3/2)*sqrt(a/(b*x) +
1)/3 - b**(3/2)*log(a/(b*x)) + 2*b**(3/2)*log(sqrt(a/(b*x) + 1) +
 1)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.527 $\int x^{5/2}(a-bx)^{3/2}\,dx$

Optimal. Leaf size=149

$$\frac{3a^5\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{128b^{7/2}}-\frac{3a^4\sqrt{x}\sqrt{a-bx}}{128b^3}-\frac{a^3x^{3/2}\sqrt{a-bx}}{64b^2}-\frac{a^2x^{5/2}\sqrt{a-bx}}{80b}+\frac{3}{40}ax^{7/2}\sqrt{a-bx}+\frac{1}{5}x^{7/2}(a-bx)^{3/2}$$

```
[Out] (-3*a^4*Sqrt[x]*Sqrt[a - b*x])/(128*b^3) - (a^3*x^(3/2)*Sqrt[a -
b*x])/(64*b^2) - (a^2*x^(5/2)*Sqrt[a - b*x])/(80*b) + (3*a*x^(7/2
)*Sqrt[a - b*x])/40 + (x^(7/2)*(a - b*x)^(3/2))/5 + (3*a^5*ArcTan
[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(128*b^(7/2))
```

Rubi [A] time = 0.125709, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3a^5\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{128b^{7/2}}-\frac{3a^4\sqrt{x}\sqrt{a-bx}}{128b^3}-\frac{a^3x^{3/2}\sqrt{a-bx}}{64b^2}-\frac{a^2x^{5/2}\sqrt{a-bx}}{80b}+\frac{3}{40}ax^{7/2}\sqrt{a-bx}+\frac{1}{5}x^{7/2}(a-bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a - b*x)^(3/2),x]
```

```
[Out] (-3*a^4*Sqrt[x]*Sqrt[a - b*x])/(128*b^3) - (a^3*x^(3/2)*Sqrt[a -
b*x])/(64*b^2) - (a^2*x^(5/2)*Sqrt[a - b*x])/(80*b) + (3*a*x^(7/2
)*Sqrt[a - b*x])/40 + (x^(7/2)*(a - b*x)^(3/2))/5 + (3*a^5*ArcTan
[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(128*b^(7/2))
```

Rubi in Sympy [A] time = 20.1527, size = 136, normalized size = 0.91

$$\frac{3a^5\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{128b^{\frac{7}{2}}}+\frac{3a^4\sqrt{x}\sqrt{a-bx}}{128b^3}+\frac{a^3\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{64b^3}-\frac{a^2\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{16b^3}-\frac{ax^{\frac{3}{2}}\,(a-bx)^{\frac{5}{2}}}{8b^2}-\frac{x^{\frac{5}{2}}\,(a-bx)^{\frac{5}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(-b*x+a)**(3/2),x)
```

```
[Out] 3*a**5*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(128*b**(7/2)) + 3*a**
4*sqrt(x)*sqrt(a - b*x)/(128*b**3) + a**3*sqrt(x)*(a - b*x)**(3/2
```

```
)/(64*b**3) - a**2*sqrt(x)*(a - b*x)**(5/2)/(16*b**3) - a*x**(3/2
)*(a - b*x)**(5/2)/(8*b**2) - x**(5/2)*(a - b*x)**(5/2)/(5*b)
```

Mathematica [A] time = 0.0879275, size = 100, normalized size = 0.67

$$\frac{15a^5\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(15a^4+10a^3bx+8a^2b^2x^2-176ab^3x^3+128b^4x^4\right)}{640b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a - b*x)^(3/2),x]
```

```
[Out] (-(Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(15*a^4 + 10*a^3*b*x + 8*a^2*b^2
*x^2 - 176*a*b^3*x^3 + 128*b^4*x^4)) + 15*a^5*ArcTan[(Sqrt[b]*Sqr
t[x])/Sqrt[a - b*x]])/(640*b^(7/2))
```

Maple [A] time = 0.01, size = 146, normalized size = 1.

$$-\frac{1}{5\,b}x^{\frac{5}{2}}\left(-bx+a\right)^{\frac{5}{2}}-\frac{a}{8\,b^{2}}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{5}{2}}-\frac{a^{2}}{16\,b^{3}}\left(-bx+a\right)^{\frac{5}{2}}\sqrt{x}+\frac{a^{3}}{64\,b^{3}}\left(-bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{3\,a^{4}}{128\,b^{3}}\sqrt{x}\sqrt{-bx+a}+\frac{3\,a^{5}}{256}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^{2}+ax}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(-b*x+a)^(3/2),x)
```

```
[Out] -1/5/b*x^(5/2)*(-b*x+a)^(5/2)-1/8*a/b^2*x^(3/2)*(-b*x+a)^(5/2)-1/
16*a^2/b^3*x^(1/2)*(-b*x+a)^(5/2)+1/64*a^3/b^3*(-b*x+a)^(3/2)*x^(
1/2)+3/128*a^4*x^(1/2)*(-b*x+a)^(1/2)/b^3+3/256*a^5/b^(7/2)*(x*(-
b*x+a))^(1/2)/(-b*x+a)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(
-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223228, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^5\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)-2\left(128\,b^4x^4-176\,ab^3x^3+8\,a^2b^2x^2+10\,a^3bx+15\,a^4\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{1280\,\sqrt{-b}b^3},\right.$$
$$\left.-\frac{15\,a^5\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\left(128\,b^4x^4-176\,ab^3x^3+8\,a^2b^2x^2+10\,a^3bx+15\,a^4\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{640\,b^{\frac{7}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/1280*(15*a^5*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqr
t(-b)) - 2*(128*b^4*x^4 - 176*a*b^3*x^3 + 8*a^2*b^2*x^2 + 10*a^3*
b*x + 15*a^4)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^3), -1
/640*(15*a^5*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) + (128*b^4*
x^4 - 176*a*b^3*x^3 + 8*a^2*b^2*x^2 + 10*a^3*b*x + 15*a^4)*sqrt(-
b*x + a)*sqrt(b)*sqrt(x))/b^(7/2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(-b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.528 $\int x^{3/2}(a-bx)^{3/2}\,dx$

Optimal. Leaf size=124

$$\frac{3a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{5/2}}-\frac{3a^3\sqrt{x}\sqrt{a-bx}}{64b^2}-\frac{a^2x^{3/2}\sqrt{a-bx}}{32b}+\frac{1}{8}ax^{5/2}\sqrt{a-bx}+\frac{1}{4}x^{5/2}(a-bx)^{3/2}$$

```
[Out] (-3*a^3*Sqrt[x]*Sqrt[a - b*x])/(64*b^2) - (a^2*x^(3/2)*Sqrt[a - b
*x])/(32*b) + (a*x^(5/2)*Sqrt[a - b*x])/8 + (x^(5/2)*(a - b*x)^(3
/2))/4 + (3*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(64*b^(5
/2))
```

Rubi [A] time = 0.0966688, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{5/2}}-\frac{3a^3\sqrt{x}\sqrt{a-bx}}{64b^2}-\frac{a^2x^{3/2}\sqrt{a-bx}}{32b}+\frac{1}{8}ax^{5/2}\sqrt{a-bx}+\frac{1}{4}x^{5/2}(a-bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a - b*x)^(3/2),x]
```

```
[Out] (-3*a^3*Sqrt[x]*Sqrt[a - b*x])/(64*b^2) - (a^2*x^(3/2)*Sqrt[a - b
*x])/(32*b) + (a*x^(5/2)*Sqrt[a - b*x])/8 + (x^(5/2)*(a - b*x)^(3
/2))/4 + (3*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(64*b^(5
/2))
```

Rubi in Sympy [A] time = 14.9515, size = 114, normalized size = 0.92

$$-\frac{3a^4\operatorname{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{64b^{\frac{5}{2}}}+\frac{3a^3\sqrt{x}\sqrt{a-bx}}{64b^2}+\frac{a^2\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{32b^2}-\frac{a\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{8b^2}-\frac{x^{\frac{3}{2}}\,(a-bx)^{\frac{5}{2}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(-b*x+a)**(3/2),x)
```

```
[Out] -3*a**4*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/(64*b**(5/2)) + 3*a
**3*sqrt(x)*sqrt(a - b*x)/(64*b**2) + a**2*sqrt(x)*(a - b*x)**(3/
2)/(32*b**2) - a*sqrt(x)*(a - b*x)**(5/2)/(8*b**2) - x**(3/2)*(a
- b*x)**(5/2)/(4*b)
```

Mathematica [A] time = 0.0763476, size = 89, normalized size = 0.72

$$\frac{3a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(3a^3+2a^2bx-24ab^2x^2+16b^3x^3\right)}{64b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a - b*x)^(3/2),x]
```

```
[Out] (-(Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(3*a^3 + 2*a^2*b*x - 24*a*b^2*x^
2 + 16*b^3*x^3)) + 3*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])
/(64*b^(5/2))
```

Maple [A] time = 0.009, size = 127, normalized size = 1.

$$-\frac{1}{4\,b}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{5}{2}}-\frac{a}{8\,b^2}\left(-bx+a\right)^{\frac{5}{2}}\sqrt{x}+\frac{a^2}{32\,b^2}\left(-bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{3\,a^3}{64\,b^2}\sqrt{x}\sqrt{-bx+a}+\frac{3\,a^4}{128}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(-b*x+a)^(3/2),x)
```

```
[Out] -1/4/b*x^(3/2)*(-b*x+a)^(5/2)-1/8*a/b^2*x^(1/2)*(-b*x+a)^(5/2)+1/
32*a^2/b^2*(-b*x+a)^(3/2)*x^(1/2)+3/64*a^3*x^(1/2)*(-b*x+a)^(1/2)
/b^2+3/128*a^4/b^(5/2)*(x*(-b*x+a))^(1/2)/(-b*x+a)^(1/2)/x^(1/2)*
arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232363, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^{4}\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)-2\left(16\,b^{3}x^{3}-24\,ab^{2}x^{2}+2\,a^{2}bx+3\,a^{3}\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{128\,\sqrt{-b}b^{2}},\right.$$
$$\left.-\frac{3\,a^{4}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\left(16\,b^{3}x^{3}-24\,ab^{2}x^{2}+2\,a^{2}bx+3\,a^{3}\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{64\,b^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/128*(3*a^4*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(
-b)) - 2*(16*b^3*x^3 - 24*a*b^2*x^2 + 2*a^2*b*x + 3*a^3)*sqrt(-b*
x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^2), -1/64*(3*a^4*arctan(sqrt
(-b*x + a)/(sqrt(b)*sqrt(x))) + (16*b^3*x^3 - 24*a*b^2*x^2 + 2*a^
2*b*x + 3*a^3)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))/b^(5/2)]
```

Sympy [A] time = 54.6287, size = 323, normalized size = 2.6

$$\begin{cases} \frac{3ia^{\frac{7}{2}}\sqrt{x}}{64b^{2}\sqrt{-1+\frac{bx}{a}}}-\frac{ia^{\frac{5}{2}}x^{\frac{3}{2}}}{64b\sqrt{-1+\frac{bx}{a}}}-\frac{13ia^{\frac{3}{2}}x^{\frac{5}{2}}}{32\sqrt{-1+\frac{bx}{a}}}+\frac{5i\sqrt{a}bx^{\frac{7}{2}}}{8\sqrt{-1+\frac{bx}{a}}}-\frac{3ia^{4}\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{5}{2}}}-\frac{ib^{2}x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right|>1 \\ -\frac{3a^{\frac{7}{2}}\sqrt{x}}{64b^{2}\sqrt{1-\frac{bx}{a}}}+\frac{a^{\frac{5}{2}}x^{\frac{3}{2}}}{64b\sqrt{1-\frac{bx}{a}}}+\frac{13a^{\frac{3}{2}}x^{\frac{5}{2}}}{32\sqrt{1-\frac{bx}{a}}}-\frac{5\sqrt{a}bx^{\frac{7}{2}}}{8\sqrt{1-\frac{bx}{a}}}+\frac{3a^{4}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{5}{2}}}+\frac{b^{2}x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(-b*x+a)**(3/2),x)
```

```
[Out] Piecewise((3*I*a**(7/2)*sqrt(x)/(64*b**2*sqrt(-1 + b*x/a)) - I*a*
*(5/2)*x**(3/2)/(64*b*sqrt(-1 + b*x/a)) - 13*I*a**(3/2)*x**(5/2)/
(32*sqrt(-1 + b*x/a)) + 5*I*sqrt(a)*b*x**(7/2)/(8*sqrt(-1 + b*x/a
)) - 3*I*a**4*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(64*b**(5/2)) - I*b*
*2*x**(9/2)/(4*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1), (-3*a*
*(7/2)*sqrt(x)/(64*b**2*sqrt(1 - b*x/a)) + a**(5/2)*x**(3/2)/(64*
b*sqrt(1 - b*x/a)) + 13*a**(3/2)*x**(5/2)/(32*sqrt(1 - b*x/a)) -
5*sqrt(a)*b*x**(7/2)/(8*sqrt(1 - b*x/a)) + 3*a**4*asin(sqrt(b)*sq
rt(x)/sqrt(a))/(64*b**(5/2)) + b**2*x**(9/2)/(4*sqrt(a)*sqrt(1 -
b*x/a)), True))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.529 $\int \sqrt{x}(a-bx)^{3/2}\,dx$

Optimal. Leaf size=99

$$\frac{a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{3/2}}-\frac{a^2\sqrt{x}\sqrt{a-bx}}{8b}+\frac{1}{4}ax^{3/2}\sqrt{a-bx}+\frac{1}{3}x^{3/2}(a-bx)^{3/2}$$

```
[Out] -(a^2*Sqrt[x]*Sqrt[a - b*x])/(8*b) + (a*x^(3/2)*Sqrt[a - b*x])/4
+ (x^(3/2)*(a - b*x)^(3/2))/3 + (a^3*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a - b*x]])/(8*b^(3/2))
```

Rubi [A] time = 0.0719495, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{3/2}}-\frac{a^2\sqrt{x}\sqrt{a-bx}}{8b}+\frac{1}{4}ax^{3/2}\sqrt{a-bx}+\frac{1}{3}x^{3/2}(a-bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a - b*x)^(3/2),x]
```

```
[Out] -(a^2*Sqrt[x]*Sqrt[a - b*x])/(8*b) + (a*x^(3/2)*Sqrt[a - b*x])/4
+ (x^(3/2)*(a - b*x)^(3/2))/3 + (a^3*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a - b*x]])/(8*b^(3/2))
```

Rubi in Sympy [A] time = 11.1272, size = 85, normalized size = 0.86

$$-\frac{a^3\operatorname{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{8b^{\frac{3}{2}}}+\frac{a^2\sqrt{x}\sqrt{a-bx}}{8b}+\frac{a\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{12b}-\frac{\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(3/2)*x**(1/2),x)
```

```
[Out] -a**3*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/(8*b**(3/2)) + a**2*s
qrt(x)*sqrt(a - b*x)/(8*b) + a*sqrt(x)*(a - b*x)**(3/2)/(12*b) -
sqrt(x)*(a - b*x)**(5/2)/(3*b)
```

Mathematica [A] time = 0.056668, size = 77, normalized size = 0.78

$$\frac{3a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(-3a^2+14abx-8b^2x^2\right)}{24b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a - b*x)^(3/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-3*a^2 + 14*a*b*x - 8*b^2*x^2) +
3*a^3*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(24*b^(3/2))
```

Maple [A] time = 0.008, size = 102, normalized size = 1.

$$\frac{1}{3}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{3}{2}}+\frac{a}{4}x^{\frac{3}{2}}\sqrt{-bx+a}-\frac{a^2}{8\,b}\sqrt{x}\sqrt{-bx+a}+\frac{a^3}{16}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(3/2)*x^(1/2),x)
```

```
[Out] 1/3*x^(3/2)*(-b*x+a)^(3/2)+1/4*a*x^(3/2)*(-b*x+a)^(1/2)-1/8*a^2*x
^(1/2)*(-b*x+a)^(1/2)/b+1/16*a^3/b^(3/2)*(x*(-b*x+a))^(1/2)/x^(1/
2)/(-b*x+a)^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233005, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^3\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)-2\left(8\,b^2x^2-14\,abx+3\,a^2\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{48\,\sqrt{-b}b},\right.$$
$$\left.-\frac{3\,a^3\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\left(8\,b^2x^2-14\,abx+3\,a^2\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{24\,b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/48*(3*a^3*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-
b)) - 2*(8*b^2*x^2 - 14*a*b*x + 3*a^2)*sqrt(-b*x + a)*sqrt(-b)*sq
rt(x))/(sqrt(-b)*b), -1/24*(3*a^3*arctan(sqrt(-b*x + a)/(sqrt(b)*
sqrt(x))) + (8*b^2*x^2 - 14*a*b*x + 3*a^2)*sqrt(-b*x + a)*sqrt(b)
*sqrt(x))/b^(3/2)]
```

Sympy [A] time = 25.0996, size = 264, normalized size = 2.67

$$\begin{cases} \frac{ia^{\frac{5}{2}}\sqrt{x}}{8b\sqrt{-1+\frac{bx}{a}}}-\frac{17ia^{\frac{3}{2}}x^{\frac{3}{2}}}{24\sqrt{-1+\frac{bx}{a}}}+\frac{11i\sqrt{a}bx^{\frac{5}{2}}}{12\sqrt{-1+\frac{bx}{a}}}-\frac{ia^3\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{3}{2}}}-\frac{ib^2x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right|>1 \\ -\frac{a^{\frac{5}{2}}\sqrt{x}}{8b\sqrt{1-\frac{bx}{a}}}+\frac{17a^{\frac{3}{2}}x^{\frac{3}{2}}}{24\sqrt{1-\frac{bx}{a}}}-\frac{11\sqrt{a}bx^{\frac{5}{2}}}{12\sqrt{1-\frac{bx}{a}}}+\frac{a^3\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{3}{2}}}+\frac{b^2x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(3/2)*x**(1/2),x)
```

```
[Out] Piecewise((I*a**(5/2)*sqrt(x)/(8*b*sqrt(-1 + b*x/a)) - 17*I*a**(3
/2)*x**(3/2)/(24*sqrt(-1 + b*x/a)) + 11*I*sqrt(a)*b*x**(5/2)/(12*
sqrt(-1 + b*x/a)) - I*a**3*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(
3/2)) - I*b**2*x**(7/2)/(3*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a)
> 1), (-a**(5/2)*sqrt(x)/(8*b*sqrt(1 - b*x/a)) + 17*a**(3/2)*x**(
3/2)/(24*sqrt(1 - b*x/a)) - 11*sqrt(a)*b*x**(5/2)/(12*sqrt(1 - b*
x/a)) + a**3*asin(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(3/2)) + b**2*x*
*(7/2)/(3*sqrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)*sqrt(x),x, algorithm="giac")

[Out] Timed out
```

3.530 $\int \frac{(a-bx)^{3/2}}{\sqrt{x}} \, dx$

Optimal. Leaf size=74

$$\frac{3a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4\sqrt{b}}+\frac{3}{4}a\sqrt{x}\sqrt{a-bx}+\frac{1}{2}\sqrt{x}(a-bx)^{3/2}$$

```
[Out] (3*a*Sqrt[x]*Sqrt[a - b*x])/4 + (Sqrt[x]*(a - b*x)^(3/2))/2 + (3*
a^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*Sqrt[b])
```

Rubi [A] time = 0.0505026, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4\sqrt{b}}+\frac{3}{4}a\sqrt{x}\sqrt{a-bx}+\frac{1}{2}\sqrt{x}(a-bx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (3*a*Sqrt[x]*Sqrt[a - b*x])/4 + (Sqrt[x]*(a - b*x)^(3/2))/2 + (3*
a^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*Sqrt[b])
```

Rubi in Sympy [A] time = 7.83581, size = 65, normalized size = 0.88

$$\frac{3a^2\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4\sqrt{b}}+\frac{3a\sqrt{x}\sqrt{a-bx}}{4}+\frac{\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(3/2)/x**(1/2),x)
```

```
[Out] 3*a**2*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(4*sqrt(b)) + 3*a*sqrt
(x)*sqrt(a - b*x)/4 + sqrt(x)*(a - b*x)**(3/2)/2
```

Mathematica [A] time = 0.0549427, size = 61, normalized size = 0.82

$$\frac{1}{4}\left(\frac{3a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}+\sqrt{x}(5a-2bx)\sqrt{a-bx}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*(5*a - 2*b*x)*Sqrt[a - b*x] + (3*a^2*ArcTan[(Sqrt[b]*Sqr
t[x])/Sqrt[a - b*x]])/Sqrt[b])/4
```

Maple [A] time = 0.009, size = 83, normalized size = 1.1

$$\frac{1}{2}(-bx+a)^{\frac{3}{2}}\sqrt{x}+\frac{3a}{4}\sqrt{x}\sqrt{-bx+a}+\frac{3a^2}{8}\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(3/2)/x^(1/2),x)
```

```
[Out] 1/2*(-b*x+a)^(3/2)*x^(1/2)+3/4*a*x^(1/2)*(-b*x+a)^(1/2)+3/8*a^2*(
x*(-b*x+a))^(1/2)/(-b*x+a)^(1/2)/x^(1/2)/b^(1/2)*arctan(b^(1/2)*(
x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220834, size = 1, normalized size = 0.01

$$\left[\frac{3a^2\log\left(-2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)-2(2bx-5a)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{8\sqrt{-b}},\ -\frac{3a^2\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+(2bx-5a)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{4\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/8*(3*a^2*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b
)) - 2*(2*b*x - 5*a)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/sqrt(-b), -
1/4*(3*a^2*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) + (2*b*x - 5*
a)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))/sqrt(b)]
```

Sympy [A] time = 14.0811, size = 190, normalized size = 2.57

$$\begin{cases} -\frac{5ia^{\frac{3}{2}}\sqrt{x}}{4\sqrt{-1+\frac{bx}{a}}}+\frac{7i\sqrt{a}bx^{\frac{3}{2}}}{4\sqrt{-1+\frac{bx}{a}}}-\frac{3ia^2\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{b}}-\frac{ib^2x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right|>1 \\ \frac{5a^{\frac{3}{2}}\sqrt{x}\sqrt{1-\frac{bx}{a}}}{4}-\frac{\sqrt{a}bx^{\frac{3}{2}}\sqrt{1-\frac{bx}{a}}}{2}+\frac{3a^2\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(3/2)/x**(1/2),x)
```

```
[Out] Piecewise((-5*I*a**(3/2)*sqrt(x)/(4*sqrt(-1 + b*x/a)) + 7*I*sqrt(
a)*b*x**(3/2)/(4*sqrt(-1 + b*x/a)) - 3*I*a**2*acosh(sqrt(b)*sqrt(
x)/sqrt(a))/(4*sqrt(b)) - I*b**2*x**(5/2)/(2*sqrt(a)*sqrt(-1 + b*
x/a)), Abs(b*x/a) > 1), (5*a**(3/2)*sqrt(x)*sqrt(1 - b*x/a)/4 - s
qrt(a)*b*x**(3/2)*sqrt(1 - b*x/a)/2 + 3*a**2*asin(sqrt(b)*sqrt(x)
/sqrt(a))/(4*sqrt(b)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.531 $\int \frac{(a-bx)^{3/2}}{x^{3/2}} \, dx$

Optimal. Leaf size=66

$$-\frac{2(a-bx)^{3/2}}{\sqrt{x}}-3b\sqrt{x}\sqrt{a-bx}-3a\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

```
[Out] -3*b*Sqrt[x]*Sqrt[a - b*x] - (2*(a - b*x)^(3/2))/Sqrt[x] - 3*a*Sq
rt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Rubi [A] time = 0.0498914, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$-\frac{2(a-bx)^{3/2}}{\sqrt{x}}-3b\sqrt{x}\sqrt{a-bx}-3a\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(a - b*x)^(3/2)/x^(3/2),x]
```

```
[Out] -3*b*Sqrt[x]*Sqrt[a - b*x] - (2*(a - b*x)^(3/2))/Sqrt[x] - 3*a*Sq
rt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Rubi in Sympy [A] time = 7.51781, size = 60, normalized size = 0.91

$$3a\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)-3b\sqrt{x}\sqrt{a-bx}-\frac{2\,(a-bx)^{\frac{3}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(3/2)/x**(3/2),x)
```

```
[Out] 3*a*sqrt(b)*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x))) - 3*b*sqrt(x)*s
qrt(a - b*x) - 2*(a - b*x)**(3/2)/sqrt(x)
```

Mathematica [A] time = 0.0568354, size = 55, normalized size = 0.83

$$-\frac{\sqrt{a-bx}(2a+bx)}{\sqrt{x}}-3a\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - b*x)^(3/2)/x^(3/2),x]
```

```
[Out] -((Sqrt[a - b*x]*(2*a + b*x))/Sqrt[x]) - 3*a*Sqrt[b]*ArcTan[(Sqrt
[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Maple [A] time = 0.026, size = 74, normalized size = 1.1

$$-(bx+2a)\sqrt{-bx+a}\frac{1}{\sqrt{x}}-\frac{3a}{2}\sqrt{b}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\sqrt{x(-bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(3/2)/x^(3/2),x)
```

```
[Out] -(-b*x+a)^(1/2)*(b*x+2*a)/x^(1/2)-3/2*a*b^(1/2)*arctan(b^(1/2)*(x
-1/2*a/b)/(-b*x^2+a*x)^(1/2))*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)
^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219793, size = 1, normalized size = 0.02

$$\left[\frac{3a\sqrt{-b}x\log\left(-2bx+2\sqrt{-bx+a}\sqrt{-b}\sqrt{x}+a\right)-2(bx+2a)\sqrt{-bx+a}\sqrt{x}}{2x}, \frac{3a\sqrt{b}x\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-(bx+2a)\sqrt{-bx+a}}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(3*a*sqrt(-b)*x*log(-2*b*x + 2*sqrt(-b*x + a)*sqrt(-b)*sqrt(
x) + a) - 2*(b*x + 2*a)*sqrt(-b*x + a)*sqrt(x))/x, (3*a*sqrt(b)*x
*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (b*x + 2*a)*sqrt(-b*x
 + a)*sqrt(x))/x]
```

Sympy [A] time = 13.8959, size = 197, normalized size = 2.98

$$\begin{cases} \frac{2ia^{\frac{3}{2}}}{\sqrt{x}\sqrt{-1+\frac{bx}{a}}} - \frac{i\sqrt{a}b\sqrt{x}}{\sqrt{-1+\frac{bx}{a}}} + 3ia\sqrt{b}\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) - \frac{ib^2x^{\frac{3}{2}}}{\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{2a^{\frac{3}{2}}}{\sqrt{x}\sqrt{1-\frac{bx}{a}}} + \frac{\sqrt{a}b\sqrt{x}}{\sqrt{1-\frac{bx}{a}}} - 3a\sqrt{b}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) + \frac{b^2x^{\frac{3}{2}}}{\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(3/2)/x**(3/2),x)
```

```
[Out] Piecewise((2*I*a**(3/2)/(sqrt(x)*sqrt(-1 + b*x/a)) - I*sqrt(a)*b*
sqrt(x)/sqrt(-1 + b*x/a) + 3*I*a*sqrt(b)*acosh(sqrt(b)*sqrt(x)/sq
rt(a)) - I*b**2*x**(3/2)/(sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a) >
 1), (-2*a**(3/2)/(sqrt(x)*sqrt(1 - b*x/a)) + sqrt(a)*b*sqrt(x)/s
qrt(1 - b*x/a) - 3*a*sqrt(b)*asin(sqrt(b)*sqrt(x)/sqrt(a)) + b**2
*x**(3/2)/(sqrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.532 $\int \frac{(a-bx)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=67

$$2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\frac{2(a-bx)^{3/2}}{3x^{3/2}}+\frac{2b\sqrt{a-bx}}{\sqrt{x}}$$

```
[Out] (2*b*Sqrt[a - b*x])/Sqrt[x] - (2*(a - b*x)^(3/2))/(3*x^(3/2)) + 2
*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Rubi [A] time = 0.0508722, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\frac{2(a-bx)^{3/2}}{3x^{3/2}}+\frac{2b\sqrt{a-bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(a - b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (2*b*Sqrt[a - b*x])/Sqrt[x] - (2*(a - b*x)^(3/2))/(3*x^(3/2)) + 2
*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Rubi in Sympy [A] time = 7.50989, size = 60, normalized size = 0.9

$$2b^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\frac{2b\sqrt{a-bx}}{\sqrt{x}}-\frac{2\,(a-bx)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((-b*x+a)**(3/2)/x**(5/2),x)
```

```
[Out] 2*b**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x)) + 2*b*sqrt(a - b*x
)/sqrt(x) - 2*(a - b*x)**(3/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0538307, size = 55, normalized size = 0.82

$$2b^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\frac{2(a-4bx)\sqrt{a-bx}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (-2*(a - 4*b*x)*Sqrt[a - b*x])/(3*x^(3/2)) + 2*b^(3/2)*ArcTan[(Sq
rt[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Maple [A] time = 0.029, size = 71, normalized size = 1.1

$$-\frac{-8\,bx+2\,a}{3}\sqrt{-bx+a}x^{-\frac{3}{2}}+1b^{\frac{3}{2}}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^{2}+ax}}\right)\sqrt{x\left(-bx+a\right)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(3/2)/x^(5/2),x)
```

```
[Out] -2/3*(-b*x+a)^(1/2)*(-4*b*x+a)/x^(3/2)+b^(3/2)*arctan(b^(1/2)*(x-
1/2*a/b)/(-b*x^2+a*x)^(1/2))*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^
(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220202, size = 1, normalized size = 0.01

$$\left[\frac{3\,\sqrt{-b}bx^{2}\log\left(-2\,bx-2\,\sqrt{-bx+a}\sqrt{-b}\sqrt{x}+a\right)+2\,(4\,bx-a)\sqrt{-bx+a}\sqrt{x}}{3\,x^{2}},\right.$$
$$\left.-\frac{2\left(3\,b^{\frac{3}{2}}x^{2}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-(4\,bx-a)\sqrt{-bx+a}\sqrt{x}\right)}{3\,x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*sqrt(-b)*b*x^2*log(-2*b*x - 2*sqrt(-b*x + a)*sqrt(-b)*sqr
t(x) + a) + 2*(4*b*x - a)*sqrt(-b*x + a)*sqrt(x))/x^2, -2/3*(3*b^
(3/2)*x^2*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (4*b*x - a)*
sqrt(-b*x + a)*sqrt(x))/x^2]
```

Sympy [A] time = 28.028, size = 187, normalized size = 2.79

$$\begin{cases} -\frac{2a\sqrt{b}\sqrt{\frac{a}{bx}-1}}{3x} + \frac{8b^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}}{3} - 2ib^{\frac{3}{2}}\log\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right) + ib^{\frac{3}{2}}\log\left(\frac{a}{bx}\right) + 2b^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) & \text{for}\ \left|\frac{a}{bx}\right| > 1 \\ -\frac{2ia\sqrt{b}\sqrt{-\frac{a}{bx}+1}}{3x} + \frac{8ib^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{3} + ib^{\frac{3}{2}}\log\left(\frac{a}{bx}\right) - 2ib^{\frac{3}{2}}\log\left(\sqrt{-\frac{a}{bx}+1}+1\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(3/2)/x**(5/2),x)
```

```
[Out] Piecewise((-2*a*sqrt(b)*sqrt(a/(b*x) - 1)/(3*x) + 8*b**(3/2)*sqrt
(a/(b*x) - 1)/3 - 2*I*b**(3/2)*log(sqrt(a)/(sqrt(b)*sqrt(x))) + I
*b**(3/2)*log(a/(b*x)) + 2*b**(3/2)*asin(sqrt(b)*sqrt(x)/sqrt(a))
, Abs(a/(b*x)) > 1), (-2*I*a*sqrt(b)*sqrt(-a/(b*x) + 1)/(3*x) + 8
*I*b**(3/2)*sqrt(-a/(b*x) + 1)/3 + I*b**(3/2)*log(a/(b*x)) - 2*I*
b**(3/2)*log(sqrt(-a/(b*x) + 1) + 1), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.533 $\int x^{5/2}(2+bx)^{3/2}\,dx$

Optimal. Leaf size=126

$$-\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}+\frac{3\sqrt{x}\sqrt{bx+2}}{8b^3}-\frac{x^{3/2}\sqrt{bx+2}}{8b^2}+\frac{1}{5}x^{7/2}(bx+2)^{3/2}+\frac{3}{20}x^{7/2}\sqrt{bx+2}+\frac{x^{5/2}\sqrt{bx+2}}{20b}$$

```
[Out] (3*Sqrt[x]*Sqrt[2 + b*x])/(8*b^3) - (x^(3/2)*Sqrt[2 + b*x])/(8*b^
2) + (x^(5/2)*Sqrt[2 + b*x])/(20*b) + (3*x^(7/2)*Sqrt[2 + b*x])/2
0 + (x^(7/2)*(2 + b*x)^(3/2))/5 - (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sq
rt[2]])/(4*b^(7/2))
```

Rubi [A] time = 0.10299, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}+\frac{3\sqrt{x}\sqrt{bx+2}}{8b^3}-\frac{x^{3/2}\sqrt{bx+2}}{8b^2}+\frac{1}{5}x^{7/2}(bx+2)^{3/2}+\frac{3}{20}x^{7/2}\sqrt{bx+2}+\frac{x^{5/2}\sqrt{bx+2}}{20b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(2 + b*x)^(3/2),x]
```

```
[Out] (3*Sqrt[x]*Sqrt[2 + b*x])/(8*b^3) - (x^(3/2)*Sqrt[2 + b*x])/(8*b^
2) + (x^(5/2)*Sqrt[2 + b*x])/(20*b) + (3*x^(7/2)*Sqrt[2 + b*x])/2
0 + (x^(7/2)*(2 + b*x)^(3/2))/5 - (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sq
rt[2]])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 16.2817, size = 119, normalized size = 0.94

$$\frac{x^{\frac{5}{2}}(bx+2)^{\frac{5}{2}}}{5b}-\frac{x^{\frac{3}{2}}(bx+2)^{\frac{5}{2}}}{4b^2}+\frac{\sqrt{x}(bx+2)^{\frac{5}{2}}}{4b^3}-\frac{\sqrt{x}(bx+2)^{\frac{3}{2}}}{8b^3}-\frac{3\sqrt{x}\sqrt{bx+2}}{8b^3}-\frac{3\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+2)**(3/2),x)
```

```
[Out] x**(5/2)*(b*x + 2)**(5/2)/(5*b) - x**(3/2)*(b*x + 2)**(5/2)/(4*b*
*2) + sqrt(x)*(b*x + 2)**(5/2)/(4*b**3) - sqrt(x)*(b*x + 2)**(3/2
)/(8*b**3) - 3*sqrt(x)*sqrt(b*x + 2)/(8*b**3) - 3*asinh(sqrt(2)*s
qrt(b)*sqrt(x)/2)/(4*b**(7/2))
```

Mathematica [A] time = 0.0857385, size = 78, normalized size = 0.62

$$\frac{\sqrt{x}\sqrt{bx+2}\left(8b^4x^4+22b^3x^3+2b^2x^2-5bx+15\right)}{40b^3}-\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(2 + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(15 - 5*b*x + 2*b^2*x^2 + 22*b^3*x^3 + 8*b
^4*x^4))/(40*b^3) - (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(
7/2))
```

Maple [A] time = 0.009, size = 123, normalized size = 1.

$$\frac{1}{5\,b}x^{\frac{5}{2}}\left(bx+2\right)^{\frac{5}{2}}-\frac{1}{4\,b^{2}}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{5}{2}}+\frac{1}{4\,b^{3}}\left(bx+2\right)^{\frac{5}{2}}\sqrt{x}-\frac{1}{8\,b^{3}}\left(bx+2\right)^{\frac{3}{2}}\sqrt{x}-\frac{3}{8\,b^{3}}\sqrt{x}\sqrt{bx+2}-\frac{3}{8}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^{2}+2\,x}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+2)^(3/2),x)
```

```
[Out] 1/5/b*x^(5/2)*(b*x+2)^(5/2)-1/4/b^2*x^(3/2)*(b*x+2)^(5/2)+1/4/b^3
*x^(1/2)*(b*x+2)^(5/2)-1/8/b^3*x^(1/2)*(b*x+2)^(3/2)-3/8*x^(1/2)*
(b*x+2)^(1/2)/b^3-3/8/b^(7/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(
1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220873, size = 1, normalized size = 0.01

$$\left[\frac{\left(8\,b^4x^4+22\,b^3x^3+2\,b^2x^2-5\,bx+15\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\,\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{40\,b^{\frac{7}{2}}},\frac{\left(8\,b^4x^4+22\,b^3x^3+2\,b^2x^2-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/40*((8*b^4*x^4 + 22*b^3*x^3 + 2*b^2*x^2 - 5*b*x + 15)*sqrt(b*x
 + 2)*sqrt(b)*sqrt(x) + 15*log(-sqrt(b*x + 2)*b*sqrt(x) + (b*x +
1)*sqrt(b)))/b^(7/2), 1/40*((8*b^4*x^4 + 22*b^3*x^3 + 2*b^2*x^2 -
 5*b*x + 15)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x) - 30*arctan(sqrt(b*x
+ 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+2)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.534 $\int x^{3/2}(2+bx)^{3/2}\,dx$

Optimal. Leaf size=105

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{bx+2}}{8b^2}+\frac{1}{4}x^{5/2}(bx+2)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{bx+2}+\frac{x^{3/2}\sqrt{bx+2}}{8b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 + b*x])/(8*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(8*b
) + (x^(5/2)*Sqrt[2 + b*x])/4 + (x^(5/2)*(2 + b*x)^(3/2))/4 + (3*
ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(5/2))
```

Rubi [A] time = 0.080069, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{bx+2}}{8b^2}+\frac{1}{4}x^{5/2}(bx+2)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{bx+2}+\frac{x^{3/2}\sqrt{bx+2}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(2 + b*x)^(3/2),x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 + b*x])/(8*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(8*b
) + (x^(5/2)*Sqrt[2 + b*x])/4 + (x^(5/2)*(2 + b*x)^(3/2))/4 + (3*
ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(5/2))
```

Rubi in Sympy [A] time = 11.7675, size = 100, normalized size = 0.95

$$\frac{x^{\frac{3}{2}}(bx+2)^{\frac{5}{2}}}{4b}-\frac{\sqrt{x}(bx+2)^{\frac{5}{2}}}{4b^2}+\frac{\sqrt{x}(bx+2)^{\frac{3}{2}}}{8b^2}+\frac{3\sqrt{x}\sqrt{bx+2}}{8b^2}+\frac{3\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+2)**(3/2),x)
```

```
[Out] x**(3/2)*(b*x + 2)**(5/2)/(4*b) - sqrt(x)*(b*x + 2)**(5/2)/(4*b**
2) + sqrt(x)*(b*x + 2)**(3/2)/(8*b**2) + 3*sqrt(x)*sqrt(b*x + 2)/
(8*b**2) + 3*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(5/2))
```

Mathematica [A] time = 0.0526074, size = 70, normalized size = 0.67

$$\frac{\sqrt{b}\sqrt{x}\sqrt{bx+2}\left(2b^3x^3+6b^2x^2+bx-3\right)+6\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(2 + b*x)^(3/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[2 + b*x]*(-3 + b*x + 6*b^2*x^2 + 2*b^3*x^3)
 + 6*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(8*b^(5/2))
```

Maple [A] time = 0.007, size = 108, normalized size = 1.

$$\frac{1}{4b}x^{\frac{3}{2}}(bx+2)^{\frac{5}{2}}-\frac{1}{4b^2}(bx+2)^{\frac{5}{2}}\sqrt{x}+\frac{1}{8b^2}(bx+2)^{\frac{3}{2}}\sqrt{x}+\frac{3}{8b^2}\sqrt{x}\sqrt{bx+2}$$
$$+\frac{3}{8}\sqrt{x(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+2)^(3/2),x)
```

```
[Out] 1/4/b*x^(3/2)*(b*x+2)^(5/2)-1/4/b^2*x^(1/2)*(b*x+2)^(5/2)+1/8/b^2
*x^(1/2)*(b*x+2)^(3/2)+3/8*x^(1/2)*(b*x+2)^(1/2)/b^2+3/8/b^(5/2)*
(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2
+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224567, size = 1, normalized size = 0.01

$$\left[\frac{\left(2\,b^3x^3+6\,b^2x^2+bx-3\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+3\,\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{8\,b^{\frac{5}{2}}},\frac{\left(2\,b^3x^3+6\,b^2x^2+bx-3\right)\sqrt{bx+2}\sqrt{-b}\sqrt{x}}{8\,\sqrt{-b}b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*((2*b^3*x^3 + 6*b^2*x^2 + b*x - 3)*sqrt(b*x + 2)*sqrt(b)*sqr
t(x) + 3*log(sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/b^(5/2
), 1/8*((2*b^3*x^3 + 6*b^2*x^2 + b*x - 3)*sqrt(b*x + 2)*sqrt(-b)*
sqrt(x) + 6*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)
*b^2)]
```

Sympy [A] time = 49.0637, size = 117, normalized size = 1.11

$$\frac{b^2x^{\frac{9}{2}}}{4\sqrt{bx+2}}+\frac{5bx^{\frac{7}{2}}}{4\sqrt{bx+2}}+\frac{13x^{\frac{5}{2}}}{8\sqrt{bx+2}}-\frac{x^{\frac{3}{2}}}{8b\sqrt{bx+2}}-\frac{3\sqrt{x}}{4b^2\sqrt{bx+2}}+\frac{3\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+2)**(3/2),x)
```

```
[Out] b**2*x**(9/2)/(4*sqrt(b*x + 2)) + 5*b*x**(7/2)/(4*sqrt(b*x + 2))
+ 13*x**(5/2)/(8*sqrt(b*x + 2)) - x**(3/2)/(8*b*sqrt(b*x + 2)) -
3*sqrt(x)/(4*b**2*sqrt(b*x + 2)) + 3*asinh(sqrt(2)*sqrt(b)*sqrt(x
)/2)/(4*b**(5/2))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.535 $\int \sqrt{x}(2+bx)^{3/2}\,dx$

Optimal. Leaf size=82

$$-\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{3}x^{3/2}(bx+2)^{3/2}+\frac{1}{2}x^{3/2}\sqrt{bx+2}+\frac{\sqrt{x}\sqrt{bx+2}}{2b}$$

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/(2*b) + (x^(3/2)*Sqrt[2 + b*x])/2 + (x^(3
/2)*(2 + b*x)^(3/2))/3 - ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/
2)
```

Rubi [A] time = 0.0533578, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{3}x^{3/2}(bx+2)^{3/2}+\frac{1}{2}x^{3/2}\sqrt{bx+2}+\frac{\sqrt{x}\sqrt{bx+2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(2 + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/(2*b) + (x^(3/2)*Sqrt[2 + b*x])/2 + (x^(3
/2)*(2 + b*x)^(3/2))/3 - ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/
2)
```

Rubi in Sympy [A] time = 8.75426, size = 73, normalized size = 0.89

$$\frac{\sqrt{x}\,(bx+2)^{\frac{5}{2}}}{3b}-\frac{\sqrt{x}\,(bx+2)^{\frac{3}{2}}}{6b}-\frac{\sqrt{x}\sqrt{bx+2}}{2b}-\frac{\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(3/2)*x**(1/2),x)
```

```
[Out] sqrt(x)*(b*x + 2)**(5/2)/(3*b) - sqrt(x)*(b*x + 2)**(3/2)/(6*b) -
 sqrt(x)*sqrt(b*x + 2)/(2*b) - asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b
**(3/2)
```

Mathematica [A] time = 0.0633419, size = 60, normalized size = 0.73

$$\frac{\sqrt{x}\sqrt{bx+2}\left(2b^2x^2+7bx+3\right)}{6b}-\frac{\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(2 + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(3 + 7*b*x + 2*b^2*x^2))/(6*b) - ArcSinh[(
Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/2)
```

Maple [A] time = 0.007, size = 87, normalized size = 1.1

$$\frac{1}{3}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{3}{2}}+\frac{1}{2}x^{\frac{3}{2}}\sqrt{bx+2}+\frac{1}{2b}\sqrt{x}\sqrt{bx+2}-\frac{1}{2}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(3/2)*x^(1/2),x)
```

```
[Out] 1/3*x^(3/2)*(b*x+2)^(3/2)+1/2*x^(3/2)*(b*x+2)^(1/2)+1/2*x^(1/2)*(
b*x+2)^(1/2)/b-1/2/b^(3/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2
)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219929, size = 1, normalized size = 0.01

$$\left[\frac{\left(2\,b^2x^2+7\,bx+3\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+3\,\log\left(-\sqrt{bx+2}b\sqrt{x}+\left(bx+1\right)\sqrt{b}\right)}{6\,b^{\frac{3}{2}}},\frac{\left(2\,b^2x^2+7\,bx+3\right)\sqrt{bx+2}\sqrt{-b}\sqrt{x}-6\,\arctan\left(\right.}{6\sqrt{-b}b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/6*((2*b^2*x^2 + 7*b*x + 3)*sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 3*l
og(-sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/b^(3/2), 1/6*((
2*b^2*x^2 + 7*b*x + 3)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x) - 6*arctan(
sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b)]
```

Sympy [A] time = 21.919, size = 92, normalized size = 1.12

$$\frac{b^2x^{\frac{7}{2}}}{3\sqrt{bx+2}}+\frac{11bx^{\frac{5}{2}}}{6\sqrt{bx+2}}+\frac{17x^{\frac{3}{2}}}{6\sqrt{bx+2}}+\frac{\sqrt{x}}{b\sqrt{bx+2}}-\frac{\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(3/2)*x**(1/2),x)
```

```
[Out] b**2*x**(7/2)/(3*sqrt(b*x + 2)) + 11*b*x**(5/2)/(6*sqrt(b*x + 2))
 + 17*x**(3/2)/(6*sqrt(b*x + 2)) + sqrt(x)/(b*sqrt(b*x + 2)) - as
inh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.536 $\int \frac{(2+bx)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=61

$$\frac{1}{2}\sqrt{x}(bx+2)^{3/2}+\frac{3}{2}\sqrt{x}\sqrt{bx+2}+\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] (3*Sqrt[x]*Sqrt[2 + b*x])/2 + (Sqrt[x]*(2 + b*x)^(3/2))/2 + (3*Ar
cSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi [A] time = 0.0398299, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{1}{2}\sqrt{x}(bx+2)^{3/2}+\frac{3}{2}\sqrt{x}\sqrt{bx+2}+\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (3*Sqrt[x]*Sqrt[2 + b*x])/2 + (Sqrt[x]*(2 + b*x)^(3/2))/2 + (3*Ar
cSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi in Sympy [A] time = 6.3803, size = 56, normalized size = 0.92

$$\frac{\sqrt{x}\,(bx+2)^{\frac{3}{2}}}{2}+\frac{3\sqrt{x}\sqrt{bx+2}}{2}+\frac{3\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*(b*x + 2)**(3/2)/2 + 3*sqrt(x)*sqrt(b*x + 2)/2 + 3*asinh(
sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

Mathematica [A] time = 0.041608, size = 48, normalized size = 0.79

$$\frac{1}{2}\sqrt{x}\sqrt{bx+2}(bx+5)+\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(5 + b*x))/2 + (3*ArcSinh[(Sqrt[b]*Sqrt[x]
)/Sqrt[2]])/Sqrt[b]
```

Maple [A]   time = 0.008, size = 72, normalized size = 1.2

$$\frac{1}{2}(bx+2)^{\frac{3}{2}}\sqrt{x}+\frac{3}{2}\sqrt{x}\sqrt{bx+2}+\frac{3}{2}\sqrt{x\,(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(3/2)/x^(1/2),x)
```

```
[Out] 1/2*(b*x+2)^(3/2)*x^(1/2)+3/2*x^(1/2)*(b*x+2)^(1/2)+3/2*(x*(b*x+2
))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/
2))/b^(1/2)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.224266, size = 1, normalized size = 0.02

$$\left[\frac{(bx+5)\sqrt{bx+2}\sqrt{b}\sqrt{x}+3\,\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{2\sqrt{b}},\frac{(bx+5)\sqrt{bx+2}\sqrt{-b}\sqrt{x}+6\,\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)}{2\sqrt{-b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/2*((b*x + 5)*sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 3*log(sqrt(b*x +
2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/sqrt(b), 1/2*((b*x + 5)*sqrt(b
*x + 2)*sqrt(-b)*sqrt(x) + 6*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqr
t(x))))/sqrt(-b)]
```

Sympy [A] time = 12.5101, size = 76, normalized size = 1.25

$$\frac{b^2x^{\frac{5}{2}}}{2\sqrt{bx+2}} + \frac{7bx^{\frac{3}{2}}}{2\sqrt{bx+2}} + \frac{5\sqrt{x}}{\sqrt{bx+2}} + \frac{3\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] b**2*x**(5/2)/(2*sqrt(b*x + 2)) + 7*b*x**(3/2)/(2*sqrt(b*x + 2))
+ 5*sqrt(x)/sqrt(b*x + 2) + 3*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sq
rt(b)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.537 $\int \frac{(2+bx)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=58

$$-\frac{2(bx+2)^{3/2}}{\sqrt{x}}+3b\sqrt{x}\sqrt{bx+2}+6\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

```
[Out] 3*b*Sqrt[x]*Sqrt[2 + b*x] - (2*(2 + b*x)^(3/2))/Sqrt[x] + 6*Sqrt[
b]*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi [A] time = 0.0408551, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{2(bx+2)^{3/2}}{\sqrt{x}}+3b\sqrt{x}\sqrt{bx+2}+6\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + b*x)^(3/2)/x^(3/2),x]
```

```
[Out] 3*b*Sqrt[x]*Sqrt[2 + b*x] - (2*(2 + b*x)^(3/2))/Sqrt[x] + 6*Sqrt[
b]*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 6.71353, size = 56, normalized size = 0.97

$$6\sqrt{b}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+3b\sqrt{x}\sqrt{bx+2}-\frac{2\,(bx+2)^{\frac{3}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(3/2)/x**(3/2),x)
```

```
[Out] 6*sqrt(b)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) + 3*b*sqrt(x)*sqrt(b*x
 + 2) - 2*(b*x + 2)**(3/2)/sqrt(x)
```

Mathematica [A] time = 0.0481059, size = 45, normalized size = 0.78

$$\frac{\sqrt{bx+2}(bx-4)}{\sqrt{x}}+6\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(3/2)/x^(3/2),x]
```

```
[Out] ((-4 + b*x)*Sqrt[2 + b*x])/Sqrt[x] + 6*Sqrt[b]*ArcSinh[(Sqrt[b]*S
qrt[x])/Sqrt[2]]
```

Maple [A] time = 0.025, size = 72, normalized size = 1.2

$$(b^2x^2 - 2\,bx - 8)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}} + 3\,\frac{\sqrt{b}\sqrt{x\,(bx+2)}}{\sqrt{x}\sqrt{bx+2}}\ln\left(\frac{bx+1}{\sqrt{b}} + \sqrt{bx^2+2\,x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(3/2)/x^(3/2),x)
```

```
[Out] (b^2*x^2-2*b*x-8)/x^(1/2)/(b*x+2)^(1/2)+3*b^(1/2)*ln((b*x+1)/b^(1
/2)+(b*x^2+2*x)^(1/2))*(x*(b*x+2))^(1/2)/x^(1/2)/(b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222048, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{b}x\log\left(bx + \sqrt{bx+2}\sqrt{b}\sqrt{x} + 1\right) + \sqrt{bx+2}(bx-4)\sqrt{x}}{x}, \frac{6\,\sqrt{-b}x\arctan\left(\frac{\sqrt{bx+2}}{\sqrt{-b}\sqrt{x}}\right) + \sqrt{bx+2}(bx-4)\sqrt{x}}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [(3*sqrt(b)*x*log(b*x + sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 1) + sqrt
(b*x + 2)*(b*x - 4)*sqrt(x))/x, (6*sqrt(-b)*x*arctan(sqrt(b*x + 2
```

```
)/(sqrt(-b)*sqrt(x))) + sqrt(b*x + 2)*(b*x - 4)*sqrt(x))/x]
```

Sympy [A] time = 12.6304, size = 73, normalized size = 1.26

$$6\sqrt{b}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+\frac{b^2x^{\frac{3}{2}}}{\sqrt{bx+2}}-\frac{2b\sqrt{x}}{\sqrt{bx+2}}-\frac{8}{\sqrt{x}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(3/2)/x**(3/2),x)
```

```
[Out] 6*sqrt(b)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) + b**2*x**(3/2)/sqrt(b
*x + 2) - 2*b*sqrt(x)/sqrt(b*x + 2) - 8/(sqrt(x)*sqrt(b*x + 2))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.538 $\int \frac{(2+bx)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=60

$$2b^{3/2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2(bx+2)^{3/2}}{3x^{3/2}}-\frac{2b\sqrt{bx+2}}{\sqrt{x}}$$

```
[Out] (-2*b*Sqrt[2 + b*x])/Sqrt[x] - (2*(2 + b*x)^(3/2))/(3*x^(3/2)) +
2*b^(3/2)*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi [A] time = 0.044396, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2b^{3/2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2(bx+2)^{3/2}}{3x^{3/2}}-\frac{2b\sqrt{bx+2}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (-2*b*Sqrt[2 + b*x])/Sqrt[x] - (2*(2 + b*x)^(3/2))/(3*x^(3/2)) +
2*b^(3/2)*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 6.90151, size = 58, normalized size = 0.97

$$2b^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)-\frac{2b\sqrt{bx+2}}{\sqrt{x}}-\frac{2\left(bx+2\right)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(3/2)/x**(5/2),x)
```

```
[Out] 2*b**(3/2)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) - 2*b*sqrt(b*x + 2)/s
qrt(x) - 2*(b*x + 2)**(3/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0596666, size = 49, normalized size = 0.82

$$2b^{3/2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{4\sqrt{bx+2}(2bx+1)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (-4*Sqrt[2 + b*x]*(1 + 2*b*x))/(3*x^(3/2)) + 2*b^(3/2)*ArcSinh[(S
qrt[b]*Sqrt[x])/Sqrt[2]]
```

Maple [A] time = 0.028, size = 73, normalized size = 1.2

$$-\frac{8\,b^2x^2+20\,bx+8}{3}x^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}+1b^{\frac{3}{2}}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)\sqrt{x\,(bx+2)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(3/2)/x^(5/2),x)
```

```
[Out] -4/3*(2*b^2*x^2+5*b*x+2)/x^(3/2)/(b*x+2)^(1/2)+b^(3/2)*ln((b*x+1)
/b^(1/2)+(b*x^2+2*x)^(1/2))*(x*(b*x+2))^(1/2)/x^(1/2)/(b*x+2)^(1/
2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232047, size = 1, normalized size = 0.02

$$\left[\frac{3\,b^{\frac{3}{2}}x^2\log\left(bx+\sqrt{bx+2}\sqrt{b}\sqrt{x}+1\right)-4\,(2\,bx+1)\sqrt{bx+2}\sqrt{x}}{3\,x^2},\frac{2\left(3\,\sqrt{-b}bx^2\arctan\left(\frac{\sqrt{bx+2}}{\sqrt{-b}\sqrt{x}}\right)-2\,(2\,bx+1)\sqrt{bx+2}\sqrt{x}\right)}{3\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*b^(3/2)*x^2*log(b*x + sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 1)
- 4*(2*b*x + 1)*sqrt(b*x + 2)*sqrt(x))/x^2, 2/3*(3*sqrt(-b)*b*x^2
*arctan(sqrt(b*x + 2)/(sqrt(-b)*sqrt(x))) - 2*(2*b*x + 1)*sqrt(b*
x + 2)*sqrt(x))/x^2]
```

Sympy [A] time = 27.0085, size = 70, normalized size = 1.17

$$-\frac{8b^{\frac{3}{2}}\sqrt{1+\frac{2}{bx}}}{3}-b^{\frac{3}{2}}\log\left(\frac{1}{bx}\right)+2b^{\frac{3}{2}}\log\left(\sqrt{1+\frac{2}{bx}}+1\right)-\frac{4\sqrt{b}\sqrt{1+\frac{2}{bx}}}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(3/2)/x**(5/2),x)
```

```
[Out] -8*b**(3/2)*sqrt(1 + 2/(b*x))/3 - b**(3/2)*log(1/(b*x)) + 2*b**(3
/2)*log(sqrt(1 + 2/(b*x)) + 1) - 4*sqrt(b)*sqrt(1 + 2/(b*x))/(3*x
)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.539 $\int x^{5/2}(2-bx)^{3/2}\,dx$

Optimal. Leaf size=131

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{8b^3}-\frac{x^{3/2}\sqrt{2-bx}}{8b^2}+\frac{1}{5}x^{7/2}(2-bx)^{3/2}+\frac{3}{20}x^{7/2}\sqrt{2-bx}-\frac{x^{5/2}\sqrt{2-bx}}{20b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(8*b^3) - (x^(3/2)*Sqrt[2 - b*x])/(8*b
^2) - (x^(5/2)*Sqrt[2 - b*x])/(20*b) + (3*x^(7/2)*Sqrt[2 - b*x])/
20 + (x^(7/2)*(2 - b*x)^(3/2))/5 + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sq
rt[2]])/(4*b^(7/2))
```

Rubi [A] time = 0.109361, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{8b^3}-\frac{x^{3/2}\sqrt{2-bx}}{8b^2}+\frac{1}{5}x^{7/2}(2-bx)^{3/2}+\frac{3}{20}x^{7/2}\sqrt{2-bx}-\frac{x^{5/2}\sqrt{2-bx}}{20b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(2 - b*x)^(3/2),x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(8*b^3) - (x^(3/2)*Sqrt[2 - b*x])/(8*b
^2) - (x^(5/2)*Sqrt[2 - b*x])/(20*b) + (3*x^(7/2)*Sqrt[2 - b*x])/
20 + (x^(7/2)*(2 - b*x)^(3/2))/5 + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sq
rt[2]])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 16.2297, size = 119, normalized size = 0.91

$$-\frac{x^{\frac{5}{2}}(-bx+2)^{\frac{5}{2}}}{5b}-\frac{x^{\frac{3}{2}}(-bx+2)^{\frac{5}{2}}}{4b^2}-\frac{\sqrt{x}(-bx+2)^{\frac{5}{2}}}{4b^3}+\frac{\sqrt{x}(-bx+2)^{\frac{3}{2}}}{8b^3}+\frac{3\sqrt{x}\sqrt{-bx+2}}{8b^3}+\frac{3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(-b*x+2)**(3/2),x)
```

```
[Out] -x**(5/2)*(-b*x + 2)**(5/2)/(5*b) - x**(3/2)*(-b*x + 2)**(5/2)/(4
*b**2) - sqrt(x)*(-b*x + 2)**(5/2)/(4*b**3) + sqrt(x)*(-b*x + 2)*
*(3/2)/(8*b**3) + 3*sqrt(x)*sqrt(-b*x + 2)/(8*b**3) + 3*asin(sqrt
(2)*sqrt(b)*sqrt(x)/2)/(4*b**(7/2))
```

Mathematica [A] time = 0.0883575, size = 79, normalized size = 0.6

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{7/2}}-\frac{\sqrt{x}\sqrt{2-bx}\left(8b^4x^4-22b^3x^3+2b^2x^2+5bx+15\right)}{40b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(2 - b*x)^(3/2),x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x]*(15 + 5*b*x + 2*b^2*x^2 - 22*b^3*x^3 + 8*
b^4*x^4))/(40*b^3) + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(
7/2))
```

Maple [A] time = 0.01, size = 132, normalized size = 1.

$$-\frac{1}{5\,b}x^{\frac{5}{2}}\left(-bx+2\right)^{\frac{5}{2}}-\frac{1}{4\,b^2}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{5}{2}}-\frac{1}{4\,b^3}\left(-bx+2\right)^{\frac{5}{2}}\sqrt{x}+\frac{1}{8\,b^3}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{3}{8\,b^3}\sqrt{x}\sqrt{-bx+2}+\frac{3}{8}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(-b*x+2)^(3/2),x)
```

```
[Out] -1/5/b*x^(5/2)*(-b*x+2)^(5/2)-1/4/b^2*x^(3/2)*(-b*x+2)^(5/2)-1/4/
b^3*x^(1/2)*(-b*x+2)^(5/2)+1/8/b^3*x^(1/2)*(-b*x+2)^(3/2)+3/8*x^(
1/2)*(-b*x+2)^(1/2)/b^3+3/8/b^(7/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(
1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226117, size = 1, normalized size = 0.01

$$\left[-\frac{\left(8\,b^{4}x^{4}-22\,b^{3}x^{3}+2\,b^{2}x^{2}+5\,bx+15\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-15\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{40\,\sqrt{-b}b^{3}},\right.$$
$$\left.-\frac{\left(8\,b^{4}x^{4}-22\,b^{3}x^{3}+2\,b^{2}x^{2}+5\,bx+15\right)\sqrt{-bx+2}\sqrt{b}\sqrt{x}+30\,\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{40\,b^{\frac{7}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/40*((8*b^4*x^4 - 22*b^3*x^3 + 2*b^2*x^2 + 5*b*x + 15)*sqrt(-b
*x + 2)*sqrt(-b)*sqrt(x) - 15*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*
x - 1)*sqrt(-b)))/(sqrt(-b)*b^3), -1/40*((8*b^4*x^4 - 22*b^3*x^3
+ 2*b^2*x^2 + 5*b*x + 15)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) + 30*arc
tan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^(7/2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(-b*x+2)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.540 $\int x^{3/2}(2-bx)^{3/2}\,dx$

Optimal. Leaf size=109

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{8b^2}+\frac{1}{4}x^{5/2}(2-bx)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{2-bx}-\frac{x^{3/2}\sqrt{2-bx}}{8b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(8*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(8*b
) + (x^(5/2)*Sqrt[2 - b*x])/4 + (x^(5/2)*(2 - b*x)^(3/2))/4 + (3*
ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(5/2))
```

Rubi [A] time = 0.0854214, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{8b^2}+\frac{1}{4}x^{5/2}(2-bx)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{2-bx}-\frac{x^{3/2}\sqrt{2-bx}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(2 - b*x)^(3/2),x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(8*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(8*b
) + (x^(5/2)*Sqrt[2 - b*x])/4 + (x^(5/2)*(2 - b*x)^(3/2))/4 + (3*
ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(5/2))
```

Rubi in Sympy [A] time = 12.1892, size = 100, normalized size = 0.92

$$-\frac{x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{5}{2}}}{4b}-\frac{\sqrt{x}\left(-bx+2\right)^{\frac{5}{2}}}{4b^2}+\frac{\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{8b^2}+\frac{3\sqrt{x}\sqrt{-bx+2}}{8b^2}+\frac{3\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(-b*x+2)**(3/2),x)
```

```
[Out] -x**(3/2)*(-b*x + 2)**(5/2)/(4*b) - sqrt(x)*(-b*x + 2)**(5/2)/(4*
b**2) + sqrt(x)*(-b*x + 2)**(3/2)/(8*b**2) + 3*sqrt(x)*sqrt(-b*x
+ 2)/(8*b**2) + 3*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(5/2))
```

Mathematica [A] time = 0.0744792, size = 70, normalized size = 0.64

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{\sqrt{x}\sqrt{2-bx}\left(2b^3x^3-6b^2x^2+bx+3\right)}{8b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(2 - b*x)^(3/2),x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x]*(3 + b*x - 6*b^2*x^2 + 2*b^3*x^3))/(8*b^2
) + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(5/2))
```

Maple [A] time = 0.007, size = 116, normalized size = 1.1

$$-\frac{1}{4\,b}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{5}{2}}-\frac{1}{4\,b^2}\left(-bx+2\right)^{\frac{5}{2}}\sqrt{x}+\frac{1}{8\,b^2}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{3}{8\,b^2}\sqrt{x}\sqrt{-bx+2}+\frac{3}{8}\sqrt{(-bx+2)\,x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(-b*x+2)^(3/2),x)
```

```
[Out] -1/4/b*x^(3/2)*(-b*x+2)^(5/2)-1/4/b^2*x^(1/2)*(-b*x+2)^(5/2)+1/8/
b^2*x^(1/2)*(-b*x+2)^(3/2)+3/8*x^(1/2)*(-b*x+2)^(1/2)/b^2+3/8/b^(
5/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-
1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225016, size = 1, normalized size = 0.01

$$\left[-\frac{\left(2\,b^{3}x^{3}-6\,b^{2}x^{2}+bx+3\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-3\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{8\,\sqrt{-b}b^{2}},\right.$$
$$\left.-\frac{\left(2\,b^{3}x^{3}-6\,b^{2}x^{2}+bx+3\right)\sqrt{-bx+2}\sqrt{b}\sqrt{x}+6\,\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{8\,b^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((2*b^3*x^3 - 6*b^2*x^2 + b*x + 3)*sqrt(-b*x + 2)*sqrt(-b)*
sqrt(x) - 3*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/
(sqrt(-b)*b^2), -1/8*((2*b^3*x^3 - 6*b^2*x^2 + b*x + 3)*sqrt(-b*x
 + 2)*sqrt(b)*sqrt(x) + 6*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))
))/b^(5/2)]
```

Sympy [A] time = 49.1069, size = 252, normalized size = 2.31

$$\begin{cases} -\frac{ib^{2}x^{\frac{9}{2}}}{4\sqrt{bx-2}}+\frac{5ibx^{\frac{7}{2}}}{4\sqrt{bx-2}}-\frac{13ix^{\frac{5}{2}}}{8\sqrt{bx-2}}-\frac{ix^{\frac{3}{2}}}{8b\sqrt{bx-2}}+\frac{3i\sqrt{x}}{4b^{2}\sqrt{bx-2}}-\frac{3i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}} & \text{for}\ \frac{|bx|}{2}>1 \\ \frac{b^{2}x^{\frac{9}{2}}}{4\sqrt{-bx+2}}-\frac{5bx^{\frac{7}{2}}}{4\sqrt{-bx+2}}+\frac{13x^{\frac{5}{2}}}{8\sqrt{-bx+2}}+\frac{x^{\frac{3}{2}}}{8b\sqrt{-bx+2}}-\frac{3\sqrt{x}}{4b^{2}\sqrt{-bx+2}}+\frac{3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(-b*x+2)**(3/2),x)
```

```
[Out] Piecewise((-I*b**2*x**(9/2)/(4*sqrt(b*x - 2)) + 5*I*b*x**(7/2)/(4
*sqrt(b*x - 2)) - 13*I*x**(5/2)/(8*sqrt(b*x - 2)) - I*x**(3/2)/(8
*b*sqrt(b*x - 2)) + 3*I*sqrt(x)/(4*b**2*sqrt(b*x - 2)) - 3*I*acos
h(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(5/2)), Abs(b*x)/2 > 1), (b**2
*x**(9/2)/(4*sqrt(-b*x + 2)) - 5*b*x**(7/2)/(4*sqrt(-b*x + 2)) +
13*x**(5/2)/(8*sqrt(-b*x + 2)) + x**(3/2)/(8*b*sqrt(-b*x + 2)) -
3*sqrt(x)/(4*b**2*sqrt(-b*x + 2)) + 3*asin(sqrt(2)*sqrt(b)*sqrt(x
)/2)/(4*b**(5/2)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*x^(3/2),x, algorithm="giac")

[Out] Exception raised: NotImplementedError
```

3.541 $\int \sqrt{x}(2-bx)^{3/2}\,dx$

Optimal. Leaf size=84

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{3}x^{3/2}(2-bx)^{3/2}+\frac{1}{2}x^{3/2}\sqrt{2-bx}-\frac{\sqrt{x}\sqrt{2-bx}}{2b}$$

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x])/(2*b) + (x^(3/2)*Sqrt[2 - b*x])/2 + (x^(
3/2)*(2 - b*x)^(3/2))/3 + ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/
2)
```

Rubi [A] time = 0.0573771, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}+\frac{1}{3}x^{3/2}(2-bx)^{3/2}+\frac{1}{2}x^{3/2}\sqrt{2-bx}-\frac{\sqrt{x}\sqrt{2-bx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(2 - b*x)^(3/2),x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x])/(2*b) + (x^(3/2)*Sqrt[2 - b*x])/2 + (x^(
3/2)*(2 - b*x)^(3/2))/3 + ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/
2)
```

Rubi in Sympy [A] time = 9.15491, size = 73, normalized size = 0.87

$$-\frac{\sqrt{x}\left(-bx+2\right)^{\frac{5}{2}}}{3b}+\frac{\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{6b}+\frac{\sqrt{x}\sqrt{-bx+2}}{2b}+\frac{\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(3/2)*x**(1/2),x)
```

```
[Out] -sqrt(x)*(-b*x + 2)**(5/2)/(3*b) + sqrt(x)*(-b*x + 2)**(3/2)/(6*b
) + sqrt(x)*sqrt(-b*x + 2)/(2*b) + asin(sqrt(2)*sqrt(b)*sqrt(x)/2
)/b**(3/2)
```

Mathematica [A] time = 0.0727008, size = 60, normalized size = 0.71

$$\frac{\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{2-bx}\left(2b^2x^2-7bx+3\right)}{6b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(2 - b*x)^(3/2),x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x]*(3 - 7*b*x + 2*b^2*x^2))/(6*b) + ArcSin[(
Sqrt[b]*Sqrt[x])/Sqrt[2]]/b^(3/2)
```

Maple [A] time = 0.007, size = 94, normalized size = 1.1

$$\frac{1}{3}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{3}{2}}+\frac{1}{2}x^{\frac{3}{2}}\sqrt{-bx+2}-\frac{1}{2\,b}\sqrt{x}\sqrt{-bx+2}\\+\frac{1}{2}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(3/2)*x^(1/2),x)
```

```
[Out] 1/3*x^(3/2)*(-b*x+2)^(3/2)+1/2*x^(3/2)*(-b*x+2)^(1/2)-1/2*x^(1/2)
*(-b*x+2)^(1/2)/b+1/2/b^(3/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x
^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.239696, size = 1, normalized size = 0.01

$$\left[-\frac{\left(2\,b^{2}x^{2}-7\,bx+3\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-3\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{6\,\sqrt{-b}b},\right.$$
$$\left.-\frac{\left(2\,b^{2}x^{2}-7\,bx+3\right)\sqrt{-bx+2}\sqrt{b}\sqrt{x}+6\,\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{6\,b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [-1/6*((2*b^2*x^2 - 7*b*x + 3)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) -
3*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/(sqrt(-b)*
b), -1/6*((2*b^2*x^2 - 7*b*x + 3)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x)
+ 6*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^(3/2)]
```

Sympy [A] time = 21.9239, size = 199, normalized size = 2.37

$$\begin{cases} -\frac{ib^{2}x^{\frac{7}{2}}}{3\sqrt{bx-2}}+\frac{11ibx^{\frac{5}{2}}}{6\sqrt{bx-2}}-\frac{17ix^{\frac{3}{2}}}{6\sqrt{bx-2}}+\frac{i\sqrt{x}}{b\sqrt{bx-2}}-\frac{i\,\mathrm{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{for}\ \frac{|bx|}{2}>1\\ \frac{b^{2}x^{\frac{7}{2}}}{3\sqrt{-bx+2}}-\frac{11bx^{\frac{5}{2}}}{6\sqrt{-bx+2}}+\frac{17x^{\frac{3}{2}}}{6\sqrt{-bx+2}}-\frac{\sqrt{x}}{b\sqrt{-bx+2}}+\frac{\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(3/2)*x**(1/2),x)
```

```
[Out] Piecewise((-I*b**2*x**(7/2)/(3*sqrt(b*x - 2)) + 11*I*b*x**(5/2)/(
6*sqrt(b*x - 2)) - 17*I*x**(3/2)/(6*sqrt(b*x - 2)) + I*sqrt(x)/(b
*sqrt(b*x - 2)) - I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2), Ab
s(b*x)/2 > 1), (b**2*x**(7/2)/(3*sqrt(-b*x + 2)) - 11*b*x**(5/2)/
(6*sqrt(-b*x + 2)) + 17*x**(3/2)/(6*sqrt(-b*x + 2)) - sqrt(x)/(b*
sqrt(-b*x + 2)) + asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2), True)
)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.542 $\int \frac{(2-bx)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=63

$$\frac{1}{2}\sqrt{x}(2-bx)^{3/2}+\frac{3}{2}\sqrt{x}\sqrt{2-bx}+\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] (3*Sqrt[x]*Sqrt[2 - b*x])/2 + (Sqrt[x]*(2 - b*x)^(3/2))/2 + (3*Ar
cSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi [A] time = 0.0433811, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{1}{2}\sqrt{x}(2-bx)^{3/2}+\frac{3}{2}\sqrt{x}\sqrt{2-bx}+\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] (3*Sqrt[x]*Sqrt[2 - b*x])/2 + (Sqrt[x]*(2 - b*x)^(3/2))/2 + (3*Ar
cSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi in Sympy [A] time = 6.98751, size = 56, normalized size = 0.89

$$\frac{\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{2}+\frac{3\sqrt{x}\sqrt{-bx+2}}{2}+\frac{3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*(-b*x + 2)**(3/2)/2 + 3*sqrt(x)*sqrt(-b*x + 2)/2 + 3*asin
(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

Mathematica [A] time = 0.049853, size = 49, normalized size = 0.78

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}-\frac{1}{2}\sqrt{x}\sqrt{2-bx}(bx-5)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(3/2)/Sqrt[x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x]*(-5 + b*x))/2 + (3*ArcSin[(Sqrt[b]*Sqrt[x
])/Sqrt[2]])/Sqrt[b]
```

Maple [A] time = 0.007, size = 78, normalized size = 1.2

$$\frac{1}{2}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{3}{2}\sqrt{x}\sqrt{-bx+2}+\frac{3}{2}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^{2}+2\,x}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(3/2)/x^(1/2),x)
```

```
[Out] 1/2*(-b*x+2)^(3/2)*x^(1/2)+3/2*x^(1/2)*(-b*x+2)^(1/2)+3/2*((-b*x+
2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)/b^(1/2)*arctan(b^(1/2)*(x-1/b)
/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.24767, size = 1, normalized size = 0.02

$$\left[-\frac{(bx-5)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-3\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{2\,\sqrt{-b}},\right.$$
$$\left.-\frac{(bx-5)\sqrt{-bx+2}\sqrt{b}\sqrt{x}+6\,\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{2\,\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [-1/2*((b*x - 5)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) - 3*log(-sqrt(-b
*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/sqrt(-b), -1/2*((b*x - 5
)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) + 6*arctan(sqrt(-b*x + 2)/(sqrt(
b)*sqrt(x))))/sqrt(b)]
```

Sympy [A] time = 12.7703, size = 167, normalized size = 2.65

$$\begin{cases} -\frac{ib^2x^{\frac{5}{2}}}{2\sqrt{bx-2}} + \frac{7ibx^{\frac{3}{2}}}{2\sqrt{bx-2}} - \frac{5i\sqrt{x}}{\sqrt{bx-2}} - \frac{3i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{for}\ \frac{|bx|}{2} > 1 \\ \frac{b^2x^{\frac{5}{2}}}{2\sqrt{-bx+2}} - \frac{7bx^{\frac{3}{2}}}{2\sqrt{-bx+2}} + \frac{5\sqrt{x}}{\sqrt{-bx+2}} + \frac{3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] Piecewise((-I*b**2*x**(5/2)/(2*sqrt(b*x - 2)) + 7*I*b*x**(3/2)/(2
*sqrt(b*x - 2)) - 5*I*sqrt(x)/sqrt(b*x - 2) - 3*I*acosh(sqrt(2)*s
qrt(b)*sqrt(x)/2)/sqrt(b), Abs(b*x)/2 > 1), (b**2*x**(5/2)/(2*sqr
t(-b*x + 2)) - 7*b*x**(3/2)/(2*sqrt(-b*x + 2)) + 5*sqrt(x)/sqrt(-
b*x + 2) + 3*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.543 $\int \frac{(2-bx)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=60

$$-\frac{2(2-bx)^{3/2}}{\sqrt{x}}-3b\sqrt{x}\sqrt{2-bx}-6\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

```
[Out] -3*b*Sqrt[x]*Sqrt[2 - b*x] - (2*(2 - b*x)^(3/2))/Sqrt[x] - 6*Sqrt
[b]*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi [A] time = 0.0435846, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{2(2-bx)^{3/2}}{\sqrt{x}}-3b\sqrt{x}\sqrt{2-bx}-6\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(3/2)/x^(3/2),x]
```

```
[Out] -3*b*Sqrt[x]*Sqrt[2 - b*x] - (2*(2 - b*x)^(3/2))/Sqrt[x] - 6*Sqrt
[b]*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 7.14736, size = 58, normalized size = 0.97

$$-6\sqrt{b}\,\text{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)-3b\sqrt{x}\sqrt{-bx+2}-\frac{2\,(-bx+2)^{\frac{3}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(3/2)/x**(3/2),x)
```

```
[Out] -6*sqrt(b)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) - 3*b*sqrt(x)*sqrt(-b*
x + 2) - 2*(-b*x + 2)**(3/2)/sqrt(x)
```

Mathematica [A] time = 0.0461966, size = 47, normalized size = 0.78

$$-\frac{\sqrt{2-bx}(bx+4)}{\sqrt{x}}-6\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(3/2)/x^(3/2),x]
```

```
[Out] -((Sqrt[2 - b*x]*(4 + b*x))/Sqrt[x]) - 6*Sqrt[b]*ArcSin[(Sqrt[b]*
Sqrt[x])/Sqrt[2]]
```

Maple [B]   time = 0.029, size = 97, normalized size = 1.6

$$(b^2x^2 + 2\,bx - 8)\sqrt{(-bx + 2)\,x}\frac{1}{\sqrt{-x\,(bx - 2)}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx + 2}} - 3\,\frac{\sqrt{b}\sqrt{(-bx + 2)\,x}}{\sqrt{x}\sqrt{-bx + 2}}\arctan\left(\frac{\sqrt{b}}{\sqrt{-bx^2 + 2\,x}}\left(x - b^{-1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(3/2)/x^(3/2),x)
```

```
[Out] (b^2*x^2+2*b*x-8)/(-x*(b*x-2))^(1/2)*((-b*x+2)*x)^(1/2)/x^(1/2)/(
-b*x+2)^(1/2)-3*b^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2)
)*((-b*x+2)*x)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.247444, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{-b}x\log\left(-bx + \sqrt{-bx + 2}\sqrt{-b}\sqrt{x} + 1\right) - (bx + 4)\sqrt{-bx + 2}\sqrt{x}}{x}, \frac{6\,\sqrt{b}x\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right) - (bx + 4)\sqrt{-bx + 2}\sqrt{x}}{x}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [(3*sqrt(-b)*x*log(-b*x + sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) + 1) -
(b*x + 4)*sqrt(-b*x + 2)*sqrt(x))/x, (6*sqrt(b)*x*arctan(sqrt(-b*
x + 2)/(sqrt(b)*sqrt(x))) - (b*x + 4)*sqrt(-b*x + 2)*sqrt(x))/x]
```

Sympy [A] time = 12.9476, size = 160, normalized size = 2.67

$$\begin{cases} 6i\sqrt{b}\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right) - \frac{ib^2x^{\frac{3}{2}}}{\sqrt{bx-2}} - \frac{2ib\sqrt{x}}{\sqrt{bx-2}} + \frac{8i}{\sqrt{x}\sqrt{bx-2}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -6\sqrt{b}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right) + \frac{b^2x^{\frac{3}{2}}}{\sqrt{-bx+2}} + \frac{2b\sqrt{x}}{\sqrt{-bx+2}} - \frac{8}{\sqrt{x}\sqrt{-bx+2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(3/2)/x**(3/2),x)
```

```
[Out] Piecewise((6*I*sqrt(b)*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2) - I*b**2*
x**(3/2)/sqrt(b*x - 2) - 2*I*b*sqrt(x)/sqrt(b*x - 2) + 8*I/(sqrt(
x)*sqrt(b*x - 2)), Abs(b*x)/2 > 1), (-6*sqrt(b)*asin(sqrt(2)*sqrt
(b)*sqrt(x)/2) + b**2*x**(3/2)/sqrt(-b*x + 2) + 2*b*sqrt(x)/sqrt(
-b*x + 2) - 8/(sqrt(x)*sqrt(-b*x + 2)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.544 $\int \frac{(2-bx)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=62

$$2b^{3/2}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2(2-bx)^{3/2}}{3x^{3/2}}+\frac{2b\sqrt{2-bx}}{\sqrt{x}}$$

```
[Out] (2*b*Sqrt[2 - b*x])/Sqrt[x] - (2*(2 - b*x)^(3/2))/(3*x^(3/2)) + 2
*b^(3/2)*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi [A] time = 0.0473607, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$2b^{3/2}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)-\frac{2(2-bx)^{3/2}}{3x^{3/2}}+\frac{2b\sqrt{2-bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (2*b*Sqrt[2 - b*x])/Sqrt[x] - (2*(2 - b*x)^(3/2))/(3*x^(3/2)) + 2
*b^(3/2)*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 7.45197, size = 58, normalized size = 0.94

$$2b^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+\frac{2b\sqrt{-bx+2}}{\sqrt{x}}-\frac{2\left(-bx+2\right)^{\frac{3}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(3/2)/x**(5/2),x)
```

```
[Out] 2*b**(3/2)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) + 2*b*sqrt(-b*x + 2)/s
qrt(x) - 2*(-b*x + 2)**(3/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0486589, size = 50, normalized size = 0.81

$$2b^{3/2}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+\frac{4\sqrt{2-bx}(2bx-1)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(3/2)/x^(5/2),x]
```

```
[Out] (4*Sqrt[2 - b*x]*(-1 + 2*b*x))/(3*x^(3/2)) + 2*b^(3/2)*ArcSin[(Sq
rt[b]*Sqrt[x])/Sqrt[2]]
```

Maple [B] time = 0.028, size = 98, normalized size = 1.6

$$-\frac{8\,b^2x^2-20\,bx+8}{3}\sqrt{(-bx+2)\,x}x^{-\frac{3}{2}}\frac{1}{\sqrt{-x\,(bx-2)}}\frac{1}{\sqrt{-bx+2}}+1b^{\frac{3}{2}}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(3/2)/x^(5/2),x)
```

```
[Out] -4/3*(2*b^2*x^2-5*b*x+2)/x^(3/2)/(-x*(b*x-2))^(1/2)*((-b*x+2)*x)^
(1/2)/(-b*x+2)^(1/2)+b^(3/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^
(1/2))*((-b*x+2)*x)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220058, size = 1, normalized size = 0.02

$$\left[\frac{3\sqrt{-b}bx^2\log\left(-bx-\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+1\right)+4\,(2\,bx-1)\sqrt{-bx+2}\sqrt{x}}{3\,x^2},\ -\frac{2\left(3\,b^{\frac{3}{2}}x^2\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)-2\,(2\,bx-1)\sqrt{-bx+2}\sqrt{x}\right)}{3\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*sqrt(-b)*b*x^2*log(-b*x - sqrt(-b*x + 2)*sqrt(-b)*sqrt(x)
 + 1) + 4*(2*b*x - 1)*sqrt(-b*x + 2)*sqrt(x))/x^2, -2/3*(3*b^(3/2
)*x^2*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))) - 2*(2*b*x - 1)*sq
rt(-b*x + 2)*sqrt(x))/x^2]
```

Sympy [A] time = 27.2035, size = 184, normalized size = 2.97

$$\begin{cases} \frac{8b^{\frac{3}{2}}\sqrt{-1+\frac{2}{bx}}}{3} + ib^{\frac{3}{2}}\log\left(\frac{1}{bx}\right) - 2ib^{\frac{3}{2}}\log\left(\frac{1}{\sqrt{b}\sqrt{x}}\right) + 2b^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right) - \frac{4\sqrt{b}\sqrt{-1+\frac{2}{bx}}}{3x} & \text{for}\ 2\left|\frac{1}{bx}\right| > 1 \\ \frac{8ib^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}}{3} + ib^{\frac{3}{2}}\log\left(\frac{1}{bx}\right) - 2ib^{\frac{3}{2}}\log\left(\sqrt{1-\frac{2}{bx}}+1\right) - \frac{4i\sqrt{b}\sqrt{1-\frac{2}{bx}}}{3x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(3/2)/x**(5/2),x)
```

```
[Out] Piecewise((8*b**(3/2)*sqrt(-1 + 2/(b*x))/3 + I*b**(3/2)*log(1/(b*
x)) - 2*I*b**(3/2)*log(1/(sqrt(b)*sqrt(x))) + 2*b**(3/2)*asin(sqr
t(2)*sqrt(b)*sqrt(x)/2) - 4*sqrt(b)*sqrt(-1 + 2/(b*x))/(3*x), 2*A
bs(1/(b*x)) > 1), (8*I*b**(3/2)*sqrt(1 - 2/(b*x))/3 + I*b**(3/2)*
log(1/(b*x)) - 2*I*b**(3/2)*log(sqrt(1 - 2/(b*x)) + 1) - 4*I*sqrt
(b)*sqrt(1 - 2/(b*x))/(3*x), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.545 $\int x^{5/2}(a+bx)^{5/2}\,dx$

Optimal. Leaf size=164

$$-\frac{5a^6\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{512b^{7/2}}+\frac{5a^5\sqrt{x}\sqrt{a+bx}}{512b^3}-\frac{5a^4x^{3/2}\sqrt{a+bx}}{768b^2}+\frac{a^3x^{5/2}\sqrt{a+bx}}{192b}+\frac{1}{32}a^2x^{7/2}\sqrt{a+bx}+\frac{1}{12}ax^{7/2}(a+bx)^{3/2}+\frac{1}{6}x^{7/2}(a+bx)^{5/2}$$

```
[Out] (5*a^5*Sqrt[x]*Sqrt[a + b*x])/(512*b^3) - (5*a^4*x^(3/2)*Sqrt[a +
 b*x])/(768*b^2) + (a^3*x^(5/2)*Sqrt[a + b*x])/(192*b) + (a^2*x^(
7/2)*Sqrt[a + b*x])/32 + (a*x^(7/2)*(a + b*x)^(3/2))/12 + (x^(7/2
)*(a + b*x)^(5/2))/6 - (5*a^6*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a +
b*x]])/(512*b^(7/2))
```

Rubi [A] time = 0.149244, antiderivative size = 164, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5a^6\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{512b^{7/2}}+\frac{5a^5\sqrt{x}\sqrt{a+bx}}{512b^3}-\frac{5a^4x^{3/2}\sqrt{a+bx}}{768b^2}+\frac{a^3x^{5/2}\sqrt{a+bx}}{192b}+\frac{1}{32}a^2x^{7/2}\sqrt{a+bx}+\frac{1}{12}ax^{7/2}(a+bx)^{3/2}+\frac{1}{6}x^{7/2}(a+bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a + b*x)^(5/2),x]
```


```
[Out] (5*a^5*Sqrt[x]*Sqrt[a + b*x])/(512*b^3) - (5*a^4*x^(3/2)*Sqrt[a +
 b*x])/(768*b^2) + (a^3*x^(5/2)*Sqrt[a + b*x])/(192*b) + (a^2*x^(
7/2)*Sqrt[a + b*x])/32 + (a*x^(7/2)*(a + b*x)^(3/2))/12 + (x^(7/2
)*(a + b*x)^(5/2))/6 - (5*a^6*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a +
b*x]])/(512*b^(7/2))
```

Rubi in Sympy [A] time = 24.118, size = 160, normalized size = 0.98

$$-\frac{5a^6\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{512b^{\frac{7}{2}}}-\frac{5a^5\sqrt{x}\sqrt{a+bx}}{512b^3}-\frac{5a^4\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{768b^3}-\frac{a^3\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{192b^3}+\frac{a^2\sqrt{x}\,(a+bx)^{\frac{7}{2}}}{32b^3}-\frac{ax^{\frac{3}{2}}(a+bx)^{\frac{7}{2}}}{12b^2}+\frac{x^{\frac{5}{2}}(a+bx)^{\frac{7}{2}}}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+a)**(5/2),x)
```

```
[Out] -5*a**6*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(512*b**(7/2)) - 5*a
**5*sqrt(x)*sqrt(a + b*x)/(512*b**3) - 5*a**4*sqrt(x)*(a + b*x)**
(3/2)/(768*b**3) - a**3*sqrt(x)*(a + b*x)**(5/2)/(192*b**3) + a**
2*sqrt(x)*(a + b*x)**(7/2)/(32*b**3) - a*x**(3/2)*(a + b*x)**(7/2
)/(12*b**2) + x**(5/2)*(a + b*x)**(7/2)/(6*b)
```

Mathematica [A] time = 0.0963994, size = 111, normalized size = 0.68

$$\frac{\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(15a^5-10a^4bx+8a^3b^2x^2+432a^2b^3x^3+640ab^4x^4+256b^5x^5\right)-15a^6\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{1536b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a + b*x)^(5/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(15*a^5 - 10*a^4*b*x + 8*a^3*b^2*x
^2 + 432*a^2*b^3*x^3 + 640*a*b^4*x^4 + 256*b^5*x^5) - 15*a^6*Log[
b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(1536*b^(7/2))
```

Maple [A] time = 0.007, size = 156, normalized size = 1.

$$\frac{1}{6\,b}x^{\frac{5}{2}}\left(bx+a\right)^{\frac{7}{2}}-\frac{a}{12\,b^2}x^{\frac{3}{2}}\left(bx+a\right)^{\frac{7}{2}}+\frac{a^2}{32\,b^3}\sqrt{x}\left(bx+a\right)^{\frac{7}{2}}-\frac{a^3}{192\,b^3}\left(bx+a\right)^{\frac{5}{2}}\sqrt{x}-\frac{5\,a^4}{768\,b^3}\left(bx+a\right)^{\frac{3}{2}}\sqrt{x}-\frac{5\,a^5}{512\,b^3}\sqrt{x}\sqrt{bx+a}-\frac{5\,a^6}{1024}\sqrt{x\left(bx+a\right)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+a)^(5/2),x)
```

```
[Out] 1/6/b*x^(5/2)*(b*x+a)^(7/2)-1/12*a/b^2*x^(3/2)*(b*x+a)^(7/2)+1/32
*a^2/b^3*x^(1/2)*(b*x+a)^(7/2)-1/192*a^3/b^3*(b*x+a)^(5/2)*x^(1/2
)-5/768*a^4/b^3*(b*x+a)^(3/2)*x^(1/2)-5/512*a^5*x^(1/2)*(b*x+a)^(
1/2)/b^3-5/1024*a^6/b^(7/2)*(x*(b*x+a))^(1/2)/(b*x+a)^(1/2)/x^(1/
2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.2262, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^6\log\left(-2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(256\,b^5x^5+640\,ab^4x^4+432\,a^2b^3x^3+8\,a^3b^2x^2-10\,a^4bx+15\,a^5\right)\sqrt{bx+a}\sqrt{}}{3072\,b^{\frac{7}{2}}}\right.$$
$$\left.-\frac{15\,a^6\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(256\,b^5x^5+640\,ab^4x^4+432\,a^2b^3x^3+8\,a^3b^2x^2-10\,a^4bx+15\,a^5\right)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{1536\,\sqrt{-b}b^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3072*(15*a^6*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt
(b)) + 2*(256*b^5*x^5 + 640*a*b^4*x^4 + 432*a^2*b^3*x^3 + 8*a^3*b
^2*x^2 - 10*a^4*b*x + 15*a^5)*sqrt(b*x + a)*sqrt(b)*sqrt(x))/b^(7
/2), -1/1536*(15*a^6*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) -
 (256*b^5*x^5 + 640*a*b^4*x^4 + 432*a^2*b^3*x^3 + 8*a^3*b^2*x^2 -
 10*a^4*b*x + 15*a^5)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b
^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 24.8317, size = 4, normalized size = 0.02

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^(5/2),x, algorithm="giac")

[Out] sage0*x
```

3.546 $\int x^{3/2}(a+bx)^{5/2}\,dx$

Optimal. Leaf size=140

$$\frac{3a^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{128b^{5/2}}-\frac{3a^4\sqrt{x}\sqrt{a+bx}}{128b^2}+\frac{a^3x^{3/2}\sqrt{a+bx}}{64b}+\frac{1}{16}a^2x^{5/2}\sqrt{a+bx}+\frac{1}{8}ax^{5/2}(a+bx)^{3/2}+\frac{1}{5}x^{5/2}(a+bx)^{5/2}$$

```
[Out] (-3*a^4*Sqrt[x]*Sqrt[a + b*x])/(128*b^2) + (a^3*x^(3/2)*Sqrt[a +
b*x])/(64*b) + (a^2*x^(5/2)*Sqrt[a + b*x])/16 + (a*x^(5/2)*(a + b
*x)^(3/2))/8 + (x^(5/2)*(a + b*x)^(5/2))/5 + (3*a^5*ArcTanh[(Sqrt
[b]*Sqrt[x])/Sqrt[a + b*x]])/(128*b^(5/2))
```

Rubi [A] time = 0.118121, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3a^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{128b^{5/2}}-\frac{3a^4\sqrt{x}\sqrt{a+bx}}{128b^2}+\frac{a^3x^{3/2}\sqrt{a+bx}}{64b}+\frac{1}{16}a^2x^{5/2}\sqrt{a+bx}+\frac{1}{8}ax^{5/2}(a+bx)^{3/2}+\frac{1}{5}x^{5/2}(a+bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a + b*x)^(5/2),x]
```

```
[Out] (-3*a^4*Sqrt[x]*Sqrt[a + b*x])/(128*b^2) + (a^3*x^(3/2)*Sqrt[a +
b*x])/(64*b) + (a^2*x^(5/2)*Sqrt[a + b*x])/16 + (a*x^(5/2)*(a + b
*x)^(3/2))/8 + (x^(5/2)*(a + b*x)^(5/2))/5 + (3*a^5*ArcTanh[(Sqrt
[b]*Sqrt[x])/Sqrt[a + b*x]])/(128*b^(5/2))
```

Rubi in Sympy [A] time = 18.7515, size = 138, normalized size = 0.99

$$\frac{3a^5\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{128b^{\frac{5}{2}}}+\frac{3a^4\sqrt{x}\sqrt{a+bx}}{128b^2}+\frac{a^3\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{64b^2}+\frac{a^2\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{80b^2}-\frac{3a\sqrt{x}\,(a+bx)^{\frac{7}{2}}}{40b^2}+\frac{x^{\frac{3}{2}}\,(a+bx)^{\frac{7}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+a)**(5/2),x)
```

```
[Out] 3*a**5*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(128*b**(5/2)) + 3*a*
*4*sqrt(x)*sqrt(a + b*x)/(128*b**2) + a**3*sqrt(x)*(a + b*x)**(3/
```

```
2)/(64*b**2) + a**2*sqrt(x)*(a + b*x)**(5/2)/(80*b**2) - 3*a*sqrt
(x)*(a + b*x)**(7/2)/(40*b**2) + x**(3/2)*(a + b*x)**(7/2)/(5*b)
```

Mathematica [A] time = 0.0711898, size = 100, normalized size = 0.71

$$\frac{15a^5\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)+\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(-15a^4+10a^3bx+248a^2b^2x^2+336ab^3x^3+128b^4x^4\right)}{640b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a + b*x)^(5/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(-15*a^4 + 10*a^3*b*x + 248*a^2*b^
2*x^2 + 336*a*b^3*x^3 + 128*b^4*x^4) + 15*a^5*Log[b*Sqrt[x] + Sqr
t[b]*Sqrt[a + b*x]])/(640*b^(5/2))
```

Maple [A] time = 0.009, size = 138, normalized size = 1.

$$\frac{1}{5\,b}x^{\frac{3}{2}}\left(bx+a\right)^{\frac{7}{2}}-\frac{3\,a}{40\,b^2}\sqrt{x}\left(bx+a\right)^{\frac{7}{2}}+\frac{a^2}{80\,b^2}\left(bx+a\right)^{\frac{5}{2}}\sqrt{x}+\frac{a^3}{64\,b^2}\left(bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{3\,a^4}{128\,b^2}\sqrt{x}\sqrt{bx+a}+\frac{3\,a^5}{256}\sqrt{x\left(bx+a\right)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+a)^(5/2),x)
```

```
[Out] 1/5/b*x^(3/2)*(b*x+a)^(7/2)-3/40*a/b^2*x^(1/2)*(b*x+a)^(7/2)+1/80
*a^2/b^2*(b*x+a)^(5/2)*x^(1/2)+1/64*a^3/b^2*(b*x+a)^(3/2)*x^(1/2)
+3/128*a^4*x^(1/2)*(b*x+a)^(1/2)/b^2+3/256*a^5/b^(5/2)*(x*(b*x+a)
)^(1/2)/(b*x+a)^(1/2)/x^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^
(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^(3/2),x, algorithm="maxima")
```

[Out] Exception raised: ValueError

Fricas [A] time = 0.224471, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^5\log\left(2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(128\,b^4x^4+336\,ab^3x^3+248\,a^2b^2x^2+10\,a^3bx-15\,a^4\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{1280\,b^{\frac{5}{2}}},\ \frac{15\,a^5 \cdots}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/1280*(15*a^5*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(
b)) + 2*(128*b^4*x^4 + 336*a*b^3*x^3 + 248*a^2*b^2*x^2 + 10*a^3*b
*x - 15*a^4)*sqrt(b*x + a)*sqrt(b)*sqrt(x))/b^(5/2), 1/640*(15*a^
5*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) + (128*b^4*x^4 + 336
*a*b^3*x^3 + 248*a^2*b^2*x^2 + 10*a^3*b*x - 15*a^4)*sqrt(b*x + a)
*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 24.6496, size = 4, normalized size = 0.03

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.547 $\int \sqrt{x}(a+bx)^{5/2}\,dx$

Optimal. Leaf size=116

$$-\frac{5a^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{3/2}}+\frac{5a^3\sqrt{x}\sqrt{a+bx}}{64b}+\frac{5}{32}a^2x^{3/2}\sqrt{a+bx}+\frac{5}{24}ax^{3/2}(a+bx)^{3/2}+\frac{1}{4}x^{3/2}(a+bx)^{5/2}$$

```
[Out] (5*a^3*Sqrt[x]*Sqrt[a + b*x])/(64*b) + (5*a^2*x^(3/2)*Sqrt[a + b*
x])/32 + (5*a*x^(3/2)*(a + b*x)^(3/2))/24 + (x^(3/2)*(a + b*x)^(5
/2))/4 - (5*a^4*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(64*b^(
3/2))
```

Rubi [A] time = 0.0909257, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5a^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{3/2}}+\frac{5a^3\sqrt{x}\sqrt{a+bx}}{64b}+\frac{5}{32}a^2x^{3/2}\sqrt{a+bx}+\frac{5}{24}ax^{3/2}(a+bx)^{3/2}+\frac{1}{4}x^{3/2}(a+bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a + b*x)^(5/2),x]
```

```
[Out] (5*a^3*Sqrt[x]*Sqrt[a + b*x])/(64*b) + (5*a^2*x^(3/2)*Sqrt[a + b*
x])/32 + (5*a*x^(3/2)*(a + b*x)^(3/2))/24 + (x^(3/2)*(a + b*x)^(5
/2))/4 - (5*a^4*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(64*b^(
3/2))
```

Rubi in Sympy [A] time = 14.1474, size = 110, normalized size = 0.95

$$-\frac{5a^4\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{64b^{\frac{3}{2}}}-\frac{5a^3\sqrt{x}\sqrt{a+bx}}{64b}-\frac{5a^2\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{96b}-\frac{a\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{24b}+\frac{\sqrt{x}\,(a+bx)^{\frac{7}{2}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)*x**(1/2),x)
```

```
[Out] -5*a**4*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(64*b**(3/2)) - 5*a*
*3*sqrt(x)*sqrt(a + b*x)/(64*b) - 5*a**2*sqrt(x)*(a + b*x)**(3/2)
/(96*b) - a*sqrt(x)*(a + b*x)**(5/2)/(24*b) + sqrt(x)*(a + b*x)**
(7/2)/(4*b)
```

Mathematica [A] time = 0.0629352, size = 89, normalized size = 0.77

$$\frac{\sqrt{b}\sqrt{x}\sqrt{a+bx}\left(15a^3+118a^2bx+136ab^2x^2+48b^3x^3\right)-15a^4\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{192b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a + b*x)^(5/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(15*a^3 + 118*a^2*b*x + 136*a*b^2*
x^2 + 48*b^3*x^3) - 15*a^4*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]]
)/(192*b^(3/2))
```

Maple [A] time = 0.008, size = 111, normalized size = 1.

$$\frac{1}{4}x^{\frac{3}{2}}(bx+a)^{\frac{5}{2}}+\frac{5a}{24}x^{\frac{3}{2}}(bx+a)^{\frac{3}{2}}+\frac{5a^2}{32}x^{\frac{3}{2}}\sqrt{bx+a}+\frac{5a^3}{64b}\sqrt{x}\sqrt{bx+a}\\-\frac{5a^4}{128}\sqrt{x(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)*x^(1/2),x)
```

```
[Out] 1/4*x^(3/2)*(b*x+a)^(5/2)+5/24*a*x^(3/2)*(b*x+a)^(3/2)+5/32*a^2*x
^(3/2)*(b*x+a)^(1/2)+5/64*a^3*x^(1/2)*(b*x+a)^(1/2)/b-5/128*a^4/b
^(3/2)*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)*ln((1/2*a+b*x)/b^(
1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224735, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^{4}\log\left(-2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(48\,b^{3}x^{3}+136\,ab^{2}x^{2}+118\,a^{2}bx+15\,a^{3}\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{384\,b^{\frac{3}{2}}},\right.$$
$$\left.-\frac{15\,a^{4}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(48\,b^{3}x^{3}+136\,ab^{2}x^{2}+118\,a^{2}bx+15\,a^{3}\right)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{192\,\sqrt{-b}b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/384*(15*a^4*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(
b)) + 2*(48*b^3*x^3 + 136*a*b^2*x^2 + 118*a^2*b*x + 15*a^3)*sqrt(
b*x + a)*sqrt(b)*sqrt(x))/b^(3/2), -1/192*(15*a^4*arctan(sqrt(b*x
 + a)*sqrt(-b)/(b*sqrt(x))) - (48*b^3*x^3 + 136*a*b^2*x^2 + 118*a
^2*b*x + 15*a^3)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b)]
```

Sympy [A] time = 101.738, size = 155, normalized size = 1.34

$$\frac{5a^{\frac{7}{2}}\sqrt{x}}{64b\sqrt{1+\frac{bx}{a}}}+\frac{133a^{\frac{5}{2}}x^{\frac{3}{2}}}{192\sqrt{1+\frac{bx}{a}}}+\frac{127a^{\frac{3}{2}}bx^{\frac{5}{2}}}{96\sqrt{1+\frac{bx}{a}}}+\frac{23\sqrt{a}b^{2}x^{\frac{7}{2}}}{24\sqrt{1+\frac{bx}{a}}}-\frac{5a^{4}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{3}{2}}}+\frac{b^{3}x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)*x**(1/2),x)
```

```
[Out] 5*a**(7/2)*sqrt(x)/(64*b*sqrt(1 + b*x/a)) + 133*a**(5/2)*x**(3/2)
/(192*sqrt(1 + b*x/a)) + 127*a**(3/2)*b*x**(5/2)/(96*sqrt(1 + b*x
/a)) + 23*sqrt(a)*b**2*x**(7/2)/(24*sqrt(1 + b*x/a)) - 5*a**4*asi
nh(sqrt(b)*sqrt(x)/sqrt(a))/(64*b**(3/2)) + b**3*x**(9/2)/(4*sqrt
(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 24.6269, size = 4, normalized size = 0.03

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.548 $\int \frac{(a+bx)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=92

$$\frac{5a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8\sqrt{b}}+\frac{5}{8}a^2\sqrt{x}\sqrt{a+bx}+\frac{5}{12}a\sqrt{x}(a+bx)^{3/2}+\frac{1}{3}\sqrt{x}(a+bx)^{5/2}$$

```
[Out] (5*a^2*Sqrt[x]*Sqrt[a + b*x])/8 + (5*a*Sqrt[x]*(a + b*x)^(3/2))/1
2 + (Sqrt[x]*(a + b*x)^(5/2))/3 + (5*a^3*ArcTanh[(Sqrt[b]*Sqrt[x]
)/Sqrt[a + b*x]])/(8*Sqrt[b])
```

Rubi [A] time = 0.0680556, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{5a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8\sqrt{b}}+\frac{5}{8}a^2\sqrt{x}\sqrt{a+bx}+\frac{5}{12}a\sqrt{x}(a+bx)^{3/2}+\frac{1}{3}\sqrt{x}(a+bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (5*a^2*Sqrt[x]*Sqrt[a + b*x])/8 + (5*a*Sqrt[x]*(a + b*x)^(3/2))/1
2 + (Sqrt[x]*(a + b*x)^(5/2))/3 + (5*a^3*ArcTanh[(Sqrt[b]*Sqrt[x]
)/Sqrt[a + b*x]])/(8*Sqrt[b])
```

Rubi in Sympy [A] time = 10.1825, size = 85, normalized size = 0.92

$$\frac{5a^3\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{8\sqrt{b}}+\frac{5a^2\sqrt{x}\sqrt{a+bx}}{8}+\frac{5a\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{12}+\frac{\sqrt{x}\,(a+bx)^{\frac{5}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] 5*a**3*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/(8*sqrt(b)) + 5*a**
2*sqrt(x)*sqrt(a + b*x)/8 + 5*a*sqrt(x)*(a + b*x)**(3/2)/12 + sqr
t(x)*(a + b*x)**(5/2)/3
```

Mathematica [A] time = 0.0652762, size = 74, normalized size = 0.8

$$\frac{5a^3\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{8\sqrt{b}}+\frac{1}{24}\sqrt{x}\sqrt{a+bx}\left(33a^2+26abx+8b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*Sqrt[a + b*x]*(33*a^2 + 26*a*b*x + 8*b^2*x^2))/24 + (5*a
^3*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(8*Sqrt[b])
```

Maple [A] time = 0.009, size = 93, normalized size = 1.

$$\frac{1}{3}(bx+a)^{\frac{5}{2}}\sqrt{x}+\frac{5a}{12}(bx+a)^{\frac{3}{2}}\sqrt{x}+\frac{5a^2}{8}\sqrt{x}\sqrt{bx+a}+\frac{5a^3}{16}\sqrt{x(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^(1/2),x)
```

```
[Out] 1/3*(b*x+a)^(5/2)*x^(1/2)+5/12*a*(b*x+a)^(3/2)*x^(1/2)+5/8*a^2*x^
(1/2)*(b*x+a)^(1/2)+5/16*a^3*(x*(b*x+a))^(1/2)/(b*x+a)^(1/2)/x^(1
/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))/b^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224611, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^3\log\left(2\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(8\,b^2x^2+26\,abx+33\,a^2\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{48\,\sqrt{b}},\ \frac{15\,a^3\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)+\left(8\,b^2x^2\right.}{24\,\sqrt{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/48*(15*a^3*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b)
) + 2*(8*b^2*x^2 + 26*a*b*x + 33*a^2)*sqrt(b*x + a)*sqrt(b)*sqrt(
x))/sqrt(b), 1/24*(15*a^3*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x
))) + (8*b^2*x^2 + 26*a*b*x + 33*a^2)*sqrt(b*x + a)*sqrt(-b)*sqrt
(x))/sqrt(-b)]
```

Sympy [A] time = 61.0818, size = 102, normalized size = 1.11

$$\frac{11a^{\frac{5}{2}}\sqrt{x}\sqrt{1+\frac{bx}{a}}}{8}+\frac{13a^{\frac{3}{2}}bx^{\frac{3}{2}}\sqrt{1+\frac{bx}{a}}}{12}+\frac{\sqrt{a}b^2x^{\frac{5}{2}}\sqrt{1+\frac{bx}{a}}}{3}+\frac{5a^3\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] 11*a**(5/2)*sqrt(x)*sqrt(1 + b*x/a)/8 + 13*a**(3/2)*b*x**(3/2)*sq
rt(1 + b*x/a)/12 + sqrt(a)*b**2*x**(5/2)*sqrt(1 + b*x/a)/3 + 5*a*
*3*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(8*sqrt(b))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.549 $\int \frac{(a+bx)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=89

$$\frac{15}{4}a^2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2(a+bx)^{5/2}}{\sqrt{x}}+\frac{5}{2}b\sqrt{x}(a+bx)^{3/2}+\frac{15}{4}ab\sqrt{x}\sqrt{a+bx}$$

```
[Out] (15*a*b*Sqrt[x]*Sqrt[a + b*x])/4 + (5*b*Sqrt[x]*(a + b*x)^(3/2))/
2 - (2*(a + b*x)^(5/2))/Sqrt[x] + (15*a^2*Sqrt[b]*ArcTanh[(Sqrt[b
]*Sqrt[x])/Sqrt[a + b*x]])/4
```

Rubi [A] time = 0.0662144, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{15}{4}a^2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)-\frac{2(a+bx)^{5/2}}{\sqrt{x}}+\frac{5}{2}b\sqrt{x}(a+bx)^{3/2}+\frac{15}{4}ab\sqrt{x}\sqrt{a+bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x^(3/2),x]
```

```
[Out] (15*a*b*Sqrt[x]*Sqrt[a + b*x])/4 + (5*b*Sqrt[x]*(a + b*x)^(3/2))/
2 - (2*(a + b*x)^(5/2))/Sqrt[x] + (15*a^2*Sqrt[b]*ArcTanh[(Sqrt[b
]*Sqrt[x])/Sqrt[a + b*x]])/4
```

Rubi in Sympy [A] time = 9.58941, size = 85, normalized size = 0.96

$$\frac{15a^2\sqrt{b}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4}+\frac{15ab\sqrt{x}\sqrt{a+bx}}{4}+\frac{5b\sqrt{x}\,(a+bx)^{\frac{3}{2}}}{2}-\frac{2\,(a+bx)^{\frac{5}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**(3/2),x)
```

```
[Out] 15*a**2*sqrt(b)*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/4 + 15*a*b*s
qrt(x)*sqrt(a + b*x)/4 + 5*b*sqrt(x)*(a + b*x)**(3/2)/2 - 2*(a +
b*x)**(5/2)/sqrt(x)
```

Mathematica [A] time = 0.0651111, size = 73, normalized size = 0.82

$$\frac{1}{4}\left(\frac{\sqrt{a+bx}\left(-8a^2+9abx+2b^2x^2\right)}{\sqrt{x}}+15a^2\sqrt{b}\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x^(3/2),x]
```

```
[Out] ((Sqrt[a + b*x]*(-8*a^2 + 9*a*b*x + 2*b^2*x^2))/Sqrt[x] + 15*a^2*
Sqrt[b]*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/4
```

Maple [A] time = 0.026, size = 84, normalized size = 0.9

$$-\frac{-2\,b^2x^2-9\,abx+8\,a^2}{4}\sqrt{bx+a}\frac{1}{\sqrt{x}}+\frac{15\,a^2}{8}\sqrt{b}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\sqrt{x\,(bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^(3/2),x)
```

```
[Out] -1/4*(b*x+a)^(1/2)*(-2*b^2*x^2-9*a*b*x+8*a^2)/x^(1/2)+15/8*a^2*b^
(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))*(x*(b*x+a))^(1/2)
/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228409, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^2\sqrt{b}x\log\left(2\,bx+2\,\sqrt{bx+a}\sqrt{b}\sqrt{x}+a\right)+2\left(2\,b^2x^2+9\,abx-8\,a^2\right)\sqrt{bx+a}\sqrt{x}}{8\,x},\frac{15\,a^2\sqrt{-b}x\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-b}\sqrt{x}}\right)+\left(2\,b^2x^2+\right.}{4\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*(15*a^2*sqrt(b)*x*log(2*b*x + 2*sqrt(b*x + a)*sqrt(b)*sqrt(x
) + a) + 2*(2*b^2*x^2 + 9*a*b*x - 8*a^2)*sqrt(b*x + a)*sqrt(x))/x
, 1/4*(15*a^2*sqrt(-b)*x*arctan(sqrt(b*x + a)/(sqrt(-b)*sqrt(x)))
 + (2*b^2*x^2 + 9*a*b*x - 8*a^2)*sqrt(b*x + a)*sqrt(x))/x]
```

Sympy [A] time = 78.4115, size = 126, normalized size = 1.42

$$-\frac{2a^{\frac{5}{2}}}{\sqrt{x}\sqrt{1+\frac{bx}{a}}}+\frac{a^{\frac{3}{2}}b\sqrt{x}}{4\sqrt{1+\frac{bx}{a}}}+\frac{11\sqrt{a}b^{2}x^{\frac{3}{2}}}{4\sqrt{1+\frac{bx}{a}}}+\frac{15a^{2}\sqrt{b}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4}+\frac{b^{3}x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**(3/2),x)
```

```
[Out] -2*a**(5/2)/(sqrt(x)*sqrt(1 + b*x/a)) + a**(3/2)*b*sqrt(x)/(4*sqr
t(1 + b*x/a)) + 11*sqrt(a)*b**2*x**(3/2)/(4*sqrt(1 + b*x/a)) + 15
*a**2*sqrt(b)*asinh(sqrt(b)*sqrt(x)/sqrt(a))/4 + b**3*x**(5/2)/(2
*sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.550 $\int \frac{(a+bx)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=86

$$5ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)+5b^2\sqrt{x}\sqrt{a+bx}-\frac{2(a+bx)^{5/2}}{3x^{3/2}}-\frac{10b(a+bx)^{3/2}}{3\sqrt{x}}$$

```
[Out] 5*b^2*Sqrt[x]*Sqrt[a + b*x] - (10*b*(a + b*x)^(3/2))/(3*Sqrt[x])
- (2*(a + b*x)^(5/2))/(3*x^(3/2)) + 5*a*b^(3/2)*ArcTanh[(Sqrt[b]*
Sqrt[x])/Sqrt[a + b*x]]
```

Rubi [A] time = 0.0653754, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$5ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)+5b^2\sqrt{x}\sqrt{a+bx}-\frac{2(a+bx)^{5/2}}{3x^{3/2}}-\frac{10b(a+bx)^{3/2}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/x^(5/2),x]
```

```
[Out] 5*b^2*Sqrt[x]*Sqrt[a + b*x] - (10*b*(a + b*x)^(3/2))/(3*Sqrt[x])
- (2*(a + b*x)^(5/2))/(3*x^(3/2)) + 5*a*b^(3/2)*ArcTanh[(Sqrt[b]*
Sqrt[x])/Sqrt[a + b*x]]
```

Rubi in Sympy [A] time = 9.57518, size = 82, normalized size = 0.95

$$5ab^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)+5b^2\sqrt{x}\sqrt{a+bx}-\frac{10b\,(a+bx)^{\frac{3}{2}}}{3\sqrt{x}}-\frac{2\,(a+bx)^{\frac{5}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/x**(5/2),x)
```

```
[Out] 5*a*b**(3/2)*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x)) + 5*b**2*sqrt(x
)*sqrt(a + b*x) - 10*b*(a + b*x)**(3/2)/(3*sqrt(x)) - 2*(a + b*x)
**(5/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0751608, size = 70, normalized size = 0.81

$$5ab^{3/2}\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)-\frac{\sqrt{a+bx}\left(2a^2+14abx-3b^2x^2\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/x^(5/2),x]
```

```
[Out] -(Sqrt[a + b*x]*(2*a^2 + 14*a*b*x - 3*b^2*x^2))/(3*x^(3/2)) + 5*a
*b^(3/2)*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]]
```

Maple [A] time = 0.029, size = 82, normalized size = 1.

$$-\frac{-3\,b^2x^2+14\,abx+2\,a^2}{3}\sqrt{bx+a}x^{-\frac{3}{2}}+\frac{5\,a}{2}b^{\frac{3}{2}}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\sqrt{x\,(bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/x^(5/2),x)
```

```
[Out] -1/3*(b*x+a)^(1/2)*(-3*b^2*x^2+14*a*b*x+2*a^2)/x^(3/2)+5/2*a*b^(3
/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))*(x*(b*x+a))^(1/2)/x
^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224323, size = 1, normalized size = 0.01

$$\left[\frac{15\,ab^{\frac{3}{2}}x^2\log\left(2\,bx+2\,\sqrt{bx+a}\sqrt{b}\sqrt{x}+a\right)+2\left(3\,b^2x^2-14\,abx-2\,a^2\right)\sqrt{bx+a}\sqrt{x}}{6\,x^2},\ \frac{15\,a\sqrt{-b}bx^2\arctan\left(\frac{\sqrt{bx+a}}{\sqrt{-b}\sqrt{x}}\right)+\left(3\,b^2x\right.}{3\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(15*a*b^(3/2)*x^2*log(2*b*x + 2*sqrt(b*x + a)*sqrt(b)*sqrt(x
) + a) + 2*(3*b^2*x^2 - 14*a*b*x - 2*a^2)*sqrt(b*x + a)*sqrt(x))/
x^2, 1/3*(15*a*sqrt(-b)*b*x^2*arctan(sqrt(b*x + a)/(sqrt(-b)*sqrt
(x))) + (3*b^2*x^2 - 14*a*b*x - 2*a^2)*sqrt(b*x + a)*sqrt(x))/x^2
]
```

Sympy [A] time = 77.3016, size = 99, normalized size = 1.15

$$-\frac{2a^2\sqrt{b}\sqrt{\frac{a}{bx}+1}}{3x}-\frac{14ab^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{3}-\frac{5ab^{\frac{3}{2}}\log\left(\frac{a}{bx}\right)}{2}+5ab^{\frac{3}{2}}\log\left(\sqrt{\frac{a}{bx}+1}+1\right)+b^{\frac{5}{2}}x\sqrt{\frac{a}{bx}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/x**(5/2),x)
```

```
[Out] -2*a**2*sqrt(b)*sqrt(a/(b*x) + 1)/(3*x) - 14*a*b**(3/2)*sqrt(a/(b
*x) + 1)/3 - 5*a*b**(3/2)*log(a/(b*x))/2 + 5*a*b**(3/2)*log(sqrt(
a/(b*x) + 1) + 1) + b**(5/2)*x*sqrt(a/(b*x) + 1)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.551 $\int x^{5/2}(a-bx)^{5/2}\,dx$

Optimal. Leaf size=171

$$\frac{5a^6\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{512b^{7/2}}-\frac{5a^5\sqrt{x}\sqrt{a-bx}}{512b^3}-\frac{5a^4x^{3/2}\sqrt{a-bx}}{768b^2}-\frac{a^3x^{5/2}\sqrt{a-bx}}{192b}+\frac{1}{32}a^2x^{7/2}\sqrt{a-bx}+\frac{1}{12}ax^{7/2}(a-bx)^{3/2}+\frac{1}{6}x^{7/2}(a-bx)^{5/2}$$

```
[Out] (-5*a^5*Sqrt[x]*Sqrt[a - b*x])/(512*b^3) - (5*a^4*x^(3/2)*Sqrt[a
- b*x])/(768*b^2) - (a^3*x^(5/2)*Sqrt[a - b*x])/(192*b) + (a^2*x^
(7/2)*Sqrt[a - b*x])/32 + (a*x^(7/2)*(a - b*x)^(3/2))/12 + (x^(7/
2)*(a - b*x)^(5/2))/6 + (5*a^6*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a -
b*x]])/(512*b^(7/2))
```

Rubi [A] time = 0.153295, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5a^6\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{512b^{7/2}}-\frac{5a^5\sqrt{x}\sqrt{a-bx}}{512b^3}-\frac{5a^4x^{3/2}\sqrt{a-bx}}{768b^2}-\frac{a^3x^{5/2}\sqrt{a-bx}}{192b}+\frac{1}{32}a^2x^{7/2}\sqrt{a-bx}+\frac{1}{12}ax^{7/2}(a-bx)^{3/2}+\frac{1}{6}x^{7/2}(a-bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(a - b*x)^(5/2),x]
```

```
[Out] (-5*a^5*Sqrt[x]*Sqrt[a - b*x])/(512*b^3) - (5*a^4*x^(3/2)*Sqrt[a
- b*x])/(768*b^2) - (a^3*x^(5/2)*Sqrt[a - b*x])/(192*b) + (a^2*x^
(7/2)*Sqrt[a - b*x])/32 + (a*x^(7/2)*(a - b*x)^(3/2))/12 + (x^(7/
2)*(a - b*x)^(5/2))/6 + (5*a^6*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a -
b*x]])/(512*b^(7/2))
```

Rubi in Sympy [A] time = 24.6945, size = 160, normalized size = 0.94

$$\frac{5a^6\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{512b^{\frac{7}{2}}}+\frac{5a^5\sqrt{x}\sqrt{a-bx}}{512b^3}+\frac{5a^4\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{768b^3}+\frac{a^3\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{192b^3}-\frac{a^2\sqrt{x}\,(a-bx)^{\frac{7}{2}}}{32b^3}-\frac{ax^{\frac{3}{2}}\,(a-bx)^{\frac{7}{2}}}{12b^2}-\frac{x^{\frac{5}{2}}\,(a-bx)^{\frac{7}{2}}}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(-b*x+a)**(5/2),x)
```

```
[Out] 5*a**6*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(512*b**(7/2)) + 5*a**
5*sqrt(x)*sqrt(a - b*x)/(512*b**3) + 5*a**4*sqrt(x)*(a - b*x)**(3
/2)/(768*b**3) + a**3*sqrt(x)*(a - b*x)**(5/2)/(192*b**3) - a**2*
sqrt(x)*(a - b*x)**(7/2)/(32*b**3) - a*x**(3/2)*(a - b*x)**(7/2)/
(12*b**2) - x**(5/2)*(a - b*x)**(7/2)/(6*b)
```

Mathematica [A] time = 0.102836, size = 110, normalized size = 0.64

$$\frac{15a^6\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(-15a^5-10a^4bx-8a^3b^2x^2+432a^2b^3x^3-640ab^4x^4+256b^5x^5\right)}{1536b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(a - b*x)^(5/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-15*a^5 - 10*a^4*b*x - 8*a^3*b^2*
x^2 + 432*a^2*b^3*x^3 - 640*a*b^4*x^4 + 256*b^5*x^5) + 15*a^6*Arc
Tan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(1536*b^(7/2))
```

Maple [A] time = 0.008, size = 165, normalized size = 1.

$$-\frac{1}{6\,b}x^{\frac{5}{2}}\left(-bx+a\right)^{\frac{7}{2}}-\frac{a}{12\,b^2}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{7}{2}}-\frac{a^2}{32\,b^3}\sqrt{x}\left(-bx+a\right)^{\frac{7}{2}}+\frac{a^3}{192\,b^3}\left(-bx+a\right)^{\frac{5}{2}}\sqrt{x}+\frac{5\,a^4}{768\,b^3}\left(-bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{5\,a^5}{512\,b^3}\sqrt{x}\sqrt{-bx+a}+\frac{5\,a^6}{1024}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(-b*x+a)^(5/2),x)
```

```
[Out] -1/6/b*x^(5/2)*(-b*x+a)^(7/2)-1/12*a/b^2*x^(3/2)*(-b*x+a)^(7/2)-1
/32*a^2/b^3*x^(1/2)*(-b*x+a)^(7/2)+1/192*a^3/b^3*(-b*x+a)^(5/2)*x
^(1/2)+5/768*a^4/b^3*(-b*x+a)^(3/2)*x^(1/2)+5/512*a^5*x^(1/2)*(-b
*x+a)^(1/2)/b^3+5/1024*a^6/b^(7/2)*(x*(-b*x+a))^(1/2)/(-b*x+a)^(1
/2)/x^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224598, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^{6}\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\left(256\,b^{5}x^{5}-640\,ab^{4}x^{4}+432\,a^{2}b^{3}x^{3}-8\,a^{3}b^{2}x^{2}-10\,a^{4}bx-15\,a^{5}\right)\sqrt{-b}}{3072\,\sqrt{-b}b^{3}}\right.$$
$$\left.-\frac{15\,a^{6}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(256\,b^{5}x^{5}-640\,ab^{4}x^{4}+432\,a^{2}b^{3}x^{3}-8\,a^{3}b^{2}x^{2}-10\,a^{4}bx-15\,a^{5}\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{1536\,b^{\frac{7}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3072*(15*a^6*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqr
t(-b)) + 2*(256*b^5*x^5 - 640*a*b^4*x^4 + 432*a^2*b^3*x^3 - 8*a^3
*b^2*x^2 - 10*a^4*b*x - 15*a^5)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/
(sqrt(-b)*b^3), -1/1536*(15*a^6*arctan(sqrt(-b*x + a)/(sqrt(b)*sq
rt(x))) - (256*b^5*x^5 - 640*a*b^4*x^4 + 432*a^2*b^3*x^3 - 8*a^3*
b^2*x^2 - 10*a^4*b*x - 15*a^5)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))/b^
(7/2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(-b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*x^(5/2),x, algorithm="giac")

[Out] Timed out
```

3.552 $\int x^{3/2}(a-bx)^{5/2}\,dx$

Optimal. Leaf size=146

$$\frac{3a^5\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{128b^{5/2}}-\frac{3a^4\sqrt{x}\sqrt{a-bx}}{128b^2}-\frac{a^3x^{3/2}\sqrt{a-bx}}{64b}+\frac{1}{16}a^2x^{5/2}\sqrt{a-bx}+\frac{1}{8}ax^{5/2}(a-bx)^{3/2}+\frac{1}{5}x^{5/2}(a-bx)^{5/2}$$

```
[Out] (-3*a^4*Sqrt[x]*Sqrt[a - b*x])/(128*b^2) - (a^3*x^(3/2)*Sqrt[a -
b*x])/(64*b) + (a^2*x^(5/2)*Sqrt[a - b*x])/16 + (a*x^(5/2)*(a - b
*x)^(3/2))/8 + (x^(5/2)*(a - b*x)^(5/2))/5 + (3*a^5*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a - b*x]])/(128*b^(5/2))
```

Rubi [A] time = 0.121534, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3a^5\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{128b^{5/2}}-\frac{3a^4\sqrt{x}\sqrt{a-bx}}{128b^2}-\frac{a^3x^{3/2}\sqrt{a-bx}}{64b}+\frac{1}{16}a^2x^{5/2}\sqrt{a-bx}+\frac{1}{8}ax^{5/2}(a-bx)^{3/2}+\frac{1}{5}x^{5/2}(a-bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(a - b*x)^(5/2),x]
```

```
[Out] (-3*a^4*Sqrt[x]*Sqrt[a - b*x])/(128*b^2) - (a^3*x^(3/2)*Sqrt[a -
b*x])/(64*b) + (a^2*x^(5/2)*Sqrt[a - b*x])/16 + (a*x^(5/2)*(a - b
*x)^(3/2))/8 + (x^(5/2)*(a - b*x)^(5/2))/5 + (3*a^5*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a - b*x]])/(128*b^(5/2))
```

Rubi in Sympy [A] time = 20.7348, size = 138, normalized size = 0.95

$$\frac{3a^5\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{128b^{\frac{5}{2}}}+\frac{3a^4\sqrt{x}\sqrt{a-bx}}{128b^2}+\frac{a^3\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{64b^2}+\frac{a^2\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{80b^2}-\frac{3a\sqrt{x}\,(a-bx)^{\frac{7}{2}}}{40b^2}-\frac{x^{\frac{3}{2}}\,(a-bx)^{\frac{7}{2}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(-b*x+a)**(5/2),x)
```

```
[Out] 3*a**5*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(128*b**(5/2)) + 3*a**
4*sqrt(x)*sqrt(a - b*x)/(128*b**2) + a**3*sqrt(x)*(a - b*x)**(3/2
```

```
)/(64*b**2) + a**2*sqrt(x)*(a - b*x)**(5/2)/(80*b**2) - 3*a*sqrt(
x)*(a - b*x)**(7/2)/(40*b**2) - x**(3/2)*(a - b*x)**(7/2)/(5*b)
```

Mathematica [A] time = 0.083481, size = 99, normalized size = 0.68

$$\frac{15a^5\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(-15a^4-10a^3bx+248a^2b^2x^2-336ab^3x^3+128b^4x^4\right)}{640b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a - b*x)^(5/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-15*a^4 - 10*a^3*b*x + 248*a^2*b^
2*x^2 - 336*a*b^3*x^3 + 128*b^4*x^4) + 15*a^5*ArcTan[(Sqrt[b]*Sqr
t[x])/Sqrt[a - b*x]])/(640*b^(5/2))
```

Maple [A] time = 0.009, size = 146, normalized size = 1.

$$-\frac{1}{5\,b}x^{\frac{3}{2}}\left(-bx+a\right)^{\frac{7}{2}}-\frac{3\,a}{40\,b^2}\sqrt{x}\left(-bx+a\right)^{\frac{7}{2}}+\frac{a^2}{80\,b^2}\left(-bx+a\right)^{\frac{5}{2}}\sqrt{x}+\frac{a^3}{64\,b^2}\left(-bx+a\right)^{\frac{3}{2}}\sqrt{x}+\frac{3\,a^4}{128\,b^2}\sqrt{x}\sqrt{-bx+a}+\frac{3\,a^5}{256}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(-b*x+a)^(5/2),x)
```

```
[Out] -1/5/b*x^(3/2)*(-b*x+a)^(7/2)-3/40*a/b^2*x^(1/2)*(-b*x+a)^(7/2)+1
/80*a^2/b^2*(-b*x+a)^(5/2)*x^(1/2)+1/64*a^3/b^2*(-b*x+a)^(3/2)*x^
(1/2)+3/128*a^4*x^(1/2)*(-b*x+a)^(1/2)/b^2+3/256*a^5/b^(5/2)*(x*(
-b*x+a))^(1/2)/(-b*x+a)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/
(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223451, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^5\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\,\left(128\,b^4x^4-336\,ab^3x^3+248\,a^2b^2x^2-10\,a^3bx-15\,a^4\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{}}{1280\,\sqrt{-b}b^2}\right.$$
$$\left.-\frac{15\,a^5\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(128\,b^4x^4-336\,ab^3x^3+248\,a^2b^2x^2-10\,a^3bx-15\,a^4\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{640\,b^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/1280*(15*a^5*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqr
t(-b)) + 2*(128*b^4*x^4 - 336*a*b^3*x^3 + 248*a^2*b^2*x^2 - 10*a^
3*b*x - 15*a^4)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^2),
-1/640*(15*a^5*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (128*b^
4*x^4 - 336*a*b^3*x^3 + 248*a^2*b^2*x^2 - 10*a^3*b*x - 15*a^4)*sq
rt(-b*x + a)*sqrt(b)*sqrt(x))/b^(5/2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(-b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.553 $\int \sqrt{x}(a-bx)^{5/2}\,dx$

Optimal. Leaf size=121

$$\frac{5a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{3/2}}-\frac{5a^3\sqrt{x}\sqrt{a-bx}}{64b}+\frac{5}{32}a^2x^{3/2}\sqrt{a-bx}+\frac{5}{24}ax^{3/2}(a-bx)^{3/2}+\frac{1}{4}x^{3/2}(a-bx)^{5/2}$$

```
[Out] (-5*a^3*Sqrt[x]*Sqrt[a - b*x])/(64*b) + (5*a^2*x^(3/2)*Sqrt[a - b
*x])/32 + (5*a*x^(3/2)*(a - b*x)^(3/2))/24 + (x^(3/2)*(a - b*x)^(
5/2))/4 + (5*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(64*b^(
3/2))
```

Rubi [A] time = 0.0914399, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{3/2}}-\frac{5a^3\sqrt{x}\sqrt{a-bx}}{64b}+\frac{5}{32}a^2x^{3/2}\sqrt{a-bx}+\frac{5}{24}ax^{3/2}(a-bx)^{3/2}+\frac{1}{4}x^{3/2}(a-bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a - b*x)^(5/2),x]
```

```
[Out] (-5*a^3*Sqrt[x]*Sqrt[a - b*x])/(64*b) + (5*a^2*x^(3/2)*Sqrt[a - b
*x])/32 + (5*a*x^(3/2)*(a - b*x)^(3/2))/24 + (x^(3/2)*(a - b*x)^(
5/2))/4 + (5*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(64*b^(
3/2))
```

Rubi in Sympy [A] time = 15.7889, size = 110, normalized size = 0.91

$$\frac{5a^4\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{64b^{\frac{3}{2}}}+\frac{5a^3\sqrt{x}\sqrt{a-bx}}{64b}+\frac{5a^2\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{96b}+\frac{a\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{24b}-\frac{\sqrt{x}\,(a-bx)^{\frac{7}{2}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(5/2)*x**(1/2),x)
```

```
[Out] 5*a**4*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(64*b**(3/2)) + 5*a**3
*sqrt(x)*sqrt(a - b*x)/(64*b) + 5*a**2*sqrt(x)*(a - b*x)**(3/2)/(
96*b) + a*sqrt(x)*(a - b*x)**(5/2)/(24*b) - sqrt(x)*(a - b*x)**(7
/2)/(4*b)
```

Mathematica [A] time = 0.0699371, size = 88, normalized size = 0.73

$$\frac{15a^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+\sqrt{b}\sqrt{x}\sqrt{a-bx}\left(-15a^3+118a^2bx-136ab^2x^2+48b^3x^3\right)}{192b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a - b*x)^(5/2),x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a - b*x]*(-15*a^3 + 118*a^2*b*x - 136*a*b^2
*x^2 + 48*b^3*x^3) + 15*a^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x
]])/(192*b^(3/2))
```

Maple [A] time = 0.009, size = 118, normalized size = 1.

$$\frac{1}{4}x^{\frac{3}{2}}(-bx+a)^{\frac{5}{2}}+\frac{5a}{24}x^{\frac{3}{2}}(-bx+a)^{\frac{3}{2}}+\frac{5a^2}{32}x^{\frac{3}{2}}\sqrt{-bx+a}-\frac{5a^3}{64b}\sqrt{x}\sqrt{-bx+a}+\frac{5a^4}{128}\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(5/2)*x^(1/2),x)
```

```
[Out] 1/4*x^(3/2)*(-b*x+a)^(5/2)+5/24*a*x^(3/2)*(-b*x+a)^(3/2)+5/32*a^2
*x^(3/2)*(-b*x+a)^(1/2)-5/64*a^3*x^(1/2)*(-b*x+a)^(1/2)/b+5/128*a
^4/b^(3/2)*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)*arctan(b^(1/
2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224621, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^4\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\left(48\,b^3x^3-136\,ab^2x^2+118\,a^2bx-15\,a^3\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{384\,\sqrt{-b}b},\right.$$
$$\left.-\frac{15\,a^4\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(48\,b^3x^3-136\,ab^2x^2+118\,a^2bx-15\,a^3\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{192\,b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/384*(15*a^4*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt
(-b)) + 2*(48*b^3*x^3 - 136*a*b^2*x^2 + 118*a^2*b*x - 15*a^3)*sqr
t(-b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b), -1/192*(15*a^4*arctan
(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (48*b^3*x^3 - 136*a*b^2*x^2
+ 118*a^2*b*x - 15*a^3)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))/b^(3/2)]
```

Sympy [A] time = 101.263, size = 326, normalized size = 2.69

$$\begin{cases} \frac{5ia^{\frac{7}{2}}\sqrt{x}}{64b\sqrt{-1+\frac{bx}{a}}}-\frac{133ia^{\frac{5}{2}}x^{\frac{3}{2}}}{192\sqrt{-1+\frac{bx}{a}}}+\frac{127ia^{\frac{3}{2}}bx^{\frac{5}{2}}}{96\sqrt{-1+\frac{bx}{a}}}-\frac{23i\sqrt{a}b^2x^{\frac{7}{2}}}{24\sqrt{-1+\frac{bx}{a}}}-\frac{5ia^4\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{3}{2}}}+\frac{ib^3x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right|>1 \\ -\frac{5a^{\frac{7}{2}}\sqrt{x}}{64b\sqrt{1-\frac{bx}{a}}}+\frac{133a^{\frac{5}{2}}x^{\frac{3}{2}}}{192\sqrt{1-\frac{bx}{a}}}-\frac{127a^{\frac{3}{2}}bx^{\frac{5}{2}}}{96\sqrt{1-\frac{bx}{a}}}+\frac{23\sqrt{a}b^2x^{\frac{7}{2}}}{24\sqrt{1-\frac{bx}{a}}}+\frac{5a^4\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64b^{\frac{3}{2}}}-\frac{b^3x^{\frac{9}{2}}}{4\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(5/2)*x**(1/2),x)
```

```
[Out] Piecewise((5*I*a**(7/2)*sqrt(x)/(64*b*sqrt(-1 + b*x/a)) - 133*I*a
**(5/2)*x**(3/2)/(192*sqrt(-1 + b*x/a)) + 127*I*a**(3/2)*b*x**(5/
2)/(96*sqrt(-1 + b*x/a)) - 23*I*sqrt(a)*b**2*x**(7/2)/(24*sqrt(-1
 + b*x/a)) - 5*I*a**4*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(64*b**(3/2)
) + I*b**3*x**(9/2)/(4*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1)
, (-5*a**(7/2)*sqrt(x)/(64*b*sqrt(1 - b*x/a)) + 133*a**(5/2)*x**(
3/2)/(192*sqrt(1 - b*x/a)) - 127*a**(3/2)*b*x**(5/2)/(96*sqrt(1 -
 b*x/a)) + 23*sqrt(a)*b**2*x**(7/2)/(24*sqrt(1 - b*x/a)) + 5*a**4
*asin(sqrt(b)*sqrt(x)/sqrt(a))/(64*b**(3/2)) - b**3*x**(9/2)/(4*s
qrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Timed out
```

3.554 $\int \frac{(a-bx)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=96

$$\frac{5a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8\sqrt{b}}+\frac{5}{8}a^2\sqrt{x}\sqrt{a-bx}+\frac{5}{12}a\sqrt{x}(a-bx)^{3/2}+\frac{1}{3}\sqrt{x}(a-bx)^{5/2}$$

```
[Out] (5*a^2*Sqrt[x]*Sqrt[a - b*x])/8 + (5*a*Sqrt[x]*(a - b*x)^(3/2))/1
2 + (Sqrt[x]*(a - b*x)^(5/2))/3 + (5*a^3*ArcTan[(Sqrt[b]*Sqrt[x])
/Sqrt[a - b*x]])/(8*Sqrt[b])
```

Rubi [A] time = 0.0676687, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8\sqrt{b}}+\frac{5}{8}a^2\sqrt{x}\sqrt{a-bx}+\frac{5}{12}a\sqrt{x}(a-bx)^{3/2}+\frac{1}{3}\sqrt{x}(a-bx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (5*a^2*Sqrt[x]*Sqrt[a - b*x])/8 + (5*a*Sqrt[x]*(a - b*x)^(3/2))/1
2 + (Sqrt[x]*(a - b*x)^(5/2))/3 + (5*a^3*ArcTan[(Sqrt[b]*Sqrt[x])
/Sqrt[a - b*x]])/(8*Sqrt[b])
```

Rubi in Sympy [A] time = 11.2973, size = 85, normalized size = 0.89

$$-\frac{5a^3\operatorname{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{8\sqrt{b}}+\frac{5a^2\sqrt{x}\sqrt{a-bx}}{8}+\frac{5a\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{12}+\frac{\sqrt{x}\,(a-bx)^{\frac{5}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] -5*a**3*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/(8*sqrt(b)) + 5*a**
2*sqrt(x)*sqrt(a - b*x)/8 + 5*a*sqrt(x)*(a - b*x)**(3/2)/12 + sqr
t(x)*(a - b*x)**(5/2)/3
```

Mathematica [A] time = 0.0697704, size = 73, normalized size = 0.76

$$\frac{5a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8\sqrt{b}}+\frac{1}{24}\sqrt{x}\sqrt{a-bx}\left(33a^2-26abx+8b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*Sqrt[a - b*x]*(33*a^2 - 26*a*b*x + 8*b^2*x^2))/24 + (5*a
^3*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(8*Sqrt[b])
```

Maple [A] time = 0.008, size = 99, normalized size = 1.

$$\frac{1}{3}(-bx+a)^{\frac{5}{2}}\sqrt{x}+\frac{5a}{12}(-bx+a)^{\frac{3}{2}}\sqrt{x}+\frac{5a^2}{8}\sqrt{x}\sqrt{-bx+a}+\frac{5a^3}{16}\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(5/2)/x^(1/2),x)
```

```
[Out] 1/3*(-b*x+a)^(5/2)*x^(1/2)+5/12*a*(-b*x+a)^(3/2)*x^(1/2)+5/8*a^2*
x^(1/2)*(-b*x+a)^(1/2)+5/16*a^3*(x*(-b*x+a))^(1/2)/(-b*x+a)^(1/2)
/x^(1/2)/b^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221696, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^3\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\left(8\,b^2x^2-26\,abx+33\,a^2\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{48\,\sqrt{-b}},\right.$$
$$\left.-\frac{15\,a^3\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(8\,b^2x^2-26\,abx+33\,a^2\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{24\,\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/48*(15*a^3*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(
-b)) + 2*(8*b^2*x^2 - 26*a*b*x + 33*a^2)*sqrt(-b*x + a)*sqrt(-b)*
sqrt(x))/sqrt(-b), -1/24*(15*a^3*arctan(sqrt(-b*x + a)/(sqrt(b)*s
qrt(x))) - (8*b^2*x^2 - 26*a*b*x + 33*a^2)*sqrt(-b*x + a)*sqrt(b)
*sqrt(x))/sqrt(b)]
```

Sympy [A] time = 61.4789, size = 246, normalized size = 2.56

$$\begin{cases}-\frac{11ia^{\frac{5}{2}}\sqrt{x}}{8\sqrt{-1+\frac{bx}{a}}}+\frac{59ia^{\frac{3}{2}}bx^{\frac{3}{2}}}{24\sqrt{-1+\frac{bx}{a}}}-\frac{17i\sqrt{a}b^2x^{\frac{5}{2}}}{12\sqrt{-1+\frac{bx}{a}}}-\frac{5ia^3\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{b}}+\frac{ib^3x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right|>1\\ \frac{11a^{\frac{5}{2}}\sqrt{x}\sqrt{1-\frac{bx}{a}}}{8}-\frac{13a^{\frac{3}{2}}bx^{\frac{3}{2}}\sqrt{1-\frac{bx}{a}}}{12}+\frac{\sqrt{a}b^2x^{\frac{5}{2}}\sqrt{1-\frac{bx}{a}}}{3}+\frac{5a^3\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{b}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] Piecewise((-11*I*a**(5/2)*sqrt(x)/(8*sqrt(-1 + b*x/a)) + 59*I*a**
(3/2)*b*x**(3/2)/(24*sqrt(-1 + b*x/a)) - 17*I*sqrt(a)*b**2*x**(5/
2)/(12*sqrt(-1 + b*x/a)) - 5*I*a**3*acosh(sqrt(b)*sqrt(x)/sqrt(a)
)/(8*sqrt(b)) + I*b**3*x**(7/2)/(3*sqrt(a)*sqrt(-1 + b*x/a)), Abs
(b*x/a) > 1), (11*a**(5/2)*sqrt(x)*sqrt(1 - b*x/a)/8 - 13*a**(3/2
)*b*x**(3/2)*sqrt(1 - b*x/a)/12 + sqrt(a)*b**2*x**(5/2)*sqrt(1 -
b*x/a)/3 + 5*a**3*asin(sqrt(b)*sqrt(x)/sqrt(a))/(8*sqrt(b)), True
))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.555 $\int \frac{(a-bx)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=93

$$-\frac{15}{4}a^2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\frac{2(a-bx)^{5/2}}{\sqrt{x}}-\frac{5}{2}b\sqrt{x}(a-bx)^{3/2}-\frac{15}{4}ab\sqrt{x}\sqrt{a-bx}$$

```
[Out] (-15*a*b*Sqrt[x]*Sqrt[a - b*x])/4 - (5*b*Sqrt[x]*(a - b*x)^(3/2))
/2 - (2*(a - b*x)^(5/2))/Sqrt[x] - (15*a^2*Sqrt[b]*ArcTan[(Sqrt[b
]*Sqrt[x])/Sqrt[a - b*x]])/4
```

Rubi [A] time = 0.0690341, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{15}{4}a^2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)-\frac{2(a-bx)^{5/2}}{\sqrt{x}}-\frac{5}{2}b\sqrt{x}(a-bx)^{3/2}-\frac{15}{4}ab\sqrt{x}\sqrt{a-bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - b*x)^(5/2)/x^(3/2),x]
```

```
[Out] (-15*a*b*Sqrt[x]*Sqrt[a - b*x])/4 - (5*b*Sqrt[x]*(a - b*x)^(3/2))
/2 - (2*(a - b*x)^(5/2))/Sqrt[x] - (15*a^2*Sqrt[b]*ArcTan[(Sqrt[b
]*Sqrt[x])/Sqrt[a - b*x]])/4
```

Rubi in Sympy [A] time = 10.6614, size = 87, normalized size = 0.94

$$-\frac{15a^2\sqrt{b}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4}-\frac{15ab\sqrt{x}\sqrt{a-bx}}{4}-\frac{5b\sqrt{x}\,(a-bx)^{\frac{3}{2}}}{2}-\frac{2\,(a-bx)^{\frac{5}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(5/2)/x**(3/2),x)
```

```
[Out] -15*a**2*sqrt(b)*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/4 - 15*a*b*s
qrt(x)*sqrt(a - b*x)/4 - 5*b*sqrt(x)*(a - b*x)**(3/2)/2 - 2*(a -
b*x)**(5/2)/sqrt(x)
```

Mathematica [A] time = 0.0797644, size = 72, normalized size = 0.77

$$\frac{1}{4}\left(\frac{\sqrt{a-bx}\,(-8a^2-9abx+2b^2x^2)}{\sqrt{x}}-15a^2\sqrt{b}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - b*x)^(5/2)/x^(3/2),x]
```

```
[Out] ((Sqrt[a - b*x]*(-8*a^2 - 9*a*b*x + 2*b^2*x^2))/Sqrt[x] - 15*a^2*
Sqrt[b]*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/4
```

Maple [A] time = 0.028, size = 88, normalized size = 1.

$$-\frac{-2\,b^2x^2+9\,abx+8\,a^2}{4}\sqrt{-bx+a}\frac{1}{\sqrt{x}}-\frac{15\,a^2}{8}\sqrt{b}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\sqrt{x\,(-bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(5/2)/x^(3/2),x)
```

```
[Out] -1/4*(-b*x+a)^(1/2)*(-2*b^2*x^2+9*a*b*x+8*a^2)/x^(1/2)-15/8*a^2*b
^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))*(x*(-b*x+a)
)^(1/2)/x^(1/2)/(-b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22458, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^2\sqrt{-b}x\log\left(-2\,bx+2\,\sqrt{-bx+a}\sqrt{-b}\sqrt{x}+a\right)+2\,\left(2\,b^2x^2-9\,abx-8\,a^2\right)\sqrt{-bx+a}\sqrt{x}}{8\,x},\ \frac{15\,a^2\sqrt{b}x\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*(15*a^2*sqrt(-b)*x*log(-2*b*x + 2*sqrt(-b*x + a)*sqrt(-b)*sq
rt(x) + a) + 2*(2*b^2*x^2 - 9*a*b*x - 8*a^2)*sqrt(-b*x + a)*sqrt(
x))/x, 1/4*(15*a^2*sqrt(b)*x*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(
x))) + (2*b^2*x^2 - 9*a*b*x - 8*a^2)*sqrt(-b*x + a)*sqrt(x))/x]
```

Sympy [A] time = 78.5413, size = 267, normalized size = 2.87

$$\begin{cases} \frac{2ia^{\frac{5}{2}}}{\sqrt{x}\sqrt{-1+\frac{bx}{a}}} + \frac{ia^{\frac{3}{2}}b\sqrt{x}}{4\sqrt{-1+\frac{bx}{a}}} - \frac{11i\sqrt{a}b^2x^{\frac{3}{2}}}{4\sqrt{-1+\frac{bx}{a}}} + \frac{15ia^2\sqrt{b}\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4} + \frac{ib^3x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{2a^{\frac{5}{2}}}{\sqrt{x}\sqrt{1-\frac{bx}{a}}} - \frac{a^{\frac{3}{2}}b\sqrt{x}}{4\sqrt{1-\frac{bx}{a}}} + \frac{11\sqrt{a}b^2x^{\frac{3}{2}}}{4\sqrt{1-\frac{bx}{a}}} - \frac{15a^2\sqrt{b}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4} - \frac{b^3x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(5/2)/x**(3/2),x)
```

```
[Out] Piecewise((2*I*a**(5/2)/(sqrt(x)*sqrt(-1 + b*x/a)) + I*a**(3/2)*b
*sqrt(x)/(4*sqrt(-1 + b*x/a)) - 11*I*sqrt(a)*b**2*x**(3/2)/(4*sqr
t(-1 + b*x/a)) + 15*I*a**2*sqrt(b)*acosh(sqrt(b)*sqrt(x)/sqrt(a))
/4 + I*b**3*x**(5/2)/(2*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1
), (-2*a**(5/2)/(sqrt(x)*sqrt(1 - b*x/a)) - a**(3/2)*b*sqrt(x)/(4
*sqrt(1 - b*x/a)) + 11*sqrt(a)*b**2*x**(3/2)/(4*sqrt(1 - b*x/a))
- 15*a**2*sqrt(b)*asin(sqrt(b)*sqrt(x)/sqrt(a))/4 - b**3*x**(5/2)
/(2*sqrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.556 $\int \frac{(a-bx)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=90

$$5ab^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+5b^2\sqrt{x}\sqrt{a-bx}-\frac{2(a-bx)^{5/2}}{3x^{3/2}}+\frac{10b(a-bx)^{3/2}}{3\sqrt{x}}$$

```
[Out] 5*b^2*Sqrt[x]*Sqrt[a - b*x] + (10*b*(a - b*x)^(3/2))/(3*Sqrt[x])
- (2*(a - b*x)^(5/2))/(3*x^(3/2)) + 5*a*b^(3/2)*ArcTan[(Sqrt[b]*S
qrt[x])/Sqrt[a - b*x]]
```

Rubi [A] time = 0.0669046, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$5ab^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+5b^2\sqrt{x}\sqrt{a-bx}-\frac{2(a-bx)^{5/2}}{3x^{3/2}}+\frac{10b(a-bx)^{3/2}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - b*x)^(5/2)/x^(5/2),x]
```

```
[Out] 5*b^2*Sqrt[x]*Sqrt[a - b*x] + (10*b*(a - b*x)^(3/2))/(3*Sqrt[x])
- (2*(a - b*x)^(5/2))/(3*x^(3/2)) + 5*a*b^(3/2)*ArcTan[(Sqrt[b]*S
qrt[x])/Sqrt[a - b*x]]
```

Rubi in Sympy [A] time = 10.374, size = 82, normalized size = 0.91

$$5ab^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)+5b^2\sqrt{x}\sqrt{a-bx}+\frac{10b\,(a-bx)^{\frac{3}{2}}}{3\sqrt{x}}-\frac{2\,(a-bx)^{\frac{5}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+a)**(5/2)/x**(5/2),x)
```

```
[Out] 5*a*b**(3/2)*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x)) + 5*b**2*sqrt(x)
*sqrt(a - b*x) + 10*b*(a - b*x)**(3/2)/(3*sqrt(x)) - 2*(a - b*x)*
*(5/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0763083, size = 69, normalized size = 0.77

$$\frac{\sqrt{a-bx}\left(-2a^2+14abx+3b^2x^2\right)}{3x^{3/2}}+5ab^{3/2}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - b*x)^(5/2)/x^(5/2),x]
```

```
[Out] (Sqrt[a - b*x]*(-2*a^2 + 14*a*b*x + 3*b^2*x^2))/(3*x^(3/2)) + 5*a
*b^(3/2)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]]
```

Maple [A] time = 0.032, size = 86, normalized size = 1.

$$-\frac{-3\,b^2x^2-14\,abx+2\,a^2}{3}\sqrt{-bx+a}x^{-\frac{3}{2}}+\frac{5\,a}{2}b^{\frac{3}{2}}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\sqrt{x\left(-bx+a\right)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+a)^(5/2)/x^(5/2),x)
```

```
[Out] -1/3*(-b*x+a)^(1/2)*(-3*b^2*x^2-14*a*b*x+2*a^2)/x^(3/2)+5/2*a*b^(
3/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))*(x*(-b*x+a))^
(1/2)/x^(1/2)/(-b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222688, size = 1, normalized size = 0.01

$$\left[\frac{15\,a\sqrt{-b}bx^{2}\log\left(-2\,bx-2\,\sqrt{-bx+a}\sqrt{-b}\sqrt{x}+a\right)+2\,\left(3\,b^{2}x^{2}+14\,abx-2\,a^{2}\right)\sqrt{-bx+a}\sqrt{x}}{6\,x^{2}},\right.$$
$$\left.-\frac{15\,ab^{\frac{3}{2}}x^{2}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(3\,b^{2}x^{2}+14\,abx-2\,a^{2}\right)\sqrt{-bx+a}\sqrt{x}}{3\,x^{2}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(15*a*sqrt(-b)*b*x^2*log(-2*b*x - 2*sqrt(-b*x + a)*sqrt(-b)*
sqrt(x) + a) + 2*(3*b^2*x^2 + 14*a*b*x - 2*a^2)*sqrt(-b*x + a)*sq
rt(x))/x^2, -1/3*(15*a*b^(3/2)*x^2*arctan(sqrt(-b*x + a)/(sqrt(b)
*sqrt(x))) - (3*b^2*x^2 + 14*a*b*x - 2*a^2)*sqrt(-b*x + a)*sqrt(x
))/x^2]
```

Sympy [A] time = 77.8715, size = 245, normalized size = 2.72

$$\begin{cases} -\frac{2a^{2}\sqrt{b}\sqrt{\frac{a}{bx}-1}}{3x}+\frac{14ab^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}}{3}-5iab^{\frac{3}{2}}\log\left(\frac{\sqrt{a}}{\sqrt{b}\sqrt{x}}\right)+\frac{5iab^{\frac{3}{2}}\log\left(\frac{a}{bx}\right)}{2}+5ab^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)+b^{\frac{5}{2}}x\sqrt{\frac{a}{bx}-1} & \text{for}\ \left|\frac{a}{bx}\right|>1 \\ -\frac{2ia^{2}\sqrt{b}\sqrt{-\frac{a}{bx}+1}}{3x}+\frac{14iab^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{3}+\frac{5iab^{\frac{3}{2}}\log\left(\frac{a}{bx}\right)}{2}-5iab^{\frac{3}{2}}\log\left(\sqrt{-\frac{a}{bx}+1}+1\right)+ib^{\frac{5}{2}}x\sqrt{-\frac{a}{bx}+1} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+a)**(5/2)/x**(5/2),x)
```

```
[Out] Piecewise((-2*a**2*sqrt(b)*sqrt(a/(b*x) - 1)/(3*x) + 14*a*b**(3/2
)*sqrt(a/(b*x) - 1)/3 - 5*I*a*b**(3/2)*log(sqrt(a)/(sqrt(b)*sqrt(
x))) + 5*I*a*b**(3/2)*log(a/(b*x))/2 + 5*a*b**(3/2)*asin(sqrt(b)*
sqrt(x)/sqrt(a)) + b**(5/2)*x*sqrt(a/(b*x) - 1), Abs(a/(b*x)) > 1
), (-2*I*a**2*sqrt(b)*sqrt(-a/(b*x) + 1)/(3*x) + 14*I*a*b**(3/2)*
sqrt(-a/(b*x) + 1)/3 + 5*I*a*b**(3/2)*log(a/(b*x))/2 - 5*I*a*b**(
3/2)*log(sqrt(-a/(b*x) + 1) + 1) + I*b**(5/2)*x*sqrt(-a/(b*x) + 1
), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + a)^(5/2)/x^(5/2),x, algorithm="giac")

[Out] Exception raised: NotImplementedError
```

3.557 $\int x^{5/2}(2+bx)^{5/2}\,dx$

Optimal. Leaf size=144

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{16b^3}-\frac{5x^{3/2}\sqrt{bx+2}}{48b^2}+\frac{1}{6}x^{7/2}(bx+2)^{5/2}+\frac{1}{6}x^{7/2}(bx+2)^{3/2}+\frac{1}{8}x^{7/2}\sqrt{bx+2}+\frac{x^{5/2}\sqrt{bx+2}}{24b}$$

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(16*b^3) - (5*x^(3/2)*Sqrt[2 + b*x])/(4
8*b^2) + (x^(5/2)*Sqrt[2 + b*x])/(24*b) + (x^(7/2)*Sqrt[2 + b*x])
/8 + (x^(7/2)*(2 + b*x)^(3/2))/6 + (x^(7/2)*(2 + b*x)^(5/2))/6 -
(5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(8*b^(7/2))
```

Rubi [A] time = 0.122189, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{16b^3}-\frac{5x^{3/2}\sqrt{bx+2}}{48b^2}+\frac{1}{6}x^{7/2}(bx+2)^{5/2}+\frac{1}{6}x^{7/2}(bx+2)^{3/2}+\frac{1}{8}x^{7/2}\sqrt{bx+2}+\frac{x^{5/2}\sqrt{bx+2}}{24b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(2 + b*x)^(5/2),x]
```

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(16*b^3) - (5*x^(3/2)*Sqrt[2 + b*x])/(4
8*b^2) + (x^(5/2)*Sqrt[2 + b*x])/(24*b) + (x^(7/2)*Sqrt[2 + b*x])
/8 + (x^(7/2)*(2 + b*x)^(3/2))/6 + (x^(7/2)*(2 + b*x)^(5/2))/6 -
(5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(8*b^(7/2))
```

Rubi in Sympy [A] time = 18.0292, size = 139, normalized size = 0.97

$$\frac{x^{\frac{5}{2}}(bx+2)^{\frac{7}{2}}}{6b}-\frac{x^{\frac{3}{2}}(bx+2)^{\frac{7}{2}}}{6b^2}+\frac{\sqrt{x}(bx+2)^{\frac{7}{2}}}{8b^3}-\frac{\sqrt{x}(bx+2)^{\frac{5}{2}}}{24b^3}-\frac{5\sqrt{x}(bx+2)^{\frac{3}{2}}}{48b^3}-\frac{5\sqrt{x}\sqrt{bx+2}}{16b^3}-\frac{5\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{8b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(b*x+2)**(5/2),x)
```

```
[Out] x**(5/2)*(b*x + 2)**(7/2)/(6*b) - x**(3/2)*(b*x + 2)**(7/2)/(6*b*
*2) + sqrt(x)*(b*x + 2)**(7/2)/(8*b**3) - sqrt(x)*(b*x + 2)**(5/2
)/(24*b**3) - 5*sqrt(x)*(b*x + 2)**(3/2)/(48*b**3) - 5*sqrt(x)*sq
rt(b*x + 2)/(16*b**3) - 5*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(8*b**
(7/2))
```

Mathematica [A] time = 0.0971939, size = 86, normalized size = 0.6

$$\frac{\sqrt{x}\sqrt{bx+2}\left(8b^5x^5+40b^4x^4+54b^3x^3+2b^2x^2-5bx+15\right)}{48b^3}-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(2 + b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(15 - 5*b*x + 2*b^2*x^2 + 54*b^3*x^3 + 40*
b^4*x^4 + 8*b^5*x^5))/(48*b^3) - (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqr
t[2]])/(8*b^(7/2))
```

Maple [A] time = 0.007, size = 138, normalized size = 1.

$$\frac{1}{6\,b}x^{\frac{5}{2}}\left(bx+2\right)^{\frac{7}{2}}-\frac{1}{6\,b^2}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{7}{2}}+\frac{1}{8\,b^3}\sqrt{x}\left(bx+2\right)^{\frac{7}{2}}-\frac{1}{24\,b^3}\left(bx+2\right)^{\frac{5}{2}}\sqrt{x}-\frac{5}{48\,b^3}\left(bx+2\right)^{\frac{3}{2}}\sqrt{x}-\frac{5}{16\,b^3}\sqrt{x}\sqrt{bx+2}-\frac{5}{16}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(b*x+2)^(5/2),x)
```

```
[Out] 1/6/b*x^(5/2)*(b*x+2)^(7/2)-1/6/b^2*x^(3/2)*(b*x+2)^(7/2)+1/8/b^3
*x^(1/2)*(b*x+2)^(7/2)-1/24/b^3*x^(1/2)*(b*x+2)^(5/2)-5/48/b^3*x^
(1/2)*(b*x+2)^(3/2)-5/16*x^(1/2)*(b*x+2)^(1/2)/b^3-5/16/b^(7/2)*(
x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+
2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225154, size = 1, normalized size = 0.01

$$\left[\frac{\left(8\,b^5x^5+40\,b^4x^4+54\,b^3x^3+2\,b^2x^2-5\,bx+15\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\,\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{48\,b^{\frac{7}{2}}}, \frac{\left(8\,b^5x^5+40\,b^4x^4\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/48*((8*b^5*x^5 + 40*b^4*x^4 + 54*b^3*x^3 + 2*b^2*x^2 - 5*b*x +
 15)*sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 15*log(-sqrt(b*x + 2)*b*sqrt
(x) + (b*x + 1)*sqrt(b)))/b^(7/2), 1/48*((8*b^5*x^5 + 40*b^4*x^4
+ 54*b^3*x^3 + 2*b^2*x^2 - 5*b*x + 15)*sqrt(b*x + 2)*sqrt(-b)*sqr
t(x) - 30*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b
^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(b*x+2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.558 $\int x^{3/2}(2+bx)^{5/2}\,dx$

Optimal. Leaf size=123

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{bx+2}}{8b^2}+\frac{1}{5}x^{5/2}(bx+2)^{5/2}+\frac{1}{4}x^{5/2}(bx+2)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{bx+2}+\frac{x^{3/2}\sqrt{bx+2}}{8b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 + b*x])/(8*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(8*b
) + (x^(5/2)*Sqrt[2 + b*x])/4 + (x^(5/2)*(2 + b*x)^(3/2))/4 + (x^
(5/2)*(2 + b*x)^(5/2))/5 + (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])
/(4*b^(5/2))
```

Rubi [A] time = 0.0872171, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{bx+2}}{8b^2}+\frac{1}{5}x^{5/2}(bx+2)^{5/2}+\frac{1}{4}x^{5/2}(bx+2)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{bx+2}+\frac{x^{3/2}\sqrt{bx+2}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(2 + b*x)^(5/2),x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 + b*x])/(8*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(8*b
) + (x^(5/2)*Sqrt[2 + b*x])/4 + (x^(5/2)*(2 + b*x)^(3/2))/4 + (x^
(5/2)*(2 + b*x)^(5/2))/5 + (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])
/(4*b^(5/2))
```

Rubi in Sympy [A] time = 15.0231, size = 121, normalized size = 0.98

$$\frac{x^{\frac{3}{2}}(bx+2)^{\frac{7}{2}}}{5b}-\frac{3\sqrt{x}(bx+2)^{\frac{7}{2}}}{20b^2}+\frac{\sqrt{x}(bx+2)^{\frac{5}{2}}}{20b^2}+\frac{\sqrt{x}(bx+2)^{\frac{3}{2}}}{8b^2}+\frac{3\sqrt{x}\sqrt{bx+2}}{8b^2}+\frac{3\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(b*x+2)**(5/2),x)
```

```
[Out] x**(3/2)*(b*x + 2)**(7/2)/(5*b) - 3*sqrt(x)*(b*x + 2)**(7/2)/(20*
b**2) + sqrt(x)*(b*x + 2)**(5/2)/(20*b**2) + sqrt(x)*(b*x + 2)**(
3/2)/(8*b**2) + 3*sqrt(x)*sqrt(b*x + 2)/(8*b**2) + 3*asinh(sqrt(2
)*sqrt(b)*sqrt(x)/2)/(4*b**(5/2))
```

Mathematica [A] time = 0.079967, size = 78, normalized size = 0.63

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}+\frac{\sqrt{x}\sqrt{bx+2}\left(8b^4x^4+42b^3x^3+62b^2x^2+5bx-15\right)}{40b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(2 + b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(-15 + 5*b*x + 62*b^2*x^2 + 42*b^3*x^3 + 8
*b^4*x^4))/(40*b^2) + (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b
^(5/2))
```

Maple [A] time = 0.008, size = 123, normalized size = 1.

$$\frac{1}{5\,b}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{7}{2}}-\frac{3}{20\,b^2}\sqrt{x}\left(bx+2\right)^{\frac{7}{2}}+\frac{1}{20\,b^2}\left(bx+2\right)^{\frac{5}{2}}\sqrt{x}+\frac{1}{8\,b^2}\left(bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{3}{8\,b^2}\sqrt{x}\sqrt{bx+2}+\frac{3}{8}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+2)^(5/2),x)
```

```
[Out] 1/5/b*x^(3/2)*(b*x+2)^(7/2)-3/20/b^2*x^(1/2)*(b*x+2)^(7/2)+1/20/b
^2*x^(1/2)*(b*x+2)^(5/2)+1/8/b^2*x^(1/2)*(b*x+2)^(3/2)+3/8*x^(1/2
)*(b*x+2)^(1/2)/b^2+3/8/b^(5/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x
^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230263, size = 1, normalized size = 0.01

$$\left[\frac{\left(8\,b^4x^4+42\,b^3x^3+62\,b^2x^2+5\,bx-15\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\,\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{40\,b^{\frac{5}{2}}},\ \frac{\left(8\,b^4x^4+42\,b^3x^3+62\,b^2x^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/40*((8*b^4*x^4 + 42*b^3*x^3 + 62*b^2*x^2 + 5*b*x - 15)*sqrt(b*
x + 2)*sqrt(b)*sqrt(x) + 15*log(sqrt(b*x + 2)*b*sqrt(x) + (b*x +
1)*sqrt(b)))/b^(5/2), 1/40*((8*b^4*x^4 + 42*b^3*x^3 + 62*b^2*x^2
+ 5*b*x - 15)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x) + 30*arctan(sqrt(b*x
 + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b^2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.559 $\int \sqrt{x}(2+bx)^{5/2}\,dx$

Optimal. Leaf size=102

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{3/2}}+\frac{1}{4}x^{3/2}(bx+2)^{5/2}+\frac{5}{12}x^{3/2}(bx+2)^{3/2}+\frac{5}{8}x^{3/2}\sqrt{bx+2}+\frac{5\sqrt{x}\sqrt{bx+2}}{8b}$$

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(8*b) + (5*x^(3/2)*Sqrt[2 + b*x])/8 + (
5*x^(3/2)*(2 + b*x)^(3/2))/12 + (x^(3/2)*(2 + b*x)^(5/2))/4 - (5*
ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(3/2))
```

Rubi [A] time = 0.0691573, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{3/2}}+\frac{1}{4}x^{3/2}(bx+2)^{5/2}+\frac{5}{12}x^{3/2}(bx+2)^{3/2}+\frac{5}{8}x^{3/2}\sqrt{bx+2}+\frac{5\sqrt{x}\sqrt{bx+2}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(2 + b*x)^(5/2),x]
```

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(8*b) + (5*x^(3/2)*Sqrt[2 + b*x])/8 + (
5*x^(3/2)*(2 + b*x)^(3/2))/12 + (x^(3/2)*(2 + b*x)^(5/2))/4 - (5*
ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(3/2))
```

Rubi in Sympy [A] time = 11.9459, size = 97, normalized size = 0.95

$$\frac{\sqrt{x}\,(bx+2)^{\frac{7}{2}}}{4b}-\frac{\sqrt{x}\,(bx+2)^{\frac{5}{2}}}{12b}-\frac{5\sqrt{x}\,(bx+2)^{\frac{3}{2}}}{24b}-\frac{5\sqrt{x}\sqrt{bx+2}}{8b}-\frac{5\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(5/2)*x**(1/2),x)
```

```
[Out] sqrt(x)*(b*x + 2)**(7/2)/(4*b) - sqrt(x)*(b*x + 2)**(5/2)/(12*b)
- 5*sqrt(x)*(b*x + 2)**(3/2)/(24*b) - 5*sqrt(x)*sqrt(b*x + 2)/(8*
b) - 5*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(3/2))
```

Mathematica [A] time = 0.0722618, size = 70, normalized size = 0.69

$$\frac{\sqrt{x}\sqrt{bx+2}\left(6b^3x^3+34b^2x^2+59bx+15\right)}{24b}-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(2 + b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(15 + 59*b*x + 34*b^2*x^2 + 6*b^3*x^3))/(2
4*b) - (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(3/2))
```

Maple [A] time = 0.009, size = 99, normalized size = 1.

$$\frac{1}{4}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{5}{2}}+\frac{5}{12}x^{\frac{3}{2}}\left(bx+2\right)^{\frac{3}{2}}+\frac{5}{8}x^{\frac{3}{2}}\sqrt{bx+2}+\frac{5}{8\,b}\sqrt{x}\sqrt{bx+2}-\frac{5}{8}\sqrt{x\left(bx+2\right)}\ln\left(\left(bx+1\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(5/2)*x^(1/2),x)
```

```
[Out] 1/4*x^(3/2)*(b*x+2)^(5/2)+5/12*x^(3/2)*(b*x+2)^(3/2)+5/8*x^(3/2)*
(b*x+2)^(1/2)+5/8*x^(1/2)*(b*x+2)^(1/2)/b-5/8/b^(3/2)*(x*(b*x+2))
^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2)
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227735, size = 1, normalized size = 0.01

$$\left[\frac{\left(6\,b^3x^3+34\,b^2x^2+59\,bx+15\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\,\log\left(-\sqrt{bx+2}b\sqrt{x}+\left(bx+1\right)\sqrt{b}\right)}{24\,b^{\frac{3}{2}}},\frac{\left(6\,b^3x^3+34\,b^2x^2+59\,bx+15\right)\sqrt{bx}}{24}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/24*((6*b^3*x^3 + 34*b^2*x^2 + 59*b*x + 15)*sqrt(b*x + 2)*sqrt(
b)*sqrt(x) + 15*log(-sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b))
)/b^(3/2), 1/24*((6*b^3*x^3 + 34*b^2*x^2 + 59*b*x + 15)*sqrt(b*x
+ 2)*sqrt(-b)*sqrt(x) - 30*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(
x))))/(sqrt(-b)*b)]
```

Sympy [A] time = 97.1978, size = 119, normalized size = 1.17

$$\frac{b^3x^{\frac{9}{2}}}{4\sqrt{bx+2}}+\frac{23b^2x^{\frac{7}{2}}}{12\sqrt{bx+2}}+\frac{127bx^{\frac{5}{2}}}{24\sqrt{bx+2}}+\frac{133x^{\frac{3}{2}}}{24\sqrt{bx+2}}+\frac{5\sqrt{x}}{4b\sqrt{bx+2}}-\frac{5\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(5/2)*x**(1/2),x)
```

```
[Out] b**3*x**(9/2)/(4*sqrt(b*x + 2)) + 23*b**2*x**(7/2)/(12*sqrt(b*x +
 2)) + 127*b*x**(5/2)/(24*sqrt(b*x + 2)) + 133*x**(3/2)/(24*sqrt(
b*x + 2)) + 5*sqrt(x)/(4*b*sqrt(b*x + 2)) - 5*asinh(sqrt(2)*sqrt(
b)*sqrt(x)/2)/(4*b**(3/2))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.560 $\int \frac{(2+bx)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=79

$$\frac{1}{3}\sqrt{x}(bx+2)^{5/2}+\frac{5}{6}\sqrt{x}(bx+2)^{3/2}+\frac{5}{2}\sqrt{x}\sqrt{bx+2}+\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/2 + (5*Sqrt[x]*(2 + b*x)^(3/2))/6 + (Sq
rt[x]*(2 + b*x)^(5/2))/3 + (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])
/Sqrt[b]
```

Rubi [A] time = 0.0538055, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{1}{3}\sqrt{x}(bx+2)^{5/2}+\frac{5}{6}\sqrt{x}(bx+2)^{3/2}+\frac{5}{2}\sqrt{x}\sqrt{bx+2}+\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 + b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/2 + (5*Sqrt[x]*(2 + b*x)^(3/2))/6 + (Sq
rt[x]*(2 + b*x)^(5/2))/3 + (5*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])
/Sqrt[b]
```

Rubi in Sympy [A] time = 8.12388, size = 73, normalized size = 0.92

$$\frac{\sqrt{x}\,(bx+2)^{\frac{5}{2}}}{3}+\frac{5\sqrt{x}\,(bx+2)^{\frac{3}{2}}}{6}+\frac{5\sqrt{x}\sqrt{bx+2}}{2}+\frac{5\,\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*(b*x + 2)**(5/2)/3 + 5*sqrt(x)*(b*x + 2)**(3/2)/6 + 5*sqr
t(x)*sqrt(b*x + 2)/2 + 5*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

Mathematica [A] time = 0.0540694, size = 57, normalized size = 0.72

$$\frac{1}{6}\sqrt{x}\sqrt{bx+2}\left(2b^2x^2+13bx+33\right)+\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(33 + 13*b*x + 2*b^2*x^2))/6 + (5*ArcSinh[
(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Maple [A] time = 0.007, size = 84, normalized size = 1.1

$$\frac{1}{3}(bx+2)^{\frac{5}{2}}\sqrt{x}+\frac{5}{6}(bx+2)^{\frac{3}{2}}\sqrt{x}+\frac{5}{2}\sqrt{x}\sqrt{bx+2}+\frac{5}{2}\sqrt{x(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(5/2)/x^(1/2),x)
```

```
[Out] 1/3*(b*x+2)^(5/2)*x^(1/2)+5/6*(b*x+2)^(3/2)*x^(1/2)+5/2*x^(1/2)*(
b*x+2)^(1/2)+5/2*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+
1)/b^(1/2)+(b*x^2+2*x)^(1/2))/b^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.251911, size = 1, normalized size = 0.01

$$\left[\frac{\left(2b^2x^2+13bx+33\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{6\sqrt{b}},\frac{\left(2b^2x^2+13bx+33\right)\sqrt{bx+2}\sqrt{-b}\sqrt{x}+30\,\mathrm{arc}}{6\sqrt{-b}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/6*((2*b^2*x^2 + 13*b*x + 33)*sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 1
5*log(sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/sqrt(b), 1/6*
((2*b^2*x^2 + 13*b*x + 33)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x) + 30*ar
ctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/sqrt(-b)]
```

Sympy [A] time = 59.0891, size = 97, normalized size = 1.23

$$\frac{b^3x^{\frac{7}{2}}}{3\sqrt{bx+2}}+\frac{17b^2x^{\frac{5}{2}}}{6\sqrt{bx+2}}+\frac{59bx^{\frac{3}{2}}}{6\sqrt{bx+2}}+\frac{11\sqrt{x}}{\sqrt{bx+2}}+\frac{5\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] b**3*x**(7/2)/(3*sqrt(b*x + 2)) + 17*b**2*x**(5/2)/(6*sqrt(b*x +
2)) + 59*b*x**(3/2)/(6*sqrt(b*x + 2)) + 11*sqrt(x)/sqrt(b*x + 2)
+ 5*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.561 $\int \frac{(2+bx)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2(bx+2)^{5/2}}{\sqrt{x}}+\frac{5}{2}b\sqrt{x}(bx+2)^{3/2}+\frac{15}{2}b\sqrt{x}\sqrt{bx+2}+15\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

```
[Out] (15*b*Sqrt[x]*Sqrt[2 + b*x])/2 + (5*b*Sqrt[x]*(2 + b*x)^(3/2))/2
- (2*(2 + b*x)^(5/2))/Sqrt[x] + 15*Sqrt[b]*ArcSinh[(Sqrt[b]*Sqrt[
x])/Sqrt[2]]
```

Rubi [A] time = 0.0555846, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{2(bx+2)^{5/2}}{\sqrt{x}}+\frac{5}{2}b\sqrt{x}(bx+2)^{3/2}+\frac{15}{2}b\sqrt{x}\sqrt{bx+2}+15\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + b*x)^(5/2)/x^(3/2),x]
```

```
[Out] (15*b*Sqrt[x]*Sqrt[2 + b*x])/2 + (5*b*Sqrt[x]*(2 + b*x)^(3/2))/2
- (2*(2 + b*x)^(5/2))/Sqrt[x] + 15*Sqrt[b]*ArcSinh[(Sqrt[b]*Sqrt[
x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 8.25842, size = 76, normalized size = 0.96

$$15\sqrt{b}\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+\frac{5b\sqrt{x}\,(bx+2)^{\frac{3}{2}}}{2}+\frac{15b\sqrt{x}\sqrt{bx+2}}{2}-\frac{2\,(bx+2)^{\frac{5}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(5/2)/x**(3/2),x)
```

```
[Out] 15*sqrt(b)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) + 5*b*sqrt(x)*(b*x +
2)**(3/2)/2 + 15*b*sqrt(x)*sqrt(b*x + 2)/2 - 2*(b*x + 2)**(5/2)/s
qrt(x)
```

Mathematica [A] time = 0.049166, size = 56, normalized size = 0.71

$$\frac{\sqrt{bx+2}\left(b^2x^2+9bx-16\right)}{2\sqrt{x}}+15\sqrt{b}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(5/2)/x^(3/2),x]
```

```
[Out] (Sqrt[2 + b*x]*(-16 + 9*b*x + b^2*x^2))/(2*Sqrt[x]) + 15*Sqrt[b]*
ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Maple [A] time = 0.024, size = 81, normalized size = 1.

$$\frac{b^3x^3+11\,b^2x^2+2\,bx-32}{2}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}+\frac{15}{2}\sqrt{b}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)\sqrt{x\,(bx+2)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(5/2)/x^(3/2),x)
```

```
[Out] 1/2*(b^3*x^3+11*b^2*x^2+2*b*x-32)/x^(1/2)/(b*x+2)^(1/2)+15/2*b^(1
/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))*(x*(b*x+2))^(1/2)/x^(1/
2)/(b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.253828, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{bx}\log\left(bx+\sqrt{bx+2}\sqrt{b}\sqrt{x}+1\right)+\left(b^2x^2+9\,bx-16\right)\sqrt{bx+2}\sqrt{x}}{2\,x},\frac{30\sqrt{-bx}\arctan\left(\frac{\sqrt{bx+2}}{\sqrt{-b}\sqrt{x}}\right)+\left(b^2x^2+9\,bx-16\right)\sqrt{bx}}{2\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(15*sqrt(b)*x*log(b*x + sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 1) +
 (b^2*x^2 + 9*b*x - 16)*sqrt(b*x + 2)*sqrt(x))/x, 1/2*(30*sqrt(-b
)*x*arctan(sqrt(b*x + 2)/(sqrt(-b)*sqrt(x))) + (b^2*x^2 + 9*b*x -
 16)*sqrt(b*x + 2)*sqrt(x))/x]
```

Sympy [A] time = 76.2539, size = 94, normalized size = 1.19

$$15\sqrt{b}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+\frac{b^3x^{\frac{5}{2}}}{2\sqrt{bx+2}}+\frac{11b^2x^{\frac{3}{2}}}{2\sqrt{bx+2}}+\frac{b\sqrt{x}}{\sqrt{bx+2}}-\frac{16}{\sqrt{x}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(5/2)/x**(3/2),x)
```

```
[Out] 15*sqrt(b)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) + b**3*x**(5/2)/(2*sq
rt(b*x + 2)) + 11*b**2*x**(3/2)/(2*sqrt(b*x + 2)) + b*sqrt(x)/sqr
t(b*x + 2) - 16/(sqrt(x)*sqrt(b*x + 2))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.562 $\int \frac{(2+bx)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=81

$$10b^{3/2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+5b^2\sqrt{x}\sqrt{bx+2}-\frac{2(bx+2)^{5/2}}{3x^{3/2}}-\frac{10b(bx+2)^{3/2}}{3\sqrt{x}}$$

```
[Out] 5*b^2*Sqrt[x]*Sqrt[2 + b*x] - (10*b*(2 + b*x)^(3/2))/(3*Sqrt[x])
- (2*(2 + b*x)^(5/2))/(3*x^(3/2)) + 10*b^(3/2)*ArcSinh[(Sqrt[b]*S
qrt[x])/Sqrt[2]]
```

Rubi [A] time = 0.0579604, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$10b^{3/2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+5b^2\sqrt{x}\sqrt{bx+2}-\frac{2(bx+2)^{5/2}}{3x^{3/2}}-\frac{10b(bx+2)^{3/2}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + b*x)^(5/2)/x^(5/2),x]
```

```
[Out] 5*b^2*Sqrt[x]*Sqrt[2 + b*x] - (10*b*(2 + b*x)^(3/2))/(3*Sqrt[x])
- (2*(2 + b*x)^(5/2))/(3*x^(3/2)) + 10*b^(3/2)*ArcSinh[(Sqrt[b]*S
qrt[x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 9.09954, size = 78, normalized size = 0.96

$$10b^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+5b^2\sqrt{x}\sqrt{bx+2}-\frac{10b\,(bx+2)^{\frac{3}{2}}}{3\sqrt{x}}-\frac{2\,(bx+2)^{\frac{5}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+2)**(5/2)/x**(5/2),x)
```

```
[Out] 10*b**(3/2)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2) + 5*b**2*sqrt(x)*sqr
t(b*x + 2) - 10*b*(b*x + 2)**(3/2)/(3*sqrt(x)) - 2*(b*x + 2)**(5/
2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0538381, size = 57, normalized size = 0.7

$$10b^{3/2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+\frac{\sqrt{bx+2}\,(3b^2x^2-28bx-8)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(5/2)/x^(5/2),x]
```

```
[Out] (Sqrt[2 + b*x]*(-8 - 28*b*x + 3*b^2*x^2))/(3*x^(3/2)) + 10*b^(3/2
)*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Maple [A] time = 0.027, size = 82, normalized size = 1.

$$\frac{3\,b^3x^3-22\,b^2x^2-64\,bx-16}{3}x^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}+5\,\frac{b^{3/2}\sqrt{x\,(bx+2)}}{\sqrt{x}\sqrt{bx+2}}\ln\left(\frac{bx+1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+2)^(5/2)/x^(5/2),x)
```

```
[Out] 1/3*(3*b^3*x^3-22*b^2*x^2-64*b*x-16)/x^(3/2)/(b*x+2)^(1/2)+5*b^(3
/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))*(x*(b*x+2))^(1/2)/x^(1/
2)/(b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226717, size = 1, normalized size = 0.01

$$\left[\frac{15\,b^{\frac{3}{2}}x^2\log\left(bx+\sqrt{bx+2}\sqrt{b}\sqrt{x}+1\right)+\left(3\,b^2x^2-28\,bx-8\right)\sqrt{bx+2}\sqrt{x}}{3\,x^2},\frac{30\,\sqrt{-b}bx^2\arctan\left(\frac{\sqrt{bx+2}}{\sqrt{-b}\sqrt{x}}\right)+\left(3\,b^2x^2-28\,bx-\right.}{3\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(15*b^(3/2)*x^2*log(b*x + sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 1)
 + (3*b^2*x^2 - 28*b*x - 8)*sqrt(b*x + 2)*sqrt(x))/x^2, 1/3*(30*s
qrt(-b)*b*x^2*arctan(sqrt(b*x + 2)/(sqrt(-b)*sqrt(x))) + (3*b^2*x
^2 - 28*b*x - 8)*sqrt(b*x + 2)*sqrt(x))/x^2]
```

Sympy [A] time = 75.7673, size = 88, normalized size = 1.09

$$b^{\frac{5}{2}}x\sqrt{1+\frac{2}{bx}}-\frac{28b^{\frac{3}{2}}\sqrt{1+\frac{2}{bx}}}{3}-5b^{\frac{3}{2}}\log\left(\frac{1}{bx}\right)+10b^{\frac{3}{2}}\log\left(\sqrt{1+\frac{2}{bx}}+1\right)-\frac{8\sqrt{b}\sqrt{1+\frac{2}{bx}}}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+2)**(5/2)/x**(5/2),x)
```

```
[Out] b**(5/2)*x*sqrt(1 + 2/(b*x)) - 28*b**(3/2)*sqrt(1 + 2/(b*x))/3 -
5*b**(3/2)*log(1/(b*x)) + 10*b**(3/2)*log(sqrt(1 + 2/(b*x)) + 1)
- 8*sqrt(b)*sqrt(1 + 2/(b*x))/(3*x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + 2)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.563 $\int x^{5/2}(2-bx)^{5/2}\,dx$

Optimal. Leaf size=150

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{16b^3}-\frac{5x^{3/2}\sqrt{2-bx}}{48b^2}+\frac{1}{6}x^{7/2}(2-bx)^{5/2}+\frac{1}{6}x^{7/2}(2-bx)^{3/2}+\frac{1}{8}x^{7/2}\sqrt{2-bx}-\frac{x^{5/2}\sqrt{2-bx}}{24b}$$

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(16*b^3) - (5*x^(3/2)*Sqrt[2 - b*x])/(
48*b^2) - (x^(5/2)*Sqrt[2 - b*x])/(24*b) + (x^(7/2)*Sqrt[2 - b*x]
)/8 + (x^(7/2)*(2 - b*x)^(3/2))/6 + (x^(7/2)*(2 - b*x)^(5/2))/6 +
 (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(8*b^(7/2))
```

Rubi [A] time = 0.13359, antiderivative size = 150, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{16b^3}-\frac{5x^{3/2}\sqrt{2-bx}}{48b^2}+\frac{1}{6}x^{7/2}(2-bx)^{5/2}+\frac{1}{6}x^{7/2}(2-bx)^{3/2}+\frac{1}{8}x^{7/2}\sqrt{2-bx}-\frac{x^{5/2}\sqrt{2-bx}}{24b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)*(2 - b*x)^(5/2),x]
```

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(16*b^3) - (5*x^(3/2)*Sqrt[2 - b*x])/(
48*b^2) - (x^(5/2)*Sqrt[2 - b*x])/(24*b) + (x^(7/2)*Sqrt[2 - b*x]
)/8 + (x^(7/2)*(2 - b*x)^(3/2))/6 + (x^(7/2)*(2 - b*x)^(5/2))/6 +
 (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(8*b^(7/2))
```

Rubi in Sympy [A] time = 19.1616, size = 139, normalized size = 0.93

$$-\frac{x^{\frac{5}{2}}\left(-bx+2\right)^{\frac{7}{2}}}{6b}-\frac{x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{7}{2}}}{6b^2}-\frac{\sqrt{x}\left(-bx+2\right)^{\frac{7}{2}}}{8b^3}+\frac{\sqrt{x}\left(-bx+2\right)^{\frac{5}{2}}}{24b^3}+\frac{5\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{48b^3}+\frac{5\sqrt{x}\sqrt{-bx+2}}{16b^3}+\frac{5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{8b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)*(-b*x+2)**(5/2),x)
```

```
[Out] -x**(5/2)*(-b*x + 2)**(7/2)/(6*b) - x**(3/2)*(-b*x + 2)**(7/2)/(6
*b**2) - sqrt(x)*(-b*x + 2)**(7/2)/(8*b**3) + sqrt(x)*(-b*x + 2)*
*(5/2)/(24*b**3) + 5*sqrt(x)*(-b*x + 2)**(3/2)/(48*b**3) + 5*sqrt
(x)*sqrt(-b*x + 2)/(16*b**3) + 5*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/
(8*b**(7/2))
```

Mathematica [A] time = 0.0993211, size = 87, normalized size = 0.58

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{8b^{7/2}}+\frac{\sqrt{x}\sqrt{2-bx}\left(8b^5x^5-40b^4x^4+54b^3x^3-2b^2x^2-5bx-15\right)}{48b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)*(2 - b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(-15 - 5*b*x - 2*b^2*x^2 + 54*b^3*x^3 - 40
*b^4*x^4 + 8*b^5*x^5))/(48*b^3) + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqr
t[2]])/(8*b^(7/2))
```

Maple [A] time = 0.008, size = 148, normalized size = 1.

$$-\frac{1}{6\,b}x^{\frac{5}{2}}\left(-bx+2\right)^{\frac{7}{2}}-\frac{1}{6\,b^2}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{7}{2}}-\frac{1}{8\,b^3}\sqrt{x}\left(-bx+2\right)^{\frac{7}{2}}+\frac{1}{24\,b^3}\left(-bx+2\right)^{\frac{5}{2}}\sqrt{x}+\frac{5}{48\,b^3}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{5}{16\,b^3}\sqrt{x}\sqrt{-bx+2}+\frac{5}{16}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)*(-b*x+2)^(5/2),x)
```

```
[Out] -1/6/b*x^(5/2)*(-b*x+2)^(7/2)-1/6/b^2*x^(3/2)*(-b*x+2)^(7/2)-1/8/
b^3*x^(1/2)*(-b*x+2)^(7/2)+1/24/b^3*x^(1/2)*(-b*x+2)^(5/2)+5/48/b
^3*x^(1/2)*(-b*x+2)^(3/2)+5/16*x^(1/2)*(-b*x+2)^(1/2)/b^3+5/16/b^
(7/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x
-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225638, size = 1, normalized size = 0.01

$$\left[\frac{\left(8\,b^5x^5 - 40\,b^4x^4 + 54\,b^3x^3 - 2\,b^2x^2 - 5\,bx - 15\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x} + 15\,\log\left(-\sqrt{-bx+2}b\sqrt{x} - (bx-1)\sqrt{-b}\right)}{48\,\sqrt{-b}b^3}, \frac{\left(8\,b^5x^5 - \right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/48*((8*b^5*x^5 - 40*b^4*x^4 + 54*b^3*x^3 - 2*b^2*x^2 - 5*b*x -
 15)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) + 15*log(-sqrt(-b*x + 2)*b*s
qrt(x) - (b*x - 1)*sqrt(-b)))/(sqrt(-b)*b^3), 1/48*((8*b^5*x^5 -
40*b^4*x^4 + 54*b^3*x^3 - 2*b^2*x^2 - 5*b*x - 15)*sqrt(-b*x + 2)*
sqrt(b)*sqrt(x) - 30*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^
(7/2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)*(-b*x+2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.564 $\int x^{3/2}(2-bx)^{5/2}\,dx$

Optimal. Leaf size=128

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{8b^2}+\frac{1}{5}x^{5/2}(2-bx)^{5/2}+\frac{1}{4}x^{5/2}(2-bx)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{2-bx}-\frac{x^{3/2}\sqrt{2-bx}}{8b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(8*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(8*b
) + (x^(5/2)*Sqrt[2 - b*x])/4 + (x^(5/2)*(2 - b*x)^(3/2))/4 + (x^
(5/2)*(2 - b*x)^(5/2))/5 + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/
(4*b^(5/2))
```

Rubi [A] time = 0.0957114, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{8b^2}+\frac{1}{5}x^{5/2}(2-bx)^{5/2}+\frac{1}{4}x^{5/2}(2-bx)^{3/2}+\frac{1}{4}x^{5/2}\sqrt{2-bx}-\frac{x^{3/2}\sqrt{2-bx}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)*(2 - b*x)^(5/2),x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(8*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(8*b
) + (x^(5/2)*Sqrt[2 - b*x])/4 + (x^(5/2)*(2 - b*x)^(3/2))/4 + (x^
(5/2)*(2 - b*x)^(5/2))/5 + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/
(4*b^(5/2))
```

Rubi in Sympy [A] time = 15.6689, size = 121, normalized size = 0.95

$$-\frac{x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{7}{2}}}{5b}-\frac{3\sqrt{x}\left(-bx+2\right)^{\frac{7}{2}}}{20b^2}+\frac{\sqrt{x}\left(-bx+2\right)^{\frac{5}{2}}}{20b^2}+\frac{\sqrt{x}\left(-bx+2\right)^{\frac{3}{2}}}{8b^2}+\frac{3\sqrt{x}\sqrt{-bx+2}}{8b^2}+\frac{3\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)*(-b*x+2)**(5/2),x)
```

```
[Out] -x**(3/2)*(-b*x + 2)**(7/2)/(5*b) - 3*sqrt(x)*(-b*x + 2)**(7/2)/(
20*b**2) + sqrt(x)*(-b*x + 2)**(5/2)/(20*b**2) + sqrt(x)*(-b*x +
2)**(3/2)/(8*b**2) + 3*sqrt(x)*sqrt(-b*x + 2)/(8*b**2) + 3*asin(s
qrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(5/2))
```

Mathematica [A] time = 0.0846272, size = 79, normalized size = 0.62

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{5/2}}+\frac{\sqrt{x}\sqrt{2-bx}\left(8b^4x^4-42b^3x^3+62b^2x^2-5bx-15\right)}{40b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(2 - b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(-15 - 5*b*x + 62*b^2*x^2 - 42*b^3*x^3 + 8
*b^4*x^4))/(40*b^2) + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^
(5/2))
```

Maple [A] time = 0.01, size = 132, normalized size = 1.

$$-\frac{1}{5\,b}x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{7}{2}}-\frac{3}{20\,b^2}\sqrt{x}\left(-bx+2\right)^{\frac{7}{2}}+\frac{1}{20\,b^2}\left(-bx+2\right)^{\frac{5}{2}}\sqrt{x}+\frac{1}{8\,b^2}\left(-bx+2\right)^{\frac{3}{2}}\sqrt{x}+\frac{3}{8\,b^2}\sqrt{x}\sqrt{-bx+2}+\frac{3}{8}\sqrt{\left(-bx+2\right)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(-b*x+2)^(5/2),x)
```

```
[Out] -1/5/b*x^(3/2)*(-b*x+2)^(7/2)-3/20/b^2*x^(1/2)*(-b*x+2)^(7/2)+1/2
0/b^2*x^(1/2)*(-b*x+2)^(5/2)+1/8/b^2*x^(1/2)*(-b*x+2)^(3/2)+3/8*x
^(1/2)*(-b*x+2)^(1/2)/b^2+3/8/b^(5/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)
^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226283, size = 1, normalized size = 0.01

$$\left[\frac{\left(8\,b^4x^4-42\,b^3x^3+62\,b^2x^2-5\,bx-15\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+15\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{40\,\sqrt{-b}b^2},\ \frac{\left(8\,b^4x^4-42\,b^3x^3\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/40*((8*b^4*x^4 - 42*b^3*x^3 + 62*b^2*x^2 - 5*b*x - 15)*sqrt(-b
*x + 2)*sqrt(-b)*sqrt(x) + 15*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*
x - 1)*sqrt(-b)))/(sqrt(-b)*b^2), 1/40*((8*b^4*x^4 - 42*b^3*x^3 +
 62*b^2*x^2 - 5*b*x - 15)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) - 30*arc
tan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^(5/2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(-b*x+2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.565 $\int \sqrt{x}(2-bx)^{5/2}\,dx$

Optimal. Leaf size=106

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{3/2}}+\frac{1}{4}x^{3/2}(2-bx)^{5/2}+\frac{5}{12}x^{3/2}(2-bx)^{3/2}+\frac{5}{8}x^{3/2}\sqrt{2-bx}-\frac{5\sqrt{x}\sqrt{2-bx}}{8b}$$

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(8*b) + (5*x^(3/2)*Sqrt[2 - b*x])/8 +
(5*x^(3/2)*(2 - b*x)^(3/2))/12 + (x^(3/2)*(2 - b*x)^(5/2))/4 + (5
*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(3/2))
```

Rubi [A] time = 0.074396, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{3/2}}+\frac{1}{4}x^{3/2}(2-bx)^{5/2}+\frac{5}{12}x^{3/2}(2-bx)^{3/2}+\frac{5}{8}x^{3/2}\sqrt{2-bx}-\frac{5\sqrt{x}\sqrt{2-bx}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(2 - b*x)^(5/2),x]
```

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(8*b) + (5*x^(3/2)*Sqrt[2 - b*x])/8 +
(5*x^(3/2)*(2 - b*x)^(3/2))/12 + (x^(3/2)*(2 - b*x)^(5/2))/4 + (5
*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(3/2))
```

Rubi in Sympy [A] time = 12.6062, size = 97, normalized size = 0.92

$$-\frac{\sqrt{x}\,(-bx+2)^{\frac{7}{2}}}{4b}+\frac{\sqrt{x}\,(-bx+2)^{\frac{5}{2}}}{12b}+\frac{5\sqrt{x}\,(-bx+2)^{\frac{3}{2}}}{24b}+\frac{5\sqrt{x}\sqrt{-bx+2}}{8b}+\frac{5\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(5/2)*x**(1/2),x)
```

```
[Out] -sqrt(x)*(-b*x + 2)**(7/2)/(4*b) + sqrt(x)*(-b*x + 2)**(5/2)/(12*
b) + 5*sqrt(x)*(-b*x + 2)**(3/2)/(24*b) + 5*sqrt(x)*sqrt(-b*x + 2
)/(8*b) + 5*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(3/2))
```

Mathematica [A] time = 0.0743964, size = 71, normalized size = 0.67

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{4b^{3/2}}+\frac{\sqrt{x}\sqrt{2-bx}\,(6b^3x^3-34b^2x^2+59bx-15)}{24b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(2 - b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(-15 + 59*b*x - 34*b^2*x^2 + 6*b^3*x^3))/(
24*b) + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(4*b^(3/2))
```

Maple [A] time = 0.008, size = 107, normalized size = 1.

$$\frac{1}{4}x^{\frac{3}{2}}(-bx+2)^{\frac{5}{2}}+\frac{5}{12}x^{\frac{3}{2}}(-bx+2)^{\frac{3}{2}}+\frac{5}{8}x^{\frac{3}{2}}\sqrt{-bx+2}-\frac{5}{8b}\sqrt{x}\sqrt{-bx+2}+\frac{5}{8}\sqrt{(-bx+2)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2x}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(5/2)*x^(1/2),x)
```

```
[Out] 1/4*x^(3/2)*(-b*x+2)^(5/2)+5/12*x^(3/2)*(-b*x+2)^(3/2)+5/8*x^(3/2
)*(-b*x+2)^(1/2)-5/8*x^(1/2)*(-b*x+2)^(1/2)/b+5/8/b^(3/2)*((-b*x+
2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2
+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223079, size = 1, normalized size = 0.01

$$\left[\frac{(6\,b^3x^3-34\,b^2x^2+59\,bx-15)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+15\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{24\sqrt{-b}b},\frac{(6\,b^3x^3-34\,b^2x^2+59\,bx-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/24*((6*b^3*x^3 - 34*b^2*x^2 + 59*b*x - 15)*sqrt(-b*x + 2)*sqrt
(-b)*sqrt(x) + 15*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(
-b)))/(sqrt(-b)*b), 1/24*((6*b^3*x^3 - 34*b^2*x^2 + 59*b*x - 15)*
sqrt(-b*x + 2)*sqrt(b)*sqrt(x) - 30*arctan(sqrt(-b*x + 2)/(sqrt(b
)*sqrt(x))))/b^(3/2)]
```

Sympy [A] time = 95.652, size = 255, normalized size = 2.41

$$\begin{cases} \frac{ib^3x^{\frac{9}{2}}}{4\sqrt{bx-2}} - \frac{23ib^2x^{\frac{7}{2}}}{12\sqrt{bx-2}} + \frac{127ibx^{\frac{5}{2}}}{24\sqrt{bx-2}} - \frac{133ix^{\frac{3}{2}}}{24\sqrt{bx-2}} + \frac{5i\sqrt{x}}{4b\sqrt{bx-2}} - \frac{5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{3}{2}}} & \text{for } \frac{|bx|}{2} > 1 \\ -\frac{b^3x^{\frac{9}{2}}}{4\sqrt{-bx+2}} + \frac{23b^2x^{\frac{7}{2}}}{12\sqrt{-bx+2}} - \frac{127bx^{\frac{5}{2}}}{24\sqrt{-bx+2}} + \frac{133x^{\frac{3}{2}}}{24\sqrt{-bx+2}} - \frac{5\sqrt{x}}{4b\sqrt{-bx+2}} + \frac{5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{4b^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(5/2)*x**(1/2),x)
```

```
[Out] Piecewise((I*b**3*x**(9/2)/(4*sqrt(b*x - 2)) - 23*I*b**2*x**(7/2)
/(12*sqrt(b*x - 2)) + 127*I*b*x**(5/2)/(24*sqrt(b*x - 2)) - 133*I
*x**(3/2)/(24*sqrt(b*x - 2)) + 5*I*sqrt(x)/(4*b*sqrt(b*x - 2)) -
5*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(4*b**(3/2)), Abs(b*x)/2 > 1
), (-b**3*x**(9/2)/(4*sqrt(-b*x + 2)) + 23*b**2*x**(7/2)/(12*sqrt
(-b*x + 2)) - 127*b*x**(5/2)/(24*sqrt(-b*x + 2)) + 133*x**(3/2)/(
24*sqrt(-b*x + 2)) - 5*sqrt(x)/(4*b*sqrt(-b*x + 2)) + 5*asin(sqrt
(2)*sqrt(b)*sqrt(x)/2)/(4*b**(3/2)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)*sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.566 $\int \frac{(2-bx)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=82

$$\frac{1}{3}\sqrt{x}(2-bx)^{5/2}+\frac{5}{6}\sqrt{x}(2-bx)^{3/2}+\frac{5}{2}\sqrt{x}\sqrt{2-bx}+\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] (5*Sqrt[x]*Sqrt[2 - b*x])/2 + (5*Sqrt[x]*(2 - b*x)^(3/2))/6 + (Sq
rt[x]*(2 - b*x)^(5/2))/3 + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/
Sqrt[b]
```

Rubi [A] time = 0.058617, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{1}{3}\sqrt{x}(2-bx)^{5/2}+\frac{5}{6}\sqrt{x}(2-bx)^{3/2}+\frac{5}{2}\sqrt{x}\sqrt{2-bx}+\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (5*Sqrt[x]*Sqrt[2 - b*x])/2 + (5*Sqrt[x]*(2 - b*x)^(3/2))/6 + (Sq
rt[x]*(2 - b*x)^(5/2))/3 + (5*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/
Sqrt[b]
```

Rubi in Sympy [A] time = 9.90206, size = 73, normalized size = 0.89

$$\frac{\sqrt{x}\,(-bx+2)^{\frac{5}{2}}}{3}+\frac{5\sqrt{x}\,(-bx+2)^{\frac{3}{2}}}{6}+\frac{5\sqrt{x}\sqrt{-bx+2}}{2}+\frac{5\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] sqrt(x)*(-b*x + 2)**(5/2)/3 + 5*sqrt(x)*(-b*x + 2)**(3/2)/6 + 5*s
qrt(x)*sqrt(-b*x + 2)/2 + 5*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(
b)
```

Mathematica [A] time = 0.0586113, size = 58, normalized size = 0.71

$$\frac{1}{6}\sqrt{x}\sqrt{2-bx}\left(2b^2x^2-13bx+33\right)+\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(5/2)/Sqrt[x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 - b*x]*(33 - 13*b*x + 2*b^2*x^2))/6 + (5*ArcSin[(
Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Maple [A] time = 0.009, size = 91, normalized size = 1.1

$$\frac{1}{3}(-bx+2)^{\frac{5}{2}}\sqrt{x}+\frac{5}{6}(-bx+2)^{\frac{3}{2}}\sqrt{x}+\frac{5}{2}\sqrt{x}\sqrt{-bx+2} \\ +\frac{5}{2}\sqrt{(-bx+2)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2x}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(5/2)/x^(1/2),x)
```

```
[Out] 1/3*(-b*x+2)^(5/2)*x^(1/2)+5/6*(-b*x+2)^(3/2)*x^(1/2)+5/2*x^(1/2)
*(-b*x+2)^(1/2)+5/2*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)/b^(
1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/sqrt(x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227477, size = 1, normalized size = 0.01

$$\left[\frac{\left(2\,b^2x^2-13\,bx+33\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+15\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{6\sqrt{-b}},\frac{\left(2\,b^2x^2-13\,bx+33\right)\sqrt{-bx+2}\sqrt{b}\sqrt{x}}{6\sqrt{b}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/sqrt(x),x, algorithm="fricas")
```

```
[Out] [1/6*((2*b^2*x^2 - 13*b*x + 33)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) +
 15*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/sqrt(-b)
, 1/6*((2*b^2*x^2 - 13*b*x + 33)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) -
 30*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/sqrt(b)]
```

Sympy [A] time = 59.5573, size = 209, normalized size = 2.55

$$\begin{cases} \frac{ib^3x^{\frac{7}{2}}}{3\sqrt{bx-2}} - \frac{17ib^2x^{\frac{5}{2}}}{6\sqrt{bx-2}} + \frac{59ibx^{\frac{3}{2}}}{6\sqrt{bx-2}} - \frac{11i\sqrt{x}}{\sqrt{bx-2}} - \frac{5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -\frac{b^3x^{\frac{7}{2}}}{3\sqrt{-bx+2}} + \frac{17b^2x^{\frac{5}{2}}}{6\sqrt{-bx+2}} - \frac{59bx^{\frac{3}{2}}}{6\sqrt{-bx+2}} + \frac{11\sqrt{x}}{\sqrt{-bx+2}} + \frac{5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] Piecewise((I*b**3*x**(7/2)/(3*sqrt(b*x - 2)) - 17*I*b**2*x**(5/2)
/(6*sqrt(b*x - 2)) + 59*I*b*x**(3/2)/(6*sqrt(b*x - 2)) - 11*I*sqr
t(x)/sqrt(b*x - 2) - 5*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
, Abs(b*x)/2 > 1), (-b**3*x**(7/2)/(3*sqrt(-b*x + 2)) + 17*b**2*x
**(5/2)/(6*sqrt(-b*x + 2)) - 59*b*x**(3/2)/(6*sqrt(-b*x + 2)) + 1
1*sqrt(x)/sqrt(-b*x + 2) + 5*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt
(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/sqrt(x),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.567 $\int \frac{(2-bx)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=82

$$-\frac{2(2-bx)^{5/2}}{\sqrt{x}}-\frac{5}{2}b\sqrt{x}(2-bx)^{3/2}-\frac{15}{2}b\sqrt{x}\sqrt{2-bx}-15\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

```
[Out] (-15*b*Sqrt[x]*Sqrt[2 - b*x])/2 - (5*b*Sqrt[x]*(2 - b*x)^(3/2))/2
 - (2*(2 - b*x)^(5/2))/Sqrt[x] - 15*Sqrt[b]*ArcSin[(Sqrt[b]*Sqrt[
x])/Sqrt[2]]
```

Rubi [A] time = 0.0595271, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{2(2-bx)^{5/2}}{\sqrt{x}}-\frac{5}{2}b\sqrt{x}(2-bx)^{3/2}-\frac{15}{2}b\sqrt{x}\sqrt{2-bx}-15\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(5/2)/x^(3/2),x]
```

```
[Out] (-15*b*Sqrt[x]*Sqrt[2 - b*x])/2 - (5*b*Sqrt[x]*(2 - b*x)^(3/2))/2
 - (2*(2 - b*x)^(5/2))/Sqrt[x] - 15*Sqrt[b]*ArcSin[(Sqrt[b]*Sqrt[
x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 9.78192, size = 78, normalized size = 0.95

$$-15\sqrt{b}\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)-\frac{5b\sqrt{x}\,(-bx+2)^{\frac{3}{2}}}{2}-\frac{15b\sqrt{x}\sqrt{-bx+2}}{2}-\frac{2\,(-bx+2)^{\frac{5}{2}}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(5/2)/x**(3/2),x)
```

```
[Out] -15*sqrt(b)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) - 5*b*sqrt(x)*(-b*x +
 2)**(3/2)/2 - 15*b*sqrt(x)*sqrt(-b*x + 2)/2 - 2*(-b*x + 2)**(5/2
)/sqrt(x)
```

Mathematica [A] time = 0.0501641, size = 57, normalized size = 0.7

$$\frac{\sqrt{2-bx}\left(b^2x^2-9bx-16\right)}{2\sqrt{x}}-15\sqrt{b}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(5/2)/x^(3/2),x]
```

```
[Out] (Sqrt[2 - b*x]*(-16 - 9*b*x + b^2*x^2))/(2*Sqrt[x]) - 15*Sqrt[b]*
ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Maple [A] time = 0.027, size = 106, normalized size = 1.3

$$-\frac{b^3x^3-11\,b^2x^2+2\,bx+32}{2}\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{-x\,(bx-2)}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}-\frac{15}{2}\sqrt{b}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(5/2)/x^(3/2),x)
```

```
[Out] -1/2*(b^3*x^3-11*b^2*x^2+2*b*x+32)/(-x*(b*x-2))^(1/2)*((-b*x+2)*x
)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)-15/2*b^(1/2)*arctan(b^(1/2)*(x-1/b
)/(-b*x^2+2*x)^(1/2))*((-b*x+2)*x)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227175, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{-b}x\log\left(-bx+\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+1\right)+\left(b^2x^2-9\,bx-16\right)\sqrt{-bx+2}\sqrt{x}}{2\,x},\frac{30\sqrt{b}x\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)+\left(b^2x^2-9\,bx-\right.}{2\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(15*sqrt(-b)*x*log(-b*x + sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) +
1) + (b^2*x^2 - 9*b*x - 16)*sqrt(-b*x + 2)*sqrt(x))/x, 1/2*(30*sq
rt(b)*x*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))) + (b^2*x^2 - 9*b
*x - 16)*sqrt(-b*x + 2)*sqrt(x))/x]
```

Sympy [A] time = 76.389, size = 202, normalized size = 2.46

$$\begin{cases} 15i\sqrt{b}\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right) + \frac{ib^3x^{\frac{5}{2}}}{2\sqrt{bx-2}} - \frac{11ib^2x^{\frac{3}{2}}}{2\sqrt{bx-2}} + \frac{ib\sqrt{x}}{\sqrt{bx-2}} + \frac{16i}{\sqrt{x}\sqrt{bx-2}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -15\sqrt{b}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right) - \frac{b^3x^{\frac{5}{2}}}{2\sqrt{-bx+2}} + \frac{11b^2x^{\frac{3}{2}}}{2\sqrt{-bx+2}} - \frac{b\sqrt{x}}{\sqrt{-bx+2}} - \frac{16}{\sqrt{x}\sqrt{-bx+2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(5/2)/x**(3/2),x)
```

```
[Out] Piecewise((15*I*sqrt(b)*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2) + I*b**3
*x**(5/2)/(2*sqrt(b*x - 2)) - 11*I*b**2*x**(3/2)/(2*sqrt(b*x - 2)
) + I*b*sqrt(x)/sqrt(b*x - 2) + 16*I/(sqrt(x)*sqrt(b*x - 2)), Abs
(b*x)/2 > 1), (-15*sqrt(b)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) - b**3
*x**(5/2)/(2*sqrt(-b*x + 2)) + 11*b**2*x**(3/2)/(2*sqrt(-b*x + 2)
) - b*sqrt(x)/sqrt(-b*x + 2) - 16/(sqrt(x)*sqrt(-b*x + 2)), True)
)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.568 $\int \frac{(2-bx)^{5/2}}{x^{5/2}} \, dx$

Optimal. Leaf size=84

$$10b^{3/2}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+5b^2\sqrt{x}\sqrt{2-bx}-\frac{2(2-bx)^{5/2}}{3x^{3/2}}+\frac{10b(2-bx)^{3/2}}{3\sqrt{x}}$$

```
[Out] 5*b^2*Sqrt[x]*Sqrt[2 - b*x] + (10*b*(2 - b*x)^(3/2))/(3*Sqrt[x])
- (2*(2 - b*x)^(5/2))/(3*x^(3/2)) + 10*b^(3/2)*ArcSin[(Sqrt[b]*Sq
rt[x])/Sqrt[2]]
```

Rubi [A] time = 0.061431, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$10b^{3/2}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+5b^2\sqrt{x}\sqrt{2-bx}-\frac{2(2-bx)^{5/2}}{3x^{3/2}}+\frac{10b(2-bx)^{3/2}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(5/2)/x^(5/2),x]
```

```
[Out] 5*b^2*Sqrt[x]*Sqrt[2 - b*x] + (10*b*(2 - b*x)^(3/2))/(3*Sqrt[x])
- (2*(2 - b*x)^(5/2))/(3*x^(3/2)) + 10*b^(3/2)*ArcSin[(Sqrt[b]*Sq
rt[x])/Sqrt[2]]
```

Rubi in Sympy [A] time = 10.0569, size = 78, normalized size = 0.93

$$10b^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)+5b^2\sqrt{x}\sqrt{-bx+2}+\frac{10b\left(-bx+2\right)^{\frac{3}{2}}}{3\sqrt{x}}-\frac{2\left(-bx+2\right)^{\frac{5}{2}}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*x+2)**(5/2)/x**(5/2),x)
```

```
[Out] 10*b**(3/2)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) + 5*b**2*sqrt(x)*sqrt
(-b*x + 2) + 10*b*(-b*x + 2)**(3/2)/(3*sqrt(x)) - 2*(-b*x + 2)**(
5/2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0537578, size = 58, normalized size = 0.69

$$10b^{3/2}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)+\frac{\sqrt{2-bx}\,(3b^2x^2+28bx-8)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(5/2)/x^(5/2),x]
```

```
[Out] (Sqrt[2 - b*x]*(-8 + 28*b*x + 3*b^2*x^2))/(3*x^(3/2)) + 10*b^(3/2
)*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
```

Maple [A] time = 0.03, size = 107, normalized size = 1.3

$$-\frac{3\,b^3x^3+22\,b^2x^2-64\,bx+16}{3}\sqrt{(-bx+2)\,x}x^{-\frac{3}{2}}\frac{1}{\sqrt{-x\,(bx-2)}}\frac{1}{\sqrt{-bx+2}}+5\,\frac{b^{3/2}\sqrt{(-bx+2)\,x}}{\sqrt{x}\sqrt{-bx+2}}\arctan\left(\frac{\sqrt{b}}{\sqrt{-bx^2+2\,x}}\left(x-b^{-1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*x+2)^(5/2)/x^(5/2),x)
```

```
[Out] -1/3*(3*b^3*x^3+22*b^2*x^2-64*b*x+16)/x^(3/2)/(-x*(b*x-2))^(1/2)*
((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)+5*b^(3/2)*arctan(b^(1/2)*(x-1/b
)/(-b*x^2+2*x)^(1/2))*((-b*x+2)*x)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228301, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{-b}bx^2\log\left(-bx-\sqrt{-bx+2}\sqrt{-b}\sqrt{x}+1\right)+\left(3\,b^2x^2+28\,bx-8\right)\sqrt{-bx+2}\sqrt{x}}{3\,x^2},\right.$$
$$\left.-\frac{30\,b^{\frac{3}{2}}x^2\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)-\left(3\,b^2x^2+28\,bx-8\right)\sqrt{-bx+2}\sqrt{x}}{3\,x^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(15*sqrt(-b)*b*x^2*log(-b*x - sqrt(-b*x + 2)*sqrt(-b)*sqrt(x
) + 1) + (3*b^2*x^2 + 28*b*x - 8)*sqrt(-b*x + 2)*sqrt(x))/x^2, -1
/3*(30*b^(3/2)*x^2*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))) - (3*
b^2*x^2 + 28*b*x - 8)*sqrt(-b*x + 2)*sqrt(x))/x^2]
```

Sympy [A] time = 78.0075, size = 223, normalized size = 2.65

$$\begin{cases} b^{\frac{5}{2}}x\sqrt{-1+\frac{2}{bx}}+\frac{28b^{\frac{3}{2}}\sqrt{-1+\frac{2}{bx}}}{3}+5ib^{\frac{3}{2}}\log\left(\frac{1}{bx}\right)-10ib^{\frac{3}{2}}\log\left(\frac{1}{\sqrt{b}\sqrt{x}}\right)+10b^{\frac{3}{2}}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)-\frac{8\sqrt{b}\sqrt{-1+\frac{2}{bx}}}{3x} & \text{for } 2\left|\frac{1}{bx}\right|>1 \\ ib^{\frac{5}{2}}x\sqrt{1-\frac{2}{bx}}+\frac{28ib^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}}{3}+5ib^{\frac{3}{2}}\log\left(\frac{1}{bx}\right)-10ib^{\frac{3}{2}}\log\left(\sqrt{1-\frac{2}{bx}}+1\right)-\frac{8i\sqrt{b}\sqrt{1-\frac{2}{bx}}}{3x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x+2)**(5/2)/x**(5/2),x)
```

```
[Out] Piecewise((b**(5/2)*x*sqrt(-1 + 2/(b*x)) + 28*b**(3/2)*sqrt(-1 +
2/(b*x))/3 + 5*I*b**(3/2)*log(1/(b*x)) - 10*I*b**(3/2)*log(1/(sqr
t(b)*sqrt(x))) + 10*b**(3/2)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2) - 8*
sqrt(b)*sqrt(-1 + 2/(b*x))/(3*x), 2*Abs(1/(b*x)) > 1), (I*b**(5/2
)*x*sqrt(1 - 2/(b*x)) + 28*I*b**(3/2)*sqrt(1 - 2/(b*x))/3 + 5*I*b
**(3/2)*log(1/(b*x)) - 10*I*b**(3/2)*log(sqrt(1 - 2/(b*x)) + 1) -
 8*I*sqrt(b)*sqrt(1 - 2/(b*x))/(3*x), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*x + 2)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.569 $\int \frac{x^{5/2}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=101

$$-\frac{5a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{7/2}}+\frac{5a^2\sqrt{x}\sqrt{a+bx}}{8b^3}-\frac{5ax^{3/2}\sqrt{a+bx}}{12b^2}+\frac{x^{5/2}\sqrt{a+bx}}{3b}$$

```
[Out] (5*a^2*Sqrt[x]*Sqrt[a + b*x])/(8*b^3) - (5*a*x^(3/2)*Sqrt[a + b*x
])/(12*b^2) + (x^(5/2)*Sqrt[a + b*x])/(3*b) - (5*a^3*ArcTanh[(Sqr
t[b]*Sqrt[x])/Sqrt[a + b*x]])/(8*b^(7/2))
```

Rubi [A] time = 0.0749691, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5a^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{7/2}}+\frac{5a^2\sqrt{x}\sqrt{a+bx}}{8b^3}-\frac{5ax^{3/2}\sqrt{a+bx}}{12b^2}+\frac{x^{5/2}\sqrt{a+bx}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/Sqrt[a + b*x],x]
```

```
[Out] (5*a^2*Sqrt[x]*Sqrt[a + b*x])/(8*b^3) - (5*a*x^(3/2)*Sqrt[a + b*x
])/(12*b^2) + (x^(5/2)*Sqrt[a + b*x])/(3*b) - (5*a^3*ArcTanh[(Sqr
t[b]*Sqrt[x])/Sqrt[a + b*x]])/(8*b^(7/2))
```

Rubi in Sympy [A] time = 11.2735, size = 94, normalized size = 0.93

$$-\frac{5a^3\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{8b^{\frac{7}{2}}}+\frac{5a^2\sqrt{x}\sqrt{a+bx}}{8b^3}-\frac{5ax^{\frac{3}{2}}\sqrt{a+bx}}{12b^2}+\frac{x^{\frac{5}{2}}\sqrt{a+bx}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+a)**(1/2),x)
```

```
[Out] -5*a**3*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(8*b**(7/2)) + 5*a**
2*sqrt(x)*sqrt(a + b*x)/(8*b**3) - 5*a*x**(3/2)*sqrt(a + b*x)/(12
*b**2) + x**(5/2)*sqrt(a + b*x)/(3*b)
```

Mathematica [A] time = 0.0765191, size = 77, normalized size = 0.76

$$\frac{\sqrt{x}\sqrt{a+bx}\left(15a^2-10abx+8b^2x^2\right)}{24b^3}-\frac{5a^3\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{8b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[a + b*x]*(15*a^2 - 10*a*b*x + 8*b^2*x^2))/(24*b^3)
- (5*a^3*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(8*b^(7/2))
```

Maple [A] time = 0.009, size = 102, normalized size = 1.

$$\frac{1}{3\,b}x^{\frac{5}{2}}\sqrt{bx+a}-\frac{5\,a}{12\,b^2}x^{\frac{3}{2}}\sqrt{bx+a}+\frac{5\,a^2}{8\,b^3}\sqrt{x}\sqrt{bx+a}-\frac{5\,a^3}{16}\sqrt{x\,(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+a)^(1/2),x)
```

```
[Out] 1/3*x^(5/2)*(b*x+a)^(1/2)/b-5/12*a*x^(3/2)*(b*x+a)^(1/2)/b^2+5/8*
a^2*x^(1/2)*(b*x+a)^(1/2)/b^3-5/16*a^3/b^(7/2)*(x*(b*x+a))^(1/2)/
x^(1/2)/(b*x+a)^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.245577, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^3\log\left(-2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(8\,b^2x^2-10\,abx+15\,a^2\right)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{48\,b^{\frac{7}{2}}},\right.$$
$$\left.-\frac{15\,a^3\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(8\,b^2x^2-10\,abx+15\,a^2\right)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{24\,\sqrt{-b}b^3}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/48*(15*a^3*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b
)) + 2*(8*b^2*x^2 - 10*a*b*x + 15*a^2)*sqrt(b*x + a)*sqrt(b)*sqrt
(x))/b^(7/2), -1/24*(15*a^3*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt
(x))) - (8*b^2*x^2 - 10*a*b*x + 15*a^2)*sqrt(b*x + a)*sqrt(-b)*sq
rt(x))/(sqrt(-b)*b^3)]
```

Sympy [A] time = 70.1071, size = 128, normalized size = 1.27

$$\frac{5a^{\frac{5}{2}}\sqrt{x}}{8b^3\sqrt{1+\frac{bx}{a}}}+\frac{5a^{\frac{3}{2}}x^{\frac{3}{2}}}{24b^2\sqrt{1+\frac{bx}{a}}}-\frac{\sqrt{a}x^{\frac{5}{2}}}{12b\sqrt{1+\frac{bx}{a}}}-\frac{5a^3\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{7}{2}}}+\frac{x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+a)**(1/2),x)
```

```
[Out] 5*a**(5/2)*sqrt(x)/(8*b**3*sqrt(1 + b*x/a)) + 5*a**(3/2)*x**(3/2)
/(24*b**2*sqrt(1 + b*x/a)) - sqrt(a)*x**(5/2)/(12*b*sqrt(1 + b*x/
a)) - 5*a**3*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(7/2)) + x**(7/
2)/(3*sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 12.4633, size = 4, normalized size = 0.04

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.570 $\int \frac{x^{3/2}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=77

$$\frac{3a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{5/2}}-\frac{3a\sqrt{x}\sqrt{a+bx}}{4b^2}+\frac{x^{3/2}\sqrt{a+bx}}{2b}$$

```
[Out] (-3*a*Sqrt[x]*Sqrt[a + b*x])/(4*b^2) + (x^(3/2)*Sqrt[a + b*x])/(2
*b) + (3*a^2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(4*b^(5/2)
)
```

Rubi [A] time = 0.0540794, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{5/2}}-\frac{3a\sqrt{x}\sqrt{a+bx}}{4b^2}+\frac{x^{3/2}\sqrt{a+bx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/Sqrt[a + b*x],x]
```

```
[Out] (-3*a*Sqrt[x]*Sqrt[a + b*x])/(4*b^2) + (x^(3/2)*Sqrt[a + b*x])/(2
*b) + (3*a^2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/(4*b^(5/2)
)
```

Rubi in Sympy [A] time = 8.02062, size = 70, normalized size = 0.91

$$\frac{3a^2\operatorname{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{4b^{\frac{5}{2}}}-\frac{3a\sqrt{x}\sqrt{a+bx}}{4b^2}+\frac{x^{\frac{3}{2}}\sqrt{a+bx}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+a)**(1/2),x)
```

```
[Out] 3*a**2*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/(4*b**(5/2)) - 3*a*
sqrt(x)*sqrt(a + b*x)/(4*b**2) + x**(3/2)*sqrt(a + b*x)/(2*b)
```

Mathematica [A] time = 0.041313, size = 67, normalized size = 0.87

$$\frac{3a^2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)+\sqrt{b}\sqrt{x}\sqrt{a+bx}(2bx-3a)}{4b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[b]*Sqrt[x]*Sqrt[a + b*x]*(-3*a + 2*b*x) + 3*a^2*Log[b*Sqrt[
x] + Sqrt[b]*Sqrt[a + b*x]])/(4*b^(5/2))
```

Maple [A] time = 0.007, size = 84, normalized size = 1.1

$$\frac{1}{2b}x^{\frac{3}{2}}\sqrt{bx+a}-\frac{3a}{4b^2}\sqrt{x}\sqrt{bx+a}+\frac{3a^2}{8}\sqrt{x(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+a)^(1/2),x)
```

```
[Out] 1/2*x^(3/2)*(b*x+a)^(1/2)/b-3/4*a*x^(1/2)*(b*x+a)^(1/2)/b^2+3/8*a
^2/b^(5/2)*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)*ln((1/2*a+b*x)
/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226435, size = 1, normalized size = 0.01

$$\left[\frac{3a^2\log\left(2\sqrt{bx+a}b\sqrt{x}+(2bx+a)\sqrt{b}\right)+2(2bx-3a)\sqrt{bx+a}\sqrt{b}\sqrt{x}}{8b^{\frac{5}{2}}},\frac{3a^2\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)+(2bx-3a)\sqrt{bx+a}\sqrt{-b}}{4\sqrt{-b}b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/8*(3*a^2*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b))
+ 2*(2*b*x - 3*a)*sqrt(b*x + a)*sqrt(b)*sqrt(x))/b^(5/2), 1/4*(3*
a^2*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) + (2*b*x - 3*a)*sq
rt(b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b^2)]
```

Sympy [A] time = 17.3327, size = 100, normalized size = 1.3

$$-\frac{3a^{\frac{3}{2}}\sqrt{x}}{4b^2\sqrt{1+\frac{bx}{a}}}-\frac{\sqrt{a}x^{\frac{3}{2}}}{4b\sqrt{1+\frac{bx}{a}}}+\frac{3a^2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{5}{2}}}+\frac{x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+a)**(1/2),x)
```

```
[Out] -3*a**(3/2)*sqrt(x)/(4*b**2*sqrt(1 + b*x/a)) - sqrt(a)*x**(3/2)/(
4*b*sqrt(1 + b*x/a)) + 3*a**2*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(4*b
**(5/2)) + x**(5/2)/(2*sqrt(a)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 12.7125, size = 4, normalized size = 0.05

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.571 $\int \frac{\sqrt{x}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=48

$$\frac{\sqrt{x}\sqrt{a+bx}}{b}-\frac{a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{3/2}}$$

```
[Out] (Sqrt[x]*Sqrt[a + b*x])/b - (a*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a +
 b*x]])/b^(3/2)
```

Rubi [A] time = 0.0353076, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\sqrt{x}\sqrt{a+bx}}{b}-\frac{a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[a + b*x])/b - (a*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a +
 b*x]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.1483, size = 41, normalized size = 0.85

$$-\frac{a\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{b^{\frac{3}{2}}}+\frac{\sqrt{x}\sqrt{a+bx}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+a)**(1/2),x)
```

```
[Out] -a*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/b**(3/2) + sqrt(x)*sqrt
(a + b*x)/b
```

Mathematica [A] time = 0.0303264, size = 51, normalized size = 1.06

$$\frac{\sqrt{x}\sqrt{a+bx}}{b}-\frac{a\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[a + b*x])/b - (a*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b
*x]])/b^(3/2)
```

Maple [A]   time = 0.007, size = 65, normalized size = 1.4

$$\frac{1}{b}\sqrt{x}\sqrt{bx+a}-\frac{a}{2}\sqrt{x\,(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+a)^(1/2),x)
```

```
[Out] x^(1/2)*(b*x+a)^(1/2)/b-1/2*a/b^(3/2)*(x*(b*x+a))^(1/2)/x^(1/2)/(
b*x+a)^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.224826, size = 1, normalized size = 0.02

$$\left[\frac{a\log\left(-2\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\sqrt{bx+a}\sqrt{b}\sqrt{x}}{2\,b^{\frac{3}{2}}},-\frac{a\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\sqrt{bx+a}\sqrt{-b}\sqrt{x}}{\sqrt{-b}b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/2*(a*log(-2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b)) + 2
*sqrt(b*x + a)*sqrt(b)*sqrt(x))/b^(3/2), -(a*arctan(sqrt(b*x + a)
```

```
*sqrt(-b)/(b*sqrt(x))) - sqrt(b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b
)*b)]
```

Sympy [A] time = 8.22372, size = 44, normalized size = 0.92

$$\frac{\sqrt{a}\sqrt{x}\sqrt{1+\frac{bx}{a}}}{b}-\frac{a\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+a)**(1/2),x)
```

```
[Out] sqrt(a)*sqrt(x)*sqrt(1 + b*x/a)/b - a*asinh(sqrt(b)*sqrt(x)/sqrt(
a))/b**(3/2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.572 $\int \frac{1}{\sqrt{x}\sqrt{a+bx}}\,dx$

Optimal. Leaf size=28

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{\sqrt{b}}$$

```
[Out] (2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/Sqrt[b]
```

Rubi [A] time = 0.0221095, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*Sqrt[a + b*x]),x]

[Out] (2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/Sqrt[b]
```

Rubi in Sympy [A] time = 3.41655, size = 26, normalized size = 0.93

$$\frac{2\,\text{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2)/(b*x+a)**(1/2),x)

[Out] 2*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/sqrt(b)
```

Mathematica [A] time = 0.0103403, size = 31, normalized size = 1.11

$$\frac{2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*Sqrt[a + b*x]),x]
```

```
[Out] (2*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/Sqrt[b]
```

Maple [B] time = 0.006, size = 48, normalized size = 1.7

$$1\sqrt{x\,(bx+a)}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2)/(b*x+a)^(1/2),x)
```

```
[Out] (x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)*ln((1/2*a+b*x)/b^(1/2)+(b
*x^2+a*x)^(1/2))/b^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221275, size = 1, normalized size = 0.04

$$\left[\frac{\log\left(2\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)}{\sqrt{b}},\ \frac{2\,\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)}{\sqrt{-b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x + a)*sqrt(b))/sqrt(b), 2*
arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x)))/sqrt(-b)]
```

Sympy [A] time = 4.01145, size = 22, normalized size = 0.79

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2)/(b*x+a)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(b)*sqrt(x)/sqrt(a))/sqrt(b)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(x)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.573 $\int \frac{1}{x^{3/2}\sqrt{a+bx}}\,dx$

Optimal. Leaf size=19

$$-\frac{2\sqrt{a+bx}}{a\sqrt{x}}$$

```
[Out] (-2*Sqrt[a + b*x])/(a*Sqrt[x])
```

Rubi [A] time = 0.01252, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2\sqrt{a+bx}}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*Sqrt[a + b*x]),x]

[Out] (-2*Sqrt[a + b*x])/(a*Sqrt[x])
```

Rubi in Sympy [A] time = 2.36496, size = 17, normalized size = 0.89

$$-\frac{2\sqrt{a+bx}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+a)**(1/2),x)

[Out] -2*sqrt(a + b*x)/(a*sqrt(x))
```

Mathematica [A] time = 0.0139484, size = 19, normalized size = 1.

$$-\frac{2\sqrt{a+bx}}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*Sqrt[a + b*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x])/(a*Sqrt[x])
```

Maple [A] time = 0.006, size = 16, normalized size = 0.8

$$-2\frac{\sqrt{bx+a}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+a)^(1/2),x)
```

```
[Out] -2*(b*x+a)^(1/2)/a/x^(1/2)
```

Maxima [A] time = 1.33884, size = 20, normalized size = 1.05

$$-\frac{2\sqrt{bx+a}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] -2*sqrt(b*x + a)/(a*sqrt(x))
```

Fricas [A] time = 0.211005, size = 20, normalized size = 1.05

$$-\frac{2\sqrt{bx+a}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] -2*sqrt(b*x + a)/(a*sqrt(x))
```

Sympy [A] time = 4.60177, size = 19, normalized size = 1.

$$-\frac{2\sqrt{b}\sqrt{\frac{a}{bx}+1}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(b)*sqrt(a/(b*x) + 1)/a
```

GIAC/XCAS [A] time = 0.222354, size = 45, normalized size = 2.37

$$-\frac{2\sqrt{bx+a}b^2}{\sqrt{(bx+a)b-ab}a|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(b*x + a)*b^2/(sqrt((b*x + a)*b - a*b)*a*abs(b))
```

3.574 $\int \frac{1}{x^{5/2}\sqrt{a+bx}}\,dx$

Optimal. Leaf size=44

$$\frac{4b\sqrt{a+bx}}{3a^2\sqrt{x}}-\frac{2\sqrt{a+bx}}{3ax^{3/2}}$$

```
[Out] (-2*Sqrt[a + b*x])/(3*a*x^(3/2)) + (4*b*Sqrt[a + b*x])/(3*a^2*Sqr
t[x])
```

Rubi [A] time = 0.0326683, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{4b\sqrt{a+bx}}{3a^2\sqrt{x}}-\frac{2\sqrt{a+bx}}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*Sqrt[a + b*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x])/(3*a*x^(3/2)) + (4*b*Sqrt[a + b*x])/(3*a^2*Sqr
t[x])
```

Rubi in Sympy [A] time = 3.82194, size = 39, normalized size = 0.89

$$-\frac{2\sqrt{a+bx}}{3ax^{\frac{3}{2}}}+\frac{4b\sqrt{a+bx}}{3a^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(a + b*x)/(3*a*x**(3/2)) + 4*b*sqrt(a + b*x)/(3*a**2*sqrt(
x))
```

Mathematica [A] time = 0.0192345, size = 27, normalized size = 0.61

$$-\frac{2(a-2bx)\sqrt{a+bx}}{3a^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*Sqrt[a + b*x]),x]

[Out] (-2*(a - 2*b*x)*Sqrt[a + b*x])/(3*a^2*x^(3/2))
```

Maple [A] time = 0.007, size = 22, normalized size = 0.5

$$-\frac{-4\,bx+2\,a}{3\,a^{2}}\sqrt{bx+a}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+a)^(1/2),x)

[Out] -2/3*(b*x+a)^(1/2)*(-2*b*x+a)/x^(3/2)/a^2
```

Maxima [A] time = 1.34569, size = 42, normalized size = 0.95

$$\frac{2\left(\frac{3\sqrt{bx+a}b}{\sqrt{x}}-\frac{(bx+a)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\right)}{3\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(5/2)),x, algorithm="maxima")

[Out] 2/3*(3*sqrt(b*x + a)*b/sqrt(x) - (b*x + a)^(3/2)/x^(3/2))/a^2
```

Fricas [A] time = 0.210812, size = 31, normalized size = 0.7

$$\frac{2\,(2\,bx-a)\sqrt{bx+a}}{3\,a^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(5/2)),x, algorithm="fricas")

[Out] 2/3*(2*b*x - a)*sqrt(b*x + a)/(a^2*x^(3/2))
```

Sympy [A] time = 24.1875, size = 42, normalized size = 0.95

$$-\frac{2\sqrt{b}\sqrt{\frac{a}{bx}+1}}{3ax}+\frac{4b^{\frac{3}{2}}\sqrt{\frac{a}{bx}+1}}{3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(b)*sqrt(a/(b*x) + 1)/(3*a*x) + 4*b**(3/2)*sqrt(a/(b*x) +
1)/(3*a**2)
```

GIAC/XCAS [A] time = 0.208372, size = 68, normalized size = 1.55

$$-\frac{\sqrt{bx+a}b\left(\frac{2(bx+a)}{a^2b^3}-\frac{3}{ab^3}\right)}{24\left((bx+a)b-ab\right)^{\frac{3}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(b*x + a)*b*(2*(b*x + a)/(a^2*b^3) - 3/(a*b^3))/(((b*x
+ a)*b - a*b)^(3/2)*abs(b))
```

3.575 $\int \frac{1}{x^{7/2}\sqrt{a+bx}}\,dx$

Optimal. Leaf size=68

$$-\frac{16b^2\sqrt{a+bx}}{15a^3\sqrt{x}}+\frac{8b\sqrt{a+bx}}{15a^2x^{3/2}}-\frac{2\sqrt{a+bx}}{5ax^{5/2}}$$

```
[Out] (-2*Sqrt[a + b*x])/(5*a*x^(5/2)) + (8*b*Sqrt[a + b*x])/(15*a^2*x^
(3/2)) - (16*b^2*Sqrt[a + b*x])/(15*a^3*Sqrt[x])
```

Rubi [A] time = 0.0482448, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$-\frac{16b^2\sqrt{a+bx}}{15a^3\sqrt{x}}+\frac{8b\sqrt{a+bx}}{15a^2x^{3/2}}-\frac{2\sqrt{a+bx}}{5ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(7/2)*Sqrt[a + b*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x])/(5*a*x^(5/2)) + (8*b*Sqrt[a + b*x])/(15*a^2*x^
(3/2)) - (16*b^2*Sqrt[a + b*x])/(15*a^3*Sqrt[x])
```

Rubi in Sympy [A] time = 6.09263, size = 63, normalized size = 0.93

$$-\frac{2\sqrt{a+bx}}{5ax^{\frac{5}{2}}}+\frac{8b\sqrt{a+bx}}{15a^2x^{\frac{3}{2}}}-\frac{16b^2\sqrt{a+bx}}{15a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(7/2)/(b*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(a + b*x)/(5*a*x**(5/2)) + 8*b*sqrt(a + b*x)/(15*a**2*x**(
3/2)) - 16*b**2*sqrt(a + b*x)/(15*a**3*sqrt(x))
```

Mathematica [A] time = 0.0238202, size = 40, normalized size = 0.59

$$-\frac{2\sqrt{a+bx}\left(3a^2-4abx+8b^2x^2\right)}{15a^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(7/2)*Sqrt[a + b*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x]*(3*a^2 - 4*a*b*x + 8*b^2*x^2))/(15*a^3*x^(5/2))
```

Maple [A] time = 0.007, size = 35, normalized size = 0.5

$$-\frac{16\,b^2x^2-8\,abx+6\,a^2}{15\,a^3}\sqrt{bx+a}x^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(7/2)/(b*x+a)^(1/2),x)
```

```
[Out] -2/15*(b*x+a)^(1/2)*(8*b^2*x^2-4*a*b*x+3*a^2)/x^(5/2)/a^3
```

Maxima [A] time = 1.34328, size = 62, normalized size = 0.91

$$-\frac{2\left(\frac{15\sqrt{bx+a}b^2}{\sqrt{x}}-\frac{10\,(bx+a)^{\frac{3}{2}}\,b}{x^{\frac{3}{2}}}+\frac{3\,(bx+a)^{\frac{5}{2}}}{x^{\frac{5}{2}}}\right)}{15\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(7/2)),x, algorithm="maxima")
```

```
[Out] -2/15*(15*sqrt(b*x + a)*b^2/sqrt(x) - 10*(b*x + a)^(3/2)*b/x^(3/2
) + 3*(b*x + a)^(5/2)/x^(5/2))/a^3
```

Fricas [A] time = 0.215624, size = 46, normalized size = 0.68

$$-\frac{2\left(8\,b^2x^2-4\,abx+3\,a^2\right)\sqrt{bx+a}}{15\,a^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] -2/15*(8*b^2*x^2 - 4*a*b*x + 3*a^2)*sqrt(b*x + a)/(a^3*x^(5/2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(7/2)/(b*x+a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.212583, size = 89, normalized size = 1.31

$$\frac{\sqrt{bx+a}\left(4\,(bx+a)\left(\frac{2\,(bx+a)}{a^3b^4}-\frac{5}{a^2b^4}\right)+\frac{15}{ab^4}\right)b}{480\,((bx+a)b-ab)^{\frac{5}{2}}\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(7/2)),x, algorithm="giac")
```

```
[Out] 1/480*sqrt(b*x + a)*(4*(b*x + a)*(2*(b*x + a)/(a^3*b^4) - 5/(a^2*
b^4)) + 15/(a*b^4))*b/(((b*x + a)*b - a*b)^(5/2)*abs(b))
```

3.576 $\int \frac{1}{x^{9/2}\sqrt{a+bx}}\,dx$

Optimal. Leaf size=92

$$\frac{32b^3\sqrt{a+bx}}{35a^4\sqrt{x}}-\frac{16b^2\sqrt{a+bx}}{35a^3x^{3/2}}+\frac{12b\sqrt{a+bx}}{35a^2x^{5/2}}-\frac{2\sqrt{a+bx}}{7ax^{7/2}}$$

```
[Out] (-2*Sqrt[a + b*x])/(7*a*x^(7/2)) + (12*b*Sqrt[a + b*x])/(35*a^2*x
^(5/2)) - (16*b^2*Sqrt[a + b*x])/(35*a^3*x^(3/2)) + (32*b^3*Sqrt[
a + b*x])/(35*a^4*Sqrt[x])
```

Rubi [A] time = 0.0686943, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{32b^3\sqrt{a+bx}}{35a^4\sqrt{x}}-\frac{16b^2\sqrt{a+bx}}{35a^3x^{3/2}}+\frac{12b\sqrt{a+bx}}{35a^2x^{5/2}}-\frac{2\sqrt{a+bx}}{7ax^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(9/2)*Sqrt[a + b*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x])/(7*a*x^(7/2)) + (12*b*Sqrt[a + b*x])/(35*a^2*x
^(5/2)) - (16*b^2*Sqrt[a + b*x])/(35*a^3*x^(3/2)) + (32*b^3*Sqrt[
a + b*x])/(35*a^4*Sqrt[x])
```

Rubi in Sympy [A] time = 9.33687, size = 87, normalized size = 0.95

$$-\frac{2\sqrt{a+bx}}{7ax^{\frac{7}{2}}}+\frac{12b\sqrt{a+bx}}{35a^2x^{\frac{5}{2}}}-\frac{16b^2\sqrt{a+bx}}{35a^3x^{\frac{3}{2}}}+\frac{32b^3\sqrt{a+bx}}{35a^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(9/2)/(b*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(a + b*x)/(7*a*x**(7/2)) + 12*b*sqrt(a + b*x)/(35*a**2*x**
(5/2)) - 16*b**2*sqrt(a + b*x)/(35*a**3*x**(3/2)) + 32*b**3*sqrt(
a + b*x)/(35*a**4*sqrt(x))
```

Mathematica [A] time = 0.0281607, size = 51, normalized size = 0.55

$$-\frac{2\sqrt{a+bx}\left(5a^3-6a^2bx+8ab^2x^2-16b^3x^3\right)}{35a^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(9/2)*Sqrt[a + b*x]),x]
```

```
[Out] (-2*Sqrt[a + b*x]*(5*a^3 - 6*a^2*b*x + 8*a*b^2*x^2 - 16*b^3*x^3))
/(35*a^4*x^(7/2))
```

Maple [A] time = 0.007, size = 46, normalized size = 0.5

$$-\frac{-32\,b^{3}x^{3}+16\,ab^{2}x^{2}-12\,a^{2}bx+10\,a^{3}}{35\,a^{4}}\sqrt{bx+a}x^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(9/2)/(b*x+a)^(1/2),x)
```

```
[Out] -2/35*(b*x+a)^(1/2)*(-16*b^3*x^3+8*a*b^2*x^2-6*a^2*b*x+5*a^3)/x^(
7/2)/a^4
```

Maxima [A] time = 1.34327, size = 82, normalized size = 0.89

$$\frac{2\left(\frac{35\sqrt{bx+a}b^{3}}{\sqrt{x}}-\frac{35\,(bx+a)^{\frac{3}{2}}b^{2}}{x^{\frac{3}{2}}}+\frac{21\,(bx+a)^{\frac{5}{2}}b}{x^{\frac{5}{2}}}-\frac{5\,(bx+a)^{\frac{7}{2}}}{x^{\frac{7}{2}}}\right)}{35\,a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(9/2)),x, algorithm="maxima")
```

```
[Out] 2/35*(35*sqrt(b*x + a)*b^3/sqrt(x) - 35*(b*x + a)^(3/2)*b^2/x^(3/
2) + 21*(b*x + a)^(5/2)*b/x^(5/2) - 5*(b*x + a)^(7/2)/x^(7/2))/a^
4
```

Fricas [A] time = 0.233639, size = 61, normalized size = 0.66

$$\frac{2\left(16\,b^{3}x^{3}-8\,ab^{2}x^{2}+6\,a^{2}bx-5\,a^{3}\right)\sqrt{bx+a}}{35\,a^{4}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(9/2)),x, algorithm="fricas")
```

```
[Out] 2/35*(16*b^3*x^3 - 8*a*b^2*x^2 + 6*a^2*b*x - 5*a^3)*sqrt(b*x + a)
/(a^4*x^(7/2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(9/2)/(b*x+a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.212779, size = 111, normalized size = 1.21

$$-\frac{\left(2\,(bx+a)\left(4\,(bx+a)\left(\frac{2\,(bx+a)}{a^4b^5}-\frac{7}{a^3b^5}\right)+\frac{35}{a^2b^5}\right)-\frac{35}{ab^5}\right)\sqrt{bx+a}b}{13440\,((bx+a)b-ab)^{\frac{7}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*x^(9/2)),x, algorithm="giac")
```

```
[Out] -1/13440*(2*(b*x + a)*(4*(b*x + a)*(2*(b*x + a)/(a^4*b^5) - 7/(a^
3*b^5)) + 35/(a^2*b^5)) - 35/(a*b^5))*sqrt(b*x + a)*b/(((b*x + a)
*b - a*b)^(7/2)*abs(b))
```

3.577 $\int \frac{x^{5/2}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{15a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{7/2}}-\frac{15a\sqrt{x}\sqrt{a+bx}}{4b^3}+\frac{5x^{3/2}\sqrt{a+bx}}{2b^2}-\frac{2x^{5/2}}{b\sqrt{a+bx}}$$

```
[Out] (-2*x^(5/2))/(b*Sqrt[a + b*x]) - (15*a*Sqrt[x]*Sqrt[a + b*x])/(4*
b^3) + (5*x^(3/2)*Sqrt[a + b*x])/(2*b^2) + (15*a^2*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[a + b*x]])/(4*b^(7/2))
```

Rubi [A] time = 0.0784013, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{15a^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{7/2}}-\frac{15a\sqrt{x}\sqrt{a+bx}}{4b^3}+\frac{5x^{3/2}\sqrt{a+bx}}{2b^2}-\frac{2x^{5/2}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*x^(5/2))/(b*Sqrt[a + b*x]) - (15*a*Sqrt[x]*Sqrt[a + b*x])/(4*
b^3) + (5*x^(3/2)*Sqrt[a + b*x])/(2*b^2) + (15*a^2*ArcTanh[(Sqrt[
b]*Sqrt[x])/Sqrt[a + b*x]])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 11.6284, size = 90, normalized size = 0.94

$$\frac{15a^2\,\text{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{4b^{\frac{7}{2}}}-\frac{15a\sqrt{x}\sqrt{a+bx}}{4b^3}-\frac{2x^{\frac{5}{2}}}{b\sqrt{a+bx}}+\frac{5x^{\frac{3}{2}}\sqrt{a+bx}}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+a)**(3/2),x)
```

```
[Out] 15*a**2*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/(4*b**(7/2)) - 15*a*
sqrt(x)*sqrt(a + b*x)/(4*b**3) - 2*x**(5/2)/(b*sqrt(a + b*x)) + 5
*x**(3/2)*sqrt(a + b*x)/(2*b**2)
```

Mathematica [A] time = 0.0979718, size = 77, normalized size = 0.8

$$\frac{15a^2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{4b^{7/2}}+\frac{\sqrt{x}\left(-15a^2-5abx+2b^2x^2\right)}{4b^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*(-15*a^2 - 5*a*b*x + 2*b^2*x^2))/(4*b^3*Sqrt[a + b*x]) +
 (15*a^2*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/(4*b^(7/2))
```

Maple [A] time = 0.069, size = 119, normalized size = 1.2

$$-\frac{-2\,bx+7\,a}{4\,b^3}\sqrt{x}\sqrt{bx+a}$$
$$+1\left(\frac{15\,a^2}{8}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{7}{2}}-2\,\frac{a^2}{b^4}\sqrt{b\left(x+\frac{a}{b}\right)^2-\left(x+\frac{a}{b}\right)a}\left(x+\frac{a}{b}\right)^{-1}\right)\sqrt{x\,(bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+a)^(3/2),x)
```

```
[Out] -1/4*(-2*b*x+7*a)*x^(1/2)*(b*x+a)^(1/2)/b^3+(15/8/b^(7/2)*a^2*ln(
(1/2*a+b*x)/b^(1/2)+(b*x^2+a*x)^(1/2))-2/b^4*a^2/(x+a/b)*(b*(x+a/
b)^2-(x+a/b)*a)^(1/2))*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.245837, size = 1, normalized size = 0.01

$$\left[\frac{15\,\sqrt{bx+a}a^2\sqrt{x}\log\left(2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)+2\left(2\,b^2x^3-5\,abx^2-15\,a^2x\right)\sqrt{b}}{8\,\sqrt{bx+a}b^{\frac{7}{2}}\sqrt{x}},\frac{15\,\sqrt{bx+a}a^2\sqrt{x}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-}}{b\sqrt{x}}\right.}{4\,\sqrt{bx+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*(15*sqrt(b*x + a)*a^2*sqrt(x)*log(2*sqrt(b*x + a)*b*sqrt(x)
+ (2*b*x + a)*sqrt(b)) + 2*(2*b^2*x^3 - 5*a*b*x^2 - 15*a^2*x)*sqr
t(b))/(sqrt(b*x + a)*b^(7/2)*sqrt(x)), 1/4*(15*sqrt(b*x + a)*a^2*
sqrt(x)*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) + (2*b^2*x^3 -
 5*a*b*x^2 - 15*a^2*x)*sqrt(-b))/(sqrt(b*x + a)*sqrt(-b)*b^3*sqrt
(x))]
```

Sympy [A] time = 84.9262, size = 105, normalized size = 1.09

$$-\frac{15a^{\frac{3}{2}}\sqrt{x}}{4b^3\sqrt{1+\frac{bx}{a}}}-\frac{5\sqrt{a}x^{\frac{3}{2}}}{4b^2\sqrt{1+\frac{bx}{a}}}+\frac{15a^2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{7}{2}}}+\frac{x^{\frac{5}{2}}}{2\sqrt{a}b\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+a)**(3/2),x)
```

```
[Out] -15*a**(3/2)*sqrt(x)/(4*b**3*sqrt(1 + b*x/a)) - 5*sqrt(a)*x**(3/2
)/(4*b**2*sqrt(1 + b*x/a)) + 15*a**2*asinh(sqrt(b)*sqrt(x)/sqrt(a
))/(4*b**(7/2)) + x**(5/2)/(2*sqrt(a)*b*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 0.221134, size = 177, normalized size = 1.84

$$\frac{\left(2\sqrt{(bx+a)b-ab}\sqrt{bx+a}\left(\frac{2(bx+a)}{b^3}-\frac{9a}{b^3}\right)-\frac{32a^3}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab\right)b^{\frac{3}{2}}}-\frac{15a^2\ln\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2\right)}{b^{\frac{5}{2}}}\right)|b|}{8b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/8*(2*sqrt((b*x + a)*b - a*b)*sqrt(b*x + a)*(2*(b*x + a)/b^3 - 9
*a/b^3) - 32*a^3/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*
b))^2 + a*b)*b^(3/2)) - 15*a^2*ln((sqrt(b*x + a)*sqrt(b) - sqrt((
b*x + a)*b - a*b))^2)/b^(5/2))*abs(b)/b^2
```

3.578 $\int \frac{x^{3/2}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{3a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{a+bx}}{b^2}-\frac{2x^{3/2}}{b\sqrt{a+bx}}$$

```
[Out] (-2*x^(3/2))/(b*Sqrt[a + b*x]) + (3*Sqrt[x]*Sqrt[a + b*x])/b^2 -
(3*a*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/b^(5/2)
```

Rubi [A] time = 0.0530922, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{3a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{a+bx}}{b^2}-\frac{2x^{3/2}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*x^(3/2))/(b*Sqrt[a + b*x]) + (3*Sqrt[x]*Sqrt[a + b*x])/b^2 -
(3*a*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/b^(5/2)
```

Rubi in Sympy [A] time = 7.89946, size = 63, normalized size = 0.93

$$-\frac{3a\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{\frac{5}{2}}}-\frac{2x^{\frac{3}{2}}}{b\sqrt{a+bx}}+\frac{3\sqrt{x}\sqrt{a+bx}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+a)**(3/2),x)
```

```
[Out] -3*a*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/b**(5/2) - 2*x**(3/2)/(
b*sqrt(a + b*x)) + 3*sqrt(x)*sqrt(a + b*x)/b**2
```

Mathematica [A] time = 0.0745807, size = 58, normalized size = 0.85

$$\frac{\sqrt{x}(3a+bx)}{b^2\sqrt{a+bx}}-\frac{3a\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*(3*a + b*x))/(b^2*Sqrt[a + b*x]) - (3*a*Log[b*Sqrt[x] +
Sqrt[b]*Sqrt[a + b*x]])/b^(5/2)
```

Maple [B] time = 0.037, size = 106, normalized size = 1.6

$$\frac{1}{b^2}\sqrt{x}\sqrt{bx+a}$$
$$+1\left(-\frac{3a}{2}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{5}{2}}+2\frac{a}{b^3}\sqrt{b\left(x+\frac{a}{b}\right)^2-\left(x+\frac{a}{b}\right)a}\left(x+\frac{a}{b}\right)^{-1}\right)\sqrt{x\left(bx+a\right)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+a)^(3/2),x)
```

```
[Out] x^(1/2)*(b*x+a)^(1/2)/b^2+(-3/2*a/b^(5/2)*ln((1/2*a+b*x)/b^(1/2)+
(b*x^2+a*x)^(1/2))+2*a/b^3/(x+a/b)*(b*(x+a/b)^2-(x+a/b)*a)^(1/2))
*(x*(b*x+a))^(1/2)/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.237418, size = 1, normalized size = 0.01

$$\left[\frac{3\sqrt{bx+a}a\sqrt{x}\log\left(-2\sqrt{bx+a}b\sqrt{x}+(2bx+a)\sqrt{b}\right)+2\left(bx^2+3ax\right)\sqrt{b}}{2\sqrt{bx+a}b^{\frac{5}{2}}\sqrt{x}},\right.$$
$$\left.-\frac{3\sqrt{bx+a}a\sqrt{x}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(bx^2+3ax\right)\sqrt{-b}}{\sqrt{bx+a}\sqrt{-b}b^2\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(3*sqrt(b*x + a)*a*sqrt(x)*log(-2*sqrt(b*x + a)*b*sqrt(x) +
(2*b*x + a)*sqrt(b)) + 2*(b*x^2 + 3*a*x)*sqrt(b))/(sqrt(b*x + a)*
b^(5/2)*sqrt(x)), -(3*sqrt(b*x + a)*a*sqrt(x)*arctan(sqrt(b*x + a
)*sqrt(-b)/(b*sqrt(x))) - (b*x^2 + 3*a*x)*sqrt(-b))/(sqrt(b*x + a
)*sqrt(-b)*b^2*sqrt(x))]
```

Sympy [A] time = 16.6604, size = 71, normalized size = 1.04

$$\frac{3\sqrt{a}\sqrt{x}}{b^2\sqrt{1+\frac{bx}{a}}}-\frac{3a\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}}+\frac{x^{\frac{3}{2}}}{\sqrt{a}b\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+a)**(3/2),x)
```

```
[Out] 3*sqrt(a)*sqrt(x)/(b**2*sqrt(1 + b*x/a)) - 3*a*asinh(sqrt(b)*sqrt
(x)/sqrt(a))/b**(5/2) + x**(3/2)/(sqrt(a)*b*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 0.217619, size = 155, normalized size = 2.28

$$\frac{\left(\frac{8\,a^2\sqrt{b}}{\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab}+\frac{3\,a\ln\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2\right)}{\sqrt{b}}+\frac{2\,\sqrt{(bx+a)b-ab}\sqrt{bx+a}}{b}\right)|b|}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(8*a^2*sqrt(b)/((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a
*b))^2 + a*b) + 3*a*ln((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b
- a*b))^2)/sqrt(b) + 2*sqrt((b*x + a)*b - a*b)*sqrt(b*x + a)/b)*a
bs(b)/b^3
```

3.579 $\int \frac{\sqrt{x}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=48

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{3/2}}-\frac{2\sqrt{x}}{b\sqrt{a+bx}}$$

```
[Out] (-2*Sqrt[x])/(b*Sqrt[a + b*x]) + (2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqr
t[a + b*x]])/b^(3/2)
```

Rubi [A] time = 0.0356186, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{3/2}}-\frac{2\sqrt{x}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a + b*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[x])/(b*Sqrt[a + b*x]) + (2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqr
t[a + b*x]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.61886, size = 42, normalized size = 0.88

$$-\frac{2\sqrt{x}}{b\sqrt{a+bx}}+\frac{2\,\text{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+a)**(3/2),x)
```

```
[Out] -2*sqrt(x)/(b*sqrt(a + b*x)) + 2*atanh(sqrt(b)*sqrt(x)/sqrt(a + b
*x))/b**(3/2)
```

Mathematica [A] time = 0.0346961, size = 51, normalized size = 1.06

$$\frac{2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{b^{3/2}}-\frac{2\sqrt{x}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a + b*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[x])/(b*Sqrt[a + b*x]) + (2*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[
a + b*x]])/b^(3/2)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\sqrt{x}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+a)^(3/2),x)
```

```
[Out] int(x^(1/2)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.245814, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{bx+a}\sqrt{x}\log\left(2\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)-2\sqrt{b}x}{\sqrt{bx+a}b^{\frac{3}{2}}\sqrt{x}},\ \frac{2\left(\sqrt{bx+a}\sqrt{x}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\sqrt{-b}x\right)}{\sqrt{bx+a}\sqrt{-b}b\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*x + a)*sqrt(x)*log(2*sqrt(b*x + a)*b*sqrt(x) + (2*b*x +
a)*sqrt(b)) - 2*sqrt(b)*x)/(sqrt(b*x + a)*b^(3/2)*sqrt(x)), 2*(sq
```

```
rt(b*x + a)*sqrt(x)*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) -
sqrt(-b)*x)/(sqrt(b*x + a)*sqrt(-b)*b*sqrt(x))]
```

Sympy [A] time = 6.63178, size = 46, normalized size = 0.96

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}} - \frac{2\sqrt{x}}{\sqrt{a}b\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+a)**(3/2),x)
```

```
[Out] 2*asinh(sqrt(b)*sqrt(x)/sqrt(a))/b**(3/2) - 2*sqrt(x)/(sqrt(a)*b*
sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 0.218413, size = 115, normalized size = 2.4

$$-\frac{\left(\frac{4\,a\sqrt{b}}{\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab}+\frac{\ln\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2\right)}{\sqrt{b}}\right)|b|}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] -(4*a*sqrt(b)/((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^
2 + a*b) + ln((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2
)/sqrt(b))*abs(b)/b^2
```

3.580 $\int \frac{1}{\sqrt{x}(a+bx)^{3/2}} dx$

Optimal. Leaf size=19

$$\frac{2\sqrt{x}}{a\sqrt{a+bx}}$$

```
[Out] (2*Sqrt[x])/(a*Sqrt[a + b*x])
```

Rubi [A] time = 0.0118621, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2\sqrt{x}}{a\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(a + b*x)^(3/2)),x]

[Out] (2*Sqrt[x])/(a*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 2.43364, size = 15, normalized size = 0.79

$$\frac{2\sqrt{x}}{a\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/x**(1/2),x)

[Out] 2*sqrt(x)/(a*sqrt(a + b*x))
```

Mathematica [A] time = 0.0125273, size = 19, normalized size = 1.

$$\frac{2\sqrt{x}}{a\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(a + b*x)^(3/2)),x]
```

```
[Out] (2*Sqrt[x])/(a*Sqrt[a + b*x])
```

Maple [A] time = 0.006, size = 16, normalized size = 0.8

$$2\,\frac{\sqrt{x}}{a\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(3/2)/x^(1/2),x)
```

```
[Out] 2*x^(1/2)/a/(b*x+a)^(1/2)
```

Maxima [A] time = 1.32163, size = 20, normalized size = 1.05

$$\frac{2\,\sqrt{x}}{\sqrt{bx+a}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] 2*sqrt(x)/(sqrt(b*x + a)*a)
```

Fricas [A] time = 0.222701, size = 20, normalized size = 1.05

$$\frac{2\,\sqrt{x}}{\sqrt{bx+a}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 2*sqrt(x)/(sqrt(b*x + a)*a)
```

Sympy [A] time = 4.44937, size = 17, normalized size = 0.89

$$\frac{2}{a\sqrt{b}\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/x**(1/2),x)
```

```
[Out] 2/(a*sqrt(b)*sqrt(a/(b*x) + 1))
```

GIAC/XCAS [A] time = 0.206668, size = 61, normalized size = 3.21

$$\frac{4\,b^{\frac{3}{2}}}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}+ab\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 4*b^(3/2)/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2 +
 a*b)*abs(b))
```

3.581 $\int \frac{1}{x^{3/2}(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=39

$$\frac{2}{a\sqrt{x}\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{a^2\sqrt{x}}$$

```
[Out] 2/(a*Sqrt[x]*Sqrt[a + b*x]) - (4*Sqrt[a + b*x])/(a^2*Sqrt[x])
```

Rubi [A] time = 0.0261449, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{2}{a\sqrt{x}\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{a^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a + b*x)^(3/2)),x]

[Out] 2/(a*Sqrt[x]*Sqrt[a + b*x]) - (4*Sqrt[a + b*x])/(a^2*Sqrt[x])
```

Rubi in Sympy [A] time = 4.39674, size = 34, normalized size = 0.87

$$\frac{2}{a\sqrt{x}\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{a^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+a)**(3/2),x)

[Out] 2/(a*sqrt(x)*sqrt(a + b*x)) - 4*sqrt(a + b*x)/(a**2*sqrt(x))
```

Mathematica [A] time = 0.0209557, size = 25, normalized size = 0.64

$$-\frac{2(a+2bx)}{a^2\sqrt{x}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a + b*x)^(3/2)),x]
```

```
[Out] (-2*(a + 2*b*x))/(a^2*Sqrt[x]*Sqrt[a + b*x])
```

Maple [A] time = 0.005, size = 22, normalized size = 0.6

$$-2\,\frac{2\,bx+a}{a^{2}\sqrt{x}\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(3/2)/(b*x+a)^(3/2),x)
```

```
[Out] -2*(2*b*x+a)/x^(1/2)/(b*x+a)^(1/2)/a^2
```

Maxima [A] time = 1.32152, size = 43, normalized size = 1.1

$$-\frac{2\,b\sqrt{x}}{\sqrt{bx+a}a^{2}}-\frac{2\,\sqrt{bx+a}}{a^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] -2*b*sqrt(x)/(sqrt(b*x + a)*a^2) - 2*sqrt(b*x + a)/(a^2*sqrt(x))
```

Fricas [A] time = 0.212735, size = 28, normalized size = 0.72

$$-\frac{2\,(2\,bx+a)}{\sqrt{bx+a}a^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] -2*(2*b*x + a)/(sqrt(b*x + a)*a^2*sqrt(x))
```

Sympy [A] time = 15.9795, size = 41, normalized size = 1.05

$$-\frac{2}{a\sqrt{bx}\sqrt{\frac{a}{bx}+1}}-\frac{4\sqrt{b}}{a^{2}\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+a)**(3/2),x)
```

```
[Out] -2/(a*sqrt(b)*x*sqrt(a/(b*x) + 1)) - 4*sqrt(b)/(a**2*sqrt(a/(b*x)
 + 1))
```

GIAC/XCAS [A] time = 0.208678, size = 111, normalized size = 2.85

$$-\frac{4\,b^{\frac{5}{2}}}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}+ab\right)a|b|}-\frac{2\,\sqrt{bx+a}b^{2}}{\sqrt{(bx+a)b-ab}a^{2}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -4*b^(5/2)/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2
+ a*b)*a*abs(b)) - 2*sqrt(b*x + a)*b^2/(sqrt((b*x + a)*b - a*b)*a
^2*abs(b))
```

3.582 $\int \frac{1}{x^{5/2}(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=63

$$\frac{16b\sqrt{a+bx}}{3a^3\sqrt{x}}-\frac{8\sqrt{a+bx}}{3a^2x^{3/2}}+\frac{2}{ax^{3/2}\sqrt{a+bx}}$$

```
[Out] 2/(a*x^(3/2)*Sqrt[a + b*x]) - (8*Sqrt[a + b*x])/(3*a^2*x^(3/2)) +
 (16*b*Sqrt[a + b*x])/(3*a^3*Sqrt[x])
```

Rubi [A] time = 0.0416455, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{16b\sqrt{a+bx}}{3a^3\sqrt{x}}-\frac{8\sqrt{a+bx}}{3a^2x^{3/2}}+\frac{2}{ax^{3/2}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a + b*x)^(3/2)),x]
```

```
[Out] 2/(a*x^(3/2)*Sqrt[a + b*x]) - (8*Sqrt[a + b*x])/(3*a^2*x^(3/2)) +
 (16*b*Sqrt[a + b*x])/(3*a^3*Sqrt[x])
```

Rubi in Sympy [A] time = 6.26241, size = 58, normalized size = 0.92

$$\frac{2}{ax^{\frac{3}{2}}\sqrt{a+bx}}-\frac{8\sqrt{a+bx}}{3a^2x^{\frac{3}{2}}}+\frac{16b\sqrt{a+bx}}{3a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+a)**(3/2),x)
```

```
[Out] 2/(a*x**(3/2)*sqrt(a + b*x)) - 8*sqrt(a + b*x)/(3*a**2*x**(3/2))
+ 16*b*sqrt(a + b*x)/(3*a**3*sqrt(x))
```

Mathematica [A] time = 0.0280075, size = 38, normalized size = 0.6

$$-\frac{2\left(a^2-4abx-8b^2x^2\right)}{3a^3x^{3/2}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a + b*x)^(3/2)),x]
```

```
[Out] (-2*(a^2 - 4*a*b*x - 8*b^2*x^2))/(3*a^3*x^(3/2)*Sqrt[a + b*x])
```

Maple [A] time = 0.006, size = 33, normalized size = 0.5

$$-\frac{-16\,b^2x^2-8\,abx+2\,a^2}{3\,a^3}x^{-\frac{3}{2}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+a)^(3/2),x)
```

```
[Out] -2/3*(-8*b^2*x^2-4*a*b*x+a^2)/x^(3/2)/(b*x+a)^(1/2)/a^3
```

Maxima [A] time = 1.34735, size = 68, normalized size = 1.08

$$\frac{2\,b^2\sqrt{x}}{\sqrt{bx+a}a^3}+\frac{2\left(\frac{6\,\sqrt{bx+a}b}{\sqrt{x}}-\frac{(bx+a)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\right)}{3\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] 2*b^2*sqrt(x)/(sqrt(b*x + a)*a^3) + 2/3*(6*sqrt(b*x + a)*b/sqrt(x
) - (b*x + a)^(3/2)/x^(3/2))/a^3
```

Fricas [A] time = 0.209284, size = 46, normalized size = 0.73

$$\frac{2\left(8\,b^2x^2+4\,abx-a^2\right)}{3\,\sqrt{bx+a}a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(8*b^2*x^2 + 4*a*b*x - a^2)/(sqrt(b*x + a)*a^3*x^(3/2))
```

Sympy [A] time = 103.614, size = 219, normalized size = 3.48

$$-\frac{2a^3b^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}}{3a^5b^4x+6a^4b^5x^2+3a^3b^6x^3}+\frac{6a^2b^{\frac{11}{2}}x\sqrt{\frac{a}{bx}+1}}{3a^5b^4x+6a^4b^5x^2+3a^3b^6x^3}+\frac{24ab^{\frac{13}{2}}x^2\sqrt{\frac{a}{bx}+1}}{3a^5b^4x+6a^4b^5x^2+3a^3b^6x^3}+\frac{16b^{\frac{15}{2}}x^3\sqrt{\frac{a}{bx}+1}}{3a^5b^4x+6a^4b^5x^2+3a^3b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+a)**(3/2),x)
```

```
[Out] -2*a**3*b**(9/2)*sqrt(a/(b*x) + 1)/(3*a**5*b**4*x + 6*a**4*b**5*x
**2 + 3*a**3*b**6*x**3) + 6*a**2*b**(11/2)*x*sqrt(a/(b*x) + 1)/(3
*a**5*b**4*x + 6*a**4*b**5*x**2 + 3*a**3*b**6*x**3) + 24*a*b**(13
/2)*x**2*sqrt(a/(b*x) + 1)/(3*a**5*b**4*x + 6*a**4*b**5*x**2 + 3*
a**3*b**6*x**3) + 16*b**(15/2)*x**3*sqrt(a/(b*x) + 1)/(3*a**5*b**
4*x + 6*a**4*b**5*x**2 + 3*a**3*b**6*x**3)
```

GIAC/XCAS [A] time = 0.216189, size = 126, normalized size = 2.

$$-\frac{\sqrt{bx+a}\left(\frac{5\,(bx+a)|b|}{b^2}-\frac{6\,a|b|}{b^2}\right)}{24\,((bx+a)b-ab)^{\frac{3}{2}}}+\frac{4\,b^{\frac{7}{2}}}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab\right)a^2|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(b*x + a)*(5*(b*x + a)*abs(b)/b^2 - 6*a*abs(b)/b^2)/((b
*x + a)*b - a*b)^(3/2) + 4*b^(7/2)/(((sqrt(b*x + a)*sqrt(b) - sqr
t((b*x + a)*b - a*b))^2 + a*b)*a^2*abs(b))
```

3.583 $\int \frac{1}{x^{7/2}(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=87

$$-\frac{32b^2\sqrt{a+bx}}{5a^4\sqrt{x}}+\frac{16b\sqrt{a+bx}}{5a^3x^{3/2}}-\frac{12\sqrt{a+bx}}{5a^2x^{5/2}}+\frac{2}{ax^{5/2}\sqrt{a+bx}}$$

```
[Out] 2/(a*x^(5/2)*Sqrt[a + b*x]) - (12*Sqrt[a + b*x])/(5*a^2*x^(5/2))
+ (16*b*Sqrt[a + b*x])/(5*a^3*x^(3/2)) - (32*b^2*Sqrt[a + b*x])/(
5*a^4*Sqrt[x])
```

Rubi [A] time = 0.0609161, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{32b^2\sqrt{a+bx}}{5a^4\sqrt{x}}+\frac{16b\sqrt{a+bx}}{5a^3x^{3/2}}-\frac{12\sqrt{a+bx}}{5a^2x^{5/2}}+\frac{2}{ax^{5/2}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(7/2)*(a + b*x)^(3/2)),x]
```

```
[Out] 2/(a*x^(5/2)*Sqrt[a + b*x]) - (12*Sqrt[a + b*x])/(5*a^2*x^(5/2))
+ (16*b*Sqrt[a + b*x])/(5*a^3*x^(3/2)) - (32*b^2*Sqrt[a + b*x])/(
5*a^4*Sqrt[x])
```

Rubi in Sympy [A] time = 9.45717, size = 82, normalized size = 0.94

$$\frac{2}{ax^{\frac{5}{2}}\sqrt{a+bx}}-\frac{12\sqrt{a+bx}}{5a^2x^{\frac{5}{2}}}+\frac{16b\sqrt{a+bx}}{5a^3x^{\frac{3}{2}}}-\frac{32b^2\sqrt{a+bx}}{5a^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(7/2)/(b*x+a)**(3/2),x)
```

```
[Out] 2/(a*x**(5/2)*sqrt(a + b*x)) - 12*sqrt(a + b*x)/(5*a**2*x**(5/2))
 + 16*b*sqrt(a + b*x)/(5*a**3*x**(3/2)) - 32*b**2*sqrt(a + b*x)/(
5*a**4*sqrt(x))
```

Mathematica [A] time = 0.0317292, size = 49, normalized size = 0.56

$$-\frac{2\left(a^3-2a^2bx+8ab^2x^2+16b^3x^3\right)}{5a^4x^{5/2}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(7/2)*(a + b*x)^(3/2)),x]
```

```
[Out] (-2*(a^3 - 2*a^2*b*x + 8*a*b^2*x^2 + 16*b^3*x^3))/(5*a^4*x^(5/2)*
Sqrt[a + b*x])
```

Maple [A] time = 0.006, size = 44, normalized size = 0.5

$$-\frac{32\,b^3x^3+16\,ab^2x^2-4\,a^2bx+2\,a^3}{5\,a^4}x^{-\frac{5}{2}}\frac{1}{\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(7/2)/(b*x+a)^(3/2),x)
```

```
[Out] -2/5*(16*b^3*x^3+8*a*b^2*x^2-2*a^2*b*x+a^3)/x^(5/2)/(b*x+a)^(1/2)
/a^4
```

Maxima [A] time = 1.36313, size = 86, normalized size = 0.99

$$-\frac{2\,b^3\sqrt{x}}{\sqrt{bx+a}a^4}-\frac{2\left(\frac{15\,\sqrt{bx+a}b^2}{\sqrt{x}}-\frac{5\,(bx+a)^{\frac{3}{2}}b}{x^{\frac{3}{2}}}+\frac{(bx+a)^{\frac{5}{2}}}{x^{\frac{5}{2}}}\right)}{5\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(7/2)),x, algorithm="maxima")
```

```
[Out] -2*b^3*sqrt(x)/(sqrt(b*x + a)*a^4) - 2/5*(15*sqrt(b*x + a)*b^2/sq
rt(x) - 5*(b*x + a)^(3/2)*b/x^(3/2) + (b*x + a)^(5/2)/x^(5/2))/a^
4
```

Fricas [A] time = 0.21008, size = 58, normalized size = 0.67

$$-\frac{2\left(16\,b^3x^3+8\,ab^2x^2-2\,a^2bx+a^3\right)}{5\,\sqrt{bx+a}a^4x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] -2/5*(16*b^3*x^3 + 8*a*b^2*x^2 - 2*a^2*b*x + a^3)/(sqrt(b*x + a)*
a^4*x^(5/2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(7/2)/(b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.216414, size = 147, normalized size = 1.69

$$-\frac{4\,b^{\frac{9}{2}}}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}+ab\right)a^{3}|b|}+\frac{\left(\frac{15\,a^{4}}{b}+\left(\frac{11\,(bx+a)a^{2}}{b}-\frac{25\,a^{3}}{b}\right)(bx+a)\right)\sqrt{bx+a}}{40\left((bx+a)b-ab\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*x^(7/2)),x, algorithm="giac")
```

```
[Out] -4*b^(9/2)/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2
+ a*b)*a^3*abs(b)) + 1/40*(15*a^4/b + (11*(b*x + a)*a^2/b - 25*a^
3/b)*(b*x + a))*sqrt(b*x + a)/((b*x + a)*b - a*b)^(5/2)
```

3.584 $\int \frac{x^{5/2}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=91

$$-\frac{5a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{7/2}}+\frac{5\sqrt{x}\sqrt{a+bx}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{a+bx}}-\frac{2x^{5/2}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*x^(5/2))/(3*b*(a + b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[a +
 b*x]) + (5*Sqrt[x]*Sqrt[a + b*x])/b^3 - (5*a*ArcTanh[(Sqrt[b]*Sq
rt[x])/Sqrt[a + b*x]])/b^(7/2)
```

Rubi [A] time = 0.0718013, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{5a\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{7/2}}+\frac{5\sqrt{x}\sqrt{a+bx}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{a+bx}}-\frac{2x^{5/2}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*x^(5/2))/(3*b*(a + b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[a +
 b*x]) + (5*Sqrt[x]*Sqrt[a + b*x])/b^3 - (5*a*ArcTanh[(Sqrt[b]*Sq
rt[x])/Sqrt[a + b*x]])/b^(7/2)
```

Rubi in Sympy [A] time = 10.9681, size = 85, normalized size = 0.93

$$-\frac{5a\,\mathrm{atanh}\left(\frac{\sqrt{a+bx}}{\sqrt{b}\sqrt{x}}\right)}{b^{\frac{7}{2}}}-\frac{2x^{\frac{5}{2}}}{3b\left(a+bx\right)^{\frac{3}{2}}}-\frac{10x^{\frac{3}{2}}}{3b^2\sqrt{a+bx}}+\frac{5\sqrt{x}\sqrt{a+bx}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+a)**(5/2),x)
```

```
[Out] -5*a*atanh(sqrt(a + b*x)/(sqrt(b)*sqrt(x)))/b**(7/2) - 2*x**(5/2)
/(3*b*(a + b*x)**(3/2)) - 10*x**(3/2)/(3*b**2*sqrt(a + b*x)) + 5*
sqrt(x)*sqrt(a + b*x)/b**3
```

Mathematica [A] time = 0.119146, size = 73, normalized size = 0.8

$$\frac{\sqrt{x}\left(15a^2+20abx+3b^2x^2\right)}{3b^3(a+bx)^{3/2}}-\frac{5a\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a + b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*(15*a^2 + 20*a*b*x + 3*b^2*x^2))/(3*b^3*(a + b*x)^(3/2))
 - (5*a*Log[b*Sqrt[x] + Sqrt[b]*Sqrt[a + b*x]])/b^(7/2)
```

Maple [B] time = 0.26, size = 147, normalized size = 1.6

$$\frac{1}{b^3}\sqrt{x}\sqrt{bx+a}$$
$$+1\left(-\frac{5\,a}{2}\ln\left(1\left(\frac{a}{2}+bx\right)\frac{1}{\sqrt{b}}+\sqrt{bx^2+ax}\right)b^{-\frac{7}{2}}+\frac{14\,a}{3\,b^4}\sqrt{b\left(x+\frac{a}{b}\right)^2-\left(x+\frac{a}{b}\right)a}\left(x+\frac{a}{b}\right)^{-1}-\frac{2\,a^2}{3\,b^5}\sqrt{b\left(x+\frac{a}{b}\right)^2-\left(x+\frac{a}{b}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+a)^(5/2),x)
```

```
[Out] x^(1/2)*(b*x+a)^(1/2)/b^3+(-5/2/b^(7/2)*a*ln((1/2*a+b*x)/b^(1/2)+
(b*x^2+a*x)^(1/2))+14/3/b^4*a/(x+a/b)*(b*(x+a/b)^2-(x+a/b)*a)^(1/
2)-2/3/b^5*a^2/(x+a/b)^2*(b*(x+a/b)^2-(x+a/b)*a)^(1/2))*(x*(b*x+a
))^(1/2)/x^(1/2)/(b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225337, size = 1, normalized size = 0.01

$$\left[\frac{15\left(abx+a^2\right)\sqrt{bx+a}\sqrt{x}\log\left(-2\sqrt{bx+a}b\sqrt{x}+(2bx+a)\sqrt{b}\right)+2\left(3b^2x^3+20abx^2+15a^2x\right)\sqrt{b}}{6(b^4x+ab^3)\sqrt{bx+a}\sqrt{b}\sqrt{x}}, -\frac{15\left(abx+a^2\right)\sqrt{bx+a}\sqrt{x}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(3b^2x^3+20abx^2+15a^2x\right)\sqrt{-b}}{3(b^4x+ab^3)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(15*(a*b*x + a^2)*sqrt(b*x + a)*sqrt(x)*log(-2*sqrt(b*x + a)
*b*sqrt(x) + (2*b*x + a)*sqrt(b)) + 2*(3*b^2*x^3 + 20*a*b*x^2 + 1
5*a^2*x)*sqrt(b))/((b^4*x + a*b^3)*sqrt(b*x + a)*sqrt(b)*sqrt(x))
, -1/3*(15*(a*b*x + a^2)*sqrt(b*x + a)*sqrt(x)*arctan(sqrt(b*x +
a)*sqrt(-b)/(b*sqrt(x))) - (3*b^2*x^3 + 20*a*b*x^2 + 15*a^2*x)*sq
rt(-b))/((b^4*x + a*b^3)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))]
```

Sympy [A] time = 84.0961, size = 396, normalized size = 4.35

$$-\frac{15a^{\frac{81}{2}}b^{22}x^{\frac{51}{2}}\sqrt{1+\frac{bx}{a}}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{3a^{\frac{79}{2}}b^{\frac{51}{2}}x^{\frac{51}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{77}{2}}b^{\frac{53}{2}}x^{\frac{53}{2}}\sqrt{1+\frac{bx}{a}}}-\frac{15a^{\frac{79}{2}}b^{23}x^{\frac{53}{2}}\sqrt{1+\frac{bx}{a}}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{3a^{\frac{79}{2}}b^{\frac{51}{2}}x^{\frac{51}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{77}{2}}b^{\frac{53}{2}}x^{\frac{53}{2}}\sqrt{1+\frac{bx}{a}}}+\frac{15a^{40}b^{\frac{45}{2}}x^{26}}{3a^{\frac{79}{2}}b^{\frac{51}{2}}x^{\frac{51}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{77}{2}}b^{\frac{53}{2}}x^{\frac{53}{2}}\sqrt{1+\frac{bx}{a}}}+\frac{20a^{39}b^{\frac{47}{2}}x^{27}}{3a^{\frac{79}{2}}b^{\frac{51}{2}}x^{\frac{51}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{77}{2}}b^{\frac{53}{2}}x^{\frac{53}{2}}\sqrt{1+\frac{bx}{a}}}+\frac{3a^{38}b^{\frac{49}{2}}x^{28}}{3a^{\frac{79}{2}}b^{\frac{51}{2}}x^{\frac{51}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{77}{2}}b^{\frac{53}{2}}x^{\frac{53}{2}}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+a)**(5/2),x)
```

```
[Out] -15*a**(81/2)*b**22*x**(51/2)*sqrt(1 + b*x/a)*asinh(sqrt(b)*sqrt(
x)/sqrt(a))/(3*a**(79/2)*b**(51/2)*x**(51/2)*sqrt(1 + b*x/a) + 3*
a**(77/2)*b**(53/2)*x**(53/2)*sqrt(1 + b*x/a)) - 15*a**(79/2)*b**
23*x**(53/2)*sqrt(1 + b*x/a)*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a*
*(79/2)*b**(51/2)*x**(51/2)*sqrt(1 + b*x/a) + 3*a**(77/2)*b**(53/
2)*x**(53/2)*sqrt(1 + b*x/a)) + 15*a**40*b**(45/2)*x**26/(3*a**(7
9/2)*b**(51/2)*x**(51/2)*sqrt(1 + b*x/a) + 3*a**(77/2)*b**(53/2)*
x**(53/2)*sqrt(1 + b*x/a)) + 20*a**39*b**(47/2)*x**27/(3*a**(79/2
)*b**(51/2)*x**(51/2)*sqrt(1 + b*x/a) + 3*a**(77/2)*b**(53/2)*x**
(53/2)*sqrt(1 + b*x/a)) + 3*a**38*b**(49/2)*x**28/(3*a**(79/2)*b*
```

```
*(51/2)*x**(51/2)*sqrt(1 + b*x/a) + 3*a**(77/2)*b**(53/2)*x**(53/
2)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 0.22866, size = 266, normalized size = 2.92

$$\frac{\frac{15 a \ln\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}\right)}{b^{\frac{5}{2}}}+\frac{6\sqrt{(bx+a)b-ab}\sqrt{bx+a}}{b^{3}}+\frac{8\left(9 a^{2}\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{4}\sqrt{b}+12 a^{3}\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2} b^{\frac{3}{2}}+7 a^{4} b^{\frac{5}{2}}\right)}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}+ab\right)^{3} b^{2}}}{6 b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*(15*a*ln((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2)
/b^(5/2) + 6*sqrt((b*x + a)*b - a*b)*sqrt(b*x + a)/b^3 + 8*(9*a^2
*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^4*sqrt(b) + 12
*a^3*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2*b^(3/2)
+ 7*a^4*b^(5/2))/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*
b))^2 + a*b)^3*b^2))*abs(b)/b^2
```

3.585 $\int \frac{x^{3/2}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=69

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{a+bx}}-\frac{2x^{3/2}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*x^(3/2))/(3*b*(a + b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[a + b*
x]) + (2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/b^(5/2)
```

Rubi [A] time = 0.0516152, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{a+bx}}-\frac{2x^{3/2}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*x^(3/2))/(3*b*(a + b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[a + b*
x]) + (2*ArcTanh[(Sqrt[b]*Sqrt[x])/Sqrt[a + b*x]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.29108, size = 63, normalized size = 0.91

$$-\frac{2x^{\frac{3}{2}}}{3b\left(a+bx\right)^{\frac{3}{2}}}-\frac{2\sqrt{x}}{b^2\sqrt{a+bx}}+\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a+bx}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+a)**(5/2),x)
```

```
[Out] -2*x**(3/2)/(3*b*(a + b*x)**(3/2)) - 2*sqrt(x)/(b**2*sqrt(a + b*x
)) + 2*atanh(sqrt(b)*sqrt(x)/sqrt(a + b*x))/b**(5/2)
```

Mathematica [A] time = 0.104215, size = 61, normalized size = 0.88

$$\frac{2\log\left(\sqrt{b}\sqrt{a+bx}+b\sqrt{x}\right)}{b^{5/2}}-\frac{2\sqrt{x}(3a+4bx)}{3b^2(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[x]*(3*a + 4*b*x))/(3*b^2*(a + b*x)^(3/2)) + (2*Log[b*Sqr
t[x] + Sqrt[b]*Sqrt[a + b*x]])/b^(5/2)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1x^{\frac{3}{2}} (bx+a)^{-\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+a)^(5/2),x)
```

```
[Out] int(x^(3/2)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228741, size = 1, normalized size = 0.01

$$\left[\frac{3\,(bx+a)^{\frac{3}{2}}\sqrt{x}\log\left(2\,\sqrt{bx+a}b\sqrt{x}+(2\,bx+a)\sqrt{b}\right)-2\left(4\,bx^2+3\,ax\right)\sqrt{b}}{3\,(b^3x+ab^2)\sqrt{bx+a}\sqrt{b}\sqrt{x}}, \frac{2\left(3\,(bx+a)^{\frac{3}{2}}\sqrt{x}\arctan\left(\frac{\sqrt{bx+a}\sqrt{-b}}{b\sqrt{x}}\right)-\left(4\,bx^2+\right.\right.}{3\,(b^3x+ab^2)\sqrt{bx+a}\sqrt{-b}\sqrt{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(b*x + a)^(3/2)*sqrt(x)*log(2*sqrt(b*x + a)*b*sqrt(x) + (
2*b*x + a)*sqrt(b)) - 2*(4*b*x^2 + 3*a*x)*sqrt(b))/((b^3*x + a*b^
```

```
2)*sqrt(b*x + a)*sqrt(b)*sqrt(x)), 2/3*(3*(b*x + a)^(3/2)*sqrt(x)
*arctan(sqrt(b*x + a)*sqrt(-b)/(b*sqrt(x))) - (4*b*x^2 + 3*a*x)*s
qrt(-b))/((b^3*x + a*b^2)*sqrt(b*x + a)*sqrt(-b)*sqrt(x))]
```

Sympy [A] time = 30.313, size = 328, normalized size = 4.75

$$\frac{6a^{\frac{39}{2}}b^{11}x^{\frac{27}{2}}\sqrt{1+\frac{bx}{a}}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{37}{2}}b^{\frac{29}{2}}x^{\frac{29}{2}}\sqrt{1+\frac{bx}{a}}}+\frac{6a^{\frac{37}{2}}b^{12}x^{\frac{29}{2}}\sqrt{1+\frac{bx}{a}}\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{37}{2}}b^{\frac{29}{2}}x^{\frac{29}{2}}\sqrt{1+\frac{bx}{a}}}-\frac{6a^{19}b^{\frac{23}{2}}x^{14}}{3a^{\frac{39}{2}}b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{37}{2}}b^{\frac{29}{2}}x^{\frac{29}{2}}\sqrt{1+\frac{bx}{a}}}-\frac{8a^{18}b^{\frac{25}{2}}x^{15}}{3a^{\frac{39}{2}}b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{37}{2}}b^{\frac{29}{2}}x^{\frac{29}{2}}\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+a)**(5/2),x)
```

```
[Out] 6*a**(39/2)*b**11*x**(27/2)*sqrt(1 + b*x/a)*asinh(sqrt(b)*sqrt(x)
/sqrt(a))/(3*a**(39/2)*b**(27/2)*x**(27/2)*sqrt(1 + b*x/a) + 3*a*
*(37/2)*b**(29/2)*x**(29/2)*sqrt(1 + b*x/a)) + 6*a**(37/2)*b**12*
x**(29/2)*sqrt(1 + b*x/a)*asinh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**(3
9/2)*b**(27/2)*x**(27/2)*sqrt(1 + b*x/a) + 3*a**(37/2)*b**(29/2)*
x**(29/2)*sqrt(1 + b*x/a)) - 6*a**19*b**(23/2)*x**14/(3*a**(39/2)
*b**(27/2)*x**(27/2)*sqrt(1 + b*x/a) + 3*a**(37/2)*b**(29/2)*x**(
29/2)*sqrt(1 + b*x/a)) - 8*a**18*b**(25/2)*x**15/(3*a**(39/2)*b**
(27/2)*x**(27/2)*sqrt(1 + b*x/a) + 3*a**(37/2)*b**(29/2)*x**(29/2
)*sqrt(1 + b*x/a))
```

GIAC/XCAS [A] time = 0.227009, size = 223, normalized size = 3.23

$$-\frac{\left(\frac{3\ln\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}\right)}{\sqrt{b}}+\frac{8\left(3a\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{4}\sqrt{b}+3a^{2}\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}b^{\frac{3}{2}}+2a^{3}b^{\frac{5}{2}}\right)}{\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}+ab\right)^{3}}\right)|b|}{3b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(3*ln((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2)/s
qrt(b) + 8*(3*a*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))
^4*sqrt(b) + 3*a^2*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*
b))^2*b^(3/2) + 2*a^3*b^(5/2))/((sqrt(b*x + a)*sqrt(b) - sqrt((b*
x + a)*b - a*b))^2 + a*b)^3)*abs(b)/b^3
```

3.586 $\int \frac{\sqrt{x}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=21

$$\frac{2x^{3/2}}{3a(a+bx)^{3/2}}$$

```
[Out] (2*x^(3/2))/(3*a*(a + b*x)^(3/2))
```

Rubi [A] time = 0.0125158, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2x^{3/2}}{3a(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a + b*x)^(5/2),x]

[Out] (2*x^(3/2))/(3*a*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 2.3188, size = 17, normalized size = 0.81

$$\frac{2x^{\frac{3}{2}}}{3a\left(a+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+a)**(5/2),x)

[Out] 2*x**(3/2)/(3*a*(a + b*x)**(3/2))
```

Mathematica [A] time = 0.0188992, size = 21, normalized size = 1.

$$\frac{2x^{3/2}}{3a(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a + b*x)^(5/2),x]
```

```
[Out] (2*x^(3/2))/(3*a*(a + b*x)^(3/2))
```

Maple [A] time = 0.007, size = 16, normalized size = 0.8

$$\frac{2}{3\,a}x^{\frac{3}{2}}\left(bx+a\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)/(b*x+a)^(5/2),x)
```

```
[Out] 2/3*x^(3/2)/a/(b*x+a)^(3/2)
```

Maxima [A] time = 1.33624, size = 20, normalized size = 0.95

$$\frac{2\,x^{\frac{3}{2}}}{3\,(bx+a)^{\frac{3}{2}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(x)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*x^(3/2)/((b*x + a)^(3/2)*a)
```

Fricas [A] time = 0.21385, size = 30, normalized size = 1.43

$$\frac{2\,x^{\frac{3}{2}}}{3\,(abx+a^2)\sqrt{bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(x)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*x^(3/2)/((a*b*x + a^2)*sqrt(b*x + a))
```

Sympy [A] time = 13.1119, size = 42, normalized size = 2.

$$\frac{2x^{\frac{3}{2}}}{3a^{\frac{5}{2}}\sqrt{1+\frac{bx}{a}}+3a^{\frac{3}{2}}bx\sqrt{1+\frac{bx}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+a)**(5/2),x)
```

```
[Out] 2*x**(3/2)/(3*a**(5/2)*sqrt(1 + b*x/a) + 3*a**(3/2)*b*x*sqrt(1 +
b*x/a))
```

GIAC/XCAS [A] time = 0.217909, size = 116, normalized size = 5.52

$$\frac{4\left(3\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{4}\sqrt{b}+a^{2}b^{\frac{5}{2}}\right)|b|}{3\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^{2}+ab\right)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*(3*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^4*sqrt(b
) + a^2*b^(5/2))*abs(b)/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)
*b - a*b))^2 + a*b)^3*b^2)
```

3.587 $\int \frac{1}{\sqrt{x}(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=43

$$\frac{4\sqrt{x}}{3a^2\sqrt{a+bx}}+\frac{2\sqrt{x}}{3a(a+bx)^{3/2}}$$

```
[Out] (2*Sqrt[x])/(3*a*(a + b*x)^(3/2)) + (4*Sqrt[x])/(3*a^2*Sqrt[a + b
*x])
```

Rubi [A] time = 0.0287422, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{4\sqrt{x}}{3a^2\sqrt{a+bx}}+\frac{2\sqrt{x}}{3a(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(a + b*x)^(5/2)),x]
```

```
[Out] (2*Sqrt[x])/(3*a*(a + b*x)^(3/2)) + (4*Sqrt[x])/(3*a^2*Sqrt[a + b
*x])
```

Rubi in Sympy [A] time = 4.05024, size = 37, normalized size = 0.86

$$\frac{2\sqrt{x}}{3a\,(a+bx)^{\frac{3}{2}}}+\frac{4\sqrt{x}}{3a^2\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] 2*sqrt(x)/(3*a*(a + b*x)**(3/2)) + 4*sqrt(x)/(3*a**2*sqrt(a + b*x
))
```

Mathematica [A] time = 0.0188422, size = 29, normalized size = 0.67

$$\frac{2\sqrt{x}(3a+2bx)}{3a^2(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(a + b*x)^(5/2)),x]

[Out] (2*Sqrt[x]*(3*a + 2*b*x))/(3*a^2*(a + b*x)^(3/2))
```

Maple [A] time = 0.006, size = 24, normalized size = 0.6

$$\frac{4\,bx+6\,a}{3\,a^{2}}\sqrt{x}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/x^(1/2),x)

[Out] 2/3*x^(1/2)*(2*b*x+3*a)/(b*x+a)^(3/2)/a^2
```

Maxima [A] time = 1.32884, size = 36, normalized size = 0.84

$$-\frac{2\left(b-\frac{3\,(bx+a)}{x}\right)x^{\frac{3}{2}}}{3\,(bx+a)^{\frac{3}{2}}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*sqrt(x)),x, algorithm="maxima")

[Out] -2/3*(b - 3*(b*x + a)/x)*x^(3/2)/((b*x + a)^(3/2)*a^2)
```

Fricas [A] time = 0.21676, size = 47, normalized size = 1.09

$$\frac{2\left(2\,bx^{2}+3\,ax\right)}{3\,(a^{2}bx+a^{3})\sqrt{bx+a}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*sqrt(x)),x, algorithm="fricas")

[Out] 2/3*(2*b*x^2 + 3*a*x)/((a^2*b*x + a^3)*sqrt(b*x + a)*sqrt(x))
```

Sympy [A] time = 23.5804, size = 92, normalized size = 2.14

$$\frac{6a}{3a^3\sqrt{b}\sqrt{\frac{a}{bx}+1}+3a^2b^{\frac{3}{2}}x\sqrt{\frac{a}{bx}+1}}+\frac{4bx}{3a^3\sqrt{b}\sqrt{\frac{a}{bx}+1}+3a^2b^{\frac{3}{2}}x\sqrt{\frac{a}{bx}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] 6*a/(3*a**3*sqrt(b)*sqrt(a/(b*x) + 1) + 3*a**2*b**(3/2)*x*sqrt(a/
(b*x) + 1)) + 4*b*x/(3*a**3*sqrt(b)*sqrt(a/(b*x) + 1) + 3*a**2*b*
*(3/2)*x*sqrt(a/(b*x) + 1))
```

GIAC/XCAS [A] time = 0.210933, size = 109, normalized size = 2.53

$$\frac{8\left(3\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab\right)b^{\frac{5}{2}}}{3\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 8/3*(3*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2 + a*b)
*b^(5/2)/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2 +
a*b)^3*abs(b))
```

3.588 $\int \frac{1}{x^{3/2}(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=64

$$-\frac{16\sqrt{a+bx}}{3a^3\sqrt{x}}+\frac{8}{3a^2\sqrt{x}\sqrt{a+bx}}+\frac{2}{3a\sqrt{x}(a+bx)^{3/2}}$$

```
[Out] 2/(3*a*Sqrt[x]*(a + b*x)^(3/2)) + 8/(3*a^2*Sqrt[x]*Sqrt[a + b*x])
 - (16*Sqrt[a + b*x])/(3*a^3*Sqrt[x])
```

Rubi [A] time = 0.0450158, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{16\sqrt{a+bx}}{3a^3\sqrt{x}}+\frac{8}{3a^2\sqrt{x}\sqrt{a+bx}}+\frac{2}{3a\sqrt{x}(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a + b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*Sqrt[x]*(a + b*x)^(3/2)) + 8/(3*a^2*Sqrt[x]*Sqrt[a + b*x])
 - (16*Sqrt[a + b*x])/(3*a^3*Sqrt[x])
```

Rubi in Sympy [A] time = 6.45407, size = 58, normalized size = 0.91

$$\frac{2}{3a\sqrt{x}\,(a+bx)^{\frac{3}{2}}}+\frac{8}{3a^2\sqrt{x}\sqrt{a+bx}}-\frac{16\sqrt{a+bx}}{3a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*sqrt(x)*(a + b*x)**(3/2)) + 8/(3*a**2*sqrt(x)*sqrt(a + b*x
)) - 16*sqrt(a + b*x)/(3*a**3*sqrt(x))
```

Mathematica [A] time = 0.0285809, size = 40, normalized size = 0.62

$$-\frac{2\left(3a^2+12abx+8b^2x^2\right)}{3a^3\sqrt{x}(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a + b*x)^(5/2)),x]
```

```
[Out] (-2*(3*a^2 + 12*a*b*x + 8*b^2*x^2))/(3*a^3*Sqrt[x]*(a + b*x)^(3/2
))
```

Maple [A] time = 0.006, size = 35, normalized size = 0.6

$$-\frac{16\,b^2x^2+24\,abx+6\,a^2}{3\,a^3}(bx+a)^{-\frac{3}{2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+a)^(5/2),x)
```

```
[Out] -2/3*(8*b^2*x^2+12*a*b*x+3*a^2)/x^(1/2)/(b*x+a)^(3/2)/a^3
```

Maxima [A] time = 1.35515, size = 62, normalized size = 0.97

$$\frac{2\left(b^2-\frac{6\,(bx+a)b}{x}\right)x^{\frac{3}{2}}}{3\,(bx+a)^{\frac{3}{2}}a^3}-\frac{2\,\sqrt{bx+a}}{a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] 2/3*(b^2 - 6*(b*x + a)*b/x)*x^(3/2)/((b*x + a)^(3/2)*a^3) - 2*sqr
t(b*x + a)/(a^3*sqrt(x))
```

Fricas [A] time = 0.236679, size = 58, normalized size = 0.91

$$-\frac{2\left(8\,b^2x^2+12\,abx+3\,a^2\right)}{3\,(a^3bx+a^4)\sqrt{bx+a}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] -2/3*(8*b^2*x^2 + 12*a*b*x + 3*a^2)/((a^3*b*x + a^4)*sqrt(b*x + a
)*sqrt(x))
```

Sympy [A] time = 104.053, size = 153, normalized size = 2.39

$$-\frac{6a^2b^{\frac{9}{2}}\sqrt{\frac{a}{bx}+1}}{3a^5b^4+6a^4b^5x+3a^3b^6x^2}-\frac{24ab^{\frac{11}{2}}x\sqrt{\frac{a}{bx}+1}}{3a^5b^4+6a^4b^5x+3a^3b^6x^2}-\frac{16b^{\frac{13}{2}}x^2\sqrt{\frac{a}{bx}+1}}{3a^5b^4+6a^4b^5x+3a^3b^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+a)**(5/2),x)
```

```
[Out] -6*a**2*b**(9/2)*sqrt(a/(b*x) + 1)/(3*a**5*b**4 + 6*a**4*b**5*x +
 3*a**3*b**6*x**2) - 24*a*b**(11/2)*x*sqrt(a/(b*x) + 1)/(3*a**5*b
**4 + 6*a**4*b**5*x + 3*a**3*b**6*x**2) - 16*b**(13/2)*x**2*sqrt(
a/(b*x) + 1)/(3*a**5*b**4 + 6*a**4*b**5*x + 3*a**3*b**6*x**2)
```

GIAC/XCAS [A] time = 0.223933, size = 215, normalized size = 3.36

$$-\frac{2\sqrt{bx+a}ab^2}{\sqrt{(bx+a)b-ab}a^3|b|}-\frac{4\left(3\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^4b^{\frac{5}{2}}+12\,a\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2b^{\frac{7}{2}}+5\,a^2b^{\frac{9}{2}}\right)}{3\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab\right)^3a^2|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(b*x + a)*b^2/(sqrt((b*x + a)*b - a*b)*a^3*abs(b)) - 4/3*(
3*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^4*b^(5/2) + 1
2*a*(sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2*b^(7/2) +
 5*a^2*b^(9/2))/(((sqrt(b*x + a)*sqrt(b) - sqrt((b*x + a)*b - a*b
))^2 + a*b)^3*a^2*abs(b))
```

3.589 $\int \frac{1}{x^{5/2}(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=84

$$\frac{32b\sqrt{a+bx}}{3a^4\sqrt{x}}-\frac{16\sqrt{a+bx}}{3a^3x^{3/2}}+\frac{4}{a^2x^{3/2}\sqrt{a+bx}}+\frac{2}{3ax^{3/2}(a+bx)^{3/2}}$$

```
[Out] 2/(3*a*x^(3/2)*(a + b*x)^(3/2)) + 4/(a^2*x^(3/2)*Sqrt[a + b*x]) -
 (16*Sqrt[a + b*x])/(3*a^3*x^(3/2)) + (32*b*Sqrt[a + b*x])/(3*a^4
*Sqrt[x])
```

Rubi [A] time = 0.0629755, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{32b\sqrt{a+bx}}{3a^4\sqrt{x}}-\frac{16\sqrt{a+bx}}{3a^3x^{3/2}}+\frac{4}{a^2x^{3/2}\sqrt{a+bx}}+\frac{2}{3ax^{3/2}(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a + b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*x^(3/2)*(a + b*x)^(3/2)) + 4/(a^2*x^(3/2)*Sqrt[a + b*x]) -
 (16*Sqrt[a + b*x])/(3*a^3*x^(3/2)) + (32*b*Sqrt[a + b*x])/(3*a^4
*Sqrt[x])
```

Rubi in Sympy [A] time = 9.22177, size = 78, normalized size = 0.93

$$\frac{2}{3ax^{\frac{3}{2}}\left(a+bx\right)^{\frac{3}{2}}}+\frac{4}{a^2x^{\frac{3}{2}}\sqrt{a+bx}}-\frac{16\sqrt{a+bx}}{3a^3x^{\frac{3}{2}}}+\frac{32b\sqrt{a+bx}}{3a^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*x**(3/2)*(a + b*x)**(3/2)) + 4/(a**2*x**(3/2)*sqrt(a + b*x
)) - 16*sqrt(a + b*x)/(3*a**3*x**(3/2)) + 32*b*sqrt(a + b*x)/(3*a
**4*sqrt(x))
```

Mathematica [A] time = 0.0366153, size = 49, normalized size = 0.58

$$-\frac{2\left(a^3-6a^2bx-24ab^2x^2-16b^3x^3\right)}{3a^4x^{3/2}(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a + b*x)^(5/2)),x]
```

```
[Out] (-2*(a^3 - 6*a^2*b*x - 24*a*b^2*x^2 - 16*b^3*x^3))/(3*a^4*x^(3/2)
*(a + b*x)^(3/2))
```

Maple [A] time = 0.007, size = 44, normalized size = 0.5

$$-\frac{-32\,b^3x^3-48\,ab^2x^2-12\,a^2bx+2\,a^3}{3\,a^4}x^{-\frac{3}{2}}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+a)^(5/2),x)
```

```
[Out] -2/3*(-16*b^3*x^3-24*a*b^2*x^2-6*a^2*b*x+a^3)/x^(3/2)/(b*x+a)^(3/
2)/a^4
```

Maxima [A] time = 1.34954, size = 86, normalized size = 1.02

$$\frac{2\left(\frac{9\,\sqrt{bx+a}b}{\sqrt{x}}-\frac{(bx+a)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\right)}{3\,a^4}-\frac{2\left(b^3-\frac{9\,(bx+a)b^2}{x}\right)x^{\frac{3}{2}}}{3\,(bx+a)^{\frac{3}{2}}a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] 2/3*(9*sqrt(b*x + a)*b/sqrt(x) - (b*x + a)^(3/2)/x^(3/2))/a^4 - 2
/3*(b^3 - 9*(b*x + a)*b^2/x)*x^(3/2)/((b*x + a)^(3/2)*a^4)
```

Fricas [A] time = 0.230459, size = 78, normalized size = 0.93

$$\frac{2\left(16\,b^3x^3+24\,ab^2x^2+6\,a^2bx-a^3\right)}{3\,(a^4bx^2+a^5x)\sqrt{bx+a}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(16*b^3*x^3 + 24*a*b^2*x^2 + 6*a^2*b*x - a^3)/((a^4*b*x^2 + a
^5*x)*sqrt(b*x + a)*sqrt(x))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.229639, size = 234, normalized size = 2.79

$$-\frac{\sqrt{bx+a}\left(\frac{8\,(bx+a)a|b|}{b^2}-\frac{9\,a^2|b|}{b^2}\right)}{24\,((bx+a)b-ab)^{\frac{3}{2}}}+\frac{8\left(3\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^4 b^{\frac{7}{2}}+9\,a\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2 b^{\frac{9}{2}}+4\,a^2 b^{\frac{11}{2}}\right)}{3\left(\left(\sqrt{bx+a}\sqrt{b}-\sqrt{(bx+a)b-ab}\right)^2+ab\right)^3 a^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(b*x + a)*(8*(b*x + a)*a*abs(b)/b^2 - 9*a^2*abs(b)/b^2)
/((b*x + a)*b - a*b)^(3/2) + 8/3*(3*(sqrt(b*x + a)*sqrt(b) - sqrt
((b*x + a)*b - a*b))^4*b^(7/2) + 9*a*(sqrt(b*x + a)*sqrt(b) - sqr
t((b*x + a)*b - a*b))^2*b^(9/2) + 4*a^2*b^(11/2))/(((sqrt(b*x + a
)*sqrt(b) - sqrt((b*x + a)*b - a*b))^2 + a*b)^3*a^3*abs(b))
```

3.590 $\int \frac{x^{5/2}}{\sqrt{a-bx}} \, dx$

Optimal. Leaf size=105

$$\frac{5a^3 \tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{7/2}} - \frac{5a^2\sqrt{x}\sqrt{a-bx}}{8b^3} - \frac{5ax^{3/2}\sqrt{a-bx}}{12b^2} - \frac{x^{5/2}\sqrt{a-bx}}{3b}$$

```
[Out] (-5*a^2*Sqrt[x]*Sqrt[a - b*x])/(8*b^3) - (5*a*x^(3/2)*Sqrt[a - b*
x])/(12*b^2) - (x^(5/2)*Sqrt[a - b*x])/(3*b) + (5*a^3*ArcTan[(Sqr
t[b]*Sqrt[x])/Sqrt[a - b*x]])/(8*b^(7/2))
```

Rubi [A] time = 0.0850979, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$

$$\frac{5a^3 \tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{7/2}} - \frac{5a^2\sqrt{x}\sqrt{a-bx}}{8b^3} - \frac{5ax^{3/2}\sqrt{a-bx}}{12b^2} - \frac{x^{5/2}\sqrt{a-bx}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/Sqrt[a - b*x],x]
```

```
[Out] (-5*a^2*Sqrt[x]*Sqrt[a - b*x])/(8*b^3) - (5*a*x^(3/2)*Sqrt[a - b*
x])/(12*b^2) - (x^(5/2)*Sqrt[a - b*x])/(3*b) + (5*a^3*ArcTan[(Sqr
t[b]*Sqrt[x])/Sqrt[a - b*x]])/(8*b^(7/2))
```

Rubi in Sympy [A] time = 11.222, size = 94, normalized size = 0.9

$$\frac{5a^3 \operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{\frac{7}{2}}} - \frac{5a^2\sqrt{x}\sqrt{a-bx}}{8b^3} - \frac{5ax^{\frac{3}{2}}\sqrt{a-bx}}{12b^2} - \frac{x^{\frac{5}{2}}\sqrt{a-bx}}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(-b*x+a)**(1/2),x)
```

```
[Out] 5*a**3*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(8*b**(7/2)) - 5*a**2*
sqrt(x)*sqrt(a - b*x)/(8*b**3) - 5*a*x**(3/2)*sqrt(a - b*x)/(12*b
**2) - x**(5/2)*sqrt(a - b*x)/(3*b)
```

Mathematica [A] time = 0.0880712, size = 76, normalized size = 0.72

$$\frac{5a^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{8b^{7/2}}-\frac{\sqrt{x}\sqrt{a-bx}\left(15a^2+10abx+8b^2x^2\right)}{24b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/Sqrt[a - b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[a - b*x]*(15*a^2 + 10*a*b*x + 8*b^2*x^2))/(24*b^3)
 + (5*a^3*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(8*b^(7/2))
```

Maple [A] time = 0.007, size = 108, normalized size = 1.

$$-\frac{1}{3\,b}x^{\frac{5}{2}}\sqrt{-bx+a}-\frac{5\,a}{12\,b^2}x^{\frac{3}{2}}\sqrt{-bx+a}-\frac{5\,a^2}{8\,b^3}\sqrt{x}\sqrt{-bx+a}+\frac{5\,a^3}{16}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(-b*x+a)^(1/2),x)
```

```
[Out] -1/3*x^(5/2)*(-b*x+a)^(1/2)/b-5/12*a*x^(3/2)*(-b*x+a)^(1/2)/b^2-5
/8*a^2*x^(1/2)*(-b*x+a)^(1/2)/b^3+5/16*a^3/b^(7/2)*(x*(-b*x+a))^(
1/2)/x^(1/2)/(-b*x+a)^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*
x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(-b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.243389, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^{3}\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)-2\,\left(8\,b^{2}x^{2}+10\,abx+15\,a^{2}\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{48\,\sqrt{-b}b^{3}},\right.$$
$$\left.-\frac{15\,a^{3}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\left(8\,b^{2}x^{2}+10\,abx+15\,a^{2}\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{24\,b^{\frac{7}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(-b*x + a),x, algorithm="fricas")
```

```
[Out] [1/48*(15*a^3*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(
-b)) - 2*(8*b^2*x^2 + 10*a*b*x + 15*a^2)*sqrt(-b*x + a)*sqrt(-b)*
sqrt(x))/(sqrt(-b)*b^3), -1/24*(15*a^3*arctan(sqrt(-b*x + a)/(sqr
t(b)*sqrt(x))) + (8*b^2*x^2 + 10*a*b*x + 15*a^2)*sqrt(-b*x + a)*s
qrt(b)*sqrt(x))/b^(7/2)]
```

Sympy [A] time = 69.2128, size = 270, normalized size = 2.57

$$\begin{cases}\frac{5ia^{\frac{5}{2}}\sqrt{x}}{8b^{3}\sqrt{-1+\frac{bx}{a}}}-\frac{5ia^{\frac{3}{2}}x^{\frac{3}{2}}}{24b^{2}\sqrt{-1+\frac{bx}{a}}}-\frac{i\sqrt{a}x^{\frac{5}{2}}}{12b\sqrt{-1+\frac{bx}{a}}}-\frac{5ia^{3}\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{7}{2}}}-\frac{ix^{\frac{7}{2}}}{3\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right|>1\\ -\frac{5a^{\frac{5}{2}}\sqrt{x}}{8b^{3}\sqrt{1-\frac{bx}{a}}}+\frac{5a^{\frac{3}{2}}x^{\frac{3}{2}}}{24b^{2}\sqrt{1-\frac{bx}{a}}}+\frac{\sqrt{a}x^{\frac{5}{2}}}{12b\sqrt{1-\frac{bx}{a}}}+\frac{5a^{3}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8b^{\frac{7}{2}}}+\frac{x^{\frac{7}{2}}}{3\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((5*I*a**(5/2)*sqrt(x)/(8*b**3*sqrt(-1 + b*x/a)) - 5*I*a
**(3/2)*x**(3/2)/(24*b**2*sqrt(-1 + b*x/a)) - I*sqrt(a)*x**(5/2)/
(12*b*sqrt(-1 + b*x/a)) - 5*I*a**3*acosh(sqrt(b)*sqrt(x)/sqrt(a))
/(8*b**(7/2)) - I*x**(7/2)/(3*sqrt(a)*sqrt(-1 + b*x/a)), Abs(b*x/
a) > 1), (-5*a**(5/2)*sqrt(x)/(8*b**3*sqrt(1 - b*x/a)) + 5*a**(3/
2)*x**(3/2)/(24*b**2*sqrt(1 - b*x/a)) + sqrt(a)*x**(5/2)/(12*b*sq
rt(1 - b*x/a)) + 5*a**3*asin(sqrt(b)*sqrt(x)/sqrt(a))/(8*b**(7/2)
) + x**(7/2)/(3*sqrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(-b*x + a),x, algorithm="giac")

[Out] Exception raised: NotImplementedError
```

3.591 $\int \frac{x^{3/2}}{\sqrt{a-bx}}\,dx$

Optimal. Leaf size=80

$$\frac{3a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{5/2}}-\frac{3a\sqrt{x}\sqrt{a-bx}}{4b^2}-\frac{x^{3/2}\sqrt{a-bx}}{2b}$$

```
[Out] (-3*a*Sqrt[x]*Sqrt[a - b*x])/(4*b^2) - (x^(3/2)*Sqrt[a - b*x])/(2
*b) + (3*a^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(5/2))
```

Rubi [A] time = 0.0551251, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{5/2}}-\frac{3a\sqrt{x}\sqrt{a-bx}}{4b^2}-\frac{x^{3/2}\sqrt{a-bx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/Sqrt[a - b*x],x]
```

```
[Out] (-3*a*Sqrt[x]*Sqrt[a - b*x])/(4*b^2) - (x^(3/2)*Sqrt[a - b*x])/(2
*b) + (3*a^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(5/2))
```

Rubi in Sympy [A] time = 7.99522, size = 71, normalized size = 0.89

$$-\frac{3a^2\,\mathrm{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{4b^{\frac{5}{2}}}-\frac{3a\sqrt{x}\sqrt{a-bx}}{4b^2}-\frac{x^{\frac{3}{2}}\sqrt{a-bx}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(-b*x+a)**(1/2),x)
```

```
[Out] -3*a**2*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/(4*b**(5/2)) - 3*a*
sqrt(x)*sqrt(a - b*x)/(4*b**2) - x**(3/2)*sqrt(a - b*x)/(2*b)
```

Mathematica [A] time = 0.0677266, size = 65, normalized size = 0.81

$$\frac{3a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{5/2}}-\frac{\sqrt{x}\sqrt{a-bx}(3a+2bx)}{4b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/Sqrt[a - b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[a - b*x]*(3*a + 2*b*x))/(4*b^2) + (3*a^2*ArcTan[(S
qrt[b]*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(5/2))
```

Maple [A] time = 0.008, size = 89, normalized size = 1.1

$$-\frac{1}{2b}x^{\frac{3}{2}}\sqrt{-bx+a}-\frac{3a}{4b^2}\sqrt{x}\sqrt{-bx+a}+\frac{3a^2}{8}\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(-b*x+a)^(1/2),x)
```

```
[Out] -1/2*x^(3/2)*(-b*x+a)^(1/2)/b-3/4*a*x^(1/2)*(-b*x+a)^(1/2)/b^2+3/
8*a^2/b^(5/2)*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)*arctan(b^
(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(-b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.255492, size = 1, normalized size = 0.01

$$\left[\frac{3a^2\log\left(-2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)-2(2bx+3a)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{8\sqrt{-b}b^2},\right.$$
$$\left.-\frac{3a^2\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+(2bx+3a)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{4b^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(-b*x + a),x, algorithm="fricas")
```

```
[Out] [1/8*(3*a^2*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b
)) - 2*(2*b*x + 3*a)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b
^2), -1/4*(3*a^2*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) + (2*b*
x + 3*a)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))/b^(5/2)]
```

Sympy [A] time = 17.2169, size = 214, normalized size = 2.68

$$\begin{cases} \frac{3ia^{\frac{3}{2}}\sqrt{x}}{4b^{2}\sqrt{-1+\frac{bx}{a}}} - \frac{i\sqrt{a}x^{\frac{3}{2}}}{4b\sqrt{-1+\frac{bx}{a}}} - \frac{3ia^{2}\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{5}{2}}} - \frac{ix^{\frac{5}{2}}}{2\sqrt{a}\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right| > 1 \\ -\frac{3a^{\frac{3}{2}}\sqrt{x}}{4b^{2}\sqrt{1-\frac{bx}{a}}} + \frac{\sqrt{a}x^{\frac{3}{2}}}{4b\sqrt{1-\frac{bx}{a}}} + \frac{3a^{2}\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{5}{2}}} + \frac{x^{\frac{5}{2}}}{2\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((3*I*a**(3/2)*sqrt(x)/(4*b**2*sqrt(-1 + b*x/a)) - I*sqr
t(a)*x**(3/2)/(4*b*sqrt(-1 + b*x/a)) - 3*I*a**2*acosh(sqrt(b)*sqr
t(x)/sqrt(a))/(4*b**(5/2)) - I*x**(5/2)/(2*sqrt(a)*sqrt(-1 + b*x/
a)), Abs(b*x/a) > 1), (-3*a**(3/2)*sqrt(x)/(4*b**2*sqrt(1 - b*x/a
)) + sqrt(a)*x**(3/2)/(4*b*sqrt(1 - b*x/a)) + 3*a**2*asin(sqrt(b)
*sqrt(x)/sqrt(a))/(4*b**(5/2)) + x**(5/2)/(2*sqrt(a)*sqrt(1 - b*x
/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(-b*x + a),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.592 $\int \frac{\sqrt{x}}{\sqrt{a-bx}}\,dx$

Optimal. Leaf size=50

$$\frac{a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{a-bx}}{b}$$

```
[Out] -((Sqrt[x]*Sqrt[a - b*x])/b) + (a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a
 - b*x]])/b^(3/2)
```

Rubi [A] time = 0.0360147, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{a-bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/Sqrt[a - b*x],x]
```

```
[Out] -((Sqrt[x]*Sqrt[a - b*x])/b) + (a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a
 - b*x]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.14887, size = 42, normalized size = 0.84

$$-\frac{a\,\mathrm{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{b^{\frac{3}{2}}}-\frac{\sqrt{x}\sqrt{a-bx}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(-b*x+a)**(1/2),x)
```

```
[Out] -a*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/b**(3/2) - sqrt(x)*sqrt(
a - b*x)/b
```

Mathematica [A] time = 0.0359431, size = 50, normalized size = 1.

$$\frac{a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{a-bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/Sqrt[a - b*x],x]
```

```
[Out] -((Sqrt[x]*Sqrt[a - b*x])/b) + (a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a
 - b*x]])/b^(3/2)
```

Maple [A] time = 0.007, size = 70, normalized size = 1.4

$$-\frac{1}{b}\sqrt{x}\sqrt{-bx+a}+\frac{a}{2}\sqrt{x\left(-bx+a\right)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^{2}+ax}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(-b*x+a)^(1/2),x)
```

```
[Out] -x^(1/2)*(-b*x+a)^(1/2)/b+1/2*a/b^(3/2)*(x*(-b*x+a))^(1/2)/x^(1/2
)/(-b*x+a)^(1/2)*arctan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232849, size = 1, normalized size = 0.02

$$\left[\frac{a\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-\left(2\,bx-a\right)\sqrt{-b}\right)-2\,\sqrt{-bx+a}\sqrt{-b}\sqrt{x}}{2\,\sqrt{-b}b},-\frac{a\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\sqrt{-bx+a}\sqrt{b}\sqrt{x}}{b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-b*x + a),x, algorithm="fricas")
```

```
[Out] [1/2*(a*log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b)) -
 2*sqrt(-b*x + a)*sqrt(-b)*sqrt(x))/(sqrt(-b)*b), -(a*arctan(sqrt
```

```
(-b*x + a)/(sqrt(b)*sqrt(x))) + sqrt(-b*x + a)*sqrt(b)*sqrt(x))/b
^(3/2)]
```

Sympy [A] time = 7.89915, size = 121, normalized size = 2.42

$$\begin{cases} -\frac{i\sqrt{a}\sqrt{x}\sqrt{-1+\frac{bx}{a}}}{b} - \frac{ia\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{\sqrt{a}\sqrt{x}}{b\sqrt{1-\frac{bx}{a}}} + \frac{a\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}} + \frac{x^{\frac{3}{2}}}{\sqrt{a}\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((-I*sqrt(a)*sqrt(x)*sqrt(-1 + b*x/a)/b - I*a*acosh(sqrt
(b)*sqrt(x)/sqrt(a))/b**(3/2), Abs(b*x/a) > 1), (-sqrt(a)*sqrt(x)
/(b*sqrt(1 - b*x/a)) + a*asin(sqrt(b)*sqrt(x)/sqrt(a))/b**(3/2) +
 x**(3/2)/(sqrt(a)*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-b*x + a),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.593 $\int \frac{1}{\sqrt{x}\sqrt{a-bx}}\,dx$

Optimal. Leaf size=29

$$\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}$$

```
[Out] (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/Sqrt[b]
```

Rubi [A] time = 0.0219393, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*Sqrt[a - b*x]),x]

[Out] (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/Sqrt[b]
```

Rubi in Sympy [A] time = 3.62393, size = 27, normalized size = 0.93

$$-\frac{2\operatorname{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2)/(-b*x+a)**(1/2),x)

[Out] -2*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/sqrt(b)
```

Mathematica [A] time = 0.0128697, size = 29, normalized size = 1.

$$\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*Sqrt[a - b*x]),x]
```

```
[Out] (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/Sqrt[b]
```

Maple [B] time = 0.007, size = 51, normalized size = 1.8

$$1\sqrt{x(-bx+a)}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2)/(-b*x+a)^(1/2),x)
```

```
[Out] (x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)/b^(1/2)*arctan(b^(1/2)*
(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217817, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(-2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)}{\sqrt{-b}}, -\frac{2\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [log(-2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b))/sqrt(-b)
, -2*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x)))/sqrt(b)]
```

Sympy [A] time = 4.09304, size = 54, normalized size = 1.86

$$\begin{cases} -\frac{2i\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{b}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ \frac{2\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2)/(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(b)*sqrt(x)/sqrt(a))/sqrt(b), Abs(b*x/a
) > 1), (2*asin(sqrt(b)*sqrt(x)/sqrt(a))/sqrt(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*sqrt(x)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.594 $\int \frac{1}{x^{3/2}\sqrt{a-bx}}\,dx$

Optimal. Leaf size=20

$$-\frac{2\sqrt{a-bx}}{a\sqrt{x}}$$

```
[Out] (-2*Sqrt[a - b*x])/(a*Sqrt[x])
```

Rubi [A] time = 0.0131849, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$

$$-\frac{2\sqrt{a-bx}}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*Sqrt[a - b*x]),x]

[Out] (-2*Sqrt[a - b*x])/(a*Sqrt[x])
```

Rubi in Sympy [A] time = 2.65643, size = 17, normalized size = 0.85

$$-\frac{2\sqrt{a-bx}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(-b*x+a)**(1/2),x)

[Out] -2*sqrt(a - b*x)/(a*sqrt(x))
```

Mathematica [A] time = 0.014332, size = 20, normalized size = 1.

$$-\frac{2\sqrt{a-bx}}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*Sqrt[a - b*x]),x]
```

```
[Out] (-2*Sqrt[a - b*x])/(a*Sqrt[x])
```

Maple [A] time = 0.006, size = 17, normalized size = 0.9

$$-2\,\frac{\sqrt{-bx+a}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(-b*x+a)^(1/2),x)

[Out] -2*(-b*x+a)^(1/2)/a/x^(1/2)
```

Maxima [A] time = 1.38745, size = 22, normalized size = 1.1

$$-\frac{2\,\sqrt{-bx+a}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*x^(3/2)),x, algorithm="maxima")

[Out] -2*sqrt(-b*x + a)/(a*sqrt(x))
```

Fricas [A] time = 0.211522, size = 22, normalized size = 1.1

$$-\frac{2\,\sqrt{-bx+a}}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*x^(3/2)),x, algorithm="fricas")

[Out] -2*sqrt(-b*x + a)/(a*sqrt(x))
```

Sympy [A] time = 4.64539, size = 46, normalized size = 2.3

$$\begin{cases} -\frac{2\sqrt{b}\sqrt{\frac{a}{bx}-1}}{a} & \text{for}\ \left|\frac{a}{bx}\right| > 1 \\ -\frac{2i\sqrt{b}\sqrt{-\frac{a}{bx}+1}}{a} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((-2*sqrt(b)*sqrt(a/(b*x) - 1)/a, Abs(a/(b*x)) > 1), (-2
*I*sqrt(b)*sqrt(-a/(b*x) + 1)/a, True))
```

GIAC/XCAS [A] time = 0.230662, size = 47, normalized size = 2.35

$$-\frac{2\sqrt{-bx+a}b^2}{\sqrt{(bx-a)b+ab}a|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(-b*x + a)*b^2/(sqrt((b*x - a)*b + a*b)*a*abs(b))
```

3.595 $\int \frac{1}{x^{5/2}\sqrt{a-bx}}\,dx$

Optimal. Leaf size=46

$$-\frac{4b\sqrt{a-bx}}{3a^2\sqrt{x}}-\frac{2\sqrt{a-bx}}{3ax^{3/2}}$$

```
[Out] (-2*Sqrt[a - b*x])/(3*a*x^(3/2)) - (4*b*Sqrt[a - b*x])/(3*a^2*Sqr
t[x])
```

Rubi [A] time = 0.0287786, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{4b\sqrt{a-bx}}{3a^2\sqrt{x}}-\frac{2\sqrt{a-bx}}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*Sqrt[a - b*x]),x]
```

```
[Out] (-2*Sqrt[a - b*x])/(3*a*x^(3/2)) - (4*b*Sqrt[a - b*x])/(3*a^2*Sqr
t[x])
```

Rubi in Sympy [A] time = 4.19993, size = 41, normalized size = 0.89

$$-\frac{2\sqrt{a-bx}}{3ax^{\frac{3}{2}}}-\frac{4b\sqrt{a-bx}}{3a^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(-b*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(a - b*x)/(3*a*x**(3/2)) - 4*b*sqrt(a - b*x)/(3*a**2*sqrt(
x))
```

Mathematica [A] time = 0.0195036, size = 28, normalized size = 0.61

$$-\frac{2\sqrt{a-bx}(a+2bx)}{3a^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*Sqrt[a - b*x]),x]

[Out] (-2*Sqrt[a - b*x]*(a + 2*b*x))/(3*a^2*x^(3/2))
```

Maple [A] time = 0.007, size = 23, normalized size = 0.5

$$-\frac{4\,bx+2\,a}{3\,a^2}\sqrt{-bx+a}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(-b*x+a)^(1/2),x)

[Out] -2/3*(-b*x+a)^(1/2)*(2*b*x+a)/x^(3/2)/a^2
```

Maxima [A] time = 1.33195, size = 43, normalized size = 0.93

$$-\frac{2\left(\frac{3\sqrt{-bx+a}b}{\sqrt{x}}+\frac{(-bx+a)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\right)}{3\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*x^(5/2)),x, algorithm="maxima")

[Out] -2/3*(3*sqrt(-b*x + a)*b/sqrt(x) + (-b*x + a)^(3/2)/x^(3/2))/a^2
```

Fricas [A] time = 0.21489, size = 30, normalized size = 0.65

$$-\frac{2\,(2\,bx+a)\sqrt{-bx+a}}{3\,a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*x^(5/2)),x, algorithm="fricas")

[Out] -2/3*(2*b*x + a)*sqrt(-b*x + a)/(a^2*x^(3/2))
```

Sympy [A] time = 23.865, size = 177, normalized size = 3.85

$$\begin{cases} -\frac{2\sqrt{b}\sqrt{\frac{a}{bx}-1}}{3ax} - \frac{4b^{\frac{3}{2}}\sqrt{\frac{a}{bx}-1}}{3a^2} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{2ia^2b^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{-3a^3bx+3a^2b^2x^2} + \frac{2iab^{\frac{5}{2}}x\sqrt{-\frac{a}{bx}+1}}{-3a^3bx+3a^2b^2x^2} - \frac{4ib^{\frac{7}{2}}x^2\sqrt{-\frac{a}{bx}+1}}{-3a^3bx+3a^2b^2x^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(-b*x+a)**(1/2),x)
```

```
[Out] Piecewise((-2*sqrt(b)*sqrt(a/(b*x) - 1)/(3*a*x) - 4*b**(3/2)*sqrt
(a/(b*x) - 1)/(3*a**2), Abs(a/(b*x)) > 1), (2*I*a**2*b**(3/2)*sqr
t(-a/(b*x) + 1)/(-3*a**3*b*x + 3*a**2*b**2*x**2) + 2*I*a*b**(5/2)
*x*sqrt(-a/(b*x) + 1)/(-3*a**3*b*x + 3*a**2*b**2*x**2) - 4*I*b**(
7/2)*x**2*sqrt(-a/(b*x) + 1)/(-3*a**3*b*x + 3*a**2*b**2*x**2), Tr
ue))
```

GIAC/XCAS [A] time = 0.21439, size = 73, normalized size = 1.59

$$-\frac{\sqrt{-bx+a}b\left(\frac{2(bx-a)}{a^2b^3} + \frac{3}{ab^3}\right)}{24\left((bx-a)b+ab\right)^{\frac{3}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(-b*x + a)*b*(2*(b*x - a)/(a^2*b^3) + 3/(a*b^3))/(((b*x
 - a)*b + a*b)^(3/2)*abs(b))
```

3.596 $\int \frac{x^{5/2}}{(a-bx)^{3/2}} dx$

Optimal. Leaf size=100

$$-\frac{15a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{7/2}}+\frac{15a\sqrt{x}\sqrt{a-bx}}{4b^3}+\frac{5x^{3/2}\sqrt{a-bx}}{2b^2}+\frac{2x^{5/2}}{b\sqrt{a-bx}}$$

```
[Out] (2*x^(5/2))/(b*Sqrt[a - b*x]) + (15*a*Sqrt[x]*Sqrt[a - b*x])/(4*b
^3) + (5*x^(3/2)*Sqrt[a - b*x])/(2*b^2) - (15*a^2*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(7/2))
```

Rubi [A] time = 0.078231, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$-\frac{15a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{7/2}}+\frac{15a\sqrt{x}\sqrt{a-bx}}{4b^3}+\frac{5x^{3/2}\sqrt{a-bx}}{2b^2}+\frac{2x^{5/2}}{b\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(a - b*x)^(3/2),x]
```

```
[Out] (2*x^(5/2))/(b*Sqrt[a - b*x]) + (15*a*Sqrt[x]*Sqrt[a - b*x])/(4*b
^3) + (5*x^(3/2)*Sqrt[a - b*x])/(2*b^2) - (15*a^2*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a - b*x]])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 11.6016, size = 90, normalized size = 0.9

$$-\frac{15a^2\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{\frac{7}{2}}}+\frac{15a\sqrt{x}\sqrt{a-bx}}{4b^3}+\frac{2x^{\frac{5}{2}}}{b\sqrt{a-bx}}+\frac{5x^{\frac{3}{2}}\sqrt{a-bx}}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(-b*x+a)**(3/2),x)
```

```
[Out] -15*a**2*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/(4*b**(7/2)) + 15*a*
sqrt(x)*sqrt(a - b*x)/(4*b**3) + 2*x**(5/2)/(b*sqrt(a - b*x)) + 5
*x**(3/2)*sqrt(a - b*x)/(2*b**2)
```

Mathematica [A] time = 0.0926373, size = 94, normalized size = 0.94

$$\sqrt{a-bx}\left(-\frac{2a^2\sqrt{x}}{b^3(bx-a)}+\frac{7a\sqrt{x}}{4b^3}+\frac{x^{3/2}}{2b^2}\right)-\frac{15a^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{4b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a - b*x)^(3/2),x]
```

```
[Out] Sqrt[a - b*x]*((7*a*Sqrt[x])/(4*b^3) + x^(3/2)/(2*b^2) - (2*a^2*S
qrt[x])/(b^3*(-a + b*x))) - (15*a^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt
[a - b*x]])/(4*b^(7/2))
```

Maple [A] time = 0.039, size = 127, normalized size = 1.3

$$\frac{2\,bx+7\,a}{4\,b^3}\sqrt{x}\sqrt{-bx+a}$$
$$+1\left(-\frac{15\,a^2}{8}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{7}{2}}-2\,\frac{a^2}{b^4}\sqrt{-b\left(x-\frac{a}{b}\right)^2-\left(x-\frac{a}{b}\right)a}\left(x-\frac{a}{b}\right)^{-1}\right)\sqrt{x\left(-bx+a\right)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(-b*x+a)^(3/2),x)
```

```
[Out] 1/4*(2*b*x+7*a)/b^3*x^(1/2)*(-b*x+a)^(1/2)+(-15/8*a^2/b^(7/2)*arc
tan(b^(1/2)*(x-1/2*a/b)/(-b*x^2+a*x)^(1/2))-2*a^2/b^4/(x-a/b)*(-b
*(x-a/b)^2-(x-a/b)*a)^(1/2))*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^
(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222319, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{-bx+a}a^2\sqrt{x}\log\left(2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)-2\left(2b^2x^3+5abx^2-15a^2x\right)\sqrt{-b}}{8\sqrt{-bx+a}\sqrt{-b}b^3\sqrt{x}}, \frac{15\sqrt{-bx+a}a^2\sqrt{x}\arctan\left(\right.}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*(15*sqrt(-b*x + a)*a^2*sqrt(x)*log(2*sqrt(-b*x + a)*b*sqrt(x
) - (2*b*x - a)*sqrt(-b)) - 2*(2*b^2*x^3 + 5*a*b*x^2 - 15*a^2*x)*
sqrt(-b))/(sqrt(-b*x + a)*sqrt(-b)*b^3*sqrt(x)), 1/4*(15*sqrt(-b*
x + a)*a^2*sqrt(x)*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))) - (2*
b^2*x^3 + 5*a*b*x^2 - 15*a^2*x)*sqrt(b))/(sqrt(-b*x + a)*b^(7/2)*
sqrt(x))]
```

Sympy [A] time = 85.3056, size = 224, normalized size = 2.24

$$\begin{cases} -\frac{15ia^{\frac{3}{2}}\sqrt{x}}{4b^3\sqrt{-1+\frac{bx}{a}}}+\frac{5i\sqrt{a}x^{\frac{3}{2}}}{4b^2\sqrt{-1+\frac{bx}{a}}}+\frac{15ia^2\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{7}{2}}}+\frac{ix^{\frac{5}{2}}}{2\sqrt{a}b\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right|>1 \\ \frac{15a^{\frac{3}{2}}\sqrt{x}}{4b^3\sqrt{1-\frac{bx}{a}}}-\frac{5\sqrt{a}x^{\frac{3}{2}}}{4b^2\sqrt{1-\frac{bx}{a}}}-\frac{15a^2\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{\frac{7}{2}}}-\frac{x^{\frac{5}{2}}}{2\sqrt{a}b\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(-b*x+a)**(3/2),x)
```

```
[Out] Piecewise((-15*I*a**(3/2)*sqrt(x)/(4*b**3*sqrt(-1 + b*x/a)) + 5*I
*sqrt(a)*x**(3/2)/(4*b**2*sqrt(-1 + b*x/a)) + 15*I*a**2*acosh(sqr
t(b)*sqrt(x)/sqrt(a))/(4*b**(7/2)) + I*x**(5/2)/(2*sqrt(a)*b*sqrt
(-1 + b*x/a)), Abs(b*x/a) > 1), (15*a**(3/2)*sqrt(x)/(4*b**3*sqrt
(1 - b*x/a)) - 5*sqrt(a)*x**(3/2)/(4*b**2*sqrt(1 - b*x/a)) - 15*a
**2*asin(sqrt(b)*sqrt(x)/sqrt(a))/(4*b**(7/2)) - x**(5/2)/(2*sqrt
(a)*b*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [A] time = 0.228643, size = 208, normalized size = 2.08

$$\frac{\left(2\sqrt{(bx-a)b+ab}\sqrt{-bx+a}\left(\frac{2(bx-a)}{b^3}+\frac{9a}{b^3}\right)-\frac{32a^3\sqrt{-b}}{\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)b^2}+\frac{15a^2\sqrt{-b}\ln\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2\right)}{b^3}\right)|b}{8b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/8*(2*sqrt((b*x - a)*b + a*b)*sqrt(-b*x + a)*(2*(b*x - a)/b^3 +
9*a/b^3) - 32*a^3*sqrt(-b)/(((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x
 - a)*b + a*b))^2 - a*b)*b^2) + 15*a^2*sqrt(-b)*ln((sqrt(-b*x + a
)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^2)/b^3)*abs(b)/b^2
```

3.597 $\int \frac{x^{3/2}}{(a-bx)^{3/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{3a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{a-bx}}{b^2}+\frac{2x^{3/2}}{b\sqrt{a-bx}}$$

```
[Out] (2*x^(3/2))/(b*Sqrt[a - b*x]) + (3*Sqrt[x]*Sqrt[a - b*x])/b^2 - (
3*a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/b^(5/2)
```

Rubi [A] time = 0.055527, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{3a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{a-bx}}{b^2}+\frac{2x^{3/2}}{b\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a - b*x)^(3/2),x]
```

```
[Out] (2*x^(3/2))/(b*Sqrt[a - b*x]) + (3*Sqrt[x]*Sqrt[a - b*x])/b^2 - (
3*a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.01517, size = 63, normalized size = 0.89

$$-\frac{3a\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{\frac{5}{2}}}+\frac{2x^{\frac{3}{2}}}{b\sqrt{a-bx}}+\frac{3\sqrt{x}\sqrt{a-bx}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(-b*x+a)**(3/2),x)
```

```
[Out] -3*a*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/b**(5/2) + 2*x**(3/2)/(b
*sqrt(a - b*x)) + 3*sqrt(x)*sqrt(a - b*x)/b**2
```

Mathematica [A] time = 0.0913292, size = 58, normalized size = 0.82

$$\frac{\sqrt{x}(3a-bx)}{b^2\sqrt{a-bx}}-\frac{3a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a - b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*(3*a - b*x))/(b^2*Sqrt[a - b*x]) - (3*a*ArcTan[(Sqrt[b]*
Sqrt[x])/Sqrt[a - b*x]])/b^(5/2)
```

Maple [B] time = 0.036, size = 114, normalized size = 1.6

$$\frac{1}{b^2}\sqrt{x}\sqrt{-bx+a} +1\left(-\frac{3a}{2}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{5}{2}}-2\frac{a}{b^3}\sqrt{-b\left(x-\frac{a}{b}\right)^2-\left(x-\frac{a}{b}\right)a}\left(x-\frac{a}{b}\right)^{-1}\right)\sqrt{x(-bx+a)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(-b*x+a)^(3/2),x)
```

```
[Out] x^(1/2)*(-b*x+a)^(1/2)/b^2+(-3/2*a/b^(5/2)*arctan(b^(1/2)*(x-1/2*
a/b)/(-b*x^2+a*x)^(1/2))-2*a/b^3/(x-a/b)*(-b*(x-a/b)^2-(x-a/b)*a)
^(1/2))*(x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227751, size = 1, normalized size = 0.01

$$\left[\frac{3\sqrt{-bx+a}a\sqrt{x}\log\left(2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)-2\left(bx^2-3ax\right)\sqrt{-b}}{2\sqrt{-bx+a}\sqrt{-b}b^2\sqrt{x}}, \frac{3\sqrt{-bx+a}a\sqrt{x}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(bx^2-\right.}{\sqrt{-bx+a}b^{\frac{5}{2}}\sqrt{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(3*sqrt(-b*x + a)*a*sqrt(x)*log(2*sqrt(-b*x + a)*b*sqrt(x) -
 (2*b*x - a)*sqrt(-b)) - 2*(b*x^2 - 3*a*x)*sqrt(-b))/(sqrt(-b*x +
 a)*sqrt(-b)*b^2*sqrt(x)), (3*sqrt(-b*x + a)*a*sqrt(x)*arctan(sqr
t(-b*x + a)/(sqrt(b)*sqrt(x))) - (b*x^2 - 3*a*x)*sqrt(b))/(sqrt(-
b*x + a)*b^(5/2)*sqrt(x))]
```

Sympy [A] time = 16.6603, size = 155, normalized size = 2.18

$$\begin{cases} -\frac{3i\sqrt{a}\sqrt{x}}{b^2\sqrt{-1+\frac{bx}{a}}} + \frac{3ia\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}} + \frac{ix^{\frac{3}{2}}}{\sqrt{a}b\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right| > 1 \\ \frac{3\sqrt{a}\sqrt{x}}{b^2\sqrt{1-\frac{bx}{a}}} - \frac{3a\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{5}{2}}} - \frac{x^{\frac{3}{2}}}{\sqrt{a}b\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(-b*x+a)**(3/2),x)
```

```
[Out] Piecewise((-3*I*sqrt(a)*sqrt(x)/(b**2*sqrt(-1 + b*x/a)) + 3*I*a*a
cosh(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) + I*x**(3/2)/(sqrt(a)*b*sq
rt(-1 + b*x/a)), Abs(b*x/a) > 1), (3*sqrt(a)*sqrt(x)/(b**2*sqrt(1
 - b*x/a)) - 3*a*asin(sqrt(b)*sqrt(x)/sqrt(a))/b**(5/2) - x**(3/2
)/(sqrt(a)*b*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [A] time = 0.222663, size = 176, normalized size = 2.48

$$-\frac{\left(\frac{8\,a^2\sqrt{-b}}{\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab} + \frac{3\,a\ln\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2\right)}{\sqrt{-b}} - \frac{2\,\sqrt{(bx-a)b+ab}\sqrt{-bx+a}}{b}\right)|b|}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] -1/2*(8*a^2*sqrt(-b)/((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b
 + a*b))^2 - a*b) + 3*a*ln((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x -
 a)*b + a*b))^2)/sqrt(-b) - 2*sqrt((b*x - a)*b + a*b)*sqrt(-b*x +
 a)/b)*abs(b)/b^3
```

3.598 $\int \frac{\sqrt{x}}{(a-bx)^{3/2}}\,dx$

Optimal. Leaf size=50

$$\frac{2\sqrt{x}}{b\sqrt{a-bx}}-\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{3/2}}$$

```
[Out] (2*Sqrt[x])/(b*Sqrt[a - b*x]) - (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[
a - b*x]])/b^(3/2)
```

Rubi [A] time = 0.0363638, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{2\sqrt{x}}{b\sqrt{a-bx}}-\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a - b*x)^(3/2),x]
```

```
[Out] (2*Sqrt[x])/(b*Sqrt[a - b*x]) - (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[
a - b*x]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.54448, size = 42, normalized size = 0.84

$$\frac{2\sqrt{x}}{b\sqrt{a-bx}}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(-b*x+a)**(3/2),x)
```

```
[Out] 2*sqrt(x)/(b*sqrt(a - b*x)) - 2*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x
))/b**(3/2)
```

Mathematica [A] time = 0.0735699, size = 50, normalized size = 1.

$$\frac{2\sqrt{x}}{b\sqrt{a-bx}}-\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a - b*x)^(3/2),x]
```

```
[Out] (2*Sqrt[x])/(b*Sqrt[a - b*x]) - (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[
a - b*x]])/b^(3/2)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\sqrt{x}\,(-bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(-b*x+a)^(3/2),x)
```

```
[Out] int(x^(1/2)/(-b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226061, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-bx+a}\sqrt{x}\log\left(2\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)+2\sqrt{-b}x}{\sqrt{-bx+a}\sqrt{-b}b\sqrt{x}},\ \frac{2\left(\sqrt{-bx+a}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\sqrt{b}x\right)}{\sqrt{-bx+a}b^{\frac{3}{2}}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(-b*x + a)*sqrt(x)*log(2*sqrt(-b*x + a)*b*sqrt(x) - (2*b*x
- a)*sqrt(-b)) + 2*sqrt(-b)*x)/(sqrt(-b*x + a)*sqrt(-b)*b*sqrt(x)
```

```
), 2*(sqrt(-b*x + a)*sqrt(x)*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(
x))) + sqrt(b)*x)/(sqrt(-b*x + a)*b^(3/2)*sqrt(x))]
```

Sympy [A] time = 6.94861, size = 102, normalized size = 2.04

$$\begin{cases} \frac{2i\operatorname{acosh}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}} - \frac{2i\sqrt{x}}{\sqrt{a}b\sqrt{-1+\frac{bx}{a}}} & \text{for}\ \left|\frac{bx}{a}\right| > 1 \\ -\frac{2\operatorname{asin}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{\frac{3}{2}}} + \frac{2\sqrt{x}}{\sqrt{a}b\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(-b*x+a)**(3/2),x)
```

```
[Out] Piecewise((2*I*acosh(sqrt(b)*sqrt(x)/sqrt(a))/b**(3/2) - 2*I*sqrt
(x)/(sqrt(a)*b*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1), (-2*asin(sqrt(
b)*sqrt(x)/sqrt(a))/b**(3/2) + 2*sqrt(x)/(sqrt(a)*b*sqrt(1 - b*x/
a)), True))
```

GIAC/XCAS [A] time = 0.222024, size = 138, normalized size = 2.76

$$-\frac{\left(\frac{4\,a\sqrt{-b}}{\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^{2}-ab} - \frac{\sqrt{-b}\ln\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^{2}\right)}{b}\right)|b|}{b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] -(4*a*sqrt(-b)/((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b
))^2 - a*b) - sqrt(-b)*ln((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x -
a)*b + a*b))^2)/b)*abs(b)/b^2
```

3.599 $\int \frac{1}{\sqrt{x}(a-bx)^{3/2}}\,dx$

Optimal. Leaf size=20

$$\frac{2\sqrt{x}}{a\sqrt{a-bx}}$$

```
[Out] (2*Sqrt[x])/(a*Sqrt[a - b*x])
```

Rubi [A] time = 0.0125798, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{2\sqrt{x}}{a\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[x]*(a - b*x)^(3/2)),x]

[Out] (2*Sqrt[x])/(a*Sqrt[a - b*x])
```

Rubi in Sympy [A] time = 2.54327, size = 15, normalized size = 0.75

$$\frac{2\sqrt{x}}{a\sqrt{a-bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(-b*x+a)**(3/2)/x**(1/2),x)

[Out] 2*sqrt(x)/(a*sqrt(a - b*x))
```

Mathematica [A] time = 0.0138338, size = 20, normalized size = 1.

$$\frac{2\sqrt{x}}{a\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[x]*(a - b*x)^(3/2)),x]
```

```
[Out] (2*Sqrt[x])/(a*Sqrt[a - b*x])
```

Maple [A] time = 0.006, size = 17, normalized size = 0.9

$$2\,\frac{\sqrt{x}}{a\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b*x+a)^(3/2)/x^(1/2),x)
```

```
[Out] 2*x^(1/2)/a/(-b*x+a)^(1/2)
```

Maxima [A] time = 1.34649, size = 22, normalized size = 1.1

$$\frac{2\,\sqrt{x}}{\sqrt{-bx+a}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + a)^(3/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] 2*sqrt(x)/(sqrt(-b*x + a)*a)
```

Fricas [A] time = 0.211418, size = 22, normalized size = 1.1

$$\frac{2\,\sqrt{x}}{\sqrt{-bx+a}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + a)^(3/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 2*sqrt(x)/(sqrt(-b*x + a)*a)
```

Sympy [A] time = 4.60408, size = 44, normalized size = 2.2

$$\begin{cases} \frac{2}{a\sqrt{b}\sqrt{\frac{a}{bx}-1}} & \text{for}\ \left|\frac{a}{bx}\right| > 1 \\ -\frac{2i}{a\sqrt{b}\sqrt{-\frac{a}{bx}+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+a)**(3/2)/x**(1/2),x)
```

```
[Out] Piecewise((2/(a*sqrt(b)*sqrt(a/(b*x) - 1)), Abs(a/(b*x)) > 1), (-
2*I/(a*sqrt(b)*sqrt(-a/(b*x) + 1)), True))
```

GIAC/XCAS [A] time = 0.209023, size = 72, normalized size = 3.6

$$-\frac{4\sqrt{-b}b}{\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(3/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] -4*sqrt(-b)*b/(((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b
))^2 - a*b)*abs(b))
```

3.600 $\int \frac{1}{x^{3/2}(a-bx)^{3/2}}\,dx$

Optimal. Leaf size=41

$$\frac{2}{a\sqrt{x}\sqrt{a-bx}}-\frac{4\sqrt{a-bx}}{a^2\sqrt{x}}$$

```
[Out] 2/(a*Sqrt[x]*Sqrt[a - b*x]) - (4*Sqrt[a - b*x])/(a^2*Sqrt[x])
```

Rubi [A] time = 0.0283095, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{2}{a\sqrt{x}\sqrt{a-bx}}-\frac{4\sqrt{a-bx}}{a^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a - b*x)^(3/2)),x]

[Out] 2/(a*Sqrt[x]*Sqrt[a - b*x]) - (4*Sqrt[a - b*x])/(a^2*Sqrt[x])
```

Rubi in Sympy [A] time = 4.67243, size = 34, normalized size = 0.83

$$\frac{2}{a\sqrt{x}\sqrt{a-bx}}-\frac{4\sqrt{a-bx}}{a^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(-b*x+a)**(3/2),x)

[Out] 2/(a*sqrt(x)*sqrt(a - b*x)) - 4*sqrt(a - b*x)/(a**2*sqrt(x))
```

Mathematica [A] time = 0.0276091, size = 26, normalized size = 0.63

$$-\frac{2(a-2bx)}{a^2\sqrt{x}\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a - b*x)^(3/2)),x]
```

```
[Out] (-2*(a - 2*b*x))/(a^2*Sqrt[x]*Sqrt[a - b*x])
```

Maple [A] time = 0.005, size = 23, normalized size = 0.6

$$-2\,\frac{-2\,bx+a}{a^{2}\sqrt{x}\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(3/2)/(-b*x+a)^(3/2),x)
```

```
[Out] -2*(-2*b*x+a)/x^(1/2)/(-b*x+a)^(1/2)/a^2
```

Maxima [A] time = 1.35029, size = 46, normalized size = 1.12

$$\frac{2\,b\sqrt{x}}{\sqrt{-bx+a}a^{2}}-\frac{2\,\sqrt{-bx+a}}{a^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + a)^(3/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] 2*b*sqrt(x)/(sqrt(-b*x + a)*a^2) - 2*sqrt(-b*x + a)/(a^2*sqrt(x))
```

Fricas [A] time = 0.212418, size = 32, normalized size = 0.78

$$\frac{2\,(2\,bx-a)}{\sqrt{-bx+a}a^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + a)^(3/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] 2*(2*b*x - a)/(sqrt(-b*x + a)*a^2*sqrt(x))
```

Sympy [A] time = 15.4609, size = 112, normalized size = 2.73

$$\begin{cases} -\frac{2}{a\sqrt{b}x\sqrt{\frac{a}{bx}-1}}+\frac{4\sqrt{b}}{a^{2}\sqrt{\frac{a}{bx}-1}} & \text{for}\ \left|\frac{a}{bx}\right|>1 \\ \frac{2iab^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}}{-a^{3}b+a^{2}b^{2}x}-\frac{4ib^{\frac{5}{2}}x\sqrt{-\frac{a}{bx}+1}}{-a^{3}b+a^{2}b^{2}x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(-b*x+a)**(3/2),x)
```

```
[Out] Piecewise((-2/(a*sqrt(b)*x*sqrt(a/(b*x) - 1)) + 4*sqrt(b)/(a**2*s
qrt(a/(b*x) - 1)), Abs(a/(b*x)) > 1), (2*I*a*b**(3/2)*sqrt(-a/(b*
x) + 1)/(-a**3*b + a**2*b**2*x) - 4*I*b**(5/2)*x*sqrt(-a/(b*x) +
1)/(-a**3*b + a**2*b**2*x), True))
```

GIAC/XCAS [A] time = 0.213142, size = 127, normalized size = 3.1

$$-\frac{4\sqrt{-b}b^2}{\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)a|b|}-\frac{2\sqrt{-bx+a}b^2}{\sqrt{(bx-a)b+ab}a^2|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(3/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -4*sqrt(-b)*b^2/(((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a
*b))^2 - a*b)*a*abs(b)) - 2*sqrt(-b*x + a)*b^2/(sqrt((b*x - a)*b
+ a*b)*a^2*abs(b))
```

3.601 $\int \frac{1}{x^{5/2}(a-bx)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{16b\sqrt{a-bx}}{3a^3\sqrt{x}}-\frac{8\sqrt{a-bx}}{3a^2x^{3/2}}+\frac{2}{ax^{3/2}\sqrt{a-bx}}$$

```
[Out] 2/(a*x^(3/2)*Sqrt[a - b*x]) - (8*Sqrt[a - b*x])/(3*a^2*x^(3/2)) -
 (16*b*Sqrt[a - b*x])/(3*a^3*Sqrt[x])
```

Rubi [A] time = 0.0442709, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{16b\sqrt{a-bx}}{3a^3\sqrt{x}}-\frac{8\sqrt{a-bx}}{3a^2x^{3/2}}+\frac{2}{ax^{3/2}\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a - b*x)^(3/2)),x]
```

```
[Out] 2/(a*x^(3/2)*Sqrt[a - b*x]) - (8*Sqrt[a - b*x])/(3*a^2*x^(3/2)) -
 (16*b*Sqrt[a - b*x])/(3*a^3*Sqrt[x])
```

Rubi in Sympy [A] time = 6.70158, size = 58, normalized size = 0.88

$$\frac{2}{ax^{\frac{3}{2}}\sqrt{a-bx}}-\frac{8\sqrt{a-bx}}{3a^2x^{\frac{3}{2}}}-\frac{16b\sqrt{a-bx}}{3a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(-b*x+a)**(3/2),x)
```

```
[Out] 2/(a*x**(3/2)*sqrt(a - b*x)) - 8*sqrt(a - b*x)/(3*a**2*x**(3/2))
- 16*b*sqrt(a - b*x)/(3*a**3*sqrt(x))
```

Mathematica [A] time = 0.0334385, size = 39, normalized size = 0.59

$$-\frac{2\left(a^2+4abx-8b^2x^2\right)}{3a^3x^{3/2}\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a - b*x)^(3/2)),x]

[Out] (-2*(a^2 + 4*a*b*x - 8*b^2*x^2))/(3*a^3*x^(3/2)*Sqrt[a - b*x])
```

Maple [A] time = 0.007, size = 34, normalized size = 0.5

$$-\frac{-16\,b^2x^2+8\,abx+2\,a^2}{3\,a^3}x^{-\frac{3}{2}}\frac{1}{\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(-b*x+a)^(3/2),x)

[Out] -2/3*(-8*b^2*x^2+4*a*b*x+a^2)/x^(3/2)/(-b*x+a)^(1/2)/a^3
```

Maxima [A] time = 1.34595, size = 70, normalized size = 1.06

$$\frac{2\,b^2\sqrt{x}}{\sqrt{-bx+a}a^3}-\frac{2\left(\frac{6\sqrt{-bx+a}b}{\sqrt{x}}+\frac{(-bx+a)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\right)}{3\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(3/2)*x^(5/2)),x, algorithm="maxima")

[Out] 2*b^2*sqrt(x)/(sqrt(-b*x + a)*a^3) - 2/3*(6*sqrt(-b*x + a)*b/sqrt
(x) + (-b*x + a)^(3/2)/x^(3/2))/a^3
```

Fricas [A] time = 0.220447, size = 47, normalized size = 0.71

$$\frac{2\left(8\,b^2x^2-4\,abx-a^2\right)}{3\sqrt{-bx+a}a^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(3/2)*x^(5/2)),x, algorithm="fricas")

[Out] 2/3*(8*b^2*x^2 - 4*a*b*x - a^2)/(sqrt(-b*x + a)*a^3*x^(3/2))
```

Sympy [A] time = 103.156, size = 452, normalized size = 6.85

$$\begin{cases} -\frac{2a^3b^{\frac{9}{2}}\sqrt{\frac{a}{bx}-1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} - \frac{6a^2b^{\frac{11}{2}}x\sqrt{\frac{a}{bx}-1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} + \frac{24ab^{\frac{13}{2}}x^2\sqrt{\frac{a}{bx}-1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} - \frac{16b^{\frac{15}{2}}x^3\sqrt{\frac{a}{bx}-1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{2ia^3b^{\frac{9}{2}}\sqrt{-\frac{a}{bx}+1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} - \frac{6ia^2b^{\frac{11}{2}}x\sqrt{-\frac{a}{bx}+1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} + \frac{24iab^{\frac{13}{2}}x^2\sqrt{-\frac{a}{bx}+1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} - \frac{16ib^{\frac{15}{2}}x^3\sqrt{-\frac{a}{bx}+1}}{3a^5b^4x-6a^4b^5x^2+3a^3b^6x^3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(-b*x+a)**(3/2),x)
```

```
[Out] Piecewise((-2*a**3*b**(9/2)*sqrt(a/(b*x) - 1)/(3*a**5*b**4*x - 6*
a**4*b**5*x**2 + 3*a**3*b**6*x**3) - 6*a**2*b**(11/2)*x*sqrt(a/(b
*x) - 1)/(3*a**5*b**4*x - 6*a**4*b**5*x**2 + 3*a**3*b**6*x**3) +
24*a*b**(13/2)*x**2*sqrt(a/(b*x) - 1)/(3*a**5*b**4*x - 6*a**4*b**
5*x**2 + 3*a**3*b**6*x**3) - 16*b**(15/2)*x**3*sqrt(a/(b*x) - 1)/
(3*a**5*b**4*x - 6*a**4*b**5*x**2 + 3*a**3*b**6*x**3), Abs(a/(b*x
)) > 1), (-2*I*a**3*b**(9/2)*sqrt(-a/(b*x) + 1)/(3*a**5*b**4*x -
6*a**4*b**5*x**2 + 3*a**3*b**6*x**3) - 6*I*a**2*b**(11/2)*x*sqrt(
-a/(b*x) + 1)/(3*a**5*b**4*x - 6*a**4*b**5*x**2 + 3*a**3*b**6*x**
3) + 24*I*a*b**(13/2)*x**2*sqrt(-a/(b*x) + 1)/(3*a**5*b**4*x - 6*
a**4*b**5*x**2 + 3*a**3*b**6*x**3) - 16*I*b**(15/2)*x**3*sqrt(-a/
(b*x) + 1)/(3*a**5*b**4*x - 6*a**4*b**5*x**2 + 3*a**3*b**6*x**3),
 True))
```

GIAC/XCAS [A] time = 0.220443, size = 144, normalized size = 2.18

$$-\frac{\sqrt{-bx+a}\left(\frac{5(bx-a)|b|}{b^2} + \frac{6a|b|}{b^2}\right)}{24\left((bx-a)b+ab\right)^{\frac{3}{2}}} - \frac{4\sqrt{-b}b^3}{\left(\left(\sqrt{-bx+a}\sqrt{-b} - \sqrt{(bx-a)b+ab}\right)^2 - ab\right)a^2|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(3/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(-b*x + a)*(5*(b*x - a)*abs(b)/b^2 + 6*a*abs(b)/b^2)/((
b*x - a)*b + a*b)^(3/2) - 4*sqrt(-b)*b^3/(((sqrt(-b*x + a)*sqrt(-
b) - sqrt((b*x - a)*b + a*b))^2 - a*b)*a^2*abs(b))
```

3.602 $\int \frac{x^{5/2}}{(a-bx)^{5/2}}\,dx$

Optimal. Leaf size=95

$$\frac{5a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{7/2}}-\frac{5\sqrt{x}\sqrt{a-bx}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{a-bx}}+\frac{2x^{5/2}}{3b(a-bx)^{3/2}}$$

```
[Out] (2*x^(5/2))/(3*b*(a - b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[a -
b*x]) - (5*Sqrt[x]*Sqrt[a - b*x])/b^3 + (5*a*ArcTan[(Sqrt[b]*Sqrt
[x])/Sqrt[a - b*x]])/b^(7/2)
```

Rubi [A] time = 0.0731161, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{5a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{7/2}}-\frac{5\sqrt{x}\sqrt{a-bx}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{a-bx}}+\frac{2x^{5/2}}{3b(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(a - b*x)^(5/2),x]
```

```
[Out] (2*x^(5/2))/(3*b*(a - b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[a -
b*x]) - (5*Sqrt[x]*Sqrt[a - b*x])/b^3 + (5*a*ArcTan[(Sqrt[b]*Sqrt
[x])/Sqrt[a - b*x]])/b^(7/2)
```

Rubi in Sympy [A] time = 11.5081, size = 85, normalized size = 0.89

$$-\frac{5a\,\mathrm{atan}\left(\frac{\sqrt{a-bx}}{\sqrt{b}\sqrt{x}}\right)}{b^{\frac{7}{2}}}+\frac{2x^{\frac{5}{2}}}{3b\,(a-bx)^{\frac{3}{2}}}-\frac{10x^{\frac{3}{2}}}{3b^2\sqrt{a-bx}}-\frac{5\sqrt{x}\sqrt{a-bx}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(-b*x+a)**(5/2),x)
```

```
[Out] -5*a*atan(sqrt(a - b*x)/(sqrt(b)*sqrt(x)))/b**(7/2) + 2*x**(5/2)/
(3*b*(a - b*x)**(3/2)) - 10*x**(3/2)/(3*b**2*sqrt(a - b*x)) - 5*s
qrt(x)*sqrt(a - b*x)/b**3
```

Mathematica [A] time = 0.143678, size = 72, normalized size = 0.76

$$\frac{5a\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{7/2}}-\frac{\sqrt{x}\left(15a^2-20abx+3b^2x^2\right)}{3b^3(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(a - b*x)^(5/2),x]
```

```
[Out] -(Sqrt[x]*(15*a^2 - 20*a*b*x + 3*b^2*x^2))/(3*b^3*(a - b*x)^(3/2)
) + (5*a*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/b^(7/2)
```

Maple [B] time = 0.052, size = 160, normalized size = 1.7

$$-\frac{1}{b^3}\sqrt{x}\sqrt{-bx+a}$$
$$+1\left(\frac{5\,a}{2}\arctan\left(1\sqrt{b}\left(x-\frac{a}{2\,b}\right)\frac{1}{\sqrt{-bx^2+ax}}\right)b^{-\frac{7}{2}}+\frac{14\,a}{3\,b^4}\sqrt{-b\left(x-\frac{a}{b}\right)^2-\left(x-\frac{a}{b}\right)a}\left(x-\frac{a}{b}\right)^{-1}+\frac{2\,a^2}{3\,b^5}\sqrt{-b\left(x-\frac{a}{b}\right)^2-\left(x\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(-b*x+a)^(5/2),x)
```

```
[Out] -x^(1/2)*(-b*x+a)^(1/2)/b^3+(5/2/b^(7/2)*a*arctan(b^(1/2)*(x-1/2*
a/b)/(-b*x^2+a*x)^(1/2))+14/3/b^4*a/(x-a/b)*(-b*(x-a/b)^2-(x-a/b)
*a)^(1/2)+2/3/b^5*a^2/(x-a/b)^2*(-b*(x-a/b)^2-(x-a/b)*a)^(1/2))*(
x*(-b*x+a))^(1/2)/x^(1/2)/(-b*x+a)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22544, size = 1, normalized size = 0.01

$$\left[\frac{15\left(abx-a^{2}\right)\sqrt{-bx+a}\sqrt{x}\log\left(-2\sqrt{-bx+a}b\sqrt{x}-(2bx-a)\sqrt{-b}\right)+2\left(3b^{2}x^{3}-20abx^{2}+15a^{2}x\right)\sqrt{-b}}{6\left(b^{4}x-ab^{3}\right)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}},\right.$$
$$\left.-\frac{15\left(abx-a^{2}\right)\sqrt{-bx+a}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)-\left(3b^{2}x^{3}-20abx^{2}+15a^{2}x\right)\sqrt{b}}{3\left(b^{4}x-ab^{3}\right)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(15*(a*b*x - a^2)*sqrt(-b*x + a)*sqrt(x)*log(-2*sqrt(-b*x +
a)*b*sqrt(x) - (2*b*x - a)*sqrt(-b)) + 2*(3*b^2*x^3 - 20*a*b*x^2
+ 15*a^2*x)*sqrt(-b))/((b^4*x - a*b^3)*sqrt(-b*x + a)*sqrt(-b)*sq
rt(x)), -1/3*(15*(a*b*x - a^2)*sqrt(-b*x + a)*sqrt(x)*arctan(sqrt
(-b*x + a)/(sqrt(b)*sqrt(x))) - (3*b^2*x^3 - 20*a*b*x^2 + 15*a^2*
x)*sqrt(b))/((b^4*x - a*b^3)*sqrt(-b*x + a)*sqrt(b)*sqrt(x))]
```

Sympy [A] time = 84.9273, size = 971, normalized size = 10.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(-b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-30*I*a**(81/2)*b**22*x**(51/2)*sqrt(-1 + b*x/a)*acosh
(sqrt(b)*sqrt(x)/sqrt(a))/(6*a**(79/2)*b**(51/2)*x**(51/2)*sqrt(-
1 + b*x/a) - 6*a**(77/2)*b**(53/2)*x**(53/2)*sqrt(-1 + b*x/a)) +
15*pi*a**(81/2)*b**22*x**(51/2)*sqrt(-1 + b*x/a)/(6*a**(79/2)*b**
(51/2)*x**(51/2)*sqrt(-1 + b*x/a) - 6*a**(77/2)*b**(53/2)*x**(53/
2)*sqrt(-1 + b*x/a)) + 30*I*a**(79/2)*b**23*x**(53/2)*sqrt(-1 + b
*x/a)*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(6*a**(79/2)*b**(51/2)*x**(5
1/2)*sqrt(-1 + b*x/a) - 6*a**(77/2)*b**(53/2)*x**(53/2)*sqrt(-1 +
 b*x/a)) - 15*pi*a**(79/2)*b**23*x**(53/2)*sqrt(-1 + b*x/a)/(6*a*
*(79/2)*b**(51/2)*x**(51/2)*sqrt(-1 + b*x/a) - 6*a**(77/2)*b**(53
/2)*x**(53/2)*sqrt(-1 + b*x/a)) + 30*I*a**40*b**(45/2)*x**26/(6*a
**(79/2)*b**(51/2)*x**(51/2)*sqrt(-1 + b*x/a) - 6*a**(77/2)*b**(5
3/2)*x**(53/2)*sqrt(-1 + b*x/a)) - 40*I*a**39*b**(47/2)*x**27/(6*
a**(79/2)*b**(51/2)*x**(51/2)*sqrt(-1 + b*x/a) - 6*a**(77/2)*b**(
53/2)*x**(53/2)*sqrt(-1 + b*x/a)) + 6*I*a**38*b**(49/2)*x**28/(6*
a**(79/2)*b**(51/2)*x**(51/2)*sqrt(-1 + b*x/a) - 6*a**(77/2)*b**(
53/2)*x**(53/2)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1), (15*a**(81/2)
*b**22*x**(51/2)*sqrt(1 - b*x/a)*asin(sqrt(b)*sqrt(x)/sqrt(a))/(3
*a**(79/2)*b**(51/2)*x**(51/2)*sqrt(1 - b*x/a) - 3*a**(77/2)*b**(
53/2)*x**(53/2)*sqrt(1 - b*x/a)) - 15*a**(79/2)*b**23*x**(53/2)*s
```

```
qrt(1 - b*x/a)*asin(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**(79/2)*b**(51/
2)*x**(51/2)*sqrt(1 - b*x/a) - 3*a**(77/2)*b**(53/2)*x**(53/2)*sq
rt(1 - b*x/a)) - 15*a**40*b**(45/2)*x**26/(3*a**(79/2)*b**(51/2)*
x**(51/2)*sqrt(1 - b*x/a) - 3*a**(77/2)*b**(53/2)*x**(53/2)*sqrt(
1 - b*x/a)) + 20*a**39*b**(47/2)*x**27/(3*a**(79/2)*b**(51/2)*x**
(51/2)*sqrt(1 - b*x/a) - 3*a**(77/2)*b**(53/2)*x**(53/2)*sqrt(1 -
 b*x/a)) - 3*a**38*b**(49/2)*x**28/(3*a**(79/2)*b**(51/2)*x**(51/
2)*sqrt(1 - b*x/a) - 3*a**(77/2)*b**(53/2)*x**(53/2)*sqrt(1 - b*x
/a)), True))
```

GIAC/XCAS [A] time = 0.235694, size = 298, normalized size = 3.14

$$\frac{\left(\frac{15\, a\ln\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^{2}\right)}{\sqrt{-b}b^{2}}-\frac{6\sqrt{(bx-a)b+ab}\sqrt{-bx+a}}{b^{3}}-\frac{8\left(9\,a^{2}\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^{4}-12\,a^{3}\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^{2}b+\cdots}{\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^{2}-ab\right)^{3}\sqrt{-b}b}\cdots}{6\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*(15*a*ln((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^
2)/(sqrt(-b)*b^2) - 6*sqrt((b*x - a)*b + a*b)*sqrt(-b*x + a)/b^3
- 8*(9*a^2*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^4
- 12*a^3*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^2*b
+ 7*a^4*b^2)/(((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b)
)^2 - a*b)^3*sqrt(-b)*b))*abs(b)/b^2
```

3.603 $\int \frac{x^{3/2}}{(a-bx)^{5/2}}\,dx$

Optimal. Leaf size=72

$$\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{a-bx}}+\frac{2x^{3/2}}{3b(a-bx)^{3/2}}$$

```
[Out] (2*x^(3/2))/(3*b*(a - b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[a - b*x
]) + (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/b^(5/2)
```

Rubi [A] time = 0.0545072, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{a-bx}}+\frac{2x^{3/2}}{3b(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(a - b*x)^(5/2),x]
```

```
[Out] (2*x^(3/2))/(3*b*(a - b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[a - b*x
]) + (2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a - b*x]])/b^(5/2)
```

Rubi in Sympy [A] time = 9.13329, size = 63, normalized size = 0.88

$$\frac{2x^{\frac{3}{2}}}{3b\,(a-bx)^{\frac{3}{2}}}-\frac{2\sqrt{x}}{b^2\sqrt{a-bx}}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(-b*x+a)**(5/2),x)
```

```
[Out] 2*x**(3/2)/(3*b*(a - b*x)**(3/2)) - 2*sqrt(x)/(b**2*sqrt(a - b*x)
) + 2*atan(sqrt(b)*sqrt(x)/sqrt(a - b*x))/b**(5/2)
```

Mathematica [A] time = 0.0988373, size = 60, normalized size = 0.83

$$\frac{2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a-bx}}\right)}{b^{5/2}}+\frac{2\sqrt{x}(4bx-3a)}{3b^2(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(a - b*x)^(5/2),x]
```

```
[Out] (2*Sqrt[x]*(-3*a + 4*b*x))/(3*b^2*(a - b*x)^(3/2)) + (2*ArcTan[(S
qrt[b]*Sqrt[x])/Sqrt[a - b*x]])/b^(5/2)
```

Maple [F]   time = 0.037, size = 0, normalized size = 0.

$$\int 1x^{\frac{3}{2}}\left(-bx+a\right)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(-b*x+a)^(5/2),x)
```

```
[Out] int(x^(3/2)/(-b*x+a)^(5/2),x)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.226536, size = 1, normalized size = 0.01

$$\left[\frac{3\,(bx-a)\sqrt{-bx+a}\sqrt{x}\log\left(-2\,\sqrt{-bx+a}b\sqrt{x}-(2\,bx-a)\sqrt{-b}\right)-2\left(4\,bx^2-3\,ax\right)\sqrt{-b}}{3\,(b^3x-ab^2)\sqrt{-bx+a}\sqrt{-b}\sqrt{x}},\right.$$
$$\left.-\frac{2\left(3\,(bx-a)\sqrt{-bx+a}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+a}}{\sqrt{b}\sqrt{x}}\right)+\left(4\,bx^2-3\,ax\right)\sqrt{b}\right)}{3\,(b^3x-ab^2)\sqrt{-bx+a}\sqrt{b}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(b*x - a)*sqrt(-b*x + a)*sqrt(x)*log(-2*sqrt(-b*x + a)*b*
sqrt(x) - (2*b*x - a)*sqrt(-b)) - 2*(4*b*x^2 - 3*a*x)*sqrt(-b))/(
(b^3*x - a*b^2)*sqrt(-b*x + a)*sqrt(-b)*sqrt(x)), -2/3*(3*(b*x -
a)*sqrt(-b*x + a)*sqrt(x)*arctan(sqrt(-b*x + a)/(sqrt(b)*sqrt(x))
) + (4*b*x^2 - 3*a*x)*sqrt(b))/((b^3*x - a*b^2)*sqrt(-b*x + a)*sq
rt(b)*sqrt(x))]
```

Sympy [A] time = 31.8005, size = 833, normalized size = 11.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(-b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-6*I*a**(39/2)*b**11*x**(27/2)*sqrt(-1 + b*x/a)*acosh(
sqrt(b)*sqrt(x)/sqrt(a))/(3*a**(39/2)*b**(27/2)*x**(27/2)*sqrt(-1
 + b*x/a) - 3*a**(37/2)*b**(29/2)*x**(29/2)*sqrt(-1 + b*x/a)) + 3
*pi*a**(39/2)*b**11*x**(27/2)*sqrt(-1 + b*x/a)/(3*a**(39/2)*b**(2
7/2)*x**(27/2)*sqrt(-1 + b*x/a) - 3*a**(37/2)*b**(29/2)*x**(29/2)
*sqrt(-1 + b*x/a)) + 6*I*a**(37/2)*b**12*x**(29/2)*sqrt(-1 + b*x/
a)*acosh(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**(39/2)*b**(27/2)*x**(27/2
)*sqrt(-1 + b*x/a) - 3*a**(37/2)*b**(29/2)*x**(29/2)*sqrt(-1 + b*
x/a)) - 3*pi*a**(37/2)*b**12*x**(29/2)*sqrt(-1 + b*x/a)/(3*a**(39
/2)*b**(27/2)*x**(27/2)*sqrt(-1 + b*x/a) - 3*a**(37/2)*b**(29/2)*
x**(29/2)*sqrt(-1 + b*x/a)) + 6*I*a**19*b**(23/2)*x**14/(3*a**(39
/2)*b**(27/2)*x**(27/2)*sqrt(-1 + b*x/a) - 3*a**(37/2)*b**(29/2)*
x**(29/2)*sqrt(-1 + b*x/a)) - 8*I*a**18*b**(25/2)*x**15/(3*a**(39
/2)*b**(27/2)*x**(27/2)*sqrt(-1 + b*x/a) - 3*a**(37/2)*b**(29/2)*
x**(29/2)*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1), (6*a**(39/2)*b**11*
x**(27/2)*sqrt(1 - b*x/a)*asin(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**(39
/2)*b**(27/2)*x**(27/2)*sqrt(1 - b*x/a) - 3*a**(37/2)*b**(29/2)*x
**(29/2)*sqrt(1 - b*x/a)) - 6*a**(37/2)*b**12*x**(29/2)*sqrt(1 -
b*x/a)*asin(sqrt(b)*sqrt(x)/sqrt(a))/(3*a**(39/2)*b**(27/2)*x**(2
7/2)*sqrt(1 - b*x/a) - 3*a**(37/2)*b**(29/2)*x**(29/2)*sqrt(1 - b
*x/a)) - 6*a**19*b**(23/2)*x**14/(3*a**(39/2)*b**(27/2)*x**(27/2)
*sqrt(1 - b*x/a) - 3*a**(37/2)*b**(29/2)*x**(29/2)*sqrt(1 - b*x/a
)) + 8*a**18*b**(25/2)*x**15/(3*a**(39/2)*b**(27/2)*x**(27/2)*sqr
t(1 - b*x/a) - 3*a**(37/2)*b**(29/2)*x**(29/2)*sqrt(1 - b*x/a)),
True))
```

GIAC/XCAS [A] time = 0.230126, size = 266, normalized size = 3.69

$$-\frac{\left(\frac{3\sqrt{-b}\ln\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2\right)}{b}-\frac{8\left(3a\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^4\sqrt{-b}-3a^2\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2\sqrt{-b}b+2a^3\sqrt{-b}b^2\right)}{\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)^3}\right)|b|}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(3*sqrt(-b)*ln((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b +
 a*b))^2)/b - 8*(3*a*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b
+ a*b))^4*sqrt(-b) - 3*a^2*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x -
 a)*b + a*b))^2*sqrt(-b)*b + 2*a^3*sqrt(-b)*b^2)/((sqrt(-b*x + a)
*sqrt(-b) - sqrt((b*x - a)*b + a*b))^2 - a*b)^3)*abs(b)/b^3
```

3.604 $\int \frac{\sqrt{x}}{(a-bx)^{5/2}}\,dx$

Optimal. Leaf size=22

$$\frac{2x^{3/2}}{3a(a-bx)^{3/2}}$$

```
[Out] (2*x^(3/2))/(3*a*(a - b*x)^(3/2))
```

Rubi [A] time = 0.0127939, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{2x^{3/2}}{3a(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(a - b*x)^(5/2),x]

[Out] (2*x^(3/2))/(3*a*(a - b*x)^(3/2))
```

Rubi in Sympy [A] time = 2.659, size = 17, normalized size = 0.77

$$\frac{2x^{\frac{3}{2}}}{3a\left(a-bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(-b*x+a)**(5/2),x)

[Out] 2*x**(3/2)/(3*a*(a - b*x)**(3/2))
```

Mathematica [A] time = 0.0201589, size = 22, normalized size = 1.

$$\frac{2x^{3/2}}{3a(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(a - b*x)^(5/2),x]
```

```
[Out] (2*x^(3/2))/(3*a*(a - b*x)^(3/2))
```

Maple [A] time = 0.005, size = 17, normalized size = 0.8

$$\frac{2}{3a}x^{\frac{3}{2}}\left(-bx+a\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(-b*x+a)^(5/2),x)
```

```
[Out] 2/3*x^(3/2)/a/(-b*x+a)^(3/2)
```

Maxima [A] time = 1.35328, size = 22, normalized size = 1.

$$\frac{2x^{\frac{3}{2}}}{3\left(-bx+a\right)^{\frac{3}{2}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*x^(3/2)/((-b*x + a)^(3/2)*a)
```

Fricas [A] time = 0.210517, size = 34, normalized size = 1.55

$$-\frac{2x^{\frac{3}{2}}}{3\left(abx-a^2\right)\sqrt{-bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*x^(3/2)/((a*b*x - a^2)*sqrt(-b*x + a))
```

Sympy [A] time = 13.7548, size = 95, normalized size = 4.32

$$\begin{cases} \frac{2ix^{\frac{3}{2}}}{-3a^{\frac{5}{2}}\sqrt{-1+\frac{bx}{a}}+3a^{\frac{3}{2}}bx\sqrt{-1+\frac{bx}{a}}} & \text{for } \left|\frac{bx}{a}\right| > 1 \\ -\frac{2x^{\frac{3}{2}}}{-3a^{\frac{5}{2}}\sqrt{1-\frac{bx}{a}}+3a^{\frac{3}{2}}bx\sqrt{1-\frac{bx}{a}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(-b*x+a)**(5/2),x)
```

```
[Out] Piecewise((2*I*x**(3/2)/(-3*a**(5/2)*sqrt(-1 + b*x/a) + 3*a**(3/2
)*b*x*sqrt(-1 + b*x/a)), Abs(b*x/a) > 1), (-2*x**(3/2)/(-3*a**(5/
2)*sqrt(1 - b*x/a) + 3*a**(3/2)*b*x*sqrt(1 - b*x/a)), True))
```

GIAC/XCAS [A] time = 0.221867, size = 138, normalized size = 6.27

$$\frac{4\left(3\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^4\sqrt{-b}+a^2\sqrt{-b}b^2\right)|b|}{3\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*(3*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^4*sqrt
(-b) + a^2*sqrt(-b)*b^2)*abs(b)/(((sqrt(-b*x + a)*sqrt(-b) - sqrt
((b*x - a)*b + a*b))^2 - a*b)^3*b^2)
```

3.605 $\int \frac{1}{\sqrt{x}(a-bx)^{5/2}}\,dx$

Optimal. Leaf size=45

$$\frac{4\sqrt{x}}{3a^2\sqrt{a-bx}}+\frac{2\sqrt{x}}{3a(a-bx)^{3/2}}$$

```
[Out] (2*Sqrt[x])/(3*a*(a - b*x)^(3/2)) + (4*Sqrt[x])/(3*a^2*Sqrt[a - b
*x])
```

Rubi [A] time = 0.0269291, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{4\sqrt{x}}{3a^2\sqrt{a-bx}}+\frac{2\sqrt{x}}{3a(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(a - b*x)^(5/2)),x]
```

```
[Out] (2*Sqrt[x])/(3*a*(a - b*x)^(3/2)) + (4*Sqrt[x])/(3*a^2*Sqrt[a - b
*x])
```

Rubi in Sympy [A] time = 4.6816, size = 37, normalized size = 0.82

$$\frac{2\sqrt{x}}{3a\left(a-bx\right)^{\frac{3}{2}}}+\frac{4\sqrt{x}}{3a^2\sqrt{a-bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] 2*sqrt(x)/(3*a*(a - b*x)**(3/2)) + 4*sqrt(x)/(3*a**2*sqrt(a - b*x
))
```

Mathematica [A] time = 0.0196095, size = 30, normalized size = 0.67

$$\frac{2\sqrt{x}(3a-2bx)}{3a^2(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(a - b*x)^(5/2)),x]

[Out] (2*Sqrt[x]*(3*a - 2*b*x))/(3*a^2*(a - b*x)^(3/2))
```

Maple [A] time = 0.005, size = 25, normalized size = 0.6

$$\frac{-4\,bx+6\,a}{3\,a^{2}}\sqrt{x}\,(-bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+a)^(5/2)/x^(1/2),x)

[Out] 2/3*x^(1/2)*(-2*b*x+3*a)/(-b*x+a)^(3/2)/a^2
```

Maxima [A] time = 1.34179, size = 41, normalized size = 0.91

$$\frac{2\left(b-\frac{3\,(bx-a)}{x}\right)x^{\frac{3}{2}}}{3\,(-bx+a)^{\frac{3}{2}}\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*sqrt(x)),x, algorithm="maxima")

[Out] 2/3*(b - 3*(b*x - a)/x)*x^(3/2)/((-b*x + a)^(3/2)*a^2)
```

Fricas [A] time = 0.226769, size = 51, normalized size = 1.13

$$\frac{2\left(2\,bx^{2}-3\,ax\right)}{3\,(a^{2}bx-a^{3})\sqrt{-bx+a}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*sqrt(x)),x, algorithm="fricas")

[Out] 2/3*(2*b*x^2 - 3*a*x)/((a^2*b*x - a^3)*sqrt(-b*x + a)*sqrt(x))
```

Sympy [A] time = 23.9292, size = 197, normalized size = 4.38

$$\begin{cases} -\frac{6a}{-3a^3\sqrt{b}\sqrt{\frac{a}{bx}-1}+3a^2b^{\frac{3}{2}}x\sqrt{\frac{a}{bx}-1}} + \frac{4bx}{-3a^3\sqrt{b}\sqrt{\frac{a}{bx}-1}+3a^2b^{\frac{3}{2}}x\sqrt{\frac{a}{bx}-1}} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ \frac{6iab}{-3a^3b^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}+3a^2b^{\frac{5}{2}}x\sqrt{-\frac{a}{bx}+1}} - \frac{4ib^2x}{-3a^3b^{\frac{3}{2}}\sqrt{-\frac{a}{bx}+1}+3a^2b^{\frac{5}{2}}x\sqrt{-\frac{a}{bx}+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+a)**(5/2)/x**(1/2),x)
```

```
[Out] Piecewise((-6*a/(-3*a**3*sqrt(b)*sqrt(a/(b*x) - 1) + 3*a**2*b**(3
/2)*x*sqrt(a/(b*x) - 1)) + 4*b*x/(-3*a**3*sqrt(b)*sqrt(a/(b*x) -
1) + 3*a**2*b**(3/2)*x*sqrt(a/(b*x) - 1)), Abs(a/(b*x)) > 1), (6*
I*a*b/(-3*a**3*b**(3/2)*sqrt(-a/(b*x) + 1) + 3*a**2*b**(5/2)*x*sq
rt(-a/(b*x) + 1)) - 4*I*b**2*x/(-3*a**3*b**(3/2)*sqrt(-a/(b*x) +
1) + 3*a**2*b**(5/2)*x*sqrt(-a/(b*x) + 1)), True))
```

GIAC/XCAS [A] time = 0.216439, size = 130, normalized size = 2.89

$$\frac{8\left(3\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)\sqrt{-b}b^2}{3\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 8/3*(3*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^2 - a*
b)*sqrt(-b)*b^2/(((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a
*b))^2 - a*b)^3*abs(b))
```

3.606 $\int \frac{1}{x^{3/2}(a-bx)^{5/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{16\sqrt{a-bx}}{3a^3\sqrt{x}}+\frac{8}{3a^2\sqrt{x}\sqrt{a-bx}}+\frac{2}{3a\sqrt{x}(a-bx)^{3/2}}$$

```
[Out] 2/(3*a*Sqrt[x]*(a - b*x)^(3/2)) + 8/(3*a^2*Sqrt[x]*Sqrt[a - b*x])
 - (16*Sqrt[a - b*x])/(3*a^3*Sqrt[x])
```

Rubi [A] time = 0.0467137, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{16\sqrt{a-bx}}{3a^3\sqrt{x}}+\frac{8}{3a^2\sqrt{x}\sqrt{a-bx}}+\frac{2}{3a\sqrt{x}(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(a - b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*Sqrt[x]*(a - b*x)^(3/2)) + 8/(3*a^2*Sqrt[x]*Sqrt[a - b*x])
 - (16*Sqrt[a - b*x])/(3*a^3*Sqrt[x])
```

Rubi in Sympy [A] time = 7.5806, size = 58, normalized size = 0.87

$$\frac{2}{3a\sqrt{x}\,(a-bx)^{\frac{3}{2}}}+\frac{8}{3a^2\sqrt{x}\sqrt{a-bx}}-\frac{16\sqrt{a-bx}}{3a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(-b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*sqrt(x)*(a - b*x)**(3/2)) + 8/(3*a**2*sqrt(x)*sqrt(a - b*x
)) - 16*sqrt(a - b*x)/(3*a**3*sqrt(x))
```

Mathematica [A] time = 0.0364345, size = 41, normalized size = 0.61

$$-\frac{2\left(3a^2-12abx+8b^2x^2\right)}{3a^3\sqrt{x}(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(a - b*x)^(5/2)),x]
```

```
[Out] (-2*(3*a^2 - 12*a*b*x + 8*b^2*x^2))/(3*a^3*Sqrt[x]*(a - b*x)^(3/2
))
```

Maple [A] time = 0.007, size = 36, normalized size = 0.5

$$-\frac{16\,b^2x^2-24\,abx+6\,a^2}{3\,a^3}\left(-bx+a\right)^{-\frac{3}{2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(-b*x+a)^(5/2),x)
```

```
[Out] -2/3*(8*b^2*x^2-12*a*b*x+3*a^2)/x^(1/2)/(-b*x+a)^(3/2)/a^3
```

Maxima [A] time = 1.34318, size = 68, normalized size = 1.01

$$\frac{2\left(b^2-\frac{6\,(bx-a)b}{x}\right)x^{\frac{3}{2}}}{3\left(-bx+a\right)^{\frac{3}{2}}a^3}-\frac{2\sqrt{-bx+a}}{a^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] 2/3*(b^2 - 6*(b*x - a)*b/x)*x^(3/2)/((-b*x + a)^(3/2)*a^3) - 2*sq
rt(-b*x + a)/(a^3*sqrt(x))
```

Fricas [A] time = 0.212388, size = 62, normalized size = 0.93

$$\frac{2\left(8\,b^2x^2-12\,abx+3\,a^2\right)}{3\left(a^3bx-a^4\right)\sqrt{-bx+a}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(8*b^2*x^2 - 12*a*b*x + 3*a^2)/((a^3*b*x - a^4)*sqrt(-b*x + a
)*sqrt(x))
```

Sympy [A] time = 102.587, size = 314, normalized size = 4.69

$$\begin{cases} -\frac{6a^2b^{\frac{9}{2}}\sqrt{\frac{a}{bx}-1}}{3a^5b^4-6a^4b^5x+3a^3b^6x^2} + \frac{24ab^{\frac{11}{2}}x\sqrt{\frac{a}{bx}-1}}{3a^5b^4-6a^4b^5x+3a^3b^6x^2} - \frac{16b^{\frac{13}{2}}x^2\sqrt{\frac{a}{bx}-1}}{3a^5b^4-6a^4b^5x+3a^3b^6x^2} & \text{for } \left|\frac{a}{bx}\right| > 1 \\ -\frac{6ia^2b^{\frac{9}{2}}\sqrt{-\frac{a}{bx}+1}}{3a^5b^4-6a^4b^5x+3a^3b^6x^2} + \frac{24iab^{\frac{11}{2}}x\sqrt{-\frac{a}{bx}+1}}{3a^5b^4-6a^4b^5x+3a^3b^6x^2} - \frac{16ib^{\frac{13}{2}}x^2\sqrt{-\frac{a}{bx}+1}}{3a^5b^4-6a^4b^5x+3a^3b^6x^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(-b*x+a)**(5/2),x)
```

```
[Out] Piecewise((-6*a**2*b**(9/2)*sqrt(a/(b*x) - 1)/(3*a**5*b**4 - 6*a*
*4*b**5*x + 3*a**3*b**6*x**2) + 24*a*b**(11/2)*x*sqrt(a/(b*x) - 1
)/(3*a**5*b**4 - 6*a**4*b**5*x + 3*a**3*b**6*x**2) - 16*b**(13/2)
*x**2*sqrt(a/(b*x) - 1)/(3*a**5*b**4 - 6*a**4*b**5*x + 3*a**3*b**
6*x**2), Abs(a/(b*x)) > 1), (-6*I*a**2*b**(9/2)*sqrt(-a/(b*x) + 1
)/(3*a**5*b**4 - 6*a**4*b**5*x + 3*a**3*b**6*x**2) + 24*I*a*b**(1
1/2)*x*sqrt(-a/(b*x) + 1)/(3*a**5*b**4 - 6*a**4*b**5*x + 3*a**3*b
**6*x**2) - 16*I*b**(13/2)*x**2*sqrt(-a/(b*x) + 1)/(3*a**5*b**4 -
 6*a**4*b**5*x + 3*a**3*b**6*x**2), True))
```

GIAC/XCAS [A] time = 0.231043, size = 255, normalized size = 3.81

$$-\frac{2\sqrt{-bx+a}b^2}{\sqrt{(bx-a)b+ab}a^3|b|} - \frac{4\left(3\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^4\sqrt{-b}b^2 - 12\,a\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2\sqrt{-b}b^3 + 5\,a^2\sqrt{-b}b^4\right)}{3\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2 - ab\right)^3 a^2|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(-b*x + a)*b^2/(sqrt((b*x - a)*b + a*b)*a^3*abs(b)) - 4/3*
(3*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^4*sqrt(-b)
*b^2 - 12*a*(sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^2
*sqrt(-b)*b^3 + 5*a^2*sqrt(-b)*b^4)/(((sqrt(-b*x + a)*sqrt(-b) -
sqrt((b*x - a)*b + a*b))^2 - a*b)^3*a^2*abs(b))
```

3.607 $\int \frac{1}{x^{5/2}(a-bx)^{5/2}}\,dx$

Optimal. Leaf size=88

$$-\frac{32b\sqrt{a-bx}}{3a^4\sqrt{x}}-\frac{16\sqrt{a-bx}}{3a^3x^{3/2}}+\frac{4}{a^2x^{3/2}\sqrt{a-bx}}+\frac{2}{3ax^{3/2}(a-bx)^{3/2}}$$

```
[Out] 2/(3*a*x^(3/2)*(a - b*x)^(3/2)) + 4/(a^2*x^(3/2)*Sqrt[a - b*x]) -
 (16*Sqrt[a - b*x])/(3*a^3*x^(3/2)) - (32*b*Sqrt[a - b*x])/(3*a^4
*Sqrt[x])
```

Rubi [A] time = 0.065912, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{32b\sqrt{a-bx}}{3a^4\sqrt{x}}-\frac{16\sqrt{a-bx}}{3a^3x^{3/2}}+\frac{4}{a^2x^{3/2}\sqrt{a-bx}}+\frac{2}{3ax^{3/2}(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(a - b*x)^(5/2)),x]
```

```
[Out] 2/(3*a*x^(3/2)*(a - b*x)^(3/2)) + 4/(a^2*x^(3/2)*Sqrt[a - b*x]) -
 (16*Sqrt[a - b*x])/(3*a^3*x^(3/2)) - (32*b*Sqrt[a - b*x])/(3*a^4
*Sqrt[x])
```

Rubi in Sympy [A] time = 10.0195, size = 78, normalized size = 0.89

$$\frac{2}{3ax^{\frac{3}{2}}(a-bx)^{\frac{3}{2}}}+\frac{4}{a^2x^{\frac{3}{2}}\sqrt{a-bx}}-\frac{16\sqrt{a-bx}}{3a^3x^{\frac{3}{2}}}-\frac{32b\sqrt{a-bx}}{3a^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(-b*x+a)**(5/2),x)
```

```
[Out] 2/(3*a*x**(3/2)*(a - b*x)**(3/2)) + 4/(a**2*x**(3/2)*sqrt(a - b*x
)) - 16*sqrt(a - b*x)/(3*a**3*x**(3/2)) - 32*b*sqrt(a - b*x)/(3*a
**4*sqrt(x))
```

Mathematica [A] time = 0.0436002, size = 50, normalized size = 0.57

$$-\frac{2\left(a^3+6a^2bx-24ab^2x^2+16b^3x^3\right)}{3a^4x^{3/2}(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(a - b*x)^(5/2)),x]
```

```
[Out] (-2*(a^3 + 6*a^2*b*x - 24*a*b^2*x^2 + 16*b^3*x^3))/(3*a^4*x^(3/2)
*(a - b*x)^(3/2))
```

Maple [A] time = 0.006, size = 45, normalized size = 0.5

$$-\frac{32\,b^3x^3-48\,ab^2x^2+12\,a^2bx+2\,a^3}{3\,a^4}x^{-\frac{3}{2}}\left(-bx+a\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(-b*x+a)^(5/2),x)
```

```
[Out] -2/3*(16*b^3*x^3-24*a*b^2*x^2+6*a^2*b*x+a^3)/x^(3/2)/(-b*x+a)^(3/
2)/a^4
```

Maxima [A] time = 1.34177, size = 92, normalized size = 1.05

$$-\frac{2\left(\frac{9\sqrt{-bx+a}b}{\sqrt{x}}+\frac{(-bx+a)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\right)}{3\,a^4}+\frac{2\left(b^3-\frac{9(bx-a)b^2}{x}\right)x^{\frac{3}{2}}}{3\left(-bx+a\right)^{\frac{3}{2}}a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] -2/3*(9*sqrt(-b*x + a)*b/sqrt(x) + (-b*x + a)^(3/2)/x^(3/2))/a^4
+ 2/3*(b^3 - 9*(b*x - a)*b^2/x)*x^(3/2)/((-b*x + a)^(3/2)*a^4)
```

Fricas [A] time = 0.227388, size = 78, normalized size = 0.89

$$\frac{2\left(16\,b^3x^3-24\,ab^2x^2+6\,a^2bx+a^3\right)}{3\left(a^4bx^2-a^5x\right)\sqrt{-bx+a}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + a)^(5/2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(16*b^3*x^3 - 24*a*b^2*x^2 + 6*a^2*b*x + a^3)/((a^4*b*x^2 - a
^5*x)*sqrt(-b*x + a)*sqrt(x))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x**(5/2)/(-b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.237783, size = 277, normalized size = 3.15

$$-\frac{\sqrt{-bx+a}\left(\frac{8\,(bx-a)a|b|}{b^2}+\frac{9\,a^2|b|}{b^2}\right)}{24\,((bx-a)b+ab)^{\frac{3}{2}}}-\frac{8\left(3\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^4\sqrt{-b}b^3-9\,a\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2\sqrt{-b}b^4+4\,a^2\sqrt{-b}b^5\right)}{3\left(\left(\sqrt{-bx+a}\sqrt{-b}-\sqrt{(bx-a)b+ab}\right)^2-ab\right)^3a^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + a)^(5/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(-b*x + a)*(8*(b*x - a)*a*abs(b)/b^2 + 9*a^2*abs(b)/b^2
)/((b*x - a)*b + a*b)^(3/2) - 8/3*(3*(sqrt(-b*x + a)*sqrt(-b) - s
qrt((b*x - a)*b + a*b))^4*sqrt(-b)*b^3 - 9*a*(sqrt(-b*x + a)*sqrt
(-b) - sqrt((b*x - a)*b + a*b))^2*sqrt(-b)*b^4 + 4*a^2*sqrt(-b)*b
^5)/(((sqrt(-b*x + a)*sqrt(-b) - sqrt((b*x - a)*b + a*b))^2 - a*b
)^3*a^3*abs(b))
```

3.608 $\int \frac{x^{5/2}}{\sqrt{2+bx}}\,dx$

Optimal. Leaf size=88

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{2b^3}-\frac{5x^{3/2}\sqrt{bx+2}}{6b^2}+\frac{x^{5/2}\sqrt{bx+2}}{3b}$$

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(2*b^3) - (5*x^(3/2)*Sqrt[2 + b*x])/(6*
b^2) + (x^(5/2)*Sqrt[2 + b*x])/(3*b) - (5*ArcSinh[(Sqrt[b]*Sqrt[x
])/Sqrt[2]])/b^(7/2)
```

Rubi [A] time = 0.0660854, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{2b^3}-\frac{5x^{3/2}\sqrt{bx+2}}{6b^2}+\frac{x^{5/2}\sqrt{bx+2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/Sqrt[2 + b*x],x]
```

```
[Out] (5*Sqrt[x]*Sqrt[2 + b*x])/(2*b^3) - (5*x^(3/2)*Sqrt[2 + b*x])/(6*
b^2) + (x^(5/2)*Sqrt[2 + b*x])/(3*b) - (5*ArcSinh[(Sqrt[b]*Sqrt[x
])/Sqrt[2]])/b^(7/2)
```

Rubi in Sympy [A] time = 9.70364, size = 82, normalized size = 0.93

$$\frac{x^{\frac{5}{2}}\sqrt{bx+2}}{3b}-\frac{5x^{\frac{3}{2}}\sqrt{bx+2}}{6b^2}+\frac{5\sqrt{x}\sqrt{bx+2}}{2b^3}-\frac{5\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+2)**(1/2),x)
```

```
[Out] x**(5/2)*sqrt(b*x + 2)/(3*b) - 5*x**(3/2)*sqrt(b*x + 2)/(6*b**2)
+ 5*sqrt(x)*sqrt(b*x + 2)/(2*b**3) - 5*asinh(sqrt(2)*sqrt(b)*sqrt
(x)/2)/b**(7/2)
```

Mathematica [A] time = 0.0690779, size = 60, normalized size = 0.68

$$\frac{\sqrt{x}\sqrt{bx+2}\left(2b^2x^2-5bx+15\right)}{6b^3}-\frac{5\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x]*(15 - 5*b*x + 2*b^2*x^2))/(6*b^3) - (5*Arc
Sinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(7/2)
```

Maple [A] time = 0.008, size = 93, normalized size = 1.1

$$\frac{1}{3b}x^{\frac{5}{2}}\sqrt{bx+2}-\frac{5}{6b^2}x^{\frac{3}{2}}\sqrt{bx+2}+\frac{5}{2b^3}\sqrt{x}\sqrt{bx+2}-\frac{5}{2}\sqrt{x(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+2)^(1/2),x)
```

```
[Out] 1/3*x^(5/2)*(b*x+2)^(1/2)/b-5/6*x^(3/2)*(b*x+2)^(1/2)/b^2+5/2*x^(
1/2)*(b*x+2)^(1/2)/b^3-5/2/b^(7/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2
)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(b*x + 2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228464, size = 1, normalized size = 0.01

$$\left[\frac{\left(2b^2x^2-5bx+15\right)\sqrt{bx+2}\sqrt{b}\sqrt{x}+15\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{6b^{\frac{7}{2}}},\frac{\left(2b^2x^2-5bx+15\right)\sqrt{bx+2}\sqrt{-b}\sqrt{x}-30\,\mathrm{arct}}{6\sqrt{-b}b^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(b*x + 2),x, algorithm="fricas")
```

```
[Out] [1/6*((2*b^2*x^2 - 5*b*x + 15)*sqrt(b*x + 2)*sqrt(b)*sqrt(x) + 15
*log(-sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/b^(7/2), 1/6*
((2*b^2*x^2 - 5*b*x + 15)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x) - 30*arc
tan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b^3)]
```

Sympy [A] time = 65.9533, size = 95, normalized size = 1.08

$$\frac{x^{\frac{7}{2}}}{3\sqrt{bx+2}} - \frac{x^{\frac{5}{2}}}{6b\sqrt{bx+2}} + \frac{5x^{\frac{3}{2}}}{6b^2\sqrt{bx+2}} + \frac{5\sqrt{x}}{b^3\sqrt{bx+2}} - \frac{5\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+2)**(1/2),x)
```

```
[Out] x**(7/2)/(3*sqrt(b*x + 2)) - x**(5/2)/(6*b*sqrt(b*x + 2)) + 5*x**
(3/2)/(6*b**2*sqrt(b*x + 2)) + 5*sqrt(x)/(b**3*sqrt(b*x + 2)) - 5
*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(7/2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(b*x + 2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.609 $\int \frac{x^{3/2}}{\sqrt{2+bx}} \, dx$

Optimal. Leaf size=67

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{3\sqrt{x}\sqrt{bx+2}}{2b^2}+\frac{x^{3/2}\sqrt{bx+2}}{2b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 + b*x])/(2*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(2*b
) + (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi [A] time = 0.047697, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{3\sqrt{x}\sqrt{bx+2}}{2b^2}+\frac{x^{3/2}\sqrt{bx+2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/Sqrt[2 + b*x],x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 + b*x])/(2*b^2) + (x^(3/2)*Sqrt[2 + b*x])/(2*b
) + (3*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi in Sympy [A] time = 7.11934, size = 61, normalized size = 0.91

$$\frac{x^{\frac{3}{2}}\sqrt{bx+2}}{2b}-\frac{3\sqrt{x}\sqrt{bx+2}}{2b^2}+\frac{3\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+2)**(1/2),x)
```

```
[Out] x**(3/2)*sqrt(b*x + 2)/(2*b) - 3*sqrt(x)*sqrt(b*x + 2)/(2*b**2) +
 3*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.051179, size = 51, normalized size = 0.76

$$\frac{3\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{\sqrt{x}\sqrt{bx+2}(bx-3)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*(-3 + b*x)*Sqrt[2 + b*x])/(2*b^2) + (3*ArcSinh[(Sqrt[b]*
Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Maple [A] time = 0.009, size = 78, normalized size = 1.2

$$\frac{1}{2b}x^{\frac{3}{2}}\sqrt{bx+2}-\frac{3}{2b^2}\sqrt{x}\sqrt{bx+2}+\frac{3}{2}\sqrt{x(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+2)^(1/2),x)
```

```
[Out] 1/2*x^(3/2)*(b*x+2)^(1/2)/b-3/2*x^(1/2)*(b*x+2)^(1/2)/b^2+3/2/b^(
5/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(
b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(b*x + 2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232883, size = 1, normalized size = 0.01

$$\left[\frac{\sqrt{bx+2}(bx-3)\sqrt{b}\sqrt{x}+3\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{2b^{\frac{5}{2}}},\frac{\sqrt{bx+2}(bx-3)\sqrt{-b}\sqrt{x}+6\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)}{2\sqrt{-b}b^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(b*x + 2),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b*x + 2)*(b*x - 3)*sqrt(b)*sqrt(x) + 3*log(sqrt(b*x +
2)*b*sqrt(x) + (b*x + 1)*sqrt(b)))/b^(5/2), 1/2*(sqrt(b*x + 2)*(b
*x - 3)*sqrt(-b)*sqrt(x) + 6*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqr
t(x))))/(sqrt(-b)*b^2)]
```

Sympy [A] time = 15.0076, size = 75, normalized size = 1.12

$$\frac{x^{\frac{5}{2}}}{2\sqrt{bx+2}} - \frac{x^{\frac{3}{2}}}{2b\sqrt{bx+2}} - \frac{3\sqrt{x}}{b^2\sqrt{bx+2}} + \frac{3\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+2)**(1/2),x)
```

```
[Out] x**(5/2)/(2*sqrt(b*x + 2)) - x**(3/2)/(2*b*sqrt(b*x + 2)) - 3*sqr
t(x)/(b**2*sqrt(b*x + 2)) + 3*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b*
*(5/2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(b*x + 2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.610 $\int \frac{\sqrt{x}}{\sqrt{2+bx}}\,dx$

Optimal. Leaf size=43

$$\frac{\sqrt{x}\sqrt{bx+2}}{b}-\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/b - (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
)/b^(3/2)
```

Rubi [A] time = 0.0329957, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\sqrt{x}\sqrt{bx+2}}{b}-\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/b - (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
)/b^(3/2)
```

Rubi in Sympy [A] time = 4.93574, size = 39, normalized size = 0.91

$$\frac{\sqrt{x}\sqrt{bx+2}}{b}-\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] sqrt(x)*sqrt(b*x + 2)/b - 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(
3/2)
```

Mathematica [A] time = 0.0288893, size = 43, normalized size = 1.

$$\frac{\sqrt{x}\sqrt{bx+2}}{b}-\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/Sqrt[2 + b*x],x]
```

```
[Out] (Sqrt[x]*Sqrt[2 + b*x])/b - (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]]
)/b^(3/2)
```

Maple [A] time = 0.006, size = 62, normalized size = 1.4

$$\frac{1}{b}\sqrt{x}\sqrt{bx+2}-1\sqrt{x(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] x^(1/2)*(b*x+2)^(1/2)/b-1/b^(3/2)*(x*(b*x+2))^(1/2)/(b*x+2)^(1/2)
/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(b*x + 2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218553, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{bx+2}\sqrt{b}\sqrt{x}+\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{b^{\frac{3}{2}}},\ \frac{\sqrt{bx+2}\sqrt{-b}\sqrt{x}-2\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)}{\sqrt{-b}b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(b*x + 2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*x + 2)*sqrt(b)*sqrt(x) + log(-sqrt(b*x + 2)*b*sqrt(x) +
(b*x + 1)*sqrt(b)))/b^(3/2), (sqrt(b*x + 2)*sqrt(-b)*sqrt(x) - 2*
```

```
arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))))/(sqrt(-b)*b)]
```

Sympy [A] time = 6.75506, size = 54, normalized size = 1.26

$$\frac{x^{\frac{3}{2}}}{\sqrt{bx+2}}+\frac{2\sqrt{x}}{b\sqrt{bx+2}}-\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] x**(3/2)/sqrt(b*x + 2) + 2*sqrt(x)/(b*sqrt(b*x + 2)) - 2*asinh(sq
rt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(b*x + 2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.611 $\int \frac{1}{\sqrt{x}\sqrt{2+bx}} dx$

Optimal. Leaf size=24

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi [A] time = 0.0193849, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*Sqrt[2 + b*x]),x]

[Out] (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi in Sympy [A] time = 3.47589, size = 24, normalized size = 1.

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2)/(b*x+2)**(1/2),x)

[Out] 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

Mathematica [A] time = 0.00996235, size = 24, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Maple [B] time = 0.007, size = 46, normalized size = 1.9

$$1\sqrt{x\,(bx+2)}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] (x*(b*x+2))^(1/2)/(b*x+2)^(1/2)/x^(1/2)*ln((b*x+1)/b^(1/2)+(b*x^2
+2*x)^(1/2))/b^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220276, size = 1, normalized size = 0.04

$$\left[\frac{\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)}{\sqrt{b}},\ \frac{2\,\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)}{\sqrt{-b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [log(sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*sqrt(b))/sqrt(b), 2*arct
an(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x)))/sqrt(-b)]
```

Sympy [A] time = 3.80638, size = 24, normalized size = 1.

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.612 $\int \frac{1}{x^{3/2}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=16

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

```
[Out] -(Sqrt[2 + b*x]/Sqrt[x])
```

Rubi [A] time = 0.0110765, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*Sqrt[2 + b*x]),x]

[Out] -(Sqrt[2 + b*x]/Sqrt[x])
```

Rubi in Sympy [A] time = 2.14088, size = 14, normalized size = 0.88

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(b*x+2)**(1/2),x)

[Out] -sqrt(b*x + 2)/sqrt(x)
```

Mathematica [A] time = 0.0115501, size = 16, normalized size = 1.

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*Sqrt[2 + b*x]),x]
```

```
[Out] -(Sqrt[2 + b*x]/Sqrt[x])
```

Maple [A] time = 0.007, size = 13, normalized size = 0.8

$$-1\sqrt{bx+2}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+2)^(1/2),x)
```

```
[Out] -(b*x+2)^(1/2)/x^(1/2)
```

Maxima [A] time = 1.33732, size = 16, normalized size = 1.

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] -sqrt(b*x + 2)/sqrt(x)
```

Fricas [A] time = 0.20816, size = 16, normalized size = 1.

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] -sqrt(b*x + 2)/sqrt(x)
```

Sympy [A] time = 4.49892, size = 15, normalized size = 0.94

$$-\sqrt{b}\sqrt{1+\frac{2}{bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+2)**(1/2),x)
```

```
[Out] -sqrt(b)*sqrt(1 + 2/(b*x))
```

GIAC/XCAS [A] time = 0.232432, size = 39, normalized size = 2.44

$$-\frac{\sqrt{bx+2}\,b^2}{\sqrt{(bx+2)b-2\,b}\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -sqrt(b*x + 2)*b^2/(sqrt((b*x + 2)*b - 2*b)*abs(b))
```

3.613 $\int \frac{1}{x^{5/2}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=38

$$\frac{b\sqrt{bx+2}}{3\sqrt{x}}-\frac{\sqrt{bx+2}}{3x^{3/2}}$$

```
[Out] -Sqrt[2 + b*x]/(3*x^(3/2)) + (b*Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0230381, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{b\sqrt{bx+2}}{3\sqrt{x}}-\frac{\sqrt{bx+2}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*Sqrt[2 + b*x]),x]

[Out] -Sqrt[2 + b*x]/(3*x^(3/2)) + (b*Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 3.06112, size = 31, normalized size = 0.82

$$\frac{b\sqrt{bx+2}}{3\sqrt{x}}-\frac{\sqrt{bx+2}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+2)**(1/2),x)

[Out] b*sqrt(b*x + 2)/(3*sqrt(x)) - sqrt(b*x + 2)/(3*x**(3/2))
```

Mathematica [A] time = 0.015859, size = 23, normalized size = 0.61

$$\frac{(bx-1)\sqrt{bx+2}}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*Sqrt[2 + b*x]),x]
```

```
[Out] ((-1 + b*x)*Sqrt[2 + b*x])/(3*x^(3/2))
```

Maple [A] time = 0.006, size = 18, normalized size = 0.5

$$\frac{bx-1}{3}\sqrt{bx+2}x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(5/2)/(b*x+2)^(1/2),x)
```

```
[Out] 1/3*(b*x+2)^(1/2)*(b*x-1)/x^(3/2)
```

Maxima [A] time = 1.3405, size = 35, normalized size = 0.92

$$\frac{\sqrt{bx+2}b}{2\sqrt{x}}-\frac{(bx+2)^{\frac{3}{2}}}{6x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + 2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b*x + 2)*b/sqrt(x) - 1/6*(b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.209167, size = 23, normalized size = 0.61

$$\frac{\sqrt{bx+2}(bx-1)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + 2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] 1/3*sqrt(b*x + 2)*(b*x - 1)/x^(3/2)
```

Sympy [A] time = 23.9987, size = 34, normalized size = 0.89

$$\frac{b^{\frac{3}{2}}\sqrt{1+\frac{2}{bx}}}{3}-\frac{\sqrt{b}\sqrt{1+\frac{2}{bx}}}{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+2)**(1/2),x)
```

```
[Out] b**(3/2)*sqrt(1 + 2/(b*x))/3 - sqrt(b)*sqrt(1 + 2/(b*x))/(3*x)
```

GIAC/XCAS [A] time = 0.216265, size = 57, normalized size = 1.5

$$\frac{\left((bx+2)b^3 - 3\,b^3\right)\sqrt{bx+2}b}{3\,\left((bx+2)b - 2\,b\right)^{\frac{3}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] 1/3*((b*x + 2)*b^3 - 3*b^3)*sqrt(b*x + 2)*b/(((b*x + 2)*b - 2*b)^
(3/2)*abs(b))
```

3.614 $\int \frac{1}{x^{7/2}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=59

$$-\frac{2b^2\sqrt{bx+2}}{15\sqrt{x}}+\frac{2b\sqrt{bx+2}}{15x^{3/2}}-\frac{\sqrt{bx+2}}{5x^{5/2}}$$

```
[Out] -Sqrt[2 + b*x]/(5*x^(5/2)) + (2*b*Sqrt[2 + b*x])/(15*x^(3/2)) - (
2*b^2*Sqrt[2 + b*x])/(15*Sqrt[x])
```

Rubi [A] time = 0.0363981, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2b^2\sqrt{bx+2}}{15\sqrt{x}}+\frac{2b\sqrt{bx+2}}{15x^{3/2}}-\frac{\sqrt{bx+2}}{5x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(7/2)*Sqrt[2 + b*x]),x]
```

```
[Out] -Sqrt[2 + b*x]/(5*x^(5/2)) + (2*b*Sqrt[2 + b*x])/(15*x^(3/2)) - (
2*b^2*Sqrt[2 + b*x])/(15*Sqrt[x])
```

Rubi in Sympy [A] time = 4.43052, size = 53, normalized size = 0.9

$$-\frac{2b^2\sqrt{bx+2}}{15\sqrt{x}}+\frac{2b\sqrt{bx+2}}{15x^{\frac{3}{2}}}-\frac{\sqrt{bx+2}}{5x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(7/2)/(b*x+2)**(1/2),x)
```

```
[Out] -2*b**2*sqrt(b*x + 2)/(15*sqrt(x)) + 2*b*sqrt(b*x + 2)/(15*x**(3/
2)) - sqrt(b*x + 2)/(5*x**(5/2))
```

Mathematica [A] time = 0.0194562, size = 32, normalized size = 0.54

$$-\frac{\sqrt{bx+2}\left(2b^2x^2-2bx+3\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(7/2)*Sqrt[2 + b*x]),x]
```

```
[Out] -(Sqrt[2 + b*x]*(3 - 2*b*x + 2*b^2*x^2))/(15*x^(5/2))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.5

$$-\frac{2\,b^{2}x^{2}-2\,bx+3}{15}\sqrt{bx+2}x^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(7/2)/(b*x+2)^(1/2),x)
```

```
[Out] -1/15*(b*x+2)^(1/2)*(2*b^2*x^2-2*b*x+3)/x^(5/2)
```

Maxima [A] time = 1.34078, size = 55, normalized size = 0.93

$$-\frac{\sqrt{bx+2}b^{2}}{4\sqrt{x}}+\frac{(bx+2)^{\frac{3}{2}}b}{6\,x^{\frac{3}{2}}}-\frac{(bx+2)^{\frac{5}{2}}}{20\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(7/2)),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(b*x + 2)*b^2/sqrt(x) + 1/6*(b*x + 2)^(3/2)*b/x^(3/2) -
1/20*(b*x + 2)^(5/2)/x^(5/2)
```

Fricas [A] time = 0.208186, size = 35, normalized size = 0.59

$$-\frac{\left(2\,b^{2}x^{2}-2\,bx+3\right)\sqrt{bx+2}}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(7/2)),x, algorithm="fricas")
```

```
[Out] -1/15*(2*b^2*x^2 - 2*b*x + 3)*sqrt(b*x + 2)/x^(5/2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(7/2)/(b*x+2)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.213216, size = 74, normalized size = 1.25

$$-\frac{\left(15\,b^{5}+2\,\left((bx+2)b^{5}-5\,b^{5}\right)(bx+2)\right)\sqrt{bx+2}b}{15\,\left((bx+2)b-2\,b\right)^{\frac{5}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(7/2)),x, algorithm="giac")
```

```
[Out] -1/15*(15*b^5 + 2*((b*x + 2)*b^5 - 5*b^5)*(b*x + 2))*sqrt(b*x + 2
)*b/(((b*x + 2)*b - 2*b)^(5/2)*abs(b))
```

3.615 $\int \frac{1}{x^{9/2}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=80

$$\frac{2b^3\sqrt{bx+2}}{35\sqrt{x}}-\frac{2b^2\sqrt{bx+2}}{35x^{3/2}}+\frac{3b\sqrt{bx+2}}{35x^{5/2}}-\frac{\sqrt{bx+2}}{7x^{7/2}}$$

```
[Out] -Sqrt[2 + b*x]/(7*x^(7/2)) + (3*b*Sqrt[2 + b*x])/(35*x^(5/2)) - (
2*b^2*Sqrt[2 + b*x])/(35*x^(3/2)) + (2*b^3*Sqrt[2 + b*x])/(35*Sqr
t[x])
```

Rubi [A] time = 0.0522062, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{2b^3\sqrt{bx+2}}{35\sqrt{x}}-\frac{2b^2\sqrt{bx+2}}{35x^{3/2}}+\frac{3b\sqrt{bx+2}}{35x^{5/2}}-\frac{\sqrt{bx+2}}{7x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(9/2)*Sqrt[2 + b*x]),x]
```

```
[Out] -Sqrt[2 + b*x]/(7*x^(7/2)) + (3*b*Sqrt[2 + b*x])/(35*x^(5/2)) - (
2*b^2*Sqrt[2 + b*x])/(35*x^(3/2)) + (2*b^3*Sqrt[2 + b*x])/(35*Sqr
t[x])
```

Rubi in Sympy [A] time = 5.96022, size = 73, normalized size = 0.91

$$\frac{2b^3\sqrt{bx+2}}{35\sqrt{x}}-\frac{2b^2\sqrt{bx+2}}{35x^{\frac{3}{2}}}+\frac{3b\sqrt{bx+2}}{35x^{\frac{5}{2}}}-\frac{\sqrt{bx+2}}{7x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(9/2)/(b*x+2)**(1/2),x)
```

```
[Out] 2*b**3*sqrt(b*x + 2)/(35*sqrt(x)) - 2*b**2*sqrt(b*x + 2)/(35*x**(
3/2)) + 3*b*sqrt(b*x + 2)/(35*x**(5/2)) - sqrt(b*x + 2)/(7*x**(7/
2))
```

Mathematica [A] time = 0.0205807, size = 40, normalized size = 0.5

$$\frac{\sqrt{bx+2}\left(2b^3x^3-2b^2x^2+3bx-5\right)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(9/2)*Sqrt[2 + b*x]),x]
```

```
[Out] (Sqrt[2 + b*x]*(-5 + 3*b*x - 2*b^2*x^2 + 2*b^3*x^3))/(35*x^(7/2))
```

Maple [A] time = 0.006, size = 35, normalized size = 0.4

$$\frac{2 b^3 x^3 - 2 b^2 x^2 + 3 b x - 5}{35} \sqrt{b x + 2} x^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(9/2)/(b*x+2)^(1/2),x)
```

```
[Out] 1/35*(b*x+2)^(1/2)*(2*b^3*x^3-2*b^2*x^2+3*b*x-5)/x^(7/2)
```

Maxima [A] time = 1.34723, size = 76, normalized size = 0.95

$$\frac{\sqrt{b x + 2} b^3}{8 \sqrt{x}} - \frac{(b x + 2)^{\frac{3}{2}} b^2}{8 x^{\frac{3}{2}}} + \frac{3 (b x + 2)^{\frac{5}{2}} b}{40 x^{\frac{5}{2}}} - \frac{(b x + 2)^{\frac{7}{2}}}{56 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(9/2)),x, algorithm="maxima")
```

```
[Out] 1/8*sqrt(b*x + 2)*b^3/sqrt(x) - 1/8*(b*x + 2)^(3/2)*b^2/x^(3/2) +
 3/40*(b*x + 2)^(5/2)*b/x^(5/2) - 1/56*(b*x + 2)^(7/2)/x^(7/2)
```

Fricas [A] time = 0.246375, size = 46, normalized size = 0.57

$$\frac{\left(2 b^3 x^3 - 2 b^2 x^2 + 3 b x - 5\right) \sqrt{b x + 2}}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(9/2)),x, algorithm="fricas")
```

```
[Out] 1/35*(2*b^3*x^3 - 2*b^2*x^2 + 3*b*x - 5)*sqrt(b*x + 2)/x^(7/2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(9/2)/(b*x+2)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.213796, size = 92, normalized size = 1.15

$$-\frac{\left(35\,b^{7}-\left(35\,b^{7}+2\,\left((bx+2)b^{7}-7\,b^{7}\right)(bx+2)\right)(bx+2)\right)\sqrt{bx+2}b}{35\,((bx+2)b-2\,b)^{\frac{7}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*x^(9/2)),x, algorithm="giac")
```

```
[Out] -1/35*(35*b^7 - (35*b^7 + 2*((b*x + 2)*b^7 - 7*b^7)*(b*x + 2))*(b
*x + 2))*sqrt(b*x + 2)*b/(((b*x + 2)*b - 2*b)^(7/2)*abs(b))
```

3.616 $\int \frac{x^{5/2}}{(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=86

$$\frac{15\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{15\sqrt{x}\sqrt{bx+2}}{2b^3}+\frac{5x^{3/2}\sqrt{bx+2}}{2b^2}-\frac{2x^{5/2}}{b\sqrt{bx+2}}$$

```
[Out] (-2*x^(5/2))/(b*Sqrt[2 + b*x]) - (15*Sqrt[x]*Sqrt[2 + b*x])/(2*b^
3) + (5*x^(3/2)*Sqrt[2 + b*x])/(2*b^2) + (15*ArcSinh[(Sqrt[b]*Sqr
t[x])/Sqrt[2]])/b^(7/2)
```

Rubi [A] time = 0.0673449, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$\frac{15\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{15\sqrt{x}\sqrt{bx+2}}{2b^3}+\frac{5x^{3/2}\sqrt{bx+2}}{2b^2}-\frac{2x^{5/2}}{b\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(2 + b*x)^(3/2),x]
```

```
[Out] (-2*x^(5/2))/(b*Sqrt[2 + b*x]) - (15*Sqrt[x]*Sqrt[2 + b*x])/(2*b^
3) + (5*x^(3/2)*Sqrt[2 + b*x])/(2*b^2) + (15*ArcSinh[(Sqrt[b]*Sqr
t[x])/Sqrt[2]])/b^(7/2)
```

Rubi in Sympy [A] time = 10.4864, size = 82, normalized size = 0.95

$$-\frac{2x^{\frac{5}{2}}}{b\sqrt{bx+2}}+\frac{5x^{\frac{3}{2}}\sqrt{bx+2}}{2b^2}-\frac{15\sqrt{x}\sqrt{bx+2}}{2b^3}+\frac{15\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+2)**(3/2),x)
```

```
[Out] -2*x**(5/2)/(b*sqrt(b*x + 2)) + 5*x**(3/2)*sqrt(b*x + 2)/(2*b**2)
 - 15*sqrt(x)*sqrt(b*x + 2)/(2*b**3) + 15*asinh(sqrt(2)*sqrt(b)*s
qrt(x)/2)/b**(7/2)
```

Mathematica [A] time = 0.0801026, size = 59, normalized size = 0.69

$$\frac{15\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{\sqrt{x}\left(b^2x^2-5bx-30\right)}{2b^3\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(2 + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*(-30 - 5*b*x + b^2*x^2))/(2*b^3*Sqrt[2 + b*x]) + (15*Arc
Sinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(7/2)
```

Maple [A] time = 0.036, size = 106, normalized size = 1.2

$$\frac{bx-7}{2\,b^3}\sqrt{x}\sqrt{bx+2}$$
$$+1\left(\frac{15}{2}\ln\left((bx+1)\frac{1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)b^{-\frac{7}{2}}-8\,\frac{1}{b^4}\sqrt{b\,(x+2\,b^{-1})^2-2\,x-4\,b^{-1}}\,\left(x+2\,b^{-1}\right)^{-1}\right)\sqrt{x\,(bx+2)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+2)^(3/2),x)
```

```
[Out] 1/2*(b*x-7)*x^(1/2)*(b*x+2)^(1/2)/b^3+(15/2/b^(7/2)*ln((b*x+1)/b^
(1/2)+(b*x^2+2*x)^(1/2))-8/b^4/(x+2/b)*(b*(x+2/b)^2-2*x-4/b)^(1/2
))*(x*(b*x+2))^(1/2)/x^(1/2)/(b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + 2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229675, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{bx+2}\sqrt{x}\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)+\left(b^2x^3-5\,bx^2-30\,x\right)\sqrt{b}}{2\sqrt{bx+2}b^{\frac{7}{2}}\sqrt{x}},\frac{30\sqrt{bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)+\left(b^2x^3-5\right.}{2\sqrt{bx+2}\sqrt{-b}b^3\sqrt{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + 2)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(15*sqrt(b*x + 2)*sqrt(x)*log(sqrt(b*x + 2)*b*sqrt(x) + (b*x
 + 1)*sqrt(b)) + (b^2*x^3 - 5*b*x^2 - 30*x)*sqrt(b))/(sqrt(b*x +
2)*b^(7/2)*sqrt(x)), 1/2*(30*sqrt(b*x + 2)*sqrt(x)*arctan(sqrt(b*
x + 2)*sqrt(-b)/(b*sqrt(x))) + (b^2*x^3 - 5*b*x^2 - 30*x)*sqrt(-b
))/(sqrt(b*x + 2)*sqrt(-b)*b^3*sqrt(x))]
```

Sympy [A] time = 80.6611, size = 80, normalized size = 0.93

$$\frac{x^{\frac{5}{2}}}{2b\sqrt{bx+2}} - \frac{5x^{\frac{3}{2}}}{2b^2\sqrt{bx+2}} - \frac{15\sqrt{x}}{b^3\sqrt{bx+2}} + \frac{15\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+2)**(3/2),x)
```

```
[Out] x**(5/2)/(2*b*sqrt(b*x + 2)) - 5*x**(3/2)/(2*b**2*sqrt(b*x + 2))
- 15*sqrt(x)/(b**3*sqrt(b*x + 2)) + 15*asinh(sqrt(2)*sqrt(b)*sqrt
(x)/2)/b**(7/2)
```

GIAC/XCAS [A] time = 0.227263, size = 161, normalized size = 1.87

$$\frac{\left(\sqrt{(bx+2)b-2\,b}\sqrt{bx+2}\left(\frac{bx+2}{b^3}-\frac{9}{b^3}\right)-\frac{15\ln\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2\right)}{b^{\frac{5}{2}}}-\frac{64}{\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2+2\,b\right)b^{\frac{3}{2}}}\right)|b|}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + 2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt((b*x + 2)*b - 2*b)*sqrt(b*x + 2)*((b*x + 2)/b^3 - 9/b^3
) - 15*ln((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2)/b^
(5/2) - 64/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2
+ 2*b)*b^(3/2)))*abs(b)/b^2
```

3.617 $\int \frac{x^{3/2}}{(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=63

$$-\frac{6\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{bx+2}}{b^2}-\frac{2x^{3/2}}{b\sqrt{bx+2}}$$

```
[Out] (-2*x^(3/2))/(b*Sqrt[2 + b*x]) + (3*Sqrt[x]*Sqrt[2 + b*x])/b^2 -
(6*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi [A] time = 0.0484157, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{6\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{bx+2}}{b^2}-\frac{2x^{3/2}}{b\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(2 + b*x)^(3/2),x]
```

```
[Out] (-2*x^(3/2))/(b*Sqrt[2 + b*x]) + (3*Sqrt[x]*Sqrt[2 + b*x])/b^2 -
(6*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.10753, size = 60, normalized size = 0.95

$$-\frac{2x^{\frac{3}{2}}}{b\sqrt{bx+2}}+\frac{3\sqrt{x}\sqrt{bx+2}}{b^2}-\frac{6\,\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+2)**(3/2),x)
```

```
[Out] -2*x**(3/2)/(b*sqrt(b*x + 2)) + 3*sqrt(x)*sqrt(b*x + 2)/b**2 - 6*
asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.0669024, size = 48, normalized size = 0.76

$$\frac{\sqrt{x}(bx+6)}{b^2\sqrt{bx+2}}-\frac{6\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(2 + b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*(6 + b*x))/(b^2*Sqrt[2 + b*x]) - (6*ArcSinh[(Sqrt[b]*Sqr
t[x])/Sqrt[2]])/b^(5/2)
```

Maple [B] time = 0.033, size = 100, normalized size = 1.6

$$\frac{1}{b^2}\sqrt{x}\sqrt{bx+2}$$
$$+1\left(-3\,\frac{1}{b^{5/2}}\ln\left(\frac{bx+1}{\sqrt{b}}+\sqrt{bx^2+2\,x}\right)+4\,\frac{1}{b^3}\sqrt{b\,(x+2\,b^{-1})^2-2\,x-4\,b^{-1}}\,\left(x+2\,b^{-1}\right)^{-1}\right)\sqrt{x\,(bx+2)}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+2)^(3/2),x)
```

```
[Out] x^(1/2)*(b*x+2)^(1/2)/b^2+(-3/b^(5/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2
*x)^(1/2))+4/b^3/(x+2/b)*(b*(x+2/b)^2-2*x-4/b)^(1/2))*(x*(b*x+2))
^(1/2)/x^(1/2)/(b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + 2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22247, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{bx+2}\sqrt{x}\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)+\left(bx^2+6\,x\right)\sqrt{b}}{\sqrt{bx+2}b^{\frac{5}{2}}\sqrt{x}},\right.$$
$$\left.-\frac{6\,\sqrt{bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)-\left(bx^2+6\,x\right)\sqrt{-b}}{\sqrt{bx+2}\sqrt{-b}b^2\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + 2)^(3/2),x, algorithm="fricas")
```

```
[Out] [(3*sqrt(b*x + 2)*sqrt(x)*log(-sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1
)*sqrt(b)) + (b*x^2 + 6*x)*sqrt(b))/(sqrt(b*x + 2)*b^(5/2)*sqrt(x
)), -(6*sqrt(b*x + 2)*sqrt(x)*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sq
rt(x))) - (b*x^2 + 6*x)*sqrt(-b))/(sqrt(b*x + 2)*sqrt(-b)*b^2*sqr
t(x))]
```

Sympy [A] time = 14.2986, size = 58, normalized size = 0.92

$$\frac{x^{\frac{3}{2}}}{b\sqrt{bx+2}} + \frac{6\sqrt{x}}{b^2\sqrt{bx+2}} - \frac{6\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+2)**(3/2),x)
```

```
[Out] x**(3/2)/(b*sqrt(b*x + 2)) + 6*sqrt(x)/(b**2*sqrt(b*x + 2)) - 6*a
sinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

GIAC/XCAS [A] time = 0.222899, size = 143, normalized size = 2.27

$$\frac{\left(\frac{3\ln\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2\right)}{\sqrt{b}} + \frac{\sqrt{(bx+2)b-2b}\sqrt{bx+2}}{b} + \frac{16\sqrt{b}}{\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2+2b}\right)|b|}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + 2)^(3/2),x, algorithm="giac")
```

```
[Out] (3*ln((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2)/sqrt(b
) + sqrt((b*x + 2)*b - 2*b)*sqrt(b*x + 2)/b + 16*sqrt(b)/((sqrt(b
*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 + 2*b))*abs(b)/b^3
```

3.618 $\int \frac{\sqrt{x}}{(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=44

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{2\sqrt{x}}{b\sqrt{bx+2}}$$

```
[Out] (-2*Sqrt[x])/(b*Sqrt[2 + b*x]) + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqr
t[2]])/b^(3/2)
```

Rubi [A] time = 0.0325928, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{2\sqrt{x}}{b\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(2 + b*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[x])/(b*Sqrt[2 + b*x]) + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqr
t[2]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.46941, size = 41, normalized size = 0.93

$$-\frac{2\sqrt{x}}{b\sqrt{bx+2}}+\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+2)**(3/2),x)
```

```
[Out] -2*sqrt(x)/(b*sqrt(b*x + 2)) + 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)
/b**(3/2)
```

Mathematica [A] time = 0.0324645, size = 44, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{2\sqrt{x}}{b\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(2 + b*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[x])/(b*Sqrt[2 + b*x]) + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqr
t[2]])/b^(3/2)
```

Maple [A] time = 0.114, size = 48, normalized size = 1.1

$$2\,\frac{1}{b^{3/2}\sqrt{\pi}}\left(-1/2\,\frac{\sqrt{\pi}\sqrt{x}\sqrt{2}\sqrt{b}}{\sqrt{1/2\,bx+1}}+\sqrt{\pi}Arcsinh\left(1/2\,\sqrt{b}\sqrt{x}\sqrt{2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+2)^(3/2),x)
```

```
[Out] 2/b^(3/2)/Pi^(1/2)*(-1/2*Pi^(1/2)*x^(1/2)*2^(1/2)*b^(1/2)/(1/2*b*
x+1)^(1/2)+Pi^(1/2)*arcsinh(1/2*b^(1/2)*x^(1/2)*2^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + 2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220105, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{bx+2}\sqrt{x}\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)-2\sqrt{b}x}{\sqrt{bx+2}b^{\frac{3}{2}}\sqrt{x}},\frac{2\left(\sqrt{bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)-\sqrt{-b}x\right)}{\sqrt{bx+2}\sqrt{-b}b\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + 2)^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*x + 2)*sqrt(x)*log(sqrt(b*x + 2)*b*sqrt(x) + (b*x + 1)*s
qrt(b)) - 2*sqrt(b)*x)/(sqrt(b*x + 2)*b^(3/2)*sqrt(x)), 2*(sqrt(b
```

```
*x + 2)*sqrt(x)*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))) - sqrt
(-b)*x)/(sqrt(b*x + 2)*sqrt(-b)*b*sqrt(x))]
```

Sympy [A] time = 5.95379, size = 41, normalized size = 0.93

$$-\frac{2\sqrt{x}}{b\sqrt{bx+2}}+\frac{2\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+2)**(3/2),x)
```

```
[Out] -2*sqrt(x)/(b*sqrt(b*x + 2)) + 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)
/b**(3/2)
```

GIAC/XCAS [A] time = 0.222615, size = 111, normalized size = 2.52

$$-\frac{\left(\frac{\ln\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2\right)}{\sqrt{b}}+\frac{8\,\sqrt{b}}{\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2+2\,b}\right)|b|}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + 2)^(3/2),x, algorithm="giac")
```

```
[Out] -(ln((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2)/sqrt(b)
 + 8*sqrt(b)/((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2
 + 2*b))*abs(b)/b^2
```

3.619 $\int \frac{1}{\sqrt{x}(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=15

$$\frac{\sqrt{x}}{\sqrt{bx+2}}$$

```
[Out] Sqrt[x]/Sqrt[2 + b*x]
```

Rubi [A] time = 0.0110465, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{\sqrt{x}}{\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(2 + b*x)^(3/2)),x]

[Out] Sqrt[x]/Sqrt[2 + b*x]
```

Rubi in Sympy [A] time = 2.04892, size = 12, normalized size = 0.8

$$\frac{\sqrt{x}}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+2)**(3/2)/x**(1/2),x)

[Out] sqrt(x)/sqrt(b*x + 2)
```

Mathematica [A] time = 0.0107898, size = 15, normalized size = 1.

$$\frac{\sqrt{x}}{\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(2 + b*x)^(3/2)),x]
```

```
[Out] Sqrt[x]/Sqrt[2 + b*x]
```

Maple [A] time = 0.005, size = 12, normalized size = 0.8

$$1\sqrt{x}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+2)^(3/2)/x^(1/2),x)
```

```
[Out] x^(1/2)/(b*x+2)^(1/2)
```

Maxima [A] time = 1.35111, size = 15, normalized size = 1.

$$\frac{\sqrt{x}}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 2)^(3/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] sqrt(x)/sqrt(b*x + 2)
```

Fricas [A] time = 0.208228, size = 15, normalized size = 1.

$$\frac{\sqrt{x}}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 2)^(3/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] sqrt(x)/sqrt(b*x + 2)
```

Sympy [A] time = 4.35119, size = 15, normalized size = 1.

$$\frac{1}{\sqrt{b}\sqrt{1+\frac{2}{bx}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] 1/(sqrt(b)*sqrt(1 + 2/(b*x)))
```

GIAC/XCAS [A] time = 0.212357, size = 59, normalized size = 3.93

$$\frac{4\,b^{\frac{3}{2}}}{\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^{2}+2\,b\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 4*b^(3/2)/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 +
 2*b)*abs(b))
```

3.620 $\int \frac{1}{x^{3/2}(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=32

$$\frac{1}{\sqrt{x}\sqrt{bx+2}}-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

```
[Out] 1/(Sqrt[x]*Sqrt[2 + b*x]) - Sqrt[2 + b*x]/Sqrt[x]
```

Rubi [A] time = 0.0215781, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{1}{\sqrt{x}\sqrt{bx+2}}-\frac{\sqrt{bx+2}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(x^(3/2)*(2 + b*x)^(3/2)),x]

[Out] 1/(Sqrt[x]*Sqrt[2 + b*x]) - Sqrt[2 + b*x]/Sqrt[x]
```

Rubi in Sympy [A] time = 3.15433, size = 27, normalized size = 0.84

$$-\frac{\sqrt{bx+2}}{\sqrt{x}}+\frac{1}{\sqrt{x}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/x**(3/2)/(b*x+2)**(3/2),x)

[Out] -sqrt(b*x + 2)/sqrt(x) + 1/(sqrt(x)*sqrt(b*x + 2))
```

Mathematica [A] time = 0.0189331, size = 21, normalized size = 0.66

$$-\frac{bx+1}{\sqrt{x}\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(x^(3/2)*(2 + b*x)^(3/2)),x]
```

```
[Out] -((1 + b*x)/(Sqrt[x]*Sqrt[2 + b*x]))
```

Maple [A] time = 0.006, size = 18, normalized size = 0.6

$$-(bx+1)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+2)^(3/2),x)

[Out] -(b*x+1)/x^(1/2)/(b*x+2)^(1/2)
```

Maxima [A] time = 1.34662, size = 35, normalized size = 1.09

$$-\frac{b\sqrt{x}}{2\sqrt{bx+2}}-\frac{\sqrt{bx+2}}{2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(3/2)),x, algorithm="maxima")

[Out] -1/2*b*sqrt(x)/sqrt(b*x + 2) - 1/2*sqrt(b*x + 2)/sqrt(x)
```

Fricas [A] time = 0.213321, size = 23, normalized size = 0.72

$$-\frac{bx+1}{\sqrt{bx+2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(3/2)),x, algorithm="fricas")

[Out] -(b*x + 1)/(sqrt(b*x + 2)*sqrt(x))
```

Sympy [A] time = 15.4876, size = 34, normalized size = 1.06

$$-\frac{\sqrt{b}}{\sqrt{1+\frac{2}{bx}}}-\frac{1}{\sqrt{b}x\sqrt{1+\frac{2}{bx}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+2)**(3/2),x)
```

```
[Out] -sqrt(b)/sqrt(1 + 2/(b*x)) - 1/(sqrt(b)*x*sqrt(1 + 2/(b*x)))
```

GIAC/XCAS [A] time = 0.213628, size = 100, normalized size = 3.12

$$-\frac{\sqrt{bx+2}b^2}{2\sqrt{(bx+2)b-2\,b}|b|}-\frac{2\,b^{\frac{5}{2}}}{\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2+2\,b\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(b*x + 2)*b^2/(sqrt((b*x + 2)*b - 2*b)*abs(b)) - 2*b^(5/
2)/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 + 2*b)*a
bs(b))
```

3.621 $\int \frac{1}{x^{5/2}(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{2\sqrt{bx+2}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{bx+2}}+\frac{2b\sqrt{bx+2}}{3\sqrt{x}}$$

```
[Out] 1/(x^(3/2)*Sqrt[2 + b*x]) - (2*Sqrt[2 + b*x])/(3*x^(3/2)) + (2*b*
Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0363974, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2\sqrt{bx+2}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{bx+2}}+\frac{2b\sqrt{bx+2}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(2 + b*x)^(3/2)),x]
```

```
[Out] 1/(x^(3/2)*Sqrt[2 + b*x]) - (2*Sqrt[2 + b*x])/(3*x^(3/2)) + (2*b*
Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 4.38866, size = 49, normalized size = 0.92

$$\frac{2b\sqrt{bx+2}}{3\sqrt{x}}-\frac{2\sqrt{bx+2}}{3x^{\frac{3}{2}}}+\frac{1}{x^{\frac{3}{2}}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+2)**(3/2),x)
```

```
[Out] 2*b*sqrt(b*x + 2)/(3*sqrt(x)) - 2*sqrt(b*x + 2)/(3*x**(3/2)) + 1/
(x**(3/2)*sqrt(b*x + 2))
```

Mathematica [A] time = 0.0203605, size = 32, normalized size = 0.6

$$\frac{2b^2x^2+2bx-1}{3x^{3/2}\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(2 + b*x)^(3/2)),x]
```

```
[Out] (-1 + 2*b*x + 2*b^2*x^2)/(3*x^(3/2)*Sqrt[2 + b*x])
```

Maple [A] time = 0.006, size = 27, normalized size = 0.5

$$\frac{2\,b^2x^2+2\,bx-1}{3}x^{-\frac{3}{2}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+2)^(3/2),x)
```

```
[Out] 1/3*(2*b^2*x^2+2*b*x-1)/x^(3/2)/(b*x+2)^(1/2)
```

Maxima [A] time = 1.35263, size = 55, normalized size = 1.04

$$\frac{b^2\sqrt{x}}{4\sqrt{bx+2}}+\frac{\sqrt{bx+2}b}{2\sqrt{x}}-\frac{(bx+2)^{\frac{3}{2}}}{12\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] 1/4*b^2*sqrt(x)/sqrt(b*x + 2) + 1/2*sqrt(b*x + 2)*b/sqrt(x) - 1/1
2*(b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.212198, size = 35, normalized size = 0.66

$$\frac{2\,b^2x^2+2\,bx-1}{3\sqrt{bx+2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] 1/3*(2*b^2*x^2 + 2*b*x - 1)/(sqrt(b*x + 2)*x^(3/2))
```

Sympy [A] time = 102.32, size = 170, normalized size = 3.21

$$\frac{2b^{\frac{15}{2}}x^3\sqrt{1+\frac{2}{bx}}}{3b^6x^3+12b^5x^2+12b^4x}+\frac{6b^{\frac{13}{2}}x^2\sqrt{1+\frac{2}{bx}}}{3b^6x^3+12b^5x^2+12b^4x}+\frac{3b^{\frac{11}{2}}x\sqrt{1+\frac{2}{bx}}}{3b^6x^3+12b^5x^2+12b^4x}-\frac{2b^{\frac{9}{2}}\sqrt{1+\frac{2}{bx}}}{3b^6x^3+12b^5x^2+12b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+2)**(3/2),x)
```

```
[Out] 2*b**(15/2)*x**3*sqrt(1 + 2/(b*x))/(3*b**6*x**3 + 12*b**5*x**2 +
12*b**4*x) + 6*b**(13/2)*x**2*sqrt(1 + 2/(b*x))/(3*b**6*x**3 + 12
*b**5*x**2 + 12*b**4*x) + 3*b**(11/2)*x*sqrt(1 + 2/(b*x))/(3*b**6
*x**3 + 12*b**5*x**2 + 12*b**4*x) - 2*b**(9/2)*sqrt(1 + 2/(b*x))/
(3*b**6*x**3 + 12*b**5*x**2 + 12*b**4*x)
```

GIAC/XCAS [A] time = 0.218849, size = 116, normalized size = 2.19

$$\frac{b^{\frac{7}{2}}}{\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2+2\,b\right)|b|}+\frac{\left(5\,(bx+2)b^2|b|-12\,b^2|b|\right)\sqrt{bx+2}}{12\,((bx+2)b-2\,b)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] b^(7/2)/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 + 2
*b)*abs(b)) + 1/12*(5*(b*x + 2)*b^2*abs(b) - 12*b^2*abs(b))*sqrt(
b*x + 2)/((b*x + 2)*b - 2*b)^(3/2)
```

3.622 $\int \frac{1}{x^{7/2}(2+bx)^{3/2}}\,dx$

Optimal. Leaf size=74

$$-\frac{2b^2\sqrt{bx+2}}{5\sqrt{x}}+\frac{2b\sqrt{bx+2}}{5x^{3/2}}-\frac{3\sqrt{bx+2}}{5x^{5/2}}+\frac{1}{x^{5/2}\sqrt{bx+2}}$$

```
[Out] 1/(x^(5/2)*Sqrt[2 + b*x]) - (3*Sqrt[2 + b*x])/(5*x^(5/2)) + (2*b*
Sqrt[2 + b*x])/(5*x^(3/2)) - (2*b^2*Sqrt[2 + b*x])/(5*Sqrt[x])
```

Rubi [A] time = 0.0532417, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2b^2\sqrt{bx+2}}{5\sqrt{x}}+\frac{2b\sqrt{bx+2}}{5x^{3/2}}-\frac{3\sqrt{bx+2}}{5x^{5/2}}+\frac{1}{x^{5/2}\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(7/2)*(2 + b*x)^(3/2)),x]
```

```
[Out] 1/(x^(5/2)*Sqrt[2 + b*x]) - (3*Sqrt[2 + b*x])/(5*x^(5/2)) + (2*b*
Sqrt[2 + b*x])/(5*x^(3/2)) - (2*b^2*Sqrt[2 + b*x])/(5*Sqrt[x])
```

Rubi in Sympy [A] time = 5.93663, size = 70, normalized size = 0.95

$$-\frac{2b^2\sqrt{bx+2}}{5\sqrt{x}}+\frac{2b\sqrt{bx+2}}{5x^{\frac{3}{2}}}-\frac{3\sqrt{bx+2}}{5x^{\frac{5}{2}}}+\frac{1}{x^{\frac{5}{2}}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(7/2)/(b*x+2)**(3/2),x)
```

```
[Out] -2*b**2*sqrt(b*x + 2)/(5*sqrt(x)) + 2*b*sqrt(b*x + 2)/(5*x**(3/2)
) - 3*sqrt(b*x + 2)/(5*x**(5/2)) + 1/(x**(5/2)*sqrt(b*x + 2))
```

Mathematica [A] time = 0.0247523, size = 39, normalized size = 0.53

$$\frac{-2b^3x^3-2b^2x^2+bx-1}{5x^{5/2}\sqrt{bx+2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(7/2)*(2 + b*x)^(3/2)),x]

[Out] (-1 + b*x - 2*b^2*x^2 - 2*b^3*x^3)/(5*x^(5/2)*Sqrt[2 + b*x])
```

Maple [A] time = 0.007, size = 35, normalized size = 0.5

$$-\frac{2\,b^3x^3+2\,b^2x^2-bx+1}{5}x^{-\frac{5}{2}}\frac{1}{\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(7/2)/(b*x+2)^(3/2),x)

[Out] -1/5*(2*b^3*x^3+2*b^2*x^2-b*x+1)/x^(5/2)/(b*x+2)^(1/2)
```

Maxima [A] time = 1.34621, size = 76, normalized size = 1.03

$$-\frac{b^3\sqrt{x}}{8\sqrt{bx+2}}-\frac{3\sqrt{bx+2}b^2}{8\sqrt{x}}+\frac{(bx+2)^{\frac{3}{2}}b}{8\,x^{\frac{3}{2}}}-\frac{(bx+2)^{\frac{5}{2}}}{40\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(7/2)),x, algorithm="maxima")

[Out] -1/8*b^3*sqrt(x)/sqrt(b*x + 2) - 3/8*sqrt(b*x + 2)*b^2/sqrt(x) +
1/8*(b*x + 2)^(3/2)*b/x^(3/2) - 1/40*(b*x + 2)^(5/2)/x^(5/2)
```

Fricas [A] time = 0.214832, size = 46, normalized size = 0.62

$$-\frac{2\,b^3x^3+2\,b^2x^2-bx+1}{5\sqrt{bx+2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(7/2)),x, algorithm="fricas")

[Out] -1/5*(2*b^3*x^3 + 2*b^2*x^2 - b*x + 1)/(sqrt(b*x + 2)*x^(5/2))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(7/2)/(b*x+2)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220174, size = 144, normalized size = 1.95

$$-\frac{b^{\frac{9}{2}}}{2\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^{2}+2\,b\right)|b|}-\frac{\left(\frac{60\,b^{6}}{|b|}+\left(\frac{11\,(bx+2)b^{6}}{|b|}-\frac{50\,b^{6}}{|b|}\right)(bx+2)\right)\sqrt{bx+2}}{40\,((bx+2)b-2\,b)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(3/2)*x^(7/2)),x, algorithm="giac")
```

```
[Out] -1/2*b^(9/2)/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^
2 + 2*b)*abs(b)) - 1/40*(60*b^6/abs(b) + (11*(b*x + 2)*b^6/abs(b)
 - 50*b^6/abs(b))*(b*x + 2))*sqrt(b*x + 2)/((b*x + 2)*b - 2*b)^(5
/2)
```

3.623 $\int \frac{x^{5/2}}{(2+bx)^{5/2}}\,dx$

Optimal. Leaf size=86

$$-\frac{10\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{bx+2}}-\frac{2x^{5/2}}{3b(bx+2)^{3/2}}$$

```
[Out] (-2*x^(5/2))/(3*b*(2 + b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[2 +
 b*x]) + (5*Sqrt[x]*Sqrt[2 + b*x])/b^3 - (10*ArcSinh[(Sqrt[b]*Sqr
t[x])/Sqrt[2]])/b^(7/2)
```

Rubi [A] time = 0.0651031, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\frac{10\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{bx+2}}-\frac{2x^{5/2}}{3b(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(2 + b*x)^(5/2),x]
```

```
[Out] (-2*x^(5/2))/(3*b*(2 + b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[2 +
 b*x]) + (5*Sqrt[x]*Sqrt[2 + b*x])/b^3 - (10*ArcSinh[(Sqrt[b]*Sqr
t[x])/Sqrt[2]])/b^(7/2)
```

Rubi in Sympy [A] time = 10.4665, size = 82, normalized size = 0.95

$$-\frac{2x^{\frac{5}{2}}}{3b\left(bx+2\right)^{\frac{3}{2}}}-\frac{10x^{\frac{3}{2}}}{3b^2\sqrt{bx+2}}+\frac{5\sqrt{x}\sqrt{bx+2}}{b^3}-\frac{10\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(b*x+2)**(5/2),x)
```

```
[Out] -2*x**(5/2)/(3*b*(b*x + 2)**(3/2)) - 10*x**(3/2)/(3*b**2*sqrt(b*x
 + 2)) + 5*sqrt(x)*sqrt(b*x + 2)/b**3 - 10*asinh(sqrt(2)*sqrt(b)*
sqrt(x)/2)/b**(7/2)
```

Mathematica [A] time = 0.107493, size = 60, normalized size = 0.7

$$\frac{\sqrt{x}\left(3b^2x^2+40bx+60\right)}{3b^3(bx+2)^{3/2}}-\frac{10\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(2 + b*x)^(5/2),x]
```

```
[Out] (Sqrt[x]*(60 + 40*b*x + 3*b^2*x^2))/(3*b^3*(2 + b*x)^(3/2)) - (10
*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(7/2)
```

Maple [B] time = 0.047, size = 136, normalized size = 1.6

$$\frac{1}{b^3}\sqrt{x}\sqrt{bx+2}$$
$$+1\left(-5\frac{1}{b^{7/2}}\ln\left(\frac{bx+1}{\sqrt{b}}+\sqrt{bx^2+2x}\right)-\frac{8}{3b^5}\sqrt{b\left(x+2b^{-1}\right)^2-2x-4b^{-1}}\left(x+2b^{-1}\right)^{-2}+\frac{28}{3b^4}\sqrt{b\left(x+2b^{-1}\right)^2-2x-4b^{-1}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(b*x+2)^(5/2),x)
```

```
[Out] x^(1/2)*(b*x+2)^(1/2)/b^3+(-5/b^(7/2)*ln((b*x+1)/b^(1/2)+(b*x^2+2
*x)^(1/2))-8/3/b^5/(x+2/b)^2*(b*(x+2/b)^2-2*x-4/b)^(1/2)+28/3/b^4
/(x+2/b)*(b*(x+2/b)^2-2*x-4/b)^(1/2))*(x*(b*x+2))^(1/2)/x^(1/2)/(
b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + 2)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.25207, size = 1, normalized size = 0.01

$$\left[\frac{15\,(bx+2)^{\frac{3}{2}}\sqrt{x}\log\left(-\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)+\left(3\,b^2x^3+40\,bx^2+60\,x\right)\sqrt{b}}{3\,(b^4x+2\,b^3)\sqrt{bx+2}\sqrt{b}\sqrt{x}},\right.$$
$$\left.-\frac{30\,(bx+2)^{\frac{3}{2}}\sqrt{x}\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)-\left(3\,b^2x^3+40\,bx^2+60\,x\right)\sqrt{-b}}{3\,(b^4x+2\,b^3)\sqrt{bx+2}\sqrt{-b}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + 2)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(15*(b*x + 2)^(3/2)*sqrt(x)*log(-sqrt(b*x + 2)*b*sqrt(x) + (
b*x + 1)*sqrt(b)) + (3*b^2*x^3 + 40*b*x^2 + 60*x)*sqrt(b))/((b^4*
x + 2*b^3)*sqrt(b*x + 2)*sqrt(b)*sqrt(x)), -1/3*(30*(b*x + 2)^(3/
2)*sqrt(x)*arctan(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))) - (3*b^2*x^
3 + 40*b*x^2 + 60*x)*sqrt(-b))/((b^4*x + 2*b^3)*sqrt(b*x + 2)*sqr
t(-b)*sqrt(x))]
```

Sympy [A] time = 79.2109, size = 308, normalized size = 3.58

$$\frac{3b^{\frac{23}{2}}x^{15}}{3b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{bx+2}+6b^{\frac{25}{2}}x^{\frac{25}{2}}\sqrt{bx+2}}+\frac{40b^{\frac{21}{2}}x^{14}}{3b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{bx+2}+6b^{\frac{25}{2}}x^{\frac{25}{2}}\sqrt{bx+2}}+\frac{60b^{\frac{19}{2}}x^{13}}{3b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{bx+2}+6b^{\frac{25}{2}}x^{\frac{25}{2}}\sqrt{bx+2}}-\frac{30b^{10}x^{\frac{27}{2}}\sqrt{bx+2}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{3b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{bx+2}+6b^{\frac{25}{2}}x^{\frac{25}{2}}\sqrt{bx+2}}-\frac{60b^{9}x^{\frac{25}{2}}\sqrt{bx+2}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{3b^{\frac{27}{2}}x^{\frac{27}{2}}\sqrt{bx+2}+6b^{\frac{25}{2}}x^{\frac{25}{2}}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(b*x+2)**(5/2),x)
```

```
[Out] 3*b**(23/2)*x**15/(3*b**(27/2)*x**(27/2)*sqrt(b*x + 2) + 6*b**(25
/2)*x**(25/2)*sqrt(b*x + 2)) + 40*b**(21/2)*x**14/(3*b**(27/2)*x*
*(27/2)*sqrt(b*x + 2) + 6*b**(25/2)*x**(25/2)*sqrt(b*x + 2)) + 60
*b**(19/2)*x**13/(3*b**(27/2)*x**(27/2)*sqrt(b*x + 2) + 6*b**(25/
2)*x**(25/2)*sqrt(b*x + 2)) - 30*b**10*x**(27/2)*sqrt(b*x + 2)*as
inh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(27/2)*x**(27/2)*sqrt(b*x +
2) + 6*b**(25/2)*x**(25/2)*sqrt(b*x + 2)) - 60*b**9*x**(25/2)*sqr
t(b*x + 2)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(27/2)*x**(27/2
)*sqrt(b*x + 2) + 6*b**(25/2)*x**(25/2)*sqrt(b*x + 2))
```

GIAC/XCAS [A] time = 0.239039, size = 246, normalized size = 2.86

$$\frac{\left(\frac{15\ln\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2\right)}{b^{\frac{5}{2}}}+\frac{3\sqrt{(bx+2)b-2\,b}\sqrt{bx+2}}{b^3}+\frac{16\left(9\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^4\sqrt{b}+24\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2b^{\frac{3}{2}}+28\,b^{\frac{5}{2}}\right)}{\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2+2\,b\right)^3b^2}\right)|b|}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(b*x + 2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(15*ln((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2)/b
^(5/2) + 3*sqrt((b*x + 2)*b - 2*b)*sqrt(b*x + 2)/b^3 + 16*(9*(sqr
t(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^4*sqrt(b) + 24*(sqr
t(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2*b^(3/2) + 28*b^(5
/2))/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 + 2*b)
^3*b^2))*abs(b)/b^2
```

3.624 $\int \frac{x^{3/2}}{(2+bx)^{5/2}} \, dx$

Optimal. Leaf size=65

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{bx+2}}-\frac{2x^{3/2}}{3b(bx+2)^{3/2}}$$

```
[Out] (-2*x^(3/2))/(3*b*(2 + b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[2 + b*
x]) + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi [A] time = 0.0476189, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{bx+2}}-\frac{2x^{3/2}}{3b(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(2 + b*x)^(5/2),x]
```

```
[Out] (-2*x^(3/2))/(3*b*(2 + b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[2 + b*
x]) + (2*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi in Sympy [A] time = 7.96137, size = 61, normalized size = 0.94

$$-\frac{2x^{\frac{3}{2}}}{3b\,(bx+2)^{\frac{3}{2}}}-\frac{2\sqrt{x}}{b^2\sqrt{bx+2}}+\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(b*x+2)**(5/2),x)
```

```
[Out] -2*x**(3/2)/(3*b*(b*x + 2)**(3/2)) - 2*sqrt(x)/(b**2*sqrt(b*x + 2
)) + 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.117435, size = 52, normalized size = 0.8

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{4\sqrt{x}(2bx+3)}{3b^2(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(2 + b*x)^(5/2),x]
```

```
[Out] (-4*Sqrt[x]*(3 + 2*b*x))/(3*b^2*(2 + b*x)^(3/2)) + (2*ArcSinh[(Sq
rt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Maple [A] time = 0.043, size = 55, normalized size = 0.9

$$\frac{4}{3\sqrt{\pi}}\left(-\frac{\sqrt{\pi}\sqrt{2}\,(10\,bx+15)}{20}\sqrt{b}\sqrt{x}\left(\frac{bx}{2}+1\right)^{-\frac{3}{2}}+\frac{3\sqrt{\pi}}{2}Arcsinh\left(\frac{\sqrt{2}}{2}\sqrt{b}\sqrt{x}\right)\right)b^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(b*x+2)^(5/2),x)
```

```
[Out] 4/3/b^(5/2)/Pi^(1/2)*(-1/20*Pi^(1/2)*x^(1/2)*2^(1/2)*b^(1/2)*(10*
b*x+15)/(1/2*b*x+1)^(3/2)+3/2*Pi^(1/2)*arcsinh(1/2*b^(1/2)*x^(1/2
)*2^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + 2)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221321, size = 1, normalized size = 0.02

$$\left[\frac{3\,(bx+2)^{\frac{3}{2}}\sqrt{x}\log\left(\sqrt{bx+2}b\sqrt{x}+(bx+1)\sqrt{b}\right)-4\left(2\,bx^2+3\,x\right)\sqrt{b}}{3\,(b^3x+2\,b^2)\sqrt{bx+2}\sqrt{b}\sqrt{x}},\frac{2\left(3\,(bx+2)^{\frac{3}{2}}\sqrt{x}\arctan\left(\frac{\sqrt{bx+2}\sqrt{-b}}{b\sqrt{x}}\right)-2\left(2\,bx^2+3\,x\right)\right.}{3\,(b^3x+2\,b^2)\sqrt{bx+2}\sqrt{-b}\sqrt{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + 2)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(b*x + 2)^(3/2)*sqrt(x)*log(sqrt(b*x + 2)*b*sqrt(x) + (b*
x + 1)*sqrt(b)) - 4*(2*b*x^2 + 3*x)*sqrt(b))/((b^3*x + 2*b^2)*sqr
t(b*x + 2)*sqrt(b)*sqrt(x)), 2/3*(3*(b*x + 2)^(3/2)*sqrt(x)*arcta
n(sqrt(b*x + 2)*sqrt(-b)/(b*sqrt(x))) - 2*(2*b*x^2 + 3*x)*sqrt(-b
))/((b^3*x + 2*b^2)*sqrt(b*x + 2)*sqrt(-b)*sqrt(x))]
```

Sympy [A] time = 28.9978, size = 257, normalized size = 3.95

$$-\frac{8b^{\frac{11}{2}}x^8}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx+2}+6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx+2}}-\frac{12b^{\frac{9}{2}}x^7}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx+2}+6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx+2}}+\frac{6b^5x^{\frac{15}{2}}\sqrt{bx+2}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx+2}+6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx+2}}+\frac{12b^4x^{\frac{13}{2}}\sqrt{bx+2}\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx+2}+6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(b*x+2)**(5/2),x)
```

```
[Out] -8*b**(11/2)*x**8/(3*b**(15/2)*x**(15/2)*sqrt(b*x + 2) + 6*b**(13
/2)*x**(13/2)*sqrt(b*x + 2)) - 12*b**(9/2)*x**7/(3*b**(15/2)*x**(
15/2)*sqrt(b*x + 2) + 6*b**(13/2)*x**(13/2)*sqrt(b*x + 2)) + 6*b*
*5*x**(15/2)*sqrt(b*x + 2)*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b*
*(15/2)*x**(15/2)*sqrt(b*x + 2) + 6*b**(13/2)*x**(13/2)*sqrt(b*x
+ 2)) + 12*b**4*x**(13/2)*sqrt(b*x + 2)*asinh(sqrt(2)*sqrt(b)*sqr
t(x)/2)/(3*b**(15/2)*x**(15/2)*sqrt(b*x + 2) + 6*b**(13/2)*x**(13
/2)*sqrt(b*x + 2))
```

GIAC/XCAS [A] time = 0.229116, size = 208, normalized size = 3.2

$$-\frac{\left(\frac{3\ln\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2\right)}{\sqrt{b}}+\frac{16\left(3\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^4\sqrt{b}+6\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2b^{\frac{3}{2}}+8b^{\frac{5}{2}}\right)}{\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2+2b\right)^3}\right)|b|}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(b*x + 2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(3*ln((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2)/s
qrt(b) + 16*(3*(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^
4*sqrt(b) + 6*(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2
*b^(3/2) + 8*b^(5/2))/((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b
- 2*b))^2 + 2*b)^3)*abs(b)/b^3
```

3.625 $\int \frac{\sqrt{x}}{(2+bx)^{5/2}}\,dx$

Optimal. Leaf size=18

$$\frac{x^{3/2}}{3(bx+2)^{3/2}}$$

```
[Out] x^(3/2)/(3*(2 + b*x)^(3/2))
```

Rubi [A] time = 0.0104337, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{x^{3/2}}{3(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(2 + b*x)^(5/2),x]

[Out] x^(3/2)/(3*(2 + b*x)^(3/2))
```

Rubi in Sympy [A] time = 2.13042, size = 14, normalized size = 0.78

$$\frac{x^{\frac{3}{2}}}{3\left(bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(b*x+2)**(5/2),x)

[Out] x**(3/2)/(3*(b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0158017, size = 18, normalized size = 1.

$$\frac{x^{3/2}}{3(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(2 + b*x)^(5/2),x]
```

```
[Out] x^(3/2)/(3*(2 + b*x)^(3/2))
```

Maple [A] time = 0.006, size = 13, normalized size = 0.7

$$\frac{1}{3}x^{\frac{3}{2}}(bx+2)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(b*x+2)^(5/2),x)
```

```
[Out] 1/3*x^(3/2)/(b*x+2)^(3/2)
```

Maxima [A] time = 1.34672, size = 16, normalized size = 0.89

$$\frac{x^{\frac{3}{2}}}{3(bx+2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + 2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*x^(3/2)/(b*x + 2)^(3/2)
```

Fricas [A] time = 0.208844, size = 16, normalized size = 0.89

$$\frac{x^{\frac{3}{2}}}{3(bx+2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + 2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*x^(3/2)/(b*x + 2)^(3/2)
```

Sympy [A] time = 13.0641, size = 27, normalized size = 1.5

$$\frac{x^{\frac{3}{2}}}{3bx\sqrt{bx+2}+6\sqrt{bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(b*x+2)**(5/2),x)
```

```
[Out] x**(3/2)/(3*b*x*sqrt(b*x + 2) + 6*sqrt(b*x + 2))
```

GIAC/XCAS [A] time = 0.219529, size = 111, normalized size = 6.17

$$\frac{4\left(3\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^{4}\sqrt{b}+4\,b^{\frac{5}{2}}\right)|b|}{3\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^{2}+2\,b\right)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(b*x + 2)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*(3*(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^4*sqrt(b
) + 4*b^(5/2))*abs(b)/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b
 - 2*b))^2 + 2*b)^3*b^2)
```

3.626 $\int \frac{1}{\sqrt{x}(2+bx)^{5/2}}\,dx$

Optimal. Leaf size=37

$$\frac{\sqrt{x}}{3\sqrt{bx+2}}+\frac{\sqrt{x}}{3(bx+2)^{3/2}}$$

```
[Out] Sqrt[x]/(3*(2 + b*x)^(3/2)) + Sqrt[x]/(3*Sqrt[2 + b*x])
```

Rubi [A] time = 0.0212939, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{\sqrt{x}}{3\sqrt{bx+2}}+\frac{\sqrt{x}}{3(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(2 + b*x)^(5/2)),x]

[Out] Sqrt[x]/(3*(2 + b*x)^(3/2)) + Sqrt[x]/(3*Sqrt[2 + b*x])
```

Rubi in Sympy [A] time = 3.31047, size = 29, normalized size = 0.78

$$\frac{\sqrt{x}}{3\sqrt{bx+2}}+\frac{\sqrt{x}}{3\left(bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+2)**(5/2)/x**(1/2),x)

[Out] sqrt(x)/(3*sqrt(b*x + 2)) + sqrt(x)/(3*(b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0137855, size = 23, normalized size = 0.62

$$\frac{\sqrt{x}(bx+3)}{3(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(2 + b*x)^(5/2)),x]
```

```
[Out] (Sqrt[x]*(3 + b*x))/(3*(2 + b*x)^(3/2))
```

Maple [A] time = 0.007, size = 18, normalized size = 0.5

$$\frac{bx+3}{3}\sqrt{x}\,(bx+2)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+2)^(5/2)/x^(1/2),x)
```

```
[Out] 1/3*x^(1/2)*(b*x+3)/(b*x+2)^(3/2)
```

Maxima [A] time = 1.35781, size = 32, normalized size = 0.86

$$-\frac{\left(b-\frac{3\,(bx+2)}{x}\right)x^{\frac{3}{2}}}{6\,(bx+2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 2)^(5/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] -1/6*(b - 3*(b*x + 2)/x)*x^(3/2)/(b*x + 2)^(3/2)
```

Fricas [A] time = 0.211883, size = 28, normalized size = 0.76

$$\frac{bx^2+3\,x}{3\,(bx+2)^{\frac{3}{2}}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 2)^(5/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 1/3*(b*x^2 + 3*x)/((b*x + 2)^(3/2)*sqrt(x))
```

Sympy [A] time = 23.3546, size = 75, normalized size = 2.03

$$\frac{bx}{3b^{\frac{3}{2}}x\sqrt{1+\frac{2}{bx}}+6\sqrt{b}\sqrt{1+\frac{2}{bx}}}+\frac{3}{3b^{\frac{3}{2}}x\sqrt{1+\frac{2}{bx}}+6\sqrt{b}\sqrt{1+\frac{2}{bx}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] b*x/(3*b**(3/2)*x*sqrt(1 + 2/(b*x)) + 6*sqrt(b)*sqrt(1 + 2/(b*x))
) + 3/(3*b**(3/2)*x*sqrt(1 + 2/(b*x)) + 6*sqrt(b)*sqrt(1 + 2/(b*x
)))
```

GIAC/XCAS [A] time = 0.211914, size = 107, normalized size = 2.89

$$\frac{8\left(3\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^{2}+2\,b\right)b^{\frac{5}{2}}}{3\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^{2}+2\,b\right)^{3}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 8/3*(3*(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 + 2*b)
*b^(5/2)/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 +
2*b)^3*abs(b))
```

3.627 $\int \frac{1}{x^{3/2}(2+bx)^{5/2}} \, dx$

Optimal. Leaf size=55

$$-\frac{2\sqrt{bx+2}}{3\sqrt{x}}+\frac{2}{3\sqrt{x}\sqrt{bx+2}}+\frac{1}{3\sqrt{x}(bx+2)^{3/2}}$$

```
[Out] 1/(3*Sqrt[x]*(2 + b*x)^(3/2)) + 2/(3*Sqrt[x]*Sqrt[2 + b*x]) - (2*
Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0324738, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$-\frac{2\sqrt{bx+2}}{3\sqrt{x}}+\frac{2}{3\sqrt{x}\sqrt{bx+2}}+\frac{1}{3\sqrt{x}(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(x^(3/2)*(2 + b*x)^(5/2)),x]
```

```
[Out] 1/(3*Sqrt[x]*(2 + b*x)^(3/2)) + 2/(3*Sqrt[x]*Sqrt[2 + b*x]) - (2*
Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 4.53927, size = 49, normalized size = 0.89

$$-\frac{2\sqrt{bx+2}}{3\sqrt{x}}+\frac{2}{3\sqrt{x}\sqrt{bx+2}}+\frac{1}{3\sqrt{x}\,(bx+2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/x**(3/2)/(b*x+2)**(5/2),x)
```

```
[Out] -2*sqrt(b*x + 2)/(3*sqrt(x)) + 2/(3*sqrt(x)*sqrt(b*x + 2)) + 1/(3
*sqrt(x)*(b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0223111, size = 32, normalized size = 0.58

$$-\frac{2b^2x^2+6bx+3}{3\sqrt{x}(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(2 + b*x)^(5/2)),x]
```

```
[Out] -(3 + 6*b*x + 2*b^2*x^2)/(3*Sqrt[x]*(2 + b*x)^(3/2))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.5

$$-\frac{2\,b^2x^2+6\,bx+3}{3}\,(bx+2)^{-\frac{3}{2}}\,\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(b*x+2)^(5/2),x)
```

```
[Out] -1/3*(2*b^2*x^2+6*b*x+3)/x^(1/2)/(b*x+2)^(3/2)
```

Maxima [A] time = 1.32382, size = 54, normalized size = 0.98

$$\frac{\left(b^2-\frac{6\,(bx+2)b}{x}\right)x^{\frac{3}{2}}}{12\,(bx+2)^{\frac{3}{2}}}-\frac{\sqrt{bx+2}}{4\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/12*(b^2 - 6*(b*x + 2)*b/x)*x^(3/2)/(b*x + 2)^(3/2) - 1/4*sqrt(b
*x + 2)/sqrt(x)
```

Fricas [A] time = 0.209134, size = 35, normalized size = 0.64

$$-\frac{2\,b^2x^2+6\,bx+3}{3\,(bx+2)^{\frac{3}{2}}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/3*(2*b^2*x^2 + 6*b*x + 3)/((b*x + 2)^(3/2)*sqrt(x))
```

Sympy [A] time = 102.687, size = 117, normalized size = 2.13

$$-\frac{2b^{\frac{13}{2}}x^2\sqrt{1+\frac{2}{bx}}}{3b^6x^2+12b^5x+12b^4}-\frac{6b^{\frac{11}{2}}x\sqrt{1+\frac{2}{bx}}}{3b^6x^2+12b^5x+12b^4}-\frac{3b^{\frac{9}{2}}\sqrt{1+\frac{2}{bx}}}{3b^6x^2+12b^5x+12b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(b*x+2)**(5/2),x)
```

```
[Out] -2*b**(13/2)*x**2*sqrt(1 + 2/(b*x))/(3*b**6*x**2 + 12*b**5*x + 12
*b**4) - 6*b**(11/2)*x*sqrt(1 + 2/(b*x))/(3*b**6*x**2 + 12*b**5*x
 + 12*b**4) - 3*b**(9/2)*sqrt(1 + 2/(b*x))/(3*b**6*x**2 + 12*b**5
*x + 12*b**4)
```

GIAC/XCAS [A] time = 0.229389, size = 196, normalized size = 3.56

$$-\frac{\sqrt{bx+2}b^2}{4\sqrt{(bx+2)b-2b}|b|}-\frac{3\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^4b^{\frac{5}{2}}+24\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2b^{\frac{7}{2}}+20\,b^{\frac{9}{2}}}{3\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2b}\right)^2+2\,b\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(b*x + 2)*b^2/(sqrt((b*x + 2)*b - 2*b)*abs(b)) - 1/3*(3*
(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^4*b^(5/2) + 24*
(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2*b^(7/2) + 20*
b^(9/2))/(((sqrt(b*x + 2)*sqrt(b) - sqrt((b*x + 2)*b - 2*b))^2 +
2*b)^3*abs(b))
```

3.628 $\int \frac{1}{x^{5/2}(2+bx)^{5/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{2\sqrt{bx+2}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{bx+2}}+\frac{1}{3x^{3/2}(bx+2)^{3/2}}+\frac{2b\sqrt{bx+2}}{3\sqrt{x}}$$

```
[Out] 1/(3*x^(3/2)*(2 + b*x)^(3/2)) + 1/(x^(3/2)*Sqrt[2 + b*x]) - (2*Sq
rt[2 + b*x])/(3*x^(3/2)) + (2*b*Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0449746, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2\sqrt{bx+2}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{bx+2}}+\frac{1}{3x^{3/2}(bx+2)^{3/2}}+\frac{2b\sqrt{bx+2}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(2 + b*x)^(5/2)),x]
```

```
[Out] 1/(3*x^(3/2)*(2 + b*x)^(3/2)) + 1/(x^(3/2)*Sqrt[2 + b*x]) - (2*Sq
rt[2 + b*x])/(3*x^(3/2)) + (2*b*Sqrt[2 + b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 5.42585, size = 66, normalized size = 0.93

$$\frac{2b\sqrt{bx+2}}{3\sqrt{x}}-\frac{2\sqrt{bx+2}}{3x^{\frac{3}{2}}}+\frac{1}{x^{\frac{3}{2}}\sqrt{bx+2}}+\frac{1}{3x^{\frac{3}{2}}\left(bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(b*x+2)**(5/2),x)
```

```
[Out] 2*b*sqrt(b*x + 2)/(3*sqrt(x)) - 2*sqrt(b*x + 2)/(3*x**(3/2)) + 1/
(x**(3/2)*sqrt(b*x + 2)) + 1/(3*x**(3/2)*(b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0260629, size = 40, normalized size = 0.56

$$\frac{2b^3x^3+6b^2x^2+3bx-1}{3x^{3/2}(bx+2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(2 + b*x)^(5/2)),x]
```

```
[Out] (-1 + 3*b*x + 6*b^2*x^2 + 2*b^3*x^3)/(3*x^(3/2)*(2 + b*x)^(3/2))
```

Maple [A] time = 0.006, size = 35, normalized size = 0.5

$$\frac{2\,b^3x^3+6\,b^2x^2+3\,bx-1}{3}x^{-\frac{3}{2}}\,(bx+2)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(b*x+2)^(5/2),x)
```

```
[Out] 1/3*(2*b^3*x^3+6*b^2*x^2+3*b*x-1)/x^(3/2)/(b*x+2)^(3/2)
```

Maxima [A] time = 1.34373, size = 74, normalized size = 1.04

$$\frac{3\,\sqrt{bx+2}b}{8\,\sqrt{x}}-\frac{\left(b^3-\frac{9\,(bx+2)b^2}{x}\right)x^{\frac{3}{2}}}{24\,(bx+2)^{\frac{3}{2}}}-\frac{(bx+2)^{\frac{3}{2}}}{24\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] 3/8*sqrt(b*x + 2)*b/sqrt(x) - 1/24*(b^3 - 9*(b*x + 2)*b^2/x)*x^(3
/2)/(b*x + 2)^(3/2) - 1/24*(b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.212732, size = 61, normalized size = 0.86

$$\frac{2\,b^3x^3+6\,b^2x^2+3\,bx-1}{3\,(bx^2+2\,x)\sqrt{bx+2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] 1/3*(2*b^3*x^3 + 6*b^2*x^2 + 3*b*x - 1)/((b*x^2 + 2*x)*sqrt(b*x +
 2)*sqrt(x))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(b*x+2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.231582, size = 213, normalized size = 3.

$$\frac{\left(4\,(bx+2)b^2|b|-9\,b^2|b|\right)\sqrt{bx+2}}{12\,((bx+2)b-2\,b)^{\frac{3}{2}}}+\frac{3\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^4 b^{\frac{7}{2}}+18\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2 b^{\frac{9}{2}}+16\,b^{\frac{11}{2}}}{3\left(\left(\sqrt{bx+2}\sqrt{b}-\sqrt{(bx+2)b-2\,b}\right)^2+2\,b\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 2)^(5/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] 1/12*(4*(b*x + 2)*b^2*abs(b) - 9*b^2*abs(b))*sqrt(b*x + 2)/((b*x
+ 2)*b - 2*b)^(3/2) + 1/3*(3*(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x +
 2)*b - 2*b))^4*b^(7/2) + 18*(sqrt(b*x + 2)*sqrt(b) - sqrt((b*x +
 2)*b - 2*b))^2*b^(9/2) + 16*b^(11/2))/(((sqrt(b*x + 2)*sqrt(b) -
 sqrt((b*x + 2)*b - 2*b))^2 + 2*b)^3*abs(b))
```

3.629 $\int \frac{x^{5/2}}{\sqrt{2-bx}}\,dx$

Optimal. Leaf size=91

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{2b^3}-\frac{5x^{3/2}\sqrt{2-bx}}{6b^2}-\frac{x^{5/2}\sqrt{2-bx}}{3b}$$

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(2*b^3) - (5*x^(3/2)*Sqrt[2 - b*x])/(6
*b^2) - (x^(5/2)*Sqrt[2 - b*x])/(3*b) + (5*ArcSin[(Sqrt[b]*Sqrt[x
])/Sqrt[2]])/b^(7/2)
```

Rubi [A] time = 0.0702088, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{2b^3}-\frac{5x^{3/2}\sqrt{2-bx}}{6b^2}-\frac{x^{5/2}\sqrt{2-bx}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/Sqrt[2 - b*x],x]
```

```
[Out] (-5*Sqrt[x]*Sqrt[2 - b*x])/(2*b^3) - (5*x^(3/2)*Sqrt[2 - b*x])/(6
*b^2) - (x^(5/2)*Sqrt[2 - b*x])/(3*b) + (5*ArcSin[(Sqrt[b]*Sqrt[x
])/Sqrt[2]])/b^(7/2)
```

Rubi in Sympy [A] time = 9.61548, size = 82, normalized size = 0.9

$$-\frac{x^{\frac{5}{2}}\sqrt{-bx+2}}{3b}-\frac{5x^{\frac{3}{2}}\sqrt{-bx+2}}{6b^2}-\frac{5\sqrt{x}\sqrt{-bx+2}}{2b^3}+\frac{5\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(-b*x+2)**(1/2),x)
```

```
[Out] -x**(5/2)*sqrt(-b*x + 2)/(3*b) - 5*x**(3/2)*sqrt(-b*x + 2)/(6*b**
2) - 5*sqrt(x)*sqrt(-b*x + 2)/(2*b**3) + 5*asin(sqrt(2)*sqrt(b)*s
qrt(x)/2)/b**(7/2)
```

Mathematica [A] time = 0.071209, size = 61, normalized size = 0.67

$$\frac{5\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{\sqrt{x}\sqrt{2-bx}\left(2b^2x^2+5bx+15\right)}{6b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/Sqrt[2 - b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x]*(15 + 5*b*x + 2*b^2*x^2))/(6*b^3) + (5*Ar
cSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(7/2)
```

Maple [A] time = 0.007, size = 100, normalized size = 1.1

$$-\frac{1}{3\,b}x^{\frac{5}{2}}\sqrt{-bx+2}-\frac{5}{6\,b^2}x^{\frac{3}{2}}\sqrt{-bx+2}-\frac{5}{2\,b^3}\sqrt{x}\sqrt{-bx+2}+\frac{5}{2}\sqrt{(-bx+2)\,x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)b^{-\frac{7}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(-b*x+2)^(1/2),x)
```

```
[Out] -1/3*x^(5/2)*(-b*x+2)^(1/2)/b-5/6*x^(3/2)*(-b*x+2)^(1/2)/b^2-5/2*
x^(1/2)*(-b*x+2)^(1/2)/b^3+5/2/b^(7/2)*((-b*x+2)*x)^(1/2)/(-b*x+2
)^(1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(-b*x + 2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.244485, size = 1, normalized size = 0.01

$$\left[-\frac{\left(2\,b^2x^2+5\,bx+15\right)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-15\,\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{6\,\sqrt{-b}b^3},\right.$$
$$\left.-\frac{\left(2\,b^2x^2+5\,bx+15\right)\sqrt{-bx+2}\sqrt{b}\sqrt{x}+30\,\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{6\,b^{\frac{7}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(-b*x + 2),x, algorithm="fricas")
```

```
[Out] [-1/6*((2*b^2*x^2 + 5*b*x + 15)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) -
 15*log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/(sqrt(-b
)*b^3), -1/6*((2*b^2*x^2 + 5*b*x + 15)*sqrt(-b*x + 2)*sqrt(b)*sqr
t(x) + 30*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^(7/2)]
```

Sympy [A] time = 65.4969, size = 206, normalized size = 2.26

$$\begin{cases} -\frac{ix^{\frac{7}{2}}}{3\sqrt{bx-2}}-\frac{ix^{\frac{5}{2}}}{6b\sqrt{bx-2}}-\frac{5ix^{\frac{3}{2}}}{6b^2\sqrt{bx-2}}+\frac{5i\sqrt{x}}{b^3\sqrt{bx-2}}-\frac{5i\,\mathrm{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}} & \text{for}\ \frac{|bx|}{2}>1 \\ \frac{x^{\frac{7}{2}}}{3\sqrt{-bx+2}}+\frac{x^{\frac{5}{2}}}{6b\sqrt{-bx+2}}+\frac{5x^{\frac{3}{2}}}{6b^2\sqrt{-bx+2}}-\frac{5\sqrt{x}}{b^3\sqrt{-bx+2}}+\frac{5\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-I*x**(7/2)/(3*sqrt(b*x - 2)) - I*x**(5/2)/(6*b*sqrt(b
*x - 2)) - 5*I*x**(3/2)/(6*b**2*sqrt(b*x - 2)) + 5*I*sqrt(x)/(b**
3*sqrt(b*x - 2)) - 5*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(7/2),
 Abs(b*x)/2 > 1), (x**(7/2)/(3*sqrt(-b*x + 2)) + x**(5/2)/(6*b*sq
rt(-b*x + 2)) + 5*x**(3/2)/(6*b**2*sqrt(-b*x + 2)) - 5*sqrt(x)/(b
**3*sqrt(-b*x + 2)) + 5*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(7/2),
 True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/sqrt(-b*x + 2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.630 $\int \frac{x^{3/2}}{\sqrt{2-bx}} \, dx$

Optimal. Leaf size=69

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{2b^2}-\frac{x^{3/2}\sqrt{2-bx}}{2b}$$

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(2*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(2*b
) + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi [A] time = 0.051283, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{3\sqrt{x}\sqrt{2-bx}}{2b^2}-\frac{x^{3/2}\sqrt{2-bx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/Sqrt[2 - b*x],x]
```

```
[Out] (-3*Sqrt[x]*Sqrt[2 - b*x])/(2*b^2) - (x^(3/2)*Sqrt[2 - b*x])/(2*b
) + (3*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi in Sympy [A] time = 7.34826, size = 61, normalized size = 0.88

$$-\frac{x^{\frac{3}{2}}\sqrt{-bx+2}}{2b}-\frac{3\sqrt{x}\sqrt{-bx+2}}{2b^2}+\frac{3\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(-b*x+2)**(1/2),x)
```

```
[Out] -x**(3/2)*sqrt(-b*x + 2)/(2*b) - 3*sqrt(x)*sqrt(-b*x + 2)/(2*b**2
) + 3*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.0551433, size = 52, normalized size = 0.75

$$\frac{3\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{\sqrt{x}\sqrt{2-bx}(bx+3)}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/Sqrt[2 - b*x],x]
```

```
[Out] -(Sqrt[x]*Sqrt[2 - b*x]*(3 + b*x))/(2*b^2) + (3*ArcSin[(Sqrt[b]*S
qrt[x])/Sqrt[2]])/b^(5/2)
```

Maple [A] time = 0.007, size = 84, normalized size = 1.2

$$-\frac{1}{2b}x^{\frac{3}{2}}\sqrt{-bx+2}-\frac{3}{2b^2}\sqrt{x}\sqrt{-bx+2}+\frac{3}{2}\sqrt{(-bx+2)x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2x}}\right)b^{-\frac{5}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(-b*x+2)^(1/2),x)
```

```
[Out] -1/2*x^(3/2)*(-b*x+2)^(1/2)/b-3/2*x^(1/2)*(-b*x+2)^(1/2)/b^2+3/2/
b^(5/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)*arctan(b^(1/2)*
(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(-b*x + 2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218754, size = 1, normalized size = 0.01

$$\left[-\frac{(bx+3)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-3\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{2\sqrt{-b}b^2},\ -\frac{(bx+3)\sqrt{-bx+2}\sqrt{b}\sqrt{x}+6\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{2b^{\frac{5}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(-b*x + 2),x, algorithm="fricas")
```

```
[Out] [-1/2*((b*x + 3)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) - 3*log(-sqrt(-b
*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b)))/(sqrt(-b)*b^2), -1/2*((b
*x + 3)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x) + 6*arctan(sqrt(-b*x + 2)/
(sqrt(b)*sqrt(x))))/b^(5/2)]
```

Sympy [A] time = 15.2563, size = 163, normalized size = 2.36

$$\begin{cases} -\frac{ix^{\frac{5}{2}}}{2\sqrt{bx-2}} - \frac{ix^{\frac{3}{2}}}{2b\sqrt{bx-2}} + \frac{3i\sqrt{x}}{b^2\sqrt{bx-2}} - \frac{3i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}} & \text{for } \frac{|bx|}{2} > 1 \\ \frac{x^{\frac{5}{2}}}{2\sqrt{-bx+2}} + \frac{x^{\frac{3}{2}}}{2b\sqrt{-bx+2}} - \frac{3\sqrt{x}}{b^2\sqrt{-bx+2}} + \frac{3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-I*x**(5/2)/(2*sqrt(b*x - 2)) - I*x**(3/2)/(2*b*sqrt(b
*x - 2)) + 3*I*sqrt(x)/(b**2*sqrt(b*x - 2)) - 3*I*acosh(sqrt(2)*s
qrt(b)*sqrt(x)/2)/b**(5/2), Abs(b*x)/2 > 1), (x**(5/2)/(2*sqrt(-b
*x + 2)) + x**(3/2)/(2*b*sqrt(-b*x + 2)) - 3*sqrt(x)/(b**2*sqrt(-
b*x + 2)) + 3*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/sqrt(-b*x + 2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.631 $\int \frac{\sqrt{x}}{\sqrt{2-bx}} \, dx$

Optimal. Leaf size=45

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{2-bx}}{b}$$

```
[Out] -((Sqrt[x]*Sqrt[2 - b*x])/b) + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2
]])/b^(3/2)
```

Rubi [A] time = 0.0344775, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{2-bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/Sqrt[2 - b*x],x]
```

```
[Out] -((Sqrt[x]*Sqrt[2 - b*x])/b) + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2
]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.91702, size = 39, normalized size = 0.87

$$-\frac{\sqrt{x}\sqrt{-bx+2}}{b}+\frac{2\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] -sqrt(x)*sqrt(-b*x + 2)/b + 2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**
(3/2)
```

Mathematica [A] time = 0.0317318, size = 45, normalized size = 1.

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}-\frac{\sqrt{x}\sqrt{2-bx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/Sqrt[2 - b*x],x]
```

```
[Out] -((Sqrt[x]*Sqrt[2 - b*x])/b) + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2
]])/b^(3/2)
```

Maple [A] time = 0.007, size = 67, normalized size = 1.5

$$-\frac{1}{b}\sqrt{x}\sqrt{-bx+2}+1\sqrt{(-bx+2)\,x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^{2}+2\,x}}\right)b^{-\frac{3}{2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(-b*x+2)^(1/2),x)
```

```
[Out] -x^(1/2)*(-b*x+2)^(1/2)/b+1/b^(3/2)*((-b*x+2)*x)^(1/2)/(-b*x+2)^(
1/2)/x^(1/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-b*x + 2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221633, size = 1, normalized size = 0.02

$$\left[-\frac{\sqrt{-bx+2}\sqrt{-b}\sqrt{x}-\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{\sqrt{-b}b},-\frac{\sqrt{-bx+2}\sqrt{b}\sqrt{x}+2\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{b^{\frac{3}{2}}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-b*x + 2),x, algorithm="fricas")
```

```
[Out] [-(sqrt(-b*x + 2)*sqrt(-b)*sqrt(x) - log(-sqrt(-b*x + 2)*b*sqrt(x
) - (b*x - 1)*sqrt(-b)))/(sqrt(-b)*b), -(sqrt(-b*x + 2)*sqrt(b)*s
```

```
qrt(x) + 2*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))))/b^(3/2)]
```

Sympy [A] time = 7.02129, size = 121, normalized size = 2.69

$$\begin{cases} -\frac{ix^{\frac{3}{2}}}{\sqrt{bx-2}} + \frac{2i\sqrt{x}}{b\sqrt{bx-2}} - \frac{2i\,\text{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{for } \frac{|bx|}{2} > 1 \\ \frac{x^{\frac{3}{2}}}{\sqrt{-bx+2}} - \frac{2\sqrt{x}}{b\sqrt{-bx+2}} + \frac{2\,\text{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-I*x**(3/2)/sqrt(b*x - 2) + 2*I*sqrt(x)/(b*sqrt(b*x -
2)) - 2*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2), Abs(b*x)/2 >
 1), (x**(3/2)/sqrt(-b*x + 2) - 2*sqrt(x)/(b*sqrt(-b*x + 2)) + 2*
asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-b*x + 2),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.632 $\int \frac{1}{\sqrt{x}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=24

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

```
[Out] (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi [A] time = 0.0203823, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*Sqrt[2 - b*x]),x]

[Out] (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Rubi in Sympy [A] time = 3.94097, size = 24, normalized size = 1.

$$\frac{2\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2)/(-b*x+2)**(1/2),x)

[Out] 2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b)
```

Mathematica [A] time = 0.0106298, size = 24, normalized size = 1.

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*Sqrt[2 - b*x]),x]
```

```
[Out] (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/Sqrt[b]
```

Maple [B] time = 0.006, size = 50, normalized size = 2.1

$$1\sqrt{(-bx+2)\,x}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2\,x}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2)/(-b*x+2)^(1/2),x)
```

```
[Out] ((-b*x+2)*x)^(1/2)/(-b*x+2)^(1/2)/x^(1/2)/b^(1/2)*arctan(b^(1/2)*
(x-1/b)/(-b*x^2+2*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218691, size = 1, normalized size = 0.04

$$\left[\frac{\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)}{\sqrt{-b}},-\frac{2\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [log(-sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)*sqrt(-b))/sqrt(-b), -2
*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x)))/sqrt(b)]
```

Sympy [A] time = 3.97392, size = 58, normalized size = 2.42

$$\begin{cases} -\frac{2i \operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{for } \frac{|bx|}{2} > 1 \\ \frac{2 \operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b), Abs(b*x
)/2 > 1), (2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/sqrt(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.633 $\int \frac{1}{x^{3/2}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=17

$$-\frac{\sqrt{2-bx}}{\sqrt{x}}$$

```
[Out] -(Sqrt[2 - b*x]/Sqrt[x])
```

Rubi [A] time = 0.0116922, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$

$$-\frac{\sqrt{2-bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*Sqrt[2 - b*x]),x]

[Out] -(Sqrt[2 - b*x]/Sqrt[x])
```

Rubi in Sympy [A] time = 2.55384, size = 14, normalized size = 0.82

$$-\frac{\sqrt{-bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(-b*x+2)**(1/2),x)

[Out] -sqrt(-b*x + 2)/sqrt(x)
```

Mathematica [A] time = 0.011696, size = 17, normalized size = 1.

$$-\frac{\sqrt{2-bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*Sqrt[2 - b*x]),x]
```

```
[Out] -(Sqrt[2 - b*x]/Sqrt[x])
```

Maple [A] time = 0.005, size = 14, normalized size = 0.8

$$-1\sqrt{-bx+2}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(3/2)/(-b*x+2)^(1/2),x)
```

```
[Out] -(-b*x+2)^(1/2)/x^(1/2)
```

Maxima [A] time = 1.32228, size = 18, normalized size = 1.06

$$-\frac{\sqrt{-bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-b*x + 2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] -sqrt(-b*x + 2)/sqrt(x)
```

Fricas [A] time = 0.20879, size = 18, normalized size = 1.06

$$-\frac{\sqrt{-bx+2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-b*x + 2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] -sqrt(-b*x + 2)/sqrt(x)
```

Sympy [A] time = 4.63751, size = 41, normalized size = 2.41

$$\begin{cases} -\sqrt{b}\sqrt{-1+\frac{2}{bx}} & \text{for } 2\left|\frac{1}{bx}\right| > 1 \\ -i\sqrt{b}\sqrt{1-\frac{2}{bx}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-sqrt(b)*sqrt(-1 + 2/(b*x)), 2*Abs(1/(b*x)) > 1), (-I*
sqrt(b)*sqrt(1 - 2/(b*x)), True))
```

GIAC/XCAS [A] time = 0.224528, size = 41, normalized size = 2.41

$$-\frac{\sqrt{-bx+2}b^2}{\sqrt{(bx-2)b+2\,b}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -sqrt(-b*x + 2)*b^2/(sqrt((b*x - 2)*b + 2*b)*abs(b))
```

3.634 $\int \frac{1}{x^{5/2}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=40

$$-\frac{\sqrt{2-bx}}{3x^{3/2}}-\frac{b\sqrt{2-bx}}{3\sqrt{x}}$$

```
[Out] -Sqrt[2 - b*x]/(3*x^(3/2)) - (b*Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0250857, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{\sqrt{2-bx}}{3x^{3/2}}-\frac{b\sqrt{2-bx}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*Sqrt[2 - b*x]),x]

[Out] -Sqrt[2 - b*x]/(3*x^(3/2)) - (b*Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 3.31175, size = 32, normalized size = 0.8

$$-\frac{b\sqrt{-bx+2}}{3\sqrt{x}}-\frac{\sqrt{-bx+2}}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(-b*x+2)**(1/2),x)

[Out] -b*sqrt(-b*x + 2)/(3*sqrt(x)) - sqrt(-b*x + 2)/(3*x**(3/2))
```

Mathematica [A] time = 0.0156881, size = 24, normalized size = 0.6

$$-\frac{\sqrt{2-bx}(bx+1)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*Sqrt[2 - b*x]),x]
```

```
[Out] -(Sqrt[2 - b*x]*(1 + b*x))/(3*x^(3/2))
```

Maple [A] time = 0.006, size = 19, normalized size = 0.5

$$-\frac{bx+1}{3}\sqrt{-bx+2}\,x^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(5/2)/(-b*x+2)^(1/2),x)
```

```
[Out] -1/3*(b*x+1)/x^(3/2)*(-b*x+2)^(1/2)
```

Maxima [A] time = 1.32913, size = 38, normalized size = 0.95

$$-\frac{\sqrt{-bx+2}\,b}{2\sqrt{x}}-\frac{(-bx+2)^{\frac{3}{2}}}{6\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-b*x + 2)*x^(5/2)),x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(-b*x + 2)*b/sqrt(x) - 1/6*(-b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.208689, size = 24, normalized size = 0.6

$$-\frac{(bx+1)\sqrt{-bx+2}}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-b*x + 2)*x^(5/2)),x, algorithm="fricas")
```

```
[Out] -1/3*(b*x + 1)*sqrt(-b*x + 2)/x^(3/2)
```

Sympy [A] time = 23.8503, size = 141, normalized size = 3.52

$$\begin{cases} -\frac{b^{\frac{3}{2}}\sqrt{-1+\frac{2}{bx}}}{3}-\frac{\sqrt{b}\sqrt{-1+\frac{2}{bx}}}{3x} & \text{for } 2\left|\frac{1}{bx}\right|>1 \\ -\frac{ib^{\frac{7}{2}}x^2\sqrt{1-\frac{2}{bx}}}{3b^2x^2-6bx}+\frac{ib^{\frac{5}{2}}x\sqrt{1-\frac{2}{bx}}}{3b^2x^2-6bx}+\frac{2ib^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}}{3b^2x^2-6bx} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-b**(3/2)*sqrt(-1 + 2/(b*x))/3 - sqrt(b)*sqrt(-1 + 2/(
b*x))/(3*x), 2*Abs(1/(b*x)) > 1), (-I*b**(7/2)*x**2*sqrt(1 - 2/(b
*x))/(3*b**2*x**2 - 6*b*x) + I*b**(5/2)*x*sqrt(1 - 2/(b*x))/(3*b*
*2*x**2 - 6*b*x) + 2*I*b**(3/2)*sqrt(1 - 2/(b*x))/(3*b**2*x**2 -
6*b*x), True))
```

GIAC/XCAS [A] time = 0.210243, size = 58, normalized size = 1.45

$$-\frac{\left((bx-2)b^3+3\,b^3\right)\sqrt{-bx+2}b}{3\left((bx-2)b+2\,b\right)^{\frac{3}{2}}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/3*((b*x - 2)*b^3 + 3*b^3)*sqrt(-b*x + 2)*b/(((b*x - 2)*b + 2*b
)^(3/2)*abs(b))
```

3.635 $\int \frac{x^{5/2}}{(2-bx)^{3/2}}\,dx$

Optimal. Leaf size=89

$$-\frac{15\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{15\sqrt{x}\sqrt{2-bx}}{2b^3}+\frac{5x^{3/2}\sqrt{2-bx}}{2b^2}+\frac{2x^{5/2}}{b\sqrt{2-bx}}$$

```
[Out] (2*x^(5/2))/(b*Sqrt[2 - b*x]) + (15*Sqrt[x]*Sqrt[2 - b*x])/(2*b^3
) + (5*x^(3/2)*Sqrt[2 - b*x])/(2*b^2) - (15*ArcSin[(Sqrt[b]*Sqrt[
x])/Sqrt[2]])/b^(7/2)
```

Rubi [A] time = 0.070138, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$-\frac{15\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}+\frac{15\sqrt{x}\sqrt{2-bx}}{2b^3}+\frac{5x^{3/2}\sqrt{2-bx}}{2b^2}+\frac{2x^{5/2}}{b\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(2 - b*x)^(3/2),x]
```

```
[Out] (2*x^(5/2))/(b*Sqrt[2 - b*x]) + (15*Sqrt[x]*Sqrt[2 - b*x])/(2*b^3
) + (5*x^(3/2)*Sqrt[2 - b*x])/(2*b^2) - (15*ArcSin[(Sqrt[b]*Sqrt[
x])/Sqrt[2]])/b^(7/2)
```

Rubi in Sympy [A] time = 10.5232, size = 82, normalized size = 0.92

$$\frac{2x^{\frac{5}{2}}}{b\sqrt{-bx+2}}+\frac{5x^{\frac{3}{2}}\sqrt{-bx+2}}{2b^2}+\frac{15\sqrt{x}\sqrt{-bx+2}}{2b^3}-\frac{15\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(-b*x+2)**(3/2),x)
```

```
[Out] 2*x**(5/2)/(b*sqrt(-b*x + 2)) + 5*x**(3/2)*sqrt(-b*x + 2)/(2*b**2
) + 15*sqrt(x)*sqrt(-b*x + 2)/(2*b**3) - 15*asin(sqrt(2)*sqrt(b)*
sqrt(x)/2)/b**(7/2)
```

Mathematica [A] time = 0.10218, size = 60, normalized size = 0.67

$$-\frac{15\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{\sqrt{x}\left(b^2x^2+5bx-30\right)}{2b^3\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(2 - b*x)^(3/2),x]
```

```
[Out] -(Sqrt[x]*(-30 + 5*b*x + b^2*x^2))/(2*b^3*Sqrt[2 - b*x]) - (15*Ar
cSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(7/2)
```

Maple [B] time = 0.042, size = 138, normalized size = 1.6

$$-\frac{(bx+7)(bx-2)}{2b^3}\sqrt{x}\sqrt{(-bx+2)x}\frac{1}{\sqrt{-x(bx-2)}}\frac{1}{\sqrt{-bx+2}}$$
$$-1\left(\frac{15}{2}\arctan\left(1\sqrt{b}\left(x-b^{-1}\right)\frac{1}{\sqrt{-bx^2+2x}}\right)b^{-\frac{7}{2}}+8\frac{1}{b^4}\sqrt{-b\left(x-2b^{-1}\right)^2-2x+4b^{-1}}\left(x-2b^{-1}\right)^{-1}\right)\sqrt{(-bx+2)x}\frac{1}{\sqrt{x}\sqrt{-}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(-b*x+2)^(3/2),x)
```

```
[Out] -1/2*(b*x+7)*x^(1/2)*(b*x-2)/b^3/(-x*(b*x-2))^(1/2)*((-b*x+2)*x)^
(1/2)/(-b*x+2)^(1/2)-(15/2/b^(7/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2
+2*x)^(1/2))+8/b^4/(x-2/b)*(-b*(x-2/b)^2-2*x+4/b)^(1/2))*((-b*x+2
)*x)^(1/2)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + 2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226447, size = 1, normalized size = 0.01

$$\left[\frac{15\sqrt{-bx+2}\sqrt{x}\log\left(\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)-\left(b^2x^3+5\,bx^2-30\,x\right)\sqrt{-b}}{2\sqrt{-bx+2}\sqrt{-b}b^3\sqrt{x}}, \frac{30\sqrt{-bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)-\left(b^2 \cdots\right.}{2\sqrt{-bx+2}b^{\frac{7}{2}}\sqrt{x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + 2)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(15*sqrt(-b*x + 2)*sqrt(x)*log(sqrt(-b*x + 2)*b*sqrt(x) - (b
*x - 1)*sqrt(-b)) - (b^2*x^3 + 5*b*x^2 - 30*x)*sqrt(-b))/(sqrt(-b
*x + 2)*sqrt(-b)*b^3*sqrt(x)), 1/2*(30*sqrt(-b*x + 2)*sqrt(x)*arc
tan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))) - (b^2*x^3 + 5*b*x^2 - 30*x
)*sqrt(b))/(sqrt(-b*x + 2)*b^(7/2)*sqrt(x))]
```

Sympy [A] time = 82.162, size = 173, normalized size = 1.94

$$\begin{cases} \frac{ix^{\frac{5}{2}}}{2b\sqrt{bx-2}} + \frac{5ix^{\frac{3}{2}}}{2b^2\sqrt{bx-2}} - \frac{15i\sqrt{x}}{b^3\sqrt{bx-2}} + \frac{15i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -\frac{x^{\frac{5}{2}}}{2b\sqrt{-bx+2}} - \frac{5x^{\frac{3}{2}}}{2b^2\sqrt{-bx+2}} + \frac{15\sqrt{x}}{b^3\sqrt{-bx+2}} - \frac{15\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(-b*x+2)**(3/2),x)
```

```
[Out] Piecewise((I*x**(5/2)/(2*b*sqrt(b*x - 2)) + 5*I*x**(3/2)/(2*b**2*
sqrt(b*x - 2)) - 15*I*sqrt(x)/(b**3*sqrt(b*x - 2)) + 15*I*acosh(s
qrt(2)*sqrt(b)*sqrt(x)/2)/b**(7/2), Abs(b*x)/2 > 1), (-x**(5/2)/(
2*b*sqrt(-b*x + 2)) - 5*x**(3/2)/(2*b**2*sqrt(-b*x + 2)) + 15*sqr
t(x)/(b**3*sqrt(-b*x + 2)) - 15*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b
**(7/2), True))
```

GIAC/XCAS [A] time = 0.221612, size = 184, normalized size = 2.07

$$\frac{\left(\sqrt{(bx-2)b+2\,b}\sqrt{-bx+2}\left(\frac{bx-2}{b^3}+\frac{9}{b^3}\right)-\frac{15\ln\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2\right)}{\sqrt{-b}b^2}+\frac{64}{\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2-2\,b\right)\sqrt{-b}b}\right)|b|}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + 2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt((b*x - 2)*b + 2*b)*sqrt(-b*x + 2)*((b*x - 2)/b^3 + 9/b^
3) - 15*ln((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2)
/(sqrt(-b)*b^2) + 64/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*
b + 2*b))^2 - 2*b)*sqrt(-b)*b))*abs(b)/b^2
```

3.636 $\int \frac{x^{3/2}}{(2-bx)^{3/2}}\,dx$

Optimal. Leaf size=65

$$-\frac{6\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{2-bx}}{b^2}+\frac{2x^{3/2}}{b\sqrt{2-bx}}$$

```
[Out] (2*x^(3/2))/(b*Sqrt[2 - b*x]) + (3*Sqrt[x]*Sqrt[2 - b*x])/b^2 - (
6*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi [A] time = 0.0520545, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.25$

$$-\frac{6\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{3\sqrt{x}\sqrt{2-bx}}{b^2}+\frac{2x^{3/2}}{b\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(2 - b*x)^(3/2),x]
```

```
[Out] (2*x^(3/2))/(b*Sqrt[2 - b*x]) + (3*Sqrt[x]*Sqrt[2 - b*x])/b^2 - (
6*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.70608, size = 60, normalized size = 0.92

$$\frac{2x^{\frac{3}{2}}}{b\sqrt{-bx+2}}+\frac{3\sqrt{x}\sqrt{-bx+2}}{b^2}-\frac{6\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(-b*x+2)**(3/2),x)
```

```
[Out] 2*x**(3/2)/(b*sqrt(-b*x + 2)) + 3*sqrt(x)*sqrt(-b*x + 2)/b**2 - 6
*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.0757573, size = 50, normalized size = 0.77

$$\frac{\sqrt{x}(6-bx)}{b^2\sqrt{2-bx}}-\frac{6\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(2 - b*x)^(3/2),x]
```

```
[Out] (Sqrt[x]*(6 - b*x))/(b^2*Sqrt[2 - b*x]) - (6*ArcSin[(Sqrt[b]*Sqrt
[x])/Sqrt[2]])/b^(5/2)
```

Maple [B] time = 0.036, size = 133, normalized size = 2.1

$$-\frac{bx-2}{b^2}\sqrt{x}\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{-x\,(bx-2)}}\frac{1}{\sqrt{-bx+2}}$$
$$-1\left(3\,\frac{1}{b^{5/2}}\arctan\left(\frac{\sqrt{b}}{\sqrt{-bx^2+2\,x}}\left(x-b^{-1}\right)\right)+4\,\frac{1}{b^3}\sqrt{-b\,(x-2\,b^{-1})^2-2\,x+4\,b^{-1}}\left(x-2\,b^{-1}\right)^{-1}\right)\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(-b*x+2)^(3/2),x)
```

```
[Out] -1/b^2*x^(1/2)*(b*x-2)/(-x*(b*x-2))^(1/2)*((-b*x+2)*x)^(1/2)/(-b*
x+2)^(1/2)-(3/b^(5/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))+
4/b^3/(x-2/b)*(-b*(x-2/b)^2-2*x+4/b)^(1/2))*((-b*x+2)*x)^(1/2)/x^
(1/2)/(-b*x+2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + 2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22152, size = 1, normalized size = 0.02

$$\left[\frac{3\,\sqrt{-bx+2}\sqrt{x}\log\left(\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)-\left(bx^2-6\,x\right)\sqrt{-b}}{\sqrt{-bx+2}\sqrt{-b}b^2\sqrt{x}},\frac{6\,\sqrt{-bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)-\left(bx^2-6\,x\right)\sqrt{b}}{\sqrt{-bx+2}b^{\frac{5}{2}}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + 2)^(3/2),x, algorithm="fricas")
```

```
[Out] [(3*sqrt(-b*x + 2)*sqrt(x)*log(sqrt(-b*x + 2)*b*sqrt(x) - (b*x -
1)*sqrt(-b)) - (b*x^2 - 6*x)*sqrt(-b))/(sqrt(-b*x + 2)*sqrt(-b)*b
^2*sqrt(x)), (6*sqrt(-b*x + 2)*sqrt(x)*arctan(sqrt(-b*x + 2)/(sqr
t(b)*sqrt(x))) - (b*x^2 - 6*x)*sqrt(b))/(sqrt(-b*x + 2)*b^(5/2)*s
qrt(x))]
```

Sympy [A] time = 14.7449, size = 128, normalized size = 1.97

$$\begin{cases} \frac{ix^{\frac{3}{2}}}{b\sqrt{bx-2}} - \frac{6i\sqrt{x}}{b^2\sqrt{bx-2}} + \frac{6i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -\frac{x^{\frac{3}{2}}}{b\sqrt{-bx+2}} + \frac{6\sqrt{x}}{b^2\sqrt{-bx+2}} - \frac{6\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(-b*x+2)**(3/2),x)
```

```
[Out] Piecewise((I*x**(3/2)/(b*sqrt(b*x - 2)) - 6*I*sqrt(x)/(b**2*sqrt(
b*x - 2)) + 6*I*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2), Abs(b*
x)/2 > 1), (-x**(3/2)/(b*sqrt(-b*x + 2)) + 6*sqrt(x)/(b**2*sqrt(-
b*x + 2)) - 6*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2), True))
```

GIAC/XCAS [A] time = 0.218386, size = 162, normalized size = 2.49

$$\frac{\left(\frac{3\sqrt{-b}\ln\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^2\right)}{b} + \frac{\sqrt{(bx-2)b+2b}\sqrt{-bx+2}}{b} - \frac{16\sqrt{-b}}{\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^2 - 2b}\right)|b|}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + 2)^(3/2),x, algorithm="giac")
```

```
[Out] (3*sqrt(-b)*ln((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b)
)^2)/b + sqrt((b*x - 2)*b + 2*b)*sqrt(-b*x + 2)/b - 16*sqrt(-b)/(
(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2 - 2*b))*abs
(b)/b^3
```

3.637 $\int \frac{\sqrt{x}}{(2-bx)^{3/2}} \, dx$

Optimal. Leaf size=45

$$\frac{2\sqrt{x}}{b\sqrt{2-bx}}-\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

```
[Out] (2*Sqrt[x])/(b*Sqrt[2 - b*x]) - (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[
2]])/b^(3/2)
```

Rubi [A] time = 0.0347025, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$

$$\frac{2\sqrt{x}}{b\sqrt{2-bx}}-\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(2 - b*x)^(3/2),x]
```

```
[Out] (2*Sqrt[x])/(b*Sqrt[2 - b*x]) - (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[
2]])/b^(3/2)
```

Rubi in Sympy [A] time = 5.84384, size = 41, normalized size = 0.91

$$\frac{2\sqrt{x}}{b\sqrt{-bx+2}}-\frac{2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(-b*x+2)**(3/2),x)
```

```
[Out] 2*sqrt(x)/(b*sqrt(-b*x + 2)) - 2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/
b**(3/2)
```

Mathematica [A] time = 0.0628981, size = 45, normalized size = 1.

$$\frac{2\sqrt{x}}{b\sqrt{2-bx}}-\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(2 - b*x)^(3/2),x]
```

```
[Out] (2*Sqrt[x])/(b*Sqrt[2 - b*x]) - (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[
2]])/b^(3/2)
```

Maple [A] time = 0.046, size = 67, normalized size = 1.5

$$-2\,\frac{1}{\sqrt{-b}\sqrt{\pi}b}\left(1/2\,\frac{\sqrt{\pi}\sqrt{x}\sqrt{2}\,(-b)^{3/2}}{b\sqrt{-1/2\,bx+1}}-\frac{\sqrt{\pi}\,(-b)^{3/2}\arcsin\left(1/2\,\sqrt{b}\sqrt{x}\sqrt{2}\right)}{b^{3/2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(-b*x+2)^(3/2),x)
```

```
[Out] -2/(-b)^(1/2)/Pi^(1/2)/b*(1/2*Pi^(1/2)*x^(1/2)*2^(1/2)*(-b)^(3/2)
/b/(-1/2*b*x+1)^(1/2)-Pi^(1/2)*(-b)^(3/2)/b^(3/2)*arcsin(1/2*b^(1
/2)*x^(1/2)*2^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + 2)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220175, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{-bx+2}\sqrt{x}\log\left(\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)+2\sqrt{-b}x}{\sqrt{-bx+2}\sqrt{-b}b\sqrt{x}},\frac{2\left(\sqrt{-bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)+\sqrt{b}x\right)}{\sqrt{-bx+2}b^{\frac{3}{2}}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + 2)^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(-b*x + 2)*sqrt(x)*log(sqrt(-b*x + 2)*b*sqrt(x) - (b*x - 1)
*sqrt(-b)) + 2*sqrt(-b)*x)/(sqrt(-b*x + 2)*sqrt(-b)*b*sqrt(x)), 2
*(sqrt(-b*x + 2)*sqrt(x)*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x)))
 + sqrt(b)*x)/(sqrt(-b*x + 2)*b^(3/2)*sqrt(x))]
```

Sympy [A] time = 6.26537, size = 92, normalized size = 2.04

$$\begin{cases} -\frac{2i\sqrt{x}}{b\sqrt{bx-2}} + \frac{2i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{for}\ \frac{|bx|}{2} > 1 \\ \frac{2\sqrt{x}}{b\sqrt{-bx+2}} - \frac{2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(-b*x+2)**(3/2),x)
```

```
[Out] Piecewise((-2*I*sqrt(x)/(b*sqrt(b*x - 2)) + 2*I*acosh(sqrt(2)*sqr
t(b)*sqrt(x)/2)/b**(3/2), Abs(b*x)/2 > 1), (2*sqrt(x)/(b*sqrt(-b*
x + 2)) - 2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(3/2), True))
```

GIAC/XCAS [A] time = 0.218181, size = 124, normalized size = 2.76

$$-\frac{\left(\frac{\ln\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2\right)}{\sqrt{-b}} + \frac{8\sqrt{-b}}{\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2-2\,b}\right)|b|}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + 2)^(3/2),x, algorithm="giac")
```

```
[Out] -(ln((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2)/sqrt(
-b) + 8*sqrt(-b)/((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2
*b))^2 - 2*b))*abs(b)/b^2
```

3.638 $\int \frac{1}{\sqrt{x}(2-bx)^{3/2}}\,dx$

Optimal. Leaf size=16

$$\frac{\sqrt{x}}{\sqrt{2-bx}}$$

```
[Out] Sqrt[x]/Sqrt[2 - b*x]
```

Rubi [A] time = 0.0114071, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$

$$\frac{\sqrt{x}}{\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(2 - b*x)^(3/2)),x]

[Out] Sqrt[x]/Sqrt[2 - b*x]
```

Rubi in Sympy [A] time = 2.60775, size = 12, normalized size = 0.75

$$\frac{\sqrt{x}}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+2)**(3/2)/x**(1/2),x)

[Out] sqrt(x)/sqrt(-b*x + 2)
```

Mathematica [A] time = 0.0143253, size = 16, normalized size = 1.

$$\frac{\sqrt{x}}{\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(2 - b*x)^(3/2)),x]
```

```
[Out] Sqrt[x]/Sqrt[2 - b*x]
```

Maple [A] time = 0.005, size = 13, normalized size = 0.8

$$1\sqrt{x}\frac{1}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+2)^(3/2)/x^(1/2),x)
```

```
[Out] x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [A] time = 1.35518, size = 16, normalized size = 1.

$$\frac{\sqrt{x}}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] sqrt(x)/sqrt(-b*x + 2)
```

Fricas [A] time = 0.210902, size = 16, normalized size = 1.

$$\frac{\sqrt{x}}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] sqrt(x)/sqrt(-b*x + 2)
```

Sympy [A] time = 4.59417, size = 41, normalized size = 2.56

$$\begin{cases} \frac{1}{\sqrt{b}\sqrt{-1+\frac{2}{bx}}} & \text{for } 2\left|\frac{1}{bx}\right| > 1 \\ -\frac{i}{\sqrt{b}\sqrt{1-\frac{2}{bx}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] Piecewise((1/(sqrt(b)*sqrt(-1 + 2/(b*x))), 2*Abs(1/(b*x)) > 1), (
-I/(sqrt(b)*sqrt(1 - 2/(b*x))), True))
```

GIAC/XCAS [A] time = 0.206826, size = 68, normalized size = 4.25

$$-\frac{4\sqrt{-b}b}{\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2-2\,b\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] -4*sqrt(-b)*b/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b
))^2 - 2*b)*abs(b))
```

3.639 $\int \frac{1}{x^{3/2}(2-bx)^{3/2}}\,dx$

Optimal. Leaf size=34

$$\frac{1}{\sqrt{x}\sqrt{2-bx}}-\frac{\sqrt{2-bx}}{\sqrt{x}}$$

```
[Out] 1/(Sqrt[x]*Sqrt[2 - b*x]) - Sqrt[2 - b*x]/Sqrt[x]
```

Rubi [A] time = 0.0233024, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{1}{\sqrt{x}\sqrt{2-bx}}-\frac{\sqrt{2-bx}}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(2 - b*x)^(3/2)),x]

[Out] 1/(Sqrt[x]*Sqrt[2 - b*x]) - Sqrt[2 - b*x]/Sqrt[x]
```

Rubi in Sympy [A] time = 4.04549, size = 27, normalized size = 0.79

$$-\frac{\sqrt{-bx+2}}{\sqrt{x}}+\frac{1}{\sqrt{x}\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(-b*x+2)**(3/2),x)

[Out] -sqrt(-b*x + 2)/sqrt(x) + 1/(sqrt(x)*sqrt(-b*x + 2))
```

Mathematica [A] time = 0.0228692, size = 21, normalized size = 0.62

$$\frac{bx-1}{\sqrt{x}\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(2 - b*x)^(3/2)),x]
```

```
[Out] (-1 + b*x)/(Sqrt[x]*Sqrt[2 - b*x])
```

Maple [A] time = 0.005, size = 18, normalized size = 0.5

$$(bx-1)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^(3/2)/(-b*x+2)^(3/2),x)
```

```
[Out] (b*x-1)/x^(1/2)/(-b*x+2)^(1/2)
```

Maxima [A] time = 1.33664, size = 38, normalized size = 1.12

$$\frac{b\sqrt{x}}{2\sqrt{-bx+2}}-\frac{\sqrt{-bx+2}}{2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + 2)^(3/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/2*b*sqrt(x)/sqrt(-b*x + 2) - 1/2*sqrt(-b*x + 2)/sqrt(x)
```

Fricas [A] time = 0.209372, size = 23, normalized size = 0.68

$$\frac{bx-1}{\sqrt{-bx+2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + 2)^(3/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] (b*x - 1)/(sqrt(-b*x + 2)*sqrt(x))
```

Sympy [A] time = 15.5224, size = 92, normalized size = 2.71

$$\begin{cases} \frac{\sqrt{b}}{\sqrt{-1+\frac{2}{bx}}}-\frac{1}{\sqrt{b}x\sqrt{-1+\frac{2}{bx}}} & \text{for } 2\left|\frac{1}{bx}\right|>1 \\ -\frac{ib^{\frac{5}{2}}x\sqrt{1-\frac{2}{bx}}}{b^2x-2b}+\frac{ib^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}}{b^2x-2b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(-b*x+2)**(3/2),x)
```

```
[Out] Piecewise((sqrt(b)/sqrt(-1 + 2/(b*x)) - 1/(sqrt(b)*x*sqrt(-1 + 2/
(b*x))), 2*Abs(1/(b*x)) > 1), (-I*b**(5/2)*x*sqrt(1 - 2/(b*x))/(b
**2*x - 2*b) + I*b**(3/2)*sqrt(1 - 2/(b*x))/(b**2*x - 2*b), True)
)
```

GIAC/XCAS [A] time = 0.212779, size = 112, normalized size = 3.29

$$-\frac{\sqrt{-bx+2}b^{2}}{2\sqrt{(bx-2)b+2\,b}|b|}-\frac{2\sqrt{-b}b^{2}}{\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}-2\,b\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(-b*x + 2)*b^2/(sqrt((b*x - 2)*b + 2*b)*abs(b)) - 2*sqrt
(-b)*b^2/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2
- 2*b)*abs(b))
```

3.640 $\int \frac{1}{x^{5/2}(2-bx)^{3/2}}\,dx$

Optimal. Leaf size=56

$$-\frac{2\sqrt{2-bx}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{2-bx}}-\frac{2b\sqrt{2-bx}}{3\sqrt{x}}$$

```
[Out] 1/(x^(3/2)*Sqrt[2 - b*x]) - (2*Sqrt[2 - b*x])/(3*x^(3/2)) - (2*b*
Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0384904, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{2\sqrt{2-bx}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{2-bx}}-\frac{2b\sqrt{2-bx}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(2 - b*x)^(3/2)),x]
```

```
[Out] 1/(x^(3/2)*Sqrt[2 - b*x]) - (2*Sqrt[2 - b*x])/(3*x^(3/2)) - (2*b*
Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 5.35548, size = 49, normalized size = 0.88

$$-\frac{2b\sqrt{-bx+2}}{3\sqrt{x}}-\frac{2\sqrt{-bx+2}}{3x^{\frac{3}{2}}}+\frac{1}{x^{\frac{3}{2}}\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(-b*x+2)**(3/2),x)
```

```
[Out] -2*b*sqrt(-b*x + 2)/(3*sqrt(x)) - 2*sqrt(-b*x + 2)/(3*x**(3/2)) +
 1/(x**(3/2)*sqrt(-b*x + 2))
```

Mathematica [A] time = 0.0300019, size = 33, normalized size = 0.59

$$\frac{2b^2x^2-2bx-1}{3x^{3/2}\sqrt{2-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(2 - b*x)^(3/2)),x]

[Out] (-1 - 2*b*x + 2*b^2*x^2)/(3*x^(3/2)*Sqrt[2 - b*x])
```

Maple [A] time = 0.006, size = 28, normalized size = 0.5

$$\frac{2\,b^2x^2-2\,bx-1}{3}x^{-\frac{3}{2}}\frac{1}{\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(-b*x+2)^(3/2),x)

[Out] 1/3*(2*b^2*x^2-2*b*x-1)/x^(3/2)/(-b*x+2)^(1/2)
```

Maxima [A] time = 1.34152, size = 59, normalized size = 1.05

$$\frac{b^2\sqrt{x}}{4\sqrt{-bx+2}}-\frac{\sqrt{-bx+2}b}{2\sqrt{x}}-\frac{(-bx+2)^{\frac{3}{2}}}{12\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*x^(5/2)),x, algorithm="maxima")

[Out] 1/4*b^2*sqrt(x)/sqrt(-b*x + 2) - 1/2*sqrt(-b*x + 2)*b/sqrt(x) - 1
/12*(-b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.208235, size = 36, normalized size = 0.64

$$\frac{2\,b^2x^2-2\,bx-1}{3\sqrt{-bx+2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*x^(5/2)),x, algorithm="fricas")

[Out] 1/3*(2*b^2*x^2 - 2*b*x - 1)/(sqrt(-b*x + 2)*x^(3/2))
```

Sympy [A] time = 102.609, size = 355, normalized size = 6.34

$$\begin{cases} -\frac{2b^{\frac{15}{2}}x^3\sqrt{-1+\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} + \frac{6b^{\frac{13}{2}}x^2\sqrt{-1+\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} - \frac{3b^{\frac{11}{2}}x\sqrt{-1+\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} - \frac{2b^{\frac{9}{2}}\sqrt{-1+\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} & \text{for } 2\left|\frac{1}{bx}\right| > 1 \\ -\frac{2ib^{\frac{15}{2}}x^3\sqrt{1-\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} + \frac{6ib^{\frac{13}{2}}x^2\sqrt{1-\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} - \frac{3ib^{\frac{11}{2}}x\sqrt{1-\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} - \frac{2ib^{\frac{9}{2}}\sqrt{1-\frac{2}{bx}}}{3b^6x^3-12b^5x^2+12b^4x} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(-b*x+2)**(3/2),x)
```

```
[Out] Piecewise((-2*b**(15/2)*x**3*sqrt(-1 + 2/(b*x))/(3*b**6*x**3 - 12
*b**5*x**2 + 12*b**4*x) + 6*b**(13/2)*x**2*sqrt(-1 + 2/(b*x))/(3*
b**6*x**3 - 12*b**5*x**2 + 12*b**4*x) - 3*b**(11/2)*x*sqrt(-1 + 2
/(b*x))/(3*b**6*x**3 - 12*b**5*x**2 + 12*b**4*x) - 2*b**(9/2)*sqr
t(-1 + 2/(b*x))/(3*b**6*x**3 - 12*b**5*x**2 + 12*b**4*x), 2*Abs(1
/(b*x)) > 1), (-2*I*b**(15/2)*x**3*sqrt(1 - 2/(b*x))/(3*b**6*x**3
 - 12*b**5*x**2 + 12*b**4*x) + 6*I*b**(13/2)*x**2*sqrt(1 - 2/(b*x
))/(3*b**6*x**3 - 12*b**5*x**2 + 12*b**4*x) - 3*I*b**(11/2)*x*sqr
t(1 - 2/(b*x))/(3*b**6*x**3 - 12*b**5*x**2 + 12*b**4*x) - 2*I*b**
(9/2)*sqrt(1 - 2/(b*x))/(3*b**6*x**3 - 12*b**5*x**2 + 12*b**4*x),
 True))
```

GIAC/XCAS [A] time = 0.212938, size = 130, normalized size = 2.32

$$-\frac{\sqrt{-b}b^3}{\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2-2\,b\right)|b|}-\frac{\left(5\,(bx-2)b^2|b|+12\,b^2|b|\right)\sqrt{-bx+2}}{12\,((bx-2)b+2\,b)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(3/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -sqrt(-b)*b^3/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b
))^2 - 2*b)*abs(b)) - 1/12*(5*(b*x - 2)*b^2*abs(b) + 12*b^2*abs(b
))*sqrt(-b*x + 2)/((b*x - 2)*b + 2*b)^(3/2)
```

3.641 $\int \frac{x^{5/2}}{(2-bx)^{5/2}}\,dx$

Optimal. Leaf size=89

$$\frac{10\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{2-bx}}+\frac{2x^{5/2}}{3b(2-bx)^{3/2}}$$

```
[Out] (2*x^(5/2))/(3*b*(2 - b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[2 -
b*x]) - (5*Sqrt[x]*Sqrt[2 - b*x])/b^3 + (10*ArcSin[(Sqrt[b]*Sqrt[
x])/Sqrt[2]])/b^(7/2)
```

Rubi [A] time = 0.0688159, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.25

$$\frac{10\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{5\sqrt{x}\sqrt{2-bx}}{b^3}-\frac{10x^{3/2}}{3b^2\sqrt{2-bx}}+\frac{2x^{5/2}}{3b(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/2)/(2 - b*x)^(5/2),x]
```

```
[Out] (2*x^(5/2))/(3*b*(2 - b*x)^(3/2)) - (10*x^(3/2))/(3*b^2*Sqrt[2 -
b*x]) - (5*Sqrt[x]*Sqrt[2 - b*x])/b^3 + (10*ArcSin[(Sqrt[b]*Sqrt[
x])/Sqrt[2]])/b^(7/2)
```

Rubi in Sympy [A] time = 11.5827, size = 82, normalized size = 0.92

$$\frac{2x^{\frac{5}{2}}}{3b\left(-bx+2\right)^{\frac{3}{2}}}-\frac{10x^{\frac{3}{2}}}{3b^2\sqrt{-bx+2}}-\frac{5\sqrt{x}\sqrt{-bx+2}}{b^3}+\frac{10\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/2)/(-b*x+2)**(5/2),x)
```

```
[Out] 2*x**(5/2)/(3*b*(-b*x + 2)**(3/2)) - 10*x**(3/2)/(3*b**2*sqrt(-b*
x + 2)) - 5*sqrt(x)*sqrt(-b*x + 2)/b**3 + 10*asin(sqrt(2)*sqrt(b)
*sqrt(x)/2)/b**(7/2)
```

Mathematica [A] time = 0.141551, size = 61, normalized size = 0.69

$$\frac{10\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{7/2}}-\frac{\sqrt{x}\left(3b^2x^2-40bx+60\right)}{3b^3(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/2)/(2 - b*x)^(5/2),x]
```

```
[Out] -(Sqrt[x]*(60 - 40*b*x + 3*b^2*x^2))/(3*b^3*(2 - b*x)^(3/2)) + (1
0*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(7/2)
```

Maple [B] time = 0.05, size = 168, normalized size = 1.9

$$\frac{bx-2}{b^3}\sqrt{x}\sqrt{(-bx+2)\,x}\frac{1}{\sqrt{-x\,(bx-2)}}\frac{1}{\sqrt{-bx+2}}$$
$$+1\left(5\,\frac{1}{b^{7/2}}\arctan\left(\frac{\sqrt{b}}{\sqrt{-bx^2+2\,x}}\left(x-b^{-1}\right)\right)+\frac{8}{3\,b^5}\sqrt{-b\,(x-2\,b^{-1})^2-2\,x+4\,b^{-1}}\left(x-2\,b^{-1}\right)^{-2}+\frac{28}{3\,b^4}\sqrt{-b\,(x-2\,b^{-1})^2-2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/2)/(-b*x+2)^(5/2),x)
```

```
[Out] 1/b^3*x^(1/2)*(b*x-2)/(-x*(b*x-2))^(1/2)*((-b*x+2)*x)^(1/2)/(-b*x
+2)^(1/2)+(5/b^(7/2)*arctan(b^(1/2)*(x-1/b)/(-b*x^2+2*x)^(1/2))+8
/3/b^5/(x-2/b)^2*(-b*(x-2/b)^2-2*x+4/b)^(1/2)+28/3/b^4/(x-2/b)*(-
b*(x-2/b)^2-2*x+4/b)^(1/2))*((-b*x+2)*x)^(1/2)/x^(1/2)/(-b*x+2)^(
1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + 2)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226206, size = 1, normalized size = 0.01

$$\left[\frac{15\,(bx-2)\sqrt{-bx+2}\sqrt{x}\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)+\left(3\,b^2x^3-40\,bx^2+60\,x\right)\sqrt{-b}}{3\,(b^4x-2\,b^3)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}},\right.$$
$$\left.-\frac{30\,(bx-2)\sqrt{-bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)-\left(3\,b^2x^3-40\,bx^2+60\,x\right)\sqrt{b}}{3\,(b^4x-2\,b^3)\sqrt{-bx+2}\sqrt{b}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + 2)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(15*(b*x - 2)*sqrt(-b*x + 2)*sqrt(x)*log(-sqrt(-b*x + 2)*b*s
qrt(x) - (b*x - 1)*sqrt(-b)) + (3*b^2*x^3 - 40*b*x^2 + 60*x)*sqrt
(-b))/((b^4*x - 2*b^3)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x)), -1/3*(30
*(b*x - 2)*sqrt(-b*x + 2)*sqrt(x)*arctan(sqrt(-b*x + 2)/(sqrt(b)*
sqrt(x))) - (3*b^2*x^3 - 40*b*x^2 + 60*x)*sqrt(b))/((b^4*x - 2*b^
3)*sqrt(-b*x + 2)*sqrt(b)*sqrt(x))]
```

Sympy [A] time = 81.5704, size = 753, normalized size = 8.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/2)/(-b*x+2)**(5/2),x)
```

```
[Out] Piecewise((-3*I*b**(23/2)*x**15/(3*b**(27/2)*x**(27/2)*sqrt(b*x -
 2) - 6*b**(25/2)*x**(25/2)*sqrt(b*x - 2)) + 40*I*b**(21/2)*x**14
/(3*b**(27/2)*x**(27/2)*sqrt(b*x - 2) - 6*b**(25/2)*x**(25/2)*sqr
t(b*x - 2)) - 60*I*b**(19/2)*x**13/(3*b**(27/2)*x**(27/2)*sqrt(b*
x - 2) - 6*b**(25/2)*x**(25/2)*sqrt(b*x - 2)) - 30*I*b**10*x**(27
/2)*sqrt(b*x - 2)*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(27/2)*x
**(27/2)*sqrt(b*x - 2) - 6*b**(25/2)*x**(25/2)*sqrt(b*x - 2)) + 1
5*pi*b**10*x**(27/2)*sqrt(b*x - 2)/(3*b**(27/2)*x**(27/2)*sqrt(b*
x - 2) - 6*b**(25/2)*x**(25/2)*sqrt(b*x - 2)) + 60*I*b**9*x**(25/
2)*sqrt(b*x - 2)*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(27/2)*x*
*(27/2)*sqrt(b*x - 2) - 6*b**(25/2)*x**(25/2)*sqrt(b*x - 2)) - 30
*pi*b**9*x**(25/2)*sqrt(b*x - 2)/(3*b**(27/2)*x**(27/2)*sqrt(b*x
- 2) - 6*b**(25/2)*x**(25/2)*sqrt(b*x - 2)), Abs(b*x)/2 > 1), (3*
b**(23/2)*x**15/(3*b**(27/2)*x**(27/2)*sqrt(-b*x + 2) - 6*b**(25/
2)*x**(25/2)*sqrt(-b*x + 2)) - 40*b**(21/2)*x**14/(3*b**(27/2)*x*
*(27/2)*sqrt(-b*x + 2) - 6*b**(25/2)*x**(25/2)*sqrt(-b*x + 2)) +
60*b**(19/2)*x**13/(3*b**(27/2)*x**(27/2)*sqrt(-b*x + 2) - 6*b**(
25/2)*x**(25/2)*sqrt(-b*x + 2)) + 30*b**10*x**(27/2)*sqrt(-b*x +
2)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(27/2)*x**(27/2)*sqrt(-b
*x + 2) - 6*b**(25/2)*x**(25/2)*sqrt(-b*x + 2)) - 60*b**9*x**(25/
```

```
2)*sqrt(-b*x + 2)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(27/2)*x*
*(27/2)*sqrt(-b*x + 2) - 6*b**(25/2)*x**(25/2)*sqrt(-b*x + 2)), T
rue))
```

GIAC/XCAS [A] time = 0.229447, size = 270, normalized size = 3.03

$$\frac{\left(\frac{15\,\ln\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}\right)}{\sqrt{-b}b^{2}}-\frac{3\,\sqrt{(bx-2)b+2\,b}\sqrt{-bx+2}}{b^{3}}-\frac{16\left(9\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{4}-24\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}b+28\,b^{2}\right)}{\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}-2\,b\right)^{3}\sqrt{-b}b}\right.}{3\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/2)/(-b*x + 2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(15*ln((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2)
/(sqrt(-b)*b^2) - 3*sqrt((b*x - 2)*b + 2*b)*sqrt(-b*x + 2)/b^3 -
16*(9*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^4 - 24*
(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2*b + 28*b^2)
/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2 - 2*b)^3
*sqrt(-b)*b))*abs(b)/b^2
```

3.642 $\int \frac{x^{3/2}}{(2-bx)^{5/2}}\,dx$

Optimal. Leaf size=67

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{2-bx}}+\frac{2x^{3/2}}{3b(2-bx)^{3/2}}$$

```
[Out] (2*x^(3/2))/(3*b*(2 - b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[2 - b*x
]) + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi [A] time = 0.0507138, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}-\frac{2\sqrt{x}}{b^2\sqrt{2-bx}}+\frac{2x^{3/2}}{3b(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(3/2)/(2 - b*x)^(5/2),x]
```

```
[Out] (2*x^(3/2))/(3*b*(2 - b*x)^(3/2)) - (2*Sqrt[x])/(b^2*Sqrt[2 - b*x
]) + (2*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Rubi in Sympy [A] time = 8.51216, size = 61, normalized size = 0.91

$$\frac{2x^{\frac{3}{2}}}{3b\left(-bx+2\right)^{\frac{3}{2}}}-\frac{2\sqrt{x}}{b^2\sqrt{-bx+2}}+\frac{2\,\text{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(3/2)/(-b*x+2)**(5/2),x)
```

```
[Out] 2*x**(3/2)/(3*b*(-b*x + 2)**(3/2)) - 2*sqrt(x)/(b**2*sqrt(-b*x +
2)) + 2*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b**(5/2)
```

Mathematica [A] time = 0.0893866, size = 53, normalized size = 0.79

$$\frac{2\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{b^{5/2}}+\frac{4\sqrt{x}(2bx-3)}{3b^2(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)/(2 - b*x)^(5/2),x]
```

```
[Out] (4*Sqrt[x]*(-3 + 2*b*x))/(3*b^2*(2 - b*x)^(3/2)) + (2*ArcSin[(Sqr
t[b]*Sqrt[x])/Sqrt[2]])/b^(5/2)
```

Maple [A] time = 0.047, size = 73, normalized size = 1.1

$$-\frac{4}{3\sqrt{\pi}b}\left(-\frac{\sqrt{\pi}\sqrt{2}\,(-10\,bx+15)}{20\,b^2}\sqrt{x}\,(-b)^{\frac{5}{2}}\left(-\frac{bx}{2}+1\right)^{-\frac{3}{2}}+\frac{3\sqrt{\pi}}{2}(-b)^{\frac{5}{2}}\arcsin\left(\frac{\sqrt{2}}{2}\sqrt{b}\sqrt{x}\right)b^{-\frac{5}{2}}\right)(-b)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)/(-b*x+2)^(5/2),x)
```

```
[Out] -4/3/(-b)^(3/2)/Pi^(1/2)/b*(-1/20*Pi^(1/2)*x^(1/2)*2^(1/2)*(-b)^(
5/2)*(-10*b*x+15)/b^2/(-1/2*b*x+1)^(3/2)+3/2*Pi^(1/2)*(-b)^(5/2)/
b^(5/2)*arcsin(1/2*b^(1/2)*x^(1/2)*2^(1/2)))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + 2)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222514, size = 1, normalized size = 0.01

$$\left[\frac{3\,(bx-2)\sqrt{-bx+2}\sqrt{x}\log\left(-\sqrt{-bx+2}b\sqrt{x}-(bx-1)\sqrt{-b}\right)-4\left(2\,bx^2-3\,x\right)\sqrt{-b}}{3\,(b^3x-2\,b^2)\sqrt{-bx+2}\sqrt{-b}\sqrt{x}},\right.$$
$$\left.-\frac{2\left(3\,(bx-2)\sqrt{-bx+2}\sqrt{x}\arctan\left(\frac{\sqrt{-bx+2}}{\sqrt{b}\sqrt{x}}\right)+2\left(2\,bx^2-3\,x\right)\sqrt{b}\right)}{3\,(b^3x-2\,b^2)\sqrt{-bx+2}\sqrt{b}\sqrt{x}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + 2)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(b*x - 2)*sqrt(-b*x + 2)*sqrt(x)*log(-sqrt(-b*x + 2)*b*sq
rt(x) - (b*x - 1)*sqrt(-b)) - 4*(2*b*x^2 - 3*x)*sqrt(-b))/((b^3*x
 - 2*b^2)*sqrt(-b*x + 2)*sqrt(-b)*sqrt(x)), -2/3*(3*(b*x - 2)*sqr
t(-b*x + 2)*sqrt(x)*arctan(sqrt(-b*x + 2)/(sqrt(b)*sqrt(x))) + 2*
(2*b*x^2 - 3*x)*sqrt(b))/((b^3*x - 2*b^2)*sqrt(-b*x + 2)*sqrt(b)*
sqrt(x))]
```

Sympy [A] time = 29.9538, size = 649, normalized size = 9.69

$$\begin{cases} \frac{8ib^{\frac{11}{2}}x^{8}}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx-2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx-2}} - \frac{12ib^{\frac{9}{2}}x^{7}}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx-2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx-2}} - \frac{6ib^{5}x^{\frac{15}{2}}\sqrt{bx-2}\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx-2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx-2}} + \frac{3\pi b^{5}x^{\frac{15}{2}}\sqrt{bx-2}}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{bx-2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{bx-2}} + \frac{12 \ldots}{3b \ldots} \\ -\frac{8b^{\frac{11}{2}}x^{8}}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{-bx+2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{-bx+2}} + \frac{12b^{\frac{9}{2}}x^{7}}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{-bx+2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{-bx+2}} + \frac{6b^{5}x^{\frac{15}{2}}\sqrt{-bx+2}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{-bx+2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{-bx+2}} - \frac{12b^{4}x^{\frac{13}{2}}\sqrt{-bx+2}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b \ldots}}{2}\right)}{3b^{\frac{15}{2}}x^{\frac{15}{2}}\sqrt{-bx+2}-6b^{\frac{13}{2}}x^{\frac{13}{2}}\sqrt{- \ldots}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)/(-b*x+2)**(5/2),x)
```

```
[Out] Piecewise((8*I*b**(11/2)*x**8/(3*b**(15/2)*x**(15/2)*sqrt(b*x - 2
) - 6*b**(13/2)*x**(13/2)*sqrt(b*x - 2)) - 12*I*b**(9/2)*x**7/(3*
b**(15/2)*x**(15/2)*sqrt(b*x - 2) - 6*b**(13/2)*x**(13/2)*sqrt(b*
x - 2)) - 6*I*b**5*x**(15/2)*sqrt(b*x - 2)*acosh(sqrt(2)*sqrt(b)*
sqrt(x)/2)/(3*b**(15/2)*x**(15/2)*sqrt(b*x - 2) - 6*b**(13/2)*x**
(13/2)*sqrt(b*x - 2)) + 3*pi*b**5*x**(15/2)*sqrt(b*x - 2)/(3*b**(
15/2)*x**(15/2)*sqrt(b*x - 2) - 6*b**(13/2)*x**(13/2)*sqrt(b*x -
2)) + 12*I*b**4*x**(13/2)*sqrt(b*x - 2)*acosh(sqrt(2)*sqrt(b)*sqr
t(x)/2)/(3*b**(15/2)*x**(15/2)*sqrt(b*x - 2) - 6*b**(13/2)*x**(13
/2)*sqrt(b*x - 2)) - 6*pi*b**4*x**(13/2)*sqrt(b*x - 2)/(3*b**(15/
2)*x**(15/2)*sqrt(b*x - 2) - 6*b**(13/2)*x**(13/2)*sqrt(b*x - 2))
, Abs(b*x)/2 > 1), (-8*b**(11/2)*x**8/(3*b**(15/2)*x**(15/2)*sqrt
(-b*x + 2) - 6*b**(13/2)*x**(13/2)*sqrt(-b*x + 2)) + 12*b**(9/2)*
x**7/(3*b**(15/2)*x**(15/2)*sqrt(-b*x + 2) - 6*b**(13/2)*x**(13/2
)*sqrt(-b*x + 2)) + 6*b**5*x**(15/2)*sqrt(-b*x + 2)*asin(sqrt(2)*
sqrt(b)*sqrt(x)/2)/(3*b**(15/2)*x**(15/2)*sqrt(-b*x + 2) - 6*b**(
13/2)*x**(13/2)*sqrt(-b*x + 2)) - 12*b**4*x**(13/2)*sqrt(-b*x + 2
)*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/(3*b**(15/2)*x**(15/2)*sqrt(-b*
x + 2) - 6*b**(13/2)*x**(13/2)*sqrt(-b*x + 2)), True))
```

GIAC/XCAS [A] time = 0.226236, size = 244, normalized size = 3.64

$$-\frac{\left(\frac{3\sqrt{-b}\ln\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^{2}\right)}{b} - \frac{16\left(3\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^{4}\sqrt{-b}-6\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^{2}\sqrt{-b}b+8\sqrt{-b}b^{2}\right)}{\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^{2}-2b\right)^{3}}\right)|b|}{3b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2)/(-b*x + 2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(3*sqrt(-b)*ln((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b +
 2*b))^2)/b - 16*(3*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b +
 2*b))^4*sqrt(-b) - 6*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b
 + 2*b))^2*sqrt(-b)*b + 8*sqrt(-b)*b^2)/((sqrt(-b*x + 2)*sqrt(-b)
 - sqrt((b*x - 2)*b + 2*b))^2 - 2*b)^3)*abs(b)/b^3
```

3.643 $\int \frac{\sqrt{x}}{(2-bx)^{5/2}}\,dx$

Optimal. Leaf size=19

$$\frac{x^{3/2}}{3(2-bx)^{3/2}}$$

```
[Out] x^(3/2)/(3*(2 - b*x)^(3/2))
```

Rubi [A] time = 0.0115242, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{x^{3/2}}{3(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/(2 - b*x)^(5/2),x]

[Out] x^(3/2)/(3*(2 - b*x)^(3/2))
```

Rubi in Sympy [A] time = 2.40184, size = 14, normalized size = 0.74

$$\frac{x^{\frac{3}{2}}}{3\left(-bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(-b*x+2)**(5/2),x)

[Out] x**(3/2)/(3*(-b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0199826, size = 19, normalized size = 1.

$$\frac{x^{3/2}}{3(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/(2 - b*x)^(5/2),x]
```

```
[Out] x^(3/2)/(3*(2 - b*x)^(3/2))
```

Maple [A] time = 0.004, size = 14, normalized size = 0.7

$$\frac{1}{3}x^{\frac{3}{2}}\left(-bx+2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(-b*x+2)^(5/2),x)
```

```
[Out] 1/3*x^(3/2)/(-b*x+2)^(3/2)
```

Maxima [A] time = 1.34282, size = 18, normalized size = 0.95

$$\frac{x^{\frac{3}{2}}}{3\left(-bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + 2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*x^(3/2)/(-b*x + 2)^(3/2)
```

Fricas [A] time = 0.228623, size = 27, normalized size = 1.42

$$-\frac{x^{\frac{3}{2}}}{3\left(bx-2\right)\sqrt{-bx+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + 2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3*x^(3/2)/((b*x - 2)*sqrt(-b*x + 2))
```

Sympy [A] time = 13.7715, size = 65, normalized size = 3.42

$$\begin{cases} \frac{ix^{\frac{3}{2}}}{3bx\sqrt{bx-2}-6\sqrt{bx-2}} & \text{for}\ \frac{|bx|}{2} > 1 \\ -\frac{x^{\frac{3}{2}}}{3bx\sqrt{-bx+2}-6\sqrt{-bx+2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(-b*x+2)**(5/2),x)
```

```
[Out] Piecewise((I*x**(3/2)/(3*b*x*sqrt(b*x - 2) - 6*sqrt(b*x - 2)), Ab
s(b*x)/2 > 1), (-x**(3/2)/(3*b*x*sqrt(-b*x + 2) - 6*sqrt(-b*x + 2
)), True))
```

GIAC/XCAS [A] time = 0.217782, size = 128, normalized size = 6.74

$$\frac{4\left(3\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{4}\sqrt{-b}+4\,\sqrt{-b}b^{2}\right)|b|}{3\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}-2\,b\right)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/(-b*x + 2)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*(3*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^4*sqrt
(-b) + 4*sqrt(-b)*b^2)*abs(b)/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((
b*x - 2)*b + 2*b))^2 - 2*b)^3*b^2)
```

3.644 $\int \frac{1}{\sqrt{x}(2-bx)^{5/2}}\,dx$

Optimal. Leaf size=39

$$\frac{\sqrt{x}}{3\sqrt{2-bx}}+\frac{\sqrt{x}}{3(2-bx)^{3/2}}$$

```
[Out] Sqrt[x]/(3*(2 - b*x)^(3/2)) + Sqrt[x]/(3*Sqrt[2 - b*x])
```

Rubi [A] time = 0.0233741, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{\sqrt{x}}{3\sqrt{2-bx}}+\frac{\sqrt{x}}{3(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*(2 - b*x)^(5/2)),x]

[Out] Sqrt[x]/(3*(2 - b*x)^(3/2)) + Sqrt[x]/(3*Sqrt[2 - b*x])
```

Rubi in Sympy [A] time = 3.71283, size = 29, normalized size = 0.74

$$\frac{\sqrt{x}}{3\sqrt{-bx+2}}+\frac{\sqrt{x}}{3\left(-bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+2)**(5/2)/x**(1/2),x)

[Out] sqrt(x)/(3*sqrt(-b*x + 2)) + sqrt(x)/(3*(-b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0223988, size = 24, normalized size = 0.62

$$-\frac{\sqrt{x}(bx-3)}{3(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*(2 - b*x)^(5/2)),x]
```

```
[Out] -(Sqrt[x]*(-3 + b*x))/(3*(2 - b*x)^(3/2))
```

Maple [A] time = 0.007, size = 19, normalized size = 0.5

$$-\frac{bx-3}{3}\sqrt{x}\,(-bx+2)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b*x+2)^(5/2)/x^(1/2),x)
```

```
[Out] -1/3*x^(1/2)*(b*x-3)/(-b*x+2)^(3/2)
```

Maxima [A] time = 1.34482, size = 34, normalized size = 0.87

$$\frac{\left(b-\frac{3\,(bx-2)}{x}\right)x^{\frac{3}{2}}}{6\,(-bx+2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + 2)^(5/2)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] 1/6*(b - 3*(b*x - 2)/x)*x^(3/2)/(-b*x + 2)^(3/2)
```

Fricas [A] time = 0.228981, size = 39, normalized size = 1.

$$\frac{bx^2-3\,x}{3\,(bx-2)\sqrt{-bx+2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*x + 2)^(5/2)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 1/3*(b*x^2 - 3*x)/((b*x - 2)*sqrt(-b*x + 2)*sqrt(x))
```

Sympy [A] time = 23.8281, size = 165, normalized size = 4.23

$$\begin{cases} \frac{bx}{3b^{\frac{3}{2}}x\sqrt{-1+\frac{2}{bx}}-6\sqrt{b}\sqrt{-1+\frac{2}{bx}}} - \frac{3}{3b^{\frac{3}{2}}x\sqrt{-1+\frac{2}{bx}}-6\sqrt{b}\sqrt{-1+\frac{2}{bx}}} & \text{for } 2\left|\frac{1}{bx}\right| > 1 \\ -\frac{ib^2x}{3b^{\frac{5}{2}}x\sqrt{1-\frac{2}{bx}}-6b^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}} + \frac{3ib}{3b^{\frac{5}{2}}x\sqrt{1-\frac{2}{bx}}-6b^{\frac{3}{2}}\sqrt{1-\frac{2}{bx}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] Piecewise((b*x/(3*b**(3/2)*x*sqrt(-1 + 2/(b*x)) - 6*sqrt(b)*sqrt(
-1 + 2/(b*x))) - 3/(3*b**(3/2)*x*sqrt(-1 + 2/(b*x)) - 6*sqrt(b)*s
qrt(-1 + 2/(b*x))), 2*Abs(1/(b*x)) > 1), (-I*b**2*x/(3*b**(5/2)*x
*sqrt(1 - 2/(b*x)) - 6*b**(3/2)*sqrt(1 - 2/(b*x))) + 3*I*b/(3*b**
(5/2)*x*sqrt(1 - 2/(b*x)) - 6*b**(3/2)*sqrt(1 - 2/(b*x))), True))
```

GIAC/XCAS [A] time = 0.210541, size = 122, normalized size = 3.13

$$\frac{8\left(3\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}-2\,b\right)\sqrt{-b}b^{2}}{3\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^{2}-2\,b\right)^{3}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*sqrt(x)),x, algorithm="giac")
```

```
[Out] 8/3*(3*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2 - 2*
b)*sqrt(-b)*b^2/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2
*b))^2 - 2*b)^3*abs(b))
```

3.645 $\int \frac{1}{x^{3/2}(2-bx)^{5/2}}\,dx$

Optimal. Leaf size=58

$$-\frac{2\sqrt{2-bx}}{3\sqrt{x}}+\frac{2}{3\sqrt{x}\sqrt{2-bx}}+\frac{1}{3\sqrt{x}(2-bx)^{3/2}}$$

```
[Out] 1/(3*Sqrt[x]*(2 - b*x)^(3/2)) + 2/(3*Sqrt[x]*Sqrt[2 - b*x]) - (2*
Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0359354, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{2\sqrt{2-bx}}{3\sqrt{x}}+\frac{2}{3\sqrt{x}\sqrt{2-bx}}+\frac{1}{3\sqrt{x}(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(3/2)*(2 - b*x)^(5/2)),x]
```

```
[Out] 1/(3*Sqrt[x]*(2 - b*x)^(3/2)) + 2/(3*Sqrt[x]*Sqrt[2 - b*x]) - (2*
Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 5.27797, size = 49, normalized size = 0.84

$$-\frac{2\sqrt{-bx+2}}{3\sqrt{x}}+\frac{2}{3\sqrt{x}\sqrt{-bx+2}}+\frac{1}{3\sqrt{x}\,(-bx+2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)/(-b*x+2)**(5/2),x)
```

```
[Out] -2*sqrt(-b*x + 2)/(3*sqrt(x)) + 2/(3*sqrt(x)*sqrt(-b*x + 2)) + 1/
(3*sqrt(x)*(-b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0299446, size = 33, normalized size = 0.57

$$-\frac{2b^2x^2-6bx+3}{3\sqrt{x}(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(3/2)*(2 - b*x)^(5/2)),x]
```

```
[Out] -(3 - 6*b*x + 2*b^2*x^2)/(3*Sqrt[x]*(2 - b*x)^(3/2))
```

Maple [A] time = 0.006, size = 28, normalized size = 0.5

$$-\frac{2\,b^2x^2-6\,bx+3}{3}\left(-bx+2\right)^{-\frac{3}{2}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)/(-b*x+2)^(5/2),x)
```

```
[Out] -1/3*(2*b^2*x^2-6*b*x+3)/x^(1/2)/(-b*x+2)^(3/2)
```

Maxima [A] time = 1.35694, size = 57, normalized size = 0.98

$$\frac{\left(b^2-\frac{6\,(bx-2)b}{x}\right)x^{\frac{3}{2}}}{12\left(-bx+2\right)^{\frac{3}{2}}}-\frac{\sqrt{-bx+2}}{4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*x^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/12*(b^2 - 6*(b*x - 2)*b/x)*x^(3/2)/(-b*x + 2)^(3/2) - 1/4*sqrt(
-b*x + 2)/sqrt(x)
```

Fricas [A] time = 0.228525, size = 46, normalized size = 0.79

$$\frac{2\,b^2x^2-6\,bx+3}{3\,(bx-2)\sqrt{-bx+2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*x^(3/2)),x, algorithm="fricas")
```

```
[Out] 1/3*(2*b^2*x^2 - 6*b*x + 3)/((b*x - 2)*sqrt(-b*x + 2)*sqrt(x))
```

Sympy [A] time = 103.24, size = 245, normalized size = 4.22

$$\begin{cases} -\frac{2b^{\frac{13}{2}}x^2\sqrt{-1+\frac{2}{bx}}}{3b^6x^2-12b^5x+12b^4} + \frac{6b^{\frac{11}{2}}x\sqrt{-1+\frac{2}{bx}}}{3b^6x^2-12b^5x+12b^4} - \frac{3b^{\frac{9}{2}}\sqrt{-1+\frac{2}{bx}}}{3b^6x^2-12b^5x+12b^4} & \text{for } 2\left|\frac{1}{bx}\right| > 1 \\ -\frac{2ib^{\frac{13}{2}}x^2\sqrt{1-\frac{2}{bx}}}{3b^6x^2-12b^5x+12b^4} + \frac{6ib^{\frac{11}{2}}x\sqrt{1-\frac{2}{bx}}}{3b^6x^2-12b^5x+12b^4} - \frac{3ib^{\frac{9}{2}}\sqrt{1-\frac{2}{bx}}}{3b^6x^2-12b^5x+12b^4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)/(-b*x+2)**(5/2),x)
```

```
[Out] Piecewise((-2*b**(13/2)*x**2*sqrt(-1 + 2/(b*x))/(3*b**6*x**2 - 12
*b**5*x + 12*b**4) + 6*b**(11/2)*x*sqrt(-1 + 2/(b*x))/(3*b**6*x**
2 - 12*b**5*x + 12*b**4) - 3*b**(9/2)*sqrt(-1 + 2/(b*x))/(3*b**6*
x**2 - 12*b**5*x + 12*b**4), 2*Abs(1/(b*x)) > 1), (-2*I*b**(13/2)
*x**2*sqrt(1 - 2/(b*x))/(3*b**6*x**2 - 12*b**5*x + 12*b**4) + 6*I
*b**(11/2)*x*sqrt(1 - 2/(b*x))/(3*b**6*x**2 - 12*b**5*x + 12*b**4
) - 3*I*b**(9/2)*sqrt(1 - 2/(b*x))/(3*b**6*x**2 - 12*b**5*x + 12*
b**4), True))
```

GIAC/XCAS [A] time = 0.222849, size = 230, normalized size = 3.97

$$-\frac{\sqrt{-bx+2}b^2}{4\sqrt{(bx-2)b+2b}|b|} - \frac{3\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^4\sqrt{-b}b^2 - 24\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^2\sqrt{-b}b^3 + 20\sqrt{-b}b^4}{3\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2b}\right)^2-2b\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*x^(3/2)),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(-b*x + 2)*b^2/(sqrt((b*x - 2)*b + 2*b)*abs(b)) - 1/3*(3
*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^4*sqrt(-b)*b
^2 - 24*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2*sqr
t(-b)*b^3 + 20*sqrt(-b)*b^4)/(((sqrt(-b*x + 2)*sqrt(-b) - sqrt((b
*x - 2)*b + 2*b))^2 - 2*b)^3*abs(b))
```

3.646 $\int \frac{1}{x^{5/2}(2-bx)^{5/2}}\,dx$

Optimal. Leaf size=75

$$-\frac{2\sqrt{2-bx}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{2-bx}}+\frac{1}{3x^{3/2}(2-bx)^{3/2}}-\frac{2b\sqrt{2-bx}}{3\sqrt{x}}$$

```
[Out] 1/(3*x^(3/2)*(2 - b*x)^(3/2)) + 1/(x^(3/2)*Sqrt[2 - b*x]) - (2*Sq
rt[2 - b*x])/(3*x^(3/2)) - (2*b*Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi [A] time = 0.0478922, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{2\sqrt{2-bx}}{3x^{3/2}}+\frac{1}{x^{3/2}\sqrt{2-bx}}+\frac{1}{3x^{3/2}(2-bx)^{3/2}}-\frac{2b\sqrt{2-bx}}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/2)*(2 - b*x)^(5/2)),x]
```

```
[Out] 1/(3*x^(3/2)*(2 - b*x)^(3/2)) + 1/(x^(3/2)*Sqrt[2 - b*x]) - (2*Sq
rt[2 - b*x])/(3*x^(3/2)) - (2*b*Sqrt[2 - b*x])/(3*Sqrt[x])
```

Rubi in Sympy [A] time = 6.17764, size = 66, normalized size = 0.88

$$-\frac{2b\sqrt{-bx+2}}{3\sqrt{x}}-\frac{2\sqrt{-bx+2}}{3x^{\frac{3}{2}}}+\frac{1}{x^{\frac{3}{2}}\sqrt{-bx+2}}+\frac{1}{3x^{\frac{3}{2}}\left(-bx+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/2)/(-b*x+2)**(5/2),x)
```

```
[Out] -2*b*sqrt(-b*x + 2)/(3*sqrt(x)) - 2*sqrt(-b*x + 2)/(3*x**(3/2)) +
 1/(x**(3/2)*sqrt(-b*x + 2)) + 1/(3*x**(3/2)*(-b*x + 2)**(3/2))
```

Mathematica [A] time = 0.0331432, size = 41, normalized size = 0.55

$$-\frac{2b^3x^3-6b^2x^2+3bx+1}{3x^{3/2}(2-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/2)*(2 - b*x)^(5/2)),x]

[Out] -(1 + 3*b*x - 6*b^2*x^2 + 2*b^3*x^3)/(3*x^(3/2)*(2 - b*x)^(3/2))
```

Maple [A] time = 0.006, size = 36, normalized size = 0.5

$$-\frac{2\,b^3x^3-6\,b^2x^2+3\,bx+1}{3}x^{-\frac{3}{2}}\left(-bx+2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/2)/(-b*x+2)^(5/2),x)

[Out] -1/3*(2*b^3*x^3-6*b^2*x^2+3*b*x+1)/x^(3/2)/(-b*x+2)^(3/2)
```

Maxima [A] time = 1.3435, size = 78, normalized size = 1.04

$$-\frac{3\sqrt{-bx+2}b}{8\sqrt{x}}+\frac{\left(b^3-\frac{9\,(bx-2)b^2}{x}\right)x^{\frac{3}{2}}}{24\,(-bx+2)^{\frac{3}{2}}}-\frac{(-bx+2)^{\frac{3}{2}}}{24\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*x^(5/2)),x, algorithm="maxima")

[Out] -3/8*sqrt(-b*x + 2)*b/sqrt(x) + 1/24*(b^3 - 9*(b*x - 2)*b^2/x)*x^
(3/2)/(-b*x + 2)^(3/2) - 1/24*(-b*x + 2)^(3/2)/x^(3/2)
```

Fricas [A] time = 0.24165, size = 62, normalized size = 0.83

$$\frac{2\,b^3x^3-6\,b^2x^2+3\,bx+1}{3\,(bx^2-2\,x)\sqrt{-bx+2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*x^(5/2)),x, algorithm="fricas")

[Out] 1/3*(2*b^3*x^3 - 6*b^2*x^2 + 3*b*x + 1)/((b*x^2 - 2*x)*sqrt(-b*x
+ 2)*sqrt(x))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/2)/(-b*x+2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.228596, size = 247, normalized size = 3.29

$$-\frac{\left(4\,(bx-2)b^2|b|+9\,b^2|b|\right)\sqrt{-bx+2}}{12\,((bx-2)b+2\,b)^{\frac{3}{2}}}-\frac{3\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^4\sqrt{-b}b^3-18\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2\sqrt{-b}b^4+16\sqrt{-b}b^5}{3\left(\left(\sqrt{-bx+2}\sqrt{-b}-\sqrt{(bx-2)b+2\,b}\right)^2-2\,b\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*x + 2)^(5/2)*x^(5/2)),x, algorithm="giac")
```

```
[Out] -1/12*(4*(b*x - 2)*b^2*abs(b) + 9*b^2*abs(b))*sqrt(-b*x + 2)/((b*
x - 2)*b + 2*b)^(3/2) - 1/3*(3*(sqrt(-b*x + 2)*sqrt(-b) - sqrt((b
*x - 2)*b + 2*b))^4*sqrt(-b)*b^3 - 18*(sqrt(-b*x + 2)*sqrt(-b) -
sqrt((b*x - 2)*b + 2*b))^2*sqrt(-b)*b^4 + 16*sqrt(-b)*b^5)/(((sqr
t(-b*x + 2)*sqrt(-b) - sqrt((b*x - 2)*b + 2*b))^2 - 2*b)^3*abs(b)
)
```

3.647 $\int \frac{\sqrt{x}}{\sqrt{1-x}}\,dx$

Optimal. Leaf size=27

$$-\sqrt{1-x}\sqrt{x}-\frac{1}{2}\sin^{-1}(1-2x)$$

```
[Out] -(Sqrt[1 - x]*Sqrt[x]) - ArcSin[1 - 2*x]/2
```

Rubi [A] time = 0.0200479, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.267

$$-\sqrt{1-x}\sqrt{x}-\frac{1}{2}\sin^{-1}(1-2x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]/Sqrt[1 - x],x]

[Out] -(Sqrt[1 - x]*Sqrt[x]) - ArcSin[1 - 2*x]/2
```

Rubi in Sympy [A] time = 3.1598, size = 19, normalized size = 0.7

$$-\sqrt{x}\sqrt{-x+1}+\frac{\operatorname{asin}(2x-1)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)/(1-x)**(1/2),x)

[Out] -sqrt(x)*sqrt(-x + 1) + asin(2*x - 1)/2
```

Mathematica [A] time = 0.0153409, size = 19, normalized size = 0.7

$$\sin^{-1}\left(\sqrt{x}\right)-\sqrt{-(x-1)x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]/Sqrt[1 - x],x]
```

```
[Out] -Sqrt[-((-1 + x)*x)] + ArcSin[Sqrt[x]]
```

Maple [A] time = 0.026, size = 41, normalized size = 1.5

$$-\sqrt{1-x}\,\sqrt{x}+\frac{\arcsin\left(-1+2\,x\right)}{2}\sqrt{x\left(1-x\right)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)/(1-x)^(1/2),x)
```

```
[Out] -(1-x)^(1/2)*x^(1/2)+1/2*(x*(1-x))^(1/2)/x^(1/2)/(1-x)^(1/2)*arcs
in(-1+2*x)
```

Maxima [A] time = 1.49528, size = 50, normalized size = 1.85

$$\frac{\sqrt{-x+1}}{\sqrt{x}\left(\frac{x-1}{x}-1\right)}-\arctan\left(\frac{\sqrt{-x+1}}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] sqrt(-x + 1)/(sqrt(x)*((x - 1)/x - 1)) - arctan(sqrt(-x + 1)/sqrt
(x))
```

Fricas [A] time = 0.2257, size = 36, normalized size = 1.33

$$-\sqrt{x}\sqrt{-x+1}-\arctan\left(\frac{\sqrt{-x+1}}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] -sqrt(x)*sqrt(-x + 1) - arctan(sqrt(-x + 1)/sqrt(x))
```

Sympy [A] time = 5.8027, size = 54, normalized size = 2.

$$\begin{cases} -i\sqrt{x}\sqrt{x-1} - i\operatorname{acosh}\left(\sqrt{x}\right) & \text{for } |x| > 1 \\ \frac{x^{\frac{3}{2}}}{\sqrt{-x+1}} - \frac{\sqrt{x}}{\sqrt{-x+1}} + \operatorname{asin}\left(\sqrt{x}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)/(1-x)**(1/2),x)
```

```
[Out] Piecewise((-I*sqrt(x)*sqrt(x - 1) - I*acosh(sqrt(x)), Abs(x) > 1)
, (x**(3/2)/sqrt(-x + 1) - sqrt(x)/sqrt(-x + 1) + asin(sqrt(x)),
True))
```

GIAC/XCAS [A] time = 0.208235, size = 23, normalized size = 0.85

$$-\sqrt{x}\sqrt{-x+1} + \arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x)/sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] -sqrt(x)*sqrt(-x + 1) + arcsin(sqrt(x))
```

3.648 $\int \frac{1}{\sqrt{1-x}\sqrt{x}}\,dx$

Optimal. Leaf size=8

$$-\sin^{-1}(1-2x)$$

```
[Out] -ArcSin[1 - 2*x]
```

Rubi [A] time = 0.0118503, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\sin^{-1}(1-2x)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[1 - x]*Sqrt[x]),x]

[Out] -ArcSin[1 - 2*x]
```

Rubi in Sympy [A] time = 2.40306, size = 5, normalized size = 0.62

$$\operatorname{asin}(2x-1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(1/2)/x**(1/2),x)

[Out] asin(2*x - 1)
```

Mathematica [B] time = 0.0144386, size = 38, normalized size = 4.75

$$\frac{2\sqrt{x-1}\sqrt{x}\log\left(\sqrt{x-1}+\sqrt{x}\right)}{\sqrt{-(x-1)x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[1 - x]*Sqrt[x]),x]

[Out] (2*Sqrt[-1 + x]*Sqrt[x]*Log[Sqrt[-1 + x] + Sqrt[x]])/Sqrt[-((-1 +
 x)*x)]
```

Maple [B] time = 0.017, size = 27, normalized size = 3.4

$$\arcsin(-1+2x)\sqrt{x(1-x)}\,\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(1/2)/x^(1/2),x)
```

```
[Out] (x*(1-x))^(1/2)/x^(1/2)/(1-x)^(1/2)*arcsin(-1+2*x)
```

Maxima [A] time = 1.50174, size = 19, normalized size = 2.38

$$-2\arctan\left(\frac{\sqrt{-x+1}}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-x + 1)),x, algorithm="maxima")
```

```
[Out] -2*arctan(sqrt(-x + 1)/sqrt(x))
```

Fricas [A] time = 0.2262, size = 19, normalized size = 2.38

$$-2\arctan\left(\frac{\sqrt{-x+1}}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-x + 1)),x, algorithm="fricas")
```

```
[Out] -2*arctan(sqrt(-x + 1)/sqrt(x))
```

Sympy [A] time = 3.55382, size = 20, normalized size = 2.5

$$\begin{cases} -2i\operatorname{acosh}\left(\sqrt{x}\right) & \text{for } |x| > 1 \\ 2\operatorname{asin}\left(\sqrt{x}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(1/2)/x**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(x)), Abs(x) > 1), (2*asin(sqrt(x)), Tr
ue))
```

GIAC/XCAS [A] time = 0.206095, size = 8, normalized size = 1.

$$2 \arcsin\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-x + 1)),x, algorithm="giac")
```

```
[Out] 2*arcsin(sqrt(x))
```

3.649 $\int \frac{1}{\sqrt{x}\sqrt{1-bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sin^{-1}\left(\sqrt{b}\sqrt{x}\right)}{\sqrt{b}}$$

```
[Out] (2*ArcSin[Sqrt[b]*Sqrt[x]])/Sqrt[b]
```

Rubi [A] time = 0.0184633, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{2\sin^{-1}\left(\sqrt{b}\sqrt{x}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*Sqrt[1 - b*x]),x]

[Out] (2*ArcSin[Sqrt[b]*Sqrt[x]])/Sqrt[b]
```

Rubi in Sympy [A] time = 3.84713, size = 17, normalized size = 0.89

$$\frac{2\,\text{asin}\left(\sqrt{b}\sqrt{x}\right)}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2)/(-b*x+1)**(1/2),x)

[Out] 2*asin(sqrt(b)*sqrt(x))/sqrt(b)
```

Mathematica [A] time = 0.012767, size = 19, normalized size = 1.

$$\frac{2\sin^{-1}\left(\sqrt{b}\sqrt{x}\right)}{\sqrt{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*Sqrt[1 - b*x]),x]
```

```
[Out] (2*ArcSin[Sqrt[b]*Sqrt[x]])/Sqrt[b]
```

Maple [B] time = 0.011, size = 48, normalized size = 2.5

$$1\sqrt{x\left(-bx+1\right)}\arctan\left(1\sqrt{b}\left(x-\frac{1}{2\,b}\right)\frac{1}{\sqrt{-bx^{2}+x}}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-bx+1}}\frac{1}{\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2)/(-b*x+1)^(1/2),x)
```

```
[Out] (x*(-b*x+1))^(1/2)/x^(1/2)/(-b*x+1)^(1/2)/b^(1/2)*arctan(b^(1/2)*
(x-1/2/b)/(-b*x^2+x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 1)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218335, size = 1, normalized size = 0.05

$$\left[\frac{\log\left(-2\,\sqrt{-bx+1}b\sqrt{x}-(2\,bx-1)\sqrt{-b}\right)}{\sqrt{-b}},-\frac{2\,\arctan\left(\frac{\sqrt{-bx+1}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 1)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] [log(-2*sqrt(-b*x + 1)*b*sqrt(x) - (2*b*x - 1)*sqrt(-b))/sqrt(-b)
, -2*arctan(sqrt(-b*x + 1)/(sqrt(b)*sqrt(x)))/sqrt(b)]
```

Sympy [A] time = 3.91238, size = 42, normalized size = 2.21

$$\begin{cases} -\frac{2i\operatorname{acosh}\left(\sqrt{b}\sqrt{x}\right)}{\sqrt{b}} & \text{for } |bx| > 1 \\ \frac{2\operatorname{asin}\left(\sqrt{b}\sqrt{x}\right)}{\sqrt{b}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2)/(-b*x+1)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(b)*sqrt(x))/sqrt(b), Abs(b*x) > 1), (2
*asin(sqrt(b)*sqrt(x))/sqrt(b), True))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 1)*sqrt(x)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.650 $\int x^{5/3}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{3}{8}ax^{8/3}+\frac{3}{11}bx^{11/3}$$

```
[Out] (3*a*x^(8/3))/8 + (3*b*x^(11/3))/11
```

Rubi [A] time = 0.0127315, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3}{8}ax^{8/3}+\frac{3}{11}bx^{11/3}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/3)*(a + b*x),x]

[Out] (3*a*x^(8/3))/8 + (3*b*x^(11/3))/11
```

Rubi in Sympy [A] time = 2.38163, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{8}{3}}}{8}+\frac{3bx^{\frac{11}{3}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(5/3)*(b*x+a),x)

[Out] 3*a*x**(8/3)/8 + 3*b*x**(11/3)/11
```

Mathematica [A] time = 0.00549539, size = 17, normalized size = 0.81

$$\frac{3}{88}x^{8/3}(11a+8bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/3)*(a + b*x),x]
```

```
[Out] (3*x^(8/3)*(11*a + 8*b*x))/88
```

Maple [A] time = 0.005, size = 14, normalized size = 0.7

$$\frac{24\,bx+33\,a}{88}x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/3)*(b*x+a),x)
```

```
[Out] 3/88*x^(8/3)*(8*b*x+11*a)
```

Maxima [A] time = 1.33992, size = 18, normalized size = 0.86

$$\frac{3}{11}\,bx^{\frac{11}{3}}+\frac{3}{8}\,ax^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^(5/3),x, algorithm="maxima")
```

```
[Out] 3/11*b*x^(11/3) + 3/8*a*x^(8/3)
```

Fricas [A] time = 0.20636, size = 24, normalized size = 1.14

$$\frac{3}{88}\left(8\,bx^3+11\,ax^2\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^(5/3),x, algorithm="fricas")
```

```
[Out] 3/88*(8*b*x^3 + 11*a*x^2)*x^(2/3)
```

Sympy [A] time = 4.546, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{8}{3}}}{8}+\frac{3bx^{\frac{11}{3}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3)*(b*x+a),x)
```

```
[Out] 3*a*x**(8/3)/8 + 3*b*x**(11/3)/11
```

GIAC/XCAS [A] time = 0.2184, size = 18, normalized size = 0.86

$$\frac{3}{11}\,bx^{\frac{11}{3}}+\frac{3}{8}\,ax^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(5/3),x, algorithm="giac")
```

```
[Out] 3/11*b*x^(11/3) + 3/8*a*x^(8/3)
```

3.651 $\int x^{4/3}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{3}{7}ax^{7/3}+\frac{3}{10}bx^{10/3}$$

```
[Out] (3*a*x^(7/3))/7 + (3*b*x^(10/3))/10
```

Rubi [A] time = 0.0130831, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3}{7}ax^{7/3}+\frac{3}{10}bx^{10/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3)*(a + b*x),x]

[Out] (3*a*x^(7/3))/7 + (3*b*x^(10/3))/10
```

Rubi in Sympy [A] time = 2.35771, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{7}{3}}}{7}+\frac{3bx^{\frac{10}{3}}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3)*(b*x+a),x)

[Out] 3*a*x**(7/3)/7 + 3*b*x**(10/3)/10
```

Mathematica [A] time = 0.00552099, size = 17, normalized size = 0.81

$$\frac{3}{70}x^{7/3}(10a+7bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3)*(a + b*x),x]
```

```
[Out] (3*x^(7/3)*(10*a + 7*b*x))/70
```

Maple [A] time = 0.003, size = 14, normalized size = 0.7

$$\frac{21\,bx+30\,a}{70}x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(4/3)*(b*x+a),x)
```

```
[Out] 3/70*x^(7/3)*(7*b*x+10*a)
```

Maxima [A] time = 1.34989, size = 18, normalized size = 0.86

$$\frac{3}{10}\,bx^{\frac{10}{3}}+\frac{3}{7}\,ax^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/10*b*x^(10/3) + 3/7*a*x^(7/3)
```

Fricas [A] time = 0.205048, size = 24, normalized size = 1.14

$$\frac{3}{70}\left(7\,bx^{3}+10\,ax^{2}\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/70*(7*b*x^3 + 10*a*x^2)*x^(1/3)
```

Sympy [A] time = 2.58819, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{7}{3}}}{7}+\frac{3bx^{\frac{10}{3}}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3)*(b*x+a),x)
```

```
[Out] 3*a*x**(7/3)/7 + 3*b*x**(10/3)/10
```

GIAC/XCAS [A] time = 0.204476, size = 18, normalized size = 0.86

$$\frac{3}{10}\,bx^{\frac{10}{3}} + \frac{3}{7}\,ax^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(4/3),x, algorithm="giac")
```

```
[Out] 3/10*b*x^(10/3) + 3/7*a*x^(7/3)
```

3.652 $\int x^{2/3}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{3}{5}ax^{5/3}+\frac{3}{8}bx^{8/3}$$

```
[Out] (3*a*x^(5/3))/5 + (3*b*x^(8/3))/8
```

Rubi [A] time = 0.0133689, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3}{5}ax^{5/3}+\frac{3}{8}bx^{8/3}$$

Antiderivative was successfully verified.

```
[In] Int[x^(2/3)*(a + b*x),x]

[Out] (3*a*x^(5/3))/5 + (3*b*x^(8/3))/8
```

Rubi in Sympy [A] time = 2.42239, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{5}{3}}}{5}+\frac{3bx^{\frac{8}{3}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(2/3)*(b*x+a),x)

[Out] 3*a*x**(5/3)/5 + 3*b*x**(8/3)/8
```

Mathematica [A] time = 0.00510021, size = 17, normalized size = 0.81

$$\frac{3}{40}x^{5/3}(8a+5bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(2/3)*(a + b*x),x]
```

```
[Out] (3*x^(5/3)*(8*a + 5*b*x))/40
```

Maple [A] time = 0.005, size = 14, normalized size = 0.7

$$\frac{15\,bx+24\,a}{40}x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2/3)*(b*x+a),x)
```

```
[Out] 3/40*x^(5/3)*(5*b*x+8*a)
```

Maxima [A] time = 1.34303, size = 18, normalized size = 0.86

$$\frac{3}{8}\,bx^{\frac{8}{3}}+\frac{3}{5}\,ax^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(2/3),x, algorithm="maxima")
```

```
[Out] 3/8*b*x^(8/3) + 3/5*a*x^(5/3)
```

Fricas [A] time = 0.203833, size = 22, normalized size = 1.05

$$\frac{3}{40}\left(5\,bx^{2}+8\,ax\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(2/3),x, algorithm="fricas")
```

```
[Out] 3/40*(5*b*x^2 + 8*a*x)*x^(2/3)
```

Sympy [A] time = 1.82854, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{5}{3}}}{5}+\frac{3bx^{\frac{8}{3}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3)*(b*x+a),x)
```

```
[Out] 3*a*x**(5/3)/5 + 3*b*x**(8/3)/8
```

GIAC/XCAS [A] time = 0.207311, size = 18, normalized size = 0.86

$$\frac{3}{8}\,bx^{\frac{8}{3}} + \frac{3}{5}\,ax^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(2/3),x, algorithm="giac")
```

```
[Out] 3/8*b*x^(8/3) + 3/5*a*x^(5/3)
```

3.653 $\int \sqrt[3]{x}(a+bx)\,dx$

Optimal. Leaf size=21

$$\frac{3}{4}ax^{4/3}+\frac{3}{7}bx^{7/3}$$

```
[Out] (3*a*x^(4/3))/4 + (3*b*x^(7/3))/7
```

Rubi [A] time = 0.0126864, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3}{4}ax^{4/3}+\frac{3}{7}bx^{7/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3)*(a + b*x),x]

[Out] (3*a*x^(4/3))/4 + (3*b*x^(7/3))/7
```

Rubi in Sympy [A] time = 2.38398, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{4}{3}}}{4}+\frac{3bx^{\frac{7}{3}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3)*(b*x+a),x)

[Out] 3*a*x**(4/3)/4 + 3*b*x**(7/3)/7
```

Mathematica [A] time = 0.00488774, size = 17, normalized size = 0.81

$$\frac{3}{28}x^{4/3}(7a+4bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3)*(a + b*x),x]
```

```
[Out] (3*x^(4/3)*(7*a + 4*b*x))/28
```

Maple [A] time = 0.004, size = 14, normalized size = 0.7

$$\frac{12\,bx+21\,a}{28}x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/3)*(b*x+a),x)
```

```
[Out] 3/28*x^(4/3)*(4*b*x+7*a)
```

Maxima [A] time = 1.34684, size = 18, normalized size = 0.86

$$\frac{3}{7}\,bx^{\frac{7}{3}}+\frac{3}{4}\,ax^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(1/3),x, algorithm="maxima")
```

```
[Out] 3/7*b*x^(7/3) + 3/4*a*x^(4/3)
```

Fricas [A] time = 0.205835, size = 22, normalized size = 1.05

$$\frac{3}{28}\left(4\,bx^2+7\,ax\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(1/3),x, algorithm="fricas")
```

```
[Out] 3/28*(4*b*x^2 + 7*a*x)*x^(1/3)
```

Sympy [A] time = 1.65008, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{4}{3}}}{4}+\frac{3bx^{\frac{7}{3}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3)*(b*x+a),x)
```

```
[Out] 3*a*x**(4/3)/4 + 3*b*x**(7/3)/7
```

GIAC/XCAS [A] time = 0.204337, size = 18, normalized size = 0.86

$$\frac{3}{7}\,bx^{\frac{7}{3}}+\frac{3}{4}\,ax^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^(1/3),x, algorithm="giac")
```

```
[Out] 3/7*b*x^(7/3) + 3/4*a*x^(4/3)
```

3.654 $\int \frac{a+bx}{\sqrt[3]{x}}\,dx$

Optimal. Leaf size=21

$$\frac{3}{2}ax^{2/3}+\frac{3}{5}bx^{5/3}$$

```
[Out] (3*a*x^(2/3))/2 + (3*b*x^(5/3))/5
```

Rubi [A] time = 0.0127264, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3}{2}ax^{2/3}+\frac{3}{5}bx^{5/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^(1/3),x]

[Out] (3*a*x^(2/3))/2 + (3*b*x^(5/3))/5
```

Rubi in Sympy [A] time = 2.46658, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{2}{3}}}{2}+\frac{3bx^{\frac{5}{3}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**(1/3),x)

[Out] 3*a*x**(2/3)/2 + 3*b*x**(5/3)/5
```

Mathematica [A] time = 0.00516613, size = 17, normalized size = 0.81

$$\frac{3}{10}x^{2/3}(5a+2bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^(1/3),x]
```

```
[Out] (3*x^(2/3)*(5*a + 2*b*x))/10
```

Maple [A] time = 0.004, size = 14, normalized size = 0.7

$$\frac{6\,bx+15\,a}{10}x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^(1/3),x)
```

```
[Out] 3/10*x^(2/3)*(2*b*x+5*a)
```

Maxima [A] time = 1.34543, size = 18, normalized size = 0.86

$$\frac{3}{5}\,bx^{\frac{5}{3}}+\frac{3}{2}\,ax^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/x^(1/3),x, algorithm="maxima")
```

```
[Out] 3/5*b*x^(5/3) + 3/2*a*x^(2/3)
```

Fricas [A] time = 0.204778, size = 18, normalized size = 0.86

$$\frac{3}{10}\,(2\,bx+5\,a)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/x^(1/3),x, algorithm="fricas")
```

```
[Out] 3/10*(2*b*x + 5*a)*x^(2/3)
```

Sympy [A] time = 1.60896, size = 19, normalized size = 0.9

$$\frac{3ax^{\frac{2}{3}}}{2}+\frac{3bx^{\frac{5}{3}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(1/3),x)
```

```
[Out] 3*a*x**(2/3)/2 + 3*b*x**(5/3)/5
```

GIAC/XCAS [A] time = 0.211454, size = 18, normalized size = 0.86

$$\frac{3}{5}\,bx^{\frac{5}{3}}+\frac{3}{2}\,ax^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(1/3),x, algorithm="giac")
```

```
[Out] 3/5*b*x^(5/3) + 3/2*a*x^(2/3)
```

3.655 $\int \frac{a+bx}{x^{2/3}} \, dx$

Optimal. Leaf size=19

$$3a\sqrt[3]{x} + \frac{3}{4}bx^{4/3}$$

```
[Out] 3*a*x^(1/3) + (3*b*x^(4/3))/4
```

Rubi [A] time = 0.0133091, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$3a\sqrt[3]{x} + \frac{3}{4}bx^{4/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^(2/3),x]

[Out] 3*a*x^(1/3) + (3*b*x^(4/3))/4
```

Rubi in Sympy [A] time = 2.33952, size = 17, normalized size = 0.89

$$3a\sqrt[3]{x} + \frac{3bx^{\frac{4}{3}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**(2/3),x)

[Out] 3*a*x**(1/3) + 3*b*x**(4/3)/4
```

Mathematica [A] time = 0.00468135, size = 16, normalized size = 0.84

$$\frac{3}{4}\sqrt[3]{x}(4a + bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^(2/3),x]
```

```
[Out] (3*x^(1/3)*(4*a + b*x))/4
```

Maple [A] time = 0.004, size = 13, normalized size = 0.7

$$\frac{3\,bx+12\,a}{4}\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^(2/3),x)

[Out] 3/4*x^(1/3)*(b*x+4*a)
```

Maxima [A] time = 1.34718, size = 18, normalized size = 0.95

$$\frac{3}{4}\,bx^{\frac{4}{3}}+3\,ax^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(2/3),x, algorithm="maxima")

[Out] 3/4*b*x^(4/3) + 3*a*x^(1/3)
```

Fricas [A] time = 0.208549, size = 16, normalized size = 0.84

$$\frac{3}{4}\,(bx+4\,a)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(2/3),x, algorithm="fricas")

[Out] 3/4*(b*x + 4*a)*x^(1/3)
```

Sympy [A] time = 1.71138, size = 17, normalized size = 0.89

$$3a\sqrt[3]{x}+\frac{3bx^{\frac{4}{3}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(2/3),x)
```

```
[Out] 3*a*x**(1/3) + 3*b*x**(4/3)/4
```

GIAC/XCAS [A] time = 0.204884, size = 18, normalized size = 0.95

$$\frac{3}{4}\, b x^{\frac{4}{3}} + 3\, a x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(2/3),x, algorithm="giac")
```

```
[Out] 3/4*b*x^(4/3) + 3*a*x^(1/3)
```

3.656 $\int \frac{a+bx}{x^{4/3}}\,dx$

Optimal. Leaf size=19

$$\frac{3}{2}bx^{2/3}-\frac{3a}{\sqrt[3]{x}}$$

```
[Out] (-3*a)/x^(1/3) + (3*b*x^(2/3))/2
```

Rubi [A] time = 0.0133116, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{3}{2}bx^{2/3}-\frac{3a}{\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/x^(4/3),x]
```

```
[Out] (-3*a)/x^(1/3) + (3*b*x^(2/3))/2
```

Rubi in Sympy [A] time = 2.54751, size = 17, normalized size = 0.89

$$-\frac{3a}{\sqrt[3]{x}}+\frac{3bx^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**(4/3),x)
```

```
[Out] -3*a/x**(1/3) + 3*b*x**(2/3)/2
```

Mathematica [A] time = 0.00597312, size = 16, normalized size = 0.84

$$\frac{3(bx-2a)}{2\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/x^(4/3),x]
```

```
[Out] (3*(-2*a + b*x))/(2*x^(1/3))
```

Maple [A] time = 0.005, size = 14, normalized size = 0.7

$$-\frac{-3\,bx+6\,a}{2}\frac{1}{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^(4/3),x)
```

```
[Out] -3/2*(-b*x+2*a)/x^(1/3)
```

Maxima [A] time = 1.34238, size = 18, normalized size = 0.95

$$\frac{3}{2}\,bx^{\frac{2}{3}}-\frac{3\,a}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/2*b*x^(2/3) - 3*a/x^(1/3)
```

Fricas [A] time = 0.205579, size = 16, normalized size = 0.84

$$\frac{3\,(bx-2\,a)}{2\,x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/2*(b*x - 2*a)/x^(1/3)
```

Sympy [A] time = 1.52331, size = 17, normalized size = 0.89

$$-\frac{3a}{\sqrt[3]{x}}+\frac{3bx^{\frac{2}{3}}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(4/3),x)
```

```
[Out] -3*a/x**(1/3) + 3*b*x**(2/3)/2
```

GIAC/XCAS [A] time = 0.204536, size = 18, normalized size = 0.95

$$\frac{3}{2}\,bx^{\frac{2}{3}} - \frac{3\,a}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(4/3),x, algorithm="giac")
```

```
[Out] 3/2*b*x^(2/3) - 3*a/x^(1/3)
```

3.657 $\int \frac{a+bx}{x^{5/3}} dx$

Optimal. Leaf size=19

$$3b\sqrt[3]{x} - \frac{3a}{2x^{2/3}}$$

```
[Out] (-3*a)/(2*x^(2/3)) + 3*b*x^(1/3)
```

Rubi [A] time = 0.0131865, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$3b\sqrt[3]{x} - \frac{3a}{2x^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/x^(5/3),x]

[Out] (-3*a)/(2*x^(2/3)) + 3*b*x^(1/3)
```

Rubi in Sympy [A] time = 2.37611, size = 17, normalized size = 0.89

$$-\frac{3a}{2x^{\frac{2}{3}}} + 3b\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)/x**(5/3),x)

[Out] -3*a/(2*x**(2/3)) + 3*b*x**(1/3)
```

Mathematica [A] time = 0.00607552, size = 19, normalized size = 1.

$$3b\sqrt[3]{x} - \frac{3a}{2x^{2/3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/x^(5/3),x]
```

```
[Out] (-3*a)/(2*x^(2/3)) + 3*b*x^(1/3)
```

Maple [A] time = 0.004, size = 12, normalized size = 0.6

$$-\frac{-6\,bx+3\,a}{2}x^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^(5/3),x)
```

```
[Out] -3/2*(-2*b*x+a)/x^(2/3)
```

Maxima [A] time = 1.35031, size = 18, normalized size = 0.95

$$3\,bx^{\frac{1}{3}}-\frac{3\,a}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/x^(5/3),x, algorithm="maxima")
```

```
[Out] 3*b*x^(1/3) - 3/2*a/x^(2/3)
```

Fricas [A] time = 0.206751, size = 18, normalized size = 0.95

$$\frac{3\,(2\,bx-a)}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/x^(5/3),x, algorithm="fricas")
```

```
[Out] 3/2*(2*b*x - a)/x^(2/3)
```

Sympy [A] time = 1.7539, size = 17, normalized size = 0.89

$$-\frac{3a}{2x^{\frac{2}{3}}}+3b\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**(5/3),x)

[Out] -3*a/(2*x**(2/3)) + 3*b*x**(1/3)
```

GIAC/XCAS [A] time = 0.203437, size = 18, normalized size = 0.95

$$3\,bx^{\frac{1}{3}} - \frac{3\,a}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/x^(5/3),x, algorithm="giac")

[Out] 3*b*x^(1/3) - 3/2*a/x^(2/3)
```

3.658 $\int x^{5/3}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{3}{8}a^2x^{8/3}+\frac{6}{11}abx^{11/3}+\frac{3}{14}b^2x^{14/3}$$

```
[Out] (3*a^2*x^(8/3))/8 + (6*a*b*x^(11/3))/11 + (3*b^2*x^(14/3))/14
```

Rubi [A] time = 0.0223623, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{8}a^2x^{8/3}+\frac{6}{11}abx^{11/3}+\frac{3}{14}b^2x^{14/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/3)*(a + b*x)^2,x]

[Out] (3*a^2*x^(8/3))/8 + (6*a*b*x^(11/3))/11 + (3*b^2*x^(14/3))/14
```

Rubi in Sympy [A] time = 4.1744, size = 34, normalized size = 0.94

$$\frac{3a^2x^{\frac{8}{3}}}{8}+\frac{6abx^{\frac{11}{3}}}{11}+\frac{3b^2x^{\frac{14}{3}}}{14}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/3)*(b*x+a)**2,x)

[Out] 3*a**2*x**(8/3)/8 + 6*a*b*x**(11/3)/11 + 3*b**2*x**(14/3)/14
```

Mathematica [A] time = 0.00967309, size = 28, normalized size = 0.78

$$\frac{3}{616}x^{8/3}\left(77a^2+112abx+44b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/3)*(a + b*x)^2,x]
```

```
[Out] (3*x^(8/3)*(77*a^2 + 112*a*b*x + 44*b^2*x^2))/616
```

Maple [A] time = 0.006, size = 25, normalized size = 0.7

$$\frac{132\, b^{2} x^{2} + 336\, a b x + 231\, a^{2}}{616} x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/3)*(b*x+a)^2,x)
```

```
[Out] 3/616*x^(8/3)*(44*b^2*x^2+112*a*b*x+77*a^2)
```

Maxima [A] time = 1.34208, size = 32, normalized size = 0.89

$$\frac{3}{14}\, b^{2} x^{\frac{14}{3}} + \frac{6}{11}\, a b x^{\frac{11}{3}} + \frac{3}{8}\, a^{2} x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(5/3),x, algorithm="maxima")
```

```
[Out] 3/14*b^2*x^(14/3) + 6/11*a*b*x^(11/3) + 3/8*a^2*x^(8/3)
```

Fricas [A] time = 0.203689, size = 39, normalized size = 1.08

$$\frac{3}{616}\left(44\, b^{2} x^{4} + 112\, a b x^{3} + 77\, a^{2} x^{2}\right) x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(5/3),x, algorithm="fricas")
```

```
[Out] 3/616*(44*b^2*x^4 + 112*a*b*x^3 + 77*a^2*x^2)*x^(2/3)
```

Sympy [A] time = 9.99048, size = 2142, normalized size = 59.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3)*(b*x+a)**2,x)
```

```
[Out] Piecewise((-27*a**(38/3)*(-1 + b*(a/b + x)/a)**(2/3)/(-616*a**8*b
**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/
b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) + 27*a**(38/3)*exp(1
4*I*pi/3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1
848*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3
) + 63*a**(35/3)*b*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)/(-616*a*
*8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)
*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) - 81*a**(35/3)*b
*(a/b + x)*exp(14*I*pi/3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/
3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17
/3)*(a/b + x)**3) - 42*a**(32/3)*b**2*(-1 + b*(a/b + x)/a)**(2/3)
*(a/b + x)**2/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x)
 - 1848*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x
)**3) + 81*a**(32/3)*b**2*(a/b + x)**2*exp(14*I*pi/3)/(-616*a**8*
b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a
/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) + 210*a**(29/3)*b**
3*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**3/(-616*a**8*b**(8/3) +
1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b + x)**2
+ 616*a**5*b**(17/3)*(a/b + x)**3) - 27*a**(29/3)*b**3*(a/b + x)*
*3*exp(14*I*pi/3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b
+ x) - 1848*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b
 + x)**3) - 735*a**(26/3)*b**4*(-1 + b*(a/b + x)/a)**(2/3)*(a/b +
 x)**4/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848
*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) +
 987*a**(23/3)*b**5*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**5/(-61
6*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(1
4/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) - 588*a**(20
/3)*b**6*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**6/(-616*a**8*b**(
8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b +
 x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) + 132*a**(17/3)*b**7*(-
1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**7/(-616*a**8*b**(8/3) + 1848
*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b + x)**2 + 61
6*a**5*b**(17/3)*(a/b + x)**3), Abs(b*(a/b + x)/a) > 1), (-27*a**
(38/3)*(1 - b*(a/b + x)/a)**(2/3)*exp(14*I*pi/3)/(-616*a**8*b**(8
/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b +
x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) + 27*a**(38/3)*exp(14*I*
pi/3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*
a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) +
63*a**(35/3)*b*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)*exp(14*I*pi/3
)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6
*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) - 81*a
**(35/3)*b*(a/b + x)*exp(14*I*pi/3)/(-616*a**8*b**(8/3) + 1848*a*
*7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b + x)**2 + 616*a
**5*b**(17/3)*(a/b + x)**3) - 42*a**(32/3)*b**2*(1 - b*(a/b + x)/
a)**(2/3)*(a/b + x)**2*exp(14*I*pi/3)/(-616*a**8*b**(8/3) + 1848*
a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*(a/b + x)**2 + 616
*a**5*b**(17/3)*(a/b + x)**3) + 81*a**(32/3)*b**2*(a/b + x)**2*ex
p(14*I*pi/3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x)
- 1848*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)
**3) + 210*a**(29/3)*b**3*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**3
*exp(14*I*pi/3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b +
x) - 1848*a**6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b +
 x)**3) - 27*a**(29/3)*b**3*(a/b + x)**3*exp(14*I*pi/3)/(-616*a**
```

```
8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/3)*
(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) - 735*a**(26/3)*b
**4*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**4*exp(14*I*pi/3)/(-616*
a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(14/
3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) + 987*a**(23/3
)*b**5*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**5*exp(14*I*pi/3)/(-6
16*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b**(
14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) - 588*a**(2
0/3)*b**6*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**6*exp(14*I*pi/3)/
(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**6*b
**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3) + 132*a*
*(17/3)*b**7*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**7*exp(14*I*pi/
3)/(-616*a**8*b**(8/3) + 1848*a**7*b**(11/3)*(a/b + x) - 1848*a**
6*b**(14/3)*(a/b + x)**2 + 616*a**5*b**(17/3)*(a/b + x)**3), True
))
```

GIAC/XCAS [A] time = 0.204593, size = 32, normalized size = 0.89

$$\frac{3}{14}\,b^2x^{\frac{14}{3}}+\frac{6}{11}\,abx^{\frac{11}{3}}+\frac{3}{8}\,a^2x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(5/3),x, algorithm="giac")
```

```
[Out] 3/14*b^2*x^(14/3) + 6/11*a*b*x^(11/3) + 3/8*a^2*x^(8/3)
```

3.659 $\int x^{4/3}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{3}{7}a^2x^{7/3}+\frac{3}{5}abx^{10/3}+\frac{3}{13}b^2x^{13/3}$$

```
[Out] (3*a^2*x^(7/3))/7 + (3*a*b*x^(10/3))/5 + (3*b^2*x^(13/3))/13
```

Rubi [A] time = 0.0224497, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{7}a^2x^{7/3}+\frac{3}{5}abx^{10/3}+\frac{3}{13}b^2x^{13/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3)*(a + b*x)^2,x]

[Out] (3*a^2*x^(7/3))/7 + (3*a*b*x^(10/3))/5 + (3*b^2*x^(13/3))/13
```

Rubi in Sympy [A] time = 4.23525, size = 34, normalized size = 0.94

$$\frac{3a^2x^{\frac{7}{3}}}{7}+\frac{3abx^{\frac{10}{3}}}{5}+\frac{3b^2x^{\frac{13}{3}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3)*(b*x+a)**2,x)

[Out] 3*a**2*x**(7/3)/7 + 3*a*b*x**(10/3)/5 + 3*b**2*x**(13/3)/13
```

Mathematica [A] time = 0.00915503, size = 28, normalized size = 0.78

$$\frac{3}{455}x^{7/3}\left(65a^2+91abx+35b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3)*(a + b*x)^2,x]
```

```
[Out] (3*x^(7/3)*(65*a^2 + 91*a*b*x + 35*b^2*x^2))/455
```

Maple [A] time = 0.007, size = 25, normalized size = 0.7

$$\frac{105\,b^2x^2+273\,abx+195\,a^2}{455}x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(4/3)*(b*x+a)^2,x)
```

```
[Out] 3/455*x^(7/3)*(35*b^2*x^2+91*a*b*x+65*a^2)
```

Maxima [A] time = 1.34612, size = 32, normalized size = 0.89

$$\frac{3}{13}\,b^2x^{\frac{13}{3}}+\frac{3}{5}\,abx^{\frac{10}{3}}+\frac{3}{7}\,a^2x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/13*b^2*x^(13/3) + 3/5*a*b*x^(10/3) + 3/7*a^2*x^(7/3)
```

Fricas [A] time = 0.205314, size = 39, normalized size = 1.08

$$\frac{3}{455}\left(35\,b^2x^4+91\,abx^3+65\,a^2x^2\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/455*(35*b^2*x^4 + 91*a*b*x^3 + 65*a^2*x^2)*x^(1/3)
```

Sympy [A] time = 8.83111, size = 2142, normalized size = 59.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3)*(b*x+a)**2,x)
```

```
[Out] Piecewise((-27*a**(37/3)*(-1 + b*(a/b + x)/a)**(1/3)/(-455*a**8*b
**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/
b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) + 27*a**(37/3)*exp(1
3*I*pi/3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1
365*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3
) + 72*a**(34/3)*b*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)/(-455*a*
*8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)
*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) - 81*a**(34/3)*b
*(a/b + x)*exp(13*I*pi/3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/
3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16
/3)*(a/b + x)**3) - 60*a**(31/3)*b**2*(-1 + b*(a/b + x)/a)**(1/3)
*(a/b + x)**2/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x)
 - 1365*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x
)**3) + 81*a**(31/3)*b**2*(a/b + x)**2*exp(13*I*pi/3)/(-455*a**8*
b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a
/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) + 165*a**(28/3)*b**
3*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**3/(-455*a**8*b**(7/3) +
1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b + x)**2
+ 455*a**5*b**(16/3)*(a/b + x)**3) - 27*a**(28/3)*b**3*(a/b + x)*
*3*exp(13*I*pi/3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b
+ x) - 1365*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b
 + x)**3) - 555*a**(25/3)*b**4*(-1 + b*(a/b + x)/a)**(1/3)*(a/b +
 x)**4/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365
*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) +
 762*a**(22/3)*b**5*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**5/(-45
5*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(1
3/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) - 462*a**(19
/3)*b**6*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**6/(-455*a**8*b**(
7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b +
 x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) + 105*a**(16/3)*b**7*(-
1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**7/(-455*a**8*b**(7/3) + 1365
*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b + x)**2 + 45
5*a**5*b**(16/3)*(a/b + x)**3), Abs(b*(a/b + x)/a) > 1), (-27*a**
(37/3)*(1 - b*(a/b + x)/a)**(1/3)*exp(13*I*pi/3)/(-455*a**8*b**(7
/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b +
x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) + 27*a**(37/3)*exp(13*I*
pi/3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*
a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) +
72*a**(34/3)*b*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)*exp(13*I*pi/3
)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6
*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) - 81*a
**(34/3)*b*(a/b + x)*exp(13*I*pi/3)/(-455*a**8*b**(7/3) + 1365*a*
*7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b + x)**2 + 455*a
**5*b**(16/3)*(a/b + x)**3) - 60*a**(31/3)*b**2*(1 - b*(a/b + x)/
a)**(1/3)*(a/b + x)**2*exp(13*I*pi/3)/(-455*a**8*b**(7/3) + 1365*
a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*(a/b + x)**2 + 455
*a**5*b**(16/3)*(a/b + x)**3) + 81*a**(31/3)*b**2*(a/b + x)**2*ex
p(13*I*pi/3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x)
- 1365*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)
**3) + 165*a**(28/3)*b**3*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**3
*exp(13*I*pi/3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b +
x) - 1365*a**6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b +
 x)**3) - 27*a**(28/3)*b**3*(a/b + x)**3*exp(13*I*pi/3)/(-455*a**
```

```
8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/3)*
(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) - 555*a**(25/3)*b
**4*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**4*exp(13*I*pi/3)/(-455*
a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(13/
3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) + 762*a**(22/3
)*b**5*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**5*exp(13*I*pi/3)/(-4
55*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b**(
13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) - 462*a**(1
9/3)*b**6*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**6*exp(13*I*pi/3)/
(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**6*b
**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3) + 105*a*
*(16/3)*b**7*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**7*exp(13*I*pi/
3)/(-455*a**8*b**(7/3) + 1365*a**7*b**(10/3)*(a/b + x) - 1365*a**
6*b**(13/3)*(a/b + x)**2 + 455*a**5*b**(16/3)*(a/b + x)**3), True
))
```

GIAC/XCAS [A] time = 0.205826, size = 32, normalized size = 0.89

$$\frac{3}{13}\,b^2x^{\frac{13}{3}}+\frac{3}{5}\,abx^{\frac{10}{3}}+\frac{3}{7}\,a^2x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(4/3),x, algorithm="giac")
```

```
[Out] 3/13*b^2*x^(13/3) + 3/5*a*b*x^(10/3) + 3/7*a^2*x^(7/3)
```

3.660 $\int x^{2/3}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{3}{5}a^2x^{5/3}+\frac{3}{4}abx^{8/3}+\frac{3}{11}b^2x^{11/3}$$

```
[Out] (3*a^2*x^(5/3))/5 + (3*a*b*x^(8/3))/4 + (3*b^2*x^(11/3))/11
```

Rubi [A] time = 0.0220964, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{5}a^2x^{5/3}+\frac{3}{4}abx^{8/3}+\frac{3}{11}b^2x^{11/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2/3)*(a + b*x)^2,x]

[Out] (3*a^2*x^(5/3))/5 + (3*a*b*x^(8/3))/4 + (3*b^2*x^(11/3))/11
```

Rubi in Sympy [A] time = 3.93903, size = 34, normalized size = 0.94

$$\frac{3a^2x^{\frac{5}{3}}}{5}+\frac{3abx^{\frac{8}{3}}}{4}+\frac{3b^2x^{\frac{11}{3}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2/3)*(b*x+a)**2,x)

[Out] 3*a**2*x**(5/3)/5 + 3*a*b*x**(8/3)/4 + 3*b**2*x**(11/3)/11
```

Mathematica [A] time = 0.00943086, size = 28, normalized size = 0.78

$$\frac{3}{220}x^{5/3}\left(44a^2+55abx+20b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2/3)*(a + b*x)^2,x]
```

```
[Out] (3*x^(5/3)*(44*a^2 + 55*a*b*x + 20*b^2*x^2))/220
```

Maple [A] time = 0.007, size = 25, normalized size = 0.7

$$\frac{60 b^2x^2 + 165 abx + 132 a^2}{220}x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(2/3)*(b*x+a)^2,x)

[Out] 3/220*x^(5/3)*(20*b^2*x^2+55*a*b*x+44*a^2)
```

Maxima [A] time = 1.34944, size = 32, normalized size = 0.89

$$\frac{3}{11} b^2x^{\frac{11}{3}} + \frac{3}{4} abx^{\frac{8}{3}} + \frac{3}{5} a^2x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(2/3),x, algorithm="maxima")

[Out] 3/11*b^2*x^(11/3) + 3/4*a*b*x^(8/3) + 3/5*a^2*x^(5/3)
```

Fricas [A] time = 0.203381, size = 36, normalized size = 1.

$$\frac{3}{220} \left(20 b^2x^3 + 55 abx^2 + 44 a^2x\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(2/3),x, algorithm="fricas")

[Out] 3/220*(20*b^2*x^3 + 55*a*b*x^2 + 44*a^2*x)*x^(2/3)
```

Sympy [A] time = 7.1552, size = 1953, normalized size = 54.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3)*(b*x+a)**2,x)
```

```
[Out] Piecewise((27*a**(35/3)*(-1 + b*(a/b + x)/a)**(2/3)/(-220*a**8*b*
*(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b +
x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) + 27*a**(35/3)*exp(17*I*
pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**
6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) - 63*
a**(32/3)*b*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)/(-220*a**8*b**(
5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)
**2 + 220*a**5*b**(14/3)*(a/b + x)**3) - 81*a**(32/3)*b*(a/b + x)
*exp(17*I*pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x)
 - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)
**3) + 42*a**(29/3)*b**2*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**2
/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**
(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) + 81*a**(2
9/3)*b**2*(a/b + x)**2*exp(17*I*pi/3)/(-220*a**8*b**(5/3) + 660*a
**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a*
*5*b**(14/3)*(a/b + x)**3) - 78*a**(26/3)*b**3*(-1 + b*(a/b + x)/
a)**(2/3)*(a/b + x)**3/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a
/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a
/b + x)**3) - 27*a**(26/3)*b**3*(a/b + x)**3*exp(17*I*pi/3)/(-220
*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)
*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) + 207*a**(23/3)*
b**4*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**4/(-220*a**8*b**(5/3)
 + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2
+ 220*a**5*b**(14/3)*(a/b + x)**3) - 195*a**(20/3)*b**5*(-1 + b*(
a/b + x)/a)**(2/3)*(a/b + x)**5/(-220*a**8*b**(5/3) + 660*a**7*b*
*(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**
(14/3)*(a/b + x)**3) + 60*a**(17/3)*b**6*(-1 + b*(a/b + x)/a)**(2
/3)*(a/b + x)**6/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x
) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x
)**3), Abs(b*(a/b + x)/a) > 1), (-27*a**(35/3)*(1 - b*(a/b + x)/a
)**(2/3)*exp(17*I*pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(
a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(
a/b + x)**3) + 27*a**(35/3)*exp(17*I*pi/3)/(-220*a**8*b**(5/3) +
660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 2
20*a**5*b**(14/3)*(a/b + x)**3) + 63*a**(32/3)*b*(1 - b*(a/b + x)
/a)**(2/3)*(a/b + x)*exp(17*I*pi/3)/(-220*a**8*b**(5/3) + 660*a**
7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**5
*b**(14/3)*(a/b + x)**3) - 81*a**(32/3)*b*(a/b + x)*exp(17*I*pi/3
)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b*
*(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) - 42*a**(
29/3)*b**2*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**2*exp(17*I*pi/3)
/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a**6*b**
(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) + 81*a**(2
9/3)*b**2*(a/b + x)**2*exp(17*I*pi/3)/(-220*a**8*b**(5/3) + 660*a
**7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a*
*5*b**(14/3)*(a/b + x)**3) + 78*a**(26/3)*b**3*(1 - b*(a/b + x)/a
)**(2/3)*(a/b + x)**3*exp(17*I*pi/3)/(-220*a**8*b**(5/3) + 660*a*
*7*b**(8/3)*(a/b + x) - 660*a**6*b**(11/3)*(a/b + x)**2 + 220*a**
5*b**(14/3)*(a/b + x)**3) - 27*a**(26/3)*b**3*(a/b + x)**3*exp(17
*I*pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*
a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) -
207*a**(23/3)*b**4*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**4*exp(17
*I*pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*
```

```
a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) +
195*a**(20/3)*b**5*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**5*exp(17
*I*pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*
a**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3) -
60*a**(17/3)*b**6*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**6*exp(17*
I*pi/3)/(-220*a**8*b**(5/3) + 660*a**7*b**(8/3)*(a/b + x) - 660*a
**6*b**(11/3)*(a/b + x)**2 + 220*a**5*b**(14/3)*(a/b + x)**3), Tr
ue))
```

GIAC/XCAS [A] time = 0.202674, size = 32, normalized size = 0.89

$$\frac{3}{11}\,b^{2}x^{\frac{11}{3}}+\frac{3}{4}\,abx^{\frac{8}{3}}+\frac{3}{5}\,a^{2}x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(2/3),x, algorithm="giac")
```

```
[Out] 3/11*b^2*x^(11/3) + 3/4*a*b*x^(8/3) + 3/5*a^2*x^(5/3)
```

3.661 $\int \sqrt[3]{x}(a+bx)^2\,dx$

Optimal. Leaf size=36

$$\frac{3}{4}a^2x^{4/3}+\frac{6}{7}abx^{7/3}+\frac{3}{10}b^2x^{10/3}$$

```
[Out] (3*a^2*x^(4/3))/4 + (6*a*b*x^(7/3))/7 + (3*b^2*x^(10/3))/10
```

Rubi [A] time = 0.0218017, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{4}a^2x^{4/3}+\frac{6}{7}abx^{7/3}+\frac{3}{10}b^2x^{10/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3)*(a + b*x)^2,x]
```

```
[Out] (3*a^2*x^(4/3))/4 + (6*a*b*x^(7/3))/7 + (3*b^2*x^(10/3))/10
```

Rubi in Sympy [A] time = 4.04021, size = 34, normalized size = 0.94

$$\frac{3a^2x^{\frac{4}{3}}}{4}+\frac{6abx^{\frac{7}{3}}}{7}+\frac{3b^2x^{\frac{10}{3}}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3)*(b*x+a)**2,x)
```

```
[Out] 3*a**2*x**(4/3)/4 + 6*a*b*x**(7/3)/7 + 3*b**2*x**(10/3)/10
```

Mathematica [A] time = 0.0093291, size = 28, normalized size = 0.78

$$\frac{3}{140}x^{4/3}\left(35a^2+40abx+14b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3)*(a + b*x)^2,x]
```

```
[Out] (3*x^(4/3)*(35*a^2 + 40*a*b*x + 14*b^2*x^2))/140
```

Maple [A] time = 0.005, size = 25, normalized size = 0.7

$$\frac{42 b^2 x^2 + 120 abx + 105 a^2}{140} x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/3)*(b*x+a)^2,x)
```

```
[Out] 3/140*x^(4/3)*(14*b^2*x^2+40*a*b*x+35*a^2)
```

Maxima [A] time = 1.34542, size = 32, normalized size = 0.89

$$\frac{3}{10} b^2 x^{\frac{10}{3}} + \frac{6}{7} abx^{\frac{7}{3}} + \frac{3}{4} a^2 x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(1/3),x, algorithm="maxima")
```

```
[Out] 3/10*b^2*x^(10/3) + 6/7*a*b*x^(7/3) + 3/4*a^2*x^(4/3)
```

Fricas [A] time = 0.204386, size = 36, normalized size = 1.

$$\frac{3}{140} \left(14 b^2 x^3 + 40 abx^2 + 35 a^2 x\right) x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2*x^(1/3),x, algorithm="fricas")
```

```
[Out] 3/140*(14*b^2*x^3 + 40*a*b*x^2 + 35*a^2*x)*x^(1/3)
```

Sympy [A] time = 6.90639, size = 1953, normalized size = 54.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3)*(b*x+a)**2,x)
```

```
[Out] Piecewise((27*a**(34/3)*(-1 + b*(a/b + x)/a)**(1/3)/(-140*a**8*b*
*(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b +
x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) + 27*a**(34/3)*exp(16*I*
pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**
6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) - 72*
a**(31/3)*b*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)/(-140*a**8*b**(
4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)
**2 + 140*a**5*b**(13/3)*(a/b + x)**3) - 81*a**(31/3)*b*(a/b + x)
*exp(16*I*pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x)
 - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)
**3) + 60*a**(28/3)*b**2*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**2
/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**
(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) + 81*a**(2
8/3)*b**2*(a/b + x)**2*exp(16*I*pi/3)/(-140*a**8*b**(4/3) + 420*a
**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a*
*5*b**(13/3)*(a/b + x)**3) - 60*a**(25/3)*b**3*(-1 + b*(a/b + x)/
a)**(1/3)*(a/b + x)**3/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a
/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a
/b + x)**3) - 27*a**(25/3)*b**3*(a/b + x)**3*exp(16*I*pi/3)/(-140
*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)
*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) + 135*a**(22/3)*
b**4*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**4/(-140*a**8*b**(4/3)
 + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2
+ 140*a**5*b**(13/3)*(a/b + x)**3) - 132*a**(19/3)*b**5*(-1 + b*(
a/b + x)/a)**(1/3)*(a/b + x)**5/(-140*a**8*b**(4/3) + 420*a**7*b*
*(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**
(13/3)*(a/b + x)**3) + 42*a**(16/3)*b**6*(-1 + b*(a/b + x)/a)**(1
/3)*(a/b + x)**6/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x
) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x
)**3), Abs(b*(a/b + x)/a) > 1), (-27*a**(34/3)*(1 - b*(a/b + x)/a
)**(1/3)*exp(16*I*pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(
a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(
a/b + x)**3) + 27*a**(34/3)*exp(16*I*pi/3)/(-140*a**8*b**(4/3) +
420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 1
40*a**5*b**(13/3)*(a/b + x)**3) + 72*a**(31/3)*b*(1 - b*(a/b + x)
/a)**(1/3)*(a/b + x)*exp(16*I*pi/3)/(-140*a**8*b**(4/3) + 420*a**
7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**5
*b**(13/3)*(a/b + x)**3) - 81*a**(31/3)*b*(a/b + x)*exp(16*I*pi/3
)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b*
*(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) - 60*a**(
28/3)*b**2*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**2*exp(16*I*pi/3)
/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a**6*b**
(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) + 81*a**(2
8/3)*b**2*(a/b + x)**2*exp(16*I*pi/3)/(-140*a**8*b**(4/3) + 420*a
**7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a*
*5*b**(13/3)*(a/b + x)**3) + 60*a**(25/3)*b**3*(1 - b*(a/b + x)/a
)**(1/3)*(a/b + x)**3*exp(16*I*pi/3)/(-140*a**8*b**(4/3) + 420*a*
*7*b**(7/3)*(a/b + x) - 420*a**6*b**(10/3)*(a/b + x)**2 + 140*a**
5*b**(13/3)*(a/b + x)**3) - 27*a**(25/3)*b**3*(a/b + x)**3*exp(16
*I*pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*
a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) -
135*a**(22/3)*b**4*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**4*exp(16
*I*pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*
```

```
a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) +
132*a**(19/3)*b**5*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**5*exp(16
*I*pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*
a**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3) -
42*a**(16/3)*b**6*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**6*exp(16*
I*pi/3)/(-140*a**8*b**(4/3) + 420*a**7*b**(7/3)*(a/b + x) - 420*a
**6*b**(10/3)*(a/b + x)**2 + 140*a**5*b**(13/3)*(a/b + x)**3), Tr
ue))
```

GIAC/XCAS [A] time = 0.204426, size = 32, normalized size = 0.89

$$\frac{3}{10}\,b^2x^{\frac{10}{3}} + \frac{6}{7}\,abx^{\frac{7}{3}} + \frac{3}{4}\,a^2x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^(1/3),x, algorithm="giac")
```

```
[Out] 3/10*b^2*x^(10/3) + 6/7*a*b*x^(7/3) + 3/4*a^2*x^(4/3)
```

3.662 $\int \frac{(a+bx)^2}{\sqrt[3]{x}} \, dx$

Optimal. Leaf size=36

$$\frac{3}{2}a^2x^{2/3} + \frac{6}{5}abx^{5/3} + \frac{3}{8}b^2x^{8/3}$$

```
[Out] (3*a^2*x^(2/3))/2 + (6*a*b*x^(5/3))/5 + (3*b^2*x^(8/3))/8
```

Rubi [A] time = 0.0224775, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{2}a^2x^{2/3} + \frac{6}{5}abx^{5/3} + \frac{3}{8}b^2x^{8/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^(1/3),x]

[Out] (3*a^2*x^(2/3))/2 + (6*a*b*x^(5/3))/5 + (3*b^2*x^(8/3))/8
```

Rubi in Sympy [A] time = 4.0088, size = 34, normalized size = 0.94

$$\frac{3a^2x^{\frac{2}{3}}}{2} + \frac{6abx^{\frac{5}{3}}}{5} + \frac{3b^2x^{\frac{8}{3}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(1/3),x)

[Out] 3*a**2*x**(2/3)/2 + 6*a*b*x**(5/3)/5 + 3*b**2*x**(8/3)/8
```

Mathematica [A] time = 0.00899504, size = 28, normalized size = 0.78

$$\frac{3}{40}x^{2/3}\left(20a^2 + 16abx + 5b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^(1/3),x]
```

```
[Out] (3*x^(2/3)*(20*a^2 + 16*a*b*x + 5*b^2*x^2))/40
```

Maple [A] time = 0.006, size = 25, normalized size = 0.7

$$\frac{15\,b^2x^2+48\,abx+60\,a^2}{40}x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^(1/3),x)
```

```
[Out] 3/40*x^(2/3)*(5*b^2*x^2+16*a*b*x+20*a^2)
```

Maxima [A] time = 1.34741, size = 32, normalized size = 0.89

$$\frac{3}{8}\,b^2x^{\frac{8}{3}}+\frac{6}{5}\,abx^{\frac{5}{3}}+\frac{3}{2}\,a^2x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(1/3),x, algorithm="maxima")
```

```
[Out] 3/8*b^2*x^(8/3) + 6/5*a*b*x^(5/3) + 3/2*a^2*x^(2/3)
```

Fricas [A] time = 0.204227, size = 32, normalized size = 0.89

$$\frac{3}{40}\left(5\,b^2x^2+16\,abx+20\,a^2\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(1/3),x, algorithm="fricas")
```

```
[Out] 3/40*(5*b^2*x^2 + 16*a*b*x + 20*a^2)*x^(2/3)
```

Sympy [A] time = 6.63, size = 1765, normalized size = 49.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(1/3),x)
```

```
[Out] Piecewise((-27*a**(32/3)*(-1 + b*(a/b + x)/a)**(2/3)/(-40*a**8*b*
*(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b + x
)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) + 27*a**(32/3)*exp(8*I*pi/
3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b*
*(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) + 63*a**(29
/3)*b*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)/(-40*a**8*b**(2/3) +
120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40
*a**5*b**(11/3)*(a/b + x)**3) - 81*a**(29/3)*b*(a/b + x)*exp(8*I*
pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6
*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) - 42*a**
(26/3)*b**2*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**2/(-40*a**8*b*
*(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b + x
)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) + 81*a**(26/3)*b**2*(a/b +
 x)**2*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b
+ x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b +
x)**3) + 18*a**(23/3)*b**3*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)*
*3/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b*
*(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) - 27*a**(23
/3)*b**3*(a/b + x)**3*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7
*b**(5/3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b*
*(11/3)*(a/b + x)**3) - 27*a**(20/3)*b**4*(-1 + b*(a/b + x)/a)**(
2/3)*(a/b + x)**4/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x
) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)*
*3) + 15*a**(17/3)*b**5*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**5/
(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b**(8
/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3), Abs(b*(a/b +
x)/a) > 1), (-27*a**(32/3)*(1 - b*(a/b + x)/a)**(2/3)*exp(8*I*pi/
3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b*
*(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) + 27*a**(32
/3)*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x
) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)*
*3) + 63*a**(29/3)*b*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)*exp(8*I
*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**
6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) - 81*a*
*(29/3)*b*(a/b + x)*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b
**(5/3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(
11/3)*(a/b + x)**3) - 42*a**(26/3)*b**2*(1 - b*(a/b + x)/a)**(2/3
)*(a/b + x)**2*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/
3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)
*(a/b + x)**3) + 81*a**(26/3)*b**2*(a/b + x)**2*exp(8*I*pi/3)/(-4
0*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b**(8/3)
*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) + 18*a**(23/3)*b*
*3*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**3*exp(8*I*pi/3)/(-40*a**
8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) - 120*a**6*b**(8/3)*(a/b
 + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3) - 27*a**(23/3)*b**3*(a
/b + x)**3*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(
a/b + x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/
b + x)**3) - 27*a**(20/3)*b**4*(1 - b*(a/b + x)/a)**(2/3)*(a/b +
x)**4*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b +
 x) - 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x
)**3) + 15*a**(17/3)*b**5*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**5
*exp(8*I*pi/3)/(-40*a**8*b**(2/3) + 120*a**7*b**(5/3)*(a/b + x) -
 120*a**6*b**(8/3)*(a/b + x)**2 + 40*a**5*b**(11/3)*(a/b + x)**3)
```

```
, True))
```

GIAC/XCAS [A] time = 0.207543, size = 32, normalized size = 0.89

$$\frac{3}{8}\,b^2x^{\frac{8}{3}} + \frac{6}{5}\,abx^{\frac{5}{3}} + \frac{3}{2}\,a^2x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(1/3),x, algorithm="giac")
```

```
[Out] 3/8*b^2*x^(8/3) + 6/5*a*b*x^(5/3) + 3/2*a^2*x^(2/3)
```

3.663 $\int \frac{(a+bx)^2}{x^{2/3}} \, dx$

Optimal. Leaf size=34

$$3a^2\sqrt[3]{x} + \frac{3}{2}abx^{4/3} + \frac{3}{7}b^2x^{7/3}$$

```
[Out] 3*a^2*x^(1/3) + (3*a*b*x^(4/3))/2 + (3*b^2*x^(7/3))/7
```

Rubi [A] time = 0.0230266, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$3a^2\sqrt[3]{x} + \frac{3}{2}abx^{4/3} + \frac{3}{7}b^2x^{7/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^(2/3),x]
```

```
[Out] 3*a^2*x^(1/3) + (3*a*b*x^(4/3))/2 + (3*b^2*x^(7/3))/7
```

Rubi in Sympy [A] time = 4.02108, size = 32, normalized size = 0.94

$$3a^2\sqrt[3]{x} + \frac{3abx^{\frac{4}{3}}}{2} + \frac{3b^2x^{\frac{7}{3}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(2/3),x)
```

```
[Out] 3*a**2*x**(1/3) + 3*a*b*x**(4/3)/2 + 3*b**2*x**(7/3)/7
```

Mathematica [A] time = 0.00931375, size = 28, normalized size = 0.82

$$\frac{3}{14}\sqrt[3]{x}\left(14a^2 + 7abx + 2b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^(2/3),x]
```

```
[Out] (3*x^(1/3)*(14*a^2 + 7*a*b*x + 2*b^2*x^2))/14
```

Maple [A] time = 0.005, size = 25, normalized size = 0.7

$$\frac{6\,b^{2}x^{2}+21\,abx+42\,a^{2}}{14}\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^(2/3),x)
```

```
[Out] 3/14*x^(1/3)*(2*b^2*x^2+7*a*b*x+14*a^2)
```

Maxima [A] time = 1.35263, size = 32, normalized size = 0.94

$$\frac{3}{7}\,b^{2}x^{\frac{7}{3}}+\frac{3}{2}\,abx^{\frac{4}{3}}+3\,a^{2}x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(2/3),x, algorithm="maxima")
```

```
[Out] 3/7*b^2*x^(7/3) + 3/2*a*b*x^(4/3) + 3*a^2*x^(1/3)
```

Fricas [A] time = 0.202103, size = 32, normalized size = 0.94

$$\frac{3}{14}\left(2\,b^{2}x^{2}+7\,abx+14\,a^{2}\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(2/3),x, algorithm="fricas")
```

```
[Out] 3/14*(2*b^2*x^2 + 7*a*b*x + 14*a^2)*x^(1/3)
```

Sympy [A] time = 6.65764, size = 1765, normalized size = 51.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(2/3),x)
```

```
[Out] Piecewise((-27*a**(31/3)*(-1 + b*(a/b + x)/a)**(1/3)/(-14*a**8*b*
*(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)*
*2 + 14*a**5*b**(10/3)*(a/b + x)**3) + 27*a**(31/3)*exp(7*I*pi/3)
/(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/
3)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) + 72*a**(28/3)*
b*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)/(-14*a**8*b**(1/3) + 42*a
**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*a**5*
b**(10/3)*(a/b + x)**3) - 81*a**(28/3)*b*(a/b + x)*exp(7*I*pi/3)/
(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3
)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) - 60*a**(25/3)*b
**2*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**2/(-14*a**8*b**(1/3) +
 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*
a**5*b**(10/3)*(a/b + x)**3) + 81*a**(25/3)*b**2*(a/b + x)**2*exp
(7*I*pi/3)/(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a
**6*b**(7/3)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) + 18*
a**(22/3)*b**3*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**3/(-14*a**8
*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b +
x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) - 27*a**(22/3)*b**3*(a/b
+ x)**3*exp(7*I*pi/3)/(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b
+ x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x
)**3) - 9*a**(19/3)*b**4*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**4
/(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/
3)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) + 6*a**(16/3)*b
**5*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**5/(-14*a**8*b**(1/3) +
 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*
a**5*b**(10/3)*(a/b + x)**3), Abs(b*(a/b + x)/a) > 1), (-27*a**(3
1/3)*(1 - b*(a/b + x)/a)**(1/3)*exp(7*I*pi/3)/(-14*a**8*b**(1/3)
+ 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14
*a**5*b**(10/3)*(a/b + x)**3) + 27*a**(31/3)*exp(7*I*pi/3)/(-14*a
**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b
 + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) + 72*a**(28/3)*b*(1 -
b*(a/b + x)/a)**(1/3)*(a/b + x)*exp(7*I*pi/3)/(-14*a**8*b**(1/3)
+ 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14
*a**5*b**(10/3)*(a/b + x)**3) - 81*a**(28/3)*b*(a/b + x)*exp(7*I*
pi/3)/(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b
**(7/3)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) - 60*a**(2
5/3)*b**2*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**2*exp(7*I*pi/3)/(
-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)
*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b + x)**3) + 81*a**(25/3)*b*
*2*(a/b + x)**2*exp(7*I*pi/3)/(-14*a**8*b**(1/3) + 42*a**7*b**(4/
3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*a**5*b**(10/3)*
(a/b + x)**3) + 18*a**(22/3)*b**3*(1 - b*(a/b + x)/a)**(1/3)*(a/b
 + x)**3*exp(7*I*pi/3)/(-14*a**8*b**(1/3) + 42*a**7*b**(4/3)*(a/b
 + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*a**5*b**(10/3)*(a/b +
x)**3) - 27*a**(22/3)*b**3*(a/b + x)**3*exp(7*I*pi/3)/(-14*a**8*b
**(1/3) + 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)
**2 + 14*a**5*b**(10/3)*(a/b + x)**3) - 9*a**(19/3)*b**4*(1 - b*(
a/b + x)/a)**(1/3)*(a/b + x)**4*exp(7*I*pi/3)/(-14*a**8*b**(1/3)
+ 42*a**7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14
*a**5*b**(10/3)*(a/b + x)**3) + 6*a**(16/3)*b**5*(1 - b*(a/b + x)
/a)**(1/3)*(a/b + x)**5*exp(7*I*pi/3)/(-14*a**8*b**(1/3) + 42*a**
7*b**(4/3)*(a/b + x) - 42*a**6*b**(7/3)*(a/b + x)**2 + 14*a**5*b*
*(10/3)*(a/b + x)**3), True))
```

GIAC/XCAS [A] time = 0.204447, size = 32, normalized size = 0.94

$$\frac{3}{7}\,b^{2}x^{\frac{7}{3}} + \frac{3}{2}\,abx^{\frac{4}{3}} + 3\,a^{2}x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(2/3),x, algorithm="giac")
```

```
[Out] 3/7*b^2*x^(7/3) + 3/2*a*b*x^(4/3) + 3*a^2*x^(1/3)
```

3.664 $\int \frac{(a+bx)^2}{x^{4/3}} dx$

Optimal. Leaf size=32

$$-\frac{3a^2}{\sqrt[3]{x}}+3abx^{2/3}+\frac{3}{5}b^2x^{5/3}$$

```
[Out] (-3*a^2)/x^(1/3) + 3*a*b*x^(2/3) + (3*b^2*x^(5/3))/5
```

Rubi [A] time = 0.0226305, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^2}{\sqrt[3]{x}}+3abx^{2/3}+\frac{3}{5}b^2x^{5/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^(4/3),x]
```

```
[Out] (-3*a^2)/x^(1/3) + 3*a*b*x^(2/3) + (3*b^2*x^(5/3))/5
```

Rubi in Sympy [A] time = 4.33843, size = 31, normalized size = 0.97

$$-\frac{3a^2}{\sqrt[3]{x}}+3abx^{\frac{2}{3}}+\frac{3b^2x^{\frac{5}{3}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(4/3),x)
```

```
[Out] -3*a**2/x**(1/3) + 3*a*b*x**(2/3) + 3*b**2*x**(5/3)/5
```

Mathematica [A] time = 0.0102807, size = 27, normalized size = 0.84

$$\frac{3\left(-5a^2+5abx+b^2x^2\right)}{5\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^(4/3),x]
```

```
[Out] (3*(-5*a^2 + 5*a*b*x + b^2*x^2))/(5*x^(1/3))
```

Maple [A] time = 0.007, size = 25, normalized size = 0.8

$$-\frac{-3\,b^2x^2-15\,abx+15\,a^2}{5}\frac{1}{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^(4/3),x)
```

```
[Out] -3/5*(-b^2*x^2-5*a*b*x+5*a^2)/x^(1/3)
```

Maxima [A] time = 1.3439, size = 32, normalized size = 1.

$$\frac{3}{5}\,b^2x^{\frac{5}{3}}+3\,abx^{\frac{2}{3}}-\frac{3\,a^2}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/5*b^2*x^(5/3) + 3*a*b*x^(2/3) - 3*a^2/x^(1/3)
```

Fricas [A] time = 0.203759, size = 31, normalized size = 0.97

$$\frac{3\left(b^2x^2+5\,abx-5\,a^2\right)}{5\,x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/5*(b^2*x^2 + 5*a*b*x - 5*a^2)/x^(1/3)
```

Sympy [A] time = 6.74545, size = 1413, normalized size = 44.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(4/3),x)
```

```
[Out] Piecewise((-27*a**(29/3)*b**(1/3)*(-1 + b*(a/b + x)/a)**(2/3)/(-5
*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*
b**3*(a/b + x)**3) - 27*a**(29/3)*b**(1/3)*exp(5*I*pi/3)/(-5*a**8
 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*
(a/b + x)**3) + 63*a**(26/3)*b**(4/3)*(-1 + b*(a/b + x)/a)**(2/3)
*(a/b + x)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x
)**2 + 5*a**5*b**3*(a/b + x)**3) + 81*a**(26/3)*b**(4/3)*(a/b + x
)*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/
b + x)**2 + 5*a**5*b**3*(a/b + x)**3) - 42*a**(23/3)*b**(7/3)*(-1
 + b*(a/b + x)/a)**(2/3)*(a/b + x)**2/(-5*a**8 + 15*a**7*b*(a/b +
 x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)**3) - 81*
a**(23/3)*b**(7/3)*(a/b + x)**2*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*
b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)**
3) + 3*a**(20/3)*b**(10/3)*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)*
*3/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5
*a**5*b**3*(a/b + x)**3) + 27*a**(20/3)*b**(10/3)*(a/b + x)**3*ex
p(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b +
x)**2 + 5*a**5*b**3*(a/b + x)**3) + 3*a**(17/3)*b**(13/3)*(-1 + b
*(a/b + x)/a)**(2/3)*(a/b + x)**4/(-5*a**8 + 15*a**7*b*(a/b + x)
- 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)**3), Abs(b*(a
/b + x)/a) > 1), (27*a**(29/3)*b**(1/3)*(1 - b*(a/b + x)/a)**(2/3
)*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/
b + x)**2 + 5*a**5*b**3*(a/b + x)**3) - 27*a**(29/3)*b**(1/3)*exp
(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x
)**2 + 5*a**5*b**3*(a/b + x)**3) - 63*a**(26/3)*b**(4/3)*(1 - b*(
a/b + x)/a)**(2/3)*(a/b + x)*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(
a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)**3)
+ 81*a**(26/3)*b**(4/3)*(a/b + x)*exp(5*I*pi/3)/(-5*a**8 + 15*a**
7*b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)
**3) + 42*a**(23/3)*b**(7/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)
**2*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(
a/b + x)**2 + 5*a**5*b**3*(a/b + x)**3) - 81*a**(23/3)*b**(7/3)*(
a/b + x)**2*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**
6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)**3) - 3*a**(20/3)*b**
(10/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**3*exp(5*I*pi/3)/(-5*
a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b
**3*(a/b + x)**3) + 27*a**(20/3)*b**(10/3)*(a/b + x)**3*exp(5*I*p
i/3)/(-5*a**8 + 15*a**7*b*(a/b + x) - 15*a**6*b**2*(a/b + x)**2 +
 5*a**5*b**3*(a/b + x)**3) - 3*a**(17/3)*b**(13/3)*(1 - b*(a/b +
x)/a)**(2/3)*(a/b + x)**4*exp(5*I*pi/3)/(-5*a**8 + 15*a**7*b*(a/b
 + x) - 15*a**6*b**2*(a/b + x)**2 + 5*a**5*b**3*(a/b + x)**3), Tr
ue))
```

GIAC/XCAS [A] time = 0.203938, size = 32, normalized size = 1.

$$\frac{3}{5}\,b^{2}x^{\frac{5}{3}} + 3\,abx^{\frac{2}{3}} - \frac{3\,a^{2}}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(4/3),x, algorithm="giac")
```

```
[Out] 3/5*b^2*x^(5/3) + 3*a*b*x^(2/3) - 3*a^2/x^(1/3)
```

3.665 $\int \frac{(a+bx)^2}{x^{5/3}}\,dx$

Optimal. Leaf size=34

$$-\frac{3a^2}{2x^{2/3}}+6ab\sqrt[3]{x}+\frac{3}{4}b^2x^{4/3}$$

```
[Out] (-3*a^2)/(2*x^(2/3)) + 6*a*b*x^(1/3) + (3*b^2*x^(4/3))/4
```

Rubi [A] time = 0.0224129, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^2}{2x^{2/3}}+6ab\sqrt[3]{x}+\frac{3}{4}b^2x^{4/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/x^(5/3),x]
```

```
[Out] (-3*a^2)/(2*x^(2/3)) + 6*a*b*x^(1/3) + (3*b^2*x^(4/3))/4
```

Rubi in Sympy [A] time = 4.26118, size = 32, normalized size = 0.94

$$-\frac{3a^2}{2x^{\frac{2}{3}}}+6ab\sqrt[3]{x}+\frac{3b^2x^{\frac{4}{3}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**(5/3),x)
```

```
[Out] -3*a**2/(2*x**(2/3)) + 6*a*b*x**(1/3) + 3*b**2*x**(4/3)/4
```

Mathematica [A] time = 0.00990635, size = 27, normalized size = 0.79

$$\frac{3\left(-2a^2+8abx+b^2x^2\right)}{4x^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/x^(5/3),x]
```

```
[Out] (3*(-2*a^2 + 8*a*b*x + b^2*x^2))/(4*x^(2/3))
```

Maple [A] time = 0.007, size = 25, normalized size = 0.7

$$-\frac{-3\,b^2x^2-24\,abx+6\,a^2}{4}x^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^(5/3),x)
```

```
[Out] -3/4*(-b^2*x^2-8*a*b*x+2*a^2)/x^(2/3)
```

Maxima [A] time = 1.34407, size = 32, normalized size = 0.94

$$\frac{3}{4}\,b^2x^{\frac{4}{3}}+6\,abx^{\frac{1}{3}}-\frac{3\,a^2}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^(5/3),x, algorithm="maxima")
```

```
[Out] 3/4*b^2*x^(4/3) + 6*a*b*x^(1/3) - 3/2*a^2/x^(2/3)
```

Fricas [A] time = 0.212656, size = 31, normalized size = 0.91

$$\frac{3\left(b^2x^2+8\,abx-2\,a^2\right)}{4\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/x^(5/3),x, algorithm="fricas")
```

```
[Out] 3/4*(b^2*x^2 + 8*a*b*x - 2*a^2)/x^(2/3)
```

Sympy [A] time = 7.00233, size = 1413, normalized size = 41.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**(5/3),x)
```

```
[Out] Piecewise((-27*a**(28/3)*b**(2/3)*(-1 + b*(a/b + x)/a)**(1/3)/(-4
*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*
b**3*(a/b + x)**3) - 27*a**(28/3)*b**(2/3)*exp(4*I*pi/3)/(-4*a**8
 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*
(a/b + x)**3) + 72*a**(25/3)*b**(5/3)*(-1 + b*(a/b + x)/a)**(1/3)
*(a/b + x)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b + x
)**2 + 4*a**5*b**3*(a/b + x)**3) + 81*a**(25/3)*b**(5/3)*(a/b + x
)*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/
b + x)**2 + 4*a**5*b**3*(a/b + x)**3) - 60*a**(22/3)*b**(8/3)*(-1
 + b*(a/b + x)/a)**(1/3)*(a/b + x)**2/(-4*a**8 + 12*a**7*b*(a/b +
 x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**3) - 81*
a**(22/3)*b**(8/3)*(a/b + x)**2*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*
b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**
3) + 12*a**(19/3)*b**(11/3)*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)
**3/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2 +
4*a**5*b**3*(a/b + x)**3) + 27*a**(19/3)*b**(11/3)*(a/b + x)**3*e
xp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b +
 x)**2 + 4*a**5*b**3*(a/b + x)**3) + 3*a**(16/3)*b**(14/3)*(-1 +
b*(a/b + x)/a)**(1/3)*(a/b + x)**4/(-4*a**8 + 12*a**7*b*(a/b + x)
 - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**3), Abs(b*(
a/b + x)/a) > 1), (27*a**(28/3)*b**(2/3)*(1 - b*(a/b + x)/a)**(1/
3)*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a
/b + x)**2 + 4*a**5*b**3*(a/b + x)**3) - 27*a**(28/3)*b**(2/3)*ex
p(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b +
x)**2 + 4*a**5*b**3*(a/b + x)**3) - 72*a**(25/3)*b**(5/3)*(1 - b*
(a/b + x)/a)**(1/3)*(a/b + x)*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*
(a/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**3)
 + 81*a**(25/3)*b**(5/3)*(a/b + x)*exp(4*I*pi/3)/(-4*a**8 + 12*a*
*7*b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x
)**3) + 60*a**(22/3)*b**(8/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x
)**2*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*
(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**3) - 81*a**(22/3)*b**(8/3)*
(a/b + x)**2*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a*
*6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**3) - 12*a**(19/3)*b
**(11/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**3*exp(4*I*pi/3)/(-
4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5
*b**3*(a/b + x)**3) + 27*a**(19/3)*b**(11/3)*(a/b + x)**3*exp(4*I
*pi/3)/(-4*a**8 + 12*a**7*b*(a/b + x) - 12*a**6*b**2*(a/b + x)**2
 + 4*a**5*b**3*(a/b + x)**3) - 3*a**(16/3)*b**(14/3)*(1 - b*(a/b
+ x)/a)**(1/3)*(a/b + x)**4*exp(4*I*pi/3)/(-4*a**8 + 12*a**7*b*(a
/b + x) - 12*a**6*b**2*(a/b + x)**2 + 4*a**5*b**3*(a/b + x)**3),
True))
```

GIAC/XCAS [A] time = 0.205245, size = 32, normalized size = 0.94

$$\frac{3}{4}\,b^2x^{\frac{4}{3}} + 6\,abx^{\frac{1}{3}} - \frac{3\,a^2}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/x^(5/3),x, algorithm="giac")
```

```
[Out] 3/4*b^2*x^(4/3) + 6*a*b*x^(1/3) - 3/2*a^2/x^(2/3)
```

3.666 $\int x^{5/3}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{3}{8}a^3x^{8/3}+\frac{9}{11}a^2bx^{11/3}+\frac{9}{14}ab^2x^{14/3}+\frac{3}{17}b^3x^{17/3}$$

```
[Out] (3*a^3*x^(8/3))/8 + (9*a^2*b*x^(11/3))/11 + (9*a*b^2*x^(14/3))/14
 + (3*b^3*x^(17/3))/17
```

Rubi [A] time = 0.0318671, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{8}a^3x^{8/3}+\frac{9}{11}a^2bx^{11/3}+\frac{9}{14}ab^2x^{14/3}+\frac{3}{17}b^3x^{17/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/3)*(a + b*x)^3,x]
```

```
[Out] (3*a^3*x^(8/3))/8 + (9*a^2*b*x^(11/3))/11 + (9*a*b^2*x^(14/3))/14
 + (3*b^3*x^(17/3))/17
```

Rubi in Sympy [A] time = 5.63492, size = 49, normalized size = 0.96

$$\frac{3a^3x^{\frac{8}{3}}}{8}+\frac{9a^2bx^{\frac{11}{3}}}{11}+\frac{9ab^2x^{\frac{14}{3}}}{14}+\frac{3b^3x^{\frac{17}{3}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/3)*(b*x+a)**3,x)
```

```
[Out] 3*a**3*x**(8/3)/8 + 9*a**2*b*x**(11/3)/11 + 9*a*b**2*x**(14/3)/14
 + 3*b**3*x**(17/3)/17
```

Mathematica [A] time = 0.0117731, size = 39, normalized size = 0.76

$$\frac{3x^{8/3}\left(1309a^3+2856a^2bx+2244ab^2x^2+616b^3x^3\right)}{10472}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/3)*(a + b*x)^3,x]
```

```
[Out] (3*x^(8/3)*(1309*a^3 + 2856*a^2*b*x + 2244*a*b^2*x^2 + 616*b^3*x^
3))/10472
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$\frac{1848\,b^3x^3+6732\,ab^2x^2+8568\,a^2bx+3927\,a^3}{10472}x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/3)*(b*x+a)^3,x)
```

```
[Out] 3/10472*x^(8/3)*(616*b^3*x^3+2244*a*b^2*x^2+2856*a^2*b*x+1309*a^3
)
```

Maxima [A] time = 1.34407, size = 47, normalized size = 0.92

$$\frac{3}{17}\,b^3x^{\frac{17}{3}}+\frac{9}{14}\,ab^2x^{\frac{14}{3}}+\frac{9}{11}\,a^2bx^{\frac{11}{3}}+\frac{3}{8}\,a^3x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(5/3),x, algorithm="maxima")
```

```
[Out] 3/17*b^3*x^(17/3) + 9/14*a*b^2*x^(14/3) + 9/11*a^2*b*x^(11/3) + 3
/8*a^3*x^(8/3)
```

Fricas [A] time = 0.212231, size = 54, normalized size = 1.06

$$\frac{3}{10472}\left(616\,b^3x^5+2244\,ab^2x^4+2856\,a^2bx^3+1309\,a^3x^2\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(5/3),x, algorithm="fricas")
```

```
[Out] 3/10472*(616*b^3*x^5 + 2244*a*b^2*x^4 + 2856*a^2*b*x^3 + 1309*a^3
*x^2)*x^(2/3)
```

Sympy [A] time = 15.0811, size = 5345, normalized size = 104.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3)*(b*x+a)**3,x)
```

```
[Out] Piecewise((243*a**(77/3)*(-1 + b*(a/b + x)/a)**(2/3)/(10472*a**20
*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14
/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a
**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5
+ 10472*a**14*b**(26/3)*(a/b + x)**6) + 243*a**(77/3)*exp(17*I*pi
/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157
080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b +
x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/
3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) - 1296*a**(
74/3)*b*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)/(10472*a**20*b**(8/
3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/
b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b*
*(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472
*a**14*b**(26/3)*(a/b + x)**6) - 1458*a**(74/3)*b*(a/b + x)*exp(1
7*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x)
 + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(
a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b
**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 280
8*a**(71/3)*b**2*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**2/(10472*
a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b
**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157
080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x
)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 3645*a**(71/3)*b**2*
(a/b + x)**2*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b
**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440
*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)*
*4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(
a/b + x)**6) - 3120*a**(68/3)*b**3*(-1 + b*(a/b + x)/a)**(2/3)*(a
/b + x)**3/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x
) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*
(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*
b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) - 48
60*a**(68/3)*b**3*(a/b + x)**3*exp(17*I*pi/3)/(10472*a**20*b**(8/
3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/
b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b*
*(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472
*a**14*b**(26/3)*(a/b + x)**6) - 798*a**(65/3)*b**4*(-1 + b*(a/b
+ x)/a)**(2/3)*(a/b + x)**4/(10472*a**20*b**(8/3) - 62832*a**19*b
**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440
*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)*
*4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(
a/b + x)**6) + 3645*a**(65/3)*b**4*(a/b + x)**4*exp(17*I*pi/3)/(1
0472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a*
*18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3
+ 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/
b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 16968*a**(62/3)
```

```
*b**5*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**5/(10472*a**20*b**(8
/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a
/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b
**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 1047
2*a**14*b**(26/3)*(a/b + x)**6) - 1458*a**(62/3)*b**5*(a/b + x)**
5*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a
/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(
17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*
a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6
) - 49812*a**(59/3)*b**6*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**6
/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080
*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)*
*3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*
(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 243*a**(59/3
)*b**6*(a/b + x)**6*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*
a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 -
 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/
b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(
26/3)*(a/b + x)**6) + 79032*a**(56/3)*b**7*(-1 + b*(a/b + x)/a)**
(2/3)*(a/b + x)**7/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*
(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b*
*(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 6283
2*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)*
*6) - 75165*a**(53/3)*b**8*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)*
*8/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 1570
80*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x
)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3
)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 42888*a**(
50/3)*b**9*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**9/(10472*a**20*
b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/
3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a*
*16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 +
 10472*a**14*b**(26/3)*(a/b + x)**6) - 13596*a**(47/3)*b**10*(-1
+ b*(a/b + x)/a)**(2/3)*(a/b + x)**10/(10472*a**20*b**(8/3) - 628
32*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**
2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*
(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b
**(26/3)*(a/b + x)**6) + 1848*a**(44/3)*b**11*(-1 + b*(a/b + x)/a
)**(2/3)*(a/b + x)**11/(10472*a**20*b**(8/3) - 62832*a**19*b**(11
/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**1
7*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 -
62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b +
 x)**6), Abs(b*(a/b + x)/a) > 1), (-243*a**(77/3)*(1 - b*(a/b + x
)/a)**(2/3)*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b*
*(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*
a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**
4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a
/b + x)**6) + 243*a**(77/3)*exp(17*I*pi/3)/(10472*a**20*b**(8/3)
- 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b +
 x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(2
0/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a*
*14*b**(26/3)*(a/b + x)**6) + 1296*a**(74/3)*b*(1 - b*(a/b + x)/a
)**(2/3)*(a/b + x)*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a
**19*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 -
209440*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b
 + x)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(2
```

6/3)*(a/b + x)**6) - 1458*a**(74/3)*b*(a/b + x)*exp(17*I*pi/3)/(1
0472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a*
*18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3
+ 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/
b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) - 2808*a**(71/3)*
b**2*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**2*exp(17*I*pi/3)/(1047
2*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18
*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 1
57080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b +
 x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 3645*a**(71/3)*b**
2*(a/b + x)**2*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19
*b**(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 2094
40*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x
)**4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)
*(a/b + x)**6) + 3120*a**(68/3)*b**3*(1 - b*(a/b + x)/a)**(2/3)*(
a/b + x)**3*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b*
(11/3)(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*
a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**
4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a
/b + x)**6) - 4860*a**(68/3)*b**3*(a/b + x)**3*exp(17*I*pi/3)/(10
472*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**
18*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 +
 157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b
 + x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 798*a**(65/3)*b*
4(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**4*exp(17*I*pi/3)/(10472*
a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*b
(14/3)*(a/b + x)2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 157
080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b + x
)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 3645*a**(65/3)*b**4*
(a/b + x)**4*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b
(11/3)*(a/b + x) + 157080*a18*b**(14/3)*(a/b + x)**2 - 209440
*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)*
*4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(
a/b + x)**6) - 16968*a**(62/3)*b**5*(1 - b*(a/b + x)/a)**(2/3)*(a
/b + x)**5*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**
(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a
17*b(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4
 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/
b + x)**6) - 1458*a**(62/3)*b**5*(a/b + x)**5*exp(17*I*pi/3)/(104
72*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**1
8*b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 +
157080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b
+ x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 49812*a**(59/3)*b
6*(1 - b*(a/b + x)/a)(2/3)*(a/b + x)**6*exp(17*I*pi/3)/(10472
*a**20*b**(8/3) - 62832*a**19*b**(11/3)*(a/b + x) + 157080*a**18*
b**(14/3)*(a/b + x)**2 - 209440*a**17*b**(17/3)*(a/b + x)**3 + 15
7080*a**16*b**(20/3)*(a/b + x)**4 - 62832*a**15*b**(23/3)*(a/b +
x)**5 + 10472*a**14*b**(26/3)*(a/b + x)**6) + 243*a**(59/3)*b**6*
(a/b + x)**6*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b
(11/3)*(a/b + x) + 157080*a18*b**(14/3)*(a/b + x)**2 - 209440
*a**17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)*
*4 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(
a/b + x)**6) - 79032*a**(56/3)*b**7*(1 - b*(a/b + x)/a)**(2/3)*(a
/b + x)**7*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**
(11/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a
17*b(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4

```
 - 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/
b + x)**6) + 75165*a**(53/3)*b**8*(1 - b*(a/b + x)/a)**(2/3)*(a/b
 + x)**8*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(1
1/3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**
17*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 -
 62832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b
+ x)**6) - 42888*a**(50/3)*b**9*(1 - b*(a/b + x)/a)**(2/3)*(a/b +
 x)**9*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/
3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17
*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 6
2832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b +
x)**6) + 13596*a**(47/3)*b**10*(1 - b*(a/b + x)/a)**(2/3)*(a/b +
x)**10*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/
3)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17
*b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 6
2832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b +
x)**6) - 1848*a**(44/3)*b**11*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x
)**11*exp(17*I*pi/3)/(10472*a**20*b**(8/3) - 62832*a**19*b**(11/3
)*(a/b + x) + 157080*a**18*b**(14/3)*(a/b + x)**2 - 209440*a**17*
b**(17/3)*(a/b + x)**3 + 157080*a**16*b**(20/3)*(a/b + x)**4 - 62
832*a**15*b**(23/3)*(a/b + x)**5 + 10472*a**14*b**(26/3)*(a/b + x
)**6), True))
```

GIAC/XCAS [A] time = 0.205333, size = 47, normalized size = 0.92

$$\frac{3}{17}\,b^{3}x^{\frac{17}{3}}+\frac{9}{14}\,ab^{2}x^{\frac{14}{3}}+\frac{9}{11}\,a^{2}bx^{\frac{11}{3}}+\frac{3}{8}\,a^{3}x^{\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(5/3),x, algorithm="giac")
```

```
[Out] 3/17*b^3*x^(17/3) + 9/14*a*b^2*x^(14/3) + 9/11*a^2*b*x^(11/3) + 3
/8*a^3*x^(8/3)
```

3.667 $\int x^{4/3}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{3}{7}a^3x^{7/3}+\frac{9}{10}a^2bx^{10/3}+\frac{9}{13}ab^2x^{13/3}+\frac{3}{16}b^3x^{16/3}$$

```
[Out] (3*a^3*x^(7/3))/7 + (9*a^2*b*x^(10/3))/10 + (9*a*b^2*x^(13/3))/13
 + (3*b^3*x^(16/3))/16
```

Rubi [A] time = 0.0312579, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{7}a^3x^{7/3}+\frac{9}{10}a^2bx^{10/3}+\frac{9}{13}ab^2x^{13/3}+\frac{3}{16}b^3x^{16/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3)*(a + b*x)^3,x]
```

```
[Out] (3*a^3*x^(7/3))/7 + (9*a^2*b*x^(10/3))/10 + (9*a*b^2*x^(13/3))/13
 + (3*b^3*x^(16/3))/16
```

Rubi in Sympy [A] time = 5.48195, size = 49, normalized size = 0.96

$$\frac{3a^3x^{\frac{7}{3}}}{7}+\frac{9a^2bx^{\frac{10}{3}}}{10}+\frac{9ab^2x^{\frac{13}{3}}}{13}+\frac{3b^3x^{\frac{16}{3}}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3)*(b*x+a)**3,x)
```

```
[Out] 3*a**3*x**(7/3)/7 + 9*a**2*b*x**(10/3)/10 + 9*a*b**2*x**(13/3)/13
 + 3*b**3*x**(16/3)/16
```

Mathematica [A] time = 0.0110193, size = 39, normalized size = 0.76

$$\frac{3x^{7/3}\left(1040a^3+2184a^2bx+1680ab^2x^2+455b^3x^3\right)}{7280}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3)*(a + b*x)^3,x]
```

```
[Out] (3*x^(7/3)*(1040*a^3 + 2184*a^2*b*x + 1680*a*b^2*x^2 + 455*b^3*x^
3))/7280
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$\frac{1365\,b^3x^3+5040\,ab^2x^2+6552\,a^2bx+3120\,a^3}{7280}x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(4/3)*(b*x+a)^3,x)
```

```
[Out] 3/7280*x^(7/3)*(455*b^3*x^3+1680*a*b^2*x^2+2184*a^2*b*x+1040*a^3)
```

Maxima [A] time = 1.34412, size = 47, normalized size = 0.92

$$\frac{3}{16}\,b^3x^{\frac{16}{3}}+\frac{9}{13}\,ab^2x^{\frac{13}{3}}+\frac{9}{10}\,a^2bx^{\frac{10}{3}}+\frac{3}{7}\,a^3x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/16*b^3*x^(16/3) + 9/13*a*b^2*x^(13/3) + 9/10*a^2*b*x^(10/3) + 3
/7*a^3*x^(7/3)
```

Fricas [A] time = 0.20489, size = 54, normalized size = 1.06

$$\frac{3}{7280}\left(455\,b^3x^5+1680\,ab^2x^4+2184\,a^2bx^3+1040\,a^3x^2\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/7280*(455*b^3*x^5 + 1680*a*b^2*x^4 + 2184*a^2*b*x^3 + 1040*a^3*
x^2)*x^(1/3)
```

Sympy [A] time = 13.9761, size = 5345, normalized size = 104.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3)*(b*x+a)**3,x)
```

```
[Out] Piecewise((243*a**(76/3)*(-1 + b*(a/b + x)/a)**(1/3)/(7280*a**20*
b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/
3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a*
*16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 +
 7280*a**14*b**(25/3)*(a/b + x)**6) + 243*a**(76/3)*exp(16*I*pi/3
)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200
*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)*
*3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*
(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 1377*a**(73/3
)*b*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)/(7280*a**20*b**(7/3) -
43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x
)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/
3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14
*b**(25/3)*(a/b + x)**6) - 1458*a**(73/3)*b*(a/b + x)*exp(16*I*pi
/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 1092
00*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x
)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3
)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 3213*a**(70
/3)*b**2*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**2/(7280*a**20*b**
(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*
(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16
*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 72
80*a**14*b**(25/3)*(a/b + x)**6) + 3645*a**(70/3)*b**2*(a/b + x)*
*2*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a
/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(
16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*
a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6)
 - 3927*a**(67/3)*b**3*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**3/(
7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a*
*18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3
+ 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/
b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 4860*a**(67/3)*b
**3*(a/b + x)**3*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**1
9*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145
600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b +
x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)
*(a/b + x)**6) + 798*a**(64/3)*b**4*(-1 + b*(a/b + x)/a)**(1/3)*(
a/b + x)**4/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x
) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*
(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*
b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 364
5*a**(64/3)*b**4*(a/b + x)**4*exp(16*I*pi/3)/(7280*a**20*b**(7/3)
 - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b
+ x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(
19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a*
*14*b**(25/3)*(a/b + x)**6) + 11382*a**(61/3)*b**5*(-1 + b*(a/b +
```

```
 x)/a)**(1/3)*(a/b + x)**5/(7280*a**20*b**(7/3) - 43680*a**19*b**
(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a
**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4
 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b
 + x)**6) - 1458*a**(61/3)*b**5*(a/b + x)**5*exp(16*I*pi/3)/(7280
*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*
b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 10
9200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b +
x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 35238*a**(58/3)*b**6
*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**6/(7280*a**20*b**(7/3) -
43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x
)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/
3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14
*b**(25/3)*(a/b + x)**6) + 243*a**(58/3)*b**6*(a/b + x)**6*exp(16
*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) +
 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/
b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**
(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 56562*
a**(55/3)*b**7*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**7/(7280*a**
20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(
13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200
*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**
5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 54273*a**(52/3)*b**8*(-1
 + b*(a/b + x)/a)**(1/3)*(a/b + x)**8/(7280*a**20*b**(7/3) - 4368
0*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2
 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(
a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**
(25/3)*(a/b + x)**6) + 31227*a**(49/3)*b**9*(-1 + b*(a/b + x)/a)*
*(1/3)*(a/b + x)**9/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*
(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b*
*(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 4368
0*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**
6) - 9975*a**(46/3)*b**10*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**
10/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 10920
0*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)
**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)
*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 1365*a**(43/
3)*b**11*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**11/(7280*a**20*b*
*(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)
*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**1
6*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7
280*a**14*b**(25/3)*(a/b + x)**6), Abs(b*(a/b + x)/a) > 1), (-243
*a**(76/3)*(1 - b*(a/b + x)/a)**(1/3)*exp(16*I*pi/3)/(7280*a**20*
b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/
3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a*
*16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 +
 7280*a**14*b**(25/3)*(a/b + x)**6) + 243*a**(76/3)*exp(16*I*pi/3
)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200
*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)*
*3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*
(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 1377*a**(73/3
)*b*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)*exp(16*I*pi/3)/(7280*a**
20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(
13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200
*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**
5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 1458*a**(73/3)*b*(a/b +
```

x)*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a
/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(
16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*
a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6)
 - 3213*a**(70/3)*b**2*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**2*ex
p(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b +
x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)
*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15
*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 36
45*a**(70/3)*b**2*(a/b + x)**2*exp(16*I*pi/3)/(7280*a**20*b**(7/3
) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b
 + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**
(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a
14*b(25/3)*(a/b + x)**6) + 3927*a**(67/3)*b**3*(1 - b*(a/b +
x)/a)**(1/3)*(a/b + x)**3*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 4
3680*a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)
2 - 145600*a17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3
)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*
b**(25/3)*(a/b + x)**6) - 4860*a**(67/3)*b**3*(a/b + x)**3*exp(16
*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) +
 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/
b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**
(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 798*a*
*(64/3)*b**4*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**4*exp(16*I*pi/
3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 10920
0*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)
3 + 109200*a16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)
*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 3645*a**(64/
3)*b**4*(a/b + x)**4*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*
a**19*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 -
 145600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/
b + x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(2
5/3)*(a/b + x)**6) - 11382*a**(61/3)*b**5*(1 - b*(a/b + x)/a)**(1
/3)*(a/b + x)**5*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**1
9*b**(10/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145
600*a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b +
x)**4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)
*(a/b + x)**6) - 1458*a**(61/3)*b**5*(a/b + x)**5*exp(16*I*pi/3)/
(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a
18*b(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3
 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a
/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 35238*a**(58/3)
*b**6*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**6*exp(16*I*pi/3)/(728
0*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x) + 109200*a**18
*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a/b + x)**3 + 1
09200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b**(22/3)*(a/b +
 x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) + 243*a**(58/3)*b**6*
(a/b + x)**6*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b*
(10/3)(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*
a**17*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**
4 - 43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/
b + x)**6) - 56562*a**(55/3)*b**7*(1 - b*(a/b + x)/a)**(1/3)*(a/b
 + x)**7*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10
/3)*(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**1
7*b**(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 -
43680*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b +

```
x)**6) + 54273*a**(52/3)*b**8*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x
)**8*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*
(a/b + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b*
*(16/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 4368
0*a**15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**
6) - 31227*a**(49/3)*b**9*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**9
*exp(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b
 + x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16
/3)*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a*
*15*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) +
 9975*a**(46/3)*b**10*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**10*ex
p(16*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b +
x) + 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)
*(a/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15
*b**(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6) - 13
65*a**(43/3)*b**11*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**11*exp(1
6*I*pi/3)/(7280*a**20*b**(7/3) - 43680*a**19*b**(10/3)*(a/b + x)
+ 109200*a**18*b**(13/3)*(a/b + x)**2 - 145600*a**17*b**(16/3)*(a
/b + x)**3 + 109200*a**16*b**(19/3)*(a/b + x)**4 - 43680*a**15*b*
*(22/3)*(a/b + x)**5 + 7280*a**14*b**(25/3)*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.202938, size = 47, normalized size = 0.92

$$\frac{3}{16}\,b^3x^{\frac{16}{3}}+\frac{9}{13}\,ab^2x^{\frac{13}{3}}+\frac{9}{10}\,a^2bx^{\frac{10}{3}}+\frac{3}{7}\,a^3x^{\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(4/3),x, algorithm="giac")
```

```
[Out] 3/16*b^3*x^(16/3) + 9/13*a*b^2*x^(13/3) + 9/10*a^2*b*x^(10/3) + 3
/7*a^3*x^(7/3)
```

3.668 $\int x^{2/3}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{3}{5}a^3x^{5/3}+\frac{9}{8}a^2bx^{8/3}+\frac{9}{11}ab^2x^{11/3}+\frac{3}{14}b^3x^{14/3}$$

```
[Out] (3*a^3*x^(5/3))/5 + (9*a^2*b*x^(8/3))/8 + (9*a*b^2*x^(11/3))/11 +
 (3*b^3*x^(14/3))/14
```

Rubi [A] time = 0.0310873, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{5}a^3x^{5/3}+\frac{9}{8}a^2bx^{8/3}+\frac{9}{11}ab^2x^{11/3}+\frac{3}{14}b^3x^{14/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2/3)*(a + b*x)^3,x]
```

```
[Out] (3*a^3*x^(5/3))/5 + (9*a^2*b*x^(8/3))/8 + (9*a*b^2*x^(11/3))/11 +
 (3*b^3*x^(14/3))/14
```

Rubi in Sympy [A] time = 5.4749, size = 49, normalized size = 0.96

$$\frac{3a^3x^{\frac{5}{3}}}{5}+\frac{9a^2bx^{\frac{8}{3}}}{8}+\frac{9ab^2x^{\frac{11}{3}}}{11}+\frac{3b^3x^{\frac{14}{3}}}{14}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2/3)*(b*x+a)**3,x)
```

```
[Out] 3*a**3*x**(5/3)/5 + 9*a**2*b*x**(8/3)/8 + 9*a*b**2*x**(11/3)/11 +
 3*b**3*x**(14/3)/14
```

Mathematica [A] time = 0.0114333, size = 39, normalized size = 0.76

$$\frac{3x^{5/3}\left(616a^3+1155a^2bx+840ab^2x^2+220b^3x^3\right)}{3080}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2/3)*(a + b*x)^3,x]
```

```
[Out] (3*x^(5/3)*(616*a^3 + 1155*a^2*b*x + 840*a*b^2*x^2 + 220*b^3*x^3)
)/3080
```

Maple [A] time = 0.006, size = 36, normalized size = 0.7

$$\frac{660 b^3x^3 + 2520 ab^2x^2 + 3465 a^2bx + 1848 a^3}{3080}x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2/3)*(b*x+a)^3,x)
```

```
[Out] 3/3080*x^(5/3)*(220*b^3*x^3+840*a*b^2*x^2+1155*a^2*b*x+616*a^3)
```

Maxima [A] time = 1.34861, size = 47, normalized size = 0.92

$$\frac{3}{14} b^3x^{\frac{14}{3}} + \frac{9}{11} ab^2x^{\frac{11}{3}} + \frac{9}{8} a^2bx^{\frac{8}{3}} + \frac{3}{5} a^3x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(2/3),x, algorithm="maxima")
```

```
[Out] 3/14*b^3*x^(14/3) + 9/11*a*b^2*x^(11/3) + 9/8*a^2*b*x^(8/3) + 3/5
*a^3*x^(5/3)
```

Fricas [A] time = 0.223498, size = 51, normalized size = 1.

$$\frac{3}{3080} \left(220 b^3x^4 + 840 ab^2x^3 + 1155 a^2bx^2 + 616 a^3x\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(2/3),x, algorithm="fricas")
```

```
[Out] 3/3080*(220*b^3*x^4 + 840*a*b^2*x^3 + 1155*a^2*b*x^2 + 616*a^3*x)
*x^(2/3)
```

Sympy [A] time = 11.4821, size = 5054, normalized size = 99.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3)*(b*x+a)**3,x)
```

```
[Out] Piecewise((-243*a**(74/3)*(-1 + b*(a/b + x)/a)**(2/3)/(3080*a**20
*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3
)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16
*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 30
80*a**14*b**(23/3)*(a/b + x)**6) + 243*a**(74/3)*exp(20*I*pi/3)/(
3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**1
8*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 4
6200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b +
x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 1296*a**(71/3)*b*(-1
 + b*(a/b + x)/a)**(2/3)*(a/b + x)/(3080*a**20*b**(5/3) - 18480*a
**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61
600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x
)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*
(a/b + x)**6) - 1458*a**(71/3)*b*(a/b + x)*exp(20*I*pi/3)/(3080*a
**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(
11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a
**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5
+ 3080*a**14*b**(23/3)*(a/b + x)**6) - 2808*a**(68/3)*b**2*(-1 +
b*(a/b + x)/a)**(2/3)*(a/b + x)**2/(3080*a**20*b**(5/3) - 18480*a
**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61
600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x
)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*
(a/b + x)**6) + 3645*a**(68/3)*b**2*(a/b + x)**2*exp(20*I*pi/3)/(
3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**1
8*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 4
6200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b +
x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 3120*a**(65/3)*b**3*
(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**3/(3080*a**20*b**(5/3) - 1
8480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**
2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a
/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(
23/3)*(a/b + x)**6) - 4860*a**(65/3)*b**3*(a/b + x)**3*exp(20*I*p
i/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 4620
0*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)*
*3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(
a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) - 1050*a**(62/3)
*b**4*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**4/(3080*a**20*b**(5/
3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b
+ x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17
/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**1
4*b**(23/3)*(a/b + x)**6) + 3645*a**(62/3)*b**4*(a/b + x)**4*exp(
20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x)
+ 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b
 + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(2
0/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) - 4032*a**
(59/3)*b**5*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**5/(3080*a**20*
```

b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)
*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*
b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 308
0*a**14*b**(23/3)*(a/b + x)**6) - 1458*a**(59/3)*b**5*(a/b + x)**
5*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b
 + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3
)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15
*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 11
004*a**(56/3)*b**6*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**6/(3080
*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b*
(11/3)(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200
*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**
5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 243*a**(56/3)*b**6*(a/b
+ x)**6*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3
)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b*
(14/3)(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480
*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6
) - 14352*a**(53/3)*b**7*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**7
/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a*
*18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 +
 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b
+ x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 10485*a**(50/3)*b*
8(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**8/(3080*a**20*b**(5/3)
- 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x
)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)
*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b
(23/3)*(a/b + x)6) - 4080*a**(47/3)*b**9*(-1 + b*(a/b + x)/a)
(2/3)*(a/b + x)9/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*
(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(
14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a
15*b(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6)
+ 660*a**(44/3)*b**10*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**10/(
3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**1
8*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 4
6200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b +
x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6), Abs(b*(a/b + x)/a) >
1), (-243*a**(74/3)*(1 - b*(a/b + x)/a)**(2/3)*exp(20*I*pi/3)/(30
80*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*
b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 462
00*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)
5 + 3080*a14*b**(23/3)*(a/b + x)**6) + 243*a**(74/3)*exp(20*I
*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46
200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x
)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)
*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 1296*a**(71/
3)*b*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)*exp(20*I*pi/3)/(3080*a*
*20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(1
1/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a*
*16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 +
 3080*a**14*b**(23/3)*(a/b + x)**6) - 1458*a**(71/3)*b*(a/b + x)*
exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b +
 x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*
(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b
(20/3)*(a/b + x)5 + 3080*a**14*b**(23/3)*(a/b + x)**6) - 2808
*a**(68/3)*b**2*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**2*exp(20*I*
pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 462

```
00*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)
**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*
(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) + 3645*a**(68/3
)*b**2*(a/b + x)**2*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a
**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61
600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x
)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*
(a/b + x)**6) + 3120*a**(65/3)*b**3*(1 - b*(a/b + x)/a)**(2/3)*(a
/b + x)**3*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(
8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17
*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18
480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)
**6) - 4860*a**(65/3)*b**3*(a/b + x)**3*exp(20*I*pi/3)/(3080*a**2
0*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/
3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**1
6*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3
080*a**14*b**(23/3)*(a/b + x)**6) - 1050*a**(62/3)*b**4*(1 - b*(a
/b + x)/a)**(2/3)*(a/b + x)**4*exp(20*I*pi/3)/(3080*a**20*b**(5/3
) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b +
 x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/
3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14
*b**(23/3)*(a/b + x)**6) + 3645*a**(62/3)*b**4*(a/b + x)**4*exp(2
0*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) +
 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b
+ x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20
/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) - 4032*a**(
59/3)*b**5*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**5*exp(20*I*pi/3)
/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a*
*18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 +
 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b
+ x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6) - 1458*a**(59/3)*b**
5*(a/b + x)**5*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*
b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a
**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4
- 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b
+ x)**6) + 11004*a**(56/3)*b**6*(1 - b*(a/b + x)/a)**(2/3)*(a/b +
 x)**6*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)
*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**
(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*
a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6)
 + 243*a**(56/3)*b**6*(a/b + x)**6*exp(20*I*pi/3)/(3080*a**20*b**
(5/3) - 18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a
/b + x)**2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**
(17/3)*(a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a
**14*b**(23/3)*(a/b + x)**6) - 14352*a**(53/3)*b**7*(1 - b*(a/b +
 x)/a)**(2/3)*(a/b + x)**7*exp(20*I*pi/3)/(3080*a**20*b**(5/3) -
18480*a**19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)*
*2 - 61600*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(
a/b + x)**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**
(23/3)*(a/b + x)**6) + 10485*a**(50/3)*b**8*(1 - b*(a/b + x)/a)**
(2/3)*(a/b + x)**8*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a*
*19*b**(8/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 616
00*a**17*b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)
**4 - 18480*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(
a/b + x)**6) - 4080*a**(47/3)*b**9*(1 - b*(a/b + x)/a)**(2/3)*(a/
b + x)**9*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8
```

```
/3)*(a/b + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*
b**(14/3)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 184
80*a**15*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)*
*6) + 660*a**(44/3)*b**10*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**1
0*exp(20*I*pi/3)/(3080*a**20*b**(5/3) - 18480*a**19*b**(8/3)*(a/b
 + x) + 46200*a**18*b**(11/3)*(a/b + x)**2 - 61600*a**17*b**(14/3
)*(a/b + x)**3 + 46200*a**16*b**(17/3)*(a/b + x)**4 - 18480*a**15
*b**(20/3)*(a/b + x)**5 + 3080*a**14*b**(23/3)*(a/b + x)**6), Tru
e))
```

GIAC/XCAS [A] time = 0.209102, size = 47, normalized size = 0.92

$$\frac{3}{14}\,b^3x^{\frac{14}{3}} + \frac{9}{11}\,ab^2x^{\frac{11}{3}} + \frac{9}{8}\,a^2bx^{\frac{8}{3}} + \frac{3}{5}\,a^3x^{\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(2/3),x, algorithm="giac")
```

```
[Out] 3/14*b^3*x^(14/3) + 9/11*a*b^2*x^(11/3) + 9/8*a^2*b*x^(8/3) + 3/5
*a^3*x^(5/3)
```

3.669 $\int \sqrt[3]{x}(a+bx)^3\,dx$

Optimal. Leaf size=51

$$\frac{3}{4}a^3x^{4/3}+\frac{9}{7}a^2bx^{7/3}+\frac{9}{10}ab^2x^{10/3}+\frac{3}{13}b^3x^{13/3}$$

```
[Out] (3*a^3*x^(4/3))/4 + (9*a^2*b*x^(7/3))/7 + (9*a*b^2*x^(10/3))/10 +
 (3*b^3*x^(13/3))/13
```

Rubi [A] time = 0.0300442, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{4}a^3x^{4/3}+\frac{9}{7}a^2bx^{7/3}+\frac{9}{10}ab^2x^{10/3}+\frac{3}{13}b^3x^{13/3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3)*(a + b*x)^3,x]
```

```
[Out] (3*a^3*x^(4/3))/4 + (9*a^2*b*x^(7/3))/7 + (9*a*b^2*x^(10/3))/10 +
 (3*b^3*x^(13/3))/13
```

Rubi in Sympy [A] time = 5.77493, size = 49, normalized size = 0.96

$$\frac{3a^3x^{\frac{4}{3}}}{4}+\frac{9a^2bx^{\frac{7}{3}}}{7}+\frac{9ab^2x^{\frac{10}{3}}}{10}+\frac{3b^3x^{\frac{13}{3}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3)*(b*x+a)**3,x)
```

```
[Out] 3*a**3*x**(4/3)/4 + 9*a**2*b*x**(7/3)/7 + 9*a*b**2*x**(10/3)/10 +
 3*b**3*x**(13/3)/13
```

Mathematica [A] time = 0.0112458, size = 39, normalized size = 0.76

$$\frac{3x^{4/3}\left(455a^3+780a^2bx+546ab^2x^2+140b^3x^3\right)}{1820}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3)*(a + b*x)^3,x]

[Out] (3*x^(4/3)*(455*a^3 + 780*a^2*b*x + 546*a*b^2*x^2 + 140*b^3*x^3))
/1820
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$\frac{420\,b^3x^3 + 1638\,ab^2x^2 + 2340\,a^2bx + 1365\,a^3}{1820}x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/3)*(b*x+a)^3,x)

[Out] 3/1820*x^(4/3)*(140*b^3*x^3+546*a*b^2*x^2+780*a^2*b*x+455*a^3)
```

Maxima [A] time = 1.37448, size = 47, normalized size = 0.92

$$\frac{3}{13}\,b^3x^{\frac{13}{3}} + \frac{9}{10}\,ab^2x^{\frac{10}{3}} + \frac{9}{7}\,a^2bx^{\frac{7}{3}} + \frac{3}{4}\,a^3x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(1/3),x, algorithm="maxima")

[Out] 3/13*b^3*x^(13/3) + 9/10*a*b^2*x^(10/3) + 9/7*a^2*b*x^(7/3) + 3/4
*a^3*x^(4/3)
```

Fricas [A] time = 0.234238, size = 51, normalized size = 1.

$$\frac{3}{1820}\left(140\,b^3x^4 + 546\,ab^2x^3 + 780\,a^2bx^2 + 455\,a^3x\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(1/3),x, algorithm="fricas")

[Out] 3/1820*(140*b^3*x^4 + 546*a*b^2*x^3 + 780*a^2*b*x^2 + 455*a^3*x)*
x^(1/3)
```

Sympy [A] time = 11.0594, size = 5054, normalized size = 99.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3)*(b*x+a)**3,x)
```

```
[Out] Piecewise((-243*a**(73/3)*(-1 + b*(a/b + x)/a)**(1/3)/(1820*a**20
*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3
)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16
*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 18
20*a**14*b**(22/3)*(a/b + x)**6) + 243*a**(73/3)*exp(19*I*pi/3)/(
1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**1
8*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 2
7300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b +
x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 1377*a**(70/3)*b*(-1
 + b*(a/b + x)/a)**(1/3)*(a/b + x)/(1820*a**20*b**(4/3) - 10920*a
**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36
400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x
)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*
(a/b + x)**6) - 1458*a**(70/3)*b*(a/b + x)*exp(19*I*pi/3)/(1820*a
**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(
10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a
**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5
+ 1820*a**14*b**(22/3)*(a/b + x)**6) - 3213*a**(67/3)*b**2*(-1 +
b*(a/b + x)/a)**(1/3)*(a/b + x)**2/(1820*a**20*b**(4/3) - 10920*a
**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36
400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x
)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*
(a/b + x)**6) + 3645*a**(67/3)*b**2*(a/b + x)**2*exp(19*I*pi/3)/(
1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**1
8*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 2
7300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b +
x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 3927*a**(64/3)*b**3*
(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**3/(1820*a**20*b**(4/3) - 1
0920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**
2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a
/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(
22/3)*(a/b + x)**6) - 4860*a**(64/3)*b**3*(a/b + x)**3*exp(19*I*p
i/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 2730
0*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)*
*3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(
a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) - 2163*a**(61/3)
*b**4*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**4/(1820*a**20*b**(4/
3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b
+ x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16
/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**1
4*b**(22/3)*(a/b + x)**6) + 3645*a**(61/3)*b**4*(a/b + x)**4*exp(
19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x)
+ 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b
 + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(1
9/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) - 1827*a**
(58/3)*b**5*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**5/(1820*a**20*
```

```
b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)
*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*
b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 182
0*a**14*b**(22/3)*(a/b + x)**6) - 1458*a**(58/3)*b**5*(a/b + x)**
5*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b
 + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3
)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15
*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 65
73*a**(55/3)*b**6*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**6/(1820*
a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**
(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*
a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5
 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 243*a**(55/3)*b**6*(a/b +
 x)**6*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)
*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**
(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*
a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6)
 - 8787*a**(52/3)*b**7*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**7/(
1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**1
8*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 2
7300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b +
x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 6498*a**(49/3)*b**8*
(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**8/(1820*a**20*b**(4/3) - 1
0920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**
2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a
/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(
22/3)*(a/b + x)**6) - 2562*a**(46/3)*b**9*(-1 + b*(a/b + x)/a)**(
1/3)*(a/b + x)**9/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/
b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/
3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**1
5*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 4
20*a**(43/3)*b**10*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**10/(182
0*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b
**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 2730
0*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)*
*5 + 1820*a**14*b**(22/3)*(a/b + x)**6), Abs(b*(a/b + x)/a) > 1),
 (-243*a**(73/3)*(1 - b*(a/b + x)/a)**(1/3)*exp(19*I*pi/3)/(1820*
a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**
(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*
a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5
 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 243*a**(73/3)*exp(19*I*pi
/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300
*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**
3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a
/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 1377*a**(70/3)*
b*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)*exp(19*I*pi/3)/(1820*a**20
*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3
)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16
*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 18
20*a**14*b**(22/3)*(a/b + x)**6) - 1458*a**(70/3)*b*(a/b + x)*exp
(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x)
 + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/
b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(
19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) - 3213*a*
*(67/3)*b**2*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**2*exp(19*I*pi/
3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*
```

a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3
 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/
b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 3645*a**(67/3)*b
2*(a/b + x)2*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**1
9*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400
*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**
4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/
b + x)**6) + 3927*a**(64/3)*b**3*(1 - b*(a/b + x)/a)**(1/3)*(a/b
+ x)**3*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3
)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b*
(13/3)(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920
*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6
) - 4860*a**(64/3)*b**3*(a/b + x)**3*exp(19*I*pi/3)/(1820*a**20*b
(4/3) - 10920*a19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*
(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b
(16/3)*(a/b + x)4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820
*a**14*b**(22/3)*(a/b + x)**6) - 2163*a**(61/3)*b**4*(1 - b*(a/b
+ x)/a)**(1/3)*(a/b + x)**4*exp(19*I*pi/3)/(1820*a**20*b**(4/3) -
 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)
2 - 36400*a17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*
(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b*
(22/3)(a/b + x)**6) + 3645*a**(61/3)*b**4*(a/b + x)**4*exp(19*I
*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27
300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x
)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)
*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) - 1827*a**(58/
3)*b**5*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**5*exp(19*I*pi/3)/(1
820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18
*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27
300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x
)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) - 1458*a**(58/3)*b**5*(
a/b + x)**5*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**
(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**1
7*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 1
0920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x
)**6) + 6573*a**(55/3)*b**6*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)*
*6*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/
b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/
3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**1
5*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) + 2
43*a**(55/3)*b**6*(a/b + x)**6*exp(19*I*pi/3)/(1820*a**20*b**(4/3
) - 10920*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b +
 x)**2 - 36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/
3)*(a/b + x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14
*b**(22/3)*(a/b + x)**6) - 8787*a**(52/3)*b**7*(1 - b*(a/b + x)/a
)**(1/3)*(a/b + x)**7*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920
*a**19*b**(7/3)*(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 -
36400*a**17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b +
 x)**4 - 10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3
)*(a/b + x)**6) + 6498*a**(49/3)*b**8*(1 - b*(a/b + x)/a)**(1/3)*
(a/b + x)**8*exp(19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b*
(7/3)(a/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**
17*b**(13/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 -
10920*a**15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b +
x)**6) - 2562*a**(46/3)*b**9*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)
9*exp(19*I*pi/3)/(1820*a20*b**(4/3) - 10920*a**19*b**(7/3)*(a

```
/b + x) + 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13
/3)*(a/b + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**
15*b**(19/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6) +
420*a**(43/3)*b**10*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**10*exp(
19*I*pi/3)/(1820*a**20*b**(4/3) - 10920*a**19*b**(7/3)*(a/b + x)
+ 27300*a**18*b**(10/3)*(a/b + x)**2 - 36400*a**17*b**(13/3)*(a/b
 + x)**3 + 27300*a**16*b**(16/3)*(a/b + x)**4 - 10920*a**15*b**(1
9/3)*(a/b + x)**5 + 1820*a**14*b**(22/3)*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.203221, size = 47, normalized size = 0.92

$$\frac{3}{13}\,b^{3}x^{\frac{13}{3}}+\frac{9}{10}\,ab^{2}x^{\frac{10}{3}}+\frac{9}{7}\,a^{2}bx^{\frac{7}{3}}+\frac{3}{4}\,a^{3}x^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^(1/3),x, algorithm="giac")
```

```
[Out] 3/13*b^3*x^(13/3) + 9/10*a*b^2*x^(10/3) + 9/7*a^2*b*x^(7/3) + 3/4
*a^3*x^(4/3)
```

3.670 $\int \frac{(a+bx)^3}{\sqrt[3]{x}} \, dx$

Optimal. Leaf size=51

$$\frac{3}{2}a^3x^{2/3} + \frac{9}{5}a^2bx^{5/3} + \frac{9}{8}ab^2x^{8/3} + \frac{3}{11}b^3x^{11/3}$$

```
[Out] (3*a^3*x^(2/3))/2 + (9*a^2*b*x^(5/3))/5 + (9*a*b^2*x^(8/3))/8 + (
3*b^3*x^(11/3))/11
```

Rubi [A] time = 0.0305872, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{3}{2}a^3x^{2/3} + \frac{9}{5}a^2bx^{5/3} + \frac{9}{8}ab^2x^{8/3} + \frac{3}{11}b^3x^{11/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^(1/3),x]
```

```
[Out] (3*a^3*x^(2/3))/2 + (9*a^2*b*x^(5/3))/5 + (9*a*b^2*x^(8/3))/8 + (
3*b^3*x^(11/3))/11
```

Rubi in Sympy [A] time = 5.76087, size = 49, normalized size = 0.96

$$\frac{3a^3x^{\frac{2}{3}}}{2} + \frac{9a^2bx^{\frac{5}{3}}}{5} + \frac{9ab^2x^{\frac{8}{3}}}{8} + \frac{3b^3x^{\frac{11}{3}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**(1/3),x)
```

```
[Out] 3*a**3*x**(2/3)/2 + 9*a**2*b*x**(5/3)/5 + 9*a*b**2*x**(8/3)/8 + 3
*b**3*x**(11/3)/11
```

Mathematica [A] time = 0.0105137, size = 39, normalized size = 0.76

$$\frac{3}{440}x^{2/3}\left(220a^3 + 264a^2bx + 165ab^2x^2 + 40b^3x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^(1/3),x]
```

```
[Out] (3*x^(2/3)*(220*a^3 + 264*a^2*b*x + 165*a*b^2*x^2 + 40*b^3*x^3))/
440
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$\frac{120\,b^3x^3+495\,ab^2x^2+792\,a^2bx+660\,a^3}{440}x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(1/3),x)
```

```
[Out] 3/440*x^(2/3)*(40*b^3*x^3+165*a*b^2*x^2+264*a^2*b*x+220*a^3)
```

Maxima [A] time = 1.34813, size = 47, normalized size = 0.92

$$\frac{3}{11}\,b^3x^{\frac{11}{3}}+\frac{9}{8}\,ab^2x^{\frac{8}{3}}+\frac{9}{5}\,a^2bx^{\frac{5}{3}}+\frac{3}{2}\,a^3x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(1/3),x, algorithm="maxima")
```

```
[Out] 3/11*b^3*x^(11/3) + 9/8*a*b^2*x^(8/3) + 9/5*a^2*b*x^(5/3) + 3/2*a
^3*x^(2/3)
```

Fricas [A] time = 0.210567, size = 47, normalized size = 0.92

$$\frac{3}{440}\left(40\,b^3x^3+165\,ab^2x^2+264\,a^2bx+220\,a^3\right)x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(1/3),x, algorithm="fricas")
```

```
[Out] 3/440*(40*b^3*x^3 + 165*a*b^2*x^2 + 264*a^2*b*x + 220*a^3)*x^(2/3
)
```

Sympy [A] time = 10.7005, size = 4763, normalized size = 93.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(1/3),x)
```

```
[Out] Piecewise((243*a**(71/3)*(-1 + b*(a/b + x)/a)**(2/3)/(440*a**20*b
**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/
b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14
/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*
b**(20/3)*(a/b + x)**6) + 243*a**(71/3)*exp(11*I*pi/3)/(440*a**20
*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(
a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(
14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**1
4*b**(20/3)*(a/b + x)**6) - 1296*a**(68/3)*b*(-1 + b*(a/b + x)/a)
**(2/3)*(a/b + x)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b
+ x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a
/b + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(1
7/3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) - 1458*a**(
68/3)*b*(a/b + x)*exp(11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19
*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**
17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2
640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)*
*6) + 2808*a**(65/3)*b**2*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**
2/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**1
8*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 660
0*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**
5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 3645*a**(65/3)*b**2*(a/b
+ x)**2*exp(11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*
(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/
3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*
b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) - 3120
*a**(62/3)*b**3*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**3/(440*a**
20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)
*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b*
*(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a*
*14*b**(20/3)*(a/b + x)**6) - 4860*a**(62/3)*b**3*(a/b + x)**3*ex
p(11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x)
+ 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b +
x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*
(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 1710*a**(59/3)
*b**4*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**4/(440*a**20*b**(2/3
) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)
**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a
/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20
/3)*(a/b + x)**6) + 3645*a**(59/3)*b**4*(a/b + x)**4*exp(11*I*pi/
3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**
18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 66
00*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)*
*5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 72*a**(56/3)*b**5*(-1 +
b*(a/b + x)/a)**(2/3)*(a/b + x)**5/(440*a**20*b**(2/3) - 2640*a**
19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a
```

17*b(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 -
2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x
)**6) - 1458*a**(56/3)*b**5*(a/b + x)**5*exp(11*I*pi/3)/(440*a**2
0*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*
(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**
(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**
14*b**(20/3)*(a/b + x)**6) - 1104*a**(53/3)*b**6*(-1 + b*(a/b + x
)/a)**(2/3)*(a/b + x)**6/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3
)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(1
1/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**1
5*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 24
3*a**(53/3)*b**6*(a/b + x)**6*exp(11*I*pi/3)/(440*a**20*b**(2/3)
- 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)**
2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/b
+ x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/3
)*(a/b + x)**6) + 1152*a**(50/3)*b**7*(-1 + b*(a/b + x)/a)**(2/3)
*(a/b + x)**7/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x)
+ 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b +
x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)
*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) - 585*a**(47/3)
*b**8*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**8/(440*a**20*b**(2/3
) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)
2 - 8800*a17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a
/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20
/3)*(a/b + x)**6) + 120*a**(44/3)*b**9*(-1 + b*(a/b + x)/a)**(2/3
)*(a/b + x)**9/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x
) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b
+ x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3
)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6), Abs(b*(a/b +
x)/a) > 1), (-243*a**(71/3)*(1 - b*(a/b + x)/a)**(2/3)*exp(11*I*p
i/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a
18*b(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 +
6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x
)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 243*a**(71/3)*exp(11*I
*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600
*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3
+ 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b +
x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 1296*a**(68/3)*b*(1
- b*(a/b + x)/a)**(2/3)*(a/b + x)*exp(11*I*pi/3)/(440*a**20*b**(2
/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b +
x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*
(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(
20/3)*(a/b + x)**6) - 1458*a**(68/3)*b*(a/b + x)*exp(11*I*pi/3)/(
440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b
(8/3)*(a/b + x)2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a
16*b(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 +
440*a**14*b**(20/3)*(a/b + x)**6) - 2808*a**(65/3)*b**2*(1 - b*(
a/b + x)/a)**(2/3)*(a/b + x)**2*exp(11*I*pi/3)/(440*a**20*b**(2/3
) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)
2 - 8800*a17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a
/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20
/3)*(a/b + x)**6) + 3645*a**(65/3)*b**2*(a/b + x)**2*exp(11*I*pi/
3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**
18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 66
00*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)*
*5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 3120*a**(62/3)*b**3*(1 -

```
 b*(a/b + x)/a)**(2/3)*(a/b + x)**3*exp(11*I*pi/3)/(440*a**20*b**
(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b
+ x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3
)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b*
*(20/3)*(a/b + x)**6) - 4860*a**(62/3)*b**3*(a/b + x)**3*exp(11*I
*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600
*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3
+ 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b +
 x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) - 1710*a**(59/3)*b**4*
(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**4*exp(11*I*pi/3)/(440*a**20
*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(
a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(
14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**1
4*b**(20/3)*(a/b + x)**6) + 3645*a**(59/3)*b**4*(a/b + x)**4*exp(
11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) +
6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)
**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a
/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) - 72*a**(56/3)*b**
5*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**5*exp(11*I*pi/3)/(440*a**
20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)
*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b*
*(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a*
*14*b**(20/3)*(a/b + x)**6) - 1458*a**(56/3)*b**5*(a/b + x)**5*ex
p(11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x)
+ 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b +
x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*
(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) + 1104*a**(53/3)
*b**6*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**6*exp(11*I*pi/3)/(440
*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(
8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**1
6*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 44
0*a**14*b**(20/3)*(a/b + x)**6) + 243*a**(53/3)*b**6*(a/b + x)**6
*exp(11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b +
x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b
 + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/
3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6) - 1152*a**(50
/3)*b**7*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**7*exp(11*I*pi/3)/(
440*a**20*b**(2/3) - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b
**(8/3)*(a/b + x)**2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a
**16*b**(14/3)*(a/b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 +
 440*a**14*b**(20/3)*(a/b + x)**6) + 585*a**(47/3)*b**8*(1 - b*(a
/b + x)/a)**(2/3)*(a/b + x)**8*exp(11*I*pi/3)/(440*a**20*b**(2/3)
 - 2640*a**19*b**(5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)*
*2 - 8800*a**17*b**(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/
b + x)**4 - 2640*a**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/
3)*(a/b + x)**6) - 120*a**(44/3)*b**9*(1 - b*(a/b + x)/a)**(2/3)*
(a/b + x)**9*exp(11*I*pi/3)/(440*a**20*b**(2/3) - 2640*a**19*b**(
5/3)*(a/b + x) + 6600*a**18*b**(8/3)*(a/b + x)**2 - 8800*a**17*b*
*(11/3)*(a/b + x)**3 + 6600*a**16*b**(14/3)*(a/b + x)**4 - 2640*a
**15*b**(17/3)*(a/b + x)**5 + 440*a**14*b**(20/3)*(a/b + x)**6),
True))
```

GIAC/XCAS [A] time = 0.203303, size = 47, normalized size = 0.92

$$\frac{3}{11}\,b^3x^{\frac{11}{3}} + \frac{9}{8}\,ab^2x^{\frac{8}{3}} + \frac{9}{5}\,a^2bx^{\frac{5}{3}} + \frac{3}{2}\,a^3x^{\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(1/3),x, algorithm="giac")
```

```
[Out] 3/11*b^3*x^(11/3) + 9/8*a*b^2*x^(8/3) + 9/5*a^2*b*x^(5/3) + 3/2*a
^3*x^(2/3)
```

3.671 $\int \frac{(a+bx)^3}{x^{2/3}}\,dx$

Optimal. Leaf size=49

$$3a^3\sqrt[3]{x}+\frac{9}{4}a^2bx^{4/3}+\frac{9}{7}ab^2x^{7/3}+\frac{3}{10}b^3x^{10/3}$$

```
[Out] 3*a^3*x^(1/3) + (9*a^2*b*x^(4/3))/4 + (9*a*b^2*x^(7/3))/7 + (3*b^
3*x^(10/3))/10
```

Rubi [A] time = 0.0312713, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$3a^3\sqrt[3]{x}+\frac{9}{4}a^2bx^{4/3}+\frac{9}{7}ab^2x^{7/3}+\frac{3}{10}b^3x^{10/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^(2/3),x]
```

```
[Out] 3*a^3*x^(1/3) + (9*a^2*b*x^(4/3))/4 + (9*a*b^2*x^(7/3))/7 + (3*b^
3*x^(10/3))/10
```

Rubi in Sympy [A] time = 5.5272, size = 48, normalized size = 0.98

$$3a^3\sqrt[3]{x}+\frac{9a^2bx^{\frac{4}{3}}}{4}+\frac{9ab^2x^{\frac{7}{3}}}{7}+\frac{3b^3x^{\frac{10}{3}}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**(2/3),x)
```

```
[Out] 3*a**3*x**(1/3) + 9*a**2*b*x**(4/3)/4 + 9*a*b**2*x**(7/3)/7 + 3*b
**3*x**(10/3)/10
```

Mathematica [A] time = 0.0104609, size = 39, normalized size = 0.8

$$\frac{3}{140}\sqrt[3]{x}\left(140a^3+105a^2bx+60ab^2x^2+14b^3x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^(2/3),x]
```

```
[Out] (3*x^(1/3)*(140*a^3 + 105*a^2*b*x + 60*a*b^2*x^2 + 14*b^3*x^3))/1
40
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$\frac{42\,b^3x^3 + 180\,ab^2x^2 + 315\,a^2bx + 420\,a^3}{140}\sqrt[3]{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(2/3),x)
```

```
[Out] 3/140*x^(1/3)*(14*b^3*x^3+60*a*b^2*x^2+105*a^2*b*x+140*a^3)
```

Maxima [A] time = 1.32529, size = 47, normalized size = 0.96

$$\frac{3}{10}\,b^3x^{\frac{10}{3}} + \frac{9}{7}\,ab^2x^{\frac{7}{3}} + \frac{9}{4}\,a^2bx^{\frac{4}{3}} + 3\,a^3x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(2/3),x, algorithm="maxima")
```

```
[Out] 3/10*b^3*x^(10/3) + 9/7*a*b^2*x^(7/3) + 9/4*a^2*b*x^(4/3) + 3*a^3
*x^(1/3)
```

Fricas [A] time = 0.206905, size = 47, normalized size = 0.96

$$\frac{3}{140}\left(14\,b^3x^3 + 60\,ab^2x^2 + 105\,a^2bx + 140\,a^3\right)x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(2/3),x, algorithm="fricas")
```

```
[Out] 3/140*(14*b^3*x^3 + 60*a*b^2*x^2 + 105*a^2*b*x + 140*a^3)*x^(1/3)
```

Sympy [A] time = 10.656, size = 4763, normalized size = 97.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(2/3),x)
```

```
[Out] Piecewise((243*a**(70/3)*(-1 + b*(a/b + x)/a)**(1/3)/(140*a**20*b
**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b
 + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/
3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b*
*(19/3)*(a/b + x)**6) + 243*a**(70/3)*exp(10*I*pi/3)/(140*a**20*b
**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b
 + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/
3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b*
*(19/3)*(a/b + x)**6) - 1377*a**(67/3)*b*(-1 + b*(a/b + x)/a)**(1
/3)*(a/b + x)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x)
+ 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b +
x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(
a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 1458*a**(67/3)*
b*(a/b + x)*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/
3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(
10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**1
5*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) + 32
13*a**(64/3)*b**2*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**2/(140*a
**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3
)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b
**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a*
*14*b**(19/3)*(a/b + x)**6) + 3645*a**(64/3)*b**2*(a/b + x)**2*ex
p(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) +
 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x
)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a
/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 3927*a**(61/3)*b
**3*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**3/(140*a**20*b**(1/3)
- 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2
 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b
+ x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*
(a/b + x)**6) - 4860*a**(61/3)*b**3*(a/b + x)**3*exp(10*I*pi/3)/(
140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b*
*(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a*
*16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 1
40*a**14*b**(19/3)*(a/b + x)**6) + 2583*a**(58/3)*b**4*(-1 + b*(a
/b + x)/a)**(1/3)*(a/b + x)**4/(140*a**20*b**(1/3) - 840*a**19*b*
*(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*
b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*
a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6)
+ 3645*a**(58/3)*b**4*(a/b + x)**4*exp(10*I*pi/3)/(140*a**20*b**(
1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b +
x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*
(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(1
9/3)*(a/b + x)**6) - 693*a**(55/3)*b**5*(-1 + b*(a/b + x)/a)**(1/
3)*(a/b + x)**5/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x
) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b
```

```
+ x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)
*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 1458*a**(55/3
)*b**5*(a/b + x)**5*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**1
9*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a*
*17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 -
840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)*
*6) - 273*a**(52/3)*b**6*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**6
/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*
b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*
a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 +
 140*a**14*b**(19/3)*(a/b + x)**6) + 243*a**(52/3)*b**6*(a/b + x)
**6*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b
+ x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a
/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16
/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) + 387*a**(49
/3)*b**7*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**7/(140*a**20*b**(
1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b +
x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*
(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(1
9/3)*(a/b + x)**6) - 198*a**(46/3)*b**8*(-1 + b*(a/b + x)/a)**(1/
3)*(a/b + x)**8/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x
) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b
+ x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)
*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) + 42*a**(43/3)*
b**9*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**9/(140*a**20*b**(1/3)
 - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**
2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b
 + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)
*(a/b + x)**6), Abs(b*(a/b + x)/a) > 1), (-243*a**(70/3)*(1 - b*(
a/b + x)/a)**(1/3)*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19
*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**
17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 8
40*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**
6) + 243*a**(70/3)*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19
*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**
17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 8
40*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**
6) + 1377*a**(67/3)*b*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)*exp(10
*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 210
0*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3
 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b +
 x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 1458*a**(67/3)*b*(a/
b + x)*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a
/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)
*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**
(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 3213*a*
*(64/3)*b**2*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**2*exp(10*I*pi/
3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**1
8*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 210
0*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5
 + 140*a**14*b**(19/3)*(a/b + x)**6) + 3645*a**(64/3)*b**2*(a/b +
 x)**2*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a
/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)
*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**
(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) + 3927*a*
*(61/3)*b**3*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**3*exp(10*I*pi/
```

```
3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**1
8*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 210
0*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5
 + 140*a**14*b**(19/3)*(a/b + x)**6) - 4860*a**(61/3)*b**3*(a/b +
 x)**3*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a
/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)
*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**
(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 2583*a*
*(58/3)*b**4*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**4*exp(10*I*pi/
3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**1
8*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 210
0*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5
 + 140*a**14*b**(19/3)*(a/b + x)**6) + 3645*a**(58/3)*b**4*(a/b +
 x)**4*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a
/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)
*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**
(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) + 693*a**
(55/3)*b**5*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**5*exp(10*I*pi/3
)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18
*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100
*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5
+ 140*a**14*b**(19/3)*(a/b + x)**6) - 1458*a**(55/3)*b**5*(a/b +
x)**5*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/
b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*
(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(
16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) + 273*a**(
52/3)*b**6*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**6*exp(10*I*pi/3)
/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*
b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*
a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 +
 140*a**14*b**(19/3)*(a/b + x)**6) + 243*a**(52/3)*b**6*(a/b + x)
**6*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b
+ x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a
/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16
/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6) - 387*a**(49
/3)*b**7*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**7*exp(10*I*pi/3)/(
140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b*
*(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a*
*16*b**(13/3)*(a/b + x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 1
40*a**14*b**(19/3)*(a/b + x)**6) + 198*a**(46/3)*b**8*(1 - b*(a/b
 + x)/a)**(1/3)*(a/b + x)**8*exp(10*I*pi/3)/(140*a**20*b**(1/3) -
 840*a**19*b**(4/3)*(a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2
- 2800*a**17*b**(10/3)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b +
 x)**4 - 840*a**15*b**(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(
a/b + x)**6) - 42*a**(43/3)*b**9*(1 - b*(a/b + x)/a)**(1/3)*(a/b
+ x)**9*exp(10*I*pi/3)/(140*a**20*b**(1/3) - 840*a**19*b**(4/3)*(
a/b + x) + 2100*a**18*b**(7/3)*(a/b + x)**2 - 2800*a**17*b**(10/3
)*(a/b + x)**3 + 2100*a**16*b**(13/3)*(a/b + x)**4 - 840*a**15*b*
*(16/3)*(a/b + x)**5 + 140*a**14*b**(19/3)*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.203572, size = 47, normalized size = 0.96

$$\frac{3}{10}\,b^3x^{\frac{10}{3}} + \frac{9}{7}\,ab^2x^{\frac{7}{3}} + \frac{9}{4}\,a^2bx^{\frac{4}{3}} + 3\,a^3x^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(2/3),x, algorithm="giac")
```

```
[Out] 3/10*b^3*x^(10/3) + 9/7*a*b^2*x^(7/3) + 9/4*a^2*b*x^(4/3) + 3*a^3
*x^(1/3)
```

3.672 $\int \frac{(a+bx)^3}{x^{4/3}}\,dx$

Optimal. Leaf size=49

$$-\frac{3a^3}{\sqrt[3]{x}}+\frac{9}{2}a^2bx^{2/3}+\frac{9}{5}ab^2x^{5/3}+\frac{3}{8}b^3x^{8/3}$$

```
[Out] (-3*a^3)/x^(1/3) + (9*a^2*b*x^(2/3))/2 + (9*a*b^2*x^(5/3))/5 + (3
*b^3*x^(8/3))/8
```

Rubi [A] time = 0.0311833, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^3}{\sqrt[3]{x}}+\frac{9}{2}a^2bx^{2/3}+\frac{9}{5}ab^2x^{5/3}+\frac{3}{8}b^3x^{8/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^(4/3),x]
```

```
[Out] (-3*a^3)/x^(1/3) + (9*a^2*b*x^(2/3))/2 + (9*a*b^2*x^(5/3))/5 + (3
*b^3*x^(8/3))/8
```

Rubi in Sympy [A] time = 5.62572, size = 48, normalized size = 0.98

$$-\frac{3a^3}{\sqrt[3]{x}}+\frac{9a^2bx^{\frac{2}{3}}}{2}+\frac{9ab^2x^{\frac{5}{3}}}{5}+\frac{3b^3x^{\frac{8}{3}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**(4/3),x)
```

```
[Out] -3*a**3/x**(1/3) + 9*a**2*b*x**(2/3)/2 + 9*a*b**2*x**(5/3)/5 + 3*
b**3*x**(8/3)/8
```

Mathematica [A] time = 0.0116151, size = 39, normalized size = 0.8

$$\frac{3\left(-40a^3+60a^2bx+24ab^2x^2+5b^3x^3\right)}{40\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^(4/3),x]
```

```
[Out] (3*(-40*a^3 + 60*a^2*b*x + 24*a*b^2*x^2 + 5*b^3*x^3))/(40*x^(1/3)
)
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$-\frac{-15\,b^{3}x^{3}-72\,ab^{2}x^{2}-180\,a^{2}bx+120\,a^{3}}{40}\frac{1}{\sqrt[3]{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(4/3),x)
```

```
[Out] -3/40*(-5*b^3*x^3-24*a*b^2*x^2-60*a^2*b*x+40*a^3)/x^(1/3)
```

Maxima [A] time = 1.35156, size = 47, normalized size = 0.96

$$\frac{3}{8}\,b^{3}x^{\frac{8}{3}}+\frac{9}{5}\,ab^{2}x^{\frac{5}{3}}+\frac{9}{2}\,a^{2}bx^{\frac{2}{3}}-\frac{3\,a^{3}}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(4/3),x, algorithm="maxima")
```

```
[Out] 3/8*b^3*x^(8/3) + 9/5*a*b^2*x^(5/3) + 9/2*a^2*b*x^(2/3) - 3*a^3/x
^(1/3)
```

Fricas [A] time = 0.20538, size = 47, normalized size = 0.96

$$\frac{3\left(5\,b^{3}x^{3}+24\,ab^{2}x^{2}+60\,a^{2}bx-40\,a^{3}\right)}{40\,x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(4/3),x, algorithm="fricas")
```

```
[Out] 3/40*(5*b^3*x^3 + 24*a*b^2*x^2 + 60*a^2*b*x - 40*a^3)/x^(1/3)
```

Sympy [A] time = 10.6286, size = 4004, normalized size = 81.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(4/3),x)
```

```
[Out] Piecewise((243*a**(68/3)*b**(1/3)*(-1 + b*(a/b + x)/a)**(2/3)/(40
*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 80
0*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**
15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) - 243*a**(68/3
)*b**(1/3)*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*
a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16
*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*
(a/b + x)**6) - 1296*a**(65/3)*b**(4/3)*(-1 + b*(a/b + x)/a)**(2/
3)*(a/b + x)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(
a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b +
 x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6
) + 1458*a**(65/3)*b**(4/3)*(a/b + x)*exp(8*I*pi/3)/(40*a**20 - 2
40*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b*
*3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a
/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) + 2808*a**(62/3)*b**(7/3
)*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**2/(40*a**20 - 240*a**19*
b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b +
 x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**
5 + 40*a**14*b**6*(a/b + x)**6) - 3645*a**(62/3)*b**(7/3)*(a/b +
x)**2*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18
*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4
*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b
+ x)**6) - 3120*a**(59/3)*b**(10/3)*(-1 + b*(a/b + x)/a)**(2/3)*(
a/b + x)**3/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a
/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b +
x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6)
 + 4860*a**(59/3)*b**(10/3)*(a/b + x)**3*exp(8*I*pi/3)/(40*a**20
- 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17
*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5
*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) + 1830*a**(56/3)*b**(
13/3)*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**4/(40*a**20 - 240*a*
*19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a
/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b +
x)**5 + 40*a**14*b**6*(a/b + x)**6) - 3645*a**(56/3)*b**(13/3)*(a
/b + x)**4*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*
a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16
*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*
(a/b + x)**6) - 528*a**(53/3)*b**(16/3)*(-1 + b*(a/b + x)/a)**(2/
3)*(a/b + x)**5/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**
2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/
b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)
**6) + 1458*a**(53/3)*b**(16/3)*(a/b + x)**5*exp(8*I*pi/3)/(40*a*
*20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a
**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*
b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) + 96*a**(50/3)*b*
*(19/3)*(-1 + b*(a/b + x)/a)**(2/3)*(a/b + x)**6/(40*a**20 - 240*
```

a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*
(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b
+ x)**5 + 40*a**14*b**6*(a/b + x)**6) - 243*a**(50/3)*b**(19/3)*(
a/b + x)**6*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600
*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**1
6*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6
*(a/b + x)**6) - 48*a**(47/3)*b**(22/3)*(-1 + b*(a/b + x)/a)**(2/
3)*(a/b + x)**7/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**
2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/
b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)
6) + 15*a(44/3)*b**(25/3)*(-1 + b*(a/b + x)/a)**(2/3)*(a/b +
x)**8/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x
)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4
- 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6), Abs(
b*(a/b + x)/a) > 1), (243*a**(68/3)*b**(1/3)*(1 - b*(a/b + x)/a)*
*(2/3)*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**1
8*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**
4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b
 + x)**6) - 243*a**(68/3)*b**(1/3)*exp(8*I*pi/3)/(40*a**20 - 240*
a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*
(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b
+ x)**5 + 40*a**14*b**6*(a/b + x)**6) - 1296*a**(65/3)*b**(4/3)*(
1 - b*(a/b + x)/a)**(2/3)*(a/b + x)*exp(8*I*pi/3)/(40*a**20 - 240
*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3
*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b
 + x)**5 + 40*a**14*b**6*(a/b + x)**6) + 1458*a**(65/3)*b**(4/3)*
(a/b + x)*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a
18*b2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*
b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(
a/b + x)**6) + 2808*a**(62/3)*b**(7/3)*(1 - b*(a/b + x)/a)**(2/3)
*(a/b + x)**2*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 6
00*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a*
*16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b*
6(a/b + x)**6) - 3645*a**(62/3)*b**(7/3)*(a/b + x)**2*exp(8*I*p
i/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)
2 - 800*a17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 -
 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) - 3120
*a**(59/3)*b**(10/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**3*exp(
8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b
 + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)
4 - 240*a15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) +
 4860*a**(59/3)*b**(10/3)*(a/b + x)**3*exp(8*I*pi/3)/(40*a**20 -
240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b
3*(a/b + x)3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(
a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) + 1830*a**(56/3)*b**(13
/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**4*exp(8*I*pi/3)/(40*a**
20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a*
*17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b
5*(a/b + x)5 + 40*a**14*b**6*(a/b + x)**6) - 3645*a**(56/3)*b
(13/3)*(a/b + x)4*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b
+ x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3
+ 600*a**16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*
a**14*b**6*(a/b + x)**6) - 528*a**(53/3)*b**(16/3)*(1 - b*(a/b +
x)/a)**(2/3)*(a/b + x)**5*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(
a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)
3 + 600*a16*b**4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 +

```
 40*a**14*b**6*(a/b + x)**6) + 1458*a**(53/3)*b**(16/3)*(a/b + x)
**5*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b
**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(
a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b +
x)**6) + 96*a**(50/3)*b**(19/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b +
 x)**6*exp(8*I*pi/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**1
8*b**2*(a/b + x)**2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**
4*(a/b + x)**4 - 240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b
 + x)**6) - 243*a**(50/3)*b**(19/3)*(a/b + x)**6*exp(8*I*pi/3)/(4
0*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2 - 8
00*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240*a*
*15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) - 48*a**(47/3
)*b**(22/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**7*exp(8*I*pi/3)
/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)**2
- 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 - 240
*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6) + 15*a**(4
4/3)*b**(25/3)*(1 - b*(a/b + x)/a)**(2/3)*(a/b + x)**8*exp(8*I*pi
/3)/(40*a**20 - 240*a**19*b*(a/b + x) + 600*a**18*b**2*(a/b + x)*
*2 - 800*a**17*b**3*(a/b + x)**3 + 600*a**16*b**4*(a/b + x)**4 -
240*a**15*b**5*(a/b + x)**5 + 40*a**14*b**6*(a/b + x)**6), True))
```

GIAC/XCAS [A] time = 0.207048, size = 47, normalized size = 0.96

$$\frac{3}{8}\,b^3x^{\frac{8}{3}} + \frac{9}{5}\,ab^2x^{\frac{5}{3}} + \frac{9}{2}\,a^2bx^{\frac{2}{3}} - \frac{3\,a^3}{x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(4/3),x, algorithm="giac")
```

```
[Out] 3/8*b^3*x^(8/3) + 9/5*a*b^2*x^(5/3) + 9/2*a^2*b*x^(2/3) - 3*a^3/x
^(1/3)
```

3.673 $\int \frac{(a+bx)^3}{x^{5/3}}\,dx$

Optimal. Leaf size=49

$$-\frac{3a^3}{2x^{2/3}}+9a^2b\sqrt[3]{x}+\frac{9}{4}ab^2x^{4/3}+\frac{3}{7}b^3x^{7/3}$$

```
[Out] (-3*a^3)/(2*x^(2/3)) + 9*a^2*b*x^(1/3) + (9*a*b^2*x^(4/3))/4 + (3
*b^3*x^(7/3))/7
```

Rubi [A] time = 0.0316716, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{3a^3}{2x^{2/3}}+9a^2b\sqrt[3]{x}+\frac{9}{4}ab^2x^{4/3}+\frac{3}{7}b^3x^{7/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/x^(5/3),x]
```

```
[Out] (-3*a^3)/(2*x^(2/3)) + 9*a^2*b*x^(1/3) + (9*a*b^2*x^(4/3))/4 + (3
*b^3*x^(7/3))/7
```

Rubi in Sympy [A] time = 5.36094, size = 48, normalized size = 0.98

$$-\frac{3a^3}{2x^{\frac{2}{3}}}+9a^2b\sqrt[3]{x}+\frac{9ab^2x^{\frac{4}{3}}}{4}+\frac{3b^3x^{\frac{7}{3}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/x**(5/3),x)
```

```
[Out] -3*a**3/(2*x**(2/3)) + 9*a**2*b*x**(1/3) + 9*a*b**2*x**(4/3)/4 +
3*b**3*x**(7/3)/7
```

Mathematica [A] time = 0.0117088, size = 39, normalized size = 0.8

$$\frac{3\left(-14a^3+84a^2bx+21ab^2x^2+4b^3x^3\right)}{28x^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/x^(5/3),x]

[Out] (3*(-14*a^3 + 84*a^2*b*x + 21*a*b^2*x^2 + 4*b^3*x^3))/(28*x^(2/3)
)
```

Maple [A] time = 0.007, size = 36, normalized size = 0.7

$$-\frac{-12\,b^3x^3-63\,ab^2x^2-252\,a^2bx+42\,a^3}{28}x^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/x^(5/3),x)

[Out] -3/28*(-4*b^3*x^3-21*a*b^2*x^2-84*a^2*b*x+14*a^3)/x^(2/3)
```

Maxima [A] time = 1.32241, size = 47, normalized size = 0.96

$$\frac{3}{7}\,b^3x^{\frac{7}{3}}+\frac{9}{4}\,ab^2x^{\frac{4}{3}}+9\,a^2bx^{\frac{1}{3}}-\frac{3\,a^3}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(5/3),x, algorithm="maxima")

[Out] 3/7*b^3*x^(7/3) + 9/4*a*b^2*x^(4/3) + 9*a^2*b*x^(1/3) - 3/2*a^3/x
^(2/3)
```

Fricas [A] time = 0.209908, size = 47, normalized size = 0.96

$$\frac{3\left(4\,b^3x^3+21\,ab^2x^2+84\,a^2bx-14\,a^3\right)}{28\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(5/3),x, algorithm="fricas")

[Out] 3/28*(4*b^3*x^3 + 21*a*b^2*x^2 + 84*a^2*b*x - 14*a^3)/x^(2/3)
```

Sympy [A] time = 10.7685, size = 4004, normalized size = 81.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/x**(5/3),x)
```

```
[Out] Piecewise((243*a**(67/3)*b**(2/3)*(-1 + b*(a/b + x)/a)**(1/3)/(28
*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 56
0*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**
15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) - 243*a**(67/3
)*b**(2/3)*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*
a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16
*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*
(a/b + x)**6) - 1377*a**(64/3)*b**(5/3)*(-1 + b*(a/b + x)/a)**(1/
3)*(a/b + x)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(
a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b +
 x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6
) + 1458*a**(64/3)*b**(5/3)*(a/b + x)*exp(7*I*pi/3)/(28*a**20 - 1
68*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b*
*3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a
/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) + 3213*a**(61/3)*b**(8/3
)*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**2/(28*a**20 - 168*a**19*
b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b +
 x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**
5 + 28*a**14*b**6*(a/b + x)**6) - 3645*a**(61/3)*b**(8/3)*(a/b +
x)**2*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18
*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4
*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b
+ x)**6) - 3927*a**(58/3)*b**(11/3)*(-1 + b*(a/b + x)/a)**(1/3)*(
a/b + x)**3/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a
/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b +
x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6)
 + 4860*a**(58/3)*b**(11/3)*(a/b + x)**3*exp(7*I*pi/3)/(28*a**20
- 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17
*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5
*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) + 2625*a**(55/3)*b**(
14/3)*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**4/(28*a**20 - 168*a*
*19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a
/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b +
x)**5 + 28*a**14*b**6*(a/b + x)**6) - 3645*a**(55/3)*b**(14/3)*(a
/b + x)**4*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*
a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16
*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*
(a/b + x)**6) - 903*a**(52/3)*b**(17/3)*(-1 + b*(a/b + x)/a)**(1/
3)*(a/b + x)**5/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**
2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/
b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)
**6) + 1458*a**(52/3)*b**(17/3)*(a/b + x)**5*exp(7*I*pi/3)/(28*a*
*20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a
**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*
b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) + 147*a**(49/3)*b
**(20/3)*(-1 + b*(a/b + x)/a)**(1/3)*(a/b + x)**6/(28*a**20 - 168
```

```
*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3
*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b
 + x)**5 + 28*a**14*b**6*(a/b + x)**6) - 243*a**(49/3)*b**(20/3)*
(a/b + x)**6*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 42
0*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**
16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**
6*(a/b + x)**6) - 33*a**(46/3)*b**(23/3)*(-1 + b*(a/b + x)/a)**(1
/3)*(a/b + x)**7/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b*
*2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a
/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x
)**6) + 12*a**(43/3)*b**(26/3)*(-1 + b*(a/b + x)/a)**(1/3)*(a/b +
 x)**8/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b +
x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4
 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6), Abs
(b*(a/b + x)/a) > 1), (243*a**(67/3)*b**(2/3)*(1 - b*(a/b + x)/a)
**(1/3)*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**
18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b*
*4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/
b + x)**6) - 243*a**(67/3)*b**(2/3)*exp(7*I*pi/3)/(28*a**20 - 168
*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3
*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b
 + x)**5 + 28*a**14*b**6*(a/b + x)**6) - 1377*a**(64/3)*b**(5/3)*
(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)*exp(7*I*pi/3)/(28*a**20 - 16
8*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**
3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/
b + x)**5 + 28*a**14*b**6*(a/b + x)**6) + 1458*a**(64/3)*b**(5/3)
*(a/b + x)*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*
a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16
*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*
(a/b + x)**6) + 3213*a**(61/3)*b**(8/3)*(1 - b*(a/b + x)/a)**(1/3
)*(a/b + x)**2*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) +
420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a
**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b
**6*(a/b + x)**6) - 3645*a**(61/3)*b**(8/3)*(a/b + x)**2*exp(7*I*
pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x
)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4
- 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) - 392
7*a**(58/3)*b**(11/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**3*exp
(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/
b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x
)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6)
+ 4860*a**(58/3)*b**(11/3)*(a/b + x)**3*exp(7*I*pi/3)/(28*a**20 -
 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*
b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*
(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) + 2625*a**(55/3)*b**(1
4/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**4*exp(7*I*pi/3)/(28*a*
*20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a
**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*
b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) - 3645*a**(55/3)*
b**(14/3)*(a/b + x)**4*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b
 + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3
 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28
*a**14*b**6*(a/b + x)**6) - 903*a**(52/3)*b**(17/3)*(1 - b*(a/b +
 x)/a)**(1/3)*(a/b + x)**5*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*
(a/b + x) + 420*a**18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x
)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5
```

```
+ 28*a**14*b**6*(a/b + x)**6) + 1458*a**(52/3)*b**(17/3)*(a/b + x
)**5*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*
b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*
(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b +
 x)**6) + 147*a**(49/3)*b**(20/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b
 + x)**6*exp(7*I*pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a*
*18*b**2*(a/b + x)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b
**4*(a/b + x)**4 - 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a
/b + x)**6) - 243*a**(49/3)*b**(20/3)*(a/b + x)**6*exp(7*I*pi/3)/
(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**2 -
 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 168*
a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) - 33*a**(46
/3)*b**(23/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**7*exp(7*I*pi/
3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x)**
2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4 - 1
68*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6) + 12*a**
(43/3)*b**(26/3)*(1 - b*(a/b + x)/a)**(1/3)*(a/b + x)**8*exp(7*I*
pi/3)/(28*a**20 - 168*a**19*b*(a/b + x) + 420*a**18*b**2*(a/b + x
)**2 - 560*a**17*b**3*(a/b + x)**3 + 420*a**16*b**4*(a/b + x)**4
- 168*a**15*b**5*(a/b + x)**5 + 28*a**14*b**6*(a/b + x)**6), True
))
```

GIAC/XCAS [A] time = 0.204165, size = 47, normalized size = 0.96

$$\frac{3}{7}\,b^3x^{\frac{7}{3}} + \frac{9}{4}\,ab^2x^{\frac{4}{3}} + 9\,a^2bx^{\frac{1}{3}} - \frac{3\,a^3}{2\,x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/x^(5/3),x, algorithm="giac")
```

```
[Out] 3/7*b^3*x^(7/3) + 9/4*a*b^2*x^(4/3) + 9*a^2*b*x^(1/3) - 3/2*a^3/x
^(2/3)
```

3.674 $\int \frac{x^{5/3}}{a+bx}\,dx$

Optimal. Leaf size=125

$$-\frac{3a^{5/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{8/3}}+\frac{a^{5/3}\log(a+bx)}{2b^{8/3}}-\frac{\sqrt{3}a^{5/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{8/3}}-\frac{3ax^{2/3}}{2b^2}+\frac{3x^{5/3}}{5b}$$

```
[Out] (-3*a*x^(2/3))/(2*b^2) + (3*x^(5/3))/(5*b) - (Sqrt[3]*a^(5/3)*Arc
Tan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/b^(8/3) - (
3*a^(5/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*b^(8/3)) + (a^(5/3)*
Log[a + b*x])/(2*b^(8/3))
```

Rubi [A] time = 0.142331, antiderivative size = 125, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{3a^{5/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{8/3}}+\frac{a^{5/3}\log(a+bx)}{2b^{8/3}}-\frac{\sqrt{3}a^{5/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{8/3}}-\frac{3ax^{2/3}}{2b^2}+\frac{3x^{5/3}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/3)/(a + b*x),x]
```

```
[Out] (-3*a*x^(2/3))/(2*b^2) + (3*x^(5/3))/(5*b) - (Sqrt[3]*a^(5/3)*Arc
Tan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/b^(8/3) - (
3*a^(5/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*b^(8/3)) + (a^(5/3)*
Log[a + b*x])/(2*b^(8/3))
```

Rubi in Sympy [A] time = 15.3539, size = 119, normalized size = 0.95

$$-\frac{3a^{\frac{5}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{\frac{8}{3}}}+\frac{a^{\frac{5}{3}}\log\left(a+bx\right)}{2b^{\frac{8}{3}}}-\frac{\sqrt{3}a^{\frac{5}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{b^{\frac{8}{3}}}-\frac{3ax^{\frac{2}{3}}}{2b^2}+\frac{3x^{\frac{5}{3}}}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/3)/(b*x+a),x)
```

```
[Out] -3*a**(5/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*b**(8/3)) + a**(
5/3)*log(a + b*x)/(2*b**(8/3)) - sqrt(3)*a**(5/3)*atan(sqrt(3)*(a
```

```
**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/b**(8/3) - 3*a*x**(2
/3)/(2*b**2) + 3*x**(5/3)/(5*b)
```

Mathematica [A] time = 0.078127, size = 140, normalized size = 1.12

$$\frac{5a^{5/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-10a^{5/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)-10\sqrt{3}a^{5/3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)-15ab^{2/3}x^{2/3}+6b^{5/3}x^{5/}}{10b^{8/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/3)/(a + b*x),x]
```

```
[Out] (-15*a*b^(2/3)*x^(2/3) + 6*b^(5/3)*x^(5/3) - 10*Sqrt[3]*a^(5/3)*A
rcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] - 10*a^(5/3)*Log
[a^(1/3) + b^(1/3)*x^(1/3)] + 5*a^(5/3)*Log[a^(2/3) - a^(1/3)*b^(
1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/(10*b^(8/3))
```

Maple [A] time = 0.01, size = 122, normalized size = 1.

$$\frac{3}{5\,b}x^{\frac{5}{3}}-\frac{3\,a}{2\,b^2}x^{\frac{2}{3}}-\frac{a^2}{b^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{a^2}{2\,b^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$+\frac{a^2\sqrt{3}}{b^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/3)/(b*x+a),x)
```

```
[Out] 3/5*x^(5/3)/b-3/2*a*x^(2/3)/b^2-a^2/b^3/(a/b)^(1/3)*ln(x^(1/3)+(a
/b)^(1/3))+1/2*a^2/b^3/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)
+(a/b)^(2/3))+a^2/b^3*3^(1/2)/(a/b)^(1/3)*arctan(1/3*3^(1/2)*(2/(
a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220763, size = 208, normalized size = 1.66

$$-\frac{10\,\sqrt{3}a\left(-\frac{a^2}{b^2}\right)^{\frac{1}{3}}\arctan\left(-\frac{\sqrt{3}\left(b\left(-\frac{a^2}{b^2}\right)^{\frac{2}{3}}-2\,ax^{\frac{1}{3}}\right)}{3\,b\left(-\frac{a^2}{b^2}\right)^{\frac{2}{3}}}\right)+5\,a\left(-\frac{a^2}{b^2}\right)^{\frac{1}{3}}\log\left(-bx^{\frac{1}{3}}\left(-\frac{a^2}{b^2}\right)^{\frac{2}{3}}+ax^{\frac{2}{3}}-a\left(-\frac{a^2}{b^2}\right)^{\frac{1}{3}}\right)-10\,a\left(-\frac{a^2}{b^2}\right)^{\frac{1}{3}}\log\left(b\right.}{10\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a),x, algorithm="fricas")
```

```
[Out] -1/10*(10*sqrt(3)*a*(-a^2/b^2)^(1/3)*arctan(-1/3*sqrt(3)*(b*(-a^2
/b^2)^(2/3) - 2*a*x^(1/3))/(b*(-a^2/b^2)^(2/3))) + 5*a*(-a^2/b^2)
^(1/3)*log(-b*x^(1/3)*(-a^2/b^2)^(2/3) + a*x^(2/3) - a*(-a^2/b^2)
^(1/3)) - 10*a*(-a^2/b^2)^(1/3)*log(b*(-a^2/b^2)^(2/3) + a*x^(1/3
)) - 3*(2*b*x - 5*a)*x^(2/3))/b^2
```

Sympy [A] time = 6.29798, size = 206, normalized size = 1.65

$$-\frac{8a^{\frac{5}{3}}e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{8}{3}\right)}{3b^{\frac{8}{3}}\Gamma\left(\frac{11}{3}\right)}-\frac{8a^{\frac{5}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{8}{3}\right)}{3b^{\frac{8}{3}}\Gamma\left(\frac{11}{3}\right)}-\frac{8a^{\frac{5}{3}}e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{8}{3}\right)}{3b^{\frac{8}{3}}\Gamma\left(\frac{11}{3}\right)}-\frac{4ax^{\frac{2}{3}}\Gamma\left(\frac{8}{3}\right)}{b^2\Gamma\left(\frac{11}{3}\right)}+\frac{8x^{\frac{5}{3}}\Gamma\left(\frac{8}{3}\right)}{5b\Gamma\left(\frac{11}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3)/(b*x+a),x)
```

```
[Out] -8*a**(5/3)*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*
pi/3)/a**(1/3))*gamma(8/3)/(3*b**(8/3)*gamma(11/3)) - 8*a**(5/3)*
log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(8/3)/(3
*b**(8/3)*gamma(11/3)) - 8*a**(5/3)*exp(2*I*pi/3)*log(1 - b**(1/3
)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(8/3)/(3*b**(8/3)*g
amma(11/3)) - 4*a*x**(2/3)*gamma(8/3)/(b**2*gamma(11/3)) + 8*x**(
```

```
5/3)*gamma(8/3)/(5*b*gamma(11/3))
```

GIAC/XCAS [A] time = 0.217947, size = 186, normalized size = 1.49

$$-\frac{a\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{b^2}-\frac{\sqrt{3}\left(-ab^2\right)^{\frac{2}{3}}a\arctan\left(\frac{\sqrt{3}\left(2x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{b^4}+\frac{\left(-ab^2\right)^{\frac{2}{3}}a\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2b^4}+\frac{3\left(2b^4x^{\frac{5}{3}}-5ab^3x^{\frac{2}{3}}\right)}{10b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a),x, algorithm="giac")
```

```
[Out] -a*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/b^2 - sqrt(3)*(-a
*b^2)^(2/3)*a*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b
)^(1/3))/b^4 + 1/2*(-a*b^2)^(2/3)*a*ln(x^(2/3) + x^(1/3)*(-a/b)^(
1/3) + (-a/b)^(2/3))/b^4 + 3/10*(2*b^4*x^(5/3) - 5*a*b^3*x^(2/3))
/b^5
```

3.675 $\int \frac{x^{4/3}}{a+bx} dx$

Optimal. Leaf size=123

$$\frac{3a^{4/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{7/3}}-\frac{a^{4/3}\log(a+bx)}{2b^{7/3}}-\frac{\sqrt{3}a^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{7/3}}-\frac{3a\sqrt[3]{x}}{b^2}+\frac{3x^{4/3}}{4b}$$

```
[Out] (-3*a*x^(1/3))/b^2 + (3*x^(4/3))/(4*b) - (Sqrt[3]*a^(4/3)*ArcTan[
(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/b^(7/3) + (3*a^
(4/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*b^(7/3)) - (a^(4/3)*Log[
a + b*x])/(2*b^(7/3))
```

Rubi [A] time = 0.124793, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{3a^{4/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{7/3}}-\frac{a^{4/3}\log(a+bx)}{2b^{7/3}}-\frac{\sqrt{3}a^{4/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{7/3}}-\frac{3a\sqrt[3]{x}}{b^2}+\frac{3x^{4/3}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3)/(a + b*x),x]
```

```
[Out] (-3*a*x^(1/3))/b^2 + (3*x^(4/3))/(4*b) - (Sqrt[3]*a^(4/3)*ArcTan[
(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/b^(7/3) + (3*a^
(4/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*b^(7/3)) - (a^(4/3)*Log[
a + b*x])/(2*b^(7/3))
```

Rubi in Sympy [A] time = 15.8885, size = 117, normalized size = 0.95

$$\frac{3a^{\frac{4}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{\frac{7}{3}}}-\frac{a^{\frac{4}{3}}\log\left(a+bx\right)}{2b^{\frac{7}{3}}}-\frac{\sqrt{3}a^{\frac{4}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{b^{\frac{7}{3}}}-\frac{3a\sqrt[3]{x}}{b^2}+\frac{3x^{\frac{4}{3}}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3)/(b*x+a),x)
```

```
[Out] 3*a**(4/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*b**(7/3)) - a**(4
/3)*log(a + b*x)/(2*b**(7/3)) - sqrt(3)*a**(4/3)*atan(sqrt(3)*(a*
```

```
*(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/b**(7/3) - 3*a*x**(1/
3)/b**2 + 3*x**(4/3)/(4*b)
```

Mathematica [A] time = 0.0395493, size = 140, normalized size = 1.14

$$\frac{-2a^{4/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)+4a^{4/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)-4\sqrt{3}a^{4/3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)-12a\sqrt[3]{b}\sqrt[3]{x}+3b^{4/3}x^{4/3}}{4b^{7/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3)/(a + b*x),x]
```

```
[Out] (-12*a*b^(1/3)*x^(1/3) + 3*b^(4/3)*x^(4/3) - 4*Sqrt[3]*a^(4/3)*Ar
cTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] + 4*a^(4/3)*Log[a
^(1/3) + b^(1/3)*x^(1/3)] - 2*a^(4/3)*Log[a^(2/3) - a^(1/3)*b^(1/
3)*x^(1/3) + b^(2/3)*x^(2/3)])/(4*b^(7/3))
```

Maple [A] time = 0.009, size = 121, normalized size = 1.

$$\frac{3}{4\,b}x^{\frac{4}{3}}-3\,\frac{a\sqrt[3]{x}}{b^{2}}+\frac{a^{2}}{b^{3}}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{a^{2}}{2\,b^{3}}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$+\frac{a^{2}\sqrt{3}}{b^{3}}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(4/3)/(b*x+a),x)
```

```
[Out] 3/4*x^(4/3)/b-3*a*x^(1/3)/b^2+a^2/b^3/(a/b)^(2/3)*ln(x^(1/3)+(a/b
)^(1/3))-1/2*a^2/b^3/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(
a/b)^(2/3))+a^2/b^3/(a/b)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(a/
b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218596, size = 155, normalized size = 1.26

$$\frac{4\,\sqrt{3}a\,\left(\frac{a}{b}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}-\left(\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\,\left(\frac{a}{b}\right)^{\frac{1}{3}}}\right)-2\,a\,\left(\frac{a}{b}\right)^{\frac{1}{3}}\log\left(x^{\frac{2}{3}}-x^{\frac{1}{3}}\left(\frac{a}{b}\right)^{\frac{1}{3}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)+4\,a\,\left(\frac{a}{b}\right)^{\frac{1}{3}}\log\left(x^{\frac{1}{3}}+\left(\frac{a}{b}\right)^{\frac{1}{3}}\right)+3\,(bx-4\,a)x^{\frac{1}{3}}}{4\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(3)*a*(a/b)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) - (a/b
)^(1/3))/(a/b)^(1/3)) - 2*a*(a/b)^(1/3)*log(x^(2/3) - x^(1/3)*(a/
b)^(1/3) + (a/b)^(2/3)) + 4*a*(a/b)^(1/3)*log(x^(1/3) + (a/b)^(1/
3)) + 3*(b*x - 4*a)*x^(1/3))/b^2
```

Sympy [A] time = 4.98978, size = 204, normalized size = 1.66

$$-\frac{7a^{\frac{4}{3}}e^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{7}{3}\right)}{3b^{\frac{7}{3}}\Gamma\left(\frac{10}{3}\right)}+\frac{7a^{\frac{4}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{7}{3}\right)}{3b^{\frac{7}{3}}\Gamma\left(\frac{10}{3}\right)}-\frac{7a^{\frac{4}{3}}e^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{7}{3}\right)}{3b^{\frac{7}{3}}\Gamma\left(\frac{10}{3}\right)}-\frac{7a\sqrt[3]{x}\,\Gamma\left(\frac{7}{3}\right)}{b^{2}\Gamma\left(\frac{10}{3}\right)}+\frac{7x^{\frac{4}{3}}\Gamma\left(\frac{7}{3}\right)}{4b\Gamma\left(\frac{10}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3)/(b*x+a),x)
```

```
[Out] -7*a**(4/3)*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*p
i/3)/a**(1/3))*gamma(7/3)/(3*b**(7/3)*gamma(10/3)) + 7*a**(4/3)*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(7/3)/(3*
b**(7/3)*gamma(10/3)) - 7*a**(4/3)*exp(I*pi/3)*log(1 - b**(1/3)*x
**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(7/3)/(3*b**(7/3)*gamm
a(10/3)) - 7*a*x**(1/3)*gamma(7/3)/(b**2*gamma(10/3)) + 7*x**(4/3
)*gamma(7/3)/(4*b*gamma(10/3))
```

GIAC/XCAS [A] time = 0.229183, size = 184, normalized size = 1.5

$$-\frac{a\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{b^2}+\frac{\sqrt{3}\left(-ab^2\right)^{\frac{1}{3}}a\arctan\left(\frac{\sqrt{3}\left(2x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{b^3}+\frac{\left(-ab^2\right)^{\frac{1}{3}}a\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2b^3}+\frac{3\left(b^3x^{\frac{4}{3}}-4ab^2x^{\frac{1}{3}}\right)}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a),x, algorithm="giac")
```

```
[Out] -a*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/b^2 + sqrt(3)*(-a
*b^2)^(1/3)*a*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b
)^(1/3))/b^3 + 1/2*(-a*b^2)^(1/3)*a*ln(x^(2/3) + x^(1/3)*(-a/b)^(
1/3) + (-a/b)^(2/3))/b^3 + 3/4*(b^3*x^(4/3) - 4*a*b^2*x^(1/3))/b^
4
```

3.676 $\int \frac{x^{2/3}}{a+bx}\,dx$

Optimal. Leaf size=111

$$\frac{3a^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{5/3}}-\frac{a^{2/3}\log(a+bx)}{2b^{5/3}}+\frac{\sqrt{3}a^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{5/3}}+\frac{3x^{2/3}}{2b}$$

```
[Out] (3*x^(2/3))/(2*b) + (Sqrt[3]*a^(2/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*
x^(1/3))/(Sqrt[3]*a^(1/3))])/b^(5/3) + (3*a^(2/3)*Log[a^(1/3) + b
^(1/3)*x^(1/3)])/(2*b^(5/3)) - (a^(2/3)*Log[a + b*x])/(2*b^(5/3))
```

Rubi [A] time = 0.0904506, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$\frac{3a^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{5/3}}-\frac{a^{2/3}\log(a+bx)}{2b^{5/3}}+\frac{\sqrt{3}a^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{5/3}}+\frac{3x^{2/3}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2/3)/(a + b*x),x]
```

```
[Out] (3*x^(2/3))/(2*b) + (Sqrt[3]*a^(2/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*
x^(1/3))/(Sqrt[3]*a^(1/3))])/b^(5/3) + (3*a^(2/3)*Log[a^(1/3) + b
^(1/3)*x^(1/3)])/(2*b^(5/3)) - (a^(2/3)*Log[a + b*x])/(2*b^(5/3))
```

Rubi in Sympy [A] time = 11.1419, size = 105, normalized size = 0.95

$$\frac{3a^{\frac{2}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{\frac{5}{3}}}-\frac{a^{\frac{2}{3}}\log\left(a+bx\right)}{2b^{\frac{5}{3}}}+\frac{\sqrt{3}a^{\frac{2}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{b^{\frac{5}{3}}}+\frac{3x^{\frac{2}{3}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2/3)/(b*x+a),x)
```

```
[Out] 3*a**(2/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*b**(5/3)) - a**(2
/3)*log(a + b*x)/(2*b**(5/3)) + sqrt(3)*a**(2/3)*atan(sqrt(3)*(a*
*(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/b**(5/3) + 3*x**(2/3)
```

```
/(2*b)
```

Mathematica [A] time = 0.0296058, size = 127, normalized size = 1.14

$$\frac{-a^{2/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)+2a^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+2\sqrt{3}a^{2/3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)+3b^{2/3}x^{2/3}}{2b^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2/3)/(a + b*x),x]
```

```
[Out] (3*b^(2/3)*x^(2/3) + 2*Sqrt[3]*a^(2/3)*ArcTan[(1 - (2*b^(1/3)*x^(
1/3))/a^(1/3))/Sqrt[3]] + 2*a^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)
] - a^(2/3)*Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/
3)])/(2*b^(5/3))
```

Maple [A] time = 0.009, size = 107, normalized size = 1.

$$\frac{3}{2\,b}x^{\frac{2}{3}}+\frac{a}{b^2}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}-\frac{a}{2\,b^2}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$-\frac{a\sqrt{3}}{b^2}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2/3)/(b*x+a),x)
```

```
[Out] 3/2*x^(2/3)/b+a/b^2/(a/b)^(1/3)*ln(x^(1/3)+(a/b)^(1/3))-1/2*a/b^2
/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))-a/b^2*3^
(1/2)/(a/b)^(1/3)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217714, size = 180, normalized size = 1.62

$$-\frac{2\sqrt{3}\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\arctan\left(-\frac{\sqrt{3}\left(b\left(\frac{a^2}{b^2}\right)^{\frac{2}{3}}-2\,ax^{\frac{1}{3}}\right)}{3\,b\left(\frac{a^2}{b^2}\right)^{\frac{2}{3}}}\right)+\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\log\left(-bx^{\frac{1}{3}}\left(\frac{a^2}{b^2}\right)^{\frac{2}{3}}+ax^{\frac{2}{3}}+a\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\right)-2\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\log\left(b\left(\frac{a^2}{b^2}\right)^{\frac{2}{3}}+ax^{\frac{1}{3}}\right)-3}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*(a^2/b^2)^(1/3)*arctan(-1/3*sqrt(3)*(b*(a^2/b^2)^
(2/3) - 2*a*x^(1/3))/(b*(a^2/b^2)^(2/3))) + (a^2/b^2)^(1/3)*log(-
b*x^(1/3)*(a^2/b^2)^(2/3) + a*x^(2/3) + a*(a^2/b^2)^(1/3)) - 2*(a
^2/b^2)^(1/3)*log(b*(a^2/b^2)^(2/3) + a*x^(1/3)) - 3*x^(2/3))/b
```

Sympy [A] time = 3.63829, size = 184, normalized size = 1.66

$$\frac{5a^{\frac{2}{3}}e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{3b^{\frac{5}{3}}\Gamma\left(\frac{8}{3}\right)}+\frac{5a^{\frac{2}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{3b^{\frac{5}{3}}\Gamma\left(\frac{8}{3}\right)}+\frac{5a^{\frac{2}{3}}e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{3b^{\frac{5}{3}}\Gamma\left(\frac{8}{3}\right)}+\frac{5x^{\frac{2}{3}}\Gamma\left(\frac{5}{3}\right)}{2b\Gamma\left(\frac{8}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3)/(b*x+a),x)
```

```
[Out] 5*a**(2/3)*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*p
i/3)/a**(1/3))*gamma(5/3)/(3*b**(5/3)*gamma(8/3)) + 5*a**(2/3)*lo
g(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(5/3)/(3*b
**(5/3)*gamma(8/3)) + 5*a**(2/3)*exp(2*I*pi/3)*log(1 - b**(1/3)*x
**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(5/3)/(3*b**(5/3)*gamm
a(8/3)) + 5*x**(2/3)*gamma(5/3)/(2*b*gamma(8/3))
```

GIAC/XCAS [A] time = 0.218726, size = 159, normalized size = 1.43

$$\frac{\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{b}+\frac{3\,x^{\frac{2}{3}}}{2\,b}+\frac{\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{b^{3}}-\frac{\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a),x, algorithm="giac")
```

```
[Out] (-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/b + 3/2*x^(2/3)/b +
sqrt(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/
3))/(-a/b)^(1/3))/b^3 - 1/2*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(
-a/b)^(1/3) + (-a/b)^(2/3))/b^3
```

3.677 $\int \frac{\sqrt[3]{x}}{a+bx} \, dx$

Optimal. Leaf size=109

$$-\frac{3\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{4/3}}+\frac{\sqrt[3]{a}\log(a+bx)}{2b^{4/3}}+\frac{\sqrt{3}\sqrt[3]{a}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{4/3}}+\frac{3\sqrt[3]{x}}{b}$$

```
[Out] (3*x^(1/3))/b + (Sqrt[3]*a^(1/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1
/3))/(Sqrt[3]*a^(1/3))])/b^(4/3) - (3*a^(1/3)*Log[a^(1/3) + b^(1/
3)*x^(1/3)])/(2*b^(4/3)) + (a^(1/3)*Log[a + b*x])/(2*b^(4/3))
```

Rubi [A] time = 0.0880264, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{3\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{4/3}}+\frac{\sqrt[3]{a}\log(a+bx)}{2b^{4/3}}+\frac{\sqrt{3}\sqrt[3]{a}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{b^{4/3}}+\frac{3\sqrt[3]{x}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3)/(a + b*x),x]
```

```
[Out] (3*x^(1/3))/b + (Sqrt[3]*a^(1/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1
/3))/(Sqrt[3]*a^(1/3))])/b^(4/3) - (3*a^(1/3)*Log[a^(1/3) + b^(1/
3)*x^(1/3)])/(2*b^(4/3)) + (a^(1/3)*Log[a + b*x])/(2*b^(4/3))
```

Rubi in Sympy [A] time = 11.231, size = 104, normalized size = 0.95

$$-\frac{3\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{\frac{4}{3}}}+\frac{\sqrt[3]{a}\log\left(a+bx\right)}{2b^{\frac{4}{3}}}+\frac{\sqrt{3}\sqrt[3]{a}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{b^{\frac{4}{3}}}+\frac{3\sqrt[3]{x}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3)/(b*x+a),x)
```

```
[Out] -3*a**(1/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*b**(4/3)) + a**(
1/3)*log(a + b*x)/(2*b**(4/3)) + sqrt(3)*a**(1/3)*atan(sqrt(3)*(a
**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/b**(4/3) + 3*x**(1/3
```

```
)/b
```

Mathematica [A] time = 0.0276174, size = 126, normalized size = 1.16

$$\frac{\sqrt[3]{a}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-2\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+2\sqrt{3}\sqrt[3]{a}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)+6\sqrt[3]{b}\sqrt[3]{x}}{2b^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3)/(a + b*x),x]
```

```
[Out] (6*b^(1/3)*x^(1/3) + 2*Sqrt[3]*a^(1/3)*ArcTan[(1 - (2*b^(1/3)*x^(
1/3))/a^(1/3))/Sqrt[3]] - 2*a^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)
] + a^(1/3)*Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/
3)])/(2*b^(4/3))
```

Maple [A] time = 0.008, size = 108, normalized size = 1.

$$3\frac{\sqrt[3]{x}}{b}-\frac{a}{b^{2}}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{a}{2\,b^{2}}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$-\frac{a\sqrt{3}}{b^{2}}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/3)/(b*x+a),x)
```

```
[Out] 3*x^(1/3)/b-a/b^2/(a/b)^(2/3)*ln(x^(1/3)+(a/b)^(1/3))+1/2*a/b^2/(
a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))-a/b^2/(a/b
)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229134, size = 150, normalized size = 1.38

$$-\frac{2\sqrt{3}\left(-\frac{a}{b}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\log\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)-2\left(-\frac{a}{b}\right)^{\frac{1}{3}}\log\left(x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)-6x^{\frac{1}{3}}}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*(-a/b)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/
b)^(1/3))/(-a/b)^(1/3)) + (-a/b)^(1/3)*log(x^(2/3) + x^(1/3)*(-a/
b)^(1/3) + (-a/b)^(2/3)) - 2*(-a/b)^(1/3)*log(x^(1/3) - (-a/b)^(1
/3)) - 6*x^(1/3))/b
```

Sympy [A] time = 3.57049, size = 180, normalized size = 1.65

$$\frac{4\sqrt[3]{a}e^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{4}{3}\right)}{3b^{\frac{4}{3}}\Gamma\left(\frac{7}{3}\right)}-\frac{4\sqrt[3]{a}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{4}{3}\right)}{3b^{\frac{4}{3}}\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{a}e^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{4}{3}\right)}{3b^{\frac{4}{3}}\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{x}\Gamma\left(\frac{4}{3}\right)}{b\Gamma\left(\frac{7}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3)/(b*x+a),x)
```

```
[Out] 4*a**(1/3)*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi
/3)/a**(1/3))*gamma(4/3)/(3*b**(4/3)*gamma(7/3)) - 4*a**(1/3)*log
(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(4/3)/(3*b*
*(4/3)*gamma(7/3)) + 4*a**(1/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(
1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(4/3)/(3*b**(4/3)*gamma(7
/3)) + 4*x**(1/3)*gamma(4/3)/(b*gamma(7/3))
```

GIAC/XCAS [A] time = 0.224201, size = 161, normalized size = 1.48

$$\frac{\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{b}-\frac{\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{b^{2}}+\frac{3\,x^{\frac{1}{3}}}{b}-\frac{\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a),x, algorithm="giac")
```

```
[Out] (-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/b - sqrt(3)*(-a*b^2)
^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(1/3)
)/b^2 + 3*x^(1/3)/b - 1/2*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3)*(-a
/b)^(1/3) + (-a/b)^(2/3))/b^2
```

3.678 $\int \frac{1}{\sqrt[3]{x}(a+bx)}\,dx$

Optimal. Leaf size=100

$$-\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2\sqrt[3]{a}b^{2/3}}+\frac{\log(a+bx)}{2\sqrt[3]{a}b^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{a}b^{2/3}}$$

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))
])/(a^(1/3)*b^(2/3))) - (3*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*a^(
1/3)*b^(2/3)) + Log[a + b*x]/(2*a^(1/3)*b^(2/3))
```

Rubi [A] time = 0.0692117, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$-\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2\sqrt[3]{a}b^{2/3}}+\frac{\log(a+bx)}{2\sqrt[3]{a}b^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt[3]{a}b^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(1/3)*(a + b*x)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))
])/(a^(1/3)*b^(2/3))) - (3*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*a^(
1/3)*b^(2/3)) + Log[a + b*x]/(2*a^(1/3)*b^(2/3))
```

Rubi in Sympy [A] time = 7.5223, size = 95, normalized size = 0.95

$$-\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2\sqrt[3]{a}b^{\frac{2}{3}}}+\frac{\log(a+bx)}{2\sqrt[3]{a}b^{\frac{2}{3}}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{\sqrt[3]{a}b^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/3)/(b*x+a),x)
```

```
[Out] -3*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*a**(1/3)*b**(2/3)) + log(
a + b*x)/(2*a**(1/3)*b**(2/3)) - sqrt(3)*atan(sqrt(3)*(a**(1/3)/3
```

```
- 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(a**(1/3)*b**(2/3))
```

Mathematica [A] time = 0.0300627, size = 103, normalized size = 1.03

$$\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)-2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2\sqrt[3]{a}b^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(1/3)*(a + b*x)),x]
```

```
[Out] (-2*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] - 2
*Log[a^(1/3) + b^(1/3)*x^(1/3)] + Log[a^(2/3) - a^(1/3)*b^(1/3)*x
^(1/3) + b^(2/3)*x^(2/3)])/(2*a^(1/3)*b^(2/3))
```

Maple [A] time = 0.007, size = 96, normalized size = 1.

$$-\frac{1}{b}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{1}{2b}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{\sqrt{3}}{b}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/3)/(b*x+a),x)
```

```
[Out] -1/b/(a/b)^(1/3)*ln(x^(1/3)+(a/b)^(1/3))+1/2/b/(a/b)^(1/3)*ln(x^(
2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+3^(1/2)/b/(a/b)^(1/3)*arcta
n(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(1/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228121, size = 128, normalized size = 1.28

$$-\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(ab-2\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)}{3ab}\right)-2\log\left(ab+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)+\log\left(-ab+\left(-ab^2\right)^{\frac{1}{3}}bx^{\frac{2}{3}}+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)}{2\left(-ab^2\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(1/3)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(a*b - 2*(-a*b^2)^(2/3)*x^(1/
3))/(a*b)) - 2*log(a*b + (-a*b^2)^(2/3)*x^(1/3)) + log(-a*b + (-a
*b^2)^(1/3)*b*x^(2/3) + (-a*b^2)^(2/3)*x^(1/3)))/(-a*b^2)^(1/3)
```

Sympy [A] time = 3.05824, size = 165, normalized size = 1.65

$$-\frac{2e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}b^{\frac{2}{3}}\Gamma\left(\frac{5}{3}\right)}-\frac{2\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}b^{\frac{2}{3}}\Gamma\left(\frac{5}{3}\right)}-\frac{2e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{2}{3}\right)}{3\sqrt[3]{a}b^{\frac{2}{3}}\Gamma\left(\frac{5}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/3)/(b*x+a),x)
```

```
[Out] -2*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**
(1/3))*gamma(2/3)/(3*a**(1/3)*b**(2/3)*gamma(5/3)) - 2*log(1 - b*
*(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(3*a**(1/3)*
b**(2/3)*gamma(5/3)) - 2*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*
exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(3*a**(1/3)*b**(2/3)*gam
ma(5/3))
```

GIAC/XCAS [A] time = 0.218975, size = 159, normalized size = 1.59

$$-\frac{\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{a}-\frac{\sqrt{3}\left(-ab^2\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{ab^2}+\frac{\left(-ab^2\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(1/3)),x, algorithm="giac")
```

```
[Out] -(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a - sqrt(3)*(-a*b^2
)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(1/3
))/(a*b^2) + 1/2*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3)
 + (-a/b)^(2/3))/(a*b^2)
```

3.679 $\int \frac{1}{x^{2/3}(a+bx)}\,dx$

Optimal. Leaf size=100

$$\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{2/3}\sqrt[3]{b}}-\frac{\log(a+bx)}{2a^{2/3}\sqrt[3]{b}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{2/3}\sqrt[3]{b}}$$

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))
])/(a^(2/3)*b^(1/3))) + (3*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*a^(
2/3)*b^(1/3)) - Log[a + b*x]/(2*a^(2/3)*b^(1/3))
```

Rubi [A] time = 0.0676623, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.308

$$\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{2/3}\sqrt[3]{b}}-\frac{\log(a+bx)}{2a^{2/3}\sqrt[3]{b}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(2/3)*(a + b*x)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))
])/(a^(2/3)*b^(1/3))) + (3*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*a^(
2/3)*b^(1/3)) - Log[a + b*x]/(2*a^(2/3)*b^(1/3))
```

Rubi in Sympy [A] time = 7.62149, size = 95, normalized size = 0.95

$$\frac{3\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{\frac{2}{3}}\sqrt[3]{b}}-\frac{\log\left(a+bx\right)}{2a^{\frac{2}{3}}\sqrt[3]{b}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{a^{\frac{2}{3}}\sqrt[3]{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(2/3)/(b*x+a),x)
```

```
[Out] 3*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*a**(2/3)*b**(1/3)) - log(a
 + b*x)/(2*a**(2/3)*b**(1/3)) - sqrt(3)*atan(sqrt(3)*(a**(1/3)/3
- 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(a**(2/3)*b**(1/3))
```

Mathematica [A] time = 0.0230276, size = 103, normalized size = 1.03

$$-\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2a^{2/3}\sqrt[3]{b}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(2/3)*(a + b*x)),x]
```

```
[Out] -(2*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] - 2
*Log[a^(1/3) + b^(1/3)*x^(1/3)] + Log[a^(2/3) - a^(1/3)*b^(1/3)*x
^(1/3) + b^(2/3)*x^(2/3)])/(2*a^(2/3)*b^(1/3))
```

Maple [A] time = 0.007, size = 95, normalized size = 1.

$$\frac{1}{b}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{1}{2b}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{\sqrt{3}}{b}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(2/3)/(b*x+a),x)
```

```
[Out] 1/b/(a/b)^(2/3)*ln(x^(1/3)+(a/b)^(1/3))-1/2/b/(a/b)^(2/3)*ln(x^(2
/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+1/b/(a/b)^(2/3)*3^(1/2)*arct
an(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(2/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223692, size = 115, normalized size = 1.15

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(a-2\left(a^2b\right)^{\frac{1}{3}}x^{\frac{1}{3}}\right)}{3a}\right)-\log\left(a^2-\left(a^2b\right)^{\frac{1}{3}}ax^{\frac{1}{3}}+\left(a^2b\right)^{\frac{2}{3}}x^{\frac{2}{3}}\right)+2\log\left(a+\left(a^2b\right)^{\frac{1}{3}}x^{\frac{1}{3}}\right)}{2\left(a^2b\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(2/3)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(a - 2*(a^2*b)^(1/3)*x^(1/3))/
a) - log(a^2 - (a^2*b)^(1/3)*a*x^(1/3) + (a^2*b)^(2/3)*x^(2/3)) +
 2*log(a + (a^2*b)^(1/3)*x^(1/3)))/(a^2*b)^(1/3)
```

Sympy [A] time = 3.1814, size = 156, normalized size = 1.56

$$-\frac{e^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{\frac{2}{3}}\sqrt[3]{b}\,\Gamma\left(\frac{4}{3}\right)}+\frac{\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{\frac{2}{3}}\sqrt[3]{b}\,\Gamma\left(\frac{4}{3}\right)}-\frac{e^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{1}{3}\right)}{3a^{\frac{2}{3}}\sqrt[3]{b}\,\Gamma\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(2/3)/(b*x+a),x)
```

```
[Out] -exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/
3))*gamma(1/3)/(3*a**(2/3)*b**(1/3)*gamma(4/3)) + log(1 - b**(1/3
)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(1/3)/(3*a**(2/3)*b**(1
/3)*gamma(4/3)) - exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar
(5*I*pi/3)/a**(1/3))*gamma(1/3)/(3*a**(2/3)*b**(1/3)*gamma(4/3))
```

GIAC/XCAS [A] time = 0.217682, size = 158, normalized size = 1.58

$$-\frac{\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{a}+\frac{\sqrt{3}\left(-ab^2\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{ab}+\frac{\left(-ab^2\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(2/3)),x, algorithm="giac")
```

```
[Out] -(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a + sqrt(3)*(-a*b^2
)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(1/3
))/(a*b) + 1/2*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) +
 (-a/b)^(2/3))/(a*b)
```

3.680 $\int \frac{1}{x^{4/3}(a+bx)}\,dx$

Optimal. Leaf size=109

$$\frac{3\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{4/3}}-\frac{\sqrt[3]{b}\log(a+bx)}{2a^{4/3}}+\frac{\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{4/3}}-\frac{3}{a\sqrt[3]{x}}$$

```
[Out] -3/(a*x^(1/3)) + (Sqrt[3]*b^(1/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(
1/3))/(Sqrt[3]*a^(1/3))])/a^(4/3) + (3*b^(1/3)*Log[a^(1/3) + b^(1
/3)*x^(1/3)])/(2*a^(4/3)) - (b^(1/3)*Log[a + b*x])/(2*a^(4/3))
```

Rubi [A] time = 0.0879252, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{3\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{4/3}}-\frac{\sqrt[3]{b}\log(a+bx)}{2a^{4/3}}+\frac{\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{4/3}}-\frac{3}{a\sqrt[3]{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(4/3)*(a + b*x)),x]
```

```
[Out] -3/(a*x^(1/3)) + (Sqrt[3]*b^(1/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(
1/3))/(Sqrt[3]*a^(1/3))])/a^(4/3) + (3*b^(1/3)*Log[a^(1/3) + b^(1
/3)*x^(1/3)])/(2*a^(4/3)) - (b^(1/3)*Log[a + b*x])/(2*a^(4/3))
```

Rubi in Sympy [A] time = 11.1336, size = 104, normalized size = 0.95

$$-\frac{3}{a\sqrt[3]{x}}+\frac{3\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{\frac{4}{3}}}-\frac{\sqrt[3]{b}\log\left(a+bx\right)}{2a^{\frac{4}{3}}}+\frac{\sqrt{3}\sqrt[3]{b}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{a^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(4/3)/(b*x+a),x)
```

```
[Out] -3/(a*x**(1/3)) + 3*b**(1/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/(2
*a**(4/3)) - b**(1/3)*log(a + b*x)/(2*a**(4/3)) + sqrt(3)*b**(1/3
)*atan(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/a**
```

```
(4/3)
```

Mathematica [A] time = 0.0671427, size = 127, normalized size = 1.17

$$\frac{-\sqrt[3]{b}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)+2\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+2\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)-\frac{6\sqrt[3]{a}}{\sqrt[3]{x}}}{2a^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(4/3)*(a + b*x)),x]
```

```
[Out] ((-6*a^(1/3))/x^(1/3) + 2*Sqrt[3]*b^(1/3)*ArcTan[(1 - (2*b^(1/3)*
x^(1/3))/a^(1/3))/Sqrt[3]] + 2*b^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1
/3)] - b^(1/3)*Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^
(2/3)])/(2*a^(4/3))
```

Maple [A] time = 0.012, size = 104, normalized size = 1.

$$-3\,\frac{1}{a\sqrt[3]{x}}+\frac{1}{a}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}-\frac{1}{2\,a}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$-\frac{\sqrt{3}}{a}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(4/3)/(b*x+a),x)
```

```
[Out] -3/a/x^(1/3)+1/a/(a/b)^(1/3)*ln(x^(1/3)+(a/b)^(1/3))-1/2/a/(a/b)^
(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))-1/a*3^(1/2)/(a/
b)^(1/3)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(4/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232659, size = 169, normalized size = 1.55

$$-\frac{2\sqrt{3}x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\arctan\left(-\frac{\sqrt{3}\left(a\left(\frac{b}{a}\right)^{\frac{2}{3}}-2\,bx^{\frac{1}{3}}\right)}{3\,a\left(\frac{b}{a}\right)^{\frac{2}{3}}}\right)+x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\log\left(-ax^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{2}{3}}+bx^{\frac{2}{3}}+a\left(\frac{b}{a}\right)^{\frac{1}{3}}\right)-2\,x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\log\left(a\left(\frac{b}{a}\right)^{\frac{2}{3}}+bx^{\frac{1}{3}}\right)}{2\,ax^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(4/3)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*x^(1/3)*(b/a)^(1/3)*arctan(-1/3*sqrt(3)*(a*(b/a)^
(2/3) - 2*b*x^(1/3))/(a*(b/a)^(2/3))) + x^(1/3)*(b/a)^(1/3)*log(-
a*x^(1/3)*(b/a)^(2/3) + b*x^(2/3) + a*(b/a)^(1/3)) - 2*x^(1/3)*(b
/a)^(1/3)*log(a*(b/a)^(2/3) + b*x^(1/3)) + 6)/(a*x^(1/3))
```

Sympy [A] time = 3.91452, size = 182, normalized size = 1.67

$$\frac{\Gamma\left(-\frac{1}{3}\right)}{a\sqrt[3]{x}\,\Gamma\left(\frac{2}{3}\right)}-\frac{\sqrt[3]{b}e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(-\frac{1}{3}\right)}{3a^{\frac{4}{3}}\,\Gamma\left(\frac{2}{3}\right)}-\frac{\sqrt[3]{b}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(-\frac{1}{3}\right)}{3a^{\frac{4}{3}}\,\Gamma\left(\frac{2}{3}\right)}-\frac{\sqrt[3]{b}e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(-\frac{1}{3}\right)}{3a^{\frac{4}{3}}\,\Gamma\left(\frac{2}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(4/3)/(b*x+a),x)
```

```
[Out] gamma(-1/3)/(a*x**(1/3)*gamma(2/3)) - b**(1/3)*exp(10*I*pi/3)*log
(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(-1/3)/(3
*a**(4/3)*gamma(2/3)) - b**(1/3)*log(1 - b**(1/3)*x**(1/3)*exp_po
lar(I*pi)/a**(1/3))*gamma(-1/3)/(3*a**(4/3)*gamma(2/3)) - b**(1/3
)*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**
(1/3))*gamma(-1/3)/(3*a**(4/3)*gamma(2/3))
```

GIAC/XCAS [A] time = 0.221063, size = 169, normalized size = 1.55

$$\frac{b\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{a^2}+\frac{\sqrt{3}\left(-ab^2\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{a^2b}-\frac{3}{ax^{\frac{1}{3}}}-\frac{\left(-ab^2\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2\,a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(4/3)),x, algorithm="giac")
```

```
[Out] b*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^2 + sqrt(3)*(-a*
b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(
1/3))/(a^2*b) - 3/(a*x^(1/3)) - 1/2*(-a*b^2)^(2/3)*ln(x^(2/3) + x
^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a^2*b)
```

3.681 $\int \frac{1}{x^{5/3}(a+bx)}\,dx$

Optimal. Leaf size=111

$$-\frac{3b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{5/3}}+\frac{b^{2/3}\log(a+bx)}{2a^{5/3}}+\frac{\sqrt{3}b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{5/3}}-\frac{3}{2ax^{2/3}}$$

```
[Out] -3/(2*a*x^(2/3)) + (Sqrt[3]*b^(2/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x
^(1/3))/(Sqrt[3]*a^(1/3))])/a^(5/3) - (3*b^(2/3)*Log[a^(1/3) + b^
(1/3)*x^(1/3)])/(2*a^(5/3)) + (b^(2/3)*Log[a + b*x])/(2*a^(5/3))
```

Rubi [A] time = 0.090239, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{3b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{5/3}}+\frac{b^{2/3}\log(a+bx)}{2a^{5/3}}+\frac{\sqrt{3}b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{a^{5/3}}-\frac{3}{2ax^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/3)*(a + b*x)),x]
```

```
[Out] -3/(2*a*x^(2/3)) + (Sqrt[3]*b^(2/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x
^(1/3))/(Sqrt[3]*a^(1/3))])/a^(5/3) - (3*b^(2/3)*Log[a^(1/3) + b^
(1/3)*x^(1/3)])/(2*a^(5/3)) + (b^(2/3)*Log[a + b*x])/(2*a^(5/3))
```

Rubi in Sympy [A] time = 11.4381, size = 105, normalized size = 0.95

$$-\frac{3}{2ax^{\frac{2}{3}}}-\frac{3b^{\frac{2}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{\frac{5}{3}}}+\frac{b^{\frac{2}{3}}\log\left(a+bx\right)}{2a^{\frac{5}{3}}}+\frac{\sqrt{3}b^{\frac{2}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{a^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/3)/(b*x+a),x)
```

```
[Out] -3/(2*a*x**(2/3)) - 3*b**(2/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/
(2*a**(5/3)) + b**(2/3)*log(a + b*x)/(2*a**(5/3)) + sqrt(3)*b**(2
/3)*atan(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/a
```

```
**(5/3)
```

Mathematica [A] time = 0.0534176, size = 126, normalized size = 1.14

$$\frac{b^{2/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-\frac{3a^{2/3}}{x^{2/3}}-2b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+2\sqrt{3}b^{2/3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{2a^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/3)*(a + b*x)),x]
```

```
[Out] ((-3*a^(2/3))/x^(2/3) + 2*Sqrt[3]*b^(2/3)*ArcTan[(1 - (2*b^(1/3)*
x^(1/3))/a^(1/3))/Sqrt[3]] - 2*b^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1
/3)] + b^(2/3)*Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^
(2/3)])/(2*a^(5/3))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{3}{2\,a}x^{-\frac{2}{3}}-\frac{1}{a}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{1}{2\,a}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{\sqrt{3}}{a}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/3)/(b*x+a),x)
```

```
[Out] -3/2/a/x^(2/3)-1/a/(a/b)^(2/3)*ln(x^(1/3)+(a/b)^(1/3))+1/2/a/(a/b
)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))-1/a/(a/b)^(2/
3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(5/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225254, size = 208, normalized size = 1.87

$$-\frac{2\sqrt{3}x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,bx^{\frac{1}{3}}+a\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\right)}{3\,a\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}}\right)+x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\log\left(b^2x^{\frac{2}{3}}+abx^{\frac{1}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}+a^2\left(-\frac{b^2}{a^2}\right)^{\frac{2}{3}}\right)-2\,x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\log\left(bx\right.}{2\,ax^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(5/3)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*x^(2/3)*(-b^2/a^2)^(1/3)*arctan(1/3*sqrt(3)*(2*b*
x^(1/3) + a*(-b^2/a^2)^(1/3))/(a*(-b^2/a^2)^(1/3))) + x^(2/3)*(-b
^2/a^2)^(1/3)*log(b^2*x^(2/3) + a*b*x^(1/3)*(-b^2/a^2)^(1/3) + a^
2*(-b^2/a^2)^(2/3)) - 2*x^(2/3)*(-b^2/a^2)^(1/3)*log(b*x^(1/3) -
a*(-b^2/a^2)^(1/3)) + 3)/(a*x^(2/3))
```

Sympy [A] time = 4.25006, size = 185, normalized size = 1.67

$$\frac{\left(-\frac{2}{3}\right)}{ax^{\frac{2}{3}}\left(\frac{1}{3}\right)}-\frac{2b^{\frac{2}{3}}e^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(-\frac{2}{3}\right)}{3a^{\frac{5}{3}}\left(\frac{1}{3}\right)}+\frac{2b^{\frac{2}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(-\frac{2}{3}\right)}{3a^{\frac{5}{3}}\left(\frac{1}{3}\right)}-\frac{2b^{\frac{2}{3}}e^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(-\frac{2}{3}\right)}{3a^{\frac{5}{3}}\left(\frac{1}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/3)/(b*x+a),x)
```

```
[Out] gamma(-2/3)/(a*x**(2/3)*gamma(1/3)) - 2*b**(2/3)*exp(5*I*pi/3)*lo
g(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(-2/3)/(
3*a**(5/3)*gamma(1/3)) + 2*b**(2/3)*log(1 - b**(1/3)*x**(1/3)*exp
_polar(I*pi)/a**(1/3))*gamma(-2/3)/(3*a**(5/3)*gamma(1/3)) - 2*b*
*(2/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/
a**(1/3))*gamma(-2/3)/(3*a**(5/3)*gamma(1/3))
```

GIAC/XCAS [A] time = 0.218496, size = 162, normalized size = 1.46

$$\frac{b\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{a^{2}}-\frac{\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{a^{2}}-\frac{\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{2\,a^{2}}-\frac{3}{2\,ax^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*x^(5/3)),x, algorithm="giac")
```

```
[Out] b*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^2 - sqrt(3)*(-a*
b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(
1/3))/a^2 - 1/2*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3)
+ (-a/b)^(2/3))/a^2 - 3/2/(a*x^(2/3))
```

3.682 $\int \frac{x^{5/3}}{(a+bx)^2}\,dx$

Optimal. Leaf size=129

$$\frac{5a^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{8/3}}-\frac{5a^{2/3}\log(a+bx)}{6b^{8/3}}+\frac{5a^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}b^{8/3}}-\frac{x^{5/3}}{b(a+bx)}+\frac{5x^{2/3}}{2b^2}$$

```
[Out] (5*x^(2/3))/(2*b^2) - x^(5/3)/(b*(a + b*x)) + (5*a^(2/3)*ArcTan[(
a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*b^(8/3)
) + (5*a^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*b^(8/3)) - (5*a
^(2/3)*Log[a + b*x])/(6*b^(8/3))
```

Rubi [A] time = 0.113116, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.462$

$$\frac{5a^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{8/3}}-\frac{5a^{2/3}\log(a+bx)}{6b^{8/3}}+\frac{5a^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}b^{8/3}}-\frac{x^{5/3}}{b(a+bx)}+\frac{5x^{2/3}}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/3)/(a + b*x)^2,x]
```

```
[Out] (5*x^(2/3))/(2*b^2) - x^(5/3)/(b*(a + b*x)) + (5*a^(2/3)*ArcTan[(
a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*b^(8/3)
) + (5*a^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*b^(8/3)) - (5*a
^(2/3)*Log[a + b*x])/(6*b^(8/3))
```

Rubi in Sympy [A] time = 16.506, size = 124, normalized size = 0.96

$$\frac{5a^{\frac{2}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2b^{\frac{8}{3}}}-\frac{5a^{\frac{2}{3}}\log\left(a+bx\right)}{6b^{\frac{8}{3}}}+\frac{5\sqrt{3}a^{\frac{2}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3b^{\frac{8}{3}}}-\frac{x^{\frac{5}{3}}}{b\left(a+bx\right)}+\frac{5x^{\frac{2}{3}}}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/3)/(b*x+a)**2,x)
```

```
[Out] 5*a**(2/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/(2*b**(8/3)) - 5*a**
(2/3)*log(a + b*x)/(6*b**(8/3)) + 5*sqrt(3)*a**(2/3)*atan(sqrt(3)
```

```
*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*b**(8/3)) - x*
*(5/3)/(b*(a + b*x)) + 5*x**(2/3)/(2*b**2)
```

Mathematica [A] time = 0.13883, size = 147, normalized size = 1.14

$$\frac{-5a^{2/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)+10a^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+10\sqrt{3}a^{2/3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)+\frac{6ab^{2/3}x^{2/3}}{a+bx}+9b^{2/3}x^{2/3}}{6b^{8/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/3)/(a + b*x)^2,x]
```

```
[Out] (9*b^(2/3)*x^(2/3) + (6*a*b^(2/3)*x^(2/3))/(a + b*x) + 10*Sqrt[3]
*a^(2/3)*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] + 10*a
^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)] - 5*a^(2/3)*Log[a^(2/3) - a
^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/(6*b^(8/3))
```

Maple [A] time = 0.017, size = 123, normalized size = 1.

$$\frac{3}{2\,b^2}x^{\frac{2}{3}}+\frac{a}{b^2\,(bx+a)}x^{\frac{2}{3}}+\frac{5\,a}{3\,b^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$-\frac{5\,a}{6\,b^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}-\frac{5\,a\sqrt{3}}{3\,b^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/3)/(b*x+a)^2,x)
```

```
[Out] 3/2*x^(2/3)/b^2+a/b^2*x^(2/3)/(b*x+a)+5/3*a/b^3/(a/b)^(1/3)*ln(x^
(1/3)+(a/b)^(1/3))-5/6*a/b^3/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)
^(1/3)+(a/b)^(2/3))-5/3*a/b^3*3^(1/2)/(a/b)^(1/3)*arctan(1/3*3^(1
/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226783, size = 242, normalized size = 1.88

$$-\frac{\sqrt{3}\left(5\sqrt{3}(bx+a)\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\log\left(-bx^{\frac{1}{3}}\left(\frac{a^2}{b^2}\right)^{\frac{2}{3}}+ax^{\frac{2}{3}}+a\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\right)-10\sqrt{3}(bx+a)\left(\frac{a^2}{b^2}\right)^{\frac{1}{3}}\log\left(b\left(\frac{a^2}{b^2}\right)^{\frac{2}{3}}+ax^{\frac{1}{3}}\right)+30(bx+a)\left(\frac{a^2}{b^2}\right.\right.}{18(b^3x+ab^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -1/18*sqrt(3)*(5*sqrt(3)*(b*x + a)*(a^2/b^2)^(1/3)*log(-b*x^(1/3)
*(a^2/b^2)^(2/3) + a*x^(2/3) + a*(a^2/b^2)^(1/3)) - 10*sqrt(3)*(b
*x + a)*(a^2/b^2)^(1/3)*log(b*(a^2/b^2)^(2/3) + a*x^(1/3)) + 30*(
b*x + a)*(a^2/b^2)^(1/3)*arctan(-1/3*(sqrt(3)*b*(a^2/b^2)^(2/3) -
 2*sqrt(3)*a*x^(1/3))/(b*(a^2/b^2)^(2/3))) - 3*sqrt(3)*(3*b*x + 5
*a)*x^(2/3))/(b^3*x + a*b^2)
```

Sympy [A] time = 8.44365, size = 581, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3)/(b*x+a)**2,x)
```

```
[Out] 40*a**(11/3)*b**3*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_po
lar(I*pi/3)/a**(1/3))*gamma(8/3)/(9*a**3*b**(17/3)*gamma(11/3) +
9*a**2*b**(20/3)*x*gamma(11/3)) + 40*a**(11/3)*b**3*log(1 - b**(1
/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(8/3)/(9*a**3*b**(17/
3)*gamma(11/3) + 9*a**2*b**(20/3)*x*gamma(11/3)) + 40*a**(11/3)*b
**3*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a
**(1/3))*gamma(8/3)/(9*a**3*b**(17/3)*gamma(11/3) + 9*a**2*b**(20
/3)*x*gamma(11/3)) + 40*a**(8/3)*b**4*x*exp(10*I*pi/3)*log(1 - b*
*(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(8/3)/(9*a**3*b*
*(17/3)*gamma(11/3) + 9*a**2*b**(20/3)*x*gamma(11/3)) + 40*a**(8/
3)*b**4*x*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gam
ma(8/3)/(9*a**3*b**(17/3)*gamma(11/3) + 9*a**2*b**(20/3)*x*gamma(
11/3)) + 40*a**(8/3)*b**4*x*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/
3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(8/3)/(9*a**3*b**(17/3)*gam
```

```
ma(11/3) + 9*a**2*b**(20/3)*x*gamma(11/3)) + 60*a**3*b**(11/3)*x*
*(2/3)*gamma(8/3)/(9*a**3*b**(17/3)*gamma(11/3) + 9*a**2*b**(20/3
)*x*gamma(11/3)) + 36*a**2*b**(14/3)*x**(5/3)*gamma(8/3)/(9*a**3*
b**(17/3)*gamma(11/3) + 9*a**2*b**(20/3)*x*gamma(11/3))
```

GIAC/XCAS [A] time = 0.218803, size = 182, normalized size = 1.41

$$\frac{5\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,b^{2}}+\frac{ax^{\frac{2}{3}}}{(bx+a)b^{2}}+\frac{3\,x^{\frac{2}{3}}}{2\,b^{2}}+\frac{5\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,b^{4}}-\frac{5\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{6\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 5/3*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/b^2 + a*x^(2/3)/
((b*x + a)*b^2) + 3/2*x^(2/3)/b^2 + 5/3*sqrt(3)*(-a*b^2)^(2/3)*ar
ctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(1/3))/b^4 - 5
/6*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3
))/b^4
```

3.683 $\int \frac{x^{4/3}}{(a+bx)^2}\,dx$

Optimal. Leaf size=125

$$-\frac{2\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{b^{7/3}}+\frac{2\sqrt[3]{a}\log(a+bx)}{3b^{7/3}}+\frac{4\sqrt[3]{a}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}b^{7/3}}-\frac{x^{4/3}}{b(a+bx)}+\frac{4\sqrt[3]{x}}{b^2}$$

```
[Out] (4*x^(1/3))/b^2 - x^(4/3)/(b*(a + b*x)) + (4*a^(1/3)*ArcTan[(a^(1
/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*b^(7/3)) -
(2*a^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/b^(7/3) + (2*a^(1/3)*L
og[a + b*x])/(3*b^(7/3))
```

Rubi [A] time = 0.112812, antiderivative size = 125, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$-\frac{2\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{b^{7/3}}+\frac{2\sqrt[3]{a}\log(a+bx)}{3b^{7/3}}+\frac{4\sqrt[3]{a}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}b^{7/3}}-\frac{x^{4/3}}{b(a+bx)}+\frac{4\sqrt[3]{x}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3)/(a + b*x)^2,x]
```

```
[Out] (4*x^(1/3))/b^2 - x^(4/3)/(b*(a + b*x)) + (4*a^(1/3)*ArcTan[(a^(1
/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*b^(7/3)) -
(2*a^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/b^(7/3) + (2*a^(1/3)*L
og[a + b*x])/(3*b^(7/3))
```

Rubi in Sympy [A] time = 16.1072, size = 121, normalized size = 0.97

$$-\frac{2\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{b^{\frac{7}{3}}}+\frac{2\sqrt[3]{a}\log\left(a+bx\right)}{3b^{\frac{7}{3}}}+\frac{4\sqrt{3}\sqrt[3]{a}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3b^{\frac{7}{3}}}-\frac{x^{\frac{4}{3}}}{b\left(a+bx\right)}+\frac{4\sqrt[3]{x}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3)/(b*x+a)**2,x)
```

```
[Out] -2*a**(1/3)*log(a**(1/3) + b**(1/3)*x**(1/3))/b**(7/3) + 2*a**(1/
3)*log(a + b*x)/(3*b**(7/3)) + 4*sqrt(3)*a**(1/3)*atan(sqrt(3)*(a
```

```
**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*b**(7/3)) - x**(4
/3)/(b*(a + b*x)) + 4*x**(1/3)/b**2
```

Mathematica [A] time = 0.141827, size = 147, normalized size = 1.18

$$\frac{2\sqrt[3]{a}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)+\frac{3a\sqrt[3]{b}\sqrt[3]{x}}{a+bx}-4\sqrt[3]{a}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+4\sqrt{3}\sqrt[3]{a}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)+9\sqrt[3]{b}\sqrt[3]{x}}{3b^{7/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3)/(a + b*x)^2,x]
```

```
[Out] (9*b^(1/3)*x^(1/3) + (3*a*b^(1/3)*x^(1/3))/(a + b*x) + 4*Sqrt[3]*
a^(1/3)*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] - 4*a^(
1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)] + 2*a^(1/3)*Log[a^(2/3) - a^(
1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/(3*b^(7/3))
```

Maple [A] time = 0.016, size = 123, normalized size = 1.

$$3\,\frac{\sqrt[3]{x}}{b^2}+\frac{a}{b^2\,(bx+a)}\sqrt[3]{x}-\frac{4\,a}{3\,b^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$+\frac{2\,a}{3\,b^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{4\,a\sqrt{3}}{3\,b^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(4/3)/(b*x+a)^2,x)
```

```
[Out] 3*x^(1/3)/b^2+a/b^2*x^(1/3)/(b*x+a)-4/3*a/b^3/(a/b)^(2/3)*ln(x^(1
/3)+(a/b)^(1/3))+2/3*a/b^3/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(
1/3)+(a/b)^(2/3))-4/3*a/b^3/(a/b)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2
)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224728, size = 213, normalized size = 1.7

$$-\frac{\sqrt{3}\left(2\sqrt{3}(bx+a)\left(-\frac{a}{b}\right)^{\frac{1}{3}}\log\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)-4\sqrt{3}(bx+a)\left(-\frac{a}{b}\right)^{\frac{1}{3}}\log\left(x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)+12(bx+a)\left(-\frac{a}{b}\right)^{\frac{1}{3}}\text{arc}\right.}{9\left(b^{3}x+ab^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(2*sqrt(3)*(b*x + a)*(-a/b)^(1/3)*log(x^(2/3) + x^(1
/3)*(-a/b)^(1/3) + (-a/b)^(2/3)) - 4*sqrt(3)*(b*x + a)*(-a/b)^(1/
3)*log(x^(1/3) - (-a/b)^(1/3)) + 12*(b*x + a)*(-a/b)^(1/3)*arctan
(1/3*(2*sqrt(3)*x^(1/3) + sqrt(3)*(-a/b)^(1/3))/(-a/b)^(1/3)) - 3
*sqrt(3)*(3*b*x + 4*a)*x^(1/3))/(b^3*x + a*b^2)
```

Sympy [A] time = 6.17492, size = 578, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3)/(b*x+a)**2,x)
```

```
[Out] 28*a**(10/3)*b**3*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_pol
ar(I*pi/3)/a**(1/3))*gamma(7/3)/(9*a**3*b**(16/3)*gamma(10/3) + 9
*a**2*b**(19/3)*x*gamma(10/3)) - 28*a**(10/3)*b**3*log(1 - b**(1/
3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(7/3)/(9*a**3*b**(16/3
)*gamma(10/3) + 9*a**2*b**(19/3)*x*gamma(10/3)) + 28*a**(10/3)*b*
*3*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(
1/3))*gamma(7/3)/(9*a**3*b**(16/3)*gamma(10/3) + 9*a**2*b**(19/3)
*x*gamma(10/3)) + 28*a**(7/3)*b**4*x*exp(5*I*pi/3)*log(1 - b**(1/
3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(7/3)/(9*a**3*b**(16
/3)*gamma(10/3) + 9*a**2*b**(19/3)*x*gamma(10/3)) - 28*a**(7/3)*b
**4*x*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(7
/3)/(9*a**3*b**(16/3)*gamma(10/3) + 9*a**2*b**(19/3)*x*gamma(10/3
)) + 28*a**(7/3)*b**4*x*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp
_polar(5*I*pi/3)/a**(1/3))*gamma(7/3)/(9*a**3*b**(16/3)*gamma(10/
3) + 9*a**2*b**(19/3)*x*gamma(10/3)) + 84*a**3*b**(10/3)*x**(1/3)
*gamma(7/3)/(9*a**3*b**(16/3)*gamma(10/3) + 9*a**2*b**(19/3)*x*ga
mma(10/3)) + 63*a**2*b**(13/3)*x**(4/3)*gamma(7/3)/(9*a**3*b**(16
```

```
/3)*gamma(10/3) + 9*a**2*b**(19/3)*x*gamma(10/3))
```

GIAC/XCAS [A] time = 0.224804, size = 182, normalized size = 1.46

$$\frac{4\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,b^{2}}-\frac{4\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,b^{3}}+\frac{ax^{\frac{1}{3}}}{(bx+a)b^{2}}+\frac{3\,x^{\frac{1}{3}}}{b^{2}}-\frac{2\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 4/3*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/b^2 - 4/3*sqrt(3
)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(-
a/b)^(1/3))/b^3 + a*x^(1/3)/((b*x + a)*b^2) + 3*x^(1/3)/b^2 - 2/3
*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))
/b^3
```

3.684 $\int \frac{x^{2/3}}{(a+bx)^2}\,dx$

Optimal. Leaf size=115

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{a}b^{5/3}}+\frac{\log(a+bx)}{3\sqrt[3]{a}b^{5/3}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}\sqrt[3]{a}b^{5/3}}-\frac{x^{2/3}}{b(a+bx)}$$

```
[Out] -(x^(2/3)/(b*(a + b*x))) - (2*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3)
)/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(1/3)*b^(5/3)) - Log[a^(1/3) + b
^(1/3)*x^(1/3)]/(a^(1/3)*b^(5/3)) + Log[a + b*x]/(3*a^(1/3)*b^(5/
3))
```

Rubi [A] time = 0.0933573, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{a}b^{5/3}}+\frac{\log(a+bx)}{3\sqrt[3]{a}b^{5/3}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}\sqrt[3]{a}b^{5/3}}-\frac{x^{2/3}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2/3)/(a + b*x)^2,x]
```

```
[Out] -(x^(2/3)/(b*(a + b*x))) - (2*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3)
)/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(1/3)*b^(5/3)) - Log[a^(1/3) + b
^(1/3)*x^(1/3)]/(a^(1/3)*b^(5/3)) + Log[a + b*x]/(3*a^(1/3)*b^(5/
3))
```

Rubi in Sympy [A] time = 11.3347, size = 107, normalized size = 0.93

$$-\frac{x^{\frac{2}{3}}}{b\,(a+bx)}-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{a}b^{\frac{5}{3}}}+\frac{\log\left(a+bx\right)}{3\sqrt[3]{a}b^{\frac{5}{3}}}-\frac{2\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3\sqrt[3]{a}b^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2/3)/(b*x+a)**2,x)
```

```
[Out] -x**(2/3)/(b*(a + b*x)) - log(a**(1/3) + b**(1/3)*x**(1/3))/(a**(
1/3)*b**(5/3)) + log(a + b*x)/(3*a**(1/3)*b**(5/3)) - 2*sqrt(3)*a
```

```
tan(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*a**
(1/3)*b**(5/3))
```

Mathematica [A] time = 0.12689, size = 133, normalized size = 1.16

$$\frac{\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{\sqrt[3]{a}}-\frac{3b^{2/3}x^{2/3}}{a+bx}-\frac{2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{a}}-\frac{2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{\sqrt[3]{a}}}{3b^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2/3)/(a + b*x)^2,x]
```

```
[Out] ((-3*b^(2/3)*x^(2/3))/(a + b*x) - (2*Sqrt[3]*ArcTan[(1 - (2*b^(1/
3)*x^(1/3))/a^(1/3))/Sqrt[3]])/a^(1/3) - (2*Log[a^(1/3) + b^(1/3)
*x^(1/3)])/a^(1/3) + Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2
/3)*x^(2/3)]/a^(1/3))/(3*b^(5/3))
```

Maple [A] time = 0.014, size = 112, normalized size = 1.

$$-\frac{1}{b\left(bx+a\right)}x^{\frac{2}{3}}-\frac{2}{3\,b^{2}}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{1}{3\,b^{2}}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{2\sqrt{3}}{3\,b^{2}}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2/3)/(b*x+a)^2,x)
```

```
[Out] -x^(2/3)/b/(b*x+a)-2/3/b^2/(a/b)^(1/3)*ln(x^(1/3)+(a/b)^(1/3))+1/
3/b^2/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+2/3
/b^2*3^(1/2)/(a/b)^(1/3)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3
)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.214867, size = 200, normalized size = 1.74

$$\frac{\sqrt{3}\left(2\sqrt{3}(bx+a)\log\left(ab+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)-\sqrt{3}(bx+a)\log\left(-ab+\left(-ab^2\right)^{\frac{1}{3}}bx^{\frac{2}{3}}+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)-6\,(bx+a)\arctan\left(-\frac{\sqrt{3}ab-}{}\right.\right.}{9\left(-ab^2\right)^{\frac{1}{3}}\left(b^2x+ab\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*sqrt(3)*(2*sqrt(3)*(b*x + a)*log(a*b + (-a*b^2)^(2/3)*x^(1/3)
) - sqrt(3)*(b*x + a)*log(-a*b + (-a*b^2)^(1/3)*b*x^(2/3) + (-a*b
^2)^(2/3)*x^(1/3)) - 6*(b*x + a)*arctan(-1/3*(sqrt(3)*a*b - 2*sqr
t(3)*(-a*b^2)^(2/3)*x^(1/3))/(a*b)) - 3*sqrt(3)*(-a*b^2)^(1/3)*x^
(2/3))/((-a*b^2)^(1/3)*(b^2*x + a*b))
```

Sympy [A] time = 4.11905, size = 525, normalized size = 4.57

$$-\frac{10a^{\frac{8}{3}}be^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}-\frac{10a^{\frac{8}{3}}b\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}-\frac{10a^{\frac{8}{3}}be^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}-\frac{10a^{\frac{5}{3}}b^2xe^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}-\frac{10a^{\frac{5}{3}}b^2x\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}-\frac{10a^{\frac{5}{3}}b^2xe^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}-\frac{15a^2b^{\frac{5}{3}}x^{\frac{2}{3}}\Gamma\left(\frac{5}{3}\right)}{9a^3b^{\frac{8}{3}}\Gamma\left(\frac{8}{3}\right)+9a^2b^{\frac{11}{3}}x\Gamma\left(\frac{8}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3)/(b*x+a)**2,x)
```

```
[Out] -10*a**(8/3)*b*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar
(I*pi/3)/a**(1/3))*gamma(5/3)/(9*a**3*b**(8/3)*gamma(8/3) + 9*a**
2*b**(11/3)*x*gamma(8/3)) - 10*a**(8/3)*b*log(1 - b**(1/3)*x**(1/
3)*exp_polar(I*pi)/a**(1/3))*gamma(5/3)/(9*a**3*b**(8/3)*gamma(8/
3) + 9*a**2*b**(11/3)*x*gamma(8/3)) - 10*a**(8/3)*b*exp(2*I*pi/3)
*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(5/
3)/(9*a**3*b**(8/3)*gamma(8/3) + 9*a**2*b**(11/3)*x*gamma(8/3)) -
 10*a**(5/3)*b**2*x*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_
polar(I*pi/3)/a**(1/3))*gamma(5/3)/(9*a**3*b**(8/3)*gamma(8/3) +
9*a**2*b**(11/3)*x*gamma(8/3)) - 10*a**(5/3)*b**2*x*log(1 - b**(1
/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(5/3)/(9*a**3*b**(8/3
)*gamma(8/3) + 9*a**2*b**(11/3)*x*gamma(8/3)) - 10*a**(5/3)*b**2*
x*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**
(1/3))*gamma(5/3)/(9*a**3*b**(8/3)*gamma(8/3) + 9*a**2*b**(11/3)*
x*gamma(8/3)) - 15*a**2*b**(5/3)*x**(2/3)*gamma(5/3)/(9*a**3*b**(
8/3)*gamma(8/3) + 9*a**2*b**(11/3)*x*gamma(8/3))
```

GIAC/XCAS [A] time = 0.218861, size = 184, normalized size = 1.6

$$-\frac{2\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,ab}-\frac{x^{\frac{2}{3}}}{(bx+a)b}-\frac{2\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,ab^{3}}+\frac{\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{3\,ab^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -2/3*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/(a*b) - x^(2/3)
/((b*x + a)*b) - 2/3*sqrt(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2
*x^(1/3) + (-a/b)^(1/3))/(-a/b)^(1/3))/(a*b^3) + 1/3*(-a*b^2)^(2/
3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a*b^3)
```

3.685 $\int \frac{\sqrt[3]{x}}{(a+bx)^2}\,dx$

Optimal. Leaf size=117

$$\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{2/3}b^{4/3}}-\frac{\log(a+bx)}{6a^{2/3}b^{4/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{2/3}b^{4/3}}-\frac{\sqrt[3]{x}}{b(a+bx)}$$

```
[Out] -(x^(1/3)/(b*(a + b*x))) - ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(
Sqrt[3]*a^(1/3))]/(Sqrt[3]*a^(2/3)*b^(4/3)) + Log[a^(1/3) + b^(1/
3)*x^(1/3)]/(2*a^(2/3)*b^(4/3)) - Log[a + b*x]/(6*a^(2/3)*b^(4/3)
)
```

Rubi [A] time = 0.0919778, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{2/3}b^{4/3}}-\frac{\log(a+bx)}{6a^{2/3}b^{4/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{2/3}b^{4/3}}-\frac{\sqrt[3]{x}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3)/(a + b*x)^2,x]
```

```
[Out] -(x^(1/3)/(b*(a + b*x))) - ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(
Sqrt[3]*a^(1/3))]/(Sqrt[3]*a^(2/3)*b^(4/3)) + Log[a^(1/3) + b^(1/
3)*x^(1/3)]/(2*a^(2/3)*b^(4/3)) - Log[a + b*x]/(6*a^(2/3)*b^(4/3)
)
```

Rubi in Sympy [A] time = 11.5434, size = 107, normalized size = 0.91

$$-\frac{\sqrt[3]{x}}{b\,(a+bx)}+\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{\frac{2}{3}}b^{\frac{4}{3}}}-\frac{\log\,(a+bx)}{6a^{\frac{2}{3}}b^{\frac{4}{3}}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{2}{3}}b^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3)/(b*x+a)**2,x)
```

```
[Out] -x**(1/3)/(b*(a + b*x)) + log(a**(1/3) + b**(1/3)*x**(1/3))/(2*a*
*(2/3)*b**(4/3)) - log(a + b*x)/(6*a**(2/3)*b**(4/3)) - sqrt(3)*a
```

```
tan(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*a**
(2/3)*b**(4/3))
```

Mathematica [A] time = 0.144454, size = 134, normalized size = 1.15

$$\frac{-\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{a^{2/3}}+\frac{2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{2/3}}-\frac{2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{a^{2/3}}-\frac{6\sqrt[3]{b}\sqrt[3]{x}}{a+bx}}{6b^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3)/(a + b*x)^2,x]
```

```
[Out] ((-6*b^(1/3)*x^(1/3))/(a + b*x) - (2*Sqrt[3]*ArcTan[(1 - (2*b^(1/
3)*x^(1/3))/a^(1/3))/Sqrt[3]])/a^(2/3) + (2*Log[a^(1/3) + b^(1/3)
*x^(1/3)])/a^(2/3) - Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2
/3)*x^(2/3)]/a^(2/3))/(6*b^(4/3))
```

Maple [A] time = 0.015, size = 112, normalized size = 1.

$$-\frac{1}{b\left(bx+a\right)}\sqrt[3]{x}+\frac{1}{3\,b^{2}}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{1}{6\,b^{2}}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{\sqrt{3}}{3\,b^{2}}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/3)/(b*x+a)^2,x)
```

```
[Out] -x^(1/3)/b/(b*x+a)+1/3/b^2/(a/b)^(2/3)*ln(x^(1/3)+(a/b)^(1/3))-1/
6/b^2/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+1/3
/b^2/(a/b)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3
)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220809, size = 182, normalized size = 1.56

$$-\frac{\sqrt{3}\left(\sqrt{3}(bx+a)\log\left(a^{2}-\left(a^{2}b\right)^{\frac{1}{3}}ax^{\frac{1}{3}}+\left(a^{2}b\right)^{\frac{2}{3}}x^{\frac{2}{3}}\right)-2\sqrt{3}(bx+a)\log\left(a+\left(a^{2}b\right)^{\frac{1}{3}}x^{\frac{1}{3}}\right)-6\,(bx+a)\arctan\left(-\frac{\sqrt{3}a-2\sqrt{3}(a^{2}b}{3a}\right.\right.}{18\,\left(a^{2}b\right)^{\frac{1}{3}}\left(b^{2}x+ab\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -1/18*sqrt(3)*(sqrt(3)*(b*x + a)*log(a^2 - (a^2*b)^(1/3)*a*x^(1/3
) + (a^2*b)^(2/3)*x^(2/3)) - 2*sqrt(3)*(b*x + a)*log(a + (a^2*b)^
(1/3)*x^(1/3)) - 6*(b*x + a)*arctan(-1/3*(sqrt(3)*a - 2*sqrt(3)*(
a^2*b)^(1/3)*x^(1/3))/a) + 6*sqrt(3)*(a^2*b)^(1/3)*x^(1/3))/((a^2
*b)^(1/3)*(b^2*x + a*b))
```

Sympy [A] time = 3.97869, size = 520, normalized size = 4.44

$$-\frac{4a^{\frac{7}{3}}be^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}+\frac{4a^{\frac{7}{3}}b\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}$$
$$-\frac{4a^{\frac{7}{3}}be^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}$$
$$-\frac{4a^{\frac{4}{3}}b^{2}xe^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}+\frac{4a^{\frac{4}{3}}b^{2}x\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}$$
$$-\frac{4a^{\frac{4}{3}}b^{2}xe^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}-\frac{12a^{2}b^{\frac{4}{3}}\sqrt[3]{x}\left(\frac{4}{3}\right)}{9a^{3}b^{\frac{7}{3}}\left(\frac{7}{3}\right)+9a^{2}b^{\frac{10}{3}}x\left(\frac{7}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3)/(b*x+a)**2,x)
```

```
[Out] -4*a**(7/3)*b*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I
*pi/3)/a**(1/3))*gamma(4/3)/(9*a**3*b**(7/3)*gamma(7/3) + 9*a**2*
b**(10/3)*x*gamma(7/3)) + 4*a**(7/3)*b*log(1 - b**(1/3)*x**(1/3)*
exp_polar(I*pi)/a**(1/3))*gamma(4/3)/(9*a**3*b**(7/3)*gamma(7/3)
+ 9*a**2*b**(10/3)*x*gamma(7/3)) - 4*a**(7/3)*b*exp(I*pi/3)*log(1
 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(4/3)/(9*
a**3*b**(7/3)*gamma(7/3) + 9*a**2*b**(10/3)*x*gamma(7/3)) - 4*a**
(4/3)*b**2*x*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*
pi/3)/a**(1/3))*gamma(4/3)/(9*a**3*b**(7/3)*gamma(7/3) + 9*a**2*b
**(10/3)*x*gamma(7/3)) + 4*a**(4/3)*b**2*x*log(1 - b**(1/3)*x**(1
/3)*exp_polar(I*pi)/a**(1/3))*gamma(4/3)/(9*a**3*b**(7/3)*gamma(7
/3) + 9*a**2*b**(10/3)*x*gamma(7/3)) - 4*a**(4/3)*b**2*x*exp(I*pi
/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma
(4/3)/(9*a**3*b**(7/3)*gamma(7/3) + 9*a**2*b**(10/3)*x*gamma(7/3)
) - 12*a**2*b**(4/3)*x**(1/3)*gamma(4/3)/(9*a**3*b**(7/3)*gamma(7
/3) + 9*a**2*b**(10/3)*x*gamma(7/3))
```

GIAC/XCAS [A] time = 0.221679, size = 184, normalized size = 1.57

$$-\frac{\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,ab}+\frac{\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,ab^{2}}-\frac{x^{\frac{1}{3}}}{(bx+a)b}+\frac{\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{6\,ab^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/3*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/(a*b) + 1/3*sqr
t(3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))
/(-a/b)^(1/3))/(a*b^2) - x^(1/3)/((b*x + a)*b) + 1/6*(-a*b^2)^(1/
3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a*b^2)
```

3.686 $\int \frac{1}{\sqrt[3]{x}(a+bx)^2} dx$

Optimal. Leaf size=116

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{4/3}b^{2/3}}+\frac{\log(a+bx)}{6a^{4/3}b^{2/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{4/3}b^{2/3}}+\frac{x^{2/3}}{a(a+bx)}$$

```
[Out] x^(2/3)/(a*(a + b*x)) - ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqr
t[3]*a^(1/3))]/(Sqrt[3]*a^(4/3)*b^(2/3)) - Log[a^(1/3) + b^(1/3)*
x^(1/3)]/(2*a^(4/3)*b^(2/3)) + Log[a + b*x]/(6*a^(4/3)*b^(2/3))
```

Rubi [A] time = 0.0909379, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{4/3}b^{2/3}}+\frac{\log(a+bx)}{6a^{4/3}b^{2/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{4/3}b^{2/3}}+\frac{x^{2/3}}{a(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(1/3)*(a + b*x)^2),x]
```

```
[Out] x^(2/3)/(a*(a + b*x)) - ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqr
t[3]*a^(1/3))]/(Sqrt[3]*a^(4/3)*b^(2/3)) - Log[a^(1/3) + b^(1/3)*
x^(1/3)]/(2*a^(4/3)*b^(2/3)) + Log[a + b*x]/(6*a^(4/3)*b^(2/3))
```

Rubi in Sympy [A] time = 11.2629, size = 107, normalized size = 0.92

$$\frac{x^{\frac{2}{3}}}{a\left(a+bx\right)}-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{\frac{4}{3}}b^{\frac{2}{3}}}+\frac{\log\left(a+bx\right)}{6a^{\frac{4}{3}}b^{\frac{2}{3}}}-\frac{\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{4}{3}}b^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/3)/(b*x+a)**2,x)
```

```
[Out] x**(2/3)/(a*(a + b*x)) - log(a**(1/3) + b**(1/3)*x**(1/3))/(2*a**
(4/3)*b**(2/3)) + log(a + b*x)/(6*a**(4/3)*b**(2/3)) - sqrt(3)*at
an(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*a**(
```

```
4/3)*b**(2/3))
```

Mathematica [A] time = 0.12354, size = 133, normalized size = 1.15

$$\frac{\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{b^{2/3}}-\frac{2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{b^{2/3}}-\frac{2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{b^{2/3}}+\frac{6\sqrt[3]{a}x^{2/3}}{a+bx}}{6a^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(1/3)*(a + b*x)^2),x]
```

```
[Out] ((6*a^(1/3)*x^(2/3))/(a + b*x) - (2*Sqrt[3]*ArcTan[(1 - (2*b^(1/3
)*x^(1/3))/a^(1/3))/Sqrt[3]])/b^(2/3) - (2*Log[a^(1/3) + b^(1/3)*
x^(1/3)])/b^(2/3) + Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/
3)*x^(2/3)]/b^(2/3))/(6*a^(4/3))
```

Maple [A] time = 0.01, size = 120, normalized size = 1.

$$\frac{1}{a\left(bx+a\right)}x^{\frac{2}{3}}-\frac{1}{3ab}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{1}{6ab}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{\sqrt{3}}{3ab}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/3)/(b*x+a)^2,x)
```

```
[Out] x^(2/3)/a/(b*x+a)-1/3/a/b/(a/b)^(1/3)*ln(x^(1/3)+(a/b)^(1/3))+1/6
/a/b/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+1/3/
a*3^(1/2)/b/(a/b)^(1/3)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)
-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(1/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222477, size = 198, normalized size = 1.71

$$\frac{\sqrt{3}\left(2\,\sqrt{3}(bx+a)\log\left(ab+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)-\sqrt{3}(bx+a)\log\left(-ab+\left(-ab^2\right)^{\frac{1}{3}}bx^{\frac{2}{3}}+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)-6\,(bx+a)\arctan\left(-\frac{\sqrt{3}ab-}{}\right.\right.}{18\,\left(-ab^2\right)^{\frac{1}{3}}\left(abx+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(1/3)),x, algorithm="fricas")
```

```
[Out] 1/18*sqrt(3)*(2*sqrt(3)*(b*x + a)*log(a*b + (-a*b^2)^(2/3)*x^(1/3
)) - sqrt(3)*(b*x + a)*log(-a*b + (-a*b^2)^(1/3)*b*x^(2/3) + (-a*
b^2)^(2/3)*x^(1/3)) - 6*(b*x + a)*arctan(-1/3*(sqrt(3)*a*b - 2*sq
rt(3)*(-a*b^2)^(2/3)*x^(1/3))/(a*b)) + 6*sqrt(3)*(-a*b^2)^(1/3)*x
^(2/3))/((-a*b^2)^(1/3)*(a*b*x + a^2))
```

Sympy [A] time = 3.95525, size = 563, normalized size = 4.85

$$-\frac{2a^{\frac{5}{3}}b^{\frac{4}{3}}x^2e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}-\frac{2a^{\frac{5}{3}}b^{\frac{4}{3}}x^2\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}-\frac{2a^{\frac{5}{3}}b^{\frac{4}{3}}x^2e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}-\frac{2a^{\frac{2}{3}}b^{\frac{7}{3}}x^3e^{\frac{10i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}-\frac{2a^{\frac{2}{3}}b^{\frac{7}{3}}x^3\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}-\frac{2a^{\frac{2}{3}}b^{\frac{7}{3}}x^3e^{\frac{2i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}+\frac{6ab^2x^{\frac{8}{3}}\left(\frac{2}{3}\right)}{9a^3b^2x^2\left(\frac{5}{3}\right)+9a^2b^3x^3\left(\frac{5}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/3)/(b*x+a)**2,x)
```

```
[Out] -2*a**(5/3)*b**(4/3)*x**2*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3
)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*x**2*gamma(
5/3) + 9*a**2*b**3*x**3*gamma(5/3)) - 2*a**(5/3)*b**(4/3)*x**2*lo
g(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(9*a
**3*b**2*x**2*gamma(5/3) + 9*a**2*b**3*x**3*gamma(5/3)) - 2*a**(5
/3)*b**(4/3)*x**2*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_pol
ar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*x**2*gamma(5/3) +
9*a**2*b**3*x**3*gamma(5/3)) - 2*a**(2/3)*b**(7/3)*x**3*exp(10*I*
pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma
(2/3)/(9*a**3*b**2*x**2*gamma(5/3) + 9*a**2*b**3*x**3*gamma(5/3))
 - 2*a**(2/3)*b**(7/3)*x**3*log(1 - b**(1/3)*x**(1/3)*exp_polar(I
*pi)/a**(1/3))*gamma(2/3)/(9*a**3*b**2*x**2*gamma(5/3) + 9*a**2*b
**3*x**3*gamma(5/3)) - 2*a**(2/3)*b**(7/3)*x**3*exp(2*I*pi/3)*log
(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(
9*a**3*b**2*x**2*gamma(5/3) + 9*a**2*b**3*x**3*gamma(5/3)) + 6*a*
b**2*x**(8/3)*gamma(2/3)/(9*a**3*b**2*x**2*gamma(5/3) + 9*a**2*b*
*3*x**3*gamma(5/3))
```

GIAC/XCAS [A] time = 0.222316, size = 178, normalized size = 1.53

$$-\frac{\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,a^2}+\frac{x^{\frac{2}{3}}}{(bx+a)a}-\frac{\sqrt{3}\left(-ab^2\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,a^2b^2}+\frac{\left(-ab^2\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{6\,a^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(1/3)),x, algorithm="giac")
```

```
[Out] -1/3*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^2 + x^(2/3)/(
(b*x + a)*a) - 1/3*sqrt(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x
^(1/3) + (-a/b)^(1/3))/(-a/b)^(1/3))/(a^2*b^2) + 1/6*(-a*b^2)^(2/
3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a^2*b^2)
```

3.687 $\int \frac{1}{x^{2/3}(a+bx)^2}\,dx$

Optimal. Leaf size=113

$$\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{5/3}\sqrt[3]{b}}-\frac{\log(a+bx)}{3a^{5/3}\sqrt[3]{b}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{5/3}\sqrt[3]{b}}+\frac{\sqrt[3]{x}}{a(a+bx)}$$

```
[Out] x^(1/3)/(a*(a + b*x)) - (2*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(
Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(5/3)*b^(1/3)) + Log[a^(1/3) + b^(1
/3)*x^(1/3)]/(a^(5/3)*b^(1/3)) - Log[a + b*x]/(3*a^(5/3)*b^(1/3))
```

Rubi [A] time = 0.0958704, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{5/3}\sqrt[3]{b}}-\frac{\log(a+bx)}{3a^{5/3}\sqrt[3]{b}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{5/3}\sqrt[3]{b}}+\frac{\sqrt[3]{x}}{a(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(2/3)*(a + b*x)^2),x]
```

```
[Out] x^(1/3)/(a*(a + b*x)) - (2*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(
Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(5/3)*b^(1/3)) + Log[a^(1/3) + b^(1
/3)*x^(1/3)]/(a^(5/3)*b^(1/3)) - Log[a + b*x]/(3*a^(5/3)*b^(1/3))
```

Rubi in Sympy [A] time = 11.5845, size = 107, normalized size = 0.95

$$\frac{\sqrt[3]{x}}{a\,(a+bx)}+\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{\frac{5}{3}}\sqrt[3]{b}}-\frac{\log\,(a+bx)}{3a^{\frac{5}{3}}\sqrt[3]{b}}-\frac{2\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{5}{3}}\sqrt[3]{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(2/3)/(b*x+a)**2,x)
```

```
[Out] x**(1/3)/(a*(a + b*x)) + log(a**(1/3) + b**(1/3)*x**(1/3))/(a**(5
/3)*b**(1/3)) - log(a + b*x)/(3*a**(5/3)*b**(1/3)) - 2*sqrt(3)*at
an(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*a**(
```

```
5/3)*b**(1/3))
```

Mathematica [A] time = 0.131675, size = 134, normalized size = 1.19

$$\frac{-\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{\sqrt[3]{b}}+\frac{3a^{2/3}\sqrt[3]{x}}{a+bx}+\frac{2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{b}}-\frac{2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{\sqrt[3]{b}}}{3a^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(2/3)*(a + b*x)^2),x]
```

```
[Out] ((3*a^(2/3)*x^(1/3))/(a + b*x) - (2*Sqrt[3]*ArcTan[(1 - (2*b^(1/3
)*x^(1/3))/a^(1/3))/Sqrt[3]])/b^(1/3) + (2*Log[a^(1/3) + b^(1/3)*
x^(1/3)])/b^(1/3) - Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/
3)*x^(2/3)]/b^(1/3))/(3*a^(5/3))
```

Maple [A] time = 0.01, size = 120, normalized size = 1.1

$$\frac{1}{a\left(bx+a\right)}\sqrt[3]{x}+\frac{2}{3\,ab}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{1}{3\,ab}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$+\frac{2\sqrt{3}}{3\,ab}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(2/3)/(b*x+a)^2,x)
```

```
[Out] x^(1/3)/a/(b*x+a)+2/3/a/b/(a/b)^(2/3)*ln(x^(1/3)+(a/b)^(1/3))-1/3
/a/b/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+2/3/
a/b/(a/b)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)
-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(2/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.231429, size = 181, normalized size = 1.6

$$-\frac{\sqrt{3}\left(\sqrt{3}(bx+a)\log\left(a^2-\left(a^2b\right)^{\frac{1}{3}}ax^{\frac{1}{3}}+\left(a^2b\right)^{\frac{2}{3}}x^{\frac{2}{3}}\right)-2\sqrt{3}(bx+a)\log\left(a+\left(a^2b\right)^{\frac{1}{3}}x^{\frac{1}{3}}\right)-6\,(bx+a)\arctan\left(-\frac{\sqrt{3}a-2\sqrt{3}(a^2b}{3a}\right.\right.}{9\left(a^2b\right)^{\frac{1}{3}}\left(abx+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(2/3)),x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(sqrt(3)*(b*x + a)*log(a^2 - (a^2*b)^(1/3)*a*x^(1/3)
 + (a^2*b)^(2/3)*x^(2/3)) - 2*sqrt(3)*(b*x + a)*log(a + (a^2*b)^(
1/3)*x^(1/3)) - 6*(b*x + a)*arctan(-1/3*(sqrt(3)*a - 2*sqrt(3)*(a
^2*b)^(1/3)*x^(1/3))/a) - 3*sqrt(3)*(a^2*b)^(1/3)*x^(1/3))/((a^2*
b)^(1/3)*(a*b*x + a^2))
```

Sympy [A] time = 4.31162, size = 529, normalized size = 4.68

$$-\frac{2a^{\frac{4}{3}}b^{\frac{2}{3}}xe^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)}+\frac{2a^{\frac{4}{3}}b^{\frac{2}{3}}x\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)} - \frac{2a^{\frac{4}{3}}b^{\frac{2}{3}}xe^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)} - \frac{2\sqrt[3]{a}b^{\frac{5}{3}}x^2e^{\frac{5i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)}+\frac{2\sqrt[3]{a}b^{\frac{5}{3}}x^2\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{i\pi}}{\sqrt[3]{a}}\right)\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)} - \frac{2\sqrt[3]{a}b^{\frac{5}{3}}x^2e^{\frac{i\pi}{3}}\log\left(1-\frac{\sqrt[3]{b}\sqrt[3]{x}e^{\frac{5i\pi}{3}}}{\sqrt[3]{a}}\right)\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)}+\frac{3abx^{\frac{4}{3}}\left(\frac{1}{3}\right)}{9a^3bx\left(\frac{4}{3}\right)+9a^2b^2x^2\left(\frac{4}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(2/3)/(b*x+a)**2,x)
```

```
[Out] -2*a**(4/3)*b**(2/3)*x*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*ex
p_polar(I*pi/3)/a**(1/3))*gamma(1/3)/(9*a**3*b*x*gamma(4/3) + 9*a
**2*b**2*x**2*gamma(4/3)) + 2*a**(4/3)*b**(2/3)*x*log(1 - b**(1/3
```

```
)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(1/3)/(9*a**3*b*x*gamma
(4/3) + 9*a**2*b**2*x**2*gamma(4/3)) - 2*a**(4/3)*b**(2/3)*x*exp(
I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*g
amma(1/3)/(9*a**3*b*x*gamma(4/3) + 9*a**2*b**2*x**2*gamma(4/3)) -
 2*a**(1/3)*b**(5/3)*x**2*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)
*exp_polar(I*pi/3)/a**(1/3))*gamma(1/3)/(9*a**3*b*x*gamma(4/3) +
9*a**2*b**2*x**2*gamma(4/3)) + 2*a**(1/3)*b**(5/3)*x**2*log(1 - b
**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(1/3)/(9*a**3*b*x
*gamma(4/3) + 9*a**2*b**2*x**2*gamma(4/3)) - 2*a**(1/3)*b**(5/3)*
x**2*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a*
*(1/3))*gamma(1/3)/(9*a**3*b*x*gamma(4/3) + 9*a**2*b**2*x**2*gamm
a(4/3)) + 3*a*b*x**(4/3)*gamma(1/3)/(9*a**3*b*x*gamma(4/3) + 9*a*
*2*b**2*x**2*gamma(4/3))
```

GIAC/XCAS [A] time = 0.218408, size = 178, normalized size = 1.58

$$-\frac{2\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,a^{2}}+\frac{2\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,a^{2}b}+\frac{x^{\frac{1}{3}}}{(bx+a)a}+\frac{\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{3\,a^{2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(2/3)),x, algorithm="giac")
```

```
[Out] -2/3*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^2 + 2/3*sqrt(
3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(
-a/b)^(1/3))/(a^2*b) + x^(1/3)/((b*x + a)*a) + 1/3*(-a*b^2)^(1/3)
*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a^2*b)
```

3.688 $\int \frac{1}{x^{4/3}(a+bx)^2}\,dx$

Optimal. Leaf size=124

$$\frac{2\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{7/3}}-\frac{2\sqrt[3]{b}\log(a+bx)}{3a^{7/3}}+\frac{4\sqrt[3]{b}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{7/3}}-\frac{4}{a^2\sqrt[3]{x}}+\frac{1}{a\sqrt[3]{x}(a+bx)}$$

```
[Out] -4/(a^2*x^(1/3)) + 1/(a*x^(1/3)*(a + b*x)) + (4*b^(1/3)*ArcTan[(a
^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(7/3))
 + (2*b^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/a^(7/3) - (2*b^(1/3
)*Log[a + b*x])/(3*a^(7/3))
```

Rubi [A] time = 0.114734, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$\frac{2\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{7/3}}-\frac{2\sqrt[3]{b}\log(a+bx)}{3a^{7/3}}+\frac{4\sqrt[3]{b}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{7/3}}-\frac{4}{a^2\sqrt[3]{x}}+\frac{1}{a\sqrt[3]{x}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(4/3)*(a + b*x)^2),x]
```

```
[Out] -4/(a^2*x^(1/3)) + 1/(a*x^(1/3)*(a + b*x)) + (4*b^(1/3)*ArcTan[(a
^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(7/3))
 + (2*b^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/a^(7/3) - (2*b^(1/3
)*Log[a + b*x])/(3*a^(7/3))
```

Rubi in Sympy [A] time = 15.1807, size = 122, normalized size = 0.98

$$\frac{1}{a\sqrt[3]{x}\,(a+bx)}-\frac{4}{a^2\sqrt[3]{x}}+\frac{2\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{\frac{7}{3}}}-\frac{2\sqrt[3]{b}\log\left(a+bx\right)}{3a^{\frac{7}{3}}}+\frac{4\sqrt{3}\sqrt[3]{b}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{7}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(4/3)/(b*x+a)**2,x)
```

```
[Out] 1/(a*x**(1/3)*(a + b*x)) - 4/(a**2*x**(1/3)) + 2*b**(1/3)*log(a**
(1/3) + b**(1/3)*x**(1/3))/a**(7/3) - 2*b**(1/3)*log(a + b*x)/(3*
```

```
a**(7/3)) + 4*sqrt(3)*b**(1/3)*atan(sqrt(3)*(a**(1/3)/3 - 2*b**(1
/3)*x**(1/3)/3)/a**(1/3))/(3*a**(7/3))
```

Mathematica [A] time = 0.201982, size = 147, normalized size = 1.19

$$\frac{-2\sqrt[3]{b}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-\frac{3\sqrt[3]{a}bx^{2/3}}{a+bx}+4\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+4\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)-\frac{9\sqrt[3]{a}}{\sqrt[3]{x}}}{3a^{7/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(4/3)*(a + b*x)^2),x]
```

```
[Out] ((-9*a^(1/3))/x^(1/3) - (3*a^(1/3)*b*x^(2/3))/(a + b*x) + 4*Sqrt[
3]*b^(1/3)*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] + 4*
b^(1/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)] - 2*b^(1/3)*Log[a^(2/3) -
a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/(3*a^(7/3))
```

Maple [A] time = 0.019, size = 121, normalized size = 1.

$$-3\,\frac{1}{a^2\sqrt[3]{x}}-\frac{b}{a^2\,(bx+a)}x^{\frac{2}{3}}+\frac{4}{3\,a^2}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$-\frac{2}{3\,a^2}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}-\frac{4\sqrt{3}}{3\,a^2}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(4/3)/(b*x+a)^2,x)
```

```
[Out] -3/a^2/x^(1/3)-1/a^2*b*x^(2/3)/(b*x+a)+4/3/a^2/(a/b)^(1/3)*ln(x^(
1/3)+(a/b)^(1/3))-2/3/a^2/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1
/3)+(a/b)^(2/3))-4/3/a^2*3^(1/2)/(a/b)^(1/3)*arctan(1/3*3^(1/2)*(
2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(4/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224089, size = 231, normalized size = 1.86

$$-\frac{\sqrt{3}\left(2\sqrt{3}(bx+a)x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\log\left(-ax^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{2}{3}}+bx^{\frac{2}{3}}+a\left(\frac{b}{a}\right)^{\frac{1}{3}}\right)-4\sqrt{3}(bx+a)x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\log\left(a\left(\frac{b}{a}\right)^{\frac{2}{3}}+bx^{\frac{1}{3}}\right)+12\,(bx+a)x^{\frac{1}{3}}\cdots}{9\,(a^2bx+a^3)x^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(4/3)),x, algorithm="fricas")
```

```
[Out] -1/9*sqrt(3)*(2*sqrt(3)*(b*x + a)*x^(1/3)*(b/a)^(1/3)*log(-a*x^(1
/3)*(b/a)^(2/3) + b*x^(2/3) + a*(b/a)^(1/3)) - 4*sqrt(3)*(b*x + a
)*x^(1/3)*(b/a)^(1/3)*log(a*(b/a)^(2/3) + b*x^(1/3)) + 12*(b*x +
a)*x^(1/3)*(b/a)^(1/3)*arctan(-1/3*(sqrt(3)*a*(b/a)^(2/3) - 2*sqr
t(3)*b*x^(1/3))/(a*(b/a)^(2/3))) + 3*sqrt(3)*(4*b*x + 3*a))/((a^2
*b*x + a^3)*x^(1/3))
```

Sympy [A] time = 5.47909, size = 619, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(4/3)/(b*x+a)**2,x)
```

```
[Out] 9*a**(4/3)*gamma(-1/3)/(9*a**(10/3)*x**(1/3)*gamma(2/3) + 9*a**(7
/3)*b*x**(4/3)*gamma(2/3)) + 12*a**(1/3)*b*x*gamma(-1/3)/(9*a**(1
0/3)*x**(1/3)*gamma(2/3) + 9*a**(7/3)*b*x**(4/3)*gamma(2/3)) - 4*
a*b**(1/3)*x**(1/3)*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_
polar(I*pi/3)/a**(1/3))*gamma(-1/3)/(9*a**(10/3)*x**(1/3)*gamma(2
/3) + 9*a**(7/3)*b*x**(4/3)*gamma(2/3)) - 4*a*b**(1/3)*x**(1/3)*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-1/3)/(9
*a**(10/3)*x**(1/3)*gamma(2/3) + 9*a**(7/3)*b*x**(4/3)*gamma(2/3)
) - 4*a*b**(1/3)*x**(1/3)*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)
*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-1/3)/(9*a**(10/3)*x**(1/3)*
gamma(2/3) + 9*a**(7/3)*b*x**(4/3)*gamma(2/3)) - 4*b**(4/3)*x**(4
/3)*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a*
*(1/3))*gamma(-1/3)/(9*a**(10/3)*x**(1/3)*gamma(2/3) + 9*a**(7/3)
```

```
*b*x**(4/3)*gamma(2/3)) - 4*b**(4/3)*x**(4/3)*log(1 - b**(1/3)*x*
*(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-1/3)/(9*a**(10/3)*x**(1/3
)*gamma(2/3) + 9*a**(7/3)*b*x**(4/3)*gamma(2/3)) - 4*b**(4/3)*x**
(4/3)*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)
/a**(1/3))*gamma(-1/3)/(9*a**(10/3)*x**(1/3)*gamma(2/3) + 9*a**(7
/3)*b*x**(4/3)*gamma(2/3))
```

GIAC/XCAS [A] time = 0.221491, size = 196, normalized size = 1.58

$$\frac{4\,b\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,a^{3}}+\frac{4\,\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,a^{3}b}-\frac{4\,bx+3\,a}{\left(bx^{\frac{4}{3}}+ax^{\frac{1}{3}}\right)a^{2}}-\frac{2\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{3\,a^{3}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(4/3)),x, algorithm="giac")
```

```
[Out] 4/3*b*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^3 + 4/3*sqrt
(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/
(-a/b)^(1/3))/(a^3*b) - (4*b*x + 3*a)/((b*x^(4/3) + a*x^(1/3))*a^
2) - 2/3*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b
)^(2/3))/(a^3*b)
```

3.689 $\int \frac{1}{x^{5/3}(a+bx)^2}\,dx$

Optimal. Leaf size=128

$$-\frac{5b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{8/3}}+\frac{5b^{2/3}\log(a+bx)}{6a^{8/3}}+\frac{5b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{8/3}}-\frac{5}{2a^2x^{2/3}}+\frac{1}{ax^{2/3}(a+bx)}$$

```
[Out] -5/(2*a^2*x^(2/3)) + 1/(a*x^(2/3)*(a + b*x)) + (5*b^(2/3)*ArcTan[
(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(8/3
)) - (5*b^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*a^(8/3)) + (5*
b^(2/3)*Log[a + b*x])/(6*a^(8/3))
```

Rubi [A] time = 0.115408, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$-\frac{5b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{8/3}}+\frac{5b^{2/3}\log(a+bx)}{6a^{8/3}}+\frac{5b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{\sqrt{3}a^{8/3}}-\frac{5}{2a^2x^{2/3}}+\frac{1}{ax^{2/3}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/3)*(a + b*x)^2),x]
```

```
[Out] -5/(2*a^2*x^(2/3)) + 1/(a*x^(2/3)*(a + b*x)) + (5*b^(2/3)*ArcTan[
(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(Sqrt[3]*a^(8/3
)) - (5*b^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(2*a^(8/3)) + (5*
b^(2/3)*Log[a + b*x])/(6*a^(8/3))
```

Rubi in Sympy [A] time = 15.4528, size = 126, normalized size = 0.98

$$\frac{1}{ax^{\frac{2}{3}}(a+bx)}-\frac{5}{2a^2x^{\frac{2}{3}}}-\frac{5b^{\frac{2}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{2a^{\frac{8}{3}}}+\frac{5b^{\frac{2}{3}}\log(a+bx)}{6a^{\frac{8}{3}}}+\frac{5\sqrt{3}b^{\frac{2}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{3a^{\frac{8}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/3)/(b*x+a)**2,x)
```

```
[Out] 1/(a*x**(2/3)*(a + b*x)) - 5/(2*a**2*x**(2/3)) - 5*b**(2/3)*log(a
**(1/3) + b**(1/3)*x**(1/3))/(2*a**(8/3)) + 5*b**(2/3)*log(a + b*
```

```
x)/(6*a**(8/3)) + 5*sqrt(3)*b**(2/3)*atan(sqrt(3)*(a**(1/3)/3 - 2
*b**(1/3)*x**(1/3)/3)/a**(1/3))/(3*a**(8/3))
```

Mathematica [A] time = 0.174068, size = 147, normalized size = 1.15

$$\frac{5b^{2/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-\frac{6a^{2/3}b\sqrt[3]{x}}{a+bx}-\frac{9a^{2/3}}{x^{2/3}}-10b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+10\sqrt{3}b^{2/3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{6a^{8/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/3)*(a + b*x)^2),x]
```

```
[Out] ((-9*a^(2/3))/x^(2/3) - (6*a^(2/3)*b*x^(1/3))/(a + b*x) + 10*Sqrt
[3]*b^(2/3)*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] - 1
0*b^(2/3)*Log[a^(1/3) + b^(1/3)*x^(1/3)] + 5*b^(2/3)*Log[a^(2/3)
- a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/(6*a^(8/3))
```

Maple [A] time = 0.02, size = 121, normalized size = 1.

$$-\frac{3}{2a^2}x^{-\frac{2}{3}}-\frac{b}{a^2(bx+a)}\sqrt[3]{x}-\frac{5}{3a^2}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$+\frac{5}{6a^2}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{5\sqrt{3}}{3a^2}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/3)/(b*x+a)^2,x)
```

```
[Out] -3/2/a^2/x^(2/3)-1/a^2*b*x^(1/3)/(b*x+a)-5/3/a^2/(a/b)^(2/3)*ln(x
^(1/3)+(a/b)^(1/3))+5/6/a^2/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^
(1/3)+(a/b)^(2/3))-5/3/a^2/(a/b)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)
*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(5/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232116, size = 270, normalized size = 2.11

$$-\frac{\sqrt{3}\left(5\sqrt{3}(bx+a)x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\log\left(b^2x^{\frac{2}{3}}+abx^{\frac{1}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}+a^2\left(-\frac{b^2}{a^2}\right)^{\frac{2}{3}}\right)-10\sqrt{3}(bx+a)x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\log\left(bx^{\frac{1}{3}}-a\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\right)+\right.}{18\,(a^2bx+a^3)x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(5/3)),x, algorithm="fricas")
```

```
[Out] -1/18*sqrt(3)*(5*sqrt(3)*(b*x + a)*x^(2/3)*(-b^2/a^2)^(1/3)*log(b
^2*x^(2/3) + a*b*x^(1/3)*(-b^2/a^2)^(1/3) + a^2*(-b^2/a^2)^(2/3))
 - 10*sqrt(3)*(b*x + a)*x^(2/3)*(-b^2/a^2)^(1/3)*log(b*x^(1/3) -
a*(-b^2/a^2)^(1/3)) + 30*(b*x + a)*x^(2/3)*(-b^2/a^2)^(1/3)*arcta
n(1/3*(2*sqrt(3)*b*x^(1/3) + sqrt(3)*a*(-b^2/a^2)^(1/3))/(a*(-b^2
/a^2)^(1/3))) + 3*sqrt(3)*(5*b*x + 3*a))/((a^2*b*x + a^3)*x^(2/3)
)
```

Sympy [A] time = 6.08757, size = 615, normalized size = 4.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/3)/(b*x+a)**2,x)
```

```
[Out] 9*a**(5/3)*gamma(-2/3)/(9*a**(11/3)*x**(2/3)*gamma(1/3) + 9*a**(8
/3)*b*x**(5/3)*gamma(1/3)) + 15*a**(2/3)*b*x*gamma(-2/3)/(9*a**(1
1/3)*x**(2/3)*gamma(1/3) + 9*a**(8/3)*b*x**(5/3)*gamma(1/3)) - 10
*a*b**(2/3)*x**(2/3)*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_
polar(I*pi/3)/a**(1/3))*gamma(-2/3)/(9*a**(11/3)*x**(2/3)*gamma(1
/3) + 9*a**(8/3)*b*x**(5/3)*gamma(1/3)) + 10*a*b**(2/3)*x**(2/3)*
log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-2/3)/(
9*a**(11/3)*x**(2/3)*gamma(1/3) + 9*a**(8/3)*b*x**(5/3)*gamma(1/3
)) - 10*a*b**(2/3)*x**(2/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)
*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-2/3)/(9*a**(11/3)*x**(2/3)*
gamma(1/3) + 9*a**(8/3)*b*x**(5/3)*gamma(1/3)) - 10*b**(5/3)*x**(
5/3)*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a*
*(1/3))*gamma(-2/3)/(9*a**(11/3)*x**(2/3)*gamma(1/3) + 9*a**(8/3)
*b*x**(5/3)*gamma(1/3)) + 10*b**(5/3)*x**(5/3)*log(1 - b**(1/3)*x
**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-2/3)/(9*a**(11/3)*x**(2/
```

```
3)*gamma(1/3) + 9*a**(8/3)*b*x**(5/3)*gamma(1/3)) - 10*b**(5/3)*x
**(5/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)
/a**(1/3))*gamma(-2/3)/(9*a**(11/3)*x**(2/3)*gamma(1/3) + 9*a**(8
/3)*b*x**(5/3)*gamma(1/3))
```

GIAC/XCAS [A] time = 0.218071, size = 185, normalized size = 1.45

$$\frac{5\,b\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{3\,a^3}-\frac{5\,\sqrt{3}\left(-ab^2\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{3\,a^3}-\frac{bx^{\frac{1}{3}}}{(bx+a)a^2}-\frac{5\,\left(-ab^2\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{6\,a^3}-\frac{3}{2\,a^2x^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*x^(5/3)),x, algorithm="giac")
```

```
[Out] 5/3*b*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^3 - 5/3*sqrt
(3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/
(-a/b)^(1/3))/a^3 - b*x^(1/3)/((b*x + a)*a^2) - 5/6*(-a*b^2)^(1/3
)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/a^3 - 3/2/(a^
2*x^(2/3))
```

3.690 $\int \frac{x^{5/3}}{(a+bx)^3} \, dx$

Optimal. Leaf size=140

$$-\frac{5\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6\sqrt[3]{a}b^{8/3}}+\frac{5\log(a+bx)}{18\sqrt[3]{a}b^{8/3}}-\frac{5\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}\sqrt[3]{a}b^{8/3}}-\frac{5x^{2/3}}{6b^2(a+bx)}-\frac{x^{5/3}}{2b(a+bx)^2}$$

```
[Out] -x^(5/3)/(2*b*(a + b*x)^2) - (5*x^(2/3))/(6*b^2*(a + b*x)) - (5*A
rcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3
]*a^(1/3)*b^(8/3)) - (5*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(6*a^(1/3
)*b^(8/3)) + (5*Log[a + b*x])/(18*a^(1/3)*b^(8/3))
```

Rubi [A] time = 0.117144, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.385$

$$-\frac{5\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6\sqrt[3]{a}b^{8/3}}+\frac{5\log(a+bx)}{18\sqrt[3]{a}b^{8/3}}-\frac{5\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}\sqrt[3]{a}b^{8/3}}-\frac{5x^{2/3}}{6b^2(a+bx)}-\frac{x^{5/3}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(5/3)/(a + b*x)^3,x]
```

```
[Out] -x^(5/3)/(2*b*(a + b*x)^2) - (5*x^(2/3))/(6*b^2*(a + b*x)) - (5*A
rcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3
]*a^(1/3)*b^(8/3)) - (5*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(6*a^(1/3
)*b^(8/3)) + (5*Log[a + b*x])/(18*a^(1/3)*b^(8/3))
```

Rubi in Sympy [A] time = 15.8289, size = 133, normalized size = 0.95

$$-\frac{x^{\frac{5}{3}}}{2b\left(a+bx\right)^2}-\frac{5x^{\frac{2}{3}}}{6b^2\left(a+bx\right)}-\frac{5\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6\sqrt[3]{a}b^{\frac{8}{3}}}+\frac{5\log\left(a+bx\right)}{18\sqrt[3]{a}b^{\frac{8}{3}}}-\frac{5\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9\sqrt[3]{a}b^{\frac{8}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(5/3)/(b*x+a)**3,x)
```

```
[Out] -x**(5/3)/(2*b*(a + b*x)**2) - 5*x**(2/3)/(6*b**2*(a + b*x)) - 5*
log(a**(1/3) + b**(1/3)*x**(1/3))/(6*a**(1/3)*b**(8/3)) + 5*log(a
```

```
 + b*x)/(18*a**(1/3)*b**(8/3)) - 5*sqrt(3)*atan(sqrt(3)*(a**(1/3)
/3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(9*a**(1/3)*b**(8/3))
```

Mathematica [A] time = 0.121835, size = 154, normalized size = 1.1

$$\frac{\frac{5\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{\sqrt[3]{a}}+\frac{9ab^{2/3}x^{2/3}}{(a+bx)^2}-\frac{24b^{2/3}x^{2/3}}{a+bx}-\frac{10\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{a}}-\frac{10\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{\sqrt[3]{a}}}{18b^{8/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(5/3)/(a + b*x)^3,x]
```

```
[Out] ((9*a*b^(2/3)*x^(2/3))/(a + b*x)^2 - (24*b^(2/3)*x^(2/3))/(a + b*
x) - (10*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]
])/a^(1/3) - (10*Log[a^(1/3) + b^(1/3)*x^(1/3)])/a^(1/3) + (5*Log
[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/a^(1/3))/(
18*b^(8/3))
```

Maple [A] time = 0.019, size = 124, normalized size = 0.9

$$3\,\frac{1}{(bx+a)^2}\left(-4/9\,\frac{x^{5/3}}{b}-\frac{5\,ax^{2/3}}{18\,b^2}\right)-\frac{5}{9\,b^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$+\frac{5}{18\,b^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{5\sqrt{3}}{9\,b^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/3)/(b*x+a)^3,x)
```

```
[Out] 3*(-4/9*x^(5/3)/b-5/18*a*x^(2/3)/b^2)/(b*x+a)^2-5/9/b^3/(a/b)^(1/
3)*ln(x^(1/3)+(a/b)^(1/3))+5/18/b^3/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3
)*(a/b)^(1/3)+(a/b)^(2/3))+5/9/b^3*3^(1/2)/(a/b)^(1/3)*arctan(1/3
*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22812, size = 273, normalized size = 1.95

$$-\frac{\sqrt{3}\left(3\,\sqrt{3}\,\left(-ab^2\right)^{\frac{1}{3}}\,(8\,bx+5\,a)x^{\frac{2}{3}}-10\,\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)\,\log\left(ab+\left(-ab^2\right)^{\frac{2}{3}}\,x^{\frac{1}{3}}\right)+5\,\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)\,\log\left(-ab\right.\right.}{54\left(b^4x^2+2\,ab^3x+a^2b^2\right)\left(-ab^2\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(3*sqrt(3)*(-a*b^2)^(1/3)*(8*b*x + 5*a)*x^(2/3) - 1
0*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(a*b + (-a*b^2)^(2/3)*x^(1
/3)) + 5*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(-a*b + (-a*b^2)^(1
/3)*b*x^(2/3) + (-a*b^2)^(2/3)*x^(1/3)) + 30*(b^2*x^2 + 2*a*b*x +
 a^2)*arctan(-1/3*(sqrt(3)*a*b - 2*sqrt(3)*(-a*b^2)^(2/3)*x^(1/3)
)/(a*b)))/((b^4*x^2 + 2*a*b^3*x + a^2*b^2)*(-a*b^2)^(1/3))
```

Sympy [A] time = 10.7356, size = 1690, normalized size = 12.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/3)/(b*x+a)**3,x)
```

```
[Out] -40*a**(20/3)*b**3*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_p
olar(I*pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3)*gamma(11/3)
+ 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2*gamma(
11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 40*a**(20/3)*b**3*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(8/3)/(27
*a**7*b**(17/3)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 8
1*a**5*b**(23/3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(
11/3)) - 40*a**(20/3)*b**3*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3
)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3)*gam
ma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x*
*2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 120*a**(17
/3)*b**4*x*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*p
i/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3)*gamma(11/3) + 81*a**
6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2*gamma(11/3) +
```

```
27*a**4*b**(26/3)*x**3*gamma(11/3)) - 120*a**(17/3)*b**4*x*log(1
- b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(8/3)/(27*a**7
*b**(17/3)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**
5*b**(23/3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)
) - 120*a**(17/3)*b**4*x*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*
exp_polar(5*I*pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3)*gamma
(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2
*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 120*a**(14/3
)*b**5*x**2*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*
pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3)*gamma(11/3) + 81*a*
*6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2*gamma(11/3) +
 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 120*a**(14/3)*b**5*x**2*lo
g(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(8/3)/(27*
a**7*b**(17/3)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81
*a**5*b**(23/3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(1
1/3)) - 120*a**(14/3)*b**5*x**2*exp(2*I*pi/3)*log(1 - b**(1/3)*x*
*(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3
)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/
3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 40*a*
*(11/3)*b**6*x**3*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_po
lar(I*pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(17/3)*gamma(11/3) +
 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2*gamma(1
1/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 40*a**(11/3)*b**6*x*
*3*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(8/3)
/(27*a**7*b**(17/3)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3)
 + 81*a**5*b**(23/3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*ga
mma(11/3)) - 40*a**(11/3)*b**6*x**3*exp(2*I*pi/3)*log(1 - b**(1/3
)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(8/3)/(27*a**7*b**(
17/3)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**
(23/3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 6
0*a**6*b**(11/3)*x**(2/3)*gamma(8/3)/(27*a**7*b**(17/3)*gamma(11/
3) + 81*a**6*b**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2*gam
ma(11/3) + 27*a**4*b**(26/3)*x**3*gamma(11/3)) - 156*a**5*b**(14/
3)*x**(5/3)*gamma(8/3)/(27*a**7*b**(17/3)*gamma(11/3) + 81*a**6*b
**(20/3)*x*gamma(11/3) + 81*a**5*b**(23/3)*x**2*gamma(11/3) + 27*
a**4*b**(26/3)*x**3*gamma(11/3)) - 96*a**4*b**(17/3)*x**(8/3)*gam
ma(8/3)/(27*a**7*b**(17/3)*gamma(11/3) + 81*a**6*b**(20/3)*x*gamm
a(11/3) + 81*a**5*b**(23/3)*x**2*gamma(11/3) + 27*a**4*b**(26/3)*
x**3*gamma(11/3))
```

GIAC/XCAS [A] time = 0.22218, size = 197, normalized size = 1.41

$$-\frac{5\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,ab^{2}}-\frac{5\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,ab^{4}}-\frac{8\,bx^{\frac{5}{3}}+5\,ax^{\frac{2}{3}}}{6\,(bx+a)^{2}b^{2}}+\frac{5\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{18\,ab^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(5/3)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -5/9*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/(a*b^2) - 5/9*s
qrt(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3
))/(-a/b)^(1/3))/(a*b^4) - 1/6*(8*b*x^(5/3) + 5*a*x^(2/3))/((b*x
+ a)^2*b^2) + 5/18*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/
3) + (-a/b)^(2/3))/(a*b^4)
```

3.691 $\int \frac{x^{4/3}}{(a+bx)^3}\,dx$

Optimal. Leaf size=140

$$\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{2/3}b^{7/3}}-\frac{\log(a+bx)}{9a^{2/3}b^{7/3}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{2/3}b^{7/3}}-\frac{2\sqrt[3]{x}}{3b^2(a+bx)}-\frac{x^{4/3}}{2b(a+bx)^2}$$

```
[Out] -x^(4/3)/(2*b*(a + b*x)^2) - (2*x^(1/3))/(3*b^2*(a + b*x)) - (2*A
rcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3
]*a^(2/3)*b^(7/3)) + Log[a^(1/3) + b^(1/3)*x^(1/3)]/(3*a^(2/3)*b^
(7/3)) - Log[a + b*x]/(9*a^(2/3)*b^(7/3))
```

Rubi [A] time = 0.116019, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{2/3}b^{7/3}}-\frac{\log(a+bx)}{9a^{2/3}b^{7/3}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{2/3}b^{7/3}}-\frac{2\sqrt[3]{x}}{3b^2(a+bx)}-\frac{x^{4/3}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(4/3)/(a + b*x)^3,x]
```

```
[Out] -x^(4/3)/(2*b*(a + b*x)^2) - (2*x^(1/3))/(3*b^2*(a + b*x)) - (2*A
rcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3
]*a^(2/3)*b^(7/3)) + Log[a^(1/3) + b^(1/3)*x^(1/3)]/(3*a^(2/3)*b^
(7/3)) - Log[a + b*x]/(9*a^(2/3)*b^(7/3))
```

Rubi in Sympy [A] time = 16.1039, size = 129, normalized size = 0.92

$$-\frac{x^{\frac{4}{3}}}{2b\left(a+bx\right)^{2}}-\frac{2\sqrt[3]{x}}{3b^{2}\left(a+bx\right)}+\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{\frac{2}{3}}b^{\frac{7}{3}}}-\frac{\log\left(a+bx\right)}{9a^{\frac{2}{3}}b^{\frac{7}{3}}}-\frac{2\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{2}{3}}b^{\frac{7}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(4/3)/(b*x+a)**3,x)
```

```
[Out] -x**(4/3)/(2*b*(a + b*x)**2) - 2*x**(1/3)/(3*b**2*(a + b*x)) + lo
g(a**(1/3) + b**(1/3)*x**(1/3))/(3*a**(2/3)*b**(7/3)) - log(a + b
```

```
*x)/(9*a**(2/3)*b**(7/3)) - 2*sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 -
2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(9*a**(2/3)*b**(7/3))
```

Mathematica [A] time = 0.111452, size = 154, normalized size = 1.1

$$\frac{-\frac{2\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{a^{2/3}}+\frac{4\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{2/3}}-\frac{4\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{a^{2/3}}+\frac{9a\sqrt[3]{b}\sqrt[3]{x}}{(a+bx)^2}-\frac{21\sqrt[3]{b}\sqrt[3]{x}}{a+bx}}{18b^{7/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(4/3)/(a + b*x)^3,x]
```

```
[Out] ((9*a*b^(1/3)*x^(1/3))/(a + b*x)^2 - (21*b^(1/3)*x^(1/3))/(a + b*
x) - (4*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]]
)/a^(2/3) + (4*Log[a^(1/3) + b^(1/3)*x^(1/3)])/a^(2/3) - (2*Log[a
^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/a^(2/3))/(18
*b^(7/3))
```

Maple [A] time = 0.018, size = 124, normalized size = 0.9

$$3\,\frac{1}{(bx+a)^2}\left(-\frac{7\,x^{4/3}}{18\,b}-2/9\,\frac{a\sqrt[3]{x}}{b^2}\right)+\frac{2}{9\,b^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$-\frac{1}{9\,b^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{2\sqrt{3}}{9\,b^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(4/3)/(b*x+a)^3,x)
```

```
[Out] 3*(-7/18*x^(4/3)/b-2/9*a*x^(1/3)/b^2)/(b*x+a)^2+2/9/b^3/(a/b)^(2/
3)*ln(x^(1/3)+(a/b)^(1/3))-1/9/b^3/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)
*(a/b)^(1/3)+(a/b)^(2/3))+2/9/b^3/(a/b)^(2/3)*3^(1/2)*arctan(1/3*
3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22676, size = 257, normalized size = 1.84

$$-\frac{\sqrt{3}\Big(2\sqrt{3}(b^2x^2+2\,abx+a^2)\log\left(a^2-(a^2b)^{\frac{1}{3}}ax^{\frac{1}{3}}+(a^2b)^{\frac{2}{3}}x^{\frac{2}{3}}\right)-4\sqrt{3}(b^2x^2+2\,abx+a^2)\log\left(a+(a^2b)^{\frac{1}{3}}x^{\frac{1}{3}}\right)+3\sqrt{3}\,(a}{54\,(b^4x^2+2\,ab^3x+a^2b^2)\,(a^2b)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(2*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(a^2 - (a^2
*b)^(1/3)*a*x^(1/3) + (a^2*b)^(2/3)*x^(2/3)) - 4*sqrt(3)*(b^2*x^2
 + 2*a*b*x + a^2)*log(a + (a^2*b)^(1/3)*x^(1/3)) + 3*sqrt(3)*(a^2
*b)^(1/3)*(7*b*x + 4*a)*x^(1/3) - 12*(b^2*x^2 + 2*a*b*x + a^2)*ar
ctan(-1/3*(sqrt(3)*a - 2*sqrt(3)*(a^2*b)^(1/3)*x^(1/3))/a))/((b^4
*x^2 + 2*a*b^3*x + a^2*b^2)*(a^2*b)^(1/3))
```

Sympy [A] time = 7.78021, size = 1681, normalized size = 12.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(4/3)/(b*x+a)**3,x)
```

```
[Out] -28*a**(19/3)*b**3*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_po
lar(I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/3)*gamma(10/3) +
 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x**2*gamma
(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) + 28*a**(19/3)*b**3*
log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(7/3)/(5
4*a**7*b**(16/3)*gamma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) +
 162*a**5*b**(22/3)*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gam
ma(10/3)) - 28*a**(19/3)*b**3*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/
3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/3)*ga
mma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)
*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) - 84*a**(
16/3)*b**4*x*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*
pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/3)*gamma(10/3) + 162*a
**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x**2*gamma(10/3)
```

```
 + 54*a**4*b**(25/3)*x**3*gamma(10/3)) + 84*a**(16/3)*b**4*x*log(
1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(7/3)/(54*a*
*7*b**(16/3)*gamma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) + 162
*a**5*b**(22/3)*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(1
0/3)) - 84*a**(16/3)*b**4*x*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)
*exp_polar(5*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/3)*gamm
a(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x
**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) - 84*a**(13
/3)*b**5*x**2*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I
*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/3)*gamma(10/3) + 162*
a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x**2*gamma(10/3
) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) + 84*a**(13/3)*b**5*x**2*
log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(7/3)/(5
4*a**7*b**(16/3)*gamma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) +
 162*a**5*b**(22/3)*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gam
ma(10/3)) - 84*a**(13/3)*b**5*x**2*exp(I*pi/3)*log(1 - b**(1/3)*x
**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/
3)*gamma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(
22/3)*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) - 28
*a**(10/3)*b**6*x**3*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_
polar(I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*b**(16/3)*gamma(10/3)
 + 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x**2*gam
ma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) + 28*a**(10/3)*b**
6*x**3*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(
7/3)/(54*a**7*b**(16/3)*gamma(10/3) + 162*a**6*b**(19/3)*x*gamma(
10/3) + 162*a**5*b**(22/3)*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x
**3*gamma(10/3)) - 28*a**(10/3)*b**6*x**3*exp(I*pi/3)*log(1 - b**
(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(7/3)/(54*a**7*
b**(16/3)*gamma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a*
*5*b**(22/3)*x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3
)) - 84*a**6*b**(10/3)*x**(1/3)*gamma(7/3)/(54*a**7*b**(16/3)*gam
ma(10/3) + 162*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*
x**2*gamma(10/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) - 231*a**5
*b**(13/3)*x**(4/3)*gamma(7/3)/(54*a**7*b**(16/3)*gamma(10/3) + 1
62*a**6*b**(19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x**2*gamma(1
0/3) + 54*a**4*b**(25/3)*x**3*gamma(10/3)) - 147*a**4*b**(16/3)*x
**(7/3)*gamma(7/3)/(54*a**7*b**(16/3)*gamma(10/3) + 162*a**6*b**(
19/3)*x*gamma(10/3) + 162*a**5*b**(22/3)*x**2*gamma(10/3) + 54*a*
*4*b**(25/3)*x**3*gamma(10/3))
```

GIAC/XCAS [A] time = 0.225741, size = 197, normalized size = 1.41

$$-\frac{2\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,ab^{2}}+\frac{2\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,ab^{3}}+\frac{\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{9\,ab^{3}}-\frac{7\,bx^{\frac{4}{3}}+4\,ax^{\frac{1}{3}}}{6\,(bx+a)^{2}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(4/3)/(b*x + a)^3,x, algorithm="giac")

[Out] -2/9*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/(a*b^2) + 2/9*s
qrt(3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3
))/(-a/b)^(1/3))/(a*b^3) + 1/9*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3
)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a*b^3) - 1/6*(7*b*x^(4/3) + 4*a*x
^(1/3))/((b*x + a)^2*b^2)
```

3.692 $\int \frac{x^{2/3}}{(a+bx)^3}\,dx$

Optimal. Leaf size=143

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{4/3}b^{5/3}}+\frac{\log(a+bx)}{18a^{4/3}b^{5/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{4/3}b^{5/3}}+\frac{x^{2/3}}{3ab(a+bx)}-\frac{x^{2/3}}{2b(a+bx)^2}$$

```
[Out] -x^(2/3)/(2*b*(a + b*x)^2) + x^(2/3)/(3*a*b*(a + b*x)) - ArcTan[(
a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))]/(3*Sqrt[3]*a^(4/3
)*b^(5/3)) - Log[a^(1/3) + b^(1/3)*x^(1/3)]/(6*a^(4/3)*b^(5/3)) +
 Log[a + b*x]/(18*a^(4/3)*b^(5/3))
```

Rubi [A] time = 0.115859, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{4/3}b^{5/3}}+\frac{\log(a+bx)}{18a^{4/3}b^{5/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{4/3}b^{5/3}}+\frac{x^{2/3}}{3ab(a+bx)}-\frac{x^{2/3}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2/3)/(a + b*x)^3,x]
```

```
[Out] -x^(2/3)/(2*b*(a + b*x)^2) + x^(2/3)/(3*a*b*(a + b*x)) - ArcTan[(
a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))]/(3*Sqrt[3]*a^(4/3
)*b^(5/3)) - Log[a^(1/3) + b^(1/3)*x^(1/3)]/(6*a^(4/3)*b^(5/3)) +
 Log[a + b*x]/(18*a^(4/3)*b^(5/3))
```

Rubi in Sympy [A] time = 15.9869, size = 126, normalized size = 0.88

$$-\frac{x^{\frac{2}{3}}}{2b\,(a+bx)^2}+\frac{x^{\frac{2}{3}}}{3ab\,(a+bx)}-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{\frac{4}{3}}b^{\frac{5}{3}}}+\frac{\log\left(a+bx\right)}{18a^{\frac{4}{3}}b^{\frac{5}{3}}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{4}{3}}b^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2/3)/(b*x+a)**3,x)
```

```
[Out] -x**(2/3)/(2*b*(a + b*x)**2) + x**(2/3)/(3*a*b*(a + b*x)) - log(a
**(1/3) + b**(1/3)*x**(1/3))/(6*a**(4/3)*b**(5/3)) + log(a + b*x)
```

```
/(18*a**(4/3)*b**(5/3)) - sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 - 2*b*
*(1/3)*x**(1/3)/3)/a**(1/3))/(9*a**(4/3)*b**(5/3))
```

Mathematica [A] time = 0.150292, size = 155, normalized size = 1.08

$$\frac{\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{a^{4/3}}-\frac{2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{4/3}}-\frac{2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{a^{4/3}}+\frac{6b^{2/3}x^{2/3}}{a^2+abx}-\frac{9b^{2/3}x^{2/3}}{(a+bx)^2}}{18b^{5/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2/3)/(a + b*x)^3,x]
```

```
[Out] ((-9*b^(2/3)*x^(2/3))/(a + b*x)^2 + (6*b^(2/3)*x^(2/3))/(a^2 + a*
b*x) - (2*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3
]])/a^(4/3) - (2*Log[a^(1/3) + b^(1/3)*x^(1/3)])/a^(4/3) + Log[a^
(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)]/a^(4/3))/(18*b
^(5/3))
```

Maple [A] time = 0.017, size = 132, normalized size = 0.9

$$3\frac{1}{(bx+a)^2}\left(1/9\frac{x^{5/3}}{a}-1/18\frac{x^{2/3}}{b}\right)-\frac{1}{9b^2a}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$+\frac{1}{18b^2a}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{\sqrt{3}}{9b^2a}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2/3)/(b*x+a)^3,x)
```

```
[Out] 3*(1/9/a*x^(5/3)-1/18*x^(2/3)/b)/(b*x+a)^2-1/9/b^2/a/(a/b)^(1/3)*
ln(x^(1/3)+(a/b)^(1/3))+1/18/b^2/a/(a/b)^(1/3)*ln(x^(2/3)-x^(1/3)
*(a/b)^(1/3)+(a/b)^(2/3))+1/9/b^2/a*3^(1/2)/(a/b)^(1/3)*arctan(1/
3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220991, size = 274, normalized size = 1.92

$$\frac{\sqrt{3}\Big(3\sqrt{3}\,(-ab^2)^{\frac{1}{3}}\,(2\,bx-a)x^{\frac{2}{3}}+2\sqrt{3}\big(b^2x^2+2\,abx+a^2\big)\log\Big(ab+(-ab^2)^{\frac{2}{3}}\,x^{\frac{1}{3}}\Big)-\sqrt{3}\big(b^2x^2+2\,abx+a^2\big)\log\Big(-ab+(-ab}{54\,(ab^3x^2+2\,a^2b^2x+a^3b)\,(-ab^2)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/54*sqrt(3)*(3*sqrt(3)*(-a*b^2)^(1/3)*(2*b*x - a)*x^(2/3) + 2*sq
rt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(a*b + (-a*b^2)^(2/3)*x^(1/3))
 - sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(-a*b + (-a*b^2)^(1/3)*b*
x^(2/3) + (-a*b^2)^(2/3)*x^(1/3)) - 6*(b^2*x^2 + 2*a*b*x + a^2)*a
rctan(-1/3*(sqrt(3)*a*b - 2*sqrt(3)*(-a*b^2)^(2/3)*x^(1/3))/(a*b)
))/((a*b^3*x^2 + 2*a^2*b^2*x + a^3*b)*(-a*b^2)^(1/3))
```

Sympy [A] time = 5.69507, size = 1683, normalized size = 11.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2/3)/(b*x+a)**3,x)
```

```
[Out] -10*a**(17/3)*b*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_pola
r(I*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162
*a**6*b**(11/3)*x*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3)
 + 54*a**4*b**(17/3)*x**3*gamma(8/3)) - 10*a**(17/3)*b*log(1 - b*
*(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(5/3)/(54*a**7*b**
(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gamma(8/3) + 162*a**5*b**
(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x**3*gamma(8/3)) - 10*
a**(17/3)*b*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I
*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a*
*6*b**(11/3)*x*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) +
54*a**4*b**(17/3)*x**3*gamma(8/3)) - 30*a**(14/3)*b**2*x*exp(10*I
*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamm
a(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gamma(
8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x**
```

```
3*gamma(8/3)) - 30*a**(14/3)*b**2*x*log(1 - b**(1/3)*x**(1/3)*exp
_polar(I*pi)/a**(1/3))*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) +
162*a**6*b**(11/3)*x*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8
/3) + 54*a**4*b**(17/3)*x**3*gamma(8/3)) - 30*a**(14/3)*b**2*x*ex
p(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3
))*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x
*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17
/3)*x**3*gamma(8/3)) - 30*a**(11/3)*b**3*x**2*exp(10*I*pi/3)*log(
1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(5/3)/(54*
a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gamma(8/3) + 162*
a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x**3*gamma(8/3
)) - 30*a**(11/3)*b**3*x**2*log(1 - b**(1/3)*x**(1/3)*exp_polar(I
*pi)/a**(1/3))*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6
*b**(11/3)*x*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54
*a**4*b**(17/3)*x**3*gamma(8/3)) - 30*a**(11/3)*b**3*x**2*exp(2*I
*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*ga
mma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gamm
a(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x
**3*gamma(8/3)) - 10*a**(8/3)*b**4*x**3*exp(10*I*pi/3)*log(1 - b*
*(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(5/3)/(54*a**7*b
**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gamma(8/3) + 162*a**5*b
**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x**3*gamma(8/3)) - 1
0*a**(8/3)*b**4*x**3*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a*
*(1/3))*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11
/3)*x*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b
**(17/3)*x**3*gamma(8/3)) - 10*a**(8/3)*b**4*x**3*exp(2*I*pi/3)*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(5/3)
/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gamma(8/3) +
 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x**3*gamm
a(8/3)) - 15*a**5*b**(5/3)*x**(2/3)*gamma(5/3)/(54*a**7*b**(8/3)*
gamma(8/3) + 162*a**6*b**(11/3)*x*gamma(8/3) + 162*a**5*b**(14/3)
*x**2*gamma(8/3) + 54*a**4*b**(17/3)*x**3*gamma(8/3)) + 15*a**4*b
**(8/3)*x**(5/3)*gamma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a*
*6*b**(11/3)*x*gamma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) +
54*a**4*b**(17/3)*x**3*gamma(8/3)) + 30*a**3*b**(11/3)*x**(8/3)*g
amma(5/3)/(54*a**7*b**(8/3)*gamma(8/3) + 162*a**6*b**(11/3)*x*gam
ma(8/3) + 162*a**5*b**(14/3)*x**2*gamma(8/3) + 54*a**4*b**(17/3)*
x**3*gamma(8/3))
```

GIAC/XCAS [A] time = 0.220173, size = 201, normalized size = 1.41

$$-\frac{\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,a^{2}b}-\frac{\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,a^{2}b^{3}}+\frac{2\,bx^{\frac{5}{3}}-ax^{\frac{2}{3}}}{6\,(bx+a)^{2}ab}+\frac{\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{18\,a^{2}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(2/3)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -1/9*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/(a^2*b) - 1/9*s
qrt(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3
))/(-a/b)^(1/3))/(a^2*b^3) + 1/6*(2*b*x^(5/3) - a*x^(2/3))/((b*x
+ a)^2*a*b) + 1/18*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/
3) + (-a/b)^(2/3))/(a^2*b^3)
```

3.693 $\int \frac{\sqrt[3]{x}}{(a+bx)^3} \, dx$

Optimal. Leaf size=143

$$\frac{\log \left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{5/3}b^{4/3}}-\frac{\log(a+bx)}{18a^{5/3}b^{4/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{5/3}b^{4/3}}+\frac{\sqrt[3]{x}}{6ab(a+bx)}-\frac{\sqrt[3]{x}}{2b(a+bx)^2}$$

```
[Out] -x^(1/3)/(2*b*(a + b*x)^2) + x^(1/3)/(6*a*b*(a + b*x)) - ArcTan[(
a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))]/(3*Sqrt[3]*a^(5/3
)*b^(4/3)) + Log[a^(1/3) + b^(1/3)*x^(1/3)]/(6*a^(5/3)*b^(4/3)) -
 Log[a + b*x]/(18*a^(5/3)*b^(4/3))
```

Rubi [A] time = 0.117544, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.462$

$$\frac{\log \left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{5/3}b^{4/3}}-\frac{\log(a+bx)}{18a^{5/3}b^{4/3}}-\frac{\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{5/3}b^{4/3}}+\frac{\sqrt[3]{x}}{6ab(a+bx)}-\frac{\sqrt[3]{x}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1/3)/(a + b*x)^3,x]
```

```
[Out] -x^(1/3)/(2*b*(a + b*x)^2) + x^(1/3)/(6*a*b*(a + b*x)) - ArcTan[(
a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))]/(3*Sqrt[3]*a^(5/3
)*b^(4/3)) + Log[a^(1/3) + b^(1/3)*x^(1/3)]/(6*a^(5/3)*b^(4/3)) -
 Log[a + b*x]/(18*a^(5/3)*b^(4/3))
```

Rubi in Sympy [A] time = 16.3284, size = 126, normalized size = 0.88

$$-\frac{\sqrt[3]{x}}{2b\,(a+bx)^2}+\frac{\sqrt[3]{x}}{6ab\,(a+bx)}+\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{\frac{5}{3}}b^{\frac{4}{3}}}-\frac{\log\,(a+bx)}{18a^{\frac{5}{3}}b^{\frac{4}{3}}}-\frac{\sqrt{3}\,\text{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{5}{3}}b^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/3)/(b*x+a)**3,x)
```

```
[Out] -x**(1/3)/(2*b*(a + b*x)**2) + x**(1/3)/(6*a*b*(a + b*x)) + log(a
**(1/3) + b**(1/3)*x**(1/3))/(6*a**(5/3)*b**(4/3)) - log(a + b*x)
```

```
/(18*a**(5/3)*b**(4/3)) - sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 - 2*b*
*(1/3)*x**(1/3)/3)/a**(1/3))/(9*a**(5/3)*b**(4/3))
```

Mathematica [A] time = 0.125547, size = 156, normalized size = 1.09

$$\frac{-\frac{\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{a^{5/3}}+\frac{2\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{a^{5/3}}-\frac{2\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{a^{5/3}}+\frac{3\sqrt[3]{b}\sqrt[3]{x}}{a^2+abx}-\frac{9\sqrt[3]{b}\sqrt[3]{x}}{(a+bx)^2}}{18b^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1/3)/(a + b*x)^3,x]
```

```
[Out] ((-9*b^(1/3)*x^(1/3))/(a + b*x)^2 + (3*b^(1/3)*x^(1/3))/(a^2 + a*
b*x) - (2*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3
]])/a^(5/3) + (2*Log[a^(1/3) + b^(1/3)*x^(1/3)])/a^(5/3) - Log[a^
(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)]/a^(5/3))/(18*b
^(4/3))
```

Maple [A] time = 0.017, size = 132, normalized size = 0.9

$$3\,\frac{1}{(bx+a)^2}\left(1/18\,\frac{x^{4/3}}{a}-1/9\,\frac{\sqrt[3]{x}}{b}\right)+\frac{1}{9\,b^2a}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$-\frac{1}{18\,b^2a}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{\sqrt{3}}{9\,b^2a}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/3)/(b*x+a)^3,x)
```

```
[Out] 3*(1/18/a*x^(4/3)-1/9*x^(1/3)/b)/(b*x+a)^2+1/9/b^2/a/(a/b)^(2/3)*
ln(x^(1/3)+(a/b)^(1/3))-1/18/b^2/a/(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)
*(a/b)^(1/3)+(a/b)^(2/3))+1/9/b^2/a/(a/b)^(2/3)*3^(1/2)*arctan(1/
3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218344, size = 255, normalized size = 1.78

$$-\frac{\sqrt{3}\Big(\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)\log\left(a^2-\left(a^2b\right)^{\frac{1}{3}}ax^{\frac{1}{3}}+\left(a^2b\right)^{\frac{2}{3}}x^{\frac{2}{3}}\right)-2\,\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)\log\left(a+\left(a^2b\right)^{\frac{1}{3}}x^{\frac{1}{3}}\right)-3\,\sqrt{3}\,(a^2}{54\left(ab^3x^2+2\,a^2b^2x+a^3b\right)\left(a^2b\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(a^2 - (a^2*b
)^(1/3)*a*x^(1/3) + (a^2*b)^(2/3)*x^(2/3)) - 2*sqrt(3)*(b^2*x^2 +
 2*a*b*x + a^2)*log(a + (a^2*b)^(1/3)*x^(1/3)) - 3*sqrt(3)*(a^2*b
)^(1/3)*(b*x - 2*a)*x^(1/3) - 6*(b^2*x^2 + 2*a*b*x + a^2)*arctan(
-1/3*(sqrt(3)*a - 2*sqrt(3)*(a^2*b)^(1/3)*x^(1/3))/a))/((a*b^3*x^
2 + 2*a^2*b^2*x + a^3*b)*(a^2*b)^(1/3))
```

Sympy [A] time = 5.32307, size = 1676, normalized size = 11.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/3)/(b*x+a)**3,x)
```

```
[Out] -4*a**(16/3)*b*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(
I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a*
*6*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 2
7*a**4*b**(16/3)*x**3*gamma(7/3)) + 4*a**(16/3)*b*log(1 - b**(1/3
)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3)
*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*
x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3)) - 4*a**(16/3
)*b*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**
(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6*b**(10/3
)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*a**4*b**(
16/3)*x**3*gamma(7/3)) - 12*a**(13/3)*b**2*x*exp(5*I*pi/3)*log(1
- b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(4/3)/(27*a*
*7*b**(7/3)*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**5
*b**(13/3)*x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3)) +
```

```
 12*a**(13/3)*b**2*x*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a*
*(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6*b**(10/
3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*a**4*b**
(16/3)*x**3*gamma(7/3)) - 12*a**(13/3)*b**2*x*exp(I*pi/3)*log(1 -
 b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a
**7*b**(7/3)*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**
5*b**(13/3)*x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3))
- 12*a**(10/3)*b**3*x**2*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*
exp_polar(I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/
3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamm
a(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3)) + 12*a**(10/3)*b**3*x
**2*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(4/3
)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) +
 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma
(7/3)) - 12*a**(10/3)*b**3*x**2*exp(I*pi/3)*log(1 - b**(1/3)*x**(
1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*g
amma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x*
*2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3)) - 4*a**(7/3)*b
**4*x**3*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3
)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6*b**
(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*a**4
*b**(16/3)*x**3*gamma(7/3)) + 4*a**(7/3)*b**4*x**3*log(1 - b**(1/
3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3
)*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)
*x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3)) - 4*a**(7/3
)*b**4*x**3*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*p
i/3)/a**(1/3))*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6*
b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*a
**4*b**(16/3)*x**3*gamma(7/3)) - 12*a**5*b**(4/3)*x**(1/3)*gamma(
4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3
) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*ga
mma(7/3)) - 6*a**4*b**(7/3)*x**(4/3)*gamma(4/3)/(27*a**7*b**(7/3)
*gamma(7/3) + 81*a**6*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*
x**2*gamma(7/3) + 27*a**4*b**(16/3)*x**3*gamma(7/3)) + 6*a**3*b**
(10/3)*x**(7/3)*gamma(4/3)/(27*a**7*b**(7/3)*gamma(7/3) + 81*a**6
*b**(10/3)*x*gamma(7/3) + 81*a**5*b**(13/3)*x**2*gamma(7/3) + 27*
a**4*b**(16/3)*x**3*gamma(7/3))
```

GIAC/XCAS [A] time = 0.220085, size = 200, normalized size = 1.4

$$-\frac{\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,a^{2}b}+\frac{\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,a^{2}b^{2}}+\frac{\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{18\,a^{2}b^{2}}+\frac{bx^{\frac{4}{3}}-2\,ax^{\frac{1}{3}}}{6\,(bx+a)^{2}ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/3)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -1/9*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/(a^2*b) + 1/9*s
qrt(3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3
))/(-a/b)^(1/3))/(a^2*b^2) + 1/18*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(
1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a^2*b^2) + 1/6*(b*x^(4/3) - 2*
a*x^(1/3))/((b*x + a)^2*a*b)
```

3.694 $\int \frac{1}{\sqrt[3]{x}(a+bx)^3} dx$

Optimal. Leaf size=140

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{7/3}b^{2/3}}+\frac{\log(a+bx)}{9a^{7/3}b^{2/3}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{7/3}b^{2/3}}+\frac{2x^{2/3}}{3a^2(a+bx)}+\frac{x^{2/3}}{2a(a+bx)^2}$$

```
[Out] x^(2/3)/(2*a*(a + b*x)^2) + (2*x^(2/3))/(3*a^2*(a + b*x)) - (2*Ar
cTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]
*a^(7/3)*b^(2/3)) - Log[a^(1/3) + b^(1/3)*x^(1/3)]/(3*a^(7/3)*b^(
2/3)) + Log[a + b*x]/(9*a^(7/3)*b^(2/3))
```

Rubi [A] time = 0.113763, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{7/3}b^{2/3}}+\frac{\log(a+bx)}{9a^{7/3}b^{2/3}}-\frac{2\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{7/3}b^{2/3}}+\frac{2x^{2/3}}{3a^2(a+bx)}+\frac{x^{2/3}}{2a(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(1/3)*(a + b*x)^3),x]
```

```
[Out] x^(2/3)/(2*a*(a + b*x)^2) + (2*x^(2/3))/(3*a^2*(a + b*x)) - (2*Ar
cTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]
*a^(7/3)*b^(2/3)) - Log[a^(1/3) + b^(1/3)*x^(1/3)]/(3*a^(7/3)*b^(
2/3)) + Log[a + b*x]/(9*a^(7/3)*b^(2/3))
```

Rubi in Sympy [A] time = 15.7455, size = 129, normalized size = 0.92

$$\frac{x^{\frac{2}{3}}}{2a\left(a+bx\right)^2}+\frac{2x^{\frac{2}{3}}}{3a^2\left(a+bx\right)}-\frac{\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{\frac{7}{3}}b^{\frac{2}{3}}}+\frac{\log\left(a+bx\right)}{9a^{\frac{7}{3}}b^{\frac{2}{3}}}-\frac{2\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{7}{3}}b^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/3)/(b*x+a)**3,x)
```

```
[Out] x**(2/3)/(2*a*(a + b*x)**2) + 2*x**(2/3)/(3*a**2*(a + b*x)) - log
(a**(1/3) + b**(1/3)*x**(1/3))/(3*a**(7/3)*b**(2/3)) + log(a + b*
```

```
x)/(9*a**(7/3)*b**(2/3)) - 2*sqrt(3)*atan(sqrt(3)*(a**(1/3)/3 - 2
*b**(1/3)*x**(1/3)/3)/a**(1/3))/(9*a**(7/3)*b**(2/3))
```

Mathematica [A] time = 0.112105, size = 153, normalized size = 1.09

$$\frac{\frac{2\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{b^{2/3}}+\frac{9a^{4/3}x^{2/3}}{(a+bx)^2}-\frac{4\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{b^{2/3}}-\frac{4\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{b^{2/3}}+\frac{12\sqrt[3]{a}x^{2/3}}{a+bx}}{18a^{7/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(1/3)*(a + b*x)^3),x]
```

```
[Out] ((9*a^(4/3)*x^(2/3))/(a + b*x)^2 + (12*a^(1/3)*x^(2/3))/(a + b*x)
 - (4*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]])/
b^(2/3) - (4*Log[a^(1/3) + b^(1/3)*x^(1/3)])/b^(2/3) + (2*Log[a^(
2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/b^(2/3))/(18*a
^(7/3))
```

Maple [A] time = 0.011, size = 136, normalized size = 1.

$$\frac{1}{2a(bx+a)^2}x^{\frac{2}{3}}+\frac{2}{3a^2(bx+a)}x^{\frac{2}{3}}-\frac{2}{9a^2b}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$
$$+\frac{1}{9a^2b}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}+\frac{2\sqrt{3}}{9a^2b}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/3)/(b*x+a)^3,x)
```

```
[Out] 1/2*x^(2/3)/a/(b*x+a)^2+2/3*x^(2/3)/a^2/(b*x+a)-2/9/a^2/b/(a/b)^(
1/3)*ln(x^(1/3)+(a/b)^(1/3))+1/9/a^2/b/(a/b)^(1/3)*ln(x^(2/3)-x^(
1/3)*(a/b)^(1/3)+(a/b)^(2/3))+2/9/a^2*3^(1/2)/b/(a/b)^(1/3)*arcta
n(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(1/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223345, size = 271, normalized size = 1.94

$$\frac{\sqrt{3}\left(3\sqrt{3}\left(-ab^2\right)^{\frac{1}{3}}(4\,bx+7\,a)x^{\frac{2}{3}}+4\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)\log\left(ab+\left(-ab^2\right)^{\frac{2}{3}}x^{\frac{1}{3}}\right)-2\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)\log\left(-ab+\left(\cdots\right.\right.\right.}{54\left(a^2b^2x^2+2\,a^3bx+a^4\right)\left(-ab^2\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(1/3)),x, algorithm="fricas")
```

```
[Out] 1/54*sqrt(3)*(3*sqrt(3)*(-a*b^2)^(1/3)*(4*b*x + 7*a)*x^(2/3) + 4*
sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(a*b + (-a*b^2)^(2/3)*x^(1/3
)) - 2*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(-a*b + (-a*b^2)^(1/3
)*b*x^(2/3) + (-a*b^2)^(2/3)*x^(1/3)) - 12*(b^2*x^2 + 2*a*b*x + a
^2)*arctan(-1/3*(sqrt(3)*a*b - 2*sqrt(3)*(-a*b^2)^(2/3)*x^(1/3))/
(a*b)))/((a^2*b^2*x^2 + 2*a^3*b*x + a^4)*(-a*b^2)^(1/3))
```

Sympy [A] time = 5.3247, size = 1693, normalized size = 12.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/3)/(b*x+a)**3,x)
```

```
[Out] -4*a**(14/3)*b**(4/3)*x**2*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/
3)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*x**2*gamm
a(5/3) + 81*a**6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5
/3) + 27*a**4*b**5*x**5*gamma(5/3)) - 4*a**(14/3)*b**(4/3)*x**2*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(27
*a**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5/3) + 81*a*
*5*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)) - 4*a**(1
4/3)*b**(4/3)*x**2*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_po
lar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*x**2*gamma(5/3)
+ 81*a**6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/3) + 2
7*a**4*b**5*x**5*gamma(5/3)) - 12*a**(11/3)*b**(7/3)*x**3*exp(10*
I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gam
ma(2/3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5
/3) + 81*a**5*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)
```

```
) - 12*a**(11/3)*b**(7/3)*x**3*log(1 - b**(1/3)*x**(1/3)*exp_pola
r(I*pi)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*a
**6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/3) + 27*a**4
*b**5*x**5*gamma(5/3)) - 12*a**(11/3)*b**(7/3)*x**3*exp(2*I*pi/3)
*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/
3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5/3) +
 81*a**5*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)) - 1
2*a**(8/3)*b**(10/3)*x**4*exp(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3
)*exp_polar(I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*x**2*gamma
(5/3) + 81*a**6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/
3) + 27*a**4*b**5*x**5*gamma(5/3)) - 12*a**(8/3)*b**(10/3)*x**4*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(2/3)/(27
*a**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5/3) + 81*a*
*5*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)) - 12*a**(
8/3)*b**(10/3)*x**4*exp(2*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_p
olar(5*I*pi/3)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*x**2*gamma(5/3)
 + 81*a**6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/3) +
27*a**4*b**5*x**5*gamma(5/3)) - 4*a**(5/3)*b**(13/3)*x**5*exp(10*
I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gam
ma(2/3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5
/3) + 81*a**5*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)
) - 4*a**(5/3)*b**(13/3)*x**5*log(1 - b**(1/3)*x**(1/3)*exp_polar
(I*pi)/a**(1/3))*gamma(2/3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*a*
*6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/3) + 27*a**4*
b**5*x**5*gamma(5/3)) - 4*a**(5/3)*b**(13/3)*x**5*exp(2*I*pi/3)*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(2/3)
/(27*a**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5/3) + 8
1*a**5*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)) + 21*
a**4*b**2*x**(8/3)*gamma(2/3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*
a**6*b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/3) + 27*a**
4*b**5*x**5*gamma(5/3)) + 33*a**3*b**3*x**(11/3)*gamma(2/3)/(27*a
**7*b**2*x**2*gamma(5/3) + 81*a**6*b**3*x**3*gamma(5/3) + 81*a**5
*b**4*x**4*gamma(5/3) + 27*a**4*b**5*x**5*gamma(5/3)) + 12*a**2*b
**4*x**(14/3)*gamma(2/3)/(27*a**7*b**2*x**2*gamma(5/3) + 81*a**6*
b**3*x**3*gamma(5/3) + 81*a**5*b**4*x**4*gamma(5/3) + 27*a**4*b**
5*x**5*gamma(5/3))
```

GIAC/XCAS [A] time = 0.224405, size = 193, normalized size = 1.38

$$-\frac{2\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,a^{3}}-\frac{2\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,a^{3}b^{2}}+\frac{4\,bx^{\frac{5}{3}}+7\,ax^{\frac{2}{3}}}{6\,(bx+a)^{2}a^{2}}+\frac{\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{9\,a^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(1/3)),x, algorithm="giac")
```

```
[Out] -2/9*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^3 - 2/9*sqrt(
3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(
-a/b)^(1/3))/(a^3*b^2) + 1/6*(4*b*x^(5/3) + 7*a*x^(2/3))/((b*x +
a)^2*a^2) + 1/9*(-a*b^2)^(2/3)*ln(x^(2/3) + x^(1/3)*(-a/b)^(1/3)
+ (-a/b)^(2/3))/(a^3*b^2)
```

3.695 $\int \frac{1}{x^{2/3}(a+bx)^3}\,dx$

Optimal. Leaf size=140

$$\frac{5\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{8/3}\sqrt[3]{b}}-\frac{5\log(a+bx)}{18a^{8/3}\sqrt[3]{b}}-\frac{5\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{8/3}\sqrt[3]{b}}+\frac{5\sqrt[3]{x}}{6a^2(a+bx)}+\frac{\sqrt[3]{x}}{2a(a+bx)^2}$$

```
[Out] x^(1/3)/(2*a*(a + b*x)^2) + (5*x^(1/3))/(6*a^2*(a + b*x)) - (5*Ar
cTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]
*a^(8/3)*b^(1/3)) + (5*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(6*a^(8/3)
*b^(1/3)) - (5*Log[a + b*x])/(18*a^(8/3)*b^(1/3))
```

Rubi [A] time = 0.117917, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.385

$$\frac{5\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{8/3}\sqrt[3]{b}}-\frac{5\log(a+bx)}{18a^{8/3}\sqrt[3]{b}}-\frac{5\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{8/3}\sqrt[3]{b}}+\frac{5\sqrt[3]{x}}{6a^2(a+bx)}+\frac{\sqrt[3]{x}}{2a(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(2/3)*(a + b*x)^3),x]
```

```
[Out] x^(1/3)/(2*a*(a + b*x)^2) + (5*x^(1/3))/(6*a^2*(a + b*x)) - (5*Ar
cTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]
*a^(8/3)*b^(1/3)) + (5*Log[a^(1/3) + b^(1/3)*x^(1/3)])/(6*a^(8/3)
*b^(1/3)) - (5*Log[a + b*x])/(18*a^(8/3)*b^(1/3))
```

Rubi in Sympy [A] time = 15.8964, size = 133, normalized size = 0.95

$$\frac{\sqrt[3]{x}}{2a\left(a+bx\right)^2}+\frac{5\sqrt[3]{x}}{6a^2\left(a+bx\right)}+\frac{5\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{6a^{\frac{8}{3}}\sqrt[3]{b}}-\frac{5\log\left(a+bx\right)}{18a^{\frac{8}{3}}\sqrt[3]{b}}-\frac{5\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{8}{3}}\sqrt[3]{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(2/3)/(b*x+a)**3,x)
```

```
[Out] x**(1/3)/(2*a*(a + b*x)**2) + 5*x**(1/3)/(6*a**2*(a + b*x)) + 5*l
og(a**(1/3) + b**(1/3)*x**(1/3))/(6*a**(8/3)*b**(1/3)) - 5*log(a
```

```
+ b*x)/(18*a**(8/3)*b**(1/3)) - 5*sqrt(3)*atan(sqrt(3)*(a**(1/3)/
3 - 2*b**(1/3)*x**(1/3)/3)/a**(1/3))/(9*a**(8/3)*b**(1/3))
```

Mathematica [A] time = 0.11286, size = 153, normalized size = 1.09

$$\frac{-\frac{5\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)}{\sqrt[3]{b}}+\frac{9a^{5/3}\sqrt[3]{x}}{(a+bx)^2}+\frac{15a^{2/3}\sqrt[3]{x}}{a+bx}+\frac{10\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{\sqrt[3]{b}}-\frac{10\sqrt{3}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)}{\sqrt[3]{b}}}{18a^{8/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(2/3)*(a + b*x)^3),x]
```

```
[Out] ((9*a^(5/3)*x^(1/3))/(a + b*x)^2 + (15*a^(2/3)*x^(1/3))/(a + b*x)
 - (10*Sqrt[3]*ArcTan[(1 - (2*b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]])
/b^(1/3) + (10*Log[a^(1/3) + b^(1/3)*x^(1/3)])/b^(1/3) - (5*Log[a
^(2/3) - a^(1/3)*b^(1/3)*x^(1/3) + b^(2/3)*x^(2/3)])/b^(1/3))/(18
*a^(8/3))
```

Maple [A] time = 0.01, size = 136, normalized size = 1.

$$\frac{1}{2\,a\,(bx+a)^2}\sqrt[3]{x}+\frac{5}{6\,a^2\,(bx+a)}\sqrt[3]{x}+\frac{5}{9\,a^2b}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{5}{18\,a^2b}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}+\frac{5\sqrt{3}}{9\,a^2b}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(2/3)/(b*x+a)^3,x)
```

```
[Out] 1/2*x^(1/3)/a/(b*x+a)^2+5/6*x^(1/3)/a^2/(b*x+a)+5/9/a^2/b/(a/b)^(
2/3)*ln(x^(1/3)+(a/b)^(1/3))-5/18/a^2/b/(a/b)^(2/3)*ln(x^(2/3)-x^
(1/3)*(a/b)^(1/3)+(a/b)^(2/3))+5/9/a^2/b/(a/b)^(2/3)*3^(1/2)*arct
an(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(2/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225276, size = 255, normalized size = 1.82

$$-\frac{\sqrt{3}\left(5\sqrt{3}\left(b^2x^2+2abx+a^2\right)\log\left(a^2-\left(a^2b\right)^{\frac{1}{3}}ax^{\frac{1}{3}}+\left(a^2b\right)^{\frac{2}{3}}x^{\frac{2}{3}}\right)-10\sqrt{3}\left(b^2x^2+2abx+a^2\right)\log\left(a+\left(a^2b\right)^{\frac{1}{3}}x^{\frac{1}{3}}\right)-3\sqrt{3}\right.}{54\left(a^2b^2x^2+2a^3bx+a^4\right)\left(a^2b\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(2/3)),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(5*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*log(a^2 - (a^2
*b)^(1/3)*a*x^(1/3) + (a^2*b)^(2/3)*x^(2/3)) - 10*sqrt(3)*(b^2*x^
2 + 2*a*b*x + a^2)*log(a + (a^2*b)^(1/3)*x^(1/3)) - 3*sqrt(3)*(a^
2*b)^(1/3)*(5*b*x + 8*a)*x^(1/3) - 30*(b^2*x^2 + 2*a*b*x + a^2)*a
rctan(-1/3*(sqrt(3)*a - 2*sqrt(3)*(a^2*b)^(1/3)*x^(1/3))/a))/((a^
2*b^2*x^2 + 2*a^3*b*x + a^4)*(a^2*b)^(1/3))
```

Sympy [A] time = 5.94307, size = 1629, normalized size = 11.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(2/3)/(b*x+a)**3,x)
```

```
[Out] -10*a**(13/3)*b**(2/3)*x*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*
exp_polar(I*pi/3)/a**(1/3))*gamma(1/3)/(54*a**7*b*x*gamma(4/3) +
162*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 5
4*a**4*b**4*x**4*gamma(4/3)) + 10*a**(13/3)*b**(2/3)*x*log(1 - b*
*(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(1/3)/(54*a**7*b*x
*gamma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*
gamma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) - 10*a**(13/3)*b**(2/3
)*x*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**
(1/3))*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*ga
mma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gamm
a(4/3)) - 30*a**(10/3)*b**(5/3)*x**2*exp(5*I*pi/3)*log(1 - b**(1/
3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(1/3)/(54*a**7*b*x*g
amma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*ga
mma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) + 30*a**(10/3)*b**(5/3)*
```

```
x**2*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(1/
3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162*
a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) - 30*a*
*(10/3)*b**(5/3)*x**2*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_p
olar(5*I*pi/3)/a**(1/3))*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162
*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a
**4*b**4*x**4*gamma(4/3)) - 30*a**(7/3)*b**(8/3)*x**3*exp(5*I*pi/
3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(1/
3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162*
a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) + 30*a*
*(7/3)*b**(8/3)*x**3*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a*
*(1/3))*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*g
amma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gam
ma(4/3)) - 30*a**(7/3)*b**(8/3)*x**3*exp(I*pi/3)*log(1 - b**(1/3)
*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(1/3)/(54*a**7*b*x*g
amma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*ga
mma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) - 10*a**(4/3)*b**(11/3)*
x**4*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a*
*(1/3))*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*g
amma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gam
ma(4/3)) + 10*a**(4/3)*b**(11/3)*x**4*log(1 - b**(1/3)*x**(1/3)*e
xp_polar(I*pi)/a**(1/3))*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162
*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a
**4*b**4*x**4*gamma(4/3)) - 10*a**(4/3)*b**(11/3)*x**4*exp(I*pi/3
)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(1
/3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162
*a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) + 24*a
**4*b*x**(4/3)*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2
*x**2*gamma(4/3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x
**4*gamma(4/3)) + 39*a**3*b**2*x**(7/3)*gamma(1/3)/(54*a**7*b*x*g
amma(4/3) + 162*a**6*b**2*x**2*gamma(4/3) + 162*a**5*b**3*x**3*ga
mma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)) + 15*a**2*b**3*x**(10/3)
*gamma(1/3)/(54*a**7*b*x*gamma(4/3) + 162*a**6*b**2*x**2*gamma(4/
3) + 162*a**5*b**3*x**3*gamma(4/3) + 54*a**4*b**4*x**4*gamma(4/3)
)
```

GIAC/XCAS [A] time = 0.219031, size = 193, normalized size = 1.38

$$-\frac{5\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,a^{3}}+\frac{5\,\sqrt{3}\left(-ab^{2}\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,a^{3}b}+\frac{5\left(-ab^{2}\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{18\,a^{3}b}+\frac{5\,bx^{\frac{4}{3}}+8\,ax^{\frac{1}{3}}}{6\,(bx+a)^{2}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(2/3)),x, algorithm="giac")
```

```
[Out] -5/9*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^3 + 5/9*sqrt(
```

```
3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3))/(
-a/b)^(1/3))/(a^3*b) + 5/18*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3)*(
-a/b)^(1/3) + (-a/b)^(2/3))/(a^3*b) + 1/6*(5*b*x^(4/3) + 8*a*x^(1
/3))/((b*x + a)^2*a^2)
```

3.696 $\int \frac{1}{x^{4/3}(a+bx)^3}\,dx$

Optimal. Leaf size=152

$$\frac{7\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{10/3}}-\frac{7\sqrt[3]{b}\log(a+bx)}{9a^{10/3}}+\frac{14\sqrt[3]{b}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{10/3}}-\frac{14}{3a^3\sqrt[3]{x}}+\frac{7}{6a^2\sqrt[3]{x}(a+bx)}+\frac{1}{2a\sqrt[3]{x}(a+bx)^2}$$

```
[Out] -14/(3*a^3*x^(1/3)) + 1/(2*a*x^(1/3)*(a + b*x)^2) + 7/(6*a^2*x^(1
/3)*(a + b*x)) + (14*b^(1/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))
/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*a^(10/3)) + (7*b^(1/3)*Log[a^(1/3
) + b^(1/3)*x^(1/3)])/(3*a^(10/3)) - (7*b^(1/3)*Log[a + b*x])/(9*
a^(10/3))
```

Rubi [A] time = 0.139684, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$\frac{7\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{10/3}}-\frac{7\sqrt[3]{b}\log(a+bx)}{9a^{10/3}}+\frac{14\sqrt[3]{b}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{10/3}}-\frac{14}{3a^3\sqrt[3]{x}}+\frac{7}{6a^2\sqrt[3]{x}(a+bx)}+\frac{1}{2a\sqrt[3]{x}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(4/3)*(a + b*x)^3),x]
```

```
[Out] -14/(3*a^3*x^(1/3)) + 1/(2*a*x^(1/3)*(a + b*x)^2) + 7/(6*a^2*x^(1
/3)*(a + b*x)) + (14*b^(1/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))
/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*a^(10/3)) + (7*b^(1/3)*Log[a^(1/3
) + b^(1/3)*x^(1/3)])/(3*a^(10/3)) - (7*b^(1/3)*Log[a + b*x])/(9*
a^(10/3))
```

Rubi in Sympy [A] time = 20.1077, size = 146, normalized size = 0.96

$$\frac{1}{2a\sqrt[3]{x}\,(a+bx)^2}+\frac{7}{6a^2\sqrt[3]{x}\,(a+bx)}-\frac{14}{3a^3\sqrt[3]{x}}+\frac{7\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{\frac{10}{3}}}-\frac{7\sqrt[3]{b}\log\left(a+bx\right)}{9a^{\frac{10}{3}}}+\frac{14\sqrt{3}\sqrt[3]{b}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{10}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(4/3)/(b*x+a)**3,x)
```

```
[Out] 1/(2*a*x**(1/3)*(a + b*x)**2) + 7/(6*a**2*x**(1/3)*(a + b*x)) - 1
4/(3*a**3*x**(1/3)) + 7*b**(1/3)*log(a**(1/3) + b**(1/3)*x**(1/3)
)/(3*a**(10/3)) - 7*b**(1/3)*log(a + b*x)/(9*a**(10/3)) + 14*sqrt
(3)*b**(1/3)*atan(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/a*
*(1/3))/(9*a**(10/3))
```

Mathematica [A] time = 0.129759, size = 167, normalized size = 1.1

$$\frac{-14\sqrt[3]{b}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-\frac{9a^{4/3}bx^{2/3}}{(a+bx)^2}-\frac{30\sqrt[3]{a}bx^{2/3}}{a+bx}+28\sqrt[3]{b}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+28\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{1-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt[3]{a}}}{\sqrt{3}}\right)-}{18a^{10/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(4/3)*(a + b*x)^3),x]
```

```
[Out] ((-54*a^(1/3))/x^(1/3) - (9*a^(4/3)*b*x^(2/3))/(a + b*x)^2 - (30*
a^(1/3)*b*x^(2/3))/(a + b*x) + 28*Sqrt[3]*b^(1/3)*ArcTan[(1 - (2*
b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] + 28*b^(1/3)*Log[a^(1/3) + b^(
1/3)*x^(1/3)] - 14*b^(1/3)*Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3)
+ b^(2/3)*x^(2/3)])/(18*a^(10/3))
```

Maple [A] time = 0.023, size = 139, normalized size = 0.9

$$-3\frac{1}{a^3\sqrt[3]{x}}-\frac{5b^2}{3a^3(bx+a)^2}x^{\frac{5}{3}}-\frac{13b}{6a^2(bx+a)^2}x^{\frac{2}{3}}+\frac{14}{9a^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}-\frac{7}{9a^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}-\frac{14\sqrt{3}}{9a^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{a}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(4/3)/(b*x+a)^3,x)
```

```
[Out] -3/a^3/x^(1/3)-5/3*b^2/a^3/(b*x+a)^2*x^(5/3)-13/6*b/a^2/(b*x+a)^2
*x^(2/3)+14/9/a^3/(a/b)^(1/3)*ln(x^(1/3)+(a/b)^(1/3))-7/9/a^3/(a/
```

```
b)^(1/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))-14/9/a^3*3^(
1/2)/(a/b)^(1/3)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(4/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233478, size = 305, normalized size = 2.01

$$-\frac{\sqrt{3}\left(14\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\log\left(-ax^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{2}{3}}+bx^{\frac{2}{3}}+a\left(\frac{b}{a}\right)^{\frac{1}{3}}\right)-28\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)x^{\frac{1}{3}}\left(\frac{b}{a}\right)^{\frac{1}{3}}\log\left(a\left(\frac{b}{a}\right.\right.\right.}{54\left(a^3b^2x^2+2\,a^4bx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(4/3)),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(14*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*x^(1/3)*(b/a)
^(1/3)*log(-a*x^(1/3)*(b/a)^(2/3) + b*x^(2/3) + a*(b/a)^(1/3)) -
28*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*x^(1/3)*(b/a)^(1/3)*log(a*(b
/a)^(2/3) + b*x^(1/3)) + 84*(b^2*x^2 + 2*a*b*x + a^2)*x^(1/3)*(b/
a)^(1/3)*arctan(-1/3*(sqrt(3)*a*(b/a)^(2/3) - 2*sqrt(3)*b*x^(1/3)
)/(a*(b/a)^(2/3))) + 3*sqrt(3)*(28*b^2*x^2 + 49*a*b*x + 18*a^2))/
((a^3*b^2*x^2 + 2*a^4*b*x + a^5)*x^(1/3))
```

Sympy [A] time = 7.75886, size = 1928, normalized size = 12.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(4/3)/(b*x+a)**3,x)
```

```
[Out] 54*a**(13/3)*gamma(-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*
a**(19/3)*b*x**(4/3)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gam
```

```
ma(2/3) + 54*a**(13/3)*b**3*x**(10/3)*gamma(2/3)) + 201*a**(10/3)
*b*x*gamma(-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3
)*b*x**(4/3)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3)
+ 54*a**(13/3)*b**3*x**(10/3)*gamma(2/3)) + 231*a**(7/3)*b**2*x**
2*gamma(-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b
*x**(4/3)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 5
4*a**(13/3)*b**3*x**(10/3)*gamma(2/3)) + 84*a**(4/3)*b**3*x**3*ga
mma(-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**
(4/3)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a*
*(13/3)*b**3*x**(10/3)*gamma(2/3)) - 28*a**4*b**(1/3)*x**(1/3)*ex
p(10*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3)
)*gamma(-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b
*x**(4/3)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 5
4*a**(13/3)*b**3*x**(10/3)*gamma(2/3)) - 28*a**4*b**(1/3)*x**(1/3
)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-1/3)
/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gam
ma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b
**3*x**(10/3)*gamma(2/3)) - 28*a**4*b**(1/3)*x**(1/3)*exp(2*I*pi/
3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(
-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3
)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13
/3)*b**3*x**(10/3)*gamma(2/3)) - 84*a**3*b**(4/3)*x**(4/3)*exp(10
*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*ga
mma(-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**
(4/3)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a*
*(13/3)*b**3*x**(10/3)*gamma(2/3)) - 84*a**3*b**(4/3)*x**(4/3)*lo
g(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-1/3)/(54
*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gamma(2
/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*
x**(10/3)*gamma(2/3)) - 84*a**3*b**(4/3)*x**(4/3)*exp(2*I*pi/3)*l
og(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-1/3
)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*ga
mma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*
b**3*x**(10/3)*gamma(2/3)) - 84*a**2*b**(7/3)*x**(7/3)*exp(10*I*p
i/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(
-1/3)/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3
)*gamma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13
/3)*b**3*x**(10/3)*gamma(2/3)) - 84*a**2*b**(7/3)*x**(7/3)*log(1
- b**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-1/3)/(54*a**
(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gamma(2/3)
+ 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*x**(
10/3)*gamma(2/3)) - 84*a**2*b**(7/3)*x**(7/3)*exp(2*I*pi/3)*log(1
 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-1/3)/(5
4*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gamma(
2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3
*x**(10/3)*gamma(2/3)) - 28*a*b**(10/3)*x**(10/3)*exp(10*I*pi/3)*
log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(-1/3)
/(54*a**(22/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gam
ma(2/3) + 162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b
**3*x**(10/3)*gamma(2/3)) - 28*a*b**(10/3)*x**(10/3)*log(1 - b**(
1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-1/3)/(54*a**(22/3)
*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gamma(2/3) + 162*
a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*x**(10/3)*
gamma(2/3)) - 28*a*b**(10/3)*x**(10/3)*exp(2*I*pi/3)*log(1 - b**(
1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-1/3)/(54*a**(2
2/3)*x**(1/3)*gamma(2/3) + 162*a**(19/3)*b*x**(4/3)*gamma(2/3) +
```

```
162*a**(16/3)*b**2*x**(7/3)*gamma(2/3) + 54*a**(13/3)*b**3*x**(10
/3)*gamma(2/3))
```

GIAC/XCAS [A] time = 0.223882, size = 209, normalized size = 1.38

$$\frac{14\,b\left(-\frac{a}{b}\right)^{\frac{2}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,a^{4}}+\frac{14\,\sqrt{3}\left(-ab^{2}\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,a^{4}b}-\frac{3}{a^{3}x^{\frac{1}{3}}}-\frac{7\left(-ab^{2}\right)^{\frac{2}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{9\,a^{4}b}-\frac{10\,b^{2}x^{\frac{5}{3}}+13\,abx^{\frac{2}{3}}}{6\,(bx+a)^{2}a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(4/3)),x, algorithm="giac")
```

```
[Out] 14/9*b*(-a/b)^(2/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^4 + 14/9*sq
rt(3)*(-a*b^2)^(2/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3)
)/(-a/b)^(1/3))/(a^4*b) - 3/(a^3*x^(1/3)) - 7/9*(-a*b^2)^(2/3)*ln
(x^(2/3) + x^(1/3)*(-a/b)^(1/3) + (-a/b)^(2/3))/(a^4*b) - 1/6*(10
*b^2*x^(5/3) + 13*a*b*x^(2/3))/((b*x + a)^2*a^3)
```

3.697 $\int \frac{1}{x^{5/3}(a+bx)^3}\,dx$

Optimal. Leaf size=152

$$-\frac{10b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{11/3}}+\frac{10b^{2/3}\log(a+bx)}{9a^{11/3}}+\frac{20b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{11/3}}-\frac{10}{3a^3x^{2/3}}+\frac{4}{3a^2x^{2/3}(a+bx)}+\frac{1}{2ax^{2/3}(a+bx)^2}$$

```
[Out] -10/(3*a^3*x^(2/3)) + 1/(2*a*x^(2/3)*(a + b*x)^2) + 4/(3*a^2*x^(2
/3)*(a + b*x)) + (20*b^(2/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))
/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*a^(11/3)) - (10*b^(2/3)*Log[a^(1/
3) + b^(1/3)*x^(1/3)])/(3*a^(11/3)) + (10*b^(2/3)*Log[a + b*x])/(
9*a^(11/3))
```

Rubi [A] time = 0.148813, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 6, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.462

$$-\frac{10b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{11/3}}+\frac{10b^{2/3}\log(a+bx)}{9a^{11/3}}+\frac{20b^{2/3}\tan^{-1}\left(\frac{\sqrt[3]{a}-2\sqrt[3]{b}\sqrt[3]{x}}{\sqrt{3}\sqrt[3]{a}}\right)}{3\sqrt{3}a^{11/3}}-\frac{10}{3a^3x^{2/3}}+\frac{4}{3a^2x^{2/3}(a+bx)}+\frac{1}{2ax^{2/3}(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^(5/3)*(a + b*x)^3),x]
```

```
[Out] -10/(3*a^3*x^(2/3)) + 1/(2*a*x^(2/3)*(a + b*x)^2) + 4/(3*a^2*x^(2
/3)*(a + b*x)) + (20*b^(2/3)*ArcTan[(a^(1/3) - 2*b^(1/3)*x^(1/3))
/(Sqrt[3]*a^(1/3))])/(3*Sqrt[3]*a^(11/3)) - (10*b^(2/3)*Log[a^(1/
3) + b^(1/3)*x^(1/3)])/(3*a^(11/3)) + (10*b^(2/3)*Log[a + b*x])/(
9*a^(11/3))
```

Rubi in Sympy [A] time = 20.142, size = 146, normalized size = 0.96

$$\frac{1}{2ax^{\frac{2}{3}}\left(a+bx\right)^2}+\frac{4}{3a^2x^{\frac{2}{3}}\left(a+bx\right)}-\frac{10}{3a^3x^{\frac{2}{3}}}-\frac{10b^{\frac{2}{3}}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)}{3a^{\frac{11}{3}}}+\frac{10b^{\frac{2}{3}}\log\left(a+bx\right)}{9a^{\frac{11}{3}}}+\frac{20\sqrt{3}b^{\frac{2}{3}}\operatorname{atan}\left(\frac{\sqrt{3}\left(\frac{\sqrt[3]{a}}{3}-\frac{2\sqrt[3]{b}\sqrt[3]{x}}{3}\right)}{\sqrt[3]{a}}\right)}{9a^{\frac{11}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(5/3)/(b*x+a)**3,x)
```

```
[Out] 1/(2*a*x**(2/3)*(a + b*x)**2) + 4/(3*a**2*x**(2/3)*(a + b*x)) - 1
0/(3*a**3*x**(2/3)) - 10*b**(2/3)*log(a**(1/3) + b**(1/3)*x**(1/3
))/(3*a**(11/3)) + 10*b**(2/3)*log(a + b*x)/(9*a**(11/3)) + 20*sq
rt(3)*b**(2/3)*atan(sqrt(3)*(a**(1/3)/3 - 2*b**(1/3)*x**(1/3)/3)/
a**(1/3))/(9*a**(11/3))
```

Mathematica [A] time = 0.1354, size = 167, normalized size = 1.1

$$\frac{20b^{2/3}\log\left(a^{2/3}-\sqrt[3]{a}\sqrt[3]{b}\sqrt[3]{x}+b^{2/3}x^{2/3}\right)-\frac{9a^{5/3}b\sqrt[3]{x}}{(a+bx)^2}-\frac{33a^{2/3}b\sqrt[3]{x}}{a+bx}-\frac{27a^{2/3}}{x^{2/3}}-40b^{2/3}\log\left(\sqrt[3]{a}+\sqrt[3]{b}\sqrt[3]{x}\right)+40\sqrt{3}b^{2/3}\tan^{-1}\left(\frac{1-\frac{2}{}}{}\right.}{18a^{11/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^(5/3)*(a + b*x)^3),x]
```

```
[Out] ((-27*a^(2/3))/x^(2/3) - (9*a^(5/3)*b*x^(1/3))/(a + b*x)^2 - (33*
a^(2/3)*b*x^(1/3))/(a + b*x) + 40*Sqrt[3]*b^(2/3)*ArcTan[(1 - (2*
b^(1/3)*x^(1/3))/a^(1/3))/Sqrt[3]] - 40*b^(2/3)*Log[a^(1/3) + b^(
1/3)*x^(1/3)] + 20*b^(2/3)*Log[a^(2/3) - a^(1/3)*b^(1/3)*x^(1/3)
+ b^(2/3)*x^(2/3)])/(18*a^(11/3))
```

Maple [A] time = 0.023, size = 139, normalized size = 0.9

$$-\frac{3}{2\,a^3}x^{-\frac{2}{3}}-\frac{11\,b^2}{6\,a^3\,(bx+a)^2}x^{\frac{4}{3}}-\frac{7\,b}{3\,a^2\,(bx+a)^2}\sqrt[3]{x}-\frac{20}{9\,a^3}\ln\left(\sqrt[3]{x}+\sqrt[3]{\frac{a}{b}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$
$$+\frac{10}{9\,a^3}\ln\left(x^{\frac{2}{3}}-\sqrt[3]{x}\sqrt[3]{\frac{a}{b}}+\left(\frac{a}{b}\right)^{\frac{2}{3}}\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}-\frac{20\,\sqrt{3}}{9\,a^3}\arctan\left(\frac{\sqrt{3}}{3}\left(2\,\sqrt[3]{x}\frac{1}{\sqrt[3]{\frac{a}{b}}}-1\right)\right)\left(\frac{a}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(5/3)/(b*x+a)^3,x)
```

```
[Out] -3/2/a^3/x^(2/3)-11/6/a^3*b^2/(b*x+a)^2*x^(4/3)-7/3/a^2*b/(b*x+a)
^2*x^(1/3)-20/9/a^3/(a/b)^(2/3)*ln(x^(1/3)+(a/b)^(1/3))+10/9/a^3/
(a/b)^(2/3)*ln(x^(2/3)-x^(1/3)*(a/b)^(1/3)+(a/b)^(2/3))-20/9/a^3/
```

```
(a/b)^(2/3)*3^(1/2)*arctan(1/3*3^(1/2)*(2/(a/b)^(1/3)*x^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(5/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229832, size = 344, normalized size = 2.26

$$-\frac{\sqrt{3}\left(20\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\log\left(b^2x^{\frac{2}{3}}+abx^{\frac{1}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}+a^2\left(-\frac{b^2}{a^2}\right)^{\frac{2}{3}}\right)-40\sqrt{3}\left(b^2x^2+2\,abx+a^2\right)x^{\frac{2}{3}}\left(-\frac{b^2}{a^2}\right)^{\frac{1}{3}}\right.}{54\,(a^3b^2x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(5/3)),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(20*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*x^(2/3)*(-b^2
/a^2)^(1/3)*log(b^2*x^(2/3) + a*b*x^(1/3)*(-b^2/a^2)^(1/3) + a^2*
(-b^2/a^2)^(2/3)) - 40*sqrt(3)*(b^2*x^2 + 2*a*b*x + a^2)*x^(2/3)*
(-b^2/a^2)^(1/3)*log(b*x^(1/3) - a*(-b^2/a^2)^(1/3)) + 120*(b^2*x
^2 + 2*a*b*x + a^2)*x^(2/3)*(-b^2/a^2)^(1/3)*arctan(1/3*(2*sqrt(3
)*b*x^(1/3) + sqrt(3)*a*(-b^2/a^2)^(1/3))/(a*(-b^2/a^2)^(1/3))) +
 3*sqrt(3)*(20*b^2*x^2 + 32*a*b*x + 9*a^2))/((a^3*b^2*x^2 + 2*a^4
*b*x + a^5)*x^(2/3))
```

Sympy [A] time = 9.05024, size = 1921, normalized size = 12.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(5/3)/(b*x+a)**3,x)
```

```
[Out] 27*a**(14/3)*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a
**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma
```

```
(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3)) + 123*a**(11/3)*b
*x*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b
*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27
*a**(14/3)*b**3*x**(11/3)*gamma(1/3)) + 156*a**(8/3)*b**2*x**2*ga
mma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(
5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(
14/3)*b**3*x**(11/3)*gamma(1/3)) + 60*a**(5/3)*b**3*x**3*gamma(-2
/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*g
amma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*
b**3*x**(11/3)*gamma(1/3)) - 40*a**4*b**(2/3)*x**(2/3)*exp(5*I*pi
/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(-
2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*
gamma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)
*b**3*x**(11/3)*gamma(1/3)) + 40*a**4*b**(2/3)*x**(2/3)*log(1 - b
**(1/3)*x**(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-2/3)/(27*a**(23
/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81
*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)
*gamma(1/3)) - 40*a**4*b**(2/3)*x**(2/3)*exp(I*pi/3)*log(1 - b**(
1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-2/3)/(27*a**(2
3/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 8
1*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3
)*gamma(1/3)) - 120*a**3*b**(5/3)*x**(5/3)*exp(5*I*pi/3)*log(1 -
b**(1/3)*x**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(-2/3)/(27*a**
(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) +
 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11
/3)*gamma(1/3)) + 120*a**3*b**(5/3)*x**(5/3)*log(1 - b**(1/3)*x**
(1/3)*exp_polar(I*pi)/a**(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2/3
)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*
b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3)
) - 120*a**3*b**(5/3)*x**(5/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(1
/3)*exp_polar(5*I*pi/3)/a**(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2
/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3
)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/
3)) - 120*a**2*b**(8/3)*x**(8/3)*exp(5*I*pi/3)*log(1 - b**(1/3)*x
**(1/3)*exp_polar(I*pi/3)/a**(1/3))*gamma(-2/3)/(27*a**(23/3)*x**
(2/3)*gamma(1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17
/3)*b**2*x**(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(
1/3)) + 120*a**2*b**(8/3)*x**(8/3)*log(1 - b**(1/3)*x**(1/3)*exp_
polar(I*pi)/a**(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/
3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**(8
/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3)) - 120*a*
*2*b**(8/3)*x**(8/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_po
lar(5*I*pi/3)/a**(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(
1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**
(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3)) - 40*a
*b**(11/3)*x**(11/3)*exp(5*I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_
polar(I*pi/3)/a**(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(
1/3) + 81*a**(20/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**
(8/3)*gamma(1/3) + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3)) + 40*a
*b**(11/3)*x**(11/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(I*pi)/a*
*(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20
/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3)
 + 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3)) - 40*a*b**(11/3)*x**(1
1/3)*exp(I*pi/3)*log(1 - b**(1/3)*x**(1/3)*exp_polar(5*I*pi/3)/a*
*(1/3))*gamma(-2/3)/(27*a**(23/3)*x**(2/3)*gamma(1/3) + 81*a**(20
/3)*b*x**(5/3)*gamma(1/3) + 81*a**(17/3)*b**2*x**(8/3)*gamma(1/3)
```

```
+ 27*a**(14/3)*b**3*x**(11/3)*gamma(1/3))
```

GIAC/XCAS [A] time = 0.222017, size = 203, normalized size = 1.34

$$\frac{20\,b\left(-\frac{a}{b}\right)^{\frac{1}{3}}\ln\left(\left|x^{\frac{1}{3}}-\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right|\right)}{9\,a^4}-\frac{20\,\sqrt{3}\left(-ab^2\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,x^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{1}{3}}\right)}{3\left(-\frac{a}{b}\right)^{\frac{1}{3}}}\right)}{9\,a^4}-\frac{10\left(-ab^2\right)^{\frac{1}{3}}\ln\left(x^{\frac{2}{3}}+x^{\frac{1}{3}}\left(-\frac{a}{b}\right)^{\frac{1}{3}}+\left(-\frac{a}{b}\right)^{\frac{2}{3}}\right)}{9\,a^4}-\frac{20\,b^2x^2+32\,abx+9\,a^2}{6\left(bx^{\frac{4}{3}}+ax^{\frac{1}{3}}\right)^2a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*x^(5/3)),x, algorithm="giac")
```

```
[Out] 20/9*b*(-a/b)^(1/3)*ln(abs(x^(1/3) - (-a/b)^(1/3)))/a^4 - 20/9*sq
rt(3)*(-a*b^2)^(1/3)*arctan(1/3*sqrt(3)*(2*x^(1/3) + (-a/b)^(1/3)
)/(-a/b)^(1/3))/a^4 - 10/9*(-a*b^2)^(1/3)*ln(x^(2/3) + x^(1/3)*(-
a/b)^(1/3) + (-a/b)^(2/3))/a^4 - 1/6*(20*b^2*x^2 + 32*a*b*x + 9*a
^2)/((b*x^(4/3) + a*x^(1/3))^2*a^3)
```

3.698 $\int \frac{\sqrt[4]{1-x}}{1+x} \, dx$

Optimal. Leaf size=58

$$4\sqrt[4]{1-x}-2\sqrt[4]{2}\tan^{-1}\left(\frac{\sqrt[4]{1-x}}{\sqrt[4]{2}}\right)-2\sqrt[4]{2}\tanh^{-1}\left(\frac{\sqrt[4]{1-x}}{\sqrt[4]{2}}\right)$$

```
[Out] 4*(1 - x)^(1/4) - 2*2^(1/4)*ArcTan[(1 - x)^(1/4)/2^(1/4)] - 2*2^(
1/4)*ArcTanh[(1 - x)^(1/4)/2^(1/4)]
```

Rubi [A] time = 0.0561877, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$4\sqrt[4]{1-x}-2\sqrt[4]{2}\tan^{-1}\left(\frac{\sqrt[4]{1-x}}{\sqrt[4]{2}}\right)-2\sqrt[4]{2}\tanh^{-1}\left(\frac{\sqrt[4]{1-x}}{\sqrt[4]{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(1/4)/(1 + x),x]
```

```
[Out] 4*(1 - x)^(1/4) - 2*2^(1/4)*ArcTan[(1 - x)^(1/4)/2^(1/4)] - 2*2^(
1/4)*ArcTanh[(1 - x)^(1/4)/2^(1/4)]
```

Rubi in Sympy [A] time = 5.10282, size = 51, normalized size = 0.88

$$4\sqrt[4]{-x+1}-2\sqrt[4]{2}\,\mathrm{atan}\left(\frac{2^{\frac{3}{4}}\sqrt[4]{-x+1}}{2}\right)-2\sqrt[4]{2}\,\mathrm{atanh}\left(\frac{2^{\frac{3}{4}}\sqrt[4]{-x+1}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/4)/(1+x),x)
```

```
[Out] 4*(-x + 1)**(1/4) - 2*2**(1/4)*atan(2**(3/4)*(-x + 1)**(1/4)/2) -
 2*2**(1/4)*atanh(2**(3/4)*(-x + 1)**(1/4)/2)
```

Mathematica [A] time = 0.0405748, size = 85, normalized size = 1.47

$$4\sqrt[4]{1-x}+\sqrt[4]{2}\log\left(2-2^{3/4}\sqrt[4]{1-x}\right)-\sqrt[4]{2}\log\left(2^{3/4}\sqrt[4]{1-x}+2\right)-2\sqrt[4]{2}\tan^{-1}\left(\frac{\sqrt[4]{1-x}}{\sqrt[4]{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(1/4)/(1 + x),x]
```

```
[Out] 4*(1 - x)^(1/4) - 2*2^(1/4)*ArcTan[(1 - x)^(1/4)/2^(1/4)] + 2^(1/
4)*Log[2 - 2^(3/4)*(1 - x)^(1/4)] - 2^(1/4)*Log[2 + 2^(3/4)*(1 -
x)^(1/4)]
```

Maple [A] time = 0.032, size = 62, normalized size = 1.1

$$4\sqrt[4]{1-x}-2\sqrt[4]{2}\arctan\left(1/2\sqrt[4]{1-x}2^{3/4}\right)-\sqrt[4]{2}\ln\left(1\left(\sqrt[4]{1-x}+\sqrt[4]{2}\right)\left(\sqrt[4]{1-x}-\sqrt[4]{2}\right)^{-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/4)/(1+x),x)
```

```
[Out] 4*(1-x)^(1/4)-2*2^(1/4)*arctan(1/2*(1-x)^(1/4)*2^(3/4))-2^(1/4)*l
n(((1-x)^(1/4)+2^(1/4))/((1-x)^(1/4)-2^(1/4)))
```

Maxima [A] time = 1.4985, size = 85, normalized size = 1.47

$$-2\cdot 2^{\frac{1}{4}}\arctan\left(\frac{1}{2}\cdot 2^{\frac{3}{4}}(-x+1)^{\frac{1}{4}}\right)+2^{\frac{1}{4}}\log\left(-\frac{2\left(2^{\frac{1}{4}}-(-x+1)^{\frac{1}{4}}\right)}{2\cdot 2^{\frac{1}{4}}+2(-x+1)^{\frac{1}{4}}}\right)+4(-x+1)^{\frac{1}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(1/4)/(x + 1),x, algorithm="maxima")
```

```
[Out] -2*2^(1/4)*arctan(1/2*2^(3/4)*(-x + 1)^(1/4)) + 2^(1/4)*log(-2*(2
^(1/4) - (-x + 1)^(1/4))/((2*2^(1/4)) + 2*(-x + 1)^(1/4))) + 4*(-
x + 1)^(1/4)
```

Fricas [A] time = 0.22285, size = 105, normalized size = 1.81

$$4\cdot 2^{\frac{1}{4}}\arctan\left(\frac{2^{\frac{1}{4}}}{\sqrt{\sqrt{2}+\sqrt{-x+1}}+(-x+1)^{\frac{1}{4}}}\right)-2^{\frac{1}{4}}\log\left(2^{\frac{1}{4}}+(-x+1)^{\frac{1}{4}}\right)$$
$$+2^{\frac{1}{4}}\log\left(-2^{\frac{1}{4}}+(-x+1)^{\frac{1}{4}}\right)+4(-x+1)^{\frac{1}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(1/4)/(x + 1),x, algorithm="fricas")
```

```
[Out] 4*2^(1/4)*arctan(2^(1/4)/(sqrt(sqrt(2) + sqrt(-x + 1)) + (-x + 1)
^(1/4))) - 2^(1/4)*log(2^(1/4) + (-x + 1)^(1/4)) + 2^(1/4)*log(-2
^(1/4) + (-x + 1)^(1/4)) + 4*(-x + 1)^(1/4)
```

Sympy [A] time = 7.12365, size = 243, normalized size = 4.19

$$\frac{5\sqrt[4]{-1}\sqrt[4]{x-1}\,\Gamma\left(\frac{5}{4}\right)}{\Gamma\left(\frac{9}{4}\right)}+\frac{5\sqrt[4]{-2}e^{-\frac{i\pi}{4}}\log\left(-\frac{2^{\frac{3}{4}}\sqrt[4]{x-1}e^{\frac{i\pi}{4}}}{2}+1\right)\Gamma\left(\frac{5}{4}\right)}{4\Gamma\left(\frac{9}{4}\right)}-\frac{5(-1)^{\frac{3}{4}}\sqrt[4]{2}e^{-\frac{i\pi}{4}}\log\left(-\frac{2^{\frac{3}{4}}\sqrt[4]{x-1}e^{\frac{3i\pi}{4}}}{2}+1\right)\Gamma\left(\frac{5}{4}\right)}{4\Gamma\left(\frac{9}{4}\right)}-\frac{5\sqrt[4]{-2}e^{-\frac{i\pi}{4}}\log\left(-\frac{2^{\frac{3}{4}}\sqrt[4]{x-1}e^{\frac{5i\pi}{4}}}{2}+1\right)\Gamma\left(\frac{5}{4}\right)}{4\Gamma\left(\frac{9}{4}\right)}+\frac{5(-1)^{\frac{3}{4}}\sqrt[4]{2}e^{-\frac{i\pi}{4}}\log\left(-\frac{2^{\frac{3}{4}}\sqrt[4]{x-1}e^{\frac{7i\pi}{4}}}{2}+1\right)\Gamma\left(\frac{5}{4}\right)}{4\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/4)/(1+x),x)
```

```
[Out] 5*(-1)**(1/4)*(x - 1)**(1/4)*gamma(5/4)/gamma(9/4) + 5*(-2)**(1/4
)*exp(-I*pi/4)*log(-2**(3/4)*(x - 1)**(1/4)*exp_polar(I*pi/4)/2 +
 1)*gamma(5/4)/(4*gamma(9/4)) - 5*(-1)**(3/4)*2**(1/4)*exp(-I*pi/
4)*log(-2**(3/4)*(x - 1)**(1/4)*exp_polar(3*I*pi/4)/2 + 1)*gamma(
5/4)/(4*gamma(9/4)) - 5*(-2)**(1/4)*exp(-I*pi/4)*log(-2**(3/4)*(x
 - 1)**(1/4)*exp_polar(5*I*pi/4)/2 + 1)*gamma(5/4)/(4*gamma(9/4))
 + 5*(-1)**(3/4)*2**(1/4)*exp(-I*pi/4)*log(-2**(3/4)*(x - 1)**(1/
4)*exp_polar(7*I*pi/4)/2 + 1)*gamma(5/4)/(4*gamma(9/4))
```

GIAC/XCAS [A] time = 0.228981, size = 86, normalized size = 1.48

$$-2\cdot 2^{\frac{1}{4}}\arctan\left(\frac{1}{2}\cdot 2^{\frac{3}{4}}(-x+1)^{\frac{1}{4}}\right)-2^{\frac{1}{4}}\ln\left(2^{\frac{1}{4}}+(-x+1)^{\frac{1}{4}}\right)+2^{\frac{1}{4}}\ln\left(\left|-2^{\frac{1}{4}}+(-x+1)^{\frac{1}{4}}\right|\right)+4(-x+1)^{\frac{1}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(1/4)/(x + 1),x, algorithm="giac")
```

```
[Out] -2*2^(1/4)*arctan(1/2*2^(3/4)*(-x + 1)^(1/4)) - 2^(1/4)*ln(2^(1/4
) + (-x + 1)^(1/4)) + 2^(1/4)*ln(abs(-2^(1/4) + (-x + 1)^(1/4)))
+ 4*(-x + 1)^(1/4)
```

3.699 $\int x^m(a+bx)^{10}\,dx$

Optimal. Leaf size=187

$$\frac{a^{10}x^{m+1}}{m+1}+\frac{10a^9bx^{m+2}}{m+2}+\frac{45a^8b^2x^{m+3}}{m+3}+\frac{120a^7b^3x^{m+4}}{m+4}+\frac{210a^6b^4x^{m+5}}{m+5}+\frac{252a^5b^5x^{m+6}}{m+6}+\frac{210a^4b^6x^{m+7}}{m+7}+\frac{120a^3b^7x^{m+8}}{m+8}+\frac{45a^2b^8x^{m+9}}{m+9}+\frac{10ab^9x^{m+10}}{m+10}+\frac{b^{10}x^{m+11}}{m+11}$$

```
[Out] (a^10*x^(1 + m))/(1 + m) + (10*a^9*b*x^(2 + m))/(2 + m) + (45*a^8
*b^2*x^(3 + m))/(3 + m) + (120*a^7*b^3*x^(4 + m))/(4 + m) + (210*
a^6*b^4*x^(5 + m))/(5 + m) + (252*a^5*b^5*x^(6 + m))/(6 + m) + (2
10*a^4*b^6*x^(7 + m))/(7 + m) + (120*a^3*b^7*x^(8 + m))/(8 + m) +
 (45*a^2*b^8*x^(9 + m))/(9 + m) + (10*a*b^9*x^(10 + m))/(10 + m)
+ (b^10*x^(11 + m))/(11 + m)
```

Rubi [A] time = 0.197741, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^{10}x^{m+1}}{m+1}+\frac{10a^9bx^{m+2}}{m+2}+\frac{45a^8b^2x^{m+3}}{m+3}+\frac{120a^7b^3x^{m+4}}{m+4}+\frac{210a^6b^4x^{m+5}}{m+5}+\frac{252a^5b^5x^{m+6}}{m+6}+\frac{210a^4b^6x^{m+7}}{m+7}+\frac{120a^3b^7x^{m+8}}{m+8}+\frac{45a^2b^8x^{m+9}}{m+9}+\frac{10ab^9x^{m+10}}{m+10}+\frac{b^{10}x^{m+11}}{m+11}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^10,x]
```

```
[Out] (a^10*x^(1 + m))/(1 + m) + (10*a^9*b*x^(2 + m))/(2 + m) + (45*a^8
*b^2*x^(3 + m))/(3 + m) + (120*a^7*b^3*x^(4 + m))/(4 + m) + (210*
a^6*b^4*x^(5 + m))/(5 + m) + (252*a^5*b^5*x^(6 + m))/(6 + m) + (2
10*a^4*b^6*x^(7 + m))/(7 + m) + (120*a^3*b^7*x^(8 + m))/(8 + m) +
 (45*a^2*b^8*x^(9 + m))/(9 + m) + (10*a*b^9*x^(10 + m))/(10 + m)
+ (b^10*x^(11 + m))/(11 + m)
```

Rubi in Sympy [A] time = 30.9858, size = 172, normalized size = 0.92

$$\frac{a^{10}x^{m+1}}{m+1}+\frac{10a^9bx^{m+2}}{m+2}+\frac{45a^8b^2x^{m+3}}{m+3}+\frac{120a^7b^3x^{m+4}}{m+4}+\frac{210a^6b^4x^{m+5}}{m+5}+\frac{252a^5b^5x^{m+6}}{m+6}+\frac{210a^4b^6x^{m+7}}{m+7}+\frac{120a^3b^7x^{m+8}}{m+8}+\frac{45a^2b^8x^{m+9}}{m+9}+\frac{10ab^9x^{m+10}}{m+10}+\frac{b^{10}x^{m+11}}{m+11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**10,x)
```

```
[Out] a**10*x**(m + 1)/(m + 1) + 10*a**9*b*x**(m + 2)/(m + 2) + 45*a**8
*b**2*x**(m + 3)/(m + 3) + 120*a**7*b**3*x**(m + 4)/(m + 4) + 210
*a**6*b**4*x**(m + 5)/(m + 5) + 252*a**5*b**5*x**(m + 6)/(m + 6)
+ 210*a**4*b**6*x**(m + 7)/(m + 7) + 120*a**3*b**7*x**(m + 8)/(m
+ 8) + 45*a**2*b**8*x**(m + 9)/(m + 9) + 10*a*b**9*x**(m + 10)/(m
 + 10) + b**10*x**(m + 11)/(m + 11)
```

Mathematica [A] time = 0.107477, size = 167, normalized size = 0.89

$$x^m\left(\frac{a^{10}x}{m+1}+\frac{10a^9bx^2}{m+2}+\frac{45a^8b^2x^3}{m+3}+\frac{120a^7b^3x^4}{m+4}+\frac{210a^6b^4x^5}{m+5}+\frac{252a^5b^5x^6}{m+6}+\frac{210a^4b^6x^7}{m+7}+\frac{120a^3b^7x^8}{m+8}+\frac{45a^2b^8x^9}{m+9}+\frac{10ab^9x^{10}}{m+10}+\frac{b^{10}x^{11}}{m+11}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^10,x]
```

```
[Out] x^m*((a^10*x)/(1 + m) + (10*a^9*b*x^2)/(2 + m) + (45*a^8*b^2*x^3)
/(3 + m) + (120*a^7*b^3*x^4)/(4 + m) + (210*a^6*b^4*x^5)/(5 + m)
+ (252*a^5*b^5*x^6)/(6 + m) + (210*a^4*b^6*x^7)/(7 + m) + (120*a^
3*b^7*x^8)/(8 + m) + (45*a^2*b^8*x^9)/(9 + m) + (10*a*b^9*x^10)/(
10 + m) + (b^10*x^11)/(11 + m))
```

Maple [B] time = 0.012, size = 1535, normalized size = 8.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^10,x)
```

```
[Out] x^(1+m)*(b^10*m^10*x^10+10*a*b^9*m^10*x^9+55*b^10*m^9*x^10+45*a^2
*b^8*m^10*x^8+560*a*b^9*m^9*x^9+1320*b^10*m^8*x^10+120*a^3*b^7*m^
10*x^7+2565*a^2*b^8*m^9*x^8+13650*a*b^9*m^8*x^9+18150*b^10*m^7*x^
10+210*a^4*b^6*m^10*x^6+6960*a^3*b^7*m^9*x^7+63540*a^2*b^8*m^8*x^
8+190200*a*b^9*m^7*x^9+157773*b^10*m^6*x^10+252*a^5*b^5*m^10*x^5+
12390*a^4*b^6*m^9*x^6+175320*a^3*b^7*m^8*x^7+898290*a^2*b^8*m^7*x
^8+1672230*a*b^9*m^6*x^9+902055*b^10*m^5*x^10+210*a^6*b^4*m^10*x^
4+15120*a^5*b^5*m^9*x^5+317520*a^4*b^6*m^8*x^6+2517840*a^3*b^7*m^
7*x^7+7999425*a^2*b^8*m^6*x^8+9653280*a*b^9*m^5*x^9+3416930*b^10*
m^4*x^10+120*a^7*b^3*m^10*x^3+12810*a^6*b^4*m^9*x^4+394380*a^5*b^
5*m^8*x^5+4638060*a^4*b^6*m^7*x^6+22748040*a^3*b^7*m^6*x^7+466952
85*a^2*b^8*m^5*x^8+36862550*a*b^9*m^4*x^9+8409500*b^10*m^3*x^10+4
5*a^8*b^2*m^10*x^2+7440*a^7*b^3*m^9*x^3+340200*a^6*b^4*m^8*x^4+58
66560*a^5*b^5*m^7*x^5+42592410*a^4*b^6*m^6*x^6+134522640*a^3*b^7*
```

```
m^5*x^7+180021510*a^2*b^8*m^4*x^8+91331800*a*b^9*m^3*x^9+12753576
*b^10*m^2*x^10+10*a^9*b*m^10*x+2835*a^8*b^2*m^9*x^2+201240*a^7*b^
3*m^8*x^3+5159700*a^6*b^4*m^7*x^4+54871236*a^5*b^5*m^6*x^5+255740
310*a^4*b^6*m^5*x^6+524563080*a^3*b^7*m^4*x^7+449614260*a^2*b^8*m
^3*x^8+139262760*a*b^9*m^2*x^9+10628640*b^10*m*x^10+a^10*m^10+640
*a^9*b*m^9*x+78120*a^8*b^2*m^8*x^2+3115440*a^7*b^3*m^7*x^3+492603
30*a^6*b^4*m^6*x^4+335437200*a^5*b^5*m^5*x^5+1011120180*a^4*b^6*m
^4*x^6+1322982960*a^3*b^7*m^3*x^7+690085080*a^2*b^8*m^2*x^8+11655
2160*a*b^9*m*x^9+3628800*b^10*x^10+65*a^10*m^9+17970*a^9*b*m^8*x+
1235790*a^8*b^2*m^7*x^2+30429000*a^7*b^3*m^6*x^3+307585530*a^6*b^
4*m^5*x^4+1348939620*a^5*b^5*m^4*x^5+2581262040*a^4*b^6*m^3*x^6+2
047105440*a^3*b^7*m^2*x^7+580543200*a^2*b^8*m*x^8+39916800*a*b^9*
x^9+1860*a^10*m^8+290760*a^9*b*m^7*x+12376665*a^8*b^2*m^6*x^2+194
790960*a^7*b^3*m^5*x^3+1263374700*a^6*b^4*m^4*x^4+3497286240*a^5*
b^5*m^3*x^5+4035361680*a^4*b^6*m^2*x^6+1733313600*a^3*b^7*m*x^7+1
99584000*a^2*b^8*x^8+30810*a^10*m^7+2992710*a^9*b*m^6*x+81560115*
a^8*b^2*m^5*x^2+821580360*a^7*b^3*m^4*x^3+3342229800*a^6*b^4*m^3*
x^4+5541317712*a^5*b^5*m^2*x^5+3445243200*a^4*b^6*m*x^6+598752000
*a^3*b^7*x^7+326613*a^10*m^6+20390160*a^9*b*m^5*x+355598730*a^8*b
^2*m^4*x^2+2233166160*a^7*b^3*m^3*x^3+5393046960*a^6*b^4*m^2*x^4+
4783423680*a^5*b^5*m*x^5+1197504000*a^4*b^6*x^6+2310945*a^10*m^5+
92615030*a^9*b*m^4*x+1003011660*a^8*b^2*m^3*x^2+3698304480*a^7*b^
3*m^2*x^3+4727540160*a^6*b^4*m*x^4+1676505600*a^5*b^5*x^5+1102859
0*a^10*m^4+274727240*a^9*b*m^3*x+1727578440*a^8*b^2*m^2*x^2+33169
39200*a^7*b^3*m*x^3+1676505600*a^6*b^4*x^4+34967140*a^10*m^3+5031
26280*a^9*b*m^2*x+1608573600*a^8*b^2*m*x^2+1197504000*a^7*b^3*x^3
+70290936*a^10*m^2+502927200*a^9*b*m*x+598752000*a^8*b^2*x^2+8062
7040*a^10*m+199584000*a^9*b*x+39916800*a^10)/(11+m)/(10+m)/(9+m)/
(8+m)/(7+m)/(6+m)/(5+m)/(4+m)/(3+m)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229175, size = 1724, normalized size = 9.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^m,x, algorithm="fricas")
```

```
[Out] ((b^10*m^10 + 55*b^10*m^9 + 1320*b^10*m^8 + 18150*b^10*m^7 + 1577
73*b^10*m^6 + 902055*b^10*m^5 + 3416930*b^10*m^4 + 8409500*b^10*m
^3 + 12753576*b^10*m^2 + 10628640*b^10*m + 3628800*b^10)*x^11 + 1
0*(a*b^9*m^10 + 56*a*b^9*m^9 + 1365*a*b^9*m^8 + 19020*a*b^9*m^7 +
 167223*a*b^9*m^6 + 965328*a*b^9*m^5 + 3686255*a*b^9*m^4 + 913318
0*a*b^9*m^3 + 13926276*a*b^9*m^2 + 11655216*a*b^9*m + 3991680*a*b
^9)*x^10 + 45*(a^2*b^8*m^10 + 57*a^2*b^8*m^9 + 1412*a^2*b^8*m^8 +
 19962*a^2*b^8*m^7 + 177765*a^2*b^8*m^6 + 1037673*a^2*b^8*m^5 + 4
000478*a^2*b^8*m^4 + 9991428*a^2*b^8*m^3 + 15335224*a^2*b^8*m^2 +
 12900960*a^2*b^8*m + 4435200*a^2*b^8)*x^9 + 120*(a^3*b^7*m^10 +
58*a^3*b^7*m^9 + 1461*a^3*b^7*m^8 + 20982*a^3*b^7*m^7 + 189567*a^
3*b^7*m^6 + 1121022*a^3*b^7*m^5 + 4371359*a^3*b^7*m^4 + 11024858*
a^3*b^7*m^3 + 17059212*a^3*b^7*m^2 + 14444280*a^3*b^7*m + 4989600
*a^3*b^7)*x^8 + 210*(a^4*b^6*m^10 + 59*a^4*b^6*m^9 + 1512*a^4*b^6
*m^8 + 22086*a^4*b^6*m^7 + 202821*a^4*b^6*m^6 + 1217811*a^4*b^6*m
^5 + 4814858*a^4*b^6*m^4 + 12291724*a^4*b^6*m^3 + 19216008*a^4*b^
6*m^2 + 16405920*a^4*b^6*m + 5702400*a^4*b^6)*x^7 + 252*(a^5*b^5*
m^10 + 60*a^5*b^5*m^9 + 1565*a^5*b^5*m^8 + 23280*a^5*b^5*m^7 + 21
7743*a^5*b^5*m^6 + 1331100*a^5*b^5*m^5 + 5352935*a^5*b^5*m^4 + 13
878120*a^5*b^5*m^3 + 21989356*a^5*b^5*m^2 + 18981840*a^5*b^5*m +
6652800*a^5*b^5)*x^6 + 210*(a^6*b^4*m^10 + 61*a^6*b^4*m^9 + 1620*
a^6*b^4*m^8 + 24570*a^6*b^4*m^7 + 234573*a^6*b^4*m^6 + 1464693*a^
6*b^4*m^5 + 6016070*a^6*b^4*m^4 + 15915380*a^6*b^4*m^3 + 25681176
*a^6*b^4*m^2 + 22512096*a^6*b^4*m + 7983360*a^6*b^4)*x^5 + 120*(a
^7*b^3*m^10 + 62*a^7*b^3*m^9 + 1677*a^7*b^3*m^8 + 25962*a^7*b^3*m
^7 + 253575*a^7*b^3*m^6 + 1623258*a^7*b^3*m^5 + 6846503*a^7*b^3*m
^4 + 18609718*a^7*b^3*m^3 + 30819204*a^7*b^3*m^2 + 27641160*a^7*b
^3*m + 9979200*a^7*b^3)*x^4 + 45*(a^8*b^2*m^10 + 63*a^8*b^2*m^9 +
 1736*a^8*b^2*m^8 + 27462*a^8*b^2*m^7 + 275037*a^8*b^2*m^6 + 1812
447*a^8*b^2*m^5 + 7902194*a^8*b^2*m^4 + 22289148*a^8*b^2*m^3 + 38
390632*a^8*b^2*m^2 + 35746080*a^8*b^2*m + 13305600*a^8*b^2)*x^3 +
 10*(a^9*b*m^10 + 64*a^9*b*m^9 + 1797*a^9*b*m^8 + 29076*a^9*b*m^7
 + 299271*a^9*b*m^6 + 2039016*a^9*b*m^5 + 9261503*a^9*b*m^4 + 274
72724*a^9*b*m^3 + 50312628*a^9*b*m^2 + 50292720*a^9*b*m + 1995840
0*a^9*b)*x^2 + (a^10*m^10 + 65*a^10*m^9 + 1860*a^10*m^8 + 30810*a
^10*m^7 + 326613*a^10*m^6 + 2310945*a^10*m^5 + 11028590*a^10*m^4
+ 34967140*a^10*m^3 + 70290936*a^10*m^2 + 80627040*a^10*m + 39916
800*a^10)*x)*x^m/(m^11 + 66*m^10 + 1925*m^9 + 32670*m^8 + 357423*
m^7 + 2637558*m^6 + 13339535*m^5 + 45995730*m^4 + 105258076*m^3 +
 150917976*m^2 + 120543840*m + 39916800)
```

Sympy [A] time = 22.2337, size = 9996, normalized size = 53.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**10,x)
```

```
[Out] Piecewise((-a**10/(10*x**10) - 10*a**9*b/(9*x**9) - 45*a**8*b**2/
(8*x**8) - 120*a**7*b**3/(7*x**7) - 35*a**6*b**4/x**6 - 252*a**5*
b**5/(5*x**5) - 105*a**4*b**6/(2*x**4) - 40*a**3*b**7/x**3 - 45*a
```

```
**2*b**8/(2*x**2) - 10*a*b**9/x + b**10*log(x), Eq(m, -11)), (-a*
*10/(9*x**9) - 5*a**9*b/(4*x**8) - 45*a**8*b**2/(7*x**7) - 20*a**
7*b**3/x**6 - 42*a**6*b**4/x**5 - 63*a**5*b**5/x**4 - 70*a**4*b**
6/x**3 - 60*a**3*b**7/x**2 - 45*a**2*b**8/x + 10*a*b**9*log(x) +
b**10*x, Eq(m, -10)), (-a**10/(8*x**8) - 10*a**9*b/(7*x**7) - 15*
a**8*b**2/(2*x**6) - 24*a**7*b**3/x**5 - 105*a**6*b**4/(2*x**4) -
 84*a**5*b**5/x**3 - 105*a**4*b**6/x**2 - 120*a**3*b**7/x + 45*a*
*2*b**8*log(x) + 10*a*b**9*x + b**10*x**2/2, Eq(m, -9)), (-a**10/
(7*x**7) - 5*a**9*b/(3*x**6) - 9*a**8*b**2/x**5 - 30*a**7*b**3/x*
*4 - 70*a**6*b**4/x**3 - 126*a**5*b**5/x**2 - 210*a**4*b**6/x + 1
20*a**3*b**7*log(x) + 45*a**2*b**8*x + 5*a*b**9*x**2 + b**10*x**3
/3, Eq(m, -8)), (-a**10/(6*x**6) - 2*a**9*b/x**5 - 45*a**8*b**2/(
4*x**4) - 40*a**7*b**3/x**3 - 105*a**6*b**4/x**2 - 252*a**5*b**5/
x + 210*a**4*b**6*log(x) + 120*a**3*b**7*x + 45*a**2*b**8*x**2/2
+ 10*a*b**9*x**3/3 + b**10*x**4/4, Eq(m, -7)), (-a**10/(5*x**5) -
 5*a**9*b/(2*x**4) - 15*a**8*b**2/x**3 - 60*a**7*b**3/x**2 - 210*
a**6*b**4/x + 252*a**5*b**5*log(x) + 210*a**4*b**6*x + 60*a**3*b*
*7*x**2 + 15*a**2*b**8*x**3 + 5*a*b**9*x**4/2 + b**10*x**5/5, Eq(
m, -6)), (-a**10/(4*x**4) - 10*a**9*b/(3*x**3) - 45*a**8*b**2/(2*
x**2) - 120*a**7*b**3/x + 210*a**6*b**4*log(x) + 252*a**5*b**5*x
+ 105*a**4*b**6*x**2 + 40*a**3*b**7*x**3 + 45*a**2*b**8*x**4/4 +
2*a*b**9*x**5 + b**10*x**6/6, Eq(m, -5)), (-a**10/(3*x**3) - 5*a*
*9*b/x**2 - 45*a**8*b**2/x + 120*a**7*b**3*log(x) + 210*a**6*b**4
*x + 126*a**5*b**5*x**2 + 70*a**4*b**6*x**3 + 30*a**3*b**7*x**4 +
 9*a**2*b**8*x**5 + 5*a*b**9*x**6/3 + b**10*x**7/7, Eq(m, -4)), (
-a**10/(2*x**2) - 10*a**9*b/x + 45*a**8*b**2*log(x) + 120*a**7*b*
*3*x + 105*a**6*b**4*x**2 + 84*a**5*b**5*x**3 + 105*a**4*b**6*x**
4/2 + 24*a**3*b**7*x**5 + 15*a**2*b**8*x**6/2 + 10*a*b**9*x**7/7
+ b**10*x**8/8, Eq(m, -3)), (-a**10/x + 10*a**9*b*log(x) + 45*a**
8*b**2*x + 60*a**7*b**3*x**2 + 70*a**6*b**4*x**3 + 63*a**5*b**5*x
**4 + 42*a**4*b**6*x**5 + 20*a**3*b**7*x**6 + 45*a**2*b**8*x**7/7
 + 5*a*b**9*x**8/4 + b**10*x**9/9, Eq(m, -2)), (a**10*log(x) + 10
*a**9*b*x + 45*a**8*b**2*x**2/2 + 40*a**7*b**3*x**3 + 105*a**6*b*
*4*x**4/2 + 252*a**5*b**5*x**5/5 + 35*a**4*b**6*x**6 + 120*a**3*b
**7*x**7/7 + 45*a**2*b**8*x**8/8 + 10*a*b**9*x**9/9 + b**10*x**10
/10, Eq(m, -1)), (a**10*m**10*x*x**m/(m**11 + 66*m**10 + 1925*m**
9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 459
95730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 3991
6800) + 65*a**10*m**9*x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 3267
0*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m*
*4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) +
1860*a**10*m**8*x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8
 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 1
05258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 30810*
a**10*m**7*x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 35
7423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258
076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 326613*a**1
0*m**6*x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423
*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*
m**3 + 150917976*m**2 + 120543840*m + 39916800) + 2310945*a**10*m
**5*x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m*
*7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**
3 + 150917976*m**2 + 120543840*m + 39916800) + 11028590*a**10*m**
4*x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7
 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3
+ 150917976*m**2 + 120543840*m + 39916800) + 34967140*a**10*m**3*
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x*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 +
2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 +
150917976*m**2 + 120543840*m + 39916800) + 70290936*a**10*m**2*x*
x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2
637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15
0917976*m**2 + 120543840*m + 39916800) + 80627040*a**10*m*x*x**m/
(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 263755
8*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 1509179
76*m**2 + 120543840*m + 39916800) + 39916800*a**10*x*x**m/(m**11
+ 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6
+ 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2
+ 120543840*m + 39916800) + 10*a**9*b*m**10*x**2*x**m/(m**11 + 6
6*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1
3339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 +
120543840*m + 39916800) + 640*a**9*b*m**9*x**2*x**m/(m**11 + 66*m
10 + 1925*m9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1333
9535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120
543840*m + 39916800) + 17970*a**9*b*m**8*x**2*x**m/(m**11 + 66*m*
*10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339
535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 1205
43840*m + 39916800) + 290760*a**9*b*m**7*x**2*x**m/(m**11 + 66*m*
*10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339
535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 1205
43840*m + 39916800) + 2992710*a**9*b*m**6*x**2*x**m/(m**11 + 66*m
10 + 1925*m9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1333
9535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120
543840*m + 39916800) + 20390160*a**9*b*m**5*x**2*x**m/(m**11 + 66
*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13
339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 1
20543840*m + 39916800) + 92615030*a**9*b*m**4*x**2*x**m/(m**11 +
66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 +
13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 +
120543840*m + 39916800) + 274727240*a**9*b*m**3*x**2*x**m/(m**11
+ 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6
+ 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**
2 + 120543840*m + 39916800) + 503126280*a**9*b*m**2*x**2*x**m/(m*
*11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m
6 + 13339535*m5 + 45995730*m**4 + 105258076*m**3 + 150917976*
m**2 + 120543840*m + 39916800) + 502927200*a**9*b*m*x**2*x**m/(m*
*11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m
6 + 13339535*m5 + 45995730*m**4 + 105258076*m**3 + 150917976*
m**2 + 120543840*m + 39916800) + 199584000*a**9*b*x**2*x**m/(m**1
1 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**
6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m*
*2 + 120543840*m + 39916800) + 45*a**8*b**2*m**10*x**3*x**m/(m**1
1 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**
6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m*
*2 + 120543840*m + 39916800) + 2835*a**8*b**2*m**9*x**3*x**m/(m**
11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m*
*6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m
2 + 120543840*m + 39916800) + 78120*a8*b**2*m**8*x**3*x**m/(m
11 + 66*m10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*
m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976
*m**2 + 120543840*m + 39916800) + 1235790*a**8*b**2*m**7*x**3*x**
m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637
558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15091

7976*m**2 + 120543840*m + 39916800) + 12376665*a**8*b**2*m**6*x**
3*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 +
 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 +
150917976*m**2 + 120543840*m + 39916800) + 81560115*a**8*b**2*m**
5*x**3*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m
7 + 2637558*m6 + 13339535*m**5 + 45995730*m**4 + 105258076*m*
*3 + 150917976*m**2 + 120543840*m + 39916800) + 355598730*a**8*b*
*2*m**4*x**3*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 35
7423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258
076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 1003011660*
a**8*b**2*m**3*x**3*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m*
*8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 +
 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 1727
578440*a**8*b**2*m**2*x**3*x**m/(m**11 + 66*m**10 + 1925*m**9 + 3
2670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730
*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800)
 + 1608573600*a**8*b**2*m*x**3*x**m/(m**11 + 66*m**10 + 1925*m**9
 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 4599
5730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916
800) + 598752000*a**8*b**2*x**3*x**m/(m**11 + 66*m**10 + 1925*m**
9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 459
95730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 3991
6800) + 120*a**7*b**3*m**10*x**4*x**m/(m**11 + 66*m**10 + 1925*m*
*9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45
995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 399
16800) + 7440*a**7*b**3*m**9*x**4*x**m/(m**11 + 66*m**10 + 1925*m
9 + 32670*m8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 4
5995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39
916800) + 201240*a**7*b**3*m**8*x**4*x**m/(m**11 + 66*m**10 + 192
5*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5
+ 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m +
 39916800) + 3115440*a**7*b**3*m**7*x**4*x**m/(m**11 + 66*m**10 +
 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m
5 + 45995730*m4 + 105258076*m**3 + 150917976*m**2 + 120543840
*m + 39916800) + 30429000*a**7*b**3*m**6*x**4*x**m/(m**11 + 66*m*
*10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339
535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 1205
43840*m + 39916800) + 194790960*a**7*b**3*m**5*x**4*x**m/(m**11 +
 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 +
 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2
+ 120543840*m + 39916800) + 821580360*a**7*b**3*m**4*x**4*x**m/(m
11 + 66*m10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*
m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976
*m**2 + 120543840*m + 39916800) + 2233166160*a**7*b**3*m**3*x**4*
x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2
637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15
0917976*m**2 + 120543840*m + 39916800) + 3698304480*a**7*b**3*m**
2*x**4*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m
7 + 2637558*m6 + 13339535*m**5 + 45995730*m**4 + 105258076*m*
*3 + 150917976*m**2 + 120543840*m + 39916800) + 3316939200*a**7*b
3*m*x4*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 3574
23*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 10525807
6*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 1197504000*a*
*7*b**3*x**4*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 35
7423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258
076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 210*a**6*b*

*4*m**10*x**5*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 3
57423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 10525
8076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 12810*a**6
*b**4*m**9*x**5*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 +
 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105
258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 340200*a
6*b4*m**8*x**5*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**
8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 +
105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 51597
00*a**6*b**4*m**7*x**5*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670
*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**
4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 4
9260330*a**6*b**4*m**6*x**5*x**m/(m**11 + 66*m**10 + 1925*m**9 +
32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 4599573
0*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800
) + 307585530*a**6*b**4*m**5*x**5*x**m/(m**11 + 66*m**10 + 1925*m
9 + 32670*m8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 4
5995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39
916800) + 1263374700*a**6*b**4*m**4*x**5*x**m/(m**11 + 66*m**10 +
 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m
5 + 45995730*m4 + 105258076*m**3 + 150917976*m**2 + 120543840
*m + 39916800) + 3342229800*a**6*b**4*m**3*x**5*x**m/(m**11 + 66*
m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 133
39535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12
0543840*m + 39916800) + 5393046960*a**6*b**4*m**2*x**5*x**m/(m**1
1 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**
6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m*
*2 + 120543840*m + 39916800) + 4727540160*a**6*b**4*m*x**5*x**m/(
m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558
*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15091797
6*m**2 + 120543840*m + 39916800) + 1676505600*a**6*b**4*x**5*x**m
/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 26375
58*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917
976*m**2 + 120543840*m + 39916800) + 252*a**5*b**5*m**10*x**6*x**
m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637
558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15091
7976*m**2 + 120543840*m + 39916800) + 15120*a**5*b**5*m**9*x**6*x
m/(m11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 26
37558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150
917976*m**2 + 120543840*m + 39916800) + 394380*a**5*b**5*m**8*x**
6*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 +
 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 +
150917976*m**2 + 120543840*m + 39916800) + 5866560*a**5*b**5*m**7
*x**6*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m*
*7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**
3 + 150917976*m**2 + 120543840*m + 39916800) + 54871236*a**5*b**5
*m**6*x**6*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 3574
23*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 10525807
6*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 335437200*a**
5*b**5*m**5*x**6*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8
+ 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 10
5258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 1348939
620*a**5*b**5*m**4*x**6*x**m/(m**11 + 66*m**10 + 1925*m**9 + 3267
0*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m*
*4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) +
3497286240*a**5*b**5*m**3*x**6*x**m/(m**11 + 66*m**10 + 1925*m**9

+ 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 4599
5730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916
800) + 5541317712*a**5*b**5*m**2*x**6*x**m/(m**11 + 66*m**10 + 19
25*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5
+ 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m
+ 39916800) + 4783423680*a**5*b**5*m*x**6*x**m/(m**11 + 66*m**10
+ 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*
m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054384
0*m + 39916800) + 1676505600*a**5*b**5*x**6*x**m/(m**11 + 66*m**1
0 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1333953
5*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543
840*m + 39916800) + 210*a**4*b**6*m**10*x**7*x**m/(m**11 + 66*m**
10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 133395
35*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054
3840*m + 39916800) + 12390*a**4*b**6*m**9*x**7*x**m/(m**11 + 66*m
10 + 1925*m9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1333
9535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120
543840*m + 39916800) + 317520*a**4*b**6*m**8*x**7*x**m/(m**11 + 6
6*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1
3339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 +
120543840*m + 39916800) + 4638060*a**4*b**6*m**7*x**7*x**m/(m**11
+ 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6
+ 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**
2 + 120543840*m + 39916800) + 42592410*a**4*b**6*m**6*x**7*x**m/(
m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558
*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15091797
6*m**2 + 120543840*m + 39916800) + 255740310*a**4*b**6*m**5*x**7*
x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2
637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 15
0917976*m**2 + 120543840*m + 39916800) + 1011120180*a**4*b**6*m**
4*x**7*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m
7 + 2637558*m6 + 13339535*m**5 + 45995730*m**4 + 105258076*m*
*3 + 150917976*m**2 + 120543840*m + 39916800) + 2581262040*a**4*b
6*m3*x**7*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 3
57423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 10525
8076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 4035361680
*a**4*b**6*m**2*x**7*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m
8 + 357423*m7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4
+ 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 344
5243200*a**4*b**6*m*x**7*x**m/(m**11 + 66*m**10 + 1925*m**9 + 326
70*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m
4 + 105258076*m3 + 150917976*m**2 + 120543840*m + 39916800) +
1197504000*a**4*b**6*x**7*x**m/(m**11 + 66*m**10 + 1925*m**9 + 3
2670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730
*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800)
+ 120*a**3*b**7*m**10*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 +
32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 4599573
0*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800
) + 6960*a**3*b**7*m**9*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 +
32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 459957
30*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 3991680
0) + 175320*a**3*b**7*m**8*x**8*x**m/(m**11 + 66*m**10 + 1925*m**
9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 459
95730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 3991
6800) + 2517840*a**3*b**7*m**7*x**8*x**m/(m**11 + 66*m**10 + 1925
*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 +

45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 22748040*a**3*b**7*m**6*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 134522640*a**3*b**7*m**5*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 524563080*a**3*b**7*m**4*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 1322982960*a**3*b**7*m**3*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 2047105440*a**3*b**7*m**2*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 1733313600*a**3*b**7*m*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 598752000*a**3*b**7*x**8*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 45*a**2*b**8*m**10*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 2565*a**2*b**8*m**9*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 63540*a**2*b**8*m**8*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 898290*a**2*b**8*m**7*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 7999425*a**2*b**8*m**6*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 46695285*a**2*b**8*m**5*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 180021510*a**2*b**8*m**4*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 449614260*a**2*b**8*m**3*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 690085080*a**2*b**8*m**2*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 580543200*a**2*b**8*m*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*m + 39916800) + 199584000*a**2*b**8*x**9*x**m/(m**11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543

840*m + 39916800) + 10*a*b**9*m**10*x**10*x**m/(m**11 + 66*m**10
+ 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*
m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054384
0*m + 39916800) + 560*a*b**9*m**9*x**10*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m*
*5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*
m + 39916800) + 13650*a*b**9*m**8*x**10*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m*
*5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*
m + 39916800) + 190200*a*b**9*m**7*x**10*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m
5 + 45995730*m4 + 105258076*m**3 + 150917976*m**2 + 120543840
*m + 39916800) + 1672230*a*b**9*m**6*x**10*x**m/(m**11 + 66*m**10
+ 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535
*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 1205438
40*m + 39916800) + 9653280*a*b**9*m**5*x**10*x**m/(m**11 + 66*m**
10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 133395
35*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054
3840*m + 39916800) + 36862550*a*b**9*m**4*x**10*x**m/(m**11 + 66*
m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 133
39535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12
0543840*m + 39916800) + 91331800*a*b**9*m**3*x**10*x**m/(m**11 +
66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 +
13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 +
120543840*m + 39916800) + 139262760*a*b**9*m**2*x**10*x**m/(m**1
1 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**
6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m*
*2 + 120543840*m + 39916800) + 116552160*a*b**9*m*x**10*x**m/(m**
11 + 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m*
*6 + 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m
2 + 120543840*m + 39916800) + 39916800*a*b9*x**10*x**m/(m**11
+ 66*m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6
+ 13339535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**
2 + 120543840*m + 39916800) + b**10*m**10*x**11*x**m/(m**11 + 66*
m**10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 133
39535*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12
0543840*m + 39916800) + 55*b**10*m**9*x**11*x**m/(m**11 + 66*m**1
0 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1333953
5*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543
840*m + 39916800) + 1320*b**10*m**8*x**11*x**m/(m**11 + 66*m**10
+ 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*
m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054384
0*m + 39916800) + 18150*b**10*m**7*x**11*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m
5 + 45995730*m4 + 105258076*m**3 + 150917976*m**2 + 120543840
*m + 39916800) + 157773*b**10*m**6*x**11*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m
5 + 45995730*m4 + 105258076*m**3 + 150917976*m**2 + 120543840
*m + 39916800) + 902055*b**10*m**5*x**11*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m
5 + 45995730*m4 + 105258076*m**3 + 150917976*m**2 + 120543840
*m + 39916800) + 3416930*b**10*m**4*x**11*x**m/(m**11 + 66*m**10
+ 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*
m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054384
0*m + 39916800) + 8409500*b**10*m**3*x**11*x**m/(m**11 + 66*m**10
+ 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535

```
*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 1205438
40*m + 39916800) + 12753576*b**10*m**2*x**11*x**m/(m**11 + 66*m**
10 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 133395
35*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 12054
3840*m + 39916800) + 10628640*b**10*m*x**11*x**m/(m**11 + 66*m**1
0 + 1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 1333953
5*m**5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543
840*m + 39916800) + 3628800*b**10*x**11*x**m/(m**11 + 66*m**10 +
1925*m**9 + 32670*m**8 + 357423*m**7 + 2637558*m**6 + 13339535*m*
*5 + 45995730*m**4 + 105258076*m**3 + 150917976*m**2 + 120543840*
m + 39916800), True))
```

GIAC/XCAS [A] time = 0.218166, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*x^m,x, algorithm="giac")
```

```
[Out] Done
```

3.700 $\int x^m(a + bx)^7\,dx$

Optimal. Leaf size=133

$$\frac{a^7x^{m+1}}{m+1}+\frac{7a^6bx^{m+2}}{m+2}+\frac{21a^5b^2x^{m+3}}{m+3}+\frac{35a^4b^3x^{m+4}}{m+4}+\frac{35a^3b^4x^{m+5}}{m+5}+\frac{21a^2b^5x^{m+6}}{m+6}+\frac{7ab^6x^{m+7}}{m+7}+\frac{b^7x^{m+8}}{m+8}$$

```
[Out] (a^7*x^(1 + m))/(1 + m) + (7*a^6*b*x^(2 + m))/(2 + m) + (21*a^5*b
^2*x^(3 + m))/(3 + m) + (35*a^4*b^3*x^(4 + m))/(4 + m) + (35*a^3*
b^4*x^(5 + m))/(5 + m) + (21*a^2*b^5*x^(6 + m))/(6 + m) + (7*a*b^
6*x^(7 + m))/(7 + m) + (b^7*x^(8 + m))/(8 + m)
```

Rubi [A] time = 0.118782, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^7x^{m+1}}{m+1}+\frac{7a^6bx^{m+2}}{m+2}+\frac{21a^5b^2x^{m+3}}{m+3}+\frac{35a^4b^3x^{m+4}}{m+4}+\frac{35a^3b^4x^{m+5}}{m+5}+\frac{21a^2b^5x^{m+6}}{m+6}+\frac{7ab^6x^{m+7}}{m+7}+\frac{b^7x^{m+8}}{m+8}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^7,x]
```

```
[Out] (a^7*x^(1 + m))/(1 + m) + (7*a^6*b*x^(2 + m))/(2 + m) + (21*a^5*b
^2*x^(3 + m))/(3 + m) + (35*a^4*b^3*x^(4 + m))/(4 + m) + (35*a^3*
b^4*x^(5 + m))/(5 + m) + (21*a^2*b^5*x^(6 + m))/(6 + m) + (7*a*b^
6*x^(7 + m))/(7 + m) + (b^7*x^(8 + m))/(8 + m)
```

Rubi in Sympy [A] time = 21.7645, size = 121, normalized size = 0.91

$$\frac{a^7x^{m+1}}{m+1}+\frac{7a^6bx^{m+2}}{m+2}+\frac{21a^5b^2x^{m+3}}{m+3}+\frac{35a^4b^3x^{m+4}}{m+4}+\frac{35a^3b^4x^{m+5}}{m+5}+\frac{21a^2b^5x^{m+6}}{m+6}+\frac{7ab^6x^{m+7}}{m+7}+\frac{b^7x^{m+8}}{m+8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**7,x)
```

```
[Out] a**7*x**(m + 1)/(m + 1) + 7*a**6*b*x**(m + 2)/(m + 2) + 21*a**5*b
**2*x**(m + 3)/(m + 3) + 35*a**4*b**3*x**(m + 4)/(m + 4) + 35*a**
3*b**4*x**(m + 5)/(m + 5) + 21*a**2*b**5*x**(m + 6)/(m + 6) + 7*a
*b**6*x**(m + 7)/(m + 7) + b**7*x**(m + 8)/(m + 8)
```

Mathematica [A] time = 0.105192, size = 119, normalized size = 0.89

$$x^m\left(\frac{a^7x}{m+1}+\frac{7a^6bx^2}{m+2}+\frac{21a^5b^2x^3}{m+3}+\frac{35a^4b^3x^4}{m+4}+\frac{35a^3b^4x^5}{m+5}+\frac{21a^2b^5x^6}{m+6}+\frac{7ab^6x^7}{m+7}+\frac{b^7x^8}{m+8}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^7,x]
```

```
[Out] x^m*((a^7*x)/(1 + m) + (7*a^6*b*x^2)/(2 + m) + (21*a^5*b^2*x^3)/(
3 + m) + (35*a^4*b^3*x^4)/(4 + m) + (35*a^3*b^4*x^5)/(5 + m) + (2
1*a^2*b^5*x^6)/(6 + m) + (7*a*b^6*x^7)/(7 + m) + (b^7*x^8)/(8 + m
))
```

Maple [B] time = 0.008, size = 782, normalized size = 5.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^7,x)
```

```
[Out] x^(1+m)*(b^7*m^7*x^7+7*a*b^6*m^7*x^6+28*b^7*m^6*x^7+21*a^2*b^5*m^
7*x^5+203*a*b^6*m^6*x^6+322*b^7*m^5*x^7+35*a^3*b^4*m^7*x^4+630*a^
2*b^5*m^6*x^5+2401*a*b^6*m^5*x^6+1960*b^7*m^4*x^7+35*a^4*b^3*m^7*
x^3+1085*a^3*b^4*m^6*x^4+7686*a^2*b^5*m^5*x^5+14945*a*b^6*m^4*x^6
+6769*b^7*m^3*x^7+21*a^5*b^2*m^7*x^2+1120*a^4*b^3*m^6*x^3+13685*a
^3*b^4*m^5*x^4+49140*a^2*b^5*m^4*x^5+52528*a*b^6*m^3*x^6+13132*b^
7*m^2*x^7+7*a^6*b*m^7*x+693*a^5*b^2*m^6*x^2+14630*a^4*b^3*m^5*x^3
+90335*a^3*b^4*m^4*x^4+176589*a^2*b^5*m^3*x^5+103292*a*b^6*m^2*x^
6+13068*b^7*m*x^7+a^7*m^7+238*a^6*b*m^6*x+9387*a^5*b^2*m^5*x^2+10
0240*a^4*b^3*m^4*x^3+334040*a^3*b^4*m^3*x^4+353430*a^2*b^5*m^2*x^
5+103824*a*b^6*m*x^6+5040*b^7*x^7+35*a^7*m^6+3346*a^6*b*m^5*x+670
95*a^5*b^2*m^4*x^2+384755*a^4*b^3*m^3*x^3+684740*a^3*b^4*m^2*x^4+
360024*a^2*b^5*m*x^5+40320*a*b^6*x^6+511*a^7*m^5+25060*a^6*b*m^4*
x+270144*a^5*b^2*m^3*x^2+815920*a^4*b^3*m^2*x^3+710640*a^3*b^4*m*
x^4+141120*a^2*b^5*x^5+4025*a^7*m^4+107023*a^6*b*m^3*x+602532*a^5
*b^2*m^2*x^2+870660*a^4*b^3*m*x^3+282240*a^3*b^4*x^4+18424*a^7*m^
3+256942*a^6*b*m^2*x+673008*a^5*b^2*m*x^2+352800*a^4*b^3*x^3+4886
0*a^7*m^2+312984*a^6*b*m*x+282240*a^5*b^2*x^2+69264*a^7*m+141120*
a^6*b*x+40320*a^7)/(8+m)/(7+m)/(6+m)/(5+m)/(4+m)/(3+m)/(2+m)/(1+m
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228032, size = 898, normalized size = 6.75

$$\frac{\left(\left(b^7m^7 + 28\,b^7m^6 + 322\,b^7m^5 + 1960\,b^7m^4 + 6769\,b^7m^3 + 13132\,b^7m^2 + 13068\,b^7m + 5040\,b^7\right)x^8 + 7\left(ab^6m^7 + 29\,ab^6m^6 + 3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^m,x, algorithm="fricas")
```

```
[Out] ((b^7*m^7 + 28*b^7*m^6 + 322*b^7*m^5 + 1960*b^7*m^4 + 6769*b^7*m^
3 + 13132*b^7*m^2 + 13068*b^7*m + 5040*b^7)*x^8 + 7*(a*b^6*m^7 +
29*a*b^6*m^6 + 343*a*b^6*m^5 + 2135*a*b^6*m^4 + 7504*a*b^6*m^3 +
14756*a*b^6*m^2 + 14832*a*b^6*m + 5760*a*b^6)*x^7 + 21*(a^2*b^5*m
^7 + 30*a^2*b^5*m^6 + 366*a^2*b^5*m^5 + 2340*a^2*b^5*m^4 + 8409*a
^2*b^5*m^3 + 16830*a^2*b^5*m^2 + 17144*a^2*b^5*m + 6720*a^2*b^5)*
x^6 + 35*(a^3*b^4*m^7 + 31*a^3*b^4*m^6 + 391*a^3*b^4*m^5 + 2581*a
^3*b^4*m^4 + 9544*a^3*b^4*m^3 + 19564*a^3*b^4*m^2 + 20304*a^3*b^4
*m + 8064*a^3*b^4)*x^5 + 35*(a^4*b^3*m^7 + 32*a^4*b^3*m^6 + 418*a
^4*b^3*m^5 + 2864*a^4*b^3*m^4 + 10993*a^4*b^3*m^3 + 23312*a^4*b^3
*m^2 + 24876*a^4*b^3*m + 10080*a^4*b^3)*x^4 + 21*(a^5*b^2*m^7 + 3
3*a^5*b^2*m^6 + 447*a^5*b^2*m^5 + 3195*a^5*b^2*m^4 + 12864*a^5*b^
2*m^3 + 28692*a^5*b^2*m^2 + 32048*a^5*b^2*m + 13440*a^5*b^2)*x^3
+ 7*(a^6*b*m^7 + 34*a^6*b*m^6 + 478*a^6*b*m^5 + 3580*a^6*b*m^4 +
15289*a^6*b*m^3 + 36706*a^6*b*m^2 + 44712*a^6*b*m + 20160*a^6*b)*
x^2 + (a^7*m^7 + 35*a^7*m^6 + 511*a^7*m^5 + 4025*a^7*m^4 + 18424*
a^7*m^3 + 48860*a^7*m^2 + 69264*a^7*m + 40320*a^7)*x)*x^m/(m^8 +
36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2
+ 109584*m + 40320)
```

Sympy [A] time = 9.28893, size = 4257, normalized size = 32.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**7,x)
```

```
[Out] Piecewise((-a**7/(7*x**7) - 7*a**6*b/(6*x**6) - 21*a**5*b**2/(5*x
**5) - 35*a**4*b**3/(4*x**4) - 35*a**3*b**4/(3*x**3) - 21*a**2*b*
*5/(2*x**2) - 7*a*b**6/x + b**7*log(x), Eq(m, -8)), (-a**7/(6*x**
6) - 7*a**6*b/(5*x**5) - 21*a**5*b**2/(4*x**4) - 35*a**4*b**3/(3*
x**3) - 35*a**3*b**4/(2*x**2) - 21*a**2*b**5/x + 7*a*b**6*log(x)
+ b**7*x, Eq(m, -7)), (-a**7/(5*x**5) - 7*a**6*b/(4*x**4) - 7*a**
5*b**2/x**3 - 35*a**4*b**3/(2*x**2) - 35*a**3*b**4/x + 21*a**2*b*
*5*log(x) + 7*a*b**6*x + b**7*x**2/2, Eq(m, -6)), (-a**7/(4*x**4)
```

- 7*a**6*b/(3*x**3) - 21*a**5*b**2/(2*x**2) - 35*a**4*b**3/x + 3
5*a**3*b**4*log(x) + 21*a**2*b**5*x + 7*a*b**6*x**2/2 + b**7*x**3
/3, Eq(m, -5)), (-a**7/(3*x**3) - 7*a**6*b/(2*x**2) - 21*a**5*b**
2/x + 35*a**4*b**3*log(x) + 35*a**3*b**4*x + 21*a**2*b**5*x**2/2
+ 7*a*b**6*x**3/3 + b**7*x**4/4, Eq(m, -4)), (-a**7/(2*x**2) - 7*
a**6*b/x + 21*a**5*b**2*log(x) + 35*a**4*b**3*x + 35*a**3*b**4*x*
*2/2 + 7*a**2*b**5*x**3 + 7*a*b**6*x**4/4 + b**7*x**5/5, Eq(m, -3
)), (-a**7/x + 7*a**6*b*log(x) + 21*a**5*b**2*x + 35*a**4*b**3*x*
*2/2 + 35*a**3*b**4*x**3/3 + 21*a**2*b**5*x**4/4 + 7*a*b**6*x**5/
5 + b**7*x**6/6, Eq(m, -2)), (a**7*log(x) + 7*a**6*b*x + 21*a**5*
b**2*x**2/2 + 35*a**4*b**3*x**3/3 + 35*a**3*b**4*x**4/4 + 21*a**2
*b**5*x**5/5 + 7*a*b**6*x**6/6 + b**7*x**7/7, Eq(m, -1)), (a**7*m
7*x*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 35*a**7*m**6*x*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 511*a**7*m**5*x*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 4025*a**7*m**4*x*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
 + 109584*m + 40320) + 18424*a**7*m**3*x*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 48860*a**7*m**2*x*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 69264*a**7*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
+ 40320*a**7*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7*a**6*b*
m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 238*a**6*b*m**
6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3346*a**6*b*m**5*
x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 25060*a**6*b*m**4*x
2*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 107023*a**6*b*m**3*x
2*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 256942*a**6*b*m**2*x
2*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 312984*a**6*b*m*x**2
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 141120*a**6*b*x**2*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
 + 118124*m**2 + 109584*m + 40320) + 21*a**5*b**2*m**7*x**3*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 693*a**5*b**2*m**6*x**3*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 9387*a**5*b**2*m**5*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
 + 118124*m**2 + 109584*m + 40320) + 67095*a**5*b**2*m**4*x**3*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 270144*a**5*b**2*m**3*x**3
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 602532*a**5*b**2*m**2*x
3*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 673008*a**5*b**2*m*x
3*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67

284*m**3 + 118124*m**2 + 109584*m + 40320) + 282240*a**5*b**2*x**
3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6728
4*m**3 + 118124*m**2 + 109584*m + 40320) + 35*a**4*b**3*m**7*x**4
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 1120*a**4*b**3*m**6*x**
4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6728
4*m**3 + 118124*m**2 + 109584*m + 40320) + 14630*a**4*b**3*m**5*x
4*xm/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 100240*a**4*b**3*m**
4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 384755*a**4*b**3*
m**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 815920*a**4*b*
*3*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 870660*a**4
*b**3*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 352800*a**4
*b**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m*
*4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 35*a**3*b**4*
m**7*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1085*a**3*b**4
*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m*
*4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13685*a**3*b*
*4*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 90335*a**3*
b**4*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 334040*a*
*3*b**4*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 684740
*a**3*b**4*m**2*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 710
640*a**3*b**4*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 282
240*a**3*b**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 21*a*
*2*b**5*m**7*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 630*a*
*2*b**5*m**6*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7686*a
2*b5*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 49140
*a**2*b**5*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 176
589*a**2*b**5*m**3*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
353430*a**2*b**5*m**2*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
 + 360024*a**2*b**5*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
 + 141120*a**2*b**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
5 + 22449*m4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 7*a*b**6*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 203*
a*b**6*m**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22
449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2401*a*
b**6*m**5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244

```
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14945*a*b
**6*m**4*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449
*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 52528*a*b*
*6*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 103292*a*b*
*6*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 103824*a*b*
*6*m*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*a*b**6*x
**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + b**7*m**7*x**8*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 28*b**7*m**6*x**8*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 322*b**7*m**5*x**8*x**m/(m**8 + 36*
m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 1960*b**7*m**4*x**8*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 6769*b**7*m**3*x**8*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 13132*b**7*m**2*x**8*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 13068*b**7*m*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 5040*b**7*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320), Tr
ue))
```

GIAC/XCAS [A] time = 0.208252, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*x^m,x, algorithm="giac")
```

```
[Out] Done
```

3.701 $\int x^m (a+bx)^3 \, dx$

Optimal. Leaf size=61

$$\frac{a^3x^{m+1}}{m+1}+\frac{3a^2bx^{m+2}}{m+2}+\frac{3ab^2x^{m+3}}{m+3}+\frac{b^3x^{m+4}}{m+4}$$

```
[Out] (a^3*x^(1 + m))/(1 + m) + (3*a^2*b*x^(2 + m))/(2 + m) + (3*a*b^2*
x^(3 + m))/(3 + m) + (b^3*x^(4 + m))/(4 + m)
```

Rubi [A] time = 0.0481728, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^3x^{m+1}}{m+1}+\frac{3a^2bx^{m+2}}{m+2}+\frac{3ab^2x^{m+3}}{m+3}+\frac{b^3x^{m+4}}{m+4}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^3,x]
```

```
[Out] (a^3*x^(1 + m))/(1 + m) + (3*a^2*b*x^(2 + m))/(2 + m) + (3*a*b^2*
x^(3 + m))/(3 + m) + (b^3*x^(4 + m))/(4 + m)
```

Rubi in Sympy [A] time = 9.38047, size = 53, normalized size = 0.87

$$\frac{a^3x^{m+1}}{m+1}+\frac{3a^2bx^{m+2}}{m+2}+\frac{3ab^2x^{m+3}}{m+3}+\frac{b^3x^{m+4}}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**3,x)
```

```
[Out] a**3*x**(m + 1)/(m + 1) + 3*a**2*b*x**(m + 2)/(m + 2) + 3*a*b**2*
x**(m + 3)/(m + 3) + b**3*x**(m + 4)/(m + 4)
```

Mathematica [A] time = 0.038294, size = 55, normalized size = 0.9

$$x^m\left(\frac{a^3x}{m+1}+\frac{3a^2bx^2}{m+2}+\frac{3ab^2x^3}{m+3}+\frac{b^3x^4}{m+4}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^3,x]
```

```
[Out] x^m*((a^3*x)/(1 + m) + (3*a^2*b*x^2)/(2 + m) + (3*a*b^2*x^3)/(3 +
 m) + (b^3*x^4)/(4 + m))
```

Maple [B] time = 0.001, size = 170, normalized size = 2.8

$$\frac{x^{1+m}\left(b^3m^3x^3+3\,ab^2m^3x^2+6\,b^3m^2x^3+3\,a^2bm^3x+21\,ab^2m^2x^2+11\,b^3mx^3+a^3m^3+24\,a^2bm^2x+42\,ab^2mx^2+6\,b^3x^3+9\right.}{(4+m)\,(3+m)\,(2+m)\,(1+m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^3,x)
```

```
[Out] x^(1+m)*(b^3*m^3*x^3+3*a*b^2*m^3*x^2+6*b^3*m^2*x^3+3*a^2*b*m^3*x+
21*a*b^2*m^2*x^2+11*b^3*m*x^3+a^3*m^3+24*a^2*b*m^2*x+42*a*b^2*m*x
^2+6*b^3*x^3+9*a^3*m^2+57*a^2*b*m*x+24*a*b^2*x^2+26*a^3*m+36*a^2*
b*x+24*a^3)/(4+m)/(3+m)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226682, size = 212, normalized size = 3.48

$$\frac{\left(\left(b^3m^3+6\,b^3m^2+11\,b^3m+6\,b^3\right)x^4+3\left(ab^2m^3+7\,ab^2m^2+14\,ab^2m+8\,ab^2\right)x^3+3\left(a^2bm^3+8\,a^2bm^2+19\,a^2bm+12\,a^2b\right)\right.}{m^4+10\,m^3+35\,m^2+50\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^m,x, algorithm="fricas")
```

```
[Out] ((b^3*m^3 + 6*b^3*m^2 + 11*b^3*m + 6*b^3)*x^4 + 3*(a*b^2*m^3 + 7*
a*b^2*m^2 + 14*a*b^2*m + 8*a*b^2)*x^3 + 3*(a^2*b*m^3 + 8*a^2*b*m^
2 + 19*a^2*b*m + 12*a^2*b)*x^2 + (a^3*m^3 + 9*a^3*m^2 + 26*a^3*m
```

```
+ 24*a^3)*x)*x^m/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

Sympy [A] time = 2.35971, size = 663, normalized size = 10.87

$$\begin{cases} -\frac{a^3}{3x^3} - \frac{3a^2b}{2x^2} - \frac{3ab^2}{x} + b^3\log(x) \\ -\frac{a^3}{2x^2} - \frac{3a^2b}{x} + 3ab^2\log(x) + b^3x \\ -\frac{a^3}{x} + 3a^2b\log(x) + 3ab^2x + \frac{b^3x^2}{2} \\ a^3\log(x) + 3a^2bx + \frac{3ab^2x^2}{2} + \frac{b^3x^3}{3} \\ \frac{a^3m^3xx^m}{m^4+10m^3+35m^2+50m+24} + \frac{9a^3m^2xx^m}{m^4+10m^3+35m^2+50m+24} + \frac{26a^3mxx^m}{m^4+10m^3+35m^2+50m+24} + \frac{24a^3xx^m}{m^4+10m^3+35m^2+50m+24} + \frac{3a^2bm^3x^2x^m}{m^4+10m^3+35m^2+50m+24} + \frac{24}{m^4+10m} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**3,x)
```

```
[Out] Piecewise((-a**3/(3*x**3) - 3*a**2*b/(2*x**2) - 3*a*b**2/x + b**3
*log(x), Eq(m, -4)), (-a**3/(2*x**2) - 3*a**2*b/x + 3*a*b**2*log(
x) + b**3*x, Eq(m, -3)), (-a**3/x + 3*a**2*b*log(x) + 3*a*b**2*x
+ b**3*x**2/2, Eq(m, -2)), (a**3*log(x) + 3*a**2*b*x + 3*a*b**2*x
**2/2 + b**3*x**3/3, Eq(m, -1)), (a**3*m**3*x*x**m/(m**4 + 10*m**
3 + 35*m**2 + 50*m + 24) + 9*a**3*m**2*x*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24) + 26*a**3*m*x*x**m/(m**4 + 10*m**3 + 35*m**2
+ 50*m + 24) + 24*a**3*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
24) + 3*a**2*b*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
24) + 24*a**2*b*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
 24) + 57*a**2*b*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 2
4) + 36*a**2*b*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
 3*a*b**2*m**3*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
 21*a*b**2*m**2*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24)
+ 42*a*b**2*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
24*a*b**2*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + b**3
*m**3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*b**3*m
**2*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*b**3*m*
x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*b**3*x**4*x*
*m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24), True))
```

GIAC/XCAS [A] time = 0.210137, size = 346, normalized size = 5.67

$$\frac{b^3m^3x^4e^{(m\ln(x))} + 3\,ab^2m^3x^3e^{(m\ln(x))} + 6\,b^3m^2x^4e^{(m\ln(x))} + 3\,a^2bm^3x^2e^{(m\ln(x))} + 21\,ab^2m^2x^3e^{(m\ln(x))} + 11\,b^3mx^4e^{(m\ln(x))} + a^3r}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*x^m,x, algorithm="giac")
```

```
[Out] (b^3*m^3*x^4*e^(m*ln(x)) + 3*a*b^2*m^3*x^3*e^(m*ln(x)) + 6*b^3*m^
2*x^4*e^(m*ln(x)) + 3*a^2*b*m^3*x^2*e^(m*ln(x)) + 21*a*b^2*m^2*x^
```

```
3*e^(m*ln(x)) + 11*b^3*m*x^4*e^(m*ln(x)) + a^3*m^3*x*e^(m*ln(x))
+ 24*a^2*b*m^2*x^2*e^(m*ln(x)) + 42*a*b^2*m*x^3*e^(m*ln(x)) + 6*b
^3*x^4*e^(m*ln(x)) + 9*a^3*m^2*x*e^(m*ln(x)) + 57*a^2*b*m*x^2*e^(
m*ln(x)) + 24*a*b^2*x^3*e^(m*ln(x)) + 26*a^3*m*x*e^(m*ln(x)) + 36
*a^2*b*x^2*e^(m*ln(x)) + 24*a^3*x*e^(m*ln(x)))/(m^4 + 10*m^3 + 35
*m^2 + 50*m + 24)
```

3.702 $\int x^m(a+bx)^2\,dx$

Optimal. Leaf size=43

$$\frac{a^2x^{m+1}}{m+1}+\frac{2abx^{m+2}}{m+2}+\frac{b^2x^{m+3}}{m+3}$$

```
[Out] (a^2*x^(1 + m))/(1 + m) + (2*a*b*x^(2 + m))/(2 + m) + (b^2*x^(3 +
 m))/(3 + m)
```

Rubi [A] time = 0.0342321, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2x^{m+1}}{m+1}+\frac{2abx^{m+2}}{m+2}+\frac{b^2x^{m+3}}{m+3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^2,x]
```

```
[Out] (a^2*x^(1 + m))/(1 + m) + (2*a*b*x^(2 + m))/(2 + m) + (b^2*x^(3 +
 m))/(3 + m)
```

Rubi in Sympy [A] time = 6.72856, size = 36, normalized size = 0.84

$$\frac{a^2x^{m+1}}{m+1}+\frac{2abx^{m+2}}{m+2}+\frac{b^2x^{m+3}}{m+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**2,x)
```

```
[Out] a**2*x**(m + 1)/(m + 1) + 2*a*b*x**(m + 2)/(m + 2) + b**2*x**(m +
 3)/(m + 3)
```

Mathematica [A] time = 0.0255346, size = 39, normalized size = 0.91

$$x^m\left(\frac{a^2x}{m+1}+\frac{2abx^2}{m+2}+\frac{b^2x^3}{m+3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^2,x]
```

```
[Out] x^m*((a^2*x)/(1 + m) + (2*a*b*x^2)/(2 + m) + (b^2*x^3)/(3 + m))
```

Maple [A] time = 0., size = 87, normalized size = 2.

$$\frac{x^{1+m} \left(b^2 m^2 x^2 + 2\,abm^2 x + 3\,b^2 m x^2 + a^2 m^2 + 8\,abmx + 2\,b^2 x^2 + 5\,a^2 m + 6\,abx + 6\,a^2\right)}{(3+m)\,(2+m)\,(1+m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^2,x)
```

```
[Out] x^(1+m)*(b^2*m^2*x^2+2*a*b*m^2*x+3*b^2*m*x^2+a^2*m^2+8*a*b*m*x+2*
b^2*x^2+5*a^2*m+6*a*b*x+6*a^2)/(3+m)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226931, size = 115, normalized size = 2.67

$$\frac{\left(\left(b^2 m^2 + 3\,b^2 m + 2\,b^2\right) x^3 + 2\,\left(abm^2 + 4\,abm + 3\,ab\right) x^2 + \left(a^2 m^2 + 5\,a^2 m + 6\,a^2\right) x\right) x^m}{m^3 + 6\,m^2 + 11\,m + 6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^m,x, algorithm="fricas")
```

```
[Out] ((b^2*m^2 + 3*b^2*m + 2*b^2)*x^3 + 2*(a*b*m^2 + 4*a*b*m + 3*a*b)*
x^2 + (a^2*m^2 + 5*a^2*m + 6*a^2)*x)*x^m/(m^3 + 6*m^2 + 11*m + 6)
```

Sympy [A] time = 1.43253, size = 299, normalized size = 6.95

$$\begin{cases} -\frac{a^2}{2x^2} - \frac{2ab}{x} + b^2 \log(x) \\ -\frac{a^2}{x} + 2ab\log(x) + b^2x \\ a^2\log(x) + 2abx + \frac{b^2x^2}{2} \\ \frac{a^2m^2xx^m}{m^3+6m^2+11m+6} + \frac{5a^2mxx^m}{m^3+6m^2+11m+6} + \frac{6a^2xx^m}{m^3+6m^2+11m+6} + \frac{2abm^2x^2x^m}{m^3+6m^2+11m+6} + \frac{8abmx^2x^m}{m^3+6m^2+11m+6} + \frac{6abx^2x^m}{m^3+6m^2+11m+6} + \frac{b^2m^2x^3x^m}{m^3+6m^2+11m+6} + \frac{3b^2mx^3}{m^3+6m^2+1} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**2,x)
```

```
[Out] Piecewise((-a**2/(2*x**2) - 2*a*b/x + b**2*log(x), Eq(m, -3)), (-
a**2/x + 2*a*b*log(x) + b**2*x, Eq(m, -2)), (a**2*log(x) + 2*a*b*
x + b**2*x**2/2, Eq(m, -1)), (a**2*m**2*x*x**m/(m**3 + 6*m**2 + 1
1*m + 6) + 5*a**2*m*x*x**m/(m**3 + 6*m**2 + 11*m + 6) + 6*a**2*x*
x**m/(m**3 + 6*m**2 + 11*m + 6) + 2*a*b*m**2*x**2*x**m/(m**3 + 6*
m**2 + 11*m + 6) + 8*a*b*m*x**2*x**m/(m**3 + 6*m**2 + 11*m + 6) +
 6*a*b*x**2*x**m/(m**3 + 6*m**2 + 11*m + 6) + b**2*m**2*x**3*x**m
/(m**3 + 6*m**2 + 11*m + 6) + 3*b**2*m*x**3*x**m/(m**3 + 6*m**2 +
 11*m + 6) + 2*b**2*x**3*x**m/(m**3 + 6*m**2 + 11*m + 6), True))
```

GIAC/XCAS [A] time = 0.209904, size = 182, normalized size = 4.23

$$\frac{b^2m^2x^3e^{(m\ln(x))} + 2\,abm^2x^2e^{(m\ln(x))} + 3\,b^2mx^3e^{(m\ln(x))} + a^2m^2xe^{(m\ln(x))} + 8\,abmx^2e^{(m\ln(x))} + 2\,b^2x^3e^{(m\ln(x))} + 5\,a^2mxe^{(m\ln(x))}}{m^3 + 6\,m^2 + 11\,m + 6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^m,x, algorithm="giac")
```

```
[Out] (b^2*m^2*x^3*e^(m*ln(x)) + 2*a*b*m^2*x^2*e^(m*ln(x)) + 3*b^2*m*x^
3*e^(m*ln(x)) + a^2*m^2*x*e^(m*ln(x)) + 8*a*b*m*x^2*e^(m*ln(x)) +
 2*b^2*x^3*e^(m*ln(x)) + 5*a^2*m*x*e^(m*ln(x)) + 6*a*b*x^2*e^(m*l
n(x)) + 6*a^2*x*e^(m*ln(x)))/(m^3 + 6*m^2 + 11*m + 6)
```

3.703 $\int x^m(a+bx)\,dx$

Optimal. Leaf size=25

$$\frac{ax^{m+1}}{m+1}+\frac{bx^{m+2}}{m+2}$$

```
[Out] (a*x^(1 + m))/(1 + m) + (b*x^(2 + m))/(2 + m)
```

Rubi [A] time = 0.0196175, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{ax^{m+1}}{m+1}+\frac{bx^{m+2}}{m+2}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(a + b*x),x]
```

```
[Out] (a*x^(1 + m))/(1 + m) + (b*x^(2 + m))/(2 + m)
```

Rubi in Sympy [A] time = 3.54535, size = 19, normalized size = 0.76

$$\frac{ax^{m+1}}{m+1}+\frac{bx^{m+2}}{m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**m*(b*x+a),x)
```

```
[Out] a*x**(m + 1)/(m + 1) + b*x**(m + 2)/(m + 2)
```

Mathematica [A] time = 0.017617, size = 23, normalized size = 0.92

$$x^m\left(\frac{ax}{m+1}+\frac{bx^2}{m+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(a + b*x),x]
```

```
[Out] x^m*((a*x)/(1 + m) + (b*x^2)/(2 + m))
```

Maple [A] time = 0., size = 31, normalized size = 1.2

$$\frac{x^{1+m}\left(bmx+am+bx+2\,a\right)}{\left(2+m\right)\left(1+m\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a),x)
```

```
[Out] x^(1+m)*(b*m*x+a*m+b*x+2*a)/(2+m)/(1+m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224939, size = 45, normalized size = 1.8

$$\frac{\left((bm+b)x^2+(am+2\,a)x\right)x^m}{m^2+3\,m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^m,x, algorithm="fricas")
```

```
[Out] ((b*m + b)*x^2 + (a*m + 2*a)*x)*x^m/(m^2 + 3*m + 2)
```

Sympy [A] time = 0.737113, size = 87, normalized size = 3.48

$$\begin{cases} -\frac{a}{x}+b\log\left(x\right) & \text{for}\ m=-2\\ a\log\left(x\right)+bx & \text{for}\ m=-1\\ \frac{amxx^m}{m^2+3m+2}+\frac{2axx^m}{m^2+3m+2}+\frac{bmx^2x^m}{m^2+3m+2}+\frac{bx^2x^m}{m^2+3m+2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a),x)
```

```
[Out] Piecewise((-a/x + b*log(x), Eq(m, -2)), (a*log(x) + b*x, Eq(m, -1
)), (a*m*x*x**m/(m**2 + 3*m + 2) + 2*a*x*x**m/(m**2 + 3*m + 2) +
b*m*x**2*x**m/(m**2 + 3*m + 2) + b*x**2*x**m/(m**2 + 3*m + 2), Tr
ue))
```

GIAC/XCAS [A] time = 0.206867, size = 69, normalized size = 2.76

$$\frac{bmx^2e^{(m\ln(x))} + amxe^{(m\ln(x))} + bx^2e^{(m\ln(x))} + 2\,axe^{(m\ln(x))}}{m^2 + 3\,m + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^m,x, algorithm="giac")
```

```
[Out] (b*m*x^2*e^(m*ln(x)) + a*m*x*e^(m*ln(x)) + b*x^2*e^(m*ln(x)) + 2*
a*x*e^(m*ln(x)))/(m^2 + 3*m + 2)
```

3.704 $\int \frac{x^m}{a+bx}\,dx$

Optimal. Leaf size=29

$$\frac{x^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{bx}{a}\right)}{a(m+1)}$$

```
[Out] (x^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((b*x)/a)])/(a*(1
+ m))
```

Rubi [A] time = 0.0206587, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{x^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{bx}{a}\right)}{a(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/(a + b*x),x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((b*x)/a)])/(a*(1
+ m))
```

Rubi in Sympy [A] time = 3.08163, size = 20, normalized size = 0.69

$$\frac{x^{m+1}{}_2F_1\left(\begin{matrix}1,m+1\\ m+2\end{matrix}\middle|-\frac{bx}{a}\right)}{a\left(m+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a),x)
```

```
[Out] x**(m + 1)*hyper((1, m + 1), (m + 2,), -b*x/a)/(a*(m + 1))
```

Mathematica [A] time = 0.0185648, size = 29, normalized size = 1.

$$\frac{x^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{bx}{a}\right)}{a(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/(a + b*x),x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((b*x)/a)])/(a*(1
+ m))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \frac{x^m}{bx + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a),x)
```

```
[Out] int(x^m/(b*x+a),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{bx + a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^m/(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^m}{bx + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^m/(b*x + a), x)
```

Sympy [A] time = 2.12981, size = 61, normalized size = 2.1

$$\frac{mxx^{m}\left(\frac{bxe^{i\pi}}{a},1,m+1\right)\ (m+1)}{a\,(m+2)}+\frac{xx^{m}\left(\frac{bxe^{i\pi}}{a},1,m+1\right)\ (m+1)}{a\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a),x)
```

```
[Out] m*x*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(m + 1)/(
a*gamma(m + 2)) + x*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1
)*gamma(m + 1)/(a*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^m/(b*x + a), x)
```

3.705 $\int \frac{x^m}{(a+bx)^2}\,dx$

Optimal. Leaf size=29

$$\frac{x^{m+1}\,{}_2F_1\left(2,m+1;m+2;-\frac{bx}{a}\right)}{a^2(m+1)}$$

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, -((b*x)/a)])/(a^2*(
1 + m))
```

Rubi [A] time = 0.0202472, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{x^{m+1}\,{}_2F_1\left(2,m+1;m+2;-\frac{bx}{a}\right)}{a^2(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/(a + b*x)^2,x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, -((b*x)/a)])/(a^2*(
1 + m))
```

Rubi in Sympy [A] time = 3.07959, size = 22, normalized size = 0.76

$$\frac{x^{m+1}{}_2F_1\left(\begin{matrix}2,m+1\\m+2\end{matrix}\middle|-\frac{bx}{a}\right)}{a^2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a)**2,x)
```

```
[Out] x**(m + 1)*hyper((2, m + 1), (m + 2,), -b*x/a)/(a**2*(m + 1))
```

Mathematica [A] time = 0.0190924, size = 29, normalized size = 1.

$$\frac{x^{m+1}\,{}_2F_1\left(2,m+1;m+2;-\frac{bx}{a}\right)}{a^2(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/(a + b*x)^2,x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, -((b*x)/a)])/(a^2*(
1 + m))
```

Maple [F] time = 0.048, size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a)^2,x)
```

```
[Out] int(x^m/(b*x+a)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] integrate(x^m/(b*x + a)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^m}{b^2x^2+2\,abx+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] integral(x^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

Sympy [A] time = 2.91052, size = 262, normalized size = 9.03

$$-\frac{am^2xx^m\left(\frac{bxe^{i\pi}}{a},1,m+1\right)\ (m+1)}{a^3\,(m+2)+a^2bx\,(m+2)}-\frac{amxx^m\left(\frac{bxe^{i\pi}}{a},1,m+1\right)\ (m+1)}{a^3\,(m+2)+a^2bx\,(m+2)}+\frac{amxx^m\,(m+1)}{a^3\,(m+2)+a^2bx\,(m+2)}+\frac{axx^m\,(m+1)}{a^3\,(m+2)+a^2bx\,(m+2)}-\frac{bm^2x^2x^m\left(\frac{bxe^{i\pi}}{a},1,m+1\right)\ (m+1)}{a^3\,(m+2)+a^2bx\,(m+2)}-\frac{bmx^2x^m\left(\frac{bxe^{i\pi}}{a},1,m+1\right)\ (m+1)}{a^3\,(m+2)+a^2bx\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a)**2,x)
```

```
[Out] -a*m**2*x*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(m
+ 1)/(a**3*gamma(m + 2) + a**2*b*x*gamma(m + 2)) - a*m*x*x**m*ler
chphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(m + 1)/(a**3*gamma(m
 + 2) + a**2*b*x*gamma(m + 2)) + a*m*x*x**m*gamma(m + 1)/(a**3*ga
mma(m + 2) + a**2*b*x*gamma(m + 2)) + a*x*x**m*gamma(m + 1)/(a**3
*gamma(m + 2) + a**2*b*x*gamma(m + 2)) - b*m**2*x**2*x**m*lerchph
i(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(m + 1)/(a**3*gamma(m + 2
) + a**2*b*x*gamma(m + 2)) - b*m*x**2*x**m*lerchphi(b*x*exp_polar
(I*pi)/a, 1, m + 1)*gamma(m + 1)/(a**3*gamma(m + 2) + a**2*b*x*ga
mma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] integrate(x^m/(b*x + a)^2, x)
```

3.706 $\int \frac{x^m}{(a+bx)^3}\,dx$

Optimal. Leaf size=29

$$\frac{x^{m+1}\,{}_2F_1\left(3,m+1;m+2;-\frac{bx}{a}\right)}{a^3(m+1)}$$

```
[Out] (x^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((b*x)/a)])/(a^3*(
1 + m))
```

Rubi [A] time = 0.0197503, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{x^{m+1}\,{}_2F_1\left(3,m+1;m+2;-\frac{bx}{a}\right)}{a^3(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/(a + b*x)^3,x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((b*x)/a)])/(a^3*(
1 + m))
```

Rubi in Sympy [A] time = 3.1199, size = 22, normalized size = 0.76

$$\frac{x^{m+1}{}_2F_1\left(\begin{matrix}3,m+1\\m+2\end{matrix}\middle|-\frac{bx}{a}\right)}{a^3\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a)**3,x)
```

```
[Out] x**(m + 1)*hyper((3, m + 1), (m + 2,), -b*x/a)/(a**3*(m + 1))
```

Mathematica [A] time = 0.0217755, size = 29, normalized size = 1.

$$\frac{x^{m+1}\,{}_2F_1\left(3,m+1;m+2;-\frac{bx}{a}\right)}{a^3(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/(a + b*x)^3,x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((b*x)/a)])/(a^3*(
1 + m))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a)^3,x)
```

```
[Out] int(x^m/(b*x+a)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] integrate(x^m/(b*x + a)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^m}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] integral(x^m/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

Sympy [A] time = 4.10526, size = 717, normalized size = 24.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a)**3,x)
```

```
[Out] a**2*m**3*x*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(
m + 1)/(2*a**5*gamma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b*
*2*x**2*gamma(m + 2)) - a**2*m**2*x*x**m*gamma(m + 1)/(2*a**5*gam
ma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b**2*x**2*gamma(m +
2)) - a**2*m*x*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gam
ma(m + 1)/(2*a**5*gamma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3
*b**2*x**2*gamma(m + 2)) + a**2*m*x*x**m*gamma(m + 1)/(2*a**5*gam
ma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b**2*x**2*gamma(m +
2)) + 2*a**2*x*x**m*gamma(m + 1)/(2*a**5*gamma(m + 2) + 4*a**4*b*
x*gamma(m + 2) + 2*a**3*b**2*x**2*gamma(m + 2)) + 2*a*b*m**3*x**2
*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(m + 1)/(2*a
**5*gamma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b**2*x**2*gam
ma(m + 2)) - a*b*m**2*x**2*x**m*gamma(m + 1)/(2*a**5*gamma(m + 2)
 + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b**2*x**2*gamma(m + 2)) - 2*a
*b*m*x**2*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*gamma(m
+ 1)/(2*a**5*gamma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b**2
*x**2*gamma(m + 2)) + a*b*x**2*x**m*gamma(m + 1)/(2*a**5*gamma(m
+ 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**3*b**2*x**2*gamma(m + 2)) +
 b**2*m**3*x**3*x**m*lerchphi(b*x*exp_polar(I*pi)/a, 1, m + 1)*ga
mma(m + 1)/(2*a**5*gamma(m + 2) + 4*a**4*b*x*gamma(m + 2) + 2*a**
3*b**2*x**2*gamma(m + 2)) - b**2*m*x**3*x**m*lerchphi(b*x*exp_pol
ar(I*pi)/a, 1, m + 1)*gamma(m + 1)/(2*a**5*gamma(m + 2) + 4*a**4*
b*x*gamma(m + 2) + 2*a**3*b**2*x**2*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] integrate(x^m/(b*x + a)^3, x)
```

3.707 $\int x^m(a+bx)^{5/2}\,dx$

Optimal. Leaf size=48

$$\frac{2x^m(a+bx)^{7/2}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{7}{2},-m;\frac{9}{2};\frac{bx}{a}+1\right)}{7b}$$

```
[Out] (2*x^m*(a + b*x)^(7/2)*Hypergeometric2F1[7/2, -m, 9/2, 1 + (b*x)/
a])/(7*b*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0399649, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2x^m(a+bx)^{7/2}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{7}{2},-m;\frac{9}{2};\frac{bx}{a}+1\right)}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^(5/2),x]
```

```
[Out] (2*x^m*(a + b*x)^(7/2)*Hypergeometric2F1[7/2, -m, 9/2, 1 + (b*x)/
a])/(7*b*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 5.94886, size = 37, normalized size = 0.77

$$\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}(a+bx)^{\frac{7}{2}}\,{}_2F_1\left(\begin{matrix}-m,\frac{7}{2}\\ \frac{9}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**(5/2),x)
```

```
[Out] 2*x**m*(-b*x/a)**(-m)*(a + b*x)**(7/2)*hyper((-m, 7/2), (9/2,), 1
 + b*x/a)/(7*b)
```

Mathematica [B] time = 0.148806, size = 125, normalized size = 2.6

$$\frac{x^{m+1}\sqrt{a+bx}\left(a^2\left(m^2+5m+6\right)\,{}_2F_1\left(-\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)+b(m+1)x\left(2a(m+3)\,{}_2F_1\left(-\frac{1}{2},m+2;m+3;-\frac{bx}{a}\right)+b(m+2\right.\right.}{(m+1)(m+2)(m+3)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^(5/2),x]
```

```
[Out] (x^(1 + m)*Sqrt[a + b*x]*(a^2*(6 + 5*m + m^2)*Hypergeometric2F1[-
1/2, 1 + m, 2 + m, -((b*x)/a)] + b*(1 + m)*x*(2*a*(3 + m)*Hyperge
ometric2F1[-1/2, 2 + m, 3 + m, -((b*x)/a)] + b*(2 + m)*x*Hypergeo
metric2F1[-1/2, 3 + m, 4 + m, -((b*x)/a)])))/((1 + m)*(2 + m)*(3
+ m)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int x^{m} \left(bx+a\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^(5/2),x)
```

```
[Out] int(x^m*(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{2}} x^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^m,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/2)*x^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(b^{2}x^{2}+2\,abx+a^{2}\right)\sqrt{bx+a}x^{m},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^m,x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*x^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{2}} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*x^m,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)*x^m, x)
```

3.708 $\int x^m(a+bx)^{3/2}\,dx$

Optimal. Leaf size=48

$$\frac{2x^m(a+bx)^{5/2}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{5}{2},-m;\frac{7}{2};\frac{bx}{a}+1\right)}{5b}$$

```
[Out] (2*x^m*(a + b*x)^(5/2)*Hypergeometric2F1[5/2, -m, 7/2, 1 + (b*x)/
a])/(5*b*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0388495, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2x^m(a+bx)^{5/2}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{5}{2},-m;\frac{7}{2};\frac{bx}{a}+1\right)}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^(3/2),x]
```

```
[Out] (2*x^m*(a + b*x)^(5/2)*Hypergeometric2F1[5/2, -m, 7/2, 1 + (b*x)/
a])/(5*b*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 6.11254, size = 37, normalized size = 0.77

$$\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}(a+bx)^{\frac{5}{2}}\,{}_2F_1\left(\begin{matrix}-m,\frac{5}{2}\\ \frac{7}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**(3/2),x)
```

```
[Out] 2*x**m*(-b*x/a)**(-m)*(a + b*x)**(5/2)*hyper((-m, 5/2), (7/2,), 1
 + b*x/a)/(5*b)
```

Mathematica [A] time = 0.0717578, size = 83, normalized size = 1.73

$$\frac{x^{m+1}\sqrt{a+bx}\left(a(m+2)\,{}_2F_1\left(-\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)+b(m+1)x\,{}_2F_1\left(-\frac{1}{2},m+2;m+3;-\frac{bx}{a}\right)\right)}{(m+1)(m+2)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^(3/2),x]
```

```
[Out] (x^(1 + m)*Sqrt[a + b*x]*(a*(2 + m)*Hypergeometric2F1[-1/2, 1 + m
, 2 + m, -((b*x)/a)] + b*(1 + m)*x*Hypergeometric2F1[-1/2, 2 + m,
 3 + m, -((b*x)/a)]))/((1 + m)*(2 + m)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int x^{m} (bx + a)^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^(3/2),x)
```

```
[Out] int(x^m*(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{\frac{3}{2}} x^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^m,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)*x^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx + a)^{\frac{3}{2}} x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^m,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)*x^m, x)
```

Sympy [A] time = 23.4338, size = 37, normalized size = 0.77

$$\frac{a^{\frac{3}{2}}xx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{2},m+1\\m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**(3/2),x)
```

```
[Out] a**(3/2)*x*x**m*gamma(m + 1)*hyper((-3/2, m + 1), (m + 2,), b*x*e
xp_polar(I*pi)/a)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}x^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*x^m,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)*x^m, x)
```

3.709 $\int x^m \sqrt{a+bx}\,dx$

Optimal. Leaf size=48

$$\frac{2x^m(a+bx)^{3/2}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{3}{2},-m;\frac{5}{2};\frac{bx}{a}+1\right)}{3b}$$

```
[Out] (2*x^m*(a + b*x)^(3/2)*Hypergeometric2F1[3/2, -m, 5/2, 1 + (b*x)/
a])/(3*b*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0379839, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2x^m(a+bx)^{3/2}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{3}{2},-m;\frac{5}{2};\frac{bx}{a}+1\right)}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*Sqrt[a + b*x],x]
```

```
[Out] (2*x^m*(a + b*x)^(3/2)*Hypergeometric2F1[3/2, -m, 5/2, 1 + (b*x)/
a])/(3*b*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 6.14811, size = 37, normalized size = 0.77

$$\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}(a+bx)^{\frac{3}{2}}{}_2F_1\left(\begin{matrix}-m,\frac{3}{2}\\ \frac{5}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**(1/2),x)
```

```
[Out] 2*x**m*(-b*x/a)**(-m)*(a + b*x)**(3/2)*hyper((-m, 3/2), (5/2,), 1
 + b*x/a)/(3*b)
```

Mathematica [A] time = 0.018694, size = 50, normalized size = 1.04

$$\frac{x^{m+1}\sqrt{a+bx}\,{}_2F_1\left(-\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)}{(m+1)\sqrt{\frac{a+bx}{a}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*Sqrt[a + b*x],x]
```

```
[Out] (x^(1 + m)*Sqrt[a + b*x]*Hypergeometric2F1[-1/2, 1 + m, 2 + m, -(
(b*x)/a)])/((1 + m)*Sqrt[(a + b*x)/a])
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int x^m \sqrt{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^(1/2),x)
```

```
[Out] int(x^m*(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^m,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)*x^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}x^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^m,x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)*x^m, x)
```

Sympy [A] time = 4.90698, size = 37, normalized size = 0.77

$$\frac{\sqrt{a}xx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**(1/2),x)
```

```
[Out] sqrt(a)*x*x**m*gamma(m + 1)*hyper((-1/2, m + 1), (m + 2,), b*x*ex
p_polar(I*pi)/a)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{bx+a}x^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*x^m,x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)*x^m, x)
```

3.710 $\int \frac{x^m}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=46

$$\frac{2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{bx}{a}+1\right)}{b}$$

```
[Out] (2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 + (b*x)/a]
)/(b*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0393016, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{bx}{a}+1\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/Sqrt[a + b*x],x]
```

```
[Out] (2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 + (b*x)/a]
)/(b*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 6.16761, size = 36, normalized size = 0.78

$$\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a)**(1/2),x)
```

```
[Out] 2*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m, 1/2), (3/2,), 1 +
b*x/a)/b
```

Mathematica [A] time = 0.0237293, size = 50, normalized size = 1.09

$$\frac{x^{m+1}\sqrt{\frac{a+bx}{a}}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)}{(m+1)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/Sqrt[a + b*x],x]
```

```
[Out] (x^(1 + m)*Sqrt[(a + b*x)/a]*Hypergeometric2F1[1/2, 1 + m, 2 + m,
 -((b*x)/a)])/((1 + m)*Sqrt[a + b*x])
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int x^{m} \frac{1}{\sqrt{bx+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a)^(1/2),x)
```

```
[Out] int(x^m/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{bx+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^m/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{m}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^m/sqrt(b*x + a), x)
```

Sympy [A] time = 4.18525, size = 36, normalized size = 0.78

$$\frac{xx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a)**(1/2),x)
```

```
[Out] x*x**m*gamma(m + 1)*hyper((1/2, m + 1), (m + 2,), b*x*exp_polar(I
*pi)/a)/(sqrt(a)*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^m/sqrt(b*x + a), x)
```

3.711 $\int \frac{x^m}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=46

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(-\frac{1}{2},-m;\frac{1}{2};\frac{bx}{a}+1\right)}{b\sqrt{a+bx}}$$

```
[Out] (-2*x^m*Hypergeometric2F1[-1/2, -m, 1/2, 1 + (b*x)/a])/(b*(-((b*x
)/a))^m*Sqrt[a + b*x])
```

Rubi [A] time = 0.0392248, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(-\frac{1}{2},-m;\frac{1}{2};\frac{bx}{a}+1\right)}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/(a + b*x)^(3/2),x]
```

```
[Out] (-2*x^m*Hypergeometric2F1[-1/2, -m, 1/2, 1 + (b*x)/a])/(b*(-((b*x
)/a))^m*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 5.97762, size = 39, normalized size = 0.85

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\begin{matrix}-m,-\frac{1}{2}\\ \frac{1}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{b\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a)**(3/2),x)
```

```
[Out] -2*x**m*(-b*x/a)**(-m)*hyper((-m, -1/2), (1/2,), 1 + b*x/a)/(b*sq
rt(a + b*x))
```

Mathematica [A] time = 0.034299, size = 53, normalized size = 1.15

$$\frac{x^{m+1}\sqrt{\frac{a+bx}{a}}\,{}_2F_1\left(\frac{3}{2},m+1;m+2;-\frac{bx}{a}\right)}{a(m+1)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/(a + b*x)^(3/2),x]
```

```
[Out] (x^(1 + m)*Sqrt[(a + b*x)/a]*Hypergeometric2F1[3/2, 1 + m, 2 + m,
 -((b*x)/a)])/(a*(1 + m)*Sqrt[a + b*x])
```

Maple [F] time = 0.026, size = 0, normalized size = 0.

$$\int x^{m} \left(bx + a\right)^{-\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a)^(3/2),x)
```

```
[Out] int(x^m/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\left(bx + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(x^m/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{m}}{\left(bx + a\right)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(x^m/(b*x + a)^(3/2), x)
```

Sympy [A] time = 6.79872, size = 36, normalized size = 0.78

$$\frac{xx^m (m+1)\, {}_2F_1\left(\begin{matrix} \frac{3}{2}, m+1 \\ m+2 \end{matrix}\middle| \frac{bxe^{i\pi}}{a}\right)}{a^{\frac{3}{2}} (m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a)**(3/2),x)
```

```
[Out] x*x**m*gamma(m + 1)*hyper((3/2, m + 1), (m + 2,), b*x*exp_polar(I
*pi)/a)/(a**(3/2)*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{(bx+a)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(x^m/(b*x + a)^(3/2), x)
```

3.712 $\int \frac{x^m}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=48

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(-\frac{3}{2},-m;-\frac{1}{2};\frac{bx}{a}+1\right)}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*x^m*Hypergeometric2F1[-3/2, -m, -1/2, 1 + (b*x)/a])/(3*b*(-((
b*x)/a))^m*(a + b*x)^(3/2))
```

Rubi [A] time = 0.0393541, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(-\frac{3}{2},-m;-\frac{1}{2};\frac{bx}{a}+1\right)}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/(a + b*x)^(5/2),x]
```

```
[Out] (-2*x^m*Hypergeometric2F1[-3/2, -m, -1/2, 1 + (b*x)/a])/(3*b*(-((
b*x)/a))^m*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 5.9227, size = 42, normalized size = 0.88

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\begin{matrix}-m,-\frac{3}{2}\\-\frac{1}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{3b\,(a+bx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a)**(5/2),x)
```

```
[Out] -2*x**m*(-b*x/a)**(-m)*hyper((-m, -3/2), (-1/2,), 1 + b*x/a)/(3*b
*(a + b*x)**(3/2))
```

Mathematica [A] time = 0.0331586, size = 53, normalized size = 1.1

$$\frac{x^{m+1}\sqrt{\frac{a+bx}{a}}\,{}_2F_1\left(\frac{5}{2},m+1;m+2;-\frac{bx}{a}\right)}{a^2(m+1)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/(a + b*x)^(5/2),x]
```

```
[Out] (x^(1 + m)*Sqrt[(a + b*x)/a]*Hypergeometric2F1[5/2, 1 + m, 2 + m,
 -((b*x)/a)])/(a^2*(1 + m)*Sqrt[a + b*x])
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int x^{m} \left(bx+a\right)^{-\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a)^(5/2),x)
```

```
[Out] int(x^m/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\left(bx+a\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(x^m/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^{m}}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(x^m/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)), x)
```

Sympy [A] time = 26.7361, size = 36, normalized size = 0.75

$$\frac{xx^{m}\left(m+1\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{5}{2},m+1\\m+2\end{matrix}\right|\frac{bxe^{i\pi}}{a}\right)}{a^{\frac{5}{2}}\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a)**(5/2),x)
```

```
[Out] x*x**m*gamma(m + 1)*hyper((5/2, m + 1), (m + 2,), b*x*exp_polar(I
*pi)/a)/(a**(5/2)*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\left(bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(x^m/(b*x + a)^(5/2), x)
```

3.713 $\int \frac{x^{2+m}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=51

$$\frac{2a^2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},-m-2;\frac{3}{2};\frac{bx}{a}+1\right)}{b^3}$$

```
[Out] (2*a^2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -2 - m, 3/2, 1 +
(b*x)/a])/(b^3*(-((b*x)/a))^m)
```

Rubi [A] time = 0.045348, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{2a^2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},-m-2;\frac{3}{2};\frac{bx}{a}+1\right)}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2 + m)/Sqrt[a + b*x],x]
```

```
[Out] (2*a^2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -2 - m, 3/2, 1 +
(b*x)/a])/(b^3*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 7.41242, size = 42, normalized size = 0.82

$$\frac{2a^2x^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m-2,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(2+m)/(b*x+a)**(1/2),x)
```

```
[Out] 2*a**2*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m - 2, 1/2), (3/
2,), 1 + b*x/a)/b**3
```

Mathematica [B] time = 0.127036, size = 109, normalized size = 2.14

$$\frac{x^{m+1}\sqrt{a+bx}\left(-a(m+2)\,{}_2F_1\left(-\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)+b(m+1)x\,{}_2F_1\left(-\frac{1}{2},m+2;m+3;-\frac{bx}{a}\right)+a(m+2)\,{}_2F_1\left(\frac{1}{2},m+1;m+\right.\right.}{b^2(m+1)(m+2)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2 + m)/Sqrt[a + b*x],x]
```

```
[Out] (x^(1 + m)*Sqrt[a + b*x]*(-(a*(2 + m)*Hypergeometric2F1[-1/2, 1 +
 m, 2 + m, -((b*x)/a)]) + b*(1 + m)*x*Hypergeometric2F1[-1/2, 2 +
 m, 3 + m, -((b*x)/a)] + a*(2 + m)*Hypergeometric2F1[1/2, 1 + m,
2 + m, -((b*x)/a)]))/(b^2*(1 + m)*(2 + m)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int x^{2+m}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(2+m)/(b*x+a)^(1/2),x)
```

```
[Out] int(x^(2+m)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m+2}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m + 2)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m + 2)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{m+2}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m + 2)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^(m + 2)/sqrt(b*x + a), x)
```

Sympy [A] time = 19.331, size = 37, normalized size = 0.73

$$\frac{x^3x^m\,(m+3)\,{}_2F_1\left(\begin{matrix}\frac{1}{2},m+3\\m+4\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\,(m+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(2+m)/(b*x+a)**(1/2),x)
```

```
[Out] x**3*x**m*gamma(m + 3)*hyper((1/2, m + 3), (m + 4,), b*x*exp_pola
r(I*pi)/a)/(sqrt(a)*gamma(m + 4))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m+2}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m + 2)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 2)/sqrt(b*x + a), x)
```

3.714 $\int \frac{x^{1+m}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=49

$$-\frac{2ax^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},-m-1;\frac{3}{2};\frac{bx}{a}+1\right)}{b^2}$$

```
[Out] (-2*a*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -1 - m, 3/2, 1 + (
b*x)/a])/(b^2*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0421082, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$-\frac{2ax^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},-m-1;\frac{3}{2};\frac{bx}{a}+1\right)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1 + m)/Sqrt[a + b*x],x]
```

```
[Out] (-2*a*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -1 - m, 3/2, 1 + (
b*x)/a])/(b^2*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 7.29981, size = 42, normalized size = 0.86

$$-\frac{2ax^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m-1,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1+m)/(b*x+a)**(1/2),x)
```

```
[Out] -2*a*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m - 1, 1/2), (3/2,
), 1 + b*x/a)/b**2
```

Mathematica [A] time = 0.0538295, size = 72, normalized size = 1.47

$$\frac{x^{m+1}\sqrt{a+bx}\left({}_2F_1\left(-\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)-{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)\right)}{b(m+1)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1 + m)/Sqrt[a + b*x],x]
```

```
[Out] (x^(1 + m)*Sqrt[a + b*x]*(Hypergeometric2F1[-1/2, 1 + m, 2 + m, -
((b*x)/a)] - Hypergeometric2F1[1/2, 1 + m, 2 + m, -((b*x)/a)]))/(
b*(1 + m)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int x^{1+m} \frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1+m)/(b*x+a)^(1/2),x)
```

```
[Out] int(x^(1+m)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m+1}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m + 1)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m + 1)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^{m+1}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m + 1)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^(m + 1)/sqrt(b*x + a), x)
```

Sympy [A] time = 10.1239, size = 37, normalized size = 0.76

$$\frac{x^2x^m\,(m+2)\,{}_2F_1\left(\left.\begin{matrix}\frac{1}{2},m+2\\m+3\end{matrix}\right|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\,(m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1+m)/(b*x+a)**(1/2),x)
```

```
[Out] x**2*x**m*gamma(m + 2)*hyper((1/2, m + 2), (m + 3,), b*x*exp_pola
r(I*pi)/a)/(sqrt(a)*gamma(m + 3))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m+1}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m + 1)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^(m + 1)/sqrt(b*x + a), x)
```

3.715 $\int \frac{x^m}{\sqrt{a+bx}} \, dx$

Optimal. Leaf size=46

$$\frac{2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{bx}{a}+1\right)}{b}$$

```
[Out] (2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 + (b*x)/a]
)/(b*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0396741, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{bx}{a}+1\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/Sqrt[a + b*x],x]
```

```
[Out] (2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 + (b*x)/a]
)/(b*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 6.01463, size = 36, normalized size = 0.78

$$\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\\frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(b*x+a)**(1/2),x)
```

```
[Out] 2*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m, 1/2), (3/2,), 1 +
b*x/a)/b
```

Mathematica [A] time = 0.00828212, size = 50, normalized size = 1.09

$$\frac{x^{m+1}\sqrt{\frac{a+bx}{a}}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)}{(m+1)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/Sqrt[a + b*x],x]
```

```
[Out] (x^(1 + m)*Sqrt[(a + b*x)/a]*Hypergeometric2F1[1/2, 1 + m, 2 + m,
 -((b*x)/a)])/((1 + m)*Sqrt[a + b*x])
```

Maple [F] time = 0., size = 0, normalized size = 0.

$$\int x^{m} \frac{1}{\sqrt{bx+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(b*x+a)^(1/2),x)
```

```
[Out] int(x^m/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{bx+a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^m/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{m}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^m/sqrt(b*x + a), x)
```

Sympy [A] time = 4.18694, size = 36, normalized size = 0.78

$$\frac{xx^m (m+1)\,{}_2F_1\left(\begin{matrix}\frac{1}{2}, m+1\\ m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(b*x+a)**(1/2),x)
```

```
[Out] x*x**m*gamma(m + 1)*hyper((1/2, m + 1), (m + 2,), b*x*exp_polar(I
*pi)/a)/(sqrt(a)*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^m/sqrt(b*x + a), x)
```

3.716 $\int \frac{x^{-1+m}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=48

$$-\frac{2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},1-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a}$$

```
[Out] (-2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, 1 - m, 3/2, 1 + (b*x
)/a])/(a*(-((b*x)/a))^m)
```

Rubi [A] time = 0.041306, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},1-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-1 + m)/Sqrt[a + b*x],x]
```

```
[Out] (-2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, 1 - m, 3/2, 1 + (b*x
)/a])/(a*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 7.70562, size = 37, normalized size = 0.77

$$-\frac{2x^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m+1,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-1+m)/(b*x+a)**(1/2),x)
```

```
[Out] -2*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m + 1, 1/2), (3/2,),
 1 + b*x/a)/a
```

Mathematica [A] time = 0.0727344, size = 79, normalized size = 1.65

$$\frac{x^m\sqrt{a+bx}\left(a(m+1)\,{}_2F_1\left(-\frac{1}{2},m;m+1;-\frac{bx}{a}\right)-bmx\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)\right)}{a^2m(m+1)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-1 + m)/Sqrt[a + b*x],x]
```

```
[Out] (x^m*Sqrt[a + b*x]*(a*(1 + m)*Hypergeometric2F1[-1/2, m, 1 + m, -
((b*x)/a)] - b*m*x*Hypergeometric2F1[1/2, 1 + m, 2 + m, -((b*x)/a
)]))/(a^2*m*(1 + m)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.024, size = 0, normalized size = 0.

$$\int x^{-1+m}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-1+m)/(b*x+a)^(1/2),x)
```

```
[Out] int(x^(-1+m)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m-1}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 1)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m - 1)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^{m-1}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 1)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^(m - 1)/sqrt(b*x + a), x)
```

Sympy [A] time = 22.9459, size = 31, normalized size = 0.65

$$\frac{x^m\,(m)\,{}_2F_1\left(\left.\begin{matrix}\frac{1}{2},m\\ m+1\end{matrix}\right|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-1+m)/(b*x+a)**(1/2),x)
```

```
[Out] x**m*gamma(m)*hyper((1/2, m), (m + 1,), b*x*exp_polar(I*pi)/a)/(s
qrt(a)*gamma(m + 1))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m-1}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 1)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 1)/sqrt(b*x + a), x)
```

3.717 $\int \frac{x^{-2+m}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=49

$$\frac{2bx^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},2-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a^2}$$

```
[Out] (2*b*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, 2 - m, 3/2, 1 + (b*
x)/a])/(a^2*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0446194, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{2bx^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},2-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-2 + m)/Sqrt[a + b*x],x]
```

```
[Out] (2*b*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, 2 - m, 3/2, 1 + (b*
x)/a])/(a^2*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 7.60031, size = 39, normalized size = 0.8

$$\frac{2bx^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m+2,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-2+m)/(b*x+a)**(1/2),x)
```

```
[Out] 2*b*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m + 2, 1/2), (3/2,)
, 1 + b*x/a)/a**2
```

Mathematica [B] time = 0.13131, size = 114, normalized size = 2.33

$$\frac{x^{m-1}\sqrt{a+bx}\left(a^2m(m+1)\,{}_2F_1\left(-\frac{1}{2},m-1;m;-\frac{bx}{a}\right)-b(m-1)x\left(a(m+1)\,{}_2F_1\left(-\frac{1}{2},m;m+1;-\frac{bx}{a}\right)-bmx\,{}_2F_1\left(\frac{1}{2},m+1;m\right.\right.\right.}{a^3m\left(m^2-1\right)\sqrt{\frac{bx}{a}+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-2 + m)/Sqrt[a + b*x],x]
```

```
[Out] (x^(-1 + m)*Sqrt[a + b*x]*(a^2*m*(1 + m)*Hypergeometric2F1[-1/2,
-1 + m, m, -((b*x)/a)] - b*(-1 + m)*x*(a*(1 + m)*Hypergeometric2F
1[-1/2, m, 1 + m, -((b*x)/a)] - b*m*x*Hypergeometric2F1[1/2, 1 +
m, 2 + m, -((b*x)/a)])))/(a^3*m*(-1 + m^2)*Sqrt[1 + (b*x)/a])
```

Maple [F] time = 0.03, size = 0, normalized size = 0.

$$\int x^{-2+m} \frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-2+m)/(b*x+a)^(1/2),x)
```

```
[Out] int(x^(-2+m)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m-2}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 2)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m - 2)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{m-2}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 2)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^(m - 2)/sqrt(b*x + a), x)
```

Sympy [A] time = 148.243, size = 32, normalized size = 0.65

$$\frac{x^m (m-1)\,{}_2F_1\left(\begin{matrix}\frac{1}{2}, m-1\\ m\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}x\,(m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-2+m)/(b*x+a)**(1/2),x)
```

```
[Out] x**m*gamma(m - 1)*hyper((1/2, m - 1), (m,), b*x*exp_polar(I*pi)/a
)/(sqrt(a)*x*gamma(m))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m-2}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 2)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 2)/sqrt(b*x + a), x)
```

3.718 $\int \frac{x^{-3+m}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=51

$$-\frac{2b^2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},3-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a^3}$$

```
[Out] (-2*b^2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, 3 - m, 3/2, 1 +
(b*x)/a])/(a^3*(-((b*x)/a))^m)
```

Rubi [A] time = 0.0458692, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2b^2x^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}\,{}_2F_1\left(\frac{1}{2},3-m;\frac{3}{2};\frac{bx}{a}+1\right)}{a^3}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-3 + m)/Sqrt[a + b*x],x]
```

```
[Out] (-2*b^2*x^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, 3 - m, 3/2, 1 +
(b*x)/a])/(a^3*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 8.37523, size = 42, normalized size = 0.82

$$-\frac{2b^2x^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m+3,\frac{1}{2}\\\frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-3+m)/(b*x+a)**(1/2),x)
```

```
[Out] -2*b**2*x**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m + 3, 1/2), (3
/2,), 1 + b*x/a)/a**3
```

Mathematica [B] time = 0.205362, size = 156, normalized size = 3.06

$$\frac{x^{m-2}\sqrt{\frac{bx}{a}+1}\left(a^3m\left(m^2-1\right)\,{}_2F_1\left(-\frac{1}{2},m-2;m-1;-\frac{bx}{a}\right)-b(m-2)x\left(a^2m(m+1)\,{}_2F_1\left(-\frac{1}{2},m-1;m;-\frac{bx}{a}\right)+b(m-1)x\right.\right.}{a^3(m-2)(m-1)m(m+1)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-3 + m)/Sqrt[a + b*x],x]
```

```
[Out] (x^(-2 + m)*Sqrt[1 + (b*x)/a]*(a^3*m*(-1 + m^2)*Hypergeometric2F1
[-1/2, -2 + m, -1 + m, -((b*x)/a)] - b*(-2 + m)*x*(a^2*m*(1 + m)*
Hypergeometric2F1[-1/2, -1 + m, m, -((b*x)/a)] + b*(-1 + m)*x*(-(
a*(1 + m)*Hypergeometric2F1[-1/2, m, 1 + m, -((b*x)/a)]) + b*m*x*
Hypergeometric2F1[1/2, 1 + m, 2 + m, -((b*x)/a)]))))/(a^3*(-2 + m
)*(-1 + m)*m*(1 + m)*Sqrt[a + b*x])
```

Maple [F] time = 0.03, size = 0, normalized size = 0.

$$\int x^{-3+m} \frac{1}{\sqrt{bx + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-3+m)/(b*x+a)^(1/2),x)
```

```
[Out] int(x^(-3+m)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m-3}}{\sqrt{bx + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 3)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^(m - 3)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{m-3}}{\sqrt{bx + a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 3)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^(m - 3)/sqrt(b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-3+m)/(b*x+a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m-3}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(m - 3)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^(m - 3)/sqrt(b*x + a), x)
```

3.719 $\int \frac{x^m}{\sqrt{2+3x}} \, dx$

Optimal. Leaf size=31

$$\frac{x^{m+1} \, {}_2F_1\left(\frac{1}{2}, m+1; m+2; -\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

```
[Out] (x^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (-3*x)/2])/(Sqrt[
2]*(1 + m))
```

Rubi [A] time = 0.0205387, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{x^{m+1} \, {}_2F_1\left(\frac{1}{2}, m+1; m+2; -\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/Sqrt[2 + 3*x],x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (-3*x)/2])/(Sqrt[
2]*(1 + m))
```

Rubi in Sympy [A] time = 2.64582, size = 27, normalized size = 0.87

$$\frac{\sqrt{2} x^{m+1} {}_2F_1\left(\begin{matrix} \frac{1}{2}, m+1 \\ m+2 \end{matrix}\middle| -\frac{3x}{2}\right)}{2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(2+3*x)**(1/2),x)
```

```
[Out] sqrt(2)*x**(m + 1)*hyper((1/2, m + 1), (m + 2,), -3*x/2)/(2*(m +
1))
```

Mathematica [A] time = 0.0221889, size = 50, normalized size = 1.61

$$\frac{2}{3}\sqrt{3x+2}\left(\frac{1}{2}(-3x-2)+1\right)^{-m} x^m \, {}_2F_1\left(\frac{1}{2}, -m; \frac{3}{2}; \frac{1}{2}(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/Sqrt[2 + 3*x],x]
```

```
[Out] (2*x^m*Sqrt[2 + 3*x]*Hypergeometric2F1[1/2, -m, 3/2, (2 + 3*x)/2]
)/(3*(1 + (-2 - 3*x)/2)^m)
```

Maple [A] time = 0.056, size = 29, normalized size = 0.9

$$\frac{x^{1+m}\sqrt{2}}{2+2\,m}\,{}_2F_1\left(\frac{1}{2},1+m;\,2+m;\,-\frac{3\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(2+3*x)^(1/2),x)
```

```
[Out] 1/2*x^(1+m)*hypergeom([1/2,1+m],[2+m],-3/2*x)/(1+m)*2^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{\sqrt{3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(3*x + 2),x, algorithm="maxima")
```

```
[Out] integrate(x^m/sqrt(3*x + 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^m}{\sqrt{3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(3*x + 2),x, algorithm="fricas")
```

```
[Out] integral(x^m/sqrt(3*x + 2), x)
```

Sympy [A] time = 3.28149, size = 37, normalized size = 1.19

$$\frac{\sqrt{2}xx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{3xe^{i\pi}}{2}\right)}{2\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(2+3*x)**(1/2),x)
```

```
[Out] sqrt(2)*x*x**m*gamma(m + 1)*hyper((1/2, m + 1), (m + 2,), 3*x*exp
_polar(I*pi)/2)/(2*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(3*x + 2),x, algorithm="giac")
```

```
[Out] integrate(x^m/sqrt(3*x + 2), x)
```

3.720 $\int \frac{x^m}{\sqrt{2-3x}}\,dx$

Optimal. Leaf size=31

$$\frac{x^{m+1}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

```
[Out] (x^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (3*x)/2])/(Sqrt[2
]*(1 + m))
```

Rubi [A] time = 0.017481, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{x^{m+1}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/Sqrt[2 - 3*x],x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (3*x)/2])/(Sqrt[2
]*(1 + m))
```

Rubi in Sympy [A] time = 2.60922, size = 26, normalized size = 0.84

$$\frac{\sqrt{2}x^{m+1}{}_2F_1\left(\begin{matrix}\frac{1}{2},m+1\\ m+2\end{matrix}\middle|\frac{3x}{2}\right)}{2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(2-3*x)**(1/2),x)
```

```
[Out] sqrt(2)*x**(m + 1)*hyper((1/2, m + 1), (m + 2,), 3*x/2)/(2*(m + 1
))
```

Mathematica [A] time = 0.0214933, size = 37, normalized size = 1.19

$$-\left(\frac{3}{2}\right)^{-m-1}\sqrt{2-3x}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/Sqrt[2 - 3*x],x]
```

```
[Out] -((3/2)^(-1 - m)*Sqrt[2 - 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1
- (3*x)/2])
```

Maple [A] time = 0.04, size = 29, normalized size = 0.9

$$\frac{x^{1+m}\sqrt{2}}{2+2m}\,{}_2F_1\left(\frac{1}{2},1+m;\,2+m;\,\frac{3x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(2-3*x)^(1/2),x)
```

```
[Out] 1/2*x^(1+m)*hypergeom([1/2,1+m],[2+m],3/2*x)/(1+m)*2^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{\sqrt{-3x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(-3*x + 2),x, algorithm="maxima")
```

```
[Out] integrate(x^m/sqrt(-3*x + 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^m}{\sqrt{-3x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(-3*x + 2),x, algorithm="fricas")
```

```
[Out] integral(x^m/sqrt(-3*x + 2), x)
```

Sympy [A] time = 3.33253, size = 46, normalized size = 1.48

$$-\frac{2\cdot 2^{m}\sqrt{3}\cdot 3^{-m}i\sqrt{x-\frac{2}{3}}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},-m\\ \frac{3}{2}\end{matrix}\middle|\frac{3\left(x-\frac{2}{3}\right)e^{i\pi}}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(2-3*x)**(1/2),x)
```

```
[Out] -2*2**m*sqrt(3)*3**(-m)*I*sqrt(x - 2/3)*hyper((1/2, -m), (3/2,),
3*(x - 2/3)*exp_polar(I*pi)/2)/3
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(-3*x + 2),x, algorithm="giac")
```

```
[Out] integrate(x^m/sqrt(-3*x + 2), x)
```

3.721 $\int \frac{x^m}{\sqrt{-2+3x}}\,dx$

Optimal. Leaf size=36

$$\left(\frac{3}{2}\right)^{-m-1}\sqrt{3x-2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

```
[Out] (3/2)^(-1 - m)*Sqrt[-2 + 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 -
 (3*x)/2]
```

Rubi [A] time = 0.0236413, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\left(\frac{3}{2}\right)^{-m-1}\sqrt{3x-2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/Sqrt[-2 + 3*x],x]
```

```
[Out] (3/2)^(-1 - m)*Sqrt[-2 + 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 -
 (3*x)/2]
```

Rubi in Sympy [A] time = 2.61238, size = 29, normalized size = 0.81

$$\frac{2\left(\frac{2}{3}\right)^m\sqrt{3x-2}\,{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|-\frac{3x}{2}+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(-2+3*x)**(1/2),x)
```

```
[Out] 2*(2/3)**m*sqrt(3*x - 2)*hyper((-m, 1/2), (3/2,), -3*x/2 + 1)/3
```

Mathematica [A] time = 0.0160436, size = 36, normalized size = 1.

$$\left(\frac{3}{2}\right)^{-m-1}\sqrt{3x-2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/Sqrt[-2 + 3*x],x]
```

```
[Out] (3/2)^(-1 - m)*Sqrt[-2 + 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 -
 (3*x)/2]
```

Maple [C] time = 0.075, size = 43, normalized size = 1.2

$$\frac{\sqrt{2}x^{1+m}}{2+2\,m}\sqrt{-signum\left(x-\frac{2}{3}\right)}\,{}_2F_1(\frac{1}{2},1+m;\,2+m;\,\frac{3\,x}{2})\frac{1}{\sqrt{signum\left(x-\frac{2}{3}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(-2+3*x)^(1/2),x)
```

```
[Out] 1/2*2^(1/2)/signum(x-2/3)^(1/2)*(-signum(x-2/3))^(1/2)/(1+m)*x^(1
+m)*hypergeom([1/2,1+m],[2+m],3/2*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{\sqrt{3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(3*x - 2),x, algorithm="maxima")
```

```
[Out] integrate(x^m/sqrt(3*x - 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^m}{\sqrt{3\,x-2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(3*x - 2),x, algorithm="fricas")
```

```
[Out] integral(x^m/sqrt(3*x - 2), x)
```

Sympy [A] time = 3.33074, size = 36, normalized size = 1.

$$-\frac{\sqrt{2}ixx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{3x}{2}\right)}{2\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(-2+3*x)**(1/2),x)
```

```
[Out] -sqrt(2)*I*x*x**m*gamma(m + 1)*hyper((1/2, m + 1), (m + 2,), 3*x/
2)/(2*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(3*x - 2),x, algorithm="giac")
```

```
[Out] integrate(x^m/sqrt(3*x - 2), x)
```

3.722 $\int \frac{x^m}{\sqrt{-2-3x}}\,dx$

Optimal. Leaf size=50

$$-2^{m+1}3^{-m-1}\sqrt{-3x-2}(-x)^{-m}x^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{3x}{2}+1\right)$$

```
[Out] -((2^(1 + m)*3^(-1 - m)*Sqrt[-2 - 3*x]*x^m*Hypergeometric2F1[1/2,
 -m, 3/2, 1 + (3*x)/2])/(-x)^m)
```

Rubi [A] time = 0.0341291, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$

$$-2^{m+1}3^{-m-1}\sqrt{-3x-2}(-x)^{-m}x^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{3x}{2}+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x^m/Sqrt[-2 - 3*x],x]
```

```
[Out] -((2^(1 + m)*3^(-1 - m)*Sqrt[-2 - 3*x]*x^m*Hypergeometric2F1[1/2,
 -m, 3/2, 1 + (3*x)/2])/(-x)^m)
```

Rubi in Sympy [A] time = 3.58561, size = 41, normalized size = 0.82

$$-\frac{2x^m\left(-\frac{3x}{2}\right)^{-m}\sqrt{-3x-2}\,{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\\frac{3}{2}\end{matrix}\middle|\frac{3x}{2}+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m/(-2-3*x)**(1/2),x)
```

```
[Out] -2*x**m*(-3*x/2)**(-m)*sqrt(-3*x - 2)*hyper((-m, 1/2), (3/2,), 3*
x/2 + 1)/3
```

Mathematica [A] time = 0.019254, size = 50, normalized size = 1.

$$-\frac{2}{3}\sqrt{-3x-2}\left(\frac{1}{2}(-3x-2)+1\right)^{-m}x^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{1}{2}(3x+2)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m/Sqrt[-2 - 3*x],x]
```

```
[Out] (-2*Sqrt[-2 - 3*x]*x^m*Hypergeometric2F1[1/2, -m, 3/2, (2 + 3*x)/
2])/(3*(1 + (-2 - 3*x)/2)^m)
```

Maple [C] time = 0.026, size = 30, normalized size = 0.6

$$\frac{-\frac{i}{2}x^{1+m}\sqrt{2}}{1+m}{}_2F_1\left(\frac{1}{2}, 1+m; 2+m; -\frac{3x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m/(-2-3*x)^(1/2),x)
```

```
[Out] -1/2*I*x^(1+m)*hypergeom([1/2,1+m],[2+m],-3/2*x)/(1+m)*2^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^m}{\sqrt{-3x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(-3*x - 2),x, algorithm="maxima")
```

```
[Out] integrate(x^m/sqrt(-3*x - 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^m}{\sqrt{-3x-2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(-3*x - 2),x, algorithm="fricas")
```

```
[Out] integral(x^m/sqrt(-3*x - 2), x)
```

Sympy [A] time = 3.30291, size = 41, normalized size = 0.82

$$-\frac{\sqrt{2}ixx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{3xe^{i\pi}}{2}\right)}{2\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m/(-2-3*x)**(1/2),x)
```

```
[Out] -sqrt(2)*I*x*x**m*gamma(m + 1)*hyper((1/2, m + 1), (m + 2,), 3*x*
exp_polar(I*pi)/2)/(2*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{m}}{\sqrt{-3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^m/sqrt(-3*x - 2),x, algorithm="giac")
```

```
[Out] integrate(x^m/sqrt(-3*x - 2), x)
```

3.723 $\int \frac{(-x)^m}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=48

$$\frac{2(-x)^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{bx}{a}+1\right)}{b}$$

```
[Out] (2*(-x)^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 + (b*x)
/a])/(b*(-((b*x)/a))^m)
```

Rubi [A] time = 0.04121, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{2(-x)^m\sqrt{a+bx}\left(-\frac{bx}{a}\right)^{-m}{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{bx}{a}+1\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(-x)^m/Sqrt[a + b*x],x]
```

```
[Out] (2*(-x)^m*Sqrt[a + b*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 + (b*x)
/a])/(b*(-((b*x)/a))^m)
```

Rubi in Sympy [A] time = 6.08744, size = 37, normalized size = 0.77

$$\frac{2\left(-x\right)^m\left(-\frac{bx}{a}\right)^{-m}\sqrt{a+bx}\,{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|1+\frac{bx}{a}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-x)**m/(b*x+a)**(1/2),x)
```

```
[Out] 2*(-x)**m*(-b*x/a)**(-m)*sqrt(a + b*x)*hyper((-m, 1/2), (3/2,), 1
 + b*x/a)/b
```

Mathematica [A] time = 0.0263759, size = 51, normalized size = 1.06

$$\frac{x(-x)^m\sqrt{\frac{a+bx}{a}}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{bx}{a}\right)}{(m+1)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-x)^m/Sqrt[a + b*x],x]
```

```
[Out] ((-x)^m*x*Sqrt[(a + b*x)/a]*Hypergeometric2F1[1/2, 1 + m, 2 + m,
-((b*x)/a)])/((1 + m)*Sqrt[a + b*x])
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int (-x)^m \frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-x)^m/(b*x+a)^(1/2),x)
```

```
[Out] int((-x)^m/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^m}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((-x)^m/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(-x)^m}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((-x)^m/sqrt(b*x + a), x)
```

Sympy [A] time = 4.10895, size = 42, normalized size = 0.88

$$\frac{xx^m e^{i\pi m}\,(m+1)\,{}_2F_1\left(\begin{matrix}\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{\sqrt{a}\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)**m/(b*x+a)**(1/2),x)
```

```
[Out] x*x**m*exp(I*pi*m)*gamma(m + 1)*hyper((1/2, m + 1), (m + 2,), b*x
*exp_polar(I*pi)/a)/(sqrt(a)*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^m}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((-x)^m/sqrt(b*x + a), x)
```

3.724 $\int \frac{(-x)^m}{\sqrt{2+3x}}\,dx$

Optimal. Leaf size=34

$$-\frac{(-x)^{m+1}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

```
[Out] -(((-x)^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (-3*x)/2])/(
Sqrt[2]*(1 + m)))
```

Rubi [A] time = 0.0209125, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(-x)^{m+1}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;-\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(-x)^m/Sqrt[2 + 3*x],x]
```

```
[Out] -(((-x)^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (-3*x)/2])/(
Sqrt[2]*(1 + m)))
```

Rubi in Sympy [A] time = 2.82217, size = 31, normalized size = 0.91

$$-\frac{\sqrt{2}\,(-x)^{m+1}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},m+1\\ m+2\end{matrix}\middle|-\frac{3x}{2}\right)}{2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-x)**m/(2+3*x)**(1/2),x)
```

```
[Out] -sqrt(2)*(-x)**(m + 1)*hyper((1/2, m + 1), (m + 2,), -3*x/2)/(2*(
m + 1))
```

Mathematica [A] time = 0.0149829, size = 36, normalized size = 1.06

$$\left(\frac{3}{2}\right)^{-m-1}\sqrt{3x+2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{3x}{2}+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-x)^m/Sqrt[2 + 3*x],x]
```

```
[Out] (3/2)^(-1 - m)*Sqrt[2 + 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1 +
(3*x)/2]
```

Maple [A] time = 0.026, size = 30, normalized size = 0.9

$$\frac{\sqrt{2}\,(-x)^{m}\,x}{2+2\,m}\,{}_{2}\mathrm{F}_{1}(\frac{1}{2},1+m;\;2+m;\;-\frac{3\,x}{2})$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-x)^m/(2+3*x)^(1/2),x)
```

```
[Out] 1/2*2^(1/2)*(-x)^m/(1+m)*x*hypergeom([1/2,1+m],[2+m],-3/2*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^{m}}{\sqrt{3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(3*x + 2),x, algorithm="maxima")
```

```
[Out] integrate((-x)^m/sqrt(3*x + 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(-x)^{m}}{\sqrt{3\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(3*x + 2),x, algorithm="fricas")
```

```
[Out] integral((-x)^m/sqrt(3*x + 2), x)
```

Sympy [A] time = 3.25599, size = 44, normalized size = 1.29

$$\frac{2 \cdot 2^{m}\sqrt{3} \cdot 3^{-m}\sqrt{x+\frac{2}{3}}\,{}_{2}F_{1}\left(\begin{matrix}\frac{1}{2}, -m \\ \frac{3}{2}\end{matrix}\middle| \frac{3\left(x+\frac{2}{3}\right)e^{2i\pi}}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)**m/(2+3*x)**(1/2),x)
```

```
[Out] 2*2**m*sqrt(3)*3**(-m)*sqrt(x + 2/3)*hyper((1/2, -m), (3/2,), 3*(
x + 2/3)*exp_polar(2*I*pi)/2)/3
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^{m}}{\sqrt{3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(3*x + 2),x, algorithm="giac")
```

```
[Out] integrate((-x)^m/sqrt(3*x + 2), x)
```

3.725 $\int \frac{(-x)^m}{\sqrt{2-3x}}\,dx$

Optimal. Leaf size=34

$$-\frac{(-x)^{m+1}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

```
[Out] -(((-x)^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (3*x)/2])/(S
qrt[2]*(1 + m)))
```

Rubi [A] time = 0.0208373, antiderivative size = 34, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{(-x)^{m+1}\,{}_2F_1\left(\frac{1}{2},m+1;m+2;\frac{3x}{2}\right)}{\sqrt{2}(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(-x)^m/Sqrt[2 - 3*x],x]
```

```
[Out] -(((-x)^(1 + m)*Hypergeometric2F1[1/2, 1 + m, 2 + m, (3*x)/2])/(S
qrt[2]*(1 + m)))
```

Rubi in Sympy [A] time = 2.8269, size = 29, normalized size = 0.85

$$-\frac{\sqrt{2}\,(-x)^{m+1}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},m+1\\ m+2\end{matrix}\middle|\frac{3x}{2}\right)}{2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-x)**m/(2-3*x)**(1/2),x)
```

```
[Out] -sqrt(2)*(-x)**(m + 1)*hyper((1/2, m + 1), (m + 2,), 3*x/2)/(2*(m
 + 1))
```

Mathematica [A] time = 0.0204703, size = 52, normalized size = 1.53

$$-\frac{2}{3}\sqrt{2-3x}(-x)^m\left(\frac{1}{2}(3x-2)+1\right)^{-m}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{1}{2}(2-3x)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-x)^m/Sqrt[2 - 3*x],x]
```

```
[Out] (-2*Sqrt[2 - 3*x]*(-x)^m*Hypergeometric2F1[1/2, -m, 3/2, (2 - 3*x
)/2])/(3*(1 + (-2 + 3*x)/2)^m)
```

Maple [A] time = 0.033, size = 30, normalized size = 0.9

$$\frac{\sqrt{2}\,(-x)^{m}\,x}{2+2\,m}\,{}_2F_1(\frac{1}{2},\,1+m;\,2+m;\,\frac{3\,x}{2})$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-x)^m/(2-3*x)^(1/2),x)
```

```
[Out] 1/2*2^(1/2)*(-x)^m/(1+m)*x*hypergeom([1/2,1+m],[2+m],3/2*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^{m}}{\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(-3*x + 2),x, algorithm="maxima")
```

```
[Out] integrate((-x)^m/sqrt(-3*x + 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(-x)^{m}}{\sqrt{-3\,x+2}},\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(-3*x + 2),x, algorithm="fricas")
```

```
[Out] integral((-x)^m/sqrt(-3*x + 2), x)
```

Sympy [A] time = 3.41472, size = 53, normalized size = 1.56

$$-\frac{2\cdot 2^{m}\sqrt{3}\cdot 3^{-m}i\sqrt{x-\frac{2}{3}}e^{i\pi m}{}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},-m\\ \frac{3}{2}\end{matrix}\middle|\frac{3\left(x-\frac{2}{3}\right)e^{i\pi}}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)**m/(2-3*x)**(1/2),x)
```

```
[Out] -2*2**m*sqrt(3)*3**(-m)*I*sqrt(x - 2/3)*exp(I*pi*m)*hyper((1/2, -
m), (3/2,), 3*(x - 2/3)*exp_polar(I*pi)/2)/3
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-x)^{m}}{\sqrt{-3\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(-3*x + 2),x, algorithm="giac")
```

```
[Out] integrate((-x)^m/sqrt(-3*x + 2), x)
```

3.726 $\int \frac{(-x)^m}{\sqrt{-2+3x}}\,dx$

Optimal. Leaf size=49

$$2^{m+1}3^{-m-1}\sqrt{3x-2}(-x)^m x^{-m}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

```
[Out] (2^(1 + m)*3^(-1 - m)*(-x)^m*Sqrt[-2 + 3*x]*Hypergeometric2F1[1/2
, -m, 3/2, 1 - (3*x)/2])/x^m
```

Rubi [A] time = 0.0332155, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$2^{m+1}3^{-m-1}\sqrt{3x-2}(-x)^m x^{-m}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(-x)^m/Sqrt[-2 + 3*x],x]
```

```
[Out] (2^(1 + m)*3^(-1 - m)*(-x)^m*Sqrt[-2 + 3*x]*Hypergeometric2F1[1/2
, -m, 3/2, 1 - (3*x)/2])/x^m
```

Rubi in Sympy [A] time = 3.72673, size = 37, normalized size = 0.76

$$\frac{2\left(-x\right)^{m}\left(\frac{3x}{2}\right)^{-m}\sqrt{3x-2}\,{}_{2}F_{1}\left(\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|-\frac{3x}{2}+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-x)**m/(-2+3*x)**(1/2),x)
```

```
[Out] 2*(-x)**m*(3*x/2)**(-m)*sqrt(3*x - 2)*hyper((-m, 1/2), (3/2,), -3
*x/2 + 1)/3
```

Mathematica [A] time = 0.0165527, size = 49, normalized size = 1.

$$2^{m+1}3^{-m-1}\sqrt{3x-2}(-x)^m x^{-m}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};1-\frac{3x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-x)^m/Sqrt[-2 + 3*x],x]
```

```
[Out] (2^(1 + m)*3^(-1 - m)*(-x)^m*Sqrt[-2 + 3*x]*Hypergeometric2F1[1/2
, -m, 3/2, 1 - (3*x)/2])/x^m
```

Maple [C] time = 0.047, size = 44, normalized size = 0.9

$$\frac{\sqrt{2}\,(-x)^{m}\,x}{2+2\,m}\sqrt{-\mathit{signum}\left(x-\frac{2}{3}\right)}\,{}_2\mathrm{F}_1\!\left(\frac{1}{2},1+m;\;2+m;\;\frac{3\,x}{2}\right)\frac{1}{\sqrt{\mathit{signum}\left(x-\frac{2}{3}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-x)^m/(-2+3*x)^(1/2),x)
```

```
[Out] 1/2*2^(1/2)*(-x)^m/signum(x-2/3)^(1/2)*(-signum(x-2/3))^(1/2)/(1+
m)*x*hypergeom([1/2,1+m],[2+m],3/2*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^{m}}{\sqrt{3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(3*x - 2),x, algorithm="maxima")
```

```
[Out] integrate((-x)^m/sqrt(3*x - 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(-x)^{m}}{\sqrt{3\,x-2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(3*x - 2),x, algorithm="fricas")
```

```
[Out] integral((-x)^m/sqrt(3*x - 2), x)
```

Sympy [A] time = 3.45889, size = 42, normalized size = 0.86

$$-\frac{\sqrt{2}ixx^{m}e^{i\pi m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},m+1\\m+2\end{matrix}\middle|\frac{3x}{2}\right)}{2\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)**m/(-2+3*x)**(1/2),x)
```

```
[Out] -sqrt(2)*I*x*x**m*exp(I*pi*m)*gamma(m + 1)*hyper((1/2, m + 1), (m
 + 2,), 3*x/2)/(2*gamma(m + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^{m}}{\sqrt{3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(3*x - 2),x, algorithm="giac")
```

```
[Out] integrate((-x)^m/sqrt(3*x - 2), x)
```

3.727 $\int \frac{(-x)^m}{\sqrt{-2-3x}}\,dx$

Optimal. Leaf size=37

$$-\left(\frac{3}{2}\right)^{-m-1}\sqrt{-3x-2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{3x}{2}+1\right)$$

```
[Out] -((3/2)^(-1 - m)*Sqrt[-2 - 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1
 + (3*x)/2])
```

Rubi [A] time = 0.0188044, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\left(\frac{3}{2}\right)^{-m-1}\sqrt{-3x-2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{3x}{2}+1\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(-x)^m/Sqrt[-2 - 3*x],x]
```

```
[Out] -((3/2)^(-1 - m)*Sqrt[-2 - 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1
 + (3*x)/2])
```

Rubi in Sympy [A] time = 2.70601, size = 32, normalized size = 0.86

$$-\frac{2\left(\frac{2}{3}\right)^{m}\sqrt{-3x-2}\,{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|\frac{3x}{2}+1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-x)**m/(-2-3*x)**(1/2),x)
```

```
[Out] -2*(2/3)**m*sqrt(-3*x - 2)*hyper((-m, 1/2), (3/2,), 3*x/2 + 1)/3
```

Mathematica [A] time = 0.0154913, size = 37, normalized size = 1.

$$-\left(\frac{3}{2}\right)^{-m-1}\sqrt{-3x-2}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{3x}{2}+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-x)^m/Sqrt[-2 - 3*x],x]
```

```
[Out] -((3/2)^(-1 - m)*Sqrt[-2 - 3*x]*Hypergeometric2F1[1/2, -m, 3/2, 1
 + (3*x)/2])
```

Maple [C] time = 0.023, size = 31, normalized size = 0.8

$$\frac{-\frac{i}{2}\sqrt{2}\,(-x)^{m}\,x}{1+m}\,{}_2F_1\!\left(\frac{1}{2},1+m;\,2+m;\,-\frac{3\,x}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-x)^m/(-2-3*x)^(1/2),x)
```

```
[Out] -1/2*I*2^(1/2)*(-x)^m/(1+m)*x*hypergeom([1/2,1+m],[2+m],-3/2*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^{m}}{\sqrt{-3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(-3*x - 2),x, algorithm="maxima")
```

```
[Out] integrate((-x)^m/sqrt(-3*x - 2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(-x)^{m}}{\sqrt{-3\,x-2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(-3*x - 2),x, algorithm="fricas")
```

```
[Out] integral((-x)^m/sqrt(-3*x - 2), x)
```

Sympy [A] time = 3.40121, size = 48, normalized size = 1.3

$$-\frac{2\cdot 2^m\sqrt{3}\cdot 3^{-m}i\sqrt{x+\frac{2}{3}}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},-m\\ \frac{3}{2}\end{matrix}\middle|\frac{3\left(x+\frac{2}{3}\right)e^{2i\pi}}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)**m/(-2-3*x)**(1/2),x)
```

```
[Out] -2*2**m*sqrt(3)*3**(-m)*I*sqrt(x + 2/3)*hyper((1/2, -m), (3/2,),
3*(x + 2/3)*exp_polar(2*I*pi)/2)/3
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x)^m}{\sqrt{-3\,x-2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x)^m/sqrt(-3*x - 2),x, algorithm="giac")
```

```
[Out] integrate((-x)^m/sqrt(-3*x - 2), x)
```

3.728 $\int \frac{x^n}{\sqrt{1-x}}\,dx$

Optimal. Leaf size=26

$$-2\sqrt{1-x}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};1-x\right)$$

```
[Out] -2*Sqrt[1 - x]*Hypergeometric2F1[1/2, -n, 3/2, 1 - x]
```

Rubi [A] time = 0.0166743, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-2\sqrt{1-x}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};1-x\right)$$

Antiderivative was successfully verified.

```
[In]  Int[x^n/Sqrt[1 - x],x]
```

```
[Out] -2*Sqrt[1 - x]*Hypergeometric2F1[1/2, -n, 3/2, 1 - x]
```

Rubi in Sympy [A] time = 2.4398, size = 19, normalized size = 0.73

$$-2\sqrt{-x+1}\,{}_2F_1\left(\begin{matrix} -n, \frac{1}{2} \\ \frac{3}{2} \end{matrix}\middle| -x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**n/(1-x)**(1/2),x)
```

```
[Out] -2*sqrt(-x + 1)*hyper((-n, 1/2), (3/2,), -x + 1)
```

Mathematica [A] time = 0.0118179, size = 26, normalized size = 1.

$$-2\sqrt{1-x}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};1-x\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^n/Sqrt[1 - x],x]
```

```
[Out] -2*Sqrt[1 - x]*Hypergeometric2F1[1/2, -n, 3/2, 1 - x]
```

Maple [A] time = 0.043, size = 23, normalized size = 0.9

$$\frac{x^{1+n}}{1+n} {}_2\mathrm{F}_1(\frac{1}{2}, 1+n;\ 2+n;\ x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^n/(1-x)^(1/2),x)
```

```
[Out] 1/(1+n)*x^(1+n)*hypergeom([1/2,1+n],[2+n],x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^n}{\sqrt{-x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] integrate(x^n/sqrt(-x + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^n}{\sqrt{-x+1}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] integral(x^n/sqrt(-x + 1), x)
```

Sympy [A] time = 3.17132, size = 26, normalized size = 1.

$$-2i\sqrt{x-1}\,{}_2F_1\left(\begin{matrix} \frac{1}{2}, -n \\ \frac{3}{2} \end{matrix}\middle| (x-1)\,e^{i\pi}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**n/(1-x)**(1/2),x)
```

```
[Out] -2*I*sqrt(x - 1)*hyper((1/2, -n), (3/2,), (x - 1)*exp_polar(I*pi)
)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^n}{\sqrt{-x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] integrate(x^n/sqrt(-x + 1), x)
```

3.729 $\int \frac{x^n}{\sqrt{a-ax}}\,dx$

Optimal. Leaf size=30

$$-\frac{2\sqrt{a-ax}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};1-x\right)}{a}$$

```
[Out] (-2*Sqrt[a - a*x]*Hypergeometric2F1[1/2, -n, 3/2, 1 - x])/a
```

Rubi [A] time = 0.0209464, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071

$$-\frac{2\sqrt{a-ax}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};1-x\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[x^n/Sqrt[a - a*x],x]
```

```
[Out] (-2*Sqrt[a - a*x]*Hypergeometric2F1[1/2, -n, 3/2, 1 - x])/a
```

Rubi in Sympy [A] time = 3.06873, size = 22, normalized size = 0.73

$$-\frac{2\sqrt{-ax+a}\,{}_2F_1\left(\begin{matrix}-n,\frac{1}{2}\\\frac{3}{2}\end{matrix}\middle|-x+1\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**n/(-a*x+a)**(1/2),x)
```

```
[Out] -2*sqrt(-a*x + a)*hyper((-n, 1/2), (3/2,), -x + 1)/a
```

Mathematica [A] time = 0.0231201, size = 30, normalized size = 1.

$$-\frac{2\sqrt{a-ax}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};1-x\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^n/Sqrt[a - a*x],x]
```

```
[Out] (-2*Sqrt[a - a*x]*Hypergeometric2F1[1/2, -n, 3/2, 1 - x])/a
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int x^n \frac{1}{\sqrt{-ax+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^n/(-a*x+a)^(1/2),x)
```

```
[Out] int(x^n/(-a*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^n}{\sqrt{-ax+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/sqrt(-a*x + a),x, algorithm="maxima")
```

```
[Out] integrate(x^n/sqrt(-a*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{x^n}{\sqrt{-ax+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/sqrt(-a*x + a),x, algorithm="fricas")
```

```
[Out] integral(x^n/sqrt(-a*x + a), x)
```

Sympy [A] time = 3.33139, size = 31, normalized size = 1.03

$$-\frac{2i\sqrt{x-1}\,{}_{2}F_{1}\left(\begin{matrix}\frac{1}{2}, -n \\ \frac{3}{2}\end{matrix}\middle| (x-1)\,e^{i\pi}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**n/(-a*x+a)**(1/2),x)
```

```
[Out] -2*I*sqrt(x - 1)*hyper((1/2, -n), (3/2,), (x - 1)*exp_polar(I*pi)
)/sqrt(a)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^n}{\sqrt{-ax+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/sqrt(-a*x + a),x, algorithm="giac")
```

```
[Out] integrate(x^n/sqrt(-a*x + a), x)
```

3.730 $\int x^m (a+bx)^n \, dx$

Optimal. Leaf size=47

$$\frac{x^{m+1}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{bx}{a}\right)}{m+1}$$

```
[Out] (x^(1 + m)*(a + b*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((b*x
)/a)])/((1 + m)*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0333883, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$\frac{x^{m+1}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{bx}{a}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(a + b*x)^n,x]
```

```
[Out] (x^(1 + m)*(a + b*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((b*x
)/a)])/((1 + m)*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 5.91468, size = 36, normalized size = 0.77

$$\frac{x^{m+1}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n {}_2F_1\left(\begin{matrix} -n, m+1 \\ m+2 \end{matrix}\middle| -\frac{bx}{a}\right)}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(b*x+a)**n,x)
```

```
[Out] x**(m + 1)*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, m + 1), (m +
 2,), -b*x/a)/(m + 1)
```

Mathematica [A] time = 0.0423101, size = 47, normalized size = 1.

$$\frac{x^{m+1}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{bx}{a}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(a + b*x)^n,x]
```

```
[Out] (x^(1 + m)*(a + b*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((b*x
)/a)])/((1 + m)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.146, size = 0, normalized size = 0.

$$\int x^{m} (bx + a)^{n} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(b*x+a)^n,x)
```

```
[Out] int(x^m*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{n} x^{m} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^m,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx + a)^{n} x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^m,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*x^m, x)
```

Sympy [A] time = 10.0083, size = 34, normalized size = 0.72

$$\frac{a^{n}xx^{m}\left(m+1\right){}_{2}F_{1}\left(\begin{matrix}-n,m+1\\m+2\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(b*x+a)**n,x)
```

```
[Out] a**n*x*x**m*gamma(m + 1)*hyper((-n, m + 1), (m + 2,), b*x*exp_pol
ar(I*pi)/a)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n}x^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^m,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^m, x)
```

3.731 $\int (cx)^m (a+bx)^n \, dx$

Optimal. Leaf size=52

$$\frac{(cx)^{m+1}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{bx}{a}\right)}{c(m+1)}$$

```
[Out] ((c*x)^(1 + m)*(a + b*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -(
(b*x)/a)])/(c*(1 + m)*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0411034, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{(cx)^{m+1}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{bx}{a}\right)}{c(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x)^m*(a + b*x)^n,x]
```

```
[Out] ((c*x)^(1 + m)*(a + b*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -(
(b*x)/a)])/(c*(1 + m)*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 6.92345, size = 39, normalized size = 0.75

$$\frac{(cx)^{m+1} \left(1+\frac{bx}{a}\right)^{-n} (a+bx)^n {}_2F_1\left(\begin{matrix} -n, m+1 \\ m+2 \end{matrix}\middle| -\frac{bx}{a}\right)}{c\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x)**m*(b*x+a)**n,x)
```

```
[Out] (c*x)**(m + 1)*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, m + 1),
(m + 2,), -b*x/a)/(c*(m + 1))
```

Mathematica [A] time = 0.0296829, size = 48, normalized size = 0.92

$$\frac{x(cx)^m(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+1,-n;m+2;-\frac{bx}{a}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x)^m*(a + b*x)^n,x]
```

```
[Out] (x*(c*x)^m*(a + b*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((b*x
)/a)])/((1 + m)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.114, size = 0, normalized size = 0.

$$\int (cx)^m (bx + a)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x)^m*(b*x+a)^n,x)
```

```
[Out] int((c*x)^m*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^n (cx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(c*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(c*x)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx + a)^n (cx)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(c*x)^m,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*(c*x)^m, x)
```

Sympy [A] time = 8.45168, size = 37, normalized size = 0.71

$$\frac{a^n c^m x x^m (m+1)\, {}_2F_1\left(\begin{matrix} -n, m+1 \\ m+2 \end{matrix}\middle| \frac{bxe^{i\pi}}{a}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x)**m*(b*x+a)**n,x)
```

```
[Out] a**n*c**m*x*x**m*gamma(m + 1)*hyper((-n, m + 1), (m + 2,), b*x*ex
p_polar(I*pi)/a)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n (cx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(c*x)^m,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(c*x)^m, x)
```

3.732 $\int x^3(a+bx)^n\,dx$

Optimal. Leaf size=83

$$-\frac{a^3(a+bx)^{n+1}}{b^4(n+1)}+\frac{3a^2(a+bx)^{n+2}}{b^4(n+2)}-\frac{3a(a+bx)^{n+3}}{b^4(n+3)}+\frac{(a+bx)^{n+4}}{b^4(n+4)}$$

```
[Out] -((a^3*(a + b*x)^(1 + n))/(b^4*(1 + n))) + (3*a^2*(a + b*x)^(2 + n))/(b^4*(2 + n)) - (3*a*(a + b*x)^(3 + n))/(b^4*(3 + n)) + (a + b*x)^(4 + n)/(b^4*(4 + n))
```

Rubi [A] time = 0.0763022, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{a^3(a+bx)^{n+1}}{b^4(n+1)}+\frac{3a^2(a+bx)^{n+2}}{b^4(n+2)}-\frac{3a(a+bx)^{n+3}}{b^4(n+3)}+\frac{(a+bx)^{n+4}}{b^4(n+4)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(a + b*x)^n,x]
```

```
[Out] -((a^3*(a + b*x)^(1 + n))/(b^4*(1 + n))) + (3*a^2*(a + b*x)^(2 + n))/(b^4*(2 + n)) - (3*a*(a + b*x)^(3 + n))/(b^4*(3 + n)) + (a + b*x)^(4 + n)/(b^4*(4 + n))
```

Rubi in Sympy [A] time = 17.5224, size = 71, normalized size = 0.86

$$-\frac{a^3\left(a+bx\right)^{n+1}}{b^4\left(n+1\right)}+\frac{3a^2\left(a+bx\right)^{n+2}}{b^4\left(n+2\right)}-\frac{3a\left(a+bx\right)^{n+3}}{b^4\left(n+3\right)}+\frac{\left(a+bx\right)^{n+4}}{b^4\left(n+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**n,x)
```

```
[Out] -a**3*(a + b*x)**(n + 1)/(b**4*(n + 1)) + 3*a**2*(a + b*x)**(n + 2)/(b**4*(n + 2)) - 3*a*(a + b*x)**(n + 3)/(b**4*(n + 3)) + (a + b*x)**(n + 4)/(b**4*(n + 4))
```

Mathematica [A] time = 0.0551132, size = 86, normalized size = 1.04

$$\frac{(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4(n+1)(n+2)(n+3)(n+4)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(a + b*x)^n,x]
```

```
[Out] ((a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x - 3*a*b^2*(2 + 3*n
 + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/(b^4*(1 + n)*(2
+ n)*(3 + n)*(4 + n))
```

Maple [A] time = 0.007, size = 126, normalized size = 1.5

$$-\frac{(bx+a)^{1+n}\left(-b^3n^3x^3-6\,b^3n^2x^3+3\,ab^2n^2x^2-11\,b^3nx^3+9\,ab^2nx^2-6\,b^3x^3-6\,a^2bnx+6\,ab^2x^2-6\,a^2bx+6\,a^3\right)}{b^4\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^n,x)
```

```
[Out] -(b*x+a)^(1+n)*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*n^2*x^2-11*b^3
*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*x^2-6*a^2*b*x+
6*a^3)/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.35857, size = 136, normalized size = 1.64

$$\frac{\left(\left(n^3+6\,n^2+11\,n+6\right)b^4x^4+\left(n^3+3\,n^2+2\,n\right)ab^3x^3-3\left(n^2+n\right)a^2b^2x^2+6\,a^3bnx-6\,a^4\right)(bx+a)^n}{(n^4+10\,n^3+35\,n^2+50\,n+24)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3,x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*x^4 + (n^3 + 3*n^2 + 2*n)*a*b^3*x^3
 - 3*(n^2 + n)*a^2*b^2*x^2 + 6*a^3*b*n*x - 6*a^4)*(b*x + a)^n/((n
^4 + 10*n^3 + 35*n^2 + 50*n + 24)*b^4)
```

Fricas [A] time = 0.226806, size = 193, normalized size = 2.33

$$\frac{\left(6\,a^3bnx+\left(b^4n^3+6\,b^4n^2+11\,b^4n+6\,b^4\right)x^4-6\,a^4+\left(ab^3n^3+3\,ab^3n^2+2\,ab^3n\right)x^3-3\left(a^2b^2n^2+a^2b^2n\right)x^2\right)(bx+a)^n}{b^4n^4+10\,b^4n^3+35\,b^4n^2+50\,b^4n+24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3,x, algorithm="fricas")
```

```
[Out] (6*a^3*b*n*x + (b^4*n^3 + 6*b^4*n^2 + 11*b^4*n + 6*b^4)*x^4 - 6*a
^4 + (a*b^3*n^3 + 3*a*b^3*n^2 + 2*a*b^3*n)*x^3 - 3*(a^2*b^2*n^2 +
 a^2*b^2*n)*x^2)*(b*x + a)^n/(b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 +
 50*b^4*n + 24*b^4)
```

Sympy [A] time = 5.64767, size = 1316, normalized size = 15.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**n,x)
```

```
[Out] Piecewise((a**n*x**4/4, Eq(b, 0)), (6*a**3*log(a/b + x)/(6*a**3*b
**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 5*a**3/(6*
a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 18*a
**2*b*x*log(a/b + x)/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x*
*2 + 6*b**7*x**3) + 9*a**2*b*x/(6*a**3*b**4 + 18*a**2*b**5*x + 18
*a*b**6*x**2 + 6*b**7*x**3) + 18*a*b**2*x**2*log(a/b + x)/(6*a**3
*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3) + 6*b**3*x
**3*log(a/b + x)/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*b**6*x**2 +
 6*b**7*x**3) - 6*b**3*x**3/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*
b**6*x**2 + 6*b**7*x**3), Eq(n, -4)), (-6*a**3*log(a/b + x)/(2*a*
*2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 9*a**3/(2*a**2*b**4 + 4*a*b
**5*x + 2*b**6*x**2) - 12*a**2*b*x*log(a/b + x)/(2*a**2*b**4 + 4*
a*b**5*x + 2*b**6*x**2) - 12*a**2*b*x/(2*a**2*b**4 + 4*a*b**5*x +
 2*b**6*x**2) - 6*a*b**2*x**2*log(a/b + x)/(2*a**2*b**4 + 4*a*b**
5*x + 2*b**6*x**2) + 2*b**3*x**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b*
*6*x**2), Eq(n, -3)), (6*a**3*log(a/b + x)/(2*a*b**4 + 2*b**5*x)
+ 6*a**3/(2*a*b**4 + 2*b**5*x) + 6*a**2*b*x*log(a/b + x)/(2*a*b**
4 + 2*b**5*x) - 3*a*b**2*x**2/(2*a*b**4 + 2*b**5*x) + b**3*x**3/(
2*a*b**4 + 2*b**5*x), Eq(n, -2)), (-a**3*log(a/b + x)/b**4 + a**2
*x/b**3 - a*x**2/(2*b**2) + x**3/(3*b), Eq(n, -1)), (-6*a**4*(a +
 b*x)**n/(b**4*n**4 + 10*b**4*n**3 + 35*b**4*n**2 + 50*b**4*n + 2
4*b**4) + 6*a**3*b*n*x*(a + b*x)**n/(b**4*n**4 + 10*b**4*n**3 + 3
5*b**4*n**2 + 50*b**4*n + 24*b**4) - 3*a**2*b**2*n**2*x**2*(a + b
*x)**n/(b**4*n**4 + 10*b**4*n**3 + 35*b**4*n**2 + 50*b**4*n + 24*
b**4) - 3*a**2*b**2*n*x**2*(a + b*x)**n/(b**4*n**4 + 10*b**4*n**3
 + 35*b**4*n**2 + 50*b**4*n + 24*b**4) + a*b**3*n**3*x**3*(a + b*
x)**n/(b**4*n**4 + 10*b**4*n**3 + 35*b**4*n**2 + 50*b**4*n + 24*b
**4) + 3*a*b**3*n**2*x**3*(a + b*x)**n/(b**4*n**4 + 10*b**4*n**3
+ 35*b**4*n**2 + 50*b**4*n + 24*b**4) + 2*a*b**3*n*x**3*(a + b*x)
**n/(b**4*n**4 + 10*b**4*n**3 + 35*b**4*n**2 + 50*b**4*n + 24*b**
4) + b**4*n**3*x**4*(a + b*x)**n/(b**4*n**4 + 10*b**4*n**3 + 35*b
**4*n**2 + 50*b**4*n + 24*b**4) + 6*b**4*n**2*x**4*(a + b*x)**n/(
b**4*n**4 + 10*b**4*n**3 + 35*b**4*n**2 + 50*b**4*n + 24*b**4) +
11*b**4*n*x**4*(a + b*x)**n/(b**4*n**4 + 10*b**4*n**3 + 35*b**4*n
**2 + 50*b**4*n + 24*b**4) + 6*b**4*x**4*(a + b*x)**n/(b**4*n**4
+ 10*b**4*n**3 + 35*b**4*n**2 + 50*b**4*n + 24*b**4), True))
```

GIAC/XCAS [A] time = 0.210946, size = 335, normalized size = 4.04

$$\frac{b^4n^3x^4e^{(n\ln(bx+a))} + ab^3n^3x^3e^{(n\ln(bx+a))} + 6\,b^4n^2x^4e^{(n\ln(bx+a))} + 3\,ab^3n^2x^3e^{(n\ln(bx+a))} + 11\,b^4nx^4e^{(n\ln(bx+a))} - 3\,a^2b^2n^2x^2e^{(n\ln(}}{b^4n^4 + 10\,b^4n^3 + 35\,b^4n^2 + 5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3,x, algorithm="giac")
```

```
[Out] (b^4*n^3*x^4*e^(n*ln(b*x + a)) + a*b^3*n^3*x^3*e^(n*ln(b*x + a))
+ 6*b^4*n^2*x^4*e^(n*ln(b*x + a)) + 3*a*b^3*n^2*x^3*e^(n*ln(b*x +
 a)) + 11*b^4*n*x^4*e^(n*ln(b*x + a)) - 3*a^2*b^2*n^2*x^2*e^(n*ln
(b*x + a)) + 2*a*b^3*n*x^3*e^(n*ln(b*x + a)) + 6*b^4*x^4*e^(n*ln(
b*x + a)) - 3*a^2*b^2*n*x^2*e^(n*ln(b*x + a)) + 6*a^3*b*n*x*e^(n*
ln(b*x + a)) - 6*a^4*e^(n*ln(b*x + a)))/(b^4*n^4 + 10*b^4*n^3 + 3
5*b^4*n^2 + 50*b^4*n + 24*b^4)
```

3.733 $\int x^2(a+bx)^n\,dx$

Optimal. Leaf size=60

$$\frac{a^2(a+bx)^{n+1}}{b^3(n+1)}-\frac{2a(a+bx)^{n+2}}{b^3(n+2)}+\frac{(a+bx)^{n+3}}{b^3(n+3)}$$

```
[Out] (a^2*(a + b*x)^(1 + n))/(b^3*(1 + n)) - (2*a*(a + b*x)^(2 + n))/(
b^3*(2 + n)) + (a + b*x)^(3 + n)/(b^3*(3 + n))
```

Rubi [A] time = 0.0504444, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{a^2(a+bx)^{n+1}}{b^3(n+1)}-\frac{2a(a+bx)^{n+2}}{b^3(n+2)}+\frac{(a+bx)^{n+3}}{b^3(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(a + b*x)^n,x]
```

```
[Out] (a^2*(a + b*x)^(1 + n))/(b^3*(1 + n)) - (2*a*(a + b*x)^(2 + n))/(
b^3*(2 + n)) + (a + b*x)^(3 + n)/(b^3*(3 + n))
```

Rubi in Sympy [A] time = 12.2442, size = 51, normalized size = 0.85

$$\frac{a^2\left(a+bx\right)^{n+1}}{b^3\left(n+1\right)}-\frac{2a\left(a+bx\right)^{n+2}}{b^3\left(n+2\right)}+\frac{\left(a+bx\right)^{n+3}}{b^3\left(n+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**n,x)
```

```
[Out] a**2*(a + b*x)**(n + 1)/(b**3*(n + 1)) - 2*a*(a + b*x)**(n + 2)/(
b**3*(n + 2)) + (a + b*x)**(n + 3)/(b**3*(n + 3))
```

Mathematica [A] time = 0.0363888, size = 57, normalized size = 0.95

$$\frac{(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3(n+1)(n+2)(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(a + b*x)^n,x]
```

```
[Out] ((a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n + n^2)
*x^2))/(b^3*(1 + n)*(2 + n)*(3 + n))
```

Maple [A] time = 0.009, size = 73, normalized size = 1.2

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)}{b^3\left(n^3+6\,n^2+11\,n+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^n,x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.35773, size = 92, normalized size = 1.53

$$\frac{\left(\left(n^2+3\,n+2\right)b^3x^3+\left(n^2+n\right)ab^2x^2-2\,a^2bnx+2\,a^3\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2,x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*x^3 + (n^2 + n)*a*b^2*x^2 - 2*a^2*b*n*x + 2*
a^3)*(b*x + a)^n/((n^3 + 6*n^2 + 11*n + 6)*b^3)
```

Fricas [A] time = 0.225279, size = 130, normalized size = 2.17

$$-\frac{\left(2\,a^2bnx-\left(b^3n^2+3\,b^3n+2\,b^3\right)x^3-2\,a^3-\left(ab^2n^2+ab^2n\right)x^2\right)(bx+a)^n}{b^3n^3+6\,b^3n^2+11\,b^3n+6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2,x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*n*x - (b^3*n^2 + 3*b^3*n + 2*b^3)*x^3 - 2*a^3 - (a*b^2*
n^2 + a*b^2*n)*x^2)*(b*x + a)^n/(b^3*n^3 + 6*b^3*n^2 + 11*b^3*n +
 6*b^3)
```

Sympy [A] time = 3.22549, size = 597, normalized size = 9.95

$$\begin{cases} \frac{a^n x^3}{3} \\ \frac{2a^2\log\left(\frac{a}{b}+x\right)}{2a^2b^3+4ab^4x+2b^5x^2} + \frac{3a^2}{2a^2b^3+4ab^4x+2b^5x^2} + \frac{4abx\log\left(\frac{a}{b}+x\right)}{2a^2b^3+4ab^4x+2b^5x^2} + \frac{4abx}{2a^2b^3+4ab^4x+2b^5x^2} + \frac{2b^2x^2\log\left(\frac{a}{b}+x\right)}{2a^2b^3+4ab^4x+2b^5x^2} \\ -\frac{2a^2\log\left(\frac{a}{b}+x\right)}{ab^3+b^4x} - \frac{2a^2}{ab^3+b^4x} - \frac{2abx\log\left(\frac{a}{b}+x\right)}{ab^3+b^4x} + \frac{b^2x^2}{ab^3+b^4x} \\ \frac{a^2\log\left(\frac{a}{b}+x\right)}{b^3} - \frac{ax}{b^2} + \frac{x^2}{2b} \\ \frac{2a^3(a+bx)^n}{b^3n^3+6b^3n^2+11b^3n+6b^3} - \frac{2a^2bnx(a+bx)^n}{b^3n^3+6b^3n^2+11b^3n+6b^3} + \frac{ab^2n^2x^2(a+bx)^n}{b^3n^3+6b^3n^2+11b^3n+6b^3} + \frac{ab^2nx^2(a+bx)^n}{b^3n^3+6b^3n^2+11b^3n+6b^3} + \frac{b^3n^2x^3(a+bx)^n}{b^3n^3+6b^3n^2+11b^3n+6b^3} + \frac{3b^3nx^3(a}{b^3n^3+6b^3n^2+} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**n,x)
```

```
[Out] Piecewise((a**n*x**3/3, Eq(b, 0)), (2*a**2*log(a/b + x)/(2*a**2*b
**3 + 4*a*b**4*x + 2*b**5*x**2) + 3*a**2/(2*a**2*b**3 + 4*a*b**4*
x + 2*b**5*x**2) + 4*a*b*x*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x
 + 2*b**5*x**2) + 4*a*b*x/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2
) + 2*b**2*x**2*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x
**2), Eq(n, -3)), (-2*a**2*log(a/b + x)/(a*b**3 + b**4*x) - 2*a**
2/(a*b**3 + b**4*x) - 2*a*b*x*log(a/b + x)/(a*b**3 + b**4*x) + b*
*2*x**2/(a*b**3 + b**4*x), Eq(n, -2)), (a**2*log(a/b + x)/b**3 -
a*x/b**2 + x**2/(2*b), Eq(n, -1)), (2*a**3*(a + b*x)**n/(b**3*n**
3 + 6*b**3*n**2 + 11*b**3*n + 6*b**3) - 2*a**2*b*n*x*(a + b*x)**n
/(b**3*n**3 + 6*b**3*n**2 + 11*b**3*n + 6*b**3) + a*b**2*n**2*x**
2*(a + b*x)**n/(b**3*n**3 + 6*b**3*n**2 + 11*b**3*n + 6*b**3) + a
*b**2*n*x**2*(a + b*x)**n/(b**3*n**3 + 6*b**3*n**2 + 11*b**3*n +
6*b**3) + b**3*n**2*x**3*(a + b*x)**n/(b**3*n**3 + 6*b**3*n**2 +
11*b**3*n + 6*b**3) + 3*b**3*n*x**3*(a + b*x)**n/(b**3*n**3 + 6*b
**3*n**2 + 11*b**3*n + 6*b**3) + 2*b**3*x**3*(a + b*x)**n/(b**3*n
**3 + 6*b**3*n**2 + 11*b**3*n + 6*b**3), True))
```

GIAC/XCAS [A] time = 0.208666, size = 208, normalized size = 3.47

$$\frac{b^3n^2x^3e^{(n\ln(bx+a))} + ab^2n^2x^2e^{(n\ln(bx+a))} + 3\,b^3nx^3e^{(n\ln(bx+a))} + ab^2nx^2e^{(n\ln(bx+a))} + 2\,b^3x^3e^{(n\ln(bx+a))} - 2\,a^2bnxe^{(n\ln(bx+a))} + 2}{b^3n^3 + 6\,b^3n^2 + 11\,b^3n + 6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2,x, algorithm="giac")
```

```
[Out] (b^3*n^2*x^3*e^(n*ln(b*x + a)) + a*b^2*n^2*x^2*e^(n*ln(b*x + a))
+ 3*b^3*n*x^3*e^(n*ln(b*x + a)) + a*b^2*n*x^2*e^(n*ln(b*x + a)) +
 2*b^3*x^3*e^(n*ln(b*x + a)) - 2*a^2*b*n*x*e^(n*ln(b*x + a)) + 2*
a^3*e^(n*ln(b*x + a)))/(b^3*n^3 + 6*b^3*n^2 + 11*b^3*n + 6*b^3)
```

3.734 $\int x(a+bx)^n\,dx$

Optimal. Leaf size=39

$$\frac{(a+bx)^{n+2}}{b^2(n+2)}-\frac{a(a+bx)^{n+1}}{b^2(n+1)}$$

```
[Out] -((a*(a + b*x)^(1 + n))/(b^2*(1 + n))) + (a + b*x)^(2 + n)/(b^2*(
2 + n))
```

Rubi [A] time = 0.0313977, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^{n+2}}{b^2(n+2)}-\frac{a(a+bx)^{n+1}}{b^2(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(a + b*x)^n,x]
```

```
[Out] -((a*(a + b*x)^(1 + n))/(b^2*(1 + n))) + (a + b*x)^(2 + n)/(b^2*(
2 + n))
```

Rubi in Sympy [A] time = 7.19186, size = 31, normalized size = 0.79

$$-\frac{a\left(a+bx\right)^{n+1}}{b^2\left(n+1\right)}+\frac{\left(a+bx\right)^{n+2}}{b^2\left(n+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**n,x)
```

```
[Out] -a*(a + b*x)**(n + 1)/(b**2*(n + 1)) + (a + b*x)**(n + 2)/(b**2*(
n + 2))
```

Mathematica [A] time = 0.0197337, size = 33, normalized size = 0.85

$$\frac{(a+bx)^{n+1}(b(n+1)x-a)}{b^2(n+1)(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(a + b*x)^n,x]

[Out] ((a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*(1 + n)*(2 + n))
```

Maple [A] time = 0.004, size = 36, normalized size = 0.9

$$-\frac{(bx+a)^{1+n}(-xnb-bx+a)}{b^2(n^2+3n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^n,x)

[Out] -(b*x+a)^(1+n)*(-b*n*x-b*x+a)/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.35967, size = 57, normalized size = 1.46

$$\frac{(b^2(n+1)x^2+abnx-a^2)(bx+a)^n}{(n^2+3n+2)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x,x, algorithm="maxima")

[Out] (b^2*(n + 1)*x^2 + a*b*n*x - a^2)*(b*x + a)^n/((n^2 + 3*n + 2)*b^
2)
```

Fricas [A] time = 0.227206, size = 72, normalized size = 1.85

$$\frac{(abnx+(b^2n+b^2)x^2-a^2)(bx+a)^n}{b^2n^2+3b^2n+2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x,x, algorithm="fricas")

[Out] (a*b*n*x + (b^2*n + b^2)*x^2 - a^2)*(b*x + a)^n/(b^2*n^2 + 3*b^2*
n + 2*b^2)
```

Sympy [A] time = 1.76297, size = 201, normalized size = 5.15

$$\begin{cases} \frac{a^n x^2}{2} & \text{for } b = 0 \\ \frac{a \log\left(\frac{a}{b}+x\right)}{ab^2+b^3x} + \frac{a}{ab^2+b^3x} + \frac{bx \log\left(\frac{a}{b}+x\right)}{ab^2+b^3x} & \text{for } n = -2 \\ -\frac{a \log\left(\frac{a}{b}+x\right)}{b^2} + \frac{x}{b} & \text{for } n = -1 \\ -\frac{a^2(a+bx)^n}{b^2n^2+3b^2n+2b^2} + \frac{abnx(a+bx)^n}{b^2n^2+3b^2n+2b^2} + \frac{b^2nx^2(a+bx)^n}{b^2n^2+3b^2n+2b^2} + \frac{b^2x^2(a+bx)^n}{b^2n^2+3b^2n+2b^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**n,x)
```

```
[Out] Piecewise((a**n*x**2/2, Eq(b, 0)), (a*log(a/b + x)/(a*b**2 + b**3
*x) + a/(a*b**2 + b**3*x) + b*x*log(a/b + x)/(a*b**2 + b**3*x), E
q(n, -2)), (-a*log(a/b + x)/b**2 + x/b, Eq(n, -1)), (-a**2*(a + b
*x)**n/(b**2*n**2 + 3*b**2*n + 2*b**2) + a*b*n*x*(a + b*x)**n/(b*
*2*n**2 + 3*b**2*n + 2*b**2) + b**2*n*x**2*(a + b*x)**n/(b**2*n**
2 + 3*b**2*n + 2*b**2) + b**2*x**2*(a + b*x)**n/(b**2*n**2 + 3*b*
*2*n + 2*b**2), True))
```

GIAC/XCAS [A] time = 0.207403, size = 113, normalized size = 2.9

$$\frac{b^2nx^2e^{(n\ln(bx+a))} + abnxe^{(n\ln(bx+a))} + b^2x^2e^{(n\ln(bx+a))} - a^2e^{(n\ln(bx+a))}}{b^2n^2 + 3\,b^2n + 2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x,x, algorithm="giac")
```

```
[Out] (b^2*n*x^2*e^(n*ln(b*x + a)) + a*b*n*x*e^(n*ln(b*x + a)) + b^2*x^
2*e^(n*ln(b*x + a)) - a^2*e^(n*ln(b*x + a)))/(b^2*n^2 + 3*b^2*n +
 2*b^2)
```

3.735 $\int (a+bx)^n \, dx$

Optimal. Leaf size=18

$$\frac{(a+bx)^{n+1}}{b(n+1)}$$

```
[Out] (a + b*x)^(1 + n)/(b*(1 + n))
```

Rubi [A] time = 0.010586, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(a+bx)^{n+1}}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n,x]

[Out] (a + b*x)^(1 + n)/(b*(1 + n))
```

Rubi in Sympy [A] time = 1.73676, size = 12, normalized size = 0.67

$$\frac{(a+bx)^{n+1}}{b\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n,x)

[Out] (a + b*x)**(n + 1)/(b*(n + 1))
```

Mathematica [A] time = 0.00967821, size = 17, normalized size = 0.94

$$\frac{(a+bx)^{n+1}}{bn+b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n,x]
```

```
[Out] (a + b*x)^(1 + n)/(b + b*n)
```

Maple [A] time = 0.003, size = 19, normalized size = 1.1

$$\frac{(bx+a)^{1+n}}{b(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^n,x)
```

```
[Out] (b*x+a)^(1+n)/b/(1+n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222127, size = 27, normalized size = 1.5

$$\frac{(bx+a)(bx+a)^{n}}{bn+b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^n,x, algorithm="fricas")
```

```
[Out] (b*x + a)*(b*x + a)^n/(b*n + b)
```

Sympy [A] time = 0.081347, size = 20, normalized size = 1.11

$$\frac{\begin{cases} \frac{(a+bx)^{n+1}}{n+1} & \text{for}\ n \neq -1 \\ \log(a+bx) & \text{otherwise} \end{cases}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n,x)
```

```
[Out] Piecewise(((a + b*x)**(n + 1)/(n + 1), Ne(n, -1)), (log(a + b*x),
 True))/b
```

GIAC/XCAS [A] time = 0.20329, size = 24, normalized size = 1.33

$$\frac{(bx + a)^{n+1}}{b(n + 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n,x, algorithm="giac")
```

```
[Out] (b*x + a)^(n + 1)/(b*(n + 1))
```

3.736 $\int \frac{(a+bx)^n}{x}\,dx$

Optimal. Leaf size=35

$$-\frac{(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)}$$

```
[Out] -(((a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*x)
/a])/(a*(1 + n)))
```

Rubi [A] time = 0.0217294, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$-\frac{(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/x,x]
```

```
[Out] -(((a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*x)
/a])/(a*(1 + n)))
```

Rubi in Sympy [A] time = 3.17155, size = 26, normalized size = 0.74

$$-\frac{(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\ n+2\end{matrix}\middle|\,1+\frac{bx}{a}\right)}{a\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x,x)
```

```
[Out] -(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,), 1 + b*x/a)/(a*(n
+ 1))
```

Mathematica [A] time = 0.0180605, size = 46, normalized size = 1.31

$$\frac{\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/x,x]
```

```
[Out] ((a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(b*x))])/(n*(1
+ a/(b*x))^n)
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \frac{(bx + a)^n}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x,x)
```

```
[Out] int((b*x+a)^n/x,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^n}{x} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/x, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx + a)^n}{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/x, x)
```

Sympy [A] time = 4.8334, size = 83, normalized size = 2.37

$$-\frac{bb^n n\left(\frac{a}{b}+x\right)\left(\frac{a}{b}+x\right)^n\left(\frac{b\left(\frac{a}{b}+x\right)}{a},1,n+1\right)(n+1)}{a(n+2)}-\frac{bb^n\left(\frac{a}{b}+x\right)\left(\frac{a}{b}+x\right)^n\left(\frac{b\left(\frac{a}{b}+x\right)}{a},1,n+1\right)(n+1)}{a(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x,x)
```

```
[Out] -b*b**n*n*(a/b + x)*(a/b + x)**n*lerchphi(b*(a/b + x)/a, 1, n + 1
)*gamma(n + 1)/(a*gamma(n + 2)) - b*b**n*(a/b + x)*(a/b + x)**n*l
erchphi(b*(a/b + x)/a, 1, n + 1)*gamma(n + 1)/(a*gamma(n + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/x, x)
```

3.737 $\int \frac{(a+bx)^n}{x^2} \, dx$

Optimal. Leaf size=35

$$\frac{b(a+bx)^{n+1} {}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)}$$

```
[Out] (b*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*x)
/a])/(a^2*(1 + n))
```

Rubi [A] time = 0.0222475, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{b(a+bx)^{n+1} {}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^n/x^2,x]
```

```
[Out] (b*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*x)
/a])/(a^2*(1 + n))
```

Rubi in Sympy [A] time = 3.41503, size = 27, normalized size = 0.77

$$\frac{b\left(a+bx\right)^{n+1} {}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**n/x**2,x)
```

```
[Out] b*(a + b*x)**(n + 1)*hyper((2, n + 1), (n + 2,), 1 + b*x/a)/(a**2
*(n + 1))
```

Mathematica [A] time = 0.0183417, size = 53, normalized size = 1.51

$$\frac{\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n {}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/x^2,x]
```

```
[Out] ((a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(a/(b*x))])/((-
1 + n)*(1 + a/(b*x))^n*x)
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x^2,x)
```

```
[Out] int((b*x+a)^n/x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^2,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^2,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/x^2, x)
```

Sympy [A] time = 6.46835, size = 354, normalized size = 10.11

$$\frac{ab^2b^nn^2\left(\frac{a}{b}+x\right)\left(\frac{a}{b}+x\right)^n\left(\frac{b\left(\frac{a}{b}+x\right)}{a},1,n+1\right)(n+1)}{-a^3(n+2)+a^2b\left(\frac{a}{b}+x\right)(n+2)}+\frac{ab^2b^nn\left(\frac{a}{b}+x\right)\left(\frac{a}{b}+x\right)^n\left(\frac{b\left(\frac{a}{b}+x\right)}{a},1,n+1\right)(n+1)}{-a^3(n+2)+a^2b\left(\frac{a}{b}+x\right)(n+2)}-\frac{ab^2b^nn\left(\frac{a}{b}+x\right)\left(\frac{a}{b}+x\right)^n(n+1)}{-a^3(n+2)+a^2b\left(\frac{a}{b}+x\right)(n+2)}-\frac{ab^2b^n\left(\frac{a}{b}+x\right)\left(\frac{a}{b}+x\right)^n(n+1)}{-a^3(n+2)+a^2b\left(\frac{a}{b}+x\right)(n+2)}-\frac{b^3b^nn^2\left(\frac{a}{b}+x\right)^2\left(\frac{a}{b}+x\right)^n\left(\frac{b\left(\frac{a}{b}+x\right)}{a},1,n+1\right)(n+1)}{-a^3(n+2)+a^2b\left(\frac{a}{b}+x\right)(n+2)}-\frac{b^3b^nn\left(\frac{a}{b}+x\right)^2\left(\frac{a}{b}+x\right)^n\left(\frac{b\left(\frac{a}{b}+x\right)}{a},1,n+1\right)(n+1)}{-a^3(n+2)+a^2b\left(\frac{a}{b}+x\right)(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x**2,x)
```

```
[Out] a*b**2*b**n*n**2*(a/b + x)*(a/b + x)**n*lerchphi(b*(a/b + x)/a, 1
, n + 1)*gamma(n + 1)/(-a**3*gamma(n + 2) + a**2*b*(a/b + x)*gamm
a(n + 2)) + a*b**2*b**n*n*(a/b + x)*(a/b + x)**n*lerchphi(b*(a/b
+ x)/a, 1, n + 1)*gamma(n + 1)/(-a**3*gamma(n + 2) + a**2*b*(a/b
+ x)*gamma(n + 2)) - a*b**2*b**n*n*(a/b + x)*(a/b + x)**n*gamma(n
 + 1)/(-a**3*gamma(n + 2) + a**2*b*(a/b + x)*gamma(n + 2)) - a*b*
*2*b**n*(a/b + x)*(a/b + x)**n*gamma(n + 1)/(-a**3*gamma(n + 2) +
 a**2*b*(a/b + x)*gamma(n + 2)) - b**3*b**n*n**2*(a/b + x)**2*(a/
b + x)**n*lerchphi(b*(a/b + x)/a, 1, n + 1)*gamma(n + 1)/(-a**3*g
amma(n + 2) + a**2*b*(a/b + x)*gamma(n + 2)) - b**3*b**n*n*(a/b +
 x)**2*(a/b + x)**n*lerchphi(b*(a/b + x)/a, 1, n + 1)*gamma(n + 1
)/(-a**3*gamma(n + 2) + a**2*b*(a/b + x)*gamma(n + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^2,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/x^2, x)
```

3.738 $\int \frac{(a+bx)^n}{x^3} dx$

Optimal. Leaf size=38

$$-\frac{b^2(a+bx)^{n+1} {}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)}$$

```
[Out] -((b^2*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 + (
b*x)/a])/(a^3*(1 + n)))
```

Rubi [A] time = 0.0246275, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{b^2(a+bx)^{n+1} {}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^n/x^3,x]
```

```
[Out] -((b^2*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 + (
b*x)/a])/(a^3*(1 + n)))
```

Rubi in Sympy [A] time = 3.86528, size = 31, normalized size = 0.82

$$-\frac{b^2\left(a+bx\right)^{n+1} {}_2F_1\left(\begin{matrix} 3,n+1 \\ n+2 \end{matrix}\middle| 1+\frac{bx}{a}\right)}{a^3\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**n/x**3,x)
```

```
[Out] -b**2*(a + b*x)**(n + 1)*hyper((3, n + 1), (n + 2,), 1 + b*x/a)/(
a**3*(n + 1))
```

Mathematica [A] time = 0.0243385, size = 53, normalized size = 1.39

$$\frac{\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n {}_2F_1\left(2-n,-n;3-n;-\frac{a}{bx}\right)}{(n-2)x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/x^3,x]
```

```
[Out] ((a + b*x)^n*Hypergeometric2F1[2 - n, -n, 3 - n, -(a/(b*x))])/((-
2 + n)*(1 + a/(b*x))^n*x^2)
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x^3,x)
```

```
[Out] int((b*x+a)^n/x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^3,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/x^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^3,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/x^3, x)
```

Sympy [A] time = 8.77164, size = 918, normalized size = 24.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x**3,x)
```

```
[Out] -a**2*b**3*b**n*n**3*(a/b + x)*(a/b + x)**n*lerchphi(b*(a/b + x)/
a, 1, n + 1)*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*a**4*b*(a/b +
x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n + 2)) + a**2*b
**3*b**n*n**2*(a/b + x)*(a/b + x)**n*gamma(n + 1)/(2*a**5*gamma(n
 + 2) - 4*a**4*b*(a/b + x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**
2*gamma(n + 2)) + a**2*b**3*b**n*n*(a/b + x)*(a/b + x)**n*lerchph
i(b*(a/b + x)/a, 1, n + 1)*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*
a**4*b*(a/b + x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n
+ 2)) - a**2*b**3*b**n*n*(a/b + x)*(a/b + x)**n*gamma(n + 1)/(2*a
**5*gamma(n + 2) - 4*a**4*b*(a/b + x)*gamma(n + 2) + 2*a**3*b**2*
(a/b + x)**2*gamma(n + 2)) - 2*a**2*b**3*b**n*(a/b + x)*(a/b + x)
**n*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*a**4*b*(a/b + x)*gamma(
n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n + 2)) + 2*a*b**4*b**n*n
**3*(a/b + x)**2*(a/b + x)**n*lerchphi(b*(a/b + x)/a, 1, n + 1)*g
amma(n + 1)/(2*a**5*gamma(n + 2) - 4*a**4*b*(a/b + x)*gamma(n + 2
) + 2*a**3*b**2*(a/b + x)**2*gamma(n + 2)) - a*b**4*b**n*n**2*(a/
b + x)**2*(a/b + x)**n*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*a**4
*b*(a/b + x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n + 2)
) - 2*a*b**4*b**n*n*(a/b + x)**2*(a/b + x)**n*lerchphi(b*(a/b + x
)/a, 1, n + 1)*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*a**4*b*(a/b
+ x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n + 2)) + a*b*
*4*b**n*(a/b + x)**2*(a/b + x)**n*gamma(n + 1)/(2*a**5*gamma(n +
2) - 4*a**4*b*(a/b + x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*g
amma(n + 2)) - b**5*b**n*n**3*(a/b + x)**3*(a/b + x)**n*lerchphi(
b*(a/b + x)/a, 1, n + 1)*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*a*
*4*b*(a/b + x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n +
2)) + b**5*b**n*n*(a/b + x)**3*(a/b + x)**n*lerchphi(b*(a/b + x)/
a, 1, n + 1)*gamma(n + 1)/(2*a**5*gamma(n + 2) - 4*a**4*b*(a/b +
x)*gamma(n + 2) + 2*a**3*b**2*(a/b + x)**2*gamma(n + 2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^3,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/x^3, x)
```

3.739 $\int x^{-4+n}(a+bx)^{-n}\,dx$

Optimal. Leaf size=110

$$-\frac{2b^2x^{n-1}(a+bx)^{1-n}}{a^3(1-n)(2-n)(3-n)}+\frac{2bx^{n-2}(a+bx)^{1-n}}{a^2(2-n)(3-n)}-\frac{x^{n-3}(a+bx)^{1-n}}{a(3-n)}$$

```
[Out] -((x^(-3 + n)*(a + b*x)^(1 - n))/(a*(3 - n))) + (2*b*x^(-2 + n)*(
a + b*x)^(1 - n))/(a^2*(2 - n)*(3 - n)) - (2*b^2*x^(-1 + n)*(a +
b*x)^(1 - n))/(a^3*(1 - n)*(2 - n)*(3 - n))
```

Rubi [A] time = 0.0950628, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{2b^2x^{n-1}(a+bx)^{1-n}}{a^3(1-n)(2-n)(3-n)}+\frac{2bx^{n-2}(a+bx)^{1-n}}{a^2(2-n)(3-n)}-\frac{x^{n-3}(a+bx)^{1-n}}{a(3-n)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-4 + n)/(a + b*x)^n,x]
```

```
[Out] -((x^(-3 + n)*(a + b*x)^(1 - n))/(a*(3 - n))) + (2*b*x^(-2 + n)*(
a + b*x)^(1 - n))/(a^2*(2 - n)*(3 - n)) - (2*b^2*x^(-1 + n)*(a +
b*x)^(1 - n))/(a^3*(1 - n)*(2 - n)*(3 - n))
```

Rubi in Sympy [A] time = 15.7367, size = 76, normalized size = 0.69

$$-\frac{x^{n-3}\left(a+bx\right)^{-n+1}}{a\left(-n+3\right)}+\frac{2bx^{n-2}\left(a+bx\right)^{-n+1}}{a^2\left(-n+2\right)\left(-n+3\right)}-\frac{2b^2x^{n-1}\left(a+bx\right)^{-n+1}}{a^3\left(-n+1\right)\left(-n+2\right)\left(-n+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-4+n)/((b*x+a)**n),x)
```

```
[Out] -x**(n - 3)*(a + b*x)**(-n + 1)/(a*(-n + 3)) + 2*b*x**(n - 2)*(a
+ b*x)**(-n + 1)/(a**2*(-n + 2)*(-n + 3)) - 2*b**2*x**(n - 1)*(a
+ b*x)**(-n + 1)/(a**3*(-n + 1)*(-n + 2)*(-n + 3))
```

Mathematica [A] time = 0.0692235, size = 64, normalized size = 0.58

$$\frac{x^{n-3}(a+bx)^{1-n}\left(a^2\left(n^2-3n+2\right)+2ab(n-1)x+2b^2x^2\right)}{a^3(n-3)(n-2)(n-1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-4 + n)/(a + b*x)^n,x]
```

```
[Out] (x^(-3 + n)*(a + b*x)^(1 - n)*(a^2*(2 - 3*n + n^2) + 2*a*b*(-1 +
n)*x + 2*b^2*x^2))/(a^3*(-3 + n)*(-2 + n)*(-1 + n))
```

Maple [A] time = 0.008, size = 77, normalized size = 0.7

$$\frac{(bx+a)\,x^{-3+n}\left(a^2n^2+2\,abnx+2\,b^2x^2-3\,a^2n-2\,abx+2\,a^2\right)}{(bx+a)^n\,(-3+n)\,(-2+n)\,(-1+n)\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-4+n)/((b*x+a)^n),x)
```

```
[Out] (b*x+a)*x^(-3+n)*(a^2*n^2+2*a*b*n*x+2*b^2*x^2-3*a^2*n-2*a*b*x+2*a
^2)/((b*x+a)^n)/(-3+n)/(-2+n)/(-1+n)/a^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n}x^{n-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 4)/(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n)*x^(n - 4), x)
```

Fricas [A] time = 0.229661, size = 140, normalized size = 1.27

$$\frac{\left(2\,ab^2nx^3+2\,b^3x^4+\left(a^2bn^2-a^2bn\right)x^2+\left(a^3n^2-3\,a^3n+2\,a^3\right)x\right)x^{n-4}}{(a^3n^3-6\,a^3n^2+11\,a^3n-6\,a^3)(bx+a)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 4)/(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] (2*a*b^2*n*x^3 + 2*b^3*x^4 + (a^2*b*n^2 - a^2*b*n)*x^2 + (a^3*n^2
 - 3*a^3*n + 2*a^3)*x)*x^(n - 4)/((a^3*n^3 - 6*a^3*n^2 + 11*a^3*n
```

```
- 6*a^3)*(b*x + a)^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-4+n)/((b*x+a)**n),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{n-4}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 4)/(b*x + a)^n,x, algorithm="giac")

[Out] integrate(x^(n - 4)/(b*x + a)^n, x)
```

3.740 $\int x^{-3+n}(a+bx)^{-n}\,dx$

Optimal. Leaf size=64

$$\frac{bx^{n-1}(a+bx)^{1-n}}{a^2(1-n)(2-n)}-\frac{x^{n-2}(a+bx)^{1-n}}{a(2-n)}$$

```
[Out] -((x^(-2 + n)*(a + b*x)^(1 - n))/(a*(2 - n))) + (b*x^(-1 + n)*(a
+ b*x)^(1 - n))/(a^2*(1 - n)*(2 - n))
```

Rubi [A] time = 0.0382108, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{bx^{n-1}(a+bx)^{1-n}}{a^2(1-n)(2-n)}-\frac{x^{n-2}(a+bx)^{1-n}}{a(2-n)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-3 + n)/(a + b*x)^n,x]
```

```
[Out] -((x^(-2 + n)*(a + b*x)^(1 - n))/(a*(2 - n))) + (b*x^(-1 + n)*(a
+ b*x)^(1 - n))/(a^2*(1 - n)*(2 - n))
```

Rubi in Sympy [A] time = 7.21266, size = 42, normalized size = 0.66

$$-\frac{x^{n-2}\left(a+bx\right)^{-n+1}}{a\left(-n+2\right)}+\frac{bx^{n-1}\left(a+bx\right)^{-n+1}}{a^2\left(-n+1\right)\left(-n+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-3+n)/((b*x+a)**n),x)
```

```
[Out] -x**(n - 2)*(a + b*x)**(-n + 1)/(a*(-n + 2)) + b*x**(n - 1)*(a +
b*x)**(-n + 1)/(a**2*(-n + 1)*(-n + 2))
```

Mathematica [A] time = 0.0470845, size = 39, normalized size = 0.61

$$\frac{x^{n-2}(a+bx)^{1-n}(a(n-1)+bx)}{a^2(n-2)(n-1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-3 + n)/(a + b*x)^n,x]
```

```
[Out] (x^(-2 + n)*(a + b*x)^(1 - n)*(a*(-1 + n) + b*x))/(a^2*(-2 + n)*(
-1 + n))
```

Maple [A] time = 0.006, size = 44, normalized size = 0.7

$$\frac{x^{-2+n} (an + bx - a) (bx + a)}{(bx + a)^n (-2 + n) (-1 + n) a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-3+n)/((b*x+a)^n),x)
```

```
[Out] x^(-2+n)*(a*n+b*x-a)*(b*x+a)/((b*x+a)^n)/(-2+n)/(-1+n)/a^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{-n} x^{n-3} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 3)/(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n)*x^(n - 3), x)
```

Fricas [A] time = 0.222416, size = 86, normalized size = 1.34

$$\frac{\left(abnx^2 + b^2x^3 + \left(a^2n - a^2\right)x\right)x^{n-3}}{(a^2n^2 - 3a^2n + 2a^2)(bx + a)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 3)/(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] (a*b*n*x^2 + b^2*x^3 + (a^2*n - a^2)*x)*x^(n - 3)/((a^2*n^2 - 3*a
^2*n + 2*a^2)*(b*x + a)^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-3+n)/((b*x+a)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{n-3}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 3)/(b*x + a)^n,x, algorithm="giac")
```

```
[Out] integrate(x^(n - 3)/(b*x + a)^n, x)
```

3.741 $\int x^{-2+n}(a+bx)^{-n}\,dx$

Optimal. Leaf size=28

$$-\frac{x^{n-1}(a+bx)^{1-n}}{a(1-n)}$$

```
[Out] -((x^(-1 + n)*(a + b*x)^(1 - n))/(a*(1 - n)))
```

Rubi [A] time = 0.0170986, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{x^{n-1}(a+bx)^{1-n}}{a(1-n)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-2 + n)/(a + b*x)^n,x]
```

```
[Out] -((x^(-1 + n)*(a + b*x)^(1 - n))/(a*(1 - n)))
```

Rubi in Sympy [A] time = 2.89481, size = 19, normalized size = 0.68

$$-\frac{x^{n-1}\left(a+bx\right)^{-n+1}}{a\left(-n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-2+n)/((b*x+a)**n),x)
```

```
[Out] -x**(n - 1)*(a + b*x)**(-n + 1)/(a*(-n + 1))
```

Mathematica [A] time = 0.0268709, size = 25, normalized size = 0.89

$$\frac{x^{n-1}(a+bx)^{1-n}}{a(n-1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-2 + n)/(a + b*x)^n,x]
```

```
[Out] (x^(-1 + n)*(a + b*x)^(1 - n))/(a*(-1 + n))
```

Maple [A] time = 0.004, size = 29, normalized size = 1.

$$\frac{x^{-1+n}(bx+a)}{a(-1+n)(bx+a)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-2+n)/((b*x+a)^n),x)

[Out] x^(-1+n)*(b*x+a)/a/(-1+n)/((b*x+a)^n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n}x^{n-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(n - 2)/(b*x + a)^n,x, algorithm="maxima")

[Out] integrate((b*x + a)^(-n)*x^(n - 2), x)
```

Fricas [A] time = 0.231454, size = 45, normalized size = 1.61

$$\frac{(bx^2+ax)x^{n-2}}{(an-a)(bx+a)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(n - 2)/(b*x + a)^n,x, algorithm="fricas")

[Out] (b*x^2 + a*x)*x^(n - 2)/((a*n - a)*(b*x + a)^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-2+n)/((b*x+a)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{n-2}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 2)/(b*x + a)^n,x, algorithm="giac")
```

```
[Out] integrate(x^(n - 2)/(b*x + a)^n, x)
```

3.742 $\int x^{-1+n}(a+bx)^{-n}\,dx$

Optimal. Leaf size=39

$$\frac{x^n(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n;n+1;-\frac{bx}{a}\right)}{n}$$

```
[Out] (x^n*(1 + (b*x)/a)^n*Hypergeometric2F1[n, n, 1 + n, -((b*x)/a)])/
(n*(a + b*x)^n)
```

Rubi [A] time = 0.0313855, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{x^n(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n;n+1;-\frac{bx}{a}\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-1 + n)/(a + b*x)^n,x]
```

```
[Out] (x^n*(1 + (b*x)/a)^n*Hypergeometric2F1[n, n, 1 + n, -((b*x)/a)])/
(n*(a + b*x)^n)
```

Rubi in Sympy [A] time = 5.80863, size = 29, normalized size = 0.74

$$\frac{x^n\left(1+\frac{bx}{a}\right)^n(a+bx)^{-n}\,{}_2F_1\left(\left.\begin{matrix} n,n \\ n+1 \end{matrix}\right| -\frac{bx}{a}\right)}{n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-1+n)/((b*x+a)**n),x)
```

```
[Out] x**n*(1 + b*x/a)**n*(a + b*x)**(-n)*hyper((n, n), (n + 1,), -b*x/
a)/n
```

Mathematica [A] time = 0.0294176, size = 39, normalized size = 1.

$$\frac{x^n(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n;n+1;-\frac{bx}{a}\right)}{n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-1 + n)/(a + b*x)^n,x]
```

```
[Out] (x^n*(1 + (b*x)/a)^n*Hypergeometric2F1[n, n, 1 + n, -((b*x)/a)])/
(n*(a + b*x)^n)
```

Maple [F] time = 0.073, size = 0, normalized size = 0.

$$\int \frac{x^{-1+n}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-1+n)/((b*x+a)^n),x)
```

```
[Out] int(x^(-1+n)/((b*x+a)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n}x^{n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 1)/(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n)*x^(n - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{n-1}}{(bx+a)^n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 1)/(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] integral(x^(n - 1)/(b*x + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-1+n)/((b*x+a)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{n-1}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n - 1)/(b*x + a)^n,x, algorithm="giac")
```

```
[Out] integrate(x^(n - 1)/(b*x + a)^n, x)
```

3.743 $\int x^n(a + bx)^{-n} \, dx$

Optimal. Leaf size=45

$$\frac{x^{n+1}(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{bx}{a}\right)}{n+1}$$

```
[Out] (x^(1 + n)*(1 + (b*x)/a)^n*Hypergeometric2F1[n, 1 + n, 2 + n, -((
b*x)/a)])/((1 + n)*(a + b*x)^n)
```

Rubi [A] time = 0.0316364, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{x^{n+1}(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{bx}{a}\right)}{n+1}$$

Antiderivative was successfully verified.

```
[In]  Int[x^n/(a + b*x)^n,x]
```

```
[Out] (x^(1 + n)*(1 + (b*x)/a)^n*Hypergeometric2F1[n, 1 + n, 2 + n, -((
b*x)/a)])/((1 + n)*(a + b*x)^n)
```

Rubi in Sympy [A] time = 5.86218, size = 34, normalized size = 0.76

$$\frac{x^{n+1}\left(1+\frac{bx}{a}\right)^n (a+bx)^{-n} {}_2F_1\left(\begin{matrix} n, n+1 \\ n+2 \end{matrix}\middle| -\frac{bx}{a}\right)}{n+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**n/((b*x+a)**n),x)
```

```
[Out] x**(n + 1)*(1 + b*x/a)**n*(a + b*x)**(-n)*hyper((n, n + 1), (n +
2,), -b*x/a)/(n + 1)
```

Mathematica [A] time = 0.0262853, size = 45, normalized size = 1.

$$\frac{x^{n+1}(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{bx}{a}\right)}{n+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^n/(a + b*x)^n,x]
```

```
[Out] (x^(1 + n)*(1 + (b*x)/a)^n*Hypergeometric2F1[n, 1 + n, 2 + n, -((
b*x)/a)])/((1 + n)*(a + b*x)^n)
```

Maple [F] time = 0.078, size = 0, normalized size = 0.

$$\int \frac{x^n}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^n/((b*x+a)^n),x)
```

```
[Out] int(x^n/((b*x+a)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n}x^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n)*x^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^n}{(bx+a)^n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] integral(x^n/(b*x + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**n/((b*x+a)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^n}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^n/(b*x + a)^n,x, algorithm="giac")
```

```
[Out] integrate(x^n/(b*x + a)^n, x)
```

3.744 $\int x^{1+n}(a+bx)^{-n}\,dx$

Optimal. Leaf size=45

$$\frac{x^{n+2}(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n+2;n+3;-\frac{bx}{a}\right)}{n+2}$$

```
[Out] (x^(2 + n)*(1 + (b*x)/a)^n*Hypergeometric2F1[n, 2 + n, 3 + n, -((
b*x)/a)])/((2 + n)*(a + b*x)^n)
```

Rubi [A] time = 0.0333227, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{x^{n+2}(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n+2;n+3;-\frac{bx}{a}\right)}{n+2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(1 + n)/(a + b*x)^n,x]
```

```
[Out] (x^(2 + n)*(1 + (b*x)/a)^n*Hypergeometric2F1[n, 2 + n, 3 + n, -((
b*x)/a)])/((2 + n)*(a + b*x)^n)
```

Rubi in Sympy [A] time = 6.06901, size = 34, normalized size = 0.76

$$\frac{x^{n+2}\left(1+\frac{bx}{a}\right)^n (a+bx)^{-n} {}_2F_1\left(\begin{matrix} n,n+2 \\ n+3 \end{matrix}\middle| -\frac{bx}{a}\right)}{n+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1+n)/((b*x+a)**n),x)
```

```
[Out] x**(n + 2)*(1 + b*x/a)**n*(a + b*x)**(-n)*hyper((n, n + 2), (n +
3,), -b*x/a)/(n + 2)
```

Mathematica [A] time = 0.0286519, size = 45, normalized size = 1.

$$\frac{x^{n+2}(a+bx)^{-n}\left(\frac{bx}{a}+1\right)^n {}_2F_1\left(n,n+2;n+3;-\frac{bx}{a}\right)}{n+2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(1 + n)/(a + b*x)^n,x]
```

```
[Out] (x^(2 + n)*(1 + (b*x)/a)^n*Hypergeometric2F1[n, 2 + n, 3 + n, -((
b*x)/a)])/((2 + n)*(a + b*x)^n)
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int \frac{x^{1+n}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1+n)/((b*x+a)^n),x)
```

```
[Out] int(x^(1+n)/((b*x+a)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n}x^{n+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n + 1)/(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n)*x^(n + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{x^{n+1}}{(bx+a)^n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n + 1)/(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] integral(x^(n + 1)/(b*x + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1+n)/((b*x+a)**n),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^{n+1}}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(n + 1)/(b*x + a)^n,x, algorithm="giac")

[Out] integrate(x^(n + 1)/(b*x + a)^n, x)
```

3.745 $\int x^{3/2}(a+bx)^n\,dx$

Optimal. Leaf size=45

$$\frac{2}{5}x^{5/2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{5}{2},-n;\frac{7}{2};-\frac{bx}{a}\right)$$

```
[Out] (2*x^(5/2)*(a + b*x)^n*Hypergeometric2F1[5/2, -n, 7/2, -((b*x)/a)
])/(5*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0276907, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{2}{5}x^{5/2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{5}{2},-n;\frac{7}{2};-\frac{bx}{a}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(a + b*x)^n,x]
```

```
[Out] (2*x^(5/2)*(a + b*x)^n*Hypergeometric2F1[5/2, -n, 7/2, -((b*x)/a)
])/(5*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 5.31387, size = 36, normalized size = 0.8

$$\frac{2x^{\frac{5}{2}}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n,\frac{5}{2}\\ \frac{7}{2}\end{matrix}\middle|-\frac{bx}{a}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(3/2)*(b*x+a)**n,x)
```

```
[Out] 2*x**(5/2)*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, 5/2), (7/2,)
, -b*x/a)/5
```

Mathematica [A] time = 0.0187945, size = 45, normalized size = 1.

$$\frac{2}{5}x^{5/2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{5}{2},-n;\frac{7}{2};-\frac{bx}{a}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(3/2)*(a + b*x)^n,x]
```

```
[Out] (2*x^(5/2)*(a + b*x)^n*Hypergeometric2F1[5/2, -n, 7/2, -((b*x)/a)
])/(5*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.028, size = 0, normalized size = 0.

$$\int x^{\frac{3}{2}} (bx + a)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(3/2)*(b*x+a)^n,x)
```

```
[Out] int(x^(3/2)*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^n x^{\frac{3}{2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx + a)^n x^{\frac{3}{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*x^(3/2), x)
```

Sympy [A] time = 56.9557, size = 27, normalized size = 0.6

$$\frac{2a^n x^{\frac{5}{2}} {}_2F_1\left(\begin{matrix} \frac{5}{2}, -n \\ \frac{7}{2} \end{matrix}\middle| \frac{bxe^{i\pi}}{a}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(3/2)*(b*x+a)**n,x)

[Out] 2*a**n*x**(5/2)*hyper((5/2, -n), (7/2,), b*x*exp_polar(I*pi)/a)/5
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^n x^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(3/2),x, algorithm="giac")

[Out] integrate((b*x + a)^n*x^(3/2), x)
```

3.746 $\int \sqrt{x}(a+bx)^n\,dx$

Optimal. Leaf size=45

$$\frac{2}{3}x^{3/2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{3}{2},-n;\frac{5}{2};-\frac{bx}{a}\right)$$

```
[Out] (2*x^(3/2)*(a + b*x)^n*Hypergeometric2F1[3/2, -n, 5/2, -((b*x)/a)
])/(3*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0269656, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$\frac{2}{3}x^{3/2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{3}{2},-n;\frac{5}{2};-\frac{bx}{a}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[x]*(a + b*x)^n,x]
```

```
[Out] (2*x^(3/2)*(a + b*x)^n*Hypergeometric2F1[3/2, -n, 5/2, -((b*x)/a)
])/(3*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 5.27297, size = 36, normalized size = 0.8

$$\frac{2x^{\frac{3}{2}}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n,\frac{3}{2}\\ \frac{5}{2}\end{matrix}\middle|-\frac{bx}{a}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(1/2)*(b*x+a)**n,x)
```

```
[Out] 2*x**(3/2)*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, 3/2), (5/2,)
, -b*x/a)/3
```

Mathematica [A] time = 0.0170199, size = 45, normalized size = 1.

$$\frac{2}{3}x^{3/2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{3}{2},-n;\frac{5}{2};-\frac{bx}{a}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[x]*(a + b*x)^n,x]
```

```
[Out] (2*x^(3/2)*(a + b*x)^n*Hypergeometric2F1[3/2, -n, 5/2, -((b*x)/a)
])/(3*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int \sqrt{x}\,(bx+a)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(1/2)*(b*x+a)^n,x)
```

```
[Out] int(x^(1/2)*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n \sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*sqrt(x),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*sqrt(x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^n\sqrt{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*sqrt(x),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*sqrt(x), x)
```

Sympy [A] time = 6.44883, size = 27, normalized size = 0.6

$$\frac{2a^{n}x^{\frac{3}{2}}{}_{2}F_{1}\left(\begin{matrix}\frac{3}{2},-n\\\frac{5}{2}\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(1/2)*(b*x+a)**n,x)
```

```
[Out] 2*a**n*x**(3/2)*hyper((3/2, -n), (5/2,), b*x*exp_polar(I*pi)/a)/3
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n}\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*sqrt(x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*sqrt(x), x)
```

3.747 $\int \frac{(a+bx)^n}{\sqrt{x}}\,dx$

Optimal. Leaf size=43

$$2\sqrt{x}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};-\frac{bx}{a}\right)$$

```
[Out] (2*Sqrt[x]*(a + b*x)^n*Hypergeometric2F1[1/2, -n, 3/2, -((b*x)/a)
])/(1 + (b*x)/a)^n
```

Rubi [A] time = 0.0266629, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$2\sqrt{x}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};-\frac{bx}{a}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(a + b*x)^n*Hypergeometric2F1[1/2, -n, 3/2, -((b*x)/a)
])/(1 + (b*x)/a)^n
```

Rubi in Sympy [A] time = 5.29669, size = 34, normalized size = 0.79

$$2\sqrt{x}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|-\frac{bx}{a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x**(1/2),x)
```

```
[Out] 2*sqrt(x)*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, 1/2), (3/2,),
 -b*x/a)
```

Mathematica [A] time = 0.0153464, size = 43, normalized size = 1.

$$2\sqrt{x}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};-\frac{bx}{a}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(a + b*x)^n*Hypergeometric2F1[1/2, -n, 3/2, -((b*x)/a)
])/(1 + (b*x)/a)^n
```

Maple [F] time = 0.028, size = 0, normalized size = 0.

$$\int (bx + a)^n \frac{1}{\sqrt{x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x^(1/2),x)
```

```
[Out] int((b*x+a)^n/x^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^n}{\sqrt{x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/sqrt(x),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/sqrt(x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx + a)^n}{\sqrt{x}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/sqrt(x),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/sqrt(x), x)
```

Sympy [A] time = 5.195, size = 26, normalized size = 0.6

$$2a^n\sqrt{x}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},-n\\ \frac{3}{2}\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x**(1/2),x)
```

```
[Out] 2*a**n*sqrt(x)*hyper((1/2, -n), (3/2,), b*x*exp_polar(I*pi)/a)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/sqrt(x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/sqrt(x), x)
```

3.748 $\int \frac{(a+bx)^n}{x^{3/2}} dx$

Optimal. Leaf size=43

$$-\frac{2(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-\frac{1}{2},-n;\frac{1}{2};-\frac{bx}{a}\right)}{\sqrt{x}}$$

```
[Out] (-2*(a + b*x)^n*Hypergeometric2F1[-1/2, -n, 1/2, -((b*x)/a)])/(Sq
rt[x]*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0277451, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-\frac{1}{2},-n;\frac{1}{2};-\frac{bx}{a}\right)}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/x^(3/2),x]
```

```
[Out] (-2*(a + b*x)^n*Hypergeometric2F1[-1/2, -n, 1/2, -((b*x)/a)])/(Sq
rt[x]*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 5.3348, size = 37, normalized size = 0.86

$$-\frac{2\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n {}_2F_1\left(\begin{matrix} -n,-\frac{1}{2} \\ \frac{1}{2} \end{matrix}\middle| -\frac{bx}{a}\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x**(3/2),x)
```

```
[Out] -2*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, -1/2), (1/2,), -b*x/
a)/sqrt(x)
```

Mathematica [A] time = 0.0181434, size = 43, normalized size = 1.

$$-\frac{2(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-\frac{1}{2},-n;\frac{1}{2};-\frac{bx}{a}\right)}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/x^(3/2),x]
```

```
[Out] (-2*(a + b*x)^n*Hypergeometric2F1[-1/2, -n, 1/2, -((b*x)/a)])/(Sq
rt[x]*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.027, size = 0, normalized size = 0.

$$\int (bx+a)^n x^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x^(3/2),x)
```

```
[Out] int((b*x+a)^n/x^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/x^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{x^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/x^(3/2), x)
```

Sympy [A] time = 12.7532, size = 29, normalized size = 0.67

$$-\frac{2a^n {}_2F_1\left(\begin{matrix} -\frac{1}{2}, -n \\ \frac{1}{2} \end{matrix}\middle| \frac{bxe^{i\pi}}{a}\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x**(3/2),x)
```

```
[Out] -2*a**n*hyper((-1/2, -n), (1/2,), b*x*exp_polar(I*pi)/a)/sqrt(x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/x^(3/2), x)
```

3.749 $\int \frac{(a+bx)^n}{x^{5/2}}\,dx$

Optimal. Leaf size=45

$$-\frac{2(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(-\frac{3}{2},-n;-\frac{1}{2};-\frac{bx}{a}\right)}{3x^{3/2}}$$

```
[Out] (-2*(a + b*x)^n*Hypergeometric2F1[-3/2, -n, -1/2, -((b*x)/a)])/(3
*x^(3/2)*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0277944, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\frac{2(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(-\frac{3}{2},-n;-\frac{1}{2};-\frac{bx}{a}\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/x^(5/2),x]
```

```
[Out] (-2*(a + b*x)^n*Hypergeometric2F1[-3/2, -n, -1/2, -((b*x)/a)])/(3
*x^(3/2)*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 5.37066, size = 41, normalized size = 0.91

$$-\frac{2\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n,-\frac{3}{2}\\-\frac{1}{2}\end{matrix}\middle|-\frac{bx}{a}\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x**(5/2),x)
```

```
[Out] -2*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, -3/2), (-1/2,), -b*x
/a)/(3*x**(3/2))
```

Mathematica [A] time = 0.0244816, size = 45, normalized size = 1.

$$-\frac{2(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(-\frac{3}{2},-n;-\frac{1}{2};-\frac{bx}{a}\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/x^(5/2),x]
```

```
[Out] (-2*(a + b*x)^n*Hypergeometric2F1[-3/2, -n, -1/2, -((b*x)/a)])/(3
*x^(3/2)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.025, size = 0, normalized size = 0.

$$\int (bx+a)^n x^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x^(5/2),x)
```

```
[Out] int((b*x+a)^n/x^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/x^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{x^{\frac{5}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/x^(5/2), x)
```

Sympy [A] time = 90.6005, size = 32, normalized size = 0.71

$$-\frac{2a^{n}{}_{2}F_{1}\left(\begin{matrix}-\frac{3}{2},-n\\-\frac{1}{2}\end{matrix}\middle|\frac{bxe^{i\pi}}{a}\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x**(5/2),x)
```

```
[Out] -2*a**n*hyper((-3/2, -n), (-1/2,), b*x*exp_polar(I*pi)/a)/(3*x**(
3/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/x^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/x^(5/2), x)
```

3.750 $\int (bx)^m(2+dx)^n\,dx$

Optimal. Leaf size=35

$$\frac{2^n(bx)^{m+1}\,{}_2F_1\left(m+1,-n;m+2;-\frac{dx}{2}\right)}{b(m+1)}$$

```
[Out] (2^n*(b*x)^(1 + m)*Hypergeometric2F1[1 + m, -n, 2 + m, -(d*x)/2])
/(b*(1 + m))
```

Rubi [A] time = 0.0291261, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{2^n(bx)^{m+1}\,{}_2F_1\left(m+1,-n;m+2;-\frac{dx}{2}\right)}{b(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(b*x)^m*(2 + d*x)^n,x]
```

```
[Out] (2^n*(b*x)^(1 + m)*Hypergeometric2F1[1 + m, -n, 2 + m, -(d*x)/2])
/(b*(1 + m))
```

Rubi in Sympy [A] time = 3.49968, size = 27, normalized size = 0.77

$$\frac{2^n\,(bx)^{m+1}\,{}_2F_1\left(\left.\begin{matrix}-n,m+1\\m+2\end{matrix}\right|-\frac{dx}{2}\right)}{b\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x)**m*(d*x+2)**n,x)
```

```
[Out] 2**n*(b*x)**(m + 1)*hyper((-n, m + 1), (m + 2,), -d*x/2)/(b*(m +
1))
```

Mathematica [A] time = 0.0403467, size = 31, normalized size = 0.89

$$\frac{2^n x(bx)^m\,{}_2F_1\left(m+1,-n;m+2;-\frac{dx}{2}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b*x)^m*(2 + d*x)^n,x]
```

```
[Out] (2^n*x*(b*x)^m*Hypergeometric2F1[1 + m, -n, 2 + m, -(d*x)/2])/(1
+ m)
```

Maple [A] time = 0.116, size = 32, normalized size = 0.9

$$\frac{2^{n}\left(bx\right)^{m}x}{1+m}{}_2F_1(-n,1+m;\,2+m;\,-\frac{dx}{2})$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x)^m*(d*x+2)^n,x)
```

```
[Out] 2^n*(b*x)^m/(1+m)*x*hypergeom([-n,1+m],[2+m],-1/2*d*x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(bx\right)^{m}\left(dx+2\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^m*(d*x + 2)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x)^m*(d*x + 2)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(bx\right)^{m}\left(dx+2\right)^{n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^m*(d*x + 2)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x)^m*(d*x + 2)^n, x)
```

Sympy [A] time = 8.50831, size = 37, normalized size = 1.06

$$\frac{2^n b^m x x^m (m+1)\, {}_2F_1\left(\begin{matrix} -n, m+1 \\ m+2 \end{matrix}\middle| \frac{dxe^{i\pi}}{2}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)**m*(d*x+2)**n,x)
```

```
[Out] 2**n*b**m*x*x**m*gamma(m + 1)*hyper((-n, m + 1), (m + 2,), d*x*ex
p_polar(I*pi)/2)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx)^m (dx+2)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^m*(d*x + 2)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x)^m*(d*x + 2)^n, x)
```

3.751 $\int (bx)^m (c-bcx)^n \, dx$

Optimal. Leaf size=40

$$-\frac{(c-bcx)^{n+1}\,{}_2F_1(-m,n+1;n+2;1-bx)}{bc(n+1)}$$

```
[Out] -(((c - b*c*x)^(1 + n)*Hypergeometric2F1[-m, 1 + n, 2 + n, 1 - b*
x])/(b*c*(1 + n)))
```

Rubi [A] time = 0.0291204, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{(c-bcx)^{n+1}\,{}_2F_1(-m,n+1;n+2;1-bx)}{bc(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(b*x)^m*(c - b*c*x)^n,x]
```

```
[Out] -(((c - b*c*x)^(1 + n)*Hypergeometric2F1[-m, 1 + n, 2 + n, 1 - b*
x])/(b*c*(1 + n)))
```

Rubi in Sympy [A] time = 5.57311, size = 29, normalized size = 0.72

$$-\frac{(-bcx+c)^{n+1}\,{}_2F_1\left(\begin{matrix}-m,n+1\\ n+2\end{matrix}\middle|-bx+1\right)}{bc\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x)**m*(-b*c*x+c)**n,x)
```

```
[Out] -(-b*c*x + c)**(n + 1)*hyper((-m, n + 1), (n + 2,), -b*x + 1)/(b*
c*(n + 1))
```

Mathematica [A] time = 0.0385477, size = 44, normalized size = 1.1

$$\frac{x(bx)^m(1-bx)^{-n}(c-bcx)^n\,{}_2F_1(m+1,-n;m+2;bx)}{m+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b*x)^m*(c - b*c*x)^n,x]
```

```
[Out] (x*(b*x)^m*(c - b*c*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, b*x]
)/((1 + m)*(1 - b*x)^n)
```

Maple [F] time = 0.174, size = 0, normalized size = 0.

$$\int (bx)^m (-bcx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x)^m*(-b*c*x+c)^n,x)
```

```
[Out] int((b*x)^m*(-b*c*x+c)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (-bcx + c)^n (bx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + c)^n*(b*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((-b*c*x + c)^n*(b*x)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((-bcx + c)^n (bx)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + c)^n*(b*x)^m,x, algorithm="fricas")
```

```
[Out] integral((-b*c*x + c)^n*(b*x)^m, x)
```

Sympy [A] time = 8.63452, size = 37, normalized size = 0.92

$$\frac{b^m c^n x x^m (m+1)\,{}_2F_1\left(\begin{matrix}-n, m+1\\ m+2\end{matrix}\middle| bxe^{2i\pi}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)**m*(-b*c*x+c)**n,x)
```

```
[Out] b**m*c**n*x*x**m*gamma(m + 1)*hyper((-n, m + 1), (m + 2,), b*x*ex
p_polar(2*I*pi))/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (-bcx+c)^n (bx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + c)^n*(b*x)^m,x, algorithm="giac")
```

```
[Out] integrate((-b*c*x + c)^n*(b*x)^m, x)
```

3.752 $\int (bx)^m (c+dx)^n\,dx$

Optimal. Leaf size=52

$$\frac{(bx)^{m+1}(c+dx)^n\left(\frac{dx}{c}+1\right)^{-n}{}_2F_1\left(m+1,-n;m+2;-\frac{dx}{c}\right)}{b(m+1)}$$

```
[Out] ((b*x)^(1 + m)*(c + d*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -(
(d*x)/c)])/(b*(1 + m)*(1 + (d*x)/c)^n)
```

Rubi [A] time = 0.0389909, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$

$$\frac{(bx)^{m+1}(c+dx)^n\left(\frac{dx}{c}+1\right)^{-n}{}_2F_1\left(m+1,-n;m+2;-\frac{dx}{c}\right)}{b(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(b*x)^m*(c + d*x)^n,x]
```

```
[Out] ((b*x)^(1 + m)*(c + d*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -(
(d*x)/c)])/(b*(1 + m)*(1 + (d*x)/c)^n)
```

Rubi in Sympy [A] time = 6.79858, size = 39, normalized size = 0.75

$$\frac{(bx)^{m+1}\left(1+\frac{dx}{c}\right)^{-n}(c+dx)^n\,{}_2F_1\left(\begin{matrix}-n,m+1\\m+2\end{matrix}\middle|-\frac{dx}{c}\right)}{b\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x)**m*(d*x+c)**n,x)
```

```
[Out] (b*x)**(m + 1)*(1 + d*x/c)**(-n)*(c + d*x)**n*hyper((-n, m + 1),
(m + 2,), -d*x/c)/(b*(m + 1))
```

Mathematica [A] time = 0.0428601, size = 48, normalized size = 0.92

$$\frac{x(bx)^m(c+dx)^n\left(\frac{dx}{c}+1\right)^{-n}{}_2F_1\left(m+1,-n;m+2;-\frac{dx}{c}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(b*x)^m*(c + d*x)^n,x]
```

```
[Out] (x*(b*x)^m*(c + d*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m, -((d*x
)/c)])/((1 + m)*(1 + (d*x)/c)^n)
```

Maple [F] time = 0.092, size = 0, normalized size = 0.

$$\int (bx)^m (dx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x)^m*(d*x+c)^n,x)
```

```
[Out] int((b*x)^m*(d*x+c)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx)^m (dx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^m*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x)^m*(d*x + c)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx)^m (dx + c)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^m*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x)^m*(d*x + c)^n, x)
```

Sympy [A] time = 8.67537, size = 37, normalized size = 0.71

$$\frac{b^m c^n x x^m (m+1) \, {}_2F_1\left(\begin{matrix} -n, m+1 \\ m+2 \end{matrix} \middle| \frac{dxe^{i\pi}}{c}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)**m*(d*x+c)**n,x)
```

```
[Out] b**m*c**n*x*x**m*gamma(m + 1)*hyper((-n, m + 1), (m + 2,), d*x*ex
p_polar(I*pi)/c)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx)^m (dx+c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x)^m*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x)^m*(d*x + c)^n, x)
```

3.753 $\int x^{-1+n}(a+bx)^{-1-n}\,dx$

Optimal. Leaf size=19

$$\frac{x^n(a+bx)^{-n}}{an}$$

```
[Out] x^n/(a*n*(a + b*x)^n)
```

Rubi [A] time = 0.0145925, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{x^n(a+bx)^{-n}}{an}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-1 + n)*(a + b*x)^(-1 - n),x]

[Out] x^n/(a*n*(a + b*x)^n)
```

Rubi in Sympy [A] time = 2.68159, size = 12, normalized size = 0.63

$$\frac{x^n\,(a+bx)^{-n}}{an}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-1+n)*(b*x+a)**(-1-n),x)

[Out] x**n*(a + b*x)**(-n)/(a*n)
```

Mathematica [A] time = 0.014268, size = 19, normalized size = 1.

$$\frac{x^n(a+bx)^{-n}}{an}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-1 + n)*(a + b*x)^(-1 - n),x]
```

```
[Out] x^n/(a*n*(a + b*x)^n)
```

Maple [A] time = 0.004, size = 20, normalized size = 1.1

$$\frac{x^n (bx + a)^{-n}}{an}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(-1+n)*(b*x+a)^(-1-n),x)
```

```
[Out] x^n*(b*x+a)^(-n)/a/n
```

Maxima [A] time = 1.35755, size = 30, normalized size = 1.58

$$\frac{e^{(-n \log(bx+a)+n \log(x))}}{an}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-n - 1)*x^(n - 1),x, algorithm="maxima")
```

```
[Out] e^(-n*log(b*x + a) + n*log(x))/(a*n)
```

Fricas [A] time = 0.222709, size = 43, normalized size = 2.26

$$\frac{\left(bx^2 + ax\right)(bx + a)^{-n-1}x^{n-1}}{an}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-n - 1)*x^(n - 1),x, algorithm="fricas")
```

```
[Out] (b*x^2 + a*x)*(b*x + a)^(-n - 1)*x^(n - 1)/(a*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-1+n)*(b*x+a)**(-1-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-1}x^{n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 1)*x^(n - 1),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(-n - 1)*x^(n - 1), x)
```

3.754 $\int x^{-3-n}(a+bx)^n\,dx$

Optimal. Leaf size=58

$$\frac{bx^{-n-1}(a+bx)^{n+1}}{a^2(n+1)(n+2)}-\frac{x^{-n-2}(a+bx)^{n+1}}{a(n+2)}$$

```
[Out] -((x^(-2 - n)*(a + b*x)^(1 + n))/(a*(2 + n))) + (b*x^(-1 - n)*(a
+ b*x)^(1 + n))/(a^2*(1 + n)*(2 + n))
```

Rubi [A] time = 0.0448799, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{bx^{-n-1}(a+bx)^{n+1}}{a^2(n+1)(n+2)}-\frac{x^{-n-2}(a+bx)^{n+1}}{a(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-3 - n)*(a + b*x)^n,x]
```

```
[Out] -((x^(-2 - n)*(a + b*x)^(1 + n))/(a*(2 + n))) + (b*x^(-1 - n)*(a
+ b*x)^(1 + n))/(a^2*(1 + n)*(2 + n))
```

Rubi in Sympy [A] time = 7.08977, size = 46, normalized size = 0.79

$$-\frac{x^{-n-2}\left(a+bx\right)^{n+1}}{a\left(n+2\right)}+\frac{bx^{-n-1}\left(a+bx\right)^{n+1}}{a^2\left(n+1\right)\left(n+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-3-n)*(b*x+a)**n,x)
```

```
[Out] -x**(-n - 2)*(a + b*x)**(n + 1)/(a*(n + 2)) + b*x**(-n - 1)*(a +
b*x)**(n + 1)/(a**2*(n + 1)*(n + 2))
```

Mathematica [A] time = 0.045611, size = 40, normalized size = 0.69

$$-\frac{x^{-n-2}(an+a-bx)(a+bx)^{n+1}}{a^2(n+1)(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-3 - n)*(a + b*x)^n,x]
```

```
[Out] -((x^(-2 - n)*(a + a*n - b*x)*(a + b*x)^(1 + n))/(a^2*(1 + n)*(2
+ n)))
```

Maple [A] time = 0.005, size = 41, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}x^{-2-n}(an-bx+a)}{(2+n)(1+n)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-3-n)*(b*x+a)^n,x)
```

```
[Out] -(b*x+a)^(1+n)*x^(-2-n)*(a*n-b*x+a)/(2+n)/(1+n)/a^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n x^{-n-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(-n - 3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^(-n - 3), x)
```

Fricas [A] time = 0.222798, size = 86, normalized size = 1.48

$$-\frac{\left(abnx^2-b^2x^3+\left(a^2n+a^2\right)x\right)(bx+a)^n x^{-n-3}}{a^2n^2+3\,a^2n+2\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(-n - 3),x, algorithm="fricas")
```

```
[Out] -(a*b*n*x^2 - b^2*x^3 + (a^2*n + a^2)*x)*(b*x + a)^n*x^(-n - 3)/(
a^2*n^2 + 3*a^2*n + 2*a^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-3-n)*(b*x+a)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^n x^{-n-3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(-n - 3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^(-n - 3), x)
```

3.755 $\int x^{2n-3(1+n)}(a+bx)^n\,dx$

Optimal. Leaf size=58

$$\frac{bx^{-n-1}(a+bx)^{n+1}}{a^2(n+1)(n+2)}-\frac{x^{-n-2}(a+bx)^{n+1}}{a(n+2)}$$

```
[Out] -((x^(-2 - n)*(a + b*x)^(1 + n))/(a*(2 + n))) + (b*x^(-1 - n)*(a
+ b*x)^(1 + n))/(a^2*(1 + n)*(2 + n))
```

Rubi [A] time = 0.0398184, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{bx^{-n-1}(a+bx)^{n+1}}{a^2(n+1)(n+2)}-\frac{x^{-n-2}(a+bx)^{n+1}}{a(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(2*n - 3*(1 + n))*(a + b*x)^n,x]
```

```
[Out] -((x^(-2 - n)*(a + b*x)^(1 + n))/(a*(2 + n))) + (b*x^(-1 - n)*(a
+ b*x)^(1 + n))/(a^2*(1 + n)*(2 + n))
```

Rubi in Sympy [A] time = 6.96497, size = 46, normalized size = 0.79

$$-\frac{x^{-n-2}\left(a+bx\right)^{n+1}}{a\left(n+2\right)}+\frac{bx^{-n-1}\left(a+bx\right)^{n+1}}{a^2\left(n+1\right)\left(n+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**(-3-n)*(b*x+a)**n,x)
```

```
[Out] -x**(-n - 2)*(a + b*x)**(n + 1)/(a*(n + 2)) + b*x**(-n - 1)*(a +
b*x)**(n + 1)/(a**2*(n + 1)*(n + 2))
```

Mathematica [A] time = 0.026372, size = 40, normalized size = 0.69

$$-\frac{x^{-n-2}(an+a-bx)(a+bx)^{n+1}}{a^2(n+1)(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(2*n - 3*(1 + n))*(a + b*x)^n,x]
```

```
[Out] -((x^(-2 - n)*(a + a*n - b*x)*(a + b*x)^(1 + n))/(a^2*(1 + n)*(2
+ n)))
```

Maple [A] time = 0., size = 41, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}\,x^{-2-n}\,(an-bx+a)}{(2+n)\,(1+n)\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(-3-n)*(b*x+a)^n,x)
```

```
[Out] -(b*x+a)^(1+n)*x^(-2-n)*(a*n-b*x+a)/(2+n)/(1+n)/a^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n x^{-n-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(-n - 3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^(-n - 3), x)
```

Fricas [A] time = 0.220853, size = 86, normalized size = 1.48

$$-\frac{\left(abnx^2-b^2x^3+\left(a^2n+a^2\right)x\right)(bx+a)^n x^{-n-3}}{a^2n^2+3\,a^2n+2\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(-n - 3),x, algorithm="fricas")
```

```
[Out] -(a*b*n*x^2 - b^2*x^3 + (a^2*n + a^2)*x)*(b*x + a)^n*x^(-n - 3)/(
a^2*n^2 + 3*a^2*n + 2*a^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(-3-n)*(b*x+a)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^n x^{-n-3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^(-n - 3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^(-n - 3), x)
```

3.756 $\int x^3\sqrt{cx^2}(a+bx)\,dx$

Optimal. Leaf size=35

$$\frac{1}{5}ax^4\sqrt{cx^2}+\frac{1}{6}bx^5\sqrt{cx^2}$$

```
[Out] (a*x^4*Sqrt[c*x^2])/5 + (b*x^5*Sqrt[c*x^2])/6
```

Rubi [A] time = 0.0284103, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{5}ax^4\sqrt{cx^2}+\frac{1}{6}bx^5\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*Sqrt[c*x^2]*(a + b*x),x]

[Out] (a*x^4*Sqrt[c*x^2])/5 + (b*x^5*Sqrt[c*x^2])/6
```

Rubi in Sympy [A] time = 8.94978, size = 29, normalized size = 0.83

$$\frac{ax^4\sqrt{cx^2}}{5}+\frac{bx^5\sqrt{cx^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)*(c*x**2)**(1/2),x)

[Out] a*x**4*sqrt(c*x**2)/5 + b*x**5*sqrt(c*x**2)/6
```

Mathematica [A] time = 0.00634398, size = 24, normalized size = 0.69

$$\frac{1}{30}x^4\sqrt{cx^2}(6a+5bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] (x^4*Sqrt[c*x^2]*(6*a + 5*b*x))/30
```

Maple [A] time = 0.005, size = 21, normalized size = 0.6

$$\frac{x^4 (5\,bx + 6\,a)}{30}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x+a)*(c*x^2)^(1/2),x)
```

```
[Out] 1/30*x^4*(5*b*x+6*a)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)*x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.203952, size = 30, normalized size = 0.86

$$\frac{1}{30}\left(5\,bx^5 + 6\,ax^4\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/30*(5*b*x^5 + 6*a*x^4)*sqrt(c*x^2)
```

Sympy [A] time = 1.28824, size = 36, normalized size = 1.03

$$\frac{a\sqrt{c}x^4\sqrt{x^2}}{5} + \frac{b\sqrt{c}x^5\sqrt{x^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)*(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c)*x**4*sqrt(x**2)/5 + b*sqrt(c)*x**5*sqrt(x**2)/6
```

GIAC/XCAS [A] time = 0.204563, size = 30, normalized size = 0.86

$$\frac{1}{30}\left(5\,bx^{6}\mathrm{sign}\left(x\right)+6\,ax^{5}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)*x^3,x, algorithm="giac")
```

```
[Out] 1/30*(5*b*x^6*sign(x) + 6*a*x^5*sign(x))*sqrt(c)
```

3.757 $\int x^2\sqrt{cx^2}(a+bx)\,dx$

Optimal. Leaf size=35

$$\frac{1}{4}ax^3\sqrt{cx^2}+\frac{1}{5}bx^4\sqrt{cx^2}$$

```
[Out] (a*x^3*Sqrt[c*x^2])/4 + (b*x^4*Sqrt[c*x^2])/5
```

Rubi [A] time = 0.0260764, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{4}ax^3\sqrt{cx^2}+\frac{1}{5}bx^4\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*Sqrt[c*x^2]*(a + b*x),x]

[Out] (a*x^3*Sqrt[c*x^2])/4 + (b*x^4*Sqrt[c*x^2])/5
```

Rubi in Sympy [A] time = 6.72724, size = 29, normalized size = 0.83

$$\frac{ax^3\sqrt{cx^2}}{4}+\frac{bx^4\sqrt{cx^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(b*x+a)*(c*x**2)**(1/2),x)

[Out] a*x**3*sqrt(c*x**2)/4 + b*x**4*sqrt(c*x**2)/5
```

Mathematica [A] time = 0.00533284, size = 24, normalized size = 0.69

$$\frac{1}{20}x^3\sqrt{cx^2}(5a+4bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] (x^3*Sqrt[c*x^2]*(5*a + 4*b*x))/20
```

Maple [A] time = 0.006, size = 21, normalized size = 0.6

$$\frac{x^3\,(4\,bx+5\,a)}{20}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x+a)*(c*x^2)^(1/2),x)
```

```
[Out] 1/20*x^3*(4*b*x+5*a)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)*x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204281, size = 30, normalized size = 0.86

$$\frac{1}{20}\left(4\,bx^4+5\,ax^3\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/20*(4*b*x^4 + 5*a*x^3)*sqrt(c*x^2)
```

Sympy [A] time = 0.922941, size = 36, normalized size = 1.03

$$\frac{a\sqrt{c}x^3\sqrt{x^2}}{4}+\frac{b\sqrt{c}x^4\sqrt{x^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)*(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c)*x**3*sqrt(x**2)/4 + b*sqrt(c)*x**4*sqrt(x**2)/5
```

GIAC/XCAS [A] time = 0.209117, size = 30, normalized size = 0.86

$$\frac{1}{20}\left(4\,bx^{5}\mathrm{sign}\left(x\right)+5\,ax^{4}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)*x^2,x, algorithm="giac")
```

```
[Out] 1/20*(4*b*x^5*sign(x) + 5*a*x^4*sign(x))*sqrt(c)
```

3.758 $\int x\sqrt{cx^2}(a+bx)\,dx$

Optimal. Leaf size=35

$$\frac{1}{3}ax^2\sqrt{cx^2}+\frac{1}{4}bx^3\sqrt{cx^2}$$

```
[Out] (a*x^2*Sqrt[c*x^2])/3 + (b*x^3*Sqrt[c*x^2])/4
```

Rubi [A] time = 0.0243507, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{1}{3}ax^2\sqrt{cx^2}+\frac{1}{4}bx^3\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*Sqrt[c*x^2]*(a + b*x),x]

[Out] (a*x^2*Sqrt[c*x^2])/3 + (b*x^3*Sqrt[c*x^2])/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\sqrt{cx^2}\,(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)*(c*x**2)**(1/2),x)

[Out] Integral(x*sqrt(c*x**2)*(a + b*x), x)
```

Mathematica [A] time = 0.00500997, size = 24, normalized size = 0.69

$$\frac{1}{12}x^2\sqrt{cx^2}(4a+3bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] (x^2*Sqrt[c*x^2]*(4*a + 3*b*x))/12
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$\frac{x^2\left(3\,bx+4\,a\right)}{12}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)*(c*x^2)^(1/2),x)
```

```
[Out] 1/12*x^2*(3*b*x+4*a)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)*x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.199645, size = 30, normalized size = 0.86

$$\frac{1}{12}\left(3\,bx^3+4\,ax^2\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)*x,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b*x^3 + 4*a*x^2)*sqrt(c*x^2)
```

Sympy [A] time = 0.685655, size = 36, normalized size = 1.03

$$\frac{a\sqrt{c}x^2\sqrt{x^2}}{3}+\frac{b\sqrt{c}x^3\sqrt{x^2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)*(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c)*x**2*sqrt(x**2)/3 + b*sqrt(c)*x**3*sqrt(x**2)/4
```

GIAC/XCAS [A] time = 0.206327, size = 30, normalized size = 0.86

$$\frac{1}{12}\left(3\,bx^{4}\mathrm{sign}\left(x\right)+4\,ax^{3}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)*x,x, algorithm="giac")
```

```
[Out] 1/12*(3*b*x^4*sign(x) + 4*a*x^3*sign(x))*sqrt(c)
```

3.759 $\int \sqrt{cx^2}(a+bx)\,dx$

Optimal. Leaf size=33

$$\frac{1}{2}ax\sqrt{cx^2}+\frac{1}{3}bx^2\sqrt{cx^2}$$

```
[Out] (a*x*Sqrt[c*x^2])/2 + (b*x^2*Sqrt[c*x^2])/3
```

Rubi [A] time = 0.021011, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{1}{2}ax\sqrt{cx^2}+\frac{1}{3}bx^2\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] (a*x*Sqrt[c*x^2])/2 + (b*x^2*Sqrt[c*x^2])/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a\sqrt{cx^2}\int x\,dx}{x}+\frac{bx^2\sqrt{cx^2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c*x**2)*Integral(x, x)/x + b*x**2*sqrt(c*x**2)/3
```

Mathematica [A] time = 0.00440649, size = 22, normalized size = 0.67

$$\frac{1}{6}x\sqrt{cx^2}(3a+2bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] (x*Sqrt[c*x^2]*(3*a + 2*b*x))/6
```

Maple [A] time = 0.03, size = 19, normalized size = 0.6

$$\frac{x\left(2\,bx+3\,a\right)}{6}\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(c*x^2)^(1/2),x)
```

```
[Out] 1/6*x*(2*b*x+3*a)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209206, size = 27, normalized size = 0.82

$$\frac{1}{6}\left(2\,bx^{2}+3\,ax\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*x^2 + 3*a*x)*sqrt(c*x^2)
```

Sympy [A] time = 0.536257, size = 34, normalized size = 1.03

$$\frac{a\sqrt{c}x\sqrt{x^{2}}}{2}+\frac{b\sqrt{c}x^{2}\sqrt{x^{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c)*x*sqrt(x**2)/2 + b*sqrt(c)*x**2*sqrt(x**2)/3
```

GIAC/XCAS [A] time = 0.206292, size = 30, normalized size = 0.91

$$\frac{1}{6}\left(2\,bx^3\mathrm{sign}\left(x\right) + 3\,ax^2\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a),x, algorithm="giac")
```

```
[Out] 1/6*(2*b*x^3*sign(x) + 3*a*x^2*sign(x))*sqrt(c)
```

3.760 $\int \frac{\sqrt{cx^2}(a+bx)}{x}\,dx$

Optimal. Leaf size=27

$$a\sqrt{cx^2} + \frac{1}{2}bx\sqrt{cx^2}$$

```
[Out] a*Sqrt[c*x^2] + (b*x*Sqrt[c*x^2])/2
```

Rubi [A] time = 0.0129056, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$a\sqrt{cx^2} + \frac{1}{2}bx\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x))/x,x]

[Out] a*Sqrt[c*x^2] + (b*x*Sqrt[c*x^2])/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b\sqrt{cx^2}\int x\,dx}{x} + \frac{\sqrt{cx^2}\int a\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(c*x**2)**(1/2)/x,x)

[Out] b*sqrt(c*x**2)*Integral(x, x)/x + sqrt(c*x**2)*Integral(a, x)/x
```

Mathematica [A] time = 0.00705819, size = 24, normalized size = 0.89

$$\frac{cx^2(2a+bx)}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x))/x,x]
```

```
[Out] (c*x^2*(2*a + b*x))/(2*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 17, normalized size = 0.6

$$\frac{bx+2a}{2}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(c*x^2)^(1/2)/x,x)
```

```
[Out] 1/2*(b*x+2*a)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204319, size = 22, normalized size = 0.81

$$\frac{1}{2}\sqrt{cx^2}(bx+2a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x,x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(c*x^2)*(b*x + 2*a)
```

Sympy [A] time = 0.542182, size = 29, normalized size = 1.07

$$a\sqrt{c}\sqrt{x^2}+\frac{b\sqrt{c}x\sqrt{x^2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(c*x**2)**(1/2)/x,x)
```

```
[Out] a*sqrt(c)*sqrt(x**2) + b*sqrt(c)*x*sqrt(x**2)/2
```

GIAC/XCAS [A] time = 0.212554, size = 23, normalized size = 0.85

$$\frac{1}{2}\left(bx^2+2\,ax\right)\sqrt{c}\mathrm{sign}\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*sqrt(c)*sign(x)
```

3.761 $\int \frac{\sqrt{cx^2}(a+bx)}{x^2} dx$

Optimal. Leaf size=28

$$\frac{a\sqrt{cx^2}\log(x)}{x}+b\sqrt{cx^2}$$

```
[Out] b*Sqrt[c*x^2] + (a*Sqrt[c*x^2]*Log[x])/x
```

Rubi [A] time = 0.0156603, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a\sqrt{cx^2}\log(x)}{x}+b\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x))/x^2,x]
```

```
[Out] b*Sqrt[c*x^2] + (a*Sqrt[c*x^2]*Log[x])/x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a\sqrt{cx^2}\log(x)}{x}+\frac{\sqrt{cx^2}\int b\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(c*x**2)**(1/2)/x**2,x)
```

```
[Out] a*sqrt(c*x**2)*log(x)/x + sqrt(c*x**2)*Integral(b, x)/x
```

Mathematica [A] time = 0.00687355, size = 20, normalized size = 0.71

$$\frac{cx(a\log(x)+bx)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x))/x^2,x]
```

```
[Out] (c*x*(b*x + a*Log[x]))/Sqrt[c*x^2]
```

Maple [A] time = 0.02, size = 20, normalized size = 0.7

$$\frac{bx + a\ln(x)}{x}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(c*x^2)^(1/2)/x^2,x)
```

```
[Out] (c*x^2)^(1/2)/x*(b*x+a*ln(x))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.212534, size = 26, normalized size = 0.93

$$\frac{\sqrt{cx^2}(bx + a\log(x))}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^2,x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x + a*log(x))/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}\,(a + bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(c*x**2)**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)/x**2, x)
```

GIAC/XCAS [A] time = 0.20913, size = 23, normalized size = 0.82

$$(bx\text{sign}\,(x) + a\ln\left(|x|\right)\text{sign}\,(x))\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^2,x, algorithm="giac")
```

```
[Out] (b*x*sign(x) + a*ln(abs(x))*sign(x))*sqrt(c)
```

3.762 $\int \frac{\sqrt{cx^2}(a+bx)}{x^3}\,dx$

Optimal. Leaf size=32

$$\frac{b\sqrt{cx^2}\log(x)}{x}-\frac{a\sqrt{cx^2}}{x^2}$$

```
[Out] -((a*Sqrt[c*x^2])/x^2) + (b*Sqrt[c*x^2]*Log[x])/x
```

Rubi [A] time = 0.019719, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{b\sqrt{cx^2}\log(x)}{x}-\frac{a\sqrt{cx^2}}{x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x))/x^3,x]

[Out] -((a*Sqrt[c*x^2])/x^2) + (b*Sqrt[c*x^2]*Log[x])/x
```

Rubi in Sympy [A] time = 8.17114, size = 27, normalized size = 0.84

$$-\frac{a\sqrt{cx^2}}{x^2}+\frac{b\sqrt{cx^2}\log(x)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(c*x**2)**(1/2)/x**3,x)

[Out] -a*sqrt(c*x**2)/x**2 + b*sqrt(c*x**2)*log(x)/x
```

Mathematica [A] time = 0.00830452, size = 20, normalized size = 0.62

$$\frac{c(bx\log(x)-a)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x))/x^3,x]
```

```
[Out] (c*(-a + b*x*Log[x]))/Sqrt[c*x^2]
```

Maple [A] time = 0.006, size = 21, normalized size = 0.7

$$\frac{b\ln(x)\,x-a}{x^2}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(c*x^2)^(1/2)/x^3,x)

[Out] (c*x^2)^(1/2)*(b*ln(x)*x-a)/x^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^3,x, algorithm="maxima")

[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.215828, size = 27, normalized size = 0.84

$$\frac{\sqrt{cx^2}(bx\log(x)-a)}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^3,x, algorithm="fricas")

[Out] sqrt(c*x^2)*(b*x*log(x) - a)/x^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{cx^2}\,(a+bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(c*x**2)**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)/x**3, x)
```

GIAC/XCAS [A] time = 0.207842, size = 27, normalized size = 0.84

$$\left(b\ln\left(|x|\right)\operatorname{sign}\left(x\right) - \frac{a\operatorname{sign}\left(x\right)}{x}\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^3,x, algorithm="giac")
```

```
[Out] (b*ln(abs(x))*sign(x) - a*sign(x)/x)*sqrt(c)
```

3.763 $\int \frac{\sqrt{cx^2}(a+bx)}{x^4} \, dx$

Optimal. Leaf size=26

$$-\frac{\sqrt{cx^2}(a+bx)^2}{2ax^3}$$

[Out] -(Sqrt[c*x^2]*(a + b*x)^2)/(2*a*x^3)

Rubi [A] time = 0.0146623, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$-\frac{\sqrt{cx^2}(a+bx)^2}{2ax^3}$$

Antiderivative was successfully verified.

[In] Int[(Sqrt[c*x^2]*(a + b*x))/x^4,x]

[Out] -(Sqrt[c*x^2]*(a + b*x)^2)/(2*a*x^3)

Rubi in Sympy [A] time = 8.29241, size = 29, normalized size = 1.12

$$-\frac{a\sqrt{cx^2}}{2x^3} - \frac{b\sqrt{cx^2}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((b*x+a)*(c*x**2)**(1/2)/x**4,x)

[Out] -a*sqrt(c*x**2)/(2*x**3) - b*sqrt(c*x**2)/x**2

Mathematica [A] time = 0.00663325, size = 22, normalized size = 0.85

$$-\frac{\sqrt{cx^2}(a+2bx)}{2x^3}$$

Antiderivative was successfully verified.

[In] Integrate[(Sqrt[c*x^2]*(a + b*x))/x^4,x]

```
[Out] -(Sqrt[c*x^2]*(a + 2*b*x))/(2*x^3)
```

Maple [A] time = 0.006, size = 19, normalized size = 0.7

$$-\frac{2\,bx+a}{2\,x^3}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(c*x^2)^(1/2)/x^4,x)
```

```
[Out] -1/2*(2*b*x+a)*(c*x^2)^(1/2)/x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.207393, size = 24, normalized size = 0.92

$$-\frac{\sqrt{cx^2}(2\,bx+a)}{2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)/x^4,x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(c*x^2)*(2*b*x + a)/x^3
```

Sympy [A] time = 1.8043, size = 36, normalized size = 1.38

$$-\frac{a\sqrt{c}\sqrt{x^2}}{2x^3}-\frac{b\sqrt{c}\sqrt{x^2}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(c*x**2)**(1/2)/x**4,x)
```

```
[Out] -a*sqrt(c)*sqrt(x**2)/(2*x**3) - b*sqrt(c)*sqrt(x**2)/x**2
```

GIAC/XCAS [A] time = 0.211441, size = 26, normalized size = 1.

$$-\frac{(2\,bx\text{sign}\,(x)+a\text{sign}\,(x))\sqrt{c}}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)/x^4,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*x*sign(x) + a*sign(x))*sqrt(c)/x^2
```

3.764 $\int x^3 \left(cx^2\right)^{3/2} (a+bx)\, dx$

Optimal. Leaf size=37

$$\frac{1}{7}acx^6\sqrt{cx^2}+\frac{1}{8}bcx^7\sqrt{cx^2}$$

```
[Out] (a*c*x^6*Sqrt[c*x^2])/7 + (b*c*x^7*Sqrt[c*x^2])/8
```

Rubi [A] time = 0.0339374, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{7}acx^6\sqrt{cx^2}+\frac{1}{8}bcx^7\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (a*c*x^6*Sqrt[c*x^2])/7 + (b*c*x^7*Sqrt[c*x^2])/8
```

Rubi in Sympy [A] time = 9.19798, size = 32, normalized size = 0.86

$$\frac{acx^6\sqrt{cx^2}}{7}+\frac{bcx^7\sqrt{cx^2}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**3*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] a*c*x**6*sqrt(c*x**2)/7 + b*c*x**7*sqrt(c*x**2)/8
```

Mathematica [A] time = 0.00918447, size = 24, normalized size = 0.65

$$\frac{1}{56}x^4\left(cx^2\right)^{3/2}(8a+7bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (x^4*(c*x^2)^(3/2)*(8*a + 7*b*x))/56
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$\frac{x^4 (7\,bx + 8\,a)}{56} \left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(c*x^2)^(3/2)*(b*x+a),x)
```

```
[Out] 1/56*x^4*(7*b*x+8*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.210216, size = 32, normalized size = 0.86

$$\frac{1}{56} \left(7\,bcx^7 + 8\,acx^6\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/56*(7*b*c*x^7 + 8*a*c*x^6)*sqrt(c*x^2)
```

Sympy [A] time = 4.01013, size = 36, normalized size = 0.97

$$\frac{ac^{\frac{3}{2}}x^4 \left(x^2\right)^{\frac{3}{2}}}{7} + \frac{bc^{\frac{3}{2}}x^5 \left(x^2\right)^{\frac{3}{2}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] a*c**(3/2)*x**4*(x**2)**(3/2)/7 + b*c**(3/2)*x**5*(x**2)**(3/2)/8
```

GIAC/XCAS [A] time = 0.20359, size = 30, normalized size = 0.81

$$\frac{1}{56} \, {\left(7 \, b x^{8} \mathrm{sign}\left(x\right) + 8 \, a x^{7} \mathrm{sign}\left(x\right)\right)} c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x^3,x, algorithm="giac")
```

```
[Out] 1/56*(7*b*x^8*sign(x) + 8*a*x^7*sign(x))*c^(3/2)
```

3.765 $\int x^2 \left(cx^2\right)^{3/2} (a + bx)\,dx$

Optimal. Leaf size=37

$$\frac{1}{6}acx^5\sqrt{cx^2} + \frac{1}{7}bcx^6\sqrt{cx^2}$$

```
[Out] (a*c*x^5*Sqrt[c*x^2])/6 + (b*c*x^6*Sqrt[c*x^2])/7
```

Rubi [A] time = 0.0316252, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{6}acx^5\sqrt{cx^2} + \frac{1}{7}bcx^6\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (a*c*x^5*Sqrt[c*x^2])/6 + (b*c*x^6*Sqrt[c*x^2])/7
```

Rubi in Sympy [A] time = 7.28452, size = 32, normalized size = 0.86

$$\frac{acx^5\sqrt{cx^2}}{6} + \frac{bcx^6\sqrt{cx^2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] a*c*x**5*sqrt(c*x**2)/6 + b*c*x**6*sqrt(c*x**2)/7
```

Mathematica [A] time = 0.00787798, size = 24, normalized size = 0.65

$$\frac{1}{42}x^3\left(cx^2\right)^{3/2}(7a + 6bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (x^3*(c*x^2)^(3/2)*(7*a + 6*b*x))/42
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$\frac{x^3 (6 bx + 7 a)}{42} \left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(c*x^2)^(3/2)*(b*x+a),x)
```

```
[Out] 1/42*x^3*(6*b*x+7*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.202245, size = 32, normalized size = 0.86

$$\frac{1}{42} \left(6 bcx^6 + 7 acx^5\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x^2,x, algorithm="fricas")
```

```
[Out] 1/42*(6*b*c*x^6 + 7*a*c*x^5)*sqrt(c*x^2)
```

Sympy [A] time = 3.05869, size = 36, normalized size = 0.97

$$\frac{ac^{\frac{3}{2}} x^3 \left(x^2\right)^{\frac{3}{2}}}{6} + \frac{bc^{\frac{3}{2}} x^4 \left(x^2\right)^{\frac{3}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] a*c**(3/2)*x**3*(x**2)**(3/2)/6 + b*c**(3/2)*x**4*(x**2)**(3/2)/7
```

GIAC/XCAS [A] time = 0.209427, size = 30, normalized size = 0.81

$$\frac{1}{42}\left(6\,bx^7\mathrm{sign}\left(x\right) + 7\,ax^6\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x^2,x, algorithm="giac")
```

```
[Out] 1/42*(6*b*x^7*sign(x) + 7*a*x^6*sign(x))*c^(3/2)
```

3.766 $\int x\left(cx^2\right)^{3/2}(a+bx)\,dx$

Optimal. Leaf size=37

$$\frac{1}{5}acx^4\sqrt{cx^2}+\frac{1}{6}bcx^5\sqrt{cx^2}$$

```
[Out] (a*c*x^4*Sqrt[c*x^2])/5 + (b*c*x^5*Sqrt[c*x^2])/6
```

Rubi [A] time = 0.0273144, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}=0.125$

$$\frac{1}{5}acx^4\sqrt{cx^2}+\frac{1}{6}bcx^5\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (a*c*x^4*Sqrt[c*x^2])/5 + (b*c*x^5*Sqrt[c*x^2])/6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(cx^2\right)^{\frac{3}{2}}(a+bx)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)*(a + b*x), x)
```

Mathematica [A] time = 0.0075964, size = 24, normalized size = 0.65

$$\frac{1}{30}x^2\left(cx^2\right)^{3/2}(6a+5bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (x^2*(c*x^2)^(3/2)*(6*a + 5*b*x))/30
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$\frac{x^2 (5\,bx + 6\,a)}{30} \left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(3/2)*(b*x+a),x)
```

```
[Out] 1/30*x^2*(5*b*x+6*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.207279, size = 32, normalized size = 0.86

$$\frac{1}{30} \left(5\,bcx^5 + 6\,acx^4\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x,x, algorithm="fricas")
```

```
[Out] 1/30*(5*b*c*x^5 + 6*a*c*x^4)*sqrt(c*x^2)
```

Sympy [A] time = 2.13254, size = 36, normalized size = 0.97

$$\frac{ac^{\frac{3}{2}} x^2 \left(x^2\right)^{\frac{3}{2}}}{5} + \frac{bc^{\frac{3}{2}} x^3 \left(x^2\right)^{\frac{3}{2}}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] a*c**(3/2)*x**2*(x**2)**(3/2)/5 + b*c**(3/2)*x**3*(x**2)**(3/2)/6
```

GIAC/XCAS [A] time = 0.20631, size = 30, normalized size = 0.81

$$\frac{1}{30}\left(5\,bx^6\mathrm{sign}\left(x\right) + 6\,ax^5\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*x,x, algorithm="giac")
```

```
[Out] 1/30*(5*b*x^6*sign(x) + 6*a*x^5*sign(x))*c^(3/2)
```

3.767 $\int (cx^2)^{3/2} (a + bx) \, dx$

Optimal. Leaf size=37

$$\frac{1}{4}acx^3\sqrt{cx^2} + \frac{1}{5}bcx^4\sqrt{cx^2}$$

```
[Out] (a*c*x^3*Sqrt[c*x^2])/4 + (b*c*x^4*Sqrt[c*x^2])/5
```

Rubi [A] time = 0.0254089, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{1}{4}acx^3\sqrt{cx^2} + \frac{1}{5}bcx^4\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*x^2)^(3/2)*(a + b*x),x]

[Out] (a*c*x^3*Sqrt[c*x^2])/4 + (b*c*x^4*Sqrt[c*x^2])/5
```

Rubi in Sympy [A] time = 5.60317, size = 32, normalized size = 0.86

$$\frac{acx^3\sqrt{cx^2}}{4} + \frac{bcx^4\sqrt{cx^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)*(b*x+a),x)

[Out] a*c*x**3*sqrt(c*x**2)/4 + b*c*x**4*sqrt(c*x**2)/5
```

Mathematica [A] time = 0.00726745, size = 22, normalized size = 0.59

$$\frac{1}{20}x\left(cx^2\right)^{3/2}(5a + 4bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (x*(c*x^2)^(3/2)*(5*a + 4*b*x))/20
```

Maple [A] time = 0.005, size = 19, normalized size = 0.5

$$\frac{x\,(4\,bx+5\,a)}{20}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a),x)
```

```
[Out] 1/20*x*(4*b*x+5*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204298, size = 32, normalized size = 0.86

$$\frac{1}{20}\left(4\,bcx^{4}+5\,acx^{3}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/20*(4*b*c*x^4 + 5*a*c*x^3)*sqrt(c*x^2)
```

Sympy [A] time = 1.59594, size = 34, normalized size = 0.92

$$\frac{ac^{\frac{3}{2}}x\left(x^{2}\right)^{\frac{3}{2}}}{4}+\frac{bc^{\frac{3}{2}}x^{2}\left(x^{2}\right)^{\frac{3}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a),x)

[Out] a*c**(3/2)*x*(x**2)**(3/2)/4 + b*c**(3/2)*x**2*(x**2)**(3/2)/5
```

GIAC/XCAS [A] time = 0.205249, size = 30, normalized size = 0.81

$$\frac{1}{20}\left(4\,bx^5\mathrm{sign}\left(x\right) + 5\,ax^4\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a),x, algorithm="giac")

[Out] 1/20*(4*b*x^5*sign(x) + 5*a*x^4*sign(x))*c^(3/2)
```

3.768 $\int \frac{(cx^2)^{3/2}(a+bx)}{x} \, dx$

Optimal. Leaf size=37

$$\frac{1}{3}acx^2\sqrt{cx^2}+\frac{1}{4}bcx^3\sqrt{cx^2}$$

```
[Out] (a*c*x^2*Sqrt[c*x^2])/3 + (b*c*x^3*Sqrt[c*x^2])/4
```

Rubi [A] time = 0.024273, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{3}acx^2\sqrt{cx^2}+\frac{1}{4}bcx^3\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^(3/2)*(a + b*x))/x,x]
```

```
[Out] (a*c*x^2*Sqrt[c*x^2])/3 + (b*c*x^3*Sqrt[c*x^2])/4
```

Rubi in Sympy [A] time = 8.47228, size = 32, normalized size = 0.86

$$\frac{acx^2\sqrt{cx^2}}{3}+\frac{bcx^3\sqrt{cx^2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)*(b*x+a)/x,x)
```

```
[Out] a*c*x**2*sqrt(c*x**2)/3 + b*c*x**3*sqrt(c*x**2)/4
```

Mathematica [A] time = 0.002988, size = 25, normalized size = 0.68

$$\frac{1}{12}cx^2\sqrt{cx^2}(4a+3bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*x^2)^(3/2)*(a + b*x))/x,x]
```

```
[Out] (c*x^2*Sqrt[c*x^2]*(4*a + 3*b*x))/12
```

Maple [A] time = 0.004, size = 18, normalized size = 0.5

$$\frac{3\,bx+4\,a}{12}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)/x,x)

[Out] 1/12*(3*b*x+4*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205819, size = 32, normalized size = 0.86

$$\frac{1}{12}\left(3\,bcx^{3}+4\,acx^{2}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x,x, algorithm="fricas")

[Out] 1/12*(3*b*c*x^3 + 4*a*c*x^2)*sqrt(c*x^2)
```

Sympy [A] time = 1.55931, size = 31, normalized size = 0.84

$$\frac{ac^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}{3}+\frac{bc^{\frac{3}{2}}x\left(x^{2}\right)^{\frac{3}{2}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)/x,x)
```

```
[Out] a*c**(3/2)*(x**2)**(3/2)/3 + b*c**(3/2)*x*(x**2)**(3/2)/4
```

GIAC/XCAS [A] time = 0.20843, size = 30, normalized size = 0.81

$$\frac{1}{12}\left(3\,bx^{4}\operatorname{sign}\left(x\right) + 4\,ax^{3}\operatorname{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x,x, algorithm="giac")
```

```
[Out] 1/12*(3*b*x^4*sign(x) + 4*a*x^3*sign(x))*c^(3/2)
```

3.769 $\int \frac{(cx^2)^{3/2}(a+bx)}{x^2}\,dx$

Optimal. Leaf size=35

$$\frac{1}{2}acx\sqrt{cx^2}+\frac{1}{3}bcx^2\sqrt{cx^2}$$

```
[Out] (a*c*x*Sqrt[c*x^2])/2 + (b*c*x^2*Sqrt[c*x^2])/3
```

Rubi [A] time = 0.0217553, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{2}acx\sqrt{cx^2}+\frac{1}{3}bcx^2\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^(3/2)*(a + b*x))/x^2,x]
```

```
[Out] (a*c*x*Sqrt[c*x^2])/2 + (b*c*x^2*Sqrt[c*x^2])/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{ac\sqrt{cx^2}\int x\,dx}{x}+\frac{bcx^2\sqrt{cx^2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)*(b*x+a)/x**2,x)
```

```
[Out] a*c*sqrt(c*x**2)*Integral(x, x)/x + b*c*x**2*sqrt(c*x**2)/3
```

Mathematica [A] time = 0.00410058, size = 23, normalized size = 0.66

$$\frac{1}{6}cx\sqrt{cx^2}(3a+2bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*x^2)^(3/2)*(a + b*x))/x^2,x]
```

```
[Out] (c*x*Sqrt[c*x^2]*(3*a + 2*b*x))/6
```

Maple [A] time = 0.003, size = 21, normalized size = 0.6

$$\frac{2\,bx+3\,a}{6\,x}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)/x^2,x)
```

```
[Out] 1/6/x*(2*b*x+3*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204503, size = 30, normalized size = 0.86

$$\frac{1}{6}\left(2\,bcx^{2}+3\,acx\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*c*x^2 + 3*a*c*x)*sqrt(c*x^2)
```

Sympy [A] time = 1.63504, size = 31, normalized size = 0.89

$$\frac{ac^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}{2x}+\frac{bc^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)/x**2,x)

[Out] a*c**(3/2)*(x**2)**(3/2)/(2*x) + b*c**(3/2)*(x**2)**(3/2)/3
```

GIAC/XCAS [A] time = 0.209699, size = 30, normalized size = 0.86

$$\frac{1}{6}\left(2\,bx^{3}\mathrm{sign}\left(x\right) + 3\,ax^{2}\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x^2,x, algorithm="giac")

[Out] 1/6*(2*b*x^3*sign(x) + 3*a*x^2*sign(x))*c^(3/2)
```

3.770 $\int \frac{(cx^2)^{3/2}(a+bx)}{x^3}\,dx$

Optimal. Leaf size=29

$$ac\sqrt{cx^2} + \frac{1}{2}bcx\sqrt{cx^2}$$

```
[Out] a*c*Sqrt[c*x^2] + (b*c*x*Sqrt[c*x^2])/2
```

Rubi [A] time = 0.0133267, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$

$$ac\sqrt{cx^2} + \frac{1}{2}bcx\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^(3/2)*(a + b*x))/x^3,x]
```

```
[Out] a*c*Sqrt[c*x^2] + (b*c*x*Sqrt[c*x^2])/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{bc\sqrt{cx^2}\int x\,dx}{x} + \frac{c\sqrt{cx^2}\int a\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)*(b*x+a)/x**3,x)
```

```
[Out] b*c*sqrt(c*x**2)*Integral(x, x)/x + c*sqrt(c*x**2)*Integral(a, x)
/x
```

Mathematica [A] time = 0.00454536, size = 21, normalized size = 0.72

$$\frac{1}{2}c\sqrt{cx^2}(2a + bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*x^2)^(3/2)*(a + b*x))/x^3,x]
```

```
[Out] (c*Sqrt[c*x^2]*(2*a + b*x))/2
```

Maple [A] time = 0.003, size = 20, normalized size = 0.7

$$\frac{bx + 2a}{2x^2}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(3/2)*(b*x+a)/x^3,x)
```

```
[Out] 1/2/x^2*(b*x+2*a)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)*(b*x + a)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.202718, size = 24, normalized size = 0.83

$$\frac{1}{2}\left(bcx + 2ac\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)*(b*x + a)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b*c*x + 2*a*c)*sqrt(c*x^2)
```

Sympy [A] time = 2.41714, size = 32, normalized size = 1.1

$$\frac{ac^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{x^2} + \frac{bc^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)/x**3,x)
```

```
[Out] a*c**(3/2)*(x**2)**(3/2)/x**2 + b*c**(3/2)*(x**2)**(3/2)/(2*x)
```

GIAC/XCAS [A] time = 0.208048, size = 23, normalized size = 0.79

$$\frac{1}{2}\left(bx^2 + 2\,ax\right)c^{\frac{3}{2}}\operatorname{sign}\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*c^(3/2)*sign(x)
```

3.771 $\int \frac{(cx^2)^{3/2}(a+bx)}{x^4}\,dx$

Optimal. Leaf size=30

$$\frac{ac\sqrt{cx^2}\log(x)}{x}+bc\sqrt{cx^2}$$

```
[Out] b*c*Sqrt[c*x^2] + (a*c*Sqrt[c*x^2]*Log[x])/x
```

Rubi [A] time = 0.015754, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{ac\sqrt{cx^2}\log(x)}{x}+bc\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^(3/2)*(a + b*x))/x^4,x]
```

```
[Out] b*c*Sqrt[c*x^2] + (a*c*Sqrt[c*x^2]*Log[x])/x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{ac\sqrt{cx^2}\log(x)}{x}+\frac{c\sqrt{cx^2}\int b\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)*(b*x+a)/x**4,x)
```

```
[Out] a*c*sqrt(c*x**2)*log(x)/x + c*sqrt(c*x**2)*Integral(b, x)/x
```

Mathematica [A] time = 0.00696411, size = 21, normalized size = 0.7

$$\frac{(cx^2)^{3/2}(a\log(x)+bx)}{x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*x^2)^(3/2)*(a + b*x))/x^4,x]
```

```
[Out] ((c*x^2)^(3/2)*(b*x + a*Log[x]))/x^3
```

Maple [A] time = 0.007, size = 20, normalized size = 0.7

$$\frac{bx + a\ln(x)}{x^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(3/2)*(b*x+a)/x^4,x)
```

```
[Out] (c*x^2)^(3/2)/x^3*(b*x+a*ln(x))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)*(b*x + a)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.208506, size = 28, normalized size = 0.93

$$\frac{(bcx + ac\log(x))\sqrt{cx^2}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)*(b*x + a)/x^4,x, algorithm="fricas")
```

```
[Out] (b*c*x + a*c*log(x))*sqrt(c*x^2)/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(cx^2\right)^{\frac{3}{2}}(a + bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)/x**4,x)
```

```
[Out] Integral((c*x**2)**(3/2)*(a + b*x)/x**4, x)
```

GIAC/XCAS [A] time = 0.203809, size = 23, normalized size = 0.77

$$(bx\mathrm{sign}\,(x) + a\ln\,(|x|)\,\mathrm{sign}\,(x))c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)/x^4,x, algorithm="giac")
```

```
[Out] (b*x*sign(x) + a*ln(abs(x))*sign(x))*c^(3/2)
```

3.772 $\int x^3 \left(cx^2\right)^{5/2} (a+bx)\, dx$

Optimal. Leaf size=41

$$\frac{1}{9}ac^2x^8\sqrt{cx^2}+\frac{1}{10}bc^2x^9\sqrt{cx^2}$$

```
[Out] (a*c^2*x^8*Sqrt[c*x^2])/9 + (b*c^2*x^9*Sqrt[c*x^2])/10
```

Rubi [A] time = 0.0378674, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{9}ac^2x^8\sqrt{cx^2}+\frac{1}{10}bc^2x^9\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(c*x^2)^(5/2)*(a + b*x),x]

[Out] (a*c^2*x^8*Sqrt[c*x^2])/9 + (b*c^2*x^9*Sqrt[c*x^2])/10
```

Rubi in Sympy [A] time = 10.5398, size = 36, normalized size = 0.88

$$\frac{ac^2x^8\sqrt{cx^2}}{9}+\frac{bc^2x^9\sqrt{cx^2}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(c*x**2)**(5/2)*(b*x+a),x)

[Out] a*c**2*x**8*sqrt(c*x**2)/9 + b*c**2*x**9*sqrt(c*x**2)/10
```

Mathematica [A] time = 0.010355, size = 24, normalized size = 0.59

$$\frac{1}{90}x^4\left(cx^2\right)^{5/2}(10a+9bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] (x^4*(c*x^2)^(5/2)*(10*a + 9*b*x))/90
```

Maple [A] time = 0.005, size = 21, normalized size = 0.5

$$\frac{x^4 (9\,bx + 10\,a)}{90} \left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(c*x^2)^(5/2)*(b*x+a),x)
```

```
[Out] 1/90*x^4*(9*b*x+10*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.20356, size = 38, normalized size = 0.93

$$\frac{1}{90} \left(9\,bc^2x^9 + 10\,ac^2x^8\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x^3,x, algorithm="fricas")
```

```
[Out] 1/90*(9*b*c^2*x^9 + 10*a*c^2*x^8)*sqrt(c*x^2)
```

Sympy [A] time = 9.13223, size = 36, normalized size = 0.88

$$\frac{ac^{\frac{5}{2}}x^4 \left(x^2\right)^{\frac{5}{2}}}{9} + \frac{bc^{\frac{5}{2}}x^5 \left(x^2\right)^{\frac{5}{2}}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] a*c**(5/2)*x**4*(x**2)**(5/2)/9 + b*c**(5/2)*x**5*(x**2)**(5/2)/1
0
```

GIAC/XCAS [A] time = 0.208079, size = 38, normalized size = 0.93

$$\frac{1}{90}\left(9\,bc^2x^{10}\mathrm{sign}\left(x\right)+10\,ac^2x^9\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x^3,x, algorithm="giac")
```

```
[Out] 1/90*(9*b*c^2*x^10*sign(x) + 10*a*c^2*x^9*sign(x))*sqrt(c)
```

3.773 $\int x^2 \left(cx^2\right)^{5/2} (a+bx)\, dx$

Optimal. Leaf size=41

$$\frac{1}{8}ac^2x^7\sqrt{cx^2}+\frac{1}{9}bc^2x^8\sqrt{cx^2}$$

```
[Out] (a*c^2*x^7*Sqrt[c*x^2])/8 + (b*c^2*x^8*Sqrt[c*x^2])/9
```

Rubi [A] time = 0.0363945, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{8}ac^2x^7\sqrt{cx^2}+\frac{1}{9}bc^2x^8\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] (a*c^2*x^7*Sqrt[c*x^2])/8 + (b*c^2*x^8*Sqrt[c*x^2])/9
```

Rubi in Sympy [A] time = 7.65219, size = 36, normalized size = 0.88

$$\frac{ac^2x^7\sqrt{cx^2}}{8}+\frac{bc^2x^8\sqrt{cx^2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] a*c**2*x**7*sqrt(c*x**2)/8 + b*c**2*x**8*sqrt(c*x**2)/9
```

Mathematica [A] time = 0.0103236, size = 24, normalized size = 0.59

$$\frac{1}{72}x^3\left(cx^2\right)^{5/2}(9a+8bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] (x^3*(c*x^2)^(5/2)*(9*a + 8*b*x))/72
```

Maple [A] time = 0.006, size = 21, normalized size = 0.5

$$\frac{x^3 (8\,bx + 9\,a)}{72} \left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(c*x^2)^(5/2)*(b*x+a),x)

[Out] 1/72*x^3*(8*b*x+9*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x^2,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.201994, size = 38, normalized size = 0.93

$$\frac{1}{72} \left(8\,bc^2x^8 + 9\,ac^2x^7\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x^2,x, algorithm="fricas")

[Out] 1/72*(8*b*c^2*x^8 + 9*a*c^2*x^7)*sqrt(c*x^2)
```

Sympy [A] time = 8.17725, size = 36, normalized size = 0.88

$$\frac{ac^{\frac{5}{2}}x^3 \left(x^2\right)^{\frac{5}{2}}}{8} + \frac{bc^{\frac{5}{2}}x^4 \left(x^2\right)^{\frac{5}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] a*c**(5/2)*x**3*(x**2)**(5/2)/8 + b*c**(5/2)*x**4*(x**2)**(5/2)/9
```

GIAC/XCAS [A] time = 0.210167, size = 38, normalized size = 0.93

$$\frac{1}{72}\left(8\,bc^{2}x^{9}\mathrm{sign}\left(x\right)+9\,ac^{2}x^{8}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x^2,x, algorithm="giac")
```

```
[Out] 1/72*(8*b*c^2*x^9*sign(x) + 9*a*c^2*x^8*sign(x))*sqrt(c)
```

3.774 $\int x \left(cx^2\right)^{5/2} (a+bx)\,dx$

Optimal. Leaf size=41

$$\frac{1}{7}ac^2x^6\sqrt{cx^2}+\frac{1}{8}bc^2x^7\sqrt{cx^2}$$

```
[Out] (a*c^2*x^6*Sqrt[c*x^2])/7 + (b*c^2*x^7*Sqrt[c*x^2])/8
```

Rubi [A] time = 0.030822, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{1}{7}ac^2x^6\sqrt{cx^2}+\frac{1}{8}bc^2x^7\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(c*x^2)^(5/2)*(a + b*x),x]

[Out] (a*c^2*x^6*Sqrt[c*x^2])/7 + (b*c^2*x^7*Sqrt[c*x^2])/8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(cx^2\right)^{\frac{5}{2}}(a+bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(5/2)*(b*x+a),x)

[Out] Integral(x*(c*x**2)**(5/2)*(a + b*x), x)
```

Mathematica [A] time = 0.00945454, size = 24, normalized size = 0.59

$$\frac{1}{56}x^2\left(cx^2\right)^{5/2}(8a+7bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] (x^2*(c*x^2)^(5/2)*(8*a + 7*b*x))/56
```

Maple [A] time = 0.005, size = 21, normalized size = 0.5

$$\frac{x^2 (7\,bx + 8\,a)}{56} \left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(5/2)*(b*x+a),x)
```

```
[Out] 1/56*x^2*(7*b*x+8*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.208879, size = 38, normalized size = 0.93

$$\frac{1}{56} \left(7\,bc^2x^7 + 8\,ac^2x^6\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x,x, algorithm="fricas")
```

```
[Out] 1/56*(7*b*c^2*x^7 + 8*a*c^2*x^6)*sqrt(c*x^2)
```

Sympy [A] time = 6.39168, size = 36, normalized size = 0.88

$$\frac{ac^{\frac{5}{2}}x^2 \left(x^2\right)^{\frac{5}{2}}}{7} + \frac{bc^{\frac{5}{2}}x^3 \left(x^2\right)^{\frac{5}{2}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] a*c**(5/2)*x**2*(x**2)**(5/2)/7 + b*c**(5/2)*x**3*(x**2)**(5/2)/8
```

GIAC/XCAS [A] time = 0.20429, size = 38, normalized size = 0.93

$$\frac{1}{56}\left(7\,bc^{2}x^{8}\operatorname{sign}\left(x\right) + 8\,ac^{2}x^{7}\operatorname{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*x,x, algorithm="giac")
```

```
[Out] 1/56*(7*b*c^2*x^8*sign(x) + 8*a*c^2*x^7*sign(x))*sqrt(c)
```

3.775 $\int (cx^2)^{5/2} (a + bx)\, dx$

Optimal. Leaf size=41

$$\frac{1}{6}ac^2x^5\sqrt{cx^2} + \frac{1}{7}bc^2x^6\sqrt{cx^2}$$

```
[Out] (a*c^2*x^5*Sqrt[c*x^2])/6 + (b*c^2*x^6*Sqrt[c*x^2])/7
```

Rubi [A] time = 0.030896, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{1}{6}ac^2x^5\sqrt{cx^2} + \frac{1}{7}bc^2x^6\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)*(a + b*x),x]

[Out] (a*c^2*x^5*Sqrt[c*x^2])/6 + (b*c^2*x^6*Sqrt[c*x^2])/7
```

Rubi in Sympy [A] time = 6.0893, size = 36, normalized size = 0.88

$$\frac{ac^2x^5\sqrt{cx^2}}{6} + \frac{bc^2x^6\sqrt{cx^2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a),x)

[Out] a*c**2*x**5*sqrt(c*x**2)/6 + b*c**2*x**6*sqrt(c*x**2)/7
```

Mathematica [A] time = 0.00902, size = 22, normalized size = 0.54

$$\frac{1}{42}x\left(cx^2\right)^{5/2}(7a + 6bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] (x*(c*x^2)^(5/2)*(7*a + 6*b*x))/42
```

Maple [A] time = 0.005, size = 19, normalized size = 0.5

$$\frac{x(6bx+7a)}{42}(cx^2)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a),x)
```

```
[Out] 1/42*x*(6*b*x+7*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205163, size = 38, normalized size = 0.93

$$\frac{1}{42}\left(6bc^2x^6+7ac^2x^5\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/42*(6*b*c^2*x^6 + 7*a*c^2*x^5)*sqrt(c*x^2)
```

Sympy [A] time = 5.143, size = 34, normalized size = 0.83

$$\frac{ac^{\frac{5}{2}}x\left(x^2\right)^{\frac{5}{2}}}{6}+\frac{bc^{\frac{5}{2}}x^2\left(x^2\right)^{\frac{5}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] a*c**(5/2)*x*(x**2)**(5/2)/6 + b*c**(5/2)*x**2*(x**2)**(5/2)/7
```

GIAC/XCAS [A] time = 0.20549, size = 38, normalized size = 0.93

$$\frac{1}{42}\left(6\, bc^2x^7\text{sign}\left(x\right) + 7\, ac^2x^6\text{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a),x, algorithm="giac")
```

```
[Out] 1/42*(6*b*c^2*x^7*sign(x) + 7*a*c^2*x^6*sign(x))*sqrt(c)
```

3.776 $\int \frac{(cx^2)^{5/2}(a+bx)}{x}\,dx$

Optimal. Leaf size=41

$$\frac{1}{5}ac^2x^4\sqrt{cx^2}+\frac{1}{6}bc^2x^5\sqrt{cx^2}$$

```
[Out] (a*c^2*x^4*Sqrt[c*x^2])/5 + (b*c^2*x^5*Sqrt[c*x^2])/6
```

Rubi [A] time = 0.0284759, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{5}ac^2x^4\sqrt{cx^2}+\frac{1}{6}bc^2x^5\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x))/x,x]

[Out] (a*c^2*x^4*Sqrt[c*x^2])/5 + (b*c^2*x^5*Sqrt[c*x^2])/6
```

Rubi in Sympy [A] time = 9.24206, size = 36, normalized size = 0.88

$$\frac{ac^2x^4\sqrt{cx^2}}{5}+\frac{bc^2x^5\sqrt{cx^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)/x,x)

[Out] a*c**2*x**4*sqrt(c*x**2)/5 + b*c**2*x**5*sqrt(c*x**2)/6
```

Mathematica [A] time = 0.00402571, size = 25, normalized size = 0.61

$$\frac{1}{30}cx^2\left(cx^2\right)^{3/2}(6a+5bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x))/x,x]
```

```
[Out] (c*x^2*(c*x^2)^(3/2)*(6*a + 5*b*x))/30
```

Maple [A] time = 0.006, size = 18, normalized size = 0.4

$$\frac{5\,bx+6\,a}{30}\left(cx^{2}\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)/x,x)
```

```
[Out] 1/30*(5*b*x+6*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204302, size = 38, normalized size = 0.93

$$\frac{1}{30}\left(5\,bc^{2}x^{5}+6\,ac^{2}x^{4}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x,x, algorithm="fricas")
```

```
[Out] 1/30*(5*b*c^2*x^5 + 6*a*c^2*x^4)*sqrt(c*x^2)
```

Sympy [A] time = 5.09147, size = 31, normalized size = 0.76

$$\frac{ac^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{5}+\frac{bc^{\frac{5}{2}}x\left(x^{2}\right)^{\frac{5}{2}}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)/x,x)

[Out] a*c**(5/2)*(x**2)**(5/2)/5 + b*c**(5/2)*x*(x**2)**(5/2)/6
```

GIAC/XCAS [A] time = 0.206686, size = 38, normalized size = 0.93

$$\frac{1}{30}\left(5\,bc^{2}x^{6}\operatorname{sign}\left(x\right)+6\,ac^{2}x^{5}\operatorname{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x,x, algorithm="giac")

[Out] 1/30*(5*b*c^2*x^6*sign(x) + 6*a*c^2*x^5*sign(x))*sqrt(c)
```

3.777 $\int \frac{(cx^2)^{5/2}(a+bx)}{x^2}\,dx$

Optimal. Leaf size=41

$$\frac{1}{4}ac^2x^3\sqrt{cx^2}+\frac{1}{5}bc^2x^4\sqrt{cx^2}$$

```
[Out] (a*c^2*x^3*Sqrt[c*x^2])/4 + (b*c^2*x^4*Sqrt[c*x^2])/5
```

Rubi [A] time = 0.0274776, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{4}ac^2x^3\sqrt{cx^2}+\frac{1}{5}bc^2x^4\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x))/x^2,x]

[Out] (a*c^2*x^3*Sqrt[c*x^2])/4 + (b*c^2*x^4*Sqrt[c*x^2])/5
```

Rubi in Sympy [A] time = 9.07657, size = 36, normalized size = 0.88

$$\frac{ac^2x^3\sqrt{cx^2}}{4}+\frac{bc^2x^4\sqrt{cx^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)/x**2,x)

[Out] a*c**2*x**3*sqrt(c*x**2)/4 + b*c**2*x**4*sqrt(c*x**2)/5
```

Mathematica [A] time = 0.00702267, size = 23, normalized size = 0.56

$$\frac{1}{20}cx\left(cx^2\right)^{3/2}(5a+4bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x))/x^2,x]
```

```
[Out] (c*x*(c*x^2)^(3/2)*(5*a + 4*b*x))/20
```

Maple [A] time = 0.005, size = 21, normalized size = 0.5

$$\frac{4\,bx+5\,a}{20\,x}\left(cx^{2}\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)/x^2,x)
```

```
[Out] 1/20/x*(4*b*x+5*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.206782, size = 38, normalized size = 0.93

$$\frac{1}{20}\left(4\,bc^{2}x^{4}+5\,ac^{2}x^{3}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^2,x, algorithm="fricas")
```

```
[Out] 1/20*(4*b*c^2*x^4 + 5*a*c^2*x^3)*sqrt(c*x^2)
```

Sympy [A] time = 5.11859, size = 31, normalized size = 0.76

$$\frac{ac^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{4x}+\frac{bc^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)/x**2,x)
```

```
[Out] a*c**(5/2)*(x**2)**(5/2)/(4*x) + b*c**(5/2)*(x**2)**(5/2)/5
```

GIAC/XCAS [A] time = 0.205322, size = 38, normalized size = 0.93

$$\frac{1}{20}\left(4\,bc^{2}x^{5}\mathrm{sign}\left(x\right)+5\,ac^{2}x^{4}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^2,x, algorithm="giac")
```

```
[Out] 1/20*(4*b*c^2*x^5*sign(x) + 5*a*c^2*x^4*sign(x))*sqrt(c)
```

3.778 $\int \frac{(cx^2)^{5/2}(a+bx)}{x^3} dx$

Optimal. Leaf size=41

$$\frac{1}{3}ac^2x^2\sqrt{cx^2} + \frac{1}{4}bc^2x^3\sqrt{cx^2}$$

```
[Out] (a*c^2*x^2*Sqrt[c*x^2])/3 + (b*c^2*x^3*Sqrt[c*x^2])/4
```

Rubi [A] time = 0.0258188, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{3}ac^2x^2\sqrt{cx^2} + \frac{1}{4}bc^2x^3\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x))/x^3,x]

[Out] (a*c^2*x^2*Sqrt[c*x^2])/3 + (b*c^2*x^3*Sqrt[c*x^2])/4
```

Rubi in Sympy [A] time = 9.31199, size = 36, normalized size = 0.88

$$\frac{ac^2x^2\sqrt{cx^2}}{3} + \frac{bc^2x^3\sqrt{cx^2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)/x**3,x)

[Out] a*c**2*x**2*sqrt(c*x**2)/3 + b*c**2*x**3*sqrt(c*x**2)/4
```

Mathematica [A] time = 0.00477479, size = 27, normalized size = 0.66

$$\frac{1}{12}c^2x^2\sqrt{cx^2}(4a + 3bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x))/x^3,x]
```

```
[Out] (c^2*x^2*Sqrt[c*x^2]*(4*a + 3*b*x))/12
```

Maple [A] time = 0.004, size = 21, normalized size = 0.5

$$\frac{3\,bx+4\,a}{12\,x^{2}}\left(cx^{2}\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)/x^3,x)
```

```
[Out] 1/12/x^2*(3*b*x+4*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.20748, size = 38, normalized size = 0.93

$$\frac{1}{12}\left(3\,bc^{2}x^{3}+4\,ac^{2}x^{2}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^3,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b*c^2*x^3 + 4*a*c^2*x^2)*sqrt(c*x^2)
```

Sympy [A] time = 6.01704, size = 34, normalized size = 0.83

$$\frac{ac^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{3x^{2}}+\frac{bc^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)/x**3,x)
```

```
[Out] a*c**(5/2)*(x**2)**(5/2)/(3*x**2) + b*c**(5/2)*(x**2)**(5/2)/(4*x
)
```

GIAC/XCAS [A] time = 0.207291, size = 38, normalized size = 0.93

$$\frac{1}{12}\left(3\,bc^2x^4\text{sign}\left(x\right)+4\,ac^2x^3\text{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^3,x, algorithm="giac")
```

```
[Out] 1/12*(3*b*c^2*x^4*sign(x) + 4*a*c^2*x^3*sign(x))*sqrt(c)
```

3.779 $\int \frac{(cx^2)^{5/2}(a+bx)}{x^4}\,dx$

Optimal. Leaf size=39

$$\frac{1}{2}ac^2x\sqrt{cx^2}+\frac{1}{3}bc^2x^2\sqrt{cx^2}$$

```
[Out] (a*c^2*x*Sqrt[c*x^2])/2 + (b*c^2*x^2*Sqrt[c*x^2])/3
```

Rubi [A] time = 0.0228237, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{2}ac^2x\sqrt{cx^2}+\frac{1}{3}bc^2x^2\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x))/x^4,x]

[Out] (a*c^2*x*Sqrt[c*x^2])/2 + (b*c^2*x^2*Sqrt[c*x^2])/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{ac^2\sqrt{cx^2}\int x\,dx}{x}+\frac{bc^2x^2\sqrt{cx^2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)/x**4,x)

[Out] a*c**2*sqrt(c*x**2)*Integral(x, x)/x + b*c**2*x**2*sqrt(c*x**2)/3
```

Mathematica [A] time = 0.00357037, size = 25, normalized size = 0.64

$$\frac{1}{6}c^2x\sqrt{cx^2}(3a+2bx)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x))/x^4,x]
```

```
[Out] (c^2*x*Sqrt[c*x^2]*(3*a + 2*b*x))/6
```

Maple [A] time = 0.005, size = 21, normalized size = 0.5

$$\frac{2\,bx+3\,a}{6\,x^{3}}\left(cx^{2}\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)/x^4,x)
```

```
[Out] 1/6/x^3*(2*b*x+3*a)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.20597, size = 35, normalized size = 0.9

$$\frac{1}{6}\left(2\,bc^{2}x^{2}+3\,ac^{2}x\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*c^2*x^2 + 3*a*c^2*x)*sqrt(c*x^2)
```

Sympy [A] time = 5.98195, size = 36, normalized size = 0.92

$$\frac{ac^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{2x^{3}}+\frac{bc^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}{3x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)/x**4,x)
```

```
[Out] a*c**(5/2)*(x**2)**(5/2)/(2*x**3) + b*c**(5/2)*(x**2)**(5/2)/(3*x
**2)
```

GIAC/XCAS [A] time = 0.20626, size = 38, normalized size = 0.97

$$\frac{1}{6}\left(2\,bc^2x^3\mathrm{sign}\left(x\right)+3\,ac^2x^2\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)/x^4,x, algorithm="giac")
```

```
[Out] 1/6*(2*b*c^2*x^3*sign(x) + 3*a*c^2*x^2*sign(x))*sqrt(c)
```

3.780 $\int \frac{x^3(a+bx)}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=35

$$\frac{ax^4}{3\sqrt{cx^2}}+\frac{bx^5}{4\sqrt{cx^2}}$$

```
[Out] (a*x^4)/(3*Sqrt[c*x^2]) + (b*x^5)/(4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0236339, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{ax^4}{3\sqrt{cx^2}}+\frac{bx^5}{4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(a + b*x))/Sqrt[c*x^2],x]

[Out] (a*x^4)/(3*Sqrt[c*x^2]) + (b*x^5)/(4*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.6738, size = 32, normalized size = 0.91

$$\frac{ax^2\sqrt{cx^2}}{3c}+\frac{bx^3\sqrt{cx^2}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)/(c*x**2)**(1/2),x)

[Out] a*x**2*sqrt(c*x**2)/(3*c) + b*x**3*sqrt(c*x**2)/(4*c)
```

Mathematica [A] time = 0.00748888, size = 24, normalized size = 0.69

$$\frac{x^4(4a+3bx)}{12\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x))/Sqrt[c*x^2],x]
```

```
[Out] (x^4*(4*a + 3*b*x))/(12*Sqrt[c*x^2])
```

Maple [A] time = 0.005, size = 21, normalized size = 0.6

$$\frac{x^4\left(3\,bx+4\,a\right)}{12}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] 1/12*x^4*(3*b*x+4*a)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.35301, size = 45, normalized size = 1.29

$$\frac{\sqrt{cx^2}bx^3}{4\,c}+\frac{\sqrt{cx^2}ax^2}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^3/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2)*b*x^3/c + 1/3*sqrt(c*x^2)*a*x^2/c
```

Fricas [A] time = 0.203903, size = 34, normalized size = 0.97

$$\frac{\left(3\,bx^3+4\,ax^2\right)\sqrt{cx^2}}{12\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^3/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b*x^3 + 4*a*x^2)*sqrt(c*x^2)/c
```

Sympy [A] time = 2.16656, size = 36, normalized size = 1.03

$$\frac{ax^4}{3\sqrt{c}\sqrt{x^2}}+\frac{bx^5}{4\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] a*x**4/(3*sqrt(c)*sqrt(x**2)) + b*x**5/(4*sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.211573, size = 35, normalized size = 1.

$$\frac{1}{12}\sqrt{cx^2}\left(\frac{3\,bx}{c}+\frac{4\,a}{c}\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] 1/12*sqrt(c*x^2)*(3*b*x/c + 4*a/c)*x^2
```

3.781 $\int \frac{x^2(a+bx)}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=35

$$\frac{ax^3}{2\sqrt{cx^2}} + \frac{bx^4}{3\sqrt{cx^2}}$$

```
[Out] (a*x^3)/(2*Sqrt[c*x^2]) + (b*x^4)/(3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0206731, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{ax^3}{2\sqrt{cx^2}} + \frac{bx^4}{3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x))/Sqrt[c*x^2],x]

[Out] (a*x^3)/(2*Sqrt[c*x^2]) + (b*x^4)/(3*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a\sqrt{cx^2}\int x\,dx}{cx} + \frac{bx^2\sqrt{cx^2}}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)/(c*x**2)**(1/2),x)

[Out] a*sqrt(c*x**2)*Integral(x, x)/(c*x) + b*x**2*sqrt(c*x**2)/(3*c)
```

Mathematica [A] time = 0.0063251, size = 24, normalized size = 0.69

$$\frac{x^3(3a+2bx)}{6\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x))/Sqrt[c*x^2],x]
```

```
[Out] (x^3*(3*a + 2*b*x))/(6*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$\frac{x^{3}\left(2\,bx+3\,a\right)}{6}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] 1/6*x^3*(2*b*x+3*a)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.33397, size = 35, normalized size = 1.

$$\frac{\sqrt{cx^{2}}bx^{2}}{3\,c}+\frac{ax^{2}}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^2/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2)*b*x^2/c + 1/2*a*x^2/sqrt(c)
```

Fricas [A] time = 0.195584, size = 31, normalized size = 0.89

$$\frac{\left(2\,bx^{2}+3\,ax\right)\sqrt{cx^{2}}}{6\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^2/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*x^2 + 3*a*x)*sqrt(c*x^2)/c
```

Sympy [A] time = 1.85788, size = 36, normalized size = 1.03

$$\frac{ax^{3}}{2\sqrt{c}\sqrt{x^{2}}}+\frac{bx^{4}}{3\sqrt{c}\sqrt{x^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] a*x**3/(2*sqrt(c)*sqrt(x**2)) + b*x**4/(3*sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.210782, size = 32, normalized size = 0.91

$$\frac{1}{6}\sqrt{cx^2}\left(\frac{2\,bx}{c}+\frac{3\,a}{c}\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(c*x^2)*(2*b*x/c + 3*a/c)*x
```

3.782 $\int \frac{x(a+bx)}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=32

$$\frac{ax^2}{\sqrt{cx^2}}+\frac{bx^3}{2\sqrt{cx^2}}$$

```
[Out] (a*x^2)/Sqrt[c*x^2] + (b*x^3)/(2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0131356, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062

$$\frac{ax^2}{\sqrt{cx^2}}+\frac{bx^3}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x))/Sqrt[c*x^2],x]

[Out] (a*x^2)/Sqrt[c*x^2] + (b*x^3)/(2*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)/(c*x**2)**(1/2),x)

[Out] Integral(x*(a + b*x)/sqrt(c*x**2), x)
```

Mathematica [A] time = 0.00559522, size = 23, normalized size = 0.72

$$\frac{x^2(2a+bx)}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x))/Sqrt[c*x^2],x]
```

```
[Out] (x^2*(2*a + b*x))/(2*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 20, normalized size = 0.6

$$\frac{x^2 (bx + 2 a)}{2} \frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] 1/2*x^2*(b*x+2*a)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.3486, size = 30, normalized size = 0.94

$$\frac{bx^2}{2\sqrt{c}} + \frac{\sqrt{cx^2}a}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] 1/2*b*x^2/sqrt(c) + sqrt(c*x^2)*a/c
```

Fricas [A] time = 0.20746, size = 26, normalized size = 0.81

$$\frac{\sqrt{cx^2}(bx + 2 a)}{2 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(c*x^2)*(b*x + 2*a)/c
```

Sympy [A] time = 1.67322, size = 34, normalized size = 1.06

$$\frac{ax^2}{\sqrt{c}\sqrt{x^2}} + \frac{bx^3}{2\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] a*x**2/(sqrt(c)*sqrt(x**2)) + b*x**3/(2*sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.210776, size = 30, normalized size = 0.94

$$\frac{1}{2}\sqrt{cx^2}\left(\frac{bx}{c} + \frac{2a}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2)*(b*x/c + 2*a/c)
```

3.783 $\int \frac{a+bx}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=29

$$\frac{ax\log(x)}{\sqrt{cx^2}}+\frac{bx^2}{\sqrt{cx^2}}$$

```
[Out] (b*x^2)/Sqrt[c*x^2] + (a*x*Log[x])/Sqrt[c*x^2]
```

Rubi [A] time = 0.0149554, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{ax\log(x)}{\sqrt{cx^2}}+\frac{bx^2}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/Sqrt[c*x^2],x]

[Out] (b*x^2)/Sqrt[c*x^2] + (a*x*Log[x])/Sqrt[c*x^2]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a\sqrt{cx^2}\log\left(x\right)}{cx}+\frac{\sqrt{cx^2}\int b\,dx}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(c*x**2)**(1/2),x)

[Out] a*sqrt(c*x**2)*log(x)/(c*x) + sqrt(c*x**2)*Integral(b, x)/(c*x)
```

Mathematica [A] time = 0.00582401, size = 19, normalized size = 0.66

$$\frac{x(a\log(x)+bx)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/Sqrt[c*x^2],x]
```

```
[Out] (x*(b*x + a*Log[x]))/Sqrt[c*x^2]
```

Maple [A] time = 0.005, size = 18, normalized size = 0.6

$$x(bx + a\ln(x))\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] 1/(c*x^2)^(1/2)*x*(b*x+a*ln(x))
```

Maxima [A] time = 1.33998, size = 27, normalized size = 0.93

$$\frac{a\log(x)}{\sqrt{c}} + \frac{\sqrt{cx^2}b}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] a*log(x)/sqrt(c) + sqrt(c*x^2)*b/c
```

Fricas [A] time = 0.214175, size = 30, normalized size = 1.03

$$\frac{\sqrt{cx^2}(bx + a\log(x))}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x + a*log(x))/(c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{a + bx}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)/sqrt(c*x**2), x)
```

GIAC/XCAS [A] time = 0.212215, size = 47, normalized size = 1.62

$$-\frac{a\ln\left(\left|-\sqrt{c}x+\sqrt{cx^{2}}\right|\right)}{\sqrt{c}}+\frac{\sqrt{cx^{2}}b}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] -a*ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/sqrt(c) + sqrt(c*x^2)*b/c
```

3.784 $\int \frac{a+bx}{x\sqrt{cx^2}}\,dx$

Optimal. Leaf size=27

$$\frac{bx\log(x)}{\sqrt{cx^2}} - \frac{a}{\sqrt{cx^2}}$$

```
[Out] -(a/Sqrt[c*x^2]) + (b*x*Log[x])/Sqrt[c*x^2]
```

Rubi [A] time = 0.0178087, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{bx\log(x)}{\sqrt{cx^2}} - \frac{a}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x*Sqrt[c*x^2]),x]

[Out] -(a/Sqrt[c*x^2]) + (b*x*Log[x])/Sqrt[c*x^2]
```

Rubi in Sympy [A] time = 9.06173, size = 31, normalized size = 1.15

$$-\frac{a\sqrt{cx^2}}{cx^2} + \frac{b\sqrt{cx^2}\log{(x)}}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x/(c*x**2)**(1/2),x)

[Out] -a*sqrt(c*x**2)/(c*x**2) + b*sqrt(c*x**2)*log(x)/(c*x)
```

Mathematica [A] time = 0.0102027, size = 23, normalized size = 0.85

$$\frac{cx^2(bx\log(x) - a)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x*Sqrt[c*x^2]),x]
```

```
[Out] (c*x^2*(-a + b*x*Log[x]))/(c*x^2)^(3/2)
```

Maple [A] time = 0.006, size = 18, normalized size = 0.7

$$(b\ln(x)\,x-a)\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x/(c*x^2)^(1/2),x)
```

```
[Out] (b*ln(x)*x-a)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.35178, size = 23, normalized size = 0.85

$$\frac{b\log(x)}{\sqrt{c}}-\frac{a}{\sqrt{c}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x),x, algorithm="maxima")
```

```
[Out] b*log(x)/sqrt(c) - a/(sqrt(c)*x)
```

Fricas [A] time = 0.221174, size = 31, normalized size = 1.15

$$\frac{\sqrt{cx^2}(bx\log(x)-a)}{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x*log(x) - a)/(c*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{a+bx}{x\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)/(x*sqrt(c*x**2)), x)
```

GIAC/XCAS [A] time = 0.219873, size = 63, normalized size = 2.33

$$-\frac{b\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)-\frac{2\,a\sqrt{c}}{\sqrt{c}x-\sqrt{cx^2}}}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(sqrt(c*x^2)*x),x, algorithm="giac")
```

```
[Out] -(b*ln(abs(-sqrt(c)*x + sqrt(c*x^2))) - 2*a*sqrt(c)/(sqrt(c)*x -
sqrt(c*x^2)))/sqrt(c)
```

3.785 $\int \frac{a+bx}{x^2\sqrt{cx^2}}\,dx$

Optimal. Leaf size=26

$$-\frac{(a+bx)^2}{2ax\sqrt{cx^2}}$$

```
[Out] -(a + b*x)^2/(2*a*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0138498, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{(a+bx)^2}{2ax\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^2*Sqrt[c*x^2]),x]

[Out] -(a + b*x)^2/(2*a*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.06509, size = 32, normalized size = 1.23

$$-\frac{a\sqrt{cx^2}}{2cx^3}-\frac{b\sqrt{cx^2}}{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**2/(c*x**2)**(1/2),x)

[Out] -a*sqrt(c*x**2)/(2*c*x**3) - b*sqrt(c*x**2)/(c*x**2)
```

Mathematica [A] time = 0.00900688, size = 23, normalized size = 0.88

$$\frac{cx(-a-2bx)}{2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^2*Sqrt[c*x^2]),x]
```

```
[Out] (c*x*(-a - 2*b*x))/(2*(c*x^2)^(3/2))
```

Maple [A] time = 0.004, size = 19, normalized size = 0.7

$$-\frac{2\,bx+a}{2\,x}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^2/(c*x^2)^(1/2),x)
```

```
[Out] -1/2*(2*b*x+a)/x/(c*x^2)^(1/2)
```

Maxima [A] time = 1.34348, size = 26, normalized size = 1.

$$-\frac{b}{\sqrt{c}x}-\frac{a}{2\sqrt{c}x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x^2),x, algorithm="maxima")
```

```
[Out] -b/(sqrt(c)*x) - 1/2*a/(sqrt(c)*x^2)
```

Fricas [A] time = 0.208279, size = 28, normalized size = 1.08

$$-\frac{\sqrt{cx^2}(2\,bx+a)}{2\,cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x^2),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(c*x^2)*(2*b*x + a)/(c*x^3)
```

Sympy [A] time = 2.0305, size = 31, normalized size = 1.19

$$-\frac{a}{2\sqrt{c}x\sqrt{x^2}}-\frac{b}{\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**2/(c*x**2)**(1/2),x)
```

```
[Out] -a/(2*sqrt(c)*x*sqrt(x**2)) - b/(sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.574227, size = 4, normalized size = 0.15

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(sqrt(c*x^2)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.786 $\int \frac{a+bx}{x^3\sqrt{cx^2}}\,dx$

Optimal. Leaf size=35

$$-\frac{a}{3x^2\sqrt{cx^2}}-\frac{b}{2x\sqrt{cx^2}}$$

```
[Out] -a/(3*x^2*Sqrt[c*x^2]) - b/(2*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0203954, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{3x^2\sqrt{cx^2}}-\frac{b}{2x\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^3*Sqrt[c*x^2]),x]
```

```
[Out] -a/(3*x^2*Sqrt[c*x^2]) - b/(2*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.18917, size = 34, normalized size = 0.97

$$-\frac{a\sqrt{cx^2}}{3cx^4}-\frac{b\sqrt{cx^2}}{2cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**3/(c*x**2)**(1/2),x)
```

```
[Out] -a*sqrt(c*x**2)/(3*c*x**4) - b*sqrt(c*x**2)/(2*c*x**3)
```

Mathematica [A] time = 0.0090696, size = 22, normalized size = 0.63

$$\frac{c(-2a-3bx)}{6\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^3*Sqrt[c*x^2]),x]
```

```
[Out] (c*(-2*a - 3*b*x))/(6*(c*x^2)^(3/2))
```

Maple [A] time = 0.006, size = 21, normalized size = 0.6

$$-\frac{3\,bx+2\,a}{6\,x^{2}}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^3/(c*x^2)^(1/2),x)
```

```
[Out] -1/6*(3*b*x+2*a)/x^2/(c*x^2)^(1/2)
```

Maxima [A] time = 1.34014, size = 26, normalized size = 0.74

$$-\frac{b}{2\,\sqrt{c}x^{2}}-\frac{a}{3\,\sqrt{c}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x^3),x, algorithm="maxima")
```

```
[Out] -1/2*b/(sqrt(c)*x^2) - 1/3*a/(sqrt(c)*x^3)
```

Fricas [A] time = 0.208012, size = 31, normalized size = 0.89

$$-\frac{\sqrt{cx^{2}}(3\,bx+2\,a)}{6\,cx^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x^3),x, algorithm="fricas")
```

```
[Out] -1/6*sqrt(c*x^2)*(3*b*x + 2*a)/(c*x^4)
```

Sympy [A] time = 2.36725, size = 36, normalized size = 1.03

$$-\frac{a}{3\sqrt{c}x^{2}\sqrt{x^{2}}}-\frac{b}{2\sqrt{c}x\sqrt{x^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**3/(c*x**2)**(1/2),x)
```

```
[Out] -a/(3*sqrt(c)*x**2*sqrt(x**2)) - b/(2*sqrt(c)*x*sqrt(x**2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx + a}{\sqrt{cx^2}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(sqrt(c*x^2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/(sqrt(c*x^2)*x^3), x)
```

3.787 $\int \frac{a+bx}{x^4\sqrt{cx^2}}\,dx$

Optimal. Leaf size=35

$$-\frac{a}{4x^3\sqrt{cx^2}}-\frac{b}{3x^2\sqrt{cx^2}}$$

```
[Out] -a/(4*x^3*Sqrt[c*x^2]) - b/(3*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0200505, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{4x^3\sqrt{cx^2}}-\frac{b}{3x^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^4*Sqrt[c*x^2]),x]

[Out] -a/(4*x^3*Sqrt[c*x^2]) - b/(3*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.19481, size = 34, normalized size = 0.97

$$-\frac{a\sqrt{cx^2}}{4cx^5}-\frac{b\sqrt{cx^2}}{3cx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**4/(c*x**2)**(1/2),x)

[Out] -a*sqrt(c*x**2)/(4*c*x**5) - b*sqrt(c*x**2)/(3*c*x**4)
```

Mathematica [A] time = 0.00840179, size = 24, normalized size = 0.69

$$\frac{-3a-4bx}{12x^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^4*Sqrt[c*x^2]),x]
```

```
[Out] (-3*a - 4*b*x)/(12*x^3*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 21, normalized size = 0.6

$$-\frac{4\,bx+3\,a}{12\,x^3}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^4/(c*x^2)^(1/2),x)
```

```
[Out] -1/12*(4*b*x+3*a)/x^3/(c*x^2)^(1/2)
```

Maxima [A] time = 1.34434, size = 26, normalized size = 0.74

$$-\frac{b}{3\,\sqrt{c}x^3}-\frac{a}{4\,\sqrt{c}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x^4),x, algorithm="maxima")
```

```
[Out] -1/3*b/(sqrt(c)*x^3) - 1/4*a/(sqrt(c)*x^4)
```

Fricas [A] time = 0.210393, size = 31, normalized size = 0.89

$$-\frac{\sqrt{cx^2}(4\,bx+3\,a)}{12\,cx^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(sqrt(c*x^2)*x^4),x, algorithm="fricas")
```

```
[Out] -1/12*sqrt(c*x^2)*(4*b*x + 3*a)/(c*x^5)
```

Sympy [A] time = 2.75897, size = 37, normalized size = 1.06

$$-\frac{a}{4\sqrt{c}x^3\sqrt{x^2}}-\frac{b}{3\sqrt{c}x^2\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**4/(c*x**2)**(1/2),x)
```

```
[Out] -a/(4*sqrt(c)*x**3*sqrt(x**2)) - b/(3*sqrt(c)*x**2*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.519624, size = 4, normalized size = 0.11

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(sqrt(c*x^2)*x^4),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.788 $\int \frac{x^3(a+bx)}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=38

$$\frac{ax^2}{c\sqrt{cx^2}}+\frac{bx^3}{2c\sqrt{cx^2}}$$

```
[Out] (a*x^2)/(c*Sqrt[c*x^2]) + (b*x^3)/(2*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0163118, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$\frac{ax^2}{c\sqrt{cx^2}}+\frac{bx^3}{2c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(a + b*x))/(c*x^2)^(3/2),x]

[Out] (a*x^2)/(c*Sqrt[c*x^2]) + (b*x^3)/(2*c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b\sqrt{cx^2}\int x\,dx}{c^2x}+\frac{\sqrt{cx^2}\int a\,dx}{c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)/(c*x**2)**(3/2),x)

[Out] b*sqrt(c*x**2)*Integral(x, x)/(c**2*x) + sqrt(c*x**2)*Integral(a,
 x)/(c**2*x)
```

Mathematica [A] time = 0.00729913, size = 23, normalized size = 0.61

$$\frac{x^4(2a+bx)}{2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x))/(c*x^2)^(3/2),x]

[Out] (x^4*(2*a + b*x))/(2*(c*x^2)^(3/2))
```

Maple [A] time = 0.005, size = 20, normalized size = 0.5

$$\frac{x^4 (bx + 2a)}{2} \left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)/(c*x^2)^(3/2),x)

[Out] 1/2*x^4*(b*x+2*a)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.33841, size = 43, normalized size = 1.13

$$\frac{bx^3}{2\sqrt{cx^2}c} + \frac{ax^2}{\sqrt{cx^2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3/(c*x^2)^(3/2),x, algorithm="maxima")

[Out] 1/2*b*x^3/(sqrt(c*x^2)*c) + a*x^2/(sqrt(c*x^2)*c)
```

Fricas [A] time = 0.206474, size = 26, normalized size = 0.68

$$\frac{\sqrt{cx^2}(bx + 2a)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3/(c*x^2)^(3/2),x, algorithm="fricas")

[Out] 1/2*sqrt(c*x^2)*(b*x + 2*a)/c^2
```

Sympy [A] time = 2.27244, size = 34, normalized size = 0.89

$$\frac{ax^4}{c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}+\frac{bx^5}{2c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] a*x**4/(c**(3/2)*(x**2)**(3/2)) + b*x**5/(2*c**(3/2)*(x**2)**(3/2
))
```

GIAC/XCAS [A] time = 0.210118, size = 34, normalized size = 0.89

$$\frac{\sqrt{cx^2}\left(\frac{bx}{c}+\frac{2\,a}{c}\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2)*(b*x/c + 2*a/c)/c
```

3.789 $\int \frac{x^2(a+bx)}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=35

$$\frac{ax\log(x)}{c\sqrt{cx^2}}+\frac{bx^2}{c\sqrt{cx^2}}$$

```
[Out] (b*x^2)/(c*Sqrt[c*x^2]) + (a*x*Log[x])/(c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0179818, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{ax\log(x)}{c\sqrt{cx^2}}+\frac{bx^2}{c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x))/(c*x^2)^(3/2),x]
```

```
[Out] (b*x^2)/(c*Sqrt[c*x^2]) + (a*x*Log[x])/(c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a\sqrt{cx^2}\log(x)}{c^2x}+\frac{\sqrt{cx^2}\int b\,dx}{c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] a*sqrt(c*x**2)*log(x)/(c**2*x) + sqrt(c*x**2)*Integral(b, x)/(c**
2*x)
```

Mathematica [A] time = 0.00607968, size = 21, normalized size = 0.6

$$\frac{x^3(a\log(x)+bx)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x))/(c*x^2)^(3/2),x]

[Out] (x^3*(b*x + a*Log[x]))/(c*x^2)^(3/2)
```

Maple [A] time = 0.004, size = 20, normalized size = 0.6

$$x^{3}\left(bx+a\ln\left(x\right)\right)\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)/(c*x^2)^(3/2),x)

[Out] 1/(c*x^2)^(3/2)*x^3*(b*x+a*ln(x))
```

Maxima [A] time = 1.3457, size = 31, normalized size = 0.89

$$\frac{bx^{2}}{\sqrt{cx^{2}}c}+\frac{a\log\left(x\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2/(c*x^2)^(3/2),x, algorithm="maxima")

[Out] b*x^2/(sqrt(c*x^2)*c) + a*log(x)/c^(3/2)
```

Fricas [A] time = 0.210445, size = 30, normalized size = 0.86

$$\frac{\sqrt{cx^{2}}(bx+a\log\left(x\right))}{c^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2/(c*x^2)^(3/2),x, algorithm="fricas")

[Out] sqrt(c*x^2)*(b*x + a*log(x))/(c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^{2}\left(a+bx\right)}{\left(cx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x**2*(a + b*x)/(c*x**2)**(3/2), x)
```

GIAC/XCAS [A] time = 0.212585, size = 54, normalized size = 1.54

$$-\frac{\frac{a\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{\sqrt{c}}-\frac{\sqrt{cx^2}b}{c}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] -(a*ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/sqrt(c) - sqrt(c*x^2)*b/c)/
c
```

3.790 $\int \frac{x(a+bx)}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=33

$$\frac{bx\log(x)}{c\sqrt{cx^2}}-\frac{a}{c\sqrt{cx^2}}$$

```
[Out] -(a/(c*Sqrt[c*x^2])) + (b*x*Log[x])/(c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0203989, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$\frac{bx\log(x)}{c\sqrt{cx^2}}-\frac{a}{c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x))/(c*x^2)^(3/2),x]

[Out] -(a/(c*Sqrt[c*x^2])) + (b*x*Log[x])/(c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)/(c*x**2)**(3/2),x)

[Out] Integral(x*(a + b*x)/(c*x**2)**(3/2), x)
```

Mathematica [A] time = 0.00433833, size = 22, normalized size = 0.67

$$\frac{x^2(bx\log(x)-a)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x))/(c*x^2)^(3/2),x]
```

```
[Out] (x^2*(-a + b*x*Log[x]))/(c*x^2)^(3/2)
```

Maple [A] time = 0.007, size = 21, normalized size = 0.6

$$x^{2}\left(b\ln\left(x\right)x-a\right)\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)/(c*x^2)^(3/2),x)
```

```
[Out] x^2*(b*ln(x)*x-a)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.34042, size = 28, normalized size = 0.85

$$\frac{b\log\left(x\right)}{c^{\frac{3}{2}}}-\frac{a}{\sqrt{cx^{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] b*log(x)/c^(3/2) - a/(sqrt(c*x^2)*c)
```

Fricas [A] time = 0.20606, size = 31, normalized size = 0.94

$$\frac{\sqrt{cx^{2}}(bx\log\left(x\right)-a)}{c^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x*log(x) - a)/(c^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x\left(a+bx\right)}{\left(cx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x*(a + b*x)/(c*x**2)**(3/2), x)
```

GIAC/XCAS [A] time = 0.214517, size = 63, normalized size = 1.91

$$-\frac{b\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)-\frac{2\,a\sqrt{c}}{\sqrt{c}x-\sqrt{cx^2}}}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] -(b*ln(abs(-sqrt(c)*x + sqrt(c*x^2))) - 2*a*sqrt(c)/(sqrt(c)*x -
sqrt(c*x^2)))/c^(3/2)
```

3.791 $\int \frac{a+bx}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=29

$$-\frac{(a+bx)^2}{2acx\sqrt{cx^2}}$$

```
[Out] -(a + b*x)^2/(2*a*c*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0157361, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$-\frac{(a+bx)^2}{2acx\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c*x^2)^(3/2),x]

[Out] -(a + b*x)^2/(2*a*c*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 6.38163, size = 36, normalized size = 1.24

$$-\frac{a\sqrt{cx^2}}{2c^2x^3} - \frac{b\sqrt{cx^2}}{c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(c*x**2)**(3/2),x)

[Out] -a*sqrt(c*x**2)/(2*c**2*x**3) - b*sqrt(c*x**2)/(c**2*x**2)
```

Mathematica [A] time = 0.00393579, size = 22, normalized size = 0.76

$$\frac{x(-a-2bx)}{2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c*x^2)^(3/2),x]
```

```
[Out] (x*(-a - 2*b*x))/(2*(c*x^2)^(3/2))
```

Maple [A] time = 0.004, size = 17, normalized size = 0.6

$$-\frac{x(2bx+a)}{2}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(c*x^2)^(3/2),x)
```

```
[Out] -1/2*x*(2*b*x+a)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.34866, size = 31, normalized size = 1.07

$$-\frac{b}{\sqrt{cx^2}c} - \frac{a}{2\,c^{\frac{3}{2}}x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -b/(sqrt(c*x^2)*c) - 1/2*a/(c^(3/2)*x^2)
```

Fricas [A] time = 0.210717, size = 28, normalized size = 0.97

$$-\frac{\sqrt{cx^2}(2\,bx+a)}{2\,c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(c*x^2)*(2*b*x + a)/(c^2*x^3)
```

Sympy [A] time = 2.03309, size = 34, normalized size = 1.17

$$-\frac{ax}{2c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}} - \frac{bx^2}{c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] -a*x/(2*c**(3/2)*(x**2)**(3/2)) - b*x**2/(c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [A] time = 0.538674, size = 4, normalized size = 0.14

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.792 $\int \frac{a+bx}{x(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{3cx^2\sqrt{cx^2}}-\frac{b}{2cx\sqrt{cx^2}}$$

```
[Out] -a/(3*c*x^2*Sqrt[c*x^2]) - b/(2*c*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0221236, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{3cx^2\sqrt{cx^2}}-\frac{b}{2cx\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x*(c*x^2)^(3/2)),x]
```

```
[Out] -a/(3*c*x^2*Sqrt[c*x^2]) - b/(2*c*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 10.1134, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{3c^2x^4}-\frac{b\sqrt{cx^2}}{2c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x/(c*x**2)**(3/2),x)
```

```
[Out] -a*sqrt(c*x**2)/(3*c**2*x**4) - b*sqrt(c*x**2)/(2*c**2*x**3)
```

Mathematica [A] time = 0.0112656, size = 25, normalized size = 0.61

$$\frac{cx^2(-2a-3bx)}{6\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x*(c*x^2)^(3/2)),x]
```

```
[Out] (c*x^2*(-2*a - 3*b*x))/(6*(c*x^2)^(5/2))
```

Maple [A] time = 0.004, size = 18, normalized size = 0.4

$$-\frac{3\,bx+2\,a}{6}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x/(c*x^2)^(3/2),x)
```

```
[Out] -1/6*(3*b*x+2*a)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.33946, size = 26, normalized size = 0.63

$$-\frac{b}{2\,c^{\frac{3}{2}}x^{2}}-\frac{a}{3\,c^{\frac{3}{2}}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x),x, algorithm="maxima")
```

```
[Out] -1/2*b/(c^(3/2)*x^2) - 1/3*a/(c^(3/2)*x^3)
```

Fricas [A] time = 0.21, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(3\,bx+2\,a)}{6\,c^{2}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x),x, algorithm="fricas")
```

```
[Out] -1/6*sqrt(c*x^2)*(3*b*x + 2*a)/(c^2*x^4)
```

Sympy [A] time = 2.43401, size = 32, normalized size = 0.78

$$-\frac{a}{3c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}-\frac{bx}{2c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x/(c*x**2)**(3/2),x)
```

```
[Out] -a/(3*c**(3/2)*(x**2)**(3/2)) - b*x/(2*c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx + a}{(cx^2)^{\frac{3}{2}}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((c*x^2)^(3/2)*x), x)
```

3.793 $\int \frac{a+bx}{x^2(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{4cx^3\sqrt{cx^2}}-\frac{b}{3cx^2\sqrt{cx^2}}$$

```
[Out] -a/(4*c*x^3*Sqrt[c*x^2]) - b/(3*c*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0220923, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{4cx^3\sqrt{cx^2}}-\frac{b}{3cx^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^2*(c*x^2)^(3/2)),x]

[Out] -a/(4*c*x^3*Sqrt[c*x^2]) - b/(3*c*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.22865, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{4c^2x^5}-\frac{b\sqrt{cx^2}}{3c^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**2/(c*x**2)**(3/2),x)

[Out] -a*sqrt(c*x**2)/(4*c**2*x**5) - b*sqrt(c*x**2)/(3*c**2*x**4)
```

Mathematica [A] time = 0.0119504, size = 27, normalized size = 0.66

$$-\frac{\sqrt{cx^2}(3a+4bx)}{12c^2x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^2*(c*x^2)^(3/2)),x]
```

[Out] -(Sqrt[c*x^2]*(3*a + 4*b*x))/(12*c^2*x^5)

Maple [A] time = 0.004, size = 21, normalized size = 0.5

$$-\frac{4\,bx+3\,a}{12\,x}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int((b*x+a)/x^2/(c*x^2)^(3/2),x)

[Out] -1/12*(4*b*x+3*a)/x/(c*x^2)^(3/2)

Maxima [A] time = 1.34763, size = 26, normalized size = 0.63

$$-\frac{b}{3\,c^{\frac{3}{2}}x^{3}}-\frac{a}{4\,c^{\frac{3}{2}}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x + a)/((c*x^2)^(3/2)*x^2),x, algorithm="maxima")

[Out] -1/3*b/(c^(3/2)*x^3) - 1/4*a/(c^(3/2)*x^4)

Fricas [A] time = 0.213526, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(4\,bx+3\,a)}{12\,c^{2}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate((b*x + a)/((c*x^2)^(3/2)*x^2),x, algorithm="fricas")

[Out] -1/12*sqrt(c*x^2)*(4*b*x + 3*a)/(c^2*x^5)

Sympy [A] time = 2.66576, size = 32, normalized size = 0.78

$$-\frac{a}{4c^{\frac{3}{2}}x\left(x^{2}\right)^{\frac{3}{2}}}-\frac{b}{3c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**2/(c*x**2)**(3/2),x)
```

```
[Out] -a/(4*c**(3/2)*x*(x**2)**(3/2)) - b/(3*c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [A] time = 0.518496, size = 4, normalized size = 0.1

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.794 $\int \frac{a+bx}{x^3(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{5cx^4\sqrt{cx^2}}-\frac{b}{4cx^3\sqrt{cx^2}}$$

```
[Out] -a/(5*c*x^4*Sqrt[c*x^2]) - b/(4*c*x^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0231201, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{5cx^4\sqrt{cx^2}}-\frac{b}{4cx^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^3*(c*x^2)^(3/2)),x]

[Out] -a/(5*c*x^4*Sqrt[c*x^2]) - b/(4*c*x^3*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.83537, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{5c^2x^6}-\frac{b\sqrt{cx^2}}{4c^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**3/(c*x**2)**(3/2),x)

[Out] -a*sqrt(c*x**2)/(5*c**2*x**6) - b*sqrt(c*x**2)/(4*c**2*x**5)
```

Mathematica [A] time = 0.0109857, size = 22, normalized size = 0.54

$$\frac{c(-4a-5bx)}{20\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^3*(c*x^2)^(3/2)),x]
```

```
[Out] (c*(-4*a - 5*b*x))/(20*(c*x^2)^(5/2))
```

Maple [A] time = 0.006, size = 21, normalized size = 0.5

$$-\frac{5\,bx+4\,a}{20\,x^{2}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^3/(c*x^2)^(3/2),x)
```

```
[Out] -1/20*(5*b*x+4*a)/x^2/(c*x^2)^(3/2)
```

Maxima [A] time = 1.37824, size = 26, normalized size = 0.63

$$-\frac{b}{4\,c^{\frac{3}{2}}x^{4}}-\frac{a}{5\,c^{\frac{3}{2}}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^3),x, algorithm="maxima")
```

```
[Out] -1/4*b/(c^(3/2)*x^4) - 1/5*a/(c^(3/2)*x^5)
```

Fricas [A] time = 0.207753, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(5\,bx+4\,a)}{20\,c^{2}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^3),x, algorithm="fricas")
```

```
[Out] -1/20*sqrt(c*x^2)*(5*b*x + 4*a)/(c^2*x^6)
```

Sympy [A] time = 3.40375, size = 36, normalized size = 0.88

$$-\frac{a}{5c^{\frac{3}{2}}x^{2}\left(x^{2}\right)^{\frac{3}{2}}}-\frac{b}{4c^{\frac{3}{2}}x\left(x^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**3/(c*x**2)**(3/2),x)
```

```
[Out] -a/(5*c**(3/2)*x**2*(x**2)**(3/2)) - b/(4*c**(3/2)*x*(x**2)**(3/2
))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx + a}{\left(cx^2\right)^{\frac{3}{2}} x^3} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((c*x^2)^(3/2)*x^3), x)
```

3.795 $\int \frac{a+bx}{x^4(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{6cx^5\sqrt{cx^2}}-\frac{b}{5cx^4\sqrt{cx^2}}$$

```
[Out] -a/(6*c*x^5*Sqrt[c*x^2]) - b/(5*c*x^4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0226007, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{6cx^5\sqrt{cx^2}}-\frac{b}{5cx^4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^4*(c*x^2)^(3/2)),x]

[Out] -a/(6*c*x^5*Sqrt[c*x^2]) - b/(5*c*x^4*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.99415, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{6c^2x^7}-\frac{b\sqrt{cx^2}}{5c^2x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**4/(c*x**2)**(3/2),x)

[Out] -a*sqrt(c*x**2)/(6*c**2*x**7) - b*sqrt(c*x**2)/(5*c**2*x**6)
```

Mathematica [A] time = 0.00960557, size = 24, normalized size = 0.59

$$\frac{-5a-6bx}{30x^3\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^4*(c*x^2)^(3/2)),x]
```

```
[Out] (-5*a - 6*b*x)/(30*x^3*(c*x^2)^(3/2))
```

Maple [A] time = 0.004, size = 21, normalized size = 0.5

$$-\frac{6\,bx+5\,a}{30\,x^{3}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^4/(c*x^2)^(3/2),x)
```

```
[Out] -1/30*(6*b*x+5*a)/x^3/(c*x^2)^(3/2)
```

Maxima [A] time = 1.34024, size = 26, normalized size = 0.63

$$-\frac{b}{5\,c^{\frac{3}{2}}x^{5}}-\frac{a}{6\,c^{\frac{3}{2}}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^4),x, algorithm="maxima")
```

```
[Out] -1/5*b/(c^(3/2)*x^5) - 1/6*a/(c^(3/2)*x^6)
```

Fricas [A] time = 0.2066, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(6\,bx+5\,a)}{30\,c^{2}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^4),x, algorithm="fricas")
```

```
[Out] -1/30*sqrt(c*x^2)*(6*b*x + 5*a)/(c^2*x^7)
```

Sympy [A] time = 3.9317, size = 37, normalized size = 0.9

$$-\frac{a}{6c^{\frac{3}{2}}x^{3}\left(x^{2}\right)^{\frac{3}{2}}}-\frac{b}{5c^{\frac{3}{2}}x^{2}\left(x^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**4/(c*x**2)**(3/2),x)
```

```
[Out] -a/(6*c**(3/2)*x**3*(x**2)**(3/2)) - b/(5*c**(3/2)*x**2*(x**2)**(
3/2))
```

GIAC/XCAS [A] time = 0.516279, size = 4, normalized size = 0.1

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(3/2)*x^4),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.796 $\int \frac{x^3(a+bx)}{(cx^2)^{5/2}} \, dx$

Optimal. Leaf size=33

$$\frac{bx\log(x)}{c^2\sqrt{cx^2}} - \frac{a}{c^2\sqrt{cx^2}}$$

```
[Out] -(a/(c^2*Sqrt[c*x^2])) + (b*x*Log[x])/(c^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.021652, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{bx\log(x)}{c^2\sqrt{cx^2}} - \frac{a}{c^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(a + b*x))/(c*x^2)^(5/2),x]
```

```
[Out] -(a/(c^2*Sqrt[c*x^2])) + (b*x*Log[x])/(c^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 10.2827, size = 34, normalized size = 1.03

$$-\frac{a\sqrt{cx^2}}{c^3x^2} + \frac{b\sqrt{cx^2}\log{(x)}}{c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] -a*sqrt(c*x**2)/(c**3*x**2) + b*sqrt(c*x**2)*log(x)/(c**3*x)
```

Mathematica [A] time = 0.00772119, size = 22, normalized size = 0.67

$$\frac{bx\log(x) - a}{c^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x))/(c*x^2)^(5/2),x]
```

```
[Out] (-a + b*x*Log[x])/(c^2*Sqrt[c*x^2])
```

Maple [A] time = 0.006, size = 21, normalized size = 0.6

$$x^4 (b \ln (x) x - a) \left(c x^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x+a)/(c*x^2)^(5/2),x)
```

```
[Out] x^4*(b*ln(x)*x-a)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.34088, size = 32, normalized size = 0.97

$$-\frac{a x^2}{(c x^2)^{\frac{3}{2}} c} + \frac{b \log (x)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^3/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -a*x^2/((c*x^2)^(3/2)*c) + b*log(x)/c^(5/2)
```

Fricas [A] time = 0.206232, size = 31, normalized size = 0.94

$$\frac{\sqrt{c x^2}(b x \log (x) - a)}{c^3 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^3/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x*log(x) - a)/(c^3*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 (a + b x)}{(c x^2)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] Integral(x**3*(a + b*x)/(c*x**2)**(5/2), x)
```

GIAC/XCAS [A] time = 0.215147, size = 63, normalized size = 1.91

$$-\frac{b\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)-\frac{2a\sqrt{c}}{\sqrt{c}x-\sqrt{cx^2}}}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^3/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] -(b*ln(abs(-sqrt(c)*x + sqrt(c*x^2))) - 2*a*sqrt(c)/(sqrt(c)*x -
sqrt(c*x^2)))/c^(5/2)
```

3.797 $\int \frac{x^2(a+bx)}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=29

$$-\frac{(a+bx)^2}{2ac^2x\sqrt{cx^2}}$$

```
[Out] -(a + b*x)^2/(2*a*c^2*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0164279, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$-\frac{(a+bx)^2}{2ac^2x\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(a + b*x))/(c*x^2)^(5/2),x]

[Out] -(a + b*x)^2/(2*a*c^2*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 7.67015, size = 36, normalized size = 1.24

$$-\frac{a\sqrt{cx^2}}{2c^3x^3} - \frac{b\sqrt{cx^2}}{c^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**2*(b*x+a)/(c*x**2)**(5/2),x)

[Out] -a*sqrt(c*x**2)/(2*c**3*x**3) - b*sqrt(c*x**2)/(c**3*x**2)
```

Mathematica [A] time = 0.0107201, size = 24, normalized size = 0.83

$$\frac{x^3(-a-2bx)}{2\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(a + b*x))/(c*x^2)^(5/2),x]
```

```
[Out] (x^3*(-a - 2*b*x))/(2*(c*x^2)^(5/2))
```

Maple [A] time = 0.004, size = 19, normalized size = 0.7

$$-\frac{x^3 (2\,bx+a)}{2} \left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x+a)/(c*x^2)^(5/2),x)
```

```
[Out] -1/2*x^3*(2*b*x+a)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.33834, size = 35, normalized size = 1.21

$$-\frac{bx^2}{\left(cx^2\right)^{\frac{3}{2}} c} - \frac{a}{2\,c^{\frac{5}{2}} x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^2/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -b*x^2/((c*x^2)^(3/2)*c) - 1/2*a/(c^(5/2)*x^2)
```

Fricas [A] time = 0.207943, size = 28, normalized size = 0.97

$$-\frac{\sqrt{cx^2}(2\,bx+a)}{2\,c^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x^2/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(c*x^2)*(2*b*x + a)/(c^3*x^3)
```

Sympy [A] time = 3.37945, size = 36, normalized size = 1.24

$$-\frac{ax^3}{2c^{\frac{5}{2}} \left(x^2\right)^{\frac{5}{2}}} - \frac{bx^4}{c^{\frac{5}{2}} \left(x^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] -a*x**3/(2*c**(5/2)*(x**2)**(5/2)) - b*x**4/(c**(5/2)*(x**2)**(5/
2))
```

GIAC/XCAS [A] time = 0.517797, size = 4, normalized size = 0.14

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x^2/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.798 $\int \frac{x(a+bx)}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{3c^2x^2\sqrt{cx^2}}-\frac{b}{2c^2x\sqrt{cx^2}}$$

```
[Out] -a/(3*c^2*x^2*Sqrt[c*x^2]) - b/(2*c^2*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0224916, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125

$$-\frac{a}{3c^2x^2\sqrt{cx^2}}-\frac{b}{2c^2x\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x))/(c*x^2)^(5/2),x]

[Out] -a/(3*c^2*x^2*Sqrt[c*x^2]) - b/(2*c^2*x*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)/(c*x**2)**(5/2),x)

[Out] Integral(x*(a + b*x)/(c*x**2)**(5/2), x)
```

Mathematica [A] time = 0.0056429, size = 24, normalized size = 0.59

$$\frac{x^2(-2a-3bx)}{6\,(cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x))/(c*x^2)^(5/2),x]
```

```
[Out] (x^2*(-2*a - 3*b*x))/(6*(c*x^2)^(5/2))
```

Maple [A] time = 0.006, size = 21, normalized size = 0.5

$$-\frac{x^{2}\left(3\,bx+2\,a\right)}{6}\left(c{x}^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x+a)/(c*x^2)^(5/2),x)
```

```
[Out] -1/6*x^2*(3*b*x+2*a)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.32906, size = 31, normalized size = 0.76

$$-\frac{a}{3\,\left(cx^{2}\right)^{\frac{3}{2}}c}-\frac{b}{2\,c^{\frac{5}{2}}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*a/((c*x^2)^(3/2)*c) - 1/2*b/(c^(5/2)*x^2)
```

Fricas [A] time = 0.208517, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(3\,bx+2\,a)}{6\,c^{3}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*x/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/6*sqrt(c*x^2)*(3*b*x + 2*a)/(c^3*x^4)
```

Sympy [A] time = 3.23276, size = 37, normalized size = 0.9

$$-\frac{ax^{2}}{3c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}-\frac{bx^{3}}{2c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] -a*x**2/(3*c**(5/2)*(x**2)**(5/2)) - b*x**3/(2*c**(5/2)*(x**2)**(
5/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)x}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*x/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*x/(c*x^2)^(5/2), x)
```

3.799 $\int \frac{a+bx}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{4c^2x^3\sqrt{cx^2}}-\frac{b}{3c^2x^2\sqrt{cx^2}}$$

```
[Out] -a/(4*c^2*x^3*Sqrt[c*x^2]) - b/(3*c^2*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0225028, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{a}{4c^2x^3\sqrt{cx^2}}-\frac{b}{3c^2x^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c*x^2)^(5/2),x]

[Out] -a/(4*c^2*x^3*Sqrt[c*x^2]) - b/(3*c^2*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 6.21177, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{4c^3x^5}-\frac{b\sqrt{cx^2}}{3c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(c*x**2)**(5/2),x)

[Out] -a*sqrt(c*x**2)/(4*c**3*x**5) - b*sqrt(c*x**2)/(3*c**3*x**4)
```

Mathematica [A] time = 0.0082818, size = 27, normalized size = 0.66

$$-\frac{\sqrt{cx^2}(3a+4bx)}{12c^3x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c*x^2)^(5/2),x]
```

```
[Out] -(Sqrt[c*x^2]*(3*a + 4*b*x))/(12*c^3*x^5)
```

Maple [A] time = 0.006, size = 19, normalized size = 0.5

$$-\frac{x(4bx+3a)}{12}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(c*x^2)^(5/2),x)
```

```
[Out] -1/12*x*(4*b*x+3*a)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.32344, size = 31, normalized size = 0.76

$$-\frac{b}{3\left(cx^2\right)^{\frac{3}{2}}c}-\frac{a}{4c^{\frac{5}{2}}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*b/((c*x^2)^(3/2)*c) - 1/4*a/(c^(5/2)*x^4)
```

Fricas [A] time = 0.208374, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^2}(4bx+3a)}{12c^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*sqrt(c*x^2)*(4*b*x + 3*a)/(c^3*x^5)
```

Sympy [A] time = 3.21976, size = 36, normalized size = 0.88

$$-\frac{ax}{4c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}-\frac{bx^2}{3c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] -a*x/(4*c**(5/2)*(x**2)**(5/2)) - b*x**2/(3*c**(5/2)*(x**2)**(5/2
))
```

GIAC/XCAS [A] time = 0.519605, size = 4, normalized size = 0.1

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.800 $\int \frac{a+bx}{x(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{5c^2x^4\sqrt{cx^2}}-\frac{b}{4c^2x^3\sqrt{cx^2}}$$

```
[Out] -a/(5*c^2*x^4*Sqrt[c*x^2]) - b/(4*c^2*x^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0222753, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{5c^2x^4\sqrt{cx^2}}-\frac{b}{4c^2x^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x*(c*x^2)^(5/2)),x]

[Out] -a/(5*c^2*x^4*Sqrt[c*x^2]) - b/(4*c^2*x^3*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.13288, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{5c^3x^6}-\frac{b\sqrt{cx^2}}{4c^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x/(c*x**2)**(5/2),x)

[Out] -a*sqrt(c*x**2)/(5*c**3*x**6) - b*sqrt(c*x**2)/(4*c**3*x**5)
```

Mathematica [A] time = 0.0135106, size = 27, normalized size = 0.66

$$-\frac{\sqrt{cx^2}(4a+5bx)}{20c^3x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x*(c*x^2)^(5/2)),x]
```

```
[Out] -(Sqrt[c*x^2]*(4*a + 5*b*x))/(20*c^3*x^6)
```

Maple [A] time = 0.003, size = 18, normalized size = 0.4

$$-\frac{5\,bx+4\,a}{20}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x/(c*x^2)^(5/2),x)
```

```
[Out] -1/20*(5*b*x+4*a)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.33796, size = 26, normalized size = 0.63

$$-\frac{b}{4\,c^{\frac{5}{2}}x^{4}}-\frac{a}{5\,c^{\frac{5}{2}}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x),x, algorithm="maxima")
```

```
[Out] -1/4*b/(c^(5/2)*x^4) - 1/5*a/(c^(5/2)*x^5)
```

Fricas [A] time = 0.208085, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(5\,bx+4\,a)}{20\,c^{3}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x),x, algorithm="fricas")
```

```
[Out] -1/20*sqrt(c*x^2)*(5*b*x + 4*a)/(c^3*x^6)
```

Sympy [A] time = 3.92021, size = 32, normalized size = 0.78

$$-\frac{a}{5c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}-\frac{bx}{4c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x/(c*x**2)**(5/2),x)
```

```
[Out] -a/(5*c**(5/2)*(x**2)**(5/2)) - b*x/(4*c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx+a}{(cx^2)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((c*x^2)^(5/2)*x), x)
```

3.801 $\int \frac{a+bx}{x^2(cx^2)^{5/2}} \, dx$

Optimal. Leaf size=41

$$-\frac{a}{6c^2x^5\sqrt{cx^2}}-\frac{b}{5c^2x^4\sqrt{cx^2}}$$

```
[Out] -a/(6*c^2*x^5*Sqrt[c*x^2]) - b/(5*c^2*x^4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0232365, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{6c^2x^5\sqrt{cx^2}}-\frac{b}{5c^2x^4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^2*(c*x^2)^(5/2)),x]

[Out] -a/(6*c^2*x^5*Sqrt[c*x^2]) - b/(5*c^2*x^4*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.21953, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{6c^3x^7}-\frac{b\sqrt{cx^2}}{5c^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**2/(c*x**2)**(5/2),x)

[Out] -a*sqrt(c*x**2)/(6*c**3*x**7) - b*sqrt(c*x**2)/(5*c**3*x**6)
```

Mathematica [A] time = 0.0124851, size = 27, normalized size = 0.66

$$-\frac{\sqrt{cx^2}(5a+6bx)}{30c^3x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^2*(c*x^2)^(5/2)),x]
```

```
[Out] -(Sqrt[c*x^2]*(5*a + 6*b*x))/(30*c^3*x^7)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.5

$$-\frac{6\,bx+5\,a}{30\,x}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^2/(c*x^2)^(5/2),x)
```

```
[Out] -1/30*(6*b*x+5*a)/x/(c*x^2)^(5/2)
```

Maxima [A] time = 1.31975, size = 26, normalized size = 0.63

$$-\frac{b}{5\,c^{\frac{5}{2}}x^{5}}-\frac{a}{6\,c^{\frac{5}{2}}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((c*x^2)^(5/2)*x^2),x, algorithm="maxima")
```

```
[Out] -1/5*b/(c^(5/2)*x^5) - 1/6*a/(c^(5/2)*x^6)
```

Fricas [A] time = 0.209571, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(6\,bx+5\,a)}{30\,c^{3}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((c*x^2)^(5/2)*x^2),x, algorithm="fricas")
```

```
[Out] -1/30*sqrt(c*x^2)*(6*b*x + 5*a)/(c^3*x^7)
```

Sympy [A] time = 5.10562, size = 32, normalized size = 0.78

$$-\frac{a}{6c^{\frac{5}{2}}x\left(x^{2}\right)^{\frac{5}{2}}}-\frac{b}{5c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**2/(c*x**2)**(5/2),x)
```

```
[Out] -a/(6*c**(5/2)*x*(x**2)**(5/2)) - b/(5*c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [A] time = 0.535343, size = 4, normalized size = 0.1

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.802 $\int \frac{a+bx}{x^3(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{7c^2x^6\sqrt{cx^2}}-\frac{b}{6c^2x^5\sqrt{cx^2}}$$

```
[Out] -a/(7*c^2*x^6*Sqrt[c*x^2]) - b/(6*c^2*x^5*Sqrt[c*x^2])
```

Rubi [A] time = 0.0238813, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{7c^2x^6\sqrt{cx^2}}-\frac{b}{6c^2x^5\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^3*(c*x^2)^(5/2)),x]

[Out] -a/(7*c^2*x^6*Sqrt[c*x^2]) - b/(6*c^2*x^5*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 8.99718, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{7c^3x^8}-\frac{b\sqrt{cx^2}}{6c^3x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**3/(c*x**2)**(5/2),x)

[Out] -a*sqrt(c*x**2)/(7*c**3*x**8) - b*sqrt(c*x**2)/(6*c**3*x**7)
```

Mathematica [A] time = 0.0136975, size = 22, normalized size = 0.54

$$\frac{c(-6a-7bx)}{42\left(cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^3*(c*x^2)^(5/2)),x]
```

```
[Out] (c*(-6*a - 7*b*x))/(42*(c*x^2)^(7/2))
```

Maple [A] time = 0.006, size = 21, normalized size = 0.5

$$-\frac{7\,bx+6\,a}{42\,x^{2}}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/x^3/(c*x^2)^(5/2),x)
```

```
[Out] -1/42*(7*b*x+6*a)/x^2/(c*x^2)^(5/2)
```

Maxima [A] time = 1.33752, size = 26, normalized size = 0.63

$$-\frac{b}{6\,c^{\frac{5}{2}}x^{6}}-\frac{a}{7\,c^{\frac{5}{2}}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((c*x^2)^(5/2)*x^3),x, algorithm="maxima")
```

```
[Out] -1/6*b/(c^(5/2)*x^6) - 1/7*a/(c^(5/2)*x^7)
```

Fricas [A] time = 0.206742, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(7\,bx+6\,a)}{42\,c^{3}x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/((c*x^2)^(5/2)*x^3),x, algorithm="fricas")
```

```
[Out] -1/42*sqrt(c*x^2)*(7*b*x + 6*a)/(c^3*x^8)
```

Sympy [A] time = 6.28148, size = 36, normalized size = 0.88

$$-\frac{a}{7c^{\frac{5}{2}}x^{2}\left(x^{2}\right)^{\frac{5}{2}}}-\frac{b}{6c^{\frac{5}{2}}x\left(x^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**3/(c*x**2)**(5/2),x)
```

```
[Out] -a/(7*c**(5/2)*x**2*(x**2)**(5/2)) - b/(6*c**(5/2)*x*(x**2)**(5/2
))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{bx + a}{(cx^2)^{\frac{5}{2}}\, x^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((c*x^2)^(5/2)*x^3), x)
```

3.803 $\int \frac{a+bx}{x^4(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{a}{8c^2x^7\sqrt{cx^2}}-\frac{b}{7c^2x^6\sqrt{cx^2}}$$

```
[Out] -a/(8*c^2*x^7*Sqrt[c*x^2]) - b/(7*c^2*x^6*Sqrt[c*x^2])
```

Rubi [A] time = 0.0235344, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a}{8c^2x^7\sqrt{cx^2}}-\frac{b}{7c^2x^6\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(x^4*(c*x^2)^(5/2)),x]

[Out] -a/(8*c^2*x^7*Sqrt[c*x^2]) - b/(7*c^2*x^6*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 9.14298, size = 37, normalized size = 0.9

$$-\frac{a\sqrt{cx^2}}{8c^3x^9}-\frac{b\sqrt{cx^2}}{7c^3x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/x**4/(c*x**2)**(5/2),x)

[Out] -a*sqrt(c*x**2)/(8*c**3*x**9) - b*sqrt(c*x**2)/(7*c**3*x**8)
```

Mathematica [A] time = 0.012519, size = 24, normalized size = 0.59

$$\frac{-7a-8bx}{56x^3\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(x^4*(c*x^2)^(5/2)),x]
```

```
[Out] (-7*a - 8*b*x)/(56*x^3*(c*x^2)^(5/2))
```

Maple [A] time = 0.006, size = 21, normalized size = 0.5

$$-\frac{8\,bx+7\,a}{56\,x^{3}}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/x^4/(c*x^2)^(5/2),x)
```

```
[Out] -1/56*(8*b*x+7*a)/x^3/(c*x^2)^(5/2)
```

Maxima [A] time = 1.34083, size = 26, normalized size = 0.63

$$-\frac{b}{7\,c^{\frac{5}{2}}x^{7}}-\frac{a}{8\,c^{\frac{5}{2}}x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x^4),x, algorithm="maxima")
```

```
[Out] -1/7*b/(c^(5/2)*x^7) - 1/8*a/(c^(5/2)*x^8)
```

Fricas [A] time = 0.206376, size = 31, normalized size = 0.76

$$-\frac{\sqrt{cx^{2}}(8\,bx+7\,a)}{56\,c^{3}x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x^4),x, algorithm="fricas")
```

```
[Out] -1/56*sqrt(c*x^2)*(8*b*x + 7*a)/(c^3*x^9)
```

Sympy [A] time = 6.92721, size = 37, normalized size = 0.9

$$-\frac{a}{8c^{\frac{5}{2}}x^{3}\left(x^{2}\right)^{\frac{5}{2}}}-\frac{b}{7c^{\frac{5}{2}}x^{2}\left(x^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/x**4/(c*x**2)**(5/2),x)
```

```
[Out] -a/(8*c**(5/2)*x**3*(x**2)**(5/2)) - b/(7*c**(5/2)*x**2*(x**2)**(
5/2))
```

GIAC/XCAS [A] time = 0.515954, size = 4, normalized size = 0.1

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/((c*x^2)^(5/2)*x^4),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.804 $\int x^3\sqrt{cx^2}(a+bx)^2\,dx$

Optimal. Leaf size=57

$$\frac{1}{5}a^2x^4\sqrt{cx^2}+\frac{1}{3}abx^5\sqrt{cx^2}+\frac{1}{7}b^2x^6\sqrt{cx^2}$$

```
[Out] (a^2*x^4*Sqrt[c*x^2])/5 + (a*b*x^5*Sqrt[c*x^2])/3 + (b^2*x^6*Sqrt
[c*x^2])/7
```

Rubi [A] time = 0.0418007, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}=0.1$

$$\frac{1}{5}a^2x^4\sqrt{cx^2}+\frac{1}{3}abx^5\sqrt{cx^2}+\frac{1}{7}b^2x^6\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (a^2*x^4*Sqrt[c*x^2])/5 + (a*b*x^5*Sqrt[c*x^2])/3 + (b^2*x^6*Sqrt
[c*x^2])/7
```

Rubi in Sympy [A] time = 17.7589, size = 49, normalized size = 0.86

$$\frac{a^2x^4\sqrt{cx^2}}{5}+\frac{abx^5\sqrt{cx^2}}{3}+\frac{b^2x^6\sqrt{cx^2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*x**4*sqrt(c*x**2)/5 + a*b*x**5*sqrt(c*x**2)/3 + b**2*x**6*sq
rt(c*x**2)/7
```

Mathematica [A] time = 0.00886833, size = 35, normalized size = 0.61

$$\frac{1}{105}x^4\sqrt{cx^2}\left(21a^2+35abx+15b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (x^4*Sqrt[c*x^2]*(21*a^2 + 35*a*b*x + 15*b^2*x^2))/105
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$\frac{x^4 (15 b^2x^2 + 35 abx + 21 a^2)}{105}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^2*(c*x^2)^(1/2),x)
```

```
[Out] 1/105*x^4*(15*b^2*x^2+35*a*b*x+21*a^2)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.199967, size = 45, normalized size = 0.79

$$\frac{1}{105} (15 b^2x^6 + 35 abx^5 + 21 a^2x^4) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x^3,x, algorithm="fricas")
```

```
[Out] 1/105*(15*b^2*x^6 + 35*a*b*x^5 + 21*a^2*x^4)*sqrt(c*x^2)
```

Sympy [A] time = 1.77094, size = 60, normalized size = 1.05

$$\frac{a^2\sqrt{c}x^4\sqrt{x^2}}{5} + \frac{ab\sqrt{c}x^5\sqrt{x^2}}{3} + \frac{b^2\sqrt{c}x^6\sqrt{x^2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c)*x**4*sqrt(x**2)/5 + a*b*sqrt(c)*x**5*sqrt(x**2)/3 +
b**2*sqrt(c)*x**6*sqrt(x**2)/7
```

GIAC/XCAS [A] time = 0.207127, size = 47, normalized size = 0.82

$$\frac{1}{105}\left(15\,b^2x^7\mathrm{sign}\left(x\right) + 35\,abx^6\mathrm{sign}\left(x\right) + 21\,a^2x^5\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x^3,x, algorithm="giac")
```

```
[Out] 1/105*(15*b^2*x^7*sign(x) + 35*a*b*x^6*sign(x) + 21*a^2*x^5*sign(
x))*sqrt(c)
```

3.805 $\int x^2\sqrt{cx^2}(a+bx)^2\,dx$

Optimal. Leaf size=57

$$\frac{1}{4}a^2x^3\sqrt{cx^2}+\frac{2}{5}abx^4\sqrt{cx^2}+\frac{1}{6}b^2x^5\sqrt{cx^2}$$

```
[Out] (a^2*x^3*Sqrt[c*x^2])/4 + (2*a*b*x^4*Sqrt[c*x^2])/5 + (b^2*x^5*Sq
rt[c*x^2])/6
```

Rubi [A] time = 0.0398942, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{1}{4}a^2x^3\sqrt{cx^2}+\frac{2}{5}abx^4\sqrt{cx^2}+\frac{1}{6}b^2x^5\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (a^2*x^3*Sqrt[c*x^2])/4 + (2*a*b*x^4*Sqrt[c*x^2])/5 + (b^2*x^5*Sq
rt[c*x^2])/6
```

Rubi in Sympy [A] time = 12.6069, size = 51, normalized size = 0.89

$$\frac{a^2x^3\sqrt{cx^2}}{4}+\frac{2abx^4\sqrt{cx^2}}{5}+\frac{b^2x^5\sqrt{cx^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*x**3*sqrt(c*x**2)/4 + 2*a*b*x**4*sqrt(c*x**2)/5 + b**2*x**5*
sqrt(c*x**2)/6
```

Mathematica [A] time = 0.00858386, size = 35, normalized size = 0.61

$$\frac{1}{60}x^3\sqrt{cx^2}\left(15a^2+24abx+10b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (x^3*Sqrt[c*x^2]*(15*a^2 + 24*a*b*x + 10*b^2*x^2))/60
```

Maple [A] time = 0.006, size = 32, normalized size = 0.6

$$\frac{x^3 (10 b^2x^2 + 24 abx + 15 a^2)}{60} \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^2*(c*x^2)^(1/2),x)
```

```
[Out] 1/60*x^3*(10*b^2*x^2+24*a*b*x+15*a^2)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.194943, size = 45, normalized size = 0.79

$$\frac{1}{60} (10 b^2x^5 + 24 abx^4 + 15 a^2x^3) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*b^2*x^5 + 24*a*b*x^4 + 15*a^2*x^3)*sqrt(c*x^2)
```

Sympy [A] time = 1.38453, size = 61, normalized size = 1.07

$$\frac{a^2\sqrt{c}x^3\sqrt{x^2}}{4} + \frac{2ab\sqrt{c}x^4\sqrt{x^2}}{5} + \frac{b^2\sqrt{c}x^5\sqrt{x^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c)*x**3*sqrt(x**2)/4 + 2*a*b*sqrt(c)*x**4*sqrt(x**2)/5
+ b**2*sqrt(c)*x**5*sqrt(x**2)/6
```

GIAC/XCAS [A] time = 0.20649, size = 47, normalized size = 0.82

$$\frac{1}{60}\left(10\,b^2x^6\operatorname{sign}(x) + 24\,abx^5\operatorname{sign}(x) + 15\,a^2x^4\operatorname{sign}(x)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*b^2*x^6*sign(x) + 24*a*b*x^5*sign(x) + 15*a^2*x^4*sign(x
))*sqrt(c)
```

3.806 $\int x\sqrt{cx^2}(a+bx)^2\,dx$

Optimal. Leaf size=57

$$\frac{1}{3}a^2x^2\sqrt{cx^2}+\frac{1}{2}abx^3\sqrt{cx^2}+\frac{1}{5}b^2x^4\sqrt{cx^2}$$

```
[Out] (a^2*x^2*Sqrt[c*x^2])/3 + (a*b*x^3*Sqrt[c*x^2])/2 + (b^2*x^4*Sqrt
[c*x^2])/5
```

Rubi [A] time = 0.0365248, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{3}a^2x^2\sqrt{cx^2}+\frac{1}{2}abx^3\sqrt{cx^2}+\frac{1}{5}b^2x^4\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (a^2*x^2*Sqrt[c*x^2])/3 + (a*b*x^3*Sqrt[c*x^2])/2 + (b^2*x^4*Sqrt
[c*x^2])/5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\sqrt{cx^2}\,(a+bx)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] Integral(x*sqrt(c*x**2)*(a + b*x)**2, x)
```

Mathematica [A] time = 0.00772535, size = 35, normalized size = 0.61

$$\frac{1}{30}x^2\sqrt{cx^2}\left(10a^2+15abx+6b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (x^2*Sqrt[c*x^2]*(10*a^2 + 15*a*b*x + 6*b^2*x^2))/30
```

Maple [A] time = 0.005, size = 32, normalized size = 0.6

$$\frac{x^2 (6 b^2x^2 + 15 abx + 10 a^2)}{30}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^2*(c*x^2)^(1/2),x)
```

```
[Out] 1/30*x^2*(6*b^2*x^2+15*a*b*x+10*a^2)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.197611, size = 45, normalized size = 0.79

$$\frac{1}{30}\left(6 b^2x^4 + 15 abx^3 + 10 a^2x^2\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x,x, algorithm="fricas")
```

```
[Out] 1/30*(6*b^2*x^4 + 15*a*b*x^3 + 10*a^2*x^2)*sqrt(c*x^2)
```

Sympy [A] time = 1.01472, size = 60, normalized size = 1.05

$$\frac{a^2\sqrt{c}x^2\sqrt{x^2}}{3} + \frac{ab\sqrt{c}x^3\sqrt{x^2}}{2} + \frac{b^2\sqrt{c}x^4\sqrt{x^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c)*x**2*sqrt(x**2)/3 + a*b*sqrt(c)*x**3*sqrt(x**2)/2 +
b**2*sqrt(c)*x**4*sqrt(x**2)/5
```

GIAC/XCAS [A] time = 0.207698, size = 47, normalized size = 0.82

$$\frac{1}{30}\left(6\,b^2x^5\mathrm{sign}\left(x\right)+15\,abx^4\mathrm{sign}\left(x\right)+10\,a^2x^3\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*x,x, algorithm="giac")
```

```
[Out] 1/30*(6*b^2*x^5*sign(x) + 15*a*b*x^4*sign(x) + 10*a^2*x^3*sign(x)
)*sqrt(c)
```

3.807 $\int \sqrt{cx^2}(a+bx)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{2}a^2x\sqrt{cx^2}+\frac{2}{3}abx^2\sqrt{cx^2}+\frac{1}{4}b^2x^3\sqrt{cx^2}$$

```
[Out] (a^2*x*Sqrt[c*x^2])/2 + (2*a*b*x^2*Sqrt[c*x^2])/3 + (b^2*x^3*Sqrt
[c*x^2])/4
```

Rubi [A] time = 0.03524, antiderivative size = 55, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{1}{2}a^2x\sqrt{cx^2}+\frac{2}{3}abx^2\sqrt{cx^2}+\frac{1}{4}b^2x^3\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (a^2*x*Sqrt[c*x^2])/2 + (2*a*b*x^2*Sqrt[c*x^2])/3 + (b^2*x^3*Sqrt
[c*x^2])/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\int x\,dx}{x}+\frac{2abx^2\sqrt{cx^2}}{3}+\frac{b^2x^3\sqrt{cx^2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*Integral(x, x)/x + 2*a*b*x**2*sqrt(c*x**2)/3 +
b**2*x**3*sqrt(c*x**2)/4
```

Mathematica [A] time = 0.0102158, size = 33, normalized size = 0.6

$$\frac{1}{12}x\sqrt{cx^2}\left(6a^2+8abx+3b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (x*Sqrt[c*x^2]*(6*a^2 + 8*a*b*x + 3*b^2*x^2))/12
```

Maple [A] time = 0.004, size = 30, normalized size = 0.6

$$\frac{x\left(3\,b^{2}x^{2}+8\,abx+6\,a^{2}\right)}{12}\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(c*x^2)^(1/2),x)
```

```
[Out] 1/12*x*(3*b^2*x^2+8*a*b*x+6*a^2)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.195615, size = 42, normalized size = 0.76

$$\frac{1}{12}\left(3\,b^{2}x^{3}+8\,abx^{2}+6\,a^{2}x\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^2*x^3 + 8*a*b*x^2 + 6*a^2*x)*sqrt(c*x^2)
```

Sympy [A] time = 0.87286, size = 60, normalized size = 1.09

$$\frac{a^{2}\sqrt{c}x\sqrt{x^{2}}}{2}+\frac{2ab\sqrt{c}x^{2}\sqrt{x^{2}}}{3}+\frac{b^{2}\sqrt{c}x^{3}\sqrt{x^{2}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c)*x*sqrt(x**2)/2 + 2*a*b*sqrt(c)*x**2*sqrt(x**2)/3 + b
**2*sqrt(c)*x**3*sqrt(x**2)/4
```

GIAC/XCAS [A] time = 0.208969, size = 47, normalized size = 0.85

$$\frac{1}{12}\left(3\,b^{2}x^{4}\mathrm{sign}\left(x\right)+8\,abx^{3}\mathrm{sign}\left(x\right)+6\,a^{2}x^{2}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*b^2*x^4*sign(x) + 8*a*b*x^3*sign(x) + 6*a^2*x^2*sign(x))*
sqrt(c)
```

3.808 $\int \frac{\sqrt{cx^2}(a+bx)^2}{x} dx$

Optimal. Leaf size=26

$$\frac{\sqrt{cx^2}(a+bx)^3}{3bx}$$

[Out] (Sqrt[c*x^2]*(a + b*x)^3)/(3*b*x)

Rubi [A] time = 0.0118528, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{\sqrt{cx^2}(a+bx)^3}{3bx}$$

Antiderivative was successfully verified.

[In] Int[(Sqrt[c*x^2]*(a + b*x)^2)/x,x]

[Out] (Sqrt[c*x^2]*(a + b*x)^3)/(3*b*x)

Rubi in Sympy [A] time = 12.3457, size = 19, normalized size = 0.73

$$\frac{\sqrt{cx^2}\,(a+bx)^3}{3bx}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((b*x+a)**2*(c*x**2)**(1/2)/x,x)

[Out] sqrt(c*x**2)*(a + b*x)**3/(3*b*x)

Mathematica [A] time = 0.00887857, size = 25, normalized size = 0.96

$$\frac{cx(a+bx)^3}{3b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

[In] Integrate[(Sqrt[c*x^2]*(a + b*x)^2)/x,x]

```
[Out] (c*x*(a + b*x)^3)/(3*b*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 28, normalized size = 1.1

$$\frac{b^2x^2 + 3\,abx + 3\,a^2}{3}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(c*x^2)^(1/2)/x,x)
```

```
[Out] 1/3*(b^2*x^2+3*a*b*x+3*a^2)*(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205356, size = 36, normalized size = 1.38

$$\frac{1}{3}\left(b^2x^2 + 3\,abx + 3\,a^2\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x,x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*x^2 + 3*a*b*x + 3*a^2)*sqrt(c*x^2)
```

Sympy [A] time = 0.813651, size = 51, normalized size = 1.96

$$a^2\sqrt{c}\sqrt{x^2} + ab\sqrt{c}x\sqrt{x^2} + \frac{b^2\sqrt{c}x^2\sqrt{x^2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(c*x**2)**(1/2)/x,x)
```

```
[Out] a**2*sqrt(c)*sqrt(x**2) + a*b*sqrt(c)*x*sqrt(x**2) + b**2*sqrt(c)
*x**2*sqrt(x**2)/3
```

GIAC/XCAS [A] time = 0.2055, size = 39, normalized size = 1.5

$$\frac{1}{3}\left(\frac{(bx+a)^3\operatorname{sign}(x)}{b}-\frac{a^3\operatorname{sign}(x)}{b}\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x,x, algorithm="giac")
```

```
[Out] 1/3*((b*x + a)^3*sign(x)/b - a^3*sign(x)/b)*sqrt(c)
```

3.809 $\int \frac{\sqrt{cx^2}(a+bx)^2}{x^2}\,dx$

Optimal. Leaf size=49

$$\frac{a^2\sqrt{cx^2}\log(x)}{x}+2ab\sqrt{cx^2}+\frac{1}{2}b^2x\sqrt{cx^2}$$

```
[Out] 2*a*b*Sqrt[c*x^2] + (b^2*x*Sqrt[c*x^2])/2 + (a^2*Sqrt[c*x^2]*Log[
x])/x
```

Rubi [A] time = 0.0269627, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2\sqrt{cx^2}\log(x)}{x}+2ab\sqrt{cx^2}+\frac{1}{2}b^2x\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^2)/x^2,x]
```

```
[Out] 2*a*b*Sqrt[c*x^2] + (b^2*x*Sqrt[c*x^2])/2 + (a^2*Sqrt[c*x^2]*Log[
x])/x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\log(x)}{x}+2ab\sqrt{cx^2}+\frac{b^2\sqrt{cx^2}\int x\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(c*x**2)**(1/2)/x**2,x)
```

```
[Out] a**2*sqrt(c*x**2)*log(x)/x + 2*a*b*sqrt(c*x**2) + b**2*sqrt(c*x**
2)*Integral(x, x)/x
```

Mathematica [A] time = 0.0150334, size = 33, normalized size = 0.67

$$\frac{cx\left(2a^2\log(x)+bx(4a+bx)\right)}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^2)/x^2,x]
```

```
[Out] (c*x*(b*x*(4*a + b*x) + 2*a^2*Log[x]))/(2*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 33, normalized size = 0.7

$$\frac{b^2x^2 + 2\,a^2\ln(x) + 4\,abx}{2\,x}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(c*x^2)^(1/2)/x^2,x)
```

```
[Out] 1/2*(c*x^2)^(1/2)*(b^2*x^2+2*a^2*ln(x)+4*a*b*x)/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.212906, size = 43, normalized size = 0.88

$$\frac{\left(b^2x^2 + 4\,abx + 2\,a^2\log(x)\right)\sqrt{cx^2}}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 + 4*a*b*x + 2*a^2*log(x))*sqrt(c*x^2)/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{cx^2}\,(a+bx)^2}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(c*x**2)**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)**2/x**2, x)
```

GIAC/XCAS [A] time = 0.20721, size = 43, normalized size = 0.88

$$\frac{1}{2}\left(b^2x^2\text{sign}\left(x\right)+4\,abx\text{sign}\left(x\right)+2\,a^2\ln\left(|x|\right)\text{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/2*(b^2*x^2*sign(x) + 4*a*b*x*sign(x) + 2*a^2*ln(abs(x))*sign(x)
)*sqrt(c)
```

3.810 $\int \frac{\sqrt{cx^2}(a+bx)^2}{x^3} dx$

Optimal. Leaf size=49

$$-\frac{a^2\sqrt{cx^2}}{x^2}+\frac{2ab\sqrt{cx^2}\log(x)}{x}+b^2\sqrt{cx^2}$$

```
[Out] b^2*Sqrt[c*x^2] - (a^2*Sqrt[c*x^2])/x^2 + (2*a*b*Sqrt[c*x^2]*Log[
x])/x
```

Rubi [A] time = 0.0318719, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2\sqrt{cx^2}}{x^2}+\frac{2ab\sqrt{cx^2}\log(x)}{x}+b^2\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^2)/x^3,x]
```

```
[Out] b^2*Sqrt[c*x^2] - (a^2*Sqrt[c*x^2])/x^2 + (2*a*b*Sqrt[c*x^2]*Log[
x])/x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2\sqrt{cx^2}}{x^2}+\frac{2ab\sqrt{cx^2}\log(x)}{x}+\frac{\sqrt{cx^2}\int b^2\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(c*x**2)**(1/2)/x**3,x)
```

```
[Out] -a**2*sqrt(c*x**2)/x**2 + 2*a*b*sqrt(c*x**2)*log(x)/x + sqrt(c*x*
*2)*Integral(b**2, x)/x
```

Mathematica [A] time = 0.0166452, size = 31, normalized size = 0.63

$$\frac{c\left(-a^2+2abx\log(x)+b^2x^2\right)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^2)/x^3,x]
```

```
[Out] (c*(-a^2 + b^2*x^2 + 2*a*b*x*Log[x]))/Sqrt[c*x^2]
```

Maple [A] time = 0.007, size = 32, normalized size = 0.7

$$\frac{2\,ab\ln(x)\,x+b^2x^2-a^2}{x^2}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(c*x^2)^(1/2)/x^3,x)
```

```
[Out] (c*x^2)^(1/2)*(2*a*b*ln(x)*x+b^2*x^2-a^2)/x^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.22565, size = 42, normalized size = 0.86

$$\frac{\left(b^2x^2+2\,abx\log(x)-a^2\right)\sqrt{cx^2}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^3,x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + 2*a*b*x*log(x) - a^2)*sqrt(c*x^2)/x^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{cx^2}\,(a+bx)^2}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(c*x**2)**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)**2/x**3, x)
```

GIAC/XCAS [A] time = 0.20874, size = 42, normalized size = 0.86

$$\left(b^2 x \operatorname{sign}(x) + 2\,ab \ln(|x|) \operatorname{sign}(x) - \frac{a^2 \operatorname{sign}(x)}{x}\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^3,x, algorithm="giac")
```

```
[Out] (b^2*x*sign(x) + 2*a*b*ln(abs(x))*sign(x) - a^2*sign(x)/x)*sqrt(c
)
```

3.811 $\int \frac{\sqrt{cx^2}(a+bx)^2}{x^4} dx$

Optimal. Leaf size=54

$$-\frac{a^2\sqrt{cx^2}}{2x^3}-\frac{2ab\sqrt{cx^2}}{x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{x}$$

```
[Out] -(a^2*Sqrt[c*x^2])/(2*x^3) - (2*a*b*Sqrt[c*x^2])/x^2 + (b^2*Sqrt[
c*x^2]*Log[x])/x
```

Rubi [A] time = 0.0316508, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2\sqrt{cx^2}}{2x^3}-\frac{2ab\sqrt{cx^2}}{x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^2)/x^4,x]
```

```
[Out] -(a^2*Sqrt[c*x^2])/(2*x^3) - (2*a*b*Sqrt[c*x^2])/x^2 + (b^2*Sqrt[
c*x^2]*Log[x])/x
```

Rubi in Sympy [A] time = 15.3947, size = 49, normalized size = 0.91

$$-\frac{a^2\sqrt{cx^2}}{2x^3}-\frac{2ab\sqrt{cx^2}}{x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(c*x**2)**(1/2)/x**4,x)
```

```
[Out] -a**2*sqrt(c*x**2)/(2*x**3) - 2*a*b*sqrt(c*x**2)/x**2 + b**2*sqrt
(c*x**2)*log(x)/x
```

Mathematica [A] time = 0.0150725, size = 36, normalized size = 0.67

$$\frac{\sqrt{cx^2}\left(2b^2x^2\log(x)-a(a+4bx)\right)}{2x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^2)/x^4,x]
```

```
[Out] (Sqrt[c*x^2]*(-(a*(a + 4*b*x)) + 2*b^2*x^2*Log[x]))/(2*x^3)
```

Maple [A] time = 0.007, size = 34, normalized size = 0.6

$$\frac{2\,b^{2}\ln\left(x\right)x^{2}-4\,abx-a^{2}}{2\,x^{3}}\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(c*x^2)^(1/2)/x^4,x)
```

```
[Out] 1/2*(c*x^2)^(1/2)*(2*b^2*ln(x)*x^2-4*a*b*x-a^2)/x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.216448, size = 45, normalized size = 0.83

$$\frac{\left(2\,b^{2}x^{2}\log\left(x\right)-4\,abx-a^{2}\right)\sqrt{cx^{2}}}{2\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*x^2*log(x) - 4*a*b*x - a^2)*sqrt(c*x^2)/x^3
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{cx^{2}}\left(a+bx\right)^{2}}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(c*x**2)**(1/2)/x**4,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)**2/x**4, x)
```

GIAC/XCAS [A] time = 0.205849, size = 47, normalized size = 0.87

$$\frac{1}{2}\left(2\,b^2\ln\left(|x|\right)\mathrm{sign}\left(x\right) - \frac{4\,abx\mathrm{sign}\left(x\right) + a^2\mathrm{sign}\left(x\right)}{x^2}\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*(2*b^2*ln(abs(x))*sign(x) - (4*a*b*x*sign(x) + a^2*sign(x))/x
^2)*sqrt(c)
```

3.812 $\int x^3 \left(cx^2\right)^{3/2} (a+bx)^2 \, dx$

Optimal. Leaf size=60

$$\frac{1}{7}a^2cx^6\sqrt{cx^2}+\frac{1}{4}abcx^7\sqrt{cx^2}+\frac{1}{9}b^2cx^8\sqrt{cx^2}$$

```
[Out] (a^2*c*x^6*Sqrt[c*x^2])/7 + (a*b*c*x^7*Sqrt[c*x^2])/4 + (b^2*c*x^
8*Sqrt[c*x^2])/9
```

Rubi [A] time = 0.0473152, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{1}{7}a^2cx^6\sqrt{cx^2}+\frac{1}{4}abcx^7\sqrt{cx^2}+\frac{1}{9}b^2cx^8\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c*x^6*Sqrt[c*x^2])/7 + (a*b*c*x^7*Sqrt[c*x^2])/4 + (b^2*c*x^
8*Sqrt[c*x^2])/9
```

Rubi in Sympy [A] time = 18.6254, size = 54, normalized size = 0.9

$$\frac{a^2cx^6\sqrt{cx^2}}{7}+\frac{abcx^7\sqrt{cx^2}}{4}+\frac{b^2cx^8\sqrt{cx^2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c*x**6*sqrt(c*x**2)/7 + a*b*c*x**7*sqrt(c*x**2)/4 + b**2*c*x
**8*sqrt(c*x**2)/9
```

Mathematica [A] time = 0.0122243, size = 35, normalized size = 0.58

$$\frac{1}{252}x^4\left(cx^2\right)^{3/2}\left(36a^2+63abx+28b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(c*x^2)^(3/2)*(a + b*x)^2,x]

[Out] (x^4*(c*x^2)^(3/2)*(36*a^2 + 63*a*b*x + 28*b^2*x^2))/252
```

Maple [A] time = 0.006, size = 32, normalized size = 0.5

$$\frac{x^4 \left(28 b^2 x^2 + 63 abx + 36 a^2\right)}{252} \left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(c*x^2)^(3/2)*(b*x+a)^2,x)

[Out] 1/252*x^4*(28*b^2*x^2+63*a*b*x+36*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x^3,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.208958, size = 49, normalized size = 0.82

$$\frac{1}{252} \left(28 b^2 cx^8 + 63 abcx^7 + 36 a^2 cx^6\right) \sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x^3,x, algorithm="fricas")

[Out] 1/252*(28*b^2*c*x^8 + 63*a*b*c*x^7 + 36*a^2*c*x^6)*sqrt(c*x^2)
```

Sympy [A] time = 5.46974, size = 60, normalized size = 1.

$$\frac{a^2 c^{\frac{3}{2}} x^4 \left(x^2\right)^{\frac{3}{2}}}{7} + \frac{abc^{\frac{3}{2}} x^5 \left(x^2\right)^{\frac{3}{2}}}{4} + \frac{b^2 c^{\frac{3}{2}} x^6 \left(x^2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**(3/2)*x**4*(x**2)**(3/2)/7 + a*b*c**(3/2)*x**5*(x**2)**(3
/2)/4 + b**2*c**(3/2)*x**6*(x**2)**(3/2)/9
```

GIAC/XCAS [A] time = 0.20659, size = 47, normalized size = 0.78

$$\frac{1}{252}\left(28\,b^2x^9\mathrm{sign}\left(x\right)+63\,abx^8\mathrm{sign}\left(x\right)+36\,a^2x^7\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x^3,x, algorithm="giac")
```

```
[Out] 1/252*(28*b^2*x^9*sign(x) + 63*a*b*x^8*sign(x) + 36*a^2*x^7*sign(
x))*c^(3/2)
```

3.813 $\int x^2 \left(cx^2\right)^{3/2} (a+bx)^2 \, dx$

Optimal. Leaf size=60

$$\frac{1}{6}a^2cx^5\sqrt{cx^2}+\frac{2}{7}abcx^6\sqrt{cx^2}+\frac{1}{8}b^2cx^7\sqrt{cx^2}$$

```
[Out] (a^2*c*x^5*Sqrt[c*x^2])/6 + (2*a*b*c*x^6*Sqrt[c*x^2])/7 + (b^2*c*
x^7*Sqrt[c*x^2])/8
```

Rubi [A] time = 0.0451368, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{1}{6}a^2cx^5\sqrt{cx^2}+\frac{2}{7}abcx^6\sqrt{cx^2}+\frac{1}{8}b^2cx^7\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c*x^5*Sqrt[c*x^2])/6 + (2*a*b*c*x^6*Sqrt[c*x^2])/7 + (b^2*c*
x^7*Sqrt[c*x^2])/8
```

Rubi in Sympy [A] time = 14.3005, size = 56, normalized size = 0.93

$$\frac{a^2cx^5\sqrt{cx^2}}{6}+\frac{2abcx^6\sqrt{cx^2}}{7}+\frac{b^2cx^7\sqrt{cx^2}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c*x**5*sqrt(c*x**2)/6 + 2*a*b*c*x**6*sqrt(c*x**2)/7 + b**2*c
*x**7*sqrt(c*x**2)/8
```

Mathematica [A] time = 0.011984, size = 35, normalized size = 0.58

$$\frac{1}{168}x^3\left(cx^2\right)^{3/2}\left(28a^2+48abx+21b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(c*x^2)^(3/2)*(a + b*x)^2,x]

[Out] (x^3*(c*x^2)^(3/2)*(28*a^2 + 48*a*b*x + 21*b^2*x^2))/168
```

Maple [A] time = 0.007, size = 32, normalized size = 0.5

$$\frac{x^3\left(21\,b^2x^2+48\,abx+28\,a^2\right)}{168}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(c*x^2)^(3/2)*(b*x+a)^2,x)

[Out] 1/168*x^3*(21*b^2*x^2+48*a*b*x+28*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x^2,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.210102, size = 49, normalized size = 0.82

$$\frac{1}{168}\left(21\,b^2cx^7+48\,abcx^6+28\,a^2cx^5\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x^2,x, algorithm="fricas")

[Out] 1/168*(21*b^2*c*x^7 + 48*a*b*c*x^6 + 28*a^2*c*x^5)*sqrt(c*x^2)
```

Sympy [A] time = 4.32644, size = 61, normalized size = 1.02

$$\frac{a^2c^{\frac{3}{2}}x^3\left(x^2\right)^{\frac{3}{2}}}{6}+\frac{2abc^{\frac{3}{2}}x^4\left(x^2\right)^{\frac{3}{2}}}{7}+\frac{b^2c^{\frac{3}{2}}x^5\left(x^2\right)^{\frac{3}{2}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**(3/2)*x**3*(x**2)**(3/2)/6 + 2*a*b*c**(3/2)*x**4*(x**2)**
(3/2)/7 + b**2*c**(3/2)*x**5*(x**2)**(3/2)/8
```

GIAC/XCAS [A] time = 0.207011, size = 47, normalized size = 0.78

$$\frac{1}{168}\left(21\,b^2x^8\mathrm{sign}\left(x\right) + 48\,abx^7\mathrm{sign}\left(x\right) + 28\,a^2x^6\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x^2,x, algorithm="giac")
```

```
[Out] 1/168*(21*b^2*x^8*sign(x) + 48*a*b*x^7*sign(x) + 28*a^2*x^6*sign(
x))*c^(3/2)
```

3.814 $\int x\left(cx^2\right)^{3/2}(a+bx)^2\,dx$

Optimal. Leaf size=60

$$\frac{1}{5}a^2cx^4\sqrt{cx^2}+\frac{1}{3}abcx^5\sqrt{cx^2}+\frac{1}{7}b^2cx^6\sqrt{cx^2}$$

```
[Out] (a^2*c*x^4*Sqrt[c*x^2])/5 + (a*b*c*x^5*Sqrt[c*x^2])/3 + (b^2*c*x^
6*Sqrt[c*x^2])/7
```

Rubi [A] time = 0.0398862, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{5}a^2cx^4\sqrt{cx^2}+\frac{1}{3}abcx^5\sqrt{cx^2}+\frac{1}{7}b^2cx^6\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c*x^4*Sqrt[c*x^2])/5 + (a*b*c*x^5*Sqrt[c*x^2])/3 + (b^2*c*x^
6*Sqrt[c*x^2])/7
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(cx^2\right)^{\frac{3}{2}}(a+bx)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)*(a + b*x)**2, x)
```

Mathematica [A] time = 0.0117181, size = 35, normalized size = 0.58

$$\frac{1}{105}x^2\left(cx^2\right)^{3/2}\left(21a^2+35abx+15b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (x^2*(c*x^2)^(3/2)*(21*a^2 + 35*a*b*x + 15*b^2*x^2))/105
```

Maple [A] time = 0.005, size = 32, normalized size = 0.5

$$\frac{x^2\left(15\,b^2x^2+35\,abx+21\,a^2\right)}{105}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(3/2)*(b*x+a)^2,x)
```

```
[Out] 1/105*x^2*(15*b^2*x^2+35*a*b*x+21*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.203549, size = 49, normalized size = 0.82

$$\frac{1}{105}\left(15\,b^2cx^6+35\,abcx^5+21\,a^2cx^4\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x,x, algorithm="fricas")
```

```
[Out] 1/105*(15*b^2*c*x^6 + 35*a*b*c*x^5 + 21*a^2*c*x^4)*sqrt(c*x^2)
```

Sympy [A] time = 3.27732, size = 60, normalized size = 1.

$$\frac{a^2c^{\frac{3}{2}}x^2\left(x^2\right)^{\frac{3}{2}}}{5}+\frac{abc^{\frac{3}{2}}x^3\left(x^2\right)^{\frac{3}{2}}}{3}+\frac{b^2c^{\frac{3}{2}}x^4\left(x^2\right)^{\frac{3}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**(3/2)*x**2*(x**2)**(3/2)/5 + a*b*c**(3/2)*x**3*(x**2)**(3
/2)/3 + b**2*c**(3/2)*x**4*(x**2)**(3/2)/7
```

GIAC/XCAS [A] time = 0.205638, size = 47, normalized size = 0.78

$$\frac{1}{105}\left(15\,b^{2}x^{7}\operatorname{sign}\left(x\right)+35\,abx^{6}\operatorname{sign}\left(x\right)+21\,a^{2}x^{5}\operatorname{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*x,x, algorithm="giac")
```

```
[Out] 1/105*(15*b^2*x^7*sign(x) + 35*a*b*x^6*sign(x) + 21*a^2*x^5*sign(
x))*c^(3/2)
```

3.815 $\int \left(cx^2\right)^{3/2} (a+bx)^2 \, dx$

Optimal. Leaf size=60

$$\frac{1}{4}a^2cx^3\sqrt{cx^2}+\frac{2}{5}abcx^4\sqrt{cx^2}+\frac{1}{6}b^2cx^5\sqrt{cx^2}$$

```
[Out] (a^2*c*x^3*Sqrt[c*x^2])/4 + (2*a*b*c*x^4*Sqrt[c*x^2])/5 + (b^2*c*
x^5*Sqrt[c*x^2])/6
```

Rubi [A] time = 0.0381567, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{1}{4}a^2cx^3\sqrt{cx^2}+\frac{2}{5}abcx^4\sqrt{cx^2}+\frac{1}{6}b^2cx^5\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c*x^3*Sqrt[c*x^2])/4 + (2*a*b*c*x^4*Sqrt[c*x^2])/5 + (b^2*c*
x^5*Sqrt[c*x^2])/6
```

Rubi in Sympy [A] time = 11.0313, size = 56, normalized size = 0.93

$$\frac{a^2cx^3\sqrt{cx^2}}{4}+\frac{2abcx^4\sqrt{cx^2}}{5}+\frac{b^2cx^5\sqrt{cx^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c*x**3*sqrt(c*x**2)/4 + 2*a*b*c*x**4*sqrt(c*x**2)/5 + b**2*c
*x**5*sqrt(c*x**2)/6
```

Mathematica [A] time = 0.011928, size = 33, normalized size = 0.55

$$\frac{1}{60}x\left(cx^2\right)^{3/2}\left(15a^2+24abx+10b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (x*(c*x^2)^(3/2)*(15*a^2 + 24*a*b*x + 10*b^2*x^2))/60
```

Maple [A] time = 0.006, size = 30, normalized size = 0.5

$$\frac{x\left(10\,b^{2}x^{2}+24\,abx+15\,a^{2}\right)}{60}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^2,x)
```

```
[Out] 1/60*x*(10*b^2*x^2+24*a*b*x+15*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204318, size = 49, normalized size = 0.82

$$\frac{1}{60}\left(10\,b^{2}cx^{5}+24\,abcx^{4}+15\,a^{2}cx^{3}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*b^2*c*x^5 + 24*a*b*c*x^4 + 15*a^2*c*x^3)*sqrt(c*x^2)
```

Sympy [A] time = 2.36483, size = 60, normalized size = 1.

$$\frac{a^{2}c^{\frac{3}{2}}x\left(x^{2}\right)^{\frac{3}{2}}}{4}+\frac{2abc^{\frac{3}{2}}x^{2}\left(x^{2}\right)^{\frac{3}{2}}}{5}+\frac{b^{2}c^{\frac{3}{2}}x^{3}\left(x^{2}\right)^{\frac{3}{2}}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**(3/2)*x*(x**2)**(3/2)/4 + 2*a*b*c**(3/2)*x**2*(x**2)**(3/
2)/5 + b**2*c**(3/2)*x**3*(x**2)**(3/2)/6
```

GIAC/XCAS [A] time = 0.207233, size = 47, normalized size = 0.78

$$\frac{1}{60}\left(10\,b^{2}x^{6}\mathrm{sign}\left(x\right) + 24\,abx^{5}\mathrm{sign}\left(x\right) + 15\,a^{2}x^{4}\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*b^2*x^6*sign(x) + 24*a*b*x^5*sign(x) + 15*a^2*x^4*sign(x
))*c^(3/2)
```

3.816 $\int \frac{(cx^2)^{3/2}(a+bx)^2}{x}\,dx$

Optimal. Leaf size=60

$$\frac{1}{3}a^2cx^2\sqrt{cx^2}+\frac{1}{2}abcx^3\sqrt{cx^2}+\frac{1}{5}b^2cx^4\sqrt{cx^2}$$

```
[Out] (a^2*c*x^2*Sqrt[c*x^2])/3 + (a*b*c*x^3*Sqrt[c*x^2])/2 + (b^2*c*x^
4*Sqrt[c*x^2])/5
```

Rubi [A] time = 0.0372246, antiderivative size = 60, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{1}{3}a^2cx^2\sqrt{cx^2}+\frac{1}{2}abcx^3\sqrt{cx^2}+\frac{1}{5}b^2cx^4\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^2)/x,x]
```

```
[Out] (a^2*c*x^2*Sqrt[c*x^2])/3 + (a*b*c*x^3*Sqrt[c*x^2])/2 + (b^2*c*x^
4*Sqrt[c*x^2])/5
```

Rubi in Sympy [A] time = 16.2961, size = 54, normalized size = 0.9

$$\frac{a^2cx^2\sqrt{cx^2}}{3}+\frac{abcx^3\sqrt{cx^2}}{2}+\frac{b^2cx^4\sqrt{cx^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**2/x,x)
```

```
[Out] a**2*c*x**2*sqrt(c*x**2)/3 + a*b*c*x**3*sqrt(c*x**2)/2 + b**2*c*x
**4*sqrt(c*x**2)/5
```

Mathematica [A] time = 0.00466887, size = 36, normalized size = 0.6

$$\frac{1}{30}cx^2\sqrt{cx^2}\left(10a^2+15abx+6b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^2)/x,x]
```

```
[Out] (c*x^2*Sqrt[c*x^2]*(10*a^2 + 15*a*b*x + 6*b^2*x^2))/30
```

Maple [A] time = 0.004, size = 29, normalized size = 0.5

$$\frac{6\,b^{2}x^{2}+15\,abx+10\,a^{2}}{30}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^2/x,x)
```

```
[Out] 1/30*(6*b^2*x^2+15*a*b*x+10*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209128, size = 49, normalized size = 0.82

$$\frac{1}{30}\left(6\,b^{2}cx^{4}+15\,abcx^{3}+10\,a^{2}cx^{2}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x,x, algorithm="fricas")
```

```
[Out] 1/30*(6*b^2*c*x^4 + 15*a*b*c*x^3 + 10*a^2*c*x^2)*sqrt(c*x^2)
```

Sympy [A] time = 2.31711, size = 54, normalized size = 0.9

$$\frac{a^{2}c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}{3}+\frac{abc^{\frac{3}{2}}x\left(x^{2}\right)^{\frac{3}{2}}}{2}+\frac{b^{2}c^{\frac{3}{2}}x^{2}\left(x^{2}\right)^{\frac{3}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**2/x,x)
```

```
[Out] a**2*c**(3/2)*(x**2)**(3/2)/3 + a*b*c**(3/2)*x*(x**2)**(3/2)/2 +
b**2*c**(3/2)*x**2*(x**2)**(3/2)/5
```

GIAC/XCAS [A] time = 0.205142, size = 47, normalized size = 0.78

$$\frac{1}{30}\left(6\,b^2x^5\mathrm{sign}\left(x\right)+15\,abx^4\mathrm{sign}\left(x\right)+10\,a^2x^3\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x,x, algorithm="giac")
```

```
[Out] 1/30*(6*b^2*x^5*sign(x) + 15*a*b*x^4*sign(x) + 10*a^2*x^3*sign(x)
)*c^(3/2)
```

3.817 $\int \frac{(cx^2)^{3/2}(a+bx)^2}{x^2}\,dx$

Optimal. Leaf size=58

$$\frac{1}{2}a^2cx\sqrt{cx^2}+\frac{2}{3}abcx^2\sqrt{cx^2}+\frac{1}{4}b^2cx^3\sqrt{cx^2}$$

```
[Out] (a^2*c*x*Sqrt[c*x^2])/2 + (2*a*b*c*x^2*Sqrt[c*x^2])/3 + (b^2*c*x^
3*Sqrt[c*x^2])/4
```

Rubi [A] time = 0.0342071, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{1}{2}a^2cx\sqrt{cx^2}+\frac{2}{3}abcx^2\sqrt{cx^2}+\frac{1}{4}b^2cx^3\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^(3/2)*(a + b*x)^2)/x^2,x]
```

```
[Out] (a^2*c*x*Sqrt[c*x^2])/2 + (2*a*b*c*x^2*Sqrt[c*x^2])/3 + (b^2*c*x^
3*Sqrt[c*x^2])/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2c\sqrt{cx^2}\int x\,dx}{x}+\frac{2abcx^2\sqrt{cx^2}}{3}+\frac{b^2cx^3\sqrt{cx^2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)*(b*x+a)**2/x**2,x)
```

```
[Out] a**2*c*sqrt(c*x**2)*Integral(x, x)/x + 2*a*b*c*x**2*sqrt(c*x**2)/
3 + b**2*c*x**3*sqrt(c*x**2)/4
```

Mathematica [A] time = 0.00370924, size = 34, normalized size = 0.59

$$\frac{1}{12}cx\sqrt{cx^2}\left(6a^2+8abx+3b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^2)/x^2,x]

[Out] (c*x*Sqrt[c*x^2]*(6*a^2 + 8*a*b*x + 3*b^2*x^2))/12
```

Maple [A] time = 0.005, size = 32, normalized size = 0.6

$$\frac{3\,b^2x^2+8\,abx+6\,a^2}{12\,x}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^2/x^2,x)

[Out] 1/12/x*(3*b^2*x^2+8*a*b*x+6*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^2,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205095, size = 46, normalized size = 0.79

$$\frac{1}{12}\left(3\,b^2cx^3+8\,abcx^2+6\,a^2cx\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^2,x, algorithm="fricas")

[Out] 1/12*(3*b^2*c*x^3 + 8*a*b*c*x^2 + 6*a^2*c*x)*sqrt(c*x^2)
```

Sympy [A] time = 2.3194, size = 54, normalized size = 0.93

$$\frac{a^2c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{2x}+\frac{2abc^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{3}+\frac{b^2c^{\frac{3}{2}}x\left(x^2\right)^{\frac{3}{2}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**2/x**2,x)
```

```
[Out] a**2*c**(3/2)*(x**2)**(3/2)/(2*x) + 2*a*b*c**(3/2)*(x**2)**(3/2)/
3 + b**2*c**(3/2)*x*(x**2)**(3/2)/4
```

GIAC/XCAS [A] time = 0.204901, size = 47, normalized size = 0.81

$$\frac{1}{12}\left(3\,b^2x^4\mathrm{sign}\left(x\right) + 8\,abx^3\mathrm{sign}\left(x\right) + 6\,a^2x^2\mathrm{sign}\left(x\right)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*b^2*x^4*sign(x) + 8*a*b*x^3*sign(x) + 6*a^2*x^2*sign(x))*
c^(3/2)
```

3.818 $\int \frac{(cx^2)^{3/2}(a+bx)^2}{x^3} dx$

Optimal. Leaf size=27

$$\frac{c\sqrt{cx^2}(a+bx)^3}{3bx}$$

```
[Out] (c*Sqrt[c*x^2]*(a + b*x)^3)/(3*b*x)
```

Rubi [A] time = 0.0126876, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{c\sqrt{cx^2}(a+bx)^3}{3bx}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^2)/x^3,x]

[Out] (c*Sqrt[c*x^2]*(a + b*x)^3)/(3*b*x)
```

Rubi in Sympy [A] time = 12.2651, size = 20, normalized size = 0.74

$$\frac{c\sqrt{cx^2}\,(a+bx)^3}{3bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**2/x**3,x)

[Out] c*sqrt(c*x**2)*(a + b*x)**3/(3*b*x)
```

Mathematica [A] time = 0.00818805, size = 26, normalized size = 0.96

$$\frac{(cx^2)^{3/2}\,(a+bx)^3}{3bx^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^2)/x^3,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^3)/(3*b*x^3)
```

Maple [A] time = 0.003, size = 31, normalized size = 1.2

$$\frac{b^2x^2 + 3\,abx + 3\,a^2}{3\,x^2}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^2/x^3,x)
```

```
[Out] 1/3/x^2*(b^2*x^2+3*a*b*x+3*a^2)*(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.206881, size = 41, normalized size = 1.52

$$\frac{1}{3}\left(b^2cx^2 + 3\,abcx + 3\,a^2c\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*c*x^2 + 3*a*b*c*x + 3*a^2*c)*sqrt(c*x^2)
```

Sympy [A] time = 3.21202, size = 51, normalized size = 1.89

$$\frac{a^2c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{x^2} + \frac{abc^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{x} + \frac{b^2c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**2/x**3,x)
```

```
[Out] a**2*c**(3/2)*(x**2)**(3/2)/x**2 + a*b*c**(3/2)*(x**2)**(3/2)/x +
 b**2*c**(3/2)*(x**2)**(3/2)/3
```

GIAC/XCAS [A] time = 0.206975, size = 39, normalized size = 1.44

$$\frac{1}{3}\left(\frac{(bx+a)^3\operatorname{sign}(x)}{b}-\frac{a^3\operatorname{sign}(x)}{b}\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*((b*x + a)^3*sign(x)/b - a^3*sign(x)/b)*c^(3/2)
```

3.819 $\int \frac{(cx^2)^{3/2}(a+bx)^2}{x^4} dx$

Optimal. Leaf size=52

$$\frac{a^2c\sqrt{cx^2}\log(x)}{x} + 2abc\sqrt{cx^2} + \frac{1}{2}b^2cx\sqrt{cx^2}$$

```
[Out] 2*a*b*c*Sqrt[c*x^2] + (b^2*c*x*Sqrt[c*x^2])/2 + (a^2*c*Sqrt[c*x^2
]*Log[x])/x
```

Rubi [A] time = 0.0280747, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2c\sqrt{cx^2}\log(x)}{x} + 2abc\sqrt{cx^2} + \frac{1}{2}b^2cx\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^2)/x^4,x]
```

```
[Out] 2*a*b*c*Sqrt[c*x^2] + (b^2*c*x*Sqrt[c*x^2])/2 + (a^2*c*Sqrt[c*x^2
]*Log[x])/x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2c\sqrt{cx^2}\log(x)}{x} + 2abc\sqrt{cx^2} + \frac{b^2c\sqrt{cx^2}\int x\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**2/x**4,x)
```

```
[Out] a**2*c*sqrt(c*x**2)*log(x)/x + 2*a*b*c*sqrt(c*x**2) + b**2*c*sqrt
(c*x**2)*Integral(x, x)/x
```

Mathematica [A] time = 0.0143637, size = 34, normalized size = 0.65

$$\frac{(cx^2)^{3/2}(2a^2\log(x) + bx(4a + bx))}{2x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^2)/x^4,x]

[Out] ((c*x^2)^(3/2)*(b*x*(4*a + b*x) + 2*a^2*Log[x]))/(2*x^3)
```

Maple [A] time = 0.009, size = 33, normalized size = 0.6

$$\frac{b^2x^2+2\,a^2\ln(x)+4\,abx}{2\,x^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^2/x^4,x)

[Out] 1/2*(c*x^2)^(3/2)*(b^2*x^2+2*a^2*ln(x)+4*a*b*x)/x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^4,x, algorithm="maxima")

[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.217427, size = 47, normalized size = 0.9

$$\frac{\left(b^2cx^2+4\,abcx+2\,a^2c\log(x)\right)\sqrt{cx^2}}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^4,x, algorithm="fricas")

[Out] 1/2*(b^2*c*x^2 + 4*a*b*c*x + 2*a^2*c*log(x))*sqrt(c*x^2)/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(cx^2\right)^{\frac{3}{2}}(a+bx)^2}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**2/x**4,x)
```

```
[Out] Integral((c*x**2)**(3/2)*(a + b*x)**2/x**4, x)
```

GIAC/XCAS [A] time = 0.205191, size = 43, normalized size = 0.83

$$\frac{1}{2}\left(b^2x^2\operatorname{sign}(x) + 4\,abx\operatorname{sign}(x) + 2\,a^2\ln(|x|)\operatorname{sign}(x)\right)c^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*(b^2*x^2*sign(x) + 4*a*b*x*sign(x) + 2*a^2*ln(abs(x))*sign(x)
)*c^(3/2)
```

3.820 $\int x\left(cx^2\right)^{5/2}(a+bx)^2\,dx$

Optimal. Leaf size=66

$$\frac{1}{7}a^2c^2x^6\sqrt{cx^2}+\frac{1}{4}abc^2x^7\sqrt{cx^2}+\frac{1}{9}b^2c^2x^8\sqrt{cx^2}$$

```
[Out] (a^2*c^2*x^6*Sqrt[c*x^2])/7 + (a*b*c^2*x^7*Sqrt[c*x^2])/4 + (b^2*
c^2*x^8*Sqrt[c*x^2])/9
```

Rubi [A] time = 0.0466228, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{1}{7}a^2c^2x^6\sqrt{cx^2}+\frac{1}{4}abc^2x^7\sqrt{cx^2}+\frac{1}{9}b^2c^2x^8\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(c*x^2)^(5/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c^2*x^6*Sqrt[c*x^2])/7 + (a*b*c^2*x^7*Sqrt[c*x^2])/4 + (b^2*
c^2*x^8*Sqrt[c*x^2])/9
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(cx^2\right)^{\frac{5}{2}}(a+bx)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(5/2)*(b*x+a)**2,x)
```

```
[Out] Integral(x*(c*x**2)**(5/2)*(a + b*x)**2, x)
```

Mathematica [A] time = 0.0130076, size = 35, normalized size = 0.53

$$\frac{1}{252}x^2\left(cx^2\right)^{5/2}\left(36a^2+63abx+28b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(c*x^2)^(5/2)*(a + b*x)^2,x]
```

```
[Out] (x^2*(c*x^2)^(5/2)*(36*a^2 + 63*a*b*x + 28*b^2*x^2))/252
```

Maple [A] time = 0.007, size = 32, normalized size = 0.5

$$\frac{x^{2}\left(28\,b^{2}x^{2}+63\,abx+36\,a^{2}\right)}{252}\left(cx^{2}\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(5/2)*(b*x+a)^2,x)
```

```
[Out] 1/252*x^2*(28*b^2*x^2+63*a*b*x+36*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2*x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205066, size = 57, normalized size = 0.86

$$\frac{1}{252}\left(28\,b^{2}c^{2}x^{8}+63\,abc^{2}x^{7}+36\,a^{2}c^{2}x^{6}\right)\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2*x,x, algorithm="fricas")
```

```
[Out] 1/252*(28*b^2*c^2*x^8 + 63*a*b*c^2*x^7 + 36*a^2*c^2*x^6)*sqrt(c*x
^2)
```

Sympy [A] time = 8.44826, size = 60, normalized size = 0.91

$$\frac{a^{2}c^{\frac{5}{2}}x^{2}\left(x^{2}\right)^{\frac{5}{2}}}{7}+\frac{abc^{\frac{5}{2}}x^{3}\left(x^{2}\right)^{\frac{5}{2}}}{4}+\frac{b^{2}c^{\frac{5}{2}}x^{4}\left(x^{2}\right)^{\frac{5}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(5/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**(5/2)*x**2*(x**2)**(5/2)/7 + a*b*c**(5/2)*x**3*(x**2)**(5
/2)/4 + b**2*c**(5/2)*x**4*(x**2)**(5/2)/9
```

GIAC/XCAS [A] time = 0.205685, size = 59, normalized size = 0.89

$$\frac{1}{252}\left(28\,b^{2}c^{2}x^{9}\operatorname{sign}\left(x\right)+63\,abc^{2}x^{8}\operatorname{sign}\left(x\right)+36\,a^{2}c^{2}x^{7}\operatorname{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2*x,x, algorithm="giac")
```

```
[Out] 1/252*(28*b^2*c^2*x^9*sign(x) + 63*a*b*c^2*x^8*sign(x) + 36*a^2*c
^2*x^7*sign(x))*sqrt(c)
```

3.821 $\int \left(cx^2\right)^{5/2} (a+bx)^2 \, dx$

Optimal. Leaf size=66

$$\frac{1}{6}a^2c^2x^5\sqrt{cx^2}+\frac{2}{7}abc^2x^6\sqrt{cx^2}+\frac{1}{8}b^2c^2x^7\sqrt{cx^2}$$

```
[Out] (a^2*c^2*x^5*Sqrt[c*x^2])/6 + (2*a*b*c^2*x^6*Sqrt[c*x^2])/7 + (b^
2*c^2*x^7*Sqrt[c*x^2])/8
```

Rubi [A] time = 0.0445365, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{1}{6}a^2c^2x^5\sqrt{cx^2}+\frac{2}{7}abc^2x^6\sqrt{cx^2}+\frac{1}{8}b^2c^2x^7\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(c*x^2)^(5/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c^2*x^5*Sqrt[c*x^2])/6 + (2*a*b*c^2*x^6*Sqrt[c*x^2])/7 + (b^
2*c^2*x^7*Sqrt[c*x^2])/8
```

Rubi in Sympy [A] time = 12.5922, size = 61, normalized size = 0.92

$$\frac{a^2c^2x^5\sqrt{cx^2}}{6}+\frac{2abc^2x^6\sqrt{cx^2}}{7}+\frac{b^2c^2x^7\sqrt{cx^2}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**2*x**5*sqrt(c*x**2)/6 + 2*a*b*c**2*x**6*sqrt(c*x**2)/7 +
b**2*c**2*x**7*sqrt(c*x**2)/8
```

Mathematica [A] time = 0.0125648, size = 33, normalized size = 0.5

$$\frac{1}{168}x\left(cx^2\right)^{5/2}\left(28a^2+48abx+21b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)*(a + b*x)^2,x]
```

```
[Out] (x*(c*x^2)^(5/2)*(28*a^2 + 48*a*b*x + 21*b^2*x^2))/168
```

Maple [A] time = 0.007, size = 30, normalized size = 0.5

$$\frac{x\left(21\,b^2x^2+48\,abx+28\,a^2\right)}{168}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2,x)
```

```
[Out] 1/168*x*(21*b^2*x^2+48*a*b*x+28*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205562, size = 57, normalized size = 0.86

$$\frac{1}{168}\left(21\,b^2c^2x^7+48\,abc^2x^6+28\,a^2c^2x^5\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/168*(21*b^2*c^2*x^7 + 48*a*b*c^2*x^6 + 28*a^2*c^2*x^5)*sqrt(c*x
^2)
```

Sympy [A] time = 6.81288, size = 60, normalized size = 0.91

$$\frac{a^2c^{\frac{5}{2}}x\left(x^2\right)^{\frac{5}{2}}}{6}+\frac{2abc^{\frac{5}{2}}x^2\left(x^2\right)^{\frac{5}{2}}}{7}+\frac{b^2c^{\frac{5}{2}}x^3\left(x^2\right)^{\frac{5}{2}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**(5/2)*x*(x**2)**(5/2)/6 + 2*a*b*c**(5/2)*x**2*(x**2)**(5/
2)/7 + b**2*c**(5/2)*x**3*(x**2)**(5/2)/8
```

GIAC/XCAS [A] time = 0.20669, size = 59, normalized size = 0.89

$$\frac{1}{168}\left(21\, b^2c^2x^8\mathrm{sign}\left(x\right) + 48\, abc^2x^7\,\mathrm{sign}\left(x\right) + 28\, a^2c^2x^6\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/168*(21*b^2*c^2*x^8*sign(x) + 48*a*b*c^2*x^7*sign(x) + 28*a^2*c
^2*x^6*sign(x))*sqrt(c)
```

3.822 $\int \frac{(cx^2)^{5/2}(a+bx)^2}{x} \, dx$

Optimal. Leaf size=66

$$\frac{1}{5}a^2c^2x^4\sqrt{cx^2} + \frac{1}{3}abc^2x^5\sqrt{cx^2} + \frac{1}{7}b^2c^2x^6\sqrt{cx^2}$$

```
[Out] (a^2*c^2*x^4*Sqrt[c*x^2])/5 + (a*b*c^2*x^5*Sqrt[c*x^2])/3 + (b^2*
c^2*x^6*Sqrt[c*x^2])/7
```

Rubi [A] time = 0.0414672, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{1}{5}a^2c^2x^4\sqrt{cx^2} + \frac{1}{3}abc^2x^5\sqrt{cx^2} + \frac{1}{7}b^2c^2x^6\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^2)/x,x]
```

```
[Out] (a^2*c^2*x^4*Sqrt[c*x^2])/5 + (a*b*c^2*x^5*Sqrt[c*x^2])/3 + (b^2*
c^2*x^6*Sqrt[c*x^2])/7
```

Rubi in Sympy [A] time = 17.7404, size = 60, normalized size = 0.91

$$\frac{a^2c^2x^4\sqrt{cx^2}}{5} + \frac{abc^2x^5\sqrt{cx^2}}{3} + \frac{b^2c^2x^6\sqrt{cx^2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2/x,x)
```

```
[Out] a**2*c**2*x**4*sqrt(c*x**2)/5 + a*b*c**2*x**5*sqrt(c*x**2)/3 + b*
*2*c**2*x**6*sqrt(c*x**2)/7
```

Mathematica [A] time = 0.00561474, size = 36, normalized size = 0.55

$$\frac{1}{105}cx^2\left(cx^2\right)^{3/2}\left(21a^2 + 35abx + 15b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^2)/x,x]

[Out] (c*x^2*(c*x^2)^(3/2)*(21*a^2 + 35*a*b*x + 15*b^2*x^2))/105
```

Maple [A] time = 0.007, size = 29, normalized size = 0.4

$$\frac{15\,b^2x^2+35\,abx+21\,a^2}{105}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2/x,x)

[Out] 1/105*(15*b^2*x^2+35*a*b*x+21*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.199887, size = 57, normalized size = 0.86

$$\frac{1}{105}\left(15\,b^2c^2x^6+35\,abc^2x^5+21\,a^2c^2x^4\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x,x, algorithm="fricas")

[Out] 1/105*(15*b^2*c^2*x^6 + 35*a*b*c^2*x^5 + 21*a^2*c^2*x^4)*sqrt(c*x
^2)
```

Sympy [A] time = 6.94461, size = 54, normalized size = 0.82

$$\frac{a^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{5}+\frac{abc^{\frac{5}{2}}x\left(x^2\right)^{\frac{5}{2}}}{3}+\frac{b^2c^{\frac{5}{2}}x^2\left(x^2\right)^{\frac{5}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2/x,x)
```

```
[Out] a**2*c**(5/2)*(x**2)**(5/2)/5 + a*b*c**(5/2)*x*(x**2)**(5/2)/3 +
b**2*c**(5/2)*x**2*(x**2)**(5/2)/7
```

GIAC/XCAS [A] time = 0.209671, size = 59, normalized size = 0.89

$$\frac{1}{105}\left(15\,b^{2}c^{2}x^{7}\operatorname{sign}\left(x\right)+35\,abc^{2}x^{6}\operatorname{sign}\left(x\right)+21\,a^{2}c^{2}x^{5}\operatorname{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x,x, algorithm="giac")
```

```
[Out] 1/105*(15*b^2*c^2*x^7*sign(x) + 35*a*b*c^2*x^6*sign(x) + 21*a^2*c
^2*x^5*sign(x))*sqrt(c)
```

3.823 $\int \frac{(cx^2)^{5/2}(a+bx)^2}{x^2}\,dx$

Optimal. Leaf size=66

$$\frac{1}{4}a^2c^2x^3\sqrt{cx^2}+\frac{2}{5}abc^2x^4\sqrt{cx^2}+\frac{1}{6}b^2c^2x^5\sqrt{cx^2}$$

```
[Out] (a^2*c^2*x^3*Sqrt[c*x^2])/4 + (2*a*b*c^2*x^4*Sqrt[c*x^2])/5 + (b^
2*c^2*x^5*Sqrt[c*x^2])/6
```

Rubi [A] time = 0.041474, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{1}{4}a^2c^2x^3\sqrt{cx^2}+\frac{2}{5}abc^2x^4\sqrt{cx^2}+\frac{1}{6}b^2c^2x^5\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^2)/x^2,x]
```

```
[Out] (a^2*c^2*x^3*Sqrt[c*x^2])/4 + (2*a*b*c^2*x^4*Sqrt[c*x^2])/5 + (b^
2*c^2*x^5*Sqrt[c*x^2])/6
```

Rubi in Sympy [A] time = 17.6533, size = 61, normalized size = 0.92

$$\frac{a^2c^2x^3\sqrt{cx^2}}{4}+\frac{2abc^2x^4\sqrt{cx^2}}{5}+\frac{b^2c^2x^5\sqrt{cx^2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2/x**2,x)
```

```
[Out] a**2*c**2*x**3*sqrt(c*x**2)/4 + 2*a*b*c**2*x**4*sqrt(c*x**2)/5 +
b**2*c**2*x**5*sqrt(c*x**2)/6
```

Mathematica [A] time = 0.00753272, size = 34, normalized size = 0.52

$$\frac{1}{60}cx\left(cx^2\right)^{3/2}\left(15a^2+24abx+10b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^2)/x^2,x]
```

```
[Out] (c*x*(c*x^2)^(3/2)*(15*a^2 + 24*a*b*x + 10*b^2*x^2))/60
```

Maple [A] time = 0.006, size = 32, normalized size = 0.5

$$\frac{10\,b^2x^2+24\,abx+15\,a^2}{60\,x}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2/x^2,x)
```

```
[Out] 1/60/x*(10*b^2*x^2+24*a*b*x+15*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.201348, size = 57, normalized size = 0.86

$$\frac{1}{60}\left(10\,b^2c^2x^5+24\,abc^2x^4+15\,a^2c^2x^3\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*b^2*c^2*x^5 + 24*a*b*c^2*x^4 + 15*a^2*c^2*x^3)*sqrt(c*x^
2)
```

Sympy [A] time = 6.83661, size = 54, normalized size = 0.82

$$\frac{a^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{4x}+\frac{2abc^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{5}+\frac{b^2c^{\frac{5}{2}}x\left(x^2\right)^{\frac{5}{2}}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2/x**2,x)
```

```
[Out] a**2*c**(5/2)*(x**2)**(5/2)/(4*x) + 2*a*b*c**(5/2)*(x**2)**(5/2)/
5 + b**2*c**(5/2)*x*(x**2)**(5/2)/6
```

GIAC/XCAS [A] time = 0.20637, size = 59, normalized size = 0.89

$$\frac{1}{60}\left(10\,b^2c^2x^6\operatorname{sign}(x) + 24\,abc^2x^5\operatorname{sign}(x) + 15\,a^2c^2x^4\operatorname{sign}(x)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*b^2*c^2*x^6*sign(x) + 24*a*b*c^2*x^5*sign(x) + 15*a^2*c^
2*x^4*sign(x))*sqrt(c)
```

3.824 $\int \frac{(cx^2)^{5/2}(a+bx)^2}{x^3} dx$

Optimal. Leaf size=66

$$\frac{1}{3}a^2c^2x^2\sqrt{cx^2} + \frac{1}{2}abc^2x^3\sqrt{cx^2} + \frac{1}{5}b^2c^2x^4\sqrt{cx^2}$$

```
[Out] (a^2*c^2*x^2*Sqrt[c*x^2])/3 + (a*b*c^2*x^3*Sqrt[c*x^2])/2 + (b^2*
c^2*x^4*Sqrt[c*x^2])/5
```

Rubi [A] time = 0.0390712, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{1}{3}a^2c^2x^2\sqrt{cx^2} + \frac{1}{2}abc^2x^3\sqrt{cx^2} + \frac{1}{5}b^2c^2x^4\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^(5/2)*(a + b*x)^2)/x^3,x]
```

```
[Out] (a^2*c^2*x^2*Sqrt[c*x^2])/3 + (a*b*c^2*x^3*Sqrt[c*x^2])/2 + (b^2*
c^2*x^4*Sqrt[c*x^2])/5
```

Rubi in Sympy [A] time = 17.4651, size = 60, normalized size = 0.91

$$\frac{a^2c^2x^2\sqrt{cx^2}}{3} + \frac{abc^2x^3\sqrt{cx^2}}{2} + \frac{b^2c^2x^4\sqrt{cx^2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2/x**3,x)
```

```
[Out] a**2*c**2*x**2*sqrt(c*x**2)/3 + a*b*c**2*x**3*sqrt(c*x**2)/2 + b*
*2*c**2*x**4*sqrt(c*x**2)/5
```

Mathematica [A] time = 0.00573538, size = 38, normalized size = 0.58

$$\frac{1}{30}c^2x^2\sqrt{cx^2}\left(10a^2 + 15abx + 6b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^2)/x^3,x]

[Out] (c^2*x^2*Sqrt[c*x^2]*(10*a^2 + 15*a*b*x + 6*b^2*x^2))/30
```

Maple [A] time = 0.004, size = 32, normalized size = 0.5

$$\frac{6\,b^2x^2+15\,abx+10\,a^2}{30\,x^2}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2/x^3,x)

[Out] 1/30/x^2*(6*b^2*x^2+15*a*b*x+10*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^3,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.203484, size = 57, normalized size = 0.86

$$\frac{1}{30}\left(6\,b^2c^2x^4+15\,abc^2x^3+10\,a^2c^2x^2\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^3,x, algorithm="fricas")

[Out] 1/30*(6*b^2*c^2*x^4 + 15*a*b*c^2*x^3 + 10*a^2*c^2*x^2)*sqrt(c*x^2
)
```

Sympy [A] time = 7.83509, size = 54, normalized size = 0.82

$$\frac{a^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{3x^2}+\frac{abc^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{2x}+\frac{b^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2/x**3,x)
```

```
[Out] a**2*c**(5/2)*(x**2)**(5/2)/(3*x**2) + a*b*c**(5/2)*(x**2)**(5/2)
/(2*x) + b**2*c**(5/2)*(x**2)**(5/2)/5
```

GIAC/XCAS [A] time = 0.20725, size = 59, normalized size = 0.89

$$\frac{1}{30}\left(6\,b^2c^2x^5\mathrm{sign}\left(x\right)+15\,abc^2x^4\mathrm{sign}\left(x\right)+10\,a^2c^2x^3\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/30*(6*b^2*c^2*x^5*sign(x) + 15*a*b*c^2*x^4*sign(x) + 10*a^2*c^2
*x^3*sign(x))*sqrt(c)
```

3.825 $\int \frac{(cx^2)^{5/2}(a+bx)^2}{x^4}\,dx$

Optimal. Leaf size=64

$$\frac{1}{2}a^2c^2x\sqrt{cx^2}+\frac{2}{3}abc^2x^2\sqrt{cx^2}+\frac{1}{4}b^2c^2x^3\sqrt{cx^2}$$

```
[Out] (a^2*c^2*x*Sqrt[c*x^2])/2 + (2*a*b*c^2*x^2*Sqrt[c*x^2])/3 + (b^2*
c^2*x^3*Sqrt[c*x^2])/4
```

Rubi [A] time = 0.0364669, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{1}{2}a^2c^2x\sqrt{cx^2}+\frac{2}{3}abc^2x^2\sqrt{cx^2}+\frac{1}{4}b^2c^2x^3\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^2)/x^4,x]
```

```
[Out] (a^2*c^2*x*Sqrt[c*x^2])/2 + (2*a*b*c^2*x^2*Sqrt[c*x^2])/3 + (b^2*
c^2*x^3*Sqrt[c*x^2])/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2c^2\sqrt{cx^2}\int x\,dx}{x}+\frac{2abc^2x^2\sqrt{cx^2}}{3}+\frac{b^2c^2x^3\sqrt{cx^2}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2/x**4,x)
```

```
[Out] a**2*c**2*sqrt(c*x**2)*Integral(x, x)/x + 2*a*b*c**2*x**2*sqrt(c*
x**2)/3 + b**2*c**2*x**3*sqrt(c*x**2)/4
```

Mathematica [A] time = 0.009723, size = 36, normalized size = 0.56

$$\frac{1}{12}c^2x\sqrt{cx^2}\left(6a^2+8abx+3b^2x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^2)/x^4,x]

[Out] (c^2*x*Sqrt[c*x^2]*(6*a^2 + 8*a*b*x + 3*b^2*x^2))/12
```

Maple [A] time = 0.004, size = 32, normalized size = 0.5

$$\frac{3\,b^2x^2+8\,abx+6\,a^2}{12\,x^3}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2/x^4,x)

[Out] 1/12/x^3*(3*b^2*x^2+8*a*b*x+6*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^4,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.207548, size = 54, normalized size = 0.84

$$\frac{1}{12}\left(3\,b^2c^2x^3+8\,abc^2x^2+6\,a^2c^2x\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^4,x, algorithm="fricas")

[Out] 1/12*(3*b^2*c^2*x^3 + 8*a*b*c^2*x^2 + 6*a^2*c^2*x)*sqrt(c*x^2)
```

Sympy [A] time = 7.83014, size = 60, normalized size = 0.94

$$\frac{a^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{2x^3}+\frac{2abc^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{3x^2}+\frac{b^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2/x**4,x)
```

```
[Out] a**2*c**(5/2)*(x**2)**(5/2)/(2*x**3) + 2*a*b*c**(5/2)*(x**2)**(5/
2)/(3*x**2) + b**2*c**(5/2)*(x**2)**(5/2)/(4*x)
```

GIAC/XCAS [A] time = 0.207363, size = 59, normalized size = 0.92

$$\frac{1}{12}\left(3\,b^{2}c^{2}x^{4}\mathrm{sign}\left(x\right) + 8\,abc^{2}x^{3}\mathrm{sign}\left(x\right) + 6\,a^{2}c^{2}x^{2}\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/12*(3*b^2*c^2*x^4*sign(x) + 8*a*b*c^2*x^3*sign(x) + 6*a^2*c^2*x
^2*sign(x))*sqrt(c)
```

3.826 $\int \frac{(cx^2)^{5/2}(a+bx)^2}{x^5}\,dx$

Optimal. Leaf size=29

$$\frac{c^2\sqrt{cx^2}(a+bx)^3}{3bx}$$

```
[Out] (c^2*Sqrt[c*x^2]*(a + b*x)^3)/(3*b*x)
```

Rubi [A] time = 0.0134806, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{c^2\sqrt{cx^2}(a+bx)^3}{3bx}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^2)/x^5,x]
```

```
[Out] (c^2*Sqrt[c*x^2]*(a + b*x)^3)/(3*b*x)
```

Rubi in Sympy [A] time = 12.768, size = 22, normalized size = 0.76

$$\frac{c^2\sqrt{cx^2}\,(a+bx)^3}{3bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2/x**5,x)
```

```
[Out] c**2*sqrt(c*x**2)*(a + b*x)**3/(3*b*x)
```

Mathematica [A] time = 0.00895344, size = 26, normalized size = 0.9

$$\frac{(cx^2)^{5/2}\,(a+bx)^3}{3bx^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^2)/x^5,x]
```

```
[Out] ((c*x^2)^(5/2)*(a + b*x)^3)/(3*b*x^5)
```

Maple [A] time = 0.003, size = 31, normalized size = 1.1

$$\frac{b^2x^2 + 3\,abx + 3\,a^2}{3\,x^4}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2/x^5,x)
```

```
[Out] 1/3/x^4*(b^2*x^2+3*a*b*x+3*a^2)*(c*x^2)^(5/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.204162, size = 49, normalized size = 1.69

$$\frac{1}{3}\left(b^2c^2x^2 + 3\,abc^2x + 3\,a^2c^2\right)\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*c^2*x^2 + 3*a*b*c^2*x + 3*a^2*c^2)*sqrt(c*x^2)
```

Sympy [A] time = 7.84313, size = 56, normalized size = 1.93

$$\frac{a^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{x^4} + \frac{abc^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{x^3} + \frac{b^2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}{3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2/x**5,x)
```

```
[Out] a**2*c**(5/2)*(x**2)**(5/2)/x**4 + a*b*c**(5/2)*(x**2)**(5/2)/x**
3 + b**2*c**(5/2)*(x**2)**(5/2)/(3*x**2)
```

GIAC/XCAS [A] time = 0.209745, size = 55, normalized size = 1.9

$$\frac{1}{3}\left(b^{2}c^{2}x^{3}\operatorname{sign}\left(x\right)+3\,abc^{2}x^{2}\operatorname{sign}\left(x\right)+3\,a^{2}c^{2}x\operatorname{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^5,x, algorithm="giac")
```

```
[Out] 1/3*(b^2*c^2*x^3*sign(x) + 3*a*b*c^2*x^2*sign(x) + 3*a^2*c^2*x*si
gn(x))*sqrt(c)
```

3.827 $\int \frac{(cx^2)^{5/2}(a+bx)^2}{x^6}\,dx$

Optimal. Leaf size=58

$$\frac{a^2c^2\sqrt{cx^2}\log(x)}{x}+2abc^2\sqrt{cx^2}+\frac{1}{2}b^2c^2x\sqrt{cx^2}$$

```
[Out] 2*a*b*c^2*Sqrt[c*x^2] + (b^2*c^2*x*Sqrt[c*x^2])/2 + (a^2*c^2*Sqrt
[c*x^2]*Log[x])/x
```

Rubi [A] time = 0.0303417, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2c^2\sqrt{cx^2}\log(x)}{x}+2abc^2\sqrt{cx^2}+\frac{1}{2}b^2c^2x\sqrt{cx^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^2)/x^6,x]
```

```
[Out] 2*a*b*c^2*Sqrt[c*x^2] + (b^2*c^2*x*Sqrt[c*x^2])/2 + (a^2*c^2*Sqrt
[c*x^2]*Log[x])/x
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2c^2\sqrt{cx^2}\log(x)}{x}+2abc^2\sqrt{cx^2}+\frac{b^2c^2\sqrt{cx^2}\int x\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**2/x**6,x)
```

```
[Out] a**2*c**2*sqrt(c*x**2)*log(x)/x + 2*a*b*c**2*sqrt(c*x**2) + b**2*
c**2*sqrt(c*x**2)*Integral(x, x)/x
```

Mathematica [A] time = 0.0162225, size = 35, normalized size = 0.6

$$\frac{c^3x\left(2a^2\log(x)+bx(4a+bx)\right)}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^2)/x^6,x]
```

```
[Out] (c^3*x*(b*x*(4*a + b*x) + 2*a^2*Log[x]))/(2*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 33, normalized size = 0.6

$$\frac{b^2x^2 + 2\,a^2 \ln(x) + 4\,abx}{2\,x^5} \left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^2/x^6,x)
```

```
[Out] 1/2*(c*x^2)^(5/2)*(b^2*x^2+2*a^2*ln(x)+4*a*b*x)/x^5
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.211031, size = 55, normalized size = 0.95

$$\frac{\left(b^2c^2x^2 + 4\,abc^2x + 2\,a^2c^2 \log(x)\right)\sqrt{cx^2}}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^6,x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*c^2*x^2 + 4*a*b*c^2*x + 2*a^2*c^2*log(x))*sqrt(c*x^2)/x
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}(a + bx)^2}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**2/x**6,x)
```

```
[Out] Integral((c*x**2)**(5/2)*(a + b*x)**2/x**6, x)
```

GIAC/XCAS [A] time = 0.212789, size = 55, normalized size = 0.95

$$\frac{1}{2}\left(b^2c^2x^2\mathrm{sign}\left(x\right)+4\,abc^2x\mathrm{sign}\left(x\right)+2\,a^2c^2\ln\left(\left|x\right|\right)\mathrm{sign}\left(x\right)\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2/x^6,x, algorithm="giac")
```

```
[Out] 1/2*(b^2*c^2*x^2*sign(x) + 4*a*b*c^2*x*sign(x) + 2*a^2*c^2*ln(abs
(x))*sign(x))*sqrt(c)
```

3.828 $\int \frac{x^3(a+bx)^2}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=57

$$\frac{a^2x^4}{3\sqrt{cx^2}}+\frac{abx^5}{2\sqrt{cx^2}}+\frac{b^2x^6}{5\sqrt{cx^2}}$$

```
[Out] (a^2*x^4)/(3*Sqrt[c*x^2]) + (a*b*x^5)/(2*Sqrt[c*x^2]) + (b^2*x^6)
/(5*Sqrt[c*x^2])
```

Rubi [A] time = 0.0347383, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x^4}{3\sqrt{cx^2}}+\frac{abx^5}{2\sqrt{cx^2}}+\frac{b^2x^6}{5\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (a^2*x^4)/(3*Sqrt[c*x^2]) + (a*b*x^5)/(2*Sqrt[c*x^2]) + (b^2*x^6)
/(5*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 17.9882, size = 54, normalized size = 0.95

$$\frac{a^2x^2\sqrt{cx^2}}{3c}+\frac{abx^3\sqrt{cx^2}}{2c}+\frac{b^2x^4\sqrt{cx^2}}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**3*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*x**2*sqrt(c*x**2)/(3*c) + a*b*x**3*sqrt(c*x**2)/(2*c) + b**2
*x**4*sqrt(c*x**2)/(5*c)
```

Mathematica [A] time = 0.00994731, size = 35, normalized size = 0.61

$$\frac{x^4\left(10a^2+15abx+6b^2x^2\right)}{30\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (x^4*(10*a^2 + 15*a*b*x + 6*b^2*x^2))/(30*Sqrt[c*x^2])
```

Maple [A] time = 0.005, size = 32, normalized size = 0.6

$$\frac{x^4\left(6\,b^2x^2+15\,abx+10\,a^2\right)}{30}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] 1/30*x^4*(6*b^2*x^2+15*a*b*x+10*a^2)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.34642, size = 73, normalized size = 1.28

$$\frac{\sqrt{cx^2}b^2x^4}{5\,c}+\frac{\sqrt{cx^2}abx^3}{2\,c}+\frac{\sqrt{cx^2}a^2x^2}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(c*x^2)*b^2*x^4/c + 1/2*sqrt(c*x^2)*a*b*x^3/c + 1/3*sqrt(
c*x^2)*a^2*x^2/c
```

Fricas [A] time = 0.207325, size = 49, normalized size = 0.86

$$\frac{\left(6\,b^2x^4+15\,abx^3+10\,a^2x^2\right)\sqrt{cx^2}}{30\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] 1/30*(6*b^2*x^4 + 15*a*b*x^3 + 10*a^2*x^2)*sqrt(c*x^2)/c
```

Sympy [A] time = 2.66987, size = 60, normalized size = 1.05

$$\frac{a^2x^4}{3\sqrt{c}\sqrt{x^2}} + \frac{abx^5}{2\sqrt{c}\sqrt{x^2}} + \frac{b^2x^6}{5\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*x**4/(3*sqrt(c)*sqrt(x**2)) + a*b*x**5/(2*sqrt(c)*sqrt(x**2)
) + b**2*x**6/(5*sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.213407, size = 55, normalized size = 0.96

$$\frac{1}{30}\sqrt{cx^2}\left(3\left(\frac{2\,b^2x}{c} + \frac{5\,ab}{c}\right)x + \frac{10\,a^2}{c}\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] 1/30*sqrt(c*x^2)*(3*(2*b^2*x/c + 5*a*b/c)*x + 10*a^2/c)*x^2
```

3.829 $\int \frac{x^2(a+bx)^2}{\sqrt{cx^2}} \, dx$

Optimal. Leaf size=57

$$\frac{a^2x^3}{2\sqrt{cx^2}} + \frac{2abx^4}{3\sqrt{cx^2}} + \frac{b^2x^5}{4\sqrt{cx^2}}$$

```
[Out] (a^2*x^3)/(2*Sqrt[c*x^2]) + (2*a*b*x^4)/(3*Sqrt[c*x^2]) + (b^2*x^
5)/(4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0331154, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x^3}{2\sqrt{cx^2}} + \frac{2abx^4}{3\sqrt{cx^2}} + \frac{b^2x^5}{4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (a^2*x^3)/(2*Sqrt[c*x^2]) + (2*a*b*x^4)/(3*Sqrt[c*x^2]) + (b^2*x^
5)/(4*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\int x\,dx}{cx} + \frac{2abx^2\sqrt{cx^2}}{3c} + \frac{b^2x^3\sqrt{cx^2}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*Integral(x, x)/(c*x) + 2*a*b*x**2*sqrt(c*x**2)/
(3*c) + b**2*x**3*sqrt(c*x**2)/(4*c)
```

Mathematica [A] time = 0.00849363, size = 35, normalized size = 0.61

$$\frac{x^3\left(6a^2 + 8abx + 3b^2x^2\right)}{12\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (x^3*(6*a^2 + 8*a*b*x + 3*b^2*x^2))/(12*Sqrt[c*x^2])
```

Maple [A] time = 0.005, size = 32, normalized size = 0.6

$$\frac{x^3\left(3\,b^2x^2+8\,abx+6\,a^2\right)}{12}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] 1/12*x^3*(3*b^2*x^2+8*a*b*x+6*a^2)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.35781, size = 63, normalized size = 1.11

$$\frac{\sqrt{cx^2}b^2x^3}{4\,c}+\frac{2\,\sqrt{cx^2}abx^2}{3\,c}+\frac{a^2x^2}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2)*b^2*x^3/c + 2/3*sqrt(c*x^2)*a*b*x^2/c + 1/2*a^2*x
^2/sqrt(c)
```

Fricas [A] time = 0.206531, size = 46, normalized size = 0.81

$$\frac{\left(3\,b^2x^3+8\,abx^2+6\,a^2x\right)\sqrt{cx^2}}{12\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^2*x^3 + 8*a*b*x^2 + 6*a^2*x)*sqrt(c*x^2)/c
```

Sympy [A] time = 2.34863, size = 61, normalized size = 1.07

$$\frac{a^2x^3}{2\sqrt{c}\sqrt{x^2}} + \frac{2abx^4}{3\sqrt{c}\sqrt{x^2}} + \frac{b^2x^5}{4\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*x**3/(2*sqrt(c)*sqrt(x**2)) + 2*a*b*x**4/(3*sqrt(c)*sqrt(x**
2)) + b**2*x**5/(4*sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.213252, size = 51, normalized size = 0.89

$$\frac{1}{12}\sqrt{cx^2}\left(\left(\frac{3\,b^2x}{c} + \frac{8\,ab}{c}\right)x + \frac{6\,a^2}{c}\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] 1/12*sqrt(c*x^2)*((3*b^2*x/c + 8*a*b/c)*x + 6*a^2/c)*x
```

3.830 $\int \frac{x(a+bx)^2}{\sqrt{cx^2}} \, dx$

Optimal. Leaf size=24

$$\frac{x(a+bx)^3}{3b\sqrt{cx^2}}$$

```
[Out] (x*(a + b*x)^3)/(3*b*Sqrt[c*x^2])
```

Rubi [A] time = 0.0112343, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{x(a+bx)^3}{3b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x)^2)/Sqrt[c*x^2],x]

[Out] (x*(a + b*x)^3)/(3*b*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x(a+bx)^2}{\sqrt{cx^2}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**2/(c*x**2)**(1/2),x)

[Out] Integral(x*(a + b*x)**2/sqrt(c*x**2), x)
```

Mathematica [A] time = 0.00674524, size = 24, normalized size = 1.

$$\frac{x(a+bx)^3}{3b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^3)/(3*b*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 31, normalized size = 1.3

$$\frac{x^2\left(b^2x^2+3\,abx+3\,a^2\right)}{3}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] 1/3*x^2*(b^2*x^2+3*a*b*x+3*a^2)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.33853, size = 57, normalized size = 2.38

$$\frac{\sqrt{cx^2}b^2x^2}{3\,c}+\frac{abx^2}{\sqrt{c}}+\frac{\sqrt{cx^2}a^2}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2)*b^2*x^2/c + a*b*x^2/sqrt(c) + sqrt(c*x^2)*a^2/c
```

Fricas [A] time = 0.207623, size = 41, normalized size = 1.71

$$\frac{\left(b^2x^2+3\,abx+3\,a^2\right)\sqrt{cx^2}}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*x^2 + 3*a*b*x + 3*a^2)*sqrt(c*x^2)/c
```

Sympy [A] time = 2.00759, size = 56, normalized size = 2.33

$$\frac{a^2x^2}{\sqrt{c}\sqrt{x^2}}+\frac{abx^3}{\sqrt{c}\sqrt{x^2}}+\frac{b^2x^4}{3\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*x**2/(sqrt(c)*sqrt(x**2)) + a*b*x**3/(sqrt(c)*sqrt(x**2)) +
b**2*x**4/(3*sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.210123, size = 49, normalized size = 2.04

$$\frac{1}{3}\sqrt{cx^2}\left(\left(\frac{b^2x}{c}+\frac{3\,ab}{c}\right)x+\frac{3\,a^2}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] 1/3*sqrt(c*x^2)*((b^2*x/c + 3*a*b/c)*x + 3*a^2/c)
```

3.831 $\int \frac{(a+bx)^2}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=52

$$\frac{a^2x\log(x)}{\sqrt{cx^2}}+\frac{2abx^2}{\sqrt{cx^2}}+\frac{b^2x^3}{2\sqrt{cx^2}}$$

```
[Out] (2*a*b*x^2)/Sqrt[c*x^2] + (b^2*x^3)/(2*Sqrt[c*x^2]) + (a^2*x*Log[
x])/Sqrt[c*x^2]
```

Rubi [A] time = 0.0264642, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{a^2x\log(x)}{\sqrt{cx^2}}+\frac{2abx^2}{\sqrt{cx^2}}+\frac{b^2x^3}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/Sqrt[c*x^2],x]
```

```
[Out] (2*a*b*x^2)/Sqrt[c*x^2] + (b^2*x^3)/(2*Sqrt[c*x^2]) + (a^2*x*Log[
x])/Sqrt[c*x^2]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\log{(x)}}{cx}+\frac{2ab\sqrt{cx^2}}{c}+\frac{b^2\sqrt{cx^2}\int x\,dx}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*log(x)/(c*x) + 2*a*b*sqrt(c*x**2)/c + b**2*sqrt
(c*x**2)*Integral(x, x)/(c*x)
```

Mathematica [A] time = 0.0109473, size = 32, normalized size = 0.62

$$\frac{x\left(2a^2\log(x)+bx(4a+bx)\right)}{2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/Sqrt[c*x^2],x]

[Out] (x*(b*x*(4*a + b*x) + 2*a^2*Log[x]))/(2*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 31, normalized size = 0.6

$$\frac{x\left(b^2x^2+2\,a^2\ln\left(x\right)+4\,abx\right)}{2}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(c*x^2)^(1/2),x)

[Out] 1/2*x*(b^2*x^2+2*a^2*ln(x)+4*a*b*x)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.34248, size = 47, normalized size = 0.9

$$\frac{b^2x^2}{2\,\sqrt{c}}+\frac{a^2\log\left(x\right)}{\sqrt{c}}+\frac{2\,\sqrt{cx^2}ab}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(c*x^2),x, algorithm="maxima")

[Out] 1/2*b^2*x^2/sqrt(c) + a^2*log(x)/sqrt(c) + 2*sqrt(c*x^2)*a*b/c
```

Fricas [A] time = 0.211219, size = 47, normalized size = 0.9

$$\frac{\left(b^2x^2+4\,abx+2\,a^2\log\left(x\right)\right)\sqrt{cx^2}}{2\,cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(c*x^2),x, algorithm="fricas")

[Out] 1/2*(b^2*x^2 + 4*a*b*x + 2*a^2*log(x))*sqrt(c*x^2)/(c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^2}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)**2/sqrt(c*x**2), x)
```

GIAC/XCAS [A] time = 0.216858, size = 68, normalized size = 1.31

$$-\frac{a^2 \ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{\sqrt{c}}+\frac{1}{2}\sqrt{cx^2}\left(\frac{b^2x}{c}+\frac{4\,ab}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] -a^2*ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/sqrt(c) + 1/2*sqrt(c*x^2)*
(b^2*x/c + 4*a*b/c)
```

3.832 $\int \frac{(a+bx)^2}{x\sqrt{cx^2}}\,dx$

Optimal. Leaf size=47

$$-\frac{a^2}{\sqrt{cx^2}}+\frac{2abx\log(x)}{\sqrt{cx^2}}+\frac{b^2x^2}{\sqrt{cx^2}}$$

```
[Out] -(a^2/Sqrt[c*x^2]) + (b^2*x^2)/Sqrt[c*x^2] + (2*a*b*x*Log[x])/Sqr
t[c*x^2]
```

Rubi [A] time = 0.0290423, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{\sqrt{cx^2}}+\frac{2abx\log(x)}{\sqrt{cx^2}}+\frac{b^2x^2}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/(x*Sqrt[c*x^2]),x]
```

```
[Out] -(a^2/Sqrt[c*x^2]) + (b^2*x^2)/Sqrt[c*x^2] + (2*a*b*x*Log[x])/Sqr
t[c*x^2]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2\sqrt{cx^2}}{cx^2}+\frac{2ab\sqrt{cx^2}\log(x)}{cx}+\frac{\sqrt{cx^2}\int b^2\,dx}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2/x/(c*x**2)**(1/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(c*x**2) + 2*a*b*sqrt(c*x**2)*log(x)/(c*x) + s
qrt(c*x**2)*Integral(b**2, x)/(c*x)
```

Mathematica [A] time = 0.0169981, size = 34, normalized size = 0.72

$$\frac{cx^2\left(-a^2+2abx\log(x)+b^2x^2\right)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x*Sqrt[c*x^2]),x]

[Out] (c*x^2*(-a^2 + b^2*x^2 + 2*a*b*x*Log[x]))/(c*x^2)^(3/2)
```

Maple [A] time = 0.008, size = 29, normalized size = 0.6

$$(2\,ab\ln(x)\,x+b^2x^2-a^2)\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x/(c*x^2)^(1/2),x)

[Out] (2*a*b*ln(x)*x+b^2*x^2-a^2)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.34546, size = 47, normalized size = 1.

$$\frac{2\,ab\log(x)}{\sqrt{c}}+\frac{\sqrt{cx^2}b^2}{c}-\frac{a^2}{\sqrt{c}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x),x, algorithm="maxima")

[Out] 2*a*b*log(x)/sqrt(c) + sqrt(c*x^2)*b^2/c - a^2/(sqrt(c)*x)
```

Fricas [A] time = 0.206527, size = 46, normalized size = 0.98

$$\frac{\left(b^2x^2+2\,abx\log(x)-a^2\right)\sqrt{cx^2}}{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x),x, algorithm="fricas")

[Out] (b^2*x^2 + 2*a*b*x*log(x) - a^2)*sqrt(c*x^2)/(c*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^2}{x\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)**2/(x*sqrt(c*x**2)), x)
```

GIAC/XCAS [A] time = 0.211898, size = 88, normalized size = 1.87

$$\frac{\sqrt{cx^2}b^2}{c} - \frac{2\left(ab\ln\left(\left|-\sqrt{c}x + \sqrt{cx^2}\right|\right) - \frac{a^2\sqrt{c}}{\sqrt{c}x - \sqrt{cx^2}}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2)*b^2/c - 2*(a*b*ln(abs(-sqrt(c)*x + sqrt(c*x^2))) - a^
2*sqrt(c)/(sqrt(c)*x - sqrt(c*x^2)))/sqrt(c)
```

3.833 $\int \frac{(a+bx)^2}{x^2\sqrt{cx^2}}\,dx$

Optimal. Leaf size=49

$$-\frac{a^2}{2x\sqrt{cx^2}}-\frac{2ab}{\sqrt{cx^2}}+\frac{b^2x\log(x)}{\sqrt{cx^2}}$$

```
[Out] (-2*a*b)/Sqrt[c*x^2] - a^2/(2*x*Sqrt[c*x^2]) + (b^2*x*Log[x])/Sqr
t[c*x^2]
```

Rubi [A] time = 0.0292724, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{2x\sqrt{cx^2}}-\frac{2ab}{\sqrt{cx^2}}+\frac{b^2x\log(x)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^2*Sqrt[c*x^2]),x]
```

```
[Out] (-2*a*b)/Sqrt[c*x^2] - a^2/(2*x*Sqrt[c*x^2]) + (b^2*x*Log[x])/Sqr
t[c*x^2]
```

Rubi in Sympy [A] time = 15.5135, size = 54, normalized size = 1.1

$$-\frac{a^2\sqrt{cx^2}}{2cx^3}-\frac{2ab\sqrt{cx^2}}{cx^2}+\frac{b^2\sqrt{cx^2}\log(x)}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**2/(c*x**2)**(1/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(2*c*x**3) - 2*a*b*sqrt(c*x**2)/(c*x**2) + b**
2*sqrt(c*x**2)*log(x)/(c*x)
```

Mathematica [A] time = 0.0165879, size = 35, normalized size = 0.71

$$\frac{cx\left(2b^2x^2\log(x)-a(a+4bx)\right)}{2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^2*Sqrt[c*x^2]),x]

[Out] (c*x*(-(a*(a + 4*b*x)) + 2*b^2*x^2*Log[x]))/(2*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 34, normalized size = 0.7

$$\frac{2\,b^{2}\ln\left(x\right)x^{2}-4\,abx-a^{2}}{2\,x}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^2/(c*x^2)^(1/2),x)

[Out] 1/2/x*(2*b^2*ln(x)*x^2-4*a*b*x-a^2)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.35129, size = 42, normalized size = 0.86

$$\frac{b^{2}\log\left(x\right)}{\sqrt{c}}-\frac{2\,ab}{\sqrt{c}x}-\frac{a^{2}}{2\,\sqrt{c}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^2),x, algorithm="maxima")

[Out] b^2*log(x)/sqrt(c) - 2*a*b/(sqrt(c)*x) - 1/2*a^2/(sqrt(c)*x^2)
```

Fricas [A] time = 0.211696, size = 49, normalized size = 1.

$$\frac{\left(2\,b^{2}x^{2}\log\left(x\right)-4\,abx-a^{2}\right)\sqrt{cx^{2}}}{2\,cx^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^2),x, algorithm="fricas")

[Out] 1/2*(2*b^2*x^2*log(x) - 4*a*b*x - a^2)*sqrt(c*x^2)/(c*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^2}{x^2\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)**2/(x**2*sqrt(c*x**2)), x)
```

GIAC/XCAS [A] time = 0.523083, size = 4, normalized size = 0.08

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.834 $\int \frac{(a+bx)^2}{x^3\sqrt{cx^2}}\,dx$

Optimal. Leaf size=26

$$-\frac{(a+bx)^3}{3ax^2\sqrt{cx^2}}$$

```
[Out] -(a + b*x)^3/(3*a*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.015093, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{(a+bx)^3}{3ax^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^3*Sqrt[c*x^2]),x]

[Out] -(a + b*x)^3/(3*a*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 12.3658, size = 24, normalized size = 0.92

$$-\frac{\sqrt{cx^2}\,(a+bx)^3}{3acx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**3/(c*x**2)**(1/2),x)

[Out] -sqrt(c*x**2)*(a + b*x)**3/(3*a*c*x**4)
```

Mathematica [A] time = 0.0161121, size = 33, normalized size = 1.27

$$\frac{c\left(-a^2-3abx-3b^2x^2\right)}{3\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^3*Sqrt[c*x^2]),x]
```

```
[Out] (c*(-a^2 - 3*a*b*x - 3*b^2*x^2))/(3*(c*x^2)^(3/2))
```

Maple [A] time = 0.006, size = 30, normalized size = 1.2

$$-\frac{3\,b^2x^2+3\,abx+a^2}{3\,x^2}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/x^3/(c*x^2)^(1/2),x)
```

```
[Out] -1/3*(3*b^2*x^2+3*a*b*x+a^2)/x^2/(c*x^2)^(1/2)
```

Maxima [A] time = 1.342, size = 45, normalized size = 1.73

$$-\frac{b^2}{\sqrt{c}x}-\frac{ab}{\sqrt{c}x^2}-\frac{a^2}{3\,\sqrt{c}x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/(sqrt(c*x^2)*x^3),x, algorithm="maxima")
```

```
[Out] -b^2/(sqrt(c)*x) - a*b/(sqrt(c)*x^2) - 1/3*a^2/(sqrt(c)*x^3)
```

Fricas [A] time = 0.2129, size = 43, normalized size = 1.65

$$-\frac{\left(3\,b^2x^2+3\,abx+a^2\right)\sqrt{cx^2}}{3\,cx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/(sqrt(c*x^2)*x^3),x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*sqrt(c*x^2)/(c*x^4)
```

Sympy [A] time = 2.44276, size = 53, normalized size = 2.04

$$-\frac{a^2}{3\sqrt{cx^2}\sqrt{x^2}}-\frac{ab}{\sqrt{cx}\sqrt{x^2}}-\frac{b^2}{\sqrt{c}\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**3/(c*x**2)**(1/2),x)
```

```
[Out] -a**2/(3*sqrt(c)*x**2*sqrt(x**2)) - a*b/(sqrt(c)*x*sqrt(x**2)) -
b**2/(sqrt(c)*sqrt(x**2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^2}{\sqrt{cx^2}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2/(sqrt(c*x^2)*x^3), x)
```

3.835 $\int \frac{(a+bx)^2}{x^4\sqrt{cx^2}}\,dx$

Optimal. Leaf size=57

$$-\frac{a^2}{4x^3\sqrt{cx^2}}-\frac{2ab}{3x^2\sqrt{cx^2}}-\frac{b^2}{2x\sqrt{cx^2}}$$

```
[Out] -a^2/(4*x^3*Sqrt[c*x^2]) - (2*a*b)/(3*x^2*Sqrt[c*x^2]) - b^2/(2*x
*Sqrt[c*x^2])
```

Rubi [A] time = 0.0323167, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{a^2}{4x^3\sqrt{cx^2}}-\frac{2ab}{3x^2\sqrt{cx^2}}-\frac{b^2}{2x\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/(x^4*Sqrt[c*x^2]),x]
```

```
[Out] -a^2/(4*x^3*Sqrt[c*x^2]) - (2*a*b)/(3*x^2*Sqrt[c*x^2]) - b^2/(2*x
*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 15.8446, size = 58, normalized size = 1.02

$$-\frac{a^2\sqrt{cx^2}}{4cx^5}-\frac{2ab\sqrt{cx^2}}{3cx^4}-\frac{b^2\sqrt{cx^2}}{2cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2/x**4/(c*x**2)**(1/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(4*c*x**5) - 2*a*b*sqrt(c*x**2)/(3*c*x**4) - b
**2*sqrt(c*x**2)/(2*c*x**3)
```

Mathematica [A] time = 0.0114842, size = 35, normalized size = 0.61

$$\frac{-3a^2-8abx-6b^2x^2}{12x^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^4*Sqrt[c*x^2]),x]
```

```
[Out] (-3*a^2 - 8*a*b*x - 6*b^2*x^2)/(12*x^3*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$-\frac{6\,b^2x^2+8\,abx+3\,a^2}{12\,x^3}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^4/(c*x^2)^(1/2),x)
```

```
[Out] -1/12*(6*b^2*x^2+8*a*b*x+3*a^2)/x^3/(c*x^2)^(1/2)
```

Maxima [A] time = 1.3467, size = 45, normalized size = 0.79

$$-\frac{b^2}{2\,\sqrt{c}x^2}-\frac{2\,ab}{3\,\sqrt{c}x^3}-\frac{a^2}{4\,\sqrt{c}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^4),x, algorithm="maxima")
```

```
[Out] -1/2*b^2/(sqrt(c)*x^2) - 2/3*a*b/(sqrt(c)*x^3) - 1/4*a^2/(sqrt(c)
*x^4)
```

Fricas [A] time = 0.214958, size = 46, normalized size = 0.81

$$-\frac{\left(6\,b^2x^2+8\,abx+3\,a^2\right)\sqrt{cx^2}}{12\,cx^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^4),x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*x^2 + 8*a*b*x + 3*a^2)*sqrt(c*x^2)/(c*x^5)
```

Sympy [A] time = 2.9542, size = 61, normalized size = 1.07

$$-\frac{a^2}{4\sqrt{c}x^3\sqrt{x^2}}-\frac{2ab}{3\sqrt{c}x^2\sqrt{x^2}}-\frac{b^2}{2\sqrt{c}x\sqrt{x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**4/(c*x**2)**(1/2),x)
```

```
[Out] -a**2/(4*sqrt(c)*x**3*sqrt(x**2)) - 2*a*b/(3*sqrt(c)*x**2*sqrt(x*
*2)) - b**2/(2*sqrt(c)*x*sqrt(x**2))
```

GIAC/XCAS [A] time = 0.563604, size = 4, normalized size = 0.07

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(sqrt(c*x^2)*x^4),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.836 $\int \frac{x^3(a+bx)^2}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=27

$$\frac{x(a+bx)^3}{3bc\sqrt{cx^2}}$$

```
[Out] (x*(a + b*x)^3)/(3*b*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0129958, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{x(a+bx)^3}{3bc\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*x)^3)/(3*b*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 13.9064, size = 22, normalized size = 0.81

$$\frac{\sqrt{cx^2}\,(a+bx)^3}{3bc^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] sqrt(c*x**2)*(a + b*x)**3/(3*b*c**2*x)
```

Mathematica [A] time = 0.00727513, size = 26, normalized size = 0.96

$$\frac{x^3(a+bx)^3}{3b\,(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] (x^3*(a + b*x)^3)/(3*b*(c*x^2)^(3/2))
```

Maple [A] time = 0.004, size = 31, normalized size = 1.2

$$\frac{x^{4}\left(b^{2}x^{2}+3\,abx+3\,a^{2}\right)}{3}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^2/(c*x^2)^(3/2),x)
```

```
[Out] 1/3*x^4*(b^2*x^2+3*a*b*x+3*a^2)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.3451, size = 70, normalized size = 2.59

$$\frac{b^{2}x^{4}}{3\,\sqrt{cx^{2}}c}+\frac{abx^{3}}{\sqrt{cx^{2}}c}+\frac{a^{2}x^{2}}{\sqrt{cx^{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*b^2*x^4/(sqrt(c*x^2)*c) + a*b*x^3/(sqrt(c*x^2)*c) + a^2*x^2/(
sqrt(c*x^2)*c)
```

Fricas [A] time = 0.202182, size = 41, normalized size = 1.52

$$\frac{\left(b^{2}x^{2}+3\,abx+3\,a^{2}\right)\sqrt{cx^{2}}}{3\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*x^2 + 3*a*b*x + 3*a^2)*sqrt(c*x^2)/c^2
```

Sympy [A] time = 2.83268, size = 56, normalized size = 2.07

$$\frac{a^{2}x^{4}}{c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}+\frac{abx^{5}}{c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}+\frac{b^{2}x^{6}}{3c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] a**2*x**4/(c**(3/2)*(x**2)**(3/2)) + a*b*x**5/(c**(3/2)*(x**2)**(
3/2)) + b**2*x**6/(3*c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [A] time = 0.213829, size = 53, normalized size = 1.96

$$\frac{\sqrt{cx^2}\left(\left(\frac{b^2x}{c}+\frac{3\,ab}{c}\right)x+\frac{3\,a^2}{c}\right)}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/3*sqrt(c*x^2)*((b^2*x/c + 3*a*b/c)*x + 3*a^2/c)/c
```

3.837 $\int \frac{x^2(a+bx)^2}{(cx^2)^{3/2}} dx$

Optimal. Leaf size=61

$$\frac{a^2x\log(x)}{c\sqrt{cx^2}}+\frac{2abx^2}{c\sqrt{cx^2}}+\frac{b^2x^3}{2c\sqrt{cx^2}}$$

```
[Out] (2*a*b*x^2)/(c*Sqrt[c*x^2]) + (b^2*x^3)/(2*c*Sqrt[c*x^2]) + (a^2*
x*Log[x])/(c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0318025, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x\log(x)}{c\sqrt{cx^2}}+\frac{2abx^2}{c\sqrt{cx^2}}+\frac{b^2x^3}{2c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] (2*a*b*x^2)/(c*Sqrt[c*x^2]) + (b^2*x^3)/(2*c*Sqrt[c*x^2]) + (a^2*
x*Log[x])/(c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\log(x)}{c^2x}+\frac{2ab\sqrt{cx^2}}{c^2}+\frac{b^2\sqrt{cx^2}\int x\,dx}{c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*log(x)/(c**2*x) + 2*a*b*sqrt(c*x**2)/c**2 + b**
2*sqrt(c*x**2)*Integral(x, x)/(c**2*x)
```

Mathematica [A] time = 0.0138377, size = 34, normalized size = 0.56

$$\frac{x^3\left(2a^2\log(x)+bx(4a+bx)\right)}{2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] (x^3*(b*x*(4*a + b*x) + 2*a^2*Log[x]))/(2*(c*x^2)^(3/2))
```

Maple [A] time = 0.008, size = 33, normalized size = 0.5

$$\frac{x^3 \left(b^2x^2 + 2\,a^2 \ln(x) + 4\,abx\right)}{2} \left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^2/(c*x^2)^(3/2),x)
```

```
[Out] 1/2*x^3*(b^2*x^2+2*a^2*ln(x)+4*a*b*x)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.34873, size = 61, normalized size = 1.

$$\frac{b^2x^3}{2\sqrt{cx^2}c} + \frac{2\,abx^2}{\sqrt{cx^2}c} + \frac{a^2 \log(x)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*b^2*x^3/(sqrt(c*x^2)*c) + 2*a*b*x^2/(sqrt(c*x^2)*c) + a^2*log
(x)/c^(3/2)
```

Fricas [A] time = 0.213048, size = 47, normalized size = 0.77

$$\frac{\left(b^2x^2 + 4\,abx + 2\,a^2 \log(x)\right)\sqrt{cx^2}}{2\,c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 + 4*a*b*x + 2*a^2*log(x))*sqrt(c*x^2)/(c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 (a+bx)^2}{(cx^2)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x**2*(a + b*x)**2/(c*x**2)**(3/2), x)
```

GIAC/XCAS [A] time = 0.215587, size = 74, normalized size = 1.21

$$-\frac{\frac{2\,a^2\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{\sqrt{c}} - \sqrt{cx^2}\left(\frac{b^2x}{c} + \frac{4\,ab}{c}\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/2*(2*a^2*ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/sqrt(c) - sqrt(c*x^
2)*(b^2*x/c + 4*a*b/c))/c
```

3.838 $\int \frac{x(a+bx)^2}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=56

$$-\frac{a^2}{c\sqrt{cx^2}}+\frac{2abx\log(x)}{c\sqrt{cx^2}}+\frac{b^2x^2}{c\sqrt{cx^2}}$$

```
[Out] -(a^2/(c*Sqrt[c*x^2])) + (b^2*x^2)/(c*Sqrt[c*x^2]) + (2*a*b*x*Log
[x])/(c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0344171, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a^2}{c\sqrt{cx^2}}+\frac{2abx\log(x)}{c\sqrt{cx^2}}+\frac{b^2x^2}{c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] -(a^2/(c*Sqrt[c*x^2])) + (b^2*x^2)/(c*Sqrt[c*x^2]) + (2*a*b*x*Log
[x])/(c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)^2}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x*(a + b*x)**2/(c*x**2)**(3/2), x)
```

Mathematica [A] time = 0.0122496, size = 33, normalized size = 0.59

$$\frac{x^2\left(-a^2+2abx\log(x)+b^2x^2\right)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] (x^2*(-a^2 + b^2*x^2 + 2*a*b*x*Log[x]))/(c*x^2)^(3/2)
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$x^{2}\left(2\,ab\ln\left(x\right)x+b^{2}x^{2}-a^{2}\right)\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^2/(c*x^2)^(3/2),x)
```

```
[Out] x^2*(2*a*b*ln(x)*x+b^2*x^2-a^2)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.35351, size = 57, normalized size = 1.02

$$\frac{b^{2}x^{2}}{\sqrt{cx^{2}}c}+\frac{2\,ab\log\left(x\right)}{c^{\frac{3}{2}}}-\frac{a^{2}}{\sqrt{cx^{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] b^2*x^2/(sqrt(c*x^2)*c) + 2*a*b*log(x)/c^(3/2) - a^2/(sqrt(c*x^2)
*c)
```

Fricas [A] time = 0.219729, size = 46, normalized size = 0.82

$$\frac{\left(b^{2}x^{2}+2\,abx\log\left(x\right)-a^{2}\right)\sqrt{cx^{2}}}{c^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + 2*a*b*x*log(x) - a^2)*sqrt(c*x^2)/(c^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x(a+bx)^2}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x*(a + b*x)**2/(c*x**2)**(3/2), x)
```

GIAC/XCAS [A] time = 0.222928, size = 93, normalized size = 1.66

$$\frac{\frac{\sqrt{cx^2}b^2}{c} - \frac{2\left(ab\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right) - \frac{a^2\sqrt{c}}{\sqrt{c}x-\sqrt{cx^2}}\right)}{\sqrt{c}}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] (sqrt(c*x^2)*b^2/c - 2*(a*b*ln(abs(-sqrt(c)*x + sqrt(c*x^2))) - a
^2*sqrt(c)/(sqrt(c)*x - sqrt(c*x^2)))/sqrt(c))/c
```

3.839 $\int \frac{(a+bx)^2}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=58

$$-\frac{a^2}{2cx\sqrt{cx^2}}-\frac{2ab}{c\sqrt{cx^2}}+\frac{b^2x\log(x)}{c\sqrt{cx^2}}$$

```
[Out] (-2*a*b)/(c*Sqrt[c*x^2]) - a^2/(2*c*x*Sqrt[c*x^2]) + (b^2*x*Log[x
])/(c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0348897, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{a^2}{2cx\sqrt{cx^2}}-\frac{2ab}{c\sqrt{cx^2}}+\frac{b^2x\log(x)}{c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c*x^2)^(3/2),x]
```

```
[Out] (-2*a*b)/(c*Sqrt[c*x^2]) - a^2/(2*c*x*Sqrt[c*x^2]) + (b^2*x*Log[x
])/(c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 11.1233, size = 60, normalized size = 1.03

$$-\frac{a^2\sqrt{cx^2}}{2c^2x^3}-\frac{2ab\sqrt{cx^2}}{c^2x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(2*c**2*x**3) - 2*a*b*sqrt(c*x**2)/(c**2*x**2)
 + b**2*sqrt(c*x**2)*log(x)/(c**2*x)
```

Mathematica [A] time = 0.00745528, size = 34, normalized size = 0.59

$$\frac{x\left(2b^2x^2\log(x)-a(a+4bx)\right)}{2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c*x^2)^(3/2),x]
```

```
[Out] (x*(-(a*(a + 4*b*x)) + 2*b^2*x^2*Log[x]))/(2*(c*x^2)^(3/2))
```

Maple [A] time = 0.008, size = 32, normalized size = 0.6

$$\frac{x\left(2\,b^{2}\ln\left(x\right)x^{2}-4\,abx-a^{2}\right)}{2}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(c*x^2)^(3/2),x)
```

```
[Out] 1/2*x*(2*b^2*ln(x)*x^2-4*a*b*x-a^2)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.34639, size = 47, normalized size = 0.81

$$\frac{b^{2}\log\left(x\right)}{c^{\frac{3}{2}}}-\frac{2\,ab}{\sqrt{cx^{2}}c}-\frac{a^{2}}{2\,c^{\frac{3}{2}}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] b^2*log(x)/c^(3/2) - 2*a*b/(sqrt(c*x^2)*c) - 1/2*a^2/(c^(3/2)*x^2
)
```

Fricas [A] time = 0.212627, size = 49, normalized size = 0.84

$$\frac{\left(2\,b^{2}x^{2}\log\left(x\right)-4\,abx-a^{2}\right)\sqrt{cx^{2}}}{2\,c^{2}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*x^2*log(x) - 4*a*b*x - a^2)*sqrt(c*x^2)/(c^2*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^2}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)**2/(c*x**2)**(3/2), x)
```

GIAC/XCAS [A] time = 0.501621, size = 4, normalized size = 0.07

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.840 $\int \frac{(a+bx)^2}{x(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=29

$$-\frac{(a+bx)^3}{3acx^2\sqrt{cx^2}}$$

```
[Out] -(a + b*x)^3/(3*a*c*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0176509, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{(a+bx)^3}{3acx^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x*(c*x^2)^(3/2)),x]

[Out] -(a + b*x)^3/(3*a*c*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 13.1476, size = 26, normalized size = 0.9

$$-\frac{\sqrt{cx^2}\,(a+bx)^3}{3ac^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x/(c*x**2)**(3/2),x)

[Out] -sqrt(c*x**2)*(a + b*x)**3/(3*a*c**2*x**4)
```

Mathematica [A] time = 0.0193321, size = 36, normalized size = 1.24

$$\frac{cx^2\left(-a^2-3abx-3b^2x^2\right)}{3\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x*(c*x^2)^(3/2)),x]
```

```
[Out] (c*x^2*(-a^2 - 3*a*b*x - 3*b^2*x^2))/(3*(c*x^2)^(5/2))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$-\frac{3\,b^{2}x^{2}+3\,abx+a^{2}}{3}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x/(c*x^2)^(3/2),x)
```

```
[Out] -1/3*(3*b^2*x^2+3*a*b*x+a^2)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.35064, size = 50, normalized size = 1.72

$$-\frac{b^{2}}{\sqrt{cx^{2}}c}-\frac{ab}{c^{\frac{3}{2}}x^{2}}-\frac{a^{2}}{3\,c^{\frac{3}{2}}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x),x, algorithm="maxima")
```

```
[Out] -b^2/(sqrt(c*x^2)*c) - a*b/(c^(3/2)*x^2) - 1/3*a^2/(c^(3/2)*x^3)
```

Fricas [A] time = 0.207315, size = 43, normalized size = 1.48

$$-\frac{\left(3\,b^{2}x^{2}+3\,abx+a^{2}\right)\sqrt{cx^{2}}}{3\,c^{2}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x),x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*sqrt(c*x^2)/(c^2*x^4)
```

Sympy [A] time = 2.29853, size = 53, normalized size = 1.83

$$-\frac{a^{2}}{3c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}-\frac{abx}{c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}-\frac{b^{2}x^{2}}{c^{\frac{3}{2}}\left(x^{2}\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x/(c*x**2)**(3/2),x)
```

```
[Out] -a**2/(3*c**(3/2)*(x**2)**(3/2)) - a*b*x/(c**(3/2)*(x**2)**(3/2))
 - b**2*x**2/(c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^2}{(cx^2)^{\frac{3}{2}}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2/((c*x^2)^(3/2)*x), x)
```

3.841 $\int \frac{(a+bx)^2}{x^2(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{4cx^3\sqrt{cx^2}}-\frac{2ab}{3cx^2\sqrt{cx^2}}-\frac{b^2}{2cx\sqrt{cx^2}}$$

```
[Out] -a^2/(4*c*x^3*Sqrt[c*x^2]) - (2*a*b)/(3*c*x^2*Sqrt[c*x^2]) - b^2/
(2*c*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0358915, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{4cx^3\sqrt{cx^2}}-\frac{2ab}{3cx^2\sqrt{cx^2}}-\frac{b^2}{2cx\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^2*(c*x^2)^(3/2)),x]
```

```
[Out] -a^2/(4*c*x^3*Sqrt[c*x^2]) - (2*a*b)/(3*c*x^2*Sqrt[c*x^2]) - b^2/
(2*c*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 17.3988, size = 63, normalized size = 0.95

$$-\frac{a^2\sqrt{cx^2}}{4c^2x^5}-\frac{2ab\sqrt{cx^2}}{3c^2x^4}-\frac{b^2\sqrt{cx^2}}{2c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**2/(c*x**2)**(3/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(4*c**2*x**5) - 2*a*b*sqrt(c*x**2)/(3*c**2*x**
4) - b**2*sqrt(c*x**2)/(2*c**2*x**3)
```

Mathematica [A] time = 0.0165892, size = 38, normalized size = 0.58

$$-\frac{\sqrt{cx^2}\left(3a^2+8abx+6b^2x^2\right)}{12c^2x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^2*(c*x^2)^(3/2)),x]
```

```
[Out] -(Sqrt[c*x^2]*(3*a^2 + 8*a*b*x + 6*b^2*x^2))/(12*c^2*x^5)
```

Maple [A] time = 0.006, size = 32, normalized size = 0.5

$$-\frac{6\,b^2x^2+8\,abx+3\,a^2}{12\,x}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^2/(c*x^2)^(3/2),x)
```

```
[Out] -1/12*(6*b^2*x^2+8*a*b*x+3*a^2)/x/(c*x^2)^(3/2)
```

Maxima [A] time = 1.39862, size = 45, normalized size = 0.68

$$-\frac{b^2}{2\,c^{\frac{3}{2}}x^2}-\frac{2\,ab}{3\,c^{\frac{3}{2}}x^3}-\frac{a^2}{4\,c^{\frac{3}{2}}x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^2),x, algorithm="maxima")
```

```
[Out] -1/2*b^2/(c^(3/2)*x^2) - 2/3*a*b/(c^(3/2)*x^3) - 1/4*a^2/(c^(3/2)
*x^4)
```

Fricas [A] time = 0.201984, size = 46, normalized size = 0.7

$$-\frac{\left(6\,b^2x^2+8\,abx+3\,a^2\right)\sqrt{cx^2}}{12\,c^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^2),x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*x^2 + 8*a*b*x + 3*a^2)*sqrt(c*x^2)/(c^2*x^5)
```

Sympy [A] time = 2.71032, size = 56, normalized size = 0.85

$$-\frac{a^2}{4c^{\frac{3}{2}}x\,(x^2)^{\frac{3}{2}}}-\frac{2ab}{3c^{\frac{3}{2}}\,(x^2)^{\frac{3}{2}}}-\frac{b^2x}{2c^{\frac{3}{2}}\,(x^2)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**2/(c*x**2)**(3/2),x)
```

```
[Out] -a**2/(4*c**(3/2)*x*(x**2)**(3/2)) - 2*a*b/(3*c**(3/2)*(x**2)**(3
/2)) - b**2*x/(2*c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [A] time = 0.523941, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.842 $\int \frac{(a+bx)^2}{x^3(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{5cx^4\sqrt{cx^2}}-\frac{ab}{2cx^3\sqrt{cx^2}}-\frac{b^2}{3cx^2\sqrt{cx^2}}$$

```
[Out] -a^2/(5*c*x^4*Sqrt[c*x^2]) - (a*b)/(2*c*x^3*Sqrt[c*x^2]) - b^2/(3
*c*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0367929, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{5cx^4\sqrt{cx^2}}-\frac{ab}{2cx^3\sqrt{cx^2}}-\frac{b^2}{3cx^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^3*(c*x^2)^(3/2)),x]
```

```
[Out] -a^2/(5*c*x^4*Sqrt[c*x^2]) - (a*b)/(2*c*x^3*Sqrt[c*x^2]) - b^2/(3
*c*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 16.5554, size = 61, normalized size = 0.92

$$-\frac{a^2\sqrt{cx^2}}{5c^2x^6}-\frac{ab\sqrt{cx^2}}{2c^2x^5}-\frac{b^2\sqrt{cx^2}}{3c^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**3/(c*x**2)**(3/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(5*c**2*x**6) - a*b*sqrt(c*x**2)/(2*c**2*x**5)
 - b**2*sqrt(c*x**2)/(3*c**2*x**4)
```

Mathematica [A] time = 0.0194348, size = 33, normalized size = 0.5

$$\frac{c\left(-6a^2-15abx-10b^2x^2\right)}{30\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^3*(c*x^2)^(3/2)),x]

[Out] (c*(-6*a^2 - 15*a*b*x - 10*b^2*x^2))/(30*(c*x^2)^(5/2))
```

Maple [A] time = 0.006, size = 32, normalized size = 0.5

$$-\frac{10\,b^{2}x^{2}+15\,abx+6\,a^{2}}{30\,x^{2}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^3/(c*x^2)^(3/2),x)

[Out] -1/30*(10*b^2*x^2+15*a*b*x+6*a^2)/x^2/(c*x^2)^(3/2)
```

Maxima [A] time = 1.3691, size = 45, normalized size = 0.68

$$-\frac{b^{2}}{3\,c^{\frac{3}{2}}x^{3}}-\frac{ab}{2\,c^{\frac{3}{2}}x^{4}}-\frac{a^{2}}{5\,c^{\frac{3}{2}}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^3),x, algorithm="maxima")

[Out] -1/3*b^2/(c^(3/2)*x^3) - 1/2*a*b/(c^(3/2)*x^4) - 1/5*a^2/(c^(3/2)
*x^5)
```

Fricas [A] time = 0.209676, size = 46, normalized size = 0.7

$$-\frac{\left(10\,b^{2}x^{2}+15\,abx+6\,a^{2}\right)\sqrt{cx^{2}}}{30\,c^{2}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^3),x, algorithm="fricas")

[Out] -1/30*(10*b^2*x^2 + 15*a*b*x + 6*a^2)*sqrt(c*x^2)/(c^2*x^6)
```

Sympy [A] time = 3.26511, size = 56, normalized size = 0.85

$$-\frac{a^2}{5c^{\frac{3}{2}}x^2\left(x^2\right)^{\frac{3}{2}}}-\frac{ab}{2c^{\frac{3}{2}}x\left(x^2\right)^{\frac{3}{2}}}-\frac{b^2}{3c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**3/(c*x**2)**(3/2),x)
```

```
[Out] -a**2/(5*c**(3/2)*x**2*(x**2)**(3/2)) - a*b/(2*c**(3/2)*x*(x**2)*
*(3/2)) - b**2/(3*c**(3/2)*(x**2)**(3/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^2}{\left(cx^2\right)^{\frac{3}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2/((c*x^2)^(3/2)*x^3), x)
```

3.843 $\int \frac{(a+bx)^2}{x^4(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{6cx^5\sqrt{cx^2}}-\frac{2ab}{5cx^4\sqrt{cx^2}}-\frac{b^2}{4cx^3\sqrt{cx^2}}$$

```
[Out] -a^2/(6*c*x^5*Sqrt[c*x^2]) - (2*a*b)/(5*c*x^4*Sqrt[c*x^2]) - b^2/
(4*c*x^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0372419, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{6cx^5\sqrt{cx^2}}-\frac{2ab}{5cx^4\sqrt{cx^2}}-\frac{b^2}{4cx^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^4*(c*x^2)^(3/2)),x]
```

```
[Out] -a^2/(6*c*x^5*Sqrt[c*x^2]) - (2*a*b)/(5*c*x^4*Sqrt[c*x^2]) - b^2/
(4*c*x^3*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 16.8689, size = 63, normalized size = 0.95

$$-\frac{a^2\sqrt{cx^2}}{6c^2x^7}-\frac{2ab\sqrt{cx^2}}{5c^2x^6}-\frac{b^2\sqrt{cx^2}}{4c^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**4/(c*x**2)**(3/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(6*c**2*x**7) - 2*a*b*sqrt(c*x**2)/(5*c**2*x**
6) - b**2*sqrt(c*x**2)/(4*c**2*x**5)
```

Mathematica [A] time = 0.013429, size = 35, normalized size = 0.53

$$\frac{-10a^2-24abx-15b^2x^2}{60x^3\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^4*(c*x^2)^(3/2)),x]
```

```
[Out] (-10*a^2 - 24*a*b*x - 15*b^2*x^2)/(60*x^3*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 32, normalized size = 0.5

$$-\frac{15\,b^{2}x^{2}+24\,abx+10\,a^{2}}{60\,x^{3}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^4/(c*x^2)^(3/2),x)
```

```
[Out] -1/60*(15*b^2*x^2+24*a*b*x+10*a^2)/x^3/(c*x^2)^(3/2)
```

Maxima [A] time = 1.32442, size = 45, normalized size = 0.68

$$-\frac{b^{2}}{4\,c^{\frac{3}{2}}x^{4}}-\frac{2\,ab}{5\,c^{\frac{3}{2}}x^{5}}-\frac{a^{2}}{6\,c^{\frac{3}{2}}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^4),x, algorithm="maxima")
```

```
[Out] -1/4*b^2/(c^(3/2)*x^4) - 2/5*a*b/(c^(3/2)*x^5) - 1/6*a^2/(c^(3/2)
*x^6)
```

Fricas [A] time = 0.209876, size = 46, normalized size = 0.7

$$-\frac{\left(15\,b^{2}x^{2}+24\,abx+10\,a^{2}\right)\sqrt{cx^{2}}}{60\,c^{2}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^4),x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*x^2 + 24*a*b*x + 10*a^2)*sqrt(c*x^2)/(c^2*x^7)
```

Sympy [A] time = 4.00149, size = 61, normalized size = 0.92

$$-\frac{a^2}{6c^{\frac{3}{2}}x^3\left(x^2\right)^{\frac{3}{2}}}-\frac{2ab}{5c^{\frac{3}{2}}x^2\left(x^2\right)^{\frac{3}{2}}}-\frac{b^2}{4c^{\frac{3}{2}}x\left(x^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**4/(c*x**2)**(3/2),x)
```

```
[Out] -a**2/(6*c**(3/2)*x**3*(x**2)**(3/2)) - 2*a*b/(5*c**(3/2)*x**2*(x
**2)**(3/2)) - b**2/(4*c**(3/2)*x*(x**2)**(3/2))
```

GIAC/XCAS [A] time = 0.545009, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(3/2)*x^4),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.844 $\int \frac{x^3(a+bx)^2}{(cx^2)^{5/2}} dx$

Optimal. Leaf size=56

$$-\frac{a^2}{c^2\sqrt{cx^2}}+\frac{2abx\log(x)}{c^2\sqrt{cx^2}}+\frac{b^2x^2}{c^2\sqrt{cx^2}}$$

```
[Out] -(a^2/(c^2*Sqrt[c*x^2])) + (b^2*x^2)/(c^2*Sqrt[c*x^2]) + (2*a*b*x
*Log[x])/(c^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0349828, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{c^2\sqrt{cx^2}}+\frac{2abx\log(x)}{c^2\sqrt{cx^2}}+\frac{b^2x^2}{c^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(a + b*x)^2)/(c*x^2)^(5/2),x]
```

```
[Out] -(a^2/(c^2*Sqrt[c*x^2])) + (b^2*x^2)/(c^2*Sqrt[c*x^2]) + (2*a*b*x
*Log[x])/(c^2*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2\sqrt{cx^2}}{c^3x^2}+\frac{2ab\sqrt{cx^2}\log(x)}{c^3x}+\frac{\sqrt{cx^2}\int b^2\,dx}{c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**3*(b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(c**3*x**2) + 2*a*b*sqrt(c*x**2)*log(x)/(c**3*
x) + sqrt(c*x**2)*Integral(b**2, x)/(c**3*x)
```

Mathematica [A] time = 0.0128508, size = 33, normalized size = 0.59

$$\frac{-a^2+2abx\log(x)+b^2x^2}{c^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x)^2)/(c*x^2)^(5/2),x]
```

```
[Out] (-a^2 + b^2*x^2 + 2*a*b*x*Log[x])/(c^2*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 32, normalized size = 0.6

$$x^{4}\left(2\,ab\ln\left(x\right)x+b^{2}x^{2}-a^{2}\right)\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^2/(c*x^2)^(5/2),x)
```

```
[Out] x^4*(2*a*b*ln(x)*x+b^2*x^2-a^2)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.37581, size = 61, normalized size = 1.09

$$\frac{b^{2}x^{4}}{\left(cx^{2}\right)^{\frac{3}{2}}c}-\frac{a^{2}x^{2}}{\left(cx^{2}\right)^{\frac{3}{2}}c}+\frac{2\,ab\log\left(x\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] b^2*x^4/((c*x^2)^(3/2)*c) - a^2*x^2/((c*x^2)^(3/2)*c) + 2*a*b*log
(x)/c^(5/2)
```

Fricas [A] time = 0.213981, size = 46, normalized size = 0.82

$$\frac{\left(b^{2}x^{2}+2\,abx\log\left(x\right)-a^{2}\right)\sqrt{cx^{2}}}{c^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + 2*a*b*x*log(x) - a^2)*sqrt(c*x^2)/(c^3*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 (a+bx)^2}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] Integral(x**3*(a + b*x)**2/(c*x**2)**(5/2), x)
```

GIAC/XCAS [A] time = 0.220188, size = 88, normalized size = 1.57

$$\frac{\sqrt{cx^2}b^2}{c^3} - \frac{2\left(ab\ln\left(\left|-\sqrt{c}x + \sqrt{cx^2}\right|\right) - \frac{a^2\sqrt{c}}{\sqrt{c}x - \sqrt{cx^2}}\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^3/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2)*b^2/c^3 - 2*(a*b*ln(abs(-sqrt(c)*x + sqrt(c*x^2))) -
a^2*sqrt(c)/(sqrt(c)*x - sqrt(c*x^2)))/c^(5/2)
```

3.845 $\int \frac{x^2(a+bx)^2}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=58

$$-\frac{a^2}{2c^2x\sqrt{cx^2}}-\frac{2ab}{c^2\sqrt{cx^2}}+\frac{b^2x\log(x)}{c^2\sqrt{cx^2}}$$

```
[Out] (-2*a*b)/(c^2*Sqrt[c*x^2]) - a^2/(2*c^2*x*Sqrt[c*x^2]) + (b^2*x*L
og[x])/(c^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0345514, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{2c^2x\sqrt{cx^2}}-\frac{2ab}{c^2\sqrt{cx^2}}+\frac{b^2x\log(x)}{c^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x)^2)/(c*x^2)^(5/2),x]
```

```
[Out] (-2*a*b)/(c^2*Sqrt[c*x^2]) - a^2/(2*c^2*x*Sqrt[c*x^2]) + (b^2*x*L
og[x])/(c^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 13.5369, size = 60, normalized size = 1.03

$$-\frac{a^2\sqrt{cx^2}}{2c^3x^3}-\frac{2ab\sqrt{cx^2}}{c^3x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{c^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(2*c**3*x**3) - 2*a*b*sqrt(c*x**2)/(c**3*x**2)
 + b**2*sqrt(c*x**2)*log(x)/(c**3*x)
```

Mathematica [A] time = 0.0167111, size = 36, normalized size = 0.62

$$\frac{x^3\left(2b^2x^2\log(x)-a(a+4bx)\right)}{2\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x)^2)/(c*x^2)^(5/2),x]

[Out] (x^3*(-(a*(a + 4*b*x)) + 2*b^2*x^2*Log[x]))/(2*(c*x^2)^(5/2))
```

Maple [A] time = 0.006, size = 34, normalized size = 0.6

$$\frac{x^{3}\left(2 b^{2} \ln \left(x\right) x^{2}-4 a b x-a^{2}\right)}{2}\left(c x^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^2/(c*x^2)^(5/2),x)

[Out] 1/2*x^3*(2*b^2*ln(x)*x^2-4*a*b*x-a^2)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.35256, size = 51, normalized size = 0.88

$$-\frac{2 a b x^{2}}{\left(c x^{2}\right)^{\frac{3}{2}} c}+\frac{b^{2} \log \left(x\right)}{c^{\frac{5}{2}}}-\frac{a^{2}}{2 c^{\frac{5}{2}} x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/(c*x^2)^(5/2),x, algorithm="maxima")

[Out] -2*a*b*x^2/((c*x^2)^(3/2)*c) + b^2*log(x)/c^(5/2) - 1/2*a^2/(c^(5
/2)*x^2)
```

Fricas [A] time = 0.213256, size = 49, normalized size = 0.84

$$\frac{\left(2 b^{2} x^{2} \log \left(x\right)-4 a b x-a^{2}\right) \sqrt{c x^{2}}}{2 c^{3} x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/(c*x^2)^(5/2),x, algorithm="fricas")

[Out] 1/2*(2*b^2*x^2*log(x) - 4*a*b*x - a^2)*sqrt(c*x^2)/(c^3*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 (a + bx)^2}{(cx^2)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**2/(c*x**2)**(5/2),x)

[Out] Integral(x**2*(a + b*x)**2/(c*x**2)**(5/2), x)
```

GIAC/XCAS [A] time = 0.542564, size = 4, normalized size = 0.07

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x^2/(c*x^2)^(5/2),x, algorithm="giac")

[Out] sage0*x
```

3.846 $\int \frac{x(a+bx)^2}{(cx^2)^{5/2}} dx$

Optimal. Leaf size=29

$$-\frac{(a+bx)^3}{3ac^2x^2\sqrt{cx^2}}$$

```
[Out] -(a + b*x)^3/(3*a*c^2*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0169844, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{(a+bx)^3}{3ac^2x^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x)^2)/(c*x^2)^(5/2),x]

[Out] -(a + b*x)^3/(3*a*c^2*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x(a+bx)^2}{(cx^2)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**2/(c*x**2)**(5/2),x)

[Out] Integral(x*(a + b*x)**2/(c*x**2)**(5/2), x)
```

Mathematica [A] time = 0.016897, size = 35, normalized size = 1.21

$$\frac{x^2\left(-a^2-3abx-3b^2x^2\right)}{3\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x)^2)/(c*x^2)^(5/2),x]
```

```
[Out] (x^2*(-a^2 - 3*a*b*x - 3*b^2*x^2))/(3*(c*x^2)^(5/2))
```

Maple [A] time = 0.007, size = 30, normalized size = 1.

$$-\frac{x^{2}\left(3\,b^{2}x^{2}+3\,abx+a^{2}\right)}{3}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^2/(c*x^2)^(5/2),x)
```

```
[Out] -1/3*x^2*(3*b^2*x^2+3*a*b*x+a^2)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.32486, size = 59, normalized size = 2.03

$$-\frac{b^{2}x^{2}}{\left(cx^{2}\right)^{\frac{3}{2}}c}-\frac{a^{2}}{3\,\left(cx^{2}\right)^{\frac{3}{2}}c}-\frac{ab}{c^{\frac{5}{2}}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -b^2*x^2/((c*x^2)^(3/2)*c) - 1/3*a^2/((c*x^2)^(3/2)*c) - a*b/(c^(
5/2)*x^2)
```

Fricas [A] time = 0.205032, size = 43, normalized size = 1.48

$$-\frac{\left(3\,b^{2}x^{2}+3\,abx+a^{2}\right)\sqrt{cx^{2}}}{3\,c^{3}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*x^2 + 3*a*b*x + a^2)*sqrt(c*x^2)/(c^3*x^4)
```

Sympy [A] time = 3.32278, size = 58, normalized size = 2.

$$-\frac{a^{2}x^{2}}{3c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}-\frac{abx^{3}}{c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}-\frac{b^{2}x^{4}}{c^{\frac{5}{2}}\left(x^{2}\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*x**2/(3*c**(5/2)*(x**2)**(5/2)) - a*b*x**3/(c**(5/2)*(x**2)
**(5/2)) - b**2*x**4/(c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^2 x}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*x/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*x/(c*x^2)^(5/2), x)
```

3.847 $\int \frac{(a+bx)^2}{(cx^2)^{5/2}} dx$

Optimal. Leaf size=66

$$-\frac{a^2}{4c^2x^3\sqrt{cx^2}}-\frac{2ab}{3c^2x^2\sqrt{cx^2}}-\frac{b^2}{2c^2x\sqrt{cx^2}}$$

```
[Out] -a^2/(4*c^2*x^3*Sqrt[c*x^2]) - (2*a*b)/(3*c^2*x^2*Sqrt[c*x^2]) -
b^2/(2*c^2*x*Sqrt[c*x^2])
```

Rubi [A] time = 0.0353748, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{a^2}{4c^2x^3\sqrt{cx^2}}-\frac{2ab}{3c^2x^2\sqrt{cx^2}}-\frac{b^2}{2c^2x\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c*x^2)^(5/2),x]
```

```
[Out] -a^2/(4*c^2*x^3*Sqrt[c*x^2]) - (2*a*b)/(3*c^2*x^2*Sqrt[c*x^2]) -
b^2/(2*c^2*x*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 11.1197, size = 63, normalized size = 0.95

$$-\frac{a^2\sqrt{cx^2}}{4c^3x^5}-\frac{2ab\sqrt{cx^2}}{3c^3x^4}-\frac{b^2\sqrt{cx^2}}{2c^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(4*c**3*x**5) - 2*a*b*sqrt(c*x**2)/(3*c**3*x**
4) - b**2*sqrt(c*x**2)/(2*c**3*x**3)
```

Mathematica [A] time = 0.0119613, size = 38, normalized size = 0.58

$$-\frac{\sqrt{cx^2}\left(3a^2+8abx+6b^2x^2\right)}{12c^3x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c*x^2)^(5/2),x]

[Out] -(Sqrt[c*x^2]*(3*a^2 + 8*a*b*x + 6*b^2*x^2))/(12*c^3*x^5)
```

Maple [A] time = 0.007, size = 30, normalized size = 0.5

$$-\frac{x\left(6\,b^{2}x^{2}+8\,abx+3\,a^{2}\right)}{12}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(c*x^2)^(5/2),x)

[Out] -1/12*x*(6*b^2*x^2+8*a*b*x+3*a^2)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.32554, size = 50, normalized size = 0.76

$$-\frac{2\,ab}{3\,\left(cx^{2}\right)^{\frac{3}{2}}\,c}-\frac{b^{2}}{2\,c^{\frac{5}{2}}x^{2}}-\frac{a^{2}}{4\,c^{\frac{5}{2}}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(c*x^2)^(5/2),x, algorithm="maxima")

[Out] -2/3*a*b/((c*x^2)^(3/2)*c) - 1/2*b^2/(c^(5/2)*x^2) - 1/4*a^2/(c^(
5/2)*x^4)
```

Fricas [A] time = 0.200488, size = 46, normalized size = 0.7

$$-\frac{\left(6\,b^{2}x^{2}+8\,abx+3\,a^{2}\right)\sqrt{cx^{2}}}{12\,c^{3}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(c*x^2)^(5/2),x, algorithm="fricas")

[Out] -1/12*(6*b^2*x^2 + 8*a*b*x + 3*a^2)*sqrt(c*x^2)/(c^3*x^5)
```

Sympy [A] time = 3.28694, size = 61, normalized size = 0.92

$$-\frac{a^2x}{4c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}-\frac{2abx^2}{3c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}-\frac{b^2x^3}{2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*x/(4*c**(5/2)*(x**2)**(5/2)) - 2*a*b*x**2/(3*c**(5/2)*(x**2
)**(5/2)) - b**2*x**3/(2*c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [A] time = 0.506198, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.848 $\int \frac{(a+bx)^2}{x(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{5c^2x^4\sqrt{cx^2}}-\frac{ab}{2c^2x^3\sqrt{cx^2}}-\frac{b^2}{3c^2x^2\sqrt{cx^2}}$$

```
[Out] -a^2/(5*c^2*x^4*Sqrt[c*x^2]) - (a*b)/(2*c^2*x^3*Sqrt[c*x^2]) - b^
2/(3*c^2*x^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0363574, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{5c^2x^4\sqrt{cx^2}}-\frac{ab}{2c^2x^3\sqrt{cx^2}}-\frac{b^2}{3c^2x^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x*(c*x^2)^(5/2)),x]
```

```
[Out] -a^2/(5*c^2*x^4*Sqrt[c*x^2]) - (a*b)/(2*c^2*x^3*Sqrt[c*x^2]) - b^
2/(3*c^2*x^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 17.0638, size = 61, normalized size = 0.92

$$-\frac{a^2\sqrt{cx^2}}{5c^3x^6}-\frac{ab\sqrt{cx^2}}{2c^3x^5}-\frac{b^2\sqrt{cx^2}}{3c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(5*c**3*x**6) - a*b*sqrt(c*x**2)/(2*c**3*x**5)
 - b**2*sqrt(c*x**2)/(3*c**3*x**4)
```

Mathematica [A] time = 0.0221972, size = 38, normalized size = 0.58

$$-\frac{\sqrt{cx^2}\left(6a^2+15abx+10b^2x^2\right)}{30c^3x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x*(c*x^2)^(5/2)),x]
```

```
[Out] -(Sqrt[c*x^2]*(6*a^2 + 15*a*b*x + 10*b^2*x^2))/(30*c^3*x^6)
```

Maple [A] time = 0.006, size = 29, normalized size = 0.4

$$-\frac{10\,b^{2}x^{2}+15\,abx+6\,a^{2}}{30}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x/(c*x^2)^(5/2),x)
```

```
[Out] -1/30*(10*b^2*x^2+15*a*b*x+6*a^2)/(c*x^2)^(5/2)
```

Maxima [A] time = 1.32071, size = 50, normalized size = 0.76

$$-\frac{b^{2}}{3\,\left(cx^{2}\right)^{\frac{3}{2}}c}-\frac{ab}{2\,c^{\frac{5}{2}}x^{4}}-\frac{a^{2}}{5\,c^{\frac{5}{2}}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x),x, algorithm="maxima")
```

```
[Out] -1/3*b^2/((c*x^2)^(3/2)*c) - 1/2*a*b/(c^(5/2)*x^4) - 1/5*a^2/(c^(
5/2)*x^5)
```

Fricas [A] time = 0.20799, size = 46, normalized size = 0.7

$$-\frac{\left(10\,b^{2}x^{2}+15\,abx+6\,a^{2}\right)\sqrt{cx^{2}}}{30\,c^{3}x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x),x, algorithm="fricas")
```

```
[Out] -1/30*(10*b^2*x^2 + 15*a*b*x + 6*a^2)*sqrt(c*x^2)/(c^3*x^6)
```

Sympy [A] time = 3.97685, size = 56, normalized size = 0.85

$$-\frac{a^2}{5c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}-\frac{abx}{2c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}-\frac{b^2x^2}{3c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x/(c*x**2)**(5/2),x)
```

```
[Out] -a**2/(5*c**(5/2)*(x**2)**(5/2)) - a*b*x/(2*c**(5/2)*(x**2)**(5/2
)) - b**2*x**2/(3*c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(bx+a)^2}{(cx^2)^{\frac{5}{2}}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2/((c*x^2)^(5/2)*x), x)
```

3.849 $\int \frac{(a+bx)^2}{x^2(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{6c^2x^5\sqrt{cx^2}}-\frac{2ab}{5c^2x^4\sqrt{cx^2}}-\frac{b^2}{4c^2x^3\sqrt{cx^2}}$$

```
[Out] -a^2/(6*c^2*x^5*Sqrt[c*x^2]) - (2*a*b)/(5*c^2*x^4*Sqrt[c*x^2]) -
b^2/(4*c^2*x^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0365168, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{6c^2x^5\sqrt{cx^2}}-\frac{2ab}{5c^2x^4\sqrt{cx^2}}-\frac{b^2}{4c^2x^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^2*(c*x^2)^(5/2)),x]
```

```
[Out] -a^2/(6*c^2*x^5*Sqrt[c*x^2]) - (2*a*b)/(5*c^2*x^4*Sqrt[c*x^2]) -
b^2/(4*c^2*x^3*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 16.8138, size = 63, normalized size = 0.95

$$-\frac{a^2\sqrt{cx^2}}{6c^3x^7}-\frac{2ab\sqrt{cx^2}}{5c^3x^6}-\frac{b^2\sqrt{cx^2}}{4c^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(6*c**3*x**7) - 2*a*b*sqrt(c*x**2)/(5*c**3*x**
6) - b**2*sqrt(c*x**2)/(4*c**3*x**5)
```

Mathematica [A] time = 0.0179024, size = 38, normalized size = 0.58

$$-\frac{\sqrt{cx^2}\left(10a^2+24abx+15b^2x^2\right)}{60c^3x^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^2*(c*x^2)^(5/2)),x]
```

```
[Out] -(Sqrt[c*x^2]*(10*a^2 + 24*a*b*x + 15*b^2*x^2))/(60*c^3*x^7)
```

Maple [A] time = 0.009, size = 32, normalized size = 0.5

$$-\frac{15\,b^2x^2+24\,abx+10\,a^2}{60\,x}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^2/(c*x^2)^(5/2),x)
```

```
[Out] -1/60*(15*b^2*x^2+24*a*b*x+10*a^2)/x/(c*x^2)^(5/2)
```

Maxima [A] time = 1.33985, size = 45, normalized size = 0.68

$$-\frac{b^2}{4\,c^{\frac{5}{2}}x^4}-\frac{2\,ab}{5\,c^{\frac{5}{2}}x^5}-\frac{a^2}{6\,c^{\frac{5}{2}}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^2),x, algorithm="maxima")
```

```
[Out] -1/4*b^2/(c^(5/2)*x^4) - 2/5*a*b/(c^(5/2)*x^5) - 1/6*a^2/(c^(5/2)
*x^6)
```

Fricas [A] time = 0.209239, size = 46, normalized size = 0.7

$$-\frac{\left(15\,b^2x^2+24\,abx+10\,a^2\right)\sqrt{cx^2}}{60\,c^3x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^2),x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*x^2 + 24*a*b*x + 10*a^2)*sqrt(c*x^2)/(c^3*x^7)
```

Sympy [A] time = 5.13168, size = 56, normalized size = 0.85

$$-\frac{a^2}{6c^{\frac{5}{2}}x\,(x^2)^{\frac{5}{2}}}-\frac{2ab}{5c^{\frac{5}{2}}\,(x^2)^{\frac{5}{2}}}-\frac{b^2x}{4c^{\frac{5}{2}}\,(x^2)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2/(6*c**(5/2)*x*(x**2)**(5/2)) - 2*a*b/(5*c**(5/2)*(x**2)**(5
/2)) - b**2*x/(4*c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [A] time = 0.532116, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.850 $\int \frac{(a+bx)^2}{x^3(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{7c^2x^6\sqrt{cx^2}}-\frac{ab}{3c^2x^5\sqrt{cx^2}}-\frac{b^2}{5c^2x^4\sqrt{cx^2}}$$

```
[Out] -a^2/(7*c^2*x^6*Sqrt[c*x^2]) - (a*b)/(3*c^2*x^5*Sqrt[c*x^2]) - b^
2/(5*c^2*x^4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0376738, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{7c^2x^6\sqrt{cx^2}}-\frac{ab}{3c^2x^5\sqrt{cx^2}}-\frac{b^2}{5c^2x^4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^3*(c*x^2)^(5/2)),x]
```

```
[Out] -a^2/(7*c^2*x^6*Sqrt[c*x^2]) - (a*b)/(3*c^2*x^5*Sqrt[c*x^2]) - b^
2/(5*c^2*x^4*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 17.0297, size = 61, normalized size = 0.92

$$-\frac{a^2\sqrt{cx^2}}{7c^3x^8}-\frac{ab\sqrt{cx^2}}{3c^3x^7}-\frac{b^2\sqrt{cx^2}}{5c^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**3/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(7*c**3*x**8) - a*b*sqrt(c*x**2)/(3*c**3*x**7)
 - b**2*sqrt(c*x**2)/(5*c**3*x**6)
```

Mathematica [A] time = 0.0192895, size = 33, normalized size = 0.5

$$\frac{c\left(-15a^2-35abx-21b^2x^2\right)}{105\left(cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^3*(c*x^2)^(5/2)),x]

[Out] (c*(-15*a^2 - 35*a*b*x - 21*b^2*x^2))/(105*(c*x^2)^(7/2))
```

Maple [A] time = 0.008, size = 32, normalized size = 0.5

$$-\frac{21 b^2x^2+35 abx+15 a^2}{105 x^2}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^3/(c*x^2)^(5/2),x)

[Out] -1/105*(21*b^2*x^2+35*a*b*x+15*a^2)/x^2/(c*x^2)^(5/2)
```

Maxima [A] time = 1.34183, size = 45, normalized size = 0.68

$$-\frac{b^2}{5 c^{\frac{5}{2}}x^5}-\frac{ab}{3 c^{\frac{5}{2}}x^6}-\frac{a^2}{7 c^{\frac{5}{2}}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^3),x, algorithm="maxima")

[Out] -1/5*b^2/(c^(5/2)*x^5) - 1/3*a*b/(c^(5/2)*x^6) - 1/7*a^2/(c^(5/2)
*x^7)
```

Fricas [A] time = 0.212655, size = 46, normalized size = 0.7

$$-\frac{\left(21 b^2x^2+35 abx+15 a^2\right)\sqrt{cx^2}}{105 c^3x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^3),x, algorithm="fricas")

[Out] -1/105*(21*b^2*x^2 + 35*a*b*x + 15*a^2)*sqrt(c*x^2)/(c^3*x^8)
```

Sympy [A] time = 6.24623, size = 56, normalized size = 0.85

$$-\frac{a^2}{7c^{\frac{5}{2}}x^2\left(x^2\right)^{\frac{5}{2}}}-\frac{ab}{3c^{\frac{5}{2}}x\left(x^2\right)^{\frac{5}{2}}}-\frac{b^2}{5c^{\frac{5}{2}}\left(x^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**3/(c*x**2)**(5/2),x)
```

```
[Out] -a**2/(7*c**(5/2)*x**2*(x**2)**(5/2)) - a*b/(3*c**(5/2)*x*(x**2)*
*(5/2)) - b**2/(5*c**(5/2)*(x**2)**(5/2))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(bx+a)^2}{\left(cx^2\right)^{\frac{5}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2/((c*x^2)^(5/2)*x^3), x)
```

3.851 $\int \frac{(a+bx)^2}{x^4(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{a^2}{8c^2x^7\sqrt{cx^2}}-\frac{2ab}{7c^2x^6\sqrt{cx^2}}-\frac{b^2}{6c^2x^5\sqrt{cx^2}}$$

```
[Out] -a^2/(8*c^2*x^7*Sqrt[c*x^2]) - (2*a*b)/(7*c^2*x^6*Sqrt[c*x^2]) -
b^2/(6*c^2*x^5*Sqrt[c*x^2])
```

Rubi [A] time = 0.0375986, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2}{8c^2x^7\sqrt{cx^2}}-\frac{2ab}{7c^2x^6\sqrt{cx^2}}-\frac{b^2}{6c^2x^5\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(x^4*(c*x^2)^(5/2)),x]
```

```
[Out] -a^2/(8*c^2*x^7*Sqrt[c*x^2]) - (2*a*b)/(7*c^2*x^6*Sqrt[c*x^2]) -
b^2/(6*c^2*x^5*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 16.9921, size = 63, normalized size = 0.95

$$-\frac{a^2\sqrt{cx^2}}{8c^3x^9}-\frac{2ab\sqrt{cx^2}}{7c^3x^8}-\frac{b^2\sqrt{cx^2}}{6c^3x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/x**4/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(8*c**3*x**9) - 2*a*b*sqrt(c*x**2)/(7*c**3*x**
8) - b**2*sqrt(c*x**2)/(6*c**3*x**7)
```

Mathematica [A] time = 0.0162651, size = 35, normalized size = 0.53

$$\frac{-21a^2-48abx-28b^2x^2}{168x^3\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(x^4*(c*x^2)^(5/2)),x]

[Out] (-21*a^2 - 48*a*b*x - 28*b^2*x^2)/(168*x^3*(c*x^2)^(5/2))
```

Maple [A] time = 0.008, size = 32, normalized size = 0.5

$$-\frac{28\,b^2x^2+48\,abx+21\,a^2}{168\,x^3}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/x^4/(c*x^2)^(5/2),x)

[Out] -1/168*(28*b^2*x^2+48*a*b*x+21*a^2)/x^3/(c*x^2)^(5/2)
```

Maxima [A] time = 1.33033, size = 45, normalized size = 0.68

$$-\frac{b^2}{6\,c^{\frac{5}{2}}x^6}-\frac{2\,ab}{7\,c^{\frac{5}{2}}x^7}-\frac{a^2}{8\,c^{\frac{5}{2}}x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^4),x, algorithm="maxima")

[Out] -1/6*b^2/(c^(5/2)*x^6) - 2/7*a*b/(c^(5/2)*x^7) - 1/8*a^2/(c^(5/2)
*x^8)
```

Fricas [A] time = 0.208186, size = 46, normalized size = 0.7

$$-\frac{\left(28\,b^2x^2+48\,abx+21\,a^2\right)\sqrt{cx^2}}{168\,c^3x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^4),x, algorithm="fricas")

[Out] -1/168*(28*b^2*x^2 + 48*a*b*x + 21*a^2)*sqrt(c*x^2)/(c^3*x^9)
```

Sympy [A] time = 7.0458, size = 61, normalized size = 0.92

$$-\frac{a^2}{8c^{\frac{5}{2}}x^3\left(x^2\right)^{\frac{5}{2}}}-\frac{2ab}{7c^{\frac{5}{2}}x^2\left(x^2\right)^{\frac{5}{2}}}-\frac{b^2}{6c^{\frac{5}{2}}x\left(x^2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/x**4/(c*x**2)**(5/2),x)
```

```
[Out] -a**2/(8*c**(5/2)*x**3*(x**2)**(5/2)) - 2*a*b/(7*c**(5/2)*x**2*(x
**2)**(5/2)) - b**2/(6*c**(5/2)*x*(x**2)**(5/2))
```

GIAC/XCAS [A] time = 0.537897, size = 4, normalized size = 0.06

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/((c*x^2)^(5/2)*x^4),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.852 $\int \frac{x^3\sqrt{cx^2}}{a+bx}\,dx$

Optimal. Leaf size=102

$$\frac{a^4\sqrt{cx^2}\log(a+bx)}{b^5x}-\frac{a^3\sqrt{cx^2}}{b^4}+\frac{a^2x\sqrt{cx^2}}{2b^3}-\frac{ax^2\sqrt{cx^2}}{3b^2}+\frac{x^3\sqrt{cx^2}}{4b}$$

```
[Out] -((a^3*Sqrt[c*x^2])/b^4) + (a^2*x*Sqrt[c*x^2])/(2*b^3) - (a*x^2*S
qrt[c*x^2])/(3*b^2) + (x^3*Sqrt[c*x^2])/(4*b) + (a^4*Sqrt[c*x^2]*
Log[a + b*x])/(b^5*x)
```

Rubi [A] time = 0.0800921, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^4\sqrt{cx^2}\log(a+bx)}{b^5x}-\frac{a^3\sqrt{cx^2}}{b^4}+\frac{a^2x\sqrt{cx^2}}{2b^3}-\frac{ax^2\sqrt{cx^2}}{3b^2}+\frac{x^3\sqrt{cx^2}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*Sqrt[c*x^2])/(a + b*x),x]
```

```
[Out] -((a^3*Sqrt[c*x^2])/b^4) + (a^2*x*Sqrt[c*x^2])/(2*b^3) - (a*x^2*S
qrt[c*x^2])/(3*b^2) + (x^3*Sqrt[c*x^2])/(4*b) + (a^4*Sqrt[c*x^2]*
Log[a + b*x])/(b^5*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^4\sqrt{cx^2}\log(a+bx)}{b^5x}+\frac{a^2\sqrt{cx^2}\int x\,dx}{b^3x}-\frac{ax^2\sqrt{cx^2}}{3b^2}+\frac{x^3\sqrt{cx^2}}{4b}-\frac{\sqrt{cx^2}\int a^3\,dx}{b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] a**4*sqrt(c*x**2)*log(a + b*x)/(b**5*x) + a**2*sqrt(c*x**2)*Integ
ral(x, x)/(b**3*x) - a*x**2*sqrt(c*x**2)/(3*b**2) + x**3*sqrt(c*x
**2)/(4*b) - sqrt(c*x**2)*Integral(a**3, x)/(b**4*x)
```

Mathematica [A] time = 0.0280353, size = 63, normalized size = 0.62

$$\frac{cx\left(12a^4\log(a+bx)+bx\left(-12a^3+6a^2bx-4ab^2x^2+3b^3x^3\right)\right)}{12b^5\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*Sqrt[c*x^2])/(a + b*x),x]
```

```
[Out] (c*x*(b*x*(-12*a^3 + 6*a^2*b*x - 4*a*b^2*x^2 + 3*b^3*x^3) + 12*a^
4*Log[a + b*x]))/(12*b^5*Sqrt[c*x^2])
```

Maple [A] time = 0.008, size = 63, normalized size = 0.6

$$\frac{3\,x^4b^4-4\,x^3ab^3+6\,x^2a^2b^2+12\,a^4\ln\left(bx+a\right)-12\,xa^3b}{12\,b^5x}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(c*x^2)^(1/2)/(b*x+a),x)
```

```
[Out] 1/12*(c*x^2)^(1/2)*(3*x^4*b^4-4*x^3*a*b^3+6*x^2*a^2*b^2+12*a^4*ln
(b*x+a)-12*x*a^3*b)/b^5/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^3/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213199, size = 84, normalized size = 0.82

$$\frac{\left(3\,b^4x^4-4\,ab^3x^3+6\,a^2b^2x^2-12\,a^3bx+12\,a^4\log\left(bx+a\right)\right)\sqrt{cx^2}}{12\,b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^3/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*x^4 - 4*a*b^3*x^3 + 6*a^2*b^2*x^2 - 12*a^3*b*x + 12*a
^4*log(b*x + a))*sqrt(c*x^2)/(b^5*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3\sqrt{cx^2}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(x**3*sqrt(c*x**2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.206193, size = 109, normalized size = 1.07

$$\frac{1}{12}\sqrt{c}\left(\frac{12\,a^4\ln\left(|bx+a|\right)\operatorname{sign}\left(x\right)}{b^5}-\frac{12\,a^4\ln\left(|a|\right)\operatorname{sign}\left(x\right)}{b^5}+\frac{3\,b^3x^4\operatorname{sign}\left(x\right)-4\,ab^2x^3\operatorname{sign}\left(x\right)+6\,a^2bx^2\operatorname{sign}\left(x\right)-12\,a^3x\operatorname{sign}\left(\right.}{b^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^3/(b*x + a),x, algorithm="giac")
```

```
[Out] 1/12*sqrt(c)*(12*a^4*ln(abs(b*x + a))*sign(x)/b^5 - 12*a^4*ln(abs
(a))*sign(x)/b^5 + (3*b^3*x^4*sign(x) - 4*a*b^2*x^3*sign(x) + 6*a
^2*b*x^2*sign(x) - 12*a^3*x*sign(x))/b^4)
```

3.853 $\int \frac{x^2\sqrt{cx^2}}{a+bx}\,dx$

Optimal. Leaf size=80

$$-\frac{a^3\sqrt{cx^2}\log(a+bx)}{b^4x}+\frac{a^2\sqrt{cx^2}}{b^3}-\frac{ax\sqrt{cx^2}}{2b^2}+\frac{x^2\sqrt{cx^2}}{3b}$$

```
[Out] (a^2*Sqrt[c*x^2])/b^3 - (a*x*Sqrt[c*x^2])/(2*b^2) + (x^2*Sqrt[c*x
^2])/(3*b) - (a^3*Sqrt[c*x^2]*Log[a + b*x])/(b^4*x)
```

Rubi [A] time = 0.0600202, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3\sqrt{cx^2}\log(a+bx)}{b^4x}+\frac{a^2\sqrt{cx^2}}{b^3}-\frac{ax\sqrt{cx^2}}{2b^2}+\frac{x^2\sqrt{cx^2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*Sqrt[c*x^2])/(a + b*x),x]
```

```
[Out] (a^2*Sqrt[c*x^2])/b^3 - (a*x*Sqrt[c*x^2])/(2*b^2) + (x^2*Sqrt[c*x
^2])/(3*b) - (a^3*Sqrt[c*x^2]*Log[a + b*x])/(b^4*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3\sqrt{cx^2}\log(a+bx)}{b^4x}-\frac{a\sqrt{cx^2}\int x\,dx}{b^2x}+\frac{x^2\sqrt{cx^2}}{3b}+\frac{\sqrt{cx^2}\int a^2\,dx}{b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] -a**3*sqrt(c*x**2)*log(a + b*x)/(b**4*x) - a*sqrt(c*x**2)*Integra
l(x, x)/(b**2*x) + x**2*sqrt(c*x**2)/(3*b) + sqrt(c*x**2)*Integra
l(a**2, x)/(b**3*x)
```

Mathematica [A] time = 0.0233421, size = 52, normalized size = 0.65

$$\frac{cx\left(bx\left(6a^2-3abx+2b^2x^2\right)-6a^3\log(a+bx)\right)}{6b^4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*Sqrt[c*x^2])/(a + b*x),x]
```

```
[Out] (c*x*(b*x*(6*a^2 - 3*a*b*x + 2*b^2*x^2) - 6*a^3*Log[a + b*x]))/(6
*b^4*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 52, normalized size = 0.7

$$-\frac{-2\,b^3x^3+3\,ab^2x^2+6\,a^3\ln(bx+a)-6\,a^2bx}{6\,xb^4}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(c*x^2)^(1/2)/(b*x+a),x)
```

```
[Out] -1/6*(c*x^2)^(1/2)*(-2*b^3*x^3+3*a*b^2*x^2+6*a^3*ln(b*x+a)-6*a^2*
b*x)/x/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^2/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.210753, size = 69, normalized size = 0.86

$$\frac{\left(2\,b^3x^3-3\,ab^2x^2+6\,a^2bx-6\,a^3\log(bx+a)\right)\sqrt{cx^2}}{6\,b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^2/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3 - 3*a*b^2*x^2 + 6*a^2*b*x - 6*a^3*log(b*x + a))*sq
rt(c*x^2)/(b^4*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2\sqrt{cx^2}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(x**2*sqrt(c*x**2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.208648, size = 93, normalized size = 1.16

$$-\frac{1}{6}\sqrt{c}\left(\frac{6\,a^3\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^4}-\frac{6\,a^3\ln\left(|a|\right)\mathrm{sign}\left(x\right)}{b^4}-\frac{2\,b^2x^3\mathrm{sign}\left(x\right)-3\,abx^2\mathrm{sign}\left(x\right)+6\,a^2x\mathrm{sign}\left(x\right)}{b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^2/(b*x + a),x, algorithm="giac")
```

```
[Out] -1/6*sqrt(c)*(6*a^3*ln(abs(b*x + a))*sign(x)/b^4 - 6*a^3*ln(abs(a
))*sign(x)/b^4 - (2*b^2*x^3*sign(x) - 3*a*b*x^2*sign(x) + 6*a^2*x
*sign(x))/b^3)
```

3.854 $\int \frac{x\sqrt{cx^2}}{a+bx}\,dx$

Optimal. Leaf size=58

$$\frac{a^2\sqrt{cx^2}\log(a+bx)}{b^3x}-\frac{a\sqrt{cx^2}}{b^2}+\frac{x\sqrt{cx^2}}{2b}$$

```
[Out] -((a*Sqrt[c*x^2])/b^2) + (x*Sqrt[c*x^2])/(2*b) + (a^2*Sqrt[c*x^2]
*Log[a + b*x])/(b^3*x)
```

Rubi [A] time = 0.0458353, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a^2\sqrt{cx^2}\log(a+bx)}{b^3x}-\frac{a\sqrt{cx^2}}{b^2}+\frac{x\sqrt{cx^2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*Sqrt[c*x^2])/(a + b*x),x]
```

```
[Out] -((a*Sqrt[c*x^2])/b^2) + (x*Sqrt[c*x^2])/(2*b) + (a^2*Sqrt[c*x^2]
*Log[a + b*x])/(b^3*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\sqrt{cx^2}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(x*sqrt(c*x**2)/(a + b*x), x)
```

Mathematica [A] time = 0.0178285, size = 40, normalized size = 0.69

$$\frac{cx\left(2a^2\log(a+bx)+bx(bx-2a)\right)}{2b^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*Sqrt[c*x^2])/(a + b*x),x]

[Out] (c*x*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x]))/(2*b^3*Sqrt[c*x^2])
```

Maple [A] time = 0.009, size = 40, normalized size = 0.7

$$\frac{b^2x^2 + 2\,a^2\ln(bx + a) - 2\,abx}{2\,b^3x}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(1/2)/(b*x+a),x)

[Out] 1/2*(c*x^2)^(1/2)*(b^2*x^2+2*a^2*ln(b*x+a)-2*a*b*x)/b^3/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x/(b*x + a),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.20929, size = 53, normalized size = 0.91

$$\frac{\left(b^2x^2 - 2\,abx + 2\,a^2\log(bx + a)\right)\sqrt{cx^2}}{2\,b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x/(b*x + a),x, algorithm="fricas")

[Out] 1/2*(b^2*x^2 - 2*a*b*x + 2*a^2*log(b*x + a))*sqrt(c*x^2)/(b^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\sqrt{cx^2}}{a + bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(x*sqrt(c*x**2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.205359, size = 73, normalized size = 1.26

$$\frac{1}{2}\sqrt{c}\left(\frac{2\,a^2\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^3}-\frac{2\,a^2\ln\left(|a|\right)\mathrm{sign}\left(x\right)}{b^3}+\frac{bx^2\mathrm{sign}\left(x\right)-2\,ax\mathrm{sign}\left(x\right)}{b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x/(b*x + a),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c)*(2*a^2*ln(abs(b*x + a))*sign(x)/b^3 - 2*a^2*ln(abs(a)
)*sign(x)/b^3 + (b*x^2*sign(x) - 2*a*x*sign(x))/b^2)
```

3.855 $\int \frac{\sqrt{cx^2}}{a+bx} dx$

Optimal. Leaf size=38

$$\frac{\sqrt{cx^2}}{b} - \frac{a\sqrt{cx^2}\log(a+bx)}{b^2x}$$

```
[Out] Sqrt[c*x^2]/b - (a*Sqrt[c*x^2]*Log[a + b*x])/(b^2*x)
```

Rubi [A] time = 0.0312646, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{\sqrt{cx^2}}{b} - \frac{a\sqrt{cx^2}\log(a+bx)}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(a + b*x),x]
```

```
[Out] Sqrt[c*x^2]/b - (a*Sqrt[c*x^2]*Log[a + b*x])/(b^2*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a\sqrt{cx^2}\log(a+bx)}{b^2x} + \frac{\sqrt{cx^2}\int \frac{1}{b}\, dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] -a*sqrt(c*x**2)*log(a + b*x)/(b**2*x) + sqrt(c*x**2)*Integral(1/b
, x)/x
```

Mathematica [A] time = 0.0109076, size = 28, normalized size = 0.74

$$\frac{cx(bx - a\log(a+bx))}{b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(a + b*x),x]
```

```
[Out] (c*x*(b*x - a*Log[a + b*x]))/(b^2*Sqrt[c*x^2])
```

Maple [A] time = 0.005, size = 29, normalized size = 0.8

$$-\frac{a\ln(bx+a)-bx}{b^2x}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(1/2)/(b*x+a),x)
```

```
[Out] -(c*x^2)^(1/2)*(a*ln(b*x+a)-b*x)/b^2/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204184, size = 36, normalized size = 0.95

$$\frac{\sqrt{cx^2}(bx-a\log(bx+a))}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x - a*log(b*x + a))/(b^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{cx^2}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/(b*x+a),x)
```

```
[Out] Integral(sqrt(c*x**2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.207965, size = 50, normalized size = 1.32

$$\sqrt{c}\left(\frac{x\operatorname{sign}(x)}{b} - \frac{a\ln(|bx+a|)\operatorname{sign}(x)}{b^2} + \frac{a\ln(|a|)\operatorname{sign}(x)}{b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/(b*x + a),x, algorithm="giac")
```

```
[Out] sqrt(c)*(x*sign(x)/b - a*ln(abs(b*x + a))*sign(x)/b^2 + a*ln(abs(
a))*sign(x)/b^2)
```

3.856 $\int \frac{\sqrt{cx^2}}{x(a+bx)}\,dx$

Optimal. Leaf size=22

$$\frac{\sqrt{cx^2}\log(a+bx)}{bx}$$

```
[Out] (Sqrt[c*x^2]*Log[a + b*x])/(b*x)
```

Rubi [A] time = 0.0114679, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{\sqrt{cx^2}\log(a+bx)}{bx}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x*(a + b*x)),x]

[Out] (Sqrt[c*x^2]*Log[a + b*x])/(b*x)
```

Rubi in Sympy [A] time = 11.8602, size = 17, normalized size = 0.77

$$\frac{\sqrt{cx^2}\log\left(a+bx\right)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x/(b*x+a),x)

[Out] sqrt(c*x**2)*log(a + b*x)/(b*x)
```

Mathematica [A] time = 0.00718074, size = 21, normalized size = 0.95

$$\frac{cx\log(a+bx)}{b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x*(a + b*x)),x]
```

```
[Out] (c*x*Log[a + b*x])/(b*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 21, normalized size = 1.

$$\frac{\ln \left(bx+a\right)}{bx}\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(1/2)/x/(b*x+a),x)

[Out] ln(b*x+a)*(c*x^2)^(1/2)/b/x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/((b*x + a)*x),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.201458, size = 27, normalized size = 1.23

$$\frac{\sqrt{cx^{2}}\log \left(bx+a\right)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/((b*x + a)*x),x, algorithm="fricas")

[Out] sqrt(c*x^2)*log(b*x + a)/(b*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^{2}}}{x\left(a+bx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x/(b*x+a),x)
```

```
[Out] Integral(sqrt(c*x**2)/(x*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.208499, size = 38, normalized size = 1.73

$$\sqrt{c}\left(\frac{\ln\left(|bx+a|\right)\operatorname{sign}\left(x\right)}{b}-\frac{\ln\left(|a|\right)\operatorname{sign}\left(x\right)}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x),x, algorithm="giac")
```

```
[Out] sqrt(c)*(ln(abs(b*x + a))*sign(x)/b - ln(abs(a))*sign(x)/b)
```

3.857 $\int \frac{\sqrt{cx^2}}{x^2(a+bx)}\,dx$

Optimal. Leaf size=42

$$\frac{\sqrt{cx^2}\log(x)}{ax}-\frac{\sqrt{cx^2}\log(a+bx)}{ax}$$

```
[Out] (Sqrt[c*x^2]*Log[x])/(a*x) - (Sqrt[c*x^2]*Log[a + b*x])/(a*x)
```

Rubi [A] time = 0.0219454, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{\sqrt{cx^2}\log(x)}{ax}-\frac{\sqrt{cx^2}\log(a+bx)}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x^2*(a + b*x)),x]

[Out] (Sqrt[c*x^2]*Log[x])/(a*x) - (Sqrt[c*x^2]*Log[a + b*x])/(a*x)
```

Rubi in Sympy [A] time = 14.0785, size = 32, normalized size = 0.76

$$\frac{\sqrt{cx^2}\log(x)}{ax}-\frac{\sqrt{cx^2}\log(a+bx)}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x**2/(b*x+a),x)

[Out] sqrt(c*x**2)*log(x)/(a*x) - sqrt(c*x**2)*log(a + b*x)/(a*x)
```

Mathematica [A] time = 0.0108631, size = 26, normalized size = 0.62

$$\frac{cx(\log(x)-\log(a+bx))}{a\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x^2*(a + b*x)),x]
```

```
[Out] (c*x*(Log[x] - Log[a + b*x]))/(a*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 26, normalized size = 0.6

$$\frac{\ln(x) - \ln(bx + a)}{ax}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(1/2)/x^2/(b*x+a),x)
```

```
[Out] (c*x^2)^(1/2)*(ln(x)-ln(b*x+a))/x/a
```

Maxima [A] time = 1.35115, size = 32, normalized size = 0.76

$$-\frac{\sqrt{c}\log(bx + a)}{a} + \frac{\sqrt{c}\log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/((b*x + a)*x^2),x, algorithm="maxima")
```

```
[Out] -sqrt(c)*log(b*x + a)/a + sqrt(c)*log(x)/a
```

Fricas [A] time = 0.211578, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{cx^2}\log\left(\frac{x}{bx+a}\right)}{ax}, -\frac{2\sqrt{-c}\arctan\left(\frac{2\,bcx^2+acx}{\sqrt{cx^2}a\sqrt{-c}}\right)}{a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/((b*x + a)*x^2),x, algorithm="fricas")
```

```
[Out] [sqrt(c*x^2)*log(x/(b*x + a))/(a*x), -2*sqrt(-c)*arctan((2*b*c*x^
2 + a*c*x)/(sqrt(c*x^2)*a*sqrt(-c)))/a]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{x^2(a + bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x**2/(b*x+a),x)
```

```
[Out] Integral(sqrt(c*x**2)/(x**2*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.858 $\int \frac{\sqrt{cx^2}}{x^3(a+bx)}\,dx$

Optimal. Leaf size=61

$$-\frac{b\sqrt{cx^2}\log(x)}{a^2x}+\frac{b\sqrt{cx^2}\log(a+bx)}{a^2x}-\frac{\sqrt{cx^2}}{ax^2}$$

```
[Out] -(Sqrt[c*x^2]/(a*x^2)) - (b*Sqrt[c*x^2]*Log[x])/(a^2*x) + (b*Sqrt
[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi [A] time = 0.0437014, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b\sqrt{cx^2}\log(x)}{a^2x}+\frac{b\sqrt{cx^2}\log(a+bx)}{a^2x}-\frac{\sqrt{cx^2}}{ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x^3*(a + b*x)),x]
```

```
[Out] -(Sqrt[c*x^2]/(a*x^2)) - (b*Sqrt[c*x^2]*Log[x])/(a^2*x) + (b*Sqrt
[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi in Sympy [A] time = 17.2833, size = 53, normalized size = 0.87

$$-\frac{\sqrt{cx^2}}{ax^2}-\frac{b\sqrt{cx^2}\log(x)}{a^2x}+\frac{b\sqrt{cx^2}\log(a+bx)}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x**3/(b*x+a),x)
```

```
[Out] -sqrt(c*x**2)/(a*x**2) - b*sqrt(c*x**2)*log(x)/(a**2*x) + b*sqrt(
c*x**2)*log(a + b*x)/(a**2*x)
```

Mathematica [A] time = 0.0172298, size = 32, normalized size = 0.52

$$-\frac{c(-bx\log(a+bx)+a+bx\log(x))}{a^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x^3*(a + b*x)),x]

[Out] -((c*(a + b*x*Log[x] - b*x*Log[a + b*x]))/(a^2*Sqrt[c*x^2]))
```

Maple [A] time = 0.007, size = 33, normalized size = 0.5

$$-\frac{b\ln(x)\,x-b\ln(bx+a)\,x+a}{a^2x^2}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(1/2)/x^3/(b*x+a),x)

[Out] -(c*x^2)^(1/2)*(b*ln(x)*x-b*ln(b*x+a)*x+a)/a^2/x^2
```

Maxima [A] time = 1.34268, size = 50, normalized size = 0.82

$$\frac{b\sqrt{c}\log(bx+a)}{a^2}-\frac{b\sqrt{c}\log(x)}{a^2}-\frac{\sqrt{c}}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^3),x, algorithm="maxima")

[Out] b*sqrt(c)*log(b*x + a)/a^2 - b*sqrt(c)*log(x)/a^2 - sqrt(c)/(a*x)
```

Fricas [A] time = 0.208432, size = 42, normalized size = 0.69

$$\frac{\sqrt{cx^2}\left(bx\log\left(\frac{bx+a}{x}\right)-a\right)}{a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^3),x, algorithm="fricas")

[Out] sqrt(c*x^2)*(b*x*log((b*x + a)/x) - a)/(a^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{x^3\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x**3/(b*x+a),x)
```

```
[Out] Integral(sqrt(c*x**2)/(x**3*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.859 $\int \frac{\sqrt{cx^2}}{x^4(a+bx)}\,dx$

Optimal. Leaf size=84

$$\frac{b^2\sqrt{cx^2}\log(x)}{a^3x}-\frac{b^2\sqrt{cx^2}\log(a+bx)}{a^3x}+\frac{b\sqrt{cx^2}}{a^2x^2}-\frac{\sqrt{cx^2}}{2ax^3}$$

```
[Out] -Sqrt[c*x^2]/(2*a*x^3) + (b*Sqrt[c*x^2])/(a^2*x^2) + (b^2*Sqrt[c*
x^2]*Log[x])/(a^3*x) - (b^2*Sqrt[c*x^2]*Log[a + b*x])/(a^3*x)
```

Rubi [A] time = 0.0566069, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{b^2\sqrt{cx^2}\log(x)}{a^3x}-\frac{b^2\sqrt{cx^2}\log(a+bx)}{a^3x}+\frac{b\sqrt{cx^2}}{a^2x^2}-\frac{\sqrt{cx^2}}{2ax^3}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x^4*(a + b*x)),x]
```

```
[Out] -Sqrt[c*x^2]/(2*a*x^3) + (b*Sqrt[c*x^2])/(a^2*x^2) + (b^2*Sqrt[c*
x^2]*Log[x])/(a^3*x) - (b^2*Sqrt[c*x^2]*Log[a + b*x])/(a^3*x)
```

Rubi in Sympy [A] time = 20.075, size = 75, normalized size = 0.89

$$-\frac{\sqrt{cx^2}}{2ax^3}+\frac{b\sqrt{cx^2}}{a^2x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{a^3x}-\frac{b^2\sqrt{cx^2}\log(a+bx)}{a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x**4/(b*x+a),x)
```

```
[Out] -sqrt(c*x**2)/(2*a*x**3) + b*sqrt(c*x**2)/(a**2*x**2) + b**2*sqrt
(c*x**2)*log(x)/(a**3*x) - b**2*sqrt(c*x**2)*log(a + b*x)/(a**3*x
)
```

Mathematica [A] time = 0.0230228, size = 53, normalized size = 0.63

$$\frac{\sqrt{cx^2}\left(-2b^2x^2\log(a+bx)-a(a-2bx)+2b^2x^2\log(x)\right)}{2a^3x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x^4*(a + b*x)),x]
```

```
[Out] (Sqrt[c*x^2]*(-(a*(a - 2*b*x)) + 2*b^2*x^2*Log[x] - 2*b^2*x^2*Log
[a + b*x]))/(2*a^3*x^3)
```

Maple [A] time = 0.008, size = 51, normalized size = 0.6

$$\frac{2\,b^2\ln(x)\,x^2 - 2\,b^2\ln(bx+a)\,x^2 + 2\,abx - a^2}{2\,a^3x^3}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(1/2)/x^4/(b*x+a),x)
```

```
[Out] 1/2*(c*x^2)^(1/2)*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*x-a^
2)/a^3/x^3
```

Maxima [A] time = 1.34775, size = 70, normalized size = 0.83

$$-\frac{b^2\sqrt{c}\log(bx+a)}{a^3} + \frac{b^2\sqrt{c}\log(x)}{a^3} + \frac{2\,b\sqrt{c}x - a\sqrt{c}}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^4),x, algorithm="maxima")
```

```
[Out] -b^2*sqrt(c)*log(b*x + a)/a^3 + b^2*sqrt(c)*log(x)/a^3 + 1/2*(2*b
*sqrt(c)*x - a*sqrt(c))/(a^2*x^2)
```

Fricas [A] time = 0.221737, size = 59, normalized size = 0.7

$$\frac{\left(2\,b^2x^2\log\left(\frac{x}{bx+a}\right) + 2\,abx - a^2\right)\sqrt{cx^2}}{2\,a^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^4),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*x^2*log(x/(b*x + a)) + 2*a*b*x - a^2)*sqrt(c*x^2)/(a^3
*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{x^4 (a + bx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x**4/(b*x+a),x)
```

```
[Out] Integral(sqrt(c*x**2)/(x**4*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)*x^4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.860 $\int \frac{x(cx^2)^{3/2}}{a+bx} dx$

Optimal. Leaf size=107

$$\frac{a^4c\sqrt{cx^2}\log(a+bx)}{b^5x}-\frac{a^3c\sqrt{cx^2}}{b^4}+\frac{a^2cx\sqrt{cx^2}}{2b^3}-\frac{acx^2\sqrt{cx^2}}{3b^2}+\frac{cx^3\sqrt{cx^2}}{4b}$$

```
[Out] -((a^3*c*Sqrt[c*x^2])/b^4) + (a^2*c*x*Sqrt[c*x^2])/(2*b^3) - (a*c
*x^2*Sqrt[c*x^2])/(3*b^2) + (c*x^3*Sqrt[c*x^2])/(4*b) + (a^4*c*Sq
rt[c*x^2]*Log[a + b*x])/(b^5*x)
```

Rubi [A] time = 0.0789539, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a^4c\sqrt{cx^2}\log(a+bx)}{b^5x}-\frac{a^3c\sqrt{cx^2}}{b^4}+\frac{a^2cx\sqrt{cx^2}}{2b^3}-\frac{acx^2\sqrt{cx^2}}{3b^2}+\frac{cx^3\sqrt{cx^2}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(c*x^2)^(3/2))/(a + b*x),x]
```

```
[Out] -((a^3*c*Sqrt[c*x^2])/b^4) + (a^2*c*x*Sqrt[c*x^2])/(2*b^3) - (a*c
*x^2*Sqrt[c*x^2])/(3*b^2) + (c*x^3*Sqrt[c*x^2])/(4*b) + (a^4*c*Sq
rt[c*x^2]*Log[a + b*x])/(b^5*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(cx^2\right)^{\frac{3}{2}}}{a+bx}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)/(a + b*x), x)
```

Mathematica [A] time = 0.0231876, size = 64, normalized size = 0.6

$$\frac{\left(cx^2\right)^{3/2}\left(12a^4\log(a+bx)+bx\left(-12a^3+6a^2bx-4ab^2x^2+3b^3x^3\right)\right)}{12b^5x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(c*x^2)^(3/2))/(a + b*x),x]
```

```
[Out] ((c*x^2)^(3/2)*(b*x*(-12*a^3 + 6*a^2*b*x - 4*a*b^2*x^2 + 3*b^3*x^
3) + 12*a^4*Log[a + b*x]))/(12*b^5*x^3)
```

Maple [A]   time = 0.008, size = 63, normalized size = 0.6

$$\frac{3x^4b^4 - 4x^3ab^3 + 6x^2a^2b^2 + 12a^4\ln(bx+a) - 12xa^3b}{12b^5x^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] 1/12*(c*x^2)^(3/2)*(3*x^4*b^4-4*x^3*a*b^3+6*x^2*a^2*b^2+12*a^4*ln
(b*x+a)-12*x*a^3*b)/b^5/x^3
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*x/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.206334, size = 90, normalized size = 0.84

$$\frac{\left(3b^4cx^4 - 4ab^3cx^3 + 6a^2b^2cx^2 - 12a^3bcx + 12a^4c\log(bx+a)\right)\sqrt{cx^2}}{12b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*x/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*c*x^4 - 4*a*b^3*c*x^3 + 6*a^2*b^2*c*x^2 - 12*a^3*b*c*
x + 12*a^4*c*log(b*x + a))*sqrt(c*x^2)/(b^5*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(cx^2\right)^{\frac{3}{2}}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.209479, size = 109, normalized size = 1.02

$$\frac{1}{12}\,c^{\frac{3}{2}}\left(\frac{12\,a^4\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^5}-\frac{12\,a^4\ln\left(|a|\right)\mathrm{sign}\left(x\right)}{b^5}+\frac{3\,b^3x^4\mathrm{sign}\left(x\right)-4\,ab^2x^3\mathrm{sign}\left(x\right)+6\,a^2bx^2\mathrm{sign}\left(x\right)-12\,a^3x\mathrm{sign}\left(\right.}{b^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*x/(b*x + a),x, algorithm="giac")
```

```
[Out] 1/12*c^(3/2)*(12*a^4*ln(abs(b*x + a))*sign(x)/b^5 - 12*a^4*ln(abs
(a))*sign(x)/b^5 + (3*b^3*x^4*sign(x) - 4*a*b^2*x^3*sign(x) + 6*a
^2*b*x^2*sign(x) - 12*a^3*x*sign(x))/b^4)
```

3.861 $\int \frac{(cx^2)^{3/2}}{a+bx}\,dx$

Optimal. Leaf size=84

$$-\frac{a^3c\sqrt{cx^2}\log(a+bx)}{b^4x}+\frac{a^2c\sqrt{cx^2}}{b^3}-\frac{acx\sqrt{cx^2}}{2b^2}+\frac{cx^2\sqrt{cx^2}}{3b}$$

```
[Out] (a^2*c*Sqrt[c*x^2])/b^3 - (a*c*x*Sqrt[c*x^2])/(2*b^2) + (c*x^2*Sq
rt[c*x^2])/(3*b) - (a^3*c*Sqrt[c*x^2]*Log[a + b*x])/(b^4*x)
```

Rubi [A] time = 0.0596295, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{a^3c\sqrt{cx^2}\log(a+bx)}{b^4x}+\frac{a^2c\sqrt{cx^2}}{b^3}-\frac{acx\sqrt{cx^2}}{2b^2}+\frac{cx^2\sqrt{cx^2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(a + b*x),x]
```

```
[Out] (a^2*c*Sqrt[c*x^2])/b^3 - (a*c*x*Sqrt[c*x^2])/(2*b^2) + (c*x^2*Sq
rt[c*x^2])/(3*b) - (a^3*c*Sqrt[c*x^2]*Log[a + b*x])/(b^4*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3c\sqrt{cx^2}\log(a+bx)}{b^4x}-\frac{ac\sqrt{cx^2}\int x\,dx}{b^2x}+\frac{cx^2\sqrt{cx^2}}{3b}+\frac{c\sqrt{cx^2}\int a^2\,dx}{b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] -a**3*c*sqrt(c*x**2)*log(a + b*x)/(b**4*x) - a*c*sqrt(c*x**2)*Int
egral(x, x)/(b**2*x) + c*x**2*sqrt(c*x**2)/(3*b) + c*sqrt(c*x**2)
*Integral(a**2, x)/(b**3*x)
```

Mathematica [A] time = 0.0217636, size = 53, normalized size = 0.63

$$\frac{(cx^2)^{3/2}\left(bx\left(6a^2-3abx+2b^2x^2\right)-6a^3\log(a+bx)\right)}{6b^4x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(a + b*x),x]
```

```
[Out] ((c*x^2)^(3/2)*(b*x*(6*a^2 - 3*a*b*x + 2*b^2*x^2) - 6*a^3*Log[a +
 b*x]))/(6*b^4*x^3)
```

Maple [A] time = 0.007, size = 52, normalized size = 0.6

$$-\frac{-2\,b^3x^3+3\,ab^2x^2+6\,a^3\ln(bx+a)-6\,a^2bx}{6\,x^3b^4}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] -1/6*(c*x^2)^(3/2)*(-2*b^3*x^3+3*a*b^2*x^2+6*a^3*ln(b*x+a)-6*a^2*
b*x)/x^3/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215739, size = 74, normalized size = 0.88

$$\frac{\left(2\,b^3cx^3-3\,ab^2cx^2+6\,a^2bcx-6\,a^3c\log(bx+a)\right)\sqrt{cx^2}}{6\,b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*c*x^3 - 3*a*b^2*c*x^2 + 6*a^2*b*c*x - 6*a^3*c*log(b*x
+ a))*sqrt(c*x^2)/(b^4*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.20642, size = 93, normalized size = 1.11

$$-\frac{1}{6}\,c^{\frac{3}{2}}\left(\frac{6\,a^3\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^4}-\frac{6\,a^3\ln\left(|a|\right)\mathrm{sign}\left(x\right)}{b^4}-\frac{2\,b^2x^3\mathrm{sign}\left(x\right)-3\,abx^2\mathrm{sign}\left(x\right)+6\,a^2x\mathrm{sign}\left(x\right)}{b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/(b*x + a),x, algorithm="giac")
```

```
[Out] -1/6*c^(3/2)*(6*a^3*ln(abs(b*x + a))*sign(x)/b^4 - 6*a^3*ln(abs(a
))*sign(x)/b^4 - (2*b^2*x^3*sign(x) - 3*a*b*x^2*sign(x) + 6*a^2*x
*sign(x))/b^3)
```

3.862 $\int \frac{(cx^2)^{3/2}}{x(a+bx)}\,dx$

Optimal. Leaf size=61

$$\frac{a^2c\sqrt{cx^2}\log(a+bx)}{b^3x}-\frac{ac\sqrt{cx^2}}{b^2}+\frac{cx\sqrt{cx^2}}{2b}$$

```
[Out] -((a*c*Sqrt[c*x^2])/b^2) + (c*x*Sqrt[c*x^2])/(2*b) + (a^2*c*Sqrt[
c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi [A] time = 0.0443128, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2c\sqrt{cx^2}\log(a+bx)}{b^3x}-\frac{ac\sqrt{cx^2}}{b^2}+\frac{cx\sqrt{cx^2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x*(a + b*x)),x]
```

```
[Out] -((a*c*Sqrt[c*x^2])/b^2) + (c*x*Sqrt[c*x^2])/(2*b) + (a^2*c*Sqrt[
c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2c\sqrt{cx^2}\log(a+bx)}{b^3x}+\frac{c\sqrt{cx^2}\int x\,dx}{bx}-\frac{c\sqrt{cx^2}\int a\,dx}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x/(b*x+a),x)
```

```
[Out] a**2*c*sqrt(c*x**2)*log(a + b*x)/(b**3*x) + c*sqrt(c*x**2)*Integr
al(x, x)/(b*x) - c*sqrt(c*x**2)*Integral(a, x)/(b**2*x)
```

Mathematica [A] time = 0.0141023, size = 42, normalized size = 0.69

$$\frac{c^2x\left(2a^2\log(a+bx)+bx(bx-2a)\right)}{2b^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x*(a + b*x)),x]
```

```
[Out] (c^2*x*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x]))/(2*b^3*Sqrt[c*x^2
])
```

Maple [A] time = 0.009, size = 40, normalized size = 0.7

$$\frac{b^2x^2 + 2\,a^2\ln(bx + a) - 2\,abx}{2\,b^3x^3}\,(cx^2)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x/(b*x+a),x)
```

```
[Out] 1/2*(c*x^2)^(3/2)*(b^2*x^2+2*a^2*ln(b*x+a)-2*a*b*x)/b^3/x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217807, size = 57, normalized size = 0.93

$$\frac{\left(b^2cx^2 - 2\,abcx + 2\,a^2c\log(bx + a)\right)\sqrt{cx^2}}{2\,b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*c*x^2 - 2*a*b*c*x + 2*a^2*c*log(b*x + a))*sqrt(c*x^2)/(b
^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.209592, size = 73, normalized size = 1.2

$$\frac{1}{2}\,c^{\frac{3}{2}}\left(\frac{2\,a^2\ln\left(|bx+a|\right)\,\mathrm{sign}\left(x\right)}{b^3}-\frac{2\,a^2\ln\left(|a|\right)\,\mathrm{sign}\left(x\right)}{b^3}+\frac{bx^2\mathrm{sign}\left(x\right)-2\,ax\mathrm{sign}\left(x\right)}{b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x),x, algorithm="giac")
```

```
[Out] 1/2*c^(3/2)*(2*a^2*ln(abs(b*x + a))*sign(x)/b^3 - 2*a^2*ln(abs(a)
)*sign(x)/b^3 + (b*x^2*sign(x) - 2*a*x*sign(x))/b^2)
```

3.863 $\int \frac{(cx^2)^{3/2}}{x^2(a+bx)}\,dx$

Optimal. Leaf size=40

$$\frac{c\sqrt{cx^2}}{b} - \frac{ac\sqrt{cx^2}\log(a+bx)}{b^2x}$$

```
[Out] (c*Sqrt[c*x^2])/b - (a*c*Sqrt[c*x^2]*Log[a + b*x])/(b^2*x)
```

Rubi [A] time = 0.0298071, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{c\sqrt{cx^2}}{b} - \frac{ac\sqrt{cx^2}\log(a+bx)}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^2*(a + b*x)),x]
```

```
[Out] (c*Sqrt[c*x^2])/b - (a*c*Sqrt[c*x^2]*Log[a + b*x])/(b^2*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{ac\sqrt{cx^2}\log(a+bx)}{b^2x} + \frac{c\sqrt{cx^2}\int \frac{1}{b}\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**2/(b*x+a),x)
```

```
[Out] -a*c*sqrt(c*x**2)*log(a + b*x)/(b**2*x) + c*sqrt(c*x**2)*Integral
(1/b, x)/x
```

Mathematica [A] time = 0.0103214, size = 30, normalized size = 0.75

$$\frac{c^2x(bx - a\log(a+bx))}{b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^2*(a + b*x)),x]

[Out] (c^2*x*(b*x - a*Log[a + b*x]))/(b^2*Sqrt[c*x^2])
```

Maple [A] time = 0.005, size = 29, normalized size = 0.7

$$-\frac{a\ln(bx+a)-bx}{b^2x^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^2/(b*x+a),x)

[Out] -(c*x^2)^(3/2)*(a*ln(b*x+a)-b*x)/b^2/x^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^2),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.234928, size = 39, normalized size = 0.98

$$\frac{(bcx-ac\log(bx+a))\sqrt{cx^2}}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^2),x, algorithm="fricas")

[Out] (b*c*x - a*c*log(b*x + a))*sqrt(c*x^2)/(b^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(cx^2\right)^{\frac{3}{2}}}{x^2(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**2/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**2*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.204419, size = 50, normalized size = 1.25

$$c^{\frac{3}{2}}\left(\frac{x\operatorname{sign}(x)}{b} - \frac{a\ln(|bx+a|)\operatorname{sign}(x)}{b^2} + \frac{a\ln(|a|)\operatorname{sign}(x)}{b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^2),x, algorithm="giac")
```

```
[Out] c^(3/2)*(x*sign(x)/b - a*ln(abs(b*x + a))*sign(x)/b^2 + a*ln(abs(
a))*sign(x)/b^2)
```

3.864 $\int \frac{(cx^2)^{3/2}}{x^3(a+bx)}\,dx$

Optimal. Leaf size=23

$$\frac{c\sqrt{cx^2}\log(a+bx)}{bx}$$

```
[Out] (c*Sqrt[c*x^2]*Log[a + b*x])/(b*x)
```

Rubi [A] time = 0.0114327, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{c\sqrt{cx^2}\log(a+bx)}{bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^3*(a + b*x)),x]

[Out] (c*Sqrt[c*x^2]*Log[a + b*x])/(b*x)
```

Rubi in Sympy [A] time = 13.0937, size = 19, normalized size = 0.83

$$\frac{c\sqrt{cx^2}\log(a+bx)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**3/(b*x+a),x)

[Out] c*sqrt(c*x**2)*log(a + b*x)/(b*x)
```

Mathematica [A] time = 0.00525604, size = 22, normalized size = 0.96

$$\frac{(cx^2)^{3/2}\log(a+bx)}{bx^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^3*(a + b*x)),x]
```

```
[Out] ((c*x^2)^(3/2)*Log[a + b*x])/(b*x^3)
```

Maple [A] time = 0.005, size = 21, normalized size = 0.9

$$\frac{\ln\left(bx+a\right)}{bx^{3}}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^3/(b*x+a),x)
```

```
[Out] (c*x^2)^(3/2)/x^3*ln(b*x+a)/b
```

Maxima [A] time = 1.35739, size = 18, normalized size = 0.78

$$\frac{c^{\frac{3}{2}}\log\left(bx+a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^3),x, algorithm="maxima")
```

```
[Out] c^(3/2)*log(b*x + a)/b
```

Fricas [A] time = 0.211369, size = 28, normalized size = 1.22

$$\frac{\sqrt{cx^{2}}c\log\left(bx+a\right)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^3),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*c*log(b*x + a)/(b*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(cx^{2}\right)^{\frac{3}{2}}}{x^{3}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**3/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**3*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.206746, size = 38, normalized size = 1.65

$$c^{\frac{3}{2}}\left(\frac{\ln\left(|bx+a|\right)\operatorname{sign}\left(x\right)}{b}-\frac{\ln\left(|a|\right)\operatorname{sign}\left(x\right)}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^3),x, algorithm="giac")
```

```
[Out] c^(3/2)*(ln(abs(b*x + a))*sign(x)/b - ln(abs(a))*sign(x)/b)
```

3.865 $\int \frac{(cx^2)^{3/2}}{x^4(a+bx)}\,dx$

Optimal. Leaf size=44

$$\frac{c\sqrt{cx^2}\log(x)}{ax}-\frac{c\sqrt{cx^2}\log(a+bx)}{ax}$$

```
[Out] (c*Sqrt[c*x^2]*Log[x])/(a*x) - (c*Sqrt[c*x^2]*Log[a + b*x])/(a*x)
```

Rubi [A] time = 0.0226804, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{c\sqrt{cx^2}\log(x)}{ax}-\frac{c\sqrt{cx^2}\log(a+bx)}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^4*(a + b*x)),x]
```

```
[Out] (c*Sqrt[c*x^2]*Log[x])/(a*x) - (c*Sqrt[c*x^2]*Log[a + b*x])/(a*x)
```

Rubi in Sympy [A] time = 14.4984, size = 36, normalized size = 0.82

$$\frac{c\sqrt{cx^2}\log{(x)}}{ax}-\frac{c\sqrt{cx^2}\log{(a+bx)}}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**4/(b*x+a),x)
```

```
[Out] c*sqrt(c*x**2)*log(x)/(a*x) - c*sqrt(c*x**2)*log(a + b*x)/(a*x)
```

Mathematica [A] time = 0.0124848, size = 27, normalized size = 0.61

$$\frac{(cx^2)^{3/2}(\log(x)-\log(a+bx))}{ax^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^4*(a + b*x)),x]
```

```
[Out] ((c*x^2)^(3/2)*(Log[x] - Log[a + b*x]))/(a*x^3)
```

Maple [A] time = 0.008, size = 26, normalized size = 0.6

$$\frac{\ln(x) - \ln(bx + a)}{a x^3} \left(c x^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(3/2)/x^4/(b*x+a),x)
```

```
[Out] (c*x^2)^(3/2)*(ln(x)-ln(b*x+a))/a/x^3
```

Maxima [A] time = 1.36218, size = 32, normalized size = 0.73

$$-\frac{c^{\frac{3}{2}} \log(bx + a)}{a} + \frac{c^{\frac{3}{2}} \log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)/((b*x + a)*x^4),x, algorithm="maxima")
```

```
[Out] -c^(3/2)*log(b*x + a)/a + c^(3/2)*log(x)/a
```

Fricas [A] time = 0.21877, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{c x^2} c \log\left(\frac{x}{bx+a}\right)}{a x}, -\frac{2 \sqrt{-c} c \arctan\left(\frac{2 b c x^2 + a c x}{\sqrt{c x^2} a \sqrt{-c}}\right)}{a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)/((b*x + a)*x^4),x, algorithm="fricas")
```

```
[Out] [sqrt(c*x^2)*c*log(x/(b*x + a))/(a*x), -2*sqrt(-c)*c*arctan((2*b*
c*x^2 + a*c*x)/(sqrt(c*x^2)*a*sqrt(-c)))/a]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(c x^2\right)^{\frac{3}{2}}}{x^4 (a + bx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**4/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**4*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.866 $\int \frac{(cx^2)^{3/2}}{x^5(a+bx)} dx$

Optimal. Leaf size=64

$$-\frac{bc\sqrt{cx^2}\log(x)}{a^2x}+\frac{bc\sqrt{cx^2}\log(a+bx)}{a^2x}-\frac{c\sqrt{cx^2}}{ax^2}$$

```
[Out] -((c*Sqrt[c*x^2])/(a*x^2)) - (b*c*Sqrt[c*x^2]*Log[x])/(a^2*x) + (
b*c*Sqrt[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi [A] time = 0.0439269, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{bc\sqrt{cx^2}\log(x)}{a^2x}+\frac{bc\sqrt{cx^2}\log(a+bx)}{a^2x}-\frac{c\sqrt{cx^2}}{ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^5*(a + b*x)),x]
```

```
[Out] -((c*Sqrt[c*x^2])/(a*x^2)) - (b*c*Sqrt[c*x^2]*Log[x])/(a^2*x) + (
b*c*Sqrt[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi in Sympy [A] time = 17.3579, size = 58, normalized size = 0.91

$$-\frac{c\sqrt{cx^2}}{ax^2}-\frac{bc\sqrt{cx^2}\log(x)}{a^2x}+\frac{bc\sqrt{cx^2}\log(a+bx)}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**5/(b*x+a),x)
```

```
[Out] -c*sqrt(c*x**2)/(a*x**2) - b*c*sqrt(c*x**2)*log(x)/(a**2*x) + b*c
*sqrt(c*x**2)*log(a + b*x)/(a**2*x)
```

Mathematica [A] time = 0.0171175, size = 34, normalized size = 0.53

$$-\frac{c^2(-bx\log(a+bx)+a+bx\log(x))}{a^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^5*(a + b*x)),x]

[Out] -((c^2*(a + b*x*Log[x] - b*x*Log[a + b*x]))/(a^2*Sqrt[c*x^2]))
```

Maple [A] time = 0.007, size = 33, normalized size = 0.5

$$-\frac{b\ln(x)\,x-b\ln(bx+a)\,x+a}{a^2x^4}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^5/(b*x+a),x)

[Out] -(c*x^2)^(3/2)*(b*ln(x)*x-b*ln(b*x+a)*x+a)/a^2/x^4
```

Maxima [A] time = 1.35481, size = 50, normalized size = 0.78

$$\frac{bc^{\frac{3}{2}}\log(bx+a)}{a^2}-\frac{bc^{\frac{3}{2}}\log(x)}{a^2}-\frac{c^{\frac{3}{2}}}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^5),x, algorithm="maxima")

[Out] b*c^(3/2)*log(b*x + a)/a^2 - b*c^(3/2)*log(x)/a^2 - c^(3/2)/(a*x)
```

Fricas [A] time = 0.233999, size = 45, normalized size = 0.7

$$\frac{\left(bcx\log\left(\frac{bx+a}{x}\right)-ac\right)\sqrt{cx^2}}{a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^5),x, algorithm="fricas")

[Out] (b*c*x*log((b*x + a)/x) - a*c)*sqrt(c*x^2)/(a^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{3}{2}}}{x^5\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**5/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**5*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^5),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.867 $\int \frac{(cx^2)^{3/2}}{x^6(a+bx)} dx$

Optimal. Leaf size=88

$$\frac{b^2c\sqrt{cx^2}\log(x)}{a^3x} - \frac{b^2c\sqrt{cx^2}\log(a+bx)}{a^3x} + \frac{bc\sqrt{cx^2}}{a^2x^2} - \frac{c\sqrt{cx^2}}{2ax^3}$$

```
[Out] -(c*Sqrt[c*x^2])/(2*a*x^3) + (b*c*Sqrt[c*x^2])/(a^2*x^2) + (b^2*c
*Sqrt[c*x^2]*Log[x])/(a^3*x) - (b^2*c*Sqrt[c*x^2]*Log[a + b*x])/(
a^3*x)
```

Rubi [A] time = 0.0557167, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{b^2c\sqrt{cx^2}\log(x)}{a^3x} - \frac{b^2c\sqrt{cx^2}\log(a+bx)}{a^3x} + \frac{bc\sqrt{cx^2}}{a^2x^2} - \frac{c\sqrt{cx^2}}{2ax^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^6*(a + b*x)),x]
```

```
[Out] -(c*Sqrt[c*x^2])/(2*a*x^3) + (b*c*Sqrt[c*x^2])/(a^2*x^2) + (b^2*c
*Sqrt[c*x^2]*Log[x])/(a^3*x) - (b^2*c*Sqrt[c*x^2]*Log[a + b*x])/(
a^3*x)
```

Rubi in Sympy [A] time = 20.0423, size = 82, normalized size = 0.93

$$-\frac{c\sqrt{cx^2}}{2ax^3} + \frac{bc\sqrt{cx^2}}{a^2x^2} + \frac{b^2c\sqrt{cx^2}\log(x)}{a^3x} - \frac{b^2c\sqrt{cx^2}\log(a+bx)}{a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**6/(b*x+a),x)
```

```
[Out] -c*sqrt(c*x**2)/(2*a*x**3) + b*c*sqrt(c*x**2)/(a**2*x**2) + b**2*
c*sqrt(c*x**2)*log(x)/(a**3*x) - b**2*c*sqrt(c*x**2)*log(a + b*x)
/(a**3*x)
```

Mathematica [A] time = 0.0208136, size = 53, normalized size = 0.6

$$\frac{(cx^2)^{3/2}\left(-2b^2x^2\log(a+bx) - a(a-2bx) + 2b^2x^2\log(x)\right)}{2a^3x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^6*(a + b*x)),x]
```

```
[Out] ((c*x^2)^(3/2)*(-(a*(a - 2*b*x)) + 2*b^2*x^2*Log[x] - 2*b^2*x^2*L
og[a + b*x]))/(2*a^3*x^5)
```

Maple [A] time = 0.007, size = 51, normalized size = 0.6

$$\frac{2\,b^{2}\ln\left(x\right)x^{2}-2\,b^{2}\ln\left(bx+a\right)x^{2}+2\,abx-a^{2}}{2\,a^{3}x^{5}}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^6/(b*x+a),x)
```

```
[Out] 1/2*(c*x^2)^(3/2)*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*x-a^
2)/x^5/a^3
```

Maxima [A] time = 1.34983, size = 70, normalized size = 0.8

$$-\frac{b^{2}c^{\frac{3}{2}}\log\left(bx+a\right)}{a^{3}}+\frac{b^{2}c^{\frac{3}{2}}\log\left(x\right)}{a^{3}}+\frac{2\,bc^{\frac{3}{2}}x-ac^{\frac{3}{2}}}{2\,a^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^6),x, algorithm="maxima")
```

```
[Out] -b^2*c^(3/2)*log(b*x + a)/a^3 + b^2*c^(3/2)*log(x)/a^3 + 1/2*(2*b
*c^(3/2)*x - a*c^(3/2))/(a^2*x^2)
```

Fricas [A] time = 0.223243, size = 63, normalized size = 0.72

$$\frac{\left(2\,b^{2}cx^{2}\log\left(\frac{x}{bx+a}\right)+2\,abcx-a^{2}c\right)\sqrt{cx^{2}}}{2\,a^{3}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^6),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*c*x^2*log(x/(b*x + a)) + 2*a*b*c*x - a^2*c)*sqrt(c*x^2
)/(a^3*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x^6 (a + bx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**6/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**6*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^6),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.868 $\int \frac{(cx^2)^{3/2}}{x^7(a+bx)}\,dx$

Optimal. Leaf size=112

$$-\frac{b^3c\sqrt{cx^2}\log(x)}{a^4x}+\frac{b^3c\sqrt{cx^2}\log(a+bx)}{a^4x}-\frac{b^2c\sqrt{cx^2}}{a^3x^2}+\frac{bc\sqrt{cx^2}}{2a^2x^3}-\frac{c\sqrt{cx^2}}{3ax^4}$$

```
[Out] -(c*Sqrt[c*x^2])/(3*a*x^4) + (b*c*Sqrt[c*x^2])/(2*a^2*x^3) - (b^2
*c*Sqrt[c*x^2])/(a^3*x^2) - (b^3*c*Sqrt[c*x^2]*Log[x])/(a^4*x) +
(b^3*c*Sqrt[c*x^2]*Log[a + b*x])/(a^4*x)
```

Rubi [A] time = 0.0745695, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^3c\sqrt{cx^2}\log(x)}{a^4x}+\frac{b^3c\sqrt{cx^2}\log(a+bx)}{a^4x}-\frac{b^2c\sqrt{cx^2}}{a^3x^2}+\frac{bc\sqrt{cx^2}}{2a^2x^3}-\frac{c\sqrt{cx^2}}{3ax^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^7*(a + b*x)),x]
```

```
[Out] -(c*Sqrt[c*x^2])/(3*a*x^4) + (b*c*Sqrt[c*x^2])/(2*a^2*x^3) - (b^2
*c*Sqrt[c*x^2])/(a^3*x^2) - (b^3*c*Sqrt[c*x^2]*Log[x])/(a^4*x) +
(b^3*c*Sqrt[c*x^2]*Log[a + b*x])/(a^4*x)
```

Rubi in Sympy [A] time = 22.8768, size = 104, normalized size = 0.93

$$-\frac{c\sqrt{cx^2}}{3ax^4}+\frac{bc\sqrt{cx^2}}{2a^2x^3}-\frac{b^2c\sqrt{cx^2}}{a^3x^2}-\frac{b^3c\sqrt{cx^2}\log(x)}{a^4x}+\frac{b^3c\sqrt{cx^2}\log(a+bx)}{a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**7/(b*x+a),x)
```

```
[Out] -c*sqrt(c*x**2)/(3*a*x**4) + b*c*sqrt(c*x**2)/(2*a**2*x**3) - b**
2*c*sqrt(c*x**2)/(a**3*x**2) - b**3*c*sqrt(c*x**2)*log(x)/(a**4*x
) + b**3*c*sqrt(c*x**2)*log(a + b*x)/(a**4*x)
```

Mathematica [A] time = 0.0400254, size = 65, normalized size = 0.58

$$-\frac{(cx^2)^{3/2}\left(a\left(2a^2-3abx+6b^2x^2\right)-6b^3x^3\log(a+bx)+6b^3x^3\log(x)\right)}{6a^4x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^7*(a + b*x)),x]
```

```
[Out] -((c*x^2)^(3/2)*(a*(2*a^2 - 3*a*b*x + 6*b^2*x^2) + 6*b^3*x^3*Log[
x] - 6*b^3*x^3*Log[a + b*x]))/(6*a^4*x^6)
```

Maple [A] time = 0.007, size = 62, normalized size = 0.6

$$-\frac{6 b^3 \ln(x) x^3 - 6 b^3 \ln(bx+a) x^3 + 6 ab^2x^2 - 3 a^2bx + 2 a^3}{6 x^6a^4} \left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^7/(b*x+a),x)
```

```
[Out] -1/6*(c*x^2)^(3/2)*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*a*b^2*x
^2-3*a^2*b*x+2*a^3)/x^6/a^4
```

Maxima [A] time = 1.34792, size = 89, normalized size = 0.79

$$\frac{b^3c^{\frac{3}{2}} \log(bx+a)}{a^4} - \frac{b^3c^{\frac{3}{2}} \log(x)}{a^4} - \frac{6 b^2c^{\frac{3}{2}}x^2 - 3 abc^{\frac{3}{2}}x + 2 a^2c^{\frac{3}{2}}}{6 a^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^7),x, algorithm="maxima")
```

```
[Out] b^3*c^(3/2)*log(b*x + a)/a^4 - b^3*c^(3/2)*log(x)/a^4 - 1/6*(6*b^
2*c^(3/2)*x^2 - 3*a*b*c^(3/2)*x + 2*a^2*c^(3/2))/(a^3*x^3)
```

Fricas [A] time = 0.222494, size = 80, normalized size = 0.71

$$\frac{\left(6 b^3cx^3 \log\left(\frac{bx+a}{x}\right) - 6 ab^2cx^2 + 3 a^2bcx - 2 a^3c\right)\sqrt{cx^2}}{6 a^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^7),x, algorithm="fricas")
```

```
[Out] 1/6*(6*b^3*c*x^3*log((b*x + a)/x) - 6*a*b^2*c*x^2 + 3*a^2*b*c*x -
 2*a^3*c)*sqrt(c*x^2)/(a^4*x^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x^7(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**7/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**7*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)*x^7),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.869 $\int \frac{(cx^2)^{5/2}}{a+bx} dx$

Optimal. Leaf size=142

$$-\frac{a^5c^2\sqrt{cx^2}\log(a+bx)}{b^6x}+\frac{a^4c^2\sqrt{cx^2}}{b^5}-\frac{a^3c^2x\sqrt{cx^2}}{2b^4}+\frac{a^2c^2x^2\sqrt{cx^2}}{3b^3}-\frac{ac^2x^3\sqrt{cx^2}}{4b^2}+\frac{c^2x^4\sqrt{cx^2}}{5b}$$

```
[Out] (a^4*c^2*Sqrt[c*x^2])/b^5 - (a^3*c^2*x*Sqrt[c*x^2])/(2*b^4) + (a^
2*c^2*x^2*Sqrt[c*x^2])/(3*b^3) - (a*c^2*x^3*Sqrt[c*x^2])/(4*b^2)
+ (c^2*x^4*Sqrt[c*x^2])/(5*b) - (a^5*c^2*Sqrt[c*x^2]*Log[a + b*x]
)/(b^6*x)
```

Rubi [A] time = 0.10857, antiderivative size = 142, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$-\frac{a^5c^2\sqrt{cx^2}\log(a+bx)}{b^6x}+\frac{a^4c^2\sqrt{cx^2}}{b^5}-\frac{a^3c^2x\sqrt{cx^2}}{2b^4}+\frac{a^2c^2x^2\sqrt{cx^2}}{3b^3}-\frac{ac^2x^3\sqrt{cx^2}}{4b^2}+\frac{c^2x^4\sqrt{cx^2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(a + b*x),x]
```

```
[Out] (a^4*c^2*Sqrt[c*x^2])/b^5 - (a^3*c^2*x*Sqrt[c*x^2])/(2*b^4) + (a^
2*c^2*x^2*Sqrt[c*x^2])/(3*b^3) - (a*c^2*x^3*Sqrt[c*x^2])/(4*b^2)
+ (c^2*x^4*Sqrt[c*x^2])/(5*b) - (a^5*c^2*Sqrt[c*x^2]*Log[a + b*x]
)/(b^6*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^5c^2\sqrt{cx^2}\log(a+bx)}{b^6x}-\frac{a^3c^2\sqrt{cx^2}\int x\,dx}{b^4x}+\frac{a^2c^2x^2\sqrt{cx^2}}{3b^3}-\frac{ac^2x^3\sqrt{cx^2}}{4b^2}+\frac{c^2x^4\sqrt{cx^2}}{5b}+\frac{c^2\sqrt{cx^2}\int a^4\,dx}{b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/(b*x+a),x)
```

```
[Out] -a**5*c**2*sqrt(c*x**2)*log(a + b*x)/(b**6*x) - a**3*c**2*sqrt(c*
x**2)*Integral(x, x)/(b**4*x) + a**2*c**2*x**2*sqrt(c*x**2)/(3*b*
*3) - a*c**2*x**3*sqrt(c*x**2)/(4*b**2) + c**2*x**4*sqrt(c*x**2)/
(5*b) + c**2*sqrt(c*x**2)*Integral(a**4, x)/(b**5*x)
```

Mathematica [A] time = 0.0361824, size = 76, normalized size = 0.54

$$\frac{c^3x\left(bx\left(60a^4-30a^3bx+20a^2b^2x^2-15ab^3x^3+12b^4x^4\right)-60a^5\log(a+bx)\right)}{60b^6\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(a + b*x),x]
```

```
[Out] (c^3*x*(b*x*(60*a^4 - 30*a^3*b*x + 20*a^2*b^2*x^2 - 15*a*b^3*x^3
+ 12*b^4*x^4) - 60*a^5*Log[a + b*x]))/(60*b^6*Sqrt[c*x^2])
```

Maple [A] time = 0.008, size = 74, normalized size = 0.5

$$-\frac{-12\,b^5x^5+15\,ab^4x^4-20\,a^2b^3x^3+30\,a^3b^2x^2+60\,a^5\ln(bx+a)-60\,a^4bx}{60\,x^5b^6}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/(b*x+a),x)
```

```
[Out] -1/60*(c*x^2)^(5/2)*(-12*b^5*x^5+15*a*b^4*x^4-20*a^2*b^3*x^3+30*a
^3*b^2*x^2+60*a^5*ln(b*x+a)-60*a^4*b*x)/x^5/b^6
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213358, size = 123, normalized size = 0.87

$$\frac{\left(12\,b^5c^2x^5-15\,ab^4c^2x^4+20\,a^2b^3c^2x^3-30\,a^3b^2c^2x^2+60\,a^4bc^2x-60\,a^5c^2\log(bx+a)\right)\sqrt{cx^2}}{60\,b^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/60*(12*b^5*c^2*x^5 - 15*a*b^4*c^2*x^4 + 20*a^2*b^3*c^2*x^3 - 30
*a^3*b^2*c^2*x^2 + 60*a^4*b*c^2*x - 60*a^5*c^2*log(b*x + a))*sqrt
(c*x^2)/(b^6*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(a + b*x), x)
```

GIAC/XCAS [A] time = 0.205415, size = 157, normalized size = 1.11

$$-\frac{1}{60}\left(\frac{60\,a^5c^2\ln\left(|bx+a|\right)\operatorname{sign}(x)}{b^6}-\frac{60\,a^5c^2\ln\left(|a|\right)\operatorname{sign}(x)}{b^6}-\frac{12\,b^4c^2x^5\operatorname{sign}(x)-15\,ab^3c^2x^4\operatorname{sign}(x)+20\,a^2b^2c^2x^3\operatorname{sign}(x)}{b^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/(b*x + a),x, algorithm="giac")
```

```
[Out] -1/60*(60*a^5*c^2*ln(abs(b*x + a))*sign(x)/b^6 - 60*a^5*c^2*ln(ab
s(a))*sign(x)/b^6 - (12*b^4*c^2*x^5*sign(x) - 15*a*b^3*c^2*x^4*si
gn(x) + 20*a^2*b^2*c^2*x^3*sign(x) - 30*a^3*b*c^2*x^2*sign(x) + 6
0*a^4*c^2*x*sign(x))/b^5)*sqrt(c)
```

3.870 $\int \frac{(cx^2)^{5/2}}{x(a+bx)}\,dx$

Optimal. Leaf size=117

$$\frac{a^4c^2\sqrt{cx^2}\log(a+bx)}{b^5x}-\frac{a^3c^2\sqrt{cx^2}}{b^4}+\frac{a^2c^2x\sqrt{cx^2}}{2b^3}-\frac{ac^2x^2\sqrt{cx^2}}{3b^2}+\frac{c^2x^3\sqrt{cx^2}}{4b}$$

```
[Out] -((a^3*c^2*Sqrt[c*x^2])/b^4) + (a^2*c^2*x*Sqrt[c*x^2])/(2*b^3) -
(a*c^2*x^2*Sqrt[c*x^2])/(3*b^2) + (c^2*x^3*Sqrt[c*x^2])/(4*b) + (
a^4*c^2*Sqrt[c*x^2]*Log[a + b*x])/(b^5*x)
```

Rubi [A] time = 0.0817061, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^4c^2\sqrt{cx^2}\log(a+bx)}{b^5x}-\frac{a^3c^2\sqrt{cx^2}}{b^4}+\frac{a^2c^2x\sqrt{cx^2}}{2b^3}-\frac{ac^2x^2\sqrt{cx^2}}{3b^2}+\frac{c^2x^3\sqrt{cx^2}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x*(a + b*x)),x]
```

```
[Out] -((a^3*c^2*Sqrt[c*x^2])/b^4) + (a^2*c^2*x*Sqrt[c*x^2])/(2*b^3) -
(a*c^2*x^2*Sqrt[c*x^2])/(3*b^2) + (c^2*x^3*Sqrt[c*x^2])/(4*b) + (
a^4*c^2*Sqrt[c*x^2]*Log[a + b*x])/(b^5*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^4c^2\sqrt{cx^2}\log(a+bx)}{b^5x}+\frac{a^2c^2\sqrt{cx^2}\int x\,dx}{b^3x}-\frac{ac^2x^2\sqrt{cx^2}}{3b^2}+\frac{c^2x^3\sqrt{cx^2}}{4b}-\frac{c^2\sqrt{cx^2}\int a^3\,dx}{b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x/(b*x+a),x)
```

```
[Out] a**4*c**2*sqrt(c*x**2)*log(a + b*x)/(b**5*x) + a**2*c**2*sqrt(c*x
**2)*Integral(x, x)/(b**3*x) - a*c**2*x**2*sqrt(c*x**2)/(3*b**2)
+ c**2*x**3*sqrt(c*x**2)/(4*b) - c**2*sqrt(c*x**2)*Integral(a**3,
 x)/(b**4*x)
```

Mathematica [A] time = 0.0232445, size = 65, normalized size = 0.56

$$\frac{c\left(cx^2\right)^{3/2}\left(12a^4\log(a+bx)+bx\left(-12a^3+6a^2bx-4ab^2x^2+3b^3x^3\right)\right)}{12b^5x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x*(a + b*x)),x]
```

```
[Out] (c*(c*x^2)^(3/2)*(b*x*(-12*a^3 + 6*a^2*b*x - 4*a*b^2*x^2 + 3*b^3*
x^3) + 12*a^4*Log[a + b*x]))/(12*b^5*x^3)
```

Maple [A] time = 0.009, size = 63, normalized size = 0.5

$$\frac{3x^4b^4 - 4x^3ab^3 + 6x^2a^2b^2 + 12a^4\ln(bx+a) - 12xa^3b}{12b^5x^5}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/x/(b*x+a),x)
```

```
[Out] 1/12*(c*x^2)^(5/2)*(3*x^4*b^4-4*x^3*a*b^3+6*x^2*a^2*b^2+12*a^4*ln
(b*x+a)-12*x*a^3*b)/b^5/x^5
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22976, size = 104, normalized size = 0.89

$$\frac{\left(3b^4c^2x^4 - 4ab^3c^2x^3 + 6a^2b^2c^2x^2 - 12a^3bc^2x + 12a^4c^2\log(bx+a)\right)\sqrt{cx^2}}{12b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*c^2*x^4 - 4*a*b^3*c^2*x^3 + 6*a^2*b^2*c^2*x^2 - 12*a^
3*b*c^2*x + 12*a^4*c^2*log(b*x + a))*sqrt(c*x^2)/(b^5*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}}}{x\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.212035, size = 134, normalized size = 1.15

$$\frac{1}{12}\left(\frac{12\,a^4c^2\ln\left(|bx+a|\right)\operatorname{sign}(x)}{b^5}-\frac{12\,a^4c^2\ln\left(|a|\right)\operatorname{sign}(x)}{b^5}+\frac{3\,b^3c^2x^4\operatorname{sign}(x)-4\,ab^2c^2x^3\operatorname{sign}(x)+6\,a^2bc^2x^2\operatorname{sign}(x)-12\,a}{b^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x),x, algorithm="giac")
```

```
[Out] 1/12*(12*a^4*c^2*ln(abs(b*x + a))*sign(x)/b^5 - 12*a^4*c^2*ln(abs
(a))*sign(x)/b^5 + (3*b^3*c^2*x^4*sign(x) - 4*a*b^2*c^2*x^3*sign(
x) + 6*a^2*b*c^2*x^2*sign(x) - 12*a^3*c^2*x*sign(x))/b^4)*sqrt(c)
```

3.871 $\int \frac{(cx^2)^{5/2}}{x^2(a+bx)} dx$

Optimal. Leaf size=92

$$-\frac{a^3c^2\sqrt{cx^2}\log(a+bx)}{b^4x}+\frac{a^2c^2\sqrt{cx^2}}{b^3}-\frac{ac^2x\sqrt{cx^2}}{2b^2}+\frac{c^2x^2\sqrt{cx^2}}{3b}$$

```
[Out] (a^2*c^2*Sqrt[c*x^2])/b^3 - (a*c^2*x*Sqrt[c*x^2])/(2*b^2) + (c^2*
x^2*Sqrt[c*x^2])/(3*b) - (a^3*c^2*Sqrt[c*x^2]*Log[a + b*x])/(b^4*
x)
```

Rubi [A] time = 0.0651437, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{a^3c^2\sqrt{cx^2}\log(a+bx)}{b^4x}+\frac{a^2c^2\sqrt{cx^2}}{b^3}-\frac{ac^2x\sqrt{cx^2}}{2b^2}+\frac{c^2x^2\sqrt{cx^2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x^2*(a + b*x)),x]
```

```
[Out] (a^2*c^2*Sqrt[c*x^2])/b^3 - (a*c^2*x*Sqrt[c*x^2])/(2*b^2) + (c^2*
x^2*Sqrt[c*x^2])/(3*b) - (a^3*c^2*Sqrt[c*x^2]*Log[a + b*x])/(b^4*
x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3c^2\sqrt{cx^2}\log{(a+bx)}}{b^4x}-\frac{ac^2\sqrt{cx^2}\int x\,dx}{b^2x}+\frac{c^2x^2\sqrt{cx^2}}{3b}+\frac{c^2\sqrt{cx^2}\int a^2\,dx}{b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x**2/(b*x+a),x)
```

```
[Out] -a**3*c**2*sqrt(c*x**2)*log(a + b*x)/(b**4*x) - a*c**2*sqrt(c*x**
2)*Integral(x, x)/(b**2*x) + c**2*x**2*sqrt(c*x**2)/(3*b) + c**2*
sqrt(c*x**2)*Integral(a**2, x)/(b**3*x)
```

Mathematica [A] time = 0.00850899, size = 54, normalized size = 0.59

$$\frac{c\left(cx^2\right)^{3/2}\left(bx\left(6a^2-3abx+2b^2x^2\right)-6a^3\log(a+bx)\right)}{6b^4x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x^2*(a + b*x)),x]
```

```
[Out] (c*(c*x^2)^(3/2)*(b*x*(6*a^2 - 3*a*b*x + 2*b^2*x^2) - 6*a^3*Log[a
 + b*x]))/(6*b^4*x^3)
```

Maple [A] time = 0.009, size = 52, normalized size = 0.6

$$-\frac{-2\,b^3x^3+3\,ab^2x^2+6\,a^3\ln\left(bx+a\right)-6\,a^2bx}{6\,x^5b^4}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/x^2/(b*x+a),x)
```

```
[Out] -1/6*(c*x^2)^(5/2)*(-2*b^3*x^3+3*a*b^2*x^2+6*a^3*ln(b*x+a)-6*a^2*
b*x)/x^5/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213613, size = 85, normalized size = 0.92

$$\frac{\left(2\,b^3c^2x^3-3\,ab^2c^2x^2+6\,a^2bc^2x-6\,a^3c^2\log\left(bx+a\right)\right)\sqrt{cx^2}}{6\,b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*c^2*x^3 - 3*a*b^2*c^2*x^2 + 6*a^2*b*c^2*x - 6*a^3*c^2*
log(b*x + a))*sqrt(c*x^2)/(b^4*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}}}{x^2 (a + bx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x**2/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x**2*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.232947, size = 113, normalized size = 1.23

$$-\frac{1}{6} \left(\frac{6\, a^3 c^2 \ln\left(|bx + a|\right) \operatorname{sign}\left(x\right)}{b^4} - \frac{6\, a^3 c^2 \ln\left(|a|\right) \operatorname{sign}\left(x\right)}{b^4} - \frac{2\, b^2 c^2 x^3 \operatorname{sign}\left(x\right) - 3\, abc^2 x^2 \operatorname{sign}\left(x\right) + 6\, a^2 c^2 x \operatorname{sign}\left(x\right)}{b^3} \right) \sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^2),x, algorithm="giac")
```

```
[Out] -1/6*(6*a^3*c^2*ln(abs(b*x + a))*sign(x)/b^4 - 6*a^3*c^2*ln(abs(a
))*sign(x)/b^4 - (2*b^2*c^2*x^3*sign(x) - 3*a*b*c^2*x^2*sign(x) +
 6*a^2*c^2*x*sign(x))/b^3)*sqrt(c)
```

3.872 $\int \frac{(cx^2)^{5/2}}{x^3(a+bx)}\,dx$

Optimal. Leaf size=67

$$\frac{a^2c^2\sqrt{cx^2}\log(a+bx)}{b^3x}-\frac{ac^2\sqrt{cx^2}}{b^2}+\frac{c^2x\sqrt{cx^2}}{2b}$$

```
[Out] -((a*c^2*Sqrt[c*x^2])/b^2) + (c^2*x*Sqrt[c*x^2])/(2*b) + (a^2*c^2
*Sqrt[c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi [A] time = 0.0477946, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2c^2\sqrt{cx^2}\log(a+bx)}{b^3x}-\frac{ac^2\sqrt{cx^2}}{b^2}+\frac{c^2x\sqrt{cx^2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x^3*(a + b*x)),x]
```

```
[Out] -((a*c^2*Sqrt[c*x^2])/b^2) + (c^2*x*Sqrt[c*x^2])/(2*b) + (a^2*c^2
*Sqrt[c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2c^2\sqrt{cx^2}\log(a+bx)}{b^3x}+\frac{c^2\sqrt{cx^2}\int x\,dx}{bx}-\frac{c^2\sqrt{cx^2}\int a\,dx}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x**3/(b*x+a),x)
```

```
[Out] a**2*c**2*sqrt(c*x**2)*log(a + b*x)/(b**3*x) + c**2*sqrt(c*x**2)*
Integral(x, x)/(b*x) - c**2*sqrt(c*x**2)*Integral(a, x)/(b**2*x)
```

Mathematica [A] time = 0.0177629, size = 42, normalized size = 0.63

$$\frac{c^3x\left(2a^2\log(a+bx)+bx(bx-2a)\right)}{2b^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x^3*(a + b*x)),x]
```

```
[Out] (c^3*x*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x]))/(2*b^3*Sqrt[c*x^2
])
```

Maple [A] time = 0.009, size = 40, normalized size = 0.6

$$\frac{b^2x^2 + 2\,a^2\ln(bx+a) - 2\,abx}{2\,b^3x^5}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/x^3/(b*x+a),x)
```

```
[Out] 1/2*(c*x^2)^(5/2)*(b^2*x^2+2*a^2*ln(b*x+a)-2*a*b*x)/x^5/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^3),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.205414, size = 65, normalized size = 0.97

$$\frac{\left(b^2c^2x^2 - 2\,abc^2x + 2\,a^2c^2\log(bx+a)\right)\sqrt{cx^2}}{2\,b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^3),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*c^2*x^2 - 2*a*b*c^2*x + 2*a^2*c^2*log(b*x + a))*sqrt(c*x
^2)/(b^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}}}{x^3 (a + bx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x**3/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x**3*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.21648, size = 89, normalized size = 1.33

$$\frac{1}{2} \left(\frac{2 a^2 c^2 \ln(|bx + a|) \operatorname{sign}(x)}{b^3} - \frac{2 a^2 c^2 \ln(|a|) \operatorname{sign}(x)}{b^3} + \frac{bc^2 x^2 \operatorname{sign}(x) - 2 ac^2 x \operatorname{sign}(x)}{b^2} \right) \sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^3),x, algorithm="giac")
```

```
[Out] 1/2*(2*a^2*c^2*ln(abs(b*x + a))*sign(x)/b^3 - 2*a^2*c^2*ln(abs(a)
)*sign(x)/b^3 + (b*c^2*x^2*sign(x) - 2*a*c^2*x*sign(x))/b^2)*sqrt
(c)
```

3.873 $\int \frac{(cx^2)^{5/2}}{x^4(a+bx)} dx$

Optimal. Leaf size=44

$$\frac{c^2\sqrt{cx^2}}{b} - \frac{ac^2\sqrt{cx^2}\log(a+bx)}{b^2x}$$

```
[Out] (c^2*Sqrt[c*x^2])/b - (a*c^2*Sqrt[c*x^2]*Log[a + b*x])/(b^2*x)
```

Rubi [A] time = 0.0320857, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{c^2\sqrt{cx^2}}{b} - \frac{ac^2\sqrt{cx^2}\log(a+bx)}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x^4*(a + b*x)),x]
```

```
[Out] (c^2*Sqrt[c*x^2])/b - (a*c^2*Sqrt[c*x^2]*Log[a + b*x])/(b^2*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{ac^2\sqrt{cx^2}\log(a+bx)}{b^2x} + \frac{c^2\sqrt{cx^2}\int \frac{1}{b}\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x**4/(b*x+a),x)
```

```
[Out] -a*c**2*sqrt(c*x**2)*log(a + b*x)/(b**2*x) + c**2*sqrt(c*x**2)*In
tegral(1/b, x)/x
```

Mathematica [A] time = 0.0106193, size = 30, normalized size = 0.68

$$\frac{c^3x(bx-a\log(a+bx))}{b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x^4*(a + b*x)),x]

[Out] (c^3*x*(b*x - a*Log[a + b*x]))/(b^2*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 29, normalized size = 0.7

$$-\frac{a\ln(bx+a)-bx}{b^2x^5}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/x^4/(b*x+a),x)

[Out] -(c*x^2)^(5/2)*(a*ln(b*x+a)-b*x)/x^5/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^4),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21096, size = 45, normalized size = 1.02

$$\frac{\left(bc^2x-ac^2\log(bx+a)\right)\sqrt{cx^2}}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^4),x, algorithm="fricas")

[Out] (b*c^2*x - a*c^2*log(b*x + a))*sqrt(c*x^2)/(b^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(cx^2\right)^{\frac{5}{2}}}{x^4\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x**4/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x**4*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.205656, size = 62, normalized size = 1.41

$$\left(\frac{c^{2}x\operatorname{sign}\left(x\right)}{b}-\frac{ac^{2}\ln\left(|bx+a|\right)\operatorname{sign}\left(x\right)}{b^{2}}+\frac{ac^{2}\ln\left(|a|\right)\operatorname{sign}\left(x\right)}{b^{2}}\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^4),x, algorithm="giac")
```

```
[Out] (c^2*x*sign(x)/b - a*c^2*ln(abs(b*x + a))*sign(x)/b^2 + a*c^2*ln(
abs(a))*sign(x)/b^2)*sqrt(c)
```

3.874 $\int \frac{(cx^2)^{5/2}}{x^5(a+bx)} dx$

Optimal. Leaf size=25

$$\frac{c^2\sqrt{cx^2}\log(a+bx)}{bx}$$

```
[Out] (c^2*Sqrt[c*x^2]*Log[a + b*x])/(b*x)
```

Rubi [A] time = 0.0123549, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{c^2\sqrt{cx^2}\log(a+bx)}{bx}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x^5*(a + b*x)),x]

[Out] (c^2*Sqrt[c*x^2]*Log[a + b*x])/(b*x)
```

Rubi in Sympy [A] time = 12.351, size = 20, normalized size = 0.8

$$\frac{c^2\sqrt{cx^2}\log(a+bx)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x**5/(b*x+a),x)

[Out] c**2*sqrt(c*x**2)*log(a + b*x)/(b*x)
```

Mathematica [A] time = 0.0063219, size = 22, normalized size = 0.88

$$\frac{(cx^2)^{5/2}\log(a+bx)}{bx^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x^5*(a + b*x)),x]
```

```
[Out] ((c*x^2)^(5/2)*Log[a + b*x])/(b*x^5)
```

Maple [A] time = 0.004, size = 21, normalized size = 0.8

$$\frac{\ln(bx+a)}{bx^5}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(5/2)/x^5/(b*x+a),x)
```

```
[Out] (c*x^2)^(5/2)/x^5*ln(b*x+a)/b
```

Maxima [A] time = 1.3536, size = 18, normalized size = 0.72

$$\frac{c^{\frac{5}{2}}\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(5/2)/((b*x + a)*x^5),x, algorithm="maxima")
```

```
[Out] c^(5/2)*log(b*x + a)/b
```

Fricas [A] time = 0.214451, size = 31, normalized size = 1.24

$$\frac{\sqrt{cx^2}c^2\log(bx+a)}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(5/2)/((b*x + a)*x^5),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*c^2*log(b*x + a)/(b*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(cx^2\right)^{\frac{5}{2}}}{x^5\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x**5/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x**5*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.20629, size = 46, normalized size = 1.84

$$\left(\frac{c^2\ln\left(|bx+a|\right)\operatorname{sign}\left(x\right)}{b}-\frac{c^2\ln\left(|a|\right)\operatorname{sign}\left(x\right)}{b}\right)\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^5),x, algorithm="giac")
```

```
[Out] (c^2*ln(abs(b*x + a))*sign(x)/b - c^2*ln(abs(a))*sign(x)/b)*sqrt(
c)
```

3.875 $\int \frac{(cx^2)^{5/2}}{x^6(a+bx)}\,dx$

Optimal. Leaf size=48

$$\frac{c^2\sqrt{cx^2}\log(x)}{ax}-\frac{c^2\sqrt{cx^2}\log(a+bx)}{ax}$$

```
[Out] (c^2*Sqrt[c*x^2]*Log[x])/(a*x) - (c^2*Sqrt[c*x^2]*Log[a + b*x])/(
a*x)
```

Rubi [A] time = 0.0249964, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{c^2\sqrt{cx^2}\log(x)}{ax}-\frac{c^2\sqrt{cx^2}\log(a+bx)}{ax}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x^6*(a + b*x)),x]
```

```
[Out] (c^2*Sqrt[c*x^2]*Log[x])/(a*x) - (c^2*Sqrt[c*x^2]*Log[a + b*x])/(
a*x)
```

Rubi in Sympy [A] time = 15.5395, size = 39, normalized size = 0.81

$$\frac{c^2\sqrt{cx^2}\log(x)}{ax}-\frac{c^2\sqrt{cx^2}\log(a+bx)}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x**6/(b*x+a),x)
```

```
[Out] c**2*sqrt(c*x**2)*log(x)/(a*x) - c**2*sqrt(c*x**2)*log(a + b*x)/(
a*x)
```

Mathematica [A] time = 0.0143397, size = 28, normalized size = 0.58

$$\frac{c^3x(\log(x)-\log(a+bx))}{a\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x^6*(a + b*x)),x]

[Out] (c^3*x*(Log[x] - Log[a + b*x]))/(a*Sqrt[c*x^2])
```

Maple [A] time = 0.006, size = 26, normalized size = 0.5

$$\frac{\ln(x) - \ln(bx + a)}{ax^5} \left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/x^6/(b*x+a),x)

[Out] (c*x^2)^(5/2)*(ln(x)-ln(b*x+a))/a/x^5
```

Maxima [A] time = 1.36085, size = 32, normalized size = 0.67

$$-\frac{c^{\frac{5}{2}} \log(bx + a)}{a} + \frac{c^{\frac{5}{2}} \log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^6),x, algorithm="maxima")

[Out] -c^(5/2)*log(b*x + a)/a + c^(5/2)*log(x)/a
```

Fricas [A] time = 0.225202, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{cx^2} c^2 \log\left(\frac{x}{bx+a}\right)}{ax}, -\frac{2\sqrt{-c} c^2 \arctan\left(\frac{2bcx^2+acx}{\sqrt{cx^2} a\sqrt{-c}}\right)}{a}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^6),x, algorithm="fricas")

[Out] [sqrt(c*x^2)*c^2*log(x/(b*x + a))/(a*x), -2*sqrt(-c)*c^2*arctan((
2*b*c*x^2 + a*c*x)/(sqrt(c*x^2)*a*sqrt(-c)))/a]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}}}{x^6(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x**6/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x**6*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^6),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.876 $\int \frac{(cx^2)^{5/2}}{x^7(a+bx)}\,dx$

Optimal. Leaf size=70

$$-\frac{bc^2\sqrt{cx^2}\log(x)}{a^2x}+\frac{bc^2\sqrt{cx^2}\log(a+bx)}{a^2x}-\frac{c^2\sqrt{cx^2}}{ax^2}$$

```
[Out] -((c^2*Sqrt[c*x^2])/(a*x^2)) - (b*c^2*Sqrt[c*x^2]*Log[x])/(a^2*x)
 + (b*c^2*Sqrt[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi [A] time = 0.0474253, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{bc^2\sqrt{cx^2}\log(x)}{a^2x}+\frac{bc^2\sqrt{cx^2}\log(a+bx)}{a^2x}-\frac{c^2\sqrt{cx^2}}{ax^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)/(x^7*(a + b*x)),x]
```

```
[Out] -((c^2*Sqrt[c*x^2])/(a*x^2)) - (b*c^2*Sqrt[c*x^2]*Log[x])/(a^2*x)
 + (b*c^2*Sqrt[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi in Sympy [A] time = 19.491, size = 63, normalized size = 0.9

$$-\frac{c^2\sqrt{cx^2}}{ax^2}-\frac{bc^2\sqrt{cx^2}\log(x)}{a^2x}+\frac{bc^2\sqrt{cx^2}\log(a+bx)}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)/x**7/(b*x+a),x)
```

```
[Out] -c**2*sqrt(c*x**2)/(a*x**2) - b*c**2*sqrt(c*x**2)*log(x)/(a**2*x)
 + b*c**2*sqrt(c*x**2)*log(a + b*x)/(a**2*x)
```

Mathematica [A] time = 0.0198117, size = 34, normalized size = 0.49

$$-\frac{c^3(-bx\log(a+bx)+a+bx\log(x))}{a^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)/(x^7*(a + b*x)),x]
```

```
[Out] -((c^3*(a + b*x*Log[x] - b*x*Log[a + b*x]))/(a^2*Sqrt[c*x^2]))
```

Maple [A] time = 0.007, size = 33, normalized size = 0.5

$$-\frac{b\ln(x)\,x-b\ln(bx+a)\,x+a}{x^6a^2}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)/x^7/(b*x+a),x)
```

```
[Out] -(c*x^2)^(5/2)*(b*ln(x)*x-b*ln(b*x+a)*x+a)/x^6/a^2
```

Maxima [A] time = 1.32117, size = 50, normalized size = 0.71

$$\frac{bc^{\frac{5}{2}}\log(bx+a)}{a^2}-\frac{bc^{\frac{5}{2}}\log(x)}{a^2}-\frac{c^{\frac{5}{2}}}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^7),x, algorithm="maxima")
```

```
[Out] b*c^(5/2)*log(b*x + a)/a^2 - b*c^(5/2)*log(x)/a^2 - c^(5/2)/(a*x)
```

Fricas [A] time = 0.215148, size = 50, normalized size = 0.71

$$\frac{\left(bc^2x\log\left(\frac{bx+a}{x}\right)-ac^2\right)\sqrt{cx^2}}{a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^7),x, algorithm="fricas")
```

```
[Out] (b*c^2*x*log((b*x + a)/x) - a*c^2)*sqrt(c*x^2)/(a^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}}}{x^7 (a + bx)} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)/x**7/(b*x+a),x)
```

```
[Out] Integral((c*x**2)**(5/2)/(x**7*(a + b*x)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)/((b*x + a)*x^7),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.877 $\int \frac{x^4}{\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=83

$$-\frac{a^3x\log(a+bx)}{b^4\sqrt{cx^2}}+\frac{a^2x^2}{b^3\sqrt{cx^2}}-\frac{ax^3}{2b^2\sqrt{cx^2}}+\frac{x^4}{3b\sqrt{cx^2}}$$

```
[Out] (a^2*x^2)/(b^3*Sqrt[c*x^2]) - (a*x^3)/(2*b^2*Sqrt[c*x^2]) + x^4/(
3*b*Sqrt[c*x^2]) - (a^3*x*Log[a + b*x])/(b^4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0557734, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3x\log(a+bx)}{b^4\sqrt{cx^2}}+\frac{a^2x^2}{b^3\sqrt{cx^2}}-\frac{ax^3}{2b^2\sqrt{cx^2}}+\frac{x^4}{3b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (a^2*x^2)/(b^3*Sqrt[c*x^2]) - (a*x^3)/(2*b^2*Sqrt[c*x^2]) + x^4/(
3*b*Sqrt[c*x^2]) - (a^3*x*Log[a + b*x])/(b^4*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3\sqrt{cx^2}\log(a+bx)}{b^4cx}-\frac{a\sqrt{cx^2}\int x\,dx}{b^2cx}+\frac{x^2\sqrt{cx^2}}{3bc}+\frac{\sqrt{cx^2}\int a^2\,dx}{b^3cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] -a**3*sqrt(c*x**2)*log(a + b*x)/(b**4*c*x) - a*sqrt(c*x**2)*Integ
ral(x, x)/(b**2*c*x) + x**2*sqrt(c*x**2)/(3*b*c) + sqrt(c*x**2)*I
ntegral(a**2, x)/(b**3*c*x)
```

Mathematica [A] time = 0.021187, size = 51, normalized size = 0.61

$$\frac{x\left(bx\left(6a^2-3abx+2b^2x^2\right)-6a^3\log(a+bx)\right)}{6b^4\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (x*(b*x*(6*a^2 - 3*a*b*x + 2*b^2*x^2) - 6*a^3*Log[a + b*x]))/(6*b
^4*Sqrt[c*x^2])
```

Maple [A] time = 0.008, size = 50, normalized size = 0.6

$$-\frac{x\left(-2\,b^3x^3+3\,ab^2x^2+6\,a^3\ln\left(bx+a\right)-6\,a^2bx\right)}{6\,b^4}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] -1/6*x*(-2*b^3*x^3+3*a*b^2*x^2+6*a^3*ln(b*x+a)-6*a^2*b*x)/(c*x^2)
^(1/2)/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(sqrt(c*x^2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217254, size = 73, normalized size = 0.88

$$\frac{\left(2\,b^3x^3-3\,ab^2x^2+6\,a^2bx-6\,a^3\log\left(bx+a\right)\right)\sqrt{cx^2}}{6\,b^4cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(sqrt(c*x^2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3 - 3*a*b^2*x^2 + 6*a^2*b*x - 6*a^3*log(b*x + a))*sq
rt(c*x^2)/(b^4*c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4}{\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x**4/(sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.215686, size = 108, normalized size = 1.3

$$\frac{1}{6}\sqrt{cx^2}\left(x\left(\frac{2\,x}{bc}-\frac{3\,a}{b^2c}\right)+\frac{6\,a^2}{b^3c}\right)+\frac{a^3\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{b^4\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(sqrt(c*x^2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(c*x^2)*(x*(2*x/(b*c) - 3*a/(b^2*c)) + 6*a^2/(b^3*c)) + a
^3*ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b^4*sqrt(
c))
```

3.878 $\int \frac{x^3}{\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=61

$$\frac{a^2x\log(a+bx)}{b^3\sqrt{cx^2}}-\frac{ax^2}{b^2\sqrt{cx^2}}+\frac{x^3}{2b\sqrt{cx^2}}$$

```
[Out] -((a*x^2)/(b^2*Sqrt[c*x^2])) + x^3/(2*b*Sqrt[c*x^2]) + (a^2*x*Log
[a + b*x])/(b^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0421072, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x\log(a+bx)}{b^3\sqrt{cx^2}}-\frac{ax^2}{b^2\sqrt{cx^2}}+\frac{x^3}{2b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] -((a*x^2)/(b^2*Sqrt[c*x^2])) + x^3/(2*b*Sqrt[c*x^2]) + (a^2*x*Log
[a + b*x])/(b^3*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\log(a+bx)}{b^3cx}+\frac{\sqrt{cx^2}\int x\,dx}{bcx}-\frac{\sqrt{cx^2}\int a\,dx}{b^2cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*log(a + b*x)/(b**3*c*x) + sqrt(c*x**2)*Integral
(x, x)/(b*c*x) - sqrt(c*x**2)*Integral(a, x)/(b**2*c*x)
```

Mathematica [A] time = 0.0188905, size = 39, normalized size = 0.64

$$\frac{x\left(2a^2\log(a+bx)+bx(bx-2a)\right)}{2b^3\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (x*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x]))/(2*b^3*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 38, normalized size = 0.6

$$\frac{x\left(b^{2}x^{2}+2\,a^{2}\ln\left(bx+a\right)-2\,abx\right)}{2\,b^{3}}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] 1/2*x*(b^2*x^2+2*a^2*ln(b*x+a)-2*a*b*x)/(c*x^2)^(1/2)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(sqrt(c*x^2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220327, size = 57, normalized size = 0.93

$$\frac{\left(b^{2}x^{2}-2\,abx+2\,a^{2}\log\left(bx+a\right)\right)\sqrt{cx^{2}}}{2\,b^{3}cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(sqrt(c*x^2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 - 2*a*b*x + 2*a^2*log(b*x + a))*sqrt(c*x^2)/(b^3*c*x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3}{\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x**3/(sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.213666, size = 89, normalized size = 1.46

$$\frac{1}{2}\sqrt{cx^2}\left(\frac{x}{bc}-\frac{2\,a}{b^2c}\right)-\frac{a^2\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{b^3\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(sqrt(c*x^2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2)*(x/(b*c) - 2*a/(b^2*c)) - a^2*ln(abs(-(sqrt(c)*x
- sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b^3*sqrt(c))
```

3.879 $\int \frac{x^2}{\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=39

$$\frac{x^2}{b\sqrt{cx^2}} - \frac{ax\log(a+bx)}{b^2\sqrt{cx^2}}$$

```
[Out] x^2/(b*Sqrt[c*x^2]) - (a*x*Log[a + b*x])/(b^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.028457, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{x^2}{b\sqrt{cx^2}} - \frac{ax\log(a+bx)}{b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] x^2/(b*Sqrt[c*x^2]) - (a*x*Log[a + b*x])/(b^2*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a\sqrt{cx^2}\log(a+bx)}{b^2cx} + \frac{\sqrt{cx^2}\int \frac{1}{b}\,dx}{cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] -a*sqrt(c*x**2)*log(a + b*x)/(b**2*c*x) + sqrt(c*x**2)*Integral(1
/b, x)/(c*x)
```

Mathematica [A] time = 0.011657, size = 27, normalized size = 0.69

$$\frac{x(bx-a\log(a+bx))}{b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (x*(b*x - a*Log[a + b*x]))/(b^2*Sqrt[c*x^2])
```

Maple [A] time = 0.006, size = 27, normalized size = 0.7

$$-\frac{x\left(a\ln\left(bx+a\right)-bx\right)}{b^{2}}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)/(c*x^2)^(1/2),x)

[Out] -x*(a*ln(b*x+a)-b*x)/(c*x^2)^(1/2)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(sqrt(c*x^2)*(b*x + a)),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213503, size = 41, normalized size = 1.05

$$\frac{\sqrt{cx^{2}}(bx-a\log\left(bx+a\right))}{b^{2}cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(sqrt(c*x^2)*(b*x + a)),x, algorithm="fricas")

[Out] sqrt(c*x^2)*(b*x - a*log(b*x + a))/(b^2*c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^{2}}{\sqrt{cx^{2}}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x**2/(sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.212665, size = 68, normalized size = 1.74

$$\frac{a \ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{b^2\sqrt{c}}+\frac{\sqrt{cx^2}}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(sqrt(c*x^2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] a*ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b^2*sqrt(c
)) + sqrt(c*x^2)/(b*c)
```

3.880 $\int \frac{x}{\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=20

$$\frac{x\log(a+bx)}{b\sqrt{cx^2}}$$

```
[Out] (x*Log[a + b*x])/(b*Sqrt[c*x^2])
```

Rubi [A] time = 0.0104734, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{x\log(a+bx)}{b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(Sqrt[c*x^2]*(a + b*x)),x]

[Out] (x*Log[a + b*x])/(b*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)/(c*x**2)**(1/2),x)

[Out] Integral(x/(sqrt(c*x**2)*(a + b*x)), x)
```

Mathematica [A] time = 0.00359213, size = 20, normalized size = 1.

$$\frac{x\log(a+bx)}{b\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (x*Log[a + b*x])/(b*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 19, normalized size = 1.

$$\frac{x \ln(bx+a)}{b} \frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] x*ln(b*x+a)/b/(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(sqrt(c*x^2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209833, size = 31, normalized size = 1.55

$$\frac{\sqrt{cx^2} \log(bx+a)}{bcx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(sqrt(c*x^2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*log(b*x + a)/(b*c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{cx^2}(a+bx)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x/(sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.212909, size = 47, normalized size = 2.35

$$-\frac{\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{b\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(sqrt(c*x^2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] -ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b*sqrt(c))
```

3.881 $\int \frac{1}{\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=38

$$\frac{x\log(x)}{a\sqrt{cx^2}}-\frac{x\log(a+bx)}{a\sqrt{cx^2}}$$

```
[Out] (x*Log[x])/(a*Sqrt[c*x^2]) - (x*Log[a + b*x])/(a*Sqrt[c*x^2])
```

Rubi [A] time = 0.0204316, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{x\log(x)}{a\sqrt{cx^2}}-\frac{x\log(a+bx)}{a\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[c*x^2]*(a + b*x)),x]

[Out] (x*Log[x])/(a*Sqrt[c*x^2]) - (x*Log[a + b*x])/(a*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 8.8205, size = 36, normalized size = 0.95

$$\frac{\sqrt{cx^2}\log(x)}{acx}-\frac{\sqrt{cx^2}\log(a+bx)}{acx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(c*x**2)**(1/2),x)

[Out] sqrt(c*x**2)*log(x)/(a*c*x) - sqrt(c*x**2)*log(a + b*x)/(a*c*x)
```

Mathematica [A] time = 0.00915343, size = 25, normalized size = 0.66

$$\frac{x(\log(x)-\log(a+bx))}{a\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (x*(Log[x] - Log[a + b*x]))/(a*Sqrt[c*x^2])
```

Maple [A] time = 0.006, size = 24, normalized size = 0.6

$$\frac{x(\ln(x)-\ln(bx+a))}{a}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] x*(ln(x)-ln(b*x+a))/(c*x^2)^(1/2)/a
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(c*x^2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.211943, size = 1, normalized size = 0.03

$$\left[\frac{\sqrt{cx^2}\log\left(\frac{x}{bx+a}\right)}{acx}, \frac{2\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2}(2bx+a)\sqrt{-c}}{acx}\right)}{ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(c*x^2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] [sqrt(c*x^2)*log(x/(b*x + a))/(a*c*x), 2*sqrt(-c)*arctan(sqrt(c*x
^2)*(2*b*x + a)*sqrt(-c)/(a*c*x))/(a*c)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.218298, size = 80, normalized size = 2.11

$$\frac{\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{a\sqrt{c}}-\frac{\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{a\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(a*sqrt(c)) -
 ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/(a*sqrt(c))
```

3.882 $\int \frac{1}{x\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=54

$$-\frac{bx\log(x)}{a^2\sqrt{cx^2}}+\frac{bx\log(a+bx)}{a^2\sqrt{cx^2}}-\frac{1}{a\sqrt{cx^2}}$$

```
[Out] -(1/(a*Sqrt[c*x^2])) - (b*x*Log[x])/(a^2*Sqrt[c*x^2]) + (b*x*Log[
a + b*x])/(a^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0380108, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{bx\log(x)}{a^2\sqrt{cx^2}}+\frac{bx\log(a+bx)}{a^2\sqrt{cx^2}}-\frac{1}{a\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] -(1/(a*Sqrt[c*x^2])) - (b*x*Log[x])/(a^2*Sqrt[c*x^2]) + (b*x*Log[
a + b*x])/(a^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 16.6663, size = 58, normalized size = 1.07

$$-\frac{\sqrt{cx^2}}{acx^2}-\frac{b\sqrt{cx^2}\log(x)}{a^2cx}+\frac{b\sqrt{cx^2}\log(a+bx)}{a^2cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] -sqrt(c*x**2)/(a*c*x**2) - b*sqrt(c*x**2)*log(x)/(a**2*c*x) + b*s
qrt(c*x**2)*log(a + b*x)/(a**2*c*x)
```

Mathematica [A] time = 0.0189449, size = 36, normalized size = 0.67

$$\frac{cx^2(bx\log(a+bx)-a-bx\log(x))}{a^2\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (c*x^2*(-a - b*x*Log[x] + b*x*Log[a + b*x]))/(a^2*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 30, normalized size = 0.6

$$-\frac{b\ln(x)\,x - b\ln(bx+a)\,x + a}{a^2}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] -(b*ln(x)*x-b*ln(b*x+a)*x+a)/(c*x^2)^(1/2)/a^2
```

Maxima [A] time = 1.3641, size = 50, normalized size = 0.93

$$\frac{b\log(bx+a)}{a^2\sqrt{c}} - \frac{b\log(x)}{a^2\sqrt{c}} - \frac{1}{a\sqrt{c}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x),x, algorithm="maxima")
```

```
[Out] b*log(b*x + a)/(a^2*sqrt(c)) - b*log(x)/(a^2*sqrt(c)) - 1/(a*sqrt
(c)*x)
```

Fricas [A] time = 0.220559, size = 46, normalized size = 0.85

$$\frac{\sqrt{cx^2}\left(bx\log\left(\frac{bx+a}{x}\right) - a\right)}{a^2cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x*log((b*x + a)/x) - a)/(a^2*c*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(x*sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.218503, size = 123, normalized size = 2.28

$$-\sqrt{c}\left(\frac{b\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{a^2c}-\frac{b\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{a^2c}-\frac{2}{\left(\sqrt{c}x-\sqrt{cx^2}\right)a\sqrt{c}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x),x, algorithm="giac")
```

```
[Out] -sqrt(c)*(b*ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(
a^2*c) - b*ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/(a^2*c) - 2/((sqrt(c
)*x - sqrt(c*x^2))*a*sqrt(c)))
```

3.883 $\int \frac{1}{x^2\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=77

$$\frac{b^2x\log(x)}{a^3\sqrt{cx^2}}-\frac{b^2x\log(a+bx)}{a^3\sqrt{cx^2}}+\frac{b}{a^2\sqrt{cx^2}}-\frac{1}{2ax\sqrt{cx^2}}$$

```
[Out] b/(a^2*Sqrt[c*x^2]) - 1/(2*a*x*Sqrt[c*x^2]) + (b^2*x*Log[x])/(a^3
*Sqrt[c*x^2]) - (b^2*x*Log[a + b*x])/(a^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0536256, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{b^2x\log(x)}{a^3\sqrt{cx^2}}-\frac{b^2x\log(a+bx)}{a^3\sqrt{cx^2}}+\frac{b}{a^2\sqrt{cx^2}}-\frac{1}{2ax\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] b/(a^2*Sqrt[c*x^2]) - 1/(2*a*x*Sqrt[c*x^2]) + (b^2*x*Log[x])/(a^3
*Sqrt[c*x^2]) - (b^2*x*Log[a + b*x])/(a^3*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 20.203, size = 82, normalized size = 1.06

$$-\frac{\sqrt{cx^2}}{2acx^3}+\frac{b\sqrt{cx^2}}{a^2cx^2}+\frac{b^2\sqrt{cx^2}\log(x)}{a^3cx}-\frac{b^2\sqrt{cx^2}\log(a+bx)}{a^3cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] -sqrt(c*x**2)/(2*a*c*x**3) + b*sqrt(c*x**2)/(a**2*c*x**2) + b**2*
sqrt(c*x**2)*log(x)/(a**3*c*x) - b**2*sqrt(c*x**2)*log(a + b*x)/(
a**3*c*x)
```

Mathematica [A] time = 0.0237383, size = 52, normalized size = 0.68

$$\frac{cx\left(-2b^2x^2\log(a+bx)-a(a-2bx)+2b^2x^2\log(x)\right)}{2a^3\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (c*x*(-(a*(a - 2*b*x)) + 2*b^2*x^2*Log[x] - 2*b^2*x^2*Log[a + b*x
]))/(2*a^3*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 51, normalized size = 0.7

$$\frac{2\,b^2\ln(x)\,x^2 - 2\,b^2\ln(bx+a)\,x^2 + 2\,abx - a^2}{2\,xa^3}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] 1/2/x*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*x-a^2)/(c*x^2)^(
1/2)/a^3
```

Maxima [A] time = 1.36181, size = 74, normalized size = 0.96

$$-\frac{b^2\log(bx+a)}{a^3\sqrt{c}} + \frac{b^2\log(x)}{a^3\sqrt{c}} + \frac{2\,b\sqrt{c}x - a\sqrt{c}}{2\,a^2cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x^2),x, algorithm="maxima")
```

```
[Out] -b^2*log(b*x + a)/(a^3*sqrt(c)) + b^2*log(x)/(a^3*sqrt(c)) + 1/2*
(2*b*sqrt(c)*x - a*sqrt(c))/(a^2*c*x^2)
```

Fricas [A] time = 0.219372, size = 63, normalized size = 0.82

$$\frac{\left(2\,b^2x^2\log\left(\frac{x}{bx+a}\right) + 2\,abx - a^2\right)\sqrt{cx^2}}{2\,a^3cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*x^2*log(x/(b*x + a)) + 2*a*b*x - a^2)*sqrt(c*x^2)/(a^3
*c*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x^2\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(x**2*sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.517077, size = 4, normalized size = 0.05

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x^2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.884 $\int \frac{1}{x^3\sqrt{cx^2}(a+bx)}\,dx$

Optimal. Leaf size=100

$$-\frac{b^3x\log(x)}{a^4\sqrt{cx^2}}+\frac{b^3x\log(a+bx)}{a^4\sqrt{cx^2}}-\frac{b^2}{a^3\sqrt{cx^2}}+\frac{b}{2a^2x\sqrt{cx^2}}-\frac{1}{3ax^2\sqrt{cx^2}}$$

```
[Out] -(b^2/(a^3*Sqrt[c*x^2])) - 1/(3*a*x^2*Sqrt[c*x^2]) + b/(2*a^2*x*S
qrt[c*x^2]) - (b^3*x*Log[x])/(a^4*Sqrt[c*x^2]) + (b^3*x*Log[a + b
*x])/(a^4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0686479, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^3x\log(x)}{a^4\sqrt{cx^2}}+\frac{b^3x\log(a+bx)}{a^4\sqrt{cx^2}}-\frac{b^2}{a^3\sqrt{cx^2}}+\frac{b}{2a^2x\sqrt{cx^2}}-\frac{1}{3ax^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^3*Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] -(b^2/(a^3*Sqrt[c*x^2])) - 1/(3*a*x^2*Sqrt[c*x^2]) + b/(2*a^2*x*S
qrt[c*x^2]) - (b^3*x*Log[x])/(a^4*Sqrt[c*x^2]) + (b^3*x*Log[a + b
*x])/(a^4*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 23.5059, size = 104, normalized size = 1.04

$$-\frac{\sqrt{cx^2}}{3acx^4}+\frac{b\sqrt{cx^2}}{2a^2cx^3}-\frac{b^2\sqrt{cx^2}}{a^3cx^2}-\frac{b^3\sqrt{cx^2}\log(x)}{a^4cx}+\frac{b^3\sqrt{cx^2}\log(a+bx)}{a^4cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] -sqrt(c*x**2)/(3*a*c*x**4) + b*sqrt(c*x**2)/(2*a**2*c*x**3) - b**
2*sqrt(c*x**2)/(a**3*c*x**2) - b**3*sqrt(c*x**2)*log(x)/(a**4*c*x
) + b**3*sqrt(c*x**2)*log(a + b*x)/(a**4*c*x)
```

Mathematica [A] time = 0.0250908, size = 63, normalized size = 0.63

$$\frac{c\left(a\left(-2a^2+3abx-6b^2x^2\right)+6b^3x^3\log(a+bx)-6b^3x^3\log(x)\right)}{6a^4\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^3*Sqrt[c*x^2]*(a + b*x)),x]
```

```
[Out] (c*(a*(-2*a^2 + 3*a*b*x - 6*b^2*x^2) - 6*b^3*x^3*Log[x] + 6*b^3*x
^3*Log[a + b*x]))/(6*a^4*(c*x^2)^(3/2))
```

Maple [A] time = 0.008, size = 62, normalized size = 0.6

$$-\frac{6\,b^3\ln(x)\,x^3-6\,b^3\ln(bx+a)\,x^3+6\,ab^2x^2-3\,a^2bx+2\,a^3}{6\,x^2a^4}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^3/(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] -1/6/x^2*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*a*b^2*x^2-3*a^2*b
*x+2*a^3)/(c*x^2)^(1/2)/a^4
```

Maxima [A] time = 1.35757, size = 93, normalized size = 0.93

$$\frac{b^3\log(bx+a)}{a^4\sqrt{c}}-\frac{b^3\log(x)}{a^4\sqrt{c}}-\frac{6\,b^2\sqrt{c}x^2-3\,ab\sqrt{c}x+2\,a^2\sqrt{c}}{6\,a^3cx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x^3),x, algorithm="maxima")
```

```
[Out] b^3*log(b*x + a)/(a^4*sqrt(c)) - b^3*log(x)/(a^4*sqrt(c)) - 1/6*(
6*b^2*sqrt(c)*x^2 - 3*a*b*sqrt(c)*x + 2*a^2*sqrt(c))/(a^3*c*x^3)
```

Fricas [A] time = 0.220686, size = 78, normalized size = 0.78

$$\frac{\left(6\,b^3x^3\log\left(\frac{bx+a}{x}\right)-6\,ab^2x^2+3\,a^2bx-2\,a^3\right)\sqrt{cx^2}}{6\,a^4cx^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x^3),x, algorithm="fricas")
```

```
[Out] 1/6*(6*b^3*x^3*log((b*x + a)/x) - 6*a*b^2*x^2 + 3*a^2*b*x - 2*a^3
)*sqrt(c*x^2)/(a^4*c*x^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x^3\sqrt{cx^2}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3/(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(x**3*sqrt(c*x**2)*(a + b*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{cx^2}(bx+a)x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)*x^3),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(c*x^2)*(b*x + a)*x^3), x)
```

3.885 $\int \frac{x^6}{(cx^2)^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=95

$$-\frac{a^3x\log(a+bx)}{b^4c\sqrt{cx^2}}+\frac{a^2x^2}{b^3c\sqrt{cx^2}}-\frac{ax^3}{2b^2c\sqrt{cx^2}}+\frac{x^4}{3bc\sqrt{cx^2}}$$

```
[Out] (a^2*x^2)/(b^3*c*Sqrt[c*x^2]) - (a*x^3)/(2*b^2*c*Sqrt[c*x^2]) + x
^4/(3*b*c*Sqrt[c*x^2]) - (a^3*x*Log[a + b*x])/(b^4*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.071385, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3x\log(a+bx)}{b^4c\sqrt{cx^2}}+\frac{a^2x^2}{b^3c\sqrt{cx^2}}-\frac{ax^3}{2b^2c\sqrt{cx^2}}+\frac{x^4}{3bc\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^6/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (a^2*x^2)/(b^3*c*Sqrt[c*x^2]) - (a*x^3)/(2*b^2*c*Sqrt[c*x^2]) + x
^4/(3*b*c*Sqrt[c*x^2]) - (a^3*x*Log[a + b*x])/(b^4*c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3\sqrt{cx^2}\log(a+bx)}{b^4c^2x}-\frac{a\sqrt{cx^2}\int x\,dx}{b^2c^2x}+\frac{x^2\sqrt{cx^2}}{3bc^2}+\frac{\sqrt{cx^2}\int a^2\,dx}{b^3c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] -a**3*sqrt(c*x**2)*log(a + b*x)/(b**4*c**2*x) - a*sqrt(c*x**2)*In
tegral(x, x)/(b**2*c**2*x) + x**2*sqrt(c*x**2)/(3*b*c**2) + sqrt(
c*x**2)*Integral(a**2, x)/(b**3*c**2*x)
```

Mathematica [A] time = 0.018119, size = 53, normalized size = 0.56

$$\frac{x^3\left(bx\left(6a^2-3abx+2b^2x^2\right)-6a^3\log(a+bx)\right)}{6b^4\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^6/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x^3*(b*x*(6*a^2 - 3*a*b*x + 2*b^2*x^2) - 6*a^3*Log[a + b*x]))/(6
*b^4*(c*x^2)^(3/2))
```

Maple [A] time = 0.009, size = 52, normalized size = 0.6

$$-\frac{x^3\left(-2\,b^3x^3+3\,ab^2x^2+6\,a^3\ln\left(bx+a\right)-6\,a^2bx\right)}{6\,b^4}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6/(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] -1/6*x^3*(-2*b^3*x^3+3*a*b^2*x^2+6*a^3*ln(b*x+a)-6*a^2*b*x)/(c*x^
2)^(3/2)/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.212755, size = 73, normalized size = 0.77

$$\frac{\left(2\,b^3x^3-3\,ab^2x^2+6\,a^2bx-6\,a^3\log\left(bx+a\right)\right)\sqrt{cx^2}}{6\,b^4c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*x^3 - 3*a*b^2*x^2 + 6*a^2*b*x - 6*a^3*log(b*x + a))*sq
rt(c*x^2)/(b^4*c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^6}{(cx^2)^{\frac{3}{2}}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x**6/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.212941, size = 115, normalized size = 1.21

$$\frac{\sqrt{cx^2}\left(x\left(\frac{2\,x}{bc}-\frac{3\,a}{b^2c}\right)+\frac{6\,a^2}{b^3c}\right)+\frac{6\,a^3\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{b^4\sqrt{c}}}{6\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] 1/6*(sqrt(c*x^2)*(x*(2*x/(b*c) - 3*a/(b^2*c)) + 6*a^2/(b^3*c)) +
6*a^3*ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b^4*sq
rt(c)))/c
```

3.886 $\int \frac{x^5}{(cx^2)^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=70

$$\frac{a^2x\log(a+bx)}{b^3c\sqrt{cx^2}}-\frac{ax^2}{b^2c\sqrt{cx^2}}+\frac{x^3}{2bc\sqrt{cx^2}}$$

```
[Out] -((a*x^2)/(b^2*c*Sqrt[c*x^2])) + x^3/(2*b*c*Sqrt[c*x^2]) + (a^2*x
*Log[a + b*x])/(b^3*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0507685, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x\log(a+bx)}{b^3c\sqrt{cx^2}}-\frac{ax^2}{b^2c\sqrt{cx^2}}+\frac{x^3}{2bc\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] -((a*x^2)/(b^2*c*Sqrt[c*x^2])) + x^3/(2*b*c*Sqrt[c*x^2]) + (a^2*x
*Log[a + b*x])/(b^3*c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2\sqrt{cx^2}\log(a+bx)}{b^3c^2x}+\frac{\sqrt{cx^2}\int x\,dx}{bc^2x}-\frac{\sqrt{cx^2}\int a\,dx}{b^2c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] a**2*sqrt(c*x**2)*log(a + b*x)/(b**3*c**2*x) + sqrt(c*x**2)*Integ
ral(x, x)/(b*c**2*x) - sqrt(c*x**2)*Integral(a, x)/(b**2*c**2*x)
```

Mathematica [A] time = 0.0136537, size = 41, normalized size = 0.59

$$\frac{x^3\left(2a^2\log(a+bx)+bx(bx-2a)\right)}{2b^3\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x^3*(b*x*(-2*a + b*x) + 2*a^2*Log[a + b*x]))/(2*b^3*(c*x^2)^(3/2
))
```

Maple [A] time = 0.008, size = 40, normalized size = 0.6

$$\frac{x^3\left(b^2x^2+2a^2\ln\left(bx+a\right)-2abx\right)}{2b^3}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] 1/2*x^3*(b^2*x^2+2*a^2*ln(b*x+a)-2*a*b*x)/(c*x^2)^(3/2)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.216206, size = 57, normalized size = 0.81

$$\frac{\left(b^2x^2-2abx+2a^2\log\left(bx+a\right)\right)\sqrt{cx^2}}{2b^3c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 - 2*a*b*x + 2*a^2*log(b*x + a))*sqrt(c*x^2)/(b^3*c^2
*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5}{(cx^2)^{\frac{3}{2}}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x**5/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.212122, size = 95, normalized size = 1.36

$$\frac{\sqrt{cx^2}\left(\frac{x}{bc}-\frac{2a}{b^2c}\right)-\frac{2a^2\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2a\sqrt{c}\right|\right)}{b^3\sqrt{c}}}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt(c*x^2)*(x/(b*c) - 2*a/(b^2*c)) - 2*a^2*ln(abs(-(sqrt(c)
*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b^3*sqrt(c)))/c
```

3.887 $\int \frac{x^4}{(cx^2)^{3/2}(a+bx)} dx$

Optimal. Leaf size=45

$$\frac{x^2}{bc\sqrt{cx^2}} - \frac{ax\log(a+bx)}{b^2c\sqrt{cx^2}}$$

```
[Out] x^2/(b*c*Sqrt[c*x^2]) - (a*x*Log[a + b*x])/(b^2*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0333006, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{x^2}{bc\sqrt{cx^2}} - \frac{ax\log(a+bx)}{b^2c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] x^2/(b*c*Sqrt[c*x^2]) - (a*x*Log[a + b*x])/(b^2*c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a\sqrt{cx^2}\log(a+bx)}{b^2c^2x} + \frac{\sqrt{cx^2}\int\frac{1}{b}\,dx}{c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] -a*sqrt(c*x**2)*log(a + b*x)/(b**2*c**2*x) + sqrt(c*x**2)*Integra
l(1/b, x)/(c**2*x)
```

Mathematica [A] time = 0.0112439, size = 29, normalized size = 0.64

$$\frac{x^3(bx - a\log(a+bx))}{b^2(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/((c*x^2)^(3/2)*(a + b*x)),x]

[Out] (x^3*(b*x - a*Log[a + b*x]))/(b^2*(c*x^2)^(3/2))
```

Maple [A] time = 0.006, size = 29, normalized size = 0.6

$$-\frac{x^3 \left(a \ln \left(bx + a\right) - bx\right)}{b^2} \left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(c*x^2)^(3/2)/(b*x+a),x)

[Out] -x^3*(a*ln(b*x+a)-b*x)/(c*x^2)^(3/2)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220019, size = 41, normalized size = 0.91

$$\frac{\sqrt{cx^2}\left(bx - a \log \left(bx + a\right)\right)}{b^2 c^2 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")

[Out] sqrt(c*x^2)*(b*x - a*log(b*x + a))/(b^2*c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4}{\left(cx^2\right)^{\frac{3}{2}} \left(a + bx\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x**4/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.215779, size = 73, normalized size = 1.62

$$\frac{\frac{a \ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{b^2\sqrt{c}}+\frac{\sqrt{cx^2}}{bc}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] (a*ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b^2*sqrt(
c)) + sqrt(c*x^2)/(b*c))/c
```

3.888 $\int \frac{x^3}{(cx^2)^{3/2}(a+bx)} dx$

Optimal. Leaf size=23

$$\frac{x \log(a + bx)}{bc\sqrt{cx^2}}$$

```
[Out] (x*Log[a + b*x])/(b*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0129196, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{x \log(a + bx)}{bc\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x*Log[a + b*x])/(b*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 12.1337, size = 20, normalized size = 0.87

$$\frac{\sqrt{cx^2} \log(a + bx)}{bc^2 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**3/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] sqrt(c*x**2)*log(a + b*x)/(b*c**2*x)
```

Mathematica [A] time = 0.00547395, size = 22, normalized size = 0.96

$$\frac{x^3 \log(a + bx)}{b(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x^3*Log[a + b*x])/(b*(c*x^2)^(3/2))
```

Maple [A] time = 0.004, size = 21, normalized size = 0.9

$$\frac{x^{3}\ln\left(bx+a\right)}{b}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3/(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] 1/(c*x^2)^(3/2)*x^3*ln(b*x+a)/b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.210982, size = 31, normalized size = 1.35

$$\frac{\sqrt{cx^{2}}\log\left(bx+a\right)}{bc^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*log(b*x + a)/(b*c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^{3}}{\left(cx^{2}\right)^{\frac{3}{2}}\left(a+bx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x**3/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.211095, size = 47, normalized size = 2.04

$$-\frac{\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^{2}}\right)b-2\,a\sqrt{c}\right|\right)}{bc^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] -ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(b*c^(3/2))
```

3.889 $\int \frac{x^2}{(cx^2)^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=44

$$\frac{x\log(x)}{ac\sqrt{cx^2}}-\frac{x\log(a+bx)}{ac\sqrt{cx^2}}$$

```
[Out] (x*Log[x])/(a*c*Sqrt[c*x^2]) - (x*Log[a + b*x])/(a*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0250121, antiderivative size = 44, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{x\log(x)}{ac\sqrt{cx^2}}-\frac{x\log(a+bx)}{ac\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x*Log[x])/(a*c*Sqrt[c*x^2]) - (x*Log[a + b*x])/(a*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 11.281, size = 39, normalized size = 0.89

$$\frac{\sqrt{cx^2}\log(x)}{ac^2x}-\frac{\sqrt{cx^2}\log(a+bx)}{ac^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] sqrt(c*x**2)*log(x)/(a*c**2*x) - sqrt(c*x**2)*log(a + b*x)/(a*c**
2*x)
```

Mathematica [A] time = 0.0105271, size = 27, normalized size = 0.61

$$\frac{x^3(\log(x)-\log(a+bx))}{a\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x^3*(Log[x] - Log[a + b*x]))/(a*(c*x^2)^(3/2))
```

Maple [A] time = 0.006, size = 26, normalized size = 0.6

$$\frac{x^3 (\ln(x) - \ln(bx + a))}{a} (cx^2)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2/(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] x^3*(ln(x)-ln(b*x+a))/(c*x^2)^(3/2)/a
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.216421, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{cx^2}\log\left(\frac{x}{bx+a}\right)}{ac^2x}, \frac{2\sqrt{-c}\arctan\left(\frac{\sqrt{cx^2}(2bx+a)\sqrt{-c}}{acx}\right)}{ac^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] [sqrt(c*x^2)*log(x/(b*x + a))/(a*c^2*x), 2*sqrt(-c)*arctan(sqrt(c
*x^2)*(2*b*x + a)*sqrt(-c)/(a*c*x))/(a*c^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{(cx^2)^{\frac{3}{2}} (a + bx)} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x**2/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.218624, size = 85, normalized size = 1.93

$$\frac{\frac{\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{a\sqrt{c}}-\frac{\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{a\sqrt{c}}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] (ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(a*sqrt(c))
- ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/(a*sqrt(c)))/c
```

3.890 $\int \frac{x}{(cx^2)^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=63

$$-\frac{bx\log(x)}{a^2c\sqrt{cx^2}}+\frac{bx\log(a+bx)}{a^2c\sqrt{cx^2}}-\frac{1}{ac\sqrt{cx^2}}$$

```
[Out] -(1/(a*c*Sqrt[c*x^2])) - (b*x*Log[x])/(a^2*c*Sqrt[c*x^2]) + (b*x*
Log[a + b*x])/(a^2*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0471217, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{bx\log(x)}{a^2c\sqrt{cx^2}}+\frac{bx\log(a+bx)}{a^2c\sqrt{cx^2}}-\frac{1}{ac\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] -(1/(a*c*Sqrt[c*x^2])) - (b*x*Log[x])/(a^2*c*Sqrt[c*x^2]) + (b*x*
Log[a + b*x])/(a^2*c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(cx^2)^{\frac{3}{2}}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x/((c*x**2)**(3/2)*(a + b*x)), x)
```

Mathematica [A] time = 0.0155227, size = 35, normalized size = 0.56

$$\frac{x^2(bx\log(a+bx)-a-bx\log(x))}{a^2\,(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/((c*x^2)^(3/2)*(a + b*x)),x]

[Out] (x^2*(-a - b*x*Log[x] + b*x*Log[a + b*x]))/(a^2*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 33, normalized size = 0.5

$$-\frac{x^2\left(b\ln(x)x - b\ln(bx+a)x + a\right)}{a^2}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(c*x^2)^(3/2)/(b*x+a),x)

[Out] -x^2*(b*ln(x)*x-b*ln(b*x+a)*x+a)/(c*x^2)^(3/2)/a^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213451, size = 46, normalized size = 0.73

$$\frac{\sqrt{cx^2}\left(bx\log\left(\frac{bx+a}{x}\right) - a\right)}{a^2c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")

[Out] sqrt(c*x^2)*(b*x*log((b*x + a)/x) - a)/(a^2*c^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(cx^2)^{\frac{3}{2}}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(x/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.218447, size = 123, normalized size = 1.95

$$-\frac{\frac{b\ln\left(\left|-\left(\sqrt{c}x-\sqrt{cx^2}\right)b-2\,a\sqrt{c}\right|\right)}{a^2c}-\frac{b\ln\left(\left|-\sqrt{c}x+\sqrt{cx^2}\right|\right)}{a^2c}-\frac{2}{\left(\sqrt{c}x-\sqrt{cx^2}\right)a\sqrt{c}}}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")
```

```
[Out] -(b*ln(abs(-(sqrt(c)*x - sqrt(c*x^2))*b - 2*a*sqrt(c)))/(a^2*c) -
 b*ln(abs(-sqrt(c)*x + sqrt(c*x^2)))/(a^2*c) - 2/((sqrt(c)*x - sq
rt(c*x^2))*a*sqrt(c)))/sqrt(c)
```

3.891 $\int \frac{1}{(cx^2)^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=89

$$\frac{b^2x\log(x)}{a^3c\sqrt{cx^2}}-\frac{b^2x\log(a+bx)}{a^3c\sqrt{cx^2}}+\frac{b}{a^2c\sqrt{cx^2}}-\frac{1}{2acx\sqrt{cx^2}}$$

```
[Out] b/(a^2*c*Sqrt[c*x^2]) - 1/(2*a*c*x*Sqrt[c*x^2]) + (b^2*x*Log[x])/
(a^3*c*Sqrt[c*x^2]) - (b^2*x*Log[a + b*x])/(a^3*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0609574, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{b^2x\log(x)}{a^3c\sqrt{cx^2}}-\frac{b^2x\log(a+bx)}{a^3c\sqrt{cx^2}}+\frac{b}{a^2c\sqrt{cx^2}}-\frac{1}{2acx\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] b/(a^2*c*Sqrt[c*x^2]) - 1/(2*a*c*x*Sqrt[c*x^2]) + (b^2*x*Log[x])/
(a^3*c*Sqrt[c*x^2]) - (b^2*x*Log[a + b*x])/(a^3*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 15.1481, size = 88, normalized size = 0.99

$$-\frac{\sqrt{cx^2}}{2ac^2x^3}+\frac{b\sqrt{cx^2}}{a^2c^2x^2}+\frac{b^2\sqrt{cx^2}\log(x)}{a^3c^2x}-\frac{b^2\sqrt{cx^2}\log(a+bx)}{a^3c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] -sqrt(c*x**2)/(2*a*c**2*x**3) + b*sqrt(c*x**2)/(a**2*c**2*x**2) +
 b**2*sqrt(c*x**2)*log(x)/(a**3*c**2*x) - b**2*sqrt(c*x**2)*log(a
 + b*x)/(a**3*c**2*x)
```

Mathematica [A] time = 0.0103348, size = 51, normalized size = 0.57

$$\frac{x\left(-2b^2x^2\log(a+bx)-a(a-2bx)+2b^2x^2\log(x)\right)}{2a^3\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (x*(-(a*(a - 2*b*x)) + 2*b^2*x^2*Log[x] - 2*b^2*x^2*Log[a + b*x])
)/(2*a^3*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 49, normalized size = 0.6

$$\frac{x\left(2\,b^{2}\ln\left(x\right)x^{2}-2\,b^{2}\ln\left(bx+a\right)x^{2}+2\,abx-a^{2}\right)}{2\,a^{3}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] 1/2*x*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*x-a^2)/(c*x^2)^(
3/2)/a^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220869, size = 63, normalized size = 0.71

$$\frac{\left(2\,b^{2}x^{2}\log\left(\frac{x}{bx+a}\right)+2\,abx-a^{2}\right)\sqrt{cx^{2}}}{2\,a^{3}c^{2}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^2*x^2*log(x/(b*x + a)) + 2*a*b*x - a^2)*sqrt(c*x^2)/(a^3
*c^2*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(cx^2)^{\frac{3}{2}}(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c*x**2)**(3/2)/(b*x+a),x)

[Out] Integral(1/((c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [A] time = 0.505189, size = 4, normalized size = 0.04

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)),x, algorithm="giac")

[Out] sage0*x
```

3.892 $\int \frac{1}{x(cx^2)^{3/2}(a+bx)}\,dx$

Optimal. Leaf size=115

$$-\frac{b^3x\log(x)}{a^4c\sqrt{cx^2}}+\frac{b^3x\log(a+bx)}{a^4c\sqrt{cx^2}}-\frac{b^2}{a^3c\sqrt{cx^2}}+\frac{b}{2a^2cx\sqrt{cx^2}}-\frac{1}{3acx^2\sqrt{cx^2}}$$

```
[Out] -(b^2/(a^3*c*Sqrt[c*x^2])) - 1/(3*a*c*x^2*Sqrt[c*x^2]) + b/(2*a^2
*c*x*Sqrt[c*x^2]) - (b^3*x*Log[x])/(a^4*c*Sqrt[c*x^2]) + (b^3*x*L
og[a + b*x])/(a^4*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0768615, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^3x\log(x)}{a^4c\sqrt{cx^2}}+\frac{b^3x\log(a+bx)}{a^4c\sqrt{cx^2}}-\frac{b^2}{a^3c\sqrt{cx^2}}+\frac{b}{2a^2cx\sqrt{cx^2}}-\frac{1}{3acx^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*(c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] -(b^2/(a^3*c*Sqrt[c*x^2])) - 1/(3*a*c*x^2*Sqrt[c*x^2]) + b/(2*a^2
*c*x*Sqrt[c*x^2]) - (b^3*x*Log[x])/(a^4*c*Sqrt[c*x^2]) + (b^3*x*L
og[a + b*x])/(a^4*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 23.3302, size = 112, normalized size = 0.97

$$-\frac{\sqrt{cx^2}}{3ac^2x^4}+\frac{b\sqrt{cx^2}}{2a^2c^2x^3}-\frac{b^2\sqrt{cx^2}}{a^3c^2x^2}-\frac{b^3\sqrt{cx^2}\log(x)}{a^4c^2x}+\frac{b^3\sqrt{cx^2}\log(a+bx)}{a^4c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] -sqrt(c*x**2)/(3*a*c**2*x**4) + b*sqrt(c*x**2)/(2*a**2*c**2*x**3)
 - b**2*sqrt(c*x**2)/(a**3*c**2*x**2) - b**3*sqrt(c*x**2)*log(x)/
(a**4*c**2*x) + b**3*sqrt(c*x**2)*log(a + b*x)/(a**4*c**2*x)
```

Mathematica [A] time = 0.0221844, size = 66, normalized size = 0.57

$$\frac{cx^2\left(a\left(-2a^2+3abx-6b^2x^2\right)+6b^3x^3\log(a+bx)-6b^3x^3\log(x)\right)}{6a^4\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*(c*x^2)^(3/2)*(a + b*x)),x]
```

```
[Out] (c*x^2*(a*(-2*a^2 + 3*a*b*x - 6*b^2*x^2) - 6*b^3*x^3*Log[x] + 6*b
^3*x^3*Log[a + b*x]))/(6*a^4*(c*x^2)^(5/2))
```

Maple [A] time = 0.007, size = 59, normalized size = 0.5

$$-\frac{6\,b^{3}\ln\left(x\right)x^{3}-6\,b^{3}\ln\left(bx+a\right)x^{3}+6\,ab^{2}x^{2}-3\,a^{2}bx+2\,a^{3}}{6\,a^{4}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(c*x^2)^(3/2)/(b*x+a),x)
```

```
[Out] -1/6*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*a*b^2*x^2-3*a^2*b*x+2
*a^3)/(c*x^2)^(3/2)/a^4
```

Maxima [A] time = 1.35498, size = 93, normalized size = 0.81

$$\frac{b^{3}\log\left(bx+a\right)}{a^{4}c^{\frac{3}{2}}}-\frac{b^{3}\log\left(x\right)}{a^{4}c^{\frac{3}{2}}}-\frac{6\,b^{2}\sqrt{c}x^{2}-3\,ab\sqrt{c}x+2\,a^{2}\sqrt{c}}{6\,a^{3}c^{2}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)*x),x, algorithm="maxima")
```

```
[Out] b^3*log(b*x + a)/(a^4*c^(3/2)) - b^3*log(x)/(a^4*c^(3/2)) - 1/6*(
6*b^2*sqrt(c)*x^2 - 3*a*b*sqrt(c)*x + 2*a^2*sqrt(c))/(a^3*c^2*x^3
)
```

Fricas [A] time = 0.222767, size = 78, normalized size = 0.68

$$\frac{\left(6\,b^{3}x^{3}\log\left(\frac{bx+a}{x}\right)-6\,ab^{2}x^{2}+3\,a^{2}bx-2\,a^{3}\right)\sqrt{cx^{2}}}{6\,a^{4}c^{2}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)*x),x, algorithm="fricas")
```

```
[Out] 1/6*(6*b^3*x^3*log((b*x + a)/x) - 6*a*b^2*x^2 + 3*a^2*b*x - 2*a^3
)*sqrt(c*x^2)/(a^4*c^2*x^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x\,(cx^2)^{\frac{3}{2}}\,(a+bx)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(c*x**2)**(3/2)/(b*x+a),x)
```

```
[Out] Integral(1/(x*(c*x**2)**(3/2)*(a + b*x)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(cx^2)^{\frac{3}{2}}\,(bx+a)x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)*x),x, algorithm="giac")
```

```
[Out] integrate(1/((c*x^2)^(3/2)*(b*x + a)*x), x)
```

3.893 $\int \frac{x^3\sqrt{cx^2}}{(a+bx)^2}\,dx$

Optimal. Leaf size=106

$$-\frac{a^4\sqrt{cx^2}}{b^5x(a+bx)}-\frac{4a^3\sqrt{cx^2}\log(a+bx)}{b^5x}+\frac{3a^2\sqrt{cx^2}}{b^4}-\frac{ax\sqrt{cx^2}}{b^3}+\frac{x^2\sqrt{cx^2}}{3b^2}$$

```
[Out] (3*a^2*Sqrt[c*x^2])/b^4 - (a*x*Sqrt[c*x^2])/b^3 + (x^2*Sqrt[c*x^2
])/(3*b^2) - (a^4*Sqrt[c*x^2])/(b^5*x*(a + b*x)) - (4*a^3*Sqrt[c*
x^2]*Log[a + b*x])/(b^5*x)
```

Rubi [A] time = 0.0946004, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^4\sqrt{cx^2}}{b^5x(a+bx)}-\frac{4a^3\sqrt{cx^2}\log(a+bx)}{b^5x}+\frac{3a^2\sqrt{cx^2}}{b^4}-\frac{ax\sqrt{cx^2}}{b^3}+\frac{x^2\sqrt{cx^2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*Sqrt[c*x^2])/(a + b*x)^2,x]
```

```
[Out] (3*a^2*Sqrt[c*x^2])/b^4 - (a*x*Sqrt[c*x^2])/b^3 + (x^2*Sqrt[c*x^2
])/(3*b^2) - (a^4*Sqrt[c*x^2])/(b^5*x*(a + b*x)) - (4*a^3*Sqrt[c*
x^2]*Log[a + b*x])/(b^5*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^4\sqrt{cx^2}}{b^5x\,(a+bx)}-\frac{4a^3\sqrt{cx^2}\log\,(a+bx)}{b^5x}+\frac{3a^2\sqrt{cx^2}}{b^4}-\frac{2a\sqrt{cx^2}\int x\,dx}{b^3x}+\frac{x^2\sqrt{cx^2}}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] -a**4*sqrt(c*x**2)/(b**5*x*(a + b*x)) - 4*a**3*sqrt(c*x**2)*log(a
 + b*x)/(b**5*x) + 3*a**2*sqrt(c*x**2)/b**4 - 2*a*sqrt(c*x**2)*In
tegral(x, x)/(b**3*x) + x**2*sqrt(c*x**2)/(3*b**2)
```

Mathematica [A] time = 0.0440962, size = 81, normalized size = 0.76

$$\frac{cx\left(-3a^4+9a^3bx-12a^3(a+bx)\log(a+bx)+6a^2b^2x^2-2ab^3x^3+b^4x^4\right)}{3b^5\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*Sqrt[c*x^2])/(a + b*x)^2,x]
```

```
[Out] (c*x*(-3*a^4 + 9*a^3*b*x + 6*a^2*b^2*x^2 - 2*a*b^3*x^3 + b^4*x^4
- 12*a^3*(a + b*x)*Log[a + b*x]))/(3*b^5*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.009, size = 88, normalized size = 0.8

$$-\frac{-x^4b^4+2\,x^3ab^3+12\,\ln(bx+a)\,xa^3b-6\,x^2a^2b^2+12\,a^4\ln(bx+a)-9\,xa^3b+3\,a^4}{3\,x\,(bx+a)\,b^5}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(c*x^2)^(1/2)/(b*x+a)^2,x)
```

```
[Out] -1/3*(c*x^2)^(1/2)*(-x^4*b^4+2*x^3*a*b^3+12*ln(b*x+a)*x*a^3*b-6*x
^2*a^2*b^2+12*a^4*ln(b*x+a)-9*x*a^3*b+3*a^4)/x/(b*x+a)/b^5
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^3/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219823, size = 112, normalized size = 1.06

$$\frac{\left(b^4x^4-2\,ab^3x^3+6\,a^2b^2x^2+9\,a^3bx-3\,a^4-12\,\left(a^3bx+a^4\right)\log\left(bx+a\right)\right)\sqrt{cx^2}}{3\,(b^6x^2+ab^5x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^3/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/3*(b^4*x^4 - 2*a*b^3*x^3 + 6*a^2*b^2*x^2 + 9*a^3*b*x - 3*a^4 -
12*(a^3*b*x + a^4)*log(b*x + a))*sqrt(c*x^2)/(b^6*x^2 + a*b^5*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3\sqrt{cx^2}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x**3*sqrt(c*x**2)/(a + b*x)**2, x)
```

GIAC/XCAS [A] time = 0.212978, size = 130, normalized size = 1.23

$$-\frac{1}{3}\sqrt{c}\left(\frac{12\,a^3\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^5}+\frac{3\,a^4\mathrm{sign}\left(x\right)}{(bx+a)b^5}-\frac{3\left(4\,a^3\ln\left(|a|\right)+a^3\right)\mathrm{sign}\left(x\right)}{b^5}-\frac{b^4x^3\mathrm{sign}\left(x\right)-3\,ab^3x^2\mathrm{sign}\left(x\right)+9\,a^2b^2x\mathrm{si}}{b^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^3/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/3*sqrt(c)*(12*a^3*ln(abs(b*x + a))*sign(x)/b^5 + 3*a^4*sign(x)
/((b*x + a)*b^5) - 3*(4*a^3*ln(abs(a)) + a^3)*sign(x)/b^5 - (b^4*
x^3*sign(x) - 3*a*b^3*x^2*sign(x) + 9*a^2*b^2*x*sign(x))/b^6)
```

3.894 $\int \frac{x^2\sqrt{cx^2}}{(a+bx)^2}\,dx$

Optimal. Leaf size=85

$$\frac{a^3\sqrt{cx^2}}{b^4x(a+bx)}+\frac{3a^2\sqrt{cx^2}\log(a+bx)}{b^4x}-\frac{2a\sqrt{cx^2}}{b^3}+\frac{x\sqrt{cx^2}}{2b^2}$$

```
[Out] (-2*a*Sqrt[c*x^2])/b^3 + (x*Sqrt[c*x^2])/(2*b^2) + (a^3*Sqrt[c*x^
2])/(b^4*x*(a + b*x)) + (3*a^2*Sqrt[c*x^2]*Log[a + b*x])/(b^4*x)
```

Rubi [A] time = 0.0764667, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^3\sqrt{cx^2}}{b^4x(a+bx)}+\frac{3a^2\sqrt{cx^2}\log(a+bx)}{b^4x}-\frac{2a\sqrt{cx^2}}{b^3}+\frac{x\sqrt{cx^2}}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*Sqrt[c*x^2])/(a + b*x)^2,x]
```

```
[Out] (-2*a*Sqrt[c*x^2])/b^3 + (x*Sqrt[c*x^2])/(2*b^2) + (a^3*Sqrt[c*x^
2])/(b^4*x*(a + b*x)) + (3*a^2*Sqrt[c*x^2]*Log[a + b*x])/(b^4*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3\sqrt{cx^2}}{b^4x\,(a+bx)}+\frac{3a^2\sqrt{cx^2}\log\,(a+bx)}{b^4x}-\frac{2a\sqrt{cx^2}}{b^3}+\frac{\sqrt{cx^2}\int x\,dx}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] a**3*sqrt(c*x**2)/(b**4*x*(a + b*x)) + 3*a**2*sqrt(c*x**2)*log(a
+ b*x)/(b**4*x) - 2*a*sqrt(c*x**2)/b**3 + sqrt(c*x**2)*Integral(x
, x)/(b**2*x)
```

Mathematica [A] time = 0.0327775, size = 70, normalized size = 0.82

$$\frac{cx\left(2a^3-4a^2bx+6a^2(a+bx)\log(a+bx)-3ab^2x^2+b^3x^3\right)}{2b^4\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*Sqrt[c*x^2])/(a + b*x)^2,x]
```

```
[Out] (c*x*(2*a^3 - 4*a^2*b*x - 3*a*b^2*x^2 + b^3*x^3 + 6*a^2*(a + b*x)
*Log[a + b*x]))/(2*b^4*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.009, size = 76, normalized size = 0.9

$$\frac{b^3x^3 + 6\ln(bx + a)\,xa^2b - 3\,ab^2x^2 + 6\,a^3\ln(bx + a) - 4\,a^2bx + 2\,a^3}{2\,x\,(bx + a)\,b^4}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(c*x^2)^(1/2)/(b*x+a)^2,x)
```

```
[Out] 1/2*(c*x^2)^(1/2)*(b^3*x^3+6*ln(b*x+a)*x*a^2*b-3*a*b^2*x^2+6*a^3*
ln(b*x+a)-4*a^2*b*x+2*a^3)/x/(b*x+a)/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^2/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21573, size = 97, normalized size = 1.14

$$\frac{\left(b^3x^3 - 3\,ab^2x^2 - 4\,a^2bx + 2\,a^3 + 6\left(a^2bx + a^3\right)\log(bx + a)\right)\sqrt{cx^2}}{2\,(b^5x^2 + ab^4x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^2/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*x^3 - 3*a*b^2*x^2 - 4*a^2*b*x + 2*a^3 + 6*(a^2*b*x + a^3
)*log(b*x + a))*sqrt(c*x^2)/(b^5*x^2 + a*b^4*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2\sqrt{cx^2}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x**2*sqrt(c*x**2)/(a + b*x)**2, x)
```

GIAC/XCAS [A] time = 0.207359, size = 108, normalized size = 1.27

$$\frac{1}{2}\sqrt{c}\left(\frac{6\,a^2\ln\left(|bx+a|\right)\operatorname{sign}\left(x\right)}{b^4}+\frac{2\,a^3\operatorname{sign}\left(x\right)}{(bx+a)b^4}-\frac{2\left(3\,a^2\ln\left(|a|\right)+a^2\right)\operatorname{sign}\left(x\right)}{b^4}+\frac{b^2x^2\operatorname{sign}\left(x\right)-4\,abx\operatorname{sign}\left(x\right)}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x^2/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c)*(6*a^2*ln(abs(b*x + a))*sign(x)/b^4 + 2*a^3*sign(x)/(
(b*x + a)*b^4) - 2*(3*a^2*ln(abs(a)) + a^2)*sign(x)/b^4 + (b^2*x^
2*sign(x) - 4*a*b*x*sign(x))/b^4)
```

3.895 $\int \frac{x\sqrt{cx^2}}{(a+bx)^2}\,dx$

Optimal. Leaf size=65

$$-\frac{a^2\sqrt{cx^2}}{b^3x(a+bx)}-\frac{2a\sqrt{cx^2}\log(a+bx)}{b^3x}+\frac{\sqrt{cx^2}}{b^2}$$

```
[Out] Sqrt[c*x^2]/b^2 - (a^2*Sqrt[c*x^2])/(b^3*x*(a + b*x)) - (2*a*Sqrt
[c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi [A] time = 0.056326, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a^2\sqrt{cx^2}}{b^3x(a+bx)}-\frac{2a\sqrt{cx^2}\log(a+bx)}{b^3x}+\frac{\sqrt{cx^2}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*Sqrt[c*x^2])/(a + b*x)^2,x]
```

```
[Out] Sqrt[c*x^2]/b^2 - (a^2*Sqrt[c*x^2])/(b^3*x*(a + b*x)) - (2*a*Sqrt
[c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\sqrt{cx^2}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x*sqrt(c*x**2)/(a + b*x)**2, x)
```

Mathematica [A] time = 0.0299677, size = 53, normalized size = 0.82

$$\frac{cx\left(-a^2+abx-2a(a+bx)\log(a+bx)+b^2x^2\right)}{b^3\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*Sqrt[c*x^2])/(a + b*x)^2,x]
```

```
[Out] (c*x*(-a^2 + a*b*x + b^2*x^2 - 2*a*(a + b*x)*Log[a + b*x]))/(b^3*
Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 62, normalized size = 1.

$$-\frac{2\ln\left(bx+a\right)xab-b^{2}x^{2}+2\,a^{2}\ln\left(bx+a\right)-abx+a^{2}}{x\left(bx+a\right)b^{3}}\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(1/2)/(b*x+a)^2,x)
```

```
[Out] -(c*x^2)^(1/2)*(2*ln(b*x+a)*x*a*b-b^2*x^2+2*a^2*ln(b*x+a)-a*b*x+a
^2)/x/(b*x+a)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209758, size = 77, normalized size = 1.18

$$\frac{\left(b^{2}x^{2}+abx-a^{2}-2\left(abx+a^{2}\right)\log\left(bx+a\right)\right)\sqrt{cx^{2}}}{b^{4}x^{2}+ab^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + a*b*x - a^2 - 2*(a*b*x + a^2)*log(b*x + a))*sqrt(c*x^2
)/(b^4*x^2 + a*b^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\sqrt{cx^2}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x*sqrt(c*x**2)/(a + b*x)**2, x)
```

GIAC/XCAS [A] time = 0.206885, size = 78, normalized size = 1.2

$$\sqrt{c}\left(\frac{x\mathrm{sign}\,(x)}{b^2}-\frac{2\,a\ln\left(|bx+a|\right)\mathrm{sign}\,(x)}{b^3}+\frac{(2\,a\ln\left(|a|\right)+a)\mathrm{sign}\,(x)}{b^3}-\frac{a^2\mathrm{sign}\,(x)}{(bx+a)b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*x/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] sqrt(c)*(x*sign(x)/b^2 - 2*a*ln(abs(b*x + a))*sign(x)/b^3 + (2*a*
ln(abs(a)) + a)*sign(x)/b^3 - a^2*sign(x)/((b*x + a)*b^3))
```

3.896 $\int \frac{\sqrt{cx^2}}{(a+bx)^2}\,dx$

Optimal. Leaf size=47

$$\frac{a\sqrt{cx^2}}{b^2x(a+bx)}+\frac{\sqrt{cx^2}\log(a+bx)}{b^2x}$$

```
[Out] (a*Sqrt[c*x^2])/(b^2*x*(a + b*x)) + (Sqrt[c*x^2]*Log[a + b*x])/(b
^2*x)
```

Rubi [A] time = 0.0391064, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{a\sqrt{cx^2}}{b^2x(a+bx)}+\frac{\sqrt{cx^2}\log(a+bx)}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(a + b*x)^2,x]
```

```
[Out] (a*Sqrt[c*x^2])/(b^2*x*(a + b*x)) + (Sqrt[c*x^2]*Log[a + b*x])/(b
^2*x)
```

Rubi in Sympy [A] time = 9.94411, size = 39, normalized size = 0.83

$$\frac{a\sqrt{cx^2}}{b^2x\,(a+bx)}+\frac{\sqrt{cx^2}\log{(a+bx)}}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] a*sqrt(c*x**2)/(b**2*x*(a + b*x)) + sqrt(c*x**2)*log(a + b*x)/(b*
*2*x)
```

Mathematica [A] time = 0.0178698, size = 36, normalized size = 0.77

$$\frac{cx((a+bx)\log(a+bx)+a)}{b^2\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(a + b*x)^2,x]

[Out] (c*x*(a + (a + b*x)*Log[a + b*x]))/(b^2*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.004, size = 41, normalized size = 0.9

$$\frac{b\ln(bx+a)\,x + a\ln(bx+a) + a}{x\,(bx+a)\,b^2}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(1/2)/(b*x+a)^2,x)

[Out] (c*x^2)^(1/2)*(b*ln(b*x+a)*x+a*ln(b*x+a)+a)/x/(b*x+a)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/(b*x + a)^2,x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215358, size = 51, normalized size = 1.09

$$\frac{\sqrt{cx^2}\left((bx+a)\log(bx+a)+a\right)}{b^3x^2+ab^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/(b*x + a)^2,x, algorithm="fricas")

[Out] sqrt(c*x^2)*((b*x + a)*log(b*x + a) + a)/(b^3*x^2 + a*b^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/(b*x+a)**2,x)
```

```
[Out] Integral(sqrt(c*x**2)/(a + b*x)**2, x)
```

GIAC/XCAS [A] time = 0.208445, size = 62, normalized size = 1.32

$$-\sqrt{c}\left(\frac{(\ln(|a|)+1)\mathrm{sign}(x)}{b^2}-\frac{\ln(|bx+a|)\,\mathrm{sign}(x)}{b^2}-\frac{a\mathrm{sign}(x)}{(bx+a)b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -sqrt(c)*((ln(abs(a)) + 1)*sign(x)/b^2 - ln(abs(b*x + a))*sign(x)
/b^2 - a*sign(x)/((b*x + a)*b^2))
```

3.897 $\int \frac{\sqrt{cx^2}}{x(a+bx)^2}\,dx$

Optimal. Leaf size=24

$$-\frac{\sqrt{cx^2}}{bx(a+bx)}$$

```
[Out] -(Sqrt[c*x^2]/(b*x*(a + b*x)))
```

Rubi [A] time = 0.0123094, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{\sqrt{cx^2}}{bx(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[c*x^2]/(x*(a + b*x)^2),x]

[Out] -(Sqrt[c*x^2]/(b*x*(a + b*x)))
```

Rubi in Sympy [A] time = 11.1074, size = 17, normalized size = 0.71

$$-\frac{\sqrt{cx^2}}{bx\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(1/2)/x/(b*x+a)**2,x)

[Out] -sqrt(c*x**2)/(b*x*(a + b*x))
```

Mathematica [A] time = 0.0103767, size = 23, normalized size = 0.96

$$-\frac{cx}{b\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[c*x^2]/(x*(a + b*x)^2),x]
```

```
[Out] -((c*x)/(b*Sqrt[c*x^2]*(a + b*x)))
```

Maple [A] time = 0.004, size = 23, normalized size = 1.

$$-\frac{1}{bx\left(bx+a\right)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(1/2)/x/(b*x+a)^2,x)
```

```
[Out] -(c*x^2)^(1/2)/b/x/(b*x+a)
```

Maxima [A] time = 1.34582, size = 22, normalized size = 0.92

$$-\frac{\sqrt{c}}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/((b*x + a)^2*x),x, algorithm="maxima")
```

```
[Out] -sqrt(c)/(b^2*x + a*b)
```

Fricas [A] time = 0.209496, size = 31, normalized size = 1.29

$$-\frac{\sqrt{cx^2}}{b^2x^2+abx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)/((b*x + a)^2*x),x, algorithm="fricas")
```

```
[Out] -sqrt(c*x^2)/(b^2*x^2 + a*b*x)
```

Sympy [A] time = 2.96737, size = 39, normalized size = 1.62

$$\begin{cases} -\frac{\sqrt{c}\sqrt{x^2}}{abx+b^2x^2} & \text{for } b \neq 0 \\ \frac{\sqrt{c}\sqrt{x^2}}{a^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x/(b*x+a)**2,x)
```

```
[Out] Piecewise((-sqrt(c)*sqrt(x**2)/(a*b*x + b**2*x**2), Ne(b, 0)), (s
qrt(c)*sqrt(x**2)/a**2, True))
```

GIAC/XCAS [A] time = 0.205167, size = 39, normalized size = 1.62

$$-\sqrt{c}\left(\frac{\mathrm{sign}\left(x\right)}{(bx+a)b}-\frac{\mathrm{sign}\left(x\right)}{ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x),x, algorithm="giac")
```

```
[Out] -sqrt(c)*(sign(x)/((b*x + a)*b) - sign(x)/(a*b))
```

3.898 $\int \frac{\sqrt{cx^2}}{x^2(a+bx)^2}\,dx$

Optimal. Leaf size=65

$$-\frac{\sqrt{cx^2}\log(a+bx)}{a^2x}+\frac{\sqrt{cx^2}\log(x)}{a^2x}+\frac{\sqrt{cx^2}}{ax(a+bx)}$$

```
[Out] Sqrt[c*x^2]/(a*x*(a + b*x)) + (Sqrt[c*x^2]*Log[x])/(a^2*x) - (Sqr
t[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi [A] time = 0.0462673, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{\sqrt{cx^2}\log(a+bx)}{a^2x}+\frac{\sqrt{cx^2}\log(x)}{a^2x}+\frac{\sqrt{cx^2}}{ax(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x^2*(a + b*x)^2),x]
```

```
[Out] Sqrt[c*x^2]/(a*x*(a + b*x)) + (Sqrt[c*x^2]*Log[x])/(a^2*x) - (Sqr
t[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi in Sympy [A] time = 16.7456, size = 53, normalized size = 0.82

$$\frac{\sqrt{cx^2}}{ax\,(a+bx)}+\frac{\sqrt{cx^2}\log{(x)}}{a^2x}-\frac{\sqrt{cx^2}\log{(a+bx)}}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x**2/(b*x+a)**2,x)
```

```
[Out] sqrt(c*x**2)/(a*x*(a + b*x)) + sqrt(c*x**2)*log(x)/(a**2*x) - sqr
t(c*x**2)*log(a + b*x)/(a**2*x)
```

Mathematica [A] time = 0.0244368, size = 45, normalized size = 0.69

$$\frac{cx(\log(x)(a+bx)-(a+bx)\log(a+bx)+a)}{a^2\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x^2*(a + b*x)^2),x]
```

```
[Out] (c*x*(a + (a + b*x)*Log[x] - (a + b*x)*Log[a + b*x]))/(a^2*Sqrt[c
*x^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 52, normalized size = 0.8

$$\frac{b\ln(x)x - b\ln(bx+a)x + a\ln(x) - a\ln(bx+a) + a}{xa^2(bx+a)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(1/2)/x^2/(b*x+a)^2,x)
```

```
[Out] (c*x^2)^(1/2)*(b*ln(x)*x-b*ln(b*x+a)*x+a*ln(x)-a*ln(b*x+a)+a)/x/a
^2/(b*x+a)
```

Maxima [A] time = 1.36099, size = 51, normalized size = 0.78

$$\frac{\sqrt{c}}{abx+a^2} - \frac{\sqrt{c}\log(bx+a)}{a^2} + \frac{\sqrt{c}\log(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^2),x, algorithm="maxima")
```

```
[Out] sqrt(c)/(a*b*x + a^2) - sqrt(c)*log(b*x + a)/a^2 + sqrt(c)*log(x)
/a^2
```

Fricas [A] time = 0.220959, size = 57, normalized size = 0.88

$$\frac{\sqrt{cx^2}\left((bx+a)\log\left(\frac{x}{bx+a}\right) + a\right)}{a^2bx^2 + a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*((b*x + a)*log(x/(b*x + a)) + a)/(a^2*b*x^2 + a^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{x^2 (a + bx)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x**2/(b*x+a)**2,x)

[Out] Integral(sqrt(c*x**2)/(x**2*(a + b*x)**2), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^2),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.899 $\int \frac{\sqrt{cx^2}}{x^3(a+bx)^2} dx$

Optimal. Leaf size=87

$$-\frac{2b\sqrt{cx^2}\log(x)}{a^3x}+\frac{2b\sqrt{cx^2}\log(a+bx)}{a^3x}-\frac{b\sqrt{cx^2}}{a^2x(a+bx)}-\frac{\sqrt{cx^2}}{a^2x^2}$$

```
[Out] -(Sqrt[c*x^2]/(a^2*x^2)) - (b*Sqrt[c*x^2])/(a^2*x*(a + b*x)) - (2
*b*Sqrt[c*x^2]*Log[x])/(a^3*x) + (2*b*Sqrt[c*x^2]*Log[a + b*x])/(
a^3*x)
```

Rubi [A] time = 0.066799, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{2b\sqrt{cx^2}\log(x)}{a^3x}+\frac{2b\sqrt{cx^2}\log(a+bx)}{a^3x}-\frac{b\sqrt{cx^2}}{a^2x(a+bx)}-\frac{\sqrt{cx^2}}{a^2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x^3*(a + b*x)^2),x]
```

```
[Out] -(Sqrt[c*x^2]/(a^2*x^2)) - (b*Sqrt[c*x^2])/(a^2*x*(a + b*x)) - (2
*b*Sqrt[c*x^2]*Log[x])/(a^3*x) + (2*b*Sqrt[c*x^2]*Log[a + b*x])/(
a^3*x)
```

Rubi in Sympy [A] time = 19.0077, size = 78, normalized size = 0.9

$$-\frac{b\sqrt{cx^2}}{a^2x\,(a+bx)}-\frac{\sqrt{cx^2}}{a^2x^2}-\frac{2b\sqrt{cx^2}\log{(x)}}{a^3x}+\frac{2b\sqrt{cx^2}\log{(a+bx)}}{a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x**3/(b*x+a)**2,x)
```

```
[Out] -b*sqrt(c*x**2)/(a**2*x*(a + b*x)) - sqrt(c*x**2)/(a**2*x**2) - 2
*b*sqrt(c*x**2)*log(x)/(a**3*x) + 2*b*sqrt(c*x**2)*log(a + b*x)/(
a**3*x)
```

Mathematica [A] time = 0.0465946, size = 57, normalized size = 0.66

$$-\frac{c(a(a+2bx)+2bx\log(x)(a+bx)-2bx(a+bx)\log(a+bx))}{a^3\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x^3*(a + b*x)^2),x]
```

```
[Out] -((c*(a*(a + 2*b*x) + 2*b*x*(a + b*x)*Log[x] - 2*b*x*(a + b*x)*Lo
g[a + b*x]))/(a^3*Sqrt[c*x^2]*(a + b*x)))
```

Maple [A] time = 0.007, size = 74, normalized size = 0.9

$$-\frac{2\,b^2\ln(x)\,x^2-2\,b^2\ln(bx+a)\,x^2+2\,ab\ln(x)\,x-2\,\ln(bx+a)\,xab+2\,abx+a^2}{a^3x^2\,(bx+a)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(1/2)/x^3/(b*x+a)^2,x)
```

```
[Out] -(c*x^2)^(1/2)*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*ln(x)*x
-2*ln(b*x+a)*x*a*b+2*a*b*x+a^2)/x^2/a^3/(b*x+a)
```

Maxima [A] time = 1.34393, size = 78, normalized size = 0.9

$$-\frac{2\,b\sqrt{c}x+a\sqrt{c}}{a^2bx^2+a^3x}+\frac{2\,b\sqrt{c}\log(bx+a)}{a^3}-\frac{2\,b\sqrt{c}\log(x)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^3),x, algorithm="maxima")
```

```
[Out] -(2*b*sqrt(c)*x + a*sqrt(c))/(a^2*b*x^2 + a^3*x) + 2*b*sqrt(c)*lo
g(b*x + a)/a^3 - 2*b*sqrt(c)*log(x)/a^3
```

Fricas [A] time = 0.223972, size = 81, normalized size = 0.93

$$-\frac{\left(2\,abx+a^2-2\left(b^2x^2+abx\right)\log\left(\frac{bx+a}{x}\right)\right)\sqrt{cx^2}}{a^3bx^3+a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^3),x, algorithm="fricas")
```

```
[Out] -(2*a*b*x + a^2 - 2*(b^2*x^2 + a*b*x)*log((b*x + a)/x))*sqrt(c*x^
2)/(a^3*b*x^3 + a^4*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{x^3 (a + bx)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x**3/(b*x+a)**2,x)
```

```
[Out] Integral(sqrt(c*x**2)/(x**3*(a + b*x)**2), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^3),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.900 $\int \frac{\sqrt{cx^2}}{x^4(a+bx)^2}\,dx$

Optimal. Leaf size=112

$$\frac{3b^2\sqrt{cx^2}\log(x)}{a^4x}-\frac{3b^2\sqrt{cx^2}\log(a+bx)}{a^4x}+\frac{b^2\sqrt{cx^2}}{a^3x(a+bx)}+\frac{2b\sqrt{cx^2}}{a^3x^2}-\frac{\sqrt{cx^2}}{2a^2x^3}$$

```
[Out] -Sqrt[c*x^2]/(2*a^2*x^3) + (2*b*Sqrt[c*x^2])/(a^3*x^2) + (b^2*Sqr
t[c*x^2])/(a^3*x*(a + b*x)) + (3*b^2*Sqrt[c*x^2]*Log[x])/(a^4*x)
- (3*b^2*Sqrt[c*x^2]*Log[a + b*x])/(a^4*x)
```

Rubi [A] time = 0.0883547, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{3b^2\sqrt{cx^2}\log(x)}{a^4x}-\frac{3b^2\sqrt{cx^2}\log(a+bx)}{a^4x}+\frac{b^2\sqrt{cx^2}}{a^3x(a+bx)}+\frac{2b\sqrt{cx^2}}{a^3x^2}-\frac{\sqrt{cx^2}}{2a^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]/(x^4*(a + b*x)^2),x]
```

```
[Out] -Sqrt[c*x^2]/(2*a^2*x^3) + (2*b*Sqrt[c*x^2])/(a^3*x^2) + (b^2*Sqr
t[c*x^2])/(a^3*x*(a + b*x)) + (3*b^2*Sqrt[c*x^2]*Log[x])/(a^4*x)
- (3*b^2*Sqrt[c*x^2]*Log[a + b*x])/(a^4*x)
```

Rubi in Sympy [A] time = 23.5787, size = 104, normalized size = 0.93

$$-\frac{\sqrt{cx^2}}{2a^2x^3}+\frac{b^2\sqrt{cx^2}}{a^3x\,(a+bx)}+\frac{2b\sqrt{cx^2}}{a^3x^2}+\frac{3b^2\sqrt{cx^2}\log{(x)}}{a^4x}-\frac{3b^2\sqrt{cx^2}\log{(a+bx)}}{a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(1/2)/x**4/(b*x+a)**2,x)
```

```
[Out] -sqrt(c*x**2)/(2*a**2*x**3) + b**2*sqrt(c*x**2)/(a**3*x*(a + b*x)
) + 2*b*sqrt(c*x**2)/(a**3*x**2) + 3*b**2*sqrt(c*x**2)*log(x)/(a*
*4*x) - 3*b**2*sqrt(c*x**2)*log(a + b*x)/(a**4*x)
```

Mathematica [A] time = 0.043294, size = 82, normalized size = 0.73

$$\frac{\sqrt{cx^2}\left(a\left(-a^2+3abx+6b^2x^2\right)+6b^2x^2\log(x)(a+bx)-6b^2x^2(a+bx)\log(a+bx)\right)}{2a^4x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]/(x^4*(a + b*x)^2),x]
```

```
[Out] (Sqrt[c*x^2]*(a*(-a^2 + 3*a*b*x + 6*b^2*x^2) + 6*b^2*x^2*(a + b*x
)*Log[x] - 6*b^2*x^2*(a + b*x)*Log[a + b*x]))/(2*a^4*x^3*(a + b*x
))
```

Maple [A] time = 0.01, size = 95, normalized size = 0.9

$$\frac{6\,b^{3}\ln(x)\,x^{3}-6\,b^{3}\ln(bx+a)\,x^{3}+6\,\ln(x)\,x^{2}ab^{2}-6\,\ln(bx+a)\,x^{2}ab^{2}+6\,ab^{2}x^{2}+3\,a^{2}bx-a^{3}}{2\,x^{3}a^{4}\,(bx+a)}\sqrt{cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(1/2)/x^4/(b*x+a)^2,x)
```

```
[Out] 1/2*(c*x^2)^(1/2)*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*ln(x)*x^
2*a*b^2-6*ln(b*x+a)*x^2*a*b^2+6*a*b^2*x^2+3*a^2*b*x-a^3)/x^3/a^4/
(b*x+a)
```

Maxima [A] time = 1.33582, size = 107, normalized size = 0.96

$$\frac{6\,b^{2}\sqrt{c}x^{2}+3\,ab\sqrt{c}x-a^{2}\sqrt{c}}{2\,(a^{3}bx^{3}+a^{4}x^{2})}-\frac{3\,b^{2}\sqrt{c}\log(bx+a)}{a^{4}}+\frac{3\,b^{2}\sqrt{c}\log(x)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^4),x, algorithm="maxima")
```

```
[Out] 1/2*(6*b^2*sqrt(c)*x^2 + 3*a*b*sqrt(c)*x - a^2*sqrt(c))/(a^3*b*x^
3 + a^4*x^2) - 3*b^2*sqrt(c)*log(b*x + a)/a^4 + 3*b^2*sqrt(c)*log
(x)/a^4
```

Fricas [A] time = 0.225983, size = 104, normalized size = 0.93

$$\frac{\left(6\,ab^{2}x^{2}+3\,a^{2}bx-a^{3}+6\,\left(b^{3}x^{3}+ab^{2}x^{2}\right)\,\log\left(\frac{x}{bx+a}\right)\right)\sqrt{cx^{2}}}{2\,(a^{4}bx^{4}+a^{5}x^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^4),x, algorithm="fricas")
```

```
[Out] 1/2*(6*a*b^2*x^2 + 3*a^2*b*x - a^3 + 6*(b^3*x^3 + a*b^2*x^2)*log(
x/(b*x + a)))*sqrt(c*x^2)/(a^4*b*x^4 + a^5*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}}{x^4 (a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(1/2)/x**4/(b*x+a)**2,x)
```

```
[Out] Integral(sqrt(c*x**2)/(x**4*(a + b*x)**2), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)/((b*x + a)^2*x^4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.901 $\int \frac{x(cx^2)^{3/2}}{(a+bx)^2}\,dx$

Optimal. Leaf size=111

$$-\frac{a^4c\sqrt{cx^2}}{b^5x(a+bx)}-\frac{4a^3c\sqrt{cx^2}\log(a+bx)}{b^5x}+\frac{3a^2c\sqrt{cx^2}}{b^4}-\frac{acx\sqrt{cx^2}}{b^3}+\frac{cx^2\sqrt{cx^2}}{3b^2}$$

```
[Out] (3*a^2*c*Sqrt[c*x^2])/b^4 - (a*c*x*Sqrt[c*x^2])/b^3 + (c*x^2*Sqrt
[c*x^2])/(3*b^2) - (a^4*c*Sqrt[c*x^2])/(b^5*x*(a + b*x)) - (4*a^3
*c*Sqrt[c*x^2]*Log[a + b*x])/(b^5*x)
```

Rubi [A] time = 0.0928012, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{a^4c\sqrt{cx^2}}{b^5x(a+bx)}-\frac{4a^3c\sqrt{cx^2}\log(a+bx)}{b^5x}+\frac{3a^2c\sqrt{cx^2}}{b^4}-\frac{acx\sqrt{cx^2}}{b^3}+\frac{cx^2\sqrt{cx^2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(c*x^2)^(3/2))/(a + b*x)^2,x]
```

```
[Out] (3*a^2*c*Sqrt[c*x^2])/b^4 - (a*c*x*Sqrt[c*x^2])/b^3 + (c*x^2*Sqrt
[c*x^2])/(3*b^2) - (a^4*c*Sqrt[c*x^2])/(b^5*x*(a + b*x)) - (4*a^3
*c*Sqrt[c*x^2]*Log[a + b*x])/(b^5*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(cx^2\right)^{\frac{3}{2}}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)/(a + b*x)**2, x)
```

Mathematica [A] time = 0.0388168, size = 82, normalized size = 0.74

$$\frac{\left(cx^2\right)^{3/2}\left(-3a^4+9a^3bx-12a^3(a+bx)\log(a+bx)+6a^2b^2x^2-2ab^3x^3+b^4x^4\right)}{3b^5x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(c*x^2)^(3/2))/(a + b*x)^2,x]
```

```
[Out] ((c*x^2)^(3/2)*(-3*a^4 + 9*a^3*b*x + 6*a^2*b^2*x^2 - 2*a*b^3*x^3
+ b^4*x^4 - 12*a^3*(a + b*x)*Log[a + b*x]))/(3*b^5*x^3*(a + b*x))
```

Maple [A] time = 0.007, size = 88, normalized size = 0.8

$$-\frac{-x^4b^4+2\,x^3ab^3+12\,\ln(bx+a)\,xa^3b-6\,x^2a^2b^2+12\,a^4\ln(bx+a)-9\,xa^3b+3\,a^4}{3\,x^3\,(bx+a)\,b^5}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] -1/3*(c*x^2)^(3/2)*(-x^4*b^4+2*x^3*a*b^3+12*ln(b*x+a)*x*a^3*b-6*x
^2*a^2*b^2+12*a^4*ln(b*x+a)-9*x*a^3*b+3*a^4)/x^3/(b*x+a)/b^5
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*x/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215826, size = 123, normalized size = 1.11

$$\frac{\left(b^4cx^4-2\,ab^3cx^3+6\,a^2b^2cx^2+9\,a^3bcx-3\,a^4c-12\,\left(a^3bcx+a^4c\right)\,\log\left(bx+a\right)\right)\sqrt{cx^2}}{3\,\left(b^6x^2+ab^5x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*x/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/3*(b^4*c*x^4 - 2*a*b^3*c*x^3 + 6*a^2*b^2*c*x^2 + 9*a^3*b*c*x -
3*a^4*c - 12*(a^3*b*c*x + a^4*c)*log(b*x + a))*sqrt(c*x^2)/(b^6*x
```

```
^2 + a*b^5*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\left(cx^2\right)^{\frac{3}{2}}}{\left(a+bx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)/(a + b*x)**2, x)
```

GIAC/XCAS [A] time = 0.206547, size = 130, normalized size = 1.17

$$-\frac{1}{3}\,c^{\frac{3}{2}}\left(\frac{12\,a^3\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^5}+\frac{3\,a^4\mathrm{sign}\left(x\right)}{(bx+a)b^5}-\frac{3\left(4\,a^3\ln\left(|a|\right)+a^3\right)\mathrm{sign}\left(x\right)}{b^5}-\frac{b^4x^3\mathrm{sign}\left(x\right)-3\,ab^3x^2\mathrm{sign}\left(x\right)+9\,a^2b^2x\mathrm{si}}{b^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*x/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/3*c^(3/2)*(12*a^3*ln(abs(b*x + a))*sign(x)/b^5 + 3*a^4*sign(x)
/((b*x + a)*b^5) - 3*(4*a^3*ln(abs(a)) + a^3)*sign(x)/b^5 - (b^4*
x^3*sign(x) - 3*a*b^3*x^2*sign(x) + 9*a^2*b^2*x*sign(x))/b^6)
```

3.902 $\int \frac{(cx^2)^{3/2}}{(a+bx)^2} dx$

Optimal. Leaf size=89

$$\frac{a^3c\sqrt{cx^2}}{b^4x(a+bx)}+\frac{3a^2c\sqrt{cx^2}\log(a+bx)}{b^4x}-\frac{2ac\sqrt{cx^2}}{b^3}+\frac{cx\sqrt{cx^2}}{2b^2}$$

```
[Out] (-2*a*c*Sqrt[c*x^2])/b^3 + (c*x*Sqrt[c*x^2])/(2*b^2) + (a^3*c*Sqr
t[c*x^2])/(b^4*x*(a + b*x)) + (3*a^2*c*Sqrt[c*x^2]*Log[a + b*x])/
(b^4*x)
```

Rubi [A] time = 0.0759953, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{a^3c\sqrt{cx^2}}{b^4x(a+bx)}+\frac{3a^2c\sqrt{cx^2}\log(a+bx)}{b^4x}-\frac{2ac\sqrt{cx^2}}{b^3}+\frac{cx\sqrt{cx^2}}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(a + b*x)^2,x]
```

```
[Out] (-2*a*c*Sqrt[c*x^2])/b^3 + (c*x*Sqrt[c*x^2])/(2*b^2) + (a^3*c*Sqr
t[c*x^2])/(b^4*x*(a + b*x)) + (3*a^2*c*Sqrt[c*x^2]*Log[a + b*x])/
(b^4*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3c\sqrt{cx^2}}{b^4x\,(a+bx)}+\frac{3a^2c\sqrt{cx^2}\log{(a+bx)}}{b^4x}-\frac{2ac\sqrt{cx^2}}{b^3}+\frac{c\sqrt{cx^2}\int x\,dx}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] a**3*c*sqrt(c*x**2)/(b**4*x*(a + b*x)) + 3*a**2*c*sqrt(c*x**2)*lo
g(a + b*x)/(b**4*x) - 2*a*c*sqrt(c*x**2)/b**3 + c*sqrt(c*x**2)*In
tegral(x, x)/(b**2*x)
```

Mathematica [A] time = 0.0326959, size = 71, normalized size = 0.8

$$\frac{(cx^2)^{3/2}\left(2a^3-4a^2bx+6a^2(a+bx)\log(a+bx)-3ab^2x^2+b^3x^3\right)}{2b^4x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(a + b*x)^2,x]
```

```
[Out] ((c*x^2)^(3/2)*(2*a^3 - 4*a^2*b*x - 3*a*b^2*x^2 + b^3*x^3 + 6*a^2
*(a + b*x)*Log[a + b*x]))/(2*b^4*x^3*(a + b*x))
```

Maple [A] time = 0.007, size = 76, normalized size = 0.9

$$\frac{b^{3}x^{3}+6\,\ln\left(bx+a\right)xa^{2}b-3\,ab^{2}x^{2}+6\,a^{3}\ln\left(bx+a\right)-4\,a^{2}bx+2\,a^{3}}{2\,x^{3}\left(bx+a\right)b^{4}}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] 1/2*(c*x^2)^(3/2)*(b^3*x^3+6*ln(b*x+a)*x*a^2*b-3*a*b^2*x^2+6*a^3*
ln(b*x+a)-4*a^2*b*x+2*a^3)/x^3/(b*x+a)/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213576, size = 107, normalized size = 1.2

$$\frac{\left(b^{3}cx^{3}-3\,ab^{2}cx^{2}-4\,a^{2}bcx+2\,a^{3}c+6\,\left(a^{2}bcx+a^{3}c\right)\log\left(bx+a\right)\right)\sqrt{cx^{2}}}{2\,\left(b^{5}x^{2}+ab^{4}x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*c*x^3 - 3*a*b^2*c*x^2 - 4*a^2*b*c*x + 2*a^3*c + 6*(a^2*b
*c*x + a^3*c)*log(b*x + a))*sqrt(c*x^2)/(b^5*x^2 + a*b^4*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral((c*x**2)**(3/2)/(a + b*x)**2, x)
```

GIAC/XCAS [A] time = 0.213992, size = 108, normalized size = 1.21

$$\frac{1}{2}\,c^{\frac{3}{2}}\left(\frac{6\,a^2\ln\left(|bx+a|\right)\mathrm{sign}\left(x\right)}{b^4}+\frac{2\,a^3\mathrm{sign}\left(x\right)}{(bx+a)b^4}-\frac{2\left(3\,a^2\ln\left(|a|\right)+a^2\right)\mathrm{sign}\left(x\right)}{b^4}+\frac{b^2x^2\mathrm{sign}\left(x\right)-4\,abx\mathrm{sign}\left(x\right)}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/2*c^(3/2)*(6*a^2*ln(abs(b*x + a))*sign(x)/b^4 + 2*a^3*sign(x)/(
(b*x + a)*b^4) - 2*(3*a^2*ln(abs(a)) + a^2)*sign(x)/b^4 + (b^2*x^
2*sign(x) - 4*a*b*x*sign(x))/b^4)
```

3.903 $\int \frac{(cx^2)^{3/2}}{x(a+bx)^2}\,dx$

Optimal. Leaf size=68

$$-\frac{a^2c\sqrt{cx^2}}{b^3x(a+bx)}-\frac{2ac\sqrt{cx^2}\log(a+bx)}{b^3x}+\frac{c\sqrt{cx^2}}{b^2}$$

```
[Out] (c*Sqrt[c*x^2])/b^2 - (a^2*c*Sqrt[c*x^2])/(b^3*x*(a + b*x)) - (2*
a*c*Sqrt[c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi [A] time = 0.0527329, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{a^2c\sqrt{cx^2}}{b^3x(a+bx)}-\frac{2ac\sqrt{cx^2}\log(a+bx)}{b^3x}+\frac{c\sqrt{cx^2}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x*(a + b*x)^2),x]
```

```
[Out] (c*Sqrt[c*x^2])/b^2 - (a^2*c*Sqrt[c*x^2])/(b^3*x*(a + b*x)) - (2*
a*c*Sqrt[c*x^2]*Log[a + b*x])/(b^3*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2c\sqrt{cx^2}}{b^3x\,(a+bx)}-\frac{2ac\sqrt{cx^2}\log\,(a+bx)}{b^3x}+\frac{c\sqrt{cx^2}\int\frac{1}{b^2}\,dx}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x/(b*x+a)**2,x)
```

```
[Out] -a**2*c*sqrt(c*x**2)/(b**3*x*(a + b*x)) - 2*a*c*sqrt(c*x**2)*log(
a + b*x)/(b**3*x) + c*sqrt(c*x**2)*Integral(b**(-2), x)/x
```

Mathematica [A] time = 0.0105255, size = 55, normalized size = 0.81

$$\frac{c^2x\left(-a^2+abx-2a(a+bx)\log(a+bx)+b^2x^2\right)}{b^3\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x*(a + b*x)^2),x]
```

```
[Out] (c^2*x*(-a^2 + a*b*x + b^2*x^2 - 2*a*(a + b*x)*Log[a + b*x]))/(b^
3*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 62, normalized size = 0.9

$$-\frac{2\ \ln(bx+a)\,xab - b^2x^2 + 2\,a^2\ln(bx+a) - abx + a^2}{x^3\,(bx+a)\,b^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x/(b*x+a)^2,x)
```

```
[Out] -(c*x^2)^(3/2)*(2*ln(b*x+a)*x*a*b-b^2*x^2+2*a^2*ln(b*x+a)-a*b*x+a
^2)/x^3/(b*x+a)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209069, size = 85, normalized size = 1.25

$$\frac{\left(b^2cx^2 + abcx - a^2c - 2\left(abcx + a^2c\right)\log(bx+a)\right)\sqrt{cx^2}}{b^4x^2 + ab^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x),x, algorithm="fricas")
```

```
[Out] (b^2*c*x^2 + a*b*c*x - a^2*c - 2*(a*b*c*x + a^2*c)*log(b*x + a))*
sqrt(c*x^2)/(b^4*x^2 + a*b^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x/(b*x+a)**2,x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x*(a + b*x)**2), x)
```

GIAC/XCAS [A] time = 0.206268, size = 78, normalized size = 1.15

$$c^{\frac{3}{2}}\left(\frac{x\mathrm{sign}(x)}{b^2} - \frac{2\,a\ln(|bx+a|)\,\mathrm{sign}(x)}{b^3} + \frac{(2\,a\ln(|a|)+a)\mathrm{sign}(x)}{b^3} - \frac{a^2\mathrm{sign}(x)}{(bx+a)b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x),x, algorithm="giac")
```

```
[Out] c^(3/2)*(x*sign(x)/b^2 - 2*a*ln(abs(b*x + a))*sign(x)/b^3 + (2*a*
ln(abs(a)) + a)*sign(x)/b^3 - a^2*sign(x)/((b*x + a)*b^3))
```

3.904 $\int \frac{(cx^2)^{3/2}}{x^2(a+bx)^2} dx$

Optimal. Leaf size=49

$$\frac{ac\sqrt{cx^2}}{b^2x(a+bx)} + \frac{c\sqrt{cx^2}\log(a+bx)}{b^2x}$$

```
[Out] (a*c*Sqrt[c*x^2])/(b^2*x*(a + b*x)) + (c*Sqrt[c*x^2]*Log[a + b*x]
)/(b^2*x)
```

Rubi [A] time = 0.0379737, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{ac\sqrt{cx^2}}{b^2x(a+bx)} + \frac{c\sqrt{cx^2}\log(a+bx)}{b^2x}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^2*(a + b*x)^2),x]
```

```
[Out] (a*c*Sqrt[c*x^2])/(b^2*x*(a + b*x)) + (c*Sqrt[c*x^2]*Log[a + b*x]
)/(b^2*x)
```

Rubi in Sympy [A] time = 15.7894, size = 42, normalized size = 0.86

$$\frac{ac\sqrt{cx^2}}{b^2x\,(a+bx)} + \frac{c\sqrt{cx^2}\log\,(a+bx)}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**2/(b*x+a)**2,x)
```

```
[Out] a*c*sqrt(c*x**2)/(b**2*x*(a + b*x)) + c*sqrt(c*x**2)*log(a + b*x)
/(b**2*x)
```

Mathematica [A] time = 0.00633918, size = 38, normalized size = 0.78

$$\frac{c^2x((a+bx)\log(a+bx)+a)}{b^2\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^2*(a + b*x)^2),x]
```

```
[Out] (c^2*x*(a + (a + b*x)*Log[a + b*x]))/(b^2*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 41, normalized size = 0.8

$$\frac{b\ln(bx+a)x+a\ln(bx+a)+a}{x^3(bx+a)b^2}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^2/(b*x+a)^2,x)
```

```
[Out] (c*x^2)^(3/2)*(b*ln(b*x+a)*x+a*ln(b*x+a)+a)/x^3/(b*x+a)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204265, size = 58, normalized size = 1.18

$$\frac{\sqrt{cx^2}(ac+(bcx+ac)\log(bx+a))}{b^3x^2+ab^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(a*c + (b*c*x + a*c)*log(b*x + a))/(b^3*x^2 + a*b^2*x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x^2 (a+bx)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**2/(b*x+a)**2,x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**2*(a + b*x)**2), x)
```

GIAC/XCAS [A] time = 0.20731, size = 62, normalized size = 1.27

$$-c^{\frac{3}{2}}\left(\frac{(\ln(|a|)+1)\mathrm{sign}(x)}{b^2} - \frac{\ln(|bx+a|)\,\mathrm{sign}(x)}{b^2} - \frac{a\mathrm{sign}(x)}{(bx+a)b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^2),x, algorithm="giac")
```

```
[Out] -c^(3/2)*((ln(abs(a)) + 1)*sign(x)/b^2 - ln(abs(b*x + a))*sign(x)
/b^2 - a*sign(x)/((b*x + a)*b^2))
```

3.905 $\int \frac{(cx^2)^{3/2}}{x^3(a+bx)^2} dx$

Optimal. Leaf size=25

$$-\frac{c\sqrt{cx^2}}{bx(a+bx)}$$

```
[Out] -((c*Sqrt[c*x^2])/(b*x*(a + b*x)))
```

Rubi [A] time = 0.0123677, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{c\sqrt{cx^2}}{bx(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(c*x^2)^(3/2)/(x^3*(a + b*x)^2),x]

[Out] -((c*Sqrt[c*x^2])/(b*x*(a + b*x)))
```

Rubi in Sympy [A] time = 11.9056, size = 19, normalized size = 0.76

$$-\frac{c\sqrt{cx^2}}{bx\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**(3/2)/x**3/(b*x+a)**2,x)

[Out] -c*sqrt(c*x**2)/(b*x*(a + b*x))
```

Mathematica [A] time = 0.00927663, size = 24, normalized size = 0.96

$$-\frac{(cx^2)^{3/2}}{bx^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c*x^2)^(3/2)/(x^3*(a + b*x)^2),x]
```

```
[Out] -((c*x^2)^(3/2)/(b*x^3*(a + b*x)))
```

Maple [A] time = 0.003, size = 23, normalized size = 0.9

$$-\frac{1}{(bx+a)\,bx^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^3/(b*x+a)^2,x)
```

```
[Out] -1/(b*x+a)/b*(c*x^2)^(3/2)/x^3
```

Maxima [A] time = 1.36154, size = 22, normalized size = 0.88

$$-\frac{c^{\frac{3}{2}}}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^3),x, algorithm="maxima")
```

```
[Out] -c^(3/2)/(b^2*x + a*b)
```

Fricas [A] time = 0.19635, size = 32, normalized size = 1.28

$$-\frac{\sqrt{cx^2}\,c}{b^2x^2+abx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^3),x, algorithm="fricas")
```

```
[Out] -sqrt(c*x^2)*c/(b^2*x^2 + a*b*x)
```

Sympy [A] time = 8.36785, size = 44, normalized size = 1.76

$$\begin{cases} \frac{c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{a^2x^2+abx^3} & \text{for } a \neq 0 \\ -\frac{c^{\frac{3}{2}}\left(x^2\right)^{\frac{3}{2}}}{b^2x^4} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**3/(b*x+a)**2,x)
```

```
[Out] Piecewise((c**(3/2)*(x**2)**(3/2)/(a**2*x**2 + a*b*x**3), Ne(a, 0
)), (-c**(3/2)*(x**2)**(3/2)/(b**2*x**4), True))
```

GIAC/XCAS [A] time = 0.205092, size = 39, normalized size = 1.56

$$-c^{\frac{3}{2}}\left(\frac{\operatorname{sign}(x)}{(bx+a)b}-\frac{\operatorname{sign}(x)}{ab}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^3),x, algorithm="giac")
```

```
[Out] -c^(3/2)*(sign(x)/((b*x + a)*b) - sign(x)/(a*b))
```

3.906 $\int \frac{(cx^2)^{3/2}}{x^4(a+bx)^2}\,dx$

Optimal. Leaf size=68

$$-\frac{c\sqrt{cx^2}\log(a+bx)}{a^2x}+\frac{c\sqrt{cx^2}\log(x)}{a^2x}+\frac{c\sqrt{cx^2}}{ax(a+bx)}$$

```
[Out] (c*Sqrt[c*x^2])/(a*x*(a + b*x)) + (c*Sqrt[c*x^2]*Log[x])/(a^2*x)
- (c*Sqrt[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi [A] time = 0.0456363, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{c\sqrt{cx^2}\log(a+bx)}{a^2x}+\frac{c\sqrt{cx^2}\log(x)}{a^2x}+\frac{c\sqrt{cx^2}}{ax(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^4*(a + b*x)^2),x]
```

```
[Out] (c*Sqrt[c*x^2])/(a*x*(a + b*x)) + (c*Sqrt[c*x^2]*Log[x])/(a^2*x)
- (c*Sqrt[c*x^2]*Log[a + b*x])/(a^2*x)
```

Rubi in Sympy [A] time = 17.4021, size = 58, normalized size = 0.85

$$\frac{c\sqrt{cx^2}}{ax\,(a+bx)}+\frac{c\sqrt{cx^2}\log{(x)}}{a^2x}-\frac{c\sqrt{cx^2}\log{(a+bx)}}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**4/(b*x+a)**2,x)
```

```
[Out] c*sqrt(c*x**2)/(a*x*(a + b*x)) + c*sqrt(c*x**2)*log(x)/(a**2*x) -
 c*sqrt(c*x**2)*log(a + b*x)/(a**2*x)
```

Mathematica [A] time = 0.0239437, size = 46, normalized size = 0.68

$$\frac{(cx^2)^{3/2}\,(\log(x)(a+bx)-(a+bx)\log(a+bx)+a)}{a^2x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^4*(a + b*x)^2),x]
```

```
[Out] ((c*x^2)^(3/2)*(a + (a + b*x)*Log[x] - (a + b*x)*Log[a + b*x]))/(
a^2*x^3*(a + b*x))
```

Maple [A] time = 0.007, size = 52, normalized size = 0.8

$$\frac{b\ln(x)\,x-b\ln(bx+a)\,x+a\ln(x)-a\ln(bx+a)+a}{a^2x^3\,(bx+a)}\,(cx^2)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^4/(b*x+a)^2,x)
```

```
[Out] (c*x^2)^(3/2)*(b*ln(x)*x-b*ln(b*x+a)*x+a*ln(x)-a*ln(b*x+a)+a)/x^3
/a^2/(b*x+a)
```

Maxima [A] time = 1.35478, size = 51, normalized size = 0.75

$$\frac{c^{\frac{3}{2}}}{abx+a^2}-\frac{c^{\frac{3}{2}}\log(bx+a)}{a^2}+\frac{c^{\frac{3}{2}}\log(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^4),x, algorithm="maxima")
```

```
[Out] c^(3/2)/(a*b*x + a^2) - c^(3/2)*log(b*x + a)/a^2 + c^(3/2)*log(x)
/a^2
```

Fricas [A] time = 0.215787, size = 63, normalized size = 0.93

$$\frac{\sqrt{cx^2}\left(ac+(bcx+ac)\log\left(\frac{x}{bx+a}\right)\right)}{a^2bx^2+a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^4),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(a*c + (b*c*x + a*c)*log(x/(b*x + a)))/(a^2*b*x^2 + a
^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x^4 (a + bx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**4/(b*x+a)**2,x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**4*(a + b*x)**2), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.907 $\int \frac{(cx^2)^{3/2}}{x^5(a+bx)^2}\,dx$

Optimal. Leaf size=91

$$-\frac{2bc\sqrt{cx^2}\log(x)}{a^3x}+\frac{2bc\sqrt{cx^2}\log(a+bx)}{a^3x}-\frac{bc\sqrt{cx^2}}{a^2x(a+bx)}-\frac{c\sqrt{cx^2}}{a^2x^2}$$

```
[Out] -((c*Sqrt[c*x^2])/(a^2*x^2)) - (b*c*Sqrt[c*x^2])/(a^2*x*(a + b*x)
) - (2*b*c*Sqrt[c*x^2]*Log[x])/(a^3*x) + (2*b*c*Sqrt[c*x^2]*Log[a
 + b*x])/(a^3*x)
```

Rubi [A] time = 0.0662371, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{2bc\sqrt{cx^2}\log(x)}{a^3x}+\frac{2bc\sqrt{cx^2}\log(a+bx)}{a^3x}-\frac{bc\sqrt{cx^2}}{a^2x(a+bx)}-\frac{c\sqrt{cx^2}}{a^2x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^5*(a + b*x)^2),x]
```

```
[Out] -((c*Sqrt[c*x^2])/(a^2*x^2)) - (b*c*Sqrt[c*x^2])/(a^2*x*(a + b*x)
) - (2*b*c*Sqrt[c*x^2]*Log[x])/(a^3*x) + (2*b*c*Sqrt[c*x^2]*Log[a
 + b*x])/(a^3*x)
```

Rubi in Sympy [A] time = 19.9006, size = 85, normalized size = 0.93

$$-\frac{bc\sqrt{cx^2}}{a^2x\,(a+bx)}-\frac{c\sqrt{cx^2}}{a^2x^2}-\frac{2bc\sqrt{cx^2}\log{(x)}}{a^3x}+\frac{2bc\sqrt{cx^2}\log{(a+bx)}}{a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**5/(b*x+a)**2,x)
```

```
[Out] -b*c*sqrt(c*x**2)/(a**2*x*(a + b*x)) - c*sqrt(c*x**2)/(a**2*x**2)
 - 2*b*c*sqrt(c*x**2)*log(x)/(a**3*x) + 2*b*c*sqrt(c*x**2)*log(a
+ b*x)/(a**3*x)
```

Mathematica [A] time = 0.0430611, size = 59, normalized size = 0.65

$$-\frac{c^2(a(a+2bx)+2bx\log(x)(a+bx)-2bx(a+bx)\log(a+bx))}{a^3\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^5*(a + b*x)^2),x]
```

```
[Out] -((c^2*(a*(a + 2*b*x) + 2*b*x*(a + b*x)*Log[x] - 2*b*x*(a + b*x)*
Log[a + b*x]))/(a^3*Sqrt[c*x^2]*(a + b*x)))
```

Maple [A] time = 0.006, size = 74, normalized size = 0.8

$$-\frac{2\,b^2\ln(x)\,x^2 - 2\,b^2\ln(bx+a)\,x^2 + 2\,ab\ln(x)\,x - 2\,\ln(bx+a)\,xab + 2\,abx + a^2}{a^3x^4\,(bx+a)}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^5/(b*x+a)^2,x)
```

```
[Out] -(c*x^2)^(3/2)*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*ln(x)*x
-2*ln(b*x+a)*x*a*b+2*a*b*x+a^2)/x^4/a^3/(b*x+a)
```

Maxima [A] time = 1.35947, size = 78, normalized size = 0.86

$$\frac{2\,bc^{\frac{3}{2}}\log(bx+a)}{a^3} - \frac{2\,bc^{\frac{3}{2}}\log(x)}{a^3} - \frac{2\,bc^{\frac{3}{2}}x + ac^{\frac{3}{2}}}{a^2bx^2 + a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^5),x, algorithm="maxima")
```

```
[Out] 2*b*c^(3/2)*log(b*x + a)/a^3 - 2*b*c^(3/2)*log(x)/a^3 - (2*b*c^(3
/2)*x + a*c^(3/2))/(a^2*b*x^2 + a^3*x)
```

Fricas [A] time = 0.2201, size = 88, normalized size = 0.97

$$-\frac{\left(2\,abcx + a^2c - 2\left(b^2cx^2 + abcx\right)\log\left(\frac{bx+a}{x}\right)\right)\sqrt{cx^2}}{a^3bx^3 + a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^5),x, algorithm="fricas")
```

```
[Out] -(2*a*b*c*x + a^2*c - 2*(b^2*c*x^2 + a*b*c*x)*log((b*x + a)/x))*s
qrt(c*x^2)/(a^3*b*x^3 + a^4*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{3}{2}}}{x^5\left(a+bx\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**5/(b*x+a)**2,x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**5*(a + b*x)**2), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^5),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.908 $\int \frac{(cx^2)^{3/2}}{x^6(a+bx)^2}\,dx$

Optimal. Leaf size=117

$$\frac{3b^2c\sqrt{cx^2}\log(x)}{a^4x}-\frac{3b^2c\sqrt{cx^2}\log(a+bx)}{a^4x}+\frac{b^2c\sqrt{cx^2}}{a^3x(a+bx)}+\frac{2bc\sqrt{cx^2}}{a^3x^2}-\frac{c\sqrt{cx^2}}{2a^2x^3}$$

```
[Out] -(c*Sqrt[c*x^2])/(2*a^2*x^3) + (2*b*c*Sqrt[c*x^2])/(a^3*x^2) + (b
^2*c*Sqrt[c*x^2])/(a^3*x*(a + b*x)) + (3*b^2*c*Sqrt[c*x^2]*Log[x]
)/(a^4*x) - (3*b^2*c*Sqrt[c*x^2]*Log[a + b*x])/(a^4*x)
```

Rubi [A] time = 0.0852988, antiderivative size = 117, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{3b^2c\sqrt{cx^2}\log(x)}{a^4x}-\frac{3b^2c\sqrt{cx^2}\log(a+bx)}{a^4x}+\frac{b^2c\sqrt{cx^2}}{a^3x(a+bx)}+\frac{2bc\sqrt{cx^2}}{a^3x^2}-\frac{c\sqrt{cx^2}}{2a^2x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)/(x^6*(a + b*x)^2),x]
```

```
[Out] -(c*Sqrt[c*x^2])/(2*a^2*x^3) + (2*b*c*Sqrt[c*x^2])/(a^3*x^2) + (b
^2*c*Sqrt[c*x^2])/(a^3*x*(a + b*x)) + (3*b^2*c*Sqrt[c*x^2]*Log[x]
)/(a^4*x) - (3*b^2*c*Sqrt[c*x^2]*Log[a + b*x])/(a^4*x)
```

Rubi in Sympy [A] time = 24.4734, size = 112, normalized size = 0.96

$$-\frac{c\sqrt{cx^2}}{2a^2x^3}+\frac{b^2c\sqrt{cx^2}}{a^3x\,(a+bx)}+\frac{2bc\sqrt{cx^2}}{a^3x^2}+\frac{3b^2c\sqrt{cx^2}\log{(x)}}{a^4x}-\frac{3b^2c\sqrt{cx^2}\log{(a+bx)}}{a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)/x**6/(b*x+a)**2,x)
```

```
[Out] -c*sqrt(c*x**2)/(2*a**2*x**3) + b**2*c*sqrt(c*x**2)/(a**3*x*(a +
b*x)) + 2*b*c*sqrt(c*x**2)/(a**3*x**2) + 3*b**2*c*sqrt(c*x**2)*lo
g(x)/(a**4*x) - 3*b**2*c*sqrt(c*x**2)*log(a + b*x)/(a**4*x)
```

Mathematica [A] time = 0.0449586, size = 82, normalized size = 0.7

$$\frac{(cx^2)^{3/2}\left(a\left(-a^2+3abx+6b^2x^2\right)+6b^2x^2\log(x)(a+bx)-6b^2x^2(a+bx)\log(a+bx)\right)}{2a^4x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)/(x^6*(a + b*x)^2),x]
```

```
[Out] ((c*x^2)^(3/2)*(a*(-a^2 + 3*a*b*x + 6*b^2*x^2) + 6*b^2*x^2*(a + b
*x)*Log[x] - 6*b^2*x^2*(a + b*x)*Log[a + b*x]))/(2*a^4*x^5*(a + b
*x))
```

Maple [A] time = 0.007, size = 95, normalized size = 0.8

$$\frac{6\,b^{3}\ln\left(x\right)x^{3}-6\,b^{3}\ln\left(bx+a\right)x^{3}+6\,\ln\left(x\right)x^{2}ab^{2}-6\,\ln\left(bx+a\right)x^{2}ab^{2}+6\,ab^{2}x^{2}+3\,a^{2}bx-a^{3}}{2\,x^{5}a^{4}\left(bx+a\right)}\left(cx^{2}\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)/x^6/(b*x+a)^2,x)
```

```
[Out] 1/2*(c*x^2)^(3/2)*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*ln(x)*x^
2*a*b^2-6*ln(b*x+a)*x^2*a*b^2+6*a*b^2*x^2+3*a^2*b*x-a^3)/x^5/a^4/
(b*x+a)
```

Maxima [A] time = 1.35834, size = 107, normalized size = 0.91

$$-\frac{3\,b^{2}c^{\frac{3}{2}}\log\left(bx+a\right)}{a^{4}}+\frac{3\,b^{2}c^{\frac{3}{2}}\log\left(x\right)}{a^{4}}+\frac{6\,b^{2}c^{\frac{3}{2}}x^{2}+3\,abc^{\frac{3}{2}}x-a^{2}c^{\frac{3}{2}}}{2\left(a^{3}bx^{3}+a^{4}x^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^6),x, algorithm="maxima")
```

```
[Out] -3*b^2*c^(3/2)*log(b*x + a)/a^4 + 3*b^2*c^(3/2)*log(x)/a^4 + 1/2*
(6*b^2*c^(3/2)*x^2 + 3*a*b*c^(3/2)*x - a^2*c^(3/2))/(a^3*b*x^3 +
a^4*x^2)
```

Fricas [A] time = 0.224114, size = 111, normalized size = 0.95

$$\frac{\left(6\,ab^{2}cx^{2}+3\,a^{2}bcx-a^{3}c+6\left(b^{3}cx^{3}+ab^{2}cx^{2}\right)\log\left(\frac{x}{bx+a}\right)\right)\sqrt{cx^{2}}}{2\left(a^{4}bx^{4}+a^{5}x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^6),x, algorithm="fricas")
```

```
[Out] 1/2*(6*a*b^2*c*x^2 + 3*a^2*b*c*x - a^3*c + 6*(b^3*c*x^3 + a*b^2*c
*x^2)*log(x/(b*x + a)))*sqrt(c*x^2)/(a^4*b*x^4 + a^5*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}}{x^6 (a + bx)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)/x**6/(b*x+a)**2,x)
```

```
[Out] Integral((c*x**2)**(3/2)/(x**6*(a + b*x)**2), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)/((b*x + a)^2*x^6),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.909 $\int \frac{x^5}{\sqrt{cx^2}(a+bx)^2}\,dx$

Optimal. Leaf size=107

$$-\frac{a^4x}{b^5\sqrt{cx^2}(a+bx)}-\frac{4a^3x\log(a+bx)}{b^5\sqrt{cx^2}}+\frac{3a^2x^2}{b^4\sqrt{cx^2}}-\frac{ax^3}{b^3\sqrt{cx^2}}+\frac{x^4}{3b^2\sqrt{cx^2}}$$

```
[Out] (3*a^2*x^2)/(b^4*Sqrt[c*x^2]) - (a*x^3)/(b^3*Sqrt[c*x^2]) + x^4/(
3*b^2*Sqrt[c*x^2]) - (a^4*x)/(b^5*Sqrt[c*x^2]*(a + b*x)) - (4*a^3
*x*Log[a + b*x])/(b^5*Sqrt[c*x^2])
```

Rubi [A] time = 0.0885451, antiderivative size = 107, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^4x}{b^5\sqrt{cx^2}(a+bx)}-\frac{4a^3x\log(a+bx)}{b^5\sqrt{cx^2}}+\frac{3a^2x^2}{b^4\sqrt{cx^2}}-\frac{ax^3}{b^3\sqrt{cx^2}}+\frac{x^4}{3b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (3*a^2*x^2)/(b^4*Sqrt[c*x^2]) - (a*x^3)/(b^3*Sqrt[c*x^2]) + x^4/(
3*b^2*Sqrt[c*x^2]) - (a^4*x)/(b^5*Sqrt[c*x^2]*(a + b*x)) - (4*a^3
*x*Log[a + b*x])/(b^5*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^4\sqrt{cx^2}}{b^5cx\,(a+bx)}-\frac{4a^3\sqrt{cx^2}\log{(a+bx)}}{b^5cx}+\frac{3a^2\sqrt{cx^2}}{b^4c}-\frac{2a\sqrt{cx^2}\int x\,dx}{b^3cx}+\frac{x^2\sqrt{cx^2}}{3b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] -a**4*sqrt(c*x**2)/(b**5*c*x*(a + b*x)) - 4*a**3*sqrt(c*x**2)*log
(a + b*x)/(b**5*c*x) + 3*a**2*sqrt(c*x**2)/(b**4*c) - 2*a*sqrt(c*
x**2)*Integral(x, x)/(b**3*c*x) + x**2*sqrt(c*x**2)/(3*b**2*c)
```

Mathematica [A] time = 0.0315065, size = 80, normalized size = 0.75

$$\frac{x\left(-3a^4+9a^3bx-12a^3(a+bx)\log(a+bx)+6a^2b^2x^2-2ab^3x^3+b^4x^4\right)}{3b^5\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (x*(-3*a^4 + 9*a^3*b*x + 6*a^2*b^2*x^2 - 2*a*b^3*x^3 + b^4*x^4 -
12*a^3*(a + b*x)*Log[a + b*x]))/(3*b^5*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 86, normalized size = 0.8

$$-{\frac {x \left(-{x}^{4}{b}^{4}+2\,{x}^{3}a{b}^{3}+12\,\ln \left(bx+a \right) x{a}^{3}b-6\,{x}^{2}{a}^{2}{b}^{2}+12\,{a}^{4}\ln \left(bx+a \right) -9\,x{a}^{3}b+3\,{a}^{4} \right) }{ \left(3\,bx+3\,a \right) {b}^{5}}{\frac {1}{\sqrt {c{x}^{2}}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] -1/3*x*(-x^4*b^4+2*x^3*a*b^3+12*ln(b*x+a)*x*a^3*b-6*x^2*a^2*b^2+1
2*a^4*ln(b*x+a)-9*x*a^3*b+3*a^4)/(c*x^2)^(1/2)/(b*x+a)/b^5
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217482, size = 115, normalized size = 1.07

$$\frac {{\left (b^{4} x^{4} - 2 \, a b^{3} x^{3} + 6 \, a^{2} b^{2} x^{2} + 9 \, a^{3} b x - 3 \, a^{4} - 12 \, {\left (a^{3} b x + a^{4}\right)} \log \left (b x + a\right)\right)} \sqrt {c x^{2}}}{3 \, {\left (b^{6} c x^{2} + a b^{5} c x\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] 1/3*(b^4*x^4 - 2*a*b^3*x^3 + 6*a^2*b^2*x^2 + 9*a^3*b*x - 3*a^4 -
12*(a^3*b*x + a^4)*log(b*x + a))*sqrt(c*x^2)/(b^6*c*x^2 + a*b^5*c
```

```
*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5}{\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(b*x+a)**2/(c*x**2)**(1/2),x)

[Out] Integral(x**5/(sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5}{\sqrt{cx^2}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="giac")

[Out] integrate(x^5/(sqrt(c*x^2)*(b*x + a)^2), x)
```

3.910 $\int \frac{x^4}{\sqrt{cx^2}(a+bx)^2}\,dx$

Optimal. Leaf size=86

$$\frac{a^3x}{b^4\sqrt{cx^2}(a+bx)}+\frac{3a^2x\log(a+bx)}{b^4\sqrt{cx^2}}-\frac{2ax^2}{b^3\sqrt{cx^2}}+\frac{x^3}{2b^2\sqrt{cx^2}}$$

```
[Out] (-2*a*x^2)/(b^3*Sqrt[c*x^2]) + x^3/(2*b^2*Sqrt[c*x^2]) + (a^3*x)/
(b^4*Sqrt[c*x^2]*(a + b*x)) + (3*a^2*x*Log[a + b*x])/(b^4*Sqrt[c*
x^2])
```

Rubi [A] time = 0.0718311, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^3x}{b^4\sqrt{cx^2}(a+bx)}+\frac{3a^2x\log(a+bx)}{b^4\sqrt{cx^2}}-\frac{2ax^2}{b^3\sqrt{cx^2}}+\frac{x^3}{2b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (-2*a*x^2)/(b^3*Sqrt[c*x^2]) + x^3/(2*b^2*Sqrt[c*x^2]) + (a^3*x)/
(b^4*Sqrt[c*x^2]*(a + b*x)) + (3*a^2*x*Log[a + b*x])/(b^4*Sqrt[c*
x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^3\sqrt{cx^2}}{b^4cx\,(a+bx)}+\frac{3a^2\sqrt{cx^2}\log\left(a+bx\right)}{b^4cx}-\frac{2a\sqrt{cx^2}}{b^3c}+\frac{\sqrt{cx^2}\int x\,dx}{b^2cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**3*sqrt(c*x**2)/(b**4*c*x*(a + b*x)) + 3*a**2*sqrt(c*x**2)*log(
a + b*x)/(b**4*c*x) - 2*a*sqrt(c*x**2)/(b**3*c) + sqrt(c*x**2)*In
tegral(x, x)/(b**2*c*x)
```

Mathematica [A] time = 0.0226759, size = 69, normalized size = 0.8

$$\frac{x\left(2a^3-4a^2bx+6a^2(a+bx)\log(a+bx)-3ab^2x^2+b^3x^3\right)}{2b^4\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (x*(2*a^3 - 4*a^2*b*x - 3*a*b^2*x^2 + b^3*x^3 + 6*a^2*(a + b*x)*L
og[a + b*x]))/(2*b^4*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 74, normalized size = 0.9

$$\frac{x\left(b^{3}x^{3}+6\,\ln\left(bx+a\right)xa^{2}b-3\,ab^{2}x^{2}+6\,a^{3}\ln\left(bx+a\right)-4\,a^{2}bx+2\,a^{3}\right)}{\left(2\,bx+2\,a\right)b^{4}}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] 1/2*x*(b^3*x^3+6*ln(b*x+a)*x*a^2*b-3*a*b^2*x^2+6*a^3*ln(b*x+a)-4*
a^2*b*x+2*a^3)/(c*x^2)^(1/2)/(b*x+a)/b^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.213932, size = 100, normalized size = 1.16

$$\frac{\left(b^{3}x^{3}-3\,ab^{2}x^{2}-4\,a^{2}bx+2\,a^{3}+6\,\left(a^{2}bx+a^{3}\right)\log\left(bx+a\right)\right)\sqrt{cx^{2}}}{2\,\left(b^{5}cx^{2}+ab^{4}cx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*x^3 - 3*a*b^2*x^2 - 4*a^2*b*x + 2*a^3 + 6*(a^2*b*x + a^3
)*log(b*x + a))*sqrt(c*x^2)/(b^5*c*x^2 + a*b^4*c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4}{\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(b*x+a)**2/(c*x**2)**(1/2),x)

[Out] Integral(x**4/(sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4}{\sqrt{cx^2}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="giac")

[Out] integrate(x^4/(sqrt(c*x^2)*(b*x + a)^2), x)
```

3.911 $\int \frac{x^3}{\sqrt{cx^2}(a+bx)^2} \, dx$

Optimal. Leaf size=64

$$-\frac{a^2 x}{b^3 \sqrt{cx^2}(a+bx)}-\frac{2 a x \log (a+b x)}{b^3 \sqrt{cx^2}}+\frac{x^2}{b^2 \sqrt{cx^2}}$$

```
[Out] x^2/(b^2*Sqrt[c*x^2]) - (a^2*x)/(b^3*Sqrt[c*x^2]*(a + b*x)) - (2*
a*x*Log[a + b*x])/(b^3*Sqrt[c*x^2])
```

Rubi [A] time = 0.0518219, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2 x}{b^3 \sqrt{cx^2}(a+bx)}-\frac{2 a x \log (a+b x)}{b^3 \sqrt{cx^2}}+\frac{x^2}{b^2 \sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] x^2/(b^2*Sqrt[c*x^2]) - (a^2*x)/(b^3*Sqrt[c*x^2]*(a + b*x)) - (2*
a*x*Log[a + b*x])/(b^3*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2 \sqrt{cx^2}}{b^3 c x\,(a+bx)}-\frac{2 a \sqrt{cx^2} \log \,(a+bx)}{b^3 c x}+\frac{\sqrt{cx^2} \int \frac{1}{b^2}\, dx}{c x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] -a**2*sqrt(c*x**2)/(b**3*c*x*(a + b*x)) - 2*a*sqrt(c*x**2)*log(a
+ b*x)/(b**3*c*x) + sqrt(c*x**2)*Integral(b**(-2), x)/(c*x)
```

Mathematica [A] time = 0.0270059, size = 52, normalized size = 0.81

$$\frac{x\left(-a^2+abx-2a(a+bx)\log (a+bx)+b^2 x^2\right)}{b^3 \sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (x*(-a^2 + a*b*x + b^2*x^2 - 2*a*(a + b*x)*Log[a + b*x]))/(b^3*Sq
rt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.006, size = 60, normalized size = 0.9

$$-\frac{x\left(2\ln\left(bx+a\right)xab-b^{2}x^{2}+2a^{2}\ln\left(bx+a\right)-abx+a^{2}\right)}{\left(bx+a\right)b^{3}}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] -x*(2*ln(b*x+a)*x*a*b-b^2*x^2+2*a^2*ln(b*x+a)-a*b*x+a^2)/(c*x^2)^
(1/2)/(b*x+a)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217433, size = 80, normalized size = 1.25

$$\frac{\left(b^{2}x^{2}+abx-a^{2}-2\left(abx+a^{2}\right)\log\left(bx+a\right)\right)\sqrt{cx^{2}}}{b^{4}cx^{2}+ab^{3}cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + a*b*x - a^2 - 2*(a*b*x + a^2)*log(b*x + a))*sqrt(c*x^2
)/(b^4*c*x^2 + a*b^3*c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3}{\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x**3/(sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3}{\sqrt{cx^2}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x^3/(sqrt(c*x^2)*(b*x + a)^2), x)
```

3.912 $\int \frac{x^2}{\sqrt{cx^2}(a+bx)^2}\,dx$

Optimal. Leaf size=43

$$\frac{ax}{b^2\sqrt{cx^2}(a+bx)}+\frac{x\log(a+bx)}{b^2\sqrt{cx^2}}$$

```
[Out] (a*x)/(b^2*Sqrt[c*x^2]*(a + b*x)) + (x*Log[a + b*x])/(b^2*Sqrt[c*
x^2])
```

Rubi [A] time = 0.0383983, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{ax}{b^2\sqrt{cx^2}(a+bx)}+\frac{x\log(a+bx)}{b^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (a*x)/(b^2*Sqrt[c*x^2]*(a + b*x)) + (x*Log[a + b*x])/(b^2*Sqrt[c*
x^2])
```

Rubi in Sympy [A] time = 12.1177, size = 42, normalized size = 0.98

$$\frac{a\sqrt{cx^2}}{b^2cx\,(a+bx)}+\frac{\sqrt{cx^2}\log\,(a+bx)}{b^2cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c*x**2)/(b**2*c*x*(a + b*x)) + sqrt(c*x**2)*log(a + b*x)/(
b**2*c*x)
```

Mathematica [A] time = 0.0163927, size = 35, normalized size = 0.81

$$\frac{x((a+bx)\log(a+bx)+a)}{b^2\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/(Sqrt[c*x^2]*(a + b*x)^2),x]

[Out] (x*(a + (a + b*x)*Log[a + b*x]))/(b^2*Sqrt[c*x^2]*(a + b*x))
```

Maple [A] time = 0.004, size = 39, normalized size = 0.9

$$\frac{x\left(b\ln\left(bx+a\right)x+a\ln\left(bx+a\right)+a\right)}{\left(bx+a\right)b^{2}}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(b*x+a)^2/(c*x^2)^(1/2),x)

[Out] x*(b*ln(b*x+a)*x+a*ln(b*x+a)+a)/(c*x^2)^(1/2)/(b*x+a)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.210533, size = 54, normalized size = 1.26

$$\frac{\sqrt{cx^{2}}\left(\left(bx+a\right)\log\left(bx+a\right)+a\right)}{b^{3}cx^{2}+ab^{2}cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="fricas")

[Out] sqrt(c*x^2)*((b*x + a)*log(b*x + a) + a)/(b^3*c*x^2 + a*b^2*c*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{x^{2}}{\sqrt{cx^{2}}\left(a+bx\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x**2/(sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{\sqrt{cx^2}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x^2/(sqrt(c*x^2)*(b*x + a)^2), x)
```

3.913 $\int \frac{x}{\sqrt{cx^2}(a+bx)^2} dx$

Optimal. Leaf size=22

$$-\frac{x}{b\sqrt{cx^2}(a+bx)}$$

```
[Out] -(x/(b*Sqrt[c*x^2]*(a + b*x)))
```

Rubi [A] time = 0.0122026, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{x}{b\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[x/(Sqrt[c*x^2]*(a + b*x)^2),x]

[Out] -(x/(b*Sqrt[c*x^2]*(a + b*x)))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(b*x+a)**2/(c*x**2)**(1/2),x)

[Out] Integral(x/(sqrt(c*x**2)*(a + b*x)**2), x)
```

Mathematica [A] time = 0.00797302, size = 22, normalized size = 1.

$$-\frac{x}{b\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] -(x/(b*Sqrt[c*x^2]*(a + b*x)))
```

Maple [A] time = 0.004, size = 21, normalized size = 1.

$$-\frac{x}{b\,(bx+a)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] -x/b/(b*x+a)/(c*x^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.209756, size = 34, normalized size = 1.55

$$-\frac{\sqrt{cx^2}}{b^2cx^2+abcx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] -sqrt(c*x^2)/(b^2*c*x^2 + a*b*c*x)
```

Sympy [A] time = 3.80443, size = 85, normalized size = 3.86

$$\begin{cases} \frac{\tilde{\infty}}{\sqrt{c}\sqrt{x^2}} & \text{for } a = 0 \wedge b = 0 \\ -\frac{1}{b^2\sqrt{c}\sqrt{x^2}} & \text{for } a = 0 \\ \frac{\tilde{\infty}x^2}{\sqrt{c}\sqrt{x^2}} & \text{for } b = -\frac{a}{x} \\ \frac{x^2}{a^2\sqrt{c}\sqrt{x^2}+ab\sqrt{c}x\sqrt{x^2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Piecewise((zoo/(sqrt(c)*sqrt(x**2)), Eq(a, 0) & Eq(b, 0)), (-1/(b
**2*sqrt(c)*sqrt(x**2)), Eq(a, 0)), (zoo*x**2/(sqrt(c)*sqrt(x**2)
), Eq(b, -a/x)), (x**2/(a**2*sqrt(c)*sqrt(x**2) + a*b*sqrt(c)*x*s
qrt(x**2)), True))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{\sqrt{cx^2}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x/(sqrt(c*x^2)*(b*x + a)^2), x)
```

3.914 $\int \frac{1}{\sqrt{cx^2}(a+bx)^2} dx$

Optimal. Leaf size=59

$$-\frac{x\log(a+bx)}{a^2\sqrt{cx^2}}+\frac{x\log(x)}{a^2\sqrt{cx^2}}+\frac{x}{a\sqrt{cx^2}(a+bx)}$$

```
[Out] x/(a*Sqrt[c*x^2]*(a + b*x)) + (x*Log[x])/(a^2*Sqrt[c*x^2]) - (x*L
og[a + b*x])/(a^2*Sqrt[c*x^2])
```

Rubi [A] time = 0.0444968, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{x\log(a+bx)}{a^2\sqrt{cx^2}}+\frac{x\log(x)}{a^2\sqrt{cx^2}}+\frac{x}{a\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] x/(a*Sqrt[c*x^2]*(a + b*x)) + (x*Log[x])/(a^2*Sqrt[c*x^2]) - (x*L
og[a + b*x])/(a^2*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 13.5593, size = 58, normalized size = 0.98

$$\frac{\sqrt{cx^2}}{acx\,(a+bx)}+\frac{\sqrt{cx^2}\log{(x)}}{a^2cx}-\frac{\sqrt{cx^2}\log{(a+bx)}}{a^2cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] sqrt(c*x**2)/(a*c*x*(a + b*x)) + sqrt(c*x**2)*log(x)/(a**2*c*x) -
 sqrt(c*x**2)*log(a + b*x)/(a**2*c*x)
```

Mathematica [A] time = 0.0170737, size = 44, normalized size = 0.75

$$\frac{x(\log(x)(a+bx)-(a+bx)\log(a+bx)+a)}{a^2\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (x*(a + (a + b*x)*Log[x] - (a + b*x)*Log[a + b*x]))/(a^2*Sqrt[c*x
^2]*(a + b*x))
```

Maple [A] time = 0.007, size = 50, normalized size = 0.9

$$\frac{x\left(b\ln\left(x\right)x-b\ln\left(bx+a\right)x+a\ln\left(x\right)-a\ln\left(bx+a\right)+a\right)}{a^{2}\left(bx+a\right)}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] x*(b*ln(x)*x-b*ln(b*x+a)*x+a*ln(x)-a*ln(b*x+a)+a)/(c*x^2)^(1/2)/a
^2/(b*x+a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224034, size = 59, normalized size = 1.

$$\frac{\sqrt{cx^{2}}\left(\left(bx+a\right)\log\left(\frac{x}{bx+a}\right)+a\right)}{a^{2}bcx^{2}+a^{3}cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*((b*x + a)*log(x/(b*x + a)) + a)/(a^2*b*c*x^2 + a^3*c
*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [A] time = 0.221463, size = 116, normalized size = 1.97

$$-\frac{\ln\left(\left|-\frac{a}{bx+a}+1\right|\right)}{a^2\sqrt{c}\mathrm{sign}\left(-\frac{b}{bx+a}+\frac{ab}{(bx+a)^2}\right)}-\frac{1}{(bx+a)a\sqrt{c}\mathrm{sign}\left(-\frac{b}{bx+a}+\frac{ab}{(bx+a)^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] -ln(abs(-a/(b*x + a) + 1))/(a^2*sqrt(c)*sign(-b/(b*x + a) + a*b/(
b*x + a)^2)) - 1/((b*x + a)*a*sqrt(c)*sign(-b/(b*x + a) + a*b/(b*
x + a)^2))
```

3.915 $\int \frac{1}{x\sqrt{cx^2}(a+bx)^2}\,dx$

Optimal. Leaf size=78

$$-\frac{2bx\log(x)}{a^3\sqrt{cx^2}}+\frac{2bx\log(a+bx)}{a^3\sqrt{cx^2}}-\frac{bx}{a^2\sqrt{cx^2}(a+bx)}-\frac{1}{a^2\sqrt{cx^2}}$$

```
[Out] -(1/(a^2*Sqrt[c*x^2])) - (b*x)/(a^2*Sqrt[c*x^2]*(a + b*x)) - (2*b
*x*Log[x])/(a^3*Sqrt[c*x^2]) + (2*b*x*Log[a + b*x])/(a^3*Sqrt[c*x
^2])
```

Rubi [A] time = 0.0614447, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{2bx\log(x)}{a^3\sqrt{cx^2}}+\frac{2bx\log(a+bx)}{a^3\sqrt{cx^2}}-\frac{bx}{a^2\sqrt{cx^2}(a+bx)}-\frac{1}{a^2\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x*Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] -(1/(a^2*Sqrt[c*x^2])) - (b*x)/(a^2*Sqrt[c*x^2]*(a + b*x)) - (2*b
*x*Log[x])/(a^3*Sqrt[c*x^2]) + (2*b*x*Log[a + b*x])/(a^3*Sqrt[c*x
^2])
```

Rubi in Sympy [A] time = 23.1525, size = 85, normalized size = 1.09

$$-\frac{b\sqrt{cx^2}}{a^2cx\,(a+bx)}-\frac{\sqrt{cx^2}}{a^2cx^2}-\frac{2b\sqrt{cx^2}\log{(x)}}{a^3cx}+\frac{2b\sqrt{cx^2}\log{(a+bx)}}{a^3cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] -b*sqrt(c*x**2)/(a**2*c*x*(a + b*x)) - sqrt(c*x**2)/(a**2*c*x**2)
 - 2*b*sqrt(c*x**2)*log(x)/(a**3*c*x) + 2*b*sqrt(c*x**2)*log(a +
b*x)/(a**3*c*x)
```

Mathematica [A] time = 0.0415879, size = 60, normalized size = 0.77

$$\frac{cx^2(-a(a+2bx)-2bx\log(x)(a+bx)+2bx(a+bx)\log(a+bx))}{a^3\left(cx^2\right)^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x*Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (c*x^2*(-(a*(a + 2*b*x)) - 2*b*x*(a + b*x)*Log[x] + 2*b*x*(a + b*
x)*Log[a + b*x]))/(a^3*(c*x^2)^(3/2)*(a + b*x))
```

Maple [A] time = 0.006, size = 71, normalized size = 0.9

$$-\frac{2\,b^2\ln(x)\,x^2-2\,b^2\ln(bx+a)\,x^2+2\,ab\ln(x)\,x-2\,\ln(bx+a)\,xab+2\,abx+a^2}{a^3\,(bx+a)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] -(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*ln(x)*x-2*ln(b*x+a)*x
*a*b+2*a*b*x+a^2)/(c*x^2)^(1/2)/a^3/(b*x+a)
```

Maxima [A] time = 1.35887, size = 77, normalized size = 0.99

$$-\frac{2\,bx+a}{a^2b\sqrt{c}x^2+a^3\sqrt{c}x}+\frac{2\,b\log(bx+a)}{a^3\sqrt{c}}-\frac{2\,b\log(x)}{a^3\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x),x, algorithm="maxima")
```

```
[Out] -(2*b*x + a)/(a^2*b*sqrt(c)*x^2 + a^3*sqrt(c)*x) + 2*b*log(b*x +
a)/(a^3*sqrt(c)) - 2*b*log(x)/(a^3*sqrt(c))
```

Fricas [A] time = 0.224598, size = 84, normalized size = 1.08

$$-\frac{\left(2\,abx+a^2-2\left(b^2x^2+abx\right)\log\left(\frac{bx+a}{x}\right)\right)\sqrt{cx^2}}{a^3bcx^3+a^4cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x),x, algorithm="fricas")
```

```
[Out] -(2*a*b*x + a^2 - 2*(b^2*x^2 + a*b*x)*log((b*x + a)/x))*sqrt(c*x^
2)/(a^3*b*c*x^3 + a^4*c*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(x*sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{cx^2}(bx+a)^2x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x), x)
```

3.916 $\int \frac{1}{x^2\sqrt{cx^2}(a+bx)^2}\,dx$

Optimal. Leaf size=103

$$\frac{3b^2x\log(x)}{a^4\sqrt{cx^2}}-\frac{3b^2x\log(a+bx)}{a^4\sqrt{cx^2}}+\frac{b^2x}{a^3\sqrt{cx^2}(a+bx)}+\frac{2b}{a^3\sqrt{cx^2}}-\frac{1}{2a^2x\sqrt{cx^2}}$$

```
[Out] (2*b)/(a^3*Sqrt[c*x^2]) - 1/(2*a^2*x*Sqrt[c*x^2]) + (b^2*x)/(a^3*
Sqrt[c*x^2]*(a + b*x)) + (3*b^2*x*Log[x])/(a^4*Sqrt[c*x^2]) - (3*
b^2*x*Log[a + b*x])/(a^4*Sqrt[c*x^2])
```

Rubi [A] time = 0.0791382, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{3b^2x\log(x)}{a^4\sqrt{cx^2}}-\frac{3b^2x\log(a+bx)}{a^4\sqrt{cx^2}}+\frac{b^2x}{a^3\sqrt{cx^2}(a+bx)}+\frac{2b}{a^3\sqrt{cx^2}}-\frac{1}{2a^2x\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(x^2*Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (2*b)/(a^3*Sqrt[c*x^2]) - 1/(2*a^2*x*Sqrt[c*x^2]) + (b^2*x)/(a^3*
Sqrt[c*x^2]*(a + b*x)) + (3*b^2*x*Log[x])/(a^4*Sqrt[c*x^2]) - (3*
b^2*x*Log[a + b*x])/(a^4*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 28.3191, size = 112, normalized size = 1.09

$$-\frac{\sqrt{cx^2}}{2a^2cx^3}+\frac{b^2\sqrt{cx^2}}{a^3cx\,(a+bx)}+\frac{2b\sqrt{cx^2}}{a^3cx^2}+\frac{3b^2\sqrt{cx^2}\log(x)}{a^4cx}-\frac{3b^2\sqrt{cx^2}\log(a+bx)}{a^4cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**2/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] -sqrt(c*x**2)/(2*a**2*c*x**3) + b**2*sqrt(c*x**2)/(a**3*c*x*(a +
b*x)) + 2*b*sqrt(c*x**2)/(a**3*c*x**2) + 3*b**2*sqrt(c*x**2)*log(
x)/(a**4*c*x) - 3*b**2*sqrt(c*x**2)*log(a + b*x)/(a**4*c*x)
```

Mathematica [A] time = 0.0411053, size = 81, normalized size = 0.79

$$\frac{cx\left(a\left(-a^2+3abx+6b^2x^2\right)+6b^2x^2\log(x)(a+bx)-6b^2x^2(a+bx)\log(a+bx)\right)}{2a^4\left(cx^2\right)^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(x^2*Sqrt[c*x^2]*(a + b*x)^2),x]
```

```
[Out] (c*x*(a*(-a^2 + 3*a*b*x + 6*b^2*x^2) + 6*b^2*x^2*(a + b*x)*Log[x]
 - 6*b^2*x^2*(a + b*x)*Log[a + b*x]))/(2*a^4*(c*x^2)^(3/2)*(a + b
*x))
```

Maple [A] time = 0.008, size = 95, normalized size = 0.9

$$\frac{6\,b^3\ln(x)\,x^3-6\,b^3\ln(bx+a)\,x^3+6\,\ln(x)\,x^2ab^2-6\,\ln(bx+a)\,x^2ab^2+6\,ab^2x^2+3\,a^2bx-a^3}{2\,xa^4\,(bx+a)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^2/(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] 1/2/x*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*ln(x)*x^2*a*b^2-6*ln
(b*x+a)*x^2*a*b^2+6*a*b^2*x^2+3*a^2*b*x-a^3)/(c*x^2)^(1/2)/a^4/(b
*x+a)
```

Maxima [A] time = 1.34822, size = 103, normalized size = 1.

$$\frac{6\,b^2x^2+3\,abx-a^2}{2\left(a^3b\sqrt{c}x^3+a^4\sqrt{c}x^2\right)}-\frac{3\,b^2\log(bx+a)}{a^4\sqrt{c}}+\frac{3\,b^2\log(x)}{a^4\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x^2),x, algorithm="maxima")
```

```
[Out] 1/2*(6*b^2*x^2 + 3*a*b*x - a^2)/(a^3*b*sqrt(c)*x^3 + a^4*sqrt(c)*
x^2) - 3*b^2*log(b*x + a)/(a^4*sqrt(c)) + 3*b^2*log(x)/(a^4*sqrt(
c))
```

Fricas [A] time = 0.227095, size = 107, normalized size = 1.04

$$\frac{\left(6\,ab^2x^2+3\,a^2bx-a^3+6\left(b^3x^3+ab^2x^2\right)\log\left(\frac{x}{bx+a}\right)\right)\sqrt{cx^2}}{2\left(a^4bcx^4+a^5cx^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x^2),x, algorithm="fricas")
```

```
[Out] 1/2*(6*a*b^2*x^2 + 3*a^2*b*x - a^3 + 6*(b^3*x^3 + a*b^2*x^2)*log(
x/(b*x + a)))*sqrt(c*x^2)/(a^4*b*c*x^4 + a^5*c*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{x^2\sqrt{cx^2}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**2/(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Integral(1/(x**2*sqrt(c*x**2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{cx^2}(bx+a)^2x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x^2),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(c*x^2)*(b*x + a)^2*x^2), x)
```

3.917 $\int \frac{x^5}{(cx^2)^{3/2}(a+bx)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{a^2x}{b^3c\sqrt{cx^2}(a+bx)}-\frac{2ax\log(a+bx)}{b^3c\sqrt{cx^2}}+\frac{x^2}{b^2c\sqrt{cx^2}}$$

```
[Out] x^2/(b^2*c*Sqrt[c*x^2]) - (a^2*x)/(b^3*c*Sqrt[c*x^2]*(a + b*x)) -
 (2*a*x*Log[a + b*x])/(b^3*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0583041, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^2x}{b^3c\sqrt{cx^2}(a+bx)}-\frac{2ax\log(a+bx)}{b^3c\sqrt{cx^2}}+\frac{x^2}{b^2c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^5/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] x^2/(b^2*c*Sqrt[c*x^2]) - (a^2*x)/(b^3*c*Sqrt[c*x^2]*(a + b*x)) -
 (2*a*x*Log[a + b*x])/(b^3*c*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^2\sqrt{cx^2}}{b^3c^2x\,(a+bx)}-\frac{2a\sqrt{cx^2}\log\,(a+bx)}{b^3c^2x}+\frac{\sqrt{cx^2}\int\frac{1}{b^2}\,dx}{c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] -a**2*sqrt(c*x**2)/(b**3*c**2*x*(a + b*x)) - 2*a*sqrt(c*x**2)*log
(a + b*x)/(b**3*c**2*x) + sqrt(c*x**2)*Integral(b**(-2), x)/(c**2
*x)
```

Mathematica [A] time = 0.0341972, size = 54, normalized size = 0.74

$$\frac{x^3\left(-a^2+abx-2a(a+bx)\log(a+bx)+b^2x^2\right)}{b^3\left(cx^2\right)^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^5/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] (x^3*(-a^2 + a*b*x + b^2*x^2 - 2*a*(a + b*x)*Log[a + b*x]))/(b^3*
(c*x^2)^(3/2)*(a + b*x))
```

Maple [A] time = 0.007, size = 62, normalized size = 0.9

$$-\frac{x^{3}\left(2\,\ln\left(bx+a\right)xab-b^{2}x^{2}+2\,a^{2}\ln\left(bx+a\right)-abx+a^{2}\right)}{\left(bx+a\right)b^{3}}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5/(c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] -x^3*(2*ln(b*x+a)*x*a*b-b^2*x^2+2*a^2*ln(b*x+a)-a*b*x+a^2)/(c*x^2
)^(3/2)/(b*x+a)/b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218766, size = 85, normalized size = 1.16

$$\frac{\left(b^{2}x^{2}+abx-a^{2}-2\left(abx+a^{2}\right)\log\left(bx+a\right)\right)\sqrt{cx^{2}}}{b^{4}c^{2}x^{2}+ab^{3}c^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] (b^2*x^2 + a*b*x - a^2 - 2*(a*b*x + a^2)*log(b*x + a))*sqrt(c*x^2
)/(b^4*c^2*x^2 + a*b^3*c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5}{(cx^2)^{\frac{3}{2}} (a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x**5/((c*x**2)**(3/2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^5}{(cx^2)^{\frac{3}{2}} (bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x^5/((c*x^2)^(3/2)*(b*x + a)^2), x)
```

3.918 $\int \frac{x^4}{(cx^2)^{3/2}(a+bx)^2}\,dx$

Optimal. Leaf size=49

$$\frac{ax}{b^2c\sqrt{cx^2}(a+bx)}+\frac{x\log(a+bx)}{b^2c\sqrt{cx^2}}$$

```
[Out] (a*x)/(b^2*c*Sqrt[c*x^2]*(a + b*x)) + (x*Log[a + b*x])/(b^2*c*Sqr
t[c*x^2])
```

Rubi [A] time = 0.040467, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{ax}{b^2c\sqrt{cx^2}(a+bx)}+\frac{x\log(a+bx)}{b^2c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^4/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] (a*x)/(b^2*c*Sqrt[c*x^2]*(a + b*x)) + (x*Log[a + b*x])/(b^2*c*Sqr
t[c*x^2])
```

Rubi in Sympy [A] time = 20.0922, size = 46, normalized size = 0.94

$$\frac{a\sqrt{cx^2}}{b^2c^2x\,(a+bx)}+\frac{\sqrt{cx^2}\log{(a+bx)}}{b^2c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] a*sqrt(c*x**2)/(b**2*c**2*x*(a + b*x)) + sqrt(c*x**2)*log(a + b*x
)/(b**2*c**2*x)
```

Mathematica [A] time = 0.0194758, size = 37, normalized size = 0.76

$$\frac{x^3((a+bx)\log(a+bx)+a)}{b^2\,(cx^2)^{3/2}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^4/((c*x^2)^(3/2)*(a + b*x)^2),x]

[Out] (x^3*(a + (a + b*x)*Log[a + b*x]))/(b^2*(c*x^2)^(3/2)*(a + b*x))
```

Maple [A] time = 0.006, size = 41, normalized size = 0.8

$$\frac{x^3 \left(b \ln \left(bx+a\right) x+a \ln \left(bx+a\right)+a\right)}{\left(bx+a\right) b^2} \left(c x^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4/(c*x^2)^(3/2)/(b*x+a)^2,x)

[Out] x^3*(b*ln(b*x+a)*x+a*ln(b*x+a)+a)/(c*x^2)^(3/2)/(b*x+a)/b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21606, size = 59, normalized size = 1.2

$$\frac{\sqrt{c x^2}\left(\left(bx+a\right) \log \left(bx+a\right)+a\right)}{b^3 c^2 x^2+a b^2 c^2 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="fricas")

[Out] sqrt(c*x^2)*((b*x + a)*log(b*x + a) + a)/(b^3*c^2*x^2 + a*b^2*c^2
*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4}{(cx^2)^{\frac{3}{2}}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x**4/((c*x**2)**(3/2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4}{(cx^2)^{\frac{3}{2}}\,(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x^4/((c*x^2)^(3/2)*(b*x + a)^2), x)
```

3.919 $\int \frac{x^3}{(cx^2)^{3/2}(a+bx)^2} \, dx$

Optimal. Leaf size=25

$$-\frac{x}{bc\sqrt{cx^2}(a+bx)}$$

```
[Out] -(x/(b*c*Sqrt[c*x^2]*(a + b*x)))
```

Rubi [A] time = 0.0140044, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{x}{bc\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] -(x/(b*c*Sqrt[c*x^2]*(a + b*x)))
```

Rubi in Sympy [A] time = 13.9533, size = 20, normalized size = 0.8

$$-\frac{\sqrt{cx^2}}{bc^2x(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] -sqrt(c*x**2)/(b*c**2*x*(a + b*x))
```

Mathematica [A] time = 0.0083106, size = 24, normalized size = 0.96

$$-\frac{x^3}{b(cx^2)^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] -(x^3/(b*(c*x^2)^(3/2)*(a + b*x)))
```

Maple [A] time = 0.004, size = 23, normalized size = 0.9

$$-\frac{x^{3}}{(bx+a)\,b}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3/(c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] -1/(b*x+a)/b*x^3/(c*x^2)^(3/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.20543, size = 39, normalized size = 1.56

$$-\frac{\sqrt{cx^{2}}}{b^{2}c^{2}x^{2}+abc^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] -sqrt(c*x^2)/(b^2*c^2*x^2 + a*b*c^2*x)
```

Sympy [A] time = 6.14921, size = 90, normalized size = 3.6

$$\begin{cases} \frac{\tilde{\infty}x^2}{c^{\frac{3}{2}}(x^2)^{\frac{3}{2}}} & \text{for } a = 0 \wedge b = 0 \\ -\frac{x^2}{b^2c^{\frac{3}{2}}(x^2)^{\frac{3}{2}}} & \text{for } a = 0 \\ \frac{\tilde{\infty}x^4}{c^{\frac{3}{2}}(x^2)^{\frac{3}{2}}} & \text{for } b = -\frac{a}{x} \\ \frac{x^4}{a^2c^{\frac{3}{2}}(x^2)^{\frac{3}{2}}+abc^{\frac{3}{2}}x(x^2)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Piecewise((zoo*x**2/(c**(3/2)*(x**2)**(3/2)), Eq(a, 0) & Eq(b, 0)
), (-x**2/(b**2*c**(3/2)*(x**2)**(3/2)), Eq(a, 0)), (zoo*x**4/(c*
*(3/2)*(x**2)**(3/2)), Eq(b, -a/x)), (x**4/(a**2*c**(3/2)*(x**2)*
*(3/2) + a*b*c**(3/2)*x*(x**2)**(3/2)), True))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3}{(cx^2)^{\frac{3}{2}}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x^3/((c*x^2)^(3/2)*(b*x + a)^2), x)
```

3.920 $\int \frac{x^2}{(cx^2)^{3/2}(a+bx)^2}\,dx$

Optimal. Leaf size=68

$$-\frac{x\log(a+bx)}{a^2c\sqrt{cx^2}}+\frac{x\log(x)}{a^2c\sqrt{cx^2}}+\frac{x}{ac\sqrt{cx^2}(a+bx)}$$

```
[Out] x/(a*c*Sqrt[c*x^2]*(a + b*x)) + (x*Log[x])/(a^2*c*Sqrt[c*x^2]) -
(x*Log[a + b*x])/(a^2*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0481917, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{x\log(a+bx)}{a^2c\sqrt{cx^2}}+\frac{x\log(x)}{a^2c\sqrt{cx^2}}+\frac{x}{ac\sqrt{cx^2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] x/(a*c*Sqrt[c*x^2]*(a + b*x)) + (x*Log[x])/(a^2*c*Sqrt[c*x^2]) -
(x*Log[a + b*x])/(a^2*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 16.4641, size = 63, normalized size = 0.93

$$\frac{\sqrt{cx^2}}{ac^2x\,(a+bx)}+\frac{\sqrt{cx^2}\log{(x)}}{a^2c^2x}-\frac{\sqrt{cx^2}\log{(a+bx)}}{a^2c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] sqrt(c*x**2)/(a*c**2*x*(a + b*x)) + sqrt(c*x**2)*log(x)/(a**2*c**
2*x) - sqrt(c*x**2)*log(a + b*x)/(a**2*c**2*x)
```

Mathematica [A] time = 0.0232432, size = 46, normalized size = 0.68

$$\frac{x^3(\log(x)(a+bx)-(a+bx)\log(a+bx)+a)}{a^2\,(cx^2)^{3/2}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] (x^3*(a + (a + b*x)*Log[x] - (a + b*x)*Log[a + b*x]))/(a^2*(c*x^2
)^(3/2)*(a + b*x))
```

Maple [A] time = 0.007, size = 52, normalized size = 0.8

$$\frac{x^3\left(b\ln(x)x - b\ln(bx+a)x + a\ln(x) - a\ln(bx+a) + a\right)}{a^2(bx+a)}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2/(c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] x^3*(b*ln(x)*x-b*ln(b*x+a)*x+a*ln(x)-a*ln(b*x+a)+a)/(c*x^2)^(3/2)
/a^2/(b*x+a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224644, size = 65, normalized size = 0.96

$$\frac{\sqrt{cx^2}\left((bx+a)\log\left(\frac{x}{bx+a}\right) + a\right)}{a^2bc^2x^2 + a^3c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*((b*x + a)*log(x/(b*x + a)) + a)/(a^2*b*c^2*x^2 + a^3
*c^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{(cx^2)^{\frac{3}{2}}\,(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral(x**2/((c*x**2)**(3/2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2}{(cx^2)^{\frac{3}{2}}\,(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(x^2/((c*x^2)^(3/2)*(b*x + a)^2), x)
```

3.921 $\int \frac{x}{(cx^2)^{3/2}(a+bx)^2} \, dx$

Optimal. Leaf size=90

$$-\frac{2bx\log(x)}{a^3c\sqrt{cx^2}}+\frac{2bx\log(a+bx)}{a^3c\sqrt{cx^2}}-\frac{bx}{a^2c\sqrt{cx^2}(a+bx)}-\frac{1}{a^2c\sqrt{cx^2}}$$

```
[Out] -(1/(a^2*c*Sqrt[c*x^2])) - (b*x)/(a^2*c*Sqrt[c*x^2]*(a + b*x)) -
(2*b*x*Log[x])/(a^3*c*Sqrt[c*x^2]) + (2*b*x*Log[a + b*x])/(a^3*c*
Sqrt[c*x^2])
```

Rubi [A] time = 0.0683298, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{2bx\log(x)}{a^3c\sqrt{cx^2}}+\frac{2bx\log(a+bx)}{a^3c\sqrt{cx^2}}-\frac{bx}{a^2c\sqrt{cx^2}(a+bx)}-\frac{1}{a^2c\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[x/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] -(1/(a^2*c*Sqrt[c*x^2])) - (b*x)/(a^2*c*Sqrt[c*x^2]*(a + b*x)) -
(2*b*x*Log[x])/(a^3*c*Sqrt[c*x^2]) + (2*b*x*Log[a + b*x])/(a^3*c*
Sqrt[c*x^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.0357936, size = 59, normalized size = 0.66

$$\frac{x^2(-a(a+2bx)-2bx\log(x)(a+bx)+2bx(a+bx)\log(a+bx))}{a^3\left(cx^2\right)^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] (x^2*(-(a*(a + 2*b*x)) - 2*b*x*(a + b*x)*Log[x] + 2*b*x*(a + b*x)
*Log[a + b*x]))/(a^3*(c*x^2)^(3/2)*(a + b*x))
```

Maple [A] time = 0.007, size = 74, normalized size = 0.8

$$-\frac{x^2\left(2\,b^2\ln(x)\,x^2-2\,b^2\ln(bx+a)\,x^2+2\,ab\ln(x)\,x-2\,\ln(bx+a)\,xab+2\,abx+a^2\right)}{a^3\,(bx+a)}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x/(c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] -x^2*(2*b^2*ln(x)*x^2-2*b^2*ln(b*x+a)*x^2+2*a*b*ln(x)*x-2*ln(b*x+
a)*x*a*b+2*a*b*x+a^2)/(c*x^2)^(3/2)/a^3/(b*x+a)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223613, size = 89, normalized size = 0.99

$$-\frac{\left(2\,abx+a^2-2\,\left(b^2x^2+abx\right)\log\left(\frac{bx+a}{x}\right)\right)\sqrt{cx^2}}{a^3bc^2x^3+a^4c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] -(2*a*b*x + a^2 - 2*(b^2*x^2 + a*b*x)*log((b*x + a)/x))*sqrt(c*x^
2)/(a^3*b*c^2*x^3 + a^4*c^2*x^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(cx^2)^{\frac{3}{2}} (a+bx)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/(c*x**2)**(3/2)/(b*x+a)**2,x)

[Out] Integral(x/((c*x**2)**(3/2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x}{(cx^2)^{\frac{3}{2}} (bx+a)^2} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="giac")

[Out] integrate(x/((c*x^2)^(3/2)*(b*x + a)^2), x)
```

3.922 $\int \frac{1}{(cx^2)^{3/2}(a+bx)^2}\,dx$

Optimal. Leaf size=118

$$\frac{3b^2x\log(x)}{a^4c\sqrt{cx^2}}-\frac{3b^2x\log(a+bx)}{a^4c\sqrt{cx^2}}+\frac{b^2x}{a^3c\sqrt{cx^2}(a+bx)}+\frac{2b}{a^3c\sqrt{cx^2}}-\frac{1}{2a^2cx\sqrt{cx^2}}$$

```
[Out] (2*b)/(a^3*c*Sqrt[c*x^2]) - 1/(2*a^2*c*x*Sqrt[c*x^2]) + (b^2*x)/(
a^3*c*Sqrt[c*x^2]*(a + b*x)) + (3*b^2*x*Log[x])/(a^4*c*Sqrt[c*x^2
]) - (3*b^2*x*Log[a + b*x])/(a^4*c*Sqrt[c*x^2])
```

Rubi [A] time = 0.0888759, antiderivative size = 118, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{3b^2x\log(x)}{a^4c\sqrt{cx^2}}-\frac{3b^2x\log(a+bx)}{a^4c\sqrt{cx^2}}+\frac{b^2x}{a^3c\sqrt{cx^2}(a+bx)}+\frac{2b}{a^3c\sqrt{cx^2}}-\frac{1}{2a^2cx\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] (2*b)/(a^3*c*Sqrt[c*x^2]) - 1/(2*a^2*c*x*Sqrt[c*x^2]) + (b^2*x)/(
a^3*c*Sqrt[c*x^2]*(a + b*x)) + (3*b^2*x*Log[x])/(a^4*c*Sqrt[c*x^2
]) - (3*b^2*x*Log[a + b*x])/(a^4*c*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 20.875, size = 121, normalized size = 1.03

$$-\frac{\sqrt{cx^2}}{2a^2c^2x^3}+\frac{b^2\sqrt{cx^2}}{a^3c^2x\,(a+bx)}+\frac{2b\sqrt{cx^2}}{a^3c^2x^2}+\frac{3b^2\sqrt{cx^2}\log{(x)}}{a^4c^2x}-\frac{3b^2\sqrt{cx^2}\log{(a+bx)}}{a^4c^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] -sqrt(c*x**2)/(2*a**2*c**2*x**3) + b**2*sqrt(c*x**2)/(a**3*c**2*x
*(a + b*x)) + 2*b*sqrt(c*x**2)/(a**3*c**2*x**2) + 3*b**2*sqrt(c*x
**2)*log(x)/(a**4*c**2*x) - 3*b**2*sqrt(c*x**2)*log(a + b*x)/(a**
4*c**2*x)
```

Mathematica [A] time = 0.038166, size = 80, normalized size = 0.68

$$\frac{x\left(a\left(-a^2+3abx+6b^2x^2\right)+6b^2x^2\log(x)(a+bx)-6b^2x^2(a+bx)\log(a+bx)\right)}{2a^4\left(cx^2\right)^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((c*x^2)^(3/2)*(a + b*x)^2),x]
```

```
[Out] (x*(a*(-a^2 + 3*a*b*x + 6*b^2*x^2) + 6*b^2*x^2*(a + b*x)*Log[x] -
 6*b^2*x^2*(a + b*x)*Log[a + b*x]))/(2*a^4*(c*x^2)^(3/2)*(a + b*x
))
```

Maple [A]   time = 0.007, size = 93, normalized size = 0.8

$$\frac{x\left(6\,b^{3}\ln\left(x\right)x^{3}-6\,b^{3}\ln\left(bx+a\right)x^{3}+6\,\ln\left(x\right)x^{2}ab^{2}-6\,\ln\left(bx+a\right)x^{2}ab^{2}+6\,ab^{2}x^{2}+3\,a^{2}bx-a^{3}\right)}{2\,a^{4}\left(bx+a\right)}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(c*x^2)^(3/2)/(b*x+a)^2,x)
```

```
[Out] 1/2*x*(6*b^3*ln(x)*x^3-6*b^3*ln(b*x+a)*x^3+6*ln(x)*x^2*a*b^2-6*ln
(b*x+a)*x^2*a*b^2+6*a*b^2*x^2+3*a^2*b*x-a^3)/(c*x^2)^(3/2)/a^4/(b
*x+a)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 0.218303, size = 112, normalized size = 0.95

$$\frac{\left(6\,ab^{2}x^{2}+3\,a^{2}bx-a^{3}+6\,\left(b^{3}x^{3}+ab^{2}x^{2}\right)\log\left(\frac{x}{bx+a}\right)\right)\sqrt{cx^{2}}}{2\,\left(a^{4}bc^{2}x^{4}+a^{5}c^{2}x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] 1/2*(6*a*b^2*x^2 + 3*a^2*b*x - a^3 + 6*(b^3*x^3 + a*b^2*x^2)*log(
x/(b*x + a)))*sqrt(c*x^2)/(a^4*b*c^2*x^4 + a^5*c^2*x^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(cx^2)^{\frac{3}{2}}(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(c*x**2)**(3/2)/(b*x+a)**2,x)
```

```
[Out] Integral(1/((c*x**2)**(3/2)*(a + b*x)**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(cx^2)^{\frac{3}{2}}(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((c*x^2)^(3/2)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] integrate(1/((c*x^2)^(3/2)*(b*x + a)^2), x)
```

3.923 $\int x^2\sqrt{cx^2}(a+bx)^n\,dx$

Optimal. Leaf size=131

$$-\frac{a^3\sqrt{cx^2}(a+bx)^{n+1}}{b^4(n+1)x}+\frac{3a^2\sqrt{cx^2}(a+bx)^{n+2}}{b^4(n+2)x}-\frac{3a\sqrt{cx^2}(a+bx)^{n+3}}{b^4(n+3)x}+\frac{\sqrt{cx^2}(a+bx)^{n+4}}{b^4(n+4)x}$$

```
[Out] -((a^3*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^4*(1 + n)*x)) + (3*a^2*S
qrt[c*x^2]*(a + b*x)^(2 + n))/(b^4*(2 + n)*x) - (3*a*Sqrt[c*x^2]*
(a + b*x)^(3 + n))/(b^4*(3 + n)*x) + (Sqrt[c*x^2]*(a + b*x)^(4 +
n))/(b^4*(4 + n)*x)
```

Rubi [A] time = 0.0962621, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3\sqrt{cx^2}(a+bx)^{n+1}}{b^4(n+1)x}+\frac{3a^2\sqrt{cx^2}(a+bx)^{n+2}}{b^4(n+2)x}-\frac{3a\sqrt{cx^2}(a+bx)^{n+3}}{b^4(n+3)x}+\frac{\sqrt{cx^2}(a+bx)^{n+4}}{b^4(n+4)x}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] -((a^3*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^4*(1 + n)*x)) + (3*a^2*S
qrt[c*x^2]*(a + b*x)^(2 + n))/(b^4*(2 + n)*x) - (3*a*Sqrt[c*x^2]*
(a + b*x)^(3 + n))/(b^4*(3 + n)*x) + (Sqrt[c*x^2]*(a + b*x)^(4 +
n))/(b^4*(4 + n)*x)
```

Rubi in Sympy [A] time = 31.7795, size = 112, normalized size = 0.85

$$-\frac{a^3\sqrt{cx^2}\,(a+bx)^{n+1}}{b^4x\,(n+1)}+\frac{3a^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^4x\,(n+2)}-\frac{3a\sqrt{cx^2}\,(a+bx)^{n+3}}{b^4x\,(n+3)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+4}}{b^4x\,(n+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**n*(c*x**2)**(1/2),x)
```

```
[Out] -a**3*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**4*x*(n + 1)) + 3*a**2*s
qrt(c*x**2)*(a + b*x)**(n + 2)/(b**4*x*(n + 2)) - 3*a*sqrt(c*x**2
)*(a + b*x)**(n + 3)/(b**4*x*(n + 3)) + sqrt(c*x**2)*(a + b*x)**(
n + 4)/(b**4*x*(n + 4))
```

Mathematica [A] time = 0.108385, size = 97, normalized size = 0.74

$$\frac{cx(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4(n+1)(n+2)(n+3)(n+4)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] (c*x*(a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x - 3*a*b^2*(2 +
 3*n + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/(b^4*(1 + n)
*(2 + n)*(3 + n)*(4 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.009, size = 136, normalized size = 1.

$$-\frac{(bx+a)^{1+n}\left(-b^3n^3x^3-6\,b^3n^2x^3+3\,ab^2n^2x^2-11\,b^3nx^3+9\,ab^2nx^2-6\,b^3x^3-6\,a^2bnx+6\,ab^2x^2-6\,a^2bx+6\,a^3\right)}{xb^4\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^n*(c*x^2)^(1/2),x)
```

```
[Out] -(c*x^2)^(1/2)*(b*x+a)^(1+n)*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*
n^2*x^2-11*b^3*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*
x^2-6*a^2*b*x+6*a^3)/x/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.36215, size = 157, normalized size = 1.2

$$\frac{\left(\left(n^3+6\,n^2+11\,n+6\right)b^4\sqrt{c}x^4+\left(n^3+3\,n^2+2\,n\right)ab^3\sqrt{c}x^3-3\left(n^2+n\right)a^2b^2\sqrt{c}x^2+6\,a^3b\sqrt{c}nx-6\,a^4\sqrt{c}\right)(bx+a)^n}{(n^4+10\,n^3+35\,n^2+50\,n+24)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*x^2,x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*sqrt(c)*x^4 + (n^3 + 3*n^2 + 2*n)*a
*b^3*sqrt(c)*x^3 - 3*(n^2 + n)*a^2*b^2*sqrt(c)*x^2 + 6*a^3*b*sqrt
(c)*n*x - 6*a^4*sqrt(c))*(b*x + a)^n/((n^4 + 10*n^3 + 35*n^2 + 50
*n + 24)*b^4)
```

Fricas [A] time = 0.224466, size = 207, normalized size = 1.58

$$\frac{\left(6\,a^{3}bnx + \left(b^{4}n^{3} + 6\,b^{4}n^{2} + 11\,b^{4}n + 6\,b^{4}\right)x^{4} - 6\,a^{4} + \left(ab^{3}n^{3} + 3\,ab^{3}n^{2} + 2\,ab^{3}n\right)x^{3} - 3\,\left(a^{2}b^{2}n^{2} + a^{2}b^{2}n\right)x^{2}\right)\sqrt{cx^{2}}(bx+a)^{n}}{(b^{4}n^{4} + 10\,b^{4}n^{3} + 35\,b^{4}n^{2} + 50\,b^{4}n + 24\,b^{4})x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*x^2,x, algorithm="fricas")
```

```
[Out] (6*a^3*b*n*x + (b^4*n^3 + 6*b^4*n^2 + 11*b^4*n + 6*b^4)*x^4 - 6*a
^4 + (a*b^3*n^3 + 3*a*b^3*n^2 + 2*a*b^3*n)*x^3 - 3*(a^2*b^2*n^2 +
 a^2*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^4*n^4 + 10*b^4*n^3 +
 35*b^4*n^2 + 50*b^4*n + 24*b^4)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**n*(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [A] time = 0.210518, size = 437, normalized size = 3.34

$$\left(\frac{6\,a^{4}e^{(n\ln(a))}\mathrm{sign}\,(x)}{b^{4}n^{4} + 10\,b^{4}n^{3} + 35\,b^{4}n^{2} + 50\,b^{4}n + 24\,b^{4}} + \frac{b^{4}n^{3}x^{4}e^{(n\ln(bx+a))}\mathrm{sign}\,(x) + ab^{3}n^{3}x^{3}e^{(n\ln(bx+a))}\mathrm{sign}\,(x) + 6\,b^{4}n^{2}x^{4}e^{(n\ln(bx+a))}\mathrm{sig}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*x^2,x, algorithm="giac")
```

```
[Out] (6*a^4*e^(n*ln(a))*sign(x)/(b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 + 5
0*b^4*n + 24*b^4) + (b^4*n^3*x^4*e^(n*ln(b*x + a))*sign(x) + a*b^
3*n^3*x^3*e^(n*ln(b*x + a))*sign(x) + 6*b^4*n^2*x^4*e^(n*ln(b*x +
 a))*sign(x) + 3*a*b^3*n^2*x^3*e^(n*ln(b*x + a))*sign(x) + 11*b^4
*n*x^4*e^(n*ln(b*x + a))*sign(x) - 3*a^2*b^2*n^2*x^2*e^(n*ln(b*x
+ a))*sign(x) + 2*a*b^3*n*x^3*e^(n*ln(b*x + a))*sign(x) + 6*b^4*x
^4*e^(n*ln(b*x + a))*sign(x) - 3*a^2*b^2*n*x^2*e^(n*ln(b*x + a))*
sign(x) + 6*a^3*b*n*x*e^(n*ln(b*x + a))*sign(x) - 6*a^4*e^(n*ln(b
*x + a))*sign(x))/(b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 + 50*b^4*n +
 24*b^4))*sqrt(c)
```

3.924 $\int x\sqrt{cx^2}(a+bx)^n\,dx$

Optimal. Leaf size=96

$$\frac{a^2\sqrt{cx^2}(a+bx)^{n+1}}{b^3(n+1)x}-\frac{2a\sqrt{cx^2}(a+bx)^{n+2}}{b^3(n+2)x}+\frac{\sqrt{cx^2}(a+bx)^{n+3}}{b^3(n+3)x}$$

```
[Out] (a^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^3*(1 + n)*x) - (2*a*Sqrt[c
*x^2]*(a + b*x)^(2 + n))/(b^3*(2 + n)*x) + (Sqrt[c*x^2]*(a + b*x)
^(3 + n))/(b^3*(3 + n)*x)
```

Rubi [A] time = 0.0697829, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a^2\sqrt{cx^2}(a+bx)^{n+1}}{b^3(n+1)x}-\frac{2a\sqrt{cx^2}(a+bx)^{n+2}}{b^3(n+2)x}+\frac{\sqrt{cx^2}(a+bx)^{n+3}}{b^3(n+3)x}$$

Antiderivative was successfully verified.

```
[In]  Int[x*Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] (a^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^3*(1 + n)*x) - (2*a*Sqrt[c
*x^2]*(a + b*x)^(2 + n))/(b^3*(2 + n)*x) + (Sqrt[c*x^2]*(a + b*x)
^(3 + n))/(b^3*(3 + n)*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\sqrt{cx^2}\,(a+bx)^n\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**n*(c*x**2)**(1/2),x)
```

```
[Out] Integral(x*sqrt(c*x**2)*(a + b*x)**n, x)
```

Mathematica [A] time = 0.0626584, size = 68, normalized size = 0.71

$$\frac{cx(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3(n+1)(n+2)(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] (c*x*(a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n +
n^2)*x^2))/(b^3*(1 + n)*(2 + n)*(3 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 83, normalized size = 0.9

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)}{xb^3\,(n^3+6\,n^2+11\,n+6)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^n*(c*x^2)^(1/2),x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)*(c*x^2)^(1/2)/x/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.36483, size = 108, normalized size = 1.12

$$\frac{\left(\left(n^2+3\,n+2\right)b^3\sqrt{c}x^3+\left(n^2+n\right)ab^2\sqrt{c}x^2-2\,a^2b\sqrt{c}nx+2\,a^3\sqrt{c}\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*x,x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*sqrt(c)*x^3 + (n^2 + n)*a*b^2*sqrt(c)*x^2 -
2*a^2*b*sqrt(c)*n*x + 2*a^3*sqrt(c))*(b*x + a)^n/((n^3 + 6*n^2 +
11*n + 6)*b^3)
```

Fricas [A] time = 0.231669, size = 143, normalized size = 1.49

$$-\frac{\left(2\,a^2bnx-\left(b^3n^2+3\,b^3n+2\,b^3\right)x^3-2\,a^3-\left(ab^2n^2+ab^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^3n^3+6\,b^3n^2+11\,b^3n+6\,b^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*x,x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*n*x - (b^3*n^2 + 3*b^3*n + 2*b^3)*x^3 - 2*a^3 - (a*b^2*
n^2 + a*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^3*n^3 + 6*b^3*n^2
 + 11*b^3*n + 6*b^3)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**n*(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [A] time = 0.208211, size = 292, normalized size = 3.04

$$-\left(\frac{2\,a^3e^{(n\ln(a))}\mathrm{sign}\,(x)}{b^3n^3+6\,b^3n^2+11\,b^3n+6\,b^3}-\frac{b^3n^2x^3e^{(n\ln(bx+a))}\mathrm{sign}\,(x)+ab^2n^2x^2e^{(n\ln(bx+a))}\mathrm{sign}\,(x)+3\,b^3nx^3e^{(n\ln(bx+a))}\mathrm{sign}\,(x)+ab^2}{b^3n^3+6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*x,x, algorithm="giac")
```

```
[Out] -(2*a^3*e^(n*ln(a))*sign(x)/(b^3*n^3 + 6*b^3*n^2 + 11*b^3*n + 6*b
^3) - (b^3*n^2*x^3*e^(n*ln(b*x + a))*sign(x) + a*b^2*n^2*x^2*e^(n
*ln(b*x + a))*sign(x) + 3*b^3*n*x^3*e^(n*ln(b*x + a))*sign(x) + a
*b^2*n*x^2*e^(n*ln(b*x + a))*sign(x) + 2*b^3*x^3*e^(n*ln(b*x + a)
)*sign(x) - 2*a^2*b*n*x*e^(n*ln(b*x + a))*sign(x) + 2*a^3*e^(n*ln
(b*x + a))*sign(x))/(b^3*n^3 + 6*b^3*n^2 + 11*b^3*n + 6*b^3))*sqr
t(c)
```

3.925 $\int \sqrt{cx^2}(a+bx)^n\,dx$

Optimal. Leaf size=63

$$\frac{\sqrt{cx^2}(a+bx)^{n+2}}{b^2(n+2)x}-\frac{a\sqrt{cx^2}(a+bx)^{n+1}}{b^2(n+1)x}$$

```
[Out] -((a*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^2*(1 + n)*x)) + (Sqrt[c*x^
2]*(a + b*x)^(2 + n))/(b^2*(2 + n)*x)
```

Rubi [A] time = 0.0447093, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{\sqrt{cx^2}(a+bx)^{n+2}}{b^2(n+2)x}-\frac{a\sqrt{cx^2}(a+bx)^{n+1}}{b^2(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] -((a*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^2*(1 + n)*x)) + (Sqrt[c*x^
2]*(a + b*x)^(2 + n))/(b^2*(2 + n)*x)
```

Rubi in Sympy [A] time = 13.2611, size = 51, normalized size = 0.81

$$-\frac{a\sqrt{cx^2}\,(a+bx)^{n+1}}{b^2x\,(n+1)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+2}}{b^2x\,(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(c*x**2)**(1/2),x)
```

```
[Out] -a*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**2*x*(n + 1)) + sqrt(c*x**2
)*(a + b*x)**(n + 2)/(b**2*x*(n + 2))
```

Mathematica [A] time = 0.0408042, size = 44, normalized size = 0.7

$$\frac{cx(a+bx)^{n+1}(b(n+1)x-a)}{b^2(n+1)(n+2)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] (c*x*(a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*(1 + n)*(2 + n)*S
qrt[c*x^2])
```

Maple [A] time = 0.003, size = 46, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}(-bxn-bx+a)}{xb^2(n^2+3n+2)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(c*x^2)^(1/2),x)
```

```
[Out] -(c*x^2)^(1/2)*(b*x+a)^(1+n)*(-b*n*x-b*x+a)/x/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.36443, size = 69, normalized size = 1.1

$$\frac{\left(b^2\sqrt{c}(n+1)x^2+ab\sqrt{c}nx-a^2\sqrt{c}\right)(bx+a)^n}{(n^2+3n+2)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] (b^2*sqrt(c)*(n + 1)*x^2 + a*b*sqrt(c)*n*x - a^2*sqrt(c))*(b*x +
a)^n/((n^2 + 3*n + 2)*b^2)
```

Fricas [A] time = 0.225294, size = 85, normalized size = 1.35

$$\frac{\left(abnx+\left(b^2n+b^2\right)x^2-a^2\right)\sqrt{cx^2}(bx+a)^n}{(b^2n^2+3b^2n+2b^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] (a*b*n*x + (b^2*n + b^2)*x^2 - a^2)*sqrt(c*x^2)*(b*x + a)^n/((b^2
*n^2 + 3*b^2*n + 2*b^2)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [A] time = 0.208505, size = 174, normalized size = 2.76

$$\left(\frac{a^{2}e^{\left(n\ln\left(a\right)\right)}\operatorname{sign}\left(x\right)}{b^{2}n^{2}+3\,b^{2}n+2\,b^{2}}+\frac{b^{2}nx^{2}e^{\left(n\ln\left(bx+a\right)\right)}\operatorname{sign}\left(x\right)+abnxe^{\left(n\ln\left(bx+a\right)\right)}\operatorname{sign}\left(x\right)+b^{2}x^{2}e^{\left(n\ln\left(bx+a\right)\right)}\operatorname{sign}\left(x\right)-a^{2}e^{\left(n\ln\left(bx+a\right)\right)}\operatorname{sign}\left(x\right)}{b^{2}n^{2}+3\,b^{2}n+2\,b^{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n,x, algorithm="giac")
```

```
[Out] (a^2*e^(n*ln(a))*sign(x)/(b^2*n^2 + 3*b^2*n + 2*b^2) + (b^2*n*x^2
*e^(n*ln(b*x + a))*sign(x) + a*b*n*x*e^(n*ln(b*x + a))*sign(x) +
b^2*x^2*e^(n*ln(b*x + a))*sign(x) - a^2*e^(n*ln(b*x + a))*sign(x)
)/(b^2*n^2 + 3*b^2*n + 2*b^2))*sqrt(c)
```

3.926 $\int \frac{\sqrt{cx^2}(a+bx)^n}{x} dx$

Optimal. Leaf size=30

$$\frac{\sqrt{cx^2}(a+bx)^{n+1}}{b(n+1)x}$$

```
[Out] (Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b*(1 + n)*x)
```

Rubi [A] time = 0.0172442, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{\sqrt{cx^2}(a+bx)^{n+1}}{b(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^n)/x,x]

[Out] (Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b*(1 + n)*x)
```

Rubi in Sympy [A] time = 13.2308, size = 22, normalized size = 0.73

$$\frac{\sqrt{cx^2}\,(a+bx)^{n+1}}{bx\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(c*x**2)**(1/2)/x,x)

[Out] sqrt(c*x**2)*(a + b*x)**(n + 1)/(b*x*(n + 1))
```

Mathematica [A] time = 0.0179754, size = 29, normalized size = 0.97

$$\frac{cx(a+bx)^{n+1}}{b(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^n)/x,x]
```

```
[Out] (c*x*(a + b*x)^(1 + n))/(b*(1 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 29, normalized size = 1.

$$\frac{(bx+a)^{1+n}}{b(1+n)x}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^n*(c*x^2)^(1/2)/x,x)
```

```
[Out] (b*x+a)^(1+n)*(c*x^2)^(1/2)/b/(1+n)/x
```

Maxima [A] time = 1.35338, size = 38, normalized size = 1.27

$$\frac{\left(b\sqrt{c}x+a\sqrt{c}\right)(bx+a)^n}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)^n/x,x, algorithm="maxima")
```

```
[Out] (b*sqrt(c)*x + a*sqrt(c))*(b*x + a)^n/(b*(n + 1))
```

Fricas [A] time = 0.225717, size = 41, normalized size = 1.37

$$\frac{\sqrt{cx^2}(bx+a)(bx+a)^n}{(bn+b)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(c*x^2)*(b*x + a)^n/x,x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x + a)*(b*x + a)^n/((b*n + b)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(c*x**2)**(1/2)/x,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [A] time = 0.203946, size = 57, normalized size = 1.9

$$-\sqrt{c}\left(\frac{a^{n+1}\operatorname{sign}(x)}{bn+b}-\frac{(bx+a)^{n+1}\operatorname{sign}(x)}{b(n+1)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x,x, algorithm="giac")
```

```
[Out] -sqrt(c)*(a^(n + 1)*sign(x)/(b*n + b) - (b*x + a)^(n + 1)*sign(x)
/(b*(n + 1)))
```

3.927 $\int \frac{\sqrt{cx^2}(a+bx)^n}{x^2} dx$

Optimal. Leaf size=47

$$-\frac{\sqrt{cx^2}(a+bx)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)x}$$

```
[Out] -((Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*x)/a])/(a*(1 + n)*x))
```

Rubi [A] time = 0.0317039, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{\sqrt{cx^2}(a+bx)^{n+1} {}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^n)/x^2,x]
```

```
[Out] -((Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*x)/a])/(a*(1 + n)*x))
```

Rubi in Sympy [A] time = 14.5106, size = 36, normalized size = 0.77

$$-\frac{\sqrt{cx^2}\,(a+bx)^{n+1} {}_2F_1\left(\begin{matrix} 1, n+1 \\ n+2 \end{matrix}\middle| 1+\frac{bx}{a}\right)}{ax\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(c*x**2)**(1/2)/x**2,x)
```

```
[Out] -sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,), 1 + b*x/a)/(a*x*(n + 1))
```

Mathematica [A] time = 0.0209022, size = 57, normalized size = 1.21

$$\frac{cx\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n {}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{n\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^n)/x^2,x]
```

```
[Out] (c*x*(a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(b*x))])/(n
*(1 + a/(b*x))^n*Sqrt[c*x^2])
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^2}\sqrt{cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(c*x^2)^(1/2)/x^2,x)
```

```
[Out] int((b*x+a)^n*(c*x^2)^(1/2)/x^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}(bx+a)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^2,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n/x^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^2,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n/x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}\,(a+bx)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(c*x**2)**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)**n/x**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}(bx+a)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^2,x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n/x^2, x)
```

3.928 $\int \frac{\sqrt{cx^2}(a+bx)^n}{x^3} dx$

Optimal. Leaf size=47

$$\frac{b\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)x}$$

```
[Out] (b*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 +
n, 1 + (b*x)/a])/(a^2*(1 + n)*x)
```

Rubi [A] time = 0.0312537, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{b\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^n)/x^3,x]
```

```
[Out] (b*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 +
n, 1 + (b*x)/a])/(a^2*(1 + n)*x)
```

Rubi in Sympy [A] time = 14.7019, size = 37, normalized size = 0.79

$$\frac{b\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(c*x**2)**(1/2)/x**3,x)
```

```
[Out] b*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((2, n + 1), (n + 2,), 1 +
 b*x/a)/(a**2*x*(n + 1))
```

Mathematica [A] time = 0.0252166, size = 62, normalized size = 1.32

$$\frac{\sqrt{cx^2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^n)/x^3,x]
```

```
[Out] (Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(a/
(b*x))])/((-1 + n)*(1 + a/(b*x))^n*x^2)
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^3}\sqrt{cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(c*x^2)^(1/2)/x^3,x)
```

```
[Out] int((b*x+a)^n*(c*x^2)^(1/2)/x^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}(bx+a)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^3,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n/x^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^3,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n/x^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}\,(a+bx)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(c*x**2)**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)**n/x**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}(bx+a)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^3,x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n/x^3, x)
```

3.929 $\int \frac{\sqrt{cx^2}(a+bx)^n}{x^4}\,dx$

Optimal. Leaf size=50

$$-\frac{b^2\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)x}$$

```
[Out] -((b^2*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n,
2 + n, 1 + (b*x)/a])/(a^3*(1 + n)*x))
```

Rubi [A] time = 0.0358128, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{b^2\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(Sqrt[c*x^2]*(a + b*x)^n)/x^4,x]
```

```
[Out] -((b^2*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n,
2 + n, 1 + (b*x)/a])/(a^3*(1 + n)*x))
```

Rubi in Sympy [A] time = 15.6981, size = 41, normalized size = 0.82

$$-\frac{b^2\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}3,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^3x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(c*x**2)**(1/2)/x**4,x)
```

```
[Out] -b**2*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((3, n + 1), (n + 2,),
 1 + b*x/a)/(a**3*x*(n + 1))
```

Mathematica [A] time = 0.0250588, size = 62, normalized size = 1.24

$$\frac{\sqrt{cx^2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(2-n,-n;3-n;-\frac{a}{bx}\right)}{(n-2)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(Sqrt[c*x^2]*(a + b*x)^n)/x^4,x]
```

```
[Out] (Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[2 - n, -n, 3 - n, -(a/
(b*x))])/((-2 + n)*(1 + a/(b*x))^n*x^3)
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^4}\sqrt{cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(c*x^2)^(1/2)/x^4,x)
```

```
[Out] int((b*x+a)^n*(c*x^2)^(1/2)/x^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}(bx+a)^n}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^4,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n/x^4, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n}{x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^4,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n/x^4, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}\,(a+bx)^n}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(c*x**2)**(1/2)/x**4,x)
```

```
[Out] Integral(sqrt(c*x**2)*(a + b*x)**n/x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{cx^2}(bx+a)^n}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n/x^4,x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n/x^4, x)
```

3.930 $\int x\left(cx^2\right)^{3/2}(a+bx)^n\,dx$

Optimal. Leaf size=169

$$\frac{a^4c\sqrt{cx^2}(a+bx)^{n+1}}{b^5(n+1)x}-\frac{4a^3c\sqrt{cx^2}(a+bx)^{n+2}}{b^5(n+2)x}+\frac{6a^2c\sqrt{cx^2}(a+bx)^{n+3}}{b^5(n+3)x}-\frac{4ac\sqrt{cx^2}(a+bx)^{n+4}}{b^5(n+4)x}+\frac{c\sqrt{cx^2}(a+bx)^{n+5}}{b^5(n+5)x}$$

```
[Out] (a^4*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^5*(1 + n)*x) - (4*a^3*c*
Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^5*(2 + n)*x) + (6*a^2*c*Sqrt[c*
x^2]*(a + b*x)^(3 + n))/(b^5*(3 + n)*x) - (4*a*c*Sqrt[c*x^2]*(a +
 b*x)^(4 + n))/(b^5*(4 + n)*x) + (c*Sqrt[c*x^2]*(a + b*x)^(5 + n)
)/(b^5*(5 + n)*x)
```

Rubi [A] time = 0.134337, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{a^4c\sqrt{cx^2}(a+bx)^{n+1}}{b^5(n+1)x}-\frac{4a^3c\sqrt{cx^2}(a+bx)^{n+2}}{b^5(n+2)x}+\frac{6a^2c\sqrt{cx^2}(a+bx)^{n+3}}{b^5(n+3)x}-\frac{4ac\sqrt{cx^2}(a+bx)^{n+4}}{b^5(n+4)x}+\frac{c\sqrt{cx^2}(a+bx)^{n+5}}{b^5(n+5)x}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(c*x^2)^(3/2)*(a + b*x)^n,x]
```

```
[Out] (a^4*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^5*(1 + n)*x) - (4*a^3*c*
Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^5*(2 + n)*x) + (6*a^2*c*Sqrt[c*
x^2]*(a + b*x)^(3 + n))/(b^5*(3 + n)*x) - (4*a*c*Sqrt[c*x^2]*(a +
 b*x)^(4 + n))/(b^5*(4 + n)*x) + (c*Sqrt[c*x^2]*(a + b*x)^(5 + n)
)/(b^5*(5 + n)*x)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(cx^2\right)^{\frac{3}{2}}(a+bx)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**(3/2)*(b*x+a)**n,x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)*(a + b*x)**n, x)
```

Mathematica [A] time = 0.117044, size = 132, normalized size = 0.78

$$\frac{(cx^2)^{3/2}(a+bx)^{n+1}\left(24a^4-24a^3b(n+1)x+12a^2b^2\left(n^2+3n+2\right)x^2-4ab^3\left(n^3+6n^2+11n+6\right)x^3+b^4\left(n^4+10n^3+35n^2\right.\right.}{b^5(n+1)(n+2)(n+3)(n+4)(n+5)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(c*x^2)^(3/2)*(a + b*x)^n,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^(1 + n)*(24*a^4 - 24*a^3*b*(1 + n)*x + 1
2*a^2*b^2*(2 + 3*n + n^2)*x^2 - 4*a*b^3*(6 + 11*n + 6*n^2 + n^3)*
x^3 + b^4*(24 + 50*n + 35*n^2 + 10*n^3 + n^4)*x^4))/(b^5*(1 + n)*
(2 + n)*(3 + n)*(4 + n)*(5 + n)*x^3)
```

Maple [A] time = 0.01, size = 199, normalized size = 1.2

$$\frac{(bx+a)^{1+n}\left(b^4n^4x^4+10\,b^4n^3x^4-4\,ab^3n^3x^3+35\,b^4n^2x^4-24\,ab^3n^2x^3+50\,b^4nx^4+12\,a^2b^2n^2x^2-44\,ab^3nx^3+24\,x^4b^4+36\right.}{x^3b^5\left(n^5+15\,n^4+85\,n^3+225\,n^2+274\,n+120\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^(3/2)*(b*x+a)^n,x)
```

```
[Out] (b*x+a)^(1+n)*(b^4*n^4*x^4+10*b^4*n^3*x^4-4*a*b^3*n^3*x^3+35*b^4*
n^2*x^4-24*a*b^3*n^2*x^3+50*b^4*n*x^4+12*a^2*b^2*n^2*x^2-44*a*b^3
*n*x^3+24*b^4*x^4+36*a^2*b^2*n*x^2-24*a*b^3*x^3-24*a^3*b*n*x+24*a
^2*b^2*x^2-24*a^3*b*x+24*a^4)*(c*x^2)^(3/2)/x^3/b^5/(n^5+15*n^4+8
5*n^3+225*n^2+274*n+120)
```

Maxima [A] time = 1.37653, size = 212, normalized size = 1.25

$$\frac{\left(\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)b^5c^{\frac{3}{2}}x^5+\left(n^4+6\,n^3+11\,n^2+6\,n\right)ab^4c^{\frac{3}{2}}x^4-4\left(n^3+3\,n^2+2\,n\right)a^2b^3c^{\frac{3}{2}}x^3+12\left(n^2+n\right)a^3b^2c\right.}{\left(n^5+15\,n^4+85\,n^3+225\,n^2+274\,n+120\right)b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n*x,x, algorithm="maxima")
```

```
[Out] ((n^4 + 10*n^3 + 35*n^2 + 50*n + 24)*b^5*c^(3/2)*x^5 + (n^4 + 6*n
^3 + 11*n^2 + 6*n)*a*b^4*c^(3/2)*x^4 - 4*(n^3 + 3*n^2 + 2*n)*a^2*
b^3*c^(3/2)*x^3 + 12*(n^2 + n)*a^3*b^2*c^(3/2)*x^2 - 24*a^4*b*c^(
3/2)*n*x + 24*a^5*c^(3/2))*(b*x + a)^n/((n^5 + 15*n^4 + 85*n^3 +
```

```
225*n^2 + 274*n + 120)*b^5)
```

Fricas [A] time = 0.226257, size = 315, normalized size = 1.86

$$-\frac{\left(24\,a^4bcnx-24\,a^5c-\left(b^5cn^4+10\,b^5cn^3+35\,b^5cn^2+50\,b^5cn+24\,b^5c\right)x^5-\left(ab^4cn^4+6\,ab^4cn^3+11\,ab^4cn^2+6\,ab^4cn\right)x^4}{\left(b^5n^5+15\,b^5n^4+85\,b^5n^3+225\,b^5n^2+274\,b^5n+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n*x,x, algorithm="fricas")
```

```
[Out] -(24*a^4*b*c*n*x - 24*a^5*c - (b^5*c*n^4 + 10*b^5*c*n^3 + 35*b^5*
c*n^2 + 50*b^5*c*n + 24*b^5*c)*x^5 - (a*b^4*c*n^4 + 6*a*b^4*c*n^3
 + 11*a*b^4*c*n^2 + 6*a*b^4*c*n)*x^4 + 4*(a^2*b^3*c*n^3 + 3*a^2*b
^3*c*n^2 + 2*a^2*b^3*c*n)*x^3 - 12*(a^3*b^2*c*n^2 + a^3*b^2*c*n)*
x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^5*n^5 + 15*b^5*n^4 + 85*b^5*n^3
+ 225*b^5*n^2 + 274*b^5*n + 120*b^5)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x\left(cx^2\right)^{\frac{3}{2}}(a+bx)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**(3/2)*(b*x+a)**n,x)
```

```
[Out] Integral(x*(c*x**2)**(3/2)*(a + b*x)**n, x)
```

GIAC/XCAS [A] time = 0.212697, size = 621, normalized size = 3.67

$$-\left(\frac{24\,a^5e^{(n\ln(a))}\mathrm{sign}\left(x\right)}{b^5n^5+15\,b^5n^4+85\,b^5n^3+225\,b^5n^2+274\,b^5n+120\,b^5}-\frac{b^5n^4x^5e^{(n\ln(bx+a))}\mathrm{sign}\left(x\right)+ab^4n^4x^4e^{(n\ln(bx+a))}\mathrm{sign}\left(x\right)+10\,b^5n}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n*x,x, algorithm="giac")
```

```
[Out] -(24*a^5*e^(n*ln(a))*sign(x)/(b^5*n^5 + 15*b^5*n^4 + 85*b^5*n^3 +
 225*b^5*n^2 + 274*b^5*n + 120*b^5) - (b^5*n^4*x^5*e^(n*ln(b*x +
a))*sign(x) + a*b^4*n^4*x^4*e^(n*ln(b*x + a))*sign(x) + 10*b^5*n^
3*x^5*e^(n*ln(b*x + a))*sign(x) + 6*a*b^4*n^3*x^4*e^(n*ln(b*x + a
```

```
))*sign(x) + 35*b^5*n^2*x^5*e^(n*ln(b*x + a))*sign(x) - 4*a^2*b^3
*n^3*x^3*e^(n*ln(b*x + a))*sign(x) + 11*a*b^4*n^2*x^4*e^(n*ln(b*x
 + a))*sign(x) + 50*b^5*n*x^5*e^(n*ln(b*x + a))*sign(x) - 12*a^2*
b^3*n^2*x^3*e^(n*ln(b*x + a))*sign(x) + 6*a*b^4*n*x^4*e^(n*ln(b*x
 + a))*sign(x) + 24*b^5*x^5*e^(n*ln(b*x + a))*sign(x) + 12*a^3*b^
2*n^2*x^2*e^(n*ln(b*x + a))*sign(x) - 8*a^2*b^3*n*x^3*e^(n*ln(b*x
 + a))*sign(x) + 12*a^3*b^2*n*x^2*e^(n*ln(b*x + a))*sign(x) - 24*
a^4*b*n*x*e^(n*ln(b*x + a))*sign(x) + 24*a^5*e^(n*ln(b*x + a))*si
gn(x))/(b^5*n^5 + 15*b^5*n^4 + 85*b^5*n^3 + 225*b^5*n^2 + 274*b^5
*n + 120*b^5))*c^(3/2)
```

3.931 $\int \left(cx^2\right)^{3/2}(a+bx)^n\,dx$

Optimal. Leaf size=135

$$-\frac{a^3c\sqrt{cx^2}(a+bx)^{n+1}}{b^4(n+1)x}+\frac{3a^2c\sqrt{cx^2}(a+bx)^{n+2}}{b^4(n+2)x}-\frac{3ac\sqrt{cx^2}(a+bx)^{n+3}}{b^4(n+3)x}+\frac{c\sqrt{cx^2}(a+bx)^{n+4}}{b^4(n+4)x}$$

```
[Out] -((a^3*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^4*(1 + n)*x)) + (3*a^2
*c*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^4*(2 + n)*x) - (3*a*c*Sqrt[c
*x^2]*(a + b*x)^(3 + n))/(b^4*(3 + n)*x) + (c*Sqrt[c*x^2]*(a + b*
x)^(4 + n))/(b^4*(4 + n)*x)
```

Rubi [A] time = 0.100177, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$-\frac{a^3c\sqrt{cx^2}(a+bx)^{n+1}}{b^4(n+1)x}+\frac{3a^2c\sqrt{cx^2}(a+bx)^{n+2}}{b^4(n+2)x}-\frac{3ac\sqrt{cx^2}(a+bx)^{n+3}}{b^4(n+3)x}+\frac{c\sqrt{cx^2}(a+bx)^{n+4}}{b^4(n+4)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(3/2)*(a + b*x)^n,x]
```

```
[Out] -((a^3*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^4*(1 + n)*x)) + (3*a^2
*c*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^4*(2 + n)*x) - (3*a*c*Sqrt[c
*x^2]*(a + b*x)^(3 + n))/(b^4*(3 + n)*x) + (c*Sqrt[c*x^2]*(a + b*
x)^(4 + n))/(b^4*(4 + n)*x)
```

Rubi in Sympy [A] time = 26.2114, size = 119, normalized size = 0.88

$$-\frac{a^3c\sqrt{cx^2}\,(a+bx)^{n+1}}{b^4x\,(n+1)}+\frac{3a^2c\sqrt{cx^2}\,(a+bx)^{n+2}}{b^4x\,(n+2)}-\frac{3ac\sqrt{cx^2}\,(a+bx)^{n+3}}{b^4x\,(n+3)}+\frac{c\sqrt{cx^2}\,(a+bx)^{n+4}}{b^4x\,(n+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n,x)
```

```
[Out] -a**3*c*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**4*x*(n + 1)) + 3*a**2
*c*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**4*x*(n + 2)) - 3*a*c*sqrt(
c*x**2)*(a + b*x)**(n + 3)/(b**4*x*(n + 3)) + c*sqrt(c*x**2)*(a +
 b*x)**(n + 4)/(b**4*x*(n + 4))
```

Mathematica [A] time = 0.0875822, size = 98, normalized size = 0.73

$$\frac{(cx^2)^{3/2}(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4(n+1)(n+2)(n+3)(n+4)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(3/2)*(a + b*x)^n,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x - 3*
a*b^2*(2 + 3*n + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/(b
^4*(1 + n)*(2 + n)*(3 + n)*(4 + n)*x^3)
```

Maple [A] time = 0.007, size = 136, normalized size = 1.

$$-\frac{(bx+a)^{1+n}\left(-b^3n^3x^3-6\,b^3n^2x^3+3\,ab^2n^2x^2-11\,b^3nx^3+9\,ab^2nx^2-6\,b^3x^3-6\,a^2bnx+6\,ab^2x^2-6\,a^2bx+6\,a^3\right)}{x^3b^4\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^n,x)
```

```
[Out] -(b*x+a)^(1+n)*(c*x^2)^(3/2)*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*
n^2*x^2-11*b^3*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*
x^2-6*a^2*b*x+6*a^3)/x^3/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.40501, size = 157, normalized size = 1.16

$$\frac{\left(\left(n^3+6\,n^2+11\,n+6\right)b^4c^{\frac{3}{2}}x^4+\left(n^3+3\,n^2+2\,n\right)ab^3c^{\frac{3}{2}}x^3-3\left(n^2+n\right)a^2b^2c^{\frac{3}{2}}x^2+6\,a^3bc^{\frac{3}{2}}nx-6\,a^4c^{\frac{3}{2}}\right)(bx+a)^n}{(n^4+10\,n^3+35\,n^2+50\,n+24)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*c^(3/2)*x^4 + (n^3 + 3*n^2 + 2*n)*a
*b^3*c^(3/2)*x^3 - 3*(n^2 + n)*a^2*b^2*c^(3/2)*x^2 + 6*a^3*b*c^(3
/2)*n*x - 6*a^4*c^(3/2))*(b*x + a)^n/((n^4 + 10*n^3 + 35*n^2 + 50
*n + 24)*b^4)
```

Fricas [A] time = 0.217732, size = 221, normalized size = 1.64

$$\frac{\left(6\,a^3bcnx - 6\,a^4c + \left(b^4cn^3 + 6\,b^4cn^2 + 11\,b^4cn + 6\,b^4c\right)x^4 + \left(ab^3cn^3 + 3\,ab^3cn^2 + 2\,ab^3cn\right)x^3 - 3\,\left(a^2b^2cn^2 + a^2b^2cn\right)x^2\right)\sqrt{c}}{(b^4n^4 + 10\,b^4n^3 + 35\,b^4n^2 + 50\,b^4n + 24\,b^4)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] (6*a^3*b*c*n*x - 6*a^4*c + (b^4*c*n^3 + 6*b^4*c*n^2 + 11*b^4*c*n
+ 6*b^4*c)*x^4 + (a*b^3*c*n^3 + 3*a*b^3*c*n^2 + 2*a*b^3*c*n)*x^3
- 3*(a^2*b^2*c*n^2 + a^2*b^2*c*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((
b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 + 50*b^4*n + 24*b^4)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^{\frac{3}{2}} (a + bx)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n,x)
```

```
[Out] Integral((c*x**2)**(3/2)*(a + b*x)**n, x)
```

GIAC/XCAS [A] time = 0.210634, size = 437, normalized size = 3.24

$$\left(\frac{6\,a^4e^{(n\ln(a))}\mathrm{sign}\,(x)}{b^4n^4 + 10\,b^4n^3 + 35\,b^4n^2 + 50\,b^4n + 24\,b^4} + \frac{b^4n^3x^4e^{(n\ln(bx+a))}\mathrm{sign}\,(x) + ab^3n^3x^3e^{(n\ln(bx+a))}\mathrm{sign}\,(x) + 6\,b^4n^2x^4e^{(n\ln(bx+a))}\mathrm{sig}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n,x, algorithm="giac")
```

```
[Out] (6*a^4*e^(n*ln(a))*sign(x)/(b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 + 5
0*b^4*n + 24*b^4) + (b^4*n^3*x^4*e^(n*ln(b*x + a))*sign(x) + a*b^
3*n^3*x^3*e^(n*ln(b*x + a))*sign(x) + 6*b^4*n^2*x^4*e^(n*ln(b*x +
 a))*sign(x) + 3*a*b^3*n^2*x^3*e^(n*ln(b*x + a))*sign(x) + 11*b^4
*n*x^4*e^(n*ln(b*x + a))*sign(x) - 3*a^2*b^2*n^2*x^2*e^(n*ln(b*x
+ a))*sign(x) + 2*a*b^3*n*x^3*e^(n*ln(b*x + a))*sign(x) + 6*b^4*x
^4*e^(n*ln(b*x + a))*sign(x) - 3*a^2*b^2*n*x^2*e^(n*ln(b*x + a))*
sign(x) + 6*a^3*b*n*x*e^(n*ln(b*x + a))*sign(x) - 6*a^4*e^(n*ln(b
*x + a))*sign(x))/(b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 + 50*b^4*n +
 24*b^4))*c^(3/2)
```

3.932 $\int \frac{(cx^2)^{3/2}(a+bx)^n}{x} dx$

Optimal. Leaf size=99

$$\frac{a^2c\sqrt{cx^2}(a+bx)^{n+1}}{b^3(n+1)x} - \frac{2ac\sqrt{cx^2}(a+bx)^{n+2}}{b^3(n+2)x} + \frac{c\sqrt{cx^2}(a+bx)^{n+3}}{b^3(n+3)x}$$

```
[Out] (a^2*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^3*(1 + n)*x) - (2*a*c*Sq
rt[c*x^2]*(a + b*x)^(2 + n))/(b^3*(2 + n)*x) + (c*Sqrt[c*x^2]*(a
+ b*x)^(3 + n))/(b^3*(3 + n)*x)
```

Rubi [A] time = 0.0725417, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{a^2c\sqrt{cx^2}(a+bx)^{n+1}}{b^3(n+1)x} - \frac{2ac\sqrt{cx^2}(a+bx)^{n+2}}{b^3(n+2)x} + \frac{c\sqrt{cx^2}(a+bx)^{n+3}}{b^3(n+3)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^n)/x,x]
```

```
[Out] (a^2*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^3*(1 + n)*x) - (2*a*c*Sq
rt[c*x^2]*(a + b*x)^(2 + n))/(b^3*(2 + n)*x) + (c*Sqrt[c*x^2]*(a
+ b*x)^(3 + n))/(b^3*(3 + n)*x)
```

Rubi in Sympy [A] time = 24.7816, size = 87, normalized size = 0.88

$$\frac{a^2c\sqrt{cx^2}\,(a+bx)^{n+1}}{b^3x\,(n+1)} - \frac{2ac\sqrt{cx^2}\,(a+bx)^{n+2}}{b^3x\,(n+2)} + \frac{c\sqrt{cx^2}\,(a+bx)^{n+3}}{b^3x\,(n+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n/x,x)
```

```
[Out] a**2*c*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**3*x*(n + 1)) - 2*a*c*s
qrt(c*x**2)*(a + b*x)**(n + 2)/(b**3*x*(n + 2)) + c*sqrt(c*x**2)*
(a + b*x)**(n + 3)/(b**3*x*(n + 3))
```

Mathematica [A] time = 0.0118426, size = 70, normalized size = 0.71

$$\frac{c^2x(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3(n+1)(n+2)(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^n)/x,x]
```

```
[Out] (c^2*x*(a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n
+ n^2)*x^2))/(b^3*(1 + n)*(2 + n)*(3 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.006, size = 83, normalized size = 0.8

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)}{x^3b^3\left(n^3+6\,n^2+11\,n+6\right)}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^n/x,x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)*(c*x^2)^(3/2)/x^3/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.36267, size = 108, normalized size = 1.09

$$\frac{\left(\left(n^2+3\,n+2\right)b^3c^{\frac{3}{2}}x^3+\left(n^2+n\right)ab^2c^{\frac{3}{2}}x^2-2\,a^2bc^{\frac{3}{2}}nx+2\,a^3c^{\frac{3}{2}}\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x,x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*c^(3/2)*x^3 + (n^2 + n)*a*b^2*c^(3/2)*x^2 -
2*a^2*b*c^(3/2)*n*x + 2*a^3*c^(3/2))*(b*x + a)^n/((n^3 + 6*n^2 +
11*n + 6)*b^3)
```

Fricas [A] time = 0.22829, size = 153, normalized size = 1.55

$$-\frac{\left(2\,a^2bcnx-2\,a^3c-\left(b^3cn^2+3\,b^3cn+2\,b^3c\right)x^3-\left(ab^2cn^2+ab^2cn\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^3n^3+6\,b^3n^2+11\,b^3n+6\,b^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x,x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*c*n*x - 2*a^3*c - (b^3*c*n^2 + 3*b^3*c*n + 2*b^3*c)*x^3
 - (a*b^2*c*n^2 + a*b^2*c*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^3*n
^3 + 6*b^3*n^2 + 11*b^3*n + 6*b^3)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}(a+bx)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n/x,x)
```

```
[Out] Integral((c*x**2)**(3/2)*(a + b*x)**n/x, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}}(bx+a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x, x)
```

3.933 $\int \frac{(cx^2)^{3/2}(a+bx)^n}{x^2}\,dx$

Optimal. Leaf size=65

$$\frac{c\sqrt{cx^2}(a+bx)^{n+2}}{b^2(n+2)x}-\frac{ac\sqrt{cx^2}(a+bx)^{n+1}}{b^2(n+1)x}$$

```
[Out] -((a*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^2*(1 + n)*x)) + (c*Sqrt[
c*x^2]*(a + b*x)^(2 + n))/(b^2*(2 + n)*x)
```

Rubi [A] time = 0.0477293, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{c\sqrt{cx^2}(a+bx)^{n+2}}{b^2(n+2)x}-\frac{ac\sqrt{cx^2}(a+bx)^{n+1}}{b^2(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^n)/x^2,x]
```

```
[Out] -((a*c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^2*(1 + n)*x)) + (c*Sqrt[
c*x^2]*(a + b*x)^(2 + n))/(b^2*(2 + n)*x)
```

Rubi in Sympy [A] time = 18.6651, size = 54, normalized size = 0.83

$$-\frac{ac\sqrt{cx^2}\,(a+bx)^{n+1}}{b^2x\,(n+1)}+\frac{c\sqrt{cx^2}\,(a+bx)^{n+2}}{b^2x\,(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n/x**2,x)
```

```
[Out] -a*c*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**2*x*(n + 1)) + c*sqrt(c*
x**2)*(a + b*x)**(n + 2)/(b**2*x*(n + 2))
```

Mathematica [A] time = 0.0383413, size = 46, normalized size = 0.71

$$\frac{c^2x(a+bx)^{n+1}(b(n+1)x-a)}{b^2(n+1)(n+2)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^n)/x^2,x]
```

```
[Out] (c^2*x*(a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*(1 + n)*(2 + n)
*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 46, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}(-bxn-bx+a)}{x^3b^2(n^2+3n+2)}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^n/x^2,x)
```

```
[Out] -(b*x+a)^(1+n)*(c*x^2)^(3/2)*(-b*n*x-b*x+a)/x^3/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.34242, size = 69, normalized size = 1.06

$$\frac{\left(b^2c^{\frac{3}{2}}(n+1)x^2+abc^{\frac{3}{2}}nx-a^2c^{\frac{3}{2}}\right)(bx+a)^n}{(n^2+3n+2)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^2,x, algorithm="maxima")
```

```
[Out] (b^2*c^(3/2)*(n + 1)*x^2 + a*b*c^(3/2)*n*x - a^2*c^(3/2))*(b*x +
a)^n/((n^2 + 3*n + 2)*b^2)
```

Fricas [A] time = 0.227118, size = 92, normalized size = 1.42

$$\frac{\left(abcnx-a^2c+\left(b^2cn+b^2c\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^2n^2+3b^2n+2b^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^2,x, algorithm="fricas")
```

```
[Out] (a*b*c*n*x - a^2*c + (b^2*c*n + b^2*c)*x^2)*sqrt(c*x^2)*(b*x + a)
^n/((b^2*n^2 + 3*b^2*n + 2*b^2)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n/x**2,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [A] time = 0.209217, size = 174, normalized size = 2.68

$$\left(\frac{a^2 e^{(n\ln(a))}\operatorname{sign}(x)}{b^2n^2+3\,b^2n+2\,b^2}+\frac{b^2nx^2e^{(n\ln(bx+a))}\operatorname{sign}(x)+abnxe^{(n\ln(bx+a))}\operatorname{sign}(x)+b^2x^2e^{(n\ln(bx+a))}\operatorname{sign}(x)-a^2e^{(n\ln(bx+a))}\operatorname{sign}(x)}{b^2n^2+3\,b^2n+2\,b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^2,x, algorithm="giac")
```

```
[Out] (a^2*e^(n*ln(a))*sign(x)/(b^2*n^2 + 3*b^2*n + 2*b^2) + (b^2*n*x^2
*e^(n*ln(b*x + a))*sign(x) + a*b*n*x*e^(n*ln(b*x + a))*sign(x) +
b^2*x^2*e^(n*ln(b*x + a))*sign(x) - a^2*e^(n*ln(b*x + a))*sign(x)
)/(b^2*n^2 + 3*b^2*n + 2*b^2))*c^(3/2)
```

3.934 $\int \frac{(cx^2)^{3/2}(a+bx)^n}{x^3} dx$

Optimal. Leaf size=31

$$\frac{c\sqrt{cx^2}(a+bx)^{n+1}}{b(n+1)x}$$

```
[Out] (c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b*(1 + n)*x)
```

Rubi [A] time = 0.0191996, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{c\sqrt{cx^2}(a+bx)^{n+1}}{b(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^n)/x^3,x]
```

```
[Out] (c*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b*(1 + n)*x)
```

Rubi in Sympy [A] time = 12.3545, size = 24, normalized size = 0.77

$$\frac{c\sqrt{cx^2}\,(a+bx)^{n+1}}{bx\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n/x**3,x)
```

```
[Out] c*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b*x*(n + 1))
```

Mathematica [A] time = 0.0202143, size = 30, normalized size = 0.97

$$\frac{(cx^2)^{3/2}\,(a+bx)^{n+1}}{b(n+1)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^n)/x^3,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^(1 + n))/(b*(1 + n)*x^3)
```

Maple [A] time = 0.002, size = 29, normalized size = 0.9

$$\frac{(bx+a)^{1+n}}{b(1+n)x^3}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(3/2)*(b*x+a)^n/x^3,x)
```

```
[Out] (b*x+a)^(1+n)/b/(1+n)*(c*x^2)^(3/2)/x^3
```

Maxima [A] time = 1.36028, size = 38, normalized size = 1.23

$$\frac{\left(bc^{\frac{3}{2}}x+ac^{\frac{3}{2}}\right)(bx+a)^n}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^3,x, algorithm="maxima")
```

```
[Out] (b*c^(3/2)*x + a*c^(3/2))*(b*x + a)^n/(b*(n + 1))
```

Fricas [A] time = 0.23168, size = 45, normalized size = 1.45

$$\frac{(bcx+ac)\sqrt{cx^2}(bx+a)^n}{(bn+b)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^3,x, algorithm="fricas")
```

```
[Out] (b*c*x + a*c)*sqrt(c*x^2)*(b*x + a)^n/((b*n + b)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n/x**3,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [A]   time = 0.206723, size = 57, normalized size = 1.84

$$-c^{\frac{3}{2}}\left(\frac{a^{n+1}\mathrm{sign}\left(x\right)}{bn+b}-\frac{(bx+a)^{n+1}\mathrm{sign}\left(x\right)}{b(n+1)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^3,x, algorithm="giac")
```

```
[Out] -c^(3/2)*(a^(n + 1)*sign(x)/(b*n + b) - (b*x + a)^(n + 1)*sign(x)
/(b*(n + 1)))
```

3.935 $\int \frac{(cx^2)^{3/2}(a+bx)^n}{x^4} dx$

Optimal. Leaf size=48

$$-\frac{c\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)x}$$

```
[Out] -((c*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2
+ n, 1 + (b*x)/a])/(a*(1 + n)*x))
```

Rubi [A] time = 0.0324117, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{c\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^n)/x^4,x]
```

```
[Out] -((c*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2
+ n, 1 + (b*x)/a])/(a*(1 + n)*x))
```

Rubi in Sympy [A] time = 13.6318, size = 37, normalized size = 0.77

$$-\frac{c\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{ax\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n/x**4,x)
```

```
[Out] -c*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,), 1
+ b*x/a)/(a*x*(n + 1))
```

Mathematica [A] time = 0.0169201, size = 58, normalized size = 1.21

$$\frac{(cx^2)^{3/2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{nx^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^n)/x^4,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(
b*x))])/(n*(1 + a/(b*x))^n*x^3)
```

Maple [F] time = 0.03, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^4} \left(cx^2\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^n/x^4,x)
```

```
[Out] int((c*x^2)^(3/2)*(b*x+a)^n/x^4,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{3}{2}} (bx+a)^n}{x^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^4,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^4, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n c}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^4,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*c/x^2, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}} (a+bx)^n}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n/x**4,x)
```

```
[Out] Integral((c*x**2)**(3/2)*(a + b*x)**n/x**4, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{3}{2}} (bx+a)^n}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^4,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^4, x)
```

3.936 $\int \frac{(cx^2)^{3/2}(a+bx)^n}{x^5}\,dx$

Optimal. Leaf size=48

$$\frac{bc\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)x}$$

```
[Out] (b*c*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2
+ n, 1 + (b*x)/a])/(a^2*(1 + n)*x)
```

Rubi [A] time = 0.0335371, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{bc\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^n)/x^5,x]
```

```
[Out] (b*c*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2
+ n, 1 + (b*x)/a])/(a^2*(1 + n)*x)
```

Rubi in Sympy [A] time = 13.9013, size = 39, normalized size = 0.81

$$\frac{bc\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n/x**5,x)
```

```
[Out] b*c*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((2, n + 1), (n + 2,), 1
 + b*x/a)/(a**2*x*(n + 1))
```

Mathematica [A] time = 0.0201141, size = 62, normalized size = 1.29

$$\frac{(cx^2)^{3/2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)x^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^n)/x^5,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(
a/(b*x))])/((-1 + n)*(1 + a/(b*x))^n*x^4)
```

Maple [F] time = 0.034, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^5}\left(cx^2\right)^{\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^n/x^5,x)
```

```
[Out] int((c*x^2)^(3/2)*(b*x+a)^n/x^5,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{3}{2}}(bx+a)^n}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^5,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^5, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n c}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^5,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*c/x^3, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^{2}\right)^{\frac{3}{2}}(a+bx)^{n}}{x^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n/x**5,x)
```

```
[Out] Integral((c*x**2)**(3/2)*(a + b*x)**n/x**5, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^{2}\right)^{\frac{3}{2}}(bx+a)^{n}}{x^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^5,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^5, x)
```

3.937 $\int \frac{(cx^2)^{3/2}(a+bx)^n}{x^6}\,dx$

Optimal. Leaf size=51

$$-\frac{b^2c\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)x}$$

```
[Out] -((b^2*c*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n
, 2 + n, 1 + (b*x)/a])/(a^3*(1 + n)*x))
```

Rubi [A] time = 0.0380031, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{b^2c\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(3/2)*(a + b*x)^n)/x^6,x]
```

```
[Out] -((b^2*c*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n
, 2 + n, 1 + (b*x)/a])/(a^3*(1 + n)*x))
```

Rubi in Sympy [A] time = 15.1453, size = 42, normalized size = 0.82

$$-\frac{b^2c\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}3,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^3x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(3/2)*(b*x+a)**n/x**6,x)
```

```
[Out] -b**2*c*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((3, n + 1), (n + 2,
), 1 + b*x/a)/(a**3*x*(n + 1))
```

Mathematica [A] time = 0.0263589, size = 62, normalized size = 1.22

$$\frac{(cx^2)^{3/2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(2-n,-n;3-n;-\frac{a}{bx}\right)}{(n-2)x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(3/2)*(a + b*x)^n)/x^6,x]
```

```
[Out] ((c*x^2)^(3/2)*(a + b*x)^n*Hypergeometric2F1[2 - n, -n, 3 - n, -(
a/(b*x))])/((-2 + n)*(1 + a/(b*x))^n*x^5)
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n}}{x^{6}} \left(c x^{2}\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(3/2)*(b*x+a)^n/x^6,x)
```

```
[Out] int((c*x^2)^(3/2)*(b*x+a)^n/x^6,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(c x^{2}\right)^{\frac{3}{2}} (bx+a)^{n}}{x^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^6,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^6, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{c x^{2}}(bx+a)^{n} c}{x^{4}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^6,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*c/x^4, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(3/2)*(b*x+a)**n/x**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{3}{2}}(bx+a)^n}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n/x^6,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n/x^6, x)
```

3.938 $\int (cx^2)^{5/2} (a+bx)^n \, dx$

Optimal. Leaf size=217

$$-\frac{a^5c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^6(n+1)x}+\frac{5a^4c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^6(n+2)x}-\frac{10a^3c^2\sqrt{cx^2}(a+bx)^{n+3}}{b^6(n+3)x}+\frac{10a^2c^2\sqrt{cx^2}(a+bx)^{n+4}}{b^6(n+4)x}-\frac{5ac^2\sqrt{cx^2}(a+bx)^{n+5}}{b^6(n+5)x}+\frac{c^2\sqrt{cx^2}(a+bx)^{n+6}}{b^6(n+6)x}$$

```
[Out] -((a^5*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^6*(1 + n)*x)) + (5*a
^4*c^2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^6*(2 + n)*x) - (10*a^3*c
^2*Sqrt[c*x^2]*(a + b*x)^(3 + n))/(b^6*(3 + n)*x) + (10*a^2*c^2*S
qrt[c*x^2]*(a + b*x)^(4 + n))/(b^6*(4 + n)*x) - (5*a*c^2*Sqrt[c*x
^2]*(a + b*x)^(5 + n))/(b^6*(5 + n)*x) + (c^2*Sqrt[c*x^2]*(a + b*
x)^(6 + n))/(b^6*(6 + n)*x)
```

Rubi [A] time = 0.182136, antiderivative size = 217, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$-\frac{a^5c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^6(n+1)x}+\frac{5a^4c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^6(n+2)x}-\frac{10a^3c^2\sqrt{cx^2}(a+bx)^{n+3}}{b^6(n+3)x}+\frac{10a^2c^2\sqrt{cx^2}(a+bx)^{n+4}}{b^6(n+4)x}-\frac{5ac^2\sqrt{cx^2}(a+bx)^{n+5}}{b^6(n+5)x}+\frac{c^2\sqrt{cx^2}(a+bx)^{n+6}}{b^6(n+6)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^(5/2)*(a + b*x)^n,x]
```

```
[Out] -((a^5*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^6*(1 + n)*x)) + (5*a
^4*c^2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^6*(2 + n)*x) - (10*a^3*c
^2*Sqrt[c*x^2]*(a + b*x)^(3 + n))/(b^6*(3 + n)*x) + (10*a^2*c^2*S
qrt[c*x^2]*(a + b*x)^(4 + n))/(b^6*(4 + n)*x) - (5*a*c^2*Sqrt[c*x
^2]*(a + b*x)^(5 + n))/(b^6*(5 + n)*x) + (c^2*Sqrt[c*x^2]*(a + b*
x)^(6 + n))/(b^6*(6 + n)*x)
```

Rubi in Sympy [A] time = 45.2758, size = 194, normalized size = 0.89

$$-\frac{a^5c^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^6x\,(n+1)}+\frac{5a^4c^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^6x\,(n+2)}-\frac{10a^3c^2\sqrt{cx^2}\,(a+bx)^{n+3}}{b^6x\,(n+3)}+\frac{10a^2c^2\sqrt{cx^2}\,(a+bx)^{n+4}}{b^6x\,(n+4)}-\frac{5ac^2\sqrt{cx^2}\,(a+bx)^{n+5}}{b^6x\,(n+5)}+\frac{c^2\sqrt{cx^2}\,(a+bx)^{n+6}}{b^6x\,(n+6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n,x)
```

```
[Out] -a**5*c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**6*x*(n + 1)) + 5*a
**4*c**2*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**6*x*(n + 2)) - 10*a*
*3*c**2*sqrt(c*x**2)*(a + b*x)**(n + 3)/(b**6*x*(n + 3)) + 10*a**
2*c**2*sqrt(c*x**2)*(a + b*x)**(n + 4)/(b**6*x*(n + 4)) - 5*a*c**
2*sqrt(c*x**2)*(a + b*x)**(n + 5)/(b**6*x*(n + 5)) + c**2*sqrt(c*
x**2)*(a + b*x)**(n + 6)/(b**6*x*(n + 6))
```

Mathematica [A] time = 0.175535, size = 172, normalized size = 0.79

$$\frac{c^3x(a+bx)^{n+1}\left(-120a^5+120a^4b(n+1)x-60a^3b^2\left(n^2+3n+2\right)x^2+20a^2b^3\left(n^3+6n^2+11n+6\right)x^3-5ab^4\left(n^4+10n^3+35\right.\right.}{b^6(n+1)(n+2)(n+3)(n+4)(n+5)(n+6)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^(5/2)*(a + b*x)^n,x]
```

```
[Out] (c^3*x*(a + b*x)^(1 + n)*(-120*a^5 + 120*a^4*b*(1 + n)*x - 60*a^3
*b^2*(2 + 3*n + n^2)*x^2 + 20*a^2*b^3*(6 + 11*n + 6*n^2 + n^3)*x^
3 - 5*a*b^4*(24 + 50*n + 35*n^2 + 10*n^3 + n^4)*x^4 + b^5*(120 +
274*n + 225*n^2 + 85*n^3 + 15*n^4 + n^5)*x^5))/(b^6*(1 + n)*(2 +
n)*(3 + n)*(4 + n)*(5 + n)*(6 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.01, size = 280, normalized size = 1.3

$$-\frac{(bx+a)^{1+n}\left(-b^5n^5x^5-15\,b^5n^4x^5+5\,ab^4n^4x^4-85\,b^5n^3x^5+50\,ab^4n^3x^4-225\,b^5n^2x^5-20\,a^2b^3n^3x^3+175\,ab^4n^2x^4-274\right.}{x^5b^6\,(n^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n,x)
```

```
[Out] -(b*x+a)^(1+n)*(c*x^2)^(5/2)*(-b^5*n^5*x^5-15*b^5*n^4*x^5+5*a*b^4
*n^4*x^4-85*b^5*n^3*x^5+50*a*b^4*n^3*x^4-225*b^5*n^2*x^5-20*a^2*b
^3*n^3*x^3+175*a*b^4*n^2*x^4-274*b^5*n*x^5-120*a^2*b^3*n^2*x^3+25
0*a*b^4*n*x^4-120*b^5*x^5+60*a^3*b^2*n^2*x^2-220*a^2*b^3*n*x^3+12
0*a*b^4*x^4+180*a^3*b^2*n*x^2-120*a^2*b^3*x^3-120*a^4*b*n*x+120*a
^3*b^2*x^2-120*a^4*b*x+120*a^5)/x^5/b^6/(n^6+21*n^5+175*n^4+735*n
^3+1624*n^2+1764*n+720)
```

Maxima [A] time = 1.37876, size = 274, normalized size = 1.26

$$\frac{\left(\left(n^5 + 15\,n^4 + 85\,n^3 + 225\,n^2 + 274\,n + 120\right)b^6c^{\frac{5}{2}}x^6 + \left(n^5 + 10\,n^4 + 35\,n^3 + 50\,n^2 + 24\,n\right)ab^5c^{\frac{5}{2}}x^5 - 5\left(n^4 + 6\,n^3 + 11\,n^2 + 6\,n\right.}{\left(n^6 + 21\,n^5 + 175\,n^4 + 735\,n^3 + 1624\,n^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] ((n^5 + 15*n^4 + 85*n^3 + 225*n^2 + 274*n + 120)*b^6*c^(5/2)*x^6
+ (n^5 + 10*n^4 + 35*n^3 + 50*n^2 + 24*n)*a*b^5*c^(5/2)*x^5 - 5*(
n^4 + 6*n^3 + 11*n^2 + 6*n)*a^2*b^4*c^(5/2)*x^4 + 20*(n^3 + 3*n^2
 + 2*n)*a^3*b^3*c^(5/2)*x^3 - 60*(n^2 + n)*a^4*b^2*c^(5/2)*x^2 +
120*a^5*b*c^(5/2)*n*x - 120*a^6*c^(5/2))*(b*x + a)^n/((n^6 + 21*n
^5 + 175*n^4 + 735*n^3 + 1624*n^2 + 1764*n + 720)*b^6)
```

Fricas [A] time = 0.228725, size = 475, normalized size = 2.19

$$\frac{\left(120\,a^5bc^2nx - 120\,a^6c^2 + \left(b^6c^2n^5 + 15\,b^6c^2n^4 + 85\,b^6c^2n^3 + 225\,b^6c^2n^2 + 274\,b^6c^2n + 120\,b^6c^2\right)x^6 + \left(ab^5c^2n^5 + 10\,ab^5c^2n^4\right.}{(b^6n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] (120*a^5*b*c^2*n*x - 120*a^6*c^2 + (b^6*c^2*n^5 + 15*b^6*c^2*n^4
+ 85*b^6*c^2*n^3 + 225*b^6*c^2*n^2 + 274*b^6*c^2*n + 120*b^6*c^2)
*x^6 + (a*b^5*c^2*n^5 + 10*a*b^5*c^2*n^4 + 35*a*b^5*c^2*n^3 + 50*
a*b^5*c^2*n^2 + 24*a*b^5*c^2*n)*x^5 - 5*(a^2*b^4*c^2*n^4 + 6*a^2*
b^4*c^2*n^3 + 11*a^2*b^4*c^2*n^2 + 6*a^2*b^4*c^2*n)*x^4 + 20*(a^3
*b^3*c^2*n^3 + 3*a^3*b^3*c^2*n^2 + 2*a^3*b^3*c^2*n)*x^3 - 60*(a^4
*b^2*c^2*n^2 + a^4*b^2*c^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^6*
n^6 + 21*b^6*n^5 + 175*b^6*n^4 + 735*b^6*n^3 + 1624*b^6*n^2 + 176
4*b^6*n + 720*b^6)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.215534, size = 926, normalized size = 4.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n,x, algorithm="giac")
```

```
[Out] (120*a^6*c^2*e^(n*ln(a))*sign(x)/(b^6*n^6 + 21*b^6*n^5 + 175*b^6*
n^4 + 735*b^6*n^3 + 1624*b^6*n^2 + 1764*b^6*n + 720*b^6) + (b^6*c
^2*n^5*x^6*e^(n*ln(b*x + a))*sign(x) + a*b^5*c^2*n^5*x^5*e^(n*ln(
b*x + a))*sign(x) + 15*b^6*c^2*n^4*x^6*e^(n*ln(b*x + a))*sign(x)
+ 10*a*b^5*c^2*n^4*x^5*e^(n*ln(b*x + a))*sign(x) + 85*b^6*c^2*n^3
*x^6*e^(n*ln(b*x + a))*sign(x) - 5*a^2*b^4*c^2*n^4*x^4*e^(n*ln(b*
x + a))*sign(x) + 35*a*b^5*c^2*n^3*x^5*e^(n*ln(b*x + a))*sign(x)
+ 225*b^6*c^2*n^2*x^6*e^(n*ln(b*x + a))*sign(x) - 30*a^2*b^4*c^2*
n^3*x^4*e^(n*ln(b*x + a))*sign(x) + 50*a*b^5*c^2*n^2*x^5*e^(n*ln(
b*x + a))*sign(x) + 274*b^6*c^2*n*x^6*e^(n*ln(b*x + a))*sign(x) +
 20*a^3*b^3*c^2*n^3*x^3*e^(n*ln(b*x + a))*sign(x) - 55*a^2*b^4*c^
2*n^2*x^4*e^(n*ln(b*x + a))*sign(x) + 24*a*b^5*c^2*n*x^5*e^(n*ln(
b*x + a))*sign(x) + 120*b^6*c^2*x^6*e^(n*ln(b*x + a))*sign(x) + 6
0*a^3*b^3*c^2*n^2*x^3*e^(n*ln(b*x + a))*sign(x) - 30*a^2*b^4*c^2*
n*x^4*e^(n*ln(b*x + a))*sign(x) - 60*a^4*b^2*c^2*n^2*x^2*e^(n*ln(
b*x + a))*sign(x) + 40*a^3*b^3*c^2*n*x^3*e^(n*ln(b*x + a))*sign(x
) - 60*a^4*b^2*c^2*n*x^2*e^(n*ln(b*x + a))*sign(x) + 120*a^5*b*c^
2*n*x*e^(n*ln(b*x + a))*sign(x) - 120*a^6*c^2*e^(n*ln(b*x + a))*s
ign(x))/(b^6*n^6 + 21*b^6*n^5 + 175*b^6*n^4 + 735*b^6*n^3 + 1624*
b^6*n^2 + 1764*b^6*n + 720*b^6))*sqrt(c)
```

3.939 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x}\,dx$

Optimal. Leaf size=179

$$\frac{a^4c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^5(n+1)x}-\frac{4a^3c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^5(n+2)x}+\frac{6a^2c^2\sqrt{cx^2}(a+bx)^{n+3}}{b^5(n+3)x}-\frac{4ac^2\sqrt{cx^2}(a+bx)^{n+4}}{b^5(n+4)x}+\frac{c^2\sqrt{cx^2}(a+bx)^{n+5}}{b^5(n+5)x}$$

```
[Out] (a^4*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^5*(1 + n)*x) - (4*a^3*
c^2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^5*(2 + n)*x) + (6*a^2*c^2*S
qrt[c*x^2]*(a + b*x)^(3 + n))/(b^5*(3 + n)*x) - (4*a*c^2*Sqrt[c*x
^2]*(a + b*x)^(4 + n))/(b^5*(4 + n)*x) + (c^2*Sqrt[c*x^2]*(a + b*
x)^(5 + n))/(b^5*(5 + n)*x)
```

Rubi [A] time = 0.136534, antiderivative size = 179, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{a^4c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^5(n+1)x}-\frac{4a^3c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^5(n+2)x}+\frac{6a^2c^2\sqrt{cx^2}(a+bx)^{n+3}}{b^5(n+3)x}-\frac{4ac^2\sqrt{cx^2}(a+bx)^{n+4}}{b^5(n+4)x}+\frac{c^2\sqrt{cx^2}(a+bx)^{n+5}}{b^5(n+5)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x,x]
```

```
[Out] (a^4*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^5*(1 + n)*x) - (4*a^3*
c^2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^5*(2 + n)*x) + (6*a^2*c^2*S
qrt[c*x^2]*(a + b*x)^(3 + n))/(b^5*(3 + n)*x) - (4*a*c^2*Sqrt[c*x
^2]*(a + b*x)^(4 + n))/(b^5*(4 + n)*x) + (c^2*Sqrt[c*x^2]*(a + b*
x)^(5 + n))/(b^5*(5 + n)*x)
```

Rubi in Sympy [A] time = 46.422, size = 160, normalized size = 0.89

$$\frac{a^4c^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^5x\,(n+1)}-\frac{4a^3c^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^5x\,(n+2)}+\frac{6a^2c^2\sqrt{cx^2}\,(a+bx)^{n+3}}{b^5x\,(n+3)}-\frac{4ac^2\sqrt{cx^2}\,(a+bx)^{n+4}}{b^5x\,(n+4)}+\frac{c^2\sqrt{cx^2}\,(a+bx)^{n+5}}{b^5x\,(n+5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x,x)
```

```
[Out] a**4*c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**5*x*(n + 1)) - 4*a*
*3*c**2*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**5*x*(n + 2)) + 6*a**2
*c**2*sqrt(c*x**2)*(a + b*x)**(n + 3)/(b**5*x*(n + 3)) - 4*a*c**2
*sqrt(c*x**2)*(a + b*x)**(n + 4)/(b**5*x*(n + 4)) + c**2*sqrt(c*x
**2)*(a + b*x)**(n + 5)/(b**5*x*(n + 5))
```

Mathematica [A] time = 0.0951857, size = 133, normalized size = 0.74

$$\frac{c\left(cx^2\right)^{3/2}(a+bx)^{n+1}\left(24a^4-24a^3b(n+1)x+12a^2b^2\left(n^2+3n+2\right)x^2-4ab^3\left(n^3+6n^2+11n+6\right)x^3+b^4\left(n^4+10n^3+35n\right.\right.}{b^5(n+1)(n+2)(n+3)(n+4)(n+5)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x,x]
```

```
[Out] (c*(c*x^2)^(3/2)*(a + b*x)^(1 + n)*(24*a^4 - 24*a^3*b*(1 + n)*x +
 12*a^2*b^2*(2 + 3*n + n^2)*x^2 - 4*a*b^3*(6 + 11*n + 6*n^2 + n^3
)*x^3 + b^4*(24 + 50*n + 35*n^2 + 10*n^3 + n^4)*x^4))/(b^5*(1 + n
)*(2 + n)*(3 + n)*(4 + n)*(5 + n)*x^3)
```

Maple [A] time = 0.01, size = 199, normalized size = 1.1

$$\frac{(bx+a)^{1+n}\left(b^4n^4x^4+10\,b^4n^3x^4-4\,ab^3n^3x^3+35\,b^4n^2x^4-24\,ab^3n^2x^3+50\,b^4nx^4+12\,a^2b^2n^2x^2-44\,ab^3nx^3+24\,x^4b^4+36\right.}{x^5b^5\left(n^5+15\,n^4+85\,n^3+225\,n^2+274\,n+120\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n/x,x)
```

```
[Out] (b*x+a)^(1+n)*(b^4*n^4*x^4+10*b^4*n^3*x^4-4*a*b^3*n^3*x^3+35*b^4*
n^2*x^4-24*a*b^3*n^2*x^3+50*b^4*n*x^4+12*a^2*b^2*n^2*x^2-44*a*b^3
*n*x^3+24*b^4*x^4+36*a^2*b^2*n*x^2-24*a*b^3*x^3-24*a^3*b*n*x+24*a
^2*b^2*x^2-24*a^3*b*x+24*a^4)*(c*x^2)^(5/2)/x^5/b^5/(n^5+15*n^4+8
5*n^3+225*n^2+274*n+120)
```

Maxima [A] time = 1.38597, size = 212, normalized size = 1.18

$$\frac{\left(\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)b^5c^{\frac{5}{2}}x^5+\left(n^4+6\,n^3+11\,n^2+6\,n\right)ab^4c^{\frac{5}{2}}x^4-4\left(n^3+3\,n^2+2\,n\right)a^2b^3c^{\frac{5}{2}}x^3+12\left(n^2+n\right)a^3b^2\right.}{\left(n^5+15\,n^4+85\,n^3+225\,n^2+274\,n+120\right)b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x,x, algorithm="maxima")
```

```
[Out] ((n^4 + 10*n^3 + 35*n^2 + 50*n + 24)*b^5*c^(5/2)*x^5 + (n^4 + 6*n
^3 + 11*n^2 + 6*n)*a*b^4*c^(5/2)*x^4 - 4*(n^3 + 3*n^2 + 2*n)*a^2*
b^3*c^(5/2)*x^3 + 12*(n^2 + n)*a^3*b^2*c^(5/2)*x^2 - 24*a^4*b*c^(
5/2)*n*x + 24*a^5*c^(5/2))*(b*x + a)^n/((n^5 + 15*n^4 + 85*n^3 +
225*n^2 + 274*n + 120)*b^5)
```

Fricas [A] time = 0.225351, size = 358, normalized size = 2.

$$-\frac{\left(24\,a^4bc^2nx-24\,a^5c^2-\left(b^5c^2n^4+10\,b^5c^2n^3+35\,b^5c^2n^2+50\,b^5c^2n+24\,b^5c^2\right)x^5-\left(ab^4c^2n^4+6\,ab^4c^2n^3+11\,ab^4c^2n^2+6\right.}{(b^5n^5+15\,b^5n^4+85\,b^5n^3+225\,b^5n^2+27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x,x, algorithm="fricas")
```

```
[Out] -(24*a^4*b*c^2*n*x - 24*a^5*c^2 - (b^5*c^2*n^4 + 10*b^5*c^2*n^3 +
 35*b^5*c^2*n^2 + 50*b^5*c^2*n + 24*b^5*c^2)*x^5 - (a*b^4*c^2*n^4
 + 6*a*b^4*c^2*n^3 + 11*a*b^4*c^2*n^2 + 6*a*b^4*c^2*n)*x^4 + 4*(a
^2*b^3*c^2*n^3 + 3*a^2*b^3*c^2*n^2 + 2*a^2*b^3*c^2*n)*x^3 - 12*(a
^3*b^2*c^2*n^2 + a^3*b^2*c^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^
5*n^5 + 15*b^5*n^4 + 85*b^5*n^3 + 225*b^5*n^2 + 274*b^5*n + 120*b
^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n/x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}(bx+a)^n}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x,x, algorithm="giac")

[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x, x)
```

3.940 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x^2}\,dx$

Optimal. Leaf size=143

$$-\frac{a^3c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^4(n+1)x}+\frac{3a^2c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^4(n+2)x}-\frac{3ac^2\sqrt{cx^2}(a+bx)^{n+3}}{b^4(n+3)x}+\frac{c^2\sqrt{cx^2}(a+bx)^{n+4}}{b^4(n+4)x}$$

```
[Out] -((a^3*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^4*(1 + n)*x)) + (3*a
^2*c^2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^4*(2 + n)*x) - (3*a*c^2*
Sqrt[c*x^2]*(a + b*x)^(3 + n))/(b^4*(3 + n)*x) + (c^2*Sqrt[c*x^2]
*(a + b*x)^(4 + n))/(b^4*(4 + n)*x)
```

Rubi [A] time = 0.107941, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^4(n+1)x}+\frac{3a^2c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^4(n+2)x}-\frac{3ac^2\sqrt{cx^2}(a+bx)^{n+3}}{b^4(n+3)x}+\frac{c^2\sqrt{cx^2}(a+bx)^{n+4}}{b^4(n+4)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x^2,x]
```

```
[Out] -((a^3*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^4*(1 + n)*x)) + (3*a
^2*c^2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^4*(2 + n)*x) - (3*a*c^2*
Sqrt[c*x^2]*(a + b*x)^(3 + n))/(b^4*(3 + n)*x) + (c^2*Sqrt[c*x^2]
*(a + b*x)^(4 + n))/(b^4*(4 + n)*x)
```

Rubi in Sympy [A] time = 39.0175, size = 126, normalized size = 0.88

$$-\frac{a^3c^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^4x\,(n+1)}+\frac{3a^2c^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^4x\,(n+2)}-\frac{3ac^2\sqrt{cx^2}\,(a+bx)^{n+3}}{b^4x\,(n+3)}+\frac{c^2\sqrt{cx^2}\,(a+bx)^{n+4}}{b^4x\,(n+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x**2,x)
```

```
[Out] -a**3*c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**4*x*(n + 1)) + 3*a
**2*c**2*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**4*x*(n + 2)) - 3*a*c
**2*sqrt(c*x**2)*(a + b*x)**(n + 3)/(b**4*x*(n + 3)) + c**2*sqrt(
c*x**2)*(a + b*x)**(n + 4)/(b**4*x*(n + 4))
```

Mathematica [A] time = 0.0135622, size = 99, normalized size = 0.69

$$\frac{c\left(cx^2\right)^{3/2}(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4(n+1)(n+2)(n+3)(n+4)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x^2,x]
```

```
[Out] (c*(c*x^2)^(3/2)*(a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x -
3*a*b^2*(2 + 3*n + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/
(b^4*(1 + n)*(2 + n)*(3 + n)*(4 + n)*x^3)
```

Maple [A] time = 0.008, size = 136, normalized size = 1.

$$-\frac{(bx+a)^{1+n}\left(-b^3n^3x^3-6\,b^3n^2x^3+3\,ab^2n^2x^2-11\,b^3nx^3+9\,ab^2nx^2-6\,b^3x^3-6\,a^2bnx+6\,ab^2x^2-6\,a^2bx+6\,a^3\right)}{x^5b^4\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n/x^2,x)
```

```
[Out] -(b*x+a)^(1+n)*(c*x^2)^(5/2)*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*
n^2*x^2-11*b^3*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*
x^2-6*a^2*b*x+6*a^3)/x^5/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.37417, size = 157, normalized size = 1.1

$$\frac{\left(\left(n^3+6\,n^2+11\,n+6\right)b^4c^{\frac{5}{2}}x^4+\left(n^3+3\,n^2+2\,n\right)ab^3c^{\frac{5}{2}}x^3-3\left(n^2+n\right)a^2b^2c^{\frac{5}{2}}x^2+6\,a^3bc^{\frac{5}{2}}nx-6\,a^4c^{\frac{5}{2}}\right)(bx+a)^n}{(n^4+10\,n^3+35\,n^2+50\,n+24)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^2,x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*c^(5/2)*x^4 + (n^3 + 3*n^2 + 2*n)*a
*b^3*c^(5/2)*x^3 - 3*(n^2 + n)*a^2*b^2*c^(5/2)*x^2 + 6*a^3*b*c^(5
/2)*n*x - 6*a^4*c^(5/2))*(b*x + a)^n/((n^4 + 10*n^3 + 35*n^2 + 50
*n + 24)*b^4)
```

Fricas [A] time = 0.22562, size = 251, normalized size = 1.76

$$\frac{\left(6\,a^3bc^2nx - 6\,a^4c^2 + \left(b^4c^2n^3 + 6\,b^4c^2n^2 + 11\,b^4c^2n + 6\,b^4c^2\right)x^4 + \left(ab^3c^2n^3 + 3\,ab^3c^2n^2 + 2\,ab^3c^2n\right)x^3 - 3\left(a^2b^2c^2n^2 + a^2b^2c\right.}{(b^4n^4 + 10\,b^4n^3 + 35\,b^4n^2 + 50\,b^4n + 24\,b^4)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^2,x, algorithm="fricas")
```

```
[Out] (6*a^3*b*c^2*n*x - 6*a^4*c^2 + (b^4*c^2*n^3 + 6*b^4*c^2*n^2 + 11*
b^4*c^2*n + 6*b^4*c^2)*x^4 + (a*b^3*c^2*n^3 + 3*a*b^3*c^2*n^2 + 2
*a*b^3*c^2*n)*x^3 - 3*(a^2*b^2*c^2*n^2 + a^2*b^2*c^2*n)*x^2)*sqrt
(c*x^2)*(b*x + a)^n/((b^4*n^4 + 10*b^4*n^3 + 35*b^4*n^2 + 50*b^4*
n + 24*b^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n/x**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}(bx + a)^n}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^2,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^2, x)
```

3.941 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x^3} \, dx$

Optimal. Leaf size=105

$$\frac{a^2c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^3(n+1)x} - \frac{2ac^2\sqrt{cx^2}(a+bx)^{n+2}}{b^3(n+2)x} + \frac{c^2\sqrt{cx^2}(a+bx)^{n+3}}{b^3(n+3)x}$$

```
[Out] (a^2*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^3*(1 + n)*x) - (2*a*c^
2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^3*(2 + n)*x) + (c^2*Sqrt[c*x^
2]*(a + b*x)^(3 + n))/(b^3*(3 + n)*x)
```

Rubi [A] time = 0.0785405, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{a^2c^2\sqrt{cx^2}(a+bx)^{n+1}}{b^3(n+1)x} - \frac{2ac^2\sqrt{cx^2}(a+bx)^{n+2}}{b^3(n+2)x} + \frac{c^2\sqrt{cx^2}(a+bx)^{n+3}}{b^3(n+3)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x^3,x]
```

```
[Out] (a^2*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^3*(1 + n)*x) - (2*a*c^
2*Sqrt[c*x^2]*(a + b*x)^(2 + n))/(b^3*(2 + n)*x) + (c^2*Sqrt[c*x^
2]*(a + b*x)^(3 + n))/(b^3*(3 + n)*x)
```

Rubi in Sympy [A] time = 30.3439, size = 92, normalized size = 0.88

$$\frac{a^2c^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^3x\,(n+1)} - \frac{2ac^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^3x\,(n+2)} + \frac{c^2\sqrt{cx^2}\,(a+bx)^{n+3}}{b^3x\,(n+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x**3,x)
```

```
[Out] a**2*c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**3*x*(n + 1)) - 2*a*
c**2*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**3*x*(n + 2)) + c**2*sqrt
(c*x**2)*(a + b*x)**(n + 3)/(b**3*x*(n + 3))
```

Mathematica [A] time = 0.0719232, size = 70, normalized size = 0.67

$$\frac{c^3x(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3(n+1)(n+2)(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x^3,x]
```

```
[Out] (c^3*x*(a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n
+ n^2)*x^2))/(b^3*(1 + n)*(2 + n)*(3 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.007, size = 83, normalized size = 0.8

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)}{x^5b^3\,(n^3+6\,n^2+11\,n+6)}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n/x^3,x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)*(c*x^2)^(5/2)/x^5/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.35028, size = 108, normalized size = 1.03

$$\frac{\left(\left(n^2+3\,n+2\right)b^3c^{\frac{5}{2}}x^3+\left(n^2+n\right)ab^2c^{\frac{5}{2}}x^2-2\,a^2bc^{\frac{5}{2}}nx+2\,a^3c^{\frac{5}{2}}\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^3,x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*c^(5/2)*x^3 + (n^2 + n)*a*b^2*c^(5/2)*x^2 -
2*a^2*b*c^(5/2)*n*x + 2*a^3*c^(5/2))*(b*x + a)^n/((n^3 + 6*n^2 +
11*n + 6)*b^3)
```

Fricas [A] time = 0.228433, size = 171, normalized size = 1.63

$$-\frac{\left(2\,a^2bc^2nx-2\,a^3c^2-\left(b^3c^2n^2+3\,b^3c^2n+2\,b^3c^2\right)x^3-\left(ab^2c^2n^2+ab^2c^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^3n^3+6\,b^3n^2+11\,b^3n+6\,b^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^3,x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*c^2*n*x - 2*a^3*c^2 - (b^3*c^2*n^2 + 3*b^3*c^2*n + 2*b^
3*c^2)*x^3 - (a*b^2*c^2*n^2 + a*b^2*c^2*n)*x^2)*sqrt(c*x^2)*(b*x
+ a)^n/((b^3*n^3 + 6*b^3*n^2 + 11*b^3*n + 6*b^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x**2)**(5/2)*(b*x+a)**n/x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}(bx+a)^n}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^3,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^3, x)
```

3.942 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x^4}\,dx$

Optimal. Leaf size=69

$$\frac{c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^2(n+2)x}-\frac{ac^2\sqrt{cx^2}(a+bx)^{n+1}}{b^2(n+1)x}$$

```
[Out] -((a*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^2*(1 + n)*x)) + (c^2*S
qrt[c*x^2]*(a + b*x)^(2 + n))/(b^2*(2 + n)*x)
```

Rubi [A] time = 0.0500284, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{c^2\sqrt{cx^2}(a+bx)^{n+2}}{b^2(n+2)x}-\frac{ac^2\sqrt{cx^2}(a+bx)^{n+1}}{b^2(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x^4,x]
```

```
[Out] -((a*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b^2*(1 + n)*x)) + (c^2*S
qrt[c*x^2]*(a + b*x)^(2 + n))/(b^2*(2 + n)*x)
```

Rubi in Sympy [A] time = 22.2113, size = 58, normalized size = 0.84

$$-\frac{ac^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^2x\,(n+1)}+\frac{c^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^2x\,(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x**4,x)
```

```
[Out] -a*c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**2*x*(n + 1)) + c**2*s
qrt(c*x**2)*(a + b*x)**(n + 2)/(b**2*x*(n + 2))
```

Mathematica [A] time = 0.0394769, size = 46, normalized size = 0.67

$$\frac{c^3x(a+bx)^{n+1}(b(n+1)x-a)}{b^2(n+1)(n+2)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x^4,x]
```

```
[Out] (c^3*x*(a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*(1 + n)*(2 + n)
*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 46, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}(-bxn-bx+a)}{x^5b^2(n^2+3n+2)}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n/x^4,x)
```

```
[Out] -(b*x+a)^(1+n)*(c*x^2)^(5/2)*(-b*n*x-b*x+a)/x^5/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.34875, size = 69, normalized size = 1.

$$\frac{\left(b^2c^{\frac{5}{2}}(n+1)x^2+abc^{\frac{5}{2}}nx-a^2c^{\frac{5}{2}}\right)(bx+a)^n}{(n^2+3n+2)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^4,x, algorithm="maxima")
```

```
[Out] (b^2*c^(5/2)*(n + 1)*x^2 + a*b*c^(5/2)*n*x - a^2*c^(5/2))*(b*x +
a)^n/((n^2 + 3*n + 2)*b^2)
```

Fricas [A] time = 0.229163, size = 103, normalized size = 1.49

$$\frac{\left(abc^2nx-a^2c^2+\left(b^2c^2n+b^2c^2\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^2n^2+3b^2n+2b^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^4,x, algorithm="fricas")
```

```
[Out] (a*b*c^2*n*x - a^2*c^2 + (b^2*c^2*n + b^2*c^2)*x^2)*sqrt(c*x^2)*(
b*x + a)^n/((b^2*n^2 + 3*b^2*n + 2*b^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n/x**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}}(bx+a)^n}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^4,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^4, x)
```

3.943 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x^5} dx$

Optimal. Leaf size=33

$$\frac{c^2\sqrt{cx^2}(a+bx)^{n+1}}{b(n+1)x}$$

```
[Out] (c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b*(1 + n)*x)
```

Rubi [A] time = 0.0213224, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{c^2\sqrt{cx^2}(a+bx)^{n+1}}{b(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x^5,x]
```

```
[Out] (c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n))/(b*(1 + n)*x)
```

Rubi in Sympy [A] time = 14.949, size = 26, normalized size = 0.79

$$\frac{c^2\sqrt{cx^2}\,(a+bx)^{n+1}}{bx\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x**5,x)
```

```
[Out] c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b*x*(n + 1))
```

Mathematica [A] time = 0.0231607, size = 31, normalized size = 0.94

$$\frac{c^3x(a+bx)^{n+1}}{b(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x^5,x]
```

```
[Out] (c^3*x*(a + b*x)^(1 + n))/(b*(1 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 29, normalized size = 0.9

$$\frac{(bx+a)^{1+n}}{b(1+n)x^5}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^(5/2)*(b*x+a)^n/x^5,x)
```

```
[Out] (b*x+a)^(1+n)/b/(1+n)*(c*x^2)^(5/2)/x^5
```

Maxima [A] time = 1.36961, size = 38, normalized size = 1.15

$$\frac{\left(bc^{\frac{5}{2}}x+ac^{\frac{5}{2}}\right)(bx+a)^n}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^5,x, algorithm="maxima")
```

```
[Out] (b*c^(5/2)*x + a*c^(5/2))*(b*x + a)^n/(b*(n + 1))
```

Fricas [A] time = 0.234572, size = 50, normalized size = 1.52

$$\frac{\left(bc^2x+ac^2\right)\sqrt{cx^2}(bx+a)^n}{(bn+b)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^5,x, algorithm="fricas")
```

```
[Out] (b*c^2*x + a*c^2)*sqrt(c*x^2)*(b*x + a)^n/((b*n + b)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n/x**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}(bx+a)^n}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^5,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^5, x)
```

3.944 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x^6} dx$

Optimal. Leaf size=50

$$-\frac{c^2\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)x}$$

```
[Out] -((c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n,
2 + n, 1 + (b*x)/a])/(a*(1 + n)*x))
```

Rubi [A] time = 0.036072, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{c^2\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x^6,x]
```

```
[Out] -((c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n,
2 + n, 1 + (b*x)/a])/(a*(1 + n)*x))
```

Rubi in Sympy [A] time = 17.127, size = 39, normalized size = 0.78

$$-\frac{c^2\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{ax\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x**6,x)
```

```
[Out] -c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,),
 1 + b*x/a)/(a*x*(n + 1))
```

Mathematica [A] time = 0.0208223, size = 58, normalized size = 1.16

$$\frac{(cx^2)^{5/2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{nx^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x^6,x]
```

```
[Out] ((c*x^2)^(5/2)*(a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(
b*x))])/(n*(1 + a/(b*x))^n*x^5)
```

Maple [F] time = 0.031, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^6}\left(cx^2\right)^{\frac{5}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n/x^6,x)
```

```
[Out] int((c*x^2)^(5/2)*(b*x+a)^n/x^6,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}}(bx+a)^n}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^6,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^6, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n c^2}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^6,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*c^2/x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n/x**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}} (bx+a)^n}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^6,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^6, x)
```

3.945 $\int \frac{(cx^2)^{5/2}(a+bx)^n}{x^7}\,dx$

Optimal. Leaf size=50

$$\frac{bc^2\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)x}$$

```
[Out] (b*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n,
2 + n, 1 + (b*x)/a])/(a^2*(1 + n)*x)
```

Rubi [A] time = 0.0352554, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{bc^2\sqrt{cx^2}(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)x}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^(5/2)*(a + b*x)^n)/x^7,x]
```

```
[Out] (b*c^2*Sqrt[c*x^2]*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n,
2 + n, 1 + (b*x)/a])/(a^2*(1 + n)*x)
```

Rubi in Sympy [A] time = 17.2665, size = 41, normalized size = 0.82

$$\frac{bc^2\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**(5/2)*(b*x+a)**n/x**7,x)
```

```
[Out] b*c**2*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((2, n + 1), (n + 2,)
, 1 + b*x/a)/(a**2*x*(n + 1))
```

Mathematica [A] time = 0.0208341, size = 62, normalized size = 1.24

$$\frac{(cx^2)^{5/2}\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)x^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^(5/2)*(a + b*x)^n)/x^7,x]
```

```
[Out] ((c*x^2)^(5/2)*(a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(
a/(b*x))])/((-1 + n)*(1 + a/(b*x))^n*x^6)
```

Maple [F]   time = 0.035, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^7} (cx^2)^{\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^(5/2)*(b*x+a)^n/x^7,x)
```

```
[Out] int((c*x^2)^(5/2)*(b*x+a)^n/x^7,x)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^{\frac{5}{2}} (bx+a)^n}{x^7} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^7,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^7, x)
```

Fricas [F]   time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{cx^2}(bx+a)^n c^2}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^7,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*c^2/x^3, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**(5/2)*(b*x+a)**n/x**7,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^{\frac{5}{2}} (bx + a)^n}{x^7} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n/x^7,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n/x^7, x)
```

3.946 $\int \frac{x^4(a+bx)^n}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=123

$$-\frac{a^3x(a+bx)^{n+1}}{b^4(n+1)\sqrt{cx^2}}+\frac{3a^2x(a+bx)^{n+2}}{b^4(n+2)\sqrt{cx^2}}-\frac{3ax(a+bx)^{n+3}}{b^4(n+3)\sqrt{cx^2}}+\frac{x(a+bx)^{n+4}}{b^4(n+4)\sqrt{cx^2}}$$

```
[Out] -((a^3*x*(a + b*x)^(1 + n))/(b^4*(1 + n)*Sqrt[c*x^2])) + (3*a^2*x
*(a + b*x)^(2 + n))/(b^4*(2 + n)*Sqrt[c*x^2]) - (3*a*x*(a + b*x)^
(3 + n))/(b^4*(3 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(4 + n))/(b^4*(
4 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0856572, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{a^3x(a+bx)^{n+1}}{b^4(n+1)\sqrt{cx^2}}+\frac{3a^2x(a+bx)^{n+2}}{b^4(n+2)\sqrt{cx^2}}-\frac{3ax(a+bx)^{n+3}}{b^4(n+3)\sqrt{cx^2}}+\frac{x(a+bx)^{n+4}}{b^4(n+4)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] -((a^3*x*(a + b*x)^(1 + n))/(b^4*(1 + n)*Sqrt[c*x^2])) + (3*a^2*x
*(a + b*x)^(2 + n))/(b^4*(2 + n)*Sqrt[c*x^2]) - (3*a*x*(a + b*x)^
(3 + n))/(b^4*(3 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(4 + n))/(b^4*(
4 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 37.9326, size = 119, normalized size = 0.97

$$-\frac{a^3\sqrt{cx^2}\,(a+bx)^{n+1}}{b^4cx\,(n+1)}+\frac{3a^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^4cx\,(n+2)}-\frac{3a\sqrt{cx^2}\,(a+bx)^{n+3}}{b^4cx\,(n+3)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+4}}{b^4cx\,(n+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] -a**3*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**4*c*x*(n + 1)) + 3*a**2
*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**4*c*x*(n + 2)) - 3*a*sqrt(c*
x**2)*(a + b*x)**(n + 3)/(b**4*c*x*(n + 3)) + sqrt(c*x**2)*(a + b
*x)**(n + 4)/(b**4*c*x*(n + 4))
```

Mathematica [A] time = 0.0745528, size = 96, normalized size = 0.78

$$\frac{x(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4(n+1)(n+2)(n+3)(n+4)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x - 3*a*b^2*(2 + 3
*n + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/(b^4*(1 + n)*(
2 + n)*(3 + n)*(4 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.008, size = 134, normalized size = 1.1

$$-\frac{(bx+a)^{1+n}x\left(-b^3n^3x^3-6b^3n^2x^3+3ab^2n^2x^2-11b^3nx^3+9ab^2nx^2-6b^3x^3-6a^2bnx+6ab^2x^2-6a^2bx+6a^3\right)}{b^4\left(n^4+10n^3+35n^2+50n+24\right)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^n/(c*x^2)^(1/2),x)
```

```
[Out] -(b*x+a)^(1+n)*x*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*n^2*x^2-11*b
^3*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*x^2-6*a^2*b*
x+6*a^3)/(c*x^2)^(1/2)/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.36201, size = 140, normalized size = 1.14

$$\frac{\left(\left(n^3+6n^2+11n+6\right)b^4x^4+\left(n^3+3n^2+2n\right)ab^3x^3-3\left(n^2+n\right)a^2b^2x^2+6a^3bnx-6a^4\right)(bx+a)^n}{(n^4+10n^3+35n^2+50n+24)b^4\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*x^4 + (n^3 + 3*n^2 + 2*n)*a*b^3*x^3
 - 3*(n^2 + n)*a^2*b^2*x^2 + 6*a^3*b*n*x - 6*a^4)*(b*x + a)^n/((n
^4 + 10*n^3 + 35*n^2 + 50*n + 24)*b^4*sqrt(c))
```

Fricas [A] time = 0.227248, size = 213, normalized size = 1.73

$$\frac{\left(6a^3bnx+\left(b^4n^3+6b^4n^2+11b^4n+6b^4\right)x^4-6a^4+\left(ab^3n^3+3ab^3n^2+2ab^3n\right)x^3-3\left(a^2b^2n^2+a^2b^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^4cn^4+10b^4cn^3+35b^4cn^2+50b^4cn+24b^4c)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] (6*a^3*b*n*x + (b^4*n^3 + 6*b^4*n^2 + 11*b^4*n + 6*b^4)*x^4 - 6*a
^4 + (a*b^3*n^3 + 3*a*b^3*n^2 + 2*a*b^3*n)*x^3 - 3*(a^2*b^2*n^2 +
 a^2*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^4*c*n^4 + 10*b^4*c*n
^3 + 35*b^4*c*n^2 + 50*b^4*c*n + 24*b^4*c)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^4}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^4/sqrt(c*x^2), x)
```

3.947 $\int \frac{x^3(a+bx)^n}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=90

$$\frac{a^2x(a+bx)^{n+1}}{b^3(n+1)\sqrt{cx^2}}-\frac{2ax(a+bx)^{n+2}}{b^3(n+2)\sqrt{cx^2}}+\frac{x(a+bx)^{n+3}}{b^3(n+3)\sqrt{cx^2}}$$

```
[Out] (a^2*x*(a + b*x)^(1 + n))/(b^3*(1 + n)*Sqrt[c*x^2]) - (2*a*x*(a +
 b*x)^(2 + n))/(b^3*(2 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(3 + n))/
(b^3*(3 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0631106, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x(a+bx)^{n+1}}{b^3(n+1)\sqrt{cx^2}}-\frac{2ax(a+bx)^{n+2}}{b^3(n+2)\sqrt{cx^2}}+\frac{x(a+bx)^{n+3}}{b^3(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (a^2*x*(a + b*x)^(1 + n))/(b^3*(1 + n)*Sqrt[c*x^2]) - (2*a*x*(a +
 b*x)^(2 + n))/(b^3*(2 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(3 + n))/
(b^3*(3 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 30.0987, size = 87, normalized size = 0.97

$$\frac{a^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^3cx\,(n+1)}-\frac{2a\sqrt{cx^2}\,(a+bx)^{n+2}}{b^3cx\,(n+2)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+3}}{b^3cx\,(n+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**3*c*x*(n + 1)) - 2*a*sqr
t(c*x**2)*(a + b*x)**(n + 2)/(b**3*c*x*(n + 2)) + sqrt(c*x**2)*(a
 + b*x)**(n + 3)/(b**3*c*x*(n + 3))
```

Mathematica [A] time = 0.0477885, size = 67, normalized size = 0.74

$$\frac{x(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3(n+1)(n+2)(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n + n^
2)*x^2))/(b^3*(1 + n)*(2 + n)*(3 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.009, size = 81, normalized size = 0.9

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)x}{b^3\left(n^3+6\,n^2+11\,n+6\right)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^n/(c*x^2)^(1/2),x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)*x/(c*x^2)^(1/2)/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.37029, size = 112, normalized size = 1.24

$$\frac{\left(\left(n^2+3\,n+2\right)b^3\sqrt{c}x^3+\left(n^2+n\right)ab^2\sqrt{c}x^2-2\,a^2b\sqrt{c}nx+2\,a^3\sqrt{c}\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*sqrt(c)*x^3 + (n^2 + n)*a*b^2*sqrt(c)*x^2 -
2*a^2*b*sqrt(c)*n*x + 2*a^3*sqrt(c))*(b*x + a)^n/((n^3 + 6*n^2 +
11*n + 6)*b^3*c)
```

Fricas [A] time = 0.250767, size = 149, normalized size = 1.66

$$-\frac{\left(2\,a^2bnx-\left(b^3n^2+3\,b^3n+2\,b^3\right)x^3-2\,a^3-\left(ab^2n^2+ab^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^3cn^3+6\,b^3cn^2+11\,b^3cn+6\,b^3c)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*n*x - (b^3*n^2 + 3*b^3*n + 2*b^3)*x^3 - 2*a^3 - (a*b^2*
n^2 + a*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^3*c*n^3 + 6*b^3*c
*n^2 + 11*b^3*c*n + 6*b^3*c)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^3}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^3/sqrt(c*x^2), x)
```

3.948 $\int \frac{x^2(a+bx)^n}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=59

$$\frac{x(a+bx)^{n+2}}{b^2(n+2)\sqrt{cx^2}}-\frac{ax(a+bx)^{n+1}}{b^2(n+1)\sqrt{cx^2}}$$

```
[Out] -((a*x*(a + b*x)^(1 + n))/(b^2*(1 + n)*Sqrt[c*x^2])) + (x*(a + b*
x)^(2 + n))/(b^2*(2 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0407857, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{x(a+bx)^{n+2}}{b^2(n+2)\sqrt{cx^2}}-\frac{ax(a+bx)^{n+1}}{b^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] -((a*x*(a + b*x)^(1 + n))/(b^2*(1 + n)*Sqrt[c*x^2])) + (x*(a + b*
x)^(2 + n))/(b^2*(2 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 17.313, size = 54, normalized size = 0.92

$$-\frac{a\sqrt{cx^2}\,(a+bx)^{n+1}}{b^2cx\,(n+1)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+2}}{b^2cx\,(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] -a*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**2*c*x*(n + 1)) + sqrt(c*x*
*2)*(a + b*x)**(n + 2)/(b**2*c*x*(n + 2))
```

Mathematica [A] time = 0.0308505, size = 43, normalized size = 0.73

$$\frac{x(a+bx)^{n+1}(b(n+1)x-a)}{b^2(n+1)(n+2)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*(1 + n)*(2 + n)*Sqr
t[c*x^2])
```

Maple [A] time = 0.003, size = 44, normalized size = 0.8

$$-\frac{(bx+a)^{1+n}x(-bxn-bx+a)}{b^2(n^2+3n+2)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^n/(c*x^2)^(1/2),x)
```

```
[Out] -(b*x+a)^(1+n)*x*(-b*n*x-b*x+a)/(c*x^2)^(1/2)/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.34477, size = 61, normalized size = 1.03

$$\frac{\left(b^2(n+1)x^2+abnx-a^2\right)(bx+a)^n}{(n^2+3n+2)b^2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] (b^2*(n + 1)*x^2 + a*b*n*x - a^2)*(b*x + a)^n/((n^2 + 3*n + 2)*b^
2*sqrt(c))
```

Fricas [A] time = 0.247448, size = 89, normalized size = 1.51

$$\frac{\left(abnx+\left(b^2n+b^2\right)x^2-a^2\right)\sqrt{cx^2}(bx+a)^n}{(b^2cn^2+3b^2cn+2b^2c)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] (a*b*n*x + (b^2*n + b^2)*x^2 - a^2)*sqrt(c*x^2)*(b*x + a)^n/((b^2
*c*n^2 + 3*b^2*c*n + 2*b^2*c)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^2}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^2/sqrt(c*x^2), x)
```

3.949 $\int \frac{x(a+bx)^n}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=28

$$\frac{x(a+bx)^{n+1}}{b(n+1)\sqrt{cx^2}}$$

```
[Out] (x*(a + b*x)^(1 + n))/(b*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0162151, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{x(a+bx)^{n+1}}{b(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^(1 + n))/(b*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)^n}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Integral(x*(a + b*x)**n/sqrt(c*x**2), x)
```

Mathematica [A] time = 0.0157236, size = 28, normalized size = 1.

$$\frac{x(a+bx)^{n+1}}{b(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^(1 + n))/(b*(1 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 27, normalized size = 1.

$$\frac{x\,(bx+a)^{1+n}}{b\,(1+n)}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^n/(c*x^2)^(1/2),x)
```

```
[Out] x*(b*x+a)^(1+n)/b/(1+n)/(c*x^2)^(1/2)
```

Maxima [A] time = 1.36772, size = 42, normalized size = 1.5

$$\frac{\left(b\sqrt{c}x+a\sqrt{c}\right)(bx+a)^n}{bc(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] (b*sqrt(c)*x + a*sqrt(c))*(b*x + a)^n/(b*c*(n + 1))
```

Fricas [A] time = 0.247635, size = 45, normalized size = 1.61

$$\frac{\sqrt{cx^2}(bx+a)(bx+a)^n}{(bcn+bc)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x + a)*(b*x + a)^n/((b*c*n + b*c)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x/sqrt(c*x^2), x)
```

3.950 $\int \frac{(a+bx)^n}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=45

$$-\frac{x(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)\sqrt{cx^2}}$$

```
[Out] -((x*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*
x)/a])/(a*(1 + n)*Sqrt[c*x^2]))
```

Rubi [A] time = 0.0286116, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$-\frac{x(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{a(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/Sqrt[c*x^2],x]
```

```
[Out] -((x*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*
x)/a])/(a*(1 + n)*Sqrt[c*x^2]))
```

Rubi in Sympy [A] time = 9.0349, size = 37, normalized size = 0.82

$$-\frac{\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{acx\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] -sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,), 1 +
b*x/a)/(a*c*x*(n + 1))
```

Mathematica [A] time = 0.0147851, size = 56, normalized size = 1.24

$$\frac{x\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{n\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/Sqrt[c*x^2],x]
```

```
[Out] (x*(a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(b*x))])/(n*(
1 + a/(b*x))^n*Sqrt[c*x^2])
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int (bx+a)^n \frac{1}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/(c*x^2)^(1/2),x)
```

```
[Out] int((b*x+a)^n/(c*x^2)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/sqrt(c*x^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/sqrt(c*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^n}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)**n/sqrt(c*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/sqrt(c*x^2), x)
```

3.951 $\int \frac{(a+bx)^n}{x\sqrt{cx^2}}\,dx$

Optimal. Leaf size=45

$$\frac{bx(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)\sqrt{cx^2}}$$

```
[Out] (b*x*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*
x)/a])/(a^2*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0292743, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{bx(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/(x*Sqrt[c*x^2]),x]
```

```
[Out] (b*x*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*
x)/a])/(a^2*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 15.3185, size = 39, normalized size = 0.87

$$\frac{b\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2cx\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x/(c*x**2)**(1/2),x)
```

```
[Out] b*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((2, n + 1), (n + 2,), 1 +
 b*x/a)/(a**2*c*x*(n + 1))
```

Mathematica [A] time = 0.0226481, size = 63, normalized size = 1.4

$$\frac{cx^2\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/(x*Sqrt[c*x^2]),x]
```

```
[Out] (c*x^2*(a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(a/(b*x))
])/((-1 + n)*(1 + a/(b*x))^n*(c*x^2)^(3/2))
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x}\frac{1}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x/(c*x^2)^(1/2),x)
```

```
[Out] int((b*x+a)^n/x/(c*x^2)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{cx^2}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(sqrt(c*x^2)*x),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/(sqrt(c*x^2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(sqrt(c*x^2)*x),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^n}{x\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x/(c*x**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)**n/(x*sqrt(c*x**2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{cx^2}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(sqrt(c*x^2)*x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/(sqrt(c*x^2)*x), x)
```

3.952 $\int \frac{(a+bx)^n}{x^2\sqrt{cx^2}}\,dx$

Optimal. Leaf size=48

$$-\frac{b^2x(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)\sqrt{cx^2}}$$

```
[Out] -((b^2*x*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 +
 (b*x)/a])/(a^3*(1 + n)*Sqrt[c*x^2]))
```

Rubi [A] time = 0.034002, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^2x(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/(x^2*Sqrt[c*x^2]),x]
```

```
[Out] -((b^2*x*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 +
 (b*x)/a])/(a^3*(1 + n)*Sqrt[c*x^2]))
```

Rubi in Sympy [A] time = 16.3552, size = 42, normalized size = 0.88

$$-\frac{b^2\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}3,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^3cx\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x**2/(c*x**2)**(1/2),x)
```

```
[Out] -b**2*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((3, n + 1), (n + 2,),
 1 + b*x/a)/(a**3*c*x*(n + 1))
```

Mathematica [A] time = 0.0297098, size = 61, normalized size = 1.27

$$\frac{cx\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(2-n,-n;3-n;-\frac{a}{bx}\right)}{(n-2)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/(x^2*Sqrt[c*x^2]),x]
```

```
[Out] (c*x*(a + b*x)^n*Hypergeometric2F1[2 - n, -n, 3 - n, -(a/(b*x))])
/((-2 + n)*(1 + a/(b*x))^n*(c*x^2)^(3/2))
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x^2}\frac{1}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x^2/(c*x^2)^(1/2),x)
```

```
[Out] int((b*x+a)^n/x^2/(c*x^2)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{cx^2}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(sqrt(c*x^2)*x^2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/(sqrt(c*x^2)*x^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(sqrt(c*x^2)*x^2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^n}{x^2\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x**2/(c*x**2)**(1/2),x)

[Out] Integral((a + b*x)**n/(x**2*sqrt(c*x**2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\sqrt{cx^2}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(sqrt(c*x^2)*x^2),x, algorithm="giac")

[Out] integrate((b*x + a)^n/(sqrt(c*x^2)*x^2), x)
```

3.953 $\int \frac{x^6(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=135

$$-\frac{a^3x(a+bx)^{n+1}}{b^4c(n+1)\sqrt{cx^2}}+\frac{3a^2x(a+bx)^{n+2}}{b^4c(n+2)\sqrt{cx^2}}-\frac{3ax(a+bx)^{n+3}}{b^4c(n+3)\sqrt{cx^2}}+\frac{x(a+bx)^{n+4}}{b^4c(n+4)\sqrt{cx^2}}$$

```
[Out] -((a^3*x*(a + b*x)^(1 + n))/(b^4*c*(1 + n)*Sqrt[c*x^2])) + (3*a^2
*x*(a + b*x)^(2 + n))/(b^4*c*(2 + n)*Sqrt[c*x^2]) - (3*a*x*(a + b
*x)^(3 + n))/(b^4*c*(3 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(4 + n))/
(b^4*c*(4 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.102006, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3x(a+bx)^{n+1}}{b^4c(n+1)\sqrt{cx^2}}+\frac{3a^2x(a+bx)^{n+2}}{b^4c(n+2)\sqrt{cx^2}}-\frac{3ax(a+bx)^{n+3}}{b^4c(n+3)\sqrt{cx^2}}+\frac{x(a+bx)^{n+4}}{b^4c(n+4)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] -((a^3*x*(a + b*x)^(1 + n))/(b^4*c*(1 + n)*Sqrt[c*x^2])) + (3*a^2
*x*(a + b*x)^(2 + n))/(b^4*c*(2 + n)*Sqrt[c*x^2]) - (3*a*x*(a + b
*x)^(3 + n))/(b^4*c*(3 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(4 + n))/
(b^4*c*(4 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 35.8835, size = 126, normalized size = 0.93

$$-\frac{a^3\sqrt{cx^2}\,(a+bx)^{n+1}}{b^4c^2x\,(n+1)}+\frac{3a^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^4c^2x\,(n+2)}-\frac{3a\sqrt{cx^2}\,(a+bx)^{n+3}}{b^4c^2x\,(n+3)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+4}}{b^4c^2x\,(n+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] -a**3*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**4*c**2*x*(n + 1)) + 3*a
**2*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**4*c**2*x*(n + 2)) - 3*a*s
qrt(c*x**2)*(a + b*x)**(n + 3)/(b**4*c**2*x*(n + 3)) + sqrt(c*x**
2)*(a + b*x)**(n + 4)/(b**4*c**2*x*(n + 4))
```

Mathematica [A] time = 0.0685986, size = 98, normalized size = 0.73

$$\frac{x^3(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4(n+1)(n+2)(n+3)(n+4)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (x^3*(a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x - 3*a*b^2*(2 +
 3*n + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/(b^4*(1 + n)
*(2 + n)*(3 + n)*(4 + n)*(c*x^2)^(3/2))
```

Maple [A] time = 0.007, size = 136, normalized size = 1.

$$-\frac{(bx+a)^{1+n}x^3\left(-b^3n^3x^3-6\,b^3n^2x^3+3\,ab^2n^2x^2-11\,b^3nx^3+9\,ab^2nx^2-6\,b^3x^3-6\,a^2bnx+6\,ab^2x^2-6\,a^2bx+6\,a^3\right)}{b^4\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)}\left(cx^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] -(b*x+a)^(1+n)*x^3*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*n^2*x^2-11
*b^3*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*x^2-6*a^2*
b*x+6*a^3)/(c*x^2)^(3/2)/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.37011, size = 140, normalized size = 1.04

$$\frac{\left(\left(n^3+6\,n^2+11\,n+6\right)b^4x^4+\left(n^3+3\,n^2+2\,n\right)ab^3x^3-3\left(n^2+n\right)a^2b^2x^2+6\,a^3bnx-6\,a^4\right)(bx+a)^n}{(n^4+10\,n^3+35\,n^2+50\,n+24)b^4c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^6/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*x^4 + (n^3 + 3*n^2 + 2*n)*a*b^3*x^3
 - 3*(n^2 + n)*a^2*b^2*x^2 + 6*a^3*b*n*x - 6*a^4)*(b*x + a)^n/((n
^4 + 10*n^3 + 35*n^2 + 50*n + 24)*b^4*c^(3/2))
```

Fricas [A] time = 0.231189, size = 227, normalized size = 1.68

$$\frac{\left(6\,a^3bnx+\left(b^4n^3+6\,b^4n^2+11\,b^4n+6\,b^4\right)x^4-6\,a^4+\left(ab^3n^3+3\,ab^3n^2+2\,ab^3n\right)x^3-3\left(a^2b^2n^2+a^2b^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^4c^2n^4+10\,b^4c^2n^3+35\,b^4c^2n^2+50\,b^4c^2n+24\,b^4c^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^6/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] (6*a^3*b*n*x + (b^4*n^3 + 6*b^4*n^2 + 11*b^4*n + 6*b^4)*x^4 - 6*a
^4 + (a*b^3*n^3 + 3*a*b^3*n^2 + 2*a*b^3*n)*x^3 - 3*(a^2*b^2*n^2 +
 a^2*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^4*c^2*n^4 + 10*b^4*c
^2*n^3 + 35*b^4*c^2*n^2 + 50*b^4*c^2*n + 24*b^4*c^2)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^6}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^6/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^6/(c*x^2)^(3/2), x)
```

3.954 $\int \frac{x^5(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=99

$$\frac{a^2x(a+bx)^{n+1}}{b^3c(n+1)\sqrt{cx^2}}-\frac{2ax(a+bx)^{n+2}}{b^3c(n+2)\sqrt{cx^2}}+\frac{x(a+bx)^{n+3}}{b^3c(n+3)\sqrt{cx^2}}$$

```
[Out] (a^2*x*(a + b*x)^(1 + n))/(b^3*c*(1 + n)*Sqrt[c*x^2]) - (2*a*x*(a
 + b*x)^(2 + n))/(b^3*c*(2 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(3 +
n))/(b^3*c*(3 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0756104, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{a^2x(a+bx)^{n+1}}{b^3c(n+1)\sqrt{cx^2}}-\frac{2ax(a+bx)^{n+2}}{b^3c(n+2)\sqrt{cx^2}}+\frac{x(a+bx)^{n+3}}{b^3c(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (a^2*x*(a + b*x)^(1 + n))/(b^3*c*(1 + n)*Sqrt[c*x^2]) - (2*a*x*(a
 + b*x)^(2 + n))/(b^3*c*(2 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(3 +
n))/(b^3*c*(3 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 26.7651, size = 92, normalized size = 0.93

$$\frac{a^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^3c^2x\,(n+1)}-\frac{2a\sqrt{cx^2}\,(a+bx)^{n+2}}{b^3c^2x\,(n+2)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+3}}{b^3c^2x\,(n+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**3*c**2*x*(n + 1)) - 2*a*
sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**3*c**2*x*(n + 2)) + sqrt(c*x*
*2)*(a + b*x)**(n + 3)/(b**3*c**2*x*(n + 3))
```

Mathematica [A] time = 0.0481485, size = 69, normalized size = 0.7

$$\frac{x^3(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3(n+1)(n+2)(n+3)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (x^3*(a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n +
n^2)*x^2))/(b^3*(1 + n)*(2 + n)*(3 + n)*(c*x^2)^(3/2))
```

Maple [A] time = 0.009, size = 83, normalized size = 0.8

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)x^3}{b^3\left(n^3+6\,n^2+11\,n+6\right)}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)*x^3/(c*x^2)^(3/2)/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.36322, size = 112, normalized size = 1.13

$$\frac{\left(\left(n^2+3\,n+2\right)b^3\sqrt{c}x^3+\left(n^2+n\right)ab^2\sqrt{c}x^2-2\,a^2b\sqrt{c}nx+2\,a^3\sqrt{c}\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^5/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*sqrt(c)*x^3 + (n^2 + n)*a*b^2*sqrt(c)*x^2 -
2*a^2*b*sqrt(c)*n*x + 2*a^3*sqrt(c))*(b*x + a)^n/((n^3 + 6*n^2 +
11*n + 6)*b^3*c^2)
```

Fricas [A] time = 0.242708, size = 159, normalized size = 1.61

$$-\frac{\left(2\,a^2bnx-\left(b^3n^2+3\,b^3n+2\,b^3\right)x^3-2\,a^3-\left(ab^2n^2+ab^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^3c^2n^3+6\,b^3c^2n^2+11\,b^3c^2n+6\,b^3c^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^5/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*n*x - (b^3*n^2 + 3*b^3*n + 2*b^3)*x^3 - 2*a^3 - (a*b^2*
n^2 + a*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^3*c^2*n^3 + 6*b^3
*c^2*n^2 + 11*b^3*c^2*n + 6*b^3*c^2)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^5}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^5/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^5/(c*x^2)^(3/2), x)
```

3.955 $\int \frac{x^4(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=65

$$\frac{x(a+bx)^{n+2}}{b^2c(n+2)\sqrt{cx^2}}-\frac{ax(a+bx)^{n+1}}{b^2c(n+1)\sqrt{cx^2}}$$

```
[Out] -((a*x*(a + b*x)^(1 + n))/(b^2*c*(1 + n)*Sqrt[c*x^2])) + (x*(a +
b*x)^(2 + n))/(b^2*c*(2 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0495366, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{x(a+bx)^{n+2}}{b^2c(n+2)\sqrt{cx^2}}-\frac{ax(a+bx)^{n+1}}{b^2c(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] -((a*x*(a + b*x)^(1 + n))/(b^2*c*(1 + n)*Sqrt[c*x^2])) + (x*(a +
b*x)^(2 + n))/(b^2*c*(2 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 19.4463, size = 58, normalized size = 0.89

$$-\frac{a\sqrt{cx^2}\,(a+bx)^{n+1}}{b^2c^2x\,(n+1)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+2}}{b^2c^2x\,(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] -a*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**2*c**2*x*(n + 1)) + sqrt(c
*x**2)*(a + b*x)**(n + 2)/(b**2*c**2*x*(n + 2))
```

Mathematica [A] time = 0.0373625, size = 45, normalized size = 0.69

$$\frac{x^3(a+bx)^{n+1}(b(n+1)x-a)}{b^2(n+1)(n+2)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (x^3*(a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*(1 + n)*(2 + n)*(
c*x^2)^(3/2))
```

Maple [A] time = 0.003, size = 46, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}x^3(-bxn-bx+a)}{b^2(n^2+3n+2)}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] -(b*x+a)^(1+n)*x^3*(-b*n*x-b*x+a)/(c*x^2)^(3/2)/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.36547, size = 61, normalized size = 0.94

$$\frac{\left(b^2(n+1)x^2+abnx-a^2\right)(bx+a)^n}{(n^2+3n+2)b^2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] (b^2*(n + 1)*x^2 + a*b*n*x - a^2)*(b*x + a)^n/((n^2 + 3*n + 2)*b^
2*c^(3/2))
```

Fricas [A] time = 0.241518, size = 97, normalized size = 1.49

$$\frac{\left(abnx+\left(b^2n+b^2\right)x^2-a^2\right)\sqrt{cx^2}(bx+a)^n}{(b^2c^2n^2+3\,b^2c^2n+2\,b^2c^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] (a*b*n*x + (b^2*n + b^2)*x^2 - a^2)*sqrt(c*x^2)*(b*x + a)^n/((b^2
*c^2*n^2 + 3*b^2*c^2*n + 2*b^2*c^2)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^4}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^4/(c*x^2)^(3/2), x)
```

3.956 $\int \frac{x^3(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=31

$$\frac{x(a+bx)^{n+1}}{bc(n+1)\sqrt{cx^2}}$$

[Out] (x*(a + b*x)^(1 + n))/(b*c*(1 + n)*Sqrt[c*x^2])

Rubi [A] time = 0.0198229, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{x(a+bx)^{n+1}}{bc(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

[In] Int[(x^3*(a + b*x)^n)/(c*x^2)^(3/2),x]

[Out] (x*(a + b*x)^(1 + n))/(b*c*(1 + n)*Sqrt[c*x^2])

Rubi in Sympy [A] time = 13.1006, size = 26, normalized size = 0.84

$$\frac{\sqrt{cx^2}\,(a+bx)^{n+1}}{bc^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(x**3*(b*x+a)**n/(c*x**2)**(3/2),x)

[Out] sqrt(c*x**2)*(a + b*x)**(n + 1)/(b*c**2*x*(n + 1))

Mathematica [A] time = 0.0208168, size = 30, normalized size = 0.97

$$\frac{x^3(a+bx)^{n+1}}{b(n+1)\,(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

[In] Integrate[(x^3*(a + b*x)^n)/(c*x^2)^(3/2),x]

```
[Out] (x^3*(a + b*x)^(1 + n))/(b*(1 + n)*(c*x^2)^(3/2))
```

Maple [A] time = 0.004, size = 29, normalized size = 0.9

$$\frac{(bx+a)^{1+n}\,x^3}{b\,(1+n)}\,\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] (b*x+a)^(1+n)/b/(1+n)*x^3/(c*x^2)^(3/2)
```

Maxima [A] time = 1.35654, size = 42, normalized size = 1.35

$$\frac{\left(b\sqrt{c}x+a\sqrt{c}\right)(bx+a)^n}{bc^2(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] (b*sqrt(c)*x + a*sqrt(c))*(b*x + a)^n/(b*c^2*(n + 1))
```

Fricas [A] time = 0.230468, size = 50, normalized size = 1.61

$$\frac{\sqrt{cx^2}(bx+a)(bx+a)^n}{(bc^2n+bc^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x + a)*(b*x + a)^n/((b*c^2*n + b*c^2)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^3}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^3/(c*x^2)^(3/2), x)
```

3.957 $\int \frac{x^2(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=48

$$-\frac{x(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{ac(n+1)\sqrt{cx^2}}$$

```
[Out] -((x*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*
x)/a])/(a*c*(1 + n)*Sqrt[c*x^2]))
```

Rubi [A] time = 0.0348365, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{x(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{ac(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] -((x*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*
x)/a])/(a*c*(1 + n)*Sqrt[c*x^2]))
```

Rubi in Sympy [A] time = 10.3229, size = 39, normalized size = 0.81

$$-\frac{\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{ac^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] -sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,), 1 +
b*x/a)/(a*c**2*x*(n + 1))
```

Mathematica [A] time = 0.0156203, size = 58, normalized size = 1.21

$$\frac{x^3\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{n\,(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (x^3*(a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(b*x))])/(n
*(1 + a/(b*x))^n*(c*x^2)^(3/2))
```

Maple [F] time = 0.035, size = 0, normalized size = 0.

$$\int x^{2} \left(bx+a\right)^{n} \left(c\,x^{2}\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] int(x^2*(b*x+a)^n/(c*x^2)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n}x^{2}}{(cx^{2})^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^2/(c*x^2)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{n}}{\sqrt{cx^{2}}c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 (a + bx)^n}{(cx^2)^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x**2*(a + b*x)**n/(c*x**2)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^n x^2}{(cx^2)^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^2/(c*x^2)^(3/2), x)
```

3.958 $\int \frac{x(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=48

$$\frac{bx(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2c(n+1)\sqrt{cx^2}}$$

```
[Out] (b*x*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*
x)/a])/(a^2*c*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0347361, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{bx(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2c(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (b*x*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*
x)/a])/(a^2*c*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)^n}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x*(a + b*x)**n/(c*x**2)**(3/2), x)
```

Mathematica [A] time = 0.0193465, size = 62, normalized size = 1.29

$$\frac{x^2\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (x^2*(a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(a/(b*x))])
/((-1 + n)*(1 + a/(b*x))^n*(c*x^2)^(3/2))
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int x(bx+a)^n \left(cx^2\right)^{-\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] int(x*(b*x+a)^n/(c*x^2)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x}{(cx^2)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x/(c*x^2)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}cx}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)^n}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Integral(x*(a + b*x)**n/(c*x**2)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x/(c*x^2)^(3/2), x)
```

3.959 $\int \frac{(a+bx)^n}{(cx^2)^{3/2}} \, dx$

Optimal. Leaf size=51

$$-\frac{b^2x(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3c(n+1)\sqrt{cx^2}}$$

```
[Out] -((b^2*x*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 +
 (b*x)/a])/(a^3*c*(1 + n)*Sqrt[c*x^2]))
```

Rubi [A] time = 0.0396926, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{b^2x(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3c(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/(c*x^2)^(3/2),x]
```

```
[Out] -((b^2*x*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 +
 (b*x)/a])/(a^3*c*(1 + n)*Sqrt[c*x^2]))
```

Rubi in Sympy [A] time = 9.77186, size = 44, normalized size = 0.86

$$-\frac{b^2\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}3,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^3c^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] -b**2*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((3, n + 1), (n + 2,),
 1 + b*x/a)/(a**3*c**2*x*(n + 1))
```

Mathematica [A] time = 0.024864, size = 60, normalized size = 1.18

$$\frac{x\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(2-n,-n;3-n;-\frac{a}{bx}\right)}{(n-2)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/(c*x^2)^(3/2),x]
```

```
[Out] (x*(a + b*x)^n*Hypergeometric2F1[2 - n, -n, 3 - n, -(a/(b*x))])/(
(-2 + n)*(1 + a/(b*x))^n*(c*x^2)^(3/2))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int (bx+a)^n \left(c x^2\right)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] int((b*x+a)^n/(c*x^2)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{\left(c x^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/(c*x^2)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{c x^2}\, c x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^n}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)**n/(c*x**2)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/(c*x^2)^(3/2), x)
```

3.960 $\int \frac{(a+bx)^n}{x(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=50

$$\frac{b^3x(a+bx)^{n+1}\,{}_2F_1\left(4,n+1;n+2;\frac{bx}{a}+1\right)}{a^4c(n+1)\sqrt{cx^2}}$$

```
[Out] (b^3*x*(a + b*x)^(1 + n)*Hypergeometric2F1[4, 1 + n, 2 + n, 1 + (
b*x)/a])/(a^4*c*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0388987, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{b^3x(a+bx)^{n+1}\,{}_2F_1\left(4,n+1;n+2;\frac{bx}{a}+1\right)}{a^4c(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/(x*(c*x^2)^(3/2)),x]
```

```
[Out] (b^3*x*(a + b*x)^(1 + n)*Hypergeometric2F1[4, 1 + n, 2 + n, 1 + (
b*x)/a])/(a^4*c*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 15.1398, size = 42, normalized size = 0.84

$$\frac{b^3\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}4,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^4c^2x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/x/(c*x**2)**(3/2),x)
```

```
[Out] b**3*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((4, n + 1), (n + 2,),
1 + b*x/a)/(a**4*c**2*x*(n + 1))
```

Mathematica [A] time = 0.0380463, size = 63, normalized size = 1.26

$$\frac{cx^2\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(3-n,-n;4-n;-\frac{a}{bx}\right)}{(n-3)\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/(x*(c*x^2)^(3/2)),x]
```

```
[Out] (c*x^2*(a + b*x)^n*Hypergeometric2F1[3 - n, -n, 4 - n, -(a/(b*x))
])/((-3 + n)*(1 + a/(b*x))^n*(c*x^2)^(5/2))
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{x}\left(cx^2\right)^{-\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/x/(c*x^2)^(3/2),x)
```

```
[Out] int((b*x+a)^n/x/(c*x^2)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(cx^2)^{\frac{3}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/((c*x^2)^(3/2)*x),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n/((c*x^2)^(3/2)*x), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}cx^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/((c*x^2)^(3/2)*x),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c*x^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^n}{x\,(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/x/(c*x**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)**n/(x*(c*x**2)**(3/2)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(cx^2)^{\frac{3}{2}}\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/((c*x^2)^(3/2)*x),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/((c*x^2)^(3/2)*x), x)
```

3.961 $\int \frac{x^8(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=135

$$-\frac{a^3x(a+bx)^{n+1}}{b^4c^2(n+1)\sqrt{cx^2}}+\frac{3a^2x(a+bx)^{n+2}}{b^4c^2(n+2)\sqrt{cx^2}}-\frac{3ax(a+bx)^{n+3}}{b^4c^2(n+3)\sqrt{cx^2}}+\frac{x(a+bx)^{n+4}}{b^4c^2(n+4)\sqrt{cx^2}}$$

```
[Out] -((a^3*x*(a + b*x)^(1 + n))/(b^4*c^2*(1 + n)*Sqrt[c*x^2])) + (3*a
^2*x*(a + b*x)^(2 + n))/(b^4*c^2*(2 + n)*Sqrt[c*x^2]) - (3*a*x*(a
 + b*x)^(3 + n))/(b^4*c^2*(3 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(4
+ n))/(b^4*c^2*(4 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.10683, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{a^3x(a+bx)^{n+1}}{b^4c^2(n+1)\sqrt{cx^2}}+\frac{3a^2x(a+bx)^{n+2}}{b^4c^2(n+2)\sqrt{cx^2}}-\frac{3ax(a+bx)^{n+3}}{b^4c^2(n+3)\sqrt{cx^2}}+\frac{x(a+bx)^{n+4}}{b^4c^2(n+4)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^8*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] -((a^3*x*(a + b*x)^(1 + n))/(b^4*c^2*(1 + n)*Sqrt[c*x^2])) + (3*a
^2*x*(a + b*x)^(2 + n))/(b^4*c^2*(2 + n)*Sqrt[c*x^2]) - (3*a*x*(a
 + b*x)^(3 + n))/(b^4*c^2*(3 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(4
+ n))/(b^4*c^2*(4 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 34.7031, size = 126, normalized size = 0.93

$$-\frac{a^3\sqrt{cx^2}\,(a+bx)^{n+1}}{b^4c^3x\,(n+1)}+\frac{3a^2\sqrt{cx^2}\,(a+bx)^{n+2}}{b^4c^3x\,(n+2)}-\frac{3a\sqrt{cx^2}\,(a+bx)^{n+3}}{b^4c^3x\,(n+3)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+4}}{b^4c^3x\,(n+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**8*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] -a**3*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**4*c**3*x*(n + 1)) + 3*a
**2*sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**4*c**3*x*(n + 2)) - 3*a*s
qrt(c*x**2)*(a + b*x)**(n + 3)/(b**4*c**3*x*(n + 3)) + sqrt(c*x**
2)*(a + b*x)**(n + 4)/(b**4*c**3*x*(n + 4))
```

Mathematica [A] time = 0.0729996, size = 99, normalized size = 0.73

$$\frac{x(a+bx)^{n+1}\left(-6a^3+6a^2b(n+1)x-3ab^2\left(n^2+3n+2\right)x^2+b^3\left(n^3+6n^2+11n+6\right)x^3\right)}{b^4c^2(n+1)(n+2)(n+3)(n+4)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^8*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(a + b*x)^(1 + n)*(-6*a^3 + 6*a^2*b*(1 + n)*x - 3*a*b^2*(2 + 3
*n + n^2)*x^2 + b^3*(6 + 11*n + 6*n^2 + n^3)*x^3))/(b^4*c^2*(1 +
n)*(2 + n)*(3 + n)*(4 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.008, size = 136, normalized size = 1.

$$-\frac{(bx+a)^{1+n}x^5\left(-b^3n^3x^3-6\,b^3n^2x^3+3\,ab^2n^2x^2-11\,b^3nx^3+9\,ab^2nx^2-6\,b^3x^3-6\,a^2bnx+6\,ab^2x^2-6\,a^2bx+6\,a^3\right)}{b^4\left(n^4+10\,n^3+35\,n^2+50\,n+24\right)}\left(cx^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^8*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] -(b*x+a)^(1+n)*x^5*(-b^3*n^3*x^3-6*b^3*n^2*x^3+3*a*b^2*n^2*x^2-11
*b^3*n*x^3+9*a*b^2*n*x^2-6*b^3*x^3-6*a^2*b*n*x+6*a*b^2*x^2-6*a^2*
b*x+6*a^3)/(c*x^2)^(5/2)/b^4/(n^4+10*n^3+35*n^2+50*n+24)
```

Maxima [A] time = 1.3676, size = 140, normalized size = 1.04

$$\frac{\left(\left(n^3+6\,n^2+11\,n+6\right)b^4x^4+\left(n^3+3\,n^2+2\,n\right)ab^3x^3-3\left(n^2+n\right)a^2b^2x^2+6\,a^3bnx-6\,a^4\right)(bx+a)^n}{(n^4+10\,n^3+35\,n^2+50\,n+24)b^4c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^8/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] ((n^3 + 6*n^2 + 11*n + 6)*b^4*x^4 + (n^3 + 3*n^2 + 2*n)*a*b^3*x^3
 - 3*(n^2 + n)*a^2*b^2*x^2 + 6*a^3*b*n*x - 6*a^4)*(b*x + a)^n/((n
^4 + 10*n^3 + 35*n^2 + 50*n + 24)*b^4*c^(5/2))
```

Fricas [A] time = 0.226527, size = 227, normalized size = 1.68

$$\frac{\left(6\,a^3bnx+\left(b^4n^3+6\,b^4n^2+11\,b^4n+6\,b^4\right)x^4-6\,a^4+\left(ab^3n^3+3\,ab^3n^2+2\,ab^3n\right)x^3-3\left(a^2b^2n^2+a^2b^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^4c^3n^4+10\,b^4c^3n^3+35\,b^4c^3n^2+50\,b^4c^3n+24\,b^4c^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^8/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] (6*a^3*b*n*x + (b^4*n^3 + 6*b^4*n^2 + 11*b^4*n + 6*b^4)*x^4 - 6*a
^4 + (a*b^3*n^3 + 3*a*b^3*n^2 + 2*a*b^3*n)*x^3 - 3*(a^2*b^2*n^2 +
 a^2*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^4*c^3*n^4 + 10*b^4*c
^3*n^3 + 35*b^4*c^3*n^2 + 50*b^4*c^3*n + 24*b^4*c^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**8*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^8}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^8/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^8/(c*x^2)^(5/2), x)
```

3.962 $\int \frac{x^7(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=99

$$\frac{a^2x(a+bx)^{n+1}}{b^3c^2(n+1)\sqrt{cx^2}}-\frac{2ax(a+bx)^{n+2}}{b^3c^2(n+2)\sqrt{cx^2}}+\frac{x(a+bx)^{n+3}}{b^3c^2(n+3)\sqrt{cx^2}}$$

```
[Out] (a^2*x*(a + b*x)^(1 + n))/(b^3*c^2*(1 + n)*Sqrt[c*x^2]) - (2*a*x*
(a + b*x)^(2 + n))/(b^3*c^2*(2 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(
3 + n))/(b^3*c^2*(3 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0781562, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{a^2x(a+bx)^{n+1}}{b^3c^2(n+1)\sqrt{cx^2}}-\frac{2ax(a+bx)^{n+2}}{b^3c^2(n+2)\sqrt{cx^2}}+\frac{x(a+bx)^{n+3}}{b^3c^2(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^7*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (a^2*x*(a + b*x)^(1 + n))/(b^3*c^2*(1 + n)*Sqrt[c*x^2]) - (2*a*x*
(a + b*x)^(2 + n))/(b^3*c^2*(2 + n)*Sqrt[c*x^2]) + (x*(a + b*x)^(
3 + n))/(b^3*c^2*(3 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 26.827, size = 92, normalized size = 0.93

$$\frac{a^2\sqrt{cx^2}\,(a+bx)^{n+1}}{b^3c^3x\,(n+1)}-\frac{2a\sqrt{cx^2}\,(a+bx)^{n+2}}{b^3c^3x\,(n+2)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+3}}{b^3c^3x\,(n+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**7*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**3*c**3*x*(n + 1)) - 2*a*
sqrt(c*x**2)*(a + b*x)**(n + 2)/(b**3*c**3*x*(n + 2)) + sqrt(c*x*
*2)*(a + b*x)**(n + 3)/(b**3*c**3*x*(n + 3))
```

Mathematica [A] time = 0.0428646, size = 70, normalized size = 0.71

$$\frac{x(a+bx)^{n+1}\left(2a^2-2ab(n+1)x+b^2\left(n^2+3n+2\right)x^2\right)}{b^3c^2(n+1)(n+2)(n+3)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^7*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(a + b*x)^(1 + n)*(2*a^2 - 2*a*b*(1 + n)*x + b^2*(2 + 3*n + n^
2)*x^2))/(b^3*c^2*(1 + n)*(2 + n)*(3 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.009, size = 83, normalized size = 0.8

$$\frac{(bx+a)^{1+n}\left(b^2n^2x^2+3\,b^2nx^2-2\,abnx+2\,b^2x^2-2\,abx+2\,a^2\right)x^5}{b^3\left(n^3+6\,n^2+11\,n+6\right)}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^7*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] (b*x+a)^(1+n)*(b^2*n^2*x^2+3*b^2*n*x^2-2*a*b*n*x+2*b^2*x^2-2*a*b*
x+2*a^2)*x^5/(c*x^2)^(5/2)/b^3/(n^3+6*n^2+11*n+6)
```

Maxima [A] time = 1.35746, size = 112, normalized size = 1.13

$$\frac{\left(\left(n^2+3\,n+2\right)b^3\sqrt{c}x^3+\left(n^2+n\right)ab^2\sqrt{c}x^2-2\,a^2b\sqrt{c}nx+2\,a^3\sqrt{c}\right)(bx+a)^n}{(n^3+6\,n^2+11\,n+6)b^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^7/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] ((n^2 + 3*n + 2)*b^3*sqrt(c)*x^3 + (n^2 + n)*a*b^2*sqrt(c)*x^2 -
2*a^2*b*sqrt(c)*n*x + 2*a^3*sqrt(c))*(b*x + a)^n/((n^3 + 6*n^2 +
11*n + 6)*b^3*c^3)
```

Fricas [A] time = 0.235441, size = 159, normalized size = 1.61

$$-\frac{\left(2\,a^2bnx-\left(b^3n^2+3\,b^3n+2\,b^3\right)x^3-2\,a^3-\left(ab^2n^2+ab^2n\right)x^2\right)\sqrt{cx^2}(bx+a)^n}{(b^3c^3n^3+6\,b^3c^3n^2+11\,b^3c^3n+6\,b^3c^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^7/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -(2*a^2*b*n*x - (b^3*n^2 + 3*b^3*n + 2*b^3)*x^3 - 2*a^3 - (a*b^2*
n^2 + a*b^2*n)*x^2)*sqrt(c*x^2)*(b*x + a)^n/((b^3*c^3*n^3 + 6*b^3
*c^3*n^2 + 11*b^3*c^3*n + 6*b^3*c^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**7*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^7}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^7/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^7/(c*x^2)^(5/2), x)
```

3.963 $\int \frac{x^6(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=65

$$\frac{x(a+bx)^{n+2}}{b^2c^2(n+2)\sqrt{cx^2}}-\frac{ax(a+bx)^{n+1}}{b^2c^2(n+1)\sqrt{cx^2}}$$

```
[Out] -((a*x*(a + b*x)^(1 + n))/(b^2*c^2*(1 + n)*Sqrt[c*x^2])) + (x*(a
+ b*x)^(2 + n))/(b^2*c^2*(2 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0505711, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{x(a+bx)^{n+2}}{b^2c^2(n+2)\sqrt{cx^2}}-\frac{ax(a+bx)^{n+1}}{b^2c^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^6*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] -((a*x*(a + b*x)^(1 + n))/(b^2*c^2*(1 + n)*Sqrt[c*x^2])) + (x*(a
+ b*x)^(2 + n))/(b^2*c^2*(2 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 20.2408, size = 58, normalized size = 0.89

$$-\frac{a\sqrt{cx^2}\,(a+bx)^{n+1}}{b^2c^3x\,(n+1)}+\frac{\sqrt{cx^2}\,(a+bx)^{n+2}}{b^2c^3x\,(n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**6*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] -a*sqrt(c*x**2)*(a + b*x)**(n + 1)/(b**2*c**3*x*(n + 1)) + sqrt(c
*x**2)*(a + b*x)**(n + 2)/(b**2*c**3*x*(n + 2))
```

Mathematica [A] time = 0.0348481, size = 46, normalized size = 0.71

$$\frac{x(a+bx)^{n+1}(b(n+1)x-a)}{b^2c^2(n+1)(n+2)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^6*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(a + b*x)^(1 + n)*(-a + b*(1 + n)*x))/(b^2*c^2*(1 + n)*(2 + n)
*Sqrt[c*x^2])
```

Maple [A] time = 0.004, size = 46, normalized size = 0.7

$$-\frac{(bx+a)^{1+n}x^5(-bxn-bx+a)}{b^2(n^2+3n+2)}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^6*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] -(b*x+a)^(1+n)*x^5*(-b*n*x-b*x+a)/(c*x^2)^(5/2)/b^2/(n^2+3*n+2)
```

Maxima [A] time = 1.3585, size = 61, normalized size = 0.94

$$\frac{\left(b^2(n+1)x^2+abnx-a^2\right)(bx+a)^n}{(n^2+3n+2)b^2c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^6/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] (b^2*(n + 1)*x^2 + a*b*n*x - a^2)*(b*x + a)^n/((n^2 + 3*n + 2)*b^
2*c^(5/2))
```

Fricas [A] time = 0.245831, size = 97, normalized size = 1.49

$$\frac{\left(abnx+\left(b^2n+b^2\right)x^2-a^2\right)\sqrt{cx^2}(bx+a)^n}{(b^2c^3n^2+3\,b^2c^3n+2\,b^2c^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^6/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] (a*b*n*x + (b^2*n + b^2)*x^2 - a^2)*sqrt(c*x^2)*(b*x + a)^n/((b^2
*c^3*n^2 + 3*b^2*c^3*n + 2*b^2*c^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**6*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^6}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^6/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^6/(c*x^2)^(5/2), x)
```

3.964 $\int \frac{x^5(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=31

$$\frac{x(a+bx)^{n+1}}{bc^2(n+1)\sqrt{cx^2}}$$

```
[Out] (x*(a + b*x)^(1 + n))/(b*c^2*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0197292, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{x(a+bx)^{n+1}}{bc^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^5*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(a + b*x)^(1 + n))/(b*c^2*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 13.5807, size = 26, normalized size = 0.84

$$\frac{\sqrt{cx^2}\,(a+bx)^{n+1}}{bc^3x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**5*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] sqrt(c*x**2)*(a + b*x)**(n + 1)/(b*c**3*x*(n + 1))
```

Mathematica [A] time = 0.018296, size = 31, normalized size = 1.

$$\frac{x(a+bx)^{n+1}}{bc^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^5*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(a + b*x)^(1 + n))/(b*c^2*(1 + n)*Sqrt[c*x^2])
```

Maple [A] time = 0.003, size = 29, normalized size = 0.9

$$\frac{(bx+a)^{1+n}x^5}{b(1+n)}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] (b*x+a)^(1+n)/b/(1+n)*x^5/(c*x^2)^(5/2)
```

Maxima [A] time = 1.36073, size = 42, normalized size = 1.35

$$\frac{\left(b\sqrt{c}x+a\sqrt{c}\right)(bx+a)^n}{bc^3(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^5/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] (b*sqrt(c)*x + a*sqrt(c))*(b*x + a)^n/(b*c^3*(n + 1))
```

Fricas [A] time = 0.227519, size = 50, normalized size = 1.61

$$\frac{\sqrt{cx^2}(bx+a)(bx+a)^n}{(bc^3n+bc^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^5/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(b*x + a)*(b*x + a)^n/((b*c^3*n + b*c^3)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^5}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^5/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^5/(c*x^2)^(5/2), x)
```

3.965 $\int \frac{x^4(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=48

$$-\frac{x(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{ac^2(n+1)\sqrt{cx^2}}$$

```
[Out] -((x*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*
x)/a])/(a*c^2*(1 + n)*Sqrt[c*x^2]))
```

Rubi [A] time = 0.0331896, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{x(a+bx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{bx}{a}+1\right)}{ac^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^4*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] -((x*(a + b*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, 1 + (b*
x)/a])/(a*c^2*(1 + n)*Sqrt[c*x^2]))
```

Rubi in Sympy [A] time = 14.569, size = 39, normalized size = 0.81

$$-\frac{\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{ac^3x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] -sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((1, n + 1), (n + 2,), 1 +
b*x/a)/(a*c**3*x*(n + 1))
```

Mathematica [A] time = 0.0195906, size = 58, normalized size = 1.21

$$\frac{x^5\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(-n,-n;1-n;-\frac{a}{bx}\right)}{n\,(cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^4*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x^5*(a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -(a/(b*x))])/(n
*(1 + a/(b*x))^n*(c*x^2)^(5/2))
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int x^{4} (bx + a)^{n} \left(c x^{2}\right)^{-\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] int(x^4*(b*x+a)^n/(c*x^2)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^{n} x^{4}}{(cx^{2})^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^4/(c*x^2)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx + a)^{n}}{\sqrt{cx^{2}}c^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^4 (a + bx)^n}{(cx^2)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4*(b*x+a)**n/(c*x**2)**(5/2),x)

[Out] Integral(x**4*(a + b*x)**n/(c*x**2)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^n x^4}{(cx^2)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^4/(c*x^2)^(5/2),x, algorithm="giac")

[Out] integrate((b*x + a)^n*x^4/(c*x^2)^(5/2), x)
```

3.966 $\int \frac{x^3(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=48

$$\frac{bx(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2c^2(n+1)\sqrt{cx^2}}$$

```
[Out] (b*x*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*
x)/a])/(a^2*c^2*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0346366, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{bx(a+bx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{bx}{a}+1\right)}{a^2c^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^3*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (b*x*(a + b*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, 1 + (b*
x)/a])/(a^2*c^2*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 14.7169, size = 41, normalized size = 0.85

$$\frac{b\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^2c^3x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] b*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((2, n + 1), (n + 2,), 1 +
 b*x/a)/(a**2*c**3*x*(n + 1))
```

Mathematica [A] time = 0.02011, size = 62, normalized size = 1.29

$$\frac{x^4\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(1-n,-n;2-n;-\frac{a}{bx}\right)}{(n-1)\,(cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^3*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x^4*(a + b*x)^n*Hypergeometric2F1[1 - n, -n, 2 - n, -(a/(b*x))])
/((-1 + n)*(1 + a/(b*x))^n*(c*x^2)^(5/2))
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int x^{3} \left(b x +a \right)^{n} \left(c \,x^{2}\right)^{-\frac{5}{2}}d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] int(x^3*(b*x+a)^n/(c*x^2)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^3}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^3/(c*x^2)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}c^2x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c^2*x), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^3 (a+bx)^n}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(b*x+a)**n/(c*x**2)**(5/2),x)

[Out] Integral(x**3*(a + b*x)**n/(c*x**2)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^3}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^3/(c*x^2)^(5/2),x, algorithm="giac")

[Out] integrate((b*x + a)^n*x^3/(c*x^2)^(5/2), x)
```

3.967 $\int \frac{x^2(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=51

$$-\frac{b^2x(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3c^2(n+1)\sqrt{cx^2}}$$

```
[Out] -((b^2*x*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 +
 (b*x)/a])/(a^3*c^2*(1 + n)*Sqrt[c*x^2]))
```

Rubi [A] time = 0.0389531, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{b^2x(a+bx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{bx}{a}+1\right)}{a^3c^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x^2*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] -((b^2*x*(a + b*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, 1 +
 (b*x)/a])/(a^3*c^2*(1 + n)*Sqrt[c*x^2]))
```

Rubi in Sympy [A] time = 12.8144, size = 44, normalized size = 0.86

$$-\frac{b^2\sqrt{cx^2}\,(a+bx)^{n+1}\,{}_2F_1\left(\begin{matrix}3,n+1\\n+2\end{matrix}\middle|1+\frac{bx}{a}\right)}{a^3c^3x\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] -b**2*sqrt(c*x**2)*(a + b*x)**(n + 1)*hyper((3, n + 1), (n + 2,),
 1 + b*x/a)/(a**3*c**3*x*(n + 1))
```

Mathematica [A] time = 0.0281441, size = 62, normalized size = 1.22

$$\frac{x^3\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\,{}_2F_1\left(2-n,-n;3-n;-\frac{a}{bx}\right)}{(n-2)\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x^2*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x^3*(a + b*x)^n*Hypergeometric2F1[2 - n, -n, 3 - n, -(a/(b*x))])
/((-2 + n)*(1 + a/(b*x))^n*(c*x^2)^(5/2))
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int x^2 (bx+a)^n \left(cx^2\right)^{-\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^2*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] int(x^2*(b*x+a)^n/(c*x^2)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^2}{(cx^2)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x^2/(c*x^2)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{\sqrt{cx^2}c^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c^2*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x^2 (a+bx)^n}{(cx^2)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Integral(x**2*(a + b*x)**n/(c*x**2)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x^2}{(cx^2)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x^2/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x^2/(c*x^2)^(5/2), x)
```

3.968 $\int \frac{x(a+bx)^n}{(cx^2)^{5/2}} dx$

Optimal. Leaf size=50

$$\frac{b^3x(a+bx)^{n+1} {}_2F_1\left(4,n+1;n+2;\frac{bx}{a}+1\right)}{a^4c^2(n+1)\sqrt{cx^2}}$$

```
[Out] (b^3*x*(a + b*x)^(1 + n)*Hypergeometric2F1[4, 1 + n, 2 + n, 1 + (
b*x)/a])/(a^4*c^2*(1 + n)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0376066, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{b^3x(a+bx)^{n+1} {}_2F_1\left(4,n+1;n+2;\frac{bx}{a}+1\right)}{a^4c^2(n+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(x*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (b^3*x*(a + b*x)^(1 + n)*Hypergeometric2F1[4, 1 + n, 2 + n, 1 + (
b*x)/a])/(a^4*c^2*(1 + n)*Sqrt[c*x^2])
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)^n}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Integral(x*(a + b*x)**n/(c*x**2)**(5/2), x)
```

Mathematica [A] time = 0.0185133, size = 62, normalized size = 1.24

$$\frac{x^2\left(\frac{a}{bx}+1\right)^{-n}(a+bx)^n\, {}_2F_1\left(3-n,-n;4-n;-\frac{a}{bx}\right)}{(n-3)\left(cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(x*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x^2*(a + b*x)^n*Hypergeometric2F1[3 - n, -n, 4 - n, -(a/(b*x))])
/((-3 + n)*(1 + a/(b*x))^n*(c*x^2)^(5/2))
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int x\,(bx+a)^{n}\left(cx^{2}\right)^{-\frac{5}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] int(x*(b*x+a)^n/(c*x^2)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n}x}{(cx^{2})^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*x/(c*x^2)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{n}}{\sqrt{cx^{2}}c^{2}x^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(sqrt(c*x^2)*c^2*x^3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{x\,(a+bx)^n}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Integral(x*(a + b*x)**n/(c*x**2)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n x}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*x/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*x/(c*x^2)^(5/2), x)
```

3.969 $\int (dx)^m \left(cx^2\right)^{5/2} (a+bx)\,dx$

Optimal. Leaf size=65

$$\frac{ac^2\sqrt{cx^2}(dx)^{m+6}}{d^6(m+6)x}+\frac{bc^2\sqrt{cx^2}(dx)^{m+7}}{d^7(m+7)x}$$

```
[Out] (a*c^2*(d*x)^(6 + m)*Sqrt[c*x^2])/(d^6*(6 + m)*x) + (b*c^2*(d*x)^
(7 + m)*Sqrt[c*x^2])/(d^7*(7 + m)*x)
```

Rubi [A] time = 0.0711002, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$\frac{ac^2\sqrt{cx^2}(dx)^{m+6}}{d^6(m+6)x}+\frac{bc^2\sqrt{cx^2}(dx)^{m+7}}{d^7(m+7)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] (a*c^2*(d*x)^(6 + m)*Sqrt[c*x^2])/(d^6*(6 + m)*x) + (b*c^2*(d*x)^
(7 + m)*Sqrt[c*x^2])/(d^7*(7 + m)*x)
```

Rubi in Sympy [A] time = 17.9647, size = 56, normalized size = 0.86

$$\frac{ac^2\sqrt{cx^2}\,(dx)^{m+6}}{d^6x\,(m+6)}+\frac{bc^2\sqrt{cx^2}\,(dx)^{m+7}}{d^7x\,(m+7)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] a*c**2*sqrt(c*x**2)*(d*x)**(m + 6)/(d**6*x*(m + 6)) + b*c**2*sqrt
(c*x**2)*(d*x)**(m + 7)/(d**7*x*(m + 7))
```

Mathematica [A] time = 0.0361043, size = 39, normalized size = 0.6

$$\frac{\left(cx^2\right)^{5/2}(dx)^m\left(\frac{ax^6}{m+6}+\frac{bx^7}{m+7}\right)}{x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^(5/2)*(a + b*x),x]
```

```
[Out] ((d*x)^m*(c*x^2)^(5/2)*((a*x^6)/(6 + m) + (b*x^7)/(7 + m)))/x^5
```

Maple [A] time = 0.004, size = 40, normalized size = 0.6

$$\frac{(bmx + am + 6\,bx + 7\,a)\,x\,(dx)^{m}}{(7+m)\,(6+m)}\left(cx^{2}\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(5/2)*(b*x+a),x)
```

```
[Out] x*(b*m*x+a*m+6*b*x+7*a)*(d*x)^m*(c*x^2)^(5/2)/(7+m)/(6+m)
```

Maxima [A] time = 1.3691, size = 53, normalized size = 0.82

$$\frac{bc^{\frac{5}{2}}d^{m}x^{7}x^{m}}{m+7} + \frac{ac^{\frac{5}{2}}d^{m}x^{6}x^{m}}{m+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*(d*x)^m,x, algorithm="maxima")
```

```
[Out] b*c^(5/2)*d^m*x^7*x^m/(m + 7) + a*c^(5/2)*d^m*x^6*x^m/(m + 6)
```

Fricas [A] time = 0.231621, size = 78, normalized size = 1.2

$$\frac{\left(\left(bc^{2}m + 6\,bc^{2}\right)x^{6} + \left(ac^{2}m + 7\,ac^{2}\right)x^{5}\right)\sqrt{cx^{2}}\,(dx)^{m}}{m^{2} + 13\,m + 42}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*(d*x)^m,x, algorithm="fricas")
```

```
[Out] ((b*c^2*m + 6*b*c^2)*x^6 + (a*c^2*m + 7*a*c^2)*x^5)*sqrt(c*x^2)*(
d*x)^m/(m^2 + 13*m + 42)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(5/2)*(b*x+a),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)*(d*x)^m,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.970 $\int (dx)^m \left(cx^2\right)^{3/2} (a+bx)\, dx$

Optimal. Leaf size=61

$$\frac{ac\sqrt{cx^2}(dx)^{m+4}}{d^4(m+4)x}+\frac{bc\sqrt{cx^2}(dx)^{m+5}}{d^5(m+5)x}$$

```
[Out] (a*c*(d*x)^(4 + m)*Sqrt[c*x^2])/(d^4*(4 + m)*x) + (b*c*(d*x)^(5 +
 m)*Sqrt[c*x^2])/(d^5*(5 + m)*x)
```

Rubi [A] time = 0.0674009, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$\frac{ac\sqrt{cx^2}(dx)^{m+4}}{d^4(m+4)x}+\frac{bc\sqrt{cx^2}(dx)^{m+5}}{d^5(m+5)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^(3/2)*(a + b*x),x]
```

```
[Out] (a*c*(d*x)^(4 + m)*Sqrt[c*x^2])/(d^4*(4 + m)*x) + (b*c*(d*x)^(5 +
 m)*Sqrt[c*x^2])/(d^5*(5 + m)*x)
```

Rubi in Sympy [A] time = 16.5407, size = 53, normalized size = 0.87

$$\frac{ac\sqrt{cx^2}\,(dx)^{m+4}}{d^4x\,(m+4)}+\frac{bc\sqrt{cx^2}\,(dx)^{m+5}}{d^5x\,(m+5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(3/2)*(b*x+a),x)
```

```
[Out] a*c*sqrt(c*x**2)*(d*x)**(m + 4)/(d**4*x*(m + 4)) + b*c*sqrt(c*x**
2)*(d*x)**(m + 5)/(d**5*x*(m + 5))
```

Mathematica [A] time = 0.0301478, size = 39, normalized size = 0.64

$$\frac{\left(cx^2\right)^{3/2}(dx)^m\left(\frac{ax^4}{m+4}+\frac{bx^5}{m+5}\right)}{x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^(3/2)*(a + b*x),x]

[Out] ((d*x)^m*(c*x^2)^(3/2)*((a*x^4)/(4 + m) + (b*x^5)/(5 + m)))/x^3
```

Maple [A] time = 0.003, size = 40, normalized size = 0.7

$$\frac{(bmx + am + 4\,bx + 5\,a)\,x\,(dx)^m}{(5+m)\,(4+m)}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(3/2)*(b*x+a),x)

[Out] x*(b*m*x+a*m+4*b*x+5*a)*(d*x)^m*(c*x^2)^(3/2)/(5+m)/(4+m)
```

Maxima [A] time = 1.37678, size = 53, normalized size = 0.87

$$\frac{bc^{\frac{3}{2}}d^m x^5 x^m}{m+5} + \frac{ac^{\frac{3}{2}}d^m x^4 x^m}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*(d*x)^m,x, algorithm="maxima")

[Out] b*c^(3/2)*d^m*x^5*x^m/(m + 5) + a*c^(3/2)*d^m*x^4*x^m/(m + 4)
```

Fricas [A] time = 0.222854, size = 68, normalized size = 1.11

$$\frac{\left((bcm + 4\,bc)x^4 + (acm + 5\,ac)x^3\right)\sqrt{cx^2}\,(dx)^m}{m^2 + 9\,m + 20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*(d*x)^m,x, algorithm="fricas")

[Out] ((b*c*m + 4*b*c)*x^4 + (a*c*m + 5*a*c)*x^3)*sqrt(c*x^2)*(d*x)^m/(
m^2 + 9*m + 20)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(3/2)*(b*x+a),x)

[Out] Exception raised: TypeError
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)*(d*x)^m,x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.971 $\int (dx)^m \sqrt{cx^2}(a+bx)\,dx$

Optimal. Leaf size=59

$$\frac{a\sqrt{cx^2}(dx)^{m+2}}{d^2(m+2)x}+\frac{b\sqrt{cx^2}(dx)^{m+3}}{d^3(m+3)x}$$

```
[Out] (a*(d*x)^(2 + m)*Sqrt[c*x^2])/(d^2*(2 + m)*x) + (b*(d*x)^(3 + m)*
Sqrt[c*x^2])/(d^3*(3 + m)*x)
```

Rubi [A] time = 0.0606329, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{a\sqrt{cx^2}(dx)^{m+2}}{d^2(m+2)x}+\frac{b\sqrt{cx^2}(dx)^{m+3}}{d^3(m+3)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] (a*(d*x)^(2 + m)*Sqrt[c*x^2])/(d^2*(2 + m)*x) + (b*(d*x)^(3 + m)*
Sqrt[c*x^2])/(d^3*(3 + m)*x)
```

Rubi in Sympy [A] time = 15.6165, size = 49, normalized size = 0.83

$$\frac{a\sqrt{cx^2}\,(dx)^{m+2}}{d^2x\,(m+2)}+\frac{b\sqrt{cx^2}\,(dx)^{m+3}}{d^3x\,(m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(1/2)*(b*x+a),x)
```

```
[Out] a*sqrt(c*x**2)*(d*x)**(m + 2)/(d**2*x*(m + 2)) + b*sqrt(c*x**2)*(
d*x)**(m + 3)/(d**3*x*(m + 3))
```

Mathematica [A] time = 0.0256086, size = 39, normalized size = 0.66

$$\frac{\sqrt{cx^2}(dx)^m\left(\frac{ax^2}{m+2}+\frac{bx^3}{m+3}\right)}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*Sqrt[c*x^2]*(a + b*x),x]
```

```
[Out] ((d*x)^m*Sqrt[c*x^2]*((a*x^2)/(2 + m) + (b*x^3)/(3 + m)))/x
```

Maple [A] time = 0.004, size = 40, normalized size = 0.7

$$\frac{(bmx + am + 2\,bx + 3\,a)\,x\,(dx)^m}{(3+m)\,(2+m)}\sqrt{cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(1/2)*(b*x+a),x)
```

```
[Out] x*(b*m*x+a*m+2*b*x+3*a)*(d*x)^m*(c*x^2)^(1/2)/(3+m)/(2+m)
```

Maxima [A] time = 1.37139, size = 53, normalized size = 0.9

$$\frac{b\sqrt{c}d^m x^3 x^m}{m+3} + \frac{a\sqrt{c}d^m x^2 x^m}{m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)*(d*x)^m,x, algorithm="maxima")
```

```
[Out] b*sqrt(c)*d^m*x^3*x^m/(m + 3) + a*sqrt(c)*d^m*x^2*x^m/(m + 2)
```

Fricas [A] time = 0.232352, size = 59, normalized size = 1.

$$\frac{\left((bm+2\,b)x^2+(am+3\,a)x\right)\sqrt{cx^2}\,(dx)^m}{m^2+5\,m+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)*(d*x)^m,x, algorithm="fricas")
```

```
[Out] ((b*m + 2*b)*x^2 + (a*m + 3*a)*x)*sqrt(c*x^2)*(d*x)^m/(m^2 + 5*m
+ 6)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(1/2)*(b*x+a),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)*(d*x)^m,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.972 $\int \frac{(dx)^m(a+bx)}{\sqrt{cx^2}} dx$

Optimal. Leaf size=48

$$\frac{ax(dx)^m}{m\sqrt{cx^2}} + \frac{bx(dx)^{m+1}}{d(m+1)\sqrt{cx^2}}$$

```
[Out] (a*x*(d*x)^m)/(m*Sqrt[c*x^2]) + (b*x*(d*x)^(1 + m))/(d*(1 + m)*Sq
rt[c*x^2])
```

Rubi [A] time = 0.0492435, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$\frac{ax(dx)^m}{m\sqrt{cx^2}} + \frac{bx(dx)^{m+1}}{d(m+1)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x))/Sqrt[c*x^2],x]
```

```
[Out] (a*x*(d*x)^m)/(m*Sqrt[c*x^2]) + (b*x*(d*x)^(1 + m))/(d*(1 + m)*Sq
rt[c*x^2])
```

Rubi in Sympy [A] time = 15.3172, size = 44, normalized size = 0.92

$$\frac{a\sqrt{cx^2}\,(dx)^m}{cmx} + \frac{b\sqrt{cx^2}\,(dx)^{m+1}}{cdx\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] a*sqrt(c*x**2)*(d*x)**m/(c*m*x) + b*sqrt(c*x**2)*(d*x)**(m + 1)/(
c*d*x*(m + 1))
```

Mathematica [A] time = 0.0218366, size = 30, normalized size = 0.62

$$\frac{x(dx)^m\left(\frac{a}{m}+\frac{bx}{m+1}\right)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x))/Sqrt[c*x^2],x]
```

```
[Out] (x*(d*x)^m*(a/m + (b*x)/(1 + m)))/Sqrt[c*x^2]
```

Maple [A] time = 0.003, size = 32, normalized size = 0.7

$$\frac{(bmx + am + a)\,x\,(dx)^m}{(1+m)\,m}\frac{1}{\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)/(c*x^2)^(1/2),x)
```

```
[Out] x*(b*m*x+a*m+a)*(d*x)^m/(1+m)/m/(c*x^2)^(1/2)
```

Maxima [A] time = 1.37708, size = 43, normalized size = 0.9

$$\frac{bd^m x x^m}{\sqrt{c}(m+1)} + \frac{ad^m x^m}{\sqrt{c}m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] b*d^m*x*x^m/(sqrt(c)*(m + 1)) + a*d^m*x^m/(sqrt(c)*m)
```

Fricas [A] time = 0.227257, size = 49, normalized size = 1.02

$$\frac{(bmx + am + a)\sqrt{cx^2}\,(dx)^m}{(cm^2 + cm)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] (b*m*x + a*m + a)*sqrt(c*x^2)*(d*x)^m/((c*m^2 + c*m)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)/(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)(dx)^m}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(d*x)^m/sqrt(c*x^2), x)
```

3.973 $\int \frac{(dx)^m(a+bx)}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=65

$$-\frac{ad^2x(dx)^{m-2}}{c(2-m)\sqrt{cx^2}}-\frac{bdx(dx)^{m-1}}{c(1-m)\sqrt{cx^2}}$$

```
[Out] -((a*d^2*x*(d*x)^(-2 + m))/(c*(2 - m)*Sqrt[c*x^2])) - (b*d*x*(d*x
)^(-1 + m))/(c*(1 - m)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0792115, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$-\frac{ad^2x(dx)^{m-2}}{c(2-m)\sqrt{cx^2}}-\frac{bdx(dx)^{m-1}}{c(1-m)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x))/(c*x^2)^(3/2),x]
```

```
[Out] -((a*d^2*x*(d*x)^(-2 + m))/(c*(2 - m)*Sqrt[c*x^2])) - (b*d*x*(d*x
)^(-1 + m))/(c*(1 - m)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 17.742, size = 56, normalized size = 0.86

$$-\frac{ad^2\sqrt{cx^2}\,(dx)^{m-2}}{c^2x\,(-m+2)}-\frac{bd\sqrt{cx^2}\,(dx)^{m-1}}{c^2x\,(-m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] -a*d**2*sqrt(c*x**2)*(d*x)**(m - 2)/(c**2*x*(-m + 2)) - b*d*sqrt(
c*x**2)*(d*x)**(m - 1)/(c**2*x*(-m + 1))
```

Mathematica [A] time = 0.03946, size = 32, normalized size = 0.49

$$\frac{x(dx)^m\left(\frac{a}{m-2}+\frac{bx}{m-1}\right)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x))/(c*x^2)^(3/2),x]
```

```
[Out] (x*(d*x)^m*(a/(-2 + m) + (b*x)/(-1 + m)))/(c*x^2)^(3/2)
```

Maple [A] time = 0.004, size = 40, normalized size = 0.6

$$\frac{(bmx + am - 2bx - a)x(dx)^m}{(-1+m)(-2+m)}\left(cx^2\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)/(c*x^2)^(3/2),x)
```

```
[Out] x*(b*m*x+a*m-2*b*x-a)*(d*x)^m/(-1+m)/(-2+m)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.42635, size = 53, normalized size = 0.82

$$\frac{bd^m x^m}{c^{\frac{3}{2}}(m-1)x} + \frac{ad^m x^m}{c^{\frac{3}{2}}(m-2)x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] b*d^m*x^m/(c^(3/2)*(m - 1)*x) + a*d^m*x^m/(c^(3/2)*(m - 2)*x^2)
```

Fricas [A] time = 0.23291, size = 72, normalized size = 1.11

$$\frac{\sqrt{cx^2}(am + (bm - 2b)x - a)(dx)^m}{(c^2m^2 - 3c^2m + 2c^2)x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(a*m + (b*m - 2*b)*x - a)*(d*x)^m/((c^2*m^2 - 3*c^2*m
 + 2*c^2)*x^3)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)/(c*x**2)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)\,(dx)^m}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(d*x)^m/(c*x^2)^(3/2), x)
```

3.974 $\int \frac{(dx)^m(a+bx)}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{ad^4x(dx)^{m-4}}{c^2(4-m)\sqrt{cx^2}}-\frac{bd^3x(dx)^{m-3}}{c^2(3-m)\sqrt{cx^2}}$$

```
[Out] -((a*d^4*x*(d*x)^(-4 + m))/(c^2*(4 - m)*Sqrt[c*x^2])) - (b*d^3*x*
(d*x)^(-3 + m))/(c^2*(3 - m)*Sqrt[c*x^2])
```

Rubi [A] time = 0.0800258, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$-\frac{ad^4x(dx)^{m-4}}{c^2(4-m)\sqrt{cx^2}}-\frac{bd^3x(dx)^{m-3}}{c^2(3-m)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x))/(c*x^2)^(5/2),x]
```

```
[Out] -((a*d^4*x*(d*x)^(-4 + m))/(c^2*(4 - m)*Sqrt[c*x^2])) - (b*d^3*x*
(d*x)^(-3 + m))/(c^2*(3 - m)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 18.3277, size = 58, normalized size = 0.87

$$-\frac{ad^4\sqrt{cx^2}\,(dx)^{m-4}}{c^3x\,(-m+4)}-\frac{bd^3\sqrt{cx^2}\,(dx)^{m-3}}{c^3x\,(-m+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] -a*d**4*sqrt(c*x**2)*(d*x)**(m - 4)/(c**3*x*(-m + 4)) - b*d**3*sq
rt(c*x**2)*(d*x)**(m - 3)/(c**3*x*(-m + 3))
```

Mathematica [A] time = 0.0378204, size = 32, normalized size = 0.48

$$\frac{x(dx)^m\left(\frac{a}{m-4}+\frac{bx}{m-3}\right)}{(cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x))/(c*x^2)^(5/2),x]
```

```
[Out] (x*(d*x)^m*(a/(-4 + m) + (b*x)/(-3 + m)))/(c*x^2)^(5/2)
```

Maple [A]   time = 0.005, size = 40, normalized size = 0.6

$$\frac{(bmx + am - 4\,bx - 3\,a)\,x\,(dx)^{m}}{(-3 + m)\,(-4 + m)}\left(cx^{2}\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)/(c*x^2)^(5/2),x)
```

```
[Out] x*(b*m*x+a*m-4*b*x-3*a)*(d*x)^m/(-3+m)/(-4+m)/(c*x^2)^(5/2)
```

Maxima [A]   time = 1.34985, size = 53, normalized size = 0.79

$$\frac{bd^{m}x^{m}}{c^{\frac{5}{2}}(m-3)x^{3}} + \frac{ad^{m}x^{m}}{c^{\frac{5}{2}}(m-4)x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] b*d^m*x^m/(c^(5/2)*(m - 3)*x^3) + a*d^m*x^m/(c^(5/2)*(m - 4)*x^4)
```

Fricas [A]   time = 0.240987, size = 72, normalized size = 1.07

$$\frac{\sqrt{cx^{2}}(am + (bm - 4\,b)x - 3\,a)\,(dx)^{m}}{(c^{3}m^{2} - 7\,c^{3}m + 12\,c^{3})x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] sqrt(c*x^2)*(a*m + (b*m - 4*b)*x - 3*a)*(d*x)^m/((c^3*m^2 - 7*c^3
*m + 12*c^3)*x^5)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)/(c*x**2)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)(dx)^m}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x)^m/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(d*x)^m/(c*x^2)^(5/2), x)
```

3.975 $\int (dx)^m \left(cx^2\right)^{5/2} (a+bx)^2 \, dx$

Optimal. Leaf size=103

$$\frac{a^2c^2\sqrt{cx^2}(dx)^{m+6}}{d^6(m+6)x}+\frac{2abc^2\sqrt{cx^2}(dx)^{m+7}}{d^7(m+7)x}+\frac{b^2c^2\sqrt{cx^2}(dx)^{m+8}}{d^8(m+8)x}$$

```
[Out] (a^2*c^2*(d*x)^(6 + m)*Sqrt[c*x^2])/(d^6*(6 + m)*x) + (2*a*b*c^2*
(d*x)^(7 + m)*Sqrt[c*x^2])/(d^7*(7 + m)*x) + (b^2*c^2*(d*x)^(8 +
m)*Sqrt[c*x^2])/(d^8*(8 + m)*x)
```

Rubi [A] time = 0.120371, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{a^2c^2\sqrt{cx^2}(dx)^{m+6}}{d^6(m+6)x}+\frac{2abc^2\sqrt{cx^2}(dx)^{m+7}}{d^7(m+7)x}+\frac{b^2c^2\sqrt{cx^2}(dx)^{m+8}}{d^8(m+8)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^(5/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c^2*(d*x)^(6 + m)*Sqrt[c*x^2])/(d^6*(6 + m)*x) + (2*a*b*c^2*
(d*x)^(7 + m)*Sqrt[c*x^2])/(d^7*(7 + m)*x) + (b^2*c^2*(d*x)^(8 +
m)*Sqrt[c*x^2])/(d^8*(8 + m)*x)
```

Rubi in Sympy [A] time = 31.6366, size = 92, normalized size = 0.89

$$\frac{a^2c^2\sqrt{cx^2}\,(dx)^{m+6}}{d^6x\,(m+6)}+\frac{2abc^2\sqrt{cx^2}\,(dx)^{m+7}}{d^7x\,(m+7)}+\frac{b^2c^2\sqrt{cx^2}\,(dx)^{m+8}}{d^8x\,(m+8)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(5/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c**2*sqrt(c*x**2)*(d*x)**(m + 6)/(d**6*x*(m + 6)) + 2*a*b*c*
*2*sqrt(c*x**2)*(d*x)**(m + 7)/(d**7*x*(m + 7)) + b**2*c**2*sqrt(
c*x**2)*(d*x)**(m + 8)/(d**8*x*(m + 8))
```

Mathematica [A] time = 0.0695777, size = 48, normalized size = 0.47

$$x\left(cx^2\right)^{5/2}(dx)^m\left(\frac{a^2}{m+6}+\frac{2abx}{m+7}+\frac{b^2x^2}{m+8}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^(5/2)*(a + b*x)^2,x]
```

```
[Out] x*(d*x)^m*(c*x^2)^(5/2)*(a^2/(6 + m) + (2*a*b*x)/(7 + m) + (b^2*x
^2)/(8 + m))
```

Maple [A] time = 0.007, size = 95, normalized size = 0.9

$$\frac{\left(b^2m^2x^2+2\,abm^2x+13\,b^2mx^2+a^2m^2+28\,abmx+42\,b^2x^2+15\,a^2m+96\,abx+56\,a^2\right)x\,(dx)^m}{(8+m)\,(7+m)\,(6+m)}\left(cx^2\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(5/2)*(b*x+a)^2,x)
```

```
[Out] x*(b^2*m^2*x^2+2*a*b*m^2*x+13*b^2*m*x^2+a^2*m^2+28*a*b*m*x+42*b^2
*x^2+15*a^2*m+96*a*b*x+56*a^2)*(d*x)^m*(c*x^2)^(5/2)/(8+m)/(7+m)/
(6+m)
```

Maxima [A] time = 1.36166, size = 86, normalized size = 0.83

$$\frac{b^2c^{\frac{5}{2}}d^mx^8x^m}{m+8}+\frac{2\,abc^{\frac{5}{2}}d^mx^7x^m}{m+7}+\frac{a^2c^{\frac{5}{2}}d^mx^6x^m}{m+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2*(d*x)^m,x, algorithm="maxima")
```

```
[Out] b^2*c^(5/2)*d^m*x^8*x^m/(m + 8) + 2*a*b*c^(5/2)*d^m*x^7*x^m/(m +
7) + a^2*c^(5/2)*d^m*x^6*x^m/(m + 6)
```

Fricas [A] time = 0.230234, size = 166, normalized size = 1.61

$$\frac{\left(\left(b^2c^2m^2+13\,b^2c^2m+42\,b^2c^2\right)x^7+2\left(abc^2m^2+14\,abc^2m+48\,abc^2\right)x^6+\left(a^2c^2m^2+15\,a^2c^2m+56\,a^2c^2\right)x^5\right)\sqrt{cx^2}\,(dx)^m}{m^3+21\,m^2+146\,m+336}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2*(d*x)^m,x, algorithm="fricas")
```

```
[Out] ((b^2*c^2*m^2 + 13*b^2*c^2*m + 42*b^2*c^2)*x^7 + 2*(a*b*c^2*m^2 +
 14*a*b*c^2*m + 48*a*b*c^2)*x^6 + (a^2*c^2*m^2 + 15*a^2*c^2*m + 5
6*a^2*c^2)*x^5)*sqrt(c*x^2)*(d*x)^m/(m^3 + 21*m^2 + 146*m + 336)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(5/2)*(b*x+a)**2,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^2*(d*x)^m,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.976 $\int (dx)^m \left(cx^2\right)^{3/2} (a+bx)^2 \, dx$

Optimal. Leaf size=97

$$\frac{a^2c\sqrt{cx^2}(dx)^{m+4}}{d^4(m+4)x}+\frac{2abc\sqrt{cx^2}(dx)^{m+5}}{d^5(m+5)x}+\frac{b^2c\sqrt{cx^2}(dx)^{m+6}}{d^6(m+6)x}$$

```
[Out] (a^2*c*(d*x)^(4 + m)*Sqrt[c*x^2])/(d^4*(4 + m)*x) + (2*a*b*c*(d*x
)^(5 + m)*Sqrt[c*x^2])/(d^5*(5 + m)*x) + (b^2*c*(d*x)^(6 + m)*Sqr
t[c*x^2])/(d^6*(6 + m)*x)
```

Rubi [A] time = 0.107838, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{a^2c\sqrt{cx^2}(dx)^{m+4}}{d^4(m+4)x}+\frac{2abc\sqrt{cx^2}(dx)^{m+5}}{d^5(m+5)x}+\frac{b^2c\sqrt{cx^2}(dx)^{m+6}}{d^6(m+6)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] (a^2*c*(d*x)^(4 + m)*Sqrt[c*x^2])/(d^4*(4 + m)*x) + (2*a*b*c*(d*x
)^(5 + m)*Sqrt[c*x^2])/(d^5*(5 + m)*x) + (b^2*c*(d*x)^(6 + m)*Sqr
t[c*x^2])/(d^6*(6 + m)*x)
```

Rubi in Sympy [A] time = 29.9664, size = 87, normalized size = 0.9

$$\frac{a^2c\sqrt{cx^2}\,(dx)^{m+4}}{d^4x\,(m+4)}+\frac{2abc\sqrt{cx^2}\,(dx)^{m+5}}{d^5x\,(m+5)}+\frac{b^2c\sqrt{cx^2}\,(dx)^{m+6}}{d^6x\,(m+6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] a**2*c*sqrt(c*x**2)*(d*x)**(m + 4)/(d**4*x*(m + 4)) + 2*a*b*c*sqr
t(c*x**2)*(d*x)**(m + 5)/(d**5*x*(m + 5)) + b**2*c*sqrt(c*x**2)*(
d*x)**(m + 6)/(d**6*x*(m + 6))
```

Mathematica [A] time = 0.0656119, size = 48, normalized size = 0.49

$$x\left(cx^2\right)^{3/2}(dx)^m\left(\frac{a^2}{m+4}+\frac{2abx}{m+5}+\frac{b^2x^2}{m+6}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^(3/2)*(a + b*x)^2,x]
```

```
[Out] x*(d*x)^m*(c*x^2)^(3/2)*(a^2/(4 + m) + (2*a*b*x)/(5 + m) + (b^2*x
^2)/(6 + m))
```

Maple [A] time = 0.007, size = 95, normalized size = 1.

$$\frac{\left(b^2m^2x^2+2\,abm^2x+9\,b^2mx^2+a^2m^2+20\,abmx+20\,b^2x^2+11\,a^2m+48\,abx+30\,a^2\right)\,x\,(dx)^m}{(6+m)\,(5+m)\,(4+m)}\left(cx^2\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(3/2)*(b*x+a)^2,x)
```

```
[Out] x*(b^2*m^2*x^2+2*a*b*m^2*x+9*b^2*m*x^2+a^2*m^2+20*a*b*m*x+20*b^2*
x^2+11*a^2*m+48*a*b*x+30*a^2)*(d*x)^m*(c*x^2)^(3/2)/(6+m)/(5+m)/(
4+m)
```

Maxima [A] time = 1.35941, size = 86, normalized size = 0.89

$$\frac{b^2c^{\frac{3}{2}}d^mx^6x^m}{m+6}+\frac{2\,abc^{\frac{3}{2}}d^mx^5x^m}{m+5}+\frac{a^2c^{\frac{3}{2}}d^mx^4x^m}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*(d*x)^m,x, algorithm="maxima")
```

```
[Out] b^2*c^(3/2)*d^m*x^6*x^m/(m + 6) + 2*a*b*c^(3/2)*d^m*x^5*x^m/(m +
5) + a^2*c^(3/2)*d^m*x^4*x^m/(m + 4)
```

Fricas [A] time = 0.224471, size = 142, normalized size = 1.46

$$\frac{\left(\left(b^2cm^2+9\,b^2cm+20\,b^2c\right)x^5+2\,\left(abcm^2+10\,abcm+24\,abc\right)x^4+\left(a^2cm^2+11\,a^2cm+30\,a^2c\right)x^3\right)\sqrt{cx^2}\,(dx)^m}{m^3+15\,m^2+74\,m+120}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*(d*x)^m,x, algorithm="fricas")
```

```
[Out] ((b^2*c*m^2 + 9*b^2*c*m + 20*b^2*c)*x^5 + 2*(a*b*c*m^2 + 10*a*b*c
*m + 24*a*b*c)*x^4 + (a^2*c*m^2 + 11*a^2*c*m + 30*a^2*c)*x^3)*sqr
t(c*x^2)*(d*x)^m/(m^3 + 15*m^2 + 74*m + 120)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(3/2)*(b*x+a)**2,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^2*(d*x)^m,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.977 $\int (dx)^m \sqrt{cx^2}(a+bx)^2\,dx$

Optimal. Leaf size=94

$$\frac{a^2\sqrt{cx^2}(dx)^{m+2}}{d^2(m+2)x}+\frac{2ab\sqrt{cx^2}(dx)^{m+3}}{d^3(m+3)x}+\frac{b^2\sqrt{cx^2}(dx)^{m+4}}{d^4(m+4)x}$$

```
[Out] (a^2*(d*x)^(2 + m)*Sqrt[c*x^2])/(d^2*(2 + m)*x) + (2*a*b*(d*x)^(3
 + m)*Sqrt[c*x^2])/(d^3*(3 + m)*x) + (b^2*(d*x)^(4 + m)*Sqrt[c*x^
2])/(d^4*(4 + m)*x)
```

Rubi [A] time = 0.0980569, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$\frac{a^2\sqrt{cx^2}(dx)^{m+2}}{d^2(m+2)x}+\frac{2ab\sqrt{cx^2}(dx)^{m+3}}{d^3(m+3)x}+\frac{b^2\sqrt{cx^2}(dx)^{m+4}}{d^4(m+4)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] (a^2*(d*x)^(2 + m)*Sqrt[c*x^2])/(d^2*(2 + m)*x) + (2*a*b*(d*x)^(3
 + m)*Sqrt[c*x^2])/(d^3*(3 + m)*x) + (b^2*(d*x)^(4 + m)*Sqrt[c*x^
2])/(d^4*(4 + m)*x)
```

Rubi in Sympy [A] time = 29.185, size = 82, normalized size = 0.87

$$\frac{a^2\sqrt{cx^2}\,(dx)^{m+2}}{d^2x\,(m+2)}+\frac{2ab\sqrt{cx^2}\,(dx)^{m+3}}{d^3x\,(m+3)}+\frac{b^2\sqrt{cx^2}\,(dx)^{m+4}}{d^4x\,(m+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(1/2)*(b*x+a)**2,x)
```

```
[Out] a**2*sqrt(c*x**2)*(d*x)**(m + 2)/(d**2*x*(m + 2)) + 2*a*b*sqrt(c*
x**2)*(d*x)**(m + 3)/(d**3*x*(m + 3)) + b**2*sqrt(c*x**2)*(d*x)**
(m + 4)/(d**4*x*(m + 4))
```

Mathematica [A] time = 0.0557398, size = 48, normalized size = 0.51

$$x\sqrt{cx^2}(dx)^m\left(\frac{a^2}{m+2}+\frac{2abx}{m+3}+\frac{b^2x^2}{m+4}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*Sqrt[c*x^2]*(a + b*x)^2,x]
```

```
[Out] x*(d*x)^m*Sqrt[c*x^2]*(a^2/(2 + m) + (2*a*b*x)/(3 + m) + (b^2*x^2
)/(4 + m))
```

Maple [A] time = 0.007, size = 95, normalized size = 1.

$$\frac{\left(b^{2}m^{2}x^{2}+2\,ab\,m^{2}x+5\,b^{2}m\,x^{2}+a^{2}m^{2}+12\,abmx+6\,b^{2}x^{2}+7\,a^{2}m+16\,abx+12\,a^{2}\right)x\,(dx)^{m}}{(4+m)\,(3+m)\,(2+m)}\sqrt{c x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(1/2)*(b*x+a)^2,x)
```

```
[Out] x*(b^2*m^2*x^2+2*a*b*m^2*x+5*b^2*m*x^2+a^2*m^2+12*a*b*m*x+6*b^2*x
^2+7*a^2*m+16*a*b*x+12*a^2)*(d*x)^m*(c*x^2)^(1/2)/(4+m)/(3+m)/(2+
m)
```

Maxima [A] time = 1.37314, size = 86, normalized size = 0.91

$$\frac{b^{2}\sqrt{c}d^{m}x^{4}x^{m}}{m+4}+\frac{2\,ab\sqrt{c}d^{m}x^{3}x^{m}}{m+3}+\frac{a^{2}\sqrt{c}d^{m}x^{2}x^{m}}{m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*(d*x)^m,x, algorithm="maxima")
```

```
[Out] b^2*sqrt(c)*d^m*x^4*x^m/(m + 4) + 2*a*b*sqrt(c)*d^m*x^3*x^m/(m +
3) + a^2*sqrt(c)*d^m*x^2*x^m/(m + 2)
```

Fricas [A] time = 0.218961, size = 127, normalized size = 1.35

$$\frac{\left(\left(b^{2}m^{2}+5\,b^{2}m+6\,b^{2}\right)x^{3}+2\left(abm^{2}+6\,abm+8\,ab\right)x^{2}+\left(a^{2}m^{2}+7\,a^{2}m+12\,a^{2}\right)x\right)\sqrt{c x^{2}}\,(dx)^{m}}{m^{3}+9\,m^{2}+26\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*(d*x)^m,x, algorithm="fricas")
```

```
[Out] ((b^2*m^2 + 5*b^2*m + 6*b^2)*x^3 + 2*(a*b*m^2 + 6*a*b*m + 8*a*b)*
x^2 + (a^2*m^2 + 7*a^2*m + 12*a^2)*x)*sqrt(c*x^2)*(d*x)^m/(m^3 +
9*m^2 + 26*m + 24)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(1/2)*(b*x+a)**2,x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^2*(d*x)^m,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.978 $\int \frac{(dx)^m(a+bx)^2}{\sqrt{cx^2}} \, dx$

Optimal. Leaf size=81

$$\frac{a^2x(dx)^m}{m\sqrt{cx^2}} + \frac{2abx(dx)^{m+1}}{d(m+1)\sqrt{cx^2}} + \frac{b^2x(dx)^{m+2}}{d^2(m+2)\sqrt{cx^2}}$$

```
[Out] (a^2*x*(d*x)^m)/(m*Sqrt[c*x^2]) + (2*a*b*x*(d*x)^(1 + m))/(d*(1 +
 m)*Sqrt[c*x^2]) + (b^2*x*(d*x)^(2 + m))/(d^2*(2 + m)*Sqrt[c*x^2]
)
```

Rubi [A] time = 0.0885092, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$

$$\frac{a^2x(dx)^m}{m\sqrt{cx^2}} + \frac{2abx(dx)^{m+1}}{d(m+1)\sqrt{cx^2}} + \frac{b^2x(dx)^{m+2}}{d^2(m+2)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (a^2*x*(d*x)^m)/(m*Sqrt[c*x^2]) + (2*a*b*x*(d*x)^(1 + m))/(d*(1 +
 m)*Sqrt[c*x^2]) + (b^2*x*(d*x)^(2 + m))/(d^2*(2 + m)*Sqrt[c*x^2]
)
```

Rubi in Sympy [A] time = 28.8221, size = 78, normalized size = 0.96

$$\frac{a^2\sqrt{cx^2}\,(dx)^m}{cmx} + \frac{2ab\sqrt{cx^2}\,(dx)^{m+1}}{cdx\,(m+1)} + \frac{b^2\sqrt{cx^2}\,(dx)^{m+2}}{cd^2x\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] a**2*sqrt(c*x**2)*(d*x)**m/(c*m*x) + 2*a*b*sqrt(c*x**2)*(d*x)**(m
 + 1)/(c*d*x*(m + 1)) + b**2*sqrt(c*x**2)*(d*x)**(m + 2)/(c*d**2*
x*(m + 2))
```

Mathematica [A] time = 0.0449864, size = 46, normalized size = 0.57

$$\frac{x(dx)^m\left(\frac{a^2}{m}+\frac{2abx}{m+1}+\frac{b^2x^2}{m+2}\right)}{\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x)^2)/Sqrt[c*x^2],x]
```

```
[Out] (x*(d*x)^m*(a^2/m + (2*a*b*x)/(1 + m) + (b^2*x^2)/(2 + m)))/Sqrt[
c*x^2]
```

Maple [A] time = 0.007, size = 79, normalized size = 1.

$$\frac{\left(b^{2}x^{2}m^{2}+2\,abxm^{2}+b^{2}x^{2}m+a^{2}m^{2}+4\,abxm+3\,a^{2}m+2\,a^{2}\right)x\left(dx\right)^{m}}{\left(2+m\right)\left(1+m\right)m}\frac{1}{\sqrt{cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)^2/(c*x^2)^(1/2),x)
```

```
[Out] x*(b^2*m^2*x^2+2*a*b*m^2*x+b^2*m*x^2+a^2*m^2+4*a*b*m*x+3*a^2*m+2*
a^2)*(d*x)^m/(2+m)/(1+m)/m/(c*x^2)^(1/2)
```

Maxima [A] time = 1.36504, size = 77, normalized size = 0.95

$$\frac{b^{2}d^{m}x^{2}x^{m}}{\sqrt{c}(m+2)}+\frac{2\,abd^{m}xx^{m}}{\sqrt{c}(m+1)}+\frac{a^{2}d^{m}x^{m}}{\sqrt{c}m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] b^2*d^m*x^2*x^m/(sqrt(c)*(m + 2)) + 2*a*b*d^m*x*x^m/(sqrt(c)*(m +
 1)) + a^2*d^m*x^m/(sqrt(c)*m)
```

Fricas [A] time = 0.231889, size = 115, normalized size = 1.42

$$\frac{\left(a^{2}m^{2}+3\,a^{2}m+\left(b^{2}m^{2}+b^{2}m\right)x^{2}+2\,a^{2}+2\left(abm^{2}+2\,abm\right)x\right)\sqrt{cx^{2}}\left(dx\right)^{m}}{(cm^{3}+3\,cm^{2}+2\,cm)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] (a^2*m^2 + 3*a^2*m + (b^2*m^2 + b^2*m)*x^2 + 2*a^2 + 2*(a*b*m^2 +
 2*a*b*m)*x)*sqrt(c*x^2)*(d*x)^m/((c*m^3 + 3*c*m^2 + 2*c*m)*x)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)**2/(c*x**2)**(1/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^2 (dx)^m}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*(d*x)^m/sqrt(c*x^2), x)
```

3.979 $\int \frac{(dx)^m(a+bx)^2}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=93

$$-\frac{a^2d^2x(dx)^{m-2}}{c(2-m)\sqrt{cx^2}}-\frac{2abdx(dx)^{m-1}}{c(1-m)\sqrt{cx^2}}+\frac{b^2x(dx)^m}{cm\sqrt{cx^2}}$$

```
[Out] -((a^2*d^2*x*(d*x)^(-2 + m))/(c*(2 - m)*Sqrt[c*x^2])) - (2*a*b*d*
x*(d*x)^(-1 + m))/(c*(1 - m)*Sqrt[c*x^2]) + (b^2*x*(d*x)^m)/(c*m*
Sqrt[c*x^2])
```

Rubi [A] time = 0.105703, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$-\frac{a^2d^2x(dx)^{m-2}}{c(2-m)\sqrt{cx^2}}-\frac{2abdx(dx)^{m-1}}{c(1-m)\sqrt{cx^2}}+\frac{b^2x(dx)^m}{cm\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] -((a^2*d^2*x*(d*x)^(-2 + m))/(c*(2 - m)*Sqrt[c*x^2])) - (2*a*b*d*
x*(d*x)^(-1 + m))/(c*(1 - m)*Sqrt[c*x^2]) + (b^2*x*(d*x)^m)/(c*m*
Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 29.2067, size = 83, normalized size = 0.89

$$-\frac{a^2d^2\sqrt{cx^2}\,(dx)^{m-2}}{c^2x\,(-m+2)}-\frac{2abd\sqrt{cx^2}\,(dx)^{m-1}}{c^2x\,(-m+1)}+\frac{b^2\sqrt{cx^2}\,(dx)^m}{c^2mx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] -a**2*d**2*sqrt(c*x**2)*(d*x)**(m - 2)/(c**2*x*(-m + 2)) - 2*a*b*
d*sqrt(c*x**2)*(d*x)**(m - 1)/(c**2*x*(-m + 1)) + b**2*sqrt(c*x**
2)*(d*x)**m/(c**2*m*x)
```

Mathematica [A] time = 0.0552515, size = 50, normalized size = 0.54

$$\frac{x^3(dx)^m\left(\frac{a^2}{(m-2)x^2}+\frac{2ab}{(m-1)x}+\frac{b^2}{m}\right)}{(cx^2)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x)^2)/(c*x^2)^(3/2),x]
```

```
[Out] ((b^2/m + a^2/((-2 + m)*x^2) + (2*a*b)/((-1 + m)*x))*x^3*(d*x)^m)
/(c*x^2)^(3/2)
```

Maple [A] time = 0.006, size = 83, normalized size = 0.9

$$\frac{\left(b^{2}m^{2}x^{2}+2\,abxm^{2}-3\,b^{2}mx^{2}+a^{2}m^{2}-4\,abxm+2\,b^{2}x^{2}-a^{2}m\right)\,x\,(dx)^{m}}{m\,(-1+m)\,(-2+m)}\left(cx^{2}\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)^2/(c*x^2)^(3/2),x)
```

```
[Out] x*(b^2*m^2*x^2+2*a*b*m^2*x-3*b^2*m*x^2+a^2*m^2-4*a*b*m*x+2*b^2*x^
2-a^2*m)*(d*x)^m/m/(-1+m)/(-2+m)/(c*x^2)^(3/2)
```

Maxima [A] time = 1.38114, size = 80, normalized size = 0.86

$$\frac{b^{2}d^{m}x^{m}}{c^{\frac{3}{2}}m}+\frac{2\,abd^{m}x^{m}}{c^{\frac{3}{2}}(m-1)x}+\frac{a^{2}d^{m}x^{m}}{c^{\frac{3}{2}}(m-2)x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] b^2*d^m*x^m/(c^(3/2)*m) + 2*a*b*d^m*x^m/(c^(3/2)*(m - 1)*x) + a^2
*d^m*x^m/(c^(3/2)*(m - 2)*x^2)
```

Fricas [A] time = 0.232149, size = 124, normalized size = 1.33

$$\frac{\left(a^{2}m^{2}-a^{2}m+\left(b^{2}m^{2}-3\,b^{2}m+2\,b^{2}\right)x^{2}+2\left(abm^{2}-2\,abm\right)x\right)\sqrt{cx^{2}}\,(dx)^{m}}{(c^{2}m^{3}-3\,c^{2}m^{2}+2\,c^{2}m)x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] (a^2*m^2 - a^2*m + (b^2*m^2 - 3*b^2*m + 2*b^2)*x^2 + 2*(a*b*m^2 -
 2*a*b*m)*x)*sqrt(c*x^2)*(d*x)^m/((c^2*m^3 - 3*c^2*m^2 + 2*c^2*m)
*x^3)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)**2/(c*x**2)**(3/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^2 (dx)^m}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(3/2), x)
```

3.980 $\int \frac{(dx)^m(a+bx)^2}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{a^2d^4x(dx)^{m-4}}{c^2(4-m)\sqrt{cx^2}}-\frac{2abd^3x(dx)^{m-3}}{c^2(3-m)\sqrt{cx^2}}-\frac{b^2d^2x(dx)^{m-2}}{c^2(2-m)\sqrt{cx^2}}$$

```
[Out] -((a^2*d^4*x*(d*x)^(-4 + m))/(c^2*(4 - m)*Sqrt[c*x^2])) - (2*a*b*
d^3*x*(d*x)^(-3 + m))/(c^2*(3 - m)*Sqrt[c*x^2]) - (b^2*d^2*x*(d*x
)^(-2 + m))/(c^2*(2 - m)*Sqrt[c*x^2])
```

Rubi [A] time = 0.126941, antiderivative size = 105, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136

$$-\frac{a^2d^4x(dx)^{m-4}}{c^2(4-m)\sqrt{cx^2}}-\frac{2abd^3x(dx)^{m-3}}{c^2(3-m)\sqrt{cx^2}}-\frac{b^2d^2x(dx)^{m-2}}{c^2(2-m)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x)^2)/(c*x^2)^(5/2),x]
```

```
[Out] -((a^2*d^4*x*(d*x)^(-4 + m))/(c^2*(4 - m)*Sqrt[c*x^2])) - (2*a*b*
d^3*x*(d*x)^(-3 + m))/(c^2*(3 - m)*Sqrt[c*x^2]) - (b^2*d^2*x*(d*x
)^(-2 + m))/(c^2*(2 - m)*Sqrt[c*x^2])
```

Rubi in Sympy [A] time = 32.674, size = 94, normalized size = 0.9

$$-\frac{a^2d^4\sqrt{cx^2}\,(dx)^{m-4}}{c^3x\,(-m+4)}-\frac{2abd^3\sqrt{cx^2}\,(dx)^{m-3}}{c^3x\,(-m+3)}-\frac{b^2d^2\sqrt{cx^2}\,(dx)^{m-2}}{c^3x\,(-m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] -a**2*d**4*sqrt(c*x**2)*(d*x)**(m - 4)/(c**3*x*(-m + 4)) - 2*a*b*
d**3*sqrt(c*x**2)*(d*x)**(m - 3)/(c**3*x*(-m + 3)) - b**2*d**2*sq
rt(c*x**2)*(d*x)**(m - 2)/(c**3*x*(-m + 2))
```

Mathematica [A] time = 0.0655092, size = 48, normalized size = 0.46

$$\frac{x(dx)^m\left(\frac{a^2}{m-4}+\frac{2abx}{m-3}+\frac{b^2x^2}{m-2}\right)}{(cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x)^2)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(d*x)^m*(a^2/(-4 + m) + (2*a*b*x)/(-3 + m) + (b^2*x^2)/(-2 + m
)))/(c*x^2)^(5/2)
```

Maple [A] time = 0.007, size = 95, normalized size = 0.9

$$\frac{\left(b^2m^2x^2+2\,abm^2x-7\,b^2mx^2+a^2m^2-12\,abmx+12\,b^2x^2-5\,a^2m+16\,abx+6\,a^2\right)x\left(dx\right)^m}{\left(-2+m\right)\left(-3+m\right)\left(-4+m\right)}\left(cx^2\right)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)^2/(c*x^2)^(5/2),x)
```

```
[Out] x*(b^2*m^2*x^2+2*a*b*m^2*x-7*b^2*m*x^2+a^2*m^2-12*a*b*m*x+12*b^2*
x^2-5*a^2*m+16*a*b*x+6*a^2)*(d*x)^m/(-2+m)/(-3+m)/(-4+m)/(c*x^2)^
(5/2)
```

Maxima [A] time = 1.3593, size = 86, normalized size = 0.82

$$\frac{b^2d^mx^m}{c^{\frac{5}{2}}(m-2)x^2}+\frac{2\,abd^mx^m}{c^{\frac{5}{2}}(m-3)x^3}+\frac{a^2d^mx^m}{c^{\frac{5}{2}}(m-4)x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] b^2*d^m*x^m/(c^(5/2)*(m - 2)*x^2) + 2*a*b*d^m*x^m/(c^(5/2)*(m - 3
)*x^3) + a^2*d^m*x^m/(c^(5/2)*(m - 4)*x^4)
```

Fricas [A] time = 0.232356, size = 143, normalized size = 1.36

$$\frac{\left(a^2m^2-5\,a^2m+\left(b^2m^2-7\,b^2m+12\,b^2\right)x^2+6\,a^2+2\left(abm^2-6\,abm+8\,ab\right)x\right)\sqrt{cx^2}\left(dx\right)^m}{(c^3m^3-9\,c^3m^2+26\,c^3m-24\,c^3)x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] (a^2*m^2 - 5*a^2*m + (b^2*m^2 - 7*b^2*m + 12*b^2)*x^2 + 6*a^2 + 2
*(a*b*m^2 - 6*a*b*m + 8*a*b)*x)*sqrt(c*x^2)*(d*x)^m/((c^3*m^3 - 9
*c^3*m^2 + 26*c^3*m - 24*c^3)*x^5)
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)**2/(c*x**2)**(5/2),x)
```

```
[Out] Exception raised: TypeError
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^2 (dx)^m}{(cx^2)^{\frac{5}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^2*(d*x)^m/(c*x^2)^(5/2), x)
```

3.981 $\int (dx)^m \left(cx^2\right)^{5/2} (a+bx)^n \, dx$

Optimal. Leaf size=67

$$\frac{c^2\sqrt{cx^2}(dx)^{m+6}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m+6,-n;m+7;-\frac{bx}{a}\right)}{d^6(m+6)x}$$

```
[Out] (c^2*(d*x)^(6 + m)*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[6 +
m, -n, 7 + m, -((b*x)/a)])/(d^6*(6 + m)*x*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0732137, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$\frac{c^2\sqrt{cx^2}(dx)^{m+6}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m+6,-n;m+7;-\frac{bx}{a}\right)}{d^6(m+6)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^(5/2)*(a + b*x)^n,x]
```

```
[Out] (c^2*(d*x)^(6 + m)*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[6 +
m, -n, 7 + m, -((b*x)/a)])/(d^6*(6 + m)*x*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 20.6238, size = 54, normalized size = 0.81

$$\frac{c^2\sqrt{cx^2}\,(dx)^{m+6}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n, m+6\\ m+7\end{matrix}\middle|-\frac{bx}{a}\right)}{d^6x\,(m+6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(5/2)*(b*x+a)**n,x)
```

```
[Out] c**2*sqrt(c*x**2)*(d*x)**(m + 6)*(1 + b*x/a)**(-n)*(a + b*x)**n*h
yper((-n, m + 6), (m + 7,), -b*x/a)/(d**6*x*(m + 6))
```

Mathematica [A] time = 0.0732319, size = 57, normalized size = 0.85

$$\frac{x\left(cx^2\right)^{5/2}(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m+6,-n;m+7;-\frac{bx}{a}\right)}{m+6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^(5/2)*(a + b*x)^n,x]
```

```
[Out] (x*(d*x)^m*(c*x^2)^(5/2)*(a + b*x)^n*Hypergeometric2F1[6 + m, -n,
 7 + m, -((b*x)/a)])/((6 + m)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.073, size = 0, normalized size = 0.

$$\int (dx)^m \left(cx^2\right)^{\frac{5}{2}} (bx+a)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(5/2)*(b*x+a)^n,x)
```

```
[Out] int((d*x)^m*(c*x^2)^(5/2)*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^{\frac{5}{2}} (bx+a)^n (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n*(d*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n*(d*x)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{cx^2}(bx+a)^n (dx)^m c^2x^4, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n*(d*x)^m,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m*c^2*x^4, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(5/2)*(b*x+a)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (cx^2)^{\frac{5}{2}} (bx+a)^n (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(5/2)*(b*x + a)^n*(d*x)^m,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(5/2)*(b*x + a)^n*(d*x)^m, x)
```

3.982 $\int (dx)^m \left(cx^2\right)^{3/2} (a+bx)^n \, dx$

Optimal. Leaf size=65

$$\frac{c\sqrt{cx^2}(dx)^{m+4}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+4,-n;m+5;-\frac{bx}{a}\right)}{d^4(m+4)x}$$

```
[Out] (c*(d*x)^(4 + m)*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[4 + m,
 -n, 5 + m, -((b*x)/a)])/(d^4*(4 + m)*x*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0668694, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$\frac{c\sqrt{cx^2}(dx)^{m+4}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+4,-n;m+5;-\frac{bx}{a}\right)}{d^4(m+4)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^(3/2)*(a + b*x)^n,x]
```

```
[Out] (c*(d*x)^(4 + m)*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[4 + m,
 -n, 5 + m, -((b*x)/a)])/(d^4*(4 + m)*x*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 20.0883, size = 53, normalized size = 0.82

$$\frac{c\sqrt{cx^2}\,(dx)^{m+4}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n \, {}_2F_1\left(\begin{matrix} -n, m+4 \\ m+5 \end{matrix}\middle| -\frac{bx}{a}\right)}{d^4 x\,(m+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(3/2)*(b*x+a)**n,x)
```

```
[Out] c*sqrt(c*x**2)*(d*x)**(m + 4)*(1 + b*x/a)**(-n)*(a + b*x)**n*hype
r((-n, m + 4), (m + 5,), -b*x/a)/(d**4*x*(m + 4))
```

Mathematica [A] time = 0.0574414, size = 57, normalized size = 0.88

$$\frac{x\left(cx^2\right)^{3/2}(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+4,-n;m+5;-\frac{bx}{a}\right)}{m+4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^(3/2)*(a + b*x)^n,x]
```

```
[Out] (x*(d*x)^m*(c*x^2)^(3/2)*(a + b*x)^n*Hypergeometric2F1[4 + m, -n,
 5 + m, -((b*x)/a)])/((4 + m)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.052, size = 0, normalized size = 0.

$$\int (dx)^{m} \left(c\,x^{2}\right)^{\frac{3}{2}} \left(bx+a\right)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(3/2)*(b*x+a)^n,x)
```

```
[Out] int((d*x)^m*(c*x^2)^(3/2)*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^{2}\right)^{\frac{3}{2}} (bx+a)^{n} (dx)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n*(d*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n*(d*x)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\sqrt{cx^{2}}(bx+a)^{n} (dx)^{m} cx^{2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n*(d*x)^m,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m*c*x^2, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(3/2)*(b*x+a)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^{\frac{3}{2}} (bx + a)^n (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^(3/2)*(b*x + a)^n*(d*x)^m,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^(3/2)*(b*x + a)^n*(d*x)^m, x)
```

3.983 $\int (dx)^m \sqrt{cx^2}(a+bx)^n \, dx$

Optimal. Leaf size=64

$$\frac{\sqrt{cx^2}(dx)^{m+2}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+2,-n;m+3;-\frac{bx}{a}\right)}{d^2(m+2)x}$$

```
[Out] ((d*x)^(2 + m)*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[2 + m, -
n, 3 + m, -((b*x)/a)])/(d^2*(2 + m)*x*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0652122, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$\frac{\sqrt{cx^2}(dx)^{m+2}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+2,-n;m+3;-\frac{bx}{a}\right)}{d^2(m+2)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] ((d*x)^(2 + m)*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[2 + m, -
n, 3 + m, -((b*x)/a)])/(d^2*(2 + m)*x*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 19.4898, size = 51, normalized size = 0.8

$$\frac{\sqrt{cx^2}\,(dx)^{m+2}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\, {}_2F_1\left(\begin{matrix} -n, m+2 \\ m+3 \end{matrix}\middle| -\frac{bx}{a}\right)}{d^2x\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**(1/2)*(b*x+a)**n,x)
```

```
[Out] sqrt(c*x**2)*(d*x)**(m + 2)*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper(
(-n, m + 2), (m + 3,), -b*x/a)/(d**2*x*(m + 2))
```

Mathematica [A] time = 0.0447567, size = 57, normalized size = 0.89

$$\frac{x\sqrt{cx^2}(dx)^m(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(m+2,-n;m+3;-\frac{bx}{a}\right)}{m+2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*Sqrt[c*x^2]*(a + b*x)^n,x]
```

```
[Out] (x*(d*x)^m*Sqrt[c*x^2]*(a + b*x)^n*Hypergeometric2F1[2 + m, -n, 3
 + m, -((b*x)/a)])/((2 + m)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int (dx)^m \sqrt{cx^2}\,(bx+a)^n\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^(1/2)*(b*x+a)^n,x)
```

```
[Out] int((d*x)^m*(c*x^2)^(1/2)*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{cx^2}(bx+a)^n\,(dx)^m\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m,x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\sqrt{cx^2}(bx+a)^n\,(dx)^m\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m,x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{cx^2}\,(dx)^m\,(a+bx)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**(1/2)*(b*x+a)**n,x)
```

```
[Out] Integral(sqrt(c*x**2)*(d*x)**m*(a + b*x)**n, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{cx^2}(bx+a)^n\,(dx)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m,x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2)*(b*x + a)^n*(d*x)^m, x)
```

3.984 $\int \frac{(dx)^m(a+bx)^n}{\sqrt{cx^2}}\,dx$

Optimal. Leaf size=53

$$\frac{x(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m,-n;m+1;-\frac{bx}{a}\right)}{m\sqrt{cx^2}}$$

```
[Out] (x*(d*x)^m*(a + b*x)^n*Hypergeometric2F1[m, -n, 1 + m, -((b*x)/a)
])/(m*Sqrt[c*x^2]*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0550144, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$\frac{x(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m,-n;m+1;-\frac{bx}{a}\right)}{m\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(d*x)^m*(a + b*x)^n*Hypergeometric2F1[m, -n, 1 + m, -((b*x)/a)
])/(m*Sqrt[c*x^2]*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 19.1166, size = 44, normalized size = 0.83

$$\frac{\sqrt{cx^2}\,(dx)^m\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\left.\begin{matrix}-n,m\\m+1\end{matrix}\right|-\frac{bx}{a}\right)}{cmx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] sqrt(c*x**2)*(d*x)**m*(1 + b*x/a)**(-n)*(a + b*x)**n*hyper((-n, m
), (m + 1,), -b*x/a)/(c*m*x)
```

Mathematica [A] time = 0.0349226, size = 53, normalized size = 1.

$$\frac{x(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m,-n;m+1;-\frac{bx}{a}\right)}{m\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x)^n)/Sqrt[c*x^2],x]
```

```
[Out] (x*(d*x)^m*(a + b*x)^n*Hypergeometric2F1[m, -n, 1 + m, -((b*x)/a)
])/(m*Sqrt[c*x^2]*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int (dx)^m (bx+a)^n \frac{1}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)^n/(c*x^2)^(1/2),x)
```

```
[Out] int((d*x)^m*(b*x+a)^n/(c*x^2)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n (dx)^m}{\sqrt{cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/sqrt(c*x^2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x)^m/sqrt(c*x^2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^n (dx)^m}{\sqrt{cx^2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/sqrt(c*x^2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*(d*x)^m/sqrt(c*x^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx)^m (a+bx)^n}{\sqrt{cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)**n/(c*x**2)**(1/2),x)
```

```
[Out] Integral((d*x)**m*(a + b*x)**n/sqrt(c*x**2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n (dx)^m}{\sqrt{cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/sqrt(c*x^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x)^m/sqrt(c*x^2), x)
```

3.985 $\int \frac{(dx)^m(a+bx)^n}{(cx^2)^{3/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{d^2x(dx)^{m-2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m-2,-n;m-1;-\frac{bx}{a}\right)}{c(2-m)\sqrt{cx^2}}$$

```
[Out] -((d^2*x*(d*x)^(-2 + m)*(a + b*x)^n*Hypergeometric2F1[-2 + m, -n,
 -1 + m, -((b*x)/a)])/(c*(2 - m)*Sqrt[c*x^2]*(1 + (b*x)/a)^n))
```

Rubi [A] time = 0.0733075, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182

$$-\frac{d^2x(dx)^{m-2}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m-2,-n;m-1;-\frac{bx}{a}\right)}{c(2-m)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] -((d^2*x*(d*x)^(-2 + m)*(a + b*x)^n*Hypergeometric2F1[-2 + m, -n,
 -1 + m, -((b*x)/a)])/(c*(2 - m)*Sqrt[c*x^2]*(1 + (b*x)/a)^n))
```

Rubi in Sympy [A] time = 20.6377, size = 56, normalized size = 0.82

$$-\frac{d^2\sqrt{cx^2}\,(dx)^{m-2}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n,m-2\\m-1\end{matrix}\middle|-\frac{bx}{a}\right)}{c^2x\,(-m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] -d**2*sqrt(c*x**2)*(d*x)**(m - 2)*(1 + b*x/a)**(-n)*(a + b*x)**n*
hyper((-n, m - 2), (m - 1,), -b*x/a)/(c**2*x*(-m + 2))
```

Mathematica [A] time = 0.0549216, size = 57, normalized size = 0.84

$$\frac{x(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m-2,-n;m-1;-\frac{bx}{a}\right)}{(m-2)\left(cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x)^n)/(c*x^2)^(3/2),x]
```

```
[Out] (x*(d*x)^m*(a + b*x)^n*Hypergeometric2F1[-2 + m, -n, -1 + m, -((b
*x)/a)])/((-2 + m)*(c*x^2)^(3/2)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.052, size = 0, normalized size = 0.

$$\int (dx)^{m} (bx+a)^{n} \left(c x^{2}\right)^{-\frac{3}{2}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)^n/(c*x^2)^(3/2),x)
```

```
[Out] int((d*x)^m*(b*x+a)^n/(c*x^2)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n} (dx)^{m}}{\left(c x^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{n} (dx)^{m}}{\sqrt{c x^{2}}\, c x^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*(d*x)^m/(sqrt(c*x^2)*c*x^2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)**n/(c*x**2)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n (dx)^m}{(cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(3/2), x)
```

3.986 $\int \frac{(dx)^m(a+bx)^n}{(cx^2)^{5/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{d^4x(dx)^{m-4}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m-4,-n;m-3;-\frac{bx}{a}\right)}{c^2(4-m)\sqrt{cx^2}}$$

```
[Out] -((d^4*x*(d*x)^(-4 + m)*(a + b*x)^n*Hypergeometric2F1[-4 + m, -n,
 -3 + m, -((b*x)/a)])/(c^2*(4 - m)*Sqrt[c*x^2]*(1 + (b*x)/a)^n))
```

Rubi [A] time = 0.0736946, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$

$$-\frac{d^4x(dx)^{m-4}(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m-4,-n;m-3;-\frac{bx}{a}\right)}{c^2(4-m)\sqrt{cx^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*x)^m*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] -((d^4*x*(d*x)^(-4 + m)*(a + b*x)^n*Hypergeometric2F1[-4 + m, -n,
 -3 + m, -((b*x)/a)])/(c^2*(4 - m)*Sqrt[c*x^2]*(1 + (b*x)/a)^n))
```

Rubi in Sympy [A] time = 21.0274, size = 56, normalized size = 0.82

$$-\frac{d^4\sqrt{cx^2}\,(dx)^{m-4}\left(1+\frac{bx}{a}\right)^{-n}(a+bx)^n\,{}_2F_1\left(\begin{matrix}-n,m-4\\m-3\end{matrix}\middle|-\frac{bx}{a}\right)}{c^3x\,(-m+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] -d**4*sqrt(c*x**2)*(d*x)**(m - 4)*(1 + b*x/a)**(-n)*(a + b*x)**n*
hyper((-n, m - 4), (m - 3,), -b*x/a)/(c**3*x*(-m + 4))
```

Mathematica [A] time = 0.087477, size = 57, normalized size = 0.84

$$\frac{x(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(m-4,-n;m-3;-\frac{bx}{a}\right)}{(m-4)\,(cx^2)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*x)^m*(a + b*x)^n)/(c*x^2)^(5/2),x]
```

```
[Out] (x*(d*x)^m*(a + b*x)^n*Hypergeometric2F1[-4 + m, -n, -3 + m, -((b
*x)/a)])/((-4 + m)*(c*x^2)^(5/2)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int (dx)^m (bx+a)^n \left(cx^2\right)^{-\frac{5}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(b*x+a)^n/(c*x^2)^(5/2),x)
```

```
[Out] int((d*x)^m*(b*x+a)^n/(c*x^2)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n (dx)^m}{(cx^2)^{\frac{5}{2}}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n (dx)^m}{\sqrt{cx^2}c^2x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*(d*x)^m/(sqrt(c*x^2)*c^2*x^4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(b*x+a)**n/(c*x**2)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n (dx)^m}{(cx^2)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x)^m/(c*x^2)^(5/2), x)
```

3.987 $\int x^3 \left(cx^2\right)^p (a+bx)^{-5-2p}\,dx$

Optimal. Leaf size=33

$$\frac{x^4 \left(cx^2\right)^p (a+bx)^{-2(p+2)}}{2a(p+2)}$$

```
[Out] (x^4*(c*x^2)^p)/(2*a*(2 + p)*(a + b*x)^(2*(2 + p)))
```

Rubi [A] time = 0.0293616, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{x^4 \left(cx^2\right)^p (a+bx)^{-2(p+2)}}{2a(p+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^3*(c*x^2)^p*(a + b*x)^(-5 - 2*p),x]
```

```
[Out] (x^4*(c*x^2)^p)/(2*a*(2 + p)*(a + b*x)^(2*(2 + p)))
```

Rubi in Sympy [A] time = 49.7463, size = 39, normalized size = 1.18

$$\frac{x^3 x^{-2p} x^{2p+1} \left(cx^2\right)^p (a+bx)^{-2p-4}}{2a\,(p+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**3*(c*x**2)**p*(b*x+a)**(-5-2*p),x)
```

```
[Out] x**3*x**(-2*p)*x**(2*p + 1)*(c*x**2)**p*(a + b*x)**(-2*p - 4)/(2*
a*(p + 2))
```

Mathematica [A] time = 0.0907897, size = 32, normalized size = 0.97

$$\frac{x^4 \left(cx^2\right)^p (a+bx)^{-2p-4}}{2ap+4a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^3*(c*x^2)^p*(a + b*x)^(-5 - 2*p),x]
```

```
[Out] (x^4*(c*x^2)^p*(a + b*x)^(-4 - 2*p))/(4*a + 2*a*p)
```

Maple [A] time = 0.004, size = 32, normalized size = 1.

$$\frac{x^4 (bx + a)^{-4-2p} (cx^2)^p}{2a(2+p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^3*(c*x^2)^p*(b*x+a)^(-5-2*p),x)
```

```
[Out] 1/2*x^4*(b*x+a)^(-4-2*p)/a/(2+p)*(c*x^2)^p
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (cx^2)^p (bx + a)^{-2p-5} x^3 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 5)*x^3,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 5)*x^3, x)
```

Fricas [A] time = 0.231991, size = 54, normalized size = 1.64

$$\frac{(bx^5 + ax^4) (cx^2)^p (bx + a)^{-2p-5}}{2(ap + 2a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 5)*x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b*x^5 + a*x^4)*(c*x^2)^p*(b*x + a)^(-2*p - 5)/(a*p + 2*a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3*(c*x**2)**p*(b*x+a)**(-5-2*p),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224061, size = 103, normalized size = 3.12

$$\frac{bx^5e^{\left(p\ln\left(cx^2\right)-2\,p\ln(bx+a)-5\ln(bx+a)\right)}+ax^4e^{\left(p\ln\left(cx^2\right)-2\,p\ln(bx+a)-5\ln(bx+a)\right)}}{2\,(ap+2\,a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 5)*x^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^5*e^(p*ln(c*x^2) - 2*p*ln(b*x + a) - 5*ln(b*x + a)) + a*
x^4*e^(p*ln(c*x^2) - 2*p*ln(b*x + a) - 5*ln(b*x + a)))/(a*p + 2*a
)
```

3.988 $\int x^2 \left(cx^2\right)^p (a+bx)^{-4-2p}\,dx$

Optimal. Leaf size=32

$$\frac{x^3 \left(cx^2\right)^p (a+bx)^{-2p-3}}{a(2p+3)}$$

```
[Out] (x^3*(c*x^2)^p*(a + b*x)^(-3 - 2*p))/(a*(3 + 2*p))
```

Rubi [A] time = 0.0266024, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$\frac{x^3 \left(cx^2\right)^p (a+bx)^{-2p-3}}{a(2p+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2*(c*x^2)^p*(a + b*x)^(-4 - 2*p),x]

[Out] (x^3*(c*x^2)^p*(a + b*x)^(-3 - 2*p))/(a*(3 + 2*p))
```

Rubi in Sympy [A] time = 10.0906, size = 36, normalized size = 1.12

$$\frac{x^{-2p} x^{2p+3} \left(cx^2\right)^p (a+bx)^{-2p-3}}{a\,(2p+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**2*(c*x**2)**p*(b*x+a)**(-4-2*p),x)

[Out] x**(-2*p)*x**(2*p + 3)*(c*x**2)**p*(a + b*x)**(-2*p - 3)/(a*(2*p
+ 3))
```

Mathematica [A] time = 0.0667539, size = 32, normalized size = 1.

$$\frac{x^3 \left(cx^2\right)^p (a+bx)^{-2p-3}}{2ap+3a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2*(c*x^2)^p*(a + b*x)^(-4 - 2*p),x]
```

```
[Out] (x^3*(c*x^2)^p*(a + b*x)^(-3 - 2*p))/(3*a + 2*a*p)
```

Maple [A] time = 0.005, size = 33, normalized size = 1.

$$\frac{x^3\left(cx^2\right)^p(bx+a)^{-3-2p}}{a(3+2p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(c*x^2)^p*(b*x+a)^(-4-2*p),x)
```

```
[Out] x^3*(c*x^2)^p*(b*x+a)^(-3-2*p)/a/(3+2*p)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p(bx+a)^{-2p-4}x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-2*p - 4)*x^2,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 4)*x^2, x)
```

Fricas [A] time = 0.23271, size = 54, normalized size = 1.69

$$\frac{\left(bx^4+ax^3\right)\left(cx^2\right)^p(bx+a)^{-2p-4}}{2ap+3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-2*p - 4)*x^2,x, algorithm="fricas")
```

```
[Out] (b*x^4 + a*x^3)*(c*x^2)^p*(b*x + a)^(-2*p - 4)/(2*a*p + 3*a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**2*(c*x**2)**p*(b*x+a)**(-4-2*p),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p (bx+a)^{-2p-4} x^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 4)*x^2,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 4)*x^2, x)
```

3.989 $\int x \left(cx^2\right)^p (a + bx)^{-3-2p}\, dx$

Optimal. Leaf size=33

$$\frac{x^2 \left(cx^2\right)^p (a + bx)^{-2(p+1)}}{2a(p + 1)}$$

```
[Out] (x^2*(c*x^2)^p)/(2*a*(1 + p)*(a + b*x)^(2*(1 + p)))
```

Rubi [A] time = 0.028474, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{x^2 \left(cx^2\right)^p (a + bx)^{-2(p+1)}}{2a(p + 1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x*(c*x^2)^p*(a + b*x)^(-3 - 2*p),x]

[Out] (x^2*(c*x^2)^p)/(2*a*(1 + p)*(a + b*x)^(2*(1 + p)))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x*(c*x**2)**p*(b*x+a)**(-3-2*p),x)

[Out] Timed out
```

Mathematica [A] time = 0.0619346, size = 32, normalized size = 0.97

$$\frac{x^2 \left(cx^2\right)^p (a + bx)^{-2p-2}}{2ap + 2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x*(c*x^2)^p*(a + b*x)^(-3 - 2*p),x]
```

```
[Out] (x^2*(c*x^2)^p*(a + b*x)^(-2 - 2*p))/(2*a + 2*a*p)
```

Maple [A] time = 0.004, size = 32, normalized size = 1.

$$\frac{x^{2} \left(b x + a\right)^{-2-2 p} \left(c \,x^{2}\right)^{p}}{2 a \left(1+p \right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x*(c*x^2)^p*(b*x+a)^(-3-2*p),x)

[Out] 1/2*x^2*(b*x+a)^(-2-2*p)/a/(1+p)*(c*x^2)^p
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(c x^{2}\right)^{p} \left(b x + a\right)^{-2 \, p - 3} x \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 3)*x,x, algorithm="maxima")

[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 3)*x, x)
```

Fricas [A] time = 0.231329, size = 51, normalized size = 1.55

$$\frac{{\left(b x^{3} + a x^{2}\right)} \left(c x^{2}\right)^{p} {\left(b x + a\right)}^{-2 \, p - 3}}{2 \, {\left(a p + a\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 3)*x,x, algorithm="fricas")

[Out] 1/2*(b*x^3 + a*x^2)*(c*x^2)^p*(b*x + a)^(-2*p - 3)/(a*p + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x*(c*x**2)**p*(b*x+a)**(-3-2*p),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.217358, size = 100, normalized size = 3.03

$$\frac{bx^3 e^{\left(p\ln\left(cx^2\right) - 2\,p\ln(bx+a) - 3\ln(bx+a)\right)} + ax^2 e^{\left(p\ln\left(cx^2\right) - 2\,p\ln(bx+a) - 3\ln(bx+a)\right)}}{2\,(ap + a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 3)*x,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^3*e^(p*ln(c*x^2) - 2*p*ln(b*x + a) - 3*ln(b*x + a)) + a*
x^2*e^(p*ln(c*x^2) - 2*p*ln(b*x + a) - 3*ln(b*x + a)))/(a*p + a)
```

3.990 $\int \left(cx^2\right)^p (a+bx)^{-2-2p}\,dx$

Optimal. Leaf size=30

$$\frac{x\left(cx^2\right)^p (a+bx)^{-2p-1}}{a(2p+1)}$$

[Out] (x*(c*x^2)^p*(a + b*x)^(-1 - 2*p))/(a*(1 + 2*p))

Rubi [A] time = 0.0260095, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{x\left(cx^2\right)^p (a+bx)^{-2p-1}}{a(2p+1)}$$

Antiderivative was successfully verified.

[In] Int[(c*x^2)^p*(a + b*x)^(-2 - 2*p),x]

[Out] (x*(c*x^2)^p*(a + b*x)^(-1 - 2*p))/(a*(1 + 2*p))

Rubi in Sympy [A] time = 8.37141, size = 36, normalized size = 1.2

$$\frac{x^{-2p}x^{2p+1}\left(cx^2\right)^p (a+bx)^{-2p-1}}{a\,(2p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((c*x**2)**p*(b*x+a)**(-2-2*p),x)

[Out] x**(-2*p)*x**(2*p + 1)*(c*x**2)**p*(a + b*x)**(-2*p - 1)/(a*(2*p + 1))

Mathematica [A] time = 0.0572782, size = 28, normalized size = 0.93

$$\frac{x\left(cx^2\right)^p (a+bx)^{-2p-1}}{2ap+a}$$

Antiderivative was successfully verified.

[In] Integrate[(c*x^2)^p*(a + b*x)^(-2 - 2*p),x]

```
[Out] (x*(c*x^2)^p*(a + b*x)^(-1 - 2*p))/(a + 2*a*p)
```

Maple [A] time = 0.004, size = 31, normalized size = 1.

$$\frac{x\left(c x^2\right)^p (b x+a)^{-1-2 p}}{a(1+2 p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*x^2)^p*(b*x+a)^(-2-2*p),x)
```

```
[Out] x*(c*x^2)^p*(b*x+a)^(-1-2*p)/a/(1+2*p)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(c x^2\right)^p (b x+a)^{-2 p-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-2*p - 2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 2), x)
```

Fricas [A] time = 0.227413, size = 49, normalized size = 1.63

$$\frac{\left(b x^2+a x\right)\left(c x^2\right)^p (b x+a)^{-2 p-2}}{2 a p+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-2*p - 2),x, algorithm="fricas")
```

```
[Out] (b*x^2 + a*x)*(c*x^2)^p*(b*x + a)^(-2*p - 2)/(2*a*p + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**p*(b*x+a)**(-2-2*p),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p (bx+a)^{-2p-2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 2), x)
```

3.991 $\int \frac{(cx^2)^p (a+bx)^{-1-2p}}{x} \, dx$

Optimal. Leaf size=26

$$\frac{(cx^2)^p (a+bx)^{-2p}}{2ap}$$

```
[Out] (c*x^2)^p/(2*a*p*(a + b*x)^(2*p))
```

Rubi [A] time = 0.0217156, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{(cx^2)^p (a+bx)^{-2p}}{2ap}$$

Antiderivative was successfully verified.

```
[In] Int[((c*x^2)^p*(a + b*x)^(-1 - 2*p))/x,x]

[Out] (c*x^2)^p/(2*a*p*(a + b*x)^(2*p))
```

Rubi in Sympy [A] time = 14.5611, size = 19, normalized size = 0.73

$$\frac{(cx^2)^p (a+bx)^{-2p}}{2ap}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((c*x**2)**p*(b*x+a)**(-1-2*p)/x,x)

[Out] (c*x**2)**p*(a + b*x)**(-2*p)/(2*a*p)
```

Mathematica [A] time = 0.0166298, size = 26, normalized size = 1.

$$\frac{(cx^2)^p (a+bx)^{-2p}}{2ap}$$

Antiderivative was successfully verified.

```
[In] Integrate[((c*x^2)^p*(a + b*x)^(-1 - 2*p))/x,x]
```

```
[Out] (c*x^2)^p/(2*a*p*(a + b*x)^(2*p))
```

Maple [A] time = 0.004, size = 25, normalized size = 1.

$$\frac{(bx+a)^{-2p}\left(cx^2\right)^p}{2\,ap}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^p*(b*x+a)^(-1-2*p)/x,x)
```

```
[Out] 1/2*(b*x+a)^(-2*p)/a/p*(c*x^2)^p
```

Maxima [A] time = 1.35831, size = 36, normalized size = 1.38

$$\frac{c^p e^{(-2\,p\log(bx+a)+2\,p\log(x))}}{2\,ap}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 1)/x,x, algorithm="maxima")
```

```
[Out] 1/2*c^p*e^(-2*p*log(b*x + a) + 2*p*log(x))/(a*p)
```

Fricas [A] time = 0.220978, size = 42, normalized size = 1.62

$$\frac{(bx+a)\left(cx^2\right)^p(bx+a)^{-2\,p-1}}{2\,ap}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 1)/x,x, algorithm="fricas")
```

```
[Out] 1/2*(b*x + a)*(c*x^2)^p*(b*x + a)^(-2*p - 1)/(a*p)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**p*(b*x+a)**(-1-2*p)/x,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^p (bx+a)^{-2p-1}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p - 1)/x,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p - 1)/x, x)
```

3.992 $\int \frac{(cx^2)^p (a+bx)^{-2p}}{x^2}\,dx$

Optimal. Leaf size=33

$$-\frac{(cx^2)^p (a+bx)^{1-2p}}{a(1-2p)x}$$

```
[Out] -(((c*x^2)^p*(a + b*x)^(1 - 2*p))/(a*(1 - 2*p)*x))
```

Rubi [A] time = 0.0286186, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{(cx^2)^p (a+bx)^{1-2p}}{a(1-2p)x}$$

Antiderivative was successfully verified.

```
[In]  Int[(c*x^2)^p/(x^2*(a + b*x)^(2*p)),x]
```

```
[Out] -(((c*x^2)^p*(a + b*x)^(1 - 2*p))/(a*(1 - 2*p)*x))
```

Rubi in Sympy [A] time = 14.373, size = 36, normalized size = 1.09

$$-\frac{x^{-2p}x^{2p-1}(cx^2)^p (a+bx)^{-2p+1}}{a(-2p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**p/x**2/((b*x+a)**(2*p)),x)
```

```
[Out] -x**(-2*p)*x**(2*p - 1)*(c*x**2)**p*(a + b*x)**(-2*p + 1)/(a*(-2*
p + 1))
```

Mathematica [A] time = 0.0345089, size = 31, normalized size = 0.94

$$-\frac{(cx^2)^p (a+bx)^{1-2p}}{ax-2apx}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c*x^2)^p/(x^2*(a + b*x)^(2*p)),x]

[Out] -(((c*x^2)^p*(a + b*x)^(1 - 2*p))/(a*x - 2*a*p*x))
```

Maple [A] time = 0.004, size = 38, normalized size = 1.2

$$\frac{(bx+a)\left(cx^2\right)^p}{(2p-1)\,ax\,(bx+a)^{2p}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^p/x^2/((b*x+a)^(2*p)),x)

[Out] 1/x*(b*x+a)/a/(2*p-1)*(c*x^2)^p/((b*x+a)^(2*p))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^p (bx+a)^{-2p}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p/((b*x + a)^(2*p)*x^2),x, algorithm="maxima")

[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p)/x^2, x)
```

Fricas [A] time = 0.233072, size = 50, normalized size = 1.52

$$\frac{(bx+a)\left(cx^2\right)^p}{(2\,ap-a)(bx+a)^{2p}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p/((b*x + a)^(2*p)*x^2),x, algorithm="fricas")

[Out] (b*x + a)*(c*x^2)^p/((2*a*p - a)*(b*x + a)^(2*p)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**p/x**2/((b*x+a)**(2*p)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^p}{(bx+a)^{2p}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p/((b*x + a)^(2*p)*x^2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p/((b*x + a)^(2*p)*x^2), x)
```

3.993 $\int \frac{(cx^2)^p (a+bx)^{1-2p}}{x^3} \, dx$

Optimal. Leaf size=35

$$-\frac{(cx^2)^p (a+bx)^{2-2p}}{2a(1-p)x^2}$$

```
[Out] -((c*x^2)^p*(a + b*x)^(2 - 2*p))/(2*a*(1 - p)*x^2)
```

Rubi [A] time = 0.0309804, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{(cx^2)^p (a+bx)^{2-2p}}{2a(1-p)x^2}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^p*(a + b*x)^(1 - 2*p))/x^3,x]
```

```
[Out] -((c*x^2)^p*(a + b*x)^(2 - 2*p))/(2*a*(1 - p)*x^2)
```

Rubi in Sympy [A] time = 14.6016, size = 36, normalized size = 1.03

$$-\frac{x^{-2p} x^{2p-2} (cx^2)^p (a+bx)^{-2p+2}}{2a(-p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**p*(b*x+a)**(1-2*p)/x**3,x)
```

```
[Out] -x**(-2*p)*x**(2*p - 2)*(c*x**2)**p*(a + b*x)**(-2*p + 2)/(2*a*(-
p + 1))
```

Mathematica [A] time = 0.0442335, size = 33, normalized size = 0.94

$$\frac{(cx^2)^p (a+bx)^{2-2p}}{2a(p-1)x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^p*(a + b*x)^(1 - 2*p))/x^3,x]
```

```
[Out] ((c*x^2)^p*(a + b*x)^(2 - 2*p))/(2*a*(-1 + p)*x^2)
```

Maple [A] time = 0.004, size = 32, normalized size = 0.9

$$\frac{(bx+a)^{2-2p}\left(cx^{2}\right)^{p}}{2\,x^{2}a\,(p-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^p*(b*x+a)^(1-2*p)/x^3,x)
```

```
[Out] 1/2/x^2*(b*x+a)^(2-2*p)/a/(p-1)*(c*x^2)^p
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^{2}\right)^{p}(bx+a)^{-2\,p+1}}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p + 1)/x^3,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p + 1)/x^3, x)
```

Fricas [A] time = 0.232915, size = 50, normalized size = 1.43

$$\frac{(bx+a)\left(cx^{2}\right)^{p}(bx+a)^{-2\,p+1}}{2\,(ap-a)x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p + 1)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b*x + a)*(c*x^2)^p*(b*x + a)^(-2*p + 1)/((a*p - a)*x^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**p*(b*x+a)**(1-2*p)/x**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^p (bx+a)^{-2\,p+1}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p + 1)/x^3,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p + 1)/x^3, x)
```

3.994 $\int \frac{(cx^2)^p (a+bx)^{2-2p}}{x^4} dx$

Optimal. Leaf size=33

$$-\frac{(cx^2)^p (a+bx)^{3-2p}}{a(3-2p)x^3}$$

```
[Out] -(((c*x^2)^p*(a + b*x)^(3 - 2*p))/(a*(3 - 2*p)*x^3))
```

Rubi [A] time = 0.0300474, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$

$$-\frac{(cx^2)^p (a+bx)^{3-2p}}{a(3-2p)x^3}$$

Antiderivative was successfully verified.

```
[In]  Int[((c*x^2)^p*(a + b*x)^(2 - 2*p))/x^4,x]

[Out] -(((c*x^2)^p*(a + b*x)^(3 - 2*p))/(a*(3 - 2*p)*x^3))
```

Rubi in Sympy [A] time = 14.772, size = 36, normalized size = 1.09

$$-\frac{x^{-2p} x^{2p-3} (cx^2)^p (a+bx)^{-2p+3}}{a(-2p+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((c*x**2)**p*(b*x+a)**(2-2*p)/x**4,x)

[Out] -x**(-2*p)*x**(2*p - 3)*(c*x**2)**p*(a + b*x)**(-2*p + 3)/(a*(-2*
p + 3))
```

Mathematica [A] time = 0.0554665, size = 32, normalized size = 0.97

$$\frac{(cx^2)^p (a+bx)^{3-2p}}{a(2p-3)x^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((c*x^2)^p*(a + b*x)^(2 - 2*p))/x^4,x]

[Out] ((c*x^2)^p*(a + b*x)^(3 - 2*p))/(a*(-3 + 2*p)*x^3)
```

Maple [A] time = 0.004, size = 33, normalized size = 1.

$$\frac{(bx+a)^{3-2p}\left(cx^2\right)^p}{x^3a\,(2p-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((c*x^2)^p*(b*x+a)^(2-2*p)/x^4,x)

[Out] 1/x^3*(b*x+a)^(3-2*p)/a/(2*p-3)*(c*x^2)^p
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(cx^2\right)^p(bx+a)^{-2p+2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p + 2)/x^4,x, algorithm="maxima")

[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p + 2)/x^4, x)
```

Fricas [A] time = 0.236499, size = 50, normalized size = 1.52

$$\frac{(bx+a)\left(cx^2\right)^p(bx+a)^{-2p+2}}{(2\,ap-3\,a)x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p + 2)/x^4,x, algorithm="fricas")

[Out] (b*x + a)*(c*x^2)^p*(b*x + a)^(-2*p + 2)/((2*a*p - 3*a)*x^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x**2)**p*(b*x+a)**(2-2*p)/x**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(cx^2)^p (bx + a)^{-2p+2}}{x^4} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-2*p + 2)/x^4,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-2*p + 2)/x^4, x)
```

3.995 $\int x^m \left(cx^2\right)^p (a+bx)^{-2-m-2p}\,dx$

Optimal. Leaf size=38

$$\frac{x^{m+1}\left(cx^2\right)^p (a+bx)^{-m-2p-1}}{a(m+2p+1)}$$

```
[Out] (x^(1 + m)*(c*x^2)^p*(a + b*x)^(-1 - m - 2*p))/(a*(1 + m + 2*p))
```

Rubi [A] time = 0.0324559, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{x^{m+1}\left(cx^2\right)^p (a+bx)^{-m-2p-1}}{a(m+2p+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(c*x^2)^p*(a + b*x)^(-2 - m - 2*p),x]
```

```
[Out] (x^(1 + m)*(c*x^2)^p*(a + b*x)^(-1 - m - 2*p))/(a*(1 + m + 2*p))
```

Rubi in Sympy [A] time = 14.6668, size = 41, normalized size = 1.08

$$\frac{x^{-2p}x^{m+2p+1}\left(cx^2\right)^p (a+bx)^{-m-2p-1}}{a\,(m+2p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(c*x**2)**p*(b*x+a)**(-2-m-2*p),x)
```

```
[Out] x**(-2*p)*x**(m + 2*p + 1)*(c*x**2)**p*(a + b*x)**(-m - 2*p - 1)/
(a*(m + 2*p + 1))
```

Mathematica [A] time = 0.0755377, size = 38, normalized size = 1.

$$\frac{x^{m+1}\left(cx^2\right)^p (a+bx)^{-m-2p-1}}{am+2ap+a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(c*x^2)^p*(a + b*x)^(-2 - m - 2*p),x]
```

```
[Out] (x^(1 + m)*(c*x^2)^p*(a + b*x)^(-1 - m - 2*p))/(a + a*m + 2*a*p)
```

Maple [A] time = 0.006, size = 39, normalized size = 1.

$$\frac{x^{1+m}\left(cx^2\right)^p(bx+a)^{-1-m-2p}}{a(1+m+2p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(c*x^2)^p*(b*x+a)^(-2-m-2*p),x)
```

```
[Out] x^(1+m)*(c*x^2)^p*(b*x+a)^(-1-m-2*p)/a/(1+m+2*p)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\left(cx^2\right)^p(bx+a)^{-m-2p-2}x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*x^m,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*x^m, x)
```

Fricas [A] time = 0.2348, size = 66, normalized size = 1.74

$$\frac{\left(bx^2+ax\right)(bx+a)^{-m-2p-2}x^m e^{(p\log(c)+2p\log(x))}}{am+2ap+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*x^m,x, algorithm="fricas")
```

```
[Out] (b*x^2 + a*x)*(b*x + a)^(-m - 2*p - 2)*x^m*e^(p*log(c) + 2*p*log(
x))/(a*m + 2*a*p + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(c*x**2)**p*(b*x+a)**(-2-m-2*p),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p (bx+a)^{-m-2p-2} x^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*x^m,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*x^m, x)
```

3.996 $\int (dx)^m \left(cx^2\right)^p (a+bx)^{-2-m-2p}\,dx$

Optimal. Leaf size=39

$$\frac{x\left(cx^2\right)^p (dx)^m (a+bx)^{-m-2p-1}}{a(m+2p+1)}$$

```
[Out] (x*(d*x)^m*(c*x^2)^p*(a + b*x)^(-1 - m - 2*p))/(a*(1 + m + 2*p))
```

Rubi [A] time = 0.0326008, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{x\left(cx^2\right)^p (dx)^m (a+bx)^{-m-2p-1}}{a(m+2p+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^p*(a + b*x)^(-2 - m - 2*p),x]
```

```
[Out] (x*(d*x)^m*(c*x^2)^p*(a + b*x)^(-1 - m - 2*p))/(a*(1 + m + 2*p))
```

Rubi in Sympy [A] time = 18.3341, size = 46, normalized size = 1.18

$$\frac{\left(cx^2\right)^p (dx)^{-2p} (dx)^{m+2p+1} (a+bx)^{-m-2p-1}}{ad\,(m+2p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**p*(b*x+a)**(-2-m-2*p),x)
```

```
[Out] (c*x**2)**p*(d*x)**(-2*p)*(d*x)**(m + 2*p + 1)*(a + b*x)**(-m - 2
*p - 1)/(a*d*(m + 2*p + 1))
```

Mathematica [A] time = 0.0527546, size = 39, normalized size = 1.

$$\frac{x\left(cx^2\right)^p (dx)^m (a+bx)^{-m-2p-1}}{am+2ap+a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^p*(a + b*x)^(-2 - m - 2*p),x]
```

```
[Out] (x*(d*x)^m*(c*x^2)^p*(a + b*x)^(-1 - m - 2*p))/(a + a*m + 2*a*p)
```

Maple [A] time = 0.004, size = 40, normalized size = 1.

$$\frac{x\,(dx)^m\,(cx^2)^p\,(bx+a)^{-1-m-2\,p}}{a\,(1+m+2\,p)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x)^m*(c*x^2)^p*(b*x+a)^(-2-m-2*p),x)
```

```
[Out] x*(d*x)^m*(c*x^2)^p*(b*x+a)^(-1-m-2*p)/a/(1+m+2*p)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (cx^2)^p\,(bx+a)^{-m-2\,p-2}\,(dx)^m\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*(d*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*(d*x)^m, x)
```

Fricas [A] time = 0.235686, size = 77, normalized size = 1.97

$$\frac{(bx^2+ax)\,(bx+a)^{-m-2\,p-2}\,(dx)^m\,e^{\left(2\,p\log(dx)+p\log\left(\frac{c}{d^2}\right)\right)}}{am+2\,ap+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*(d*x)^m,x, algorithm="fricas")
```

```
[Out] (b*x^2 + a*x)*(b*x + a)^(-m - 2*p - 2)*(d*x)^m*e^(2*p*log(d*x) +
p*log(c/d^2))/(a*m + 2*a*p + a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**p*(b*x+a)**(-2-m-2*p),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p (bx+a)^{-m-2p-2} (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*(d*x)^m,x, algorithm="giac")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^(-m - 2*p - 2)*(d*x)^m, x)
```

3.997 $\int x^m \left(cx^2\right)^p (a+bx)^n\,dx$

Optimal. Leaf size=63

$$\frac{x^{m+1}\left(cx^2\right)^p (a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-n,m+2p+1;m+2p+2;-\frac{bx}{a}\right)}{m+2p+1}$$

```
[Out] (x^(1 + m)*(c*x^2)^p*(a + b*x)^n*Hypergeometric2F1[-n, 1 + m + 2*
p, 2 + m + 2*p, -((b*x)/a)])/((1 + m + 2*p)*(1 + (b*x)/a)^n)
```

Rubi [A] time = 0.0490944, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$\frac{x^{m+1}\left(cx^2\right)^p (a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-n,m+2p+1;m+2p+2;-\frac{bx}{a}\right)}{m+2p+1}$$

Antiderivative was successfully verified.

```
[In]  Int[x^m*(c*x^2)^p*(a + b*x)^n,x]
```

```
[Out] (x^(1 + m)*(c*x^2)^p*(a + b*x)^n*Hypergeometric2F1[-n, 1 + m + 2*
p, 2 + m + 2*p, -((b*x)/a)])/((1 + m + 2*p)*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 17.1306, size = 61, normalized size = 0.97

$$\frac{x^{-2p}x^{m+2p+1}\left(cx^2\right)^p \left(1+\frac{bx}{a}\right)^{-n} (a+bx)^n {}_2F_1\left(\begin{matrix} -n, m+2p+1 \\ m+2p+2 \end{matrix}\middle| -\frac{bx}{a}\right)}{m+2p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**m*(c*x**2)**p*(b*x+a)**n,x)
```

```
[Out] x**(-2*p)*x**(m + 2*p + 1)*(c*x**2)**p*(1 + b*x/a)**(-n)*(a + b*x
)**n*hyper((-n, m + 2*p + 1), (m + 2*p + 2,), -b*x/a)/(m + 2*p +
1)
```

Mathematica [A] time = 0.0551248, size = 63, normalized size = 1.

$$\frac{x^{m+1}\left(cx^2\right)^p (a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-n,m+2p+1;m+2p+2;-\frac{bx}{a}\right)}{m+2p+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^m*(c*x^2)^p*(a + b*x)^n,x]
```

```
[Out] (x^(1 + m)*(c*x^2)^p*(a + b*x)^n*Hypergeometric2F1[-n, 1 + m + 2*
p, 2 + m + 2*p, -((b*x)/a)])/((1 + m + 2*p)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.182, size = 0, normalized size = 0.

$$\int x^{m} \left(c x^{2}\right)^{p} \left(b x + a\right)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^m*(c*x^2)^p*(b*x+a)^n,x)
```

```
[Out] int(x^m*(c*x^2)^p*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(c x^{2}\right)^{p} \left(b x + a\right)^{n} x^{m}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^n*x^m,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^n*x^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(c x^{2}\right)^{p} \left(b x + a\right)^{n} x^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^n*x^m,x, algorithm="fricas")
```

```
[Out] integral((c*x^2)^p*(b*x + a)^n*x^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int x^m\left(cx^2\right)^p(a+bx)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**m*(c*x**2)**p*(b*x+a)**n,x)

[Out] Integral(x**m*(c*x**2)**p*(a + b*x)**n, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\left(cx^2\right)^p(bx+a)^n x^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^n*x^m,x, algorithm="giac")

[Out] integrate((c*x^2)^p*(b*x + a)^n*x^m, x)
```

3.998 $\int (dx)^m \left(cx^2\right)^p (a+bx)^n \, dx$

Optimal. Leaf size=68

$$\frac{\left(cx^2\right)^p (dx)^{m+1}(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-n,m+2p+1;m+2p+2;-\frac{bx}{a}\right)}{d(m+2p+1)}$$

```
[Out] ((d*x)^(1 + m)*(c*x^2)^p*(a + b*x)^n*Hypergeometric2F1[-n, 1 + m
+ 2*p, 2 + m + 2*p, -((b*x)/a)])/(d*(1 + m + 2*p)*(1 + (b*x)/a)^n
)
```

Rubi [A] time = 0.0552771, antiderivative size = 64, normalized size of antiderivative = 0.94, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{x\left(cx^2\right)^p (dx)^m(a+bx)^n \left(\frac{bx}{a}+1\right)^{-n} {}_2F_1\left(-n,m+2p+1;m+2p+2;-\frac{bx}{a}\right)}{m+2p+1}$$

Antiderivative was successfully verified.

```
[In]  Int[(d*x)^m*(c*x^2)^p*(a + b*x)^n,x]
```

```
[Out] (x*(d*x)^m*(c*x^2)^p*(a + b*x)^n*Hypergeometric2F1[-n, 1 + m + 2*
p, 2 + m + 2*p, -((b*x)/a)])/((1 + m + 2*p)*(1 + (b*x)/a)^n)
```

Rubi in Sympy [A] time = 20.9326, size = 66, normalized size = 0.97

$$\frac{\left(cx^2\right)^p (dx)^{-2p} (dx)^{m+2p+1} \left(1+\frac{bx}{a}\right)^{-n} (a+bx)^n \, {}_2F_1\left(\begin{matrix} -n, m+2p+1 \\ m+2p+2 \end{matrix}\middle| -\frac{bx}{a}\right)}{d\,(m+2p+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x)**m*(c*x**2)**p*(b*x+a)**n,x)
```

```
[Out] (c*x**2)**p*(d*x)**(-2*p)*(d*x)**(m + 2*p + 1)*(1 + b*x/a)**(-n)*
(a + b*x)**n*hyper((-n, m + 2*p + 1), (m + 2*p + 2,), -b*x/a)/(d*
(m + 2*p + 1))
```

Mathematica [A] time = 0.0391653, size = 64, normalized size = 0.94

$$\frac{x\left(cx^2\right)^p(dx)^m(a+bx)^n\left(\frac{bx}{a}+1\right)^{-n}{}_2F_1\left(-n,m+2p+1;m+2p+2;-\frac{bx}{a}\right)}{m+2p+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(d*x)^m*(c*x^2)^p*(a + b*x)^n,x]
```

```
[Out] (x*(d*x)^m*(c*x^2)^p*(a + b*x)^n*Hypergeometric2F1[-n, 1 + m + 2*
p, 2 + m + 2*p, -((b*x)/a)])/((1 + m + 2*p)*(1 + (b*x)/a)^n)
```

Maple [F] time = 0.236, size = 0, normalized size = 0.

$$\int (dx)^m\left(cx^2\right)^p(bx+a)^n\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x)^m*(c*x^2)^p*(b*x+a)^n,x)
```

```
[Out] int((d*x)^m*(c*x^2)^p*(b*x+a)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p(bx+a)^n(dx)^m\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^n*(d*x)^m,x, algorithm="maxima")
```

```
[Out] integrate((c*x^2)^p*(b*x + a)^n*(d*x)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(cx^2\right)^p(bx+a)^n(dx)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^n*(d*x)^m,x, algorithm="fricas")

[Out] integral((c*x^2)^p*(b*x + a)^n*(d*x)^m, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p (dx)^m (a + bx)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x)**m*(c*x**2)**p*(b*x+a)**n,x)

[Out] Integral((c*x**2)**p*(d*x)**m*(a + b*x)**n, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \left(cx^2\right)^p (bx + a)^n (dx)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((c*x^2)^p*(b*x + a)^n*(d*x)^m,x, algorithm="giac")

[Out] integrate((c*x^2)^p*(b*x + a)^n*(d*x)^m, x)
```

3.999 $\int \frac{(a+bx)^5}{\left(\frac{ad}{b}+dx\right)^3} dx$

Optimal. Leaf size=17

$$\frac{b^2(a+bx)^3}{3d^3}$$

```
[Out] (b^2*(a + b*x)^3)/(3*d^3)
```

Rubi [A] time = 0.0115818, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{b^2(a+bx)^3}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/((a*d)/b + d*x)^3,x]
```

```
[Out] (b^2*(a + b*x)^3)/(3*d^3)
```

Rubi in Sympy [A] time = 4.3166, size = 14, normalized size = 0.82

$$\frac{b^2 (a+bx)^3}{3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(a*d/b+d*x)**3,x)
```

```
[Out] b**2*(a + b*x)**3/(3*d**3)
```

Mathematica [A] time = 0.00351469, size = 17, normalized size = 1.

$$\frac{b^2(a+bx)^3}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/((a*d)/b + d*x)^3,x]
```

```
[Out] (b^2*(a + b*x)^3)/(3*d^3)
```

Maple [A] time = 0.001, size = 16, normalized size = 0.9

$$\frac{b^2 (bx + a)^3}{3 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(a*d/b+d*x)^3,x)
```

```
[Out] 1/3*b^2*(b*x+a)^3/d^3
```

Maxima [A] time = 1.34232, size = 42, normalized size = 2.47

$$\frac{b^5x^3 + 3 ab^4x^2 + 3 a^2b^3x}{3 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(d*x + a*d/b)^3,x, algorithm="maxima")
```

```
[Out] 1/3*(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x)/d^3
```

Fricas [A] time = 0.196277, size = 42, normalized size = 2.47

$$\frac{b^5x^3 + 3 ab^4x^2 + 3 a^2b^3x}{3 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(d*x + a*d/b)^3,x, algorithm="fricas")
```

```
[Out] 1/3*(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x)/d^3
```

Sympy [A] time = 0.231112, size = 34, normalized size = 2.

$$\frac{a^2b^3x}{d^3} + \frac{ab^4x^2}{d^3} + \frac{b^5x^3}{3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(a*d/b+d*x)**3,x)
```

```
[Out] a**2*b**3*x/d**3 + a*b**4*x**2/d**3 + b**5*x**3/(3*d**3)
```

GIAC/XCAS [A] time = 0.212677, size = 54, normalized size = 3.18

$$\frac{b^5d^6x^3 + 3\,ab^4d^6x^2 + 3\,a^2b^3d^6x}{3\,d^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + a*d/b)^3,x, algorithm="giac")
```

```
[Out] 1/3*(b^5*d^6*x^3 + 3*a*b^4*d^6*x^2 + 3*a^2*b^3*d^6*x)/d^9
```

3.1000 $\int \frac{(a+bx)^4}{\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=23

$$\frac{ab^3x}{d^3}+\frac{b^4x^2}{2d^3}$$

```
[Out] (a*b^3*x)/d^3 + (b^4*x^2)/(2*d^3)
```

Rubi [A] time = 0.0162692, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.05

$$\frac{ab^3x}{d^3}+\frac{b^4x^2}{2d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/((a*d)/b + d*x)^3,x]
```

```
[Out] (a*b^3*x)/d^3 + (b^4*x^2)/(2*d^3)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b^4\int x\,dx}{d^3}+\frac{b^3\int a\,dx}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(a*d/b+d*x)**3,x)
```

```
[Out] b**4*Integral(x, x)/d**3 + b**3*Integral(a, x)/d**3
```

Mathematica [A] time = 0.00148056, size = 19, normalized size = 0.83

$$\frac{b^3\left(ax+\frac{bx^2}{2}\right)}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/((a*d)/b + d*x)^3,x]
```

```
[Out] (b^3*(a*x + (b*x^2)/2))/d^3
```

Maple [A] time = 0.001, size = 18, normalized size = 0.8

$$\frac{b^3}{d^3}\left(ax+\frac{bx^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(a*d/b+d*x)^3,x)
```

```
[Out] b^3/d^3*(a*x+1/2*b*x^2)
```

Maxima [A] time = 1.34012, size = 27, normalized size = 1.17

$$\frac{b^4x^2+2\,ab^3x}{2\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + a*d/b)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(b^4*x^2 + 2*a*b^3*x)/d^3
```

Fricas [A] time = 0.191669, size = 27, normalized size = 1.17

$$\frac{b^4x^2+2\,ab^3x}{2\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + a*d/b)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*x^2 + 2*a*b^3*x)/d^3
```

Sympy [A] time = 0.219927, size = 20, normalized size = 0.87

$$\frac{ab^3x}{d^3}+\frac{b^4x^2}{2d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(a*d/b+d*x)**3,x)

[Out] a*b**3*x/d**3 + b**4*x**2/(2*d**3)
```

GIAC/XCAS [A] time = 0.213342, size = 35, normalized size = 1.52

$$\frac{b^4d^3x^2 + 2\,ab^3d^3x}{2\,d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + a*d/b)^3,x, algorithm="giac")

[Out] 1/2*(b^4*d^3*x^2 + 2*a*b^3*d^3*x)/d^6
```

3.1001 $\int \frac{(a+bx)^3}{\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=8

$$\frac{b^3x}{d^3}$$

```
[Out] (b^3*x)/d^3
```

Rubi [A] time = 0.00730169, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{b^3x}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/((a*d)/b + d*x)^3,x]

[Out] (b^3*x)/d^3
```

Rubi in Sympy [A] time = 3.76423, size = 7, normalized size = 0.88

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(a*d/b+d*x)**3,x)

[Out] b**3*x/d**3
```

Mathematica [A] time = 0.000525412, size = 8, normalized size = 1.

$$\frac{b^3x}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/((a*d)/b + d*x)^3,x]
```

```
[Out] (b^3*x)/d^3
```

Maple [A] time = 0.002, size = 9, normalized size = 1.1

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^3/(a*d/b+d*x)^3,x)
```

```
[Out] b^3*x/d^3
```

Maxima [A] time = 1.33905, size = 11, normalized size = 1.38

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/(d*x + a*d/b)^3,x, algorithm="maxima")
```

```
[Out] b^3*x/d^3
```

Fricas [A] time = 0.196872, size = 11, normalized size = 1.38

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^3/(d*x + a*d/b)^3,x, algorithm="fricas")
```

```
[Out] b^3*x/d^3
```

Sympy [A] time = 0.181287, size = 7, normalized size = 0.88

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(a*d/b+d*x)**3,x)
```

```
[Out] b**3*x/d**3
```

GIAC/XCAS [A] time = 0.209472, size = 11, normalized size = 1.38

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + a*d/b)^3,x, algorithm="giac")
```

```
[Out] b^3*x/d^3
```

3.1002 $\int \frac{(a+bx)^2}{\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=13

$$\frac{b^2\log(a+bx)}{d^3}$$

```
[Out] (b^2*Log[a + b*x])/d^3
```

Rubi [A] time = 0.0108081, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{b^2\log(a+bx)}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/((a*d)/b + d*x)^3,x]
```

```
[Out] (b^2*Log[a + b*x])/d^3
```

Rubi in Sympy [A] time = 4.31895, size = 12, normalized size = 0.92

$$\frac{b^2\log{(a+bx)}}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(a*d/b+d*x)**3,x)
```

```
[Out] b**2*log(a + b*x)/d**3
```

Mathematica [A] time = 0.0026645, size = 13, normalized size = 1.

$$\frac{b^2\log(a+bx)}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/((a*d)/b + d*x)^3,x]
```

```
[Out] (b^2*Log[a + b*x])/d^3
```

Maple [A] time = 0.002, size = 14, normalized size = 1.1

$$\frac{b^2 \ln(bx+a)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2/(a*d/b+d*x)^3,x)

[Out] b^2*ln(b*x+a)/d^3
```

Maxima [A] time = 1.35517, size = 18, normalized size = 1.38

$$\frac{b^2 \log(bx+a)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/(d*x + a*d/b)^3,x, algorithm="maxima")

[Out] b^2*log(b*x + a)/d^3
```

Fricas [A] time = 0.209254, size = 18, normalized size = 1.38

$$\frac{b^2 \log(bx+a)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2/(d*x + a*d/b)^3,x, algorithm="fricas")

[Out] b^2*log(b*x + a)/d^3
```

Sympy [A] time = 0.191897, size = 19, normalized size = 1.46

$$\frac{b^2 \log\left(ad^3+bd^3x\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(a*d/b+d*x)**3,x)
```

```
[Out] b**2*log(a*d**3 + b*d**3*x)/d**3
```

GIAC/XCAS [A] time = 0.215982, size = 19, normalized size = 1.46

$$\frac{b^2 \ln\left(|bx + a|\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + a*d/b)^3,x, algorithm="giac")
```

```
[Out] b^2*ln(abs(b*x + a))/d^3
```

3.1003 $\int \frac{a+bx}{\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=15

$$-\frac{b^2}{d^3(a+bx)}$$

```
[Out] -(b^2/(d^3*(a + b*x)))
```

Rubi [A] time = 0.0113412, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{b^2}{d^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/((a*d)/b + d*x)^3,x]
```

```
[Out] -(b^2/(d^3*(a + b*x)))
```

Rubi in Sympy [A] time = 4.26964, size = 12, normalized size = 0.8

$$-\frac{b^2}{d^3\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(a*d/b+d*x)**3,x)
```

```
[Out] -b**2/(d**3*(a + b*x))
```

Mathematica [A] time = 0.00598944, size = 15, normalized size = 1.

$$-\frac{b^2}{d^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/((a*d)/b + d*x)^3,x]
```

```
[Out] -(b^2/(d^3*(a + b*x)))
```

Maple [A] time = 0., size = 16, normalized size = 1.1

$$-\frac{b^2}{d^3\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(a*d/b+d*x)^3,x)
```

```
[Out] -b^2/d^3/(b*x+a)
```

Maxima [A] time = 1.34255, size = 26, normalized size = 1.73

$$-\frac{b^2}{bd^3x+ad^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + a*d/b)^3,x, algorithm="maxima")
```

```
[Out] -b^2/(b*d^3*x + a*d^3)
```

Fricas [A] time = 0.198634, size = 26, normalized size = 1.73

$$-\frac{b^2}{bd^3x+ad^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + a*d/b)^3,x, algorithm="fricas")
```

```
[Out] -b^2/(b*d^3*x + a*d^3)
```

Sympy [A] time = 1.24688, size = 19, normalized size = 1.27

$$-\frac{b^3}{abd^3+b^2d^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(a*d/b+d*x)**3,x)
```

```
[Out] -b**3/(a*b*d**3 + b**2*d**3*x)
```

GIAC/XCAS [A] time = 0.210464, size = 20, normalized size = 1.33

$$-\frac{b^2}{(bx+a)d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + a*d/b)^3,x, algorithm="giac")
```

```
[Out] -b^2/((b*x + a)*d^3)
```

3.1004 $\int \frac{1}{(a+bx)\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=17

$$-\frac{b^2}{3d^3(a+bx)^3}$$

```
[Out] -b^2/(3*d^3*(a + b*x)^3)
```

Rubi [A] time = 0.0110823, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^2}{3d^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)*((a*d)/b + d*x)^3),x]
```

```
[Out] -b^2/(3*d^3*(a + b*x)^3)
```

Rubi in Sympy [A] time = 4.40689, size = 15, normalized size = 0.88

$$-\frac{b^2}{3d^3\,(a+bx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)/(a*d/b+d*x)**3,x)
```

```
[Out] -b**2/(3*d**3*(a + b*x)**3)
```

Mathematica [A] time = 0.00754392, size = 17, normalized size = 1.

$$-\frac{b^2}{3d^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)*((a*d)/b + d*x)^3),x]
```

```
[Out] -b^2/(3*d^3*(a + b*x)^3)
```

Maple [A] time = 0., size = 16, normalized size = 0.9

$$-\frac{b^{2}}{3\,d^{3}\left(bx+a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(a*d/b+d*x)^3,x)
```

```
[Out] -1/3*b^2/d^3/(b*x+a)^3
```

Maxima [A] time = 1.34058, size = 63, normalized size = 3.71

$$-\frac{b^{2}}{3\left(b^{3}d^{3}x^{3}+3\,ab^{2}d^{3}x^{2}+3\,a^{2}bd^{3}x+a^{3}d^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + a*d/b)^3),x, algorithm="maxima")
```

```
[Out] -1/3*b^2/(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3
)
```

Fricas [A] time = 0.199678, size = 63, normalized size = 3.71

$$-\frac{b^{2}}{3\left(b^{3}d^{3}x^{3}+3\,ab^{2}d^{3}x^{2}+3\,a^{2}bd^{3}x+a^{3}d^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + a*d/b)^3),x, algorithm="fricas")
```

```
[Out] -1/3*b^2/(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3
)
```

Sympy [A] time = 1.65115, size = 53, normalized size = 3.12

$$-\frac{b^{3}}{3a^{3}bd^{3}+9a^{2}b^{2}d^{3}x+9ab^{3}d^{3}x^{2}+3b^{4}d^{3}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(a*d/b+d*x)**3,x)
```

```
[Out] -b**3/(3*a**3*b*d**3 + 9*a**2*b**2*d**3*x + 9*a*b**3*d**3*x**2 +
3*b**4*d**3*x**3)
```

GIAC/XCAS [A] time = 0.210949, size = 20, normalized size = 1.18

$$-\frac{b^2}{3\,(bx+a)^3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + a*d/b)^3),x, algorithm="giac")
```

```
[Out] -1/3*b^2/((b*x + a)^3*d^3)
```

3.1005 $\int \frac{1}{(a+bx)^2\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=17

$$-\frac{b^2}{4d^3(a+bx)^4}$$

```
[Out] -b^2/(4*d^3*(a + b*x)^4)
```

Rubi [A] time = 0.0108653, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^2}{4d^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)^2*((a*d)/b + d*x)^3),x]
```

```
[Out] -b^2/(4*d^3*(a + b*x)^4)
```

Rubi in Sympy [A] time = 4.28393, size = 15, normalized size = 0.88

$$-\frac{b^2}{4d^3\,(a+bx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**2/(a*d/b+d*x)**3,x)
```

```
[Out] -b**2/(4*d**3*(a + b*x)**4)
```

Mathematica [A] time = 0.0086741, size = 17, normalized size = 1.

$$-\frac{b^2}{4d^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)^2*((a*d)/b + d*x)^3),x]
```

```
[Out] -b^2/(4*d^3*(a + b*x)^4)
```

Maple [A] time = 0., size = 16, normalized size = 0.9

$$-\frac{b^2}{4\,d^3\,(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(a*d/b+d*x)^3,x)
```

```
[Out] -1/4*b^2/d^3/(b*x+a)^4
```

Maxima [A] time = 1.35375, size = 82, normalized size = 4.82

$$-\frac{b^2}{4\,(b^4d^3x^4+4\,ab^3d^3x^3+6\,a^2b^2d^3x^2+4\,a^3bd^3x+a^4d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + a*d/b)^3),x, algorithm="maxima")
```

```
[Out] -1/4*b^2/(b^4*d^3*x^4 + 4*a*b^3*d^3*x^3 + 6*a^2*b^2*d^3*x^2 + 4*a
^3*b*d^3*x + a^4*d^3)
```

Fricas [A] time = 0.194708, size = 82, normalized size = 4.82

$$-\frac{b^2}{4\,(b^4d^3x^4+4\,ab^3d^3x^3+6\,a^2b^2d^3x^2+4\,a^3bd^3x+a^4d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + a*d/b)^3),x, algorithm="fricas")
```

```
[Out] -1/4*b^2/(b^4*d^3*x^4 + 4*a*b^3*d^3*x^3 + 6*a^2*b^2*d^3*x^2 + 4*a
^3*b*d^3*x + a^4*d^3)
```

Sympy [A] time = 1.87233, size = 68, normalized size = 4.

$$-\frac{b^3}{4a^4bd^3+16a^3b^2d^3x+24a^2b^3d^3x^2+16ab^4d^3x^3+4b^5d^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(a*d/b+d*x)**3,x)
```

```
[Out] -b**3/(4*a**4*b*d**3 + 16*a**3*b**2*d**3*x + 24*a**2*b**3*d**3*x*
*2 + 16*a*b**4*d**3*x**3 + 4*b**5*d**3*x**4)
```

GIAC/XCAS [A] time = 0.211831, size = 20, normalized size = 1.18

$$-\frac{b^2}{4\,(bx+a)^4 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + a*d/b)^3),x, algorithm="giac")
```

```
[Out] -1/4*b^2/((b*x + a)^4*d^3)
```

3.1006 $\int \frac{1}{(a+bx)^3\left(\frac{ad}{b}+dx\right)^3}\,dx$

Optimal. Leaf size=17

$$-\frac{b^2}{5d^3(a+bx)^5}$$

```
[Out] -b^2/(5*d^3*(a + b*x)^5)
```

Rubi [A] time = 0.0107054, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{b^2}{5d^3(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*((a*d)/b + d*x)^3),x]

[Out] -b^2/(5*d^3*(a + b*x)^5)
```

Rubi in Sympy [A] time = 4.50113, size = 15, normalized size = 0.88

$$-\frac{b^2}{5d^3\,(a+bx)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(a*d/b+d*x)**3,x)

[Out] -b**2/(5*d**3*(a + b*x)**5)
```

Mathematica [A] time = 0.00959981, size = 17, normalized size = 1.

$$-\frac{b^2}{5d^3(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*((a*d)/b + d*x)^3),x]
```

```
[Out] -b^2/(5*d^3*(a + b*x)^5)
```

Maple [A] time = 0.002, size = 16, normalized size = 0.9

$$-\frac{b^2}{5\,d^3\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(a*d/b+d*x)^3,x)
```

```
[Out] -1/5*b^2/d^3/(b*x+a)^5
```

Maxima [A] time = 1.34774, size = 101, normalized size = 5.94

$$-\frac{b^2}{5\,(b^5d^3x^5+5\,ab^4d^3x^4+10\,a^2b^3d^3x^3+10\,a^3b^2d^3x^2+5\,a^4bd^3x+a^5d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + a*d/b)^3),x, algorithm="maxima")
```

```
[Out] -1/5*b^2/(b^5*d^3*x^5 + 5*a*b^4*d^3*x^4 + 10*a^2*b^3*d^3*x^3 + 10
*a^3*b^2*d^3*x^2 + 5*a^4*b*d^3*x + a^5*d^3)
```

Fricas [A] time = 0.194533, size = 101, normalized size = 5.94

$$-\frac{b^2}{5\,(b^5d^3x^5+5\,ab^4d^3x^4+10\,a^2b^3d^3x^3+10\,a^3b^2d^3x^2+5\,a^4bd^3x+a^5d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + a*d/b)^3),x, algorithm="fricas")
```

```
[Out] -1/5*b^2/(b^5*d^3*x^5 + 5*a*b^4*d^3*x^4 + 10*a^2*b^3*d^3*x^3 + 10
*a^3*b^2*d^3*x^2 + 5*a^4*b*d^3*x + a^5*d^3)
```

Sympy [A] time = 2.14561, size = 83, normalized size = 4.88

$$-\frac{b^3}{5a^5bd^3+25a^4b^2d^3x+50a^3b^3d^3x^2+50a^2b^4d^3x^3+25ab^5d^3x^4+5b^6d^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(a*d/b+d*x)**3,x)
```

```
[Out] -b**3/(5*a**5*b*d**3 + 25*a**4*b**2*d**3*x + 50*a**3*b**3*d**3*x*
*2 + 50*a**2*b**4*d**3*x**3 + 25*a*b**5*d**3*x**4 + 5*b**6*d**3*x
**5)
```

GIAC/XCAS [A] time = 0.213264, size = 20, normalized size = 1.18

$$-\frac{b^2}{5\,(bx+a)^5 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + a*d/b)^3),x, algorithm="giac")
```

```
[Out] -1/5*b^2/((b*x + a)^5*d^3)
```

3.1007 $\int \frac{\left(\frac{bc}{d}+bx\right)^5}{(c+dx)^3}\,dx$

Optimal. Leaf size=17

$$\frac{b^5(c+dx)^3}{3d^6}$$

```
[Out] (b^5*(c + d*x)^3)/(3*d^6)
```

Rubi [A] time = 0.0118669, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{b^5(c+dx)^3}{3d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[((b*c)/d + b*x)^5/(c + d*x)^3,x]

[Out] (b^5*(c + d*x)^3)/(3*d^6)
```

Rubi in Sympy [A] time = 4.47594, size = 14, normalized size = 0.82

$$\frac{b^5\left(c+dx\right)^3}{3d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*c/d+b*x)**5/(d*x+c)**3,x)

[Out] b**5*(c + d*x)**3/(3*d**6)
```

Mathematica [A] time = 0.00385356, size = 17, normalized size = 1.

$$\frac{b^5(c+dx)^3}{3d^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((b*c)/d + b*x)^5/(c + d*x)^3,x]
```

```
[Out] (b^5*(c + d*x)^3)/(3*d^6)
```

Maple [A] time = 0., size = 16, normalized size = 0.9

$$\frac{b^5 (dx + c)^3}{3\, d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*c/d+b*x)^5/(d*x+c)^3,x)
```

```
[Out] 1/3*b^5*(d*x+c)^3/d^6
```

Maxima [A] time = 1.34347, size = 47, normalized size = 2.76

$$\frac{b^5 d^2 x^3 + 3\, b^5 c d x^2 + 3\, b^5 c^2 x}{3\, d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)^5/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/3*(b^5*d^2*x^3 + 3*b^5*c*d*x^2 + 3*b^5*c^2*x)/d^5
```

Fricas [A] time = 0.191766, size = 47, normalized size = 2.76

$$\frac{b^5 d^2 x^3 + 3\, b^5 c d x^2 + 3\, b^5 c^2 x}{3\, d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)^5/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/3*(b^5*d^2*x^3 + 3*b^5*c*d*x^2 + 3*b^5*c^2*x)/d^5
```

Sympy [A] time = 0.256357, size = 34, normalized size = 2.

$$\frac{b^5 c^2 x}{d^5} + \frac{b^5 c x^2}{d^4} + \frac{b^5 x^3}{3 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c/d+b*x)**5/(d*x+c)**3,x)
```

```
[Out] b**5*c**2*x/d**5 + b**5*c*x**2/d**4 + b**5*x**3/(3*d**3)
```

GIAC/XCAS [A] time = 0.207103, size = 54, normalized size = 3.18

$$\frac{b^5 d^{12} x^3 + 3\, b^5 c d^{11} x^2 + 3\, b^5 c^2 d^{10} x}{3\, d^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)^5/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/3*(b^5*d^12*x^3 + 3*b^5*c*d^11*x^2 + 3*b^5*c^2*d^10*x)/d^15
```

3.1008 $\int \frac{\left(\frac{bc}{d}+bx\right)^4}{(c+dx)^3}\,dx$

Optimal. Leaf size=23

$$\frac{b^4cx}{d^4}+\frac{b^4x^2}{2d^3}$$

```
[Out] (b^4*c*x)/d^4 + (b^4*x^2)/(2*d^3)
```

Rubi [A] time = 0.0157176, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.05

$$\frac{b^4cx}{d^4}+\frac{b^4x^2}{2d^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b*c)/d + b*x)^4/(c + d*x)^3,x]
```

```
[Out] (b^4*c*x)/d^4 + (b^4*x^2)/(2*d^3)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b^4\int x\,dx}{d^3}+\frac{b^4\int c\,dx}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*c/d+b*x)**4/(d*x+c)**3,x)
```

```
[Out] b**4*Integral(x, x)/d**3 + b**4*Integral(c, x)/d**4
```

Mathematica [A] time = 0.00158552, size = 19, normalized size = 0.83

$$\frac{b^4\left(cx+\frac{dx^2}{2}\right)}{d^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b*c)/d + b*x)^4/(c + d*x)^3,x]
```

```
[Out] (b^4*(c*x + (d*x^2)/2))/d^4
```

Maple [A] time = 0.003, size = 18, normalized size = 0.8

$$\frac{b^4}{d^4}\left(cx + \frac{dx^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c/d+b*x)^4/(d*x+c)^3,x)
```

```
[Out] b^4/d^4*(c*x+1/2*d*x^2)
```

Maxima [A] time = 1.34888, size = 28, normalized size = 1.22

$$\frac{b^4dx^2 + 2\,b^4cx}{2\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)^4/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(b^4*d*x^2 + 2*b^4*c*x)/d^4
```

Fricas [A] time = 0.197375, size = 28, normalized size = 1.22

$$\frac{b^4dx^2 + 2\,b^4cx}{2\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)^4/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*d*x^2 + 2*b^4*c*x)/d^4
```

Sympy [A] time = 0.222965, size = 20, normalized size = 0.87

$$\frac{b^4cx}{d^4} + \frac{b^4x^2}{2d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c/d+b*x)**4/(d*x+c)**3,x)
```

```
[Out] b**4*c*x/d**4 + b**4*x**2/(2*d**3)
```

GIAC/XCAS [A] time = 0.204215, size = 35, normalized size = 1.52

$$\frac{b^4 d^5 x^2 + 2\, b^4 c d^4 x}{2\, d^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)^4/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b^4*d^5*x^2 + 2*b^4*c*d^4*x)/d^8
```

3.1009 $\int \frac{\left(\frac{bc}{d}+bx\right)^3}{(c+dx)^3}\,dx$

Optimal. Leaf size=8

$$\frac{b^3x}{d^3}$$

[Out] (b^3*x)/d^3

Rubi [A] time = 0.00696827, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{b^3x}{d^3}$$

Antiderivative was successfully verified.

[In] Int[((b*c)/d + b*x)^3/(c + d*x)^3,x]

[Out] (b^3*x)/d^3

Rubi in Sympy [A] time = 4.00453, size = 7, normalized size = 0.88

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((b*c/d+b*x)**3/(d*x+c)**3,x)

[Out] b**3*x/d**3

Mathematica [A] time = 0.00057373, size = 8, normalized size = 1.

$$\frac{b^3x}{d^3}$$

Antiderivative was successfully verified.

[In] Integrate[((b*c)/d + b*x)^3/(c + d*x)^3,x]

```
[Out] (b^3*x)/d^3
```

Maple [A] time = 0., size = 9, normalized size = 1.1

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c/d+b*x)^3/(d*x+c)^3,x)

[Out] b^3*x/d^3
```

Maxima [A] time = 1.35011, size = 11, normalized size = 1.38

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)^3/(d*x + c)^3,x, algorithm="maxima")

[Out] b^3*x/d^3
```

Fricas [A] time = 0.19321, size = 11, normalized size = 1.38

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)^3/(d*x + c)^3,x, algorithm="fricas")

[Out] b^3*x/d^3
```

Sympy [A] time = 0.201996, size = 7, normalized size = 0.88

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c/d+b*x)**3/(d*x+c)**3,x)
```

```
[Out] b**3*x/d**3
```

GIAC/XCAS [A] time = 0.207654, size = 11, normalized size = 1.38

$$\frac{b^3x}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)^3/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] b^3*x/d^3
```

3.1010 $\int \frac{\left(\frac{bc}{d}+bx\right)^2}{(c+dx)^3}\,dx$

Optimal. Leaf size=13

$$\frac{b^2\log(c+dx)}{d^3}$$

```
[Out] (b^2*Log[c + d*x])/d^3
```

Rubi [A] time = 0.0101764, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{b^2\log(c+dx)}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[((b*c)/d + b*x)^2/(c + d*x)^3,x]

[Out] (b^2*Log[c + d*x])/d^3
```

Rubi in Sympy [A] time = 4.78192, size = 12, normalized size = 0.92

$$\frac{b^2\log{(c+dx)}}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*c/d+b*x)**2/(d*x+c)**3,x)

[Out] b**2*log(c + d*x)/d**3
```

Mathematica [A] time = 0.00281777, size = 13, normalized size = 1.

$$\frac{b^2\log(c+dx)}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((b*c)/d + b*x)^2/(c + d*x)^3,x]
```

```
[Out] (b^2*Log[c + d*x])/d^3
```

Maple [A] time = 0.002, size = 14, normalized size = 1.1

$$\frac{b^2 \ln (dx + c)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c/d+b*x)^2/(d*x+c)^3,x)
```

```
[Out] b^2*ln(d*x+c)/d^3
```

Maxima [A] time = 1.33967, size = 18, normalized size = 1.38

$$\frac{b^2 \log (dx + c)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)^2/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] b^2*log(d*x + c)/d^3
```

Fricas [A] time = 0.201653, size = 18, normalized size = 1.38

$$\frac{b^2 \log (dx + c)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)^2/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] b^2*log(d*x + c)/d^3
```

Sympy [A] time = 0.184548, size = 17, normalized size = 1.31

$$\frac{b^2 \log \left(cd^2 + d^3 x\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c/d+b*x)**2/(d*x+c)**3,x)
```

```
[Out] b**2*log(c*d**2 + d**3*x)/d**3
```

GIAC/XCAS [A] time = 0.207, size = 19, normalized size = 1.46

$$\frac{b^2 \ln\left(|dx + c|\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)^2/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] b^2*ln(abs(d*x + c))/d^3
```

3.1011 $\int \frac{\frac{bc}{d}+bx}{(c+dx)^3} dx$

Optimal. Leaf size=13

$$-\frac{b}{d^2(c+dx)}$$

```
[Out] -(b/(d^2*(c + d*x)))
```

Rubi [A] time = 0.010258, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{b}{d^2(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[((b*c)/d + b*x)/(c + d*x)^3,x]
```

```
[Out] -(b/(d^2*(c + d*x)))
```

Rubi in Sympy [A] time = 3.80663, size = 10, normalized size = 0.77

$$-\frac{b}{d^2(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*c/d+b*x)/(d*x+c)**3,x)
```

```
[Out] -b/(d**2*(c + d*x))
```

Mathematica [A] time = 0.00592353, size = 13, normalized size = 1.

$$-\frac{b}{d^2(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((b*c)/d + b*x)/(c + d*x)^3,x]
```

```
[Out] -(b/(d^2*(c + d*x)))
```

Maple [A] time = 0.001, size = 14, normalized size = 1.1

$$-\frac{b}{d^2\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c/d+b*x)/(d*x+c)^3,x)
```

```
[Out] -b/d^2/(d*x+c)
```

Maxima [A] time = 1.34173, size = 22, normalized size = 1.69

$$-\frac{b}{d^3x+cd^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] -b/(d^3*x + c*d^2)
```

Fricas [A] time = 0.196637, size = 22, normalized size = 1.69

$$-\frac{b}{d^3x+cd^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + b*c/d)/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] -b/(d^3*x + c*d^2)
```

Sympy [A] time = 1.17883, size = 12, normalized size = 0.92

$$-\frac{b}{cd^2+d^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c/d+b*x)/(d*x+c)**3,x)
```

```
[Out] -b/(c*d**2 + d**3*x)
```

GIAC/XCAS [A] time = 0.203396, size = 18, normalized size = 1.38

$$-\frac{b}{(dx+c)d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + b*c/d)/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] -b/((d*x + c)*d^2)
```

3.1012 $\int \frac{1}{\left(\frac{bc}{d}+bx\right)(c+dx)^3}\,dx$

Optimal. Leaf size=14

$$-\frac{1}{3b(c+dx)^3}$$

```
[Out] -1/(3*b*(c + d*x)^3)
```

Rubi [A] time = 0.00909648, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{1}{3b(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(((b*c)/d + b*x)*(c + d*x)^3),x]
```

```
[Out] -1/(3*b*(c + d*x)^3)
```

Rubi in Sympy [A] time = 4.22088, size = 12, normalized size = 0.86

$$-\frac{1}{3b\,(c+dx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*c/d+b*x)/(d*x+c)**3,x)
```

```
[Out] -1/(3*b*(c + d*x)**3)
```

Mathematica [A] time = 0.00721082, size = 14, normalized size = 1.

$$-\frac{1}{3b(c+dx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(((b*c)/d + b*x)*(c + d*x)^3),x]
```

```
[Out] -1/(3*b*(c + d*x)^3)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$-\frac{1}{3\,b\,(dx+c)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*c/d+b*x)/(d*x+c)^3,x)

[Out] -1/3/b/(d*x+c)^3
```

Maxima [A] time = 1.34919, size = 49, normalized size = 3.5

$$-\frac{1}{3\,(bd^{3}x^{3}+3\,bcd^{2}x^{2}+3\,bc^{2}dx+bc^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)*(d*x + c)^3),x, algorithm="maxima")

[Out] -1/3/(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)
```

Fricas [A] time = 0.197369, size = 49, normalized size = 3.5

$$-\frac{1}{3\,(bd^{3}x^{3}+3\,bcd^{2}x^{2}+3\,bc^{2}dx+bc^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)*(d*x + c)^3),x, algorithm="fricas")

[Out] -1/3/(b*d^3*x^3 + 3*b*c*d^2*x^2 + 3*b*c^2*d*x + b*c^3)
```

Sympy [A] time = 1.58611, size = 44, normalized size = 3.14

$$-\frac{d}{3bc^{3}d+9bc^{2}d^{2}x+9bcd^{3}x^{2}+3bd^{4}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*c/d+b*x)/(d*x+c)**3,x)
```

```
[Out] -d/(3*b*c**3*d + 9*b*c**2*d**2*x + 9*b*c*d**3*x**2 + 3*b*d**4*x**
3)
```

GIAC/XCAS [A] time = 0.205704, size = 16, normalized size = 1.14

$$-\frac{1}{3\,(dx+c)^3 b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)*(d*x + c)^3),x, algorithm="giac")
```

```
[Out] -1/3/((d*x + c)^3*b)
```

3.1013 $\int \frac{1}{\left(\frac{bc}{d}+bx\right)^2(c+dx)^3}\,dx$

Optimal. Leaf size=15

$$-\frac{d}{4b^2(c+dx)^4}$$

```
[Out] -d/(4*b^2*(c + d*x)^4)
```

Rubi [A] time = 0.0102699, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{d}{4b^2(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(((b*c)/d + b*x)^2*(c + d*x)^3),x]
```

```
[Out] -d/(4*b^2*(c + d*x)^4)
```

Rubi in Sympy [A] time = 4.47167, size = 14, normalized size = 0.93

$$-\frac{d}{4b^2\left(c+dx\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*c/d+b*x)**2/(d*x+c)**3,x)
```

```
[Out] -d/(4*b**2*(c + d*x)**4)
```

Mathematica [A] time = 0.00807221, size = 15, normalized size = 1.

$$-\frac{d}{4b^2(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(((b*c)/d + b*x)^2*(c + d*x)^3),x]
```

```
[Out] -d/(4*b^2*(c + d*x)^4)
```

Maple [A] time = 0.003, size = 14, normalized size = 0.9

$$-\frac{d}{4\,b^2\,(dx+c)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*c/d+b*x)^2/(d*x+c)^3,x)
```

```
[Out] -1/4*d/b^2/(d*x+c)^4
```

Maxima [A] time = 1.33967, size = 80, normalized size = 5.33

$$-\frac{d}{4\,(b^2d^4x^4+4\,b^2cd^3x^3+6\,b^2c^2d^2x^2+4\,b^2c^3dx+b^2c^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)^2*(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] -1/4*d/(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2
*c^3*d*x + b^2*c^4)
```

Fricas [A] time = 0.19414, size = 80, normalized size = 5.33

$$-\frac{d}{4\,(b^2d^4x^4+4\,b^2cd^3x^3+6\,b^2c^2d^2x^2+4\,b^2c^3dx+b^2c^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)^2*(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/4*d/(b^2*d^4*x^4 + 4*b^2*c*d^3*x^3 + 6*b^2*c^2*d^2*x^2 + 4*b^2
*c^3*d*x + b^2*c^4)
```

Sympy [A] time = 1.88106, size = 68, normalized size = 4.53

$$-\frac{d^2}{4b^2c^4d+16b^2c^3d^2x+24b^2c^2d^3x^2+16b^2cd^4x^3+4b^2d^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*c/d+b*x)**2/(d*x+c)**3,x)
```

```
[Out] -d**2/(4*b**2*c**4*d + 16*b**2*c**3*d**2*x + 24*b**2*c**2*d**3*x*
*2 + 16*b**2*c*d**4*x**3 + 4*b**2*d**5*x**4)
```

GIAC/XCAS [A] time = 0.202924, size = 27, normalized size = 1.8

$$-\frac{b^2}{4\left(bx+\frac{bc}{d}\right)^4 d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)^2*(d*x + c)^3),x, algorithm="giac")
```

```
[Out] -1/4*b^2/((b*x + b*c/d)^4*d^3)
```

3.1014 $\int \frac{1}{\left(\frac{bc}{d}+bx\right)^3(c+dx)^3}\,dx$

Optimal. Leaf size=17

$$-\frac{d^2}{5b^3(c+dx)^5}$$

```
[Out] -d^2/(5*b^3*(c + d*x)^5)
```

Rubi [A] time = 0.0117367, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{d^2}{5b^3(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(((b*c)/d + b*x)^3*(c + d*x)^3),x]
```

```
[Out] -d^2/(5*b^3*(c + d*x)^5)
```

Rubi in Sympy [A] time = 4.731, size = 15, normalized size = 0.88

$$-\frac{d^2}{5b^3\,(c+dx)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*c/d+b*x)**3/(d*x+c)**3,x)
```

```
[Out] -d**2/(5*b**3*(c + d*x)**5)
```

Mathematica [A] time = 0.00910416, size = 17, normalized size = 1.

$$-\frac{d^2}{5b^3(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(((b*c)/d + b*x)^3*(c + d*x)^3),x]
```

```
[Out] -d^2/(5*b^3*(c + d*x)^5)
```

Maple [A] time = 0.002, size = 16, normalized size = 0.9

$$-\frac{d^2}{5\,b^3\,(dx+c)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*c/d+b*x)^3/(d*x+c)^3,x)
```

```
[Out] -1/5*d^2/b^3/(d*x+c)^5
```

Maxima [A] time = 1.43506, size = 101, normalized size = 5.94

$$-\frac{d^2}{5\,(b^3d^5x^5+5\,b^3cd^4x^4+10\,b^3c^2d^3x^3+10\,b^3c^3d^2x^2+5\,b^3c^4dx+b^3c^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)^3*(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] -1/5*d^2/(b^3*d^5*x^5 + 5*b^3*c*d^4*x^4 + 10*b^3*c^2*d^3*x^3 + 10
*b^3*c^3*d^2*x^2 + 5*b^3*c^4*d*x + b^3*c^5)
```

Fricas [A] time = 0.211353, size = 101, normalized size = 5.94

$$-\frac{d^2}{5\,(b^3d^5x^5+5\,b^3cd^4x^4+10\,b^3c^2d^3x^3+10\,b^3c^3d^2x^2+5\,b^3c^4dx+b^3c^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)^3*(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/5*d^2/(b^3*d^5*x^5 + 5*b^3*c*d^4*x^4 + 10*b^3*c^2*d^3*x^3 + 10
*b^3*c^3*d^2*x^2 + 5*b^3*c^4*d*x + b^3*c^5)
```

Sympy [A] time = 2.15747, size = 83, normalized size = 4.88

$$-\frac{d^3}{5b^3c^5d+25b^3c^4d^2x+50b^3c^3d^3x^2+50b^3c^2d^4x^3+25b^3cd^5x^4+5b^3d^6x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*c/d+b*x)**3/(d*x+c)**3,x)
```

```
[Out] -d**3/(5*b**3*c**5*d + 25*b**3*c**4*d**2*x + 50*b**3*c**3*d**3*x*
*2 + 50*b**3*c**2*d**4*x**3 + 25*b**3*c*d**5*x**4 + 5*b**3*d**6*x
**5)
```

GIAC/XCAS [A] time = 0.206191, size = 20, normalized size = 1.18

$$-\frac{d^2}{5\,(dx+c)^5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + b*c/d)^3*(d*x + c)^3),x, algorithm="giac")
```

```
[Out] -1/5*d^2/((d*x + c)^5*b^3)
```

3.1015 $\int (a+bx)^5(ac+bcx)^n\,dx$

Optimal. Leaf size=24

$$\frac{(ac+bcx)^{n+6}}{bc^6(n+6)}$$

```
[Out] (a*c + b*c*x)^(6 + n)/(b*c^6*(6 + n))
```

Rubi [A] time = 0.0226494, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{(ac+bcx)^{n+6}}{bc^6(n+6)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(a*c + b*c*x)^n,x]
```

```
[Out] (a*c + b*c*x)^(6 + n)/(b*c^6*(6 + n))
```

Rubi in Sympy [A] time = 5.95677, size = 19, normalized size = 0.79

$$\frac{(ac+bcx)^{n+6}}{bc^6\,(n+6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(b*c*x+a*c)**n,x)
```

```
[Out] (a*c + b*c*x)**(n + 6)/(b*c**6*(n + 6))
```

Mathematica [A] time = 0.0267896, size = 25, normalized size = 1.04

$$\frac{(a+bx)^6(c(a+bx))^n}{b(n+6)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(a*c + b*c*x)^n,x]
```

```
[Out] ((a + b*x)^6*(c*(a + b*x))^n)/(b*(6 + n))
```

Maple [A] time = 0.003, size = 27, normalized size = 1.1

$$\frac{(bx+a)^6 (bcx+ac)^n}{b(6+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(b*c*x+a*c)^n,x)
```

```
[Out] (b*x+a)^6/b/(6+n)*(b*c*x+a*c)^n
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(b*c*x + a*c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.235622, size = 108, normalized size = 4.5

$$\frac{\left(b^6x^6 + 6\,ab^5x^5 + 15\,a^2b^4x^4 + 20\,a^3b^3x^3 + 15\,a^4b^2x^2 + 6\,a^5bx + a^6\right)(bcx+ac)^n}{bn+6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(b*c*x + a*c)^n,x, algorithm="fricas")
```

```
[Out] (b^6*x^6 + 6*a*b^5*x^5 + 15*a^2*b^4*x^4 + 20*a^3*b^3*x^3 + 15*a^4
*b^2*x^2 + 6*a^5*b*x + a^6)*(b*c*x + a*c)^n/(b*n + 6*b)
```

Sympy [A] time = 5.14806, size = 212, normalized size = 8.83

$$\begin{cases} \frac{x}{ac^6} & \text{f} \\ a^5x\,(ac)^n & \text{f} \\ \frac{\log\left(\frac{a}{b}+x\right)}{bc^6} & \text{f} \\ \frac{a^6(ac+bcx)^n}{bn+6b} + \frac{6a^5bx(ac+bcx)^n}{bn+6b} + \frac{15a^4b^2x^2(ac+bcx)^n}{bn+6b} + \frac{20a^3b^3x^3(ac+bcx)^n}{bn+6b} + \frac{15a^2b^4x^4(ac+bcx)^n}{bn+6b} + \frac{6ab^5x^5(ac+bcx)^n}{bn+6b} + \frac{b^6x^6(ac+bcx)^n}{bn+6b} & \text{c} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(b*c*x+a*c)**n,x)
```

```
[Out] Piecewise((x/(a*c**6), Eq(b, 0) & Eq(n, -6)), (a**5*x*(a*c)**n, E
q(b, 0)), (log(a/b + x)/(b*c**6), Eq(n, -6)), (a**6*(a*c + b*c*x)
**n/(b*n + 6*b) + 6*a**5*b*x*(a*c + b*c*x)**n/(b*n + 6*b) + 15*a*
*4*b**2*x**2*(a*c + b*c*x)**n/(b*n + 6*b) + 20*a**3*b**3*x**3*(a*
c + b*c*x)**n/(b*n + 6*b) + 15*a**2*b**4*x**4*(a*c + b*c*x)**n/(b
*n + 6*b) + 6*a*b**5*x**5*(a*c + b*c*x)**n/(b*n + 6*b) + b**6*x**
6*(a*c + b*c*x)**n/(b*n + 6*b), True))
```

GIAC/XCAS [A] time = 0.210587, size = 209, normalized size = 8.71

$$\frac{b^6x^6e^{(n\ln(bcx+ac))} + 6\,ab^5x^5e^{(n\ln(bcx+ac))} + 15\,a^2b^4x^4e^{(n\ln(bcx+ac))} + 20\,a^3b^3x^3e^{(n\ln(bcx+ac))} + 15\,a^4b^2x^2e^{(n\ln(bcx+ac))} + 6\,a^5bxe}{bn + 6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(b*c*x + a*c)^n,x, algorithm="giac")
```

```
[Out] (b^6*x^6*e^(n*ln(b*c*x + a*c)) + 6*a*b^5*x^5*e^(n*ln(b*c*x + a*c)
) + 15*a^2*b^4*x^4*e^(n*ln(b*c*x + a*c)) + 20*a^3*b^3*x^3*e^(n*ln
(b*c*x + a*c)) + 15*a^4*b^2*x^2*e^(n*ln(b*c*x + a*c)) + 6*a^5*b*x
*e^(n*ln(b*c*x + a*c)) + a^6*e^(n*ln(b*c*x + a*c)))/(b*n + 6*b)
```

3.1016 $\int (a+bx)^5(ac+bcx)^3\,dx$

Optimal. Leaf size=17

$$\frac{c^3(a+bx)^9}{9b}$$

```
[Out] (c^3*(a + b*x)^9)/(9*b)
```

Rubi [A] time = 0.011865, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{c^3(a+bx)^9}{9b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(a*c + b*c*x)^3,x]

[Out] (c^3*(a + b*x)^9)/(9*b)
```

Rubi in Sympy [A] time = 4.39243, size = 12, normalized size = 0.71

$$\frac{c^3\,(a+bx)^9}{9b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(b*c*x+a*c)**3,x)

[Out] c**3*(a + b*x)**9/(9*b)
```

Mathematica [A] time = 0.00349581, size = 17, normalized size = 1.

$$\frac{c^3(a+bx)^9}{9b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(a*c + b*c*x)^3,x]
```

```
[Out] (c^3*(a + b*x)^9)/(9*b)
```

Maple [B] time = 0.001, size = 114, normalized size = 6.7

$$\frac{b^8c^3x^9}{9}+ab^7c^3x^8+4\,a^2b^6c^3x^7+\frac{28\,a^3b^5c^3x^6}{3}+14\,a^4b^4c^3x^5+14\,a^5b^3c^3x^4+\frac{28\,a^6c^3b^2x^3}{3}+4\,a^7c^3bx^2+a^8c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(b*c*x+a*c)^3,x)
```

```
[Out] 1/9*b^8*c^3*x^9+a*b^7*c^3*x^8+4*a^2*b^6*c^3*x^7+28/3*a^3*b^5*c^3*
x^6+14*a^4*b^4*c^3*x^5+14*a^5*b^3*c^3*x^4+28/3*a^6*c^3*b^2*x^3+4*
a^7*c^3*b*x^2+a^8*c^3*x
```

Maxima [A] time = 1.33513, size = 153, normalized size = 9.

$$\frac{1}{9}\,b^8c^3x^9+ab^7c^3x^8+4\,a^2b^6c^3x^7+\frac{28}{3}\,a^3b^5c^3x^6+14\,a^4b^4c^3x^5+14\,a^5b^3c^3x^4+\frac{28}{3}\,a^6b^2c^3x^3+4\,a^7bc^3x^2+a^8c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^3*(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] 1/9*b^8*c^3*x^9 + a*b^7*c^3*x^8 + 4*a^2*b^6*c^3*x^7 + 28/3*a^3*b^
5*c^3*x^6 + 14*a^4*b^4*c^3*x^5 + 14*a^5*b^3*c^3*x^4 + 28/3*a^6*b^
2*c^3*x^3 + 4*a^7*b*c^3*x^2 + a^8*c^3*x
```

Fricas [A] time = 0.17513, size = 1, normalized size = 0.06

$$\frac{1}{9}x^9c^3b^8+x^8c^3b^7a+4x^7c^3b^6a^2+\frac{28}{3}x^6c^3b^5a^3+14x^5c^3b^4a^4+14x^4c^3b^3a^5+\frac{28}{3}x^3c^3b^2a^6+4x^2c^3ba^7+xc^3a^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^3*(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*b^8 + x^8*c^3*b^7*a + 4*x^7*c^3*b^6*a^2 + 28/3*x^6*c^
3*b^5*a^3 + 14*x^5*c^3*b^4*a^4 + 14*x^4*c^3*b^3*a^5 + 28/3*x^3*c^
3*b^2*a^6 + 4*x^2*c^3*b*a^7 + x*c^3*a^8
```

Sympy [A] time = 0.181239, size = 124, normalized size = 7.29

$$a^8c^3x + 4a^7bc^3x^2 + \frac{28a^6b^2c^3x^3}{3} + 14a^5b^3c^3x^4 + 14a^4b^4c^3x^5 + \frac{28a^3b^5c^3x^6}{3} + 4a^2b^6c^3x^7 + ab^7c^3x^8 + \frac{b^8c^3x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(b*c*x+a*c)**3,x)
```

```
[Out] a**8*c**3*x + 4*a**7*b*c**3*x**2 + 28*a**6*b**2*c**3*x**3/3 + 14*
a**5*b**3*c**3*x**4 + 14*a**4*b**4*c**3*x**5 + 28*a**3*b**5*c**3*
x**6/3 + 4*a**2*b**6*c**3*x**7 + a*b**7*c**3*x**8 + b**8*c**3*x**
9/9
```

GIAC/XCAS [A] time = 0.208347, size = 153, normalized size = 9.

$$\frac{1}{9}\,b^8c^3x^9 + ab^7c^3x^8 + 4\,a^2b^6c^3x^7 + \frac{28}{3}\,a^3b^5c^3x^6 + 14\,a^4b^4c^3x^5 + 14\,a^5b^3c^3x^4 + \frac{28}{3}\,a^6b^2c^3x^3 + 4\,a^7bc^3x^2 + a^8c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^3*(b*x + a)^5,x, algorithm="giac")
```

```
[Out] 1/9*b^8*c^3*x^9 + a*b^7*c^3*x^8 + 4*a^2*b^6*c^3*x^7 + 28/3*a^3*b^
5*c^3*x^6 + 14*a^4*b^4*c^3*x^5 + 14*a^5*b^3*c^3*x^4 + 28/3*a^6*b^
2*c^3*x^3 + 4*a^7*b*c^3*x^2 + a^8*c^3*x
```

3.1017 $\int (a+bx)^5(ac+bcx)^2\,dx$

Optimal. Leaf size=17

$$\frac{c^2(a+bx)^8}{8b}$$

```
[Out] (c^2*(a + b*x)^8)/(8*b)
```

Rubi [A] time = 0.0120659, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{c^2(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(a*c + b*c*x)^2,x]
```

```
[Out] (c^2*(a + b*x)^8)/(8*b)
```

Rubi in Sympy [A] time = 4.23313, size = 12, normalized size = 0.71

$$\frac{c^2\,(a+bx)^8}{8b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(b*c*x+a*c)**2,x)
```

```
[Out] c**2*(a + b*x)**8/(8*b)
```

Mathematica [A] time = 0.00328079, size = 17, normalized size = 1.

$$\frac{c^2(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(a*c + b*c*x)^2,x]
```

```
[Out] (c^2*(a + b*x)^8)/(8*b)
```

Maple [B] time = 0.002, size = 100, normalized size = 5.9

$$\frac{b^7c^2x^8}{8} + ab^6c^2x^7 + \frac{7\,a^2b^5c^2x^6}{2} + 7\,a^3b^4c^2x^5 + \frac{35\,a^4b^3c^2x^4}{4} + 7\,a^5b^2c^2x^3 + \frac{7\,a^6c^2bx^2}{2} + a^7c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(b*c*x+a*c)^2,x)
```

```
[Out] 1/8*b^7*c^2*x^8+a*b^6*c^2*x^7+7/2*a^2*b^5*c^2*x^6+7*a^3*b^4*c^2*x
^5+35/4*a^4*b^3*c^2*x^4+7*a^5*b^2*c^2*x^3+7/2*a^6*c^2*b*x^2+a^7*c
^2*x
```

Maxima [A] time = 1.33242, size = 134, normalized size = 7.88

$$\frac{1}{8}\,b^7c^2x^8 + ab^6c^2x^7 + \frac{7}{2}\,a^2b^5c^2x^6 + 7\,a^3b^4c^2x^5 + \frac{35}{4}\,a^4b^3c^2x^4 + 7\,a^5b^2c^2x^3 + \frac{7}{2}\,a^6bc^2x^2 + a^7c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^2*(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] 1/8*b^7*c^2*x^8 + a*b^6*c^2*x^7 + 7/2*a^2*b^5*c^2*x^6 + 7*a^3*b^4
*c^2*x^5 + 35/4*a^4*b^3*c^2*x^4 + 7*a^5*b^2*c^2*x^3 + 7/2*a^6*b*c
^2*x^2 + a^7*c^2*x
```

Fricas [A] time = 0.177072, size = 1, normalized size = 0.06

$$\frac{1}{8}x^8c^2b^7 + x^7c^2b^6a + \frac{7}{2}x^6c^2b^5a^2 + 7x^5c^2b^4a^3 + \frac{35}{4}x^4c^2b^3a^4 + 7x^3c^2b^2a^5 + \frac{7}{2}x^2c^2ba^6 + xc^2a^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^2*(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*b^7 + x^7*c^2*b^6*a + 7/2*x^6*c^2*b^5*a^2 + 7*x^5*c^2
*b^4*a^3 + 35/4*x^4*c^2*b^3*a^4 + 7*x^3*c^2*b^2*a^5 + 7/2*x^2*c^2
*b*a^6 + x*c^2*a^7
```

Sympy [A] time = 0.167106, size = 110, normalized size = 6.47

$$a^7c^2x + \frac{7a^6bc^2x^2}{2} + 7a^5b^2c^2x^3 + \frac{35a^4b^3c^2x^4}{4} + 7a^3b^4c^2x^5 + \frac{7a^2b^5c^2x^6}{2} + ab^6c^2x^7 + \frac{b^7c^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(b*c*x+a*c)**2,x)
```

```
[Out] a**7*c**2*x + 7*a**6*b*c**2*x**2/2 + 7*a**5*b**2*c**2*x**3 + 35*a
**4*b**3*c**2*x**4/4 + 7*a**3*b**4*c**2*x**5 + 7*a**2*b**5*c**2*x
**6/2 + a*b**6*c**2*x**7 + b**7*c**2*x**8/8
```

GIAC/XCAS [A] time = 0.206103, size = 134, normalized size = 7.88

$$\frac{1}{8}b^7c^2x^8 + ab^6c^2x^7 + \frac{7}{2}a^2b^5c^2x^6 + 7a^3b^4c^2x^5 + \frac{35}{4}a^4b^3c^2x^4 + 7a^5b^2c^2x^3 + \frac{7}{2}a^6bc^2x^2 + a^7c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^2*(b*x + a)^5,x, algorithm="giac")
```

```
[Out] 1/8*b^7*c^2*x^8 + a*b^6*c^2*x^7 + 7/2*a^2*b^5*c^2*x^6 + 7*a^3*b^4
*c^2*x^5 + 35/4*a^4*b^3*c^2*x^4 + 7*a^5*b^2*c^2*x^3 + 7/2*a^6*b*c
^2*x^2 + a^7*c^2*x
```

3.1018 $\int (a+bx)^5(ac+bcx)\,dx$

Optimal. Leaf size=15

$$\frac{c(a+bx)^7}{7b}$$

```
[Out] (c*(a + b*x)^7)/(7*b)
```

Rubi [A] time = 0.0107866, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$\frac{c(a+bx)^7}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^5*(a*c + b*c*x),x]

[Out] (c*(a + b*x)^7)/(7*b)
```

Rubi in Sympy [A] time = 3.66821, size = 10, normalized size = 0.67

$$\frac{c\,(a+bx)^7}{7b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**5*(b*c*x+a*c),x)

[Out] c*(a + b*x)**7/(7*b)
```

Mathematica [A] time = 0.00265202, size = 15, normalized size = 1.

$$\frac{c(a+bx)^7}{7b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^5*(a*c + b*c*x),x]
```

```
[Out] (c*(a + b*x)^7)/(7*b)
```

Maple [B] time = 0.002, size = 72, normalized size = 4.8

$$\frac{b^6cx^7}{7} + ab^5cx^6 + 3\,a^2b^4cx^5 + 5\,a^3b^3cx^4 + 5\,a^4b^2cx^3 + 3\,a^5bcx^2 + a^6cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(b*c*x+a*c),x)
```

```
[Out] 1/7*b^6*c*x^7+a*b^5*c*x^6+3*a^2*b^4*c*x^5+5*a^3*b^3*c*x^4+5*a^4*b
^2*c*x^3+3*a^5*b*c*x^2+a^6*c*x
```

Maxima [A] time = 1.32728, size = 96, normalized size = 6.4

$$\frac{1}{7}\,b^6cx^7 + ab^5cx^6 + 3\,a^2b^4cx^5 + 5\,a^3b^3cx^4 + 5\,a^4b^2cx^3 + 3\,a^5bcx^2 + a^6cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)*(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] 1/7*b^6*c*x^7 + a*b^5*c*x^6 + 3*a^2*b^4*c*x^5 + 5*a^3*b^3*c*x^4 +
 5*a^4*b^2*c*x^3 + 3*a^5*b*c*x^2 + a^6*c*x
```

Fricas [A] time = 0.179922, size = 1, normalized size = 0.07

$$\frac{1}{7}x^7cb^6 + x^6cb^5a + 3x^5cb^4a^2 + 5x^4cb^3a^3 + 5x^3cb^2a^4 + 3x^2cba^5 + xca^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)*(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c*b^6 + x^6*c*b^5*a + 3*x^5*c*b^4*a^2 + 5*x^4*c*b^3*a^3 +
 5*x^3*c*b^2*a^4 + 3*x^2*c*b*a^5 + x*c*a^6
```

Sympy [A] time = 0.137407, size = 78, normalized size = 5.2

$$a^6cx + 3a^5bcx^2 + 5a^4b^2cx^3 + 5a^3b^3cx^4 + 3a^2b^4cx^5 + ab^5cx^6 + \frac{b^6cx^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(b*c*x+a*c),x)
```

```
[Out] a**6*c*x + 3*a**5*b*c*x**2 + 5*a**4*b**2*c*x**3 + 5*a**3*b**3*c*x
**4 + 3*a**2*b**4*c*x**5 + a*b**5*c*x**6 + b**6*c*x**7/7
```

GIAC/XCAS [A] time = 0.207929, size = 96, normalized size = 6.4

$$\frac{1}{7}\,b^6cx^7 + ab^5cx^6 + 3\,a^2b^4cx^5 + 5\,a^3b^3cx^4 + 5\,a^4b^2cx^3 + 3\,a^5bcx^2 + a^6cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)*(b*x + a)^5,x, algorithm="giac")
```

```
[Out] 1/7*b^6*c*x^7 + a*b^5*c*x^6 + 3*a^2*b^4*c*x^5 + 5*a^3*b^3*c*x^4 +
 5*a^4*b^2*c*x^3 + 3*a^5*b*c*x^2 + a^6*c*x
```

3.1019 $\int \frac{(a+bx)^5}{ac+bcx}\,dx$

Optimal. Leaf size=17

$$\frac{(a+bx)^5}{5bc}$$

```
[Out] (a + b*x)^5/(5*b*c)
```

Rubi [A] time = 0.01148, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^5}{5bc}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x),x]

[Out] (a + b*x)^5/(5*b*c)
```

Rubi in Sympy [A] time = 4.3615, size = 10, normalized size = 0.59

$$\frac{(a+bx)^5}{5bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c),x)

[Out] (a + b*x)**5/(5*b*c)
```

Mathematica [A] time = 0.00239059, size = 17, normalized size = 1.

$$\frac{(a+bx)^5}{5bc}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x),x]
```

```
[Out] (a + b*x)^5/(5*b*c)
```

Maple [A] time = 0.001, size = 16, normalized size = 0.9

$$\frac{(bx+a)^5}{5\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(b*c*x+a*c),x)
```

```
[Out] 1/5*(b*x+a)^5/b/c
```

Maxima [A] time = 1.34641, size = 65, normalized size = 3.82

$$\frac{b^4x^5+5\,ab^3x^4+10\,a^2b^2x^3+10\,a^3bx^2+5\,a^4x}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c),x, algorithm="maxima")
```

```
[Out] 1/5*(b^4*x^5 + 5*a*b^3*x^4 + 10*a^2*b^2*x^3 + 10*a^3*b*x^2 + 5*a^
4*x)/c
```

Fricas [A] time = 0.191581, size = 65, normalized size = 3.82

$$\frac{b^4x^5+5\,ab^3x^4+10\,a^2b^2x^3+10\,a^3bx^2+5\,a^4x}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c),x, algorithm="fricas")
```

```
[Out] 1/5*(b^4*x^5 + 5*a*b^3*x^4 + 10*a^2*b^2*x^3 + 10*a^3*b*x^2 + 5*a^
4*x)/c
```

Sympy [A] time = 0.19211, size = 51, normalized size = 3.

$$\frac{a^4x}{c}+\frac{2a^3bx^2}{c}+\frac{2a^2b^2x^3}{c}+\frac{ab^3x^4}{c}+\frac{b^4x^5}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c),x)
```

```
[Out] a**4*x/c + 2*a**3*b*x**2/c + 2*a**2*b**2*x**3/c + a*b**3*x**4/c +
 b**4*x**5/(5*c)
```

GIAC/XCAS [A] time = 0.207892, size = 85, normalized size = 5.

$$\frac{b^4c^4x^5 + 5\,ab^3c^4x^4 + 10\,a^2b^2c^4x^3 + 10\,a^3bc^4x^2 + 5\,a^4c^4x}{5\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c),x, algorithm="giac")
```

```
[Out] 1/5*(b^4*c^4*x^5 + 5*a*b^3*c^4*x^4 + 10*a^2*b^2*c^4*x^3 + 10*a^3*
b*c^4*x^2 + 5*a^4*c^4*x)/c^5
```

3.1020 $\int \frac{(a+bx)^5}{(ac+bcx)^2} \, dx$

Optimal. Leaf size=17

$$\frac{(a+bx)^4}{4bc^2}$$

```
[Out] (a + b*x)^4/(4*b*c^2)
```

Rubi [A] time = 0.0116, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^4}{4bc^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^2,x]

[Out] (a + b*x)^4/(4*b*c^2)
```

Rubi in Sympy [A] time = 4.35229, size = 12, normalized size = 0.71

$$\frac{(a+bx)^4}{4bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**2,x)

[Out] (a + b*x)**4/(4*b*c**2)
```

Mathematica [A] time = 0.00229364, size = 17, normalized size = 1.

$$\frac{(a+bx)^4}{4bc^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^2,x]
```

```
[Out] (a + b*x)^4/(4*b*c^2)
```

Maple [A] time = 0.002, size = 16, normalized size = 0.9

$$\frac{(bx + a)^4}{4\,bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(b*c*x+a*c)^2,x)
```

```
[Out] 1/4*(b*x+a)^4/b/c^2
```

Maxima [A] time = 1.33756, size = 50, normalized size = 2.94

$$\frac{b^3x^4 + 4\,ab^2x^3 + 6\,a^2bx^2 + 4\,a^3x}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^2,x, algorithm="maxima")
```

```
[Out] 1/4*(b^3*x^4 + 4*a*b^2*x^3 + 6*a^2*b*x^2 + 4*a^3*x)/c^2
```

Fricas [A] time = 0.188796, size = 50, normalized size = 2.94

$$\frac{b^3x^4 + 4\,ab^2x^3 + 6\,a^2bx^2 + 4\,a^3x}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(b^3*x^4 + 4*a*b^2*x^3 + 6*a^2*b*x^2 + 4*a^3*x)/c^2
```

Sympy [A] time = 0.204478, size = 46, normalized size = 2.71

$$\frac{a^3x}{c^2} + \frac{3a^2bx^2}{2c^2} + \frac{ab^2x^3}{c^2} + \frac{b^3x^4}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**2,x)
```

```
[Out] a**3*x/c**2 + 3*a**2*b*x**2/(2*c**2) + a*b**2*x**3/c**2 + b**3*x*
*4/(4*c**2)
```

GIAC/XCAS [A] time = 0.205819, size = 24, normalized size = 1.41

$$\frac{(bcx + ac)^4}{4\,bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^2,x, algorithm="giac")
```

```
[Out] 1/4*(b*c*x + a*c)^4/(b*c^6)
```

3.1021 $\int \frac{(a+bx)^5}{(ac+bcx)^3}\,dx$

Optimal. Leaf size=17

$$\frac{(a+bx)^3}{3bc^3}$$

```
[Out] (a + b*x)^3/(3*b*c^3)
```

Rubi [A] time = 0.0120301, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{(a+bx)^3}{3bc^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^3,x]

[Out] (a + b*x)^3/(3*b*c^3)
```

Rubi in Sympy [A] time = 4.14893, size = 12, normalized size = 0.71

$$\frac{(a+bx)^3}{3bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**3,x)

[Out] (a + b*x)**3/(3*b*c**3)
```

Mathematica [A] time = 0.00204821, size = 17, normalized size = 1.

$$\frac{(a+bx)^3}{3bc^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^3,x]
```

```
[Out] (a + b*x)^3/(3*b*c^3)
```

Maple [A] time = 0., size = 16, normalized size = 0.9

$$\frac{(bx+a)^3}{3\,bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^3,x)
```

```
[Out] 1/3*(b*x+a)^3/b/c^3
```

Maxima [A] time = 1.3505, size = 35, normalized size = 2.06

$$\frac{b^2x^3+3\,abx^2+3\,a^2x}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^3,x, algorithm="maxima")
```

```
[Out] 1/3*(b^2*x^3 + 3*a*b*x^2 + 3*a^2*x)/c^3
```

Fricas [A] time = 0.188471, size = 35, normalized size = 2.06

$$\frac{b^2x^3+3\,abx^2+3\,a^2x}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^3,x, algorithm="fricas")
```

```
[Out] 1/3*(b^2*x^3 + 3*a*b*x^2 + 3*a^2*x)/c^3
```

Sympy [A] time = 0.214645, size = 29, normalized size = 1.71

$$\frac{a^2x}{c^3}+\frac{abx^2}{c^3}+\frac{b^2x^3}{3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**3,x)
```

```
[Out] a**2*x/c**3 + a*b*x**2/c**3 + b**2*x**3/(3*c**3)
```

GIAC/XCAS [A] time = 0.211752, size = 47, normalized size = 2.76

$$\frac{b^2c^6x^3 + 3\,abc^6x^2 + 3\,a^2c^6x}{3\,c^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^3,x, algorithm="giac")
```

```
[Out] 1/3*(b^2*c^6*x^3 + 3*a*b*c^6*x^2 + 3*a^2*c^6*x)/c^9
```

3.1022 $\int \frac{(a+bx)^5}{(ac+bcx)^4}\,dx$

Optimal. Leaf size=18

$$\frac{ax}{c^4}+\frac{bx^2}{2c^4}$$

```
[Out] (a*x)/c^4 + (b*x^2)/(2*c^4)
```

Rubi [A] time = 0.0129734, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056

$$\frac{ax}{c^4}+\frac{bx^2}{2c^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^4,x]

[Out] (a*x)/c^4 + (b*x^2)/(2*c^4)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b\int x\,dx}{c^4}+\frac{\int a\,dx}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**4,x)

[Out] b*Integral(x, x)/c**4 + Integral(a, x)/c**4
```

Mathematica [A] time = 0.00101563, size = 16, normalized size = 0.89

$$\frac{ax+\frac{bx^2}{2}}{c^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^4,x]
```

```
[Out] (a*x + (b*x^2)/2)/c^4
```

Maple [A] time = 0., size = 15, normalized size = 0.8

$$\frac{1}{c^4}\left(ax + \frac{bx^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(b*c*x+a*c)^4,x)
```

```
[Out] 1/c^4*(a*x+1/2*b*x^2)
```

Maxima [A] time = 1.32772, size = 20, normalized size = 1.11

$$\frac{bx^2 + 2\,ax}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^4,x, algorithm="maxima")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)/c^4
```

Fricas [A] time = 0.191292, size = 20, normalized size = 1.11

$$\frac{bx^2 + 2\,ax}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^4,x, algorithm="fricas")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)/c^4
```

Sympy [A] time = 0.202368, size = 15, normalized size = 0.83

$$\frac{ax}{c^4} + \frac{bx^2}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**4,x)
```

```
[Out] a*x/c**4 + b*x**2/(2*c**4)
```

GIAC/XCAS [A] time = 0.208434, size = 28, normalized size = 1.56

$$\frac{bc^4x^2 + 2\,ac^4x}{2\,c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^4,x, algorithm="giac")
```

```
[Out] 1/2*(b*c^4*x^2 + 2*a*c^4*x)/c^8
```

3.1023 $\int \frac{(a+bx)^5}{(ac+bcx)^5} dx$

Optimal. Leaf size=5

$$\frac{x}{c^5}$$

```
[Out] x/c^5
```

Rubi [A] time = 0.00588641, antiderivative size = 5, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{x}{c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^5/(a*c + b*c*x)^5,x]
```

```
[Out] x/c^5
```

Rubi in Sympy [A] time = 3.38393, size = 3, normalized size = 0.6

$$\frac{x}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**5/(b*c*x+a*c)**5,x)
```

```
[Out] x/c**5
```

Mathematica [A] time = 0.000455336, size = 5, normalized size = 1.

$$\frac{x}{c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^5/(a*c + b*c*x)^5,x]
```

```
[Out] x/c^5
```

Maple [A] time = 0., size = 6, normalized size = 1.2

$$\frac{x}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^5,x)
```

```
[Out] x/c^5
```

Maxima [A] time = 1.33176, size = 7, normalized size = 1.4

$$\frac{x}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^5,x, algorithm="maxima")
```

```
[Out] x/c^5
```

Fricas [A] time = 0.191484, size = 7, normalized size = 1.4

$$\frac{x}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^5,x, algorithm="fricas")
```

```
[Out] x/c^5
```

Sympy [A] time = 0.203444, size = 3, normalized size = 0.6

$$\frac{x}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**5,x)
```

```
[Out] x/c**5
```

GIAC/XCAS [A] time = 0.20925, size = 20, normalized size = 4.

$$\frac{bcx + ac}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^5,x, algorithm="giac")
```

```
[Out] (b*c*x + a*c)/(b*c^6)
```

3.1024 $\int \frac{(a+bx)^5}{(ac+bcx)^6}\,dx$

Optimal. Leaf size=13

$$\frac{\log(a+bx)}{bc^6}$$

```
[Out] Log[a + b*x]/(b*c^6)
```

Rubi [A] time = 0.0109649, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{\log(a+bx)}{bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^6,x]

[Out] Log[a + b*x]/(b*c^6)
```

Rubi in Sympy [A] time = 4.09498, size = 10, normalized size = 0.77

$$\frac{\log{(a+bx)}}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**6,x)

[Out] log(a + b*x)/(b*c**6)
```

Mathematica [A] time = 0.00232244, size = 13, normalized size = 1.

$$\frac{\log(a+bx)}{bc^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^6,x]
```

```
[Out] Log[a + b*x]/(b*c^6)
```

Maple [A] time = 0.003, size = 14, normalized size = 1.1

$$\frac{\ln(bx+a)}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^6,x)
```

```
[Out] ln(b*x+a)/b/c^6
```

Maxima [A] time = 1.35859, size = 18, normalized size = 1.38

$$\frac{\log(bx+a)}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^6,x, algorithm="maxima")
```

```
[Out] log(b*x + a)/(b*c^6)
```

Fricas [A] time = 0.197201, size = 18, normalized size = 1.38

$$\frac{\log(bx+a)}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^6,x, algorithm="fricas")
```

```
[Out] log(b*x + a)/(b*c^6)
```

Sympy [A] time = 0.251329, size = 17, normalized size = 1.31

$$\frac{\log\left(ac^6+bc^6x\right)}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**6,x)

[Out] log(a*c**6 + b*c**6*x)/(b*c**6)
```

GIAC/XCAS [A] time = 0.204562, size = 19, normalized size = 1.46

$$\frac{\ln\left(|bx+a|\right)}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^6,x, algorithm="giac")

[Out] ln(abs(b*x + a))/(b*c^6)
```

3.1025 $\int \frac{(a+bx)^5}{(ac+bcx)^7} dx$

Optimal. Leaf size=15

$$-\frac{1}{bc^7(a+bx)}$$

```
[Out] -(1/(b*c^7*(a + b*x)))
```

Rubi [A] time = 0.0126729, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{1}{bc^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^5/(a*c + b*c*x)^7,x]
```

```
[Out] -(1/(b*c^7*(a + b*x)))
```

Rubi in Sympy [A] time = 4.10142, size = 12, normalized size = 0.8

$$-\frac{1}{bc^7\left(a+bx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**5/(b*c*x+a*c)**7,x)
```

```
[Out] -1/(b*c**7*(a + b*x))
```

Mathematica [A] time = 0.00510981, size = 15, normalized size = 1.

$$-\frac{1}{bc^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^5/(a*c + b*c*x)^7,x]
```

```
[Out] -(1/(b*c^7*(a + b*x)))
```

Maple [A] time = 0.001, size = 16, normalized size = 1.1

$$-\frac{1}{bc^7\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(b*c*x+a*c)^7,x)
```

```
[Out] -1/b/c^7/(b*x+a)
```

Maxima [A] time = 1.33489, size = 26, normalized size = 1.73

$$-\frac{1}{b^2c^7x+abc^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^7,x, algorithm="maxima")
```

```
[Out] -1/(b^2*c^7*x + a*b*c^7)
```

Fricas [A] time = 0.190297, size = 26, normalized size = 1.73

$$-\frac{1}{b^2c^7x+abc^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^7,x, algorithm="fricas")
```

```
[Out] -1/(b^2*c^7*x + a*b*c^7)
```

Sympy [A] time = 1.3322, size = 17, normalized size = 1.13

$$-\frac{1}{abc^7+b^2c^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**7,x)
```

```
[Out] -1/(a*b*c**7 + b**2*c**7*x)
```

GIAC/XCAS [A] time = 0.202794, size = 20, normalized size = 1.33

$$-\frac{1}{(bx+a)bc^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^7,x, algorithm="giac")
```

```
[Out] -1/((b*x + a)*b*c^7)
```

3.1026 $\int \frac{(a+bx)^5}{(ac+bcx)^8}\,dx$

Optimal. Leaf size=17

$$-\frac{1}{2bc^8(a+bx)^2}$$

```
[Out] -1/(2*b*c^8*(a + b*x)^2)
```

Rubi [A] time = 0.0122736, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{1}{2bc^8(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^8,x]

[Out] -1/(2*b*c^8*(a + b*x)^2)
```

Rubi in Sympy [A] time = 4.1028, size = 15, normalized size = 0.88

$$-\frac{1}{2bc^8\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**8,x)

[Out] -1/(2*b*c**8*(a + b*x)**2)
```

Mathematica [A] time = 0.00597728, size = 17, normalized size = 1.

$$-\frac{1}{2bc^8(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^8,x]
```

```
[Out] -1/(2*b*c^8*(a + b*x)^2)
```

Maple [A] time = 0.002, size = 16, normalized size = 0.9

$$-\frac{1}{2\,bc^{8}\,(bx+a)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^8,x)
```

```
[Out] -1/2/b/c^8/(b*x+a)^2
```

Maxima [A] time = 1.33122, size = 45, normalized size = 2.65

$$-\frac{1}{2\,(b^{3}c^{8}x^{2}+2\,ab^{2}c^{8}x+a^{2}bc^{8})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^8,x, algorithm="maxima")
```

```
[Out] -1/2/(b^3*c^8*x^2 + 2*a*b^2*c^8*x + a^2*b*c^8)
```

Fricas [A] time = 0.190956, size = 45, normalized size = 2.65

$$-\frac{1}{2\,(b^{3}c^{8}x^{2}+2\,ab^{2}c^{8}x+a^{2}bc^{8})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^8,x, algorithm="fricas")
```

```
[Out] -1/2/(b^3*c^8*x^2 + 2*a*b^2*c^8*x + a^2*b*c^8)
```

Sympy [A] time = 1.555, size = 36, normalized size = 2.12

$$-\frac{1}{2a^{2}bc^{8}+4ab^{2}c^{8}x+2b^{3}c^{8}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**8,x)
```

```
[Out] -1/(2*a**2*b*c**8 + 4*a*b**2*c**8*x + 2*b**3*c**8*x**2)
```

GIAC/XCAS [A] time = 0.208155, size = 20, normalized size = 1.18

$$-\frac{1}{2\,(bx+a)^{2}bc^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^8,x, algorithm="giac")
```

```
[Out] -1/2/((b*x + a)^2*b*c^8)
```

3.1027 $\int \frac{1}{\sqrt{-2-3x}\sqrt{2+3x}}\,dx$

Optimal. Leaf size=28

$$\frac{\sqrt{3x+2}\log(3x+2)}{3\sqrt{-3x-2}}$$

```
[Out] (Sqrt[2 + 3*x]*Log[2 + 3*x])/(3*Sqrt[-2 - 3*x])
```

Rubi [A] time = 0.0104922, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\sqrt{3x+2}\log(3x+2)}{3\sqrt{-3x-2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-2 - 3*x]*Sqrt[2 + 3*x]),x]

[Out] (Sqrt[2 + 3*x]*Log[2 + 3*x])/(3*Sqrt[-2 - 3*x])
```

Rubi in Sympy [A] time = 2.81897, size = 26, normalized size = 0.93

$$\frac{\sqrt{3x+2}\log(3x+2)}{3\sqrt{-3x-2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-2-3*x)**(1/2)/(2+3*x)**(1/2),x)

[Out] sqrt(3*x + 2)*log(3*x + 2)/(3*sqrt(-3*x - 2))
```

Mathematica [A] time = 0.00959629, size = 28, normalized size = 1.

$$\frac{(3x+2)\log(3x+2)}{3\sqrt{-(3x+2)^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-2 - 3*x]*Sqrt[2 + 3*x]),x]
```

```
[Out] ((2 + 3*x)*Log[2 + 3*x])/(3*Sqrt[-(2 + 3*x)^2])
```

Maple [A] time = 0.003, size = 23, normalized size = 0.8

$$\frac{\ln(2+3x)}{3}\sqrt{2+3x}\frac{1}{\sqrt{-2-3x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-2-3*x)^(1/2)/(2+3*x)^(1/2),x)

[Out] 1/3*ln(2+3*x)*(2+3*x)^(1/2)/(-2-3*x)^(1/2)
```

Maxima [A] time = 1.52115, size = 8, normalized size = 0.29

$$\frac{1}{3}i\log\left(x+\frac{2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(3*x + 2)*sqrt(-3*x - 2)),x, algorithm="maxima")

[Out] 1/3*I*log(x + 2/3)
```

Fricas [A] time = 0.211185, size = 1, normalized size = 0.04

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(3*x + 2)*sqrt(-3*x - 2)),x, algorithm="fricas")

[Out] 0
```

Sympy [A] time = 3.92112, size = 53, normalized size = 1.89

$$\begin{cases} -\frac{i\log\left(x+\frac{2}{3}\right)}{3} & \text{for } \left|x+\frac{2}{3}\right| < 1 \\ \frac{i\log\left(\frac{1}{x+\frac{2}{3}}\right)}{3} & \text{for } \left|\frac{1}{x+\frac{2}{3}}\right| < 1 \\ \frac{iG_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix} \middle| x+\frac{2}{3}\right)}{3} - \frac{iG_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix} \middle| x+\frac{2}{3}\right)}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-2-3*x)**(1/2)/(2+3*x)**(1/2),x)
```

```
[Out] Piecewise((-I*log(x + 2/3)/3, Abs(x + 2/3) < 1), (I*log(1/(x + 2/
3))/3, Abs(1/(x + 2/3)) < 1), (I*meijerg(((), (1, 1)), ((0, 0), (
)), x + 2/3)/3 - I*meijerg(((1, 1), ()), ((), (0, 0)), x + 2/3)/3
, True))
```

GIAC/XCAS [A] time = 0.206485, size = 12, normalized size = 0.43

$$-\frac{1}{3}i\ln\left(|3x+2|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(3*x + 2)*sqrt(-3*x - 2)),x, algorithm="giac")
```

```
[Out] -1/3*I*ln(abs(3*x + 2))
```

3.1028 $\int (a+bx)(ac-bcx)^3\,dx$

Optimal. Leaf size=38

$$\frac{c^3(a-bx)^5}{5b}-\frac{ac^3(a-bx)^4}{2b}$$

```
[Out] -(a*c^3*(a - b*x)^4)/(2*b) + (c^3*(a - b*x)^5)/(5*b)
```

Rubi [A] time = 0.0373027, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{c^3(a-bx)^5}{5b}-\frac{ac^3(a-bx)^4}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(a*c - b*c*x)^3,x]

[Out] -(a*c^3*(a - b*x)^4)/(2*b) + (c^3*(a - b*x)^5)/(5*b)
```

Rubi in Sympy [A] time = 11.5236, size = 27, normalized size = 0.71

$$-\frac{ac^3\left(a-bx\right)^4}{2b}+\frac{c^3\left(a-bx\right)^5}{5b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(-b*c*x+a*c)**3,x)

[Out] -a*c**3*(a - b*x)**4/(2*b) + c**3*(a - b*x)**5/(5*b)
```

Mathematica [A] time = 0.00444552, size = 40, normalized size = 1.05

$$c^3\left(a^4x-a^3bx^2+\frac{1}{2}ab^3x^4-\frac{1}{5}b^4x^5\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(a*c - b*c*x)^3,x]
```

```
[Out] c^3*(a^4*x - a^3*b*x^2 + (a*b^3*x^4)/2 - (b^4*x^5)/5)
```

Maple [A] time = 0.002, size = 45, normalized size = 1.2

$$-\frac{b^4c^3x^5}{5} + \frac{ab^3c^3x^4}{2} - a^3c^3bx^2 + a^4c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(-b*c*x+a*c)^3,x)
```

```
[Out] -1/5*b^4*c^3*x^5+1/2*a*b^3*c^3*x^4-a^3*c^3*b*x^2+a^4*c^3*x
```

Maxima [A] time = 1.33546, size = 59, normalized size = 1.55

$$-\frac{1}{5}b^4c^3x^5 + \frac{1}{2}ab^3c^3x^4 - a^3bc^3x^2 + a^4c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)^3*(b*x + a),x, algorithm="maxima")
```

```
[Out] -1/5*b^4*c^3*x^5 + 1/2*a*b^3*c^3*x^4 - a^3*b*c^3*x^2 + a^4*c^3*x
```

Fricas [A] time = 0.17883, size = 1, normalized size = 0.03

$$-\frac{1}{5}x^5c^3b^4 + \frac{1}{2}x^4c^3b^3a - x^2c^3ba^3 + xc^3a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)^3*(b*x + a),x, algorithm="fricas")
```

```
[Out] -1/5*x^5*c^3*b^4 + 1/2*x^4*c^3*b^3*a - x^2*c^3*b*a^3 + x*c^3*a^4
```

Sympy [A] time = 0.131532, size = 44, normalized size = 1.16

$$a^4c^3x - a^3bc^3x^2 + \frac{ab^3c^3x^4}{2} - \frac{b^4c^3x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(-b*c*x+a*c)**3,x)
```

```
[Out] a**4*c**3*x - a**3*b*c**3*x**2 + a*b**3*c**3*x**4/2 - b**4*c**3*x
**5/5
```

GIAC/XCAS [A] time = 0.206441, size = 59, normalized size = 1.55

$$-\frac{1}{5}\,b^4c^3x^5+\frac{1}{2}\,ab^3c^3x^4-a^3bc^3x^2+a^4c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3*(b*x + a),x, algorithm="giac")
```

```
[Out] -1/5*b^4*c^3*x^5 + 1/2*a*b^3*c^3*x^4 - a^3*b*c^3*x^2 + a^4*c^3*x
```

3.1029 $\int (a+bx)(ac-bcx)^2\,dx$

Optimal. Leaf size=38

$$\frac{c^2(a-bx)^4}{4b}-\frac{2ac^2(a-bx)^3}{3b}$$

```
[Out] (-2*a*c^2*(a - b*x)^3)/(3*b) + (c^2*(a - b*x)^4)/(4*b)
```

Rubi [A] time = 0.0455179, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{c^2(a-bx)^4}{4b}-\frac{2ac^2(a-bx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a*c - b*c*x)^2,x]
```

```
[Out] (-2*a*c^2*(a - b*x)^3)/(3*b) + (c^2*(a - b*x)^4)/(4*b)
```

Rubi in Sympy [A] time = 11.2217, size = 29, normalized size = 0.76

$$-\frac{2ac^2\left(a-bx\right)^3}{3b}+\frac{c^2\left(a-bx\right)^4}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)*(-b*c*x+a*c)**2,x)
```

```
[Out] -2*a*c**2*(a - b*x)**3/(3*b) + c**2*(a - b*x)**4/(4*b)
```

Mathematica [A] time = 0.00305104, size = 42, normalized size = 1.11

$$c^2\left(a^3x-\frac{1}{2}a^2bx^2-\frac{1}{3}ab^2x^3+\frac{b^3x^4}{4}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a*c - b*c*x)^2,x]
```

```
[Out] c^2*(a^3*x - (a^2*b*x^2)/2 - (a*b^2*x^3)/3 + (b^3*x^4)/4)
```

Maple [A] time = 0.001, size = 45, normalized size = 1.2

$$\frac{b^3c^2x^4}{4}-\frac{ab^2c^2x^3}{3}-\frac{a^2c^2bx^2}{2}+a^3c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(-b*c*x+a*c)^2,x)
```

```
[Out] 1/4*b^3*c^2*x^4-1/3*a*b^2*c^2*x^3-1/2*a^2*c^2*b*x^2+a^3*c^2*x
```

Maxima [A] time = 1.34221, size = 59, normalized size = 1.55

$$\frac{1}{4}\,b^3c^2x^4-\frac{1}{3}\,ab^2c^2x^3-\frac{1}{2}\,a^2bc^2x^2+a^3c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2*(b*x + a),x, algorithm="maxima")
```

```
[Out] 1/4*b^3*c^2*x^4 - 1/3*a*b^2*c^2*x^3 - 1/2*a^2*b*c^2*x^2 + a^3*c^2
*x
```

Fricas [A] time = 0.179143, size = 1, normalized size = 0.03

$$\frac{1}{4}x^4c^2b^3-\frac{1}{3}x^3c^2b^2a-\frac{1}{2}x^2c^2ba^2+xc^2a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2*(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c^2*b^3 - 1/3*x^3*c^2*b^2*a - 1/2*x^2*c^2*b*a^2 + x*c^2*a
^3
```

Sympy [A] time = 0.116099, size = 46, normalized size = 1.21

$$a^3c^2x-\frac{a^2bc^2x^2}{2}-\frac{ab^2c^2x^3}{3}+\frac{b^3c^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(-b*c*x+a*c)**2,x)
```

```
[Out] a**3*c**2*x - a**2*b*c**2*x**2/2 - a*b**2*c**2*x**3/3 + b**3*c**2
*x**4/4
```

GIAC/XCAS [A] time = 0.202387, size = 59, normalized size = 1.55

$$\frac{1}{4}\,b^3c^2x^4 - \frac{1}{3}\,ab^2c^2x^3 - \frac{1}{2}\,a^2bc^2x^2 + a^3c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2*(b*x + a),x, algorithm="giac")
```

```
[Out] 1/4*b^3*c^2*x^4 - 1/3*a*b^2*c^2*x^3 - 1/2*a^2*b*c^2*x^2 + a^3*c^2
*x
```

3.1030 $\int (a+bx)(ac-bcx)\,dx$

Optimal. Leaf size=18

$$a^2cx-\frac{1}{3}b^2cx^3$$

```
[Out] a^2*c*x - (b^2*c*x^3)/3
```

Rubi [A] time = 0.0163604, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$a^2cx-\frac{1}{3}b^2cx^3$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a*c - b*c*x),x]

[Out] a^2*c*x - (b^2*c*x^3)/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$a^2\int c\,dx-\frac{b^2cx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)*(-b*c*x+a*c),x)

[Out] a**2*Integral(c, x) - b**2*c*x**3/3
```

Mathematica [A] time = 0.00187478, size = 18, normalized size = 1.

$$c\left(a^2x-\frac{b^2x^3}{3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a*c - b*c*x),x]
```

```
[Out] c*(a^2*x - (b^2*x^3)/3)
```

Maple [A] time = 0.002, size = 17, normalized size = 0.9

$$a^2cx - \frac{b^2cx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(-b*c*x+a*c),x)
```

```
[Out] a^2*c*x-1/3*b^2*c*x^3
```

Maxima [A] time = 1.34481, size = 22, normalized size = 1.22

$$-\frac{1}{3}\,b^2cx^3 + a^2cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)*(b*x + a),x, algorithm="maxima")
```

```
[Out] -1/3*b^2*c*x^3 + a^2*c*x
```

Fricas [A] time = 0.173883, size = 1, normalized size = 0.06

$$-\frac{1}{3}x^3cb^2 + xca^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)*(b*x + a),x, algorithm="fricas")
```

```
[Out] -1/3*x^3*c*b^2 + x*c*a^2
```

Sympy [A] time = 0.078144, size = 15, normalized size = 0.83

$$a^2cx - \frac{b^2cx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(-b*c*x+a*c),x)
```

```
[Out] a**2*c*x - b**2*c*x**3/3
```

GIAC/XCAS [A] time = 0.202479, size = 22, normalized size = 1.22

$$-\frac{1}{3}\,b^2cx^3 + a^2cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)*(b*x + a),x, algorithm="giac")
```

```
[Out] -1/3*b^2*c*x^3 + a^2*c*x
```

3.1031 $\int (a+bx)\,dx$

Optimal. Leaf size=12

$$ax+\frac{bx^2}{2}$$

```
[Out] a*x + (b*x^2)/2
```

Rubi [A] time = 0.00736761, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$ax+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[a + b*x,x]

[Out] a*x + (b*x^2)/2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$b\int x\,dx+\int a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(b*x+a,x)

[Out] b*Integral(x, x) + Integral(a, x)
```

Mathematica [A] time = 0.0000419178, size = 12, normalized size = 1.

$$ax+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + b*x,x]
```

```
[Out] a*x + (b*x^2)/2
```

Maple [A] time = 0.002, size = 11, normalized size = 0.9

$$ax + \frac{bx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(b*x+a,x)
```

```
[Out] a*x+1/2*b*x^2
```

Maxima [A] time = 1.3362, size = 14, normalized size = 1.17

$$\frac{1}{2}\,bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(b*x + a,x, algorithm="maxima")
```

```
[Out] 1/2*b*x^2 + a*x
```

Fricas [A] time = 0.173978, size = 1, normalized size = 0.08

$$\frac{1}{2}x^2b + xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(b*x + a,x, algorithm="fricas")
```

```
[Out] 1/2*x^2*b + x*a
```

Sympy [A] time = 0.05453, size = 8, normalized size = 0.67

$$ax + \frac{bx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b*x+a,x)
```

```
[Out] a*x + b*x**2/2
```

GIAC/XCAS [A] time = 0.207881, size = 14, normalized size = 1.17

$$\frac{1}{2}\,bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(b*x + a,x, algorithm="giac")
```

```
[Out] 1/2*b*x^2 + a*x
```

3.1032 $\int \frac{a+bx}{ac-bcx}\,dx$

Optimal. Leaf size=23

$$-\frac{2a\log(a-bx)}{bc}-\frac{x}{c}$$

```
[Out] -(x/c) - (2*a*Log[a - b*x])/(b*c)
```

Rubi [A] time = 0.0316786, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{2a\log(a-bx)}{bc}-\frac{x}{c}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(a*c - b*c*x),x]
```

```
[Out] -(x/c) - (2*a*Log[a - b*x])/(b*c)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2a\log(a-bx)}{bc}-\int\frac{1}{c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(-b*c*x+a*c),x)
```

```
[Out] -2*a*log(a - b*x)/(b*c) - Integral(1/c, x)
```

Mathematica [A] time = 0.00663997, size = 23, normalized size = 1.

$$-\frac{2a\log(a-bx)}{bc}-\frac{x}{c}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(a*c - b*c*x),x]
```

```
[Out] -(x/c) - (2*a*Log[a - b*x])/(b*c)
```

Maple [A] time = 0.004, size = 25, normalized size = 1.1

$$-\frac{x}{c} - 2\,\frac{a\ln\left(bx - a\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(-b*c*x+a*c),x)

[Out] -x/c-2/c*a/b*ln(b*x-a)
```

Maxima [A] time = 1.33441, size = 32, normalized size = 1.39

$$-\frac{x}{c} - \frac{2\,a\log\left(bx - a\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c),x, algorithm="maxima")

[Out] -x/c - 2*a*log(b*x - a)/(b*c)
```

Fricas [A] time = 0.198649, size = 31, normalized size = 1.35

$$-\frac{bx + 2\,a\log\left(bx - a\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c),x, algorithm="fricas")

[Out] -(b*x + 2*a*log(b*x - a))/(b*c)
```

Sympy [A] time = 1.11306, size = 17, normalized size = 0.74

$$-\frac{2a\log\left(-a + bx\right)}{bc} - \frac{x}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(-b*c*x+a*c),x)
```

```
[Out] -2*a*log(-a + b*x)/(b*c) - x/c
```

GIAC/XCAS [A] time = 0.203925, size = 34, normalized size = 1.48

$$-\frac{x}{c} - \frac{2\,a\ln\left(\left|bx - a\right|\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c),x, algorithm="giac")
```

```
[Out] -x/c - 2*a*ln(abs(b*x - a))/(b*c)
```

3.1033 $\int \frac{a+bx}{(ac-bcx)^2} \, dx$

Optimal. Leaf size=32

$$\frac{2a}{bc^2(a-bx)}+\frac{\log(a-bx)}{bc^2}$$

```
[Out] (2*a)/(b*c^2*(a - b*x)) + Log[a - b*x]/(b*c^2)
```

Rubi [A] time = 0.0419325, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{2a}{bc^2(a-bx)}+\frac{\log(a-bx)}{bc^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(a*c - b*c*x)^2,x]
```

```
[Out] (2*a)/(b*c^2*(a - b*x)) + Log[a - b*x]/(b*c^2)
```

Rubi in Sympy [A] time = 10.5786, size = 24, normalized size = 0.75

$$\frac{2a}{bc^2\,(a-bx)}+\frac{\log\,(a-bx)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(-b*c*x+a*c)**2,x)
```

```
[Out] 2*a/(b*c**2*(a - b*x)) + log(a - b*x)/(b*c**2)
```

Mathematica [A] time = 0.0238941, size = 28, normalized size = 0.88

$$\frac{\log(c(a-bx))+\frac{2a}{a-bx}}{bc^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(a*c - b*c*x)^2,x]
```

```
[Out] ((2*a)/(a - b*x) + Log[c*(a - b*x)])/(b*c^2)
```

Maple [A] time = 0.007, size = 35, normalized size = 1.1

$$\frac{\ln(bx-a)}{c^2b}-2\frac{a}{c^2b(bx-a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(-b*c*x+a*c)^2,x)
```

```
[Out] 1/c^2/b*ln(b*x-a)-2/c^2*a/b/(b*x-a)
```

Maxima [A] time = 1.33804, size = 50, normalized size = 1.56

$$-\frac{2a}{b^2c^2x-abc^2}+\frac{\log(bx-a)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(b*c*x - a*c)^2,x, algorithm="maxima")
```

```
[Out] -2*a/(b^2*c^2*x - a*b*c^2) + log(b*x - a)/(b*c^2)
```

Fricas [A] time = 0.195658, size = 53, normalized size = 1.66

$$\frac{(bx-a)\log(bx-a)-2a}{b^2c^2x-abc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(b*c*x - a*c)^2,x, algorithm="fricas")
```

```
[Out] ((b*x - a)*log(b*x - a) - 2*a)/(b^2*c^2*x - a*b*c^2)
```

Sympy [A] time = 1.3307, size = 29, normalized size = 0.91

$$-\frac{2a}{-abc^2+b^2c^2x}+\frac{\log(-a+bx)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(-b*c*x+a*c)**2,x)
```

```
[Out] -2*a/(-a*b*c**2 + b**2*c**2*x) + log(-a + b*x)/(b*c**2)
```

GIAC/XCAS [A] time = 0.204781, size = 109, normalized size = 3.41

$$-\frac{\frac{a}{(bcx-ac)b}+\frac{\ln\left(\frac{|bcx-ac|}{(bcx-ac)^2|b||c|}\right)}{bc}}{c}-\frac{a}{(bcx-ac)bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(b*c*x - a*c)^2,x, algorithm="giac")
```

```
[Out] -(a/((b*c*x - a*c)*b) + ln(abs(b*c*x - a*c)/((b*c*x - a*c)^2*abs(
b)*abs(c)))/(b*c))/c - a/((b*c*x - a*c)*b*c)
```

3.1034 $\int \frac{a+bx}{(ac-bcx)^3}\,dx$

Optimal. Leaf size=13

$$\frac{x}{c^3(a-bx)^2}$$

```
[Out] x/(c^3*(a - b*x)^2)
```

Rubi [A] time = 0.0100503, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{x}{c^3(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(a*c - b*c*x)^3,x]
```

```
[Out] x/(c^3*(a - b*x)^2)
```

Rubi in Sympy [A] time = 5.36207, size = 20, normalized size = 1.54

$$\frac{(a+bx)^2}{4abc^3\,(a-bx)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(-b*c*x+a*c)**3,x)
```

```
[Out] (a + b*x)**2/(4*a*b*c**3*(a - b*x)**2)
```

Mathematica [A] time = 0.0105498, size = 13, normalized size = 1.

$$\frac{x}{c^3(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(a*c - b*c*x)^3,x]
```

```
[Out] x/(c^3*(a - b*x)^2)
```

Maple [B] time = 0.007, size = 33, normalized size = 2.5

$$\frac{1}{c^3}\left(\frac{a}{b\,(bx-a)^2}+\frac{1}{b\,(bx-a)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(-b*c*x+a*c)^3,x)
```

```
[Out] 1/c^3*(a/b/(b*x-a)^2+1/b/(b*x-a))
```

Maxima [A] time = 1.34493, size = 41, normalized size = 3.15

$$\frac{x}{b^2c^3x^2-2\,abc^3x+a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c)^3,x, algorithm="maxima")
```

```
[Out] x/(b^2*c^3*x^2 - 2*a*b*c^3*x + a^2*c^3)
```

Fricas [A] time = 0.202937, size = 41, normalized size = 3.15

$$\frac{x}{b^2c^3x^2-2\,abc^3x+a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c)^3,x, algorithm="fricas")
```

```
[Out] x/(b^2*c^3*x^2 - 2*a*b*c^3*x + a^2*c^3)
```

Sympy [A] time = 1.51781, size = 27, normalized size = 2.08

$$\frac{x}{a^2c^3-2abc^3x+b^2c^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(-b*c*x+a*c)**3,x)
```

```
[Out] x/(a**2*c**3 - 2*a*b*c**3*x + b**2*c**3*x**2)
```

GIAC/XCAS [A] time = 0.202442, size = 19, normalized size = 1.46

$$\frac{x}{(bx-a)^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c)^3,x, algorithm="giac")
```

```
[Out] x/((b*x - a)^2*c^3)
```

3.1035 $\int \frac{a+bx}{(ac-bcx)^4} \, dx$

Optimal. Leaf size=38

$$\frac{2a}{3bc^4(a-bx)^3}-\frac{1}{2bc^4(a-bx)^2}$$

```
[Out] (2*a)/(3*b*c^4*(a - b*x)^3) - 1/(2*b*c^4*(a - b*x)^2)
```

Rubi [A] time = 0.0450027, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{2a}{3bc^4(a-bx)^3}-\frac{1}{2bc^4(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a*c - b*c*x)^4,x]
```

```
[Out] (2*a)/(3*b*c^4*(a - b*x)^3) - 1/(2*b*c^4*(a - b*x)^2)
```

Rubi in Sympy [A] time = 10.9593, size = 31, normalized size = 0.82

$$\frac{2a}{3bc^4\left(a-bx\right)^3}-\frac{1}{2bc^4\left(a-bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)/(-b*c*x+a*c)**4,x)
```

```
[Out] 2*a/(3*b*c**4*(a - b*x)**3) - 1/(2*b*c**4*(a - b*x)**2)
```

Mathematica [A] time = 0.015675, size = 25, normalized size = 0.66

$$-\frac{a+3bx}{6bc^4(bx-a)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a*c - b*c*x)^4,x]
```

```
[Out] -(a + 3*b*x)/(6*b*c^4*(-a + b*x)^3)
```

Maple [A] time = 0.009, size = 35, normalized size = 0.9

$$\frac{1}{c^4}\left(-\frac{2\,a}{3\,b\,(bx-a)^3}-\frac{1}{2\,b\,(bx-a)^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(-b*c*x+a*c)^4,x)
```

```
[Out] 1/c^4*(-2/3*a/b/(b*x-a)^3-1/2/b/(b*x-a)^2)
```

Maxima [A] time = 1.34382, size = 73, normalized size = 1.92

$$-\frac{3\,bx+a}{6\,(b^4c^4x^3-3\,ab^3c^4x^2+3\,a^2b^2c^4x-a^3bc^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(b*c*x - a*c)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*b*x + a)/(b^4*c^4*x^3 - 3*a*b^3*c^4*x^2 + 3*a^2*b^2*c^4*x
 - a^3*b*c^4)
```

Fricas [A] time = 0.212076, size = 73, normalized size = 1.92

$$-\frac{3\,bx+a}{6\,(b^4c^4x^3-3\,ab^3c^4x^2+3\,a^2b^2c^4x-a^3bc^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(b*c*x - a*c)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(3*b*x + a)/(b^4*c^4*x^3 - 3*a*b^3*c^4*x^2 + 3*a^2*b^2*c^4*x
 - a^3*b*c^4)
```

Sympy [A] time = 1.74569, size = 56, normalized size = 1.47

$$-\frac{a+3bx}{-6a^3bc^4+18a^2b^2c^4x-18ab^3c^4x^2+6b^4c^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(-b*c*x+a*c)**4,x)
```

```
[Out] -(a + 3*b*x)/(-6*a**3*b*c**4 + 18*a**2*b**2*c**4*x - 18*a*b**3*c*
*4*x**2 + 6*b**4*c**4*x**3)
```

GIAC/XCAS [A] time = 0.203073, size = 31, normalized size = 0.82

$$-\frac{3\,bx+a}{6\,(bx-a)^3bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(b*c*x - a*c)^4,x, algorithm="giac")
```

```
[Out] -1/6*(3*b*x + a)/((b*x - a)^3*b*c^4)
```

3.1036 $\int \frac{a+bx}{(ac-bcx)^5} \, dx$

Optimal. Leaf size=38

$$\frac{a}{2bc^5(a-bx)^4} - \frac{1}{3bc^5(a-bx)^3}$$

```
[Out] a/(2*b*c^5*(a - b*x)^4) - 1/(3*b*c^5*(a - b*x)^3)
```

Rubi [A] time = 0.044134, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{a}{2bc^5(a-bx)^4} - \frac{1}{3bc^5(a-bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(a*c - b*c*x)^5,x]

[Out] a/(2*b*c^5*(a - b*x)^4) - 1/(3*b*c^5*(a - b*x)^3)
```

Rubi in Sympy [A] time = 11.4608, size = 29, normalized size = 0.76

$$\frac{a}{2bc^5 (a-bx)^4} - \frac{1}{3bc^5 (a-bx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(-b*c*x+a*c)**5,x)

[Out] a/(2*b*c**5*(a - b*x)**4) - 1/(3*b*c**5*(a - b*x)**3)
```

Mathematica [A] time = 0.0160516, size = 24, normalized size = 0.63

$$\frac{a+2bx}{6bc^5(a-bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(a*c - b*c*x)^5,x]
```

```
[Out] (a + 2*b*x)/(6*b*c^5*(a - b*x)^4)
```

Maple [A] time = 0.007, size = 35, normalized size = 0.9

$$\frac{1}{c^5}\left(\frac{1}{3\,b\,(bx-a)^3}+\frac{a}{2\,b\,(bx-a)^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(-b*c*x+a*c)^5,x)
```

```
[Out] 1/c^5*(1/3/b/(b*x-a)^3+1/2*a/b/(b*x-a)^4)
```

Maxima [A] time = 1.34531, size = 90, normalized size = 2.37

$$\frac{2\,bx+a}{6\,(b^5c^5x^4-4\,ab^4c^5x^3+6\,a^2b^3c^5x^2-4\,a^3b^2c^5x+a^4bc^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c)^5,x, algorithm="maxima")
```

```
[Out] 1/6*(2*b*x + a)/(b^5*c^5*x^4 - 4*a*b^4*c^5*x^3 + 6*a^2*b^3*c^5*x^
2 - 4*a^3*b^2*c^5*x + a^4*b*c^5)
```

Fricas [A] time = 0.214355, size = 90, normalized size = 2.37

$$\frac{2\,bx+a}{6\,(b^5c^5x^4-4\,ab^4c^5x^3+6\,a^2b^3c^5x^2-4\,a^3b^2c^5x+a^4bc^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c)^5,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b*x + a)/(b^5*c^5*x^4 - 4*a*b^4*c^5*x^3 + 6*a^2*b^3*c^5*x^
2 - 4*a^3*b^2*c^5*x + a^4*b*c^5)
```

Sympy [A] time = 2.04459, size = 70, normalized size = 1.84

$$\frac{a+2bx}{6a^4bc^5-24a^3b^2c^5x+36a^2b^3c^5x^2-24ab^4c^5x^3+6b^5c^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(-b*c*x+a*c)**5,x)
```

```
[Out] (a + 2*b*x)/(6*a**4*b*c**5 - 24*a**3*b**2*c**5*x + 36*a**2*b**3*c
**5*x**2 - 24*a*b**4*c**5*x**3 + 6*b**5*c**5*x**4)
```

GIAC/XCAS [A] time = 0.20687, size = 54, normalized size = 1.42

$$\frac{a}{2\,(bcx-ac)^4bc}+\frac{1}{3\,(bcx-ac)^3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)/(b*c*x - a*c)^5,x, algorithm="giac")
```

```
[Out] 1/2*a/((b*c*x - a*c)^4*b*c) + 1/3/((b*c*x - a*c)^3*b*c^2)
```

3.1037 $\int \frac{a+bx}{(ac-bcx)^6} \, dx$

Optimal. Leaf size=38

$$\frac{2a}{5bc^6(a-bx)^5} - \frac{1}{4bc^6(a-bx)^4}$$

```
[Out] (2*a)/(5*b*c^6*(a - b*x)^5) - 1/(4*b*c^6*(a - b*x)^4)
```

Rubi [A] time = 0.0456257, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{2a}{5bc^6(a-bx)^5} - \frac{1}{4bc^6(a-bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(a*c - b*c*x)^6,x]

[Out] (2*a)/(5*b*c^6*(a - b*x)^5) - 1/(4*b*c^6*(a - b*x)^4)
```

Rubi in Sympy [A] time = 11.3774, size = 31, normalized size = 0.82

$$\frac{2a}{5bc^6 (a-bx)^5} - \frac{1}{4bc^6 (a-bx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(-b*c*x+a*c)**6,x)

[Out] 2*a/(5*b*c**6*(a - b*x)**5) - 1/(4*b*c**6*(a - b*x)**4)
```

Mathematica [A] time = 0.0185107, size = 27, normalized size = 0.71

$$-\frac{3a+5bx}{20bc^6(bx-a)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(a*c - b*c*x)^6,x]
```

```
[Out] -(3*a + 5*b*x)/(20*b*c^6*(-a + b*x)^5)
```

Maple [A] time = 0.007, size = 35, normalized size = 0.9

$$\frac{1}{c^6}\left(-\frac{2a}{5b(bx-a)^5}-\frac{1}{4b(bx-a)^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(-b*c*x+a*c)^6,x)
```

```
[Out] 1/c^6*(-2/5*a/b/(b*x-a)^5-1/4/b/(b*x-a)^4)
```

Maxima [A] time = 1.35479, size = 113, normalized size = 2.97

$$-\frac{5\,bx+3\,a}{20\,(b^6c^6x^5-5\,ab^5c^6x^4+10\,a^2b^4c^6x^3-10\,a^3b^3c^6x^2+5\,a^4b^2c^6x-a^5bc^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(b*c*x - a*c)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(5*b*x + 3*a)/(b^6*c^6*x^5 - 5*a*b^5*c^6*x^4 + 10*a^2*b^4*c
^6*x^3 - 10*a^3*b^3*c^6*x^2 + 5*a^4*b^2*c^6*x - a^5*b*c^6)
```

Fricas [A] time = 0.198317, size = 113, normalized size = 2.97

$$-\frac{5\,bx+3\,a}{20\,(b^6c^6x^5-5\,ab^5c^6x^4+10\,a^2b^4c^6x^3-10\,a^3b^3c^6x^2+5\,a^4b^2c^6x-a^5bc^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(b*c*x - a*c)^6,x, algorithm="fricas")
```

```
[Out] -1/20*(5*b*x + 3*a)/(b^6*c^6*x^5 - 5*a*b^5*c^6*x^4 + 10*a^2*b^4*c
^6*x^3 - 10*a^3*b^3*c^6*x^2 + 5*a^4*b^2*c^6*x - a^5*b*c^6)
```

Sympy [A] time = 2.2953, size = 88, normalized size = 2.32

$$-\frac{3a+5bx}{-20a^5bc^6+100a^4b^2c^6x-200a^3b^3c^6x^2+200a^2b^4c^6x^3-100ab^5c^6x^4+20b^6c^6x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(-b*c*x+a*c)**6,x)
```

```
[Out] -(3*a + 5*b*x)/(-20*a**5*b*c**6 + 100*a**4*b**2*c**6*x - 200*a**3
*b**3*c**6*x**2 + 200*a**2*b**4*c**6*x**3 - 100*a*b**5*c**6*x**4
+ 20*b**6*c**6*x**5)
```

GIAC/XCAS [A] time = 0.201707, size = 34, normalized size = 0.89

$$-\frac{5\,bx + 3\,a}{20\,(bx - a)^5 bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(b*c*x - a*c)^6,x, algorithm="giac")
```

```
[Out] -1/20*(5*b*x + 3*a)/((b*x - a)^5*b*c^6)
```

3.1038 $\int (a+bx)^2(ac-bcx)^3\,dx$

Optimal. Leaf size=57

$$-\frac{a^2c^3(a-bx)^4}{b}-\frac{c^3(a-bx)^6}{6b}+\frac{4ac^3(a-bx)^5}{5b}$$

```
[Out] -((a^2*c^3*(a - b*x)^4)/b) + (4*a*c^3*(a - b*x)^5)/(5*b) - (c^3*(
a - b*x)^6)/(6*b)
```

Rubi [A] time = 0.0776877, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{a^2c^3(a-bx)^4}{b}-\frac{c^3(a-bx)^6}{6b}+\frac{4ac^3(a-bx)^5}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(a*c - b*c*x)^3,x]
```

```
[Out] -((a^2*c^3*(a - b*x)^4)/b) + (4*a*c^3*(a - b*x)^5)/(5*b) - (c^3*(
a - b*x)^6)/(6*b)
```

Rubi in Sympy [A] time = 16.9795, size = 44, normalized size = 0.77

$$-\frac{a^2c^3\left(a-bx\right)^4}{b}+\frac{4ac^3\left(a-bx\right)^5}{5b}-\frac{c^3\left(a-bx\right)^6}{6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(-b*c*x+a*c)**3,x)
```

```
[Out] -a**2*c**3*(a - b*x)**4/b + 4*a*c**3*(a - b*x)**5/(5*b) - c**3*(a
 - b*x)**6/(6*b)
```

Mathematica [A] time = 0.00531588, size = 68, normalized size = 1.19

$$c^3\left(a^5x-\frac{1}{2}a^4bx^2-\frac{2}{3}a^3b^2x^3+\frac{1}{2}a^2b^3x^4+\frac{1}{5}ab^4x^5-\frac{1}{6}b^5x^6\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(a*c - b*c*x)^3,x]
```

```
[Out] c^3*(a^5*x - (a^4*b*x^2)/2 - (2*a^3*b^2*x^3)/3 + (a^2*b^3*x^4)/2
+ (a*b^4*x^5)/5 - (b^5*x^6)/6)
```

Maple [A] time = 0., size = 73, normalized size = 1.3

$$-\frac{b^5c^3x^6}{6}+\frac{ab^4c^3x^5}{5}+\frac{a^2b^3c^3x^4}{2}-\frac{2\,a^3c^3b^2x^3}{3}-\frac{a^4c^3bx^2}{2}+a^5c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(-b*c*x+a*c)^3,x)
```

```
[Out] -1/6*b^5*c^3*x^6+1/5*a*b^4*c^3*x^5+1/2*a^2*b^3*c^3*x^4-2/3*a^3*c^
3*b^2*x^3-1/2*a^4*c^3*b*x^2+a^5*c^3*x
```

Maxima [A] time = 1.35376, size = 97, normalized size = 1.7

$$-\frac{1}{6}\,b^5c^3x^6+\frac{1}{5}\,ab^4c^3x^5+\frac{1}{2}\,a^2b^3c^3x^4-\frac{2}{3}\,a^3b^2c^3x^3-\frac{1}{2}\,a^4bc^3x^2+a^5c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3*(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -1/6*b^5*c^3*x^6 + 1/5*a*b^4*c^3*x^5 + 1/2*a^2*b^3*c^3*x^4 - 2/3*
a^3*b^2*c^3*x^3 - 1/2*a^4*b*c^3*x^2 + a^5*c^3*x
```

Fricas [A] time = 0.17653, size = 1, normalized size = 0.02

$$-\frac{1}{6}x^6c^3b^5+\frac{1}{5}x^5c^3b^4a+\frac{1}{2}x^4c^3b^3a^2-\frac{2}{3}x^3c^3b^2a^3-\frac{1}{2}x^2c^3ba^4+xc^3a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3*(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -1/6*x^6*c^3*b^5 + 1/5*x^5*c^3*b^4*a + 1/2*x^4*c^3*b^3*a^2 - 2/3*
x^3*c^3*b^2*a^3 - 1/2*x^2*c^3*b*a^4 + x*c^3*a^5
```

Sympy [A] time = 0.14738, size = 78, normalized size = 1.37

$$a^5c^3x - \frac{a^4bc^3x^2}{2} - \frac{2a^3b^2c^3x^3}{3} + \frac{a^2b^3c^3x^4}{2} + \frac{ab^4c^3x^5}{5} - \frac{b^5c^3x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(-b*c*x+a*c)**3,x)
```

```
[Out] a**5*c**3*x - a**4*b*c**3*x**2/2 - 2*a**3*b**2*c**3*x**3/3 + a**2
*b**3*c**3*x**4/2 + a*b**4*c**3*x**5/5 - b**5*c**3*x**6/6
```

GIAC/XCAS [A] time = 0.204992, size = 97, normalized size = 1.7

$$-\frac{1}{6}\,b^5c^3x^6 + \frac{1}{5}\,ab^4c^3x^5 + \frac{1}{2}\,a^2b^3c^3x^4 - \frac{2}{3}\,a^3b^2c^3x^3 - \frac{1}{2}\,a^4bc^3x^2 + a^5c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3*(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/6*b^5*c^3*x^6 + 1/5*a*b^4*c^3*x^5 + 1/2*a^2*b^3*c^3*x^4 - 2/3*
a^3*b^2*c^3*x^3 - 1/2*a^4*b*c^3*x^2 + a^5*c^3*x
```

3.1039 $\int (a+bx)^2(ac-bcx)^2\,dx$

Optimal. Leaf size=38

$$a^4c^2x-\frac{2}{3}a^2b^2c^2x^3+\frac{1}{5}b^4c^2x^5$$

```
[Out] a^4*c^2*x - (2*a^2*b^2*c^2*x^3)/3 + (b^4*c^2*x^5)/5
```

Rubi [A] time = 0.0462839, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$a^4c^2x-\frac{2}{3}a^2b^2c^2x^3+\frac{1}{5}b^4c^2x^5$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(a*c - b*c*x)^2,x]
```

```
[Out] a^4*c^2*x - (2*a^2*b^2*c^2*x^3)/3 + (b^4*c^2*x^5)/5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2a^2b^2c^2x^3}{3}+\frac{b^4c^2x^5}{5}+c^2\int a^4\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(-b*c*x+a*c)**2,x)
```

```
[Out] -2*a**2*b**2*c**2*x**3/3 + b**4*c**2*x**5/5 + c**2*Integral(a**4,
 x)
```

Mathematica [A] time = 0.00296528, size = 38, normalized size = 1.

$$a^4c^2x-\frac{2}{3}a^2b^2c^2x^3+\frac{1}{5}b^4c^2x^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(a*c - b*c*x)^2,x]
```

```
[Out] a^4*c^2*x - (2*a^2*b^2*c^2*x^3)/3 + (b^4*c^2*x^5)/5
```

Maple [A] time = 0.001, size = 35, normalized size = 0.9

$$a^{4}c^{2}x-\frac{2\,a^{2}b^{2}c^{2}x^{3}}{3}+\frac{b^{4}c^{2}x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(-b*c*x+a*c)^2,x)
```

```
[Out] a^4*c^2*x-2/3*a^2*b^2*c^2*x^3+1/5*b^4*c^2*x^5
```

Maxima [A] time = 1.34315, size = 46, normalized size = 1.21

$$\frac{1}{5}\,b^{4}c^{2}x^{5}-\frac{2}{3}\,a^{2}b^{2}c^{2}x^{3}+a^{4}c^{2}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2*(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] 1/5*b^4*c^2*x^5 - 2/3*a^2*b^2*c^2*x^3 + a^4*c^2*x
```

Fricas [A] time = 0.200378, size = 1, normalized size = 0.03

$$\frac{1}{5}x^{5}c^{2}b^{4}-\frac{2}{3}x^{3}c^{2}b^{2}a^{2}+xc^{2}a^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2*(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/5*x^5*c^2*b^4 - 2/3*x^3*c^2*b^2*a^2 + x*c^2*a^4
```

Sympy [A] time = 0.120285, size = 36, normalized size = 0.95

$$a^{4}c^{2}x-\frac{2a^{2}b^{2}c^{2}x^{3}}{3}+\frac{b^{4}c^{2}x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(-b*c*x+a*c)**2,x)
```

```
[Out] a**4*c**2*x - 2*a**2*b**2*c**2*x**3/3 + b**4*c**2*x**5/5
```

GIAC/XCAS [A] time = 0.201966, size = 46, normalized size = 1.21

$$\frac{1}{5}\,b^4c^2x^5-\frac{2}{3}\,a^2b^2c^2x^3+a^4c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2*(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/5*b^4*c^2*x^5 - 2/3*a^2*b^2*c^2*x^3 + a^4*c^2*x
```

3.1040 $\int (a+bx)^2(ac-bcx)\,dx$

Optimal. Leaf size=32

$$\frac{2ac(a+bx)^3}{3b}-\frac{c(a+bx)^4}{4b}$$

```
[Out] (2*a*c*(a + b*x)^3)/(3*b) - (c*(a + b*x)^4)/(4*b)
```

Rubi [A] time = 0.0412295, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{2ac(a+bx)^3}{3b}-\frac{c(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2*(a*c - b*c*x),x]
```

```
[Out] (2*a*c*(a + b*x)^3)/(3*b) - (c*(a + b*x)^4)/(4*b)
```

Rubi in Sympy [A] time = 8.49228, size = 26, normalized size = 0.81

$$\frac{2ac\left(a+bx\right)^3}{3b}-\frac{c\left(a+bx\right)^4}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2*(-b*c*x+a*c),x)
```

```
[Out] 2*a*c*(a + b*x)**3/(3*b) - c*(a + b*x)**4/(4*b)
```

Mathematica [A] time = 0.00253299, size = 40, normalized size = 1.25

$$c\left(a^3x+\frac{1}{2}a^2bx^2-\frac{1}{3}ab^2x^3-\frac{1}{4}b^3x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2*(a*c - b*c*x),x]
```

```
[Out] c*(a^3*x + (a^2*b*x^2)/2 - (a*b^2*x^3)/3 - (b^3*x^4)/4)
```

Maple [A] time = 0.001, size = 37, normalized size = 1.2

$$-\frac{b^3cx^4}{4}-\frac{ab^2cx^3}{3}+\frac{a^2bcx^2}{2}+a^3cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(-b*c*x+a*c),x)
```

```
[Out] -1/4*b^3*c*x^4-1/3*a*b^2*c*x^3+1/2*a^2*b*c*x^2+a^3*c*x
```

Maxima [A] time = 1.34597, size = 49, normalized size = 1.53

$$-\frac{1}{4}\,b^3cx^4-\frac{1}{3}\,ab^2cx^3+\frac{1}{2}\,a^2bcx^2+a^3cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)*(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -1/4*b^3*c*x^4 - 1/3*a*b^2*c*x^3 + 1/2*a^2*b*c*x^2 + a^3*c*x
```

Fricas [A] time = 0.19699, size = 1, normalized size = 0.03

$$-\frac{1}{4}x^4cb^3-\frac{1}{3}x^3cb^2a+\frac{1}{2}x^2cba^2+xca^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)*(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -1/4*x^4*c*b^3 - 1/3*x^3*c*b^2*a + 1/2*x^2*c*b*a^2 + x*c*a^3
```

Sympy [A] time = 0.109278, size = 39, normalized size = 1.22

$$a^3cx+\frac{a^2bcx^2}{2}-\frac{ab^2cx^3}{3}-\frac{b^3cx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(-b*c*x+a*c),x)
```

```
[Out] a**3*c*x + a**2*b*c*x**2/2 - a*b**2*c*x**3/3 - b**3*c*x**4/4
```

GIAC/XCAS [A] time = 0.202634, size = 49, normalized size = 1.53

$$-\frac{1}{4}\,b^{3}cx^{4}-\frac{1}{3}\,ab^{2}cx^{3}+\frac{1}{2}\,a^{2}bcx^{2}+a^{3}cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)*(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -1/4*b^3*c*x^4 - 1/3*a*b^2*c*x^3 + 1/2*a^2*b*c*x^2 + a^3*c*x
```

3.1041 $\int (a+bx)^2\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^3}{3b}$$

[Out] (a + b*x)^3/(3*b)

Rubi [A] time = 0.00701627, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

[In] Int[(a + b*x)^2,x]

[Out] (a + b*x)^3/(3*b)

Rubi in Sympy [A] time = 1.28959, size = 8, normalized size = 0.57

$$\frac{(a+bx)^3}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((b*x+a)**2,x)

[Out] (a + b*x)**3/(3*b)

Mathematica [A] time = 0.00143096, size = 14, normalized size = 1.

$$\frac{(a+bx)^3}{3b}$$

Antiderivative was successfully verified.

[In] Integrate[(a + b*x)^2,x]

```
[Out] (a + b*x)^3/(3*b)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$\frac{(bx + a)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^2,x)
```

```
[Out] 1/3*(b*x+a)^3/b
```

Maxima [A] time = 1.34964, size = 27, normalized size = 1.93

$$\frac{1}{3}\,b^2x^3 + abx^2 + a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2,x, algorithm="maxima")
```

```
[Out] 1/3*b^2*x^3 + a*b*x^2 + a^2*x
```

Fricas [A] time = 0.194881, size = 1, normalized size = 0.07

$$\frac{1}{3}x^3b^2 + x^2ba + xa^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/3*x^3*b^2 + x^2*b*a + x*a^2
```

Sympy [A] time = 0.080035, size = 19, normalized size = 1.36

$$a^2x + abx^2 + \frac{b^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2,x)

[Out] a**2*x + a*b*x**2 + b**2*x**3/3
```

GIAC/XCAS [A] time = 0.204439, size = 16, normalized size = 1.14

$$\frac{(bx+a)^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2,x, algorithm="giac")

[Out] 1/3*(b*x + a)^3/b
```

3.1042 $\int \frac{(a+bx)^2}{ac-bcx} \, dx$

Optimal. Leaf size=43

$$-\frac{4a^2 \log(a-bx)}{bc} - \frac{(a+bx)^2}{2bc} - \frac{2ax}{c}$$

```
[Out] (-2*a*x)/c - (a + b*x)^2/(2*b*c) - (4*a^2*Log[a - b*x])/(b*c)
```

Rubi [A] time = 0.0397019, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{4a^2 \log(a-bx)}{bc} - \frac{(a+bx)^2}{2bc} - \frac{2ax}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/(a*c - b*c*x),x]

[Out] (-2*a*x)/c - (a + b*x)^2/(2*b*c) - (4*a^2*Log[a - b*x])/(b*c)
```

Rubi in Sympy [A] time = 9.55382, size = 34, normalized size = 0.79

$$-\frac{4a^2 \log(a-bx)}{bc} - \frac{2ax}{c} - \frac{(a+bx)^2}{2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2/(-b*c*x+a*c),x)

[Out] -4*a**2*log(a - b*x)/(b*c) - 2*a*x/c - (a + b*x)**2/(2*b*c)
```

Mathematica [A] time = 0.0108964, size = 37, normalized size = 0.86

$$-\frac{4a^2 \log(a-bx)}{bc} - \frac{3ax}{c} - \frac{bx^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2/(a*c - b*c*x),x]
```

```
[Out] (-3*a*x)/c - (b*x^2)/(2*c) - (4*a^2*Log[a - b*x])/(b*c)
```

Maple [A] time = 0.003, size = 37, normalized size = 0.9

$$-\frac{bx^2}{2\,c} - 3\,\frac{ax}{c} - 4\,\frac{a^2\ln(bx-a)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c),x)
```

```
[Out] -1/2/c*b*x^2-3*a*x/c-4/c*a^2/b*ln(b*x-a)
```

Maxima [A] time = 1.33979, size = 47, normalized size = 1.09

$$-\frac{4\,a^2\log(bx-a)}{bc} - \frac{bx^2 + 6\,ax}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c),x, algorithm="maxima")
```

```
[Out] -4*a^2*log(b*x - a)/(b*c) - 1/2*(b*x^2 + 6*a*x)/c
```

Fricas [A] time = 0.215882, size = 46, normalized size = 1.07

$$-\frac{b^2x^2 + 6\,abx + 8\,a^2\log(bx-a)}{2\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c),x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*x^2 + 6*a*b*x + 8*a^2*log(b*x - a))/(b*c)
```

Sympy [A] time = 1.21252, size = 31, normalized size = 0.72

$$-\frac{4a^2\log(-a+bx)}{bc} - \frac{3ax}{c} - \frac{bx^2}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c),x)
```

```
[Out] -4*a**2*log(-a + b*x)/(b*c) - 3*a*x/c - b*x**2/(2*c)
```

GIAC/XCAS [A] time = 0.203873, size = 62, normalized size = 1.44

$$-\frac{4\,a^2\ln\left(|bx-a|\right)}{bc}-\frac{b^3cx^2+6\,ab^2cx}{2\,b^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c),x, algorithm="giac")
```

```
[Out] -4*a^2*ln(abs(b*x - a))/(b*c) - 1/2*(b^3*c*x^2 + 6*a*b^2*c*x)/(b^
2*c^2)
```

3.1043 $\int \frac{(a+bx)^2}{(ac-bcx)^2}\,dx$

Optimal. Leaf size=41

$$\frac{4a^2}{bc^2(a-bx)}+\frac{4a\log(a-bx)}{bc^2}+\frac{x}{c^2}$$

```
[Out] x/c^2 + (4*a^2)/(b*c^2*(a - b*x)) + (4*a*Log[a - b*x])/(b*c^2)
```

Rubi [A] time = 0.0560585, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{4a^2}{bc^2(a-bx)}+\frac{4a\log(a-bx)}{bc^2}+\frac{x}{c^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(a*c - b*c*x)^2,x]
```

```
[Out] x/c^2 + (4*a^2)/(b*c^2*(a - b*x)) + (4*a*Log[a - b*x])/(b*c^2)
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{4a^2}{bc^2\,(a-bx)}+\frac{4a\log\,(a-bx)}{bc^2}+\int\frac{1}{c^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(-b*c*x+a*c)**2,x)
```

```
[Out] 4*a**2/(b*c**2*(a - b*x)) + 4*a*log(a - b*x)/(b*c**2) + Integral(
c**(-2), x)
```

Mathematica [A] time = 0.0491715, size = 35, normalized size = 0.85

$$\frac{\frac{4a^2}{b(a-bx)}+\frac{4a\log(a-bx)}{b}+x}{c^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(a*c - b*c*x)^2,x]
```

```
[Out] (x + (4*a^2)/(b*(a - b*x)) + (4*a*Log[a - b*x])/b)/c^2
```

Maple [A] time = 0.008, size = 44, normalized size = 1.1

$$\frac{x}{c^2}+4\,\frac{a\ln\left(bx-a\right)}{c^2b}-4\,\frac{a^2}{c^2b\left(bx-a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c)^2,x)
```

```
[Out] x/c^2+4/c^2*a/b*ln(b*x-a)-4/c^2*a^2/b/(b*x-a)
```

Maxima [A] time = 1.3402, size = 62, normalized size = 1.51

$$-\frac{4\,a^2}{b^2c^2x-abc^2}+\frac{x}{c^2}+\frac{4\,a\log\left(bx-a\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^2,x, algorithm="maxima")
```

```
[Out] -4*a^2/(b^2*c^2*x - a*b*c^2) + x/c^2 + 4*a*log(b*x - a)/(b*c^2)
```

Fricas [A] time = 0.198504, size = 77, normalized size = 1.88

$$\frac{b^2x^2-abx-4\,a^2+4\left(abx-a^2\right)\log\left(bx-a\right)}{b^2c^2x-abc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^2,x, algorithm="fricas")
```

```
[Out] (b^2*x^2 - a*b*x - 4*a^2 + 4*(a*b*x - a^2)*log(b*x - a))/(b^2*c^2
*x - a*b*c^2)
```

Sympy [A] time = 1.38417, size = 39, normalized size = 0.95

$$-\frac{4a^2}{-abc^2+b^2c^2x}+\frac{4a\log\left(-a+bx\right)}{bc^2}+\frac{x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c)**2,x)
```

```
[Out] -4*a**2/(-a*b*c**2 + b**2*c**2*x) + 4*a*log(-a + b*x)/(b*c**2) +
x/c**2
```

GIAC/XCAS [A] time = 0.206212, size = 107, normalized size = 2.61

$$-\frac{4\,a^2}{(bcx-ac)bc}-\frac{4\,a\ln\left(\frac{|bcx-ac|}{(bcx-ac)^2|b||c|}\right)}{bc^2}+\frac{bcx-ac}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^2,x, algorithm="giac")
```

```
[Out] -4*a^2/((b*c*x - a*c)*b*c) - 4*a*ln(abs(b*c*x - a*c)/((b*c*x - a*
c)^2*abs(b)*abs(c)))/(b*c^2) + (b*c*x - a*c)/(b*c^3)
```

3.1044 $\int \frac{(a+bx)^2}{(ac-bcx)^3}\,dx$

Optimal. Leaf size=52

$$\frac{2a^2}{bc^3(a-bx)^2}-\frac{4a}{bc^3(a-bx)}-\frac{\log(a-bx)}{bc^3}$$

```
[Out] (2*a^2)/(b*c^3*(a - b*x)^2) - (4*a)/(b*c^3*(a - b*x)) - Log[a - b
*x]/(b*c^3)
```

Rubi [A] time = 0.0641844, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{2a^2}{bc^3(a-bx)^2}-\frac{4a}{bc^3(a-bx)}-\frac{\log(a-bx)}{bc^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(a*c - b*c*x)^3,x]
```

```
[Out] (2*a^2)/(b*c^3*(a - b*x)^2) - (4*a)/(b*c^3*(a - b*x)) - Log[a - b
*x]/(b*c^3)
```

Rubi in Sympy [A] time = 14.446, size = 41, normalized size = 0.79

$$\frac{2a^2}{bc^3\left(a-bx\right)^2}-\frac{4a}{bc^3\left(a-bx\right)}-\frac{\log\left(a-bx\right)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(-b*c*x+a*c)**3,x)
```

```
[Out] 2*a**2/(b*c**3*(a - b*x)**2) - 4*a/(b*c**3*(a - b*x)) - log(a - b
*x)/(b*c**3)
```

Mathematica [A] time = 0.0353191, size = 33, normalized size = 0.63

$$-\frac{\frac{2a(a-2bx)}{(a-bx)^2}+\log(a-bx)}{bc^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(a*c - b*c*x)^3,x]

[Out] -(((2*a*(a - 2*b*x))/(a - b*x)^2 + Log[a - b*x])/(b*c^3))
```

Maple [A] time = 0.01, size = 56, normalized size = 1.1

$$2\,\frac{a^2}{c^3b\,(bx-a)^2}-\frac{\ln(bx-a)}{c^3b}+4\,\frac{a}{c^3b\,(bx-a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c)^3,x)

[Out] 2/c^3*a^2/b/(b*x-a)^2-1/c^3/b*ln(b*x-a)+4/c^3*a/b/(b*x-a)
```

Maxima [A] time = 1.34865, size = 82, normalized size = 1.58

$$\frac{2\left(2\,abx-a^2\right)}{b^3c^3x^2-2\,ab^2c^3x+a^2bc^3}-\frac{\log(bx-a)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^3,x, algorithm="maxima")

[Out] 2*(2*a*b*x - a^2)/(b^3*c^3*x^2 - 2*a*b^2*c^3*x + a^2*b*c^3) - log
(b*x - a)/(b*c^3)
```

Fricas [A] time = 0.212369, size = 93, normalized size = 1.79

$$\frac{4\,abx-2\,a^2-\left(b^2x^2-2\,abx+a^2\right)\log(bx-a)}{b^3c^3x^2-2\,ab^2c^3x+a^2bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^3,x, algorithm="fricas")

[Out] (4*a*b*x - 2*a^2 - (b^2*x^2 - 2*a*b*x + a^2)*log(b*x - a))/(b^3*c
^3*x^2 - 2*a*b^2*c^3*x + a^2*b*c^3)
```

Sympy [A] time = 1.72674, size = 53, normalized size = 1.02

$$\frac{-2a^2 + 4abx}{a^2bc^3 - 2ab^2c^3x + b^3c^3x^2} - \frac{\log(-a + bx)}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c)**3,x)
```

```
[Out] (-2*a**2 + 4*a*b*x)/(a**2*b*c**3 - 2*a*b**2*c**3*x + b**3*c**3*x*
*2) - log(-a + b*x)/(b*c**3)
```

GIAC/XCAS [A] time = 0.204047, size = 62, normalized size = 1.19

$$-\frac{\ln(|bx - a|)}{bc^3} + \frac{2\left(2\,abx - a^2\right)}{(bx - a)^2bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^3,x, algorithm="giac")
```

```
[Out] -ln(abs(b*x - a))/(b*c^3) + 2*(2*a*b*x - a^2)/((b*x - a)^2*b*c^3)
```

3.1045 $\int \frac{(a+bx)^2}{(ac-bcx)^4} \, dx$

Optimal. Leaf size=28

$$\frac{(a+bx)^3}{6abc^4(a-bx)^3}$$

```
[Out] (a + b*x)^3/(6*a*b*c^4*(a - b*x)^3)
```

Rubi [A] time = 0.0224295, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{(a+bx)^3}{6abc^4(a-bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^2/(a*c - b*c*x)^4,x]

[Out] (a + b*x)^3/(6*a*b*c^4*(a - b*x)^3)
```

Rubi in Sympy [A] time = 5.99521, size = 20, normalized size = 0.71

$$\frac{(a+bx)^3}{6abc^4(a-bx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**2/(-b*c*x+a*c)**4,x)

[Out] (a + b*x)**3/(6*a*b*c**4*(a - b*x)**3)
```

Mathematica [A] time = 0.0278561, size = 31, normalized size = 1.11

$$-\frac{a^2+3b^2x^2}{3bc^4(bx-a)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^2/(a*c - b*c*x)^4,x]
```

```
[Out] -(a^2 + 3*b^2*x^2)/(3*b*c^4*(-a + b*x)^3)
```

Maple [A] time = 0.009, size = 52, normalized size = 1.9

$$\frac{1}{c^4}\left(-\frac{4\,a^2}{3\,b\,(bx-a)^3}-2\,\frac{a}{b\,(bx-a)^2}-\frac{1}{b\,(bx-a)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c)^4,x)
```

```
[Out] 1/c^4*(-4/3*a^2/b/(b*x-a)^3-2*a/b/(b*x-a)^2-1/b/(b*x-a))
```

Maxima [A] time = 1.34977, size = 81, normalized size = 2.89

$$-\frac{3\,b^2x^2+a^2}{3\,(b^4c^4x^3-3\,ab^3c^4x^2+3\,a^2b^2c^4x-a^3bc^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(3*b^2*x^2 + a^2)/(b^4*c^4*x^3 - 3*a*b^3*c^4*x^2 + 3*a^2*b^2
*c^4*x - a^3*b*c^4)
```

Fricas [A] time = 0.215013, size = 81, normalized size = 2.89

$$-\frac{3\,b^2x^2+a^2}{3\,(b^4c^4x^3-3\,ab^3c^4x^2+3\,a^2b^2c^4x-a^3bc^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^4,x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*x^2 + a^2)/(b^4*c^4*x^3 - 3*a*b^3*c^4*x^2 + 3*a^2*b^2
*c^4*x - a^3*b*c^4)
```

Sympy [A] time = 1.87073, size = 61, normalized size = 2.18

$$-\frac{a^2+3b^2x^2}{-3a^3bc^4+9a^2b^2c^4x-9ab^3c^4x^2+3b^4c^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c)**4,x)
```

```
[Out] -(a**2 + 3*b**2*x**2)/(-3*a**3*b*c**4 + 9*a**2*b**2*c**4*x - 9*a*
b**3*c**4*x**2 + 3*b**4*c**4*x**3)
```

GIAC/XCAS [A] time = 0.202151, size = 39, normalized size = 1.39

$$-\frac{3\,b^2x^2 + a^2}{3\,(bx - a)^3bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^4,x, algorithm="giac")
```

```
[Out] -1/3*(3*b^2*x^2 + a^2)/((b*x - a)^3*b*c^4)
```

3.1046 $\int \frac{(a+bx)^2}{(ac-bcx)^5}\,dx$

Optimal. Leaf size=56

$$\frac{a^2}{bc^5(a-bx)^4}-\frac{4a}{3bc^5(a-bx)^3}+\frac{1}{2bc^5(a-bx)^2}$$

```
[Out] a^2/(b*c^5*(a - b*x)^4) - (4*a)/(3*b*c^5*(a - b*x)^3) + 1/(2*b*c^
5*(a - b*x)^2)
```

Rubi [A] time = 0.063221, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{a^2}{bc^5(a-bx)^4}-\frac{4a}{3bc^5(a-bx)^3}+\frac{1}{2bc^5(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(a*c - b*c*x)^5,x]
```

```
[Out] a^2/(b*c^5*(a - b*x)^4) - (4*a)/(3*b*c^5*(a - b*x)^3) + 1/(2*b*c^
5*(a - b*x)^2)
```

Rubi in Sympy [A] time = 15.9722, size = 46, normalized size = 0.82

$$\frac{a^2}{bc^5\left(a-bx\right)^4}-\frac{4a}{3bc^5\left(a-bx\right)^3}+\frac{1}{2bc^5\left(a-bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(-b*c*x+a*c)**5,x)
```

```
[Out] a**2/(b*c**5*(a - b*x)**4) - 4*a/(3*b*c**5*(a - b*x)**3) + 1/(2*b
*c**5*(a - b*x)**2)
```

Mathematica [A] time = 0.0189852, size = 35, normalized size = 0.62

$$\frac{a^2+2abx+3b^2x^2}{6bc^5(a-bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(a*c - b*c*x)^5,x]

[Out] (a^2 + 2*a*b*x + 3*b^2*x^2)/(6*b*c^5*(a - b*x)^4)
```

Maple [A] time = 0.009, size = 51, normalized size = 0.9

$$\frac{1}{c^5}\left(\frac{4\,a}{3\,b\,(bx-a)^3}+\frac{1}{2\,b\,(bx-a)^2}+\frac{a^2}{b\,(bx-a)^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c)^5,x)

[Out] 1/c^5*(4/3*a/b/(b*x-a)^3+1/2/b/(b*x-a)^2+a^2/b/(b*x-a)^4)
```

Maxima [A] time = 1.34253, size = 105, normalized size = 1.88

$$\frac{3\,b^2x^2+2\,abx+a^2}{6\,(b^5c^5x^4-4\,ab^4c^5x^3+6\,a^2b^3c^5x^2-4\,a^3b^2c^5x+a^4bc^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^5,x, algorithm="maxima")

[Out] 1/6*(3*b^2*x^2 + 2*a*b*x + a^2)/(b^5*c^5*x^4 - 4*a*b^4*c^5*x^3 +
6*a^2*b^3*c^5*x^2 - 4*a^3*b^2*c^5*x + a^4*b*c^5)
```

Fricas [A] time = 0.216227, size = 105, normalized size = 1.88

$$\frac{3\,b^2x^2+2\,abx+a^2}{6\,(b^5c^5x^4-4\,ab^4c^5x^3+6\,a^2b^3c^5x^2-4\,a^3b^2c^5x+a^4bc^5)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^5,x, algorithm="fricas")

[Out] 1/6*(3*b^2*x^2 + 2*a*b*x + a^2)/(b^5*c^5*x^4 - 4*a*b^4*c^5*x^3 +
6*a^2*b^3*c^5*x^2 - 4*a^3*b^2*c^5*x + a^4*b*c^5)
```

Sympy [A] time = 2.21737, size = 82, normalized size = 1.46

$$\frac{a^2 + 2abx + 3b^2x^2}{6a^4bc^5 - 24a^3b^2c^5x + 36a^2b^3c^5x^2 - 24ab^4c^5x^3 + 6b^5c^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c)**5,x)
```

```
[Out] (a**2 + 2*a*b*x + 3*b**2*x**2)/(6*a**4*b*c**5 - 24*a**3*b**2*c**5
*x + 36*a**2*b**3*c**5*x**2 - 24*a*b**4*c**5*x**3 + 6*b**5*c**5*x
**4)
```

GIAC/XCAS [A] time = 0.204342, size = 88, normalized size = 1.57

$$\frac{\frac{6\,a^2c^3}{(bcx-ac)^4b} + \frac{8\,ac^2}{(bcx-ac)^3b} + \frac{3\,c}{(bcx-ac)^2b}}{6\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^5,x, algorithm="giac")
```

```
[Out] 1/6*(6*a^2*c^3/((b*c*x - a*c)^4*b) + 8*a*c^2/((b*c*x - a*c)^3*b)
+ 3*c/((b*c*x - a*c)^2*b))/c^4
```

3.1047 $\int \frac{(a+bx)^2}{(ac-bcx)^6}\,dx$

Optimal. Leaf size=57

$$\frac{4a^2}{5bc^6(a-bx)^5}-\frac{a}{bc^6(a-bx)^4}+\frac{1}{3bc^6(a-bx)^3}$$

```
[Out] (4*a^2)/(5*b*c^6*(a - b*x)^5) - a/(b*c^6*(a - b*x)^4) + 1/(3*b*c^
6*(a - b*x)^3)
```

Rubi [A] time = 0.0671939, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{4a^2}{5bc^6(a-bx)^5}-\frac{a}{bc^6(a-bx)^4}+\frac{1}{3bc^6(a-bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(a*c - b*c*x)^6,x]
```

```
[Out] (4*a^2)/(5*b*c^6*(a - b*x)^5) - a/(b*c^6*(a - b*x)^4) + 1/(3*b*c^
6*(a - b*x)^3)
```

Rubi in Sympy [A] time = 16.1261, size = 46, normalized size = 0.81

$$\frac{4a^2}{5bc^6\left(a-bx\right)^5}-\frac{a}{bc^6\left(a-bx\right)^4}+\frac{1}{3bc^6\left(a-bx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(-b*c*x+a*c)**6,x)
```

```
[Out] 4*a**2/(5*b*c**6*(a - b*x)**5) - a/(b*c**6*(a - b*x)**4) + 1/(3*b
*c**6*(a - b*x)**3)
```

Mathematica [A] time = 0.0303593, size = 38, normalized size = 0.67

$$-\frac{2a^2+5abx+5b^2x^2}{15bc^6(bx-a)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(a*c - b*c*x)^6,x]
```

```
[Out] -(2*a^2 + 5*a*b*x + 5*b^2*x^2)/(15*b*c^6*(-a + b*x)^5)
```

Maple [A] time = 0.009, size = 52, normalized size = 0.9

$$\frac{1}{c^6}\left(-\frac{1}{3\,b\,(bx-a)^3}-\frac{4\,a^2}{5\,b\,(bx-a)^5}-\frac{a}{b\,(bx-a)^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c)^6,x)
```

```
[Out] 1/c^6*(-1/3/b/(b*x-a)^3-4/5*a^2/b/(b*x-a)^5-a/b/(b*x-a)^4)
```

Maxima [A] time = 1.35367, size = 128, normalized size = 2.25

$$-\frac{5\,b^2x^2+5\,abx+2\,a^2}{15\,(b^6c^6x^5-5\,ab^5c^6x^4+10\,a^2b^4c^6x^3-10\,a^3b^3c^6x^2+5\,a^4b^2c^6x-a^5bc^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^6,x, algorithm="maxima")
```

```
[Out] -1/15*(5*b^2*x^2 + 5*a*b*x + 2*a^2)/(b^6*c^6*x^5 - 5*a*b^5*c^6*x^
4 + 10*a^2*b^4*c^6*x^3 - 10*a^3*b^3*c^6*x^2 + 5*a^4*b^2*c^6*x - a
^5*b*c^6)
```

Fricas [A] time = 0.198223, size = 128, normalized size = 2.25

$$-\frac{5\,b^2x^2+5\,abx+2\,a^2}{15\,(b^6c^6x^5-5\,ab^5c^6x^4+10\,a^2b^4c^6x^3-10\,a^3b^3c^6x^2+5\,a^4b^2c^6x-a^5bc^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^6,x, algorithm="fricas")
```

```
[Out] -1/15*(5*b^2*x^2 + 5*a*b*x + 2*a^2)/(b^6*c^6*x^5 - 5*a*b^5*c^6*x^
4 + 10*a^2*b^4*c^6*x^3 - 10*a^3*b^3*c^6*x^2 + 5*a^4*b^2*c^6*x - a
^5*b*c^6)
```

Sympy [A] time = 2.49048, size = 100, normalized size = 1.75

$$-\frac{2a^2+5abx+5b^2x^2}{-15a^5bc^6+75a^4b^2c^6x-150a^3b^3c^6x^2+150a^2b^4c^6x^3-75ab^5c^6x^4+15b^6c^6x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c)**6,x)
```

```
[Out] -(2*a**2 + 5*a*b*x + 5*b**2*x**2)/(-15*a**5*b*c**6 + 75*a**4*b**2
*c**6*x - 150*a**3*b**3*c**6*x**2 + 150*a**2*b**4*c**6*x**3 - 75*
a*b**5*c**6*x**4 + 15*b**6*c**6*x**5)
```

GIAC/XCAS [A] time = 0.203806, size = 49, normalized size = 0.86

$$-\frac{5\,b^2x^2+5\,abx+2\,a^2}{15\,(bx-a)^5bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(b*c*x - a*c)^6,x, algorithm="giac")
```

```
[Out] -1/15*(5*b^2*x^2 + 5*a*b*x + 2*a^2)/((b*x - a)^5*b*c^6)
```

3.1048 $\int \frac{(a+bx)^2}{(ac-bcx)^7} dx$

Optimal. Leaf size=59

$$\frac{2a^2}{3bc^7(a-bx)^6} - \frac{4a}{5bc^7(a-bx)^5} + \frac{1}{4bc^7(a-bx)^4}$$

```
[Out] (2*a^2)/(3*b*c^7*(a - b*x)^6) - (4*a)/(5*b*c^7*(a - b*x)^5) + 1/(
4*b*c^7*(a - b*x)^4)
```

Rubi [A] time = 0.0676258, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{2a^2}{3bc^7(a-bx)^6} - \frac{4a}{5bc^7(a-bx)^5} + \frac{1}{4bc^7(a-bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(a*c - b*c*x)^7,x]
```

```
[Out] (2*a^2)/(3*b*c^7*(a - b*x)^6) - (4*a)/(5*b*c^7*(a - b*x)^5) + 1/(
4*b*c^7*(a - b*x)^4)
```

Rubi in Sympy [A] time = 16.3848, size = 49, normalized size = 0.83

$$\frac{2a^2}{3bc^7 (a-bx)^6} - \frac{4a}{5bc^7 (a-bx)^5} + \frac{1}{4bc^7 (a-bx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(-b*c*x+a*c)**7,x)
```

```
[Out] 2*a**2/(3*b*c**7*(a - b*x)**6) - 4*a/(5*b*c**7*(a - b*x)**5) + 1/
(4*b*c**7*(a - b*x)**4)
```

Mathematica [A] time = 0.0234205, size = 37, normalized size = 0.63

$$\frac{7a^2 + 18abx + 15b^2x^2}{60bc^7(a-bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(a*c - b*c*x)^7,x]

[Out] (7*a^2 + 18*a*b*x + 15*b^2*x^2)/(60*b*c^7*(a - b*x)^6)
```

Maple [A] time = 0.008, size = 52, normalized size = 0.9

$$\frac{1}{c^7}\left(\frac{4a}{5b(bx-a)^5}+\frac{1}{4b(bx-a)^4}+\frac{2a^2}{3b(bx-a)^6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(-b*c*x+a*c)^7,x)

[Out] 1/c^7*(4/5*a/b/(b*x-a)^5+1/4/b/(b*x-a)^4+2/3*a^2/b/(b*x-a)^6)
```

Maxima [A] time = 1.36022, size = 146, normalized size = 2.47

$$\frac{15\,b^2x^2+18\,abx+7\,a^2}{60\,(b^7c^7x^6-6\,ab^6c^7x^5+15\,a^2b^5c^7x^4-20\,a^3b^4c^7x^3+15\,a^4b^3c^7x^2-6\,a^5b^2c^7x+a^6bc^7)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^7,x, algorithm="maxima")

[Out] 1/60*(15*b^2*x^2 + 18*a*b*x + 7*a^2)/(b^7*c^7*x^6 - 6*a*b^6*c^7*x
^5 + 15*a^2*b^5*c^7*x^4 - 20*a^3*b^4*c^7*x^3 + 15*a^4*b^3*c^7*x^2
 - 6*a^5*b^2*c^7*x + a^6*b*c^7)
```

Fricas [A] time = 0.209586, size = 146, normalized size = 2.47

$$\frac{15\,b^2x^2+18\,abx+7\,a^2}{60\,(b^7c^7x^6-6\,ab^6c^7x^5+15\,a^2b^5c^7x^4-20\,a^3b^4c^7x^3+15\,a^4b^3c^7x^2-6\,a^5b^2c^7x+a^6bc^7)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^7,x, algorithm="fricas")

[Out] 1/60*(15*b^2*x^2 + 18*a*b*x + 7*a^2)/(b^7*c^7*x^6 - 6*a*b^6*c^7*x
^5 + 15*a^2*b^5*c^7*x^4 - 20*a^3*b^4*c^7*x^3 + 15*a^4*b^3*c^7*x^2
 - 6*a^5*b^2*c^7*x + a^6*b*c^7)
```

Sympy [A] time = 2.86439, size = 114, normalized size = 1.93

$$\frac{7a^2+18abx+15b^2x^2}{60a^6bc^7-360a^5b^2c^7x+900a^4b^3c^7x^2-1200a^3b^4c^7x^3+900a^2b^5c^7x^4-360ab^6c^7x^5+60b^7c^7x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(-b*c*x+a*c)**7,x)
```

```
[Out] (7*a**2 + 18*a*b*x + 15*b**2*x**2)/(60*a**6*b*c**7 - 360*a**5*b**
2*c**7*x + 900*a**4*b**3*c**7*x**2 - 1200*a**3*b**4*c**7*x**3 + 9
00*a**2*b**5*c**7*x**4 - 360*a*b**6*c**7*x**5 + 60*b**7*c**7*x**6
)
```

GIAC/XCAS [A] time = 0.204808, size = 49, normalized size = 0.83

$$\frac{15\,b^2x^2+18\,abx+7\,a^2}{60\,(bx-a)^6bc^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*x + a)^2/(b*c*x - a*c)^7,x, algorithm="giac")
```

```
[Out] 1/60*(15*b^2*x^2 + 18*a*b*x + 7*a^2)/((b*x - a)^6*b*c^7)
```

3.1049 $\int \frac{(ac-bcx)^3}{a+bx}\,dx$

Optimal. Leaf size=61

$$\frac{8a^3c^3\log(a+bx)}{b} - 4a^2c^3x + \frac{c^3(a-bx)^3}{3b} + \frac{ac^3(a-bx)^2}{b}$$

```
[Out] -4*a^2*c^3*x + (a*c^3*(a - b*x)^2)/b + (c^3*(a - b*x)^3)/(3*b) +
(8*a^3*c^3*Log[a + b*x])/b
```

Rubi [A] time = 0.0536301, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{8a^3c^3\log(a+bx)}{b} - 4a^2c^3x + \frac{c^3(a-bx)^3}{3b} + \frac{ac^3(a-bx)^2}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a*c - b*c*x)^3/(a + b*x),x]
```

```
[Out] -4*a^2*c^3*x + (a*c^3*(a - b*x)^2)/b + (c^3*(a - b*x)^3)/(3*b) +
(8*a^3*c^3*Log[a + b*x])/b
```

Rubi in Sympy [A] time = 14.9552, size = 53, normalized size = 0.87

$$\frac{8a^3c^3\log{(a+bx)}}{b} - 4a^2c^3x + \frac{ac^3\,(a-bx)^2}{b} + \frac{c^3\,(a-bx)^3}{3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*c*x+a*c)**3/(b*x+a),x)
```

```
[Out] 8*a**3*c**3*log(a + b*x)/b - 4*a**2*c**3*x + a*c**3*(a - b*x)**2/
b + c**3*(a - b*x)**3/(3*b)
```

Mathematica [A] time = 0.010585, size = 42, normalized size = 0.69

$$c^3\left(\frac{8a^3\log(a+bx)}{b} - 7a^2x + 2abx^2 - \frac{b^2x^3}{3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*c - b*c*x)^3/(a + b*x),x]
```

```
[Out] c^3*(-7*a^2*x + 2*a*b*x^2 - (b^2*x^3)/3 + (8*a^3*Log[a + b*x])/b)
```

Maple [A] time = 0.004, size = 49, normalized size = 0.8

$$-\frac{c^3b^2x^3}{3}+2\,c^3bx^2a-7\,a^2c^3x+8\,\frac{a^3c^3\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*c*x+a*c)^3/(b*x+a),x)
```

```
[Out] -1/3*c^3*b^2*x^3+2*c^3*b*x^2*a-7*a^2*c^3*x+8*a^3*c^3*ln(b*x+a)/b
```

Maxima [A] time = 1.3436, size = 65, normalized size = 1.07

$$-\frac{1}{3}\,b^2c^3x^3+2\,abc^3x^2-7\,a^2c^3x+\frac{8\,a^3c^3\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3/(b*x + a),x, algorithm="maxima")
```

```
[Out] -1/3*b^2*c^3*x^3 + 2*a*b*c^3*x^2 - 7*a^2*c^3*x + 8*a^3*c^3*log(b*
x + a)/b
```

Fricas [A] time = 0.217258, size = 70, normalized size = 1.15

$$-\frac{b^3c^3x^3-6\,ab^2c^3x^2+21\,a^2bc^3x-24\,a^3c^3\log(bx+a)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3/(b*x + a),x, algorithm="fricas")
```

```
[Out] -1/3*(b^3*c^3*x^3 - 6*a*b^2*c^3*x^2 + 21*a^2*b*c^3*x - 24*a^3*c^3
*log(b*x + a))/b
```

Sympy [A] time = 1.28158, size = 49, normalized size = 0.8

$$\frac{8a^3c^3\log(a+bx)}{b} - 7a^2c^3x + 2abc^3x^2 - \frac{b^2c^3x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)**3/(b*x+a),x)
```

```
[Out] 8*a**3*c**3*log(a + b*x)/b - 7*a**2*c**3*x + 2*a*b*c**3*x**2 - b*
*2*c**3*x**3/3
```

GIAC/XCAS [A] time = 0.205888, size = 80, normalized size = 1.31

$$\frac{8\,a^3c^3\ln(|bx+a|)}{b} - \frac{b^5c^3x^3 - 6\,ab^4c^3x^2 + 21\,a^2b^3c^3x}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3/(b*x + a),x, algorithm="giac")
```

```
[Out] 8*a^3*c^3*ln(abs(b*x + a))/b - 1/3*(b^5*c^3*x^3 - 6*a*b^4*c^3*x^2
 + 21*a^2*b^3*c^3*x)/b^3
```

3.1050 $\int \frac{(ac-bcx)^2}{a+bx} \, dx$

Optimal. Leaf size=43

$$\frac{4a^2c^2\log(a+bx)}{b}+\frac{c^2(a-bx)^2}{2b}-2ac^2x$$

```
[Out] -2*a*c^2*x + (c^2*(a - b*x)^2)/(2*b) + (4*a^2*c^2*Log[a + b*x])/b
```

Rubi [A] time = 0.0410602, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{4a^2c^2\log(a+bx)}{b}+\frac{c^2(a-bx)^2}{2b}-2ac^2x$$

Antiderivative was successfully verified.

```
[In]  Int[(a*c - b*c*x)^2/(a + b*x),x]

[Out] -2*a*c^2*x + (c^2*(a - b*x)^2)/(2*b) + (4*a^2*c^2*Log[a + b*x])/b
```

Rubi in Sympy [A] time = 11.3474, size = 37, normalized size = 0.86

$$\frac{4a^2c^2\log(a+bx)}{b}-2ac^2x+\frac{c^2(a-bx)^2}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*c*x+a*c)**2/(b*x+a),x)

[Out] 4*a**2*c**2*log(a + b*x)/b - 2*a*c**2*x + c**2*(a - b*x)**2/(2*b)
```

Mathematica [A] time = 0.00945582, size = 31, normalized size = 0.72

$$c^2\left(\frac{4a^2\log(a+bx)}{b}-3ax+\frac{bx^2}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*c - b*c*x)^2/(a + b*x),x]
```

```
[Out] c^2*(-3*a*x + (b*x^2)/2 + (4*a^2*Log[a + b*x])/b)
```

Maple [A] time = 0.004, size = 35, normalized size = 0.8

$$\frac{c^2bx^2}{2} - 3\,ac^2x + 4\,\frac{a^2c^2\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*c*x+a*c)^2/(b*x+a),x)
```

```
[Out] 1/2*c^2*b*x^2-3*a*c^2*x+4*a^2*c^2*ln(b*x+a)/b
```

Maxima [A] time = 1.34182, size = 46, normalized size = 1.07

$$\frac{1}{2}\,bc^2x^2 - 3\,ac^2x + \frac{4\,a^2c^2\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2/(b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*b*c^2*x^2 - 3*a*c^2*x + 4*a^2*c^2*log(b*x + a)/b
```

Fricas [A] time = 0.220068, size = 51, normalized size = 1.19

$$\frac{b^2c^2x^2 - 6\,abc^2x + 8\,a^2c^2\log(bx+a)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*c^2*x^2 - 6*a*b*c^2*x + 8*a^2*c^2*log(b*x + a))/b
```

Sympy [A] time = 1.17284, size = 34, normalized size = 0.79

$$\frac{4a^2c^2\log(a+bx)}{b} - 3ac^2x + \frac{bc^2x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)**2/(b*x+a),x)
```

```
[Out] 4*a**2*c**2*log(a + b*x)/b - 3*a*c**2*x + b*c**2*x**2/2
```

GIAC/XCAS [A] time = 0.210602, size = 61, normalized size = 1.42

$$\frac{4\,a^2c^2\ln\left(|bx+a|\right)}{b}+\frac{b^3c^2x^2-6\,ab^2c^2x}{2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2/(b*x + a),x, algorithm="giac")
```

```
[Out] 4*a^2*c^2*ln(abs(b*x + a))/b + 1/2*(b^3*c^2*x^2 - 6*a*b^2*c^2*x)/
b^2
```

3.1051 $\int \frac{ac-bcx}{a+bx}\,dx$

Optimal. Leaf size=18

$$\frac{2ac\log(a+bx)}{b}-cx$$

```
[Out] -(c*x) + (2*a*c*Log[a + b*x])/b
```

Rubi [A] time = 0.0266799, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{2ac\log(a+bx)}{b}-cx$$

Antiderivative was successfully verified.

```
[In] Int[(a*c - b*c*x)/(a + b*x),x]
```

```
[Out] -(c*x) + (2*a*c*Log[a + b*x])/b
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2ac\log{(a+bx)}}{b}-\int c\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((-b*c*x+a*c)/(b*x+a),x)
```

```
[Out] 2*a*c*log(a + b*x)/b - Integral(c, x)
```

Mathematica [A] time = 0.00426537, size = 18, normalized size = 1.

$$c\left(\frac{2a\log(a+bx)}{b}-x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c - b*c*x)/(a + b*x),x]
```

```
[Out] c*(-x + (2*a*Log[a + b*x])/b)
```

Maple [A] time = 0.004, size = 19, normalized size = 1.1

$$-cx + 2\,\frac{ac\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b*c*x+a*c)/(b*x+a),x)
```

```
[Out] -c*x+2*a*c*ln(b*x+a)/b
```

Maxima [A] time = 1.33499, size = 24, normalized size = 1.33

$$-cx + \frac{2\,ac\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)/(b*x + a),x, algorithm="maxima")
```

```
[Out] -c*x + 2*a*c*log(b*x + a)/b
```

Fricas [A] time = 0.199829, size = 27, normalized size = 1.5

$$-\frac{bcx - 2\,ac\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)/(b*x + a),x, algorithm="fricas")
```

```
[Out] -(b*c*x - 2*a*c*log(b*x + a))/b
```

Sympy [A] time = 1.07177, size = 15, normalized size = 0.83

$$\frac{2ac\log(a+bx)}{b} - cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)/(b*x+a),x)
```

```
[Out] 2*a*c*log(a + b*x)/b - c*x
```

GIAC/XCAS [A] time = 0.203209, size = 26, normalized size = 1.44

$$-cx + \frac{2\,ac\ln\left(|bx + a|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)/(b*x + a),x, algorithm="giac")
```

```
[Out] -c*x + 2*a*c*ln(abs(b*x + a))/b
```

3.1052 $\int \frac{1}{a+bx} \, dx$

Optimal. Leaf size=10

$$\frac{\log(a+bx)}{b}$$

```
[Out] Log[a + b*x]/b
```

Rubi [A] time = 0.0067126, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-1),x]

[Out] Log[a + b*x]/b
```

Rubi in Sympy [A] time = 1.33199, size = 7, normalized size = 0.7

$$\frac{\log(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a),x)

[Out] log(a + b*x)/b
```

Mathematica [A] time = 0.000927631, size = 10, normalized size = 1.

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-1),x]
```

```
[Out] Log[a + b*x]/b
```

Maple [A] time = 0., size = 11, normalized size = 1.1

$$\frac{\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a),x)

[Out] ln(b*x+a)/b
```

Maxima [A] time = 1.3543, size = 14, normalized size = 1.4

$$\frac{\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + a),x, algorithm="maxima")

[Out] log(b*x + a)/b
```

Fricas [A] time = 0.196623, size = 14, normalized size = 1.4

$$\frac{\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + a),x, algorithm="fricas")

[Out] log(b*x + a)/b
```

Sympy [A] time = 0.080877, size = 7, normalized size = 0.7

$$\frac{\log(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a),x)
```

```
[Out] log(a + b*x)/b
```

GIAC/XCAS [A] time = 0.206452, size = 15, normalized size = 1.5

$$\frac{\ln(|bx + a|)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + a),x, algorithm="giac")
```

```
[Out] ln(abs(b*x + a))/b
```

3.1053 $\int \frac{1}{(a+bx)(ac-bcx)} \, dx$

Optimal. Leaf size=17

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{abc}$$

```
[Out] ArcTanh[(b*x)/a]/(a*b*c)
```

Rubi [A] time = 0.0281547, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{abc}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(a*c - b*c*x)),x]

[Out] ArcTanh[(b*x)/a]/(a*b*c)
```

Rubi in Sympy [A] time = 10.9698, size = 10, normalized size = 0.59

$$\frac{\operatorname{atanh}\left(\frac{bx}{a}\right)}{abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(-b*c*x+a*c),x)

[Out] atanh(b*x/a)/(a*b*c)
```

Mathematica [A] time = 0.0104122, size = 17, normalized size = 1.

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{abc}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(a*c - b*c*x)),x]

[Out] ArcTanh[(b*x)/a]/(a*b*c)
```

Maple [B] time = 0.009, size = 38, normalized size = 2.2

$$\frac{\ln(bx+a)}{2bca}-\frac{\ln(bx-a)}{2bca}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(-b*c*x+a*c),x)

[Out] 1/2/c/b/a*ln(b*x+a)-1/2/c/b/a*ln(b*x-a)
```

Maxima [A] time = 1.33874, size = 50, normalized size = 2.94

$$\frac{\log(bx+a)}{2\,abc}-\frac{\log(bx-a)}{2\,abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)*(b*x + a)),x, algorithm="maxima")

[Out] 1/2*log(b*x + a)/(a*b*c) - 1/2*log(b*x - a)/(a*b*c)
```

Fricas [A] time = 0.204205, size = 38, normalized size = 2.24

$$\frac{\log(bx+a)-\log(bx-a)}{2\,abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)*(b*x + a)),x, algorithm="fricas")

[Out] 1/2*(log(b*x + a) - log(b*x - a))/(a*b*c)
```

Sympy [A] time = 0.41556, size = 22, normalized size = 1.29

$$-\frac{\frac{\log\left(-\frac{a}{b}+x\right)}{2}-\frac{\log\left(\frac{a}{b}+x\right)}{2}}{abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(-b*c*x+a*c),x)
```

```
[Out] -(log(-a/b + x)/2 - log(a/b + x)/2)/(a*b*c)
```

GIAC/XCAS [A]   time = 0.205112, size = 53, normalized size = 3.12

$$\frac{\ln(|bx+a|)}{2\,abc} - \frac{\ln(|bx-a|)}{2\,abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)*(b*x + a)),x, algorithm="giac")
```

```
[Out] 1/2*ln(abs(b*x + a))/(a*b*c) - 1/2*ln(abs(b*x - a))/(a*b*c)
```

3.1054 $\int \frac{1}{(a+bx)(ac-bcx)^2}\,dx$

Optimal. Leaf size=42

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{2a^2bc^2}+\frac{1}{2abc^2(a-bx)}$$

```
[Out] 1/(2*a*b*c^2*(a - b*x)) + ArcTanh[(b*x)/a]/(2*a^2*b*c^2)
```

Rubi [A] time = 0.0672751, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{2a^2bc^2}+\frac{1}{2abc^2(a-bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(a*c - b*c*x)^2),x]
```

```
[Out] 1/(2*a*b*c^2*(a - b*x)) + ArcTanh[(b*x)/a]/(2*a^2*b*c^2)
```

Rubi in Sympy [A] time = 21.1932, size = 31, normalized size = 0.74

$$\frac{1}{2abc^2\left(a-bx\right)}+\frac{\operatorname{atanh}\left(\frac{bx}{a}\right)}{2a^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(-b*c*x+a*c)**2,x)
```

```
[Out] 1/(2*a*b*c**2*(a - b*x)) + atanh(b*x/a)/(2*a**2*b*c**2)
```

Mathematica [A] time = 0.0237949, size = 53, normalized size = 1.26

$$\frac{(bx-a)\log(a-bx)+(a-bx)\log(a+bx)+2a}{4a^2bc^2(a-bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(a*c - b*c*x)^2),x]
```

```
[Out] (2*a + (-a + b*x)*Log[a - b*x] + (a - b*x)*Log[a + b*x])/(4*a^2*b
*c^2*(a - b*x))
```

Maple [A] time = 0.014, size = 58, normalized size = 1.4

$$\frac{\ln(bx+a)}{4c^2a^2b} - \frac{\ln(bx-a)}{4c^2a^2b} - \frac{1}{2c^2ba(bx-a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(-b*c*x+a*c)^2,x)
```

```
[Out] 1/4/c^2/a^2/b*ln(b*x+a)-1/4/c^2/a^2/b*ln(b*x-a)-1/2/c^2/b/a/(b*x-
a)
```

Maxima [A] time = 1.35918, size = 81, normalized size = 1.93

$$-\frac{1}{2\left(ab^2c^2x-a^2bc^2\right)} + \frac{\log(bx+a)}{4a^2bc^2} - \frac{\log(bx-a)}{4a^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c*x - a*c)^2*(b*x + a)),x, algorithm="maxima")
```

```
[Out] -1/2/(a*b^2*c^2*x - a^2*b*c^2) + 1/4*log(b*x + a)/(a^2*b*c^2) - 1
/4*log(b*x - a)/(a^2*b*c^2)
```

Fricas [A] time = 0.209273, size = 81, normalized size = 1.93

$$\frac{(bx-a)\log(bx+a) - (bx-a)\log(bx-a) - 2a}{4\left(a^2b^2c^2x - a^3bc^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c*x - a*c)^2*(b*x + a)),x, algorithm="fricas")
```

```
[Out] 1/4*((b*x - a)*log(b*x + a) - (b*x - a)*log(b*x - a) - 2*a)/(a^2*
b^2*c^2*x - a^3*b*c^2)
```

Sympy [A] time = 1.63929, size = 48, normalized size = 1.14

$$-\frac{1}{-2a^2bc^2 + 2ab^2c^2x} + \frac{-\frac{\log\left(-\frac{a}{b}+x\right)}{4} + \frac{\log\left(\frac{a}{b}+x\right)}{4}}{a^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(-b*c*x+a*c)**2,x)
```

```
[Out] -1/(-2*a**2*b*c**2 + 2*a*b**2*c**2*x) + (-log(-a/b + x)/4 + log(a
/b + x)/4)/(a**2*b*c**2)
```

GIAC/XCAS [A] time = 0.20643, size = 72, normalized size = 1.71

$$-\frac{1}{2\,(bcx - ac)abc} + \frac{\ln\left(\left|-\frac{2\,ac}{bcx-ac} - 1\right|\right)}{4\,a^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c*x - a*c)^2*(b*x + a)),x, algorithm="giac")
```

```
[Out] -1/2/((b*c*x - a*c)*a*b*c) + 1/4*ln(abs(-2*a*c/(b*c*x - a*c) - 1)
)/(a^2*b*c^2)
```

3.1055 $\int \frac{1}{(a+bx)(ac-bcx)^3}\,dx$

Optimal. Leaf size=63

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{4a^3bc^3}+\frac{1}{4a^2bc^3(a-bx)}+\frac{1}{4abc^3(a-bx)^2}$$

```
[Out] 1/(4*a*b*c^3*(a - b*x)^2) + 1/(4*a^2*b*c^3*(a - b*x)) + ArcTanh[(
b*x)/a]/(4*a^3*b*c^3)
```

Rubi [A] time = 0.0850115, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{4a^3bc^3}+\frac{1}{4a^2bc^3(a-bx)}+\frac{1}{4abc^3(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(a*c - b*c*x)^3),x]
```

```
[Out] 1/(4*a*b*c^3*(a - b*x)^2) + 1/(4*a^2*b*c^3*(a - b*x)) + ArcTanh[(
b*x)/a]/(4*a^3*b*c^3)
```

Rubi in Sympy [A] time = 25.5496, size = 49, normalized size = 0.78

$$\frac{1}{4abc^3\left(a-bx\right)^2}+\frac{1}{4a^2bc^3\left(a-bx\right)}+\frac{\operatorname{atanh}\left(\frac{bx}{a}\right)}{4a^3bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(-b*c*x+a*c)**3,x)
```

```
[Out] 1/(4*a*b*c**3*(a - b*x)**2) + 1/(4*a**2*b*c**3*(a - b*x)) + atanh
(b*x/a)/(4*a**3*b*c**3)
```

Mathematica [A] time = 0.030103, size = 65, normalized size = 1.03

$$\frac{2a(2a-bx)+(a-bx)^2(-\log(a-bx))+(a-bx)^2\log(a+bx)}{8a^3bc^3(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(a*c - b*c*x)^3),x]
```

```
[Out] (2*a*(2*a - b*x) - (a - b*x)^2*Log[a - b*x] + (a - b*x)^2*Log[a +
 b*x])/(8*a^3*b*c^3*(a - b*x)^2)
```

Maple [A] time = 0.013, size = 78, normalized size = 1.2

$$\frac{\ln(bx+a)}{8c^3a^3b}-\frac{\ln(bx-a)}{8c^3a^3b}-\frac{1}{4c^3a^2b(bx-a)}+\frac{1}{4c^3ba(bx-a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(-b*c*x+a*c)^3,x)
```

```
[Out] 1/8/c^3/a^3/b*ln(b*x+a)-1/8/c^3/a^3/b*ln(b*x-a)-1/4/c^3/a^2/b/(b*
x-a)+1/4/c^3/b/a/(b*x-a)^2
```

Maxima [A] time = 1.35308, size = 111, normalized size = 1.76

$$-\frac{bx-2a}{4(a^2b^3c^3x^2-2a^3b^2c^3x+a^4bc^3)}+\frac{\log(bx+a)}{8a^3bc^3}-\frac{\log(bx-a)}{8a^3bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)^3*(b*x + a)),x, algorithm="maxima")
```

```
[Out] -1/4*(b*x - 2*a)/(a^2*b^3*c^3*x^2 - 2*a^3*b^2*c^3*x + a^4*b*c^3)
+ 1/8*log(b*x + a)/(a^3*b*c^3) - 1/8*log(b*x - a)/(a^3*b*c^3)
```

Fricas [A] time = 0.209453, size = 132, normalized size = 2.1

$$-\frac{2abx-4a^2-\left(b^2x^2-2abx+a^2\right)\log(bx+a)+\left(b^2x^2-2abx+a^2\right)\log(bx-a)}{8(a^3b^3c^3x^2-2a^4b^2c^3x+a^5bc^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)^3*(b*x + a)),x, algorithm="fricas")
```

```
[Out] -1/8*(2*a*b*x - 4*a^2 - (b^2*x^2 - 2*a*b*x + a^2)*log(b*x + a) +
(b^2*x^2 - 2*a*b*x + a^2)*log(b*x - a))/(a^3*b^3*c^3*x^2 - 2*a^4*
```

```
b^2*c^3*x + a^5*b*c^3)
```

Sympy [A] time = 2.00199, size = 71, normalized size = 1.13

$$-\frac{-2a+bx}{4a^4bc^3-8a^3b^2c^3x+4a^2b^3c^3x^2}-\frac{\frac{\log\left(-\frac{a}{b}+x\right)}{8}-\frac{\log\left(\frac{a}{b}+x\right)}{8}}{a^3bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(-b*c*x+a*c)**3,x)
```

```
[Out] -(-2*a + b*x)/(4*a**4*b*c**3 - 8*a**3*b**2*c**3*x + 4*a**2*b**3*c
**3*x**2) - (log(-a/b + x)/8 - log(a/b + x)/8)/(a**3*b*c**3)
```

GIAC/XCAS [A] time = 0.208682, size = 93, normalized size = 1.48

$$\frac{\ln\left(|bx+a|\right)}{8\,a^3bc^3}-\frac{\ln\left(|bx-a|\right)}{8\,a^3bc^3}-\frac{abx-2\,a^2}{4\,(bx-a)^2a^3bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)^3*(b*x + a)),x, algorithm="giac")
```

```
[Out] 1/8*ln(abs(b*x + a))/(a^3*b*c^3) - 1/8*ln(abs(b*x - a))/(a^3*b*c^
3) - 1/4*(a*b*x - 2*a^2)/((b*x - a)^2*a^3*b*c^3)
```

3.1056 $\int \frac{(ac-bcx)^3}{(a+bx)^2}\,dx$

Optimal. Leaf size=54

$$-\frac{8a^3c^3}{b(a+bx)}-\frac{12a^2c^3\log(a+bx)}{b}+5ac^3x-\frac{1}{2}bc^3x^2$$

```
[Out] 5*a*c^3*x - (b*c^3*x^2)/2 - (8*a^3*c^3)/(b*(a + b*x)) - (12*a^2*c
^3*Log[a + b*x])/b
```

Rubi [A] time = 0.0728237, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{8a^3c^3}{b(a+bx)}-\frac{12a^2c^3\log(a+bx)}{b}+5ac^3x-\frac{1}{2}bc^3x^2$$

Antiderivative was successfully verified.

```
[In]  Int[(a*c - b*c*x)^3/(a + b*x)^2,x]
```

```
[Out] 5*a*c^3*x - (b*c^3*x^2)/2 - (8*a^3*c^3)/(b*(a + b*x)) - (12*a^2*c
^3*Log[a + b*x])/b
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{8a^3c^3}{b\,(a+bx)}-\frac{12a^2c^3\log\,(a+bx)}{b}+5ac^3x-bc^3\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*c*x+a*c)**3/(b*x+a)**2,x)
```

```
[Out] -8*a**3*c**3/(b*(a + b*x)) - 12*a**2*c**3*log(a + b*x)/b + 5*a*c*
*3*x - b*c**3*Integral(x, x)
```

Mathematica [A] time = 0.0308275, size = 46, normalized size = 0.85

$$c^3\left(-\frac{8a^3}{b(a+bx)}-\frac{12a^2\log(a+bx)}{b}+5ax-\frac{bx^2}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*c - b*c*x)^3/(a + b*x)^2,x]
```

```
[Out] c^3*(5*a*x - (b*x^2)/2 - (8*a^3)/(b*(a + b*x)) - (12*a^2*Log[a +
b*x])/b)
```

Maple [A] time = 0.008, size = 53, normalized size = 1.

$$5\,ac^3x-\frac{bc^3x^2}{2}-8\,\frac{a^3c^3}{b\,(bx+a)}-12\,\frac{a^2c^3\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*c*x+a*c)^3/(b*x+a)^2,x)
```

```
[Out] 5*a*c^3*x-1/2*b*c^3*x^2-8*a^3*c^3/b/(b*x+a)-12*a^2*c^3*ln(b*x+a)/
b
```

Maxima [A] time = 1.35401, size = 72, normalized size = 1.33

$$-\frac{1}{2}\,bc^3x^2-\frac{8\,a^3c^3}{b^2x+ab}+5\,ac^3x-\frac{12\,a^2c^3\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*b*c^3*x^2 - 8*a^3*c^3/(b^2*x + a*b) + 5*a*c^3*x - 12*a^2*c^3
*log(b*x + a)/b
```

Fricas [A] time = 0.201214, size = 107, normalized size = 1.98

$$-\frac{b^3c^3x^3-9\,ab^2c^3x^2-10\,a^2bc^3x+16\,a^3c^3+24\left(a^2bc^3x+a^3c^3\right)\log(bx+a)}{2\,(b^2x+ab)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^3*c^3*x^3 - 9*a*b^2*c^3*x^2 - 10*a^2*b*c^3*x + 16*a^3*c^3
 + 24*(a^2*b*c^3*x + a^3*c^3)*log(b*x + a))/(b^2*x + a*b)
```

Sympy [A] time = 1.51043, size = 51, normalized size = 0.94

$$-\frac{8a^3c^3}{ab+b^2x}-\frac{12a^2c^3\log(a+bx)}{b}+5ac^3x-\frac{bc^3x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)**3/(b*x+a)**2,x)
```

```
[Out] -8*a**3*c**3/(a*b + b**2*x) - 12*a**2*c**3*log(a + b*x)/b + 5*a*c
**3*x - b*c**3*x**2/2
```

GIAC/XCAS [A] time = 0.205619, size = 108, normalized size = 2.

$$\frac{12\,a^2c^3\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b}-\frac{8\,a^3c^3}{(bx+a)b}+\frac{\left(\frac{12\,ac^3}{bx+a}-c^3\right)(bx+a)^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)^3/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 12*a^2*c^3*ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b - 8*a^3*c^3/((
b*x + a)*b) + 1/2*(12*a*c^3/(b*x + a) - c^3)*(b*x + a)^2/b
```

3.1057 $\int \frac{(ac-bcx)^2}{(a+bx)^2} dx$

Optimal. Leaf size=39

$$-\frac{4a^2c^2}{b(a+bx)}-\frac{4ac^2\log(a+bx)}{b}+c^2x$$

```
[Out] c^2*x - (4*a^2*c^2)/(b*(a + b*x)) - (4*a*c^2*Log[a + b*x])/b
```

Rubi [A] time = 0.0515832, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{4a^2c^2}{b(a+bx)}-\frac{4ac^2\log(a+bx)}{b}+c^2x$$

Antiderivative was successfully verified.

```
[In] Int[(a*c - b*c*x)^2/(a + b*x)^2,x]
```

```
[Out] c^2*x - (4*a^2*c^2)/(b*(a + b*x)) - (4*a*c^2*Log[a + b*x])/b
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{4a^2c^2}{b\,(a+bx)}-\frac{4ac^2\log\,(a+bx)}{b}+\int c^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((-b*c*x+a*c)**2/(b*x+a)**2,x)
```

```
[Out] -4*a**2*c**2/(b*(a + b*x)) - 4*a*c**2*log(a + b*x)/b + Integral(c
**2, x)
```

Mathematica [A] time = 0.0268677, size = 33, normalized size = 0.85

$$c^2\left(-\frac{4a^2}{b(a+bx)}-\frac{4a\log(a+bx)}{b}+x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c - b*c*x)^2/(a + b*x)^2,x]
```

```
[Out] c^2*(x - (4*a^2)/(b*(a + b*x)) - (4*a*Log[a + b*x])/b)
```

Maple [A] time = 0.009, size = 40, normalized size = 1.

$$c^2x - 4\,\frac{a^2c^2}{b\,(bx + a)} - 4\,\frac{ac^2\ln(bx + a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*c*x+a*c)^2/(b*x+a)^2,x)
```

```
[Out] c^2*x-4*a^2*c^2/b/(b*x+a)-4*a*c^2*ln(b*x+a)/b
```

Maxima [A] time = 1.34266, size = 54, normalized size = 1.38

$$-\frac{4\,a^2c^2}{b^2x + ab} + c^2x - \frac{4\,ac^2\log(bx + a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -4*a^2*c^2/(b^2*x + a*b) + c^2*x - 4*a*c^2*log(b*x + a)/b
```

Fricas [A] time = 0.201938, size = 82, normalized size = 2.1

$$\frac{b^2c^2x^2 + abc^2x - 4\,a^2c^2 - 4\,\left(abc^2x + a^2c^2\right)\log(bx + a)}{b^2x + ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] (b^2*c^2*x^2 + a*b*c^2*x - 4*a^2*c^2 - 4*(a*b*c^2*x + a^2*c^2)*lo
g(b*x + a))/(b^2*x + a*b)
```

Sympy [A] time = 1.37097, size = 36, normalized size = 0.92

$$-\frac{4a^2c^2}{ab + b^2x} - \frac{4ac^2\log(a + bx)}{b} + c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)**2/(b*x+a)**2,x)
```

```
[Out] -4*a**2*c**2/(a*b + b**2*x) - 4*a*c**2*log(a + b*x)/b + c**2*x
```

GIAC/XCAS [A] time = 0.20348, size = 80, normalized size = 2.05

$$\frac{4\,ac^2\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b}+\frac{(bx+a)c^2}{b}-\frac{4\,a^2c^2}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x - a*c)^2/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 4*a*c^2*ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b + (b*x + a)*c^2/b
 - 4*a^2*c^2/((b*x + a)*b)
```

3.1058 $\int \frac{ac-bcx}{(a+bx)^2} \, dx$

Optimal. Leaf size=27

$$-\frac{2ac}{b(a+bx)}-\frac{c\log(a+bx)}{b}$$

```
[Out] (-2*a*c)/(b*(a + b*x)) - (c*Log[a + b*x])/b
```

Rubi [A] time = 0.0338715, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{2ac}{b(a+bx)}-\frac{c\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a*c - b*c*x)/(a + b*x)^2,x]
```

```
[Out] (-2*a*c)/(b*(a + b*x)) - (c*Log[a + b*x])/b
```

Rubi in Sympy [A] time = 8.59556, size = 22, normalized size = 0.81

$$-\frac{2ac}{b\left(a+bx\right)}-\frac{c\log\left(a+bx\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*c*x+a*c)/(b*x+a)**2,x)
```

```
[Out] -2*a*c/(b*(a + b*x)) - c*log(a + b*x)/b
```

Mathematica [A] time = 0.0143324, size = 23, normalized size = 0.85

$$-\frac{c\left(\frac{2a}{a+bx}+\log(a+bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*c - b*c*x)/(a + b*x)^2,x]
```

```
[Out] -((c*((2*a)/(a + b*x) + Log[a + b*x]))/b)
```

Maple [A] time = 0.01, size = 28, normalized size = 1.

$$-2\,\frac{ac}{b\,(bx+a)}-\frac{c\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-b*c*x+a*c)/(b*x+a)^2,x)
```

```
[Out] -2*a*c/b/(b*x+a)-c*ln(b*x+a)/b
```

Maxima [A] time = 1.35452, size = 38, normalized size = 1.41

$$-\frac{2\,ac}{b^2x+ab}-\frac{c\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -2*a*c/(b^2*x + a*b) - c*log(b*x + a)/b
```

Fricas [A] time = 0.199769, size = 45, normalized size = 1.67

$$-\frac{2\,ac+(bcx+ac)\log(bx+a)}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-(b*c*x - a*c)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -(2*a*c + (b*c*x + a*c)*log(b*x + a))/(b^2*x + a*b)
```

Sympy [A] time = 1.28021, size = 24, normalized size = 0.89

$$-\frac{2ac}{ab+b^2x}-\frac{c\log(a+bx)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)/(b*x+a)**2,x)
```

```
[Out] -2*a*c/(a*b + b**2*x) - c*log(a + b*x)/b
```

GIAC/XCAS [A] time = 0.206808, size = 73, normalized size = 2.7

$$c\left(\frac{\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b} - \frac{a}{(bx+a)b}\right) - \frac{ac}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-(b*c*x - a*c)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] c*(ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b - a/((b*x + a)*b)) - a
*c/((b*x + a)*b)
```

3.1059 $\int \frac{1}{(a+bx)^2} dx$

Optimal. Leaf size=12

$$-\frac{1}{b(a+bx)}$$

```
[Out] -(1/(b*(a + b*x)))
```

Rubi [A] time = 0.00720442, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$-\frac{1}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-2),x]

[Out] -(1/(b*(a + b*x)))
```

Rubi in Sympy [A] time = 1.36388, size = 8, normalized size = 0.67

$$-\frac{1}{b\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2,x)

[Out] -1/(b*(a + b*x))
```

Mathematica [A] time = 0.00316207, size = 12, normalized size = 1.

$$-\frac{1}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-2),x]
```

```
[Out] -(1/(b*(a + b*x)))
```

Maple [A] time = 0.001, size = 13, normalized size = 1.1

$$-\frac{1}{b\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^2,x)
```

```
[Out] -1/b/(b*x+a)
```

Maxima [A] time = 1.35407, size = 16, normalized size = 1.33

$$-\frac{1}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-2),x, algorithm="maxima")
```

```
[Out] -1/((b*x + a)*b)
```

Fricas [A] time = 0.19212, size = 18, normalized size = 1.5

$$-\frac{1}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-2),x, algorithm="fricas")
```

```
[Out] -1/(b^2*x + a*b)
```

Sympy [A] time = 1.12119, size = 10, normalized size = 0.83

$$-\frac{1}{ab+b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2,x)

[Out] -1/(a*b + b**2*x)
```

GIAC/XCAS [A] time = 0.201659, size = 16, normalized size = 1.33

$$-\frac{1}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-2),x, algorithm="giac")

[Out] -1/((b*x + a)*b)
```

3.1060 $\int \frac{1}{(a+bx)^2(ac-bcx)}\,dx$

Optimal. Leaf size=41

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{2a^2bc}-\frac{1}{2abc(a+bx)}$$

```
[Out] -1/(2*a*b*c*(a + b*x)) + ArcTanh[(b*x)/a]/(2*a^2*b*c)
```

Rubi [A] time = 0.06362, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{2a^2bc}-\frac{1}{2abc(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(a*c - b*c*x)),x]

[Out] -1/(2*a*b*c*(a + b*x)) + ArcTanh[(b*x)/a]/(2*a^2*b*c)
```

Rubi in Sympy [A] time = 20.1858, size = 27, normalized size = 0.66

$$-\frac{1}{2abc\,(a+bx)}+\frac{\operatorname{atanh}\left(\frac{bx}{a}\right)}{2a^2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(-b*c*x+a*c),x)

[Out] -1/(2*a*b*c*(a + b*x)) + atanh(b*x/a)/(2*a**2*b*c)
```

Mathematica [A] time = 0.0205803, size = 50, normalized size = 1.22

$$\frac{-(a+bx)\log(a-bx)+(a+bx)\log(a+bx)-2a}{4a^2bc(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(a*c - b*c*x)),x]
```

```
[Out] (-2*a - (a + b*x)*Log[a - b*x] + (a + b*x)*Log[a + b*x])/(4*a^2*b
*c*(a + b*x))
```

Maple [A] time = 0.013, size = 56, normalized size = 1.4

$$\frac{\ln(bx+a)}{4\,ca^2b} - \frac{1}{2\,abc\,(bx+a)} - \frac{\ln(bx-a)}{4\,ca^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(-b*c*x+a*c),x)
```

```
[Out] 1/4/c/a^2/b*ln(b*x+a)-1/2/a/b/c/(b*x+a)-1/4/c/a^2/b*ln(b*x-a)
```

Maxima [A] time = 1.39236, size = 74, normalized size = 1.8

$$-\frac{1}{2\,(ab^2cx+a^2bc)} + \frac{\log(bx+a)}{4\,a^2bc} - \frac{\log(bx-a)}{4\,a^2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] -1/2/(a*b^2*c*x + a^2*b*c) + 1/4*log(b*x + a)/(a^2*b*c) - 1/4*log
(b*x - a)/(a^2*b*c)
```

Fricas [A] time = 0.203474, size = 69, normalized size = 1.68

$$\frac{(bx+a)\log(bx+a) - (bx+a)\log(bx-a) - 2\,a}{4\,(a^2b^2cx+a^3bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] 1/4*((b*x + a)*log(b*x + a) - (b*x + a)*log(b*x - a) - 2*a)/(a^2*
b^2*c*x + a^3*b*c)
```

Sympy [A] time = 1.64453, size = 44, normalized size = 1.07

$$-\frac{1}{2a^2bc+2ab^2cx}-\frac{\frac{\log\left(-\frac{a}{b}+x\right)}{4}-\frac{\log\left(\frac{a}{b}+x\right)}{4}}{a^2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(-b*c*x+a*c),x)
```

```
[Out] -1/(2*a**2*b*c + 2*a*b**2*c*x) - (log(-a/b + x)/4 - log(a/b + x)/
4)/(a**2*b*c)
```

GIAC/XCAS [A] time = 0.206313, size = 59, normalized size = 1.44

$$-\frac{\ln\left(\left|-\frac{2a}{bx+a}+1\right|\right)}{4a^2bc}-\frac{1}{2(bx+a)abc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] -1/4*ln(abs(-2*a/(b*x + a) + 1))/(a^2*b*c) - 1/2/((b*x + a)*a*b*c
)
```

3.1061 $\int \frac{1}{(a+bx)^2(ac-bcx)^2}\,dx$

Optimal. Leaf size=46

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{2a^3bc^2}+\frac{x}{2a^2c^2\left(a^2-b^2x^2\right)}$$

```
[Out] x/(2*a^2*c^2*(a^2 - b^2*x^2)) + ArcTanh[(b*x)/a]/(2*a^3*b*c^2)
```

Rubi [A] time = 0.0448485, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{\tanh^{-1}\left(\frac{bx}{a}\right)}{2a^3bc^2}+\frac{x}{2a^2c^2\left(a^2-b^2x^2\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(a*c - b*c*x)^2),x]

[Out] x/(2*a^2*c^2*(a^2 - b^2*x^2)) + ArcTanh[(b*x)/a]/(2*a^3*b*c^2)
```

Rubi in Sympy [A] time = 14.1912, size = 36, normalized size = 0.78

$$\frac{x}{2a^2c^2\left(a^2-b^2x^2\right)}+\frac{\operatorname{atanh}\left(\frac{bx}{a}\right)}{2a^3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(-b*c*x+a*c)**2,x)

[Out] x/(2*a**2*c**2*(a**2 - b**2*x**2)) + atanh(b*x/a)/(2*a**3*b*c**2)
```

Mathematica [A] time = 0.0366393, size = 74, normalized size = 1.61

$$\frac{\left(b^2x^2-a^2\right)\log(a-bx)+\left(a^2-b^2x^2\right)\log(a+bx)+2abx}{4a^3bc^2(a-bx)(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(a*c - b*c*x)^2),x]
```

```
[Out] (2*a*b*x + (-a^2 + b^2*x^2)*Log[a - b*x] + (a^2 - b^2*x^2)*Log[a
+ b*x])/(4*a^3*b*c^2*(a - b*x)*(a + b*x))
```

Maple [A]   time = 0.015, size = 76, normalized size = 1.7

$$\frac{\ln(bx+a)}{4c^2a^3b} - \frac{1}{4c^2a^2b(bx+a)} - \frac{\ln(bx-a)}{4c^2a^3b} - \frac{1}{4c^2a^2b(bx-a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(-b*c*x+a*c)^2,x)
```

```
[Out] 1/4/c^2/a^3/b*ln(b*x+a)-1/4/c^2/a^2/b/(b*x+a)-1/4/c^2/a^3/b*ln(b*
x-a)-1/4/c^2/a^2/b/(b*x-a)
```

Maxima [A]   time = 1.33726, size = 86, normalized size = 1.87

$$-\frac{x}{2(a^2b^2c^2x^2 - a^4c^2)} + \frac{\log(bx+a)}{4a^3bc^2} - \frac{\log(bx-a)}{4a^3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c*x - a*c)^2*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] -1/2*x/(a^2*b^2*c^2*x^2 - a^4*c^2) + 1/4*log(b*x + a)/(a^3*b*c^2)
 - 1/4*log(b*x - a)/(a^3*b*c^2)
```

Fricas [A]   time = 0.203154, size = 103, normalized size = 2.24

$$-\frac{2abx - \left(b^2x^2 - a^2\right)\log(bx+a) + \left(b^2x^2 - a^2\right)\log(bx-a)}{4(a^3b^3c^2x^2 - a^5bc^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c*x - a*c)^2*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] -1/4*(2*a*b*x - (b^2*x^2 - a^2)*log(b*x + a) + (b^2*x^2 - a^2)*lo
g(b*x - a))/(a^3*b^3*c^2*x^2 - a^5*b*c^2)
```

Sympy [A] time = 1.58745, size = 49, normalized size = 1.07

$$-\frac{x}{-2a^4c^2+2a^2b^2c^2x^2}+\frac{-\frac{\log\left(-\frac{a}{b}+x\right)}{4}+\frac{\log\left(\frac{a}{b}+x\right)}{4}}{a^3bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(-b*c*x+a*c)**2,x)
```

```
[Out] -x/(-2*a**4*c**2 + 2*a**2*b**2*c**2*x**2) + (-log(-a/b + x)/4 + l
og(a/b + x)/4)/(a**3*b*c**2)
```

GIAC/XCAS [A] time = 0.209528, size = 112, normalized size = 2.43

$$-\frac{1}{4\,(bcx-ac)a^2bc}+\frac{\ln\left(\left|-\frac{2\,ac}{bcx-ac}-1\right|\right)}{4\,a^3bc^2}+\frac{1}{8\,a^3b\left(\frac{2\,ac}{bcx-ac}+1\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c*x - a*c)^2*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] -1/4/((b*c*x - a*c)*a^2*b*c) + 1/4*ln(abs(-2*a*c/(b*c*x - a*c) -
1))/(a^3*b*c^2) + 1/8/(a^3*b*(2*a*c/(b*c*x - a*c) + 1)*c^2)
```

3.1062 $\int \frac{1}{(a+bx)^2(ac-bcx)^3}\,dx$

Optimal. Leaf size=83

$$\frac{3\tanh^{-1}\left(\frac{bx}{a}\right)}{8a^4bc^3}+\frac{1}{4a^3bc^3(a-bx)}-\frac{1}{8a^3bc^3(a+bx)}+\frac{1}{8a^2bc^3(a-bx)^2}$$

```
[Out] 1/(8*a^2*b*c^3*(a - b*x)^2) + 1/(4*a^3*b*c^3*(a - b*x)) - 1/(8*a^
3*b*c^3*(a + b*x)) + (3*ArcTanh[(b*x)/a])/(8*a^4*b*c^3)
```

Rubi [A] time = 0.109928, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{3\tanh^{-1}\left(\frac{bx}{a}\right)}{8a^4bc^3}+\frac{1}{4a^3bc^3(a-bx)}-\frac{1}{8a^3bc^3(a+bx)}+\frac{1}{8a^2bc^3(a-bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(a*c - b*c*x)^3),x]
```

```
[Out] 1/(8*a^2*b*c^3*(a - b*x)^2) + 1/(4*a^3*b*c^3*(a - b*x)) - 1/(8*a^
3*b*c^3*(a + b*x)) + (3*ArcTanh[(b*x)/a])/(8*a^4*b*c^3)
```

Rubi in Sympy [A] time = 29.4801, size = 70, normalized size = 0.84

$$\frac{1}{8a^2bc^3\left(a-bx\right)^2}-\frac{1}{8a^3bc^3\left(a+bx\right)}+\frac{1}{4a^3bc^3\left(a-bx\right)}+\frac{3\,\mathrm{atanh}\left(\frac{bx}{a}\right)}{8a^4bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(-b*c*x+a*c)**3,x)
```

```
[Out] 1/(8*a**2*b*c**3*(a - b*x)**2) - 1/(8*a**3*b*c**3*(a + b*x)) + 1/
(4*a**3*b*c**3*(a - b*x)) + 3*atanh(b*x/a)/(8*a**4*b*c**3)
```

Mathematica [A] time = 0.0598003, size = 68, normalized size = 0.82

$$\frac{\frac{2a\left(2a^2+3abx-3b^2x^2\right)}{(a-bx)^2(a+bx)}-3\log(a-bx)+3\log(a+bx)}{16a^4bc^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(a*c - b*c*x)^3),x]
```

```
[Out] ((2*a*(2*a^2 + 3*a*b*x - 3*b^2*x^2))/((a - b*x)^2*(a + b*x)) - 3*
Log[a - b*x] + 3*Log[a + b*x])/(16*a^4*b*c^3)
```

Maple [A] time = 0.016, size = 96, normalized size = 1.2

$$\frac{3\ln(bx+a)}{16c^3a^4b}-\frac{1}{8a^3bc^3(bx+a)}-\frac{3\ln(bx-a)}{16c^3a^4b}-\frac{1}{4a^3bc^3(bx-a)}+\frac{1}{8c^3a^2b(bx-a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(-b*c*x+a*c)^3,x)
```

```
[Out] 3/16/c^3/a^4/b*ln(b*x+a)-1/8/a^3/b/c^3/(b*x+a)-3/16/c^3/a^4/b*ln(
b*x-a)-1/4/c^3/a^3/b/(b*x-a)+1/8/c^3/a^2/b/(b*x-a)^2
```

Maxima [A] time = 1.33026, size = 146, normalized size = 1.76

$$-\frac{3b^2x^2-3abx-2a^2}{8(a^3b^4c^3x^3-a^4b^3c^3x^2-a^5b^2c^3x+a^6bc^3)}+\frac{3\log(bx+a)}{16a^4bc^3}-\frac{3\log(bx-a)}{16a^4bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)^3*(b*x + a)^2),x, algorithm="maxima")
```

```
[Out] -1/8*(3*b^2*x^2 - 3*a*b*x - 2*a^2)/(a^3*b^4*c^3*x^3 - a^4*b^3*c^3
*x^2 - a^5*b^2*c^3*x + a^6*b*c^3) + 3/16*log(b*x + a)/(a^4*b*c^3)
 - 3/16*log(b*x - a)/(a^4*b*c^3)
```

Fricas [A] time = 0.209391, size = 197, normalized size = 2.37

$$-\frac{6ab^2x^2-6a^2bx-4a^3-3\left(b^3x^3-ab^2x^2-a^2bx+a^3\right)\log(bx+a)+3\left(b^3x^3-ab^2x^2-a^2bx+a^3\right)\log(bx-a)}{16(a^4b^4c^3x^3-a^5b^3c^3x^2-a^6b^2c^3x+a^7bc^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)^3*(b*x + a)^2),x, algorithm="fricas")
```

```
[Out] -1/16*(6*a*b^2*x^2 - 6*a^2*b*x - 4*a^3 - 3*(b^3*x^3 - a*b^2*x^2 -
 a^2*b*x + a^3)*log(b*x + a) + 3*(b^3*x^3 - a*b^2*x^2 - a^2*b*x +
 a^3)*log(b*x - a))/(a^4*b^4*c^3*x^3 - a^5*b^3*c^3*x^2 - a^6*b^2*
c^3*x + a^7*b*c^3)
```

Sympy [A] time = 2.48175, size = 104, normalized size = 1.25

$$-\frac{-2a^2-3abx+3b^2x^2}{8a^6bc^3-8a^5b^2c^3x-8a^4b^3c^3x^2+8a^3b^4c^3x^3}-\frac{\frac{3\log\left(-\frac{a}{b}+x\right)}{16}-\frac{3\log\left(\frac{a}{b}+x\right)}{16}}{a^4bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(-b*c*x+a*c)**3,x)
```

```
[Out] -(-2*a**2 - 3*a*b*x + 3*b**2*x**2)/(8*a**6*b*c**3 - 8*a**5*b**2*c
**3*x - 8*a**4*b**3*c**3*x**2 + 8*a**3*b**4*c**3*x**3) - (3*log(-
a/b + x)/16 - 3*log(a/b + x)/16)/(a**4*b*c**3)
```

GIAC/XCAS [A] time = 0.204696, size = 109, normalized size = 1.31

$$-\frac{3\ln\left(\left|-\frac{2a}{bx+a}+1\right|\right)}{16a^4bc^3}-\frac{1}{8(bx+a)a^3bc^3}+\frac{\frac{12a}{bx+a}-5}{32a^4bc^3\left(\frac{2a}{bx+a}-1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/((b*c*x - a*c)^3*(b*x + a)^2),x, algorithm="giac")
```

```
[Out] -3/16*ln(abs(-2*a/(b*x + a) + 1))/(a^4*b*c^3) - 1/8/((b*x + a)*a^
3*b*c^3) + 1/32*(12*a/(b*x + a) - 5)/(a^4*b*c^3*(2*a/(b*x + a) -
1)^2)
```

3.1063 $\int (1-x)^{9/2}\sqrt{1+x}\,dx$

Optimal. Leaf size=108

$$\frac{1}{6}(x+1)^{3/2}(1-x)^{9/2} + \frac{3}{10}(x+1)^{3/2}(1-x)^{7/2} + \frac{21}{40}(x+1)^{3/2}(1-x)^{5/2} + \frac{7}{8}(x+1)^{3/2}(1-x)^{3/2} + \frac{21}{16}x\sqrt{x+1}\sqrt{1-x} + \frac{21}{16}\sin^{-1}(x)$$

```
[Out] (21*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (7*(1 - x)^(3/2)*(1 + x)^(3/2
))/8 + (21*(1 - x)^(5/2)*(1 + x)^(3/2))/40 + (3*(1 - x)^(7/2)*(1
+ x)^(3/2))/10 + ((1 - x)^(9/2)*(1 + x)^(3/2))/6 + (21*ArcSin[x])
/16
```

Rubi [A] time = 0.0750559, antiderivative size = 108, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{1}{6}(x+1)^{3/2}(1-x)^{9/2} + \frac{3}{10}(x+1)^{3/2}(1-x)^{7/2} + \frac{21}{40}(x+1)^{3/2}(1-x)^{5/2} + \frac{7}{8}(x+1)^{3/2}(1-x)^{3/2} + \frac{21}{16}x\sqrt{x+1}\sqrt{1-x} + \frac{21}{16}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(9/2)*Sqrt[1 + x],x]
```

```
[Out] (21*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (7*(1 - x)^(3/2)*(1 + x)^(3/2
))/8 + (21*(1 - x)^(5/2)*(1 + x)^(3/2))/40 + (3*(1 - x)^(7/2)*(1
+ x)^(3/2))/10 + ((1 - x)^(9/2)*(1 + x)^(3/2))/6 + (21*ArcSin[x])
/16
```

Rubi in Sympy [A] time = 10.2972, size = 90, normalized size = 0.83

$$\frac{21x\sqrt{-x+1}\sqrt{x+1}}{16} + \frac{(-x+1)^{\frac{9}{2}}(x+1)^{\frac{3}{2}}}{6} + \frac{3(-x+1)^{\frac{7}{2}}(x+1)^{\frac{3}{2}}}{10} + \frac{21(-x+1)^{\frac{5}{2}}(x+1)^{\frac{3}{2}}}{40} + \frac{7(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{8} + \frac{21\operatorname{asin}(x)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(9/2)*(1+x)**(1/2),x)
```

```
[Out] 21*x*sqrt(-x + 1)*sqrt(x + 1)/16 + (-x + 1)**(9/2)*(x + 1)**(3/2)
/6 + 3*(-x + 1)**(7/2)*(x + 1)**(3/2)/10 + 21*(-x + 1)**(5/2)*(x
```

```
+ 1)**(3/2)/40 + 7*(-x + 1)**(3/2)*(x + 1)**(3/2)/8 + 21*asin(x)/
16
```

Mathematica [A] time = 0.0437452, size = 59, normalized size = 0.55

$$\frac{1}{240}\sqrt{1-x^2}\left(40x^5-192x^4+350x^3-256x^2-75x+448\right)+\frac{21}{8}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(9/2)*Sqrt[1 + x],x]
```

```
[Out] (Sqrt[1 - x^2]*(448 - 75*x - 256*x^2 + 350*x^3 - 192*x^4 + 40*x^5
))/240 + (21*ArcSin[Sqrt[1 + x]/Sqrt[2]])/8
```

Maple [A] time = 0.01, size = 113, normalized size = 1.1

$$\frac{1}{6}(1-x)^{\frac{9}{2}}(1+x)^{\frac{3}{2}}+\frac{3}{10}(1-x)^{\frac{7}{2}}(1+x)^{\frac{3}{2}}+\frac{21}{40}(1-x)^{\frac{5}{2}}(1+x)^{\frac{3}{2}}+\frac{7}{8}(1-x)^{\frac{3}{2}}(1+x)^{\frac{3}{2}}+\frac{21}{16}\sqrt{1-x}(1+x)^{\frac{3}{2}}-\frac{21}{16}\sqrt{1-x}\sqrt{1+x}+\frac{21\arcsin(x)}{16}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(9/2)*(1+x)^(1/2),x)
```

```
[Out] 1/6*(1-x)^(9/2)*(1+x)^(3/2)+3/10*(1-x)^(7/2)*(1+x)^(3/2)+21/40*(1
-x)^(5/2)*(1+x)^(3/2)+7/8*(1-x)^(3/2)*(1+x)^(3/2)+21/16*(1-x)^(1/
2)*(1+x)^(3/2)-21/16*(1-x)^(1/2)*(1+x)^(1/2)+21/16*((1+x)*(1-x))^
(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49029, size = 92, normalized size = 0.85

$$-\frac{1}{6}\left(-x^2+1\right)^{\frac{3}{2}}x^3+\frac{4}{5}\left(-x^2+1\right)^{\frac{3}{2}}x^2-\frac{13}{8}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{28}{15}\left(-x^2+1\right)^{\frac{3}{2}}+\frac{21}{16}\sqrt{-x^2+1}x+\frac{21}{16}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(9/2),x, algorithm="maxima")
```

```
[Out] -1/6*(-x^2 + 1)^(3/2)*x^3 + 4/5*(-x^2 + 1)^(3/2)*x^2 - 13/8*(-x^2
 + 1)^(3/2)*x + 28/15*(-x^2 + 1)^(3/2) + 21/16*sqrt(-x^2 + 1)*x +
```

```
21/16*arcsin(x)
```

Fricas [A] time = 0.210511, size = 311, normalized size = 2.88

$$-\frac{240\,x^{11} - 1152\,x^{10} + 580\,x^{9} + 5760\,x^{8} - 11190\,x^{7} - 320\,x^{6} + 23970\,x^{5} - 19200\,x^{4} - 16000\,x^{3} + 15360\,x^{2} - \left(40\,x^{11} - 192\,x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(9/2),x, algorithm="fricas")
```

```
[Out] -1/240*(240*x^11 - 1152*x^10 + 580*x^9 + 5760*x^8 - 11190*x^7 - 3
20*x^6 + 23970*x^5 - 19200*x^4 - 16000*x^3 + 15360*x^2 - (40*x^11
 - 192*x^10 - 370*x^9 + 3200*x^8 - 4455*x^7 - 4160*x^6 + 16870*x^
5 - 11520*x^4 - 14800*x^3 + 15360*x^2 + 2400*x)*sqrt(x + 1)*sqrt(
-x + 1) + 630*(x^6 - 18*x^4 + 48*x^2 + 2*(3*x^4 - 16*x^2 + 16)*sq
rt(x + 1)*sqrt(-x + 1) - 32)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1
)/x) + 2400*x)/(x^6 - 18*x^4 + 48*x^2 + 2*(3*x^4 - 16*x^2 + 16)*s
qrt(x + 1)*sqrt(-x + 1) - 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(9/2)*(1+x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.23282, size = 201, normalized size = 1.86

$$-\frac{4}{15}\,((3\,(x+1)(x-3)+17)(x+1)-10)(x+1)^{\frac{3}{2}}\sqrt{-x+1}-\frac{4}{3}\,(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1}$$
$$+\frac{1}{48}\,((2\,((4\,(x+1)(x-4)+39)(x+1)-37)(x+1)+31)(x+1)-3)\sqrt{x+1}\sqrt{-x+1}$$
$$+\frac{3}{4}\,((2\,(x+1)(x-2)+5)(x+1)-1)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\,\sqrt{x+1}x\sqrt{-x+1}+\frac{21}{8}\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(9/2),x, algorithm="giac")
```

```
[Out] -4/15*((3*(x + 1)*(x - 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(
-x + 1) - 4/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 1/48*((2*((4*(
x + 1)*(x - 4) + 39)*(x + 1) - 37)*(x + 1) + 31)*(x + 1) - 3)*sqr
t(x + 1)*sqrt(-x + 1) + 3/4*((2*(x + 1)*(x - 2) + 5)*(x + 1) - 1)
*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 21/8
*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1064 $\int (1-x)^{7/2}\sqrt{1+x}\,dx$

Optimal. Leaf size=88

$$\frac{1}{5}(x+1)^{3/2}(1-x)^{7/2}+\frac{7}{20}(x+1)^{3/2}(1-x)^{5/2}+\frac{7}{12}(x+1)^{3/2}(1-x)^{3/2}+\frac{7}{8}x\sqrt{x+1}\sqrt{1-x}+\frac{7}{8}\sin^{-1}(x)$$

```
[Out] (7*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + (7*(1 - x)^(3/2)*(1 + x)^(3/2))
/12 + (7*(1 - x)^(5/2)*(1 + x)^(3/2))/20 + ((1 - x)^(7/2)*(1 + x)
^(3/2))/5 + (7*ArcSin[x])/8
```

Rubi [A] time = 0.0587866, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{1}{5}(x+1)^{3/2}(1-x)^{7/2}+\frac{7}{20}(x+1)^{3/2}(1-x)^{5/2}+\frac{7}{12}(x+1)^{3/2}(1-x)^{3/2}+\frac{7}{8}x\sqrt{x+1}\sqrt{1-x}+\frac{7}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(7/2)*Sqrt[1 + x],x]
```

```
[Out] (7*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + (7*(1 - x)^(3/2)*(1 + x)^(3/2))
/12 + (7*(1 - x)^(5/2)*(1 + x)^(3/2))/20 + ((1 - x)^(7/2)*(1 + x)
^(3/2))/5 + (7*ArcSin[x])/8
```

Rubi in Sympy [A] time = 8.66716, size = 73, normalized size = 0.83

$$\frac{7x\sqrt{-x+1}\sqrt{x+1}}{8}+\frac{(-x+1)^{\frac{7}{2}}(x+1)^{\frac{3}{2}}}{5}+\frac{7(-x+1)^{\frac{5}{2}}(x+1)^{\frac{3}{2}}}{20}+\frac{7(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{12}+\frac{7\operatorname{asin}(x)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(7/2)*(1+x)**(1/2),x)
```

```
[Out] 7*x*sqrt(-x + 1)*sqrt(x + 1)/8 + (-x + 1)**(7/2)*(x + 1)**(3/2)/5
 + 7*(-x + 1)**(5/2)*(x + 1)**(3/2)/20 + 7*(-x + 1)**(3/2)*(x + 1
)**(3/2)/12 + 7*asin(x)/8
```

Mathematica [A] time = 0.0407994, size = 54, normalized size = 0.61

$$\frac{1}{120}\sqrt{1-x^2}\left(-24x^4+90x^3-112x^2+15x+136\right)+\frac{7}{4}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/2)*Sqrt[1 + x],x]
```

```
[Out] (Sqrt[1 - x^2]*(136 + 15*x - 112*x^2 + 90*x^3 - 24*x^4))/120 + (7
*ArcSin[Sqrt[1 + x]/Sqrt[2]])/4
```

Maple [A] time = 0.007, size = 99, normalized size = 1.1

$$\frac{1}{5}(1-x)^{\frac{7}{2}}(1+x)^{\frac{3}{2}}+\frac{7}{20}(1-x)^{\frac{5}{2}}(1+x)^{\frac{3}{2}}+\frac{7}{12}(1-x)^{\frac{3}{2}}(1+x)^{\frac{3}{2}}+\frac{7}{8}\sqrt{1-x}(1+x)^{\frac{3}{2}}-\frac{7}{8}\sqrt{1-x}\sqrt{1+x}+\frac{7\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/2)*(1+x)^(1/2),x)
```

```
[Out] 1/5*(1-x)^(7/2)*(1+x)^(3/2)+7/20*(1-x)^(5/2)*(1+x)^(3/2)+7/12*(1-
x)^(3/2)*(1+x)^(3/2)+7/8*(1-x)^(1/2)*(1+x)^(3/2)-7/8*(1-x)^(1/2)*
(1+x)^(1/2)+7/8*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsi
n(x)
```

Maxima [A] time = 1.48221, size = 73, normalized size = 0.83

$$\frac{1}{5}\left(-x^2+1\right)^{\frac{3}{2}}x^2-\frac{3}{4}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{17}{15}\left(-x^2+1\right)^{\frac{3}{2}}+\frac{7}{8}\sqrt{-x^2+1}x+\frac{7}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(7/2),x, algorithm="maxima")
```

```
[Out] 1/5*(-x^2 + 1)^(3/2)*x^2 - 3/4*(-x^2 + 1)^(3/2)*x + 17/15*(-x^2 +
 1)^(3/2) + 7/8*sqrt(-x^2 + 1)*x + 7/8*arcsin(x)
```

Fricas [A] time = 0.211892, size = 270, normalized size = 3.07

$$-\frac{24x^{10}-90x^9-200x^8+1155x^7-920x^6-2325x^5+3840x^4+1020x^3-2880x^2+5\left(24x^8-90x^7+16x^6+345x^5-\right.}{120\left(5x^4-20x^2-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/120*(24*x^10 - 90*x^9 - 200*x^8 + 1155*x^7 - 920*x^6 - 2325*x^
5 + 3840*x^4 + 1020*x^3 - 2880*x^2 + 5*(24*x^8 - 90*x^7 + 16*x^6
+ 345*x^5 - 480*x^4 - 228*x^3 + 576*x^2 - 48*x)*sqrt(x + 1)*sqrt(
-x + 1) + 210*(5*x^4 - 20*x^2 - (x^4 - 12*x^2 + 16)*sqrt(x + 1)*s
qrt(-x + 1) + 16)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 240*
x)/(5*x^4 - 20*x^2 - (x^4 - 12*x^2 + 16)*sqrt(x + 1)*sqrt(-x + 1)
 + 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/2)*(1+x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.22896, size = 143, normalized size = 1.62

$$-\frac{1}{15}\left(\left(3\,(x+1)(x-3)+17\right)(x+1)-10\right)(x+1)^{\frac{3}{2}}\sqrt{-x+1}-(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1}+\frac{3}{8}\left(\left(2\,(x+1)(x-2)+5\right)(x+1)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{7}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(7/2),x, algorithm="giac")
```

```
[Out] -1/15*((3*(x + 1)*(x - 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(
-x + 1) - (x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 3/8*((2*(x + 1)*(x
 - 2) + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1
)*x*sqrt(-x + 1) + 7/4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1065 $\int (1-x)^{5/2}\sqrt{1+x}\,dx$

Optimal. Leaf size=68

$$\frac{1}{4}(x+1)^{3/2}(1-x)^{5/2}+\frac{5}{12}(x+1)^{3/2}(1-x)^{3/2}+\frac{5}{8}x\sqrt{x+1}\sqrt{1-x}+\frac{5}{8}\sin^{-1}(x)$$

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + (5*(1 - x)^(3/2)*(1 + x)^(3/2))
/12 + ((1 - x)^(5/2)*(1 + x)^(3/2))/4 + (5*ArcSin[x])/8
```

Rubi [A] time = 0.0440725, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{1}{4}(x+1)^{3/2}(1-x)^{5/2}+\frac{5}{12}(x+1)^{3/2}(1-x)^{3/2}+\frac{5}{8}x\sqrt{x+1}\sqrt{1-x}+\frac{5}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(5/2)*Sqrt[1 + x],x]
```

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + (5*(1 - x)^(3/2)*(1 + x)^(3/2))
/12 + ((1 - x)^(5/2)*(1 + x)^(3/2))/4 + (5*ArcSin[x])/8
```

Rubi in Sympy [A] time = 6.93309, size = 56, normalized size = 0.82

$$\frac{5x\sqrt{-x+1}\sqrt{x+1}}{8}+\frac{(-x+1)^{\frac{5}{2}}(x+1)^{\frac{3}{2}}}{4}+\frac{5(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{12}+\frac{5\,\mathrm{asin}\,(x)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(5/2)*(1+x)**(1/2),x)
```

```
[Out] 5*x*sqrt(-x + 1)*sqrt(x + 1)/8 + (-x + 1)**(5/2)*(x + 1)**(3/2)/4
 + 5*(-x + 1)**(3/2)*(x + 1)**(3/2)/12 + 5*asin(x)/8
```

Mathematica [A] time = 0.0284762, size = 49, normalized size = 0.72

$$\frac{1}{24}\sqrt{1-x^2}\left(6x^3-16x^2+9x+16\right)+\frac{5}{4}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(5/2)*Sqrt[1 + x],x]
```

```
[Out] (Sqrt[1 - x^2]*(16 + 9*x - 16*x^2 + 6*x^3))/24 + (5*ArcSin[Sqrt[1
 + x]/Sqrt[2]])/4
```

Maple [A] time = 0.007, size = 85, normalized size = 1.3

$$\frac{1}{4}(1-x)^{\frac{5}{2}}(1+x)^{\frac{3}{2}}+\frac{5}{12}(1-x)^{\frac{3}{2}}(1+x)^{\frac{3}{2}}+\frac{5}{8}\sqrt{1-x}\,(1+x)^{\frac{3}{2}} -\frac{5}{8}\sqrt{1-x}\sqrt{1+x}+\frac{5\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(5/2)*(1+x)^(1/2),x)
```

```
[Out] 1/4*(1-x)^(5/2)*(1+x)^(3/2)+5/12*(1-x)^(3/2)*(1+x)^(3/2)+5/8*(1-x
)^(1/2)*(1+x)^(3/2)-5/8*(1-x)^(1/2)*(1+x)^(1/2)+5/8*((1+x)*(1-x))
^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.47968, size = 54, normalized size = 0.79

$$-\frac{1}{4}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{2}{3}\left(-x^2+1\right)^{\frac{3}{2}}+\frac{5}{8}\sqrt{-x^2+1}x+\frac{5}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/4*(-x^2 + 1)^(3/2)*x + 2/3*(-x^2 + 1)^(3/2) + 5/8*sqrt(-x^2 +
1)*x + 5/8*arcsin(x)
```

Fricas [A] time = 0.211119, size = 224, normalized size = 3.29

$$-\frac{24x^7-64x^6-36x^5+240x^4-60x^3-192x^2-\left(6x^7-16x^6-39x^5+144x^4-24x^3-192x^2+72x\right)\sqrt{x+1}\sqrt{-x+1}+}{24\left(x^4-8x^2+4(x^2-2)\sqrt{x+1}\sqrt{-x+1}+8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/24*(24*x^7 - 64*x^6 - 36*x^5 + 240*x^4 - 60*x^3 - 192*x^2 - (6
*x^7 - 16*x^6 - 39*x^5 + 144*x^4 - 24*x^3 - 192*x^2 + 72*x)*sqrt(
x + 1)*sqrt(-x + 1) + 30*(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1)*s
qrt(-x + 1) + 8)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 72*x)
/(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1)*sqrt(-x + 1) + 8)
```

Sympy [A] time = 71.572, size = 218, normalized size = 3.21

$$\begin{cases} -\frac{5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{4} + \frac{i(x+1)^{\frac{9}{2}}}{4\sqrt{x-1}} - \frac{23i(x+1)^{\frac{7}{2}}}{12\sqrt{x-1}} + \frac{127i(x+1)^{\frac{5}{2}}}{24\sqrt{x-1}} - \frac{133i(x+1)^{\frac{3}{2}}}{24\sqrt{x-1}} + \frac{5i\sqrt{x+1}}{4\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ \frac{5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{4} - \frac{(x+1)^{\frac{9}{2}}}{4\sqrt{-x+1}} + \frac{23(x+1)^{\frac{7}{2}}}{12\sqrt{-x+1}} - \frac{127(x+1)^{\frac{5}{2}}}{24\sqrt{-x+1}} + \frac{133(x+1)^{\frac{3}{2}}}{24\sqrt{-x+1}} - \frac{5\sqrt{x+1}}{4\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(5/2)*(1+x)**(1/2),x)
```

```
[Out] Piecewise((-5*I*acosh(sqrt(2)*sqrt(x + 1)/2)/4 + I*(x + 1)**(9/2)
/(4*sqrt(x - 1)) - 23*I*(x + 1)**(7/2)/(12*sqrt(x - 1)) + 127*I*(
x + 1)**(5/2)/(24*sqrt(x - 1)) - 133*I*(x + 1)**(3/2)/(24*sqrt(x
- 1)) + 5*I*sqrt(x + 1)/(4*sqrt(x - 1)), Abs(x + 1)/2 > 1), (5*as
in(sqrt(2)*sqrt(x + 1)/2)/4 - (x + 1)**(9/2)/(4*sqrt(-x + 1)) + 2
3*(x + 1)**(7/2)/(12*sqrt(-x + 1)) - 127*(x + 1)**(5/2)/(24*sqrt(
-x + 1)) + 133*(x + 1)**(3/2)/(24*sqrt(-x + 1)) - 5*sqrt(x + 1)/(
4*sqrt(-x + 1)), True))
```

GIAC/XCAS [A] time = 0.221683, size = 103, normalized size = 1.51

$$-\frac{2}{3}(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1} + \frac{1}{8}((2(x+1)(x-2)+5)(x+1)-1)\sqrt{x+1}\sqrt{-x+1} + \frac{1}{2}\sqrt{x+1}x\sqrt{-x+1} + \frac{5}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 1/8*((2*(x + 1)*(x - 2)
 + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*s
qrt(-x + 1) + 5/4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1066 $\int (1-x)^{3/2}\sqrt{1+x}\,dx$

Optimal. Leaf size=48

$$\frac{1}{3}(1-x)^{3/2}(x+1)^{3/2}+\frac{1}{2}\sqrt{1-x}x\sqrt{x+1}+\frac{1}{2}\sin^{-1}(x)$$

```
[Out] (Sqrt[1 - x]*x*Sqrt[1 + x])/2 + ((1 - x)^(3/2)*(1 + x)^(3/2))/3 +
 ArcSin[x]/2
```

Rubi [A] time = 0.0302339, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{1}{3}(1-x)^{3/2}(x+1)^{3/2}+\frac{1}{2}\sqrt{1-x}x\sqrt{x+1}+\frac{1}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(3/2)*Sqrt[1 + x],x]
```

```
[Out] (Sqrt[1 - x]*x*Sqrt[1 + x])/2 + ((1 - x)^(3/2)*(1 + x)^(3/2))/3 +
 ArcSin[x]/2
```

Rubi in Sympy [A] time = 5.50007, size = 36, normalized size = 0.75

$$\frac{x\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{3}+\frac{\operatorname{asin}(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(3/2)*(1+x)**(1/2),x)
```

```
[Out] x*sqrt(-x + 1)*sqrt(x + 1)/2 + (-x + 1)**(3/2)*(x + 1)**(3/2)/3 +
 asin(x)/2
```

Mathematica [A] time = 0.0264536, size = 40, normalized size = 0.83

$$\frac{1}{6}\sqrt{1-x^2}\left(-2x^2+3x+2\right)+\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(3/2)*Sqrt[1 + x],x]
```

```
[Out] ((2 + 3*x - 2*x^2)*Sqrt[1 - x^2])/6 + ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [B] time = 0.005, size = 71, normalized size = 1.5

$$\frac{1}{3}(1-x)^{\frac{3}{2}}(1+x)^{\frac{3}{2}}+\frac{1}{2}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{1}{2}\sqrt{1-x}\sqrt{1+x}+\frac{\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(3/2)*(1+x)^(1/2),x)
```

```
[Out] 1/3*(1-x)^(3/2)*(1+x)^(3/2)+1/2*(1-x)^(1/2)*(1+x)^(3/2)-1/2*(1-x)
^(1/2)*(1+x)^(1/2)+1/2*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2
)*arcsin(x)
```

Maxima [A] time = 1.49216, size = 38, normalized size = 0.79

$$\frac{1}{3}\left(-x^2+1\right)^{\frac{3}{2}}+\frac{1}{2}\sqrt{-x^2+1}x+\frac{1}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*(-x^2 + 1)^(3/2) + 1/2*sqrt(-x^2 + 1)*x + 1/2*arcsin(x)
```

Fricas [A] time = 0.209754, size = 189, normalized size = 3.94

$$-\frac{2x^6-3x^5-12x^4+15x^3+12x^2+3\left(2x^4-3x^3-4x^2+4x\right)\sqrt{x+1}\sqrt{-x+1}+6\left(3x^2-\left(x^2-4\right)\sqrt{x+1}\sqrt{-x+1}-4\right)a}{6\left(3x^2-(x^2-4)\sqrt{x+1}\sqrt{-x+1}-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*x^6 - 3*x^5 - 12*x^4 + 15*x^3 + 12*x^2 + 3*(2*x^4 - 3*x^3
 - 4*x^2 + 4*x)*sqrt(x + 1)*sqrt(-x + 1) + 6*(3*x^2 - (x^2 - 4)*s
qrt(x + 1)*sqrt(-x + 1) - 4)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1
```

```
)/x) - 12*x)/(3*x^2 - (x^2 - 4)*sqrt(x + 1)*sqrt(-x + 1) - 4)
```

Sympy [A] time = 17.8997, size = 168, normalized size = 3.5

$$\begin{cases} -i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{i(x+1)^{\frac{7}{2}}}{3\sqrt{x-1}} + \frac{11i(x+1)^{\frac{5}{2}}}{6\sqrt{x-1}} - \frac{17i(x+1)^{\frac{3}{2}}}{6\sqrt{x-1}} + \frac{i\sqrt{x+1}}{\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ \operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{(x+1)^{\frac{7}{2}}}{3\sqrt{-x+1}} - \frac{11(x+1)^{\frac{5}{2}}}{6\sqrt{-x+1}} + \frac{17(x+1)^{\frac{3}{2}}}{6\sqrt{-x+1}} - \frac{\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(3/2)*(1+x)**(1/2),x)
```

```
[Out] Piecewise((-I*acosh(sqrt(2)*sqrt(x + 1)/2) - I*(x + 1)**(7/2)/(3*
sqrt(x - 1)) + 11*I*(x + 1)**(5/2)/(6*sqrt(x - 1)) - 17*I*(x + 1)
**(3/2)/(6*sqrt(x - 1)) + I*sqrt(x + 1)/sqrt(x - 1), Abs(x + 1)/2
 > 1), (asin(sqrt(2)*sqrt(x + 1)/2) + (x + 1)**(7/2)/(3*sqrt(-x +
 1)) - 11*(x + 1)**(5/2)/(6*sqrt(-x + 1)) + 17*(x + 1)**(3/2)/(6*
sqrt(-x + 1)) - sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.214512, size = 59, normalized size = 1.23

$$-\frac{1}{3}(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1} + \frac{1}{2}\sqrt{x+1}x\sqrt{-x+1} + \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*(-x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] -1/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(
-x + 1) + arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1067 $\int \sqrt{1-x}\sqrt{1+x}\,dx$

Optimal. Leaf size=28

$$\frac{1}{2}\sqrt{1-x}\sqrt{x+1}x+\frac{1}{2}\sin^{-1}(x)$$

```
[Out] (Sqrt[1 - x]*x*Sqrt[1 + x])/2 + ArcSin[x]/2
```

Rubi [A] time = 0.021347, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$\frac{1}{2}\sqrt{1-x}\sqrt{x+1}x+\frac{1}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 - x]*Sqrt[1 + x],x]

[Out] (Sqrt[1 - x]*x*Sqrt[1 + x])/2 + ArcSin[x]/2
```

Rubi in Sympy [A] time = 4.25747, size = 20, normalized size = 0.71

$$\frac{x\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{\operatorname{asin}(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/2)*(1+x)**(1/2),x)

[Out] x*sqrt(-x + 1)*sqrt(x + 1)/2 + asin(x)/2
```

Mathematica [A] time = 0.010211, size = 20, normalized size = 0.71

$$\frac{1}{2}\left(\sqrt{1-x^2}x+\sin^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 - x]*Sqrt[1 + x],x]
```

```
[Out] (x*Sqrt[1 - x^2] + ArcSin[x])/2
```

Maple [B] time = 0.006, size = 57, normalized size = 2.

$$-\frac{1}{2}(1-x)^{\frac{3}{2}}\sqrt{1+x}+\frac{1}{2}\sqrt{1-x}\sqrt{1+x}+\frac{\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/2)*(1+x)^(1/2),x)
```

```
[Out] -1/2*(1-x)^(3/2)*(1+x)^(1/2)+1/2*(1-x)^(1/2)*(1+x)^(1/2)+1/2*((1+
x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49146, size = 23, normalized size = 0.82

$$\frac{1}{2}\sqrt{-x^2+1}x+\frac{1}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(-x^2 + 1)*x + 1/2*arcsin(x)
```

Fricas [A] time = 0.208777, size = 127, normalized size = 4.54

$$-\frac{2x^3-(x^3-2x)\sqrt{x+1}\sqrt{-x+1}+2\left(x^2+2\sqrt{x+1}\sqrt{-x+1}-2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)-2x}{2\left(x^2+2\sqrt{x+1}\sqrt{-x+1}-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] -1/2*(2*x^3 - (x^3 - 2*x)*sqrt(x + 1)*sqrt(-x + 1) + 2*(x^2 + 2*s
qrt(x + 1)*sqrt(-x + 1) - 2)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1
)/x) - 2*x)/(x^2 + 2*sqrt(x + 1)*sqrt(-x + 1) - 2)
```

Sympy [A] time = 8.64077, size = 133, normalized size = 4.75

$$\begin{cases} -i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)+\frac{i(x+1)^{\frac{5}{2}}}{2\sqrt{x-1}}-\frac{3i(x+1)^{\frac{3}{2}}}{2\sqrt{x-1}}+\frac{i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2}>1 \\ \operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)-\frac{(x+1)^{\frac{5}{2}}}{2\sqrt{-x+1}}+\frac{3(x+1)^{\frac{3}{2}}}{2\sqrt{-x+1}}-\frac{\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/2)*(1+x)**(1/2),x)
```

```
[Out] Piecewise((-I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(5/2)/(2*
sqrt(x - 1)) - 3*I*(x + 1)**(3/2)/(2*sqrt(x - 1)) + I*sqrt(x + 1)
/sqrt(x - 1), Abs(x + 1)/2 > 1), (asin(sqrt(2)*sqrt(x + 1)/2) - (
x + 1)**(5/2)/(2*sqrt(-x + 1)) + 3*(x + 1)**(3/2)/(2*sqrt(-x + 1)
) - sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.209828, size = 36, normalized size = 1.29

$$\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)*sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1068 $\int \frac{\sqrt{1+x}}{\sqrt{1-x}}\,dx$

Optimal. Leaf size=21

$$\sin^{-1}(x)-\sqrt{1-x}\sqrt{x+1}$$

```
[Out] -(Sqrt[1 - x]*Sqrt[1 + x]) + ArcSin[x]
```

Rubi [A] time = 0.0215368, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\sin^{-1}(x)-\sqrt{1-x}\sqrt{x+1}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/Sqrt[1 - x],x]

[Out] -(Sqrt[1 - x]*Sqrt[1 + x]) + ArcSin[x]
```

Rubi in Sympy [A] time = 3.91407, size = 15, normalized size = 0.71

$$-\sqrt{-x+1}\sqrt{x+1}+\operatorname{asin}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(1/2),x)

[Out] -sqrt(-x + 1)*sqrt(x + 1) + asin(x)
```

Mathematica [A] time = 0.0133682, size = 30, normalized size = 1.43

$$2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)-\sqrt{1-x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 + x]/Sqrt[1 - x],x]

[Out] -Sqrt[1 - x^2] + 2*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [B] time = 0.006, size = 42, normalized size = 2.

$$-\sqrt{1-x}\,\sqrt{1+x}+\arcsin\left(x\right)\sqrt{\left(1+x\right)\left(1-x\right)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(1/2)/(1-x)^(1/2),x)
```

```
[Out] -(1-x)^(1/2)*(1+x)^(1/2)+((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1
/2)*arcsin(x)
```

Maxima [A] time = 1.4858, size = 19, normalized size = 0.9

$$-\sqrt{-x^2+1}+\arcsin\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] -sqrt(-x^2 + 1) + arcsin(x)
```

Fricas [A] time = 0.210893, size = 80, normalized size = 3.81

$$\frac{x^2-2\left(\sqrt{x+1}\sqrt{-x+1}-1\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)}{\sqrt{x+1}\sqrt{-x+1}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] (x^2 - 2*(sqrt(x + 1)*sqrt(-x + 1) - 1)*arctan((sqrt(x + 1)*sqrt(
-x + 1) - 1)/x))/(sqrt(x + 1)*sqrt(-x + 1) - 1)
```

Sympy [A] time = 5.94904, size = 100, normalized size = 4.76

$$\begin{cases} -2i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)-\frac{i(x+1)^{\frac{3}{2}}}{\sqrt{x-1}}+\frac{2i\sqrt{x+1}}{\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2}>1 \\ 2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)+\frac{(x+1)^{\frac{3}{2}}}{\sqrt{-x+1}}-\frac{2\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(2)*sqrt(x + 1)/2) - I*(x + 1)**(3/2)/s
qrt(x - 1) + 2*I*sqrt(x + 1)/sqrt(x - 1), Abs(x + 1)/2 > 1), (2*a
sin(sqrt(2)*sqrt(x + 1)/2) + (x + 1)**(3/2)/sqrt(-x + 1) - 2*sqrt
(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.20717, size = 38, normalized size = 1.81

$$-\sqrt{x+1}\sqrt{-x+1}+2\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] -sqrt(x + 1)*sqrt(-x + 1) + 2*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1069 $\int \frac{\sqrt{1+x}}{(1-x)^{3/2}}\,dx$

Optimal. Leaf size=23

$$\frac{2\sqrt{x+1}}{\sqrt{1-x}} - \sin^{-1}(x)$$

```
[Out] (2*Sqrt[1 + x])/Sqrt[1 - x] - ArcSin[x]
```

Rubi [A] time = 0.0215233, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$\frac{2\sqrt{x+1}}{\sqrt{1-x}} - \sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/(1 - x)^(3/2),x]

[Out] (2*Sqrt[1 + x])/Sqrt[1 - x] - ArcSin[x]
```

Rubi in Sympy [A] time = 4.22439, size = 17, normalized size = 0.74

$$-\operatorname{asin}(x) + \frac{2\sqrt{x+1}}{\sqrt{-x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(3/2),x)

[Out] -asin(x) + 2*sqrt(x + 1)/sqrt(-x + 1)
```

Mathematica [A] time = 0.0296442, size = 35, normalized size = 1.52

$$-\frac{2\sqrt{1-x^2}}{x-1} - 2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 + x]/(1 - x)^(3/2),x]
```

```
[Out] (-2*Sqrt[1 - x^2])/(-1 + x) - 2*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [B] time = 0.039, size = 64, normalized size = 2.8

$$2\frac{\sqrt{1+x}\sqrt{(1+x)(1-x)}}{\sqrt{-(1+x)(-1+x)}\sqrt{1-x}}-\arcsin(x)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(1/2)/(1-x)^(3/2),x)
```

```
[Out] 2*(1+x)^(1/2)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2)/(1-x)^(1/
2)-((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49794, size = 28, normalized size = 1.22

$$-\frac{2\sqrt{-x^2+1}}{x-1}-\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*sqrt(-x^2 + 1)/(x - 1) - arcsin(x)
```

Fricas [A] time = 0.213439, size = 82, normalized size = 3.57

$$\frac{2\left(\left(x+\sqrt{x+1}\sqrt{-x+1}-1\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)+2x\right)}{x+\sqrt{x+1}\sqrt{-x+1}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*((x + sqrt(x + 1)*sqrt(-x + 1) - 1)*arctan((sqrt(x + 1)*sqrt(-x
 + 1) - 1)/x) + 2*x)/(x + sqrt(x + 1)*sqrt(-x + 1) - 1)
```

Sympy [A] time = 5.3051, size = 71, normalized size = 3.09

$$\begin{cases} 2i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{2i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ -2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{2\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(3/2),x)
```

```
[Out] Piecewise((2*I*acosh(sqrt(2)*sqrt(x + 1)/2) - 2*I*sqrt(x + 1)/sqr
t(x - 1), Abs(x + 1)/2 > 1), (-2*asin(sqrt(2)*sqrt(x + 1)/2) + 2*
sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.20739, size = 45, normalized size = 1.96

$$-\frac{2\sqrt{x+1}\sqrt{-x+1}}{x-1} - 2\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] -2*sqrt(x + 1)*sqrt(-x + 1)/(x - 1) - 2*arcsin(1/2*sqrt(2)*sqrt(x
 + 1))
```

3.1070 $\int \frac{\sqrt{1+x}}{(1-x)^{5/2}}\,dx$

Optimal. Leaf size=20

$$\frac{(x+1)^{3/2}}{3(1-x)^{3/2}}$$

```
[Out] (1 + x)^(3/2)/(3*(1 - x)^(3/2))
```

Rubi [A] time = 0.011888, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{(x+1)^{3/2}}{3(1-x)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/(1 - x)^(5/2),x]
```

```
[Out] (1 + x)^(3/2)/(3*(1 - x)^(3/2))
```

Rubi in Sympy [A] time = 2.51115, size = 14, normalized size = 0.7

$$\frac{(x+1)^{\frac{3}{2}}}{3\left(-x+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(5/2),x)
```

```
[Out] (x + 1)**(3/2)/(3*(-x + 1)**(3/2))
```

Mathematica [A] time = 0.017617, size = 20, normalized size = 1.

$$\frac{(x+1)^{3/2}}{3(1-x)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 + x]/(1 - x)^(5/2),x]
```

```
[Out] (1 + x)^(3/2)/(3*(1 - x)^(3/2))
```

Maple [A] time = 0.006, size = 15, normalized size = 0.8

$$\frac{1}{3}(1+x)^{\frac{3}{2}}(1-x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1+x)^(1/2)/(1-x)^(5/2),x)
```

```
[Out] 1/3*(1+x)^(3/2)/(1-x)^(3/2)
```

Maxima [A] time = 1.33976, size = 51, normalized size = 2.55

$$\frac{2\sqrt{-x^2+1}}{3(x^2-2x+1)}+\frac{\sqrt{-x^2+1}}{3(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(x + 1)/(-x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) + 1/3*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.205381, size = 76, normalized size = 3.8

$$\frac{2\left(x^3+3\sqrt{x+1}x\sqrt{-x+1}-3x\right)}{3\left(x^3-(x^2-3x+2)\sqrt{x+1}\sqrt{-x+1}-3x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(x + 1)/(-x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(x^3 + 3*sqrt(x + 1)*x*sqrt(-x + 1) - 3*x)/(x^3 - (x^2 - 3*x
+ 2)*sqrt(x + 1)*sqrt(-x + 1) - 3*x + 2)
```

Sympy [A] time = 10.0849, size = 61, normalized size = 3.05

$$\begin{cases} \frac{i(x+1)^{\frac{3}{2}}}{3\sqrt{x-1}(x+1)-6\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ -\frac{(x+1)^{\frac{3}{2}}}{3\sqrt{-x+1}(x+1)-6\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(5/2),x)
```

```
[Out] Piecewise((I*(x + 1)**(3/2)/(3*sqrt(x - 1)*(x + 1) - 6*sqrt(x - 1
)), Abs(x + 1)/2 > 1), (-(x + 1)**(3/2)/(3*sqrt(-x + 1)*(x + 1) -
 6*sqrt(-x + 1)), True))
```

GIAC/XCAS [A] time = 0.209565, size = 26, normalized size = 1.3

$$\frac{(x+1)^{\frac{3}{2}}\sqrt{-x+1}}{3\,(x-1)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(x + 1)^(3/2)*sqrt(-x + 1)/(x - 1)^2
```

3.1071 $\int \frac{\sqrt{1+x}}{(1-x)^{7/2}}\,dx$

Optimal. Leaf size=41

$$\frac{(x+1)^{3/2}}{15(1-x)^{3/2}}+\frac{(x+1)^{3/2}}{5(1-x)^{5/2}}$$

```
[Out] (1 + x)^(3/2)/(5*(1 - x)^(5/2)) + (1 + x)^(3/2)/(15*(1 - x)^(3/2)
)
```

Rubi [A] time = 0.0241274, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{(x+1)^{3/2}}{15(1-x)^{3/2}}+\frac{(x+1)^{3/2}}{5(1-x)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/(1 - x)^(7/2),x]
```

```
[Out] (1 + x)^(3/2)/(5*(1 - x)^(5/2)) + (1 + x)^(3/2)/(15*(1 - x)^(3/2)
)
```

Rubi in Sympy [A] time = 4.01212, size = 29, normalized size = 0.71

$$\frac{(x+1)^{\frac{3}{2}}}{15\,(-x+1)^{\frac{3}{2}}}+\frac{(x+1)^{\frac{3}{2}}}{5\,(-x+1)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(7/2),x)
```

```
[Out] (x + 1)**(3/2)/(15*(-x + 1)**(3/2)) + (x + 1)**(3/2)/(5*(-x + 1)*
*(5/2))
```

Mathematica [A] time = 0.0159323, size = 28, normalized size = 0.68

$$\frac{\sqrt{1-x^2}\left(x^2-3x-4\right)}{15(x-1)^3}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[Sqrt[1 + x]/(1 - x)^(7/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(-4 - 3*x + x^2))/(15*(-1 + x)^3)
```

Maple [A] time = 0.006, size = 18, normalized size = 0.4

$$-\frac{x-4}{15}(1+x)^{\frac{3}{2}}(1-x)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(1/2)/(1-x)^(7/2),x)
```

```
[Out] -1/15*(1+x)^(3/2)*(x-4)/(1-x)^(5/2)
```

Maxima [A] time = 1.33895, size = 86, normalized size = 2.1

$$-\frac{2\sqrt{-x^2+1}}{5(x^3-3x^2+3x-1)}-\frac{\sqrt{-x^2+1}}{15(x^2-2x+1)}+\frac{\sqrt{-x^2+1}}{15(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/5*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 1/15*sqrt(-x^2 + 1)
/(x^2 - 2*x + 1) + 1/15*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.207174, size = 146, normalized size = 3.56

$$\frac{3x^5-20x^4+35x^3+30x^2+5\left(x^4-x^3-6x^2+12x\right)\sqrt{x+1}\sqrt{-x+1}-60x}{15\left(x^5-5x^4+5x^3+5x^2+(x^4-7x^2+10x-4)\sqrt{x+1}\sqrt{-x+1}-10x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(7/2),x, algorithm="fricas")
```

```
[Out] 1/15*(3*x^5 - 20*x^4 + 35*x^3 + 30*x^2 + 5*(x^4 - x^3 - 6*x^2 + 1
2*x)*sqrt(x + 1)*sqrt(-x + 1) - 60*x)/(x^5 - 5*x^4 + 5*x^3 + 5*x^
2 + (x^4 - 7*x^2 + 10*x - 4)*sqrt(x + 1)*sqrt(-x + 1) - 10*x + 4)
```

Sympy [A] time = 113.561, size = 173, normalized size = 4.22

$$\begin{cases} \frac{i(x+1)^{\frac{5}{2}}}{15\sqrt{x-1}(x+1)^2-60\sqrt{x-1}(x+1)+60\sqrt{x-1}} - \frac{5i(x+1)^{\frac{3}{2}}}{15\sqrt{x-1}(x+1)^2-60\sqrt{x-1}(x+1)+60\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ -\frac{(x+1)^{\frac{5}{2}}}{15\sqrt{-x+1}(x+1)^2-60\sqrt{-x+1}(x+1)+60\sqrt{-x+1}} + \frac{5(x+1)^{\frac{3}{2}}}{15\sqrt{-x+1}(x+1)^2-60\sqrt{-x+1}(x+1)+60\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(7/2),x)
```

```
[Out] Piecewise((I*(x + 1)**(5/2)/(15*sqrt(x - 1)*(x + 1)**2 - 60*sqrt(
x - 1)*(x + 1) + 60*sqrt(x - 1)) - 5*I*(x + 1)**(3/2)/(15*sqrt(x
- 1)*(x + 1)**2 - 60*sqrt(x - 1)*(x + 1) + 60*sqrt(x - 1)), Abs(x
 + 1)/2 > 1), (-(x + 1)**(5/2)/(15*sqrt(-x + 1)*(x + 1)**2 - 60*s
qrt(-x + 1)*(x + 1) + 60*sqrt(-x + 1)) + 5*(x + 1)**(3/2)/(15*sqr
t(-x + 1)*(x + 1)**2 - 60*sqrt(-x + 1)*(x + 1) + 60*sqrt(-x + 1))
, True))
```

GIAC/XCAS [A] time = 0.209052, size = 30, normalized size = 0.73

$$\frac{(x+1)^{\frac{3}{2}}(x-4)\sqrt{-x+1}}{15\,(x-1)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*(x + 1)^(3/2)*(x - 4)*sqrt(-x + 1)/(x - 1)^3
```

3.1072 $\int \frac{\sqrt{1+x}}{(1-x)^{9/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2(x+1)^{3/2}}{105(1-x)^{3/2}}+\frac{2(x+1)^{3/2}}{35(1-x)^{5/2}}+\frac{(x+1)^{3/2}}{7(1-x)^{7/2}}$$

```
[Out] (1 + x)^(3/2)/(7*(1 - x)^(7/2)) + (2*(1 + x)^(3/2))/(35*(1 - x)^(
5/2)) + (2*(1 + x)^(3/2))/(105*(1 - x)^(3/2))
```

Rubi [A] time = 0.0367635, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2(x+1)^{3/2}}{105(1-x)^{3/2}}+\frac{2(x+1)^{3/2}}{35(1-x)^{5/2}}+\frac{(x+1)^{3/2}}{7(1-x)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/(1 - x)^(9/2),x]
```

```
[Out] (1 + x)^(3/2)/(7*(1 - x)^(7/2)) + (2*(1 + x)^(3/2))/(35*(1 - x)^(
5/2)) + (2*(1 + x)^(3/2))/(105*(1 - x)^(3/2))
```

Rubi in Sympy [A] time = 5.69046, size = 48, normalized size = 0.79

$$\frac{2\,(x+1)^{\frac{3}{2}}}{105\,(-x+1)^{\frac{3}{2}}}+\frac{2\,(x+1)^{\frac{3}{2}}}{35\,(-x+1)^{\frac{5}{2}}}+\frac{(x+1)^{\frac{3}{2}}}{7\,(-x+1)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(9/2),x)
```

```
[Out] 2*(x + 1)**(3/2)/(105*(-x + 1)**(3/2)) + 2*(x + 1)**(3/2)/(35*(-x
 + 1)**(5/2)) + (x + 1)**(3/2)/(7*(-x + 1)**(7/2))
```

Mathematica [A] time = 0.0186272, size = 35, normalized size = 0.57

$$\frac{\sqrt{1-x^2}\left(2x^3-8x^2+13x+23\right)}{105(x-1)^4}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[Sqrt[1 + x]/(1 - x)^(9/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(23 + 13*x - 8*x^2 + 2*x^3))/(105*(-1 + x)^4)
```

Maple [A] time = 0.004, size = 25, normalized size = 0.4

$$\frac{2\,x^{2}-10\,x+23}{105}\left(1+x\right)^{\frac{3}{2}}\left(1-x\right)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(1/2)/(1-x)^(9/2),x)
```

```
[Out] 1/105*(1+x)^(3/2)*(2*x^2-10*x+23)/(1-x)^(7/2)
```

Maxima [A] time = 1.3411, size = 128, normalized size = 2.1

$$\frac{2\,\sqrt{-x^{2}+1}}{7\,\left(x^{4}-4\,x^{3}+6\,x^{2}-4\,x+1\right)}+\frac{\sqrt{-x^{2}+1}}{35\,\left(x^{3}-3\,x^{2}+3\,x-1\right)}-\frac{2\,\sqrt{-x^{2}+1}}{105\,\left(x^{2}-2\,x+1\right)}+\frac{2\,\sqrt{-x^{2}+1}}{105\,\left(x-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 1/35*sqrt(-x
^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 2/105*sqrt(-x^2 + 1)/(x^2 - 2*x
 + 1) + 2/105*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.203878, size = 204, normalized size = 3.34

$$\frac{25\,x^{7}-14\,x^{6}-301\,x^{5}+700\,x^{4}-350\,x^{3}-840\,x^{2}-7\,\left(3\,x^{6}-23\,x^{5}+40\,x^{4}+10\,x^{3}-120\,x^{2}+120\,x\right)\sqrt{x+1}\sqrt{-x+1}+840\,x}{105\,\left(x^{7}-14\,x^{5}+28\,x^{4}-7\,x^{3}-28\,x^{2}-\left(x^{6}-7\,x^{5}+11\,x^{4}+7\,x^{3}-32\,x^{2}+28\,x-8\right)\sqrt{x+1}\sqrt{-x+1}+28\,x-8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(9/2),x, algorithm="fricas")
```

```
[Out] 1/105*(25*x^7 - 14*x^6 - 301*x^5 + 700*x^4 - 350*x^3 - 840*x^2 -
7*(3*x^6 - 23*x^5 + 40*x^4 + 10*x^3 - 120*x^2 + 120*x)*sqrt(x + 1
)*sqrt(-x + 1) + 840*x)/(x^7 - 14*x^5 + 28*x^4 - 7*x^3 - 28*x^2 -
```

```
 (x^6 - 7*x^5 + 11*x^4 + 7*x^3 - 32*x^2 + 28*x - 8)*sqrt(x + 1)*s
qrt(-x + 1) + 28*x - 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(9/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.210325, size = 39, normalized size = 0.64

$$\frac{(2(x+1)(x-6)+35)(x+1)^{\frac{3}{2}}\sqrt{-x+1}}{105(x-1)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(9/2),x, algorithm="giac")

[Out] 1/105*(2*(x + 1)*(x - 6) + 35)*(x + 1)^(3/2)*sqrt(-x + 1)/(x - 1)
^4
```

3.1073 $\int \frac{\sqrt{1+x}}{(1-x)^{11/2}}\,dx$

Optimal. Leaf size=81

$$\frac{2(x+1)^{3/2}}{315(1-x)^{3/2}}+\frac{2(x+1)^{3/2}}{105(1-x)^{5/2}}+\frac{(x+1)^{3/2}}{21(1-x)^{7/2}}+\frac{(x+1)^{3/2}}{9(1-x)^{9/2}}$$

```
[Out] (1 + x)^(3/2)/(9*(1 - x)^(9/2)) + (1 + x)^(3/2)/(21*(1 - x)^(7/2)
) + (2*(1 + x)^(3/2))/(105*(1 - x)^(5/2)) + (2*(1 + x)^(3/2))/(31
5*(1 - x)^(3/2))
```

Rubi [A] time = 0.0513608, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2(x+1)^{3/2}}{315(1-x)^{3/2}}+\frac{2(x+1)^{3/2}}{105(1-x)^{5/2}}+\frac{(x+1)^{3/2}}{21(1-x)^{7/2}}+\frac{(x+1)^{3/2}}{9(1-x)^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/(1 - x)^(11/2),x]
```

```
[Out] (1 + x)^(3/2)/(9*(1 - x)^(9/2)) + (1 + x)^(3/2)/(21*(1 - x)^(7/2)
) + (2*(1 + x)^(3/2))/(105*(1 - x)^(5/2)) + (2*(1 + x)^(3/2))/(31
5*(1 - x)^(3/2))
```

Rubi in Sympy [A] time = 7.45147, size = 63, normalized size = 0.78

$$\frac{2\,(x+1)^{\frac{3}{2}}}{315\,(-x+1)^{\frac{3}{2}}}+\frac{2\,(x+1)^{\frac{3}{2}}}{105\,(-x+1)^{\frac{5}{2}}}+\frac{(x+1)^{\frac{3}{2}}}{21\,(-x+1)^{\frac{7}{2}}}+\frac{(x+1)^{\frac{3}{2}}}{9\,(-x+1)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(11/2),x)
```

```
[Out] 2*(x + 1)**(3/2)/(315*(-x + 1)**(3/2)) + 2*(x + 1)**(3/2)/(105*(-
x + 1)**(5/2)) + (x + 1)**(3/2)/(21*(-x + 1)**(7/2)) + (x + 1)**(
3/2)/(9*(-x + 1)**(9/2))
```

Mathematica [A] time = 0.0202197, size = 40, normalized size = 0.49

$$\frac{\sqrt{1-x^2}\left(2x^4-10x^3+21x^2-25x-58\right)}{315(x-1)^5}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[Sqrt[1 + x]/(1 - x)^(11/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(-58 - 25*x + 21*x^2 - 10*x^3 + 2*x^4))/(315*(-1 +
 x)^5)
```

Maple [A] time = 0.005, size = 30, normalized size = 0.4

$$-\frac{2\,x^{3}-12\,x^{2}+33\,x-58}{315}\left(1+x\right)^{\frac{3}{2}}\left(1-x\right)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(1/2)/(1-x)^(11/2),x)
```

```
[Out] -1/315*(1+x)^(3/2)*(2*x^3-12*x^2+33*x-58)/(1-x)^(9/2)
```

Maxima [A] time = 1.33516, size = 177, normalized size = 2.19

$$-\frac{2\,\sqrt{-x^{2}+1}}{9\,(x^{5}-5\,x^{4}+10\,x^{3}-10\,x^{2}+5\,x-1)}-\frac{\sqrt{-x^{2}+1}}{63\,(x^{4}-4\,x^{3}+6\,x^{2}-4\,x+1)}+\frac{\sqrt{-x^{2}+1}}{105\,(x^{3}-3\,x^{2}+3\,x-1)}-\frac{2\,\sqrt{-x^{2}+1}}{315\,(x^{2}-2\,x+1)}+\frac{2\,\sqrt{-x^{2}+1}}{315\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(11/2),x, algorithm="maxima")
```

```
[Out] -2/9*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x - 1) - 1
/63*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 1/105*sqrt(-
x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 2/315*sqrt(-x^2 + 1)/(x^2 - 2*
x + 1) + 2/315*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.208992, size = 257, normalized size = 3.17

$$\frac{56\,x^{9}-522\,x^{8}+1089\,x^{7}+924\,x^{6}-5607\,x^{5}+6300\,x^{4}+420\,x^{3}-7560\,x^{2}+3\left(20\,x^{8}-6\,x^{7}-413\,x^{6}+1169\,x^{5}-840\,x^{4}-98\right.}{315\left(x^{9}-9\,x^{8}+18\,x^{7}+18\,x^{6}-99\,x^{5}+99\,x^{4}+24\,x^{3}-108\,x^{2}+(x^{8}-22\,x^{6}+60\,x^{5}-39\,x^{4}-60\,x^{3}+116\,x^{2}-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(11/2),x, algorithm="fricas")
```

```
[Out] 1/315*(56*x^9 - 522*x^8 + 1089*x^7 + 924*x^6 - 5607*x^5 + 6300*x^
4 + 420*x^3 - 7560*x^2 + 3*(20*x^8 - 6*x^7 - 413*x^6 + 1169*x^5 -
 840*x^4 - 980*x^3 + 2520*x^2 - 1680*x)*sqrt(x + 1)*sqrt(-x + 1)
+ 5040*x)/(x^9 - 9*x^8 + 18*x^7 + 18*x^6 - 99*x^5 + 99*x^4 + 24*x
^3 - 108*x^2 + (x^8 - 22*x^6 + 60*x^5 - 39*x^4 - 60*x^3 + 116*x^2
 - 72*x + 16)*sqrt(x + 1)*sqrt(-x + 1) + 72*x - 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(11/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.21288, size = 47, normalized size = 0.58

$$\frac{((2\,(x+1)(x-8)+63)(x+1)-105)(x+1)^{\frac{3}{2}}\sqrt{-x+1}}{315\,(x-1)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(11/2),x, algorithm="giac")
```

```
[Out] 1/315*((2*(x + 1)*(x - 8) + 63)*(x + 1) - 105)*(x + 1)^(3/2)*sqrt
(-x + 1)/(x - 1)^5
```

3.1074 $\int \frac{\sqrt{1+x}}{(1-x)^{13/2}}\,dx$

Optimal. Leaf size=101

$$\frac{8(x+1)^{3/2}}{3465(1-x)^{3/2}}+\frac{8(x+1)^{3/2}}{1155(1-x)^{5/2}}+\frac{4(x+1)^{3/2}}{231(1-x)^{7/2}}+\frac{4(x+1)^{3/2}}{99(1-x)^{9/2}}+\frac{(x+1)^{3/2}}{11(1-x)^{11/2}}$$

```
[Out] (1 + x)^(3/2)/(11*(1 - x)^(11/2)) + (4*(1 + x)^(3/2))/(99*(1 - x)
^(9/2)) + (4*(1 + x)^(3/2))/(231*(1 - x)^(7/2)) + (8*(1 + x)^(3/2
))/(1155*(1 - x)^(5/2)) + (8*(1 + x)^(3/2))/(3465*(1 - x)^(3/2))
```

Rubi [A] time = 0.0685068, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{8(x+1)^{3/2}}{3465(1-x)^{3/2}}+\frac{8(x+1)^{3/2}}{1155(1-x)^{5/2}}+\frac{4(x+1)^{3/2}}{231(1-x)^{7/2}}+\frac{4(x+1)^{3/2}}{99(1-x)^{9/2}}+\frac{(x+1)^{3/2}}{11(1-x)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 + x]/(1 - x)^(13/2),x]
```

```
[Out] (1 + x)^(3/2)/(11*(1 - x)^(11/2)) + (4*(1 + x)^(3/2))/(99*(1 - x)
^(9/2)) + (4*(1 + x)^(3/2))/(231*(1 - x)^(7/2)) + (8*(1 + x)^(3/2
))/(1155*(1 - x)^(5/2)) + (8*(1 + x)^(3/2))/(3465*(1 - x)^(3/2))
```

Rubi in Sympy [A] time = 9.43438, size = 82, normalized size = 0.81

$$\frac{8\,(x+1)^{\frac{3}{2}}}{3465\,(-x+1)^{\frac{3}{2}}}+\frac{8\,(x+1)^{\frac{3}{2}}}{1155\,(-x+1)^{\frac{5}{2}}}+\frac{4\,(x+1)^{\frac{3}{2}}}{231\,(-x+1)^{\frac{7}{2}}}+\frac{4\,(x+1)^{\frac{3}{2}}}{99\,(-x+1)^{\frac{9}{2}}}+\frac{(x+1)^{\frac{3}{2}}}{11\,(-x+1)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(1/2)/(1-x)**(13/2),x)
```

```
[Out] 8*(x + 1)**(3/2)/(3465*(-x + 1)**(3/2)) + 8*(x + 1)**(3/2)/(1155*
(-x + 1)**(5/2)) + 4*(x + 1)**(3/2)/(231*(-x + 1)**(7/2)) + 4*(x
+ 1)**(3/2)/(99*(-x + 1)**(9/2)) + (x + 1)**(3/2)/(11*(-x + 1)**(
11/2))
```

Mathematica [A] time = 0.0218158, size = 45, normalized size = 0.45

$$\frac{\sqrt{1-x^2}\left(8x^5-48x^4+124x^3-184x^2+183x+547\right)}{3465(x-1)^6}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[Sqrt[1 + x]/(1 - x)^(13/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(547 + 183*x - 184*x^2 + 124*x^3 - 48*x^4 + 8*x^5)
)/(3465*(-1 + x)^6)
```

Maple [A] time = 0.005, size = 35, normalized size = 0.4

$$\frac{8\,x^{4}-56\,x^{3}+180\,x^{2}-364\,x+547}{3465}\,(1+x)^{\frac{3}{2}}\,(1-x)^{-\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(1/2)/(1-x)^(13/2),x)
```

```
[Out] 1/3465*(1+x)^(3/2)*(8*x^4-56*x^3+180*x^2-364*x+547)/(1-x)^(11/2)
```

Maxima [A] time = 1.35381, size = 232, normalized size = 2.3

$$\frac{2\,\sqrt{-x^{2}+1}}{11\,(x^{6}-6\,x^{5}+15\,x^{4}-20\,x^{3}+15\,x^{2}-6\,x+1)}+\frac{\sqrt{-x^{2}+1}}{99\,(x^{5}-5\,x^{4}+10\,x^{3}-10\,x^{2}+5\,x-1)}-\frac{4\,\sqrt{-x^{2}+1}}{693\,(x^{4}-4\,x^{3}+6\,x^{2}-4\,x+1)}+\frac{4\,\sqrt{-x^{2}+1}}{1155\,(x^{3}-3\,x^{2}+3\,x-1)}-\frac{8\,\sqrt{-x^{2}+1}}{3465\,(x^{2}-2\,x+1)}+\frac{8\,\sqrt{-x^{2}+1}}{3465\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(13/2),x, algorithm="maxima")
```

```
[Out] 2/11*sqrt(-x^2 + 1)/(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15*x^2 - 6*x
 + 1) + 1/99*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x
- 1) - 4/693*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 4/1
155*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 8/3465*sqrt(-x^2 + 1
)/(x^2 - 2*x + 1) + 8/3465*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.210389, size = 312, normalized size = 3.09

$$\frac{555\,x^{11}-88\,x^{10}-17831\,x^{9}+60390\,x^{8}-43824\,x^{7}-117348\,x^{6}+255486\,x^{5}-147840\,x^{4}-101640\,x^{3}+221760\,x^{2}-11\,\big(49}{3465\,\big(x^{11}-33\,x^{9}+110\,x^{8}-77\,x^{7}-220\,x^{6}+473\,x^{5}-242\,x^{4}-220\,x^{3}+352\,x^{2}-(x^{10}-11\,x^{9}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(13/2),x, algorithm="fricas")
```

```
[Out] 1/3465*(555*x^11 - 88*x^10 - 17831*x^9 + 60390*x^8 - 43824*x^7 -
117348*x^6 + 255486*x^5 - 147840*x^4 - 101640*x^3 + 221760*x^2 -
11*(49*x^10 - 547*x^9 + 1416*x^8 + 1014*x^7 - 9828*x^6 + 14826*x^
5 - 3360*x^4 - 14280*x^3 + 20160*x^2 - 10080*x)*sqrt(x + 1)*sqrt(
-x + 1) - 110880*x)/(x^11 - 33*x^9 + 110*x^8 - 77*x^7 - 220*x^6 +
 473*x^5 - 242*x^4 - 220*x^3 + 352*x^2 - (x^10 - 11*x^9 + 28*x^8
+ 22*x^7 - 199*x^6 + 297*x^5 - 54*x^4 - 308*x^3 + 368*x^2 - 176*x
 + 32)*sqrt(x + 1)*sqrt(-x + 1) - 176*x + 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(1/2)/(1-x)**(13/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.2173, size = 57, normalized size = 0.56

$$\frac{(4\left(\left(2\left(x+1\right)\left(x-10\right)+99\right)\left(x+1\right)-231\right)\left(x+1\right)+1155)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}}{3465\left(x-1\right)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x + 1)/(-x + 1)^(13/2),x, algorithm="giac")
```

```
[Out] 1/3465*(4*((2*(x + 1)*(x - 10) + 99)*(x + 1) - 231)*(x + 1) + 115
5)*(x + 1)^(3/2)*sqrt(-x + 1)/(x - 1)^6
```

3.1075 $\int (1-x)^{9/2}(1+x)^{3/2}\,dx$

Optimal. Leaf size=109

$$\frac{1}{7}(x+1)^{5/2}(1-x)^{9/2} + \frac{3}{14}(x+1)^{5/2}(1-x)^{7/2} + \frac{3}{10}(x+1)^{5/2}(1-x)^{5/2} + \frac{3}{8}x(x+1)^{3/2}(1-x)^{3/2} + \frac{9}{16}x\sqrt{x+1}\sqrt{1-x} + \frac{9}{16}\sin^{-1}(x)$$

```
[Out] (9*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (3*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/8 + (3*(1 - x)^(5/2)*(1 + x)^(5/2))/10 + (3*(1 - x)^(7/2)*(1
+ x)^(5/2))/14 + ((1 - x)^(9/2)*(1 + x)^(5/2))/7 + (9*ArcSin[x])/
16
```

Rubi [A] time = 0.070881, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{1}{7}(x+1)^{5/2}(1-x)^{9/2} + \frac{3}{14}(x+1)^{5/2}(1-x)^{7/2} + \frac{3}{10}(x+1)^{5/2}(1-x)^{5/2} + \frac{3}{8}x(x+1)^{3/2}(1-x)^{3/2} + \frac{9}{16}x\sqrt{x+1}\sqrt{1-x} + \frac{9}{16}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(9/2)*(1 + x)^(3/2),x]
```

```
[Out] (9*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (3*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/8 + (3*(1 - x)^(5/2)*(1 + x)^(5/2))/10 + (3*(1 - x)^(7/2)*(1
+ x)^(5/2))/14 + ((1 - x)^(9/2)*(1 + x)^(5/2))/7 + (9*ArcSin[x])/
16
```

Rubi in Sympy [A] time = 10.6257, size = 92, normalized size = 0.84

$$\frac{3x\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}{8} + \frac{9x\sqrt{-x+1}\sqrt{x+1}}{16} + \frac{\left(-x+1\right)^{\frac{9}{2}}\left(x+1\right)^{\frac{5}{2}}}{7} + \frac{3\left(-x+1\right)^{\frac{7}{2}}\left(x+1\right)^{\frac{5}{2}}}{14} + \frac{3\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{5}{2}}}{10} + \frac{9\operatorname{asin}\left(x\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(9/2)*(1+x)**(3/2),x)
```

```
[Out] 3*x*(-x + 1)**(3/2)*(x + 1)**(3/2)/8 + 9*x*sqrt(-x + 1)*sqrt(x +
1)/16 + (-x + 1)**(9/2)*(x + 1)**(5/2)/7 + 3*(-x + 1)**(7/2)*(x +
```

```
1)**(5/2)/14 + 3*(-x + 1)**(5/2)*(x + 1)**(5/2)/10 + 9*asin(x)/1
6
```

Mathematica [A] time = 0.0481386, size = 64, normalized size = 0.59

$$\frac{1}{560}\sqrt{1-x^2}\left(80x^6-280x^5+208x^4+350x^3-656x^2+245x+368\right)+\frac{9}{8}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(9/2)*(1 + x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(368 + 245*x - 656*x^2 + 350*x^3 + 208*x^4 - 280*x
^5 + 80*x^6))/560 + (9*ArcSin[Sqrt[1 + x]/Sqrt[2]])/8
```

Maple [A] time = 0.006, size = 127, normalized size = 1.2

$$\frac{1}{7}(1-x)^{\frac{9}{2}}(1+x)^{\frac{5}{2}}+\frac{3}{14}(1-x)^{\frac{7}{2}}(1+x)^{\frac{5}{2}}+\frac{3}{10}(1-x)^{\frac{5}{2}}(1+x)^{\frac{5}{2}} +\frac{3}{8}(1-x)^{\frac{3}{2}}(1+x)^{\frac{5}{2}}+\frac{3}{8}\sqrt{1-x}(1+x)^{\frac{5}{2}}-\frac{3}{16}\sqrt{1-x}(1+x)^{\frac{3}{2}} -\frac{9}{16}\sqrt{1-x}\sqrt{1+x}+\frac{9\arcsin(x)}{16}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(9/2)*(1+x)^(3/2),x)
```

```
[Out] 1/7*(1-x)^(9/2)*(1+x)^(5/2)+3/14*(1-x)^(7/2)*(1+x)^(5/2)+3/10*(1-
x)^(5/2)*(1+x)^(5/2)+3/8*(1-x)^(3/2)*(1+x)^(5/2)+3/8*(1-x)^(1/2)*
(1+x)^(5/2)-3/16*(1-x)^(1/2)*(1+x)^(3/2)-9/16*(1-x)^(1/2)*(1+x)^(
1/2)+9/16*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.48718, size = 89, normalized size = 0.82

$$\frac{1}{7}\left(-x^2+1\right)^{\frac{5}{2}}x^2-\frac{1}{2}\left(-x^2+1\right)^{\frac{5}{2}}x+\frac{23}{35}\left(-x^2+1\right)^{\frac{5}{2}}+\frac{3}{8}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{9}{16}\sqrt{-x^2+1}x+\frac{9}{16}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(9/2),x, algorithm="maxima")
```

```
[Out] 1/7*(-x^2 + 1)^(5/2)*x^2 - 1/2*(-x^2 + 1)^(5/2)*x + 23/35*(-x^2 +
 1)^(5/2) + 3/8*(-x^2 + 1)^(3/2)*x + 9/16*sqrt(-x^2 + 1)*x + 9/16
*arcsin(x)
```

Fricas [A] time = 0.213437, size = 351, normalized size = 3.22

$$\frac{80\,x^{14} - 280\,x^{13} - 1792\,x^{12} + 7350\,x^{11} + 2464\,x^{10} - 37625\,x^{9} + 26880\,x^{8} + 70595\,x^{7} - 99680\,x^{6} - 42840\,x^{5} + 125440\,x^{4} - 12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(9/2),x, algorithm="fricas")
```

```
[Out] 1/560*(80*x^14 - 280*x^13 - 1792*x^12 + 7350*x^11 + 2464*x^10 - 3
7625*x^9 + 26880*x^8 + 70595*x^7 - 99680*x^6 - 42840*x^5 + 125440
*x^4 - 12880*x^3 - 53760*x^2 + 7*(80*x^12 - 280*x^11 - 432*x^10 +
 2590*x^9 - 1040*x^8 - 7035*x^7 + 8160*x^6 + 6200*x^5 - 14080*x^4
 + 720*x^3 + 7680*x^2 - 2240*x)*sqrt(x + 1)*sqrt(-x + 1) - 630*(7
*x^6 - 56*x^4 + 112*x^2 - (x^6 - 24*x^4 + 80*x^2 - 64)*sqrt(x + 1
)*sqrt(-x + 1) - 64)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 1
5680*x)/(7*x^6 - 56*x^4 + 112*x^2 - (x^6 - 24*x^4 + 80*x^2 - 64)*
sqrt(x + 1)*sqrt(-x + 1) - 64)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(9/2)*(1+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.240987, size = 259, normalized size = 2.38

$$\frac{1}{105}\left(\left(3\left(\left(5\left(x+1\right)\left(x-5\right)+74\right)\left(x+1\right)-96\right)\left(x+1\right)+203\right)\left(x+1\right)-70\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}+\frac{2}{15}\left(\left(3\left(x+1\right)\left(x-3\right)+17\right)\left(x+1\right)-10\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}-\left(x+1\right)^{\frac{3}{2}}\left(x-1\right)\sqrt{-x+1}-\frac{1}{16}\left(\left(2\left(\left(4\left(x+1\right)\left(x-4\right)+39\right)\left(x+1\right)-37\right)\left(x+1\right)+31\right)\left(x+1\right)-3\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{4}\left(\left(2\left(x+1\right)\left(x-2\right)+5\right)\left(x+1\right)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{9}{8}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(9/2),x, algorithm="giac")
```

```
[Out] 1/105*((3*((5*(x + 1)*(x - 5) + 74)*(x + 1) - 96)*(x + 1) + 203)*
(x + 1) - 70)*(x + 1)^(3/2)*sqrt(-x + 1) + 2/15*((3*(x + 1)*(x -
3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(-x + 1) - (x + 1)^(3/2)
*(x - 1)*sqrt(-x + 1) - 1/16*((2*((4*(x + 1)*(x - 4) + 39)*(x + 1
) - 37)*(x + 1) + 31)*(x + 1) - 3)*sqrt(x + 1)*sqrt(-x + 1) + 1/4
*((2*(x + 1)*(x - 2) + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) +
 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 9/8*arcsin(1/2*sqrt(2)*sqrt(x +
 1))
```

3.1076 $\int (1-x)^{7/2}(1+x)^{3/2}\,dx$

Optimal. Leaf size=89

$$\frac{1}{6}(x+1)^{5/2}(1-x)^{7/2}+\frac{7}{30}(x+1)^{5/2}(1-x)^{5/2}+\frac{7}{24}x(x+1)^{3/2}(1-x)^{3/2}+\frac{7}{16}x\sqrt{x+1}\sqrt{1-x}+\frac{7}{16}\sin^{-1}(x)$$

```
[Out] (7*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (7*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/24 + (7*(1 - x)^(5/2)*(1 + x)^(5/2))/30 + ((1 - x)^(7/2)*(1 +
 x)^(5/2))/6 + (7*ArcSin[x])/16
```

Rubi [A] time = 0.0549936, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{1}{6}(x+1)^{5/2}(1-x)^{7/2}+\frac{7}{30}(x+1)^{5/2}(1-x)^{5/2}+\frac{7}{24}x(x+1)^{3/2}(1-x)^{3/2}+\frac{7}{16}x\sqrt{x+1}\sqrt{1-x}+\frac{7}{16}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(7/2)*(1 + x)^(3/2),x]
```

```
[Out] (7*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (7*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/24 + (7*(1 - x)^(5/2)*(1 + x)^(5/2))/30 + ((1 - x)^(7/2)*(1 +
 x)^(5/2))/6 + (7*ArcSin[x])/16
```

Rubi in Sympy [A] time = 8.6962, size = 75, normalized size = 0.84

$$\frac{7x\,(-x+1)^{\frac{3}{2}}\,(x+1)^{\frac{3}{2}}}{24}+\frac{7x\sqrt{-x+1}\sqrt{x+1}}{16}+\frac{(-x+1)^{\frac{7}{2}}\,(x+1)^{\frac{5}{2}}}{6}+\frac{7\,(-x+1)^{\frac{5}{2}}\,(x+1)^{\frac{5}{2}}}{30}+\frac{7\,\mathrm{asin}\,(x)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(7/2)*(1+x)**(3/2),x)
```

```
[Out] 7*x*(-x + 1)**(3/2)*(x + 1)**(3/2)/24 + 7*x*sqrt(-x + 1)*sqrt(x +
 1)/16 + (-x + 1)**(7/2)*(x + 1)**(5/2)/6 + 7*(-x + 1)**(5/2)*(x
+ 1)**(5/2)/30 + 7*asin(x)/16
```

Mathematica [A] time = 0.041522, size = 59, normalized size = 0.66

$$\frac{1}{240}\sqrt{1-x^2}\left(-40x^5+96x^4+10x^3-192x^2+135x+96\right)+\frac{7}{8}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/2)*(1 + x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(96 + 135*x - 192*x^2 + 10*x^3 + 96*x^4 - 40*x^5))
/240 + (7*ArcSin[Sqrt[1 + x]/Sqrt[2]])/8
```

Maple [A] time = 0.007, size = 113, normalized size = 1.3

$$\frac{1}{6}(1-x)^{\frac{7}{2}}(1+x)^{\frac{5}{2}}+\frac{7}{30}(1-x)^{\frac{5}{2}}(1+x)^{\frac{5}{2}}+\frac{7}{24}(1-x)^{\frac{3}{2}}(1+x)^{\frac{5}{2}}+\frac{7}{24}\sqrt{1-x}\,(1+x)^{\frac{5}{2}} -\frac{7}{48}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{7}{16}\sqrt{1-x}\sqrt{1+x}+\frac{7\arcsin(x)}{16}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/2)*(1+x)^(3/2),x)
```

```
[Out] 1/6*(1-x)^(7/2)*(1+x)^(5/2)+7/30*(1-x)^(5/2)*(1+x)^(5/2)+7/24*(1-
x)^(3/2)*(1+x)^(5/2)+7/24*(1-x)^(1/2)*(1+x)^(5/2)-7/48*(1-x)^(1/2
)*(1+x)^(3/2)-7/16*(1-x)^(1/2)*(1+x)^(1/2)+7/16*((1+x)*(1-x))^(1/
2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49403, size = 70, normalized size = 0.79

$$-\frac{1}{6}\left(-x^2+1\right)^{\frac{5}{2}}x+\frac{2}{5}\left(-x^2+1\right)^{\frac{5}{2}}+\frac{7}{24}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{7}{16}\sqrt{-x^2+1}x+\frac{7}{16}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/6*(-x^2 + 1)^(5/2)*x + 2/5*(-x^2 + 1)^(5/2) + 7/24*(-x^2 + 1)^
(3/2)*x + 7/16*sqrt(-x^2 + 1)*x + 7/16*arcsin(x)
```

Fricas [A] time = 0.217779, size = 311, normalized size = 3.49

$$\frac{240\,x^{11}-576\,x^{10}-1580\,x^{9}+4800\,x^{8}+2130\,x^{7}-13920\,x^{6}+3210\,x^{5}+17280\,x^{4}-8320\,x^{3}-7680\,x^{2}-\left(40\,x^{11}-96\,x^{10}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(7/2),x, algorithm="fricas")
```

```
[Out] 1/240*(240*x^11 - 576*x^10 - 1580*x^9 + 4800*x^8 + 2130*x^7 - 139
20*x^6 + 3210*x^5 + 17280*x^4 - 8320*x^3 - 7680*x^2 - (40*x^11 -
96*x^10 - 730*x^9 + 1920*x^8 + 1965*x^7 - 8160*x^6 + 670*x^5 + 13
440*x^4 - 6160*x^3 - 7680*x^2 + 4320*x)*sqrt(x + 1)*sqrt(-x + 1)
- 210*(x^6 - 18*x^4 + 48*x^2 + 2*(3*x^4 - 16*x^2 + 16)*sqrt(x + 1
)*sqrt(-x + 1) - 32)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 4
320*x)/(x^6 - 18*x^4 + 48*x^2 + 2*(3*x^4 - 16*x^2 + 16)*sqrt(x +
1)*sqrt(-x + 1) - 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/2)*(1+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.227891, size = 161, normalized size = 1.81

$$\frac{2}{15}\left(\left(3\left(x+1\right)\left(x-3\right)+17\right)\left(x+1\right)-10\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}-\frac{2}{3}\left(x+1\right)^{\frac{3}{2}}\left(x-1\right)\sqrt{-x+1}-\frac{1}{48}\left(\left(2\left(\left(4\left(x+1\right)\left(x-4\right)+39\right)\left(x+1\right)-37\right)\left(x+1\right)+31\right)\left(x+1\right)-3\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{7}{8}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((3*(x + 1)*(x - 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(-
x + 1) - 2/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) - 1/48*((2*((4*(x
 + 1)*(x - 4) + 39)*(x + 1) - 37)*(x + 1) + 31)*(x + 1) - 3)*sqrt
(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 7/8*arcsi
n(1/2*sqrt(2)*sqrt(x + 1))
```

3.1077 $\int (1-x)^{5/2}(1+x)^{3/2}\,dx$

Optimal. Leaf size=69

$$\frac{1}{5}(1-x)^{5/2}(x+1)^{5/2}+\frac{1}{4}(1-x)^{3/2}x(x+1)^{3/2}+\frac{3}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{3}{8}\sin^{-1}(x)$$

```
[Out] (3*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + ((1 - x)^(3/2)*x*(1 + x)^(3/2))
/4 + ((1 - x)^(5/2)*(1 + x)^(5/2))/5 + (3*ArcSin[x])/8
```

Rubi [A] time = 0.0402593, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{1}{5}(1-x)^{5/2}(x+1)^{5/2}+\frac{1}{4}(1-x)^{3/2}x(x+1)^{3/2}+\frac{3}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{3}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(5/2)*(1 + x)^(3/2),x]
```

```
[Out] (3*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + ((1 - x)^(3/2)*x*(1 + x)^(3/2))
/4 + ((1 - x)^(5/2)*(1 + x)^(5/2))/5 + (3*ArcSin[x])/8
```

Rubi in Sympy [A] time = 6.65919, size = 56, normalized size = 0.81

$$\frac{x\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}{4}+\frac{3x\sqrt{-x+1}\sqrt{x+1}}{8}+\frac{\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{5}{2}}}{5}+\frac{3\operatorname{asin}\left(x\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(5/2)*(1+x)**(3/2),x)
```

```
[Out] x*(-x + 1)**(3/2)*(x + 1)**(3/2)/4 + 3*x*sqrt(-x + 1)*sqrt(x + 1)
/8 + (-x + 1)**(5/2)*(x + 1)**(5/2)/5 + 3*asin(x)/8
```

Mathematica [A] time = 0.0336619, size = 54, normalized size = 0.78

$$\frac{1}{40}\sqrt{1-x^2}\left(8x^4-10x^3-16x^2+25x+8\right)+\frac{3}{4}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(5/2)*(1 + x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(8 + 25*x - 16*x^2 - 10*x^3 + 8*x^4))/40 + (3*ArcS
in[Sqrt[1 + x]/Sqrt[2]])/4
```

Maple [A] time = 0.007, size = 99, normalized size = 1.4

$$\frac{1}{5}(1-x)^{\frac{5}{2}}(1+x)^{\frac{5}{2}}+\frac{1}{4}(1-x)^{\frac{3}{2}}(1+x)^{\frac{5}{2}}+\frac{1}{4}\sqrt{1-x}\,(1+x)^{\frac{5}{2}}-\frac{1}{8}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{3}{8}\sqrt{1-x}\sqrt{1+x}+\frac{3\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(5/2)*(1+x)^(3/2),x)
```

```
[Out] 1/5*(1-x)^(5/2)*(1+x)^(5/2)+1/4*(1-x)^(3/2)*(1+x)^(5/2)+1/4*(1-x)
^(1/2)*(1+x)^(5/2)-1/8*(1-x)^(1/2)*(1+x)^(3/2)-3/8*(1-x)^(1/2)*(1
+x)^(1/2)+3/8*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(
x)
```

Maxima [A] time = 1.48145, size = 54, normalized size = 0.78

$$\frac{1}{5}\left(-x^2+1\right)^{\frac{5}{2}}+\frac{1}{4}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{3}{8}\sqrt{-x^2+1}x+\frac{3}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/5*(-x^2 + 1)^(5/2) + 1/4*(-x^2 + 1)^(3/2)*x + 3/8*sqrt(-x^2 + 1
)*x + 3/8*arcsin(x)
```

Fricas [A] time = 0.217072, size = 270, normalized size = 3.91

$$\frac{8x^{10}-10x^{9}-120x^{8}+155x^{7}+440x^{6}-605x^{5}-640x^{4}+860x^{3}+320x^{2}+5\left(8x^{8}-10x^{7}-48x^{6}+65x^{5}+96x^{4}-132\right.}{40\left(5x^{4}-20x^{2}-(x^{4}-12\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/40*(8*x^10 - 10*x^9 - 120*x^8 + 155*x^7 + 440*x^6 - 605*x^5 - 6
40*x^4 + 860*x^3 + 320*x^2 + 5*(8*x^8 - 10*x^7 - 48*x^6 + 65*x^5
+ 96*x^4 - 132*x^3 - 64*x^2 + 80*x)*sqrt(x + 1)*sqrt(-x + 1) - 30
*(5*x^4 - 20*x^2 - (x^4 - 12*x^2 + 16)*sqrt(x + 1)*sqrt(-x + 1) +
 16)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) - 400*x)/(5*x^4 - 2
0*x^2 - (x^4 - 12*x^2 + 16)*sqrt(x + 1)*sqrt(-x + 1) + 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(5/2)*(1+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225104, size = 143, normalized size = 2.07

$$\frac{1}{15}\left(\left(3\left(x+1\right)\left(x-3\right)+17\right)\left(x+1\right)-10\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}-\frac{1}{3}\left(x+1\right)^{\frac{3}{2}}\left(x-1\right)\sqrt{-x+1}-\frac{1}{8}\left(\left(2\left(x+1\right)\left(x-2\right)+5\right)\left(x+1\right)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{3}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/15*((3*(x + 1)*(x - 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(-
x + 1) - 1/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) - 1/8*((2*(x + 1)
*(x - 2) + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x
+ 1)*x*sqrt(-x + 1) + 3/4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1078 $\int (1-x)^{3/2}(1+x)^{3/2}\,dx$

Optimal. Leaf size=49

$$\frac{1}{4}(1-x)^{3/2}x(x+1)^{3/2}+\frac{3}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{3}{8}\sin^{-1}(x)$$

```
[Out] (3*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + ((1 - x)^(3/2)*x*(1 + x)^(3/2))
/4 + (3*ArcSin[x])/8
```

Rubi [A] time = 0.0321231, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{4}(1-x)^{3/2}x(x+1)^{3/2}+\frac{3}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{3}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(3/2)*(1 + x)^(3/2),x]
```

```
[Out] (3*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + ((1 - x)^(3/2)*x*(1 + x)^(3/2))
/4 + (3*ArcSin[x])/8
```

Rubi in Sympy [A] time = 5.60072, size = 41, normalized size = 0.84

$$\frac{x\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}{4}+\frac{3x\sqrt{-x+1}\sqrt{x+1}}{8}+\frac{3\operatorname{asin}\left(x\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(3/2)*(1+x)**(3/2),x)
```

```
[Out] x*(-x + 1)**(3/2)*(x + 1)**(3/2)/4 + 3*x*sqrt(-x + 1)*sqrt(x + 1)
/8 + 3*asin(x)/8
```

Mathematica [A] time = 0.0288189, size = 29, normalized size = 0.59

$$\frac{1}{8}\left(x\sqrt{1-x^2}\left(5-2x^2\right)+3\sin^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(3/2)*(1 + x)^(3/2),x]
```

```
[Out] (x*(5 - 2*x^2)*Sqrt[1 - x^2] + 3*ArcSin[x])/8
```

Maple [B] time = 0.006, size = 85, normalized size = 1.7

$$\frac{1}{4}(1-x)^{\frac{3}{2}}(1+x)^{\frac{5}{2}}+\frac{1}{4}\sqrt{1-x}\,(1+x)^{\frac{5}{2}}-\frac{1}{8}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{3}{8}\sqrt{1-x}\sqrt{1+x}+\frac{3\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(3/2)*(1+x)^(3/2),x)
```

```
[Out] 1/4*(1-x)^(3/2)*(1+x)^(5/2)+1/4*(1-x)^(1/2)*(1+x)^(5/2)-1/8*(1-x)
^(1/2)*(1+x)^(3/2)-3/8*(1-x)^(1/2)*(1+x)^(1/2)+3/8*((1+x)*(1-x))^
(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.56242, size = 39, normalized size = 0.8

$$\frac{1}{4}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{3}{8}\sqrt{-x^2+1}x+\frac{3}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(-x^2 + 1)^(3/2)*x + 3/8*sqrt(-x^2 + 1)*x + 3/8*arcsin(x)
```

Fricas [A] time = 0.217903, size = 184, normalized size = 3.76

$$\frac{8x^7-44x^5+76x^3-\left(2x^7-21x^5+56x^3-40x\right)\sqrt{x+1}\sqrt{-x+1}-6\left(x^4-8x^2+4\left(x^2-2\right)\sqrt{x+1}\sqrt{-x+1}+8\right)\arctan\left(\right.}{8\left(x^4-8x^2+4(x^2-2)\sqrt{x+1}\sqrt{-x+1}+8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/8*(8*x^7 - 44*x^5 + 76*x^3 - (2*x^7 - 21*x^5 + 56*x^3 - 40*x)*s
qrt(x + 1)*sqrt(-x + 1) - 6*(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1
```

```
)*sqrt(-x + 1) + 8)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) - 40
*x)/(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1)*sqrt(-x + 1) + 8)
```

Sympy [A] time = 38.8979, size = 214, normalized size = 4.37

$$\begin{cases} -\frac{3i\,\mathrm{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{4} - \frac{i(x+1)^{\frac{9}{2}}}{4\sqrt{x-1}} + \frac{5i(x+1)^{\frac{7}{2}}}{4\sqrt{x-1}} - \frac{13i(x+1)^{\frac{5}{2}}}{8\sqrt{x-1}} - \frac{i(x+1)^{\frac{3}{2}}}{8\sqrt{x-1}} + \frac{3i\sqrt{x+1}}{4\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ \frac{3\,\mathrm{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{4} + \frac{(x+1)^{\frac{9}{2}}}{4\sqrt{-x+1}} - \frac{5(x+1)^{\frac{7}{2}}}{4\sqrt{-x+1}} + \frac{13(x+1)^{\frac{5}{2}}}{8\sqrt{-x+1}} + \frac{(x+1)^{\frac{3}{2}}}{8\sqrt{-x+1}} - \frac{3\sqrt{x+1}}{4\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(3/2)*(1+x)**(3/2),x)
```

```
[Out] Piecewise((-3*I*acosh(sqrt(2)*sqrt(x + 1)/2)/4 - I*(x + 1)**(9/2)
/(4*sqrt(x - 1)) + 5*I*(x + 1)**(7/2)/(4*sqrt(x - 1)) - 13*I*(x +
 1)**(5/2)/(8*sqrt(x - 1)) - I*(x + 1)**(3/2)/(8*sqrt(x - 1)) + 3
*I*sqrt(x + 1)/(4*sqrt(x - 1)), Abs(x + 1)/2 > 1), (3*asin(sqrt(2
)*sqrt(x + 1)/2)/4 + (x + 1)**(9/2)/(4*sqrt(-x + 1)) - 5*(x + 1)*
*(7/2)/(4*sqrt(-x + 1)) + 13*(x + 1)**(5/2)/(8*sqrt(-x + 1)) + (x
 + 1)**(3/2)/(8*sqrt(-x + 1)) - 3*sqrt(x + 1)/(4*sqrt(-x + 1)), T
rue))
```

GIAC/XCAS [A] time = 0.219871, size = 80, normalized size = 1.63

$$-\frac{1}{8}\left(\left(2\left(x+1\right)\left(x-2\right)+5\right)\left(x+1\right)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{3}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*(-x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] -1/8*((2*(x + 1)*(x - 2) + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x +
1) + 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 3/4*arcsin(1/2*sqrt(2)*sqrt
(x + 1))
```

3.1079 $\int \sqrt{1-x}(1+x)^{3/2}\,dx$

Optimal. Leaf size=48

$$-\frac{1}{3}(1-x)^{3/2}(x+1)^{3/2}+\frac{1}{2}\sqrt{1-x}x\sqrt{x+1}+\frac{1}{2}\sin^{-1}(x)$$

```
[Out] (Sqrt[1 - x]*x*Sqrt[1 + x])/2 - ((1 - x)^(3/2)*(1 + x)^(3/2))/3 +
 ArcSin[x]/2
```

Rubi [A] time = 0.0292912, antiderivative size = 48, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{1}{3}(1-x)^{3/2}(x+1)^{3/2}+\frac{1}{2}\sqrt{1-x}x\sqrt{x+1}+\frac{1}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 - x]*(1 + x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x]*x*Sqrt[1 + x])/2 - ((1 - x)^(3/2)*(1 + x)^(3/2))/3 +
 ArcSin[x]/2
```

Rubi in Sympy [A] time = 5.1938, size = 36, normalized size = 0.75

$$\frac{x\sqrt{-x+1}\sqrt{x+1}}{2}-\frac{(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{3}+\frac{\operatorname{asin}(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/2)*(1+x)**(3/2),x)
```

```
[Out] x*sqrt(-x + 1)*sqrt(x + 1)/2 - (-x + 1)**(3/2)*(x + 1)**(3/2)/3 +
 asin(x)/2
```

Mathematica [A] time = 0.0230682, size = 40, normalized size = 0.83

$$\frac{1}{6}\sqrt{1-x^2}\left(2x^2+3x-2\right)+\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 - x]*(1 + x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(-2 + 3*x + 2*x^2))/6 + ArcSin[Sqrt[1 + x]/Sqrt[2]
]
```

Maple [B] time = 0.007, size = 71, normalized size = 1.5

$$\frac{1}{3}\sqrt{1-x}\,(1+x)^{\frac{5}{2}}-\frac{1}{6}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{1}{2}\sqrt{1-x}\sqrt{1+x}+\frac{\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/2)*(1+x)^(3/2),x)
```

```
[Out] 1/3*(1-x)^(1/2)*(1+x)^(5/2)-1/6*(1-x)^(1/2)*(1+x)^(3/2)-1/2*(1-x)
^(1/2)*(1+x)^(1/2)+1/2*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2
)*arcsin(x)
```

Maxima [A] time = 1.50034, size = 38, normalized size = 0.79

$$-\frac{1}{3}\left(-x^2+1\right)^{\frac{3}{2}}+\frac{1}{2}\sqrt{-x^2+1}x+\frac{1}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] -1/3*(-x^2 + 1)^(3/2) + 1/2*sqrt(-x^2 + 1)*x + 1/2*arcsin(x)
```

Fricas [A] time = 0.209319, size = 189, normalized size = 3.94

$$\frac{2x^6+3x^5-12x^4-15x^3+12x^2+3\left(2x^4+3x^3-4x^2-4x\right)\sqrt{x+1}\sqrt{-x+1}-6\left(3x^2-\left(x^2-4\right)\sqrt{x+1}\sqrt{-x+1}-4\right)\text{ar}}{6\left(3x^2-(x^2-4)\sqrt{x+1}\sqrt{-x+1}-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] 1/6*(2*x^6 + 3*x^5 - 12*x^4 - 15*x^3 + 12*x^2 + 3*(2*x^4 + 3*x^3
- 4*x^2 - 4*x)*sqrt(x + 1)*sqrt(-x + 1) - 6*(3*x^2 - (x^2 - 4)*sq
```

```
rt(x + 1)*sqrt(-x + 1) - 4)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)
/x) + 12*x)/(3*x^2 - (x^2 - 4)*sqrt(x + 1)*sqrt(-x + 1) - 4)
```

Sympy [A] time = 19.0127, size = 165, normalized size = 3.44

$$\begin{cases} -i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{i(x+1)^{\frac{7}{2}}}{3\sqrt{x-1}} - \frac{5i(x+1)^{\frac{5}{2}}}{6\sqrt{x-1}} - \frac{i(x+1)^{\frac{3}{2}}}{6\sqrt{x-1}} + \frac{i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ \operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{(x+1)^{\frac{7}{2}}}{3\sqrt{-x+1}} + \frac{5(x+1)^{\frac{5}{2}}}{6\sqrt{-x+1}} + \frac{(x+1)^{\frac{3}{2}}}{6\sqrt{-x+1}} - \frac{\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/2)*(1+x)**(3/2),x)
```

```
[Out] Piecewise((-I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(7/2)/(3*
sqrt(x - 1)) - 5*I*(x + 1)**(5/2)/(6*sqrt(x - 1)) - I*(x + 1)**(3
/2)/(6*sqrt(x - 1)) + I*sqrt(x + 1)/sqrt(x - 1), Abs(x + 1)/2 > 1
), (asin(sqrt(2)*sqrt(x + 1)/2) - (x + 1)**(7/2)/(3*sqrt(-x + 1))
 + 5*(x + 1)**(5/2)/(6*sqrt(-x + 1)) + (x + 1)**(3/2)/(6*sqrt(-x
+ 1)) - sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.218299, size = 59, normalized size = 1.23

$$\frac{1}{3}(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1} + \frac{1}{2}\sqrt{x+1}x\sqrt{-x+1} + \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)*sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] 1/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(-
x + 1) + arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1080 $\int \frac{(1+x)^{3/2}}{\sqrt{1-x}}\,dx$

Optimal. Leaf size=47

$$-\frac{1}{2}\sqrt{1-x}(x+1)^{3/2}-\frac{3}{2}\sqrt{1-x}\sqrt{x+1}+\frac{3}{2}\sin^{-1}(x)$$

```
[Out] (-3*Sqrt[1 - x]*Sqrt[1 + x])/2 - (Sqrt[1 - x]*(1 + x)^(3/2))/2 +
(3*ArcSin[x])/2
```

Rubi [A] time = 0.0328027, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{1}{2}\sqrt{1-x}(x+1)^{3/2}-\frac{3}{2}\sqrt{1-x}\sqrt{x+1}+\frac{3}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^(3/2)/Sqrt[1 - x],x]
```

```
[Out] (-3*Sqrt[1 - x]*Sqrt[1 + x])/2 - (Sqrt[1 - x]*(1 + x)^(3/2))/2 +
(3*ArcSin[x])/2
```

Rubi in Sympy [A] time = 4.91353, size = 37, normalized size = 0.79

$$-\frac{\sqrt{-x+1}\,(x+1)^{\frac{3}{2}}}{2}-\frac{3\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{3\,\mathrm{asin}\,(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((1+x)**(3/2)/(1-x)**(1/2),x)
```

```
[Out] -sqrt(-x + 1)*(x + 1)**(3/2)/2 - 3*sqrt(-x + 1)*sqrt(x + 1)/2 + 3
*asin(x)/2
```

Mathematica [A] time = 0.018742, size = 35, normalized size = 0.74

$$3\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)-\frac{1}{2}(x+4)\sqrt{1-x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(3/2)/Sqrt[1 - x],x]

[Out] -((4 + x)*Sqrt[1 - x^2])/2 + 3*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.005, size = 57, normalized size = 1.2

$$-\frac{1}{2}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{3}{2}\sqrt{1-x}\sqrt{1+x}+\frac{3\,\arcsin(x)}{2}\sqrt{(1+x)\,(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(1/2),x)

[Out] -1/2*(1-x)^(1/2)*(1+x)^(3/2)-3/2*(1-x)^(1/2)*(1+x)^(1/2)+3/2*((1+
x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.50134, size = 38, normalized size = 0.81

$$-\frac{1}{2}\sqrt{-x^2+1}x-2\sqrt{-x^2+1}+\frac{3}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/sqrt(-x + 1),x, algorithm="maxima")

[Out] -1/2*sqrt(-x^2 + 1)*x - 2*sqrt(-x^2 + 1) + 3/2*arcsin(x)
```

Fricas [A] time = 0.213906, size = 140, normalized size = 2.98

$$\frac{2\,x^3+4\,x^2-\left(x^3+4\,x^2-2\,x\right)\sqrt{x+1}\sqrt{-x+1}-6\left(x^2+2\sqrt{x+1}\sqrt{-x+1}-2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)-2\,x}{2\left(x^2+2\sqrt{x+1}\sqrt{-x+1}-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/sqrt(-x + 1),x, algorithm="fricas")

[Out] 1/2*(2*x^3 + 4*x^2 - (x^3 + 4*x^2 - 2*x)*sqrt(x + 1)*sqrt(-x + 1)
 - 6*(x^2 + 2*sqrt(x + 1)*sqrt(-x + 1) - 2)*arctan((sqrt(x + 1)*s
qrt(-x + 1) - 1)/x) - 2*x)/(x^2 + 2*sqrt(x + 1)*sqrt(-x + 1) - 2)
```

Sympy [A] time = 12.5616, size = 136, normalized size = 2.89

$$\begin{cases} -3i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{i(x+1)^{\frac{5}{2}}}{2\sqrt{x-1}} - \frac{i(x+1)^{\frac{3}{2}}}{2\sqrt{x-1}} + \frac{3i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ 3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{(x+1)^{\frac{5}{2}}}{2\sqrt{-x+1}} + \frac{(x+1)^{\frac{3}{2}}}{2\sqrt{-x+1}} - \frac{3\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(1/2),x)
```

```
[Out] Piecewise((-3*I*acosh(sqrt(2)*sqrt(x + 1)/2) - I*(x + 1)**(5/2)/(
2*sqrt(x - 1)) - I*(x + 1)**(3/2)/(2*sqrt(x - 1)) + 3*I*sqrt(x +
1)/sqrt(x - 1), Abs(x + 1)/2 > 1), (3*asin(sqrt(2)*sqrt(x + 1)/2)
 + (x + 1)**(5/2)/(2*sqrt(-x + 1)) + (x + 1)**(3/2)/(2*sqrt(-x +
1)) - 3*sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.214303, size = 42, normalized size = 0.89

$$-\frac{1}{2}(x+4)\sqrt{x+1}\sqrt{-x+1} + 3\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] -1/2*(x + 4)*sqrt(x + 1)*sqrt(-x + 1) + 3*arcsin(1/2*sqrt(2)*sqrt
(x + 1))
```

3.1081 $\int \frac{(1+x)^{3/2}}{(1-x)^{3/2}} \, dx$

Optimal. Leaf size=41

$$\frac{2(x+1)^{3/2}}{\sqrt{1-x}}+3\sqrt{1-x}\sqrt{x+1}-3\sin^{-1}(x)$$

```
[Out] 3*Sqrt[1 - x]*Sqrt[1 + x] + (2*(1 + x)^(3/2))/Sqrt[1 - x] - 3*Arc
Sin[x]
```

Rubi [A] time = 0.032995, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{2(x+1)^{3/2}}{\sqrt{1-x}}+3\sqrt{1-x}\sqrt{x+1}-3\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(3/2),x]
```

```
[Out] 3*Sqrt[1 - x]*Sqrt[1 + x] + (2*(1 + x)^(3/2))/Sqrt[1 - x] - 3*Arc
Sin[x]
```

Rubi in Sympy [A] time = 5.33719, size = 34, normalized size = 0.83

$$3\sqrt{-x+1}\sqrt{x+1}-3\,\mathrm{asin}\,(x)+\frac{2\,(x+1)^{\frac{3}{2}}}{\sqrt{-x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(3/2),x)
```

```
[Out] 3*sqrt(-x + 1)*sqrt(x + 1) - 3*asin(x) + 2*(x + 1)**(3/2)/sqrt(-x
 + 1)
```

Mathematica [A] time = 0.0373503, size = 37, normalized size = 0.9

$$\frac{(x-5)\sqrt{1-x^2}}{x-1}-6\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(3/2),x]
```

```
[Out] ((-5 + x)*Sqrt[1 - x^2])/(-1 + x) - 6*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [B] time = 0.028, size = 72, normalized size = 1.8

$$-(x^2-4x-5)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}-3\frac{\sqrt{(1+x)(1-x)}\arcsin(x)}{\sqrt{1-x}\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(3/2),x)
```

```
[Out] -(x^2-4*x-5)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2)/(1-x)^(1/2
)/(1+x)^(1/2)-3*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsi
n(x)
```

Maxima [A] time = 1.49155, size = 57, normalized size = 1.39

$$-\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{x^2-2x+1}-\frac{6\sqrt{-x^2+1}}{x-1}-3\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] -(-x^2 + 1)^(3/2)/(x^2 - 2*x + 1) - 6*sqrt(-x^2 + 1)/(x - 1) - 3*
arcsin(x)
```

Fricas [A] time = 0.216187, size = 139, normalized size = 3.39

$$\frac{x^3-x^2+\left(x^2-8x\right)\sqrt{x+1}\sqrt{-x+1}+6\left(x^2-\sqrt{x+1}(x-2)\sqrt{-x+1}+x-2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)+8x}{x^2-\sqrt{x+1}(x-2)\sqrt{-x+1}+x-2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] (x^3 - x^2 + (x^2 - 8*x)*sqrt(x + 1)*sqrt(-x + 1) + 6*(x^2 - sqrt
(x + 1)*(x - 2)*sqrt(-x + 1) + x - 2)*arctan((sqrt(x + 1)*sqrt(-x
```

```
 + 1) - 1)/x) + 8*x)/(x^2 - sqrt(x + 1)*(x - 2)*sqrt(-x + 1) + x
- 2)
```

Sympy [A] time = 12.1097, size = 100, normalized size = 2.44

$$\begin{cases} 6i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)+\frac{i(x+1)^{\frac{3}{2}}}{\sqrt{x-1}}-\frac{6i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2}>1 \\ -6\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)-\frac{(x+1)^{\frac{3}{2}}}{\sqrt{-x+1}}+\frac{6\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(3/2),x)
```

```
[Out] Piecewise((6*I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(3/2)/sq
rt(x - 1) - 6*I*sqrt(x + 1)/sqrt(x - 1), Abs(x + 1)/2 > 1), (-6*a
sin(sqrt(2)*sqrt(x + 1)/2) - (x + 1)**(3/2)/sqrt(-x + 1) + 6*sqrt
(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.212893, size = 47, normalized size = 1.15

$$\frac{\sqrt{x+1}(x-5)\sqrt{-x+1}}{x-1}-6\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] sqrt(x + 1)*(x - 5)*sqrt(-x + 1)/(x - 1) - 6*arcsin(1/2*sqrt(2)*s
qrt(x + 1))
```

3.1082 $\int \frac{(1+x)^{3/2}}{(1-x)^{5/2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(x+1)^{3/2}}{3(1-x)^{3/2}}-\frac{2\sqrt{x+1}}{\sqrt{1-x}}+\sin^{-1}(x)$$

```
[Out] (-2*Sqrt[1 + x])/Sqrt[1 - x] + (2*(1 + x)^(3/2))/(3*(1 - x)^(3/2)
) + ArcSin[x]
```

Rubi [A] time = 0.031318, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{2(x+1)^{3/2}}{3(1-x)^{3/2}}-\frac{2\sqrt{x+1}}{\sqrt{1-x}}+\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(5/2),x]
```

```
[Out] (-2*Sqrt[1 + x])/Sqrt[1 - x] + (2*(1 + x)^(3/2))/(3*(1 - x)^(3/2)
) + ArcSin[x]
```

Rubi in Sympy [A] time = 5.29312, size = 34, normalized size = 0.83

$$\operatorname{asin}(x)-\frac{2\sqrt{x+1}}{\sqrt{-x+1}}+\frac{2\,(x+1)^{\frac{3}{2}}}{3\,(-x+1)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(5/2),x)
```

```
[Out] asin(x) - 2*sqrt(x + 1)/sqrt(-x + 1) + 2*(x + 1)**(3/2)/(3*(-x +
1)**(3/2))
```

Mathematica [A] time = 0.0450098, size = 42, normalized size = 1.02

$$\frac{4\sqrt{1-x^2}(2x-1)}{3(x-1)^2}+2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(5/2),x]
```

```
[Out] (4*(-1 + 2*x)*Sqrt[1 - x^2])/(3*(-1 + x)^2) + 2*ArcSin[Sqrt[1 + x
]/Sqrt[2]]
```

Maple [B] time = 0.03, size = 76, normalized size = 1.9

$$-\frac{8x^2+4x-4}{-3+3x}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}+\arcsin(x)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(5/2),x)
```

```
[Out] -4/3*(2*x^2+x-1)/(-1+x)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2)
/(1-x)^(1/2)/(1+x)^(1/2)+((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1
/2)*arcsin(x)
```

Maxima [A] time = 1.51834, size = 89, normalized size = 2.17

$$-\frac{(-x^2+1)^{\frac{3}{2}}}{3(x^3-3x^2+3x-1)}+\frac{2\sqrt{-x^2+1}}{3(x^2-2x+1)}+\frac{7\sqrt{-x^2+1}}{3(x-1)}+\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*(-x^2 + 1)^(3/2)/(x^3 - 3*x^2 + 3*x - 1) + 2/3*sqrt(-x^2 + 1
)/(x^2 - 2*x + 1) + 7/3*sqrt(-x^2 + 1)/(x - 1) + arcsin(x)
```

Fricas [A] time = 0.216396, size = 154, normalized size = 3.76

$$\frac{2\left(2x^3+6\sqrt{x+1}x^2\sqrt{-x+1}-6x^2-3\left(x^3-\left(x^2-3x+2\right)\sqrt{x+1}\sqrt{-x+1}-3x+2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)\right)}{3\left(x^3-(x^2-3x+2)\sqrt{x+1}\sqrt{-x+1}-3x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(2*x^3 + 6*sqrt(x + 1)*x^2*sqrt(-x + 1) - 6*x^2 - 3*(x^3 - (x
^2 - 3*x + 2)*sqrt(x + 1)*sqrt(-x + 1) - 3*x + 2)*arctan((sqrt(x
+ 1)*sqrt(-x + 1) - 1)/x))/(x^3 - (x^2 - 3*x + 2)*sqrt(x + 1)*sqr
t(-x + 1) - 3*x + 2)
```

Sympy [A] time = 23.2524, size = 500, normalized size = 12.2

$$\begin{cases} -\frac{6i\sqrt{x-1}(x+1)^{\frac{15}{2}}\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{3\sqrt{x-1}(x+1)^{\frac{15}{2}}-6\sqrt{x-1}(x+1)^{\frac{13}{2}}} + \frac{3\pi\sqrt{x-1}(x+1)^{\frac{15}{2}}}{3\sqrt{x-1}(x+1)^{\frac{15}{2}}-6\sqrt{x-1}(x+1)^{\frac{13}{2}}} + \frac{12i\sqrt{x-1}(x+1)^{\frac{13}{2}}\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{3\sqrt{x-1}(x+1)^{\frac{15}{2}}-6\sqrt{x-1}(x+1)^{\frac{13}{2}}} - \frac{6\pi\sqrt{x-1}(x+1)^{\frac{13}{2}}}{3\sqrt{x-1}(x+1)^{\frac{15}{2}}-6\sqrt{x-1}(x+1)^{\frac{13}{2}}} + \frac{}{3\sqrt{x-1}(x} \\ \frac{6\sqrt{-x+1}(x+1)^{\frac{15}{2}}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{3\sqrt{-x+1}(x+1)^{\frac{15}{2}}-6\sqrt{-x+1}(x+1)^{\frac{13}{2}}} - \frac{12\sqrt{-x+1}(x+1)^{\frac{13}{2}}\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{3\sqrt{-x+1}(x+1)^{\frac{15}{2}}-6\sqrt{-x+1}(x+1)^{\frac{13}{2}}} - \frac{8(x+1)^{8}}{3\sqrt{-x+1}(x+1)^{\frac{15}{2}}-6\sqrt{-x+1}(x+1)^{\frac{13}{2}}} + \frac{12(x+1)^{7}}{3\sqrt{-x+1}(x+1)^{\frac{15}{2}}-6\sqrt{-x+1}(x+1)^{\frac{13}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(5/2),x)
```

```
[Out] Piecewise((-6*I*sqrt(x - 1)*(x + 1)**(15/2)*acosh(sqrt(2)*sqrt(x
+ 1)/2)/(3*sqrt(x - 1)*(x + 1)**(15/2) - 6*sqrt(x - 1)*(x + 1)**(
13/2)) + 3*pi*sqrt(x - 1)*(x + 1)**(15/2)/(3*sqrt(x - 1)*(x + 1)*
*(15/2) - 6*sqrt(x - 1)*(x + 1)**(13/2)) + 12*I*sqrt(x - 1)*(x +
1)**(13/2)*acosh(sqrt(2)*sqrt(x + 1)/2)/(3*sqrt(x - 1)*(x + 1)**(
15/2) - 6*sqrt(x - 1)*(x + 1)**(13/2)) - 6*pi*sqrt(x - 1)*(x + 1)
**(13/2)/(3*sqrt(x - 1)*(x + 1)**(15/2) - 6*sqrt(x - 1)*(x + 1)**
(13/2)) + 8*I*(x + 1)**8/(3*sqrt(x - 1)*(x + 1)**(15/2) - 6*sqrt(
x - 1)*(x + 1)**(13/2)) - 12*I*(x + 1)**7/(3*sqrt(x - 1)*(x + 1)*
*(15/2) - 6*sqrt(x - 1)*(x + 1)**(13/2)), Abs(x + 1)/2 > 1), (6*s
qrt(-x + 1)*(x + 1)**(15/2)*asin(sqrt(2)*sqrt(x + 1)/2)/(3*sqrt(-
x + 1)*(x + 1)**(15/2) - 6*sqrt(-x + 1)*(x + 1)**(13/2)) - 12*sqr
t(-x + 1)*(x + 1)**(13/2)*asin(sqrt(2)*sqrt(x + 1)/2)/(3*sqrt(-x
+ 1)*(x + 1)**(15/2) - 6*sqrt(-x + 1)*(x + 1)**(13/2)) - 8*(x + 1
)**8/(3*sqrt(-x + 1)*(x + 1)**(15/2) - 6*sqrt(-x + 1)*(x + 1)**(1
3/2)) + 12*(x + 1)**7/(3*sqrt(-x + 1)*(x + 1)**(15/2) - 6*sqrt(-x
 + 1)*(x + 1)**(13/2)), True))
```

GIAC/XCAS [A] time = 0.213942, size = 51, normalized size = 1.24

$$\frac{4\,(2\,x-1)\sqrt{x+1}\sqrt{-x+1}}{3\,(x-1)^{2}} + 2\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 4/3*(2*x - 1)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^2 + 2*arcsin(1/2*s
qrt(2)*sqrt(x + 1))
```

3.1083 $\int \frac{(1+x)^{3/2}}{(1-x)^{7/2}}\,dx$

Optimal. Leaf size=20

$$\frac{(x+1)^{5/2}}{5(1-x)^{5/2}}$$

```
[Out] (1 + x)^(5/2)/(5*(1 - x)^(5/2))
```

Rubi [A] time = 0.0118349, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{(x+1)^{5/2}}{5(1-x)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(7/2),x]

[Out] (1 + x)^(5/2)/(5*(1 - x)^(5/2))
```

Rubi in Sympy [A] time = 2.35024, size = 14, normalized size = 0.7

$$\frac{(x+1)^{\frac{5}{2}}}{5\left(-x+1\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(7/2),x)

[Out] (x + 1)**(5/2)/(5*(-x + 1)**(5/2))
```

Mathematica [A] time = 0.0176128, size = 25, normalized size = 1.25

$$-\frac{(x+1)^2\sqrt{1-x^2}}{5(x-1)^3}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(7/2),x]
```

```
[Out] -((1 + x)^2*Sqrt[1 - x^2])/(5*(-1 + x)^3)
```

Maple [A] time = 0.004, size = 15, normalized size = 0.8

$$\frac{1}{5}(1+x)^{\frac{5}{2}}(1-x)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(7/2),x)
```

```
[Out] 1/5*(1+x)^(5/2)/(1-x)^(5/2)
```

Maxima [A] time = 1.32743, size = 127, normalized size = 6.35

$$\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{x^4-4x^3+6x^2-4x+1}+\frac{6\sqrt{-x^2+1}}{5\left(x^3-3x^2+3x-1\right)}+\frac{\sqrt{-x^2+1}}{5\left(x^2-2x+1\right)}-\frac{\sqrt{-x^2+1}}{5\left(x-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(7/2),x, algorithm="maxima")
```

```
[Out] (-x^2 + 1)^(3/2)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 6/5*sqrt(-x^2
+ 1)/(x^3 - 3*x^2 + 3*x - 1) + 1/5*sqrt(-x^2 + 1)/(x^2 - 2*x + 1)
 - 1/5*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.211988, size = 108, normalized size = 5.4

$$\frac{2\left(x^5+5x^3+10\sqrt{x+1}x\sqrt{-x+1}-10x\right)}{5\left(x^5-5x^4+5x^3+5x^2+\left(x^4-7x^2+10x-4\right)\sqrt{x+1}\sqrt{-x+1}-10x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/5*(x^5 + 5*x^3 + 10*sqrt(x + 1)*x*sqrt(-x + 1) - 10*x)/(x^5 - 5
*x^4 + 5*x^3 + 5*x^2 + (x^4 - 7*x^2 + 10*x - 4)*sqrt(x + 1)*sqrt(
-x + 1) - 10*x + 4)
```

Sympy [A] time = 115.04, size = 88, normalized size = 4.4

$$\begin{cases} -\frac{i(x+1)^{\frac{5}{2}}}{5\sqrt{x-1}(x+1)^2-20\sqrt{x-1}(x+1)+20\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ \frac{(x+1)^{\frac{5}{2}}}{5\sqrt{-x+1}(x+1)^2-20\sqrt{-x+1}(x+1)+20\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(7/2),x)
```

```
[Out] Piecewise((-I*(x + 1)**(5/2)/(5*sqrt(x - 1)*(x + 1)**2 - 20*sqrt(
x - 1)*(x + 1) + 20*sqrt(x - 1)), Abs(x + 1)/2 > 1), ((x + 1)**(5
/2)/(5*sqrt(-x + 1)*(x + 1)**2 - 20*sqrt(-x + 1)*(x + 1) + 20*sqr
t(-x + 1)), True))
```

GIAC/XCAS [A] time = 0.213122, size = 26, normalized size = 1.3

$$-\frac{(x+1)^{\frac{5}{2}}\sqrt{-x+1}}{5\,(x-1)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(7/2),x, algorithm="giac")
```

```
[Out] -1/5*(x + 1)^(5/2)*sqrt(-x + 1)/(x - 1)^3
```

3.1084 $\int \frac{(1+x)^{3/2}}{(1-x)^{9/2}}\,dx$

Optimal. Leaf size=41

$$\frac{(x+1)^{5/2}}{35(1-x)^{5/2}}+\frac{(x+1)^{5/2}}{7(1-x)^{7/2}}$$

```
[Out] (1 + x)^(5/2)/(7*(1 - x)^(7/2)) + (1 + x)^(5/2)/(35*(1 - x)^(5/2)
)
```

Rubi [A] time = 0.024233, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{(x+1)^{5/2}}{35(1-x)^{5/2}}+\frac{(x+1)^{5/2}}{7(1-x)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(9/2),x]
```

```
[Out] (1 + x)^(5/2)/(7*(1 - x)^(7/2)) + (1 + x)^(5/2)/(35*(1 - x)^(5/2)
)
```

Rubi in Sympy [A] time = 3.6509, size = 29, normalized size = 0.71

$$\frac{(x+1)^{\frac{5}{2}}}{35\left(-x+1\right)^{\frac{5}{2}}}+\frac{(x+1)^{\frac{5}{2}}}{7\left(-x+1\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(9/2),x)
```

```
[Out] (x + 1)**(5/2)/(35*(-x + 1)**(5/2)) + (x + 1)**(5/2)/(7*(-x + 1)*
*(7/2))
```

Mathematica [A] time = 0.0202386, size = 28, normalized size = 0.68

$$-\frac{(x-6)(x+1)^2\sqrt{1-x^2}}{35(x-1)^4}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(9/2),x]
```

```
[Out] -((-6 + x)*(1 + x)^2*Sqrt[1 - x^2])/(35*(-1 + x)^4)
```

Maple [A] time = 0.005, size = 18, normalized size = 0.4

$$-\frac{x-6}{35}(1+x)^{\frac{5}{2}}(1-x)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(9/2),x)
```

```
[Out] -1/35*(1+x)^(5/2)*(x-6)/(1-x)^(7/2)
```

Maxima [A] time = 1.34228, size = 177, normalized size = 4.32

$$-\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{2\left(x^5-5x^4+10x^3-10x^2+5x-1\right)}-\frac{3\sqrt{-x^2+1}}{7\left(x^4-4x^3+6x^2-4x+1\right)}-\frac{3\sqrt{-x^2+1}}{70\left(x^3-3x^2+3x-1\right)}+\frac{\sqrt{-x^2+1}}{35\left(x^2-2x+1\right)}-\frac{\sqrt{-x^2+1}}{35(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(9/2),x, algorithm="maxima")
```

```
[Out] -1/2*(-x^2 + 1)^(3/2)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x - 1) -
 3/7*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) - 3/70*sqrt(-
x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) + 1/35*sqrt(-x^2 + 1)/(x^2 - 2*x
 + 1) - 1/35*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.209161, size = 194, normalized size = 4.73

$$\frac{5x^7+7x^6-77x^5+105x^4-140x^3-140x^2-7\left(x^6-6x^5+5x^4-20x^2+40x\right)\sqrt{x+1}\sqrt{-x+1}+280x}{35\left(x^7-14x^5+28x^4-7x^3-28x^2-\left(x^6-7x^5+11x^4+7x^3-32x^2+28x-8\right)\sqrt{x+1}\sqrt{-x+1}+28x-8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(9/2),x, algorithm="fricas")
```

```
[Out] 1/35*(5*x^7 + 7*x^6 - 77*x^5 + 105*x^4 - 140*x^3 - 140*x^2 - 7*(x
^6 - 6*x^5 + 5*x^4 - 20*x^2 + 40*x)*sqrt(x + 1)*sqrt(-x + 1) + 28
0*x)/(x^7 - 14*x^5 + 28*x^4 - 7*x^3 - 28*x^2 - (x^6 - 7*x^5 + 11*
x^4 + 7*x^3 - 32*x^2 + 28*x - 8)*sqrt(x + 1)*sqrt(-x + 1) + 28*x
- 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.214254, size = 30, normalized size = 0.73

$$-\frac{(x+1)^{\frac{5}{2}}(x-6)\sqrt{-x+1}}{35\,(x-1)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(9/2),x, algorithm="giac")
```

```
[Out] -1/35*(x + 1)^(5/2)*(x - 6)*sqrt(-x + 1)/(x - 1)^4
```

3.1085 $\int \frac{(1+x)^{3/2}}{(1-x)^{11/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2(x+1)^{5/2}}{315(1-x)^{5/2}}+\frac{2(x+1)^{5/2}}{63(1-x)^{7/2}}+\frac{(x+1)^{5/2}}{9(1-x)^{9/2}}$$

```
[Out] (1 + x)^(5/2)/(9*(1 - x)^(9/2)) + (2*(1 + x)^(5/2))/(63*(1 - x)^(
7/2)) + (2*(1 + x)^(5/2))/(315*(1 - x)^(5/2))
```

Rubi [A] time = 0.0374626, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2(x+1)^{5/2}}{315(1-x)^{5/2}}+\frac{2(x+1)^{5/2}}{63(1-x)^{7/2}}+\frac{(x+1)^{5/2}}{9(1-x)^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(11/2),x]
```

```
[Out] (1 + x)^(5/2)/(9*(1 - x)^(9/2)) + (2*(1 + x)^(5/2))/(63*(1 - x)^(
7/2)) + (2*(1 + x)^(5/2))/(315*(1 - x)^(5/2))
```

Rubi in Sympy [A] time = 5.12022, size = 48, normalized size = 0.79

$$\frac{2\,(x+1)^{\frac{5}{2}}}{315\,(-x+1)^{\frac{5}{2}}}+\frac{2\,(x+1)^{\frac{5}{2}}}{63\,(-x+1)^{\frac{7}{2}}}+\frac{(x+1)^{\frac{5}{2}}}{9\,(-x+1)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(11/2),x)
```

```
[Out] 2*(x + 1)**(5/2)/(315*(-x + 1)**(5/2)) + 2*(x + 1)**(5/2)/(63*(-x
 + 1)**(7/2)) + (x + 1)**(5/2)/(9*(-x + 1)**(9/2))
```

Mathematica [A] time = 0.0214625, size = 35, normalized size = 0.57

$$-\frac{(x+1)^2\sqrt{1-x^2}\left(2x^2-14x+47\right)}{315(x-1)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(11/2),x]
```

```
[Out] -((1 + x)^2*Sqrt[1 - x^2]*(47 - 14*x + 2*x^2))/(315*(-1 + x)^5)
```

Maple [A] time = 0.004, size = 25, normalized size = 0.4

$$\frac{2x^2-14x+47}{315}(1+x)^{\frac{5}{2}}(1-x)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(11/2),x)
```

```
[Out] 1/315*(1+x)^(5/2)*(2*x^2-14*x+47)/(1-x)^(9/2)
```

Maxima [A] time = 1.34682, size = 232, normalized size = 3.8

$$\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{3\left(x^6-6x^5+15x^4-20x^3+15x^2-6x+1\right)}+\frac{2\sqrt{-x^2+1}}{9\left(x^5-5x^4+10x^3-10x^2+5x-1\right)}+\frac{\sqrt{-x^2+1}}{63\left(x^4-4x^3+6x^2-4x+1\right)}-\frac{\sqrt{-x^2+1}}{105\left(x^3-3x^2+3x-1\right)}+\frac{2\sqrt{-x^2+1}}{315\left(x^2-2x+1\right)}-\frac{2\sqrt{-x^2+1}}{315\left(x-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(11/2),x, algorithm="maxima")
```

```
[Out] 1/3*(-x^2 + 1)^(3/2)/(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15*x^2 - 6*
x + 1) + 2/9*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x
- 1) + 1/63*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) - 1/10
5*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) + 2/315*sqrt(-x^2 + 1)/(
x^2 - 2*x + 1) - 2/315*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.203186, size = 257, normalized size = 4.21

$$\frac{49x^9-423x^8+801x^7+1071x^6-4158x^5+3780x^4-840x^3-5040x^2+3\left(15x^8+6x^7-357x^6+896x^5-420x^4-560\right.}{315\left(x^9-9x^8+18x^7+18x^6-99x^5+99x^4+24x^3-108x^2+\left(x^8-22x^6+60x^5-39x^4-60x^3+116x^2-7\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(11/2),x, algorithm="fricas")
```

```
[Out] 1/315*(49*x^9 - 423*x^8 + 801*x^7 + 1071*x^6 - 4158*x^5 + 3780*x^
4 - 840*x^3 - 5040*x^2 + 3*(15*x^8 + 6*x^7 - 357*x^6 + 896*x^5 -
420*x^4 - 560*x^3 + 1680*x^2 - 1680*x)*sqrt(x + 1)*sqrt(-x + 1) +
 5040*x)/(x^9 - 9*x^8 + 18*x^7 + 18*x^6 - 99*x^5 + 99*x^4 + 24*x^
3 - 108*x^2 + (x^8 - 22*x^6 + 60*x^5 - 39*x^4 - 60*x^3 + 116*x^2
- 72*x + 16)*sqrt(x + 1)*sqrt(-x + 1) + 72*x - 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(11/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.215412, size = 39, normalized size = 0.64

$$-\frac{(2(x+1)(x-8)+63)(x+1)^{\frac{5}{2}}\sqrt{-x+1}}{315(x-1)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(11/2),x, algorithm="giac")
```

```
[Out] -1/315*(2*(x + 1)*(x - 8) + 63)*(x + 1)^(5/2)*sqrt(-x + 1)/(x - 1
)^5
```

3.1086 $\int \frac{(1+x)^{3/2}}{(1-x)^{13/2}}\,dx$

Optimal. Leaf size=81

$$\frac{2(x+1)^{5/2}}{1155(1-x)^{5/2}}+\frac{2(x+1)^{5/2}}{231(1-x)^{7/2}}+\frac{(x+1)^{5/2}}{33(1-x)^{9/2}}+\frac{(x+1)^{5/2}}{11(1-x)^{11/2}}$$

```
[Out] (1 + x)^(5/2)/(11*(1 - x)^(11/2)) + (1 + x)^(5/2)/(33*(1 - x)^(9/
2)) + (2*(1 + x)^(5/2))/(231*(1 - x)^(7/2)) + (2*(1 + x)^(5/2))/(
1155*(1 - x)^(5/2))
```

Rubi [A] time = 0.0529028, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2(x+1)^{5/2}}{1155(1-x)^{5/2}}+\frac{2(x+1)^{5/2}}{231(1-x)^{7/2}}+\frac{(x+1)^{5/2}}{33(1-x)^{9/2}}+\frac{(x+1)^{5/2}}{11(1-x)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(13/2),x]
```

```
[Out] (1 + x)^(5/2)/(11*(1 - x)^(11/2)) + (1 + x)^(5/2)/(33*(1 - x)^(9/
2)) + (2*(1 + x)^(5/2))/(231*(1 - x)^(7/2)) + (2*(1 + x)^(5/2))/(
1155*(1 - x)^(5/2))
```

Rubi in Sympy [A] time = 6.73669, size = 63, normalized size = 0.78

$$\frac{2\,(x+1)^{\frac{5}{2}}}{1155\,(-x+1)^{\frac{5}{2}}}+\frac{2\,(x+1)^{\frac{5}{2}}}{231\,(-x+1)^{\frac{7}{2}}}+\frac{(x+1)^{\frac{5}{2}}}{33\,(-x+1)^{\frac{9}{2}}}+\frac{(x+1)^{\frac{5}{2}}}{11\,(-x+1)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(13/2),x)
```

```
[Out] 2*(x + 1)**(5/2)/(1155*(-x + 1)**(5/2)) + 2*(x + 1)**(5/2)/(231*(
-x + 1)**(7/2)) + (x + 1)**(5/2)/(33*(-x + 1)**(9/2)) + (x + 1)**
(5/2)/(11*(-x + 1)**(11/2))
```

Mathematica [A] time = 0.0237805, size = 40, normalized size = 0.49

$$-\frac{(x+1)^2\sqrt{1-x^2}\left(2x^3-16x^2+61x-152\right)}{1155(x-1)^6}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(13/2),x]
```

```
[Out] -((1 + x)^2*Sqrt[1 - x^2]*(-152 + 61*x - 16*x^2 + 2*x^3))/(1155*(
-1 + x)^6)
```

Maple [A] time = 0.005, size = 30, normalized size = 0.4

$$-\frac{2\,x^{3}-16\,x^{2}+61\,x-152}{1155}\,(1+x)^{\frac{5}{2}}\,(1-x)^{-\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(13/2),x)
```

```
[Out] -1/1155*(1+x)^(5/2)*(2*x^3-16*x^2+61*x-152)/(1-x)^(11/2)
```

Maxima [A] time = 1.35981, size = 294, normalized size = 3.63

$$-\frac{\left(-x^{2}+1\right)^{\frac{3}{2}}}{4\,(x^{7}-7\,x^{6}+21\,x^{5}-35\,x^{4}+35\,x^{3}-21\,x^{2}+7\,x-1)} - \frac{3\,\sqrt{-x^{2}+1}}{22\,(x^{6}-6\,x^{5}+15\,x^{4}-20\,x^{3}+15\,x^{2}-6\,x+1)} - \frac{\sqrt{-x^{2}+1}}{132\,(x^{5}-5\,x^{4}+10\,x^{3}-10\,x^{2}+5\,x-1)} + \frac{\sqrt{-x^{2}+1}}{231\,(x^{4}-4\,x^{3}+6\,x^{2}-4\,x+1)} - \frac{\sqrt{-x^{2}+1}}{385\,(x^{3}-3\,x^{2}+3\,x-1)} + \frac{2\,\sqrt{-x^{2}+1}}{1155\,(x^{2}-2\,x+1)} - \frac{2\,\sqrt{-x^{2}+1}}{1155\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(13/2),x, algorithm="maxima")
```

```
[Out] -1/4*(-x^2 + 1)^(3/2)/(x^7 - 7*x^6 + 21*x^5 - 35*x^4 + 35*x^3 - 2
1*x^2 + 7*x - 1) - 3/22*sqrt(-x^2 + 1)/(x^6 - 6*x^5 + 15*x^4 - 20
*x^3 + 15*x^2 - 6*x + 1) - 1/132*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10
*x^3 - 10*x^2 + 5*x - 1) + 1/231*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*
x^2 - 4*x + 1) - 1/385*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) + 2
/1155*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) - 2/1155*sqrt(-x^2 + 1)/(x -
 1)
```

Fricas [A] time = 0.214296, size = 312, normalized size = 3.85

$$\frac{150\,x^{11} + 22\,x^{10} - 5071\,x^{9} + 16665\,x^{8} - 10989\,x^{7} - 35343\,x^{6} + 66066\,x^{5} - 32340\,x^{4} - 18480\,x^{3} + 55440\,x^{2} - 11\,\left(14\,x^{10} - 15}{1155\,\left(x^{11} - 33\,x^{9} + 110\,x^{8} - 77\,x^{7} - 220\,x^{6} + 473\,x^{5} - 242\,x^{4} - 220\,x^{3} + 352\,x^{2} - (x^{10} - 11\,x^{9} + 28\,x^{8} + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(13/2),x, algorithm="fricas")
```

```
[Out] 1/1155*(150*x^11 + 22*x^10 - 5071*x^9 + 16665*x^8 - 10989*x^7 - 3
5343*x^6 + 66066*x^5 - 32340*x^4 - 18480*x^3 + 55440*x^2 - 11*(14
*x^10 - 152*x^9 + 381*x^8 + 324*x^7 - 2793*x^6 + 3906*x^5 - 420*x
^4 - 3360*x^3 + 5040*x^2 - 3360*x)*sqrt(x + 1)*sqrt(-x + 1) - 369
60*x)/(x^11 - 33*x^9 + 110*x^8 - 77*x^7 - 220*x^6 + 473*x^5 - 242
*x^4 - 220*x^3 + 352*x^2 - (x^10 - 11*x^9 + 28*x^8 + 22*x^7 - 199
*x^6 + 297*x^5 - 54*x^4 - 308*x^3 + 368*x^2 - 176*x + 32)*sqrt(x
+ 1)*sqrt(-x + 1) - 176*x + 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(13/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.215264, size = 47, normalized size = 0.58

$$-\frac{((2\,(x+1)(x-10)+99)(x+1)-231)(x+1)^{\frac{5}{2}}\sqrt{-x+1}}{1155\,(x-1)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(13/2),x, algorithm="giac")
```

```
[Out] -1/1155*((2*(x + 1)*(x - 10) + 99)*(x + 1) - 231)*(x + 1)^(5/2)*s
qrt(-x + 1)/(x - 1)^6
```

3.1087 $\int \frac{(1+x)^{3/2}}{(1-x)^{15/2}} \, dx$

Optimal. Leaf size=101

$$\frac{8(x+1)^{5/2}}{15015(1-x)^{5/2}}+\frac{8(x+1)^{5/2}}{3003(1-x)^{7/2}}+\frac{4(x+1)^{5/2}}{429(1-x)^{9/2}}+\frac{4(x+1)^{5/2}}{143(1-x)^{11/2}}+\frac{(x+1)^{5/2}}{13(1-x)^{13/2}}$$

```
[Out] (1 + x)^(5/2)/(13*(1 - x)^(13/2)) + (4*(1 + x)^(5/2))/(143*(1 - x
)^(11/2)) + (4*(1 + x)^(5/2))/(429*(1 - x)^(9/2)) + (8*(1 + x)^(5
/2))/(3003*(1 - x)^(7/2)) + (8*(1 + x)^(5/2))/(15015*(1 - x)^(5/2
))
```

Rubi [A] time = 0.0699723, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{8(x+1)^{5/2}}{15015(1-x)^{5/2}}+\frac{8(x+1)^{5/2}}{3003(1-x)^{7/2}}+\frac{4(x+1)^{5/2}}{429(1-x)^{9/2}}+\frac{4(x+1)^{5/2}}{143(1-x)^{11/2}}+\frac{(x+1)^{5/2}}{13(1-x)^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(3/2)/(1 - x)^(15/2),x]
```

```
[Out] (1 + x)^(5/2)/(13*(1 - x)^(13/2)) + (4*(1 + x)^(5/2))/(143*(1 - x
)^(11/2)) + (4*(1 + x)^(5/2))/(429*(1 - x)^(9/2)) + (8*(1 + x)^(5
/2))/(3003*(1 - x)^(7/2)) + (8*(1 + x)^(5/2))/(15015*(1 - x)^(5/2
))
```

Rubi in Sympy [A] time = 8.83306, size = 82, normalized size = 0.81

$$\frac{8\,(x+1)^{\frac{5}{2}}}{15015\,(-x+1)^{\frac{5}{2}}}+\frac{8\,(x+1)^{\frac{5}{2}}}{3003\,(-x+1)^{\frac{7}{2}}}+\frac{4\,(x+1)^{\frac{5}{2}}}{429\,(-x+1)^{\frac{9}{2}}}+\frac{4\,(x+1)^{\frac{5}{2}}}{143\,(-x+1)^{\frac{11}{2}}}+\frac{(x+1)^{\frac{5}{2}}}{13\,(-x+1)^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(3/2)/(1-x)**(15/2),x)
```

```
[Out] 8*(x + 1)**(5/2)/(15015*(-x + 1)**(5/2)) + 8*(x + 1)**(5/2)/(3003
*(-x + 1)**(7/2)) + 4*(x + 1)**(5/2)/(429*(-x + 1)**(9/2)) + 4*(x
 + 1)**(5/2)/(143*(-x + 1)**(11/2)) + (x + 1)**(5/2)/(13*(-x + 1)
**(13/2))
```

Mathematica [A] time = 0.0254028, size = 45, normalized size = 0.45

$$-\frac{(x+1)^2\sqrt{1-x^2}\,(8x^4-72x^3+308x^2-852x+1763)}{15015(x-1)^7}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(3/2)/(1 - x)^(15/2),x]
```

```
[Out] -((1 + x)^2*Sqrt[1 - x^2]*(1763 - 852*x + 308*x^2 - 72*x^3 + 8*x^
4))/(15015*(-1 + x)^7)
```

Maple [A] time = 0.006, size = 35, normalized size = 0.4

$$\frac{8\,x^4-72\,x^3+308\,x^2-852\,x+1763}{15015}\,(1+x)^{\frac{5}{2}}\,(1-x)^{-\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(3/2)/(1-x)^(15/2),x)
```

```
[Out] 1/15015*(1+x)^(5/2)*(8*x^4-72*x^3+308*x^2-852*x+1763)/(1-x)^(13/2
)
```

Maxima [A] time = 1.35383, size = 363, normalized size = 3.59

$$\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{5\,(x^8-8\,x^7+28\,x^6-56\,x^5+70\,x^4-56\,x^3+28\,x^2-8\,x+1)} + \frac{6\,\sqrt{-x^2+1}}{65\,(x^7-7\,x^6+21\,x^5-35\,x^4+35\,x^3-21\,x^2+7\,x-1)} + \frac{3\,\sqrt{-x^2+1}}{715\,(x^6-6\,x^5+15\,x^4-20\,x^3+15\,x^2-6\,x+1)} - \frac{\sqrt{-x^2+1}}{429\,(x^5-5\,x^4+10\,x^3-10\,x^2+5\,x-1)} + \frac{4\,\sqrt{-x^2+1}}{3003\,(x^4-4\,x^3+6\,x^2-4\,x+1)} - \frac{4\,\sqrt{-x^2+1}}{5005\,(x^3-3\,x^2+3\,x-1)} + \frac{8\,\sqrt{-x^2+1}}{15015\,(x^2-2\,x+1)} - \frac{8\,\sqrt{-x^2+1}}{15015\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(15/2),x, algorithm="maxima")
```

```
[Out] 1/5*(-x^2 + 1)^(3/2)/(x^8 - 8*x^7 + 28*x^6 - 56*x^5 + 70*x^4 - 56
*x^3 + 28*x^2 - 8*x + 1) + 6/65*sqrt(-x^2 + 1)/(x^7 - 7*x^6 + 21*
```

```
x^5 - 35*x^4 + 35*x^3 - 21*x^2 + 7*x - 1) + 3/715*sqrt(-x^2 + 1)/
(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15*x^2 - 6*x + 1) - 1/429*sqrt(-
x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x - 1) + 4/3003*sqrt(
-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) - 4/5005*sqrt(-x^2 + 1)
/(x^3 - 3*x^2 + 3*x - 1) + 8/15015*sqrt(-x^2 + 1)/(x^2 - 2*x + 1)
 - 8/15015*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.20816, size = 365, normalized size = 3.61

$$\frac{1771\,x^{13} - 22919\,x^{12} + 68393\,x^{11} + 70213\,x^{10} - 711854\,x^{9} + 1214070\,x^{8} + 55770\,x^{7} - 2594592\,x^{6} + 2870868\,x^{5} - 480480\,x^{4}}{15015\,\left(x^{13} - 13\,x^{12} + 39\,x^{11} + 39\,x^{10} - 403\,x^{9} + 689\,x^{8} + 13\,x^{7} - 1443\,x^{6} + 1742\,x^{5} - 312\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(15/2),x, algorithm="fricas")
```

```
[Out] 1/15015*(1771*x^13 - 22919*x^12 + 68393*x^11 + 70213*x^10 - 71185
4*x^9 + 1214070*x^8 + 55770*x^7 - 2594592*x^6 + 2870868*x^5 - 480
480*x^4 - 1441440*x^3 + 1921920*x^2 + 13*(135*x^12 + 8*x^11 - 612
7*x^10 + 24662*x^9 - 25938*x^8 - 50028*x^7 + 162624*x^6 - 137676*
x^5 - 36960*x^4 + 147840*x^3 - 147840*x^2 + 73920*x)*sqrt(x + 1)*
sqrt(-x + 1) - 960960*x)/(x^13 - 13*x^12 + 39*x^11 + 39*x^10 - 40
3*x^9 + 689*x^8 + 13*x^7 - 1443*x^6 + 1742*x^5 - 312*x^4 - 1040*x
^3 + 1040*x^2 + (x^12 - 45*x^10 + 182*x^9 - 193*x^8 - 364*x^7 + 1
189*x^6 - 1066*x^5 - 232*x^4 + 1248*x^3 - 1072*x^2 + 416*x - 64)*
sqrt(x + 1)*sqrt(-x + 1) - 416*x + 64)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(3/2)/(1-x)**(15/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221448, size = 57, normalized size = 0.56

$$-\frac{(4\,((2\,(x + 1)(x - 12) + 143)(x + 1) - 429)(x + 1) + 3003)(x + 1)^{\frac{5}{2}}\sqrt{-x + 1}}{15015\,(x - 1)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(3/2)/(-x + 1)^(15/2),x, algorithm="giac")
```

```
[Out] -1/15015*(4*((2*(x + 1)*(x - 12) + 143)*(x + 1) - 429)*(x + 1) +
3003)*(x + 1)^(5/2)*sqrt(-x + 1)/(x - 1)^7
```

3.1088 $\int (1-x)^{11/2}(1+x)^{5/2}\,dx$

Optimal. Leaf size=130

$$\frac{1}{9}(x+1)^{7/2}(1-x)^{11/2} + \frac{11}{72}(x+1)^{7/2}(1-x)^{9/2} + \frac{11}{56}(x+1)^{7/2}(1-x)^{7/2} + \frac{11}{48}x(x+1)^{5/2}(1-x)^{5/2} + \frac{55}{192}x(x+1)^{3/2}(1-x)^{3/2} + \frac{55}{128}x\sqrt{x+1}\sqrt{1-x} + \frac{55}{128}\sin^{-}$$

```
[Out] (55*Sqrt[1 - x]*x*Sqrt[1 + x])/128 + (55*(1 - x)^(3/2)*x*(1 + x)^
(3/2))/192 + (11*(1 - x)^(5/2)*x*(1 + x)^(5/2))/48 + (11*(1 - x)^
(7/2)*(1 + x)^(7/2))/56 + (11*(1 - x)^(9/2)*(1 + x)^(7/2))/72 + (
(1 - x)^(11/2)*(1 + x)^(7/2))/9 + (55*ArcSin[x])/128
```

Rubi [A] time = 0.0892417, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{1}{9}(x+1)^{7/2}(1-x)^{11/2} + \frac{11}{72}(x+1)^{7/2}(1-x)^{9/2} + \frac{11}{56}(x+1)^{7/2}(1-x)^{7/2} + \frac{11}{48}x(x+1)^{5/2}(1-x)^{5/2} + \frac{55}{192}x(x+1)^{3/2}(1-x)^{3/2} + \frac{55}{128}x\sqrt{x+1}\sqrt{1-x} + \frac{55}{128}\sin^{-}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(11/2)*(1 + x)^(5/2),x]
```

```
[Out] (55*Sqrt[1 - x]*x*Sqrt[1 + x])/128 + (55*(1 - x)^(3/2)*x*(1 + x)^
(3/2))/192 + (11*(1 - x)^(5/2)*x*(1 + x)^(5/2))/48 + (11*(1 - x)^
(7/2)*(1 + x)^(7/2))/56 + (11*(1 - x)^(9/2)*(1 + x)^(7/2))/72 + (
(1 - x)^(11/2)*(1 + x)^(7/2))/9 + (55*ArcSin[x])/128
```

Rubi in Sympy [A] time = 11.5305, size = 110, normalized size = 0.85

$$\frac{11x\,(-x+1)^{\frac{5}{2}}\,(x+1)^{\frac{5}{2}}}{48} + \frac{55x\,(-x+1)^{\frac{3}{2}}\,(x+1)^{\frac{3}{2}}}{192} + \frac{55x\sqrt{-x+1}\sqrt{x+1}}{128} + \frac{(-x+1)^{\frac{11}{2}}\,(x+1)^{\frac{7}{2}}}{9} + \frac{11\,(-x+1)^{\frac{9}{2}}\,(x+1)^{\frac{7}{2}}}{72} + \frac{11\,(-x+1)^{\frac{7}{2}}\,(x+1)^{\frac{7}{2}}}{56} + \frac{55\operatorname{asin}(x)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(11/2)*(1+x)**(5/2),x)
```

```
[Out] 11*x*(-x + 1)**(5/2)*(x + 1)**(5/2)/48 + 55*x*(-x + 1)**(3/2)*(x
+ 1)**(3/2)/192 + 55*x*sqrt(-x + 1)*sqrt(x + 1)/128 + (-x + 1)**(
```

```
11/2)*(x + 1)**(7/2)/9 + 11*(-x + 1)**(9/2)*(x + 1)**(7/2)/72 + 1
1*(-x + 1)**(7/2)*(x + 1)**(7/2)/56 + 55*asin(x)/128
```

Mathematica [A] time = 0.0610131, size = 74, normalized size = 0.57

$$\frac{\sqrt{1-x^2}\left(-896x^8+3024x^7-1024x^6-7224x^5+8448x^4+3066x^3-10240x^2+4599x+3712\right)}{8064}+\frac{55}{64}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(11/2)*(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(3712 + 4599*x - 10240*x^2 + 3066*x^3 + 8448*x^4 -
 7224*x^5 - 1024*x^6 + 3024*x^7 - 896*x^8))/8064 + (55*ArcSin[Sqr
t[1 + x]/Sqrt[2]])/64
```

Maple [A] time = 0.007, size = 155, normalized size = 1.2

$$\frac{1}{9}(1-x)^{\frac{11}{2}}(1+x)^{\frac{7}{2}}+\frac{11}{72}(1-x)^{\frac{9}{2}}(1+x)^{\frac{7}{2}}+\frac{11}{56}(1-x)^{\frac{7}{2}}(1+x)^{\frac{7}{2}}+\frac{11}{48}(1-x)^{\frac{5}{2}}(1+x)^{\frac{7}{2}}+\frac{11}{48}(1-x)^{\frac{3}{2}}(1+x)^{\frac{7}{2}}+\frac{11}{64}\sqrt{1-x}(1+x)^{\frac{7}{2}}-\frac{11}{192}\sqrt{1-x}(1+x)^{\frac{5}{2}}-\frac{55}{384}\sqrt{1-x}(1+x)^{\frac{3}{2}}-\frac{55}{128}\sqrt{1-x}\sqrt{1+x}+\frac{55\arcsin(x)}{128}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(11/2)*(1+x)^(5/2),x)
```

```
[Out] 1/9*(1-x)^(11/2)*(1+x)^(7/2)+11/72*(1-x)^(9/2)*(1+x)^(7/2)+11/56*
(1-x)^(7/2)*(1+x)^(7/2)+11/48*(1-x)^(5/2)*(1+x)^(7/2)+11/48*(1-x)
^(3/2)*(1+x)^(7/2)+11/64*(1-x)^(1/2)*(1+x)^(7/2)-11/192*(1-x)^(1/
2)*(1+x)^(5/2)-55/384*(1-x)^(1/2)*(1+x)^(3/2)-55/128*(1-x)^(1/2)*
(1+x)^(1/2)+55/128*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*ar
csin(x)
```

Maxima [A] time = 1.50122, size = 105, normalized size = 0.81

$$\frac{1}{9}\left(-x^2+1\right)^{\frac{7}{2}}x^2-\frac{3}{8}\left(-x^2+1\right)^{\frac{7}{2}}x+\frac{29}{63}\left(-x^2+1\right)^{\frac{7}{2}}+\frac{11}{48}\left(-x^2+1\right)^{\frac{5}{2}}x+\frac{55}{192}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{55}{128}\sqrt{-x^2+1}x+\frac{55}{128}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(11/2),x, algorithm="maxima")
```

```
[Out] 1/9*(-x^2 + 1)^(7/2)*x^2 - 3/8*(-x^2 + 1)^(7/2)*x + 29/63*(-x^2 +
 1)^(7/2) + 11/48*(-x^2 + 1)^(5/2)*x + 55/192*(-x^2 + 1)^(3/2)*x
+ 55/128*sqrt(-x^2 + 1)*x + 55/128*arcsin(x)
```

Fricas [A] time = 0.216872, size = 432, normalized size = 3.32

$$-\frac{896\,x^{18} - 3024\,x^{17} - 35712\,x^{16} + 131208\,x^{15} + 200448\,x^{14} - 1145970\,x^{13} + 26880\,x^{12} + 4224339\,x^{11} - 2862720\,x^{10} - 7768}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(11/2),x, algorithm="fricas")
```

```
[Out] -1/8064*(896*x^18 - 3024*x^17 - 35712*x^16 + 131208*x^15 + 200448
*x^14 - 1145970*x^13 + 26880*x^12 + 4224339*x^11 - 2862720*x^10 -
 7768929*x^9 + 9289728*x^8 + 6681528*x^7 - 13848576*x^6 - 843696*
x^5 + 10321920*x^4 - 2452800*x^3 - 3096576*x^2 + 3*(2688*x^16 - 9
072*x^15 - 32768*x^14 + 142632*x^13 + 62720*x^12 - 733614*x^11 +
344064*x^10 + 1729707*x^9 - 1756160*x^8 - 1902600*x^7 + 3282944*x
^6 + 542864*x^5 - 2924544*x^4 + 621376*x^3 + 1032192*x^2 - 392448
*x)*sqrt(x + 1)*sqrt(-x + 1) + 6930*(9*x^8 - 120*x^6 + 432*x^4 -
576*x^2 - (x^8 - 40*x^6 + 240*x^4 - 448*x^2 + 256)*sqrt(x + 1)*sq
rt(-x + 1) + 256)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 1177
344*x)/(9*x^8 - 120*x^6 + 432*x^4 - 576*x^2 - (x^8 - 40*x^6 + 240
*x^4 - 448*x^2 + 256)*sqrt(x + 1)*sqrt(-x + 1) + 256)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(11/2)*(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.257045, size = 409, normalized size = 3.15

$$-\frac{1}{315}\left(\left(\left(\left(5\left(\left(7\left(x+1\right)(x-7)+195\right)(x+1)-386\right)(x+1)+2369\right)(x+1)-1836\right)(x+1)+861\right)(x+1)-210\right)(x+1)^{\frac{3}{2}}\sqrt{-x+1}-\frac{1}{105}\left(\left(3\left(\left(5\left(x+1\right)(x-5)+74\right)(x+1)-96\right)(x+1)+203\right)(x+1)-70\right)(x+1)^{\frac{3}{2}}\sqrt{-x+1}+\frac{1}{3}\left(\left(3\left(x+1\right)(x-3)+17\right)(x+1)-10\right)(x+1)^{\frac{3}{2}}\sqrt{-x+1}-(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1}+\frac{1}{128}\left(\left(2\left(\left(4\left(\left(6\left(x+1\right)(x-6)+125\right)(x+1)-205\right)(x+1)+795\right)(x+1)-449\right)(x+1)+251\right)(x+1)-15\right)\sqrt{x+1}\sqrt{-x+1}-\frac{5}{48}\left(\left(2\left(\left(4\left(x+1\right)(x-4)+39\right)(x+1)-37\right)(x+1)+31\right)(x+1)-3\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{8}\left(\left(2\left(x+1\right)(x-2)+5\right)(x+1)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{55}{64}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(11/2),x, algorithm="giac")
```

```
[Out] -1/315*((((5*((7*(x + 1)*(x - 7) + 195)*(x + 1) - 386)*(x + 1) +
2369)*(x + 1) - 1836)*(x + 1) + 861)*(x + 1) - 210)*(x + 1)^(3/2)
*sqrt(-x + 1) - 1/105*((3*((5*(x + 1)*(x - 5) + 74)*(x + 1) - 96)
*(x + 1) + 203)*(x + 1) - 70)*(x + 1)^(3/2)*sqrt(-x + 1) + 1/3*((
3*(x + 1)*(x - 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(-x + 1)
- (x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 1/128*((2*((4*((6*(x + 1)*
(x - 6) + 125)*(x + 1) - 205)*(x + 1) + 795)*(x + 1) - 449)*(x +
1) + 251)*(x + 1) - 15)*sqrt(x + 1)*sqrt(-x + 1) - 5/48*((2*((4*(
x + 1)*(x - 4) + 39)*(x + 1) - 37)*(x + 1) + 31)*(x + 1) - 3)*sqr
t(x + 1)*sqrt(-x + 1) + 1/8*((2*(x + 1)*(x - 2) + 5)*(x + 1) - 1)
*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 55/6
4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1089 $\int (1-x)^{9/2}(1+x)^{5/2}\,dx$

Optimal. Leaf size=110

$$\frac{1}{8}(x+1)^{7/2}(1-x)^{9/2}+\frac{9}{56}(x+1)^{7/2}(1-x)^{7/2}+\frac{3}{16}x(x+1)^{5/2}(1-x)^{5/2}+\frac{15}{64}x(x+1)^{3/2}(1-x)^{3/2}+\frac{45}{128}x\sqrt{x+1}\sqrt{1-x}+\frac{45}{128}\sin^{-1}(x)$$

```
[Out] (45*Sqrt[1 - x]*x*Sqrt[1 + x])/128 + (15*(1 - x)^(3/2)*x*(1 + x)^
(3/2))/64 + (3*(1 - x)^(5/2)*x*(1 + x)^(5/2))/16 + (9*(1 - x)^(7/
2)*(1 + x)^(7/2))/56 + ((1 - x)^(9/2)*(1 + x)^(7/2))/8 + (45*ArcS
in[x])/128
```

Rubi [A] time = 0.0703303, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{1}{8}(x+1)^{7/2}(1-x)^{9/2}+\frac{9}{56}(x+1)^{7/2}(1-x)^{7/2}+\frac{3}{16}x(x+1)^{5/2}(1-x)^{5/2}+\frac{15}{64}x(x+1)^{3/2}(1-x)^{3/2}+\frac{45}{128}x\sqrt{x+1}\sqrt{1-x}+\frac{45}{128}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(9/2)*(1 + x)^(5/2),x]
```

```
[Out] (45*Sqrt[1 - x]*x*Sqrt[1 + x])/128 + (15*(1 - x)^(3/2)*x*(1 + x)^
(3/2))/64 + (3*(1 - x)^(5/2)*x*(1 + x)^(5/2))/16 + (9*(1 - x)^(7/
2)*(1 + x)^(7/2))/56 + ((1 - x)^(9/2)*(1 + x)^(7/2))/8 + (45*ArcS
in[x])/128
```

Rubi in Sympy [A] time = 9.64029, size = 94, normalized size = 0.85

$$\frac{3x\,(-x+1)^{\frac{5}{2}}\,(x+1)^{\frac{5}{2}}}{16}+\frac{15x\,(-x+1)^{\frac{3}{2}}\,(x+1)^{\frac{3}{2}}}{64}+\frac{45x\sqrt{-x+1}\sqrt{x+1}}{128}+\frac{(-x+1)^{\frac{9}{2}}\,(x+1)^{\frac{7}{2}}}{8}+\frac{9\,(-x+1)^{\frac{7}{2}}\,(x+1)^{\frac{7}{2}}}{56}+\frac{45\,\mathrm{asin}\,(x)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(9/2)*(1+x)**(5/2),x)
```

```
[Out] 3*x*(-x + 1)**(5/2)*(x + 1)**(5/2)/16 + 15*x*(-x + 1)**(3/2)*(x +
 1)**(3/2)/64 + 45*x*sqrt(-x + 1)*sqrt(x + 1)/128 + (-x + 1)**(9/
```

```
2)*(x + 1)**(7/2)/8 + 9*(-x + 1)**(7/2)*(x + 1)**(7/2)/56 + 45*as
in(x)/128
```

Mathematica [A] time = 0.061726, size = 68, normalized size = 0.62

$$\frac{1}{896}\left(\sqrt{1-x^2}\left(112x^7-256x^6-168x^5+768x^4-210x^3-768x^2+581x+256\right)+630\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(9/2)*(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(256 + 581*x - 768*x^2 - 210*x^3 + 768*x^4 - 168*x
^5 - 256*x^6 + 112*x^7) + 630*ArcSin[Sqrt[1 + x]/Sqrt[2]])/896
```

Maple [A] time = 0.007, size = 141, normalized size = 1.3

$$\frac{1}{8}(1-x)^{\frac{9}{2}}(1+x)^{\frac{7}{2}}+\frac{9}{56}(1-x)^{\frac{7}{2}}(1+x)^{\frac{7}{2}}+\frac{3}{16}(1-x)^{\frac{5}{2}}(1+x)^{\frac{7}{2}}+\frac{3}{16}(1-x)^{\frac{3}{2}}(1+x)^{\frac{7}{2}}+\frac{9}{64}\sqrt{1-x}(1+x)^{\frac{7}{2}}-\frac{3}{64}\sqrt{1-x}(1+x)^{\frac{5}{2}}-\frac{15}{128}\sqrt{1-x}(1+x)^{\frac{3}{2}}-\frac{45}{128}\sqrt{1-x}\sqrt{1+x}+\frac{45\arcsin(x)}{128}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(9/2)*(1+x)^(5/2),x)
```

```
[Out] 1/8*(1-x)^(9/2)*(1+x)^(7/2)+9/56*(1-x)^(7/2)*(1+x)^(7/2)+3/16*(1-
x)^(5/2)*(1+x)^(7/2)+3/16*(1-x)^(3/2)*(1+x)^(7/2)+9/64*(1-x)^(1/2
)*(1+x)^(7/2)-3/64*(1-x)^(1/2)*(1+x)^(5/2)-15/128*(1-x)^(1/2)*(1+
x)^(3/2)-45/128*(1-x)^(1/2)*(1+x)^(1/2)+45/128*((1+x)*(1-x))^(1/2
)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49644, size = 86, normalized size = 0.78

$$-\frac{1}{8}\left(-x^2+1\right)^{\frac{7}{2}}x+\frac{2}{7}\left(-x^2+1\right)^{\frac{7}{2}}+\frac{3}{16}\left(-x^2+1\right)^{\frac{5}{2}}x+\frac{15}{64}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{45}{128}\sqrt{-x^2+1}x+\frac{45}{128}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(9/2),x, algorithm="maxima")
```

```
[Out] -1/8*(-x^2 + 1)^(7/2)*x + 2/7*(-x^2 + 1)^(7/2) + 3/16*(-x^2 + 1)^
(5/2)*x + 15/64*(-x^2 + 1)^(3/2)*x + 45/128*sqrt(-x^2 + 1)*x + 45
/128*arcsin(x)
```

Fricas [A] time = 0.216722, size = 386, normalized size = 3.51

$$-\frac{896\,x^{15} - 2048\,x^{14} - 11200\,x^{13} + 28672\,x^{12} + 43568\,x^{11} - 143360\,x^{10} - 58408\,x^{9} + 360192\,x^{8} - 40152\,x^{7} - 501760\,x^{6} + 20}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(9/2),x, algorithm="fricas")
```

```
[Out] -1/896*(896*x^15 - 2048*x^14 - 11200*x^13 + 28672*x^12 + 43568*x^
11 - 143360*x^10 - 58408*x^9 + 360192*x^8 - 40152*x^7 - 501760*x^
6 + 203728*x^5 + 372736*x^4 - 212800*x^3 - 114688*x^2 - (112*x^15
 - 256*x^14 - 3752*x^13 + 8960*x^12 + 23086*x^11 - 66304*x^10 - 4
8251*x^9 + 213248*x^8 + 5152*x^7 - 358400*x^6 + 125216*x^5 + 3153
92*x^4 - 175616*x^3 - 114688*x^2 + 74368*x)*sqrt(x + 1)*sqrt(-x +
 1) + 630*(x^8 - 32*x^6 + 160*x^4 - 256*x^2 + 8*(x^6 - 10*x^4 + 2
4*x^2 - 16)*sqrt(x + 1)*sqrt(-x + 1) + 128)*arctan((sqrt(x + 1)*s
qrt(-x + 1) - 1)/x) + 74368*x)/(x^8 - 32*x^6 + 160*x^4 - 256*x^2
+ 8*(x^6 - 10*x^4 + 24*x^2 - 16)*sqrt(x + 1)*sqrt(-x + 1) + 128)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(9/2)*(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.246424, size = 335, normalized size = 3.05

$$-\frac{2}{105}\left(\left(3\left(\left(5\left(x+1\right)(x-5)+74\right)(x+1)-96\right)(x+1)+203\right)(x+1)-70\right)(x+1)^{\frac{3}{2}}\sqrt{-x+1}$$
$$+\frac{4}{15}\left(\left(3\left(x+1\right)(x-3)+17\right)(x+1)-10\right)(x+1)^{\frac{3}{2}}\sqrt{-x+1}-\frac{2}{3}\,(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1}$$
$$+\frac{1}{384}\left(\left(2\left(\left(4\left(\left(6\left(x+1\right)(x-6)+125\right)(x+1)-205\right)(x+1)+795\right)(x+1)-449\right)(x+1)+251\right)(x+1)-15\right)\sqrt{x+1}\sqrt{-x+1}$$
$$-\frac{1}{48}\left(\left(2\left(\left(4\left(x+1\right)(x-4)+39\right)(x+1)-37\right)(x+1)+31\right)(x+1)-3\right)\sqrt{x+1}\sqrt{-x+1}$$
$$-\frac{1}{8}\left(\left(2\left(x+1\right)(x-2)+5\right)(x+1)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\,\sqrt{x+1}x\sqrt{-x+1}+\frac{45}{64}\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*((3*((5*(x + 1)*(x - 5) + 74)*(x + 1) - 96)*(x + 1) + 203)
*(x + 1) - 70)*(x + 1)^(3/2)*sqrt(-x + 1) + 4/15*((3*(x + 1)*(x -
 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(-x + 1) - 2/3*(x + 1)^
(3/2)*(x - 1)*sqrt(-x + 1) + 1/384*((2*((4*((6*(x + 1)*(x - 6) +
125)*(x + 1) - 205)*(x + 1) + 795)*(x + 1) - 449)*(x + 1) + 251)*
(x + 1) - 15)*sqrt(x + 1)*sqrt(-x + 1) - 1/48*((2*((4*(x + 1)*(x
- 4) + 39)*(x + 1) - 37)*(x + 1) + 31)*(x + 1) - 3)*sqrt(x + 1)*s
qrt(-x + 1) - 1/8*((2*(x + 1)*(x - 2) + 5)*(x + 1) - 1)*sqrt(x +
1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 45/64*arcsin(1
/2*sqrt(2)*sqrt(x + 1))
```

3.1090 $\int (1-x)^{7/2}(1+x)^{5/2}\,dx$

Optimal. Leaf size=90

$$\frac{1}{7}(1-x)^{7/2}(x+1)^{7/2}+\frac{1}{6}(1-x)^{5/2}x(x+1)^{5/2}+\frac{5}{24}(1-x)^{3/2}x(x+1)^{3/2}+\frac{5}{16}\sqrt{1-x}x\sqrt{x+1}+\frac{5}{16}\sin^{-1}(x)$$

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (5*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/24 + ((1 - x)^(5/2)*x*(1 + x)^(5/2))/6 + ((1 - x)^(7/2)*(1 +
x)^(7/2))/7 + (5*ArcSin[x])/16
```

Rubi [A] time = 0.0543882, antiderivative size = 90, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{1}{7}(1-x)^{7/2}(x+1)^{7/2}+\frac{1}{6}(1-x)^{5/2}x(x+1)^{5/2}+\frac{5}{24}(1-x)^{3/2}x(x+1)^{3/2}+\frac{5}{16}\sqrt{1-x}x\sqrt{x+1}+\frac{5}{16}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(7/2)*(1 + x)^(5/2),x]
```

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (5*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/24 + ((1 - x)^(5/2)*x*(1 + x)^(5/2))/6 + ((1 - x)^(7/2)*(1 +
x)^(7/2))/7 + (5*ArcSin[x])/16
```

Rubi in Sympy [A] time = 7.96631, size = 75, normalized size = 0.83

$$\frac{x(-x+1)^{\frac{5}{2}}(x+1)^{\frac{5}{2}}}{6}+\frac{5x(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{24}+\frac{5x\sqrt{-x+1}\sqrt{x+1}}{16}+\frac{(-x+1)^{\frac{7}{2}}(x+1)^{\frac{7}{2}}}{7}+\frac{5\operatorname{asin}(x)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(7/2)*(1+x)**(5/2),x)
```

```
[Out] x*(-x + 1)**(5/2)*(x + 1)**(5/2)/6 + 5*x*(-x + 1)**(3/2)*(x + 1)*
*(3/2)/24 + 5*x*sqrt(-x + 1)*sqrt(x + 1)/16 + (-x + 1)**(7/2)*(x
+ 1)**(7/2)/7 + 5*asin(x)/16
```

Mathematica [A] time = 0.0477767, size = 64, normalized size = 0.71

$$\frac{1}{336}\sqrt{1-x^2}\left(-48x^6+56x^5+144x^4-182x^3-144x^2+231x+48\right)+\frac{5}{8}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/2)*(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(48 + 231*x - 144*x^2 - 182*x^3 + 144*x^4 + 56*x^5
 - 48*x^6))/336 + (5*ArcSin[Sqrt[1 + x]/Sqrt[2]])/8
```

Maple [A] time = 0.007, size = 127, normalized size = 1.4

$$\frac{1}{7}(1-x)^{\frac{7}{2}}(1+x)^{\frac{7}{2}}+\frac{1}{6}(1-x)^{\frac{5}{2}}(1+x)^{\frac{7}{2}}+\frac{1}{6}(1-x)^{\frac{3}{2}}(1+x)^{\frac{7}{2}}+\frac{1}{8}\sqrt{1-x}(1+x)^{\frac{7}{2}}-\frac{1}{24}\sqrt{1-x}(1+x)^{\frac{5}{2}}-\frac{5}{48}\sqrt{1-x}(1+x)^{\frac{3}{2}}-\frac{5}{16}\sqrt{1-x}\sqrt{1+x}+\frac{5\arcsin(x)}{16}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/2)*(1+x)^(5/2),x)
```

```
[Out] 1/7*(1-x)^(7/2)*(1+x)^(7/2)+1/6*(1-x)^(5/2)*(1+x)^(7/2)+1/6*(1-x)
^(3/2)*(1+x)^(7/2)+1/8*(1-x)^(1/2)*(1+x)^(7/2)-1/24*(1-x)^(1/2)*(
1+x)^(5/2)-5/48*(1-x)^(1/2)*(1+x)^(3/2)-5/16*(1-x)^(1/2)*(1+x)^(1
/2)+5/16*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49761, size = 70, normalized size = 0.78

$$\frac{1}{7}\left(-x^2+1\right)^{\frac{7}{2}}+\frac{1}{6}\left(-x^2+1\right)^{\frac{5}{2}}x+\frac{5}{24}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{5}{16}\sqrt{-x^2+1}x+\frac{5}{16}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(7/2),x, algorithm="maxima")
```

```
[Out] 1/7*(-x^2 + 1)^(7/2) + 1/6*(-x^2 + 1)^(5/2)*x + 5/24*(-x^2 + 1)^(
3/2)*x + 5/16*sqrt(-x^2 + 1)*x + 5/16*arcsin(x)
```

Fricas [A] time = 0.213426, size = 351, normalized size = 3.9

$$-\frac{48x^{14}-56x^{13}-1344x^{12}+1582x^{11}+8736x^{10}-10605x^{9}-25536x^{8}+32767x^{7}+39648x^{6}-53816x^{5}-32256x^{4}+44}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/336*(48*x^14 - 56*x^13 - 1344*x^12 + 1582*x^11 + 8736*x^10 - 1
0605*x^9 - 25536*x^8 + 32767*x^7 + 39648*x^6 - 53816*x^5 - 32256*
x^4 + 44912*x^3 + 10752*x^2 + 7*(48*x^12 - 56*x^11 - 528*x^10 + 6
30*x^9 + 2064*x^8 - 2583*x^7 - 3936*x^6 + 5272*x^5 + 3840*x^4 - 5
360*x^3 - 1536*x^2 + 2112*x)*sqrt(x + 1)*sqrt(-x + 1) + 210*(7*x^
6 - 56*x^4 + 112*x^2 - (x^6 - 24*x^4 + 80*x^2 - 64)*sqrt(x + 1)*s
qrt(-x + 1) - 64)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) - 1478
4*x)/(7*x^6 - 56*x^4 + 112*x^2 - (x^6 - 24*x^4 + 80*x^2 - 64)*sqr
t(x + 1)*sqrt(-x + 1) - 64)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/2)*(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.246151, size = 259, normalized size = 2.88

$$-\frac{1}{105}\left(\left(3\left(\left(5\left(x+1\right)\left(x-5\right)+74\right)\left(x+1\right)-96\right)\left(x+1\right)+203\right)\left(x+1\right)-70\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}+\frac{2}{15}\left(\left(3\left(x+1\right)\left(x-3\right)+17\right)\left(x+1\right)-10\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}-\frac{1}{3}\left(x+1\right)^{\frac{3}{2}}\left(x-1\right)\sqrt{-x+1}+\frac{1}{48}\left(\left(2\left(\left(4\left(x+1\right)\left(x-4\right)+39\right)\left(x+1\right)-37\right)\left(x+1\right)+31\right)\left(x+1\right)-3\right)\sqrt{x+1}\sqrt{-x+1}-\frac{1}{4}\left(\left(2\left(x+1\right)\left(x-2\right)+5\right)\left(x+1\right)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{5}{8}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(7/2),x, algorithm="giac")
```

```
[Out] -1/105*((3*((5*(x + 1)*(x - 5) + 74)*(x + 1) - 96)*(x + 1) + 203)
*(x + 1) - 70)*(x + 1)^(3/2)*sqrt(-x + 1) + 2/15*((3*(x + 1)*(x -
 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(-x + 1) - 1/3*(x + 1)^
(3/2)*(x - 1)*sqrt(-x + 1) + 1/48*((2*((4*(x + 1)*(x - 4) + 39)*(
x + 1) - 37)*(x + 1) + 31)*(x + 1) - 3)*sqrt(x + 1)*sqrt(-x + 1)
- 1/4*((2*(x + 1)*(x - 2) + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x +
 1) + 1/2*sqrt(x + 1)*x*sqrt(-x + 1) + 5/8*arcsin(1/2*sqrt(2)*sqr
```

```
t(x + 1))
```

3.1091 $\int (1-x)^{5/2}(1+x)^{5/2}\,dx$

Optimal. Leaf size=70

$$\frac{1}{6}(1-x)^{5/2}x(x+1)^{5/2}+\frac{5}{24}(1-x)^{3/2}x(x+1)^{3/2}+\frac{5}{16}\sqrt{1-x}x\sqrt{x+1}+\frac{5}{16}\sin^{-1}(x)$$

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (5*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/24 + ((1 - x)^(5/2)*x*(1 + x)^(5/2))/6 + (5*ArcSin[x])/16
```

Rubi [A] time = 0.0450069, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{6}(1-x)^{5/2}x(x+1)^{5/2}+\frac{5}{24}(1-x)^{3/2}x(x+1)^{3/2}+\frac{5}{16}\sqrt{1-x}x\sqrt{x+1}+\frac{5}{16}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(1 - x)^(5/2)*(1 + x)^(5/2),x]
```

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/16 + (5*(1 - x)^(3/2)*x*(1 + x)^(3/
2))/24 + ((1 - x)^(5/2)*x*(1 + x)^(5/2))/6 + (5*ArcSin[x])/16
```

Rubi in Sympy [A] time = 6.88058, size = 60, normalized size = 0.86

$$\frac{x\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{5}{2}}}{6}+\frac{5x\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}{24}+\frac{5x\sqrt{-x+1}\sqrt{x+1}}{16}+\frac{5\,\mathrm{asin}\left(x\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((1-x)**(5/2)*(1+x)**(5/2),x)
```

```
[Out] x*(-x + 1)**(5/2)*(x + 1)**(5/2)/6 + 5*x*(-x + 1)**(3/2)*(x + 1)*
*(3/2)/24 + 5*x*sqrt(-x + 1)*sqrt(x + 1)/16 + 5*asin(x)/16
```

Mathematica [A] time = 0.0293732, size = 34, normalized size = 0.49

$$\frac{1}{48}\left(x\sqrt{1-x^2}\left(8x^4-26x^2+33\right)+15\sin^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(5/2)*(1 + x)^(5/2),x]
```

```
[Out] (x*Sqrt[1 - x^2]*(33 - 26*x^2 + 8*x^4) + 15*ArcSin[x])/48
```

Maple [B] time = 0.004, size = 113, normalized size = 1.6

$$\frac{1}{6}(1-x)^{\frac{5}{2}}(1+x)^{\frac{7}{2}}+\frac{1}{6}(1-x)^{\frac{3}{2}}(1+x)^{\frac{7}{2}}+\frac{1}{8}\sqrt{1-x}\,(1+x)^{\frac{7}{2}}-\frac{1}{24}\sqrt{1-x}\,(1+x)^{\frac{5}{2}}-\frac{5}{48}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{5}{16}\sqrt{1-x}\sqrt{1+x}+\frac{5\arcsin(x)}{16}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(5/2)*(1+x)^(5/2),x)
```

```
[Out] 1/6*(1-x)^(5/2)*(1+x)^(7/2)+1/6*(1-x)^(3/2)*(1+x)^(7/2)+1/8*(1-x)
^(1/2)*(1+x)^(7/2)-1/24*(1-x)^(1/2)*(1+x)^(5/2)-5/48*(1-x)^(1/2)*
(1+x)^(3/2)-5/16*(1-x)^(1/2)*(1+x)^(1/2)+5/16*((1+x)*(1-x))^(1/2)
/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49399, size = 55, normalized size = 0.79

$$\frac{1}{6}\left(-x^{2}+1\right)^{\frac{5}{2}}x+\frac{5}{24}\left(-x^{2}+1\right)^{\frac{3}{2}}x+\frac{5}{16}\sqrt{-x^{2}+1}x+\frac{5}{16}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(-x^2 + 1)^(5/2)*x + 5/24*(-x^2 + 1)^(3/2)*x + 5/16*sqrt(-x^2
 + 1)*x + 5/16*arcsin(x)
```

Fricas [A] time = 0.207443, size = 243, normalized size = 3.47

$$-\frac{48\,x^{11}-460\,x^{9}+1698\,x^{7}-3174\,x^{5}+2944\,x^{3}-\left(8\,x^{11}-170\,x^{9}+885\,x^{7}-2098\,x^{5}+2416\,x^{3}-1056\,x\right)\sqrt{x+1}\sqrt{-x+1}+\cdots}{48\left(x^{6}-18\,x^{4}+48\,x^{2}+2\left(3\,x^{4}-16\,x^{2}+16\right)\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/48*(48*x^11 - 460*x^9 + 1698*x^7 - 3174*x^5 + 2944*x^3 - (8*x^
11 - 170*x^9 + 885*x^7 - 2098*x^5 + 2416*x^3 - 1056*x)*sqrt(x + 1
)*sqrt(-x + 1) + 30*(x^6 - 18*x^4 + 48*x^2 + 2*(3*x^4 - 16*x^2 +
16)*sqrt(x + 1)*sqrt(-x + 1) - 32)*arctan((sqrt(x + 1)*sqrt(-x +
1) - 1)/x) - 1056*x)/(x^6 - 18*x^4 + 48*x^2 + 2*(3*x^4 - 16*x^2 +
 16)*sqrt(x + 1)*sqrt(-x + 1) - 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(5/2)*(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224703, size = 138, normalized size = 1.97

$$\frac{1}{48}\left(\left(2\left(\left(4\left(x+1\right)\left(x-4\right)+39\right)\left(x+1\right)-37\right)\left(x+1\right)+31\right)\left(x+1\right)-3\right)\sqrt{x+1}\sqrt{-x+1}$$
$$-\frac{1}{4}\left(\left(2\left(x+1\right)\left(x-2\right)+5\right)\left(x+1\right)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{5}{8}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/48*((2*((4*(x + 1)*(x - 4) + 39)*(x + 1) - 37)*(x + 1) + 31)*(x
 + 1) - 3)*sqrt(x + 1)*sqrt(-x + 1) - 1/4*((2*(x + 1)*(x - 2) + 5
)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sqrt(
-x + 1) + 5/8*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1092 $\int (1-x)^{3/2}(1+x)^{5/2}\,dx$

Optimal. Leaf size=69

$$-\frac{1}{5}(1-x)^{5/2}(x+1)^{5/2}+\frac{1}{4}(1-x)^{3/2}x(x+1)^{3/2}+\frac{3}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{3}{8}\sin^{-1}(x)$$

```
[Out] (3*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + ((1 - x)^(3/2)*x*(1 + x)^(3/2))
/4 - ((1 - x)^(5/2)*(1 + x)^(5/2))/5 + (3*ArcSin[x])/8
```

Rubi [A] time = 0.0410788, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{1}{5}(1-x)^{5/2}(x+1)^{5/2}+\frac{1}{4}(1-x)^{3/2}x(x+1)^{3/2}+\frac{3}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{3}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(3/2)*(1 + x)^(5/2),x]
```

```
[Out] (3*Sqrt[1 - x]*x*Sqrt[1 + x])/8 + ((1 - x)^(3/2)*x*(1 + x)^(3/2))
/4 - ((1 - x)^(5/2)*(1 + x)^(5/2))/5 + (3*ArcSin[x])/8
```

Rubi in Sympy [A] time = 6.05721, size = 56, normalized size = 0.81

$$\frac{x\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}{4}+\frac{3x\sqrt{-x+1}\sqrt{x+1}}{8}-\frac{\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{5}{2}}}{5}+\frac{3\operatorname{asin}\left(x\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(3/2)*(1+x)**(5/2),x)
```

```
[Out] x*(-x + 1)**(3/2)*(x + 1)**(3/2)/4 + 3*x*sqrt(-x + 1)*sqrt(x + 1)
/8 - (-x + 1)**(5/2)*(x + 1)**(5/2)/5 + 3*asin(x)/8
```

Mathematica [A] time = 0.0353165, size = 54, normalized size = 0.78

$$\frac{3}{4}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)-\frac{1}{40}\sqrt{1-x^2}\left(8x^4+10x^3-16x^2-25x+8\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(3/2)*(1 + x)^(5/2),x]
```

```
[Out] -(Sqrt[1 - x^2]*(8 - 25*x - 16*x^2 + 10*x^3 + 8*x^4))/40 + (3*Arc
Sin[Sqrt[1 + x]/Sqrt[2]])/4
```

Maple [A] time = 0.006, size = 99, normalized size = 1.4

$$\frac{1}{5}(1-x)^{\frac{3}{2}}(1+x)^{\frac{7}{2}}+\frac{3}{20}\sqrt{1-x}\,(1+x)^{\frac{7}{2}}-\frac{1}{20}\sqrt{1-x}\,(1+x)^{\frac{5}{2}}-\frac{1}{8}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{3}{8}\sqrt{1-x}\sqrt{1+x}+\frac{3\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(3/2)*(1+x)^(5/2),x)
```

```
[Out] 1/5*(1-x)^(3/2)*(1+x)^(7/2)+3/20*(1-x)^(1/2)*(1+x)^(7/2)-1/20*(1-
x)^(1/2)*(1+x)^(5/2)-1/8*(1-x)^(1/2)*(1+x)^(3/2)-3/8*(1-x)^(1/2)*
(1+x)^(1/2)+3/8*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsi
n(x)
```

Maxima [A] time = 1.4837, size = 54, normalized size = 0.78

$$-\frac{1}{5}\left(-x^2+1\right)^{\frac{5}{2}}+\frac{1}{4}\left(-x^2+1\right)^{\frac{3}{2}}x+\frac{3}{8}\sqrt{-x^2+1}x+\frac{3}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/5*(-x^2 + 1)^(5/2) + 1/4*(-x^2 + 1)^(3/2)*x + 3/8*sqrt(-x^2 +
1)*x + 3/8*arcsin(x)
```

Fricas [A] time = 0.208999, size = 270, normalized size = 3.91

$$-\frac{8x^{10}+10x^9-120x^8-155x^7+440x^6+605x^5-640x^4-860x^3+320x^2+5\left(8x^8+10x^7-48x^6-65x^5+96x^4+13\right.}{40\left(5x^4-20x^2-(x^4-1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/40*(8*x^10 + 10*x^9 - 120*x^8 - 155*x^7 + 440*x^6 + 605*x^5 -
640*x^4 - 860*x^3 + 320*x^2 + 5*(8*x^8 + 10*x^7 - 48*x^6 - 65*x^5
 + 96*x^4 + 132*x^3 - 64*x^2 - 80*x)*sqrt(x + 1)*sqrt(-x + 1) + 3
0*(5*x^4 - 20*x^2 - (x^4 - 12*x^2 + 16)*sqrt(x + 1)*sqrt(-x + 1)
+ 16)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 400*x)/(5*x^4 -
20*x^2 - (x^4 - 12*x^2 + 16)*sqrt(x + 1)*sqrt(-x + 1) + 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(3/2)*(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226846, size = 143, normalized size = 2.07

$$-\frac{1}{15}\left(\left(3\left(x+1\right)\left(x-3\right)+17\right)\left(x+1\right)-10\right)\left(x+1\right)^{\frac{3}{2}}\sqrt{-x+1}+\frac{1}{3}\left(x+1\right)^{\frac{3}{2}}\left(x-1\right)\sqrt{-x+1}-\frac{1}{8}\left(\left(2\left(x+1\right)\left(x-2\right)+5\right)\left(x+1\right)-1\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\sqrt{x+1}x\sqrt{-x+1}+\frac{3}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*(-x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] -1/15*((3*(x + 1)*(x - 3) + 17)*(x + 1) - 10)*(x + 1)^(3/2)*sqrt(
-x + 1) + 1/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) - 1/8*((2*(x + 1
)*(x - 2) + 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x
 + 1)*x*sqrt(-x + 1) + 3/4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1093 $\int \sqrt{1-x}(1+x)^{5/2}\,dx$

Optimal. Leaf size=68

$$-\frac{1}{4}(1-x)^{3/2}(x+1)^{5/2}-\frac{5}{12}(1-x)^{3/2}(x+1)^{3/2}+\frac{5}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{5}{8}\sin^{-1}(x)$$

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/8 - (5*(1 - x)^(3/2)*(1 + x)^(3/2))
/12 - ((1 - x)^(3/2)*(1 + x)^(5/2))/4 + (5*ArcSin[x])/8
```

Rubi [A] time = 0.0424691, antiderivative size = 68, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{1}{4}(1-x)^{3/2}(x+1)^{5/2}-\frac{5}{12}(1-x)^{3/2}(x+1)^{3/2}+\frac{5}{8}\sqrt{1-x}x\sqrt{x+1}+\frac{5}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 - x]*(1 + x)^(5/2),x]
```

```
[Out] (5*Sqrt[1 - x]*x*Sqrt[1 + x])/8 - (5*(1 - x)^(3/2)*(1 + x)^(3/2))
/12 - ((1 - x)^(3/2)*(1 + x)^(5/2))/4 + (5*ArcSin[x])/8
```

Rubi in Sympy [A] time = 6.0378, size = 56, normalized size = 0.82

$$\frac{5x\sqrt{-x+1}\sqrt{x+1}}{8}-\frac{(-x+1)^{\frac{3}{2}}(x+1)^{\frac{5}{2}}}{4}-\frac{5(-x+1)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}{12}+\frac{5\operatorname{asin}(x)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/2)*(1+x)**(5/2),x)
```

```
[Out] 5*x*sqrt(-x + 1)*sqrt(x + 1)/8 - (-x + 1)**(3/2)*(x + 1)**(5/2)/4
 - 5*(-x + 1)**(3/2)*(x + 1)**(3/2)/12 + 5*asin(x)/8
```

Mathematica [A] time = 0.0276654, size = 49, normalized size = 0.72

$$\frac{1}{24}\sqrt{1-x^2}\left(6x^3+16x^2+9x-16\right)+\frac{5}{4}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 - x]*(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(-16 + 9*x + 16*x^2 + 6*x^3))/24 + (5*ArcSin[Sqrt[
1 + x]/Sqrt[2]])/4
```

Maple [A] time = 0.006, size = 85, normalized size = 1.3

$$\frac{1}{4}\sqrt{1-x}\,(1+x)^{\frac{7}{2}} - \frac{1}{12}\sqrt{1-x}\,(1+x)^{\frac{5}{2}} - \frac{5}{24}\sqrt{1-x}\,(1+x)^{\frac{3}{2}} - \frac{5}{8}\sqrt{1-x}\sqrt{1+x} + \frac{5\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/2)*(1+x)^(5/2),x)
```

```
[Out] 1/4*(1-x)^(1/2)*(1+x)^(7/2)-1/12*(1-x)^(1/2)*(1+x)^(5/2)-5/24*(1-
x)^(1/2)*(1+x)^(3/2)-5/8*(1-x)^(1/2)*(1+x)^(1/2)+5/8*((1+x)*(1-x)
)^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49014, size = 54, normalized size = 0.79

$$-\frac{1}{4}\left(-x^2+1\right)^{\frac{3}{2}}x - \frac{2}{3}\left(-x^2+1\right)^{\frac{3}{2}} + \frac{5}{8}\sqrt{-x^2+1}x + \frac{5}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] -1/4*(-x^2 + 1)^(3/2)*x - 2/3*(-x^2 + 1)^(3/2) + 5/8*sqrt(-x^2 +
1)*x + 5/8*arcsin(x)
```

Fricas [A] time = 0.208503, size = 224, normalized size = 3.29

$$-\frac{24x^7 + 64x^6 - 36x^5 - 240x^4 - 60x^3 + 192x^2 - \left(6x^7 + 16x^6 - 39x^5 - 144x^4 - 24x^3 + 192x^2 + 72x\right)\sqrt{x+1}\sqrt{-x+1} +}{24\left(x^4 - 8x^2 + 4(x^2-2)\sqrt{x+1}\sqrt{-x+1} + 8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] -1/24*(24*x^7 + 64*x^6 - 36*x^5 - 240*x^4 - 60*x^3 + 192*x^2 - (6
*x^7 + 16*x^6 - 39*x^5 - 144*x^4 - 24*x^3 + 192*x^2 + 72*x)*sqrt(
x + 1)*sqrt(-x + 1) + 30*(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1)*s
qrt(-x + 1) + 8)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 72*x)
/(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1)*sqrt(-x + 1) + 8)
```

Sympy [A] time = 74.9852, size = 214, normalized size = 3.15

$$\begin{cases} -\frac{5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{4} + \frac{i(x+1)^{\frac{9}{2}}}{4\sqrt{x-1}} - \frac{7i(x+1)^{\frac{7}{2}}}{12\sqrt{x-1}} - \frac{i(x+1)^{\frac{5}{2}}}{24\sqrt{x-1}} - \frac{5i(x+1)^{\frac{3}{2}}}{24\sqrt{x-1}} + \frac{5i\sqrt{x+1}}{4\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ \frac{5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)}{4} - \frac{(x+1)^{\frac{9}{2}}}{4\sqrt{-x+1}} + \frac{7(x+1)^{\frac{7}{2}}}{12\sqrt{-x+1}} + \frac{(x+1)^{\frac{5}{2}}}{24\sqrt{-x+1}} + \frac{5(x+1)^{\frac{3}{2}}}{24\sqrt{-x+1}} - \frac{5\sqrt{x+1}}{4\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/2)*(1+x)**(5/2),x)
```

```
[Out] Piecewise((-5*I*acosh(sqrt(2)*sqrt(x + 1)/2)/4 + I*(x + 1)**(9/2)
/(4*sqrt(x - 1)) - 7*I*(x + 1)**(7/2)/(12*sqrt(x - 1)) - I*(x + 1
)**(5/2)/(24*sqrt(x - 1)) - 5*I*(x + 1)**(3/2)/(24*sqrt(x - 1)) +
 5*I*sqrt(x + 1)/(4*sqrt(x - 1)), Abs(x + 1)/2 > 1), (5*asin(sqrt
(2)*sqrt(x + 1)/2)/4 - (x + 1)**(9/2)/(4*sqrt(-x + 1)) + 7*(x + 1
)**(7/2)/(12*sqrt(-x + 1)) + (x + 1)**(5/2)/(24*sqrt(-x + 1)) + 5
*(x + 1)**(3/2)/(24*sqrt(-x + 1)) - 5*sqrt(x + 1)/(4*sqrt(-x + 1)
), True))
```

GIAC/XCAS [A] time = 0.221973, size = 103, normalized size = 1.51

$$\frac{2}{3}(x+1)^{\frac{3}{2}}(x-1)\sqrt{-x+1} + \frac{1}{8}\left((2(x+1)(x-2)+5)(x+1)-1\right)\sqrt{x+1}\sqrt{-x+1} + \frac{1}{2}\sqrt{x+1}x\sqrt{-x+1} + \frac{5}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)*sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] 2/3*(x + 1)^(3/2)*(x - 1)*sqrt(-x + 1) + 1/8*((2*(x + 1)*(x - 2)
+ 5)*(x + 1) - 1)*sqrt(x + 1)*sqrt(-x + 1) + 1/2*sqrt(x + 1)*x*sq
rt(-x + 1) + 5/4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1094 $\int \frac{(1+x)^{5/2}}{\sqrt{1-x}}\,dx$

Optimal. Leaf size=67

$$-\frac{1}{3}\sqrt{1-x}(x+1)^{5/2}-\frac{5}{6}\sqrt{1-x}(x+1)^{3/2}-\frac{5}{2}\sqrt{1-x}\sqrt{x+1}+\frac{5}{2}\sin^{-1}(x)$$

```
[Out] (-5*Sqrt[1 - x]*Sqrt[1 + x])/2 - (5*Sqrt[1 - x]*(1 + x)^(3/2))/6
- (Sqrt[1 - x]*(1 + x)^(5/2))/3 + (5*ArcSin[x])/2
```

Rubi [A] time = 0.0476506, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{1}{3}\sqrt{1-x}(x+1)^{5/2}-\frac{5}{6}\sqrt{1-x}(x+1)^{3/2}-\frac{5}{2}\sqrt{1-x}\sqrt{x+1}+\frac{5}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/Sqrt[1 - x],x]
```

```
[Out] (-5*Sqrt[1 - x]*Sqrt[1 + x])/2 - (5*Sqrt[1 - x]*(1 + x)^(3/2))/6
- (Sqrt[1 - x]*(1 + x)^(5/2))/3 + (5*ArcSin[x])/2
```

Rubi in Sympy [A] time = 6.24036, size = 54, normalized size = 0.81

$$-\frac{\sqrt{-x+1}\,(x+1)^{\frac{5}{2}}}{3}-\frac{5\sqrt{-x+1}\,(x+1)^{\frac{3}{2}}}{6}-\frac{5\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{5\,\mathrm{asin}\,(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(1/2),x)
```

```
[Out] -sqrt(-x + 1)*(x + 1)**(5/2)/3 - 5*sqrt(-x + 1)*(x + 1)**(3/2)/6
- 5*sqrt(-x + 1)*sqrt(x + 1)/2 + 5*asin(x)/2
```

Mathematica [A] time = 0.0252943, size = 42, normalized size = 0.63

$$5\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)-\frac{1}{6}\sqrt{1-x^2}\left(2x^2+9x+22\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(5/2)/Sqrt[1 - x],x]
```

```
[Out] -(Sqrt[1 - x^2]*(22 + 9*x + 2*x^2))/6 + 5*ArcSin[Sqrt[1 + x]/Sqrt
[2]]
```

Maple [A]   time = 0.006, size = 71, normalized size = 1.1

$$-\frac{1}{3}\sqrt{1-x}\,(1+x)^{\frac{5}{2}}-\frac{5}{6}\sqrt{1-x}\,(1+x)^{\frac{3}{2}}-\frac{5}{2}\sqrt{1-x}\sqrt{1+x}+\frac{5\ \arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(1/2),x)
```

```
[Out] -1/3*(1-x)^(1/2)*(1+x)^(5/2)-5/6*(1-x)^(1/2)*(1+x)^(3/2)-5/2*(1-x
)^(1/2)*(1+x)^(1/2)+5/2*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/
2)*arcsin(x)
```

Maxima [A]   time = 1.50469, size = 57, normalized size = 0.85

$$-\frac{1}{3}\sqrt{-x^2+1}x^2-\frac{3}{2}\sqrt{-x^2+1}x-\frac{11}{3}\sqrt{-x^2+1}+\frac{5}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(-x^2 + 1)*x^2 - 3/2*sqrt(-x^2 + 1)*x - 11/3*sqrt(-x^2 +
 1) + 5/2*arcsin(x)
```

Fricas [A]   time = 0.211805, size = 189, normalized size = 2.82

$$-\frac{2\,x^6+9\,x^5+12\,x^4-45\,x^3-36\,x^2+3\left(2\,x^4+9\,x^3+12\,x^2-12\,x\right)\sqrt{x+1}\sqrt{-x+1}+30\left(3\,x^2-\left(x^2-4\right)\sqrt{x+1}\sqrt{-x+1}-\right.}{6\left(3\,x^2-(x^2-4)\sqrt{x+1}\sqrt{-x+1}-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] -1/6*(2*x^6 + 9*x^5 + 12*x^4 - 45*x^3 - 36*x^2 + 3*(2*x^4 + 9*x^3
 + 12*x^2 - 12*x)*sqrt(x + 1)*sqrt(-x + 1) + 30*(3*x^2 - (x^2 - 4
```

```
)*sqrt(x + 1)*sqrt(-x + 1) - 4)*arctan((sqrt(x + 1)*sqrt(-x + 1)
- 1)/x) + 36*x)/(3*x^2 - (x^2 - 4)*sqrt(x + 1)*sqrt(-x + 1) - 4)
```

Sympy [A] time = 50.0924, size = 172, normalized size = 2.57

$$\begin{cases} -5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{i(x+1)^{\frac{7}{2}}}{3\sqrt{x-1}} - \frac{i(x+1)^{\frac{5}{2}}}{6\sqrt{x-1}} - \frac{5i(x+1)^{\frac{3}{2}}}{6\sqrt{x-1}} + \frac{5i\sqrt{x+1}}{\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ 5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{(x+1)^{\frac{7}{2}}}{3\sqrt{-x+1}} + \frac{(x+1)^{\frac{5}{2}}}{6\sqrt{-x+1}} + \frac{5(x+1)^{\frac{3}{2}}}{6\sqrt{-x+1}} - \frac{5\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(1/2),x)
```

```
[Out] Piecewise((-5*I*acosh(sqrt(2)*sqrt(x + 1)/2) - I*(x + 1)**(7/2)/(
3*sqrt(x - 1)) - I*(x + 1)**(5/2)/(6*sqrt(x - 1)) - 5*I*(x + 1)**
(3/2)/(6*sqrt(x - 1)) + 5*I*sqrt(x + 1)/sqrt(x - 1), Abs(x + 1)/2
 > 1), (5*asin(sqrt(2)*sqrt(x + 1)/2) + (x + 1)**(7/2)/(3*sqrt(-x
 + 1)) + (x + 1)**(5/2)/(6*sqrt(-x + 1)) + 5*(x + 1)**(3/2)/(6*sq
rt(-x + 1)) - 5*sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.210881, size = 53, normalized size = 0.79

$$-\frac{1}{6}\left((2x+7)(x+1)+15\right)\sqrt{x+1}\sqrt{-x+1} + 5\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] -1/6*((2*x + 7)*(x + 1) + 15)*sqrt(x + 1)*sqrt(-x + 1) + 5*arcsin
(1/2*sqrt(2)*sqrt(x + 1))
```

3.1095 $\int \frac{(1+x)^{5/2}}{(1-x)^{3/2}} \, dx$

Optimal. Leaf size=65

$$\frac{2(x+1)^{5/2}}{\sqrt{1-x}}+\frac{5}{2}\sqrt{1-x}(x+1)^{3/2}+\frac{15}{2}\sqrt{1-x}\sqrt{x+1}-\frac{15}{2}\sin^{-1}(x)$$

```
[Out] (15*Sqrt[1 - x]*Sqrt[1 + x])/2 + (5*Sqrt[1 - x]*(1 + x)^(3/2))/2
+ (2*(1 + x)^(5/2))/Sqrt[1 - x] - (15*ArcSin[x])/2
```

Rubi [A] time = 0.0484262, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{2(x+1)^{5/2}}{\sqrt{1-x}}+\frac{5}{2}\sqrt{1-x}(x+1)^{3/2}+\frac{15}{2}\sqrt{1-x}\sqrt{x+1}-\frac{15}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(3/2),x]
```

```
[Out] (15*Sqrt[1 - x]*Sqrt[1 + x])/2 + (5*Sqrt[1 - x]*(1 + x)^(3/2))/2
+ (2*(1 + x)^(5/2))/Sqrt[1 - x] - (15*ArcSin[x])/2
```

Rubi in Sympy [A] time = 6.59423, size = 54, normalized size = 0.83

$$\frac{5\sqrt{-x+1}\,(x+1)^{\frac{3}{2}}}{2}+\frac{15\sqrt{-x+1}\sqrt{x+1}}{2}-\frac{15\operatorname{asin}(x)}{2}+\frac{2\,(x+1)^{\frac{5}{2}}}{\sqrt{-x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(3/2),x)
```

```
[Out] 5*sqrt(-x + 1)*(x + 1)**(3/2)/2 + 15*sqrt(-x + 1)*sqrt(x + 1)/2 -
 15*asin(x)/2 + 2*(x + 1)**(5/2)/sqrt(-x + 1)
```

Mathematica [A] time = 0.045349, size = 45, normalized size = 0.69

$$\frac{\sqrt{1-x^2}\left(x^2+7x-24\right)}{2(x-1)}-15\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x^2]*(-24 + 7*x + x^2))/(2*(-1 + x)) - 15*ArcSin[Sqrt[1
 + x]/Sqrt[2]]
```

Maple [A] time = 0.027, size = 77, normalized size = 1.2

$$-\frac{x^3+8x^2-17x-24}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}-\frac{15\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(3/2),x)
```

```
[Out] -1/2*(x^3+8*x^2-17*x-24)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2
)/(1-x)^(1/2)/(1+x)^(1/2)-15/2*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1
-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.50447, size = 76, normalized size = 1.17

$$-\frac{x^3}{2\sqrt{-x^2+1}}-\frac{4x^2}{\sqrt{-x^2+1}}+\frac{17x}{2\sqrt{-x^2+1}}+\frac{12}{\sqrt{-x^2+1}}-\frac{15}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*x^3/sqrt(-x^2 + 1) - 4*x^2/sqrt(-x^2 + 1) + 17/2*x/sqrt(-x^2
 + 1) + 12/sqrt(-x^2 + 1) - 15/2*arcsin(x)
```

Fricas [A] time = 0.206803, size = 198, normalized size = 3.05

$$-\frac{x^5+10x^4-29x^3-18x^2-\left(x^4+5x^3-18x^2+68x\right)\sqrt{x+1}\sqrt{-x+1}-30\left(x^3-3x^2+\left(x^2+2x-4\right)\sqrt{x+1}\sqrt{-x+1}-2\right.}{2\left(x^3-3x^2+(x^2+2x-4)\sqrt{x+1}\sqrt{-x+1}-2x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(x^5 + 10*x^4 - 29*x^3 - 18*x^2 - (x^4 + 5*x^3 - 18*x^2 + 68
*x)*sqrt(x + 1)*sqrt(-x + 1) - 30*(x^3 - 3*x^2 + (x^2 + 2*x - 4)*
sqrt(x + 1)*sqrt(-x + 1) - 2*x + 4)*arctan((sqrt(x + 1)*sqrt(-x +
 1) - 1)/x) + 68*x)/(x^3 - 3*x^2 + (x^2 + 2*x - 4)*sqrt(x + 1)*sq
rt(-x + 1) - 2*x + 4)
```

Sympy [A] time = 66.609, size = 139, normalized size = 2.14

$$\begin{cases} 15i \operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{i(x+1)^{\frac{5}{2}}}{2\sqrt{x-1}} + \frac{5i(x+1)^{\frac{3}{2}}}{2\sqrt{x-1}} - \frac{15i\sqrt{x+1}}{\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ -15 \operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{(x+1)^{\frac{5}{2}}}{2\sqrt{-x+1}} - \frac{5(x+1)^{\frac{3}{2}}}{2\sqrt{-x+1}} + \frac{15\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(3/2),x)
```

```
[Out] Piecewise((15*I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(5/2)/(
2*sqrt(x - 1)) + 5*I*(x + 1)**(3/2)/(2*sqrt(x - 1)) - 15*I*sqrt(x
 + 1)/sqrt(x - 1), Abs(x + 1)/2 > 1), (-15*asin(sqrt(2)*sqrt(x +
1)/2) - (x + 1)**(5/2)/(2*sqrt(-x + 1)) - 5*(x + 1)**(3/2)/(2*sqr
t(-x + 1)) + 15*sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.210807, size = 57, normalized size = 0.88

$$\frac{((x+6)(x+1)-30)\sqrt{x+1}\sqrt{-x+1}}{2(x-1)} - 15 \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*((x + 6)*(x + 1) - 30)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1) - 15*
arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1096 $\int \frac{(1+x)^{5/2}}{(1-x)^{5/2}} \, dx$

Optimal. Leaf size=63

$$\frac{2(x+1)^{5/2}}{3(1-x)^{3/2}}-\frac{10(x+1)^{3/2}}{3\sqrt{1-x}}-5\sqrt{1-x}\sqrt{x+1}+5\sin^{-1}(x)$$

```
[Out] -5*Sqrt[1 - x]*Sqrt[1 + x] - (10*(1 + x)^(3/2))/(3*Sqrt[1 - x]) +
 (2*(1 + x)^(5/2))/(3*(1 - x)^(3/2)) + 5*ArcSin[x]
```

Rubi [A] time = 0.0466106, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{2(x+1)^{5/2}}{3(1-x)^{3/2}}-\frac{10(x+1)^{3/2}}{3\sqrt{1-x}}-5\sqrt{1-x}\sqrt{x+1}+5\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(5/2),x]
```

```
[Out] -5*Sqrt[1 - x]*Sqrt[1 + x] - (10*(1 + x)^(3/2))/(3*Sqrt[1 - x]) +
 (2*(1 + x)^(5/2))/(3*(1 - x)^(3/2)) + 5*ArcSin[x]
```

Rubi in Sympy [A] time = 6.89366, size = 53, normalized size = 0.84

$$-5\sqrt{-x+1}\sqrt{x+1}+5\,\mathrm{asin}\,(x)-\frac{10\,(x+1)^{\frac{3}{2}}}{3\sqrt{-x+1}}+\frac{2\,(x+1)^{\frac{5}{2}}}{3\,(-x+1)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(5/2),x)
```

```
[Out] -5*sqrt(-x + 1)*sqrt(x + 1) + 5*asin(x) - 10*(x + 1)**(3/2)/(3*sq
rt(-x + 1)) + 2*(x + 1)**(5/2)/(3*(-x + 1)**(3/2))
```

Mathematica [A] time = 0.0579416, size = 47, normalized size = 0.75

$$10\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)-\frac{\sqrt{1-x^2}\left(3x^2-34x+23\right)}{3(x-1)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(5/2),x]
```

```
[Out] -(Sqrt[1 - x^2]*(23 - 34*x + 3*x^2))/(3*(-1 + x)^2) + 10*ArcSin[S
qrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.03, size = 84, normalized size = 1.3

$$\frac{3x^3-31x^2-11x+23}{-3+3x}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}+5\frac{\sqrt{(1+x)(1-x)}\arcsin(x)}{\sqrt{1-x}\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(5/2),x)
```

```
[Out] 1/3*(3*x^3-31*x^2-11*x+23)/(-1+x)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1
-x))^(1/2)/(1-x)^(1/2)/(1+x)^(1/2)+5*((1+x)*(1-x))^(1/2)/(1+x)^(1
/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.51149, size = 134, normalized size = 2.13

$$-\frac{(-x^2+1)^{\frac{5}{2}}}{x^4-4x^3+6x^2-4x+1}-\frac{5(-x^2+1)^{\frac{3}{2}}}{3(x^3-3x^2+3x-1)}+\frac{10\sqrt{-x^2+1}}{3(x^2-2x+1)}+\frac{35\sqrt{-x^2+1}}{3(x-1)}+5\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] -(-x^2 + 1)^(5/2)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) - 5/3*(-x^2 + 1
)^(3/2)/(x^3 - 3*x^2 + 3*x - 1) + 10/3*sqrt(-x^2 + 1)/(x^2 - 2*x
+ 1) + 35/3*sqrt(-x^2 + 1)/(x - 1) + 5*arcsin(x)
```

Fricas [A] time = 0.20986, size = 220, normalized size = 3.49

$$\frac{3x^5-48x^4+7x^3+102x^2-(3x^4-17x^3+102x^2-48x)\sqrt{x+1}\sqrt{-x+1}-30\left(x^4-4x^3+x^2+(x^3+x^2-6x+4)\sqrt{x+\right.}{3\left(x^4-4x^3+x^2+(x^3+x^2-6x+4)\sqrt{x+1}\sqrt{-x+1}+6x-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(3*x^5 - 48*x^4 + 7*x^3 + 102*x^2 - (3*x^4 - 17*x^3 + 102*x^2
 - 48*x)*sqrt(x + 1)*sqrt(-x + 1) - 30*(x^4 - 4*x^3 + x^2 + (x^3
+ x^2 - 6*x + 4)*sqrt(x + 1)*sqrt(-x + 1) + 6*x - 4)*arctan((sqrt
(x + 1)*sqrt(-x + 1) - 1)/x) - 48*x)/(x^4 - 4*x^3 + x^2 + (x^3 +
x^2 - 6*x + 4)*sqrt(x + 1)*sqrt(-x + 1) + 6*x - 4)
```

Sympy [A] time = 65.1956, size = 576, normalized size = 9.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(5/2),x)
```

```
[Out] Piecewise((-30*I*sqrt(x - 1)*(x + 1)**(27/2)*acosh(sqrt(2)*sqrt(x
 + 1)/2)/(3*sqrt(x - 1)*(x + 1)**(27/2) - 6*sqrt(x - 1)*(x + 1)**
(25/2)) + 15*pi*sqrt(x - 1)*(x + 1)**(27/2)/(3*sqrt(x - 1)*(x + 1
)**(27/2) - 6*sqrt(x - 1)*(x + 1)**(25/2)) + 60*I*sqrt(x - 1)*(x
+ 1)**(25/2)*acosh(sqrt(2)*sqrt(x + 1)/2)/(3*sqrt(x - 1)*(x + 1)*
*(27/2) - 6*sqrt(x - 1)*(x + 1)**(25/2)) - 30*pi*sqrt(x - 1)*(x +
 1)**(25/2)/(3*sqrt(x - 1)*(x + 1)**(27/2) - 6*sqrt(x - 1)*(x + 1
)**(25/2)) - 3*I*(x + 1)**15/(3*sqrt(x - 1)*(x + 1)**(27/2) - 6*s
qrt(x - 1)*(x + 1)**(25/2)) + 40*I*(x + 1)**14/(3*sqrt(x - 1)*(x
+ 1)**(27/2) - 6*sqrt(x - 1)*(x + 1)**(25/2)) - 60*I*(x + 1)**13/
(3*sqrt(x - 1)*(x + 1)**(27/2) - 6*sqrt(x - 1)*(x + 1)**(25/2)),
Abs(x + 1)/2 > 1), (30*sqrt(-x + 1)*(x + 1)**(27/2)*asin(sqrt(2)*
sqrt(x + 1)/2)/(3*sqrt(-x + 1)*(x + 1)**(27/2) - 6*sqrt(-x + 1)*(
x + 1)**(25/2)) - 60*sqrt(-x + 1)*(x + 1)**(25/2)*asin(sqrt(2)*sq
rt(x + 1)/2)/(3*sqrt(-x + 1)*(x + 1)**(27/2) - 6*sqrt(-x + 1)*(x
+ 1)**(25/2)) + 3*(x + 1)**15/(3*sqrt(-x + 1)*(x + 1)**(27/2) - 6
*sqrt(-x + 1)*(x + 1)**(25/2)) - 40*(x + 1)**14/(3*sqrt(-x + 1)*(
x + 1)**(27/2) - 6*sqrt(-x + 1)*(x + 1)**(25/2)) + 60*(x + 1)**13
/(3*sqrt(-x + 1)*(x + 1)**(27/2) - 6*sqrt(-x + 1)*(x + 1)**(25/2)
), True))
```

GIAC/XCAS [A] time = 0.212762, size = 59, normalized size = 0.94

$$-\frac{((3x-37)(x+1)+60)\sqrt{x+1}\sqrt{-x+1}}{3(x-1)^2}+10 \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*((3*x - 37)*(x + 1) + 60)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^2
 + 10*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1097 $\int \frac{(1+x)^{5/2}}{(1-x)^{7/2}}\,dx$

Optimal. Leaf size=63

$$\frac{2(x+1)^{5/2}}{5(1-x)^{5/2}}-\frac{2(x+1)^{3/2}}{3(1-x)^{3/2}}+\frac{2\sqrt{x+1}}{\sqrt{1-x}}-\sin^{-1}(x)$$

```
[Out] (2*Sqrt[1 + x])/Sqrt[1 - x] - (2*(1 + x)^(3/2))/(3*(1 - x)^(3/2))
 + (2*(1 + x)^(5/2))/(5*(1 - x)^(5/2)) - ArcSin[x]
```

Rubi [A] time = 0.0409623, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{2(x+1)^{5/2}}{5(1-x)^{5/2}}-\frac{2(x+1)^{3/2}}{3(1-x)^{3/2}}+\frac{2\sqrt{x+1}}{\sqrt{1-x}}-\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(7/2),x]
```

```
[Out] (2*Sqrt[1 + x])/Sqrt[1 - x] - (2*(1 + x)^(3/2))/(3*(1 - x)^(3/2))
 + (2*(1 + x)^(5/2))/(5*(1 - x)^(5/2)) - ArcSin[x]
```

Rubi in Sympy [A] time = 6.65081, size = 51, normalized size = 0.81

$$-\operatorname{asin}(x)+\frac{2\sqrt{x+1}}{\sqrt{-x+1}}-\frac{2(x+1)^{\frac{3}{2}}}{3(-x+1)^{\frac{3}{2}}}+\frac{2(x+1)^{\frac{5}{2}}}{5(-x+1)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(7/2),x)
```

```
[Out] -asin(x) + 2*sqrt(x + 1)/sqrt(-x + 1) - 2*(x + 1)**(3/2)/(3*(-x +
 1)**(3/2)) + 2*(x + 1)**(5/2)/(5*(-x + 1)**(5/2))
```

Mathematica [A] time = 0.0514779, size = 47, normalized size = 0.75

$$-\frac{2\sqrt{1-x^2}\left(23x^2-24x+13\right)}{15(x-1)^3}-2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(7/2),x]
```

```
[Out] (-2*Sqrt[1 - x^2]*(13 - 24*x + 23*x^2))/(15*(-1 + x)^3) - 2*ArcSi
n[Sqrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.033, size = 84, normalized size = 1.3

$$\frac{46\,x^3-2\,x^2-22\,x+26}{15\,(-1+x)^2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}-\arcsin(x)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(7/2),x)
```

```
[Out] 2/15*(23*x^3-x^2-11*x+13)/(-1+x)^2/(-(1+x)*(-1+x))^(1/2)*((1+x)*(
1-x))^(1/2)/(1-x)^(1/2)/(1+x)^(1/2)-((1+x)*(1-x))^(1/2)/(1+x)^(1/
2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49127, size = 216, normalized size = 3.43

$$-\frac{\left(-x^2+1\right)^{\frac{5}{2}}}{5\left(x^5-5\,x^4+10\,x^3-10\,x^2+5\,x-1\right)}+\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{x^4-4\,x^3+6\,x^2-4\,x+1}+\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{3\left(x^3-3\,x^2+3\,x-1\right)}+\frac{6\sqrt{-x^2+1}}{5\left(x^3-3\,x^2+3\,x-1\right)}-\frac{7\sqrt{-x^2+1}}{15\left(x^2-2\,x+1\right)}-\frac{38\sqrt{-x^2+1}}{15\,(x-1)}-\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/5*(-x^2 + 1)^(5/2)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x - 1) +
 (-x^2 + 1)^(3/2)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 1/3*(-x^2 + 1
)^(3/2)/(x^3 - 3*x^2 + 3*x - 1) + 6/5*sqrt(-x^2 + 1)/(x^3 - 3*x^2
 + 3*x - 1) - 7/15*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) - 38/15*sqrt(-x
^2 + 1)/(x - 1) - arcsin(x)
```

Fricas [A] time = 0.211113, size = 242, normalized size = 3.84

$$\frac{2\left(36\,x^5-20\,x^4-40\,x^3+60\,x^2-10\left(x^4-7\,x^3+6\,x^2-6\,x\right)\sqrt{x+1}\sqrt{-x+1}+15\left(x^5-5\,x^4+5\,x^3+5\,x^2+\left(x^4-7\,x^2+10\right.\right.\right.}{15\left(x^5-5\,x^4+5\,x^3+5\,x^2+(x^4-7\,x^2+10\,x-4)\sqrt{x+1}\sqrt{-x+1}-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(36*x^5 - 20*x^4 - 40*x^3 + 60*x^2 - 10*(x^4 - 7*x^3 + 6*x^2
 - 6*x)*sqrt(x + 1)*sqrt(-x + 1) + 15*(x^5 - 5*x^4 + 5*x^3 + 5*x^
2 + (x^4 - 7*x^2 + 10*x - 4)*sqrt(x + 1)*sqrt(-x + 1) - 10*x + 4)
*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) - 60*x)/(x^5 - 5*x^4 +
5*x^3 + 5*x^2 + (x^4 - 7*x^2 + 10*x - 4)*sqrt(x + 1)*sqrt(-x + 1)
 - 10*x + 4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.210777, size = 59, normalized size = 0.94

$$-\frac{2\left((23\,x-47)(x+1)+60\right)\sqrt{x+1}\sqrt{-x+1}}{15\,(x-1)^3}-2\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*((23*x - 47)*(x + 1) + 60)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)
^3 - 2*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1098 $\int \frac{(1+x)^{5/2}}{(1-x)^{9/2}}\,dx$

Optimal. Leaf size=20

$$\frac{(x+1)^{7/2}}{7(1-x)^{7/2}}$$

```
[Out] (1 + x)^(7/2)/(7*(1 - x)^(7/2))
```

Rubi [A] time = 0.0120342, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{(x+1)^{7/2}}{7(1-x)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(9/2),x]

[Out] (1 + x)^(7/2)/(7*(1 - x)^(7/2))
```

Rubi in Sympy [A] time = 2.35234, size = 14, normalized size = 0.7

$$\frac{(x+1)^{\frac{7}{2}}}{7\,(-x+1)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(9/2),x)

[Out] (x + 1)**(7/2)/(7*(-x + 1)**(7/2))
```

Mathematica [A] time = 0.0203976, size = 25, normalized size = 1.25

$$\frac{(x+1)^3\sqrt{1-x^2}}{7(x-1)^4}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(9/2),x]
```

```
[Out] ((1 + x)^3*Sqrt[1 - x^2])/(7*(-1 + x)^4)
```

Maple [A] time = 0.006, size = 15, normalized size = 0.8

$$\frac{1}{7}\left(1+x\right)^{\frac{7}{2}}\left(1-x\right)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(9/2),x)
```

```
[Out] 1/7*(1+x)^(7/2)/(1-x)^(7/2)
```

Maxima [A] time = 1.34365, size = 231, normalized size = 11.55

$$\frac{\left(-x^2+1\right)^{\frac{5}{2}}}{x^6-6\,x^5+15\,x^4-20\,x^3+15\,x^2-6\,x+1}+\frac{5\left(-x^2+1\right)^{\frac{3}{2}}}{2\left(x^5-5\,x^4+10\,x^3-10\,x^2+5\,x-1\right)}+\frac{15\sqrt{-x^2+1}}{7\left(x^4-4\,x^3+6\,x^2-4\,x+1\right)}+\frac{3\sqrt{-x^2+1}}{14\left(x^3-3\,x^2+3\,x-1\right)}-\frac{\sqrt{-x^2+1}}{7\left(x^2-2\,x+1\right)}+\frac{\sqrt{-x^2+1}}{7\left(x-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(9/2),x, algorithm="maxima")
```

```
[Out] (-x^2 + 1)^(5/2)/(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15*x^2 - 6*x +
1) + 5/2*(-x^2 + 1)^(3/2)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x -
1) + 15/7*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 3/14*s
qrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 1/7*sqrt(-x^2 + 1)/(x^2 -
 2*x + 1) + 1/7*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.206994, size = 158, normalized size = 7.9

$$\frac{2\left(x^7-14\,x^5-7\,x^3+7\left(x^5-x^3-4\,x\right)\sqrt{x+1}\sqrt{-x+1}+28\,x\right)}{7\left(x^7-14\,x^5+28\,x^4-7\,x^3-28\,x^2-\left(x^6-7\,x^5+11\,x^4+7\,x^3-32\,x^2+28\,x-8\right)\sqrt{x+1}\sqrt{-x+1}+28\,x-8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/7*(x^7 - 14*x^5 - 7*x^3 + 7*(x^5 - x^3 - 4*x)*sqrt(x + 1)*sqrt(
-x + 1) + 28*x)/(x^7 - 14*x^5 + 28*x^4 - 7*x^3 - 28*x^2 - (x^6 -
```

```
7*x^5 + 11*x^4 + 7*x^3 - 32*x^2 + 28*x - 8)*sqrt(x + 1)*sqrt(-x +
 1) + 28*x - 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.212429, size = 26, normalized size = 1.3

$$\frac{(x+1)^{\frac{7}{2}}\sqrt{-x+1}}{7\,(x-1)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(9/2),x, algorithm="giac")
```

```
[Out] 1/7*(x + 1)^(7/2)*sqrt(-x + 1)/(x - 1)^4
```

3.1099 $\int \frac{(1+x)^{5/2}}{(1-x)^{11/2}}\,dx$

Optimal. Leaf size=41

$$\frac{(x+1)^{7/2}}{63(1-x)^{7/2}}+\frac{(x+1)^{7/2}}{9(1-x)^{9/2}}$$

```
[Out] (1 + x)^(7/2)/(9*(1 - x)^(9/2)) + (1 + x)^(7/2)/(63*(1 - x)^(7/2)
)
```

Rubi [A] time = 0.0242483, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{(x+1)^{7/2}}{63(1-x)^{7/2}}+\frac{(x+1)^{7/2}}{9(1-x)^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(11/2),x]
```

```
[Out] (1 + x)^(7/2)/(9*(1 - x)^(9/2)) + (1 + x)^(7/2)/(63*(1 - x)^(7/2)
)
```

Rubi in Sympy [A] time = 3.65636, size = 29, normalized size = 0.71

$$\frac{(x+1)^{\frac{7}{2}}}{63\,(-x+1)^{\frac{7}{2}}}+\frac{(x+1)^{\frac{7}{2}}}{9\,(-x+1)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(11/2),x)
```

```
[Out] (x + 1)**(7/2)/(63*(-x + 1)**(7/2)) + (x + 1)**(7/2)/(9*(-x + 1)*
*(9/2))
```

Mathematica [A] time = 0.0209838, size = 28, normalized size = 0.68

$$\frac{(x-8)(x+1)^3\sqrt{1-x^2}}{63(x-1)^5}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(11/2),x]
```

```
[Out] ((-8 + x)*(1 + x)^3*Sqrt[1 - x^2])/(63*(-1 + x)^5)
```

Maple [A] time = 0.003, size = 18, normalized size = 0.4

$$-\frac{x-8}{63}(1+x)^{\frac{7}{2}}(1-x)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(11/2),x)
```

```
[Out] -1/63*(1+x)^(7/2)*(x-8)/(1-x)^(9/2)
```

Maxima [A] time = 1.35548, size = 294, normalized size = 7.17

$$-\frac{\left(-x^2+1\right)^{\frac{5}{2}}}{2\left(x^7-7x^6+21x^5-35x^4+35x^3-21x^2+7x-1\right)} - \frac{5\left(-x^2+1\right)^{\frac{3}{2}}}{6\left(x^6-6x^5+15x^4-20x^3+15x^2-6x+1\right)} - \frac{5\sqrt{-x^2+1}}{9\left(x^5-5x^4+10x^3-10x^2+5x-1\right)} - \frac{5\sqrt{-x^2+1}}{126\left(x^4-4x^3+6x^2-4x+1\right)} + \frac{\sqrt{-x^2+1}}{42\left(x^3-3x^2+3x-1\right)} - \frac{\sqrt{-x^2+1}}{63\left(x^2-2x+1\right)} + \frac{\sqrt{-x^2+1}}{63(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(11/2),x, algorithm="maxima")
```

```
[Out] -1/2*(-x^2 + 1)^(5/2)/(x^7 - 7*x^6 + 21*x^5 - 35*x^4 + 35*x^3 - 2
1*x^2 + 7*x - 1) - 5/6*(-x^2 + 1)^(3/2)/(x^6 - 6*x^5 + 15*x^4 - 2
0*x^3 + 15*x^2 - 6*x + 1) - 5/9*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*
x^3 - 10*x^2 + 5*x - 1) - 5/126*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x
^2 - 4*x + 1) + 1/42*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 1/6
3*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) + 1/63*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.207367, size = 250, normalized size = 6.1

$$\frac{7x^9-72x^8+198x^7+252x^6-945x^5+252x^4-84x^3-504x^2+3\left(3x^8-3x^7-63x^6+203x^5-140x^3+168x^2-336x\right.}{63\left(x^9-9x^8+18x^7+18x^6-99x^5+99x^4+24x^3-108x^2+\left(x^8-22x^6+60x^5-39x^4-60x^3+116x^2-72x+16\right)\sqrt{x\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(11/2),x, algorithm="fricas")
```

```
[Out] 1/63*(7*x^9 - 72*x^8 + 198*x^7 + 252*x^6 - 945*x^5 + 252*x^4 - 84
*x^3 - 504*x^2 + 3*(3*x^8 - 3*x^7 - 63*x^6 + 203*x^5 - 140*x^3 +
168*x^2 - 336*x)*sqrt(x + 1)*sqrt(-x + 1) + 1008*x)/(x^9 - 9*x^8
+ 18*x^7 + 18*x^6 - 99*x^5 + 99*x^4 + 24*x^3 - 108*x^2 + (x^8 - 2
2*x^6 + 60*x^5 - 39*x^4 - 60*x^3 + 116*x^2 - 72*x + 16)*sqrt(x +
1)*sqrt(-x + 1) + 72*x - 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(11/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.217918, size = 30, normalized size = 0.73

$$\frac{(x+1)^{\frac{7}{2}}(x-8)\sqrt{-x+1}}{63\,(x-1)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(11/2),x, algorithm="giac")
```

```
[Out] 1/63*(x + 1)^(7/2)*(x - 8)*sqrt(-x + 1)/(x - 1)^5
```

3.1100 $\int \frac{(1+x)^{5/2}}{(1-x)^{13/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2(x+1)^{7/2}}{693(1-x)^{7/2}}+\frac{2(x+1)^{7/2}}{99(1-x)^{9/2}}+\frac{(x+1)^{7/2}}{11(1-x)^{11/2}}$$

```
[Out] (1 + x)^(7/2)/(11*(1 - x)^(11/2)) + (2*(1 + x)^(7/2))/(99*(1 - x)
^(9/2)) + (2*(1 + x)^(7/2))/(693*(1 - x)^(7/2))
```

Rubi [A] time = 0.0376054, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2(x+1)^{7/2}}{693(1-x)^{7/2}}+\frac{2(x+1)^{7/2}}{99(1-x)^{9/2}}+\frac{(x+1)^{7/2}}{11(1-x)^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(13/2),x]
```

```
[Out] (1 + x)^(7/2)/(11*(1 - x)^(11/2)) + (2*(1 + x)^(7/2))/(99*(1 - x)
^(9/2)) + (2*(1 + x)^(7/2))/(693*(1 - x)^(7/2))
```

Rubi in Sympy [A] time = 5.26874, size = 48, normalized size = 0.79

$$\frac{2\,(x+1)^{\frac{7}{2}}}{693\,(-x+1)^{\frac{7}{2}}}+\frac{2\,(x+1)^{\frac{7}{2}}}{99\,(-x+1)^{\frac{9}{2}}}+\frac{(x+1)^{\frac{7}{2}}}{11\,(-x+1)^{\frac{11}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(13/2),x)
```

```
[Out] 2*(x + 1)**(7/2)/(693*(-x + 1)**(7/2)) + 2*(x + 1)**(7/2)/(99*(-x
 + 1)**(9/2)) + (x + 1)**(7/2)/(11*(-x + 1)**(11/2))
```

Mathematica [A] time = 0.0230263, size = 35, normalized size = 0.57

$$\frac{(x+1)^3\sqrt{1-x^2}\left(2x^2-18x+79\right)}{693(x-1)^6}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(13/2),x]
```

```
[Out] ((1 + x)^3*Sqrt[1 - x^2]*(79 - 18*x + 2*x^2))/(693*(-1 + x)^6)
```

Maple [A] time = 0.003, size = 25, normalized size = 0.4

$$\frac{2 x^2 - 18 x + 79}{693} (1 + x)^{\frac{7}{2}} (1 - x)^{-\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(13/2),x)
```

```
[Out] 1/693*(1+x)^(7/2)*(2*x^2-18*x+79)/(1-x)^(11/2)
```

Maxima [A] time = 1.34855, size = 363, normalized size = 5.95

$$\frac{\left(-x^2 + 1\right)^{\frac{5}{2}}}{3 \left(x^8 - 8 x^7 + 28 x^6 - 56 x^5 + 70 x^4 - 56 x^3 + 28 x^2 - 8 x + 1\right)} + \frac{5 \left(-x^2 + 1\right)^{\frac{3}{2}}}{12 \left(x^7 - 7 x^6 + 21 x^5 - 35 x^4 + 35 x^3 - 21 x^2 + 7 x - 1\right)} + \frac{5 \sqrt{-x^2 + 1}}{22 \left(x^6 - 6 x^5 + 15 x^4 - 20 x^3 + 15 x^2 - 6 x + 1\right)} + \frac{5 \sqrt{-x^2 + 1}}{396 \left(x^5 - 5 x^4 + 10 x^3 - 10 x^2 + 5 x - 1\right)} - \frac{5 \sqrt{-x^2 + 1}}{693 \left(x^4 - 4 x^3 + 6 x^2 - 4 x + 1\right)} + \frac{\sqrt{-x^2 + 1}}{231 \left(x^3 - 3 x^2 + 3 x - 1\right)} - \frac{2 \sqrt{-x^2 + 1}}{693 \left(x^2 - 2 x + 1\right)} + \frac{2 \sqrt{-x^2 + 1}}{693 (x - 1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(13/2),x, algorithm="maxima")
```

```
[Out] 1/3*(-x^2 + 1)^(5/2)/(x^8 - 8*x^7 + 28*x^6 - 56*x^5 + 70*x^4 - 56
*x^3 + 28*x^2 - 8*x + 1) + 5/12*(-x^2 + 1)^(3/2)/(x^7 - 7*x^6 + 2
1*x^5 - 35*x^4 + 35*x^3 - 21*x^2 + 7*x - 1) + 5/22*sqrt(-x^2 + 1)
/(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15*x^2 - 6*x + 1) + 5/396*sqrt(
-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x - 1) - 5/693*sqrt(
-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) + 1/231*sqrt(-x^2 + 1)/
(x^3 - 3*x^2 + 3*x - 1) - 2/693*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) +
2/693*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.207694, size = 312, normalized size = 5.11

$$\frac{81\,x^{11} - 22\,x^{10} - 2552\,x^{9} + 8976\,x^{8} - 7491\,x^{7} - 21714\,x^{6} + 38346\,x^{5} - 7392\,x^{4} - 9240\,x^{3} + 22176\,x^{2} - 11\,\left(7\,x^{10} - 79\,x^{9} + 2\cdots\right.}{693\,\left(x^{11} - 33\,x^{9} + 110\,x^{8} - 77\,x^{7} - 220\,x^{6} + 473\,x^{5} - 242\,x^{4} - 220\,x^{3} + 352\,x^{2} - (x^{10} - 11\,x^{9} + 28\,x^{8} + 22\,x^{7} \cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(13/2),x, algorithm="fricas")
```

```
[Out] 1/693*(81*x^11 - 22*x^10 - 2552*x^9 + 8976*x^8 - 7491*x^7 - 21714
*x^6 + 38346*x^5 - 7392*x^4 - 9240*x^3 + 22176*x^2 - 11*(7*x^10 -
 79*x^9 + 207*x^8 + 117*x^7 - 1554*x^6 + 2310*x^5 + 336*x^4 - 184
8*x^3 + 2016*x^2 - 2016*x)*sqrt(x + 1)*sqrt(-x + 1) - 22176*x)/(x
^11 - 33*x^9 + 110*x^8 - 77*x^7 - 220*x^6 + 473*x^5 - 242*x^4 - 2
20*x^3 + 352*x^2 - (x^10 - 11*x^9 + 28*x^8 + 22*x^7 - 199*x^6 + 2
97*x^5 - 54*x^4 - 308*x^3 + 368*x^2 - 176*x + 32)*sqrt(x + 1)*sqr
t(-x + 1) - 176*x + 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(13/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219973, size = 39, normalized size = 0.64

$$\frac{(2\,(x+1)(x-10)+99)(x+1)^{\frac{7}{2}}\sqrt{-x+1}}{693\,(x-1)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(13/2),x, algorithm="giac")
```

```
[Out] 1/693*(2*(x + 1)*(x - 10) + 99)*(x + 1)^(7/2)*sqrt(-x + 1)/(x - 1
)^6
```

3.1101 $\int \frac{(1+x)^{5/2}}{(1-x)^{15/2}}\,dx$

Optimal. Leaf size=81

$$\frac{2(x+1)^{7/2}}{3003(1-x)^{7/2}}+\frac{2(x+1)^{7/2}}{429(1-x)^{9/2}}+\frac{3(x+1)^{7/2}}{143(1-x)^{11/2}}+\frac{(x+1)^{7/2}}{13(1-x)^{13/2}}$$

```
[Out] (1 + x)^(7/2)/(13*(1 - x)^(13/2)) + (3*(1 + x)^(7/2))/(143*(1 - x
)^(11/2)) + (2*(1 + x)^(7/2))/(429*(1 - x)^(9/2)) + (2*(1 + x)^(7
/2))/(3003*(1 - x)^(7/2))
```

Rubi [A] time = 0.0531703, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2(x+1)^{7/2}}{3003(1-x)^{7/2}}+\frac{2(x+1)^{7/2}}{429(1-x)^{9/2}}+\frac{3(x+1)^{7/2}}{143(1-x)^{11/2}}+\frac{(x+1)^{7/2}}{13(1-x)^{13/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(15/2),x]
```

```
[Out] (1 + x)^(7/2)/(13*(1 - x)^(13/2)) + (3*(1 + x)^(7/2))/(143*(1 - x
)^(11/2)) + (2*(1 + x)^(7/2))/(429*(1 - x)^(9/2)) + (2*(1 + x)^(7
/2))/(3003*(1 - x)^(7/2))
```

Rubi in Sympy [A] time = 6.90044, size = 65, normalized size = 0.8

$$\frac{2\,(x+1)^{\frac{7}{2}}}{3003\,(-x+1)^{\frac{7}{2}}}+\frac{2\,(x+1)^{\frac{7}{2}}}{429\,(-x+1)^{\frac{9}{2}}}+\frac{3\,(x+1)^{\frac{7}{2}}}{143\,(-x+1)^{\frac{11}{2}}}+\frac{(x+1)^{\frac{7}{2}}}{13\,(-x+1)^{\frac{13}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(15/2),x)
```

```
[Out] 2*(x + 1)**(7/2)/(3003*(-x + 1)**(7/2)) + 2*(x + 1)**(7/2)/(429*(
-x + 1)**(9/2)) + 3*(x + 1)**(7/2)/(143*(-x + 1)**(11/2)) + (x +
1)**(7/2)/(13*(-x + 1)**(13/2))
```

Mathematica [A] time = 0.0254316, size = 40, normalized size = 0.49

$$\frac{(x+1)^3\sqrt{1-x^2}\left(2x^3-20x^2+97x-310\right)}{3003(x-1)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(15/2),x]
```

```
[Out] ((1 + x)^3*Sqrt[1 - x^2]*(-310 + 97*x - 20*x^2 + 2*x^3))/(3003*(-
1 + x)^7)
```

Maple [A] time = 0.003, size = 30, normalized size = 0.4

$$-\frac{2x^3-20x^2+97x-310}{3003}(1+x)^{\frac{7}{2}}(1-x)^{-\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(15/2),x)
```

```
[Out] -1/3003*(1+x)^(7/2)*(2*x^3-20*x^2+97*x-310)/(1-x)^(13/2)
```

Maxima [A] time = 1.3386, size = 439, normalized size = 5.42

$$-\frac{\left(-x^2+1\right)^{\frac{5}{2}}}{4\left(x^9-9x^8+36x^7-84x^6+126x^5-126x^4+84x^3-36x^2+9x-1\right)} - \frac{\left(-x^2+1\right)^{\frac{3}{2}}}{4\left(x^8-8x^7+28x^6-56x^5+70x^4-56x^3+28x^2-8x+1\right)} - \frac{3\sqrt{-x^2+1}}{26\left(x^7-7x^6+21x^5-35x^4+35x^3-21x^2+7x-1\right)} - \frac{3\sqrt{-x^2+1}}{572\left(x^6-6x^5+15x^4-20x^3+15x^2-6x+1\right)} + \frac{5\sqrt{-x^2+1}}{1716\left(x^5-5x^4+10x^3-10x^2+5x-1\right)} - \frac{5\sqrt{-x^2+1}}{3003\left(x^4-4x^3+6x^2-4x+1\right)} + \frac{\sqrt{-x^2+1}}{1001\left(x^3-3x^2+3x-1\right)} - \frac{2\sqrt{-x^2+1}}{3003\left(x^2-2x+1\right)} + \frac{2\sqrt{-x^2+1}}{3003\left(x-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(15/2),x, algorithm="maxima")
```

```
[Out] -1/4*(-x^2 + 1)^(5/2)/(x^9 - 9*x^8 + 36*x^7 - 84*x^6 + 126*x^5 -
126*x^4 + 84*x^3 - 36*x^2 + 9*x - 1) - 1/4*(-x^2 + 1)^(3/2)/(x^8
- 8*x^7 + 28*x^6 - 56*x^5 + 70*x^4 - 56*x^3 + 28*x^2 - 8*x + 1) -
 3/26*sqrt(-x^2 + 1)/(x^7 - 7*x^6 + 21*x^5 - 35*x^4 + 35*x^3 - 21
*x^2 + 7*x - 1) - 3/572*sqrt(-x^2 + 1)/(x^6 - 6*x^5 + 15*x^4 - 20
*x^3 + 15*x^2 - 6*x + 1) + 5/1716*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 1
0*x^3 - 10*x^2 + 5*x - 1) - 5/3003*sqrt(-x^2 + 1)/(x^4 - 4*x^3 +
6*x^2 - 4*x + 1) + 1/1001*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1)
```

```
- 2/3003*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) + 2/3003*sqrt(-x^2 + 1)/(
x - 1)
```

Fricas [A] time = 0.208693, size = 358, normalized size = 4.42

$$\frac{308\,x^{13} - 4030\,x^{12} + 12181\,x^{11} + 11726\,x^{10} - 123838\,x^{9} + 220506\,x^{8} - 6435\,x^{7} - 498498\,x^{6} + 528528\,x^{5} - 240240\,x^{3} + 2882}{3003\,\left(x^{13} - 13\,x^{12} + 39\,x^{11} + 39\,x^{10} - 403\,x^{9} + 689\,x^{8} + 13\,x^{7} - 1443\,x^{6} + 1742\,x^{5} - 312\,x^{4} - 1040\,x^{3} + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(15/2),x, algorithm="fricas")
```

```
[Out] 1/3003*(308*x^13 - 4030*x^12 + 12181*x^11 + 11726*x^10 - 123838*x
^9 + 220506*x^8 - 6435*x^7 - 498498*x^6 + 528528*x^5 - 240240*x^3
 + 288288*x^2 + 13*(24*x^12 - 2*x^11 - 1067*x^10 + 4345*x^9 - 471
9*x^8 - 8283*x^7 + 30030*x^6 - 25872*x^5 - 11088*x^4 + 25872*x^3
- 22176*x^2 + 14784*x)*sqrt(x + 1)*sqrt(-x + 1) - 192192*x)/(x^13
 - 13*x^12 + 39*x^11 + 39*x^10 - 403*x^9 + 689*x^8 + 13*x^7 - 144
3*x^6 + 1742*x^5 - 312*x^4 - 1040*x^3 + 1040*x^2 + (x^12 - 45*x^1
0 + 182*x^9 - 193*x^8 - 364*x^7 + 1189*x^6 - 1066*x^5 - 232*x^4 +
 1248*x^3 - 1072*x^2 + 416*x - 64)*sqrt(x + 1)*sqrt(-x + 1) - 416
*x + 64)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(15/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224477, size = 47, normalized size = 0.58

$$\frac{((2\,(x + 1)(x - 12) + 143)(x + 1) - 429)(x + 1)^{\frac{7}{2}}\sqrt{-x + 1}}{3003\,(x - 1)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(15/2),x, algorithm="giac")
```

```
[Out] 1/3003*((2*(x + 1)*(x - 12) + 143)*(x + 1) - 429)*(x + 1)^(7/2)*s
qrt(-x + 1)/(x - 1)^7
```

3.1102 $\int \frac{(1+x)^{5/2}}{(1-x)^{17/2}}\,dx$

Optimal. Leaf size=101

$$\frac{8(x+1)^{7/2}}{45045(1-x)^{7/2}}+\frac{8(x+1)^{7/2}}{6435(1-x)^{9/2}}+\frac{4(x+1)^{7/2}}{715(1-x)^{11/2}}+\frac{4(x+1)^{7/2}}{195(1-x)^{13/2}}+\frac{(x+1)^{7/2}}{15(1-x)^{15/2}}$$

```
[Out] (1 + x)^(7/2)/(15*(1 - x)^(15/2)) + (4*(1 + x)^(7/2))/(195*(1 - x
)^(13/2)) + (4*(1 + x)^(7/2))/(715*(1 - x)^(11/2)) + (8*(1 + x)^(
7/2))/(6435*(1 - x)^(9/2)) + (8*(1 + x)^(7/2))/(45045*(1 - x)^(7/
2))
```

Rubi [A] time = 0.0695147, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{8(x+1)^{7/2}}{45045(1-x)^{7/2}}+\frac{8(x+1)^{7/2}}{6435(1-x)^{9/2}}+\frac{4(x+1)^{7/2}}{715(1-x)^{11/2}}+\frac{4(x+1)^{7/2}}{195(1-x)^{13/2}}+\frac{(x+1)^{7/2}}{15(1-x)^{15/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(17/2),x]
```

```
[Out] (1 + x)^(7/2)/(15*(1 - x)^(15/2)) + (4*(1 + x)^(7/2))/(195*(1 - x
)^(13/2)) + (4*(1 + x)^(7/2))/(715*(1 - x)^(11/2)) + (8*(1 + x)^(
7/2))/(6435*(1 - x)^(9/2)) + (8*(1 + x)^(7/2))/(45045*(1 - x)^(7/
2))
```

Rubi in Sympy [A] time = 8.60102, size = 82, normalized size = 0.81

$$\frac{8\,(x+1)^{\frac{7}{2}}}{45045\,(-x+1)^{\frac{7}{2}}}+\frac{8\,(x+1)^{\frac{7}{2}}}{6435\,(-x+1)^{\frac{9}{2}}}+\frac{4\,(x+1)^{\frac{7}{2}}}{715\,(-x+1)^{\frac{11}{2}}}+\frac{4\,(x+1)^{\frac{7}{2}}}{195\,(-x+1)^{\frac{13}{2}}}+\frac{(x+1)^{\frac{7}{2}}}{15\,(-x+1)^{\frac{15}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(17/2),x)
```

```
[Out] 8*(x + 1)**(7/2)/(45045*(-x + 1)**(7/2)) + 8*(x + 1)**(7/2)/(6435
*(-x + 1)**(9/2)) + 4*(x + 1)**(7/2)/(715*(-x + 1)**(11/2)) + 4*(
x + 1)**(7/2)/(195*(-x + 1)**(13/2)) + (x + 1)**(7/2)/(15*(-x + 1
)**(15/2))
```

Mathematica [A] time = 0.0277988, size = 45, normalized size = 0.45

$$\frac{(x+1)^3\sqrt{1-x^2}\left(8x^4-88x^3+468x^2-1628x+4243\right)}{45045(x-1)^8}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(17/2),x]
```

```
[Out] ((1 + x)^3*Sqrt[1 - x^2]*(4243 - 1628*x + 468*x^2 - 88*x^3 + 8*x^
4))/(45045*(-1 + x)^8)
```

Maple [A] time = 0.004, size = 35, normalized size = 0.4

$$\frac{8\,x^4-88\,x^3+468\,x^2-1628\,x+4243}{45045}\,(1+x)^{\frac{7}{2}}\,(1-x)^{-\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(17/2),x)
```

```
[Out] 1/45045*(1+x)^(7/2)*(8*x^4-88*x^3+468*x^2-1628*x+4243)/(1-x)^(15/
2)
```

Maxima [A] time = 1.34592, size = 521, normalized size = 5.16

$$\frac{\left(-x^2+1\right)^{\frac{5}{2}}}{5\,(x^{10}-10\,x^9+45\,x^8-120\,x^7+210\,x^6-252\,x^5+210\,x^4-120\,x^3+45\,x^2-10\,x+1)} + \frac{\left(-x^2+1\right)^{\frac{3}{2}}}{6\,(x^9-9\,x^8+36\,x^7-84\,x^6+126\,x^5-126\,x^4+84\,x^3-36\,x^2+9\,x-1)} + \frac{\sqrt{-x^2+1}}{15\,(x^8-8\,x^7+28\,x^6-56\,x^5+70\,x^4-56\,x^3+28\,x^2-8\,x+1)} + \frac{\sqrt{-x^2+1}}{390\,(x^7-7\,x^6+21\,x^5-35\,x^4+35\,x^3-21\,x^2+7\,x-1)} - \frac{\sqrt{-x^2+1}}{715\,(x^6-6\,x^5+15\,x^4-20\,x^3+15\,x^2-6\,x+1)} + \frac{\sqrt{-x^2+1}}{1287\,(x^5-5\,x^4+10\,x^3-10\,x^2+5\,x-1)} - \frac{4\,\sqrt{-x^2+1}}{9009\,(x^4-4\,x^3+6\,x^2-4\,x+1)} + \frac{4\,\sqrt{-x^2+1}}{15015\,(x^3-3\,x^2+3\,x-1)} - \frac{8\,\sqrt{-x^2+1}}{45045\,(x^2-2\,x+1)} + \frac{8\,\sqrt{-x^2+1}}{45045\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(17/2),x, algorithm="maxima")
```

```
[Out] 1/5*(-x^2 + 1)^(5/2)/(x^10 - 10*x^9 + 45*x^8 - 120*x^7 + 210*x^6
- 252*x^5 + 210*x^4 - 120*x^3 + 45*x^2 - 10*x + 1) + 1/6*(-x^2 +
1)^(3/2)/(x^9 - 9*x^8 + 36*x^7 - 84*x^6 + 126*x^5 - 126*x^4 + 84*
x^3 - 36*x^2 + 9*x - 1) + 1/15*sqrt(-x^2 + 1)/(x^8 - 8*x^7 + 28*x
^6 - 56*x^5 + 70*x^4 - 56*x^3 + 28*x^2 - 8*x + 1) + 1/390*sqrt(-x
^2 + 1)/(x^7 - 7*x^6 + 21*x^5 - 35*x^4 + 35*x^3 - 21*x^2 + 7*x -
1) - 1/715*sqrt(-x^2 + 1)/(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15*x^2
 - 6*x + 1) + 1/1287*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^
2 + 5*x - 1) - 4/9009*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x +
 1) + 4/15015*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 8/45045*sq
rt(-x^2 + 1)/(x^2 - 2*x + 1) + 8/45045*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.207872, size = 420, normalized size = 4.16

$$\frac{4251\,x^{15} - 120\,x^{14} - 254160\,x^{13} + 1188460\,x^{12} - 1405755\,x^{11} - 3543540\,x^{10} + 12759890\,x^{9} - 12097800\,x^{8} - 9047610\,x^{7} + 3}{45045\,\left(x^{15} - 60\,x^{13} + 280\,x^{12} - 330\,x^{11} - 840\,x^{10} + 3020\,x^{9} - 2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(17/2),x, algorithm="fricas")
```

```
[Out] 1/45045*(4251*x^15 - 120*x^14 - 254160*x^13 + 1188460*x^12 - 1405
755*x^11 - 3543540*x^10 + 12759890*x^9 - 12097800*x^8 - 9047610*x
^7 + 31231200*x^6 - 21189168*x^5 - 5765760*x^4 + 13933920*x^3 - 1
1531520*x^2 - (4235*x^14 - 63645*x^13 + 225355*x^12 + 188695*x^11
 - 2835690*x^10 + 6221072*x^9 - 2247960*x^8 - 12615174*x^7 + 2402
4000*x^6 - 12060048*x^5 - 11531520*x^4 + 16816800*x^3 - 11531520*
x^2 + 5765760*x)*sqrt(x + 1)*sqrt(-x + 1) + 5765760*x)/(x^15 - 60
*x^13 + 280*x^12 - 330*x^11 - 840*x^10 + 3020*x^9 - 2760*x^8 - 21
75*x^7 + 6920*x^6 - 5208*x^5 - 720*x^4 + 3920*x^3 - 2880*x^2 - (x
^14 - 15*x^13 + 53*x^12 + 45*x^11 - 669*x^10 + 1467*x^9 - 505*x^8
 - 3009*x^7 + 5440*x^6 - 2888*x^5 - 2208*x^4 + 4400*x^3 - 2944*x^
2 + 960*x - 128)*sqrt(x + 1)*sqrt(-x + 1) + 960*x - 128)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(17/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225481, size = 57, normalized size = 0.56

$$\frac{\left(4\left(\left(2\left(x+1\right)\left(x-14\right)+195\right)\left(x+1\right)-715\right)\left(x+1\right)+6435\right)\left(x+1\right)^{\frac{7}{2}}\sqrt{-x+1}}{45045\left(x-1\right)^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(17/2),x, algorithm="giac")
```

```
[Out] 1/45045*(4*((2*(x + 1)*(x - 14) + 195)*(x + 1) - 715)*(x + 1) + 6
435)*(x + 1)^(7/2)*sqrt(-x + 1)/(x - 1)^8
```

3.1103 $\int \frac{(1+x)^{5/2}}{(1-x)^{19/2}} \, dx$

Optimal. Leaf size=121

$$\frac{8(x+1)^{7/2}}{153153(1-x)^{7/2}}+\frac{8(x+1)^{7/2}}{21879(1-x)^{9/2}}+\frac{4(x+1)^{7/2}}{2431(1-x)^{11/2}}+\frac{4(x+1)^{7/2}}{663(1-x)^{13/2}}+\frac{(x+1)^{7/2}}{51(1-x)^{15/2}}+\frac{(x+1)^{7/2}}{17(1-x)^{17/2}}$$

```
[Out] (1 + x)^(7/2)/(17*(1 - x)^(17/2)) + (1 + x)^(7/2)/(51*(1 - x)^(15
/2)) + (4*(1 + x)^(7/2))/(663*(1 - x)^(13/2)) + (4*(1 + x)^(7/2))
/(2431*(1 - x)^(11/2)) + (8*(1 + x)^(7/2))/(21879*(1 - x)^(9/2))
+ (8*(1 + x)^(7/2))/(153153*(1 - x)^(7/2))
```

Rubi [A] time = 0.0880289, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{8(x+1)^{7/2}}{153153(1-x)^{7/2}}+\frac{8(x+1)^{7/2}}{21879(1-x)^{9/2}}+\frac{4(x+1)^{7/2}}{2431(1-x)^{11/2}}+\frac{4(x+1)^{7/2}}{663(1-x)^{13/2}}+\frac{(x+1)^{7/2}}{51(1-x)^{15/2}}+\frac{(x+1)^{7/2}}{17(1-x)^{17/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^(5/2)/(1 - x)^(19/2),x]
```

```
[Out] (1 + x)^(7/2)/(17*(1 - x)^(17/2)) + (1 + x)^(7/2)/(51*(1 - x)^(15
/2)) + (4*(1 + x)^(7/2))/(663*(1 - x)^(13/2)) + (4*(1 + x)^(7/2))
/(2431*(1 - x)^(11/2)) + (8*(1 + x)^(7/2))/(21879*(1 - x)^(9/2))
+ (8*(1 + x)^(7/2))/(153153*(1 - x)^(7/2))
```

Rubi in Sympy [A] time = 10.4092, size = 97, normalized size = 0.8

$$\frac{8\,(x+1)^{\frac{7}{2}}}{153153\,(-x+1)^{\frac{7}{2}}}+\frac{8\,(x+1)^{\frac{7}{2}}}{21879\,(-x+1)^{\frac{9}{2}}}+\frac{4\,(x+1)^{\frac{7}{2}}}{2431\,(-x+1)^{\frac{11}{2}}}+\frac{4\,(x+1)^{\frac{7}{2}}}{663\,(-x+1)^{\frac{13}{2}}}+\frac{(x+1)^{\frac{7}{2}}}{51\,(-x+1)^{\frac{15}{2}}}+\frac{(x+1)^{\frac{7}{2}}}{17\,(-x+1)^{\frac{17}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**(5/2)/(1-x)**(19/2),x)
```

```
[Out] 8*(x + 1)**(7/2)/(153153*(-x + 1)**(7/2)) + 8*(x + 1)**(7/2)/(218
79*(-x + 1)**(9/2)) + 4*(x + 1)**(7/2)/(2431*(-x + 1)**(11/2)) +
4*(x + 1)**(7/2)/(663*(-x + 1)**(13/2)) + (x + 1)**(7/2)/(51*(-x
+ 1)**(15/2)) + (x + 1)**(7/2)/(17*(-x + 1)**(17/2))
```

Mathematica [A] time = 0.0287652, size = 50, normalized size = 0.41

$$\frac{(x+1)^3\sqrt{1-x^2}\left(8x^5-96x^4+556x^3-2096x^2+5871x-13252\right)}{153153(x-1)^9}$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(1 + x)^(5/2)/(1 - x)^(19/2),x]
```

```
[Out] ((1 + x)^3*Sqrt[1 - x^2]*(-13252 + 5871*x - 2096*x^2 + 556*x^3 -
96*x^4 + 8*x^5))/(153153*(-1 + x)^9)
```

Maple [A] time = 0.006, size = 40, normalized size = 0.3

$$-\frac{8\,x^5-96\,x^4+556\,x^3-2096\,x^2+5871\,x-13252}{153153}\,(1+x)^{\frac{7}{2}}\,(1-x)^{-\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^(5/2)/(1-x)^(19/2),x)
```

```
[Out] -1/153153*(1+x)^(7/2)*(8*x^5-96*x^4+556*x^3-2096*x^2+5871*x-13252
)/(1-x)^(17/2)
```

Maxima [A] time = 1.39437, size = 610, normalized size = 5.04

$$-\frac{\left(-x^2+1\right)^{\frac{5}{2}}}{6\left(x^{11}-11\,x^{10}+55\,x^9-165\,x^8+330\,x^7-462\,x^6+462\,x^5-330\,x^4+165\,x^3-55\,x^2+11\,x-1\right)}$$
$$-\frac{5\left(-x^2+1\right)^{\frac{3}{2}}}{42\left(x^{10}-10\,x^9+45\,x^8-120\,x^7+210\,x^6-252\,x^5+210\,x^4-120\,x^3+45\,x^2-10\,x+1\right)}$$
$$-\frac{5\sqrt{-x^2+1}}{119\left(x^9-9\,x^8+36\,x^7-84\,x^6+126\,x^5-126\,x^4+84\,x^3-36\,x^2+9\,x-1\right)}$$
$$-\frac{\sqrt{-x^2+1}}{714\left(x^8-8\,x^7+28\,x^6-56\,x^5+70\,x^4-56\,x^3+28\,x^2-8\,x+1\right)}$$
$$+\frac{\sqrt{-x^2+1}}{1326\left(x^7-7\,x^6+21\,x^5-35\,x^4+35\,x^3-21\,x^2+7\,x-1\right)}$$
$$-\frac{\sqrt{-x^2+1}}{2431\left(x^6-6\,x^5+15\,x^4-20\,x^3+15\,x^2-6\,x+1\right)}+\frac{5\sqrt{-x^2+1}}{21879\left(x^5-5\,x^4+10\,x^3-10\,x^2+5\,x-1\right)}$$
$$-\frac{20\sqrt{-x^2+1}}{153153\left(x^4-4\,x^3+6\,x^2-4\,x+1\right)}+\frac{4\sqrt{-x^2+1}}{51051\left(x^3-3\,x^2+3\,x-1\right)}-\frac{8\sqrt{-x^2+1}}{153153\left(x^2-2\,x+1\right)}+\frac{8\sqrt{-x^2+1}}{153153\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(19/2),x, algorithm="maxima")
```

```
[Out] -1/6*(-x^2 + 1)^(5/2)/(x^11 - 11*x^10 + 55*x^9 - 165*x^8 + 330*x^
7 - 462*x^6 + 462*x^5 - 330*x^4 + 165*x^3 - 55*x^2 + 11*x - 1) -
5/42*(-x^2 + 1)^(3/2)/(x^10 - 10*x^9 + 45*x^8 - 120*x^7 + 210*x^6
 - 252*x^5 + 210*x^4 - 120*x^3 + 45*x^2 - 10*x + 1) - 5/119*sqrt(
-x^2 + 1)/(x^9 - 9*x^8 + 36*x^7 - 84*x^6 + 126*x^5 - 126*x^4 + 84
*x^3 - 36*x^2 + 9*x - 1) - 1/714*sqrt(-x^2 + 1)/(x^8 - 8*x^7 + 28
*x^6 - 56*x^5 + 70*x^4 - 56*x^3 + 28*x^2 - 8*x + 1) + 1/1326*sqrt
(-x^2 + 1)/(x^7 - 7*x^6 + 21*x^5 - 35*x^4 + 35*x^3 - 21*x^2 + 7*x
 - 1) - 1/2431*sqrt(-x^2 + 1)/(x^6 - 6*x^5 + 15*x^4 - 20*x^3 + 15
*x^2 - 6*x + 1) + 5/21879*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 -
10*x^2 + 5*x - 1) - 20/153153*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2
 - 4*x + 1) + 4/51051*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) - 8/
153153*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) + 8/153153*sqrt(-x^2 + 1)/(
x - 1)
```

Fricas [A] time = 0.212167, size = 473, normalized size = 3.91

$$\frac{13244\,x^{17} - 225284\,x^{16} + 901748\,x^{15} + 897872\,x^{14} - 14864103\,x^{13} + 36507432\,x^{12} - 9937486\,x^{11} - 112321924\,x^{10} + 214227}{153153\left(x^{17} - 17\,x^{16} + 68\,x^{15} + 68\,x^{14} - 1122\,x^{13} + 2754\,x^{12}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(19/2),x, algorithm="fricas")
```

```
[Out] 1/153153*(13244*x^17 - 225284*x^16 + 901748*x^15 + 897872*x^14 -
14864103*x^13 + 36507432*x^12 - 9937486*x^11 - 112321924*x^10 + 2
14227013*x^9 - 89091288*x^8 - 223632552*x^7 + 373284912*x^6 - 156
011856*x^5 - 114354240*x^4 + 153561408*x^3 - 98017920*x^2 + 17*(7
80*x^16 - 8*x^15 - 59212*x^14 + 318076*x^13 - 482261*x^12 - 95283
5*x^11 + 4671953*x^10 - 6036173*x^9 - 1413984*x^8 + 13635336*x^7
- 16432416*x^6 + 3795792*x^5 + 9609600*x^4 - 10186176*x^3 + 57657
60*x^2 - 2306304*x)*sqrt(x + 1)*sqrt(-x + 1) + 39207168*x)/(x^17
- 17*x^16 + 68*x^15 + 68*x^14 - 1122*x^13 + 2754*x^12 - 748*x^11
- 8500*x^10 + 16201*x^9 - 6409*x^8 - 16864*x^7 + 27064*x^6 - 1251
2*x^5 - 7344*x^4 + 13056*x^3 - 7616*x^2 + (x^16 - 76*x^14 + 408*x
^13 - 618*x^12 - 1224*x^11 + 5996*x^10 - 7752*x^9 - 1919*x^8 + 17
544*x^7 - 20456*x^6 + 5168*x^5 + 11248*x^4 - 14144*x^3 + 7744*x^2
 - 2176*x + 256)*sqrt(x + 1)*sqrt(-x + 1) + 2176*x - 256)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**(5/2)/(1-x)**(19/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.230499, size = 65, normalized size = 0.54

$$\frac{((4\,((2\,(x+1)(x-16)+255)(x+1)-1105)(x+1)+12155)(x+1)-21879)(x+1)^{\frac{7}{2}}\sqrt{-x+1}}{153153\,(x-1)^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(5/2)/(-x + 1)^(19/2),x, algorithm="giac")
```

```
[Out] 1/153153*((4*((2*(x + 1)*(x - 16) + 255)*(x + 1) - 1105)*(x + 1)
+ 12155)*(x + 1) - 21879)*(x + 1)^(7/2)*sqrt(-x + 1)/(x - 1)^9
```

3.1104 $\int \frac{(1+ax)^{3/2}}{\sqrt{1-ax}}\,dx$

Optimal. Leaf size=64

$$-\frac{\sqrt{1-ax}(ax+1)^{3/2}}{2a}-\frac{3\sqrt{1-ax}\sqrt{ax+1}}{2a}+\frac{3\sin^{-1}(ax)}{2a}$$

```
[Out] (-3*Sqrt[1 - a*x]*Sqrt[1 + a*x])/(2*a) - (Sqrt[1 - a*x]*(1 + a*x)
^(3/2))/(2*a) + (3*ArcSin[a*x])/(2*a)
```

Rubi [A] time = 0.0649047, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$-\frac{\sqrt{1-ax}(ax+1)^{3/2}}{2a}-\frac{3\sqrt{1-ax}\sqrt{ax+1}}{2a}+\frac{3\sin^{-1}(ax)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + a*x)^(3/2)/Sqrt[1 - a*x],x]
```

```
[Out] (-3*Sqrt[1 - a*x]*Sqrt[1 + a*x])/(2*a) - (Sqrt[1 - a*x]*(1 + a*x)
^(3/2))/(2*a) + (3*ArcSin[a*x])/(2*a)
```

Rubi in Sympy [A] time = 10.0375, size = 51, normalized size = 0.8

$$-\frac{\sqrt{-ax+1}\,(ax+1)^{\frac{3}{2}}}{2a}-\frac{3\sqrt{-ax+1}\sqrt{ax+1}}{2a}+\frac{3\,\mathrm{asin}\,(ax)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)**(3/2)/(-a*x+1)**(1/2),x)
```

```
[Out] -sqrt(-a*x + 1)*(a*x + 1)**(3/2)/(2*a) - 3*sqrt(-a*x + 1)*sqrt(a*
x + 1)/(2*a) + 3*asin(a*x)/(2*a)
```

Mathematica [A] time = 0.0541555, size = 47, normalized size = 0.73

$$\frac{6\sin^{-1}\left(\frac{\sqrt{ax+1}}{\sqrt{2}}\right)-(ax+4)\sqrt{1-a^2x^2}}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + a*x)^(3/2)/Sqrt[1 - a*x],x]
```

```
[Out] (-((4 + a*x)*Sqrt[1 - a^2*x^2]) + 6*ArcSin[Sqrt[1 + a*x]/Sqrt[2]]
)/(2*a)
```

Maple [A] time = 0.017, size = 98, normalized size = 1.5

$$-\frac{1}{2a}(ax+1)^{\frac{3}{2}}\sqrt{-ax+1}-\frac{3}{2a}\sqrt{-ax+1}\sqrt{ax+1}+\frac{3}{2}\sqrt{(ax+1)(-ax+1)}\arctan\left(x\sqrt{a^2}\frac{1}{\sqrt{-a^2x^2+1}}\right)\frac{1}{\sqrt{-ax+1}}\frac{1}{\sqrt{ax+1}}\frac{1}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)^(3/2)/(-a*x+1)^(1/2),x)
```

```
[Out] -1/2*(a*x+1)^(3/2)*(-a*x+1)^(1/2)/a-3/2*(-a*x+1)^(1/2)*(a*x+1)^(1
/2)/a+3/2*((a*x+1)*(-a*x+1))^(1/2)/(a*x+1)^(1/2)/(-a*x+1)^(1/2)/(
a^2)^(1/2)*arctan((a^2)^(1/2)*x/(-a^2*x^2+1)^(1/2))
```

Maxima [A] time = 1.47995, size = 69, normalized size = 1.08

$$-\frac{1}{2}\sqrt{-a^2x^2+1}x+\frac{3\arcsin\left(\frac{a^2x}{\sqrt{a^2}}\right)}{2\sqrt{a^2}}-\frac{2\sqrt{-a^2x^2+1}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)^(3/2)/sqrt(-a*x + 1),x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(-a^2*x^2 + 1)*x + 3/2*arcsin(a^2*x/sqrt(a^2))/sqrt(a^2)
 - 2*sqrt(-a^2*x^2 + 1)/a
```

Fricas [A] time = 0.211831, size = 196, normalized size = 3.06

$$\frac{2a^3x^3+4a^2x^2-\left(a^3x^3+4a^2x^2-2ax\right)\sqrt{ax+1}\sqrt{-ax+1}-2ax-6\left(a^2x^2+2\sqrt{ax+1}\sqrt{-ax+1}-2\right)\arctan\left(\frac{\sqrt{ax+1}\sqrt{-ax+}}{ax}\right.}{2\left(a^3x^2+2\sqrt{ax+1}\sqrt{-ax+1}a-2a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)^(3/2)/sqrt(-a*x + 1),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^3*x^3 + 4*a^2*x^2 - (a^3*x^3 + 4*a^2*x^2 - 2*a*x)*sqrt(a
*x + 1)*sqrt(-a*x + 1) - 2*a*x - 6*(a^2*x^2 + 2*sqrt(a*x + 1)*sqr
t(-a*x + 1) - 2)*arctan((sqrt(a*x + 1)*sqrt(-a*x + 1) - 1)/(a*x))
)/(a^3*x^2 + 2*sqrt(a*x + 1)*sqrt(-a*x + 1)*a - 2*a)
```

Sympy [A] time = 33.8873, size = 73, normalized size = 1.14

$$\begin{cases} \frac{2\left(\begin{cases} -\frac{ax\sqrt{-ax+1}\sqrt{ax+1}}{4} - \sqrt{-ax+1}\sqrt{ax+1} + \frac{3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{ax+1}}{2}\right)}{2} & \text{for } -ax+1 \le 2 \wedge -ax+1 > 0 \end{cases}\right)}{a} & \text{for } a \neq 0 \\ x & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+1)**(3/2)/(-a*x+1)**(1/2),x)
```

```
[Out] Piecewise((2*Piecewise((-a*x*sqrt(-a*x + 1)*sqrt(a*x + 1)/4 - sqr
t(-a*x + 1)*sqrt(a*x + 1) + 3*asin(sqrt(2)*sqrt(a*x + 1)/2)/2, (-
a*x + 1 <= 2) & (-a*x + 1 > 0)))/a, Ne(a, 0)), (x, True))
```

GIAC/XCAS [A] time = 0.214039, size = 57, normalized size = 0.89

$$-\frac{(ax+4)\sqrt{ax+1}\sqrt{-ax+1} - 6\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{ax+1}\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + 1)^(3/2)/sqrt(-a*x + 1),x, algorithm="giac")
```

```
[Out] -1/2*((a*x + 4)*sqrt(a*x + 1)*sqrt(-a*x + 1) - 6*arcsin(1/2*sqrt(
2)*sqrt(a*x + 1)))/a
```

3.1105 $\int \frac{(1+ax)\sqrt{1-a^2x^2}}{1-ax}\,dx$

Optimal. Leaf size=62

$$-\frac{\left(1-a^2x^2\right)^{3/2}}{2a(1-ax)}-\frac{3\sqrt{1-a^2x^2}}{2a}+\frac{3\sin^{-1}(ax)}{2a}$$

```
[Out] (-3*Sqrt[1 - a^2*x^2])/(2*a) - (1 - a^2*x^2)^(3/2)/(2*a*(1 - a*x)
) + (3*ArcSin[a*x])/(2*a)
```

Rubi [A] time = 0.109323, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107

$$-\frac{\left(1-a^2x^2\right)^{3/2}}{2a(1-ax)}-\frac{3\sqrt{1-a^2x^2}}{2a}+\frac{3\sin^{-1}(ax)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Int[((1 + a*x)*Sqrt[1 - a^2*x^2])/(1 - a*x),x]
```

```
[Out] (-3*Sqrt[1 - a^2*x^2])/(2*a) - (1 - a^2*x^2)^(3/2)/(2*a*(1 - a*x)
) + (3*ArcSin[a*x])/(2*a)
```

Rubi in Sympy [A] time = 12.8075, size = 46, normalized size = 0.74

$$-\frac{3\sqrt{-a^2x^2+1}}{2a}+\frac{3\,\mathrm{asin}\,(ax)}{2a}-\frac{\left(-a^2x^2+1\right)^{\frac{3}{2}}}{2a\,(-ax+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+1)*(-a**2*x**2+1)**(1/2)/(-a*x+1),x)
```

```
[Out] -3*sqrt(-a**2*x**2 + 1)/(2*a) + 3*asin(a*x)/(2*a) - (-a**2*x**2 +
 1)**(3/2)/(2*a*(-a*x + 1))
```

Mathematica [A] time = 0.10661, size = 71, normalized size = 1.15

$$\frac{\sqrt{1-a^2x^2}\left(-ax+\frac{6\log\left(\sqrt{-ax-1}+\sqrt{1-ax}\right)}{\sqrt{-ax-1}\sqrt{1-ax}}-4\right)}{2a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((1 + a*x)*Sqrt[1 - a^2*x^2])/(1 - a*x),x]
```

```
[Out] (Sqrt[1 - a^2*x^2]*(-4 - a*x + (6*Log[Sqrt[-1 - a*x] + Sqrt[1 - a
*x]])/(Sqrt[-1 - a*x]*Sqrt[1 - a*x])))/(2*a)
```

Maple [B] time = 0.02, size = 118, normalized size = 1.9

$$-\frac{x}{2}\sqrt{-a^2x^2+1}-\frac{1}{2}\arctan\left(x\sqrt{a^2}\frac{1}{\sqrt{-a^2x^2+1}}\right)\frac{1}{\sqrt{a^2}}-2\,\frac{1}{a}\sqrt{-a^2\left(x-a^{-1}\right)^2-2\,\left(x-a^{-1}\right)a}+2\,\frac{1}{\sqrt{a^2}}\arctan\left(\sqrt{a^2}x\frac{1}{\sqrt{-a^2\left(x-a^{-1}\right)^2-2\,\left(x-a^{-1}\right)a}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+1)*(-a^2*x^2+1)^(1/2)/(-a*x+1),x)
```

```
[Out] -1/2*x*(-a^2*x^2+1)^(1/2)-1/2/(a^2)^(1/2)*arctan((a^2)^(1/2)*x/(-
a^2*x^2+1)^(1/2))-2/a*(-a^2*(x-1/a)^2-2*(x-1/a)*a)^(1/2)+2/(a^2)^
(1/2)*arctan((a^2)^(1/2)*x/(-a^2*(x-1/a)^2-2*(x-1/a)*a)^(1/2))
```

Maxima [A] time = 1.47933, size = 57, normalized size = 0.92

$$-\frac{1}{2}\sqrt{-a^2x^2+1}x+\frac{3\,\arcsin\left(ax\right)}{2\,a}-\frac{2\,\sqrt{-a^2x^2+1}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-sqrt(-a^2*x^2 + 1)*(a*x + 1)/(a*x - 1),x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(-a^2*x^2 + 1)*x + 3/2*arcsin(a*x)/a - 2*sqrt(-a^2*x^2 +
 1)/a
```

Fricas [A] time = 0.213965, size = 178, normalized size = 2.87

$$\frac{2\,a^3x^3+4\,a^2x^2-2\,ax-6\left(a^2x^2+2\,\sqrt{-a^2x^2+1}-2\right)\arctan\left(\frac{\sqrt{-a^2x^2+1}-1}{ax}\right)-\left(a^3x^3+4\,a^2x^2-2\,ax\right)\sqrt{-a^2x^2+1}}{2\left(a^3x^2+2\,\sqrt{-a^2x^2+1}a-2\,a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-sqrt(-a^2*x^2 + 1)*(a*x + 1)/(a*x - 1),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^3*x^3 + 4*a^2*x^2 - 2*a*x - 6*(a^2*x^2 + 2*sqrt(-a^2*x^2
 + 1) - 2)*arctan((sqrt(-a^2*x^2 + 1) - 1)/(a*x)) - (a^3*x^3 + 4*
a^2*x^2 - 2*a*x)*sqrt(-a^2*x^2 + 1))/(a^3*x^2 + 2*sqrt(-a^2*x^2 +
 1)*a - 2*a)
```

Sympy [A] time = 10.247, size = 76, normalized size = 1.23

$$-\begin{cases} -\frac{-\sqrt{-a^2x^2+1}+\operatorname{asin}(ax)}{a} & \text{for } ax > -1 \wedge ax < 1 \end{cases} - \begin{cases} -\frac{-\frac{ax\sqrt{-a^2x^2+1}}{2}-\sqrt{-a^2x^2+1}+\frac{\operatorname{asin}(ax)}{2}}{a} & \text{for } ax > -1 \wedge ax < 1 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a*x+1)*(-a**2*x**2+1)**(1/2)/(-a*x+1),x)
```

```
[Out] -Piecewise((-(-sqrt(-a**2*x**2 + 1) + asin(a*x))/a, (a*x > -1) &
(a*x < 1))) - Piecewise((-(-a*x*sqrt(-a**2*x**2 + 1)/2 - sqrt(-a*
*2*x**2 + 1) + asin(a*x)/2)/a, (a*x > -1) & (a*x < 1)))
```

GIAC/XCAS [A] time = 0.215474, size = 46, normalized size = 0.74

$$-\frac{1}{2}\sqrt{-a^2x^2+1}\left(x+\frac{4}{a}\right)+\frac{3\arcsin(ax)\operatorname{sign}(a)}{2\,|a|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-sqrt(-a^2*x^2 + 1)*(a*x + 1)/(a*x - 1),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(-a^2*x^2 + 1)*(x + 4/a) + 3/2*arcsin(a*x)*sign(a)/abs(a
)
```

3.1106 $\int \frac{(1-x)^{7/2}}{\sqrt{1+x}}\,dx$

Optimal. Leaf size=87

$$\frac{1}{4}\sqrt{x+1}(1-x)^{7/2}+\frac{7}{12}\sqrt{x+1}(1-x)^{5/2}+\frac{35}{24}\sqrt{x+1}(1-x)^{3/2}+\frac{35}{8}\sqrt{x+1}\sqrt{1-x}+\frac{35}{8}\sin^{-1}(x)$$

```
[Out] (35*Sqrt[1 - x]*Sqrt[1 + x])/8 + (35*(1 - x)^(3/2)*Sqrt[1 + x])/2
4 + (7*(1 - x)^(5/2)*Sqrt[1 + x])/12 + ((1 - x)^(7/2)*Sqrt[1 + x]
)/4 + (35*ArcSin[x])/8
```

Rubi [A] time = 0.0661754, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{4}\sqrt{x+1}(1-x)^{7/2}+\frac{7}{12}\sqrt{x+1}(1-x)^{5/2}+\frac{35}{24}\sqrt{x+1}(1-x)^{3/2}+\frac{35}{8}\sqrt{x+1}\sqrt{1-x}+\frac{35}{8}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(7/2)/Sqrt[1 + x],x]
```

```
[Out] (35*Sqrt[1 - x]*Sqrt[1 + x])/8 + (35*(1 - x)^(3/2)*Sqrt[1 + x])/2
4 + (7*(1 - x)^(5/2)*Sqrt[1 + x])/12 + ((1 - x)^(7/2)*Sqrt[1 + x]
)/4 + (35*ArcSin[x])/8
```

Rubi in Sympy [A] time = 8.40539, size = 71, normalized size = 0.82

$$\frac{(-x+1)^{\frac{7}{2}}\sqrt{x+1}}{4}+\frac{7(-x+1)^{\frac{5}{2}}\sqrt{x+1}}{12}+\frac{35(-x+1)^{\frac{3}{2}}\sqrt{x+1}}{24}+\frac{35\sqrt{-x+1}\sqrt{x+1}}{8}+\frac{35\,\mathrm{asin}(x)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(7/2)/(1+x)**(1/2),x)
```

```
[Out] (-x + 1)**(7/2)*sqrt(x + 1)/4 + 7*(-x + 1)**(5/2)*sqrt(x + 1)/12
+ 35*(-x + 1)**(3/2)*sqrt(x + 1)/24 + 35*sqrt(-x + 1)*sqrt(x + 1)
/8 + 35*asin(x)/8
```

Mathematica [A] time = 0.0381746, size = 49, normalized size = 0.56

$$\frac{1}{24}\sqrt{1-x^2}\left(-6x^3+32x^2-81x+160\right)+\frac{35}{4}\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/2)/Sqrt[1 + x],x]
```

```
[Out] (Sqrt[1 - x^2]*(160 - 81*x + 32*x^2 - 6*x^3))/24 + (35*ArcSin[Sqr
t[1 + x]/Sqrt[2]])/4
```

Maple [A] time = 0.007, size = 85, normalized size = 1.

$$\frac{1}{4}(1-x)^{\frac{7}{2}}\sqrt{1+x}+\frac{7}{12}(1-x)^{\frac{5}{2}}\sqrt{1+x}+\frac{35}{24}(1-x)^{\frac{3}{2}}\sqrt{1+x} +\frac{35}{8}\sqrt{1-x}\sqrt{1+x}+\frac{35\arcsin(x)}{8}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/2)/(1+x)^(1/2),x)
```

```
[Out] 1/4*(1-x)^(7/2)*(1+x)^(1/2)+7/12*(1-x)^(5/2)*(1+x)^(1/2)+35/24*(1
-x)^(3/2)*(1+x)^(1/2)+35/8*(1-x)^(1/2)*(1+x)^(1/2)+35/8*((1+x)*(1
-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.50939, size = 76, normalized size = 0.87

$$-\frac{1}{4}\sqrt{-x^2+1}x^3+\frac{4}{3}\sqrt{-x^2+1}x^2-\frac{27}{8}\sqrt{-x^2+1}x+\frac{20}{3}\sqrt{-x^2+1}+\frac{35}{8}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/sqrt(x + 1),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(-x^2 + 1)*x^3 + 4/3*sqrt(-x^2 + 1)*x^2 - 27/8*sqrt(-x^2
 + 1)*x + 20/3*sqrt(-x^2 + 1) + 35/8*arcsin(x)
```

Fricas [A] time = 0.208456, size = 224, normalized size = 2.57

$$\frac{24\,x^7-128\,x^6+252\,x^5-96\,x^4-924\,x^3+384\,x^2-\left(6\,x^7-32\,x^6+33\,x^5+96\,x^4-600\,x^3+384\,x^2+648\,x\right)\sqrt{x+1}\sqrt{-x+1}}{24\left(x^4-8\,x^2+4\,(x^2-2)\sqrt{x+1}\sqrt{-x+1}+8\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/sqrt(x + 1),x, algorithm="fricas")
```

```
[Out] 1/24*(24*x^7 - 128*x^6 + 252*x^5 - 96*x^4 - 924*x^3 + 384*x^2 - (
6*x^7 - 32*x^6 + 33*x^5 + 96*x^4 - 600*x^3 + 384*x^2 + 648*x)*sqr
t(x + 1)*sqrt(-x + 1) - 210*(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1
)*sqrt(-x + 1) + 8)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x) + 64
8*x)/(x^4 - 8*x^2 + 4*(x^2 - 2)*sqrt(x + 1)*sqrt(-x + 1) + 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/2)/(1+x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226323, size = 136, normalized size = 1.56

$$-\frac{1}{24}\left(\left(2\left(3x-10\right)(x+1)+43\right)(x+1)-39\right)\sqrt{x+1}\sqrt{-x+1}+\frac{1}{2}\left(\left(2x-5\right)(x+1)+9\right)\sqrt{x+1}\sqrt{-x+1}-\frac{3}{2}\sqrt{x+1}(x-2)\sqrt{-x+1}+\sqrt{x+1}\sqrt{-x+1}+\frac{35}{4}\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/sqrt(x + 1),x, algorithm="giac")
```

```
[Out] -1/24*((2*(3*x - 10)*(x + 1) + 43)*(x + 1) - 39)*sqrt(x + 1)*sqrt
(-x + 1) + 1/2*((2*x - 5)*(x + 1) + 9)*sqrt(x + 1)*sqrt(-x + 1) -
 3/2*sqrt(x + 1)*(x - 2)*sqrt(-x + 1) + sqrt(x + 1)*sqrt(-x + 1)
+ 35/4*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1107 $\int \frac{(1-x)^{5/2}}{\sqrt{1+x}}\,dx$

Optimal. Leaf size=67

$$\frac{1}{3}\sqrt{x+1}(1-x)^{5/2}+\frac{5}{6}\sqrt{x+1}(1-x)^{3/2}+\frac{5}{2}\sqrt{x+1}\sqrt{1-x}+\frac{5}{2}\sin^{-1}(x)$$

```
[Out] (5*Sqrt[1 - x]*Sqrt[1 + x])/2 + (5*(1 - x)^(3/2)*Sqrt[1 + x])/6 +
 ((1 - x)^(5/2)*Sqrt[1 + x])/3 + (5*ArcSin[x])/2
```

Rubi [A] time = 0.0485606, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{3}\sqrt{x+1}(1-x)^{5/2}+\frac{5}{6}\sqrt{x+1}(1-x)^{3/2}+\frac{5}{2}\sqrt{x+1}\sqrt{1-x}+\frac{5}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(5/2)/Sqrt[1 + x],x]
```

```
[Out] (5*Sqrt[1 - x]*Sqrt[1 + x])/2 + (5*(1 - x)^(3/2)*Sqrt[1 + x])/6 +
 ((1 - x)^(5/2)*Sqrt[1 + x])/3 + (5*ArcSin[x])/2
```

Rubi in Sympy [A] time = 6.94129, size = 54, normalized size = 0.81

$$\frac{(-x+1)^{\frac{5}{2}}\sqrt{x+1}}{3}+\frac{5(-x+1)^{\frac{3}{2}}\sqrt{x+1}}{6}+\frac{5\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{5\,\mathrm{asin}(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(5/2)/(1+x)**(1/2),x)
```

```
[Out] (-x + 1)**(5/2)*sqrt(x + 1)/3 + 5*(-x + 1)**(3/2)*sqrt(x + 1)/6 +
 5*sqrt(-x + 1)*sqrt(x + 1)/2 + 5*asin(x)/2
```

Mathematica [A] time = 0.0253878, size = 42, normalized size = 0.63

$$\frac{1}{6}\sqrt{1-x^2}\left(2x^2-9x+22\right)+5\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(5/2)/Sqrt[1 + x],x]
```

```
[Out] (Sqrt[1 - x^2]*(22 - 9*x + 2*x^2))/6 + 5*ArcSin[Sqrt[1 + x]/Sqrt[
2]]
```

Maple [A] time = 0.006, size = 71, normalized size = 1.1

$$\frac{1}{3}(1-x)^{\frac{5}{2}}\sqrt{1+x}+\frac{5}{6}(1-x)^{\frac{3}{2}}\sqrt{1+x}+\frac{5}{2}\sqrt{1-x}\sqrt{1+x}+\frac{5\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(5/2)/(1+x)^(1/2),x)
```

```
[Out] 1/3*(1-x)^(5/2)*(1+x)^(1/2)+5/6*(1-x)^(3/2)*(1+x)^(1/2)+5/2*(1-x)
^(1/2)*(1+x)^(1/2)+5/2*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2
)*arcsin(x)
```

Maxima [A] time = 1.51131, size = 57, normalized size = 0.85

$$\frac{1}{3}\sqrt{-x^2+1}x^2-\frac{3}{2}\sqrt{-x^2+1}x+\frac{11}{3}\sqrt{-x^2+1}+\frac{5}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/sqrt(x + 1),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(-x^2 + 1)*x^2 - 3/2*sqrt(-x^2 + 1)*x + 11/3*sqrt(-x^2 +
1) + 5/2*arcsin(x)
```

Fricas [A] time = 0.209976, size = 189, normalized size = 2.82

$$\frac{2x^6-9x^5+12x^4+45x^3-36x^2+3\left(2x^4-9x^3+12x^2+12x\right)\sqrt{x+1}\sqrt{-x+1}-30\left(3x^2-\left(x^2-4\right)\sqrt{x+1}\sqrt{-x+1}-4\right)}{6\left(3x^2-(x^2-4)\sqrt{x+1}\sqrt{-x+1}-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/sqrt(x + 1),x, algorithm="fricas")
```

```
[Out] 1/6*(2*x^6 - 9*x^5 + 12*x^4 + 45*x^3 - 36*x^2 + 3*(2*x^4 - 9*x^3
+ 12*x^2 + 12*x)*sqrt(x + 1)*sqrt(-x + 1) - 30*(3*x^2 - (x^2 - 4)
```

```
*sqrt(x + 1)*sqrt(-x + 1) - 4)*arctan((sqrt(x + 1)*sqrt(-x + 1) -
 1)/x) - 36*x)/(3*x^2 - (x^2 - 4)*sqrt(x + 1)*sqrt(-x + 1) - 4)
```

Sympy [A] time = 44.9529, size = 175, normalized size = 2.61

$$\begin{cases} -5i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{i(x+1)^{\frac{7}{2}}}{3\sqrt{x-1}} - \frac{17i(x+1)^{\frac{5}{2}}}{6\sqrt{x-1}} + \frac{59i(x+1)^{\frac{3}{2}}}{6\sqrt{x-1}} - \frac{11i\sqrt{x+1}}{\sqrt{x-1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ 5\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{(x+1)^{\frac{7}{2}}}{3\sqrt{-x+1}} + \frac{17(x+1)^{\frac{5}{2}}}{6\sqrt{-x+1}} - \frac{59(x+1)^{\frac{3}{2}}}{6\sqrt{-x+1}} + \frac{11\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(5/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise((-5*I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(7/2)/(
3*sqrt(x - 1)) - 17*I*(x + 1)**(5/2)/(6*sqrt(x - 1)) + 59*I*(x +
1)**(3/2)/(6*sqrt(x - 1)) - 11*I*sqrt(x + 1)/sqrt(x - 1), Abs(x +
 1)/2 > 1), (5*asin(sqrt(2)*sqrt(x + 1)/2) - (x + 1)**(7/2)/(3*sq
rt(-x + 1)) + 17*(x + 1)**(5/2)/(6*sqrt(-x + 1)) - 59*(x + 1)**(3
/2)/(6*sqrt(-x + 1)) + 11*sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.219522, size = 93, normalized size = 1.39

$$\frac{1}{6}\left((2x-5)(x+1)+9\right)\sqrt{x+1}\sqrt{-x+1} - \sqrt{x+1}(x-2)\sqrt{-x+1} + \sqrt{x+1}\sqrt{-x+1} + 5\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/sqrt(x + 1),x, algorithm="giac")
```

```
[Out] 1/6*((2*x - 5)*(x + 1) + 9)*sqrt(x + 1)*sqrt(-x + 1) - sqrt(x + 1
)*(x - 2)*sqrt(-x + 1) + sqrt(x + 1)*sqrt(-x + 1) + 5*arcsin(1/2*
sqrt(2)*sqrt(x + 1))
```

3.1108 $\int \frac{(1-x)^{3/2}}{\sqrt{1+x}}\,dx$

Optimal. Leaf size=47

$$\frac{1}{2}\sqrt{x+1}(1-x)^{3/2}+\frac{3}{2}\sqrt{x+1}\sqrt{1-x}+\frac{3}{2}\sin^{-1}(x)$$

```
[Out] (3*Sqrt[1 - x]*Sqrt[1 + x])/2 + ((1 - x)^(3/2)*Sqrt[1 + x])/2 + (
3*ArcSin[x])/2
```

Rubi [A] time = 0.0338033, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{1}{2}\sqrt{x+1}(1-x)^{3/2}+\frac{3}{2}\sqrt{x+1}\sqrt{1-x}+\frac{3}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(3/2)/Sqrt[1 + x],x]
```

```
[Out] (3*Sqrt[1 - x]*Sqrt[1 + x])/2 + ((1 - x)^(3/2)*Sqrt[1 + x])/2 + (
3*ArcSin[x])/2
```

Rubi in Sympy [A] time = 5.11313, size = 37, normalized size = 0.79

$$\frac{(-x+1)^{\frac{3}{2}}\sqrt{x+1}}{2}+\frac{3\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{3\,\text{asin}\,(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(3/2)/(1+x)**(1/2),x)
```

```
[Out] (-x + 1)**(3/2)*sqrt(x + 1)/2 + 3*sqrt(-x + 1)*sqrt(x + 1)/2 + 3*
asin(x)/2
```

Mathematica [A] time = 0.0177763, size = 35, normalized size = 0.74

$$3\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)-\frac{1}{2}(x-4)\sqrt{1-x^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(3/2)/Sqrt[1 + x],x]

[Out] -((-4 + x)*Sqrt[1 - x^2])/2 + 3*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.005, size = 57, normalized size = 1.2

$$\frac{1}{2}(1-x)^{\frac{3}{2}}\sqrt{1+x}+\frac{3}{2}\sqrt{1-x}\sqrt{1+x}+\frac{3\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(3/2)/(1+x)^(1/2),x)

[Out] 1/2*(1-x)^(3/2)*(1+x)^(1/2)+3/2*(1-x)^(1/2)*(1+x)^(1/2)+3/2*((1+x
)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.50338, size = 38, normalized size = 0.81

$$-\frac{1}{2}\sqrt{-x^2+1}x+2\sqrt{-x^2+1}+\frac{3}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/sqrt(x + 1),x, algorithm="maxima")

[Out] -1/2*sqrt(-x^2 + 1)*x + 2*sqrt(-x^2 + 1) + 3/2*arcsin(x)
```

Fricas [A] time = 0.207315, size = 140, normalized size = 2.98

$$\frac{2x^3-4x^2-\left(x^3-4x^2-2x\right)\sqrt{x+1}\sqrt{-x+1}-6\left(x^2+2\sqrt{x+1}\sqrt{-x+1}-2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)-2x}{2\left(x^2+2\sqrt{x+1}\sqrt{-x+1}-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/sqrt(x + 1),x, algorithm="fricas")

[Out] 1/2*(2*x^3 - 4*x^2 - (x^3 - 4*x^2 - 2*x)*sqrt(x + 1)*sqrt(-x + 1)
 - 6*(x^2 + 2*sqrt(x + 1)*sqrt(-x + 1) - 2)*arctan((sqrt(x + 1)*s
qrt(-x + 1) - 1)/x) - 2*x)/(x^2 + 2*sqrt(x + 1)*sqrt(-x + 1) - 2)
```

Sympy [A] time = 10.8808, size = 139, normalized size = 2.96

$$\begin{cases} -3i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{i(x+1)^{\frac{5}{2}}}{2\sqrt{x-1}} + \frac{7i(x+1)^{\frac{3}{2}}}{2\sqrt{x-1}} - \frac{5i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2} > 1 \\ 3\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{(x+1)^{\frac{5}{2}}}{2\sqrt{-x+1}} - \frac{7(x+1)^{\frac{3}{2}}}{2\sqrt{-x+1}} + \frac{5\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(3/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise((-3*I*acosh(sqrt(2)*sqrt(x + 1)/2) - I*(x + 1)**(5/2)/(
2*sqrt(x - 1)) + 7*I*(x + 1)**(3/2)/(2*sqrt(x - 1)) - 5*I*sqrt(x
+ 1)/sqrt(x - 1), Abs(x + 1)/2 > 1), (3*asin(sqrt(2)*sqrt(x + 1)/
2) + (x + 1)**(5/2)/(2*sqrt(-x + 1)) - 7*(x + 1)**(3/2)/(2*sqrt(-
x + 1)) + 5*sqrt(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.21596, size = 59, normalized size = 1.26

$$-\frac{1}{2}\sqrt{x+1}(x-2)\sqrt{-x+1} + \sqrt{x+1}\sqrt{-x+1} + 3\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/sqrt(x + 1),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(x + 1)*(x - 2)*sqrt(-x + 1) + sqrt(x + 1)*sqrt(-x + 1)
+ 3*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1109 $\int \frac{\sqrt{1-x}}{\sqrt{1+x}}\,dx$

Optimal. Leaf size=20

$$\sqrt{1-x}\sqrt{x+1}+\sin^{-1}(x)$$

```
[Out] Sqrt[1 - x]*Sqrt[1 + x] + ArcSin[x]
```

Rubi [A] time = 0.0209621, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\sqrt{1-x}\sqrt{x+1}+\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 - x]/Sqrt[1 + x],x]

[Out] Sqrt[1 - x]*Sqrt[1 + x] + ArcSin[x]
```

Rubi in Sympy [A] time = 3.70917, size = 15, normalized size = 0.75

$$\sqrt{-x+1}\sqrt{x+1}+\operatorname{asin}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/2)/(1+x)**(1/2),x)

[Out] sqrt(-x + 1)*sqrt(x + 1) + asin(x)
```

Mathematica [A] time = 0.00930959, size = 28, normalized size = 1.4

$$\sqrt{1-x^2}+2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 - x]/Sqrt[1 + x],x]

[Out] Sqrt[1 - x^2] + 2*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [B] time = 0.006, size = 41, normalized size = 2.1

$$\sqrt{1-x}\sqrt{1+x}+\arcsin\left(x\right)\sqrt{\left(1+x\right)\left(1-x\right)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/2)/(1+x)^(1/2),x)
```

```
[Out] (1-x)^(1/2)*(1+x)^(1/2)+((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/
2)*arcsin(x)
```

Maxima [A] time = 1.48377, size = 16, normalized size = 0.8

$$\sqrt{-x^2+1}+\arcsin\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/sqrt(x + 1),x, algorithm="maxima")
```

```
[Out] sqrt(-x^2 + 1) + arcsin(x)
```

Fricas [A] time = 0.209621, size = 81, normalized size = 4.05

$$-\frac{x^2+2\left(\sqrt{x+1}\sqrt{-x+1}-1\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)}{\sqrt{x+1}\sqrt{-x+1}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/sqrt(x + 1),x, algorithm="fricas")
```

```
[Out] -(x^2 + 2*(sqrt(x + 1)*sqrt(-x + 1) - 1)*arctan((sqrt(x + 1)*sqrt
(-x + 1) - 1)/x))/(sqrt(x + 1)*sqrt(-x + 1) - 1)
```

Sympy [A] time = 5.51074, size = 100, normalized size = 5.

$$\begin{cases} -2i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)+\frac{i(x+1)^{\frac{3}{2}}}{\sqrt{x-1}}-\frac{2i\sqrt{x+1}}{\sqrt{x-1}} & \text{for } \frac{|x+1|}{2}>1 \\ 2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right)-\frac{(x+1)^{\frac{3}{2}}}{\sqrt{-x+1}}+\frac{2\sqrt{x+1}}{\sqrt{-x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(3/2)/s
qrt(x - 1) - 2*I*sqrt(x + 1)/sqrt(x - 1), Abs(x + 1)/2 > 1), (2*a
sin(sqrt(2)*sqrt(x + 1)/2) - (x + 1)**(3/2)/sqrt(-x + 1) + 2*sqrt
(x + 1)/sqrt(-x + 1), True))
```

GIAC/XCAS [A] time = 0.208422, size = 36, normalized size = 1.8

$$\sqrt{x+1}\sqrt{-x+1} + 2 \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/sqrt(x + 1),x, algorithm="giac")
```

```
[Out] sqrt(x + 1)*sqrt(-x + 1) + 2*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1110 $\int \frac{1}{\sqrt{1-x}\sqrt{1+x}}\,dx$

Optimal. Leaf size=2

$$\sin^{-1}(x)$$

```
[Out] ArcSin[x]
```

Rubi [A] time = 0.0108689, antiderivative size = 2, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[1 - x]*Sqrt[1 + x]),x]

[Out] ArcSin[x]
```

Rubi in Sympy [A] time = 2.46221, size = 2, normalized size = 1.

$$\operatorname{asin}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(1/2)/(1+x)**(1/2),x)

[Out] asin(x)
```

Mathematica [A] time = 0.00722042, size = 2, normalized size = 1.

$$\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[1 - x]*Sqrt[1 + x]),x]

[Out] ArcSin[x]
```

Maple [B] time = 0.006, size = 27, normalized size = 13.5

$$\arcsin(x)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(1/2)/(1+x)^(1/2),x)
```

```
[Out] ((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.50029, size = 3, normalized size = 1.5

$$\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*sqrt(-x + 1)),x, algorithm="maxima")
```

```
[Out] arcsin(x)
```

Fricas [A] time = 0.204991, size = 30, normalized size = 15.

$$-2\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*sqrt(-x + 1)),x, algorithm="fricas")
```

```
[Out] -2*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x)
```

Sympy [A] time = 3.63443, size = 41, normalized size = 20.5

$$\begin{cases} -2i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) & \text{for}\ \frac{|x+1|}{2} > 1 \\ 2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(1/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(2)*sqrt(x + 1)/2), Abs(x + 1)/2 > 1),
(2*asin(sqrt(2)*sqrt(x + 1)/2), True))
```

GIAC/XCAS [A] time = 0.205275, size = 18, normalized size = 9.

$$2 \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*sqrt(-x + 1)),x, algorithm="giac")
```

```
[Out] 2*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1111 $\int \frac{1}{(1-x)^{3/2}\sqrt{1+x}}\,dx$

Optimal. Leaf size=17

$$\frac{\sqrt{x+1}}{\sqrt{1-x}}$$

```
[Out] Sqrt[1 + x]/Sqrt[1 - x]
```

Rubi [A] time = 0.0156638, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{\sqrt{x+1}}{\sqrt{1-x}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(3/2)*Sqrt[1 + x]),x]

[Out] Sqrt[1 + x]/Sqrt[1 - x]
```

Rubi in Sympy [A] time = 2.37912, size = 12, normalized size = 0.71

$$\frac{\sqrt{x+1}}{\sqrt{-x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(3/2)/(1+x)**(1/2),x)

[Out] sqrt(x + 1)/sqrt(-x + 1)
```

Mathematica [A] time = 0.0129875, size = 19, normalized size = 1.12

$$\frac{\sqrt{1-x^2}}{1-x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(3/2)*Sqrt[1 + x]),x]
```

```
[Out] Sqrt[1 - x^2]/(1 - x)
```

Maple [A] time = 0.006, size = 14, normalized size = 0.8

$$1\sqrt{1+x}\frac{1}{\sqrt{1-x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(3/2)/(1+x)^(1/2),x)
```

```
[Out] (1+x)^(1/2)/(1-x)^(1/2)
```

Maxima [A] time = 1.499, size = 22, normalized size = 1.29

$$-\frac{\sqrt{-x^2+1}}{x-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(3/2)),x, algorithm="maxima")
```

```
[Out] -sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.204786, size = 28, normalized size = 1.65

$$\frac{2\,x}{x+\sqrt{x+1}\sqrt{-x+1}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(3/2)),x, algorithm="fricas")
```

```
[Out] 2*x/(x + sqrt(x + 1)*sqrt(-x + 1) - 1)
```

Sympy [A] time = 3.61606, size = 31, normalized size = 1.82

$$\begin{cases} \frac{1}{\sqrt{-1+\frac{2}{x+1}}} & \text{for}\ 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{i}{\sqrt{1-\frac{2}{x+1}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(3/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise((1/sqrt(-1 + 2/(x + 1)), 2*Abs(1/(x + 1)) > 1), (-I/sqr
t(1 - 2/(x + 1)), True))
```

GIAC/XCAS [A] time = 0.207985, size = 26, normalized size = 1.53

$$-\frac{\sqrt{x+1}\sqrt{-x+1}}{x-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(3/2)),x, algorithm="giac")
```

```
[Out] -sqrt(x + 1)*sqrt(-x + 1)/(x - 1)
```

3.1112 $\int \frac{1}{(1-x)^{5/2}\sqrt{1+x}}\,dx$

Optimal. Leaf size=41

$$\frac{\sqrt{x+1}}{3\sqrt{1-x}}+\frac{\sqrt{x+1}}{3(1-x)^{3/2}}$$

```
[Out] Sqrt[1 + x]/(3*(1 - x)^(3/2)) + Sqrt[1 + x]/(3*Sqrt[1 - x])
```

Rubi [A] time = 0.0248556, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{\sqrt{x+1}}{3\sqrt{1-x}}+\frac{\sqrt{x+1}}{3(1-x)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(5/2)*Sqrt[1 + x]),x]

[Out] Sqrt[1 + x]/(3*(1 - x)^(3/2)) + Sqrt[1 + x]/(3*Sqrt[1 - x])
```

Rubi in Sympy [A] time = 3.56795, size = 29, normalized size = 0.71

$$\frac{\sqrt{x+1}}{3\sqrt{-x+1}}+\frac{\sqrt{x+1}}{3\left(-x+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(5/2)/(1+x)**(1/2),x)

[Out] sqrt(x + 1)/(3*sqrt(-x + 1)) + sqrt(x + 1)/(3*(-x + 1)**(3/2))
```

Mathematica [A] time = 0.013542, size = 23, normalized size = 0.56

$$-\frac{(x-2)\sqrt{1-x^2}}{3(x-1)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(5/2)*Sqrt[1 + x]),x]
```

```
[Out] -((-2 + x)*Sqrt[1 - x^2])/(3*(-1 + x)^2)
```

Maple [A] time = 0.006, size = 18, normalized size = 0.4

$$-\frac{-2+x}{3}\sqrt{1+x}\,(1-x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(5/2)/(1+x)^(1/2),x)
```

```
[Out] -1/3*(1+x)^(1/2)*(-2+x)/(1-x)^(3/2)
```

Maxima [A] time = 1.49236, size = 51, normalized size = 1.24

$$\frac{\sqrt{-x^2+1}}{3\,(x^2-2\,x+1)}-\frac{\sqrt{-x^2+1}}{3\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(5/2)),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(-x^2 + 1)/(x^2 - 2*x + 1) - 1/3*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.207634, size = 90, normalized size = 2.2

$$\frac{x^3+3\,x^2-3\,(x^2-2\,x)\,\sqrt{x+1}\sqrt{-x+1}-6\,x}{3\,\left(x^3-(x^2-3\,x+2)\sqrt{x+1}\sqrt{-x+1}-3\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(5/2)),x, algorithm="fricas")
```

```
[Out] 1/3*(x^3 + 3*x^2 - 3*(x^2 - 2*x)*sqrt(x + 1)*sqrt(-x + 1) - 6*x)/
(x^3 - (x^2 - 3*x + 2)*sqrt(x + 1)*sqrt(-x + 1) - 3*x + 2)
```

Sympy [A] time = 18.2424, size = 128, normalized size = 3.12

$$\begin{cases} \frac{x+1}{3\sqrt{-1+\frac{2}{x+1}}(x+1)-6\sqrt{-1+\frac{2}{x+1}}} - \frac{3}{3\sqrt{-1+\frac{2}{x+1}}(x+1)-6\sqrt{-1+\frac{2}{x+1}}} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{i(x+1)}{3\sqrt{1-\frac{2}{x+1}}(x+1)-6\sqrt{1-\frac{2}{x+1}}} + \frac{3i}{3\sqrt{1-\frac{2}{x+1}}(x+1)-6\sqrt{1-\frac{2}{x+1}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(5/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise(((x + 1)/(3*sqrt(-1 + 2/(x + 1))*(x + 1) - 6*sqrt(-1 +
2/(x + 1))) - 3/(3*sqrt(-1 + 2/(x + 1))*(x + 1) - 6*sqrt(-1 + 2/(
x + 1))), 2*Abs(1/(x + 1)) > 1), (-I*(x + 1)/(3*sqrt(1 - 2/(x + 1
))*(x + 1) - 6*sqrt(1 - 2/(x + 1))) + 3*I/(3*sqrt(1 - 2/(x + 1))*
(x + 1) - 6*sqrt(1 - 2/(x + 1))), True))
```

GIAC/XCAS [A] time = 0.207463, size = 30, normalized size = 0.73

$$-\frac{\sqrt{x+1}(x-2)\sqrt{-x+1}}{3\,(x-1)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/3*sqrt(x + 1)*(x - 2)*sqrt(-x + 1)/(x - 1)^2
```

3.1113 $\int \frac{1}{(1-x)^{7/2}\sqrt{1+x}}\,dx$

Optimal. Leaf size=61

$$\frac{2\sqrt{x+1}}{15\sqrt{1-x}}+\frac{2\sqrt{x+1}}{15(1-x)^{3/2}}+\frac{\sqrt{x+1}}{5(1-x)^{5/2}}$$

```
[Out] Sqrt[1 + x]/(5*(1 - x)^(5/2)) + (2*Sqrt[1 + x])/(15*(1 - x)^(3/2)
) + (2*Sqrt[1 + x])/(15*Sqrt[1 - x])
```

Rubi [A] time = 0.038021, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2\sqrt{x+1}}{15\sqrt{1-x}}+\frac{2\sqrt{x+1}}{15(1-x)^{3/2}}+\frac{\sqrt{x+1}}{5(1-x)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((1 - x)^(7/2)*Sqrt[1 + x]),x]
```

```
[Out] Sqrt[1 + x]/(5*(1 - x)^(5/2)) + (2*Sqrt[1 + x])/(15*(1 - x)^(3/2)
) + (2*Sqrt[1 + x])/(15*Sqrt[1 - x])
```

Rubi in Sympy [A] time = 4.87342, size = 48, normalized size = 0.79

$$\frac{2\sqrt{x+1}}{15\sqrt{-x+1}}+\frac{2\sqrt{x+1}}{15\left(-x+1\right)^{\frac{3}{2}}}+\frac{\sqrt{x+1}}{5\left(-x+1\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(1-x)**(7/2)/(1+x)**(1/2),x)
```

```
[Out] 2*sqrt(x + 1)/(15*sqrt(-x + 1)) + 2*sqrt(x + 1)/(15*(-x + 1)**(3/
2)) + sqrt(x + 1)/(5*(-x + 1)**(5/2))
```

Mathematica [A] time = 0.0216574, size = 30, normalized size = 0.49

$$-\frac{\sqrt{1-x^2}\left(2x^2-6x+7\right)}{15(x-1)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(7/2)*Sqrt[1 + x]),x]

[Out] -(Sqrt[1 - x^2]*(7 - 6*x + 2*x^2))/(15*(-1 + x)^3)
```

Maple [A] time = 0.005, size = 25, normalized size = 0.4

$$\frac{2x^2-6x+7}{15}\sqrt{1+x}\,(1-x)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(7/2)/(1+x)^(1/2),x)

[Out] 1/15*(1+x)^(1/2)*(2*x^2-6*x+7)/(1-x)^(5/2)
```

Maxima [A] time = 1.48748, size = 86, normalized size = 1.41

$$-\frac{\sqrt{-x^2+1}}{5\,(x^3-3\,x^2+3\,x-1)}+\frac{2\,\sqrt{-x^2+1}}{15\,(x^2-2\,x+1)}-\frac{2\,\sqrt{-x^2+1}}{15\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(7/2)),x, algorithm="maxima")

[Out] -1/5*sqrt(-x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) + 2/15*sqrt(-x^2 + 1)
/(x^2 - 2*x + 1) - 2/15*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.20957, size = 146, normalized size = 2.39

$$\frac{9\,x^5-35\,x^4+20\,x^3+60\,x^2+5\,(x^4+2\,x^3-12\,x^2+12\,x)\,\sqrt{x+1}\sqrt{-x+1}-60\,x}{15\left(x^5-5\,x^4+5\,x^3+5\,x^2+(x^4-7\,x^2+10\,x-4)\sqrt{x+1}\sqrt{-x+1}-10\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(7/2)),x, algorithm="fricas")

[Out] 1/15*(9*x^5 - 35*x^4 + 20*x^3 + 60*x^2 + 5*(x^4 + 2*x^3 - 12*x^2
+ 12*x)*sqrt(x + 1)*sqrt(-x + 1) - 60*x)/(x^5 - 5*x^4 + 5*x^3 + 5
*x^2 + (x^4 - 7*x^2 + 10*x - 4)*sqrt(x + 1)*sqrt(-x + 1) - 10*x +
 4)
```

Sympy [A] time = 179.026, size = 303, normalized size = 4.97

$$\begin{cases} \frac{2(x+1)^2}{15\sqrt{-1+\frac{2}{x+1}}(x+1)^2-60\sqrt{-1+\frac{2}{x+1}}(x+1)+60\sqrt{-1+\frac{2}{x+1}}} - \frac{10(x+1)}{15\sqrt{-1+\frac{2}{x+1}}(x+1)^2-60\sqrt{-1+\frac{2}{x+1}}(x+1)+60\sqrt{-1+\frac{2}{x+1}}} + \frac{15}{15\sqrt{-1+\frac{2}{x+1}}(x+1)^2-60\sqrt{-1+\frac{2}{x+1}}(x+1)+60\sqrt{-1+\frac{2}{x+1}}} \\ -\frac{2i(x+1)^2}{15\sqrt{1-\frac{2}{x+1}}(x+1)^2-60\sqrt{1-\frac{2}{x+1}}(x+1)+60\sqrt{1-\frac{2}{x+1}}} + \frac{10i(x+1)}{15\sqrt{1-\frac{2}{x+1}}(x+1)^2-60\sqrt{1-\frac{2}{x+1}}(x+1)+60\sqrt{1-\frac{2}{x+1}}} - \frac{15i}{15\sqrt{1-\frac{2}{x+1}}(x+1)^2-60\sqrt{1-\frac{2}{x+1}}(x+1)+60\sqrt{1-\frac{2}{x+1}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(7/2)/(1+x)**(1/2),x)
```

```
[Out] Piecewise((2*(x + 1)**2/(15*sqrt(-1 + 2/(x + 1))*(x + 1)**2 - 60*
sqrt(-1 + 2/(x + 1))*(x + 1) + 60*sqrt(-1 + 2/(x + 1))) - 10*(x +
 1)/(15*sqrt(-1 + 2/(x + 1))*(x + 1)**2 - 60*sqrt(-1 + 2/(x + 1))
*(x + 1) + 60*sqrt(-1 + 2/(x + 1))) + 15/(15*sqrt(-1 + 2/(x + 1))
*(x + 1)**2 - 60*sqrt(-1 + 2/(x + 1))*(x + 1) + 60*sqrt(-1 + 2/(x
 + 1))), 2*Abs(1/(x + 1)) > 1), (-2*I*(x + 1)**2/(15*sqrt(1 - 2/(
x + 1))*(x + 1)**2 - 60*sqrt(1 - 2/(x + 1))*(x + 1) + 60*sqrt(1 -
 2/(x + 1))) + 10*I*(x + 1)/(15*sqrt(1 - 2/(x + 1))*(x + 1)**2 -
60*sqrt(1 - 2/(x + 1))*(x + 1) + 60*sqrt(1 - 2/(x + 1))) - 15*I/(
15*sqrt(1 - 2/(x + 1))*(x + 1)**2 - 60*sqrt(1 - 2/(x + 1))*(x + 1
) + 60*sqrt(1 - 2/(x + 1))), True))
```

GIAC/XCAS [A] time = 0.21118, size = 39, normalized size = 0.64

$$-\frac{(2\,(x+1)(x-4)+15)\sqrt{x+1}\sqrt{-x+1}}{15\,(x-1)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(7/2)),x, algorithm="giac")
```

```
[Out] -1/15*(2*(x + 1)*(x - 4) + 15)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^3
```

3.1114 $\int \frac{1}{(1-x)^{9/2}\sqrt{1+x}} \, dx$

Optimal. Leaf size=81

$$\frac{2\sqrt{x+1}}{35\sqrt{1-x}}+\frac{2\sqrt{x+1}}{35(1-x)^{3/2}}+\frac{3\sqrt{x+1}}{35(1-x)^{5/2}}+\frac{\sqrt{x+1}}{7(1-x)^{7/2}}$$

```
[Out] Sqrt[1 + x]/(7*(1 - x)^(7/2)) + (3*Sqrt[1 + x])/(35*(1 - x)^(5/2)
) + (2*Sqrt[1 + x])/(35*(1 - x)^(3/2)) + (2*Sqrt[1 + x])/(35*Sqrt
[1 - x])
```

Rubi [A] time = 0.050573, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{2\sqrt{x+1}}{35\sqrt{1-x}}+\frac{2\sqrt{x+1}}{35(1-x)^{3/2}}+\frac{3\sqrt{x+1}}{35(1-x)^{5/2}}+\frac{\sqrt{x+1}}{7(1-x)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(9/2)*Sqrt[1 + x]),x]
```

```
[Out] Sqrt[1 + x]/(7*(1 - x)^(7/2)) + (3*Sqrt[1 + x])/(35*(1 - x)^(5/2)
) + (2*Sqrt[1 + x])/(35*(1 - x)^(3/2)) + (2*Sqrt[1 + x])/(35*Sqrt
[1 - x])
```

Rubi in Sympy [A] time = 6.36903, size = 65, normalized size = 0.8

$$\frac{2\sqrt{x+1}}{35\sqrt{-x+1}}+\frac{2\sqrt{x+1}}{35\left(-x+1\right)^{\frac{3}{2}}}+\frac{3\sqrt{x+1}}{35\left(-x+1\right)^{\frac{5}{2}}}+\frac{\sqrt{x+1}}{7\left(-x+1\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(9/2)/(1+x)**(1/2),x)
```

```
[Out] 2*sqrt(x + 1)/(35*sqrt(-x + 1)) + 2*sqrt(x + 1)/(35*(-x + 1)**(3/
2)) + 3*sqrt(x + 1)/(35*(-x + 1)**(5/2)) + sqrt(x + 1)/(7*(-x + 1
)**(7/2))
```

Mathematica [A] time = 0.0189632, size = 35, normalized size = 0.43

$$\frac{\sqrt{1-x^2}\left(-2x^3+8x^2-13x+12\right)}{35(x-1)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(9/2)*Sqrt[1 + x]),x]
```

```
[Out] (Sqrt[1 - x^2]*(12 - 13*x + 8*x^2 - 2*x^3))/(35*(-1 + x)^4)
```

Maple [A] time = 0.004, size = 30, normalized size = 0.4

$$-\frac{2x^3-8x^2+13x-12}{35}\sqrt{1+x}\,(1-x)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(9/2)/(1+x)^(1/2),x)
```

```
[Out] -1/35*(1+x)^(1/2)*(2*x^3-8*x^2+13*x-12)/(1-x)^(7/2)
```

Maxima [A] time = 1.48704, size = 128, normalized size = 1.58

$$\frac{\sqrt{-x^2+1}}{7\,(x^4-4\,x^3+6\,x^2-4\,x+1)}-\frac{3\sqrt{-x^2+1}}{35\,(x^3-3\,x^2+3\,x-1)}+\frac{2\sqrt{-x^2+1}}{35\,(x^2-2\,x+1)}-\frac{2\sqrt{-x^2+1}}{35\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(9/2)),x, algorithm="maxima")
```

```
[Out] 1/7*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) - 3/35*sqrt(-x
^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) + 2/35*sqrt(-x^2 + 1)/(x^2 - 2*x
+ 1) - 2/35*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.206749, size = 197, normalized size = 2.43

$$\frac{10\,x^7+14\,x^6-189\,x^5+315\,x^4-420\,x^2-7\left(2\,x^6-12\,x^5+15\,x^4+20\,x^3-60\,x^2+40\,x\right)\sqrt{x+1}\sqrt{-x+1}+280\,x}{35\left(x^7-14\,x^5+28\,x^4-7\,x^3-28\,x^2-(x^6-7\,x^5+11\,x^4+7\,x^3-32\,x^2+28\,x-8)\sqrt{x+1}\sqrt{-x+1}+28\,x-8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(9/2)),x, algorithm="fricas")
```

```
[Out] 1/35*(10*x^7 + 14*x^6 - 189*x^5 + 315*x^4 - 420*x^2 - 7*(2*x^6 -
12*x^5 + 15*x^4 + 20*x^3 - 60*x^2 + 40*x)*sqrt(x + 1)*sqrt(-x + 1
```

```
) + 280*x)/(x^7 - 14*x^5 + 28*x^4 - 7*x^3 - 28*x^2 - (x^6 - 7*x^5
 + 11*x^4 + 7*x^3 - 32*x^2 + 28*x - 8)*sqrt(x + 1)*sqrt(-x + 1) +
 28*x - 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(9/2)/(1+x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.207997, size = 47, normalized size = 0.58

$$-\frac{((2(x+1)(x-6)+35)(x+1)-35)\sqrt{x+1}\sqrt{-x+1}}{35(x-1)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(9/2)),x, algorithm="giac")
```

```
[Out] -1/35*((2*(x + 1)*(x - 6) + 35)*(x + 1) - 35)*sqrt(x + 1)*sqrt(-x
 + 1)/(x - 1)^4
```

3.1115 $\int \frac{1}{(1-x)^{11/2}\sqrt{1+x}}\,dx$

Optimal. Leaf size=101

$$\frac{8\sqrt{x+1}}{315\sqrt{1-x}}+\frac{8\sqrt{x+1}}{315(1-x)^{3/2}}+\frac{4\sqrt{x+1}}{105(1-x)^{5/2}}+\frac{4\sqrt{x+1}}{63(1-x)^{7/2}}+\frac{\sqrt{x+1}}{9(1-x)^{9/2}}$$

```
[Out] Sqrt[1 + x]/(9*(1 - x)^(9/2)) + (4*Sqrt[1 + x])/(63*(1 - x)^(7/2)
) + (4*Sqrt[1 + x])/(105*(1 - x)^(5/2)) + (8*Sqrt[1 + x])/(315*(1
 - x)^(3/2)) + (8*Sqrt[1 + x])/(315*Sqrt[1 - x])
```

Rubi [A] time = 0.0673135, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{8\sqrt{x+1}}{315\sqrt{1-x}}+\frac{8\sqrt{x+1}}{315(1-x)^{3/2}}+\frac{4\sqrt{x+1}}{105(1-x)^{5/2}}+\frac{4\sqrt{x+1}}{63(1-x)^{7/2}}+\frac{\sqrt{x+1}}{9(1-x)^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(11/2)*Sqrt[1 + x]),x]
```

```
[Out] Sqrt[1 + x]/(9*(1 - x)^(9/2)) + (4*Sqrt[1 + x])/(63*(1 - x)^(7/2)
) + (4*Sqrt[1 + x])/(105*(1 - x)^(5/2)) + (8*Sqrt[1 + x])/(315*(1
 - x)^(3/2)) + (8*Sqrt[1 + x])/(315*Sqrt[1 - x])
```

Rubi in Sympy [A] time = 7.8595, size = 82, normalized size = 0.81

$$\frac{8\sqrt{x+1}}{315\sqrt{-x+1}}+\frac{8\sqrt{x+1}}{315\left(-x+1\right)^{\frac{3}{2}}}+\frac{4\sqrt{x+1}}{105\left(-x+1\right)^{\frac{5}{2}}}+\frac{4\sqrt{x+1}}{63\left(-x+1\right)^{\frac{7}{2}}}+\frac{\sqrt{x+1}}{9\left(-x+1\right)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(11/2)/(1+x)**(1/2),x)
```

```
[Out] 8*sqrt(x + 1)/(315*sqrt(-x + 1)) + 8*sqrt(x + 1)/(315*(-x + 1)**(
3/2)) + 4*sqrt(x + 1)/(105*(-x + 1)**(5/2)) + 4*sqrt(x + 1)/(63*(
-x + 1)**(7/2)) + sqrt(x + 1)/(9*(-x + 1)**(9/2))
```

Mathematica [A] time = 0.0250067, size = 40, normalized size = 0.4

$$-\frac{\sqrt{1-x^2}\left(8x^4-40x^3+84x^2-100x+83\right)}{315(x-1)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(11/2)*Sqrt[1 + x]),x]
```

```
[Out] -(Sqrt[1 - x^2]*(83 - 100*x + 84*x^2 - 40*x^3 + 8*x^4))/(315*(-1
+ x)^5)
```

Maple [A] time = 0.006, size = 35, normalized size = 0.4

$$\frac{8 x^{4}-40 x^{3}+84 x^{2}-100 x+83}{315}\sqrt{1+x}\,(1-x)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(11/2)/(1+x)^(1/2),x)
```

```
[Out] 1/315*(1+x)^(1/2)*(8*x^4-40*x^3+84*x^2-100*x+83)/(1-x)^(9/2)
```

Maxima [A] time = 1.51844, size = 177, normalized size = 1.75

$$-\frac{\sqrt{-x^{2}+1}}{9\,(x^{5}-5\,x^{4}+10\,x^{3}-10\,x^{2}+5\,x-1)}+\frac{4\,\sqrt{-x^{2}+1}}{63\,(x^{4}-4\,x^{3}+6\,x^{2}-4\,x+1)}-\frac{4\,\sqrt{-x^{2}+1}}{105\,(x^{3}-3\,x^{2}+3\,x-1)}+\frac{8\,\sqrt{-x^{2}+1}}{315\,(x^{2}-2\,x+1)}-\frac{8\,\sqrt{-x^{2}+1}}{315\,(x-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(11/2)),x, algorithm="maxima")
```

```
[Out] -1/9*sqrt(-x^2 + 1)/(x^5 - 5*x^4 + 10*x^3 - 10*x^2 + 5*x - 1) + 4
/63*sqrt(-x^2 + 1)/(x^4 - 4*x^3 + 6*x^2 - 4*x + 1) - 4/105*sqrt(-
x^2 + 1)/(x^3 - 3*x^2 + 3*x - 1) + 8/315*sqrt(-x^2 + 1)/(x^2 - 2*
x + 1) - 8/315*sqrt(-x^2 + 1)/(x - 1)
```

Fricas [A] time = 0.20443, size = 257, normalized size = 2.54

$$\frac{91\,x^{9}-747\,x^{8}+1314\,x^{7}+1974\,x^{6}-8442\,x^{5}+7560\,x^{4}+3360\,x^{3}-10080\,x^{2}+3\,\big(25\,x^{8}+24\,x^{7}-658\,x^{6}+1624\,x^{5}-840\,x^{4}}{315\,\Big(x^{9}-9\,x^{8}+18\,x^{7}+18\,x^{6}-99\,x^{5}+99\,x^{4}+24\,x^{3}-108\,x^{2}+\big(x^{8}-22\,x^{6}+60\,x^{5}-39\,x^{4}-60\,x^{3}+116\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(11/2)),x, algorithm="fricas")
```

```
[Out] 1/315*(91*x^9 - 747*x^8 + 1314*x^7 + 1974*x^6 - 8442*x^5 + 7560*x
^4 + 3360*x^3 - 10080*x^2 + 3*(25*x^8 + 24*x^7 - 658*x^6 + 1624*x
^5 - 840*x^4 - 1960*x^3 + 3360*x^2 - 1680*x)*sqrt(x + 1)*sqrt(-x
+ 1) + 5040*x)/(x^9 - 9*x^8 + 18*x^7 + 18*x^6 - 99*x^5 + 99*x^4 +
 24*x^3 - 108*x^2 + (x^8 - 22*x^6 + 60*x^5 - 39*x^4 - 60*x^3 + 11
6*x^2 - 72*x + 16)*sqrt(x + 1)*sqrt(-x + 1) + 72*x - 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(11/2)/(1+x)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.212374, size = 57, normalized size = 0.56

$$-\frac{(4\,((2\,(x+1)(x-8)+63)(x+1)-105)(x+1)+315)\sqrt{x+1}\sqrt{-x+1}}{315\,(x-1)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 1)*(-x + 1)^(11/2)),x, algorithm="giac")
```

```
[Out] -1/315*(4*((2*(x + 1)*(x - 8) + 63)*(x + 1) - 105)*(x + 1) + 315)
*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^5
```

3.1116 $\int \frac{(1-x)^{7/2}}{(1+x)^{3/2}}\,dx$

Optimal. Leaf size=85

$$-\frac{2(1-x)^{7/2}}{\sqrt{x+1}}-\frac{7}{3}\sqrt{x+1}(1-x)^{5/2}-\frac{35}{6}\sqrt{x+1}(1-x)^{3/2}-\frac{35}{2}\sqrt{x+1}\sqrt{1-x}-\frac{35}{2}\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(7/2))/Sqrt[1 + x] - (35*Sqrt[1 - x]*Sqrt[1 + x])/2 -
 (35*(1 - x)^(3/2)*Sqrt[1 + x])/6 - (7*(1 - x)^(5/2)*Sqrt[1 + x])
/3 - (35*ArcSin[x])/2
```

Rubi [A] time = 0.0608198, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$-\frac{2(1-x)^{7/2}}{\sqrt{x+1}}-\frac{7}{3}\sqrt{x+1}(1-x)^{5/2}-\frac{35}{6}\sqrt{x+1}(1-x)^{3/2}-\frac{35}{2}\sqrt{x+1}\sqrt{1-x}-\frac{35}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(7/2)/(1 + x)^(3/2),x]
```

```
[Out] (-2*(1 - x)^(7/2))/Sqrt[1 + x] - (35*Sqrt[1 - x]*Sqrt[1 + x])/2 -
 (35*(1 - x)^(3/2)*Sqrt[1 + x])/6 - (7*(1 - x)^(5/2)*Sqrt[1 + x])
/3 - (35*ArcSin[x])/2
```

Rubi in Sympy [A] time = 8.48451, size = 73, normalized size = 0.86

$$-\frac{2\left(-x+1\right)^{\frac{7}{2}}}{\sqrt{x+1}}-\frac{7\left(-x+1\right)^{\frac{5}{2}}\sqrt{x+1}}{3}-\frac{35\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}{6}-\frac{35\sqrt{-x+1}\sqrt{x+1}}{2}-\frac{35\,\mathrm{asin}\,(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(7/2)/(1+x)**(3/2),x)
```

```
[Out] -2*(-x + 1)**(7/2)/sqrt(x + 1) - 7*(-x + 1)**(5/2)*sqrt(x + 1)/3
- 35*(-x + 1)**(3/2)*sqrt(x + 1)/6 - 35*sqrt(-x + 1)*sqrt(x + 1)/
2 - 35*asin(x)/2
```

Mathematica [A] time = 0.047353, size = 52, normalized size = 0.61

$$-\frac{\sqrt{1-x}\left(2x^3-13x^2+55x+166\right)}{6\sqrt{x+1}}-35\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/2)/(1 + x)^(3/2),x]
```

```
[Out] -(Sqrt[1 - x]*(166 + 55*x - 13*x^2 + 2*x^3))/(6*Sqrt[1 + x]) - 35
*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.027, size = 84, normalized size = 1.

$$\frac{2x^4-15x^3+68x^2+111x-166}{6}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}-\frac{35\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/2)/(1+x)^(3/2),x)
```

```
[Out] 1/6*(2*x^4-15*x^3+68*x^2+111*x-166)/(-(1+x)*(-1+x))^(1/2)*((1+x)*
(1-x))^(1/2)/(1-x)^(1/2)/(1+x)^(1/2)-35/2*((1+x)*(1-x))^(1/2)/(1+
x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.5161, size = 95, normalized size = 1.12

$$\frac{x^4}{3\sqrt{-x^2+1}}-\frac{5x^3}{2\sqrt{-x^2+1}}+\frac{34x^2}{3\sqrt{-x^2+1}}+\frac{37x}{2\sqrt{-x^2+1}}-\frac{83}{3\sqrt{-x^2+1}}-\frac{35}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/(x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*x^4/sqrt(-x^2 + 1) - 5/2*x^3/sqrt(-x^2 + 1) + 34/3*x^2/sqrt(-
x^2 + 1) + 37/2*x/sqrt(-x^2 + 1) - 83/3/sqrt(-x^2 + 1) - 35/2*arc
sin(x)
```

Fricas [A] time = 0.213308, size = 251, normalized size = 2.95

$$\frac{2x^7-7x^6+261x^4+624x^3-324x^2-\left(2x^6-21x^5+99x^4+180x^3-324x^2-888x\right)\sqrt{x+1}\sqrt{-x+1}+210\left(x^4-3x^3-\right.}{6\left(x^4-3x^3-8x^2+(x^3+4x^2-4x-8)\sqrt{x+1}\sqrt{-x\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/(x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*x^7 - 7*x^6 + 261*x^4 + 624*x^3 - 324*x^2 - (2*x^6 - 21*x^
5 + 99*x^4 + 180*x^3 - 324*x^2 - 888*x)*sqrt(x + 1)*sqrt(-x + 1)
+ 210*(x^4 - 3*x^3 - 8*x^2 + (x^3 + 4*x^2 - 4*x - 8)*sqrt(x + 1)*
sqrt(-x + 1) + 4*x + 8)*arctan((sqrt(x + 1)*sqrt(-x + 1) - 1)/x)
- 888*x)/(x^4 - 3*x^3 - 8*x^2 + (x^3 + 4*x^2 - 4*x - 8)*sqrt(x +
1)*sqrt(-x + 1) + 4*x + 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/2)/(1+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.23653, size = 109, normalized size = 1.28

$$-\frac{1}{6}\left((2x-17)(x+1)+87\right)\sqrt{x+1}\sqrt{-x+1}+\frac{8\left(\sqrt{2}-\sqrt{-x+1}\right)}{\sqrt{x+1}}-\frac{8\sqrt{x+1}}{\sqrt{2}-\sqrt{-x+1}}-35\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/(x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] -1/6*((2*x - 17)*(x + 1) + 87)*sqrt(x + 1)*sqrt(-x + 1) + 8*(sqrt
(2) - sqrt(-x + 1))/sqrt(x + 1) - 8*sqrt(x + 1)/(sqrt(2) - sqrt(-
x + 1)) - 35*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1117 $\int \frac{(1-x)^{5/2}}{(1+x)^{3/2}} \, dx$

Optimal. Leaf size=65

$$-\frac{2(1-x)^{5/2}}{\sqrt{x+1}}-\frac{5}{2}\sqrt{x+1}(1-x)^{3/2}-\frac{15}{2}\sqrt{x+1}\sqrt{1-x}-\frac{15}{2}\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(5/2))/Sqrt[1 + x] - (15*Sqrt[1 - x]*Sqrt[1 + x])/2 -
 (5*(1 - x)^(3/2)*Sqrt[1 + x])/2 - (15*ArcSin[x])/2
```

Rubi [A] time = 0.0458641, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{2(1-x)^{5/2}}{\sqrt{x+1}}-\frac{5}{2}\sqrt{x+1}(1-x)^{3/2}-\frac{15}{2}\sqrt{x+1}\sqrt{1-x}-\frac{15}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(5/2)/(1 + x)^(3/2),x]
```

```
[Out] (-2*(1 - x)^(5/2))/Sqrt[1 + x] - (15*Sqrt[1 - x]*Sqrt[1 + x])/2 -
 (5*(1 - x)^(3/2)*Sqrt[1 + x])/2 - (15*ArcSin[x])/2
```

Rubi in Sympy [A] time = 6.73245, size = 56, normalized size = 0.86

$$-\frac{2\left(-x+1\right)^{\frac{5}{2}}}{\sqrt{x+1}}-\frac{5\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}{2}-\frac{15\sqrt{-x+1}\sqrt{x+1}}{2}-\frac{15\,\mathrm{asin}\left(x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(5/2)/(1+x)**(3/2),x)
```

```
[Out] -2*(-x + 1)**(5/2)/sqrt(x + 1) - 5*(-x + 1)**(3/2)*sqrt(x + 1)/2
- 15*sqrt(-x + 1)*sqrt(x + 1)/2 - 15*asin(x)/2
```

Mathematica [A] time = 0.040746, size = 45, normalized size = 0.69

$$\frac{\sqrt{1-x}\left(x^2-7x-24\right)}{2\sqrt{x+1}}-15\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(5/2)/(1 + x)^(3/2),x]
```

```
[Out] (Sqrt[1 - x]*(-24 - 7*x + x^2))/(2*Sqrt[1 + x]) - 15*ArcSin[Sqrt[
1 + x]/Sqrt[2]]
```

Maple [A] time = 0.026, size = 77, normalized size = 1.2

$$-\frac{x^3-8x^2-17x+24}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}-\frac{15\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(5/2)/(1+x)^(3/2),x)
```

```
[Out] -1/2*(x^3-8*x^2-17*x+24)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2
)/(1-x)^(1/2)/(1+x)^(1/2)-15/2*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1
-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.48817, size = 76, normalized size = 1.17

$$-\frac{x^3}{2\sqrt{-x^2+1}}+\frac{4x^2}{\sqrt{-x^2+1}}+\frac{17x}{2\sqrt{-x^2+1}}-\frac{12}{\sqrt{-x^2+1}}-\frac{15}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/(x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/2*x^3/sqrt(-x^2 + 1) + 4*x^2/sqrt(-x^2 + 1) + 17/2*x/sqrt(-x^2
 + 1) - 12/sqrt(-x^2 + 1) - 15/2*arcsin(x)
```

Fricas [A] time = 0.212006, size = 200, normalized size = 3.08

$$\frac{x^5-10x^4-29x^3+18x^2+\left(x^4-5x^3-18x^2-68x\right)\sqrt{x+1}\sqrt{-x+1}+30\left(x^3+3x^2-\left(x^2-2x-4\right)\sqrt{x+1}\sqrt{-x+1}-2x\right.}{2\left(x^3+3x^2-(x^2-2x-4)\sqrt{x+1}\sqrt{-x+1}-2x-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/(x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(x^5 - 10*x^4 - 29*x^3 + 18*x^2 + (x^4 - 5*x^3 - 18*x^2 - 68*
x)*sqrt(x + 1)*sqrt(-x + 1) + 30*(x^3 + 3*x^2 - (x^2 - 2*x - 4)*s
qrt(x + 1)*sqrt(-x + 1) - 2*x - 4)*arctan((sqrt(x + 1)*sqrt(-x +
1) - 1)/x) + 68*x)/(x^3 + 3*x^2 - (x^2 - 2*x - 4)*sqrt(x + 1)*sqr
t(-x + 1) - 2*x - 4)
```

Sympy [A] time = 63.9608, size = 168, normalized size = 2.58

$$\begin{cases} 15i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{i(x+1)^{\frac{5}{2}}}{2\sqrt{x-1}} - \frac{11i(x+1)^{\frac{3}{2}}}{2\sqrt{x-1}} + \frac{i\sqrt{x+1}}{\sqrt{x-1}} + \frac{16i}{\sqrt{x-1}\sqrt{x+1}} & \text{for}\ \frac{|x+1|}{2} > 1 \\ -15\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{(x+1)^{\frac{5}{2}}}{2\sqrt{-x+1}} + \frac{11(x+1)^{\frac{3}{2}}}{2\sqrt{-x+1}} - \frac{\sqrt{x+1}}{\sqrt{-x+1}} - \frac{16}{\sqrt{-x+1}\sqrt{x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(5/2)/(1+x)**(3/2),x)
```

```
[Out] Piecewise((15*I*acosh(sqrt(2)*sqrt(x + 1)/2) + I*(x + 1)**(5/2)/(
2*sqrt(x - 1)) - 11*I*(x + 1)**(3/2)/(2*sqrt(x - 1)) + I*sqrt(x +
 1)/sqrt(x - 1) + 16*I/(sqrt(x - 1)*sqrt(x + 1)), Abs(x + 1)/2 >
1), (-15*asin(sqrt(2)*sqrt(x + 1)/2) - (x + 1)**(5/2)/(2*sqrt(-x
+ 1)) + 11*(x + 1)**(3/2)/(2*sqrt(-x + 1)) - sqrt(x + 1)/sqrt(-x
+ 1) - 16/(sqrt(-x + 1)*sqrt(x + 1)), True))
```

GIAC/XCAS [A] time = 0.229625, size = 99, normalized size = 1.52

$$\frac{1}{2}\sqrt{x+1}(x-8)\sqrt{-x+1} + \frac{4\left(\sqrt{2}-\sqrt{-x+1}\right)}{\sqrt{x+1}} - \frac{4\sqrt{x+1}}{\sqrt{2}-\sqrt{-x+1}} - 15\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/(x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(x + 1)*(x - 8)*sqrt(-x + 1) + 4*(sqrt(2) - sqrt(-x + 1))
/sqrt(x + 1) - 4*sqrt(x + 1)/(sqrt(2) - sqrt(-x + 1)) - 15*arcsin
(1/2*sqrt(2)*sqrt(x + 1))
```

3.1118 $\int \frac{(1-x)^{3/2}}{(1+x)^{3/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2(1-x)^{3/2}}{\sqrt{x+1}}-3\sqrt{x+1}\sqrt{1-x}-3\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(3/2))/Sqrt[1 + x] - 3*Sqrt[1 - x]*Sqrt[1 + x] - 3*Ar
cSin[x]
```

Rubi [A] time = 0.0331637, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{2(1-x)^{3/2}}{\sqrt{x+1}}-3\sqrt{x+1}\sqrt{1-x}-3\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(3/2)/(1 + x)^(3/2),x]
```

```
[Out] (-2*(1 - x)^(3/2))/Sqrt[1 + x] - 3*Sqrt[1 - x]*Sqrt[1 + x] - 3*Ar
cSin[x]
```

Rubi in Sympy [A] time = 5.32194, size = 36, normalized size = 0.88

$$-\frac{2\left(-x+1\right)^{\frac{3}{2}}}{\sqrt{x+1}}-3\sqrt{-x+1}\sqrt{x+1}-3\operatorname{asin}\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(3/2)/(1+x)**(3/2),x)
```

```
[Out] -2*(-x + 1)**(3/2)/sqrt(x + 1) - 3*sqrt(-x + 1)*sqrt(x + 1) - 3*a
sin(x)
```

Mathematica [A] time = 0.0284615, size = 38, normalized size = 0.93

$$-\frac{\sqrt{1-x}(x+5)}{\sqrt{x+1}}-6\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(3/2)/(1 + x)^(3/2),x]
```

```
[Out] -((Sqrt[1 - x]*(5 + x))/Sqrt[1 + x]) - 6*ArcSin[Sqrt[1 + x]/Sqrt[
2]]
```

Maple [B] time = 0.025, size = 71, normalized size = 1.7

$$(x^2+4x-5)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}-3\frac{\sqrt{(1+x)(1-x)}\arcsin(x)}{\sqrt{1-x}\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(3/2)/(1+x)^(3/2),x)
```

```
[Out] (x^2+4*x-5)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2)/(1-x)^(1/2)
/(1+x)^(1/2)-3*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin
(x)
```

Maxima [A] time = 1.51776, size = 55, normalized size = 1.34

$$\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{x^2+2x+1}-\frac{6\sqrt{-x^2+1}}{x+1}-3\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/(x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] (-x^2 + 1)^(3/2)/(x^2 + 2*x + 1) - 6*sqrt(-x^2 + 1)/(x + 1) - 3*a
rcsin(x)
```

Fricas [A] time = 0.206628, size = 140, normalized size = 3.41

$$\frac{x^3+x^2-\left(x^2+8x\right)\sqrt{x+1}\sqrt{-x+1}+6\left(x^2+(x+2)\sqrt{x+1}\sqrt{-x+1}-x-2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)+8x}{x^2+(x+2)\sqrt{x+1}\sqrt{-x+1}-x-2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/(x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] (x^3 + x^2 - (x^2 + 8*x)*sqrt(x + 1)*sqrt(-x + 1) + 6*(x^2 + (x +
 2)*sqrt(x + 1)*sqrt(-x + 1) - x - 2)*arctan((sqrt(x + 1)*sqrt(-x
```

```
 + 1) - 1)/x) + 8*x)/(x^2 + (x + 2)*sqrt(x + 1)*sqrt(-x + 1) - x
- 2)
```

Sympy [A] time = 11.187, size = 133, normalized size = 3.24

$$\begin{cases} 6i\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{i(x+1)^{\frac{3}{2}}}{\sqrt{x-1}} - \frac{2i\sqrt{x+1}}{\sqrt{x-1}} + \frac{8i}{\sqrt{x-1}\sqrt{x+1}} & \text{for } \frac{|x+1|}{2} > 1 \\ -6\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{(x+1)^{\frac{3}{2}}}{\sqrt{-x+1}} + \frac{2\sqrt{x+1}}{\sqrt{-x+1}} - \frac{8}{\sqrt{-x+1}\sqrt{x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(3/2)/(1+x)**(3/2),x)
```

```
[Out] Piecewise((6*I*acosh(sqrt(2)*sqrt(x + 1)/2) - I*(x + 1)**(3/2)/sq
rt(x - 1) - 2*I*sqrt(x + 1)/sqrt(x - 1) + 8*I/(sqrt(x - 1)*sqrt(x
 + 1)), Abs(x + 1)/2 > 1), (-6*asin(sqrt(2)*sqrt(x + 1)/2) + (x +
 1)**(3/2)/sqrt(-x + 1) + 2*sqrt(x + 1)/sqrt(-x + 1) - 8/(sqrt(-x
 + 1)*sqrt(x + 1)), True))
```

GIAC/XCAS [A] time = 0.218763, size = 95, normalized size = 2.32

$$-\sqrt{x+1}\sqrt{-x+1} + \frac{2\left(\sqrt{2} - \sqrt{-x+1}\right)}{\sqrt{x+1}} - \frac{2\sqrt{x+1}}{\sqrt{2} - \sqrt{-x+1}} - 6\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/(x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] -sqrt(x + 1)*sqrt(-x + 1) + 2*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1
) - 2*sqrt(x + 1)/(sqrt(2) - sqrt(-x + 1)) - 6*arcsin(1/2*sqrt(2)
*sqrt(x + 1))
```

3.1119 $\int \frac{\sqrt{1-x}}{(1+x)^{3/2}}\,dx$

Optimal. Leaf size=23

$$-\frac{2\sqrt{1-x}}{\sqrt{x+1}}-\sin^{-1}(x)$$

```
[Out] (-2*Sqrt[1 - x])/Sqrt[1 + x] - ArcSin[x]
```

Rubi [A] time = 0.021011, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{2\sqrt{1-x}}{\sqrt{x+1}}-\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[1 - x]/(1 + x)^(3/2),x]

[Out] (-2*Sqrt[1 - x])/Sqrt[1 + x] - ArcSin[x]
```

Rubi in Sympy [A] time = 4.02163, size = 19, normalized size = 0.83

$$-\frac{2\sqrt{-x+1}}{\sqrt{x+1}}-\operatorname{asin}(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/2)/(1+x)**(3/2),x)

[Out] -2*sqrt(-x + 1)/sqrt(x + 1) - asin(x)
```

Mathematica [A] time = 0.0180246, size = 35, normalized size = 1.52

$$-\frac{2\sqrt{1-x}}{\sqrt{x+1}}-2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[1 - x]/(1 + x)^(3/2),x]
```

```
[Out] (-2*Sqrt[1 - x])/Sqrt[1 + x] - 2*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [B] time = 0.023, size = 67, normalized size = 2.9

$$2\frac{(-1+x)\sqrt{(1+x)(1-x)}}{\sqrt{-(1+x)(-1+x)}\sqrt{1-x}\sqrt{1+x}}-\arcsin(x)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/2)/(1+x)^(3/2),x)
```

```
[Out] 2*(-1+x)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2)/(1-x)^(1/2)/(1
+x)^(1/2)-((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.50183, size = 28, normalized size = 1.22

$$-\frac{2\sqrt{-x^2+1}}{x+1}-\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/(x + 1)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*sqrt(-x^2 + 1)/(x + 1) - arcsin(x)
```

Fricas [A] time = 0.206048, size = 85, normalized size = 3.7

$$\frac{2\left(\left(x-\sqrt{x+1}\sqrt{-x+1}+1\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)-2x\right)}{x-\sqrt{x+1}\sqrt{-x+1}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/(x + 1)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*((x - sqrt(x + 1)*sqrt(-x + 1) + 1)*arctan((sqrt(x + 1)*sqrt(-x
 + 1) - 1)/x) - 2*x)/(x - sqrt(x + 1)*sqrt(-x + 1) + 1)
```

Sympy [A] time = 5.33685, size = 104, normalized size = 4.52

$$\begin{cases} 2i \operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) - \frac{2i\sqrt{x+1}}{\sqrt{x-1}} + \frac{4i}{\sqrt{x-1}\sqrt{x+1}} & \text{for } \frac{|x+1|}{2} > 1 \\ -2 \operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) + \frac{2\sqrt{x+1}}{\sqrt{-x+1}} - \frac{4}{\sqrt{-x+1}\sqrt{x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/2)/(1+x)**(3/2),x)
```

```
[Out] Piecewise((2*I*acosh(sqrt(2)*sqrt(x + 1)/2) - 2*I*sqrt(x + 1)/sqr
t(x - 1) + 4*I/(sqrt(x - 1)*sqrt(x + 1)), Abs(x + 1)/2 > 1), (-2*
asin(sqrt(2)*sqrt(x + 1)/2) + 2*sqrt(x + 1)/sqrt(-x + 1) - 4/(sqr
t(-x + 1)*sqrt(x + 1)), True))
```

GIAC/XCAS [A] time = 0.213006, size = 74, normalized size = 3.22

$$\frac{\sqrt{2} - \sqrt{-x+1}}{\sqrt{x+1}} - \frac{\sqrt{x+1}}{\sqrt{2} - \sqrt{-x+1}} - 2 \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/(x + 1)^(3/2),x, algorithm="giac")
```

```
[Out] (sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - sqrt(x + 1)/(sqrt(2) - sqr
t(-x + 1)) - 2*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1120 $\int \frac{1}{\sqrt{1-x}(1+x)^{3/2}} \, dx$

Optimal. Leaf size=18

$$-\frac{\sqrt{1-x}}{\sqrt{x+1}}$$

```
[Out] -(Sqrt[1 - x]/Sqrt[1 + x])
```

Rubi [A] time = 0.011929, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{\sqrt{1-x}}{\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - x]*(1 + x)^(3/2)),x]

[Out] -(Sqrt[1 - x]/Sqrt[1 + x])
```

Rubi in Sympy [A] time = 2.43945, size = 14, normalized size = 0.78

$$-\frac{\sqrt{-x+1}}{\sqrt{x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(1-x)**(1/2)/(1+x)**(3/2),x)

[Out] -sqrt(-x + 1)/sqrt(x + 1)
```

Mathematica [A] time = 0.00990987, size = 18, normalized size = 1.

$$-\frac{\sqrt{1-x}}{\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - x]*(1 + x)^(3/2)),x]
```

```
[Out] -(Sqrt[1 - x]/Sqrt[1 + x])
```

Maple [A] time = 0.004, size = 15, normalized size = 0.8

$$-1\sqrt{1-x}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(1-x)^(1/2)/(1+x)^(3/2),x)
```

```
[Out] -(1-x)^(1/2)/(1+x)^(1/2)
```

Maxima [A] time = 1.5101, size = 22, normalized size = 1.22

$$-\frac{\sqrt{-x^2+1}}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((x + 1)^(3/2)*sqrt(-x + 1)),x, algorithm="maxima")
```

```
[Out] -sqrt(-x^2 + 1)/(x + 1)
```

Fricas [A] time = 0.203705, size = 30, normalized size = 1.67

$$-\frac{2\,x}{x-\sqrt{x+1}\sqrt{-x+1}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((x + 1)^(3/2)*sqrt(-x + 1)),x, algorithm="fricas")
```

```
[Out] -2*x/(x - sqrt(x + 1)*sqrt(-x + 1) + 1)
```

Sympy [A] time = 3.89458, size = 31, normalized size = 1.72

$$\begin{cases} -\sqrt{-1+\frac{2}{x+1}} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -i\sqrt{1-\frac{2}{x+1}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(1/2)/(1+x)**(3/2),x)
```

```
[Out] Piecewise((-sqrt(-1 + 2/(x + 1)), 2*Abs(1/(x + 1)) > 1), (-I*sqrt
(1 - 2/(x + 1)), True))
```

GIAC/XCAS [A] time = 0.207629, size = 58, normalized size = 3.22

$$\frac{\sqrt{2}-\sqrt{-x+1}}{2\sqrt{x+1}}-\frac{\sqrt{x+1}}{2\left(\sqrt{2}-\sqrt{-x+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*sqrt(-x + 1)),x, algorithm="giac")
```

```
[Out] 1/2*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - 1/2*sqrt(x + 1)/(sqrt(
2) - sqrt(-x + 1))
```

3.1121 $\int \frac{1}{(1-x)^{3/2}(1+x)^{3/2}} \, dx$

Optimal. Leaf size=18

$$\frac{x}{\sqrt{1-x}\sqrt{x+1}}$$

```
[Out] x/(Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi [A] time = 0.0122861, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{x}{\sqrt{1-x}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(3/2)*(1 + x)^(3/2)),x]

[Out] x/(Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 2.63629, size = 14, normalized size = 0.78

$$\frac{x}{\sqrt{-x+1}\sqrt{x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(3/2)/(1+x)**(3/2),x)

[Out] x/(sqrt(-x + 1)*sqrt(x + 1))
```

Mathematica [A] time = 0.00991435, size = 13, normalized size = 0.72

$$\frac{x}{\sqrt{1-x^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(3/2)*(1 + x)^(3/2)),x]
```

```
[Out] x/Sqrt[1 - x^2]
```

Maple [A] time = 0.003, size = 15, normalized size = 0.8

$$x\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(3/2)/(1+x)^(3/2),x)
```

```
[Out] x/(1-x)^(1/2)/(1+x)^(1/2)
```

Maxima [A] time = 1.33924, size = 15, normalized size = 0.83

$$\frac{x}{\sqrt{-x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(3/2)),x, algorithm="maxima")
```

```
[Out] x/sqrt(-x^2 + 1)
```

Fricas [A] time = 0.20276, size = 54, normalized size = 3.

$$-\frac{\sqrt{x+1}x\sqrt{-x+1}-x}{x^2+\sqrt{x+1}\sqrt{-x+1}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(3/2)),x, algorithm="fricas")
```

```
[Out] -(sqrt(x + 1)*x*sqrt(-x + 1) - x)/(x^2 + sqrt(x + 1)*sqrt(-x + 1)
 - 1)
```

Sympy [A] time = 12.5958, size = 66, normalized size = 3.67

$$\begin{cases} \frac{1}{\sqrt{-1+\frac{2}{x+1}}} - \frac{1}{\sqrt{-1+\frac{2}{x+1}}(x+1)} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{i\sqrt{1-\frac{2}{x+1}}(x+1)}{x-1} + \frac{i\sqrt{1-\frac{2}{x+1}}}{x-1} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(3/2)/(1+x)**(3/2),x)
```

```
[Out] Piecewise((1/sqrt(-1 + 2/(x + 1)) - 1/(sqrt(-1 + 2/(x + 1))*(x +
1)), 2*Abs(1/(x + 1)) > 1), (-I*sqrt(1 - 2/(x + 1))*(x + 1)/(x -
1) + I*sqrt(1 - 2/(x + 1))/(x - 1), True))
```

GIAC/XCAS [A] time = 0.212366, size = 84, normalized size = 4.67

$$\frac{\sqrt{2}-\sqrt{-x+1}}{4\sqrt{x+1}}-\frac{\sqrt{x+1}\sqrt{-x+1}}{2\,(x-1)}-\frac{\sqrt{x+1}}{4\left(\sqrt{2}-\sqrt{-x+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(3/2)),x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - 1/2*sqrt(x + 1)*sqrt(-
x + 1)/(x - 1) - 1/4*sqrt(x + 1)/(sqrt(2) - sqrt(-x + 1))
```

3.1122 $\int \frac{1}{(1-x)^{5/2}(1+x)^{3/2}}\,dx$

Optimal. Leaf size=42

$$\frac{2x}{3\sqrt{1-x}\sqrt{x+1}}+\frac{1}{3(1-x)^{3/2}\sqrt{x+1}}$$

```
[Out] 1/(3*(1 - x)^(3/2)*Sqrt[1 + x]) + (2*x)/(3*Sqrt[1 - x]*Sqrt[1 + x
])
```

Rubi [A] time = 0.0246828, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2x}{3\sqrt{1-x}\sqrt{x+1}}+\frac{1}{3(1-x)^{3/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(5/2)*(1 + x)^(3/2)),x]
```

```
[Out] 1/(3*(1 - x)^(3/2)*Sqrt[1 + x]) + (2*x)/(3*Sqrt[1 - x]*Sqrt[1 + x
])
```

Rubi in Sympy [A] time = 3.96472, size = 34, normalized size = 0.81

$$\frac{2x}{3\sqrt{-x+1}\sqrt{x+1}}+\frac{1}{3\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(5/2)/(1+x)**(3/2),x)
```

```
[Out] 2*x/(3*sqrt(-x + 1)*sqrt(x + 1)) + 1/(3*(-x + 1)**(3/2)*sqrt(x +
1))
```

Mathematica [A] time = 0.0239578, size = 30, normalized size = 0.71

$$\frac{-2x^2+2x+1}{3(1-x)^{3/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(5/2)*(1 + x)^(3/2)),x]

[Out] (1 + 2*x - 2*x^2)/(3*(1 - x)^(3/2)*Sqrt[1 + x])
```

Maple [A] time = 0.004, size = 25, normalized size = 0.6

$$-\frac{2x^2-2x-1}{3}(1-x)^{-\frac{3}{2}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(5/2)/(1+x)^(3/2),x)

[Out] -1/3*(2*x^2-2*x-1)/(1+x)^(1/2)/(1-x)^(3/2)
```

Maxima [A] time = 1.34685, size = 54, normalized size = 1.29

$$\frac{2x}{3\sqrt{-x^2+1}}-\frac{1}{3\left(\sqrt{-x^2+1}x-\sqrt{-x^2+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(5/2)),x, algorithm="maxima")

[Out] 2/3*x/sqrt(-x^2 + 1) - 1/3/(sqrt(-x^2 + 1)*x - sqrt(-x^2 + 1))
```

Fricas [A] time = 0.204938, size = 122, normalized size = 2.9

$$-\frac{2x^4-4x^3-3x^2+\left(x^3+3x^2-6x\right)\sqrt{x+1}\sqrt{-x+1}+6x}{3\left(2x^3-2x^2-(x^3-x^2-2x+2)\sqrt{x+1}\sqrt{-x+1}-2x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(5/2)),x, algorithm="fricas")

[Out] -1/3*(2*x^4 - 4*x^3 - 3*x^2 + (x^3 + 3*x^2 - 6*x)*sqrt(x + 1)*sqr
t(-x + 1) + 6*x)/(2*x^3 - 2*x^2 - (x^3 - x^2 - 2*x + 2)*sqrt(x +
1)*sqrt(-x + 1) - 2*x + 2)
```

Sympy [A] time = 88.3379, size = 160, normalized size = 3.81

$$\begin{cases} -\frac{2\sqrt{-1+\frac{2}{x+1}}(x+1)^2}{-12x+3(x+1)^2} + \frac{6\sqrt{-1+\frac{2}{x+1}}(x+1)}{-12x+3(x+1)^2} - \frac{3\sqrt{-1+\frac{2}{x+1}}}{-12x+3(x+1)^2} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{2i\sqrt{1-\frac{2}{x+1}}(x+1)^2}{-12x+3(x+1)^2} + \frac{6i\sqrt{1-\frac{2}{x+1}}(x+1)}{-12x+3(x+1)^2} - \frac{3i\sqrt{1-\frac{2}{x+1}}}{-12x+3(x+1)^2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(5/2)/(1+x)**(3/2),x)
```

```
[Out] Piecewise((-2*sqrt(-1 + 2/(x + 1))*(x + 1)**2/(-12*x + 3*(x + 1)*
*2) + 6*sqrt(-1 + 2/(x + 1))*(x + 1)/(-12*x + 3*(x + 1)**2) - 3*s
qrt(-1 + 2/(x + 1))/(-12*x + 3*(x + 1)**2), 2*Abs(1/(x + 1)) > 1)
, (-2*I*sqrt(1 - 2/(x + 1))*(x + 1)**2/(-12*x + 3*(x + 1)**2) + 6
*I*sqrt(1 - 2/(x + 1))*(x + 1)/(-12*x + 3*(x + 1)**2) - 3*I*sqrt(
1 - 2/(x + 1))/(-12*x + 3*(x + 1)**2), True))
```

GIAC/XCAS [A] time = 0.207192, size = 90, normalized size = 2.14

$$\frac{\sqrt{2}-\sqrt{-x+1}}{8\,\sqrt{x+1}} - \frac{(5\,x-7)\sqrt{x+1}\sqrt{-x+1}}{12\,(x-1)^2} - \frac{\sqrt{x+1}}{8\left(\sqrt{2}-\sqrt{-x+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(5/2)),x, algorithm="giac")
```

```
[Out] 1/8*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - 1/12*(5*x - 7)*sqrt(x
+ 1)*sqrt(-x + 1)/(x - 1)^2 - 1/8*sqrt(x + 1)/(sqrt(2) - sqrt(-x
+ 1))
```

3.1123 $\int \frac{1}{(1-x)^{7/2}(1+x)^{3/2}}\,dx$

Optimal. Leaf size=62

$$\frac{2x}{5\sqrt{1-x}\sqrt{x+1}}+\frac{1}{5(1-x)^{3/2}\sqrt{x+1}}+\frac{1}{5(1-x)^{5/2}\sqrt{x+1}}$$

```
[Out] 1/(5*(1 - x)^(5/2)*Sqrt[1 + x]) + 1/(5*(1 - x)^(3/2)*Sqrt[1 + x])
 + (2*x)/(5*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi [A] time = 0.0369049, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2x}{5\sqrt{1-x}\sqrt{x+1}}+\frac{1}{5(1-x)^{3/2}\sqrt{x+1}}+\frac{1}{5(1-x)^{5/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(7/2)*(1 + x)^(3/2)),x]
```

```
[Out] 1/(5*(1 - x)^(5/2)*Sqrt[1 + x]) + 1/(5*(1 - x)^(3/2)*Sqrt[1 + x])
 + (2*x)/(5*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 4.93796, size = 51, normalized size = 0.82

$$\frac{2x}{5\sqrt{-x+1}\sqrt{x+1}}+\frac{1}{5\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}+\frac{1}{5\left(-x+1\right)^{\frac{5}{2}}\sqrt{x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(7/2)/(1+x)**(3/2),x)
```

```
[Out] 2*x/(5*sqrt(-x + 1)*sqrt(x + 1)) + 1/(5*(-x + 1)**(3/2)*sqrt(x +
1)) + 1/(5*(-x + 1)**(5/2)*sqrt(x + 1))
```

Mathematica [A] time = 0.0251305, size = 33, normalized size = 0.53

$$\frac{2x^3-4x^2+x+2}{5(1-x)^{5/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(7/2)*(1 + x)^(3/2)),x]

[Out] (2 + x - 4*x^2 + 2*x^3)/(5*(1 - x)^(5/2)*Sqrt[1 + x])
```

Maple [A] time = 0.004, size = 28, normalized size = 0.5

$$\frac{2x^3 - 4x^2 + x + 2}{5}(1-x)^{-\frac{5}{2}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(7/2)/(1+x)^(3/2),x)

[Out] 1/5*(2*x^3-4*x^2+x+2)/(1+x)^(1/2)/(1-x)^(5/2)
```

Maxima [A] time = 1.34705, size = 107, normalized size = 1.73

$$\frac{2x}{5\sqrt{-x^2+1}} + \frac{1}{5\left(\sqrt{-x^2+1}x^2 - 2\sqrt{-x^2+1}x + \sqrt{-x^2+1}\right)} - \frac{1}{5\left(\sqrt{-x^2+1}x - \sqrt{-x^2+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(7/2)),x, algorithm="maxima")

[Out] 2/5*x/sqrt(-x^2 + 1) + 1/5/(sqrt(-x^2 + 1)*x^2 - 2*sqrt(-x^2 + 1)
*x + sqrt(-x^2 + 1)) - 1/5/(sqrt(-x^2 + 1)*x - sqrt(-x^2 + 1))
```

Fricas [A] time = 0.20904, size = 178, normalized size = 2.87

$$\frac{2x^6 + 2x^5 - 20x^4 + 15x^3 + 20x^2 - \left(2x^5 - 10x^4 + 5x^3 + 20x^2 - 20x\right)\sqrt{x+1}\sqrt{-x+1} - 20x}{5\left(x^6 - 2x^5 - 4x^4 + 10x^3 - x^2 + (3x^4 - 6x^3 - x^2 + 8x - 4)\sqrt{x+1}\sqrt{-x+1} - 8x + 4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(7/2)),x, algorithm="fricas")

[Out] 1/5*(2*x^6 + 2*x^5 - 20*x^4 + 15*x^3 + 20*x^2 - (2*x^5 - 10*x^4 +
 5*x^3 + 20*x^2 - 20*x)*sqrt(x + 1)*sqrt(-x + 1) - 20*x)/(x^6 - 2
*x^5 - 4*x^4 + 10*x^3 - x^2 + (3*x^4 - 6*x^3 - x^2 + 8*x - 4)*sqr
```

```
t(x + 1)*sqrt(-x + 1) - 8*x + 4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(7/2)/(1+x)**(3/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.210014, size = 99, normalized size = 1.6

$$\frac{\sqrt{2}-\sqrt{-x+1}}{16\sqrt{x+1}}-\frac{\sqrt{x+1}}{16\left(\sqrt{2}-\sqrt{-x+1}\right)}-\frac{((11\,x-39)(x+1)+60)\sqrt{x+1}\sqrt{-x+1}}{40\,(x-1)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(7/2)),x, algorithm="giac")

[Out] 1/16*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - 1/16*sqrt(x + 1)/(sqr
t(2) - sqrt(-x + 1)) - 1/40*((11*x - 39)*(x + 1) + 60)*sqrt(x + 1
)*sqrt(-x + 1)/(x - 1)^3
```

3.1124 $\int \frac{1}{(1-x)^{9/2}(1+x)^{3/2}}\,dx$

Optimal. Leaf size=82

$$\frac{8x}{35\sqrt{1-x}\sqrt{x+1}}+\frac{4}{35(1-x)^{3/2}\sqrt{x+1}}+\frac{4}{35(1-x)^{5/2}\sqrt{x+1}}+\frac{1}{7(1-x)^{7/2}\sqrt{x+1}}$$

```
[Out] 1/(7*(1 - x)^(7/2)*Sqrt[1 + x]) + 4/(35*(1 - x)^(5/2)*Sqrt[1 + x]
) + 4/(35*(1 - x)^(3/2)*Sqrt[1 + x]) + (8*x)/(35*Sqrt[1 - x]*Sqrt
[1 + x])
```

Rubi [A] time = 0.0508251, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{8x}{35\sqrt{1-x}\sqrt{x+1}}+\frac{4}{35(1-x)^{3/2}\sqrt{x+1}}+\frac{4}{35(1-x)^{5/2}\sqrt{x+1}}+\frac{1}{7(1-x)^{7/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(9/2)*(1 + x)^(3/2)),x]
```

```
[Out] 1/(7*(1 - x)^(7/2)*Sqrt[1 + x]) + 4/(35*(1 - x)^(5/2)*Sqrt[1 + x]
) + 4/(35*(1 - x)^(3/2)*Sqrt[1 + x]) + (8*x)/(35*Sqrt[1 - x]*Sqrt
[1 + x])
```

Rubi in Sympy [A] time = 6.5305, size = 68, normalized size = 0.83

$$\frac{8x}{35\sqrt{-x+1}\sqrt{x+1}}+\frac{4}{35\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}+\frac{4}{35\left(-x+1\right)^{\frac{5}{2}}\sqrt{x+1}}+\frac{1}{7\left(-x+1\right)^{\frac{7}{2}}\sqrt{x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(9/2)/(1+x)**(3/2),x)
```

```
[Out] 8*x/(35*sqrt(-x + 1)*sqrt(x + 1)) + 4/(35*(-x + 1)**(3/2)*sqrt(x
+ 1)) + 4/(35*(-x + 1)**(5/2)*sqrt(x + 1)) + 1/(7*(-x + 1)**(7/2)
*sqrt(x + 1))
```

Mathematica [A] time = 0.0292327, size = 40, normalized size = 0.49

$$-\frac{8x^4-24x^3+20x^2+4x-13}{35(1-x)^{7/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(9/2)*(1 + x)^(3/2)),x]
```

```
[Out] -(-13 + 4*x + 20*x^2 - 24*x^3 + 8*x^4)/(35*(1 - x)^(7/2)*Sqrt[1 +
 x])
```

Maple [A] time = 0.005, size = 35, normalized size = 0.4

$$-\frac{8\,x^{4}-24\,x^{3}+20\,x^{2}+4\,x-13}{35}\left(1-x\right)^{-\frac{7}{2}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(9/2)/(1+x)^(3/2),x)
```

```
[Out] -1/35*(8*x^4-24*x^3+20*x^2+4*x-13)/(1+x)^(1/2)/(1-x)^(7/2)
```

Maxima [A] time = 1.32647, size = 181, normalized size = 2.21

$$\frac{8\,x}{35\,\sqrt{-x^{2}+1}}-\frac{1}{7\,\left(\sqrt{-x^{2}+1}x^{3}-3\,\sqrt{-x^{2}+1}x^{2}+3\,\sqrt{-x^{2}+1}x-\sqrt{-x^{2}+1}\right)}+\frac{4}{35\,\left(\sqrt{-x^{2}+1}x^{2}-2\,\sqrt{-x^{2}+1}x+\sqrt{-x^{2}+1}\right)}-\frac{4}{35\,\left(\sqrt{-x^{2}+1}x-\sqrt{-x^{2}+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(9/2)),x, algorithm="maxima")
```

```
[Out] 8/35*x/sqrt(-x^2 + 1) - 1/7/(sqrt(-x^2 + 1)*x^3 - 3*sqrt(-x^2 + 1
)*x^2 + 3*sqrt(-x^2 + 1)*x - sqrt(-x^2 + 1)) + 4/35/(sqrt(-x^2 +
1)*x^2 - 2*sqrt(-x^2 + 1)*x + sqrt(-x^2 + 1)) - 4/35/(sqrt(-x^2 +
 1)*x - sqrt(-x^2 + 1))
```

Fricas [A] time = 0.207004, size = 219, normalized size = 2.67

$$-\frac{8\,x^{8}-76\,x^{7}+112\,x^{6}+196\,x^{5}-525\,x^{4}+140\,x^{3}+420\,x^{2}+\left(13\,x^{7}-7\,x^{6}-161\,x^{5}+315\,x^{4}-420\,x^{2}+280\,x\right)\sqrt{x+1}\sqrt{-x+}}{35\,\left(4\,x^{7}-12\,x^{6}+32\,x^{4}-28\,x^{3}-12\,x^{2}-\left(x^{7}-3\,x^{6}-5\,x^{5}+23\,x^{4}-16\,x^{3}-16\,x^{2}+24\,x-8\right)\sqrt{x+1}\sqrt{-x+1}+24\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(9/2)),x, algorithm="fricas")
```

```
[Out] -1/35*(8*x^8 - 76*x^7 + 112*x^6 + 196*x^5 - 525*x^4 + 140*x^3 + 4
20*x^2 + (13*x^7 - 7*x^6 - 161*x^5 + 315*x^4 - 420*x^2 + 280*x)*s
qrt(x + 1)*sqrt(-x + 1) - 280*x)/(4*x^7 - 12*x^6 + 32*x^4 - 28*x^
3 - 12*x^2 - (x^7 - 3*x^6 - 5*x^5 + 23*x^4 - 16*x^3 - 16*x^2 + 24
*x - 8)*sqrt(x + 1)*sqrt(-x + 1) + 24*x - 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(9/2)/(1+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.208289, size = 107, normalized size = 1.3

$$\frac{\sqrt{2}-\sqrt{-x+1}}{32\,\sqrt{x+1}}-\frac{\sqrt{x+1}}{32\,\left(\sqrt{2}-\sqrt{-x+1}\right)}-\frac{\left(\left(\left(93\,x-523\right)\left(x+1\right)+1400\right)\left(x+1\right)-1120\right)\sqrt{x+1}\sqrt{-x+1}}{560\,\left(x-1\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(9/2)),x, algorithm="giac")
```

```
[Out] 1/32*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - 1/32*sqrt(x + 1)/(sqr
t(2) - sqrt(-x + 1)) - 1/560*(((93*x - 523)*(x + 1) + 1400)*(x +
1) - 1120)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^4
```

3.1125 $\int \frac{1}{(1-x)^{11/2}(1+x)^{3/2}}\,dx$

Optimal. Leaf size=102

$$\frac{8x}{63\sqrt{1-x}\sqrt{x+1}}+\frac{4}{63(1-x)^{3/2}\sqrt{x+1}}+\frac{4}{63(1-x)^{5/2}\sqrt{x+1}}+\frac{5}{63(1-x)^{7/2}\sqrt{x+1}}+\frac{1}{9(1-x)^{9/2}\sqrt{x+1}}$$

```
[Out] 1/(9*(1 - x)^(9/2)*Sqrt[1 + x]) + 5/(63*(1 - x)^(7/2)*Sqrt[1 + x]
) + 4/(63*(1 - x)^(5/2)*Sqrt[1 + x]) + 4/(63*(1 - x)^(3/2)*Sqrt[1
 + x]) + (8*x)/(63*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi [A] time = 0.0680738, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{8x}{63\sqrt{1-x}\sqrt{x+1}}+\frac{4}{63(1-x)^{3/2}\sqrt{x+1}}+\frac{4}{63(1-x)^{5/2}\sqrt{x+1}}+\frac{5}{63(1-x)^{7/2}\sqrt{x+1}}+\frac{1}{9(1-x)^{9/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(11/2)*(1 + x)^(3/2)),x]
```

```
[Out] 1/(9*(1 - x)^(9/2)*Sqrt[1 + x]) + 5/(63*(1 - x)^(7/2)*Sqrt[1 + x]
) + 4/(63*(1 - x)^(5/2)*Sqrt[1 + x]) + 4/(63*(1 - x)^(3/2)*Sqrt[1
 + x]) + (8*x)/(63*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 8.0677, size = 85, normalized size = 0.83

$$\frac{8x}{63\sqrt{-x+1}\sqrt{x+1}}+\frac{4}{63\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}+\frac{4}{63\left(-x+1\right)^{\frac{5}{2}}\sqrt{x+1}}+\frac{5}{63\left(-x+1\right)^{\frac{7}{2}}\sqrt{x+1}}+\frac{1}{9\left(-x+1\right)^{\frac{9}{2}}\sqrt{x+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(11/2)/(1+x)**(3/2),x)
```

```
[Out] 8*x/(63*sqrt(-x + 1)*sqrt(x + 1)) + 4/(63*(-x + 1)**(3/2)*sqrt(x
+ 1)) + 4/(63*(-x + 1)**(5/2)*sqrt(x + 1)) + 5/(63*(-x + 1)**(7/2
)*sqrt(x + 1)) + 1/(9*(-x + 1)**(9/2)*sqrt(x + 1))
```

Mathematica [A] time = 0.0359373, size = 45, normalized size = 0.44

$$\frac{8x^5-32x^4+44x^3-16x^2-17x+20}{63(1-x)^{9/2}\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(11/2)*(1 + x)^(3/2)),x]
```

```
[Out] (20 - 17*x - 16*x^2 + 44*x^3 - 32*x^4 + 8*x^5)/(63*(1 - x)^(9/2)*
Sqrt[1 + x])
```

Maple [A] time = 0.004, size = 40, normalized size = 0.4

$$\frac{8x^5 - 32x^4 + 44x^3 - 16x^2 - 17x + 20}{63}(1-x)^{-\frac{9}{2}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(11/2)/(1+x)^(3/2),x)
```

```
[Out] 1/63*(8*x^5-32*x^4+44*x^3-16*x^2-17*x+20)/(1+x)^(1/2)/(1-x)^(9/2)
```

Maxima [A] time = 1.34834, size = 271, normalized size = 2.66

$$\frac{8x}{63\sqrt{-x^2+1}} + \frac{1}{9\left(\sqrt{-x^2+1}x^4 - 4\sqrt{-x^2+1}x^3 + 6\sqrt{-x^2+1}x^2 - 4\sqrt{-x^2+1}x + \sqrt{-x^2+1}\right)} - \frac{5}{63\left(\sqrt{-x^2+1}x^3 - 3\sqrt{-x^2+1}x^2 + 3\sqrt{-x^2+1}x - \sqrt{-x^2+1}\right)} + \frac{4}{63\left(\sqrt{-x^2+1}x^2 - 2\sqrt{-x^2+1}x + \sqrt{-x^2+1}\right)} - \frac{4}{63\left(\sqrt{-x^2+1}x - \sqrt{-x^2+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(11/2)),x, algorithm="maxima")
```

```
[Out] 8/63*x/sqrt(-x^2 + 1) + 1/9/(sqrt(-x^2 + 1)*x^4 - 4*sqrt(-x^2 + 1
)*x^3 + 6*sqrt(-x^2 + 1)*x^2 - 4*sqrt(-x^2 + 1)*x + sqrt(-x^2 + 1
)) - 5/63/(sqrt(-x^2 + 1)*x^3 - 3*sqrt(-x^2 + 1)*x^2 + 3*sqrt(-x^
2 + 1)*x - sqrt(-x^2 + 1)) + 4/63/(sqrt(-x^2 + 1)*x^2 - 2*sqrt(-x
^2 + 1)*x + sqrt(-x^2 + 1)) - 4/63/(sqrt(-x^2 + 1)*x - sqrt(-x^2
+ 1))
```

Fricas [A] time = 0.204996, size = 286, normalized size = 2.8

$$\frac{20\,x^{10}-40\,x^{9}-300\,x^{8}+1020\,x^{7}-420\,x^{6}-2037\,x^{5}+2688\,x^{4}+84\,x^{3}-2016\,x^{2}-\big(8\,x^{9}-132\,x^{8}+348\,x^{7}+168\,x^{6}-1617}{63\left(x^{10}-4\,x^{9}-7\,x^{8}+48\,x^{7}-49\,x^{6}-60\,x^{5}+139\,x^{4}-48\,x^{3}-68\,x^{2}+(5\,x^{8}-20\,x^{7}+10\,x^{6}+60\,x^{5}-99\,x^{4}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(11/2)),x, algorithm="fricas")
```

```
[Out] 1/63*(20*x^10 - 40*x^9 - 300*x^8 + 1020*x^7 - 420*x^6 - 2037*x^5
+ 2688*x^4 + 84*x^3 - 2016*x^2 - (8*x^9 - 132*x^8 + 348*x^7 + 168
*x^6 - 1617*x^5 + 1680*x^4 + 588*x^3 - 2016*x^2 + 1008*x)*sqrt(x
+ 1)*sqrt(-x + 1) + 1008*x)/(x^10 - 4*x^9 - 7*x^8 + 48*x^7 - 49*x
^6 - 60*x^5 + 139*x^4 - 48*x^3 - 68*x^2 + (5*x^8 - 20*x^7 + 10*x^
6 + 60*x^5 - 99*x^4 + 16*x^3 + 76*x^2 - 64*x + 16)*sqrt(x + 1)*sq
rt(-x + 1) + 64*x - 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(11/2)/(1+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.209557, size = 115, normalized size = 1.13

$$\frac{\sqrt{2}-\sqrt{-x+1}}{64\,\sqrt{x+1}}-\frac{\sqrt{x+1}}{64\left(\sqrt{2}-\sqrt{-x+1}\right)}-\frac{((((193\,x-1481)(x+1)+5544)(x+1)-8400)(x+1)+5040)\sqrt{x+1}\sqrt{-x+1}}{2016\,(x-1)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(3/2)*(-x + 1)^(11/2)),x, algorithm="giac")
```

```
[Out] 1/64*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) - 1/64*sqrt(x + 1)/(sqr
t(2) - sqrt(-x + 1)) - 1/2016*((((193*x - 1481)*(x + 1) + 5544)*(
x + 1) - 8400)*(x + 1) + 5040)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^5
```

3.1126 $\int \frac{(1-x)^{9/2}}{(1+x)^{5/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2(1-x)^{9/2}}{3(x+1)^{3/2}}+\frac{6(1-x)^{7/2}}{\sqrt{x+1}}+7\sqrt{x+1}(1-x)^{5/2}+\frac{35}{2}\sqrt{x+1}(1-x)^{3/2}+\frac{105}{2}\sqrt{x+1}\sqrt{1-x}+\frac{105}{2}\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(9/2))/(3*(1 + x)^(3/2)) + (6*(1 - x)^(7/2))/Sqrt[1 +
 x] + (105*Sqrt[1 - x]*Sqrt[1 + x])/2 + (35*(1 - x)^(3/2)*Sqrt[1
+ x])/2 + 7*(1 - x)^(5/2)*Sqrt[1 + x] + (105*ArcSin[x])/2
```

Rubi [A] time = 0.0760705, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{2(1-x)^{9/2}}{3(x+1)^{3/2}}+\frac{6(1-x)^{7/2}}{\sqrt{x+1}}+7\sqrt{x+1}(1-x)^{5/2}+\frac{35}{2}\sqrt{x+1}(1-x)^{3/2}+\frac{105}{2}\sqrt{x+1}\sqrt{1-x}+\frac{105}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(9/2)/(1 + x)^(5/2),x]
```

```
[Out] (-2*(1 - x)^(9/2))/(3*(1 + x)^(3/2)) + (6*(1 - x)^(7/2))/Sqrt[1 +
 x] + (105*Sqrt[1 - x]*Sqrt[1 + x])/2 + (35*(1 - x)^(3/2)*Sqrt[1
+ x])/2 + 7*(1 - x)^(5/2)*Sqrt[1 + x] + (105*ArcSin[x])/2
```

Rubi in Sympy [A] time = 10.4849, size = 87, normalized size = 0.84

$$-\frac{2\left(-x+1\right)^{\frac{9}{2}}}{3\left(x+1\right)^{\frac{3}{2}}}+\frac{6\left(-x+1\right)^{\frac{7}{2}}}{\sqrt{x+1}}+7\left(-x+1\right)^{\frac{5}{2}}\sqrt{x+1}+\frac{35\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}{2}+\frac{105\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{105\operatorname{asin}(x)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(9/2)/(1+x)**(5/2),x)
```

```
[Out] -2*(-x + 1)**(9/2)/(3*(x + 1)**(3/2)) + 6*(-x + 1)**(7/2)/sqrt(x
+ 1) + 7*(-x + 1)**(5/2)*sqrt(x + 1) + 35*(-x + 1)**(3/2)*sqrt(x
+ 1)/2 + 105*sqrt(-x + 1)*sqrt(x + 1)/2 + 105*asin(x)/2
```

Mathematica [A] time = 0.0559897, size = 57, normalized size = 0.55

$$\frac{\sqrt{1-x}\left(2x^4-17x^3+102x^2+679x+494\right)}{6(x+1)^{3/2}}+105\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(9/2)/(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x]*(494 + 679*x + 102*x^2 - 17*x^3 + 2*x^4))/(6*(1 + x)
^(3/2)) + 105*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.033, size = 89, normalized size = 0.9

$$-\frac{2x^5-19x^4+119x^3+577x^2-185x-494}{6}\sqrt{(1+x)(1-x)}(1+x)^{-\frac{3}{2}}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}+\frac{105\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(9/2)/(1+x)^(5/2),x)
```

```
[Out] -1/6*(2*x^5-19*x^4+119*x^3+577*x^2-185*x-494)/(1+x)^(3/2)/(-(1+x)
*(-1+x))^(1/2)*((1+x)*(1-x))^(1/2)/(1-x)^(1/2)+105/2*((1+x)*(1-x)
)^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49945, size = 169, normalized size = 1.64

$$\frac{x^6}{3(-x^2+1)^{\frac{3}{2}}}-\frac{7x^5}{2(-x^2+1)^{\frac{3}{2}}}+\frac{23x^4}{(-x^2+1)^{\frac{3}{2}}}+\frac{35}{2}x\left(\frac{3x^2}{(-x^2+1)^{\frac{3}{2}}}-\frac{2}{(-x^2+1)^{\frac{3}{2}}}\right)-\frac{143x}{6\sqrt{-x^2+1}}-\frac{127x^2}{(-x^2+1)^{\frac{3}{2}}}+\frac{22x}{3(-x^2+1)^{\frac{3}{2}}}+\frac{247}{3(-x^2+1)^{\frac{3}{2}}}+\frac{105}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(9/2)/(x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/3*x^6/(-x^2 + 1)^(3/2) - 7/2*x^5/(-x^2 + 1)^(3/2) + 23*x^4/(-x^
2 + 1)^(3/2) + 35/2*x*(3*x^2/(-x^2 + 1)^(3/2) - 2/(-x^2 + 1)^(3/2
)) - 143/6*x/sqrt(-x^2 + 1) - 127*x^2/(-x^2 + 1)^(3/2) + 22/3*x/(
-x^2 + 1)^(3/2) + 247/3/(-x^2 + 1)^(3/2) + 105/2*arcsin(x)
```

Fricas [A] time = 0.212936, size = 340, normalized size = 3.3

$$\frac{2\,x^9-27\,x^8+171\,x^7+839\,x^6-1077\,x^5-7512\,x^4-3116\,x^3+7752\,x^2+\left(2\,x^8-9\,x^7+10\,x^6+781\,x^5+3636\,x^4+644\,x^3-\right.}{6\left(x^6+6\,x^5-3\,x^4-28\,x^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(9/2)/(x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*x^9 - 27*x^8 + 171*x^7 + 839*x^6 - 1077*x^5 - 7512*x^4 - 3
116*x^3 + 7752*x^2 + (2*x^8 - 9*x^7 + 10*x^6 + 781*x^5 + 3636*x^4
 + 644*x^3 - 7752*x^2 - 4944*x)*sqrt(x + 1)*sqrt(-x + 1) - 630*(x
^6 + 6*x^5 - 3*x^4 - 28*x^3 - 12*x^2 - (x^5 - 3*x^4 - 16*x^3 - 4*
x^2 + 24*x + 16)*sqrt(x + 1)*sqrt(-x + 1) + 24*x + 16)*arctan((sq
rt(x + 1)*sqrt(-x + 1) - 1)/x) + 4944*x)/(x^6 + 6*x^5 - 3*x^4 - 2
8*x^3 - 12*x^2 - (x^5 - 3*x^4 - 16*x^3 - 4*x^2 + 24*x + 16)*sqrt(
x + 1)*sqrt(-x + 1) + 24*x + 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(9/2)/(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.257099, size = 171, normalized size = 1.66

$$\frac{1}{6}\left((2\,x-23)(x+1)+165\right)\sqrt{x+1}\sqrt{-x+1}+\frac{2\left(\sqrt{2}-\sqrt{-x+1}\right)^3}{3\,(x+1)^{\frac{3}{2}}}-\frac{34\left(\sqrt{2}-\sqrt{-x+1}\right)}{\sqrt{x+1}}+\frac{2\,(x+1)^{\frac{3}{2}}\left(\frac{51\left(\sqrt{2}-\sqrt{-x+1}\right)^2}{x+1}-1\right)}{3\left(\sqrt{2}-\sqrt{-x+1}\right)^3}+105\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(9/2)/(x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*((2*x - 23)*(x + 1) + 165)*sqrt(x + 1)*sqrt(-x + 1) + 2/3*(sq
rt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) - 34*(sqrt(2) - sqrt(-x + 1
))/sqrt(x + 1) + 2/3*(x + 1)^(3/2)*(51*(sqrt(2) - sqrt(-x + 1))^2
/(x + 1) - 1)/(sqrt(2) - sqrt(-x + 1))^3 + 105*arcsin(1/2*sqrt(2)
*sqrt(x + 1))
```

3.1127 $\int \frac{(1-x)^{7/2}}{(1+x)^{5/2}}\,dx$

Optimal. Leaf size=87

$$-\frac{2(1-x)^{7/2}}{3(x+1)^{3/2}}+\frac{14(1-x)^{5/2}}{3\sqrt{x+1}}+\frac{35}{6}\sqrt{x+1}(1-x)^{3/2}+\frac{35}{2}\sqrt{x+1}\sqrt{1-x}+\frac{35}{2}\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(7/2))/(3*(1 + x)^(3/2)) + (14*(1 - x)^(5/2))/(3*Sqrt
[1 + x]) + (35*Sqrt[1 - x]*Sqrt[1 + x])/2 + (35*(1 - x)^(3/2)*Sqr
t[1 + x])/6 + (35*ArcSin[x])/2
```

Rubi [A] time = 0.0603658, antiderivative size = 87, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{2(1-x)^{7/2}}{3(x+1)^{3/2}}+\frac{14(1-x)^{5/2}}{3\sqrt{x+1}}+\frac{35}{6}\sqrt{x+1}(1-x)^{3/2}+\frac{35}{2}\sqrt{x+1}\sqrt{1-x}+\frac{35}{2}\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(7/2)/(1 + x)^(5/2),x]
```

```
[Out] (-2*(1 - x)^(7/2))/(3*(1 + x)^(3/2)) + (14*(1 - x)^(5/2))/(3*Sqrt
[1 + x]) + (35*Sqrt[1 - x]*Sqrt[1 + x])/2 + (35*(1 - x)^(3/2)*Sqr
t[1 + x])/6 + (35*ArcSin[x])/2
```

Rubi in Sympy [A] time = 8.77099, size = 73, normalized size = 0.84

$$-\frac{2\left(-x+1\right)^{\frac{7}{2}}}{3\left(x+1\right)^{\frac{3}{2}}}+\frac{14\left(-x+1\right)^{\frac{5}{2}}}{3\sqrt{x+1}}+\frac{35\left(-x+1\right)^{\frac{3}{2}}\sqrt{x+1}}{6}+\frac{35\sqrt{-x+1}\sqrt{x+1}}{2}+\frac{35\operatorname{asin}\left(x\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(7/2)/(1+x)**(5/2),x)
```

```
[Out] -2*(-x + 1)**(7/2)/(3*(x + 1)**(3/2)) + 14*(-x + 1)**(5/2)/(3*sqr
t(x + 1)) + 35*(-x + 1)**(3/2)*sqrt(x + 1)/6 + 35*sqrt(-x + 1)*sq
rt(x + 1)/2 + 35*asin(x)/2
```

Mathematica [A] time = 0.0550758, size = 52, normalized size = 0.6

$$\frac{\sqrt{1-x}\left(-3x^3+30x^2+229x+164\right)}{6(x+1)^{3/2}}+35\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/2)/(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x]*(164 + 229*x + 30*x^2 - 3*x^3))/(6*(1 + x)^(3/2)) +
35*ArcSin[Sqrt[1 + x]/Sqrt[2]]
```

Maple [A]   time = 0.033, size = 84, normalized size = 1.

$$\frac{3x^4-33x^3-199x^2+65x+164}{6}\sqrt{(1+x)(1-x)}\,(1+x)^{-\frac{3}{2}}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}+\frac{35\arcsin(x)}{2}\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/2)/(1+x)^(5/2),x)
```

```
[Out] 1/6*(3*x^4-33*x^3-199*x^2+65*x+164)/(1+x)^(3/2)/(-(1+x)*(-1+x))^(
1/2)*((1+x)*(1-x))^(1/2)/(1-x)^(1/2)+35/2*((1+x)*(1-x))^(1/2)/(1+
x)^(1/2)/(1-x)^(1/2)*arcsin(x)
```

Maxima [A]   time = 1.48719, size = 150, normalized size = 1.72

$$-\frac{x^5}{2(-x^2+1)^{\frac{3}{2}}}+\frac{6x^4}{(-x^2+1)^{\frac{3}{2}}}+\frac{35}{6}x\left(\frac{3x^2}{(-x^2+1)^{\frac{3}{2}}}-\frac{2}{(-x^2+1)^{\frac{3}{2}}}\right)-\frac{61x}{6\sqrt{-x^2+1}}-\frac{44x^2}{(-x^2+1)^{\frac{3}{2}}}+\frac{16x}{3(-x^2+1)^{\frac{3}{2}}}+\frac{82}{3(-x^2+1)^{\frac{3}{2}}}+\frac{35}{2}\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/(x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/2*x^5/(-x^2 + 1)^(3/2) + 6*x^4/(-x^2 + 1)^(3/2) + 35/6*x*(3*x^
2/(-x^2 + 1)^(3/2) - 2/(-x^2 + 1)^(3/2)) - 61/6*x/sqrt(-x^2 + 1)
- 44*x^2/(-x^2 + 1)^(3/2) + 16/3*x/(-x^2 + 1)^(3/2) + 82/3/(-x^2
+ 1)^(3/2) + 35/2*arcsin(x)
```

Fricas [A] time = 0.211501, size = 271, normalized size = 3.11

$$\frac{3\,x^7 - 21\,x^6 - 179\,x^5 - 951\,x^4 - 320\,x^3 + 1332\,x^2 - \left(3\,x^6 - 42\,x^5 - 285\,x^4 + 76\,x^3 + 1332\,x^2 + 792\,x\right)\sqrt{x+1}\sqrt{-x+1} - 210}{6\left(x^5 - 2\,x^4 - 11\,x^3 - 4\,x^2 + (x^4 + 5\,x^3 - 12\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/(x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/6*(3*x^7 - 21*x^6 - 179*x^5 - 951*x^4 - 320*x^3 + 1332*x^2 - (3
*x^6 - 42*x^5 - 285*x^4 + 76*x^3 + 1332*x^2 + 792*x)*sqrt(x + 1)*
sqrt(-x + 1) - 210*(x^5 - 2*x^4 - 11*x^3 - 4*x^2 + (x^4 + 5*x^3 -
 12*x - 8)*sqrt(x + 1)*sqrt(-x + 1) + 12*x + 8)*arctan((sqrt(x +
1)*sqrt(-x + 1) - 1)/x) + 792*x)/(x^5 - 2*x^4 - 11*x^3 - 4*x^2 +
(x^4 + 5*x^3 - 12*x - 8)*sqrt(x + 1)*sqrt(-x + 1) + 12*x + 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/2)/(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.247209, size = 161, normalized size = 1.85

$$-\frac{1}{2}\sqrt{x+1}(x-12)\sqrt{-x+1} + \frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^3}{3\,(x+1)^{\frac{3}{2}}} - \frac{13\left(\sqrt{2}-\sqrt{-x+1}\right)}{\sqrt{x+1}} + \frac{(x+1)^{\frac{3}{2}}\left(\frac{39\left(\sqrt{2}-\sqrt{-x+1}\right)^2}{x+1} - 1\right)}{3\left(\sqrt{2}-\sqrt{-x+1}\right)^3} + 35\,\arcsin\left(\frac{1}{2}\,\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(7/2)/(x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(x + 1)*(x - 12)*sqrt(-x + 1) + 1/3*(sqrt(2) - sqrt(-x +
 1))^3/(x + 1)^(3/2) - 13*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) +
```

```
1/3*(x + 1)^(3/2)*(39*(sqrt(2) - sqrt(-x + 1))^2/(x + 1) - 1)/(sq
rt(2) - sqrt(-x + 1))^3 + 35*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1128 $\int \frac{(1-x)^{5/2}}{(1+x)^{5/2}}\,dx$

Optimal. Leaf size=63

$$-\frac{2(1-x)^{5/2}}{3(x+1)^{3/2}}+\frac{10(1-x)^{3/2}}{3\sqrt{x+1}}+5\sqrt{x+1}\sqrt{1-x}+5\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(5/2))/(3*(1 + x)^(3/2)) + (10*(1 - x)^(3/2))/(3*Sqrt
[1 + x]) + 5*Sqrt[1 - x]*Sqrt[1 + x] + 5*ArcSin[x]
```

Rubi [A] time = 0.0457073, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{2(1-x)^{5/2}}{3(x+1)^{3/2}}+\frac{10(1-x)^{3/2}}{3\sqrt{x+1}}+5\sqrt{x+1}\sqrt{1-x}+5\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(5/2)/(1 + x)^(5/2),x]
```

```
[Out] (-2*(1 - x)^(5/2))/(3*(1 + x)^(3/2)) + (10*(1 - x)^(3/2))/(3*Sqrt
[1 + x]) + 5*Sqrt[1 - x]*Sqrt[1 + x] + 5*ArcSin[x]
```

Rubi in Sympy [A] time = 7.19898, size = 53, normalized size = 0.84

$$-\frac{2\left(-x+1\right)^{\frac{5}{2}}}{3\left(x+1\right)^{\frac{3}{2}}}+\frac{10\left(-x+1\right)^{\frac{3}{2}}}{3\sqrt{x+1}}+5\sqrt{-x+1}\sqrt{x+1}+5\,\mathrm{asin}\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(5/2)/(1+x)**(5/2),x)
```

```
[Out] -2*(-x + 1)**(5/2)/(3*(x + 1)**(3/2)) + 10*(-x + 1)**(3/2)/(3*sqr
t(x + 1)) + 5*sqrt(-x + 1)*sqrt(x + 1) + 5*asin(x)
```

Mathematica [A] time = 0.044941, size = 47, normalized size = 0.75

$$\frac{\sqrt{1-x}\left(3x^2+34x+23\right)}{3(x+1)^{3/2}}+10\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(5/2)/(1 + x)^(5/2),x]
```

```
[Out] (Sqrt[1 - x]*(23 + 34*x + 3*x^2))/(3*(1 + x)^(3/2)) + 10*ArcSin[S
qrt[1 + x]/Sqrt[2]]
```

Maple [A] time = 0.032, size = 79, normalized size = 1.3

$$-\frac{3x^3+31x^2-11x-23}{3}\sqrt{(1+x)(1-x)}(1+x)^{-\frac{3}{2}}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}}+5\frac{\sqrt{(1+x)(1-x)}\arcsin(x)}{\sqrt{1-x}\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(5/2)/(1+x)^(5/2),x)
```

```
[Out] -1/3*(3*x^3+31*x^2-11*x-23)/(1+x)^(3/2)/(-(1+x)*(-1+x))^(1/2)*((1
+x)*(1-x))^(1/2)/(1-x)^(1/2)+5*((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1
-x)^(1/2)*arcsin(x)
```

Maxima [A] time = 1.49698, size = 132, normalized size = 2.1

$$\frac{(-x^2+1)^{\frac{5}{2}}}{x^4+4x^3+6x^2+4x+1}-\frac{5(-x^2+1)^{\frac{3}{2}}}{3(x^3+3x^2+3x+1)}-\frac{10\sqrt{-x^2+1}}{3(x^2+2x+1)}+\frac{35\sqrt{-x^2+1}}{3(x+1)}+5\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/(x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] (-x^2 + 1)^(5/2)/(x^4 + 4*x^3 + 6*x^2 + 4*x + 1) - 5/3*(-x^2 + 1)
^(3/2)/(x^3 + 3*x^2 + 3*x + 1) - 10/3*sqrt(-x^2 + 1)/(x^2 + 2*x +
 1) + 35/3*sqrt(-x^2 + 1)/(x + 1) + 5*arcsin(x)
```

Fricas [A] time = 0.215367, size = 227, normalized size = 3.6

$$\frac{3x^5+48x^4+7x^3-102x^2+\left(3x^4+17x^3+102x^2+48x\right)\sqrt{x+1}\sqrt{-x+1}-30\left(x^4+4x^3+x^2-\left(x^3-x^2-6x-4\right)\sqrt{x+\right.}{3\left(x^4+4x^3+x^2-(x^3-x^2-6x-4)\sqrt{x+1}\sqrt{-x+1}-6x-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/(x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(3*x^5 + 48*x^4 + 7*x^3 - 102*x^2 + (3*x^4 + 17*x^3 + 102*x^2
 + 48*x)*sqrt(x + 1)*sqrt(-x + 1) - 30*(x^4 + 4*x^3 + x^2 - (x^3
- x^2 - 6*x - 4)*sqrt(x + 1)*sqrt(-x + 1) - 6*x - 4)*arctan((sqrt
(x + 1)*sqrt(-x + 1) - 1)/x) - 48*x)/(x^4 + 4*x^3 + x^2 - (x^3 -
x^2 - 6*x - 4)*sqrt(x + 1)*sqrt(-x + 1) - 6*x - 4)
```

Sympy [A] time = 62.0129, size = 162, normalized size = 2.57

$$\begin{cases} \sqrt{-1+\frac{2}{x+1}}\,(x+1)+\frac{28\sqrt{-1+\frac{2}{x+1}}}{3}-\frac{8\sqrt{-1+\frac{2}{x+1}}}{3(x+1)}+5i\log\left(\frac{1}{x+1}\right)+5i\log(x+1)+10\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) & \text{for } 2\left|\frac{1}{x+1}\right|>1 \\ i\sqrt{1-\frac{2}{x+1}}\,(x+1)+\frac{28i\sqrt{1-\frac{2}{x+1}}}{3}-\frac{8i\sqrt{1-\frac{2}{x+1}}}{3(x+1)}+5i\log\left(\frac{1}{x+1}\right)-10i\log\left(\sqrt{1-\frac{2}{x+1}}+1\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(5/2)/(1+x)**(5/2),x)
```

```
[Out] Piecewise((sqrt(-1 + 2/(x + 1))*(x + 1) + 28*sqrt(-1 + 2/(x + 1))
/3 - 8*sqrt(-1 + 2/(x + 1))/(3*(x + 1)) + 5*I*log(1/(x + 1)) + 5*
I*log(x + 1) + 10*asin(sqrt(2)*sqrt(x + 1)/2), 2*Abs(1/(x + 1)) >
 1), (I*sqrt(1 - 2/(x + 1))*(x + 1) + 28*I*sqrt(1 - 2/(x + 1))/3
- 8*I*sqrt(1 - 2/(x + 1))/(3*(x + 1)) + 5*I*log(1/(x + 1)) - 10*I
*log(sqrt(1 - 2/(x + 1)) + 1), True))
```

GIAC/XCAS [A] time = 0.238024, size = 155, normalized size = 2.46

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^3}{6\,(x+1)^{\frac{3}{2}}}+\sqrt{x+1}\sqrt{-x+1}-\frac{9\left(\sqrt{2}-\sqrt{-x+1}\right)}{2\sqrt{x+1}}+\frac{(x+1)^{\frac{3}{2}}\left(\frac{27\left(\sqrt{2}-\sqrt{-x+1}\right)^2}{x+1}-1\right)}{6\left(\sqrt{2}-\sqrt{-x+1}\right)^3}+10\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(5/2)/(x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + sqrt(x + 1)*sqrt(-
x + 1) - 9/2*(sqrt(2) - sqrt(-x + 1))/sqrt(x + 1) + 1/6*(x + 1)^(
3/2)*(27*(sqrt(2) - sqrt(-x + 1))^2/(x + 1) - 1)/(sqrt(2) - sqrt(
-x + 1))^3 + 10*arcsin(1/2*sqrt(2)*sqrt(x + 1))
```

3.1129 $\int \frac{(1-x)^{3/2}}{(1+x)^{5/2}} \, dx$

Optimal. Leaf size=41

$$-\frac{2(1-x)^{3/2}}{3(x+1)^{3/2}}+\frac{2\sqrt{1-x}}{\sqrt{x+1}}+\sin^{-1}(x)$$

```
[Out] (-2*(1 - x)^(3/2))/(3*(1 + x)^(3/2)) + (2*Sqrt[1 - x])/Sqrt[1 + x
] + ArcSin[x]
```

Rubi [A] time = 0.0298746, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{2(1-x)^{3/2}}{3(x+1)^{3/2}}+\frac{2\sqrt{1-x}}{\sqrt{x+1}}+\sin^{-1}(x)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(3/2)/(1 + x)^(5/2),x]
```

```
[Out] (-2*(1 - x)^(3/2))/(3*(1 + x)^(3/2)) + (2*Sqrt[1 - x])/Sqrt[1 + x
] + ArcSin[x]
```

Rubi in Sympy [A] time = 5.4185, size = 34, normalized size = 0.83

$$-\frac{2\left(-x+1\right)^{\frac{3}{2}}}{3\left(x+1\right)^{\frac{3}{2}}}+\frac{2\sqrt{-x+1}}{\sqrt{x+1}}+\operatorname{asin}\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(3/2)/(1+x)**(5/2),x)
```

```
[Out] -2*(-x + 1)**(3/2)/(3*(x + 1)**(3/2)) + 2*sqrt(-x + 1)/sqrt(x + 1
) + asin(x)
```

Mathematica [A] time = 0.0409002, size = 42, normalized size = 1.02

$$\frac{4\sqrt{1-x}(2x+1)}{3(x+1)^{3/2}}+2\sin^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(3/2)/(1 + x)^(5/2),x]
```

```
[Out] (4*Sqrt[1 - x]*(1 + 2*x))/(3*(1 + x)^(3/2)) + 2*ArcSin[Sqrt[1 + x
]/Sqrt[2]]
```

Maple [B] time = 0.029, size = 73, normalized size = 1.8

$$-\frac{8x^2-4x-4}{3}\sqrt{(1+x)(1-x)}(1+x)^{-\frac{3}{2}}\frac{1}{\sqrt{-(1+x)(-1+x)}}\frac{1}{\sqrt{1-x}} + \arcsin(x)\sqrt{(1+x)(1-x)}\frac{1}{\sqrt{1-x}}\frac{1}{\sqrt{1+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(3/2)/(1+x)^(5/2),x)
```

```
[Out] -4/3*(2*x^2-x-1)/(1+x)^(3/2)/(-(1+x)*(-1+x))^(1/2)*((1+x)*(1-x))^
(1/2)/(1-x)^(1/2)+((1+x)*(1-x))^(1/2)/(1+x)^(1/2)/(1-x)^(1/2)*arc
sin(x)
```

Maxima [A] time = 1.49791, size = 89, normalized size = 2.17

$$-\frac{\left(-x^2+1\right)^{\frac{3}{2}}}{3\left(x^3+3x^2+3x+1\right)}-\frac{2\sqrt{-x^2+1}}{3\left(x^2+2x+1\right)}+\frac{7\sqrt{-x^2+1}}{3(x+1)}+\arcsin(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/(x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*(-x^2 + 1)^(3/2)/(x^3 + 3*x^2 + 3*x + 1) - 2/3*sqrt(-x^2 + 1
)/(x^2 + 2*x + 1) + 7/3*sqrt(-x^2 + 1)/(x + 1) + arcsin(x)
```

Fricas [A] time = 0.209612, size = 151, normalized size = 3.68

$$-\frac{2\left(2x^3-6\sqrt{x+1}x^2\sqrt{-x+1}+6x^2+3\left(x^3+\left(x^2+3x+2\right)\sqrt{x+1}\sqrt{-x+1}-3x-2\right)\arctan\left(\frac{\sqrt{x+1}\sqrt{-x+1}-1}{x}\right)\right)}{3\left(x^3+(x^2+3x+2)\sqrt{x+1}\sqrt{-x+1}-3x-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/(x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*x^3 - 6*sqrt(x + 1)*x^2*sqrt(-x + 1) + 6*x^2 + 3*(x^3 + (
x^2 + 3*x + 2)*sqrt(x + 1)*sqrt(-x + 1) - 3*x - 2)*arctan((sqrt(x
 + 1)*sqrt(-x + 1) - 1)/x))/(x^3 + (x^2 + 3*x + 2)*sqrt(x + 1)*sq
rt(-x + 1) - 3*x - 2)
```

Sympy [A] time = 22.4582, size = 128, normalized size = 3.12

$$\begin{cases} \frac{8\sqrt{-1+\frac{2}{x+1}}}{3} - \frac{4\sqrt{-1+\frac{2}{x+1}}}{3(x+1)} + i\log\left(\frac{1}{x+1}\right) + i\log(x+1) + 2\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{x+1}}{2}\right) & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ \frac{8i\sqrt{1-\frac{2}{x+1}}}{3} - \frac{4i\sqrt{1-\frac{2}{x+1}}}{3(x+1)} + i\log\left(\frac{1}{x+1}\right) - 2i\log\left(\sqrt{1-\frac{2}{x+1}}+1\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(3/2)/(1+x)**(5/2),x)
```

```
[Out] Piecewise((8*sqrt(-1 + 2/(x + 1))/3 - 4*sqrt(-1 + 2/(x + 1))/(3*(
x + 1)) + I*log(1/(x + 1)) + I*log(x + 1) + 2*asin(sqrt(2)*sqrt(x
 + 1)/2), 2*Abs(1/(x + 1)) > 1), (8*I*sqrt(1 - 2/(x + 1))/3 - 4*I
*sqrt(1 - 2/(x + 1))/(3*(x + 1)) + I*log(1/(x + 1)) - 2*I*log(sqr
t(1 - 2/(x + 1)) + 1), True))
```

GIAC/XCAS [A] time = 0.224667, size = 138, normalized size = 3.37

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^3}{12\,(x+1)^{\frac{3}{2}}} - \frac{5\left(\sqrt{2}-\sqrt{-x+1}\right)}{4\sqrt{x+1}} + \frac{(x+1)^{\frac{3}{2}}\left(\frac{15\left(\sqrt{2}-\sqrt{-x+1}\right)^2}{x+1}-1\right)}{12\left(\sqrt{2}-\sqrt{-x+1}\right)^3} + 2\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(3/2)/(x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/12*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) - 5/4*(sqrt(2) - sq
rt(-x + 1))/sqrt(x + 1) + 1/12*(x + 1)^(3/2)*(15*(sqrt(2) - sqrt(
-x + 1))^2/(x + 1) - 1)/(sqrt(2) - sqrt(-x + 1))^3 + 2*arcsin(1/2
*sqrt(2)*sqrt(x + 1))
```

3.1130 $\int \frac{\sqrt{1-x}}{(1+x)^{5/2}} \, dx$

Optimal. Leaf size=20

$$-\frac{(1-x)^{3/2}}{3(x+1)^{3/2}}$$

```
[Out] -(1 - x)^(3/2)/(3*(1 + x)^(3/2))
```

Rubi [A] time = 0.0117837, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{(1-x)^{3/2}}{3(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 - x]/(1 + x)^(5/2),x]

[Out] -(1 - x)^(3/2)/(3*(1 + x)^(3/2))
```

Rubi in Sympy [A] time = 2.38087, size = 15, normalized size = 0.75

$$-\frac{(-x+1)^{\frac{3}{2}}}{3\,(x+1)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((1-x)**(1/2)/(1+x)**(5/2),x)

[Out] -(-x + 1)**(3/2)/(3*(x + 1)**(3/2))
```

Mathematica [A] time = 0.0123056, size = 20, normalized size = 1.

$$-\frac{(1-x)^{3/2}}{3(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 - x]/(1 + x)^(5/2),x]
```

```
[Out] -(1 - x)^(3/2)/(3*(1 + x)^(3/2))
```

Maple [A] time = 0.004, size = 15, normalized size = 0.8

$$-\frac{1}{3}\left(1-x\right)^{\frac{3}{2}}\left(1+x\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1-x)^(1/2)/(1+x)^(5/2),x)
```

```
[Out] -1/3*(1-x)^(3/2)/(1+x)^(3/2)
```

Maxima [A] time = 1.34178, size = 51, normalized size = 2.55

$$-\frac{2\sqrt{-x^2+1}}{3\left(x^2+2x+1\right)}+\frac{\sqrt{-x^2+1}}{3\left(x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-x + 1)/(x + 1)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(-x^2 + 1)/(x^2 + 2*x + 1) + 1/3*sqrt(-x^2 + 1)/(x + 1)
```

Fricas [A] time = 0.205144, size = 74, normalized size = 3.7

$$-\frac{2\left(x^3+3\sqrt{x+1}x\sqrt{-x+1}-3x\right)}{3\left(x^3+(x^2+3x+2)\sqrt{x+1}\sqrt{-x+1}-3x-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(-x + 1)/(x + 1)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(x^3 + 3*sqrt(x + 1)*x*sqrt(-x + 1) - 3*x)/(x^3 + (x^2 + 3*x
 + 2)*sqrt(x + 1)*sqrt(-x + 1) - 3*x - 2)
```

Sympy [A] time = 10.7706, size = 66, normalized size = 3.3

$$\begin{cases} \frac{\sqrt{-1+\frac{2}{x+1}}}{3} - \frac{2\sqrt{-1+\frac{2}{x+1}}}{3(x+1)} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ \frac{i\sqrt{1-\frac{2}{x+1}}}{3} - \frac{2i\sqrt{1-\frac{2}{x+1}}}{3(x+1)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/2)/(1+x)**(5/2),x)
```

```
[Out] Piecewise((sqrt(-1 + 2/(x + 1))/3 - 2*sqrt(-1 + 2/(x + 1))/(3*(x
+ 1)), 2*Abs(1/(x + 1)) > 1), (I*sqrt(1 - 2/(x + 1))/3 - 2*I*sqrt
(1 - 2/(x + 1))/(3*(x + 1)), True))
```

GIAC/XCAS [A] time = 0.214232, size = 120, normalized size = 6.

$$\frac{\left(\sqrt{2} - \sqrt{-x+1}\right)^3}{24\,(x+1)^{\frac{3}{2}}} - \frac{\sqrt{2} - \sqrt{-x+1}}{8\,\sqrt{x+1}} + \frac{(x+1)^{\frac{3}{2}}\left(\frac{3\left(\sqrt{2}-\sqrt{-x+1}\right)^2}{x+1} - 1\right)}{24\left(\sqrt{2} - \sqrt{-x+1}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-x + 1)/(x + 1)^(5/2),x, algorithm="giac")
```

```
[Out] 1/24*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) - 1/8*(sqrt(2) - sq
rt(-x + 1))/sqrt(x + 1) + 1/24*(x + 1)^(3/2)*(3*(sqrt(2) - sqrt(-
x + 1))^2/(x + 1) - 1)/(sqrt(2) - sqrt(-x + 1))^3
```

3.1131 $\int \frac{1}{\sqrt{1-x}(1+x)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{\sqrt{1-x}}{3\sqrt{x+1}}-\frac{\sqrt{1-x}}{3(x+1)^{3/2}}$$

```
[Out] -Sqrt[1 - x]/(3*(1 + x)^(3/2)) - Sqrt[1 - x]/(3*Sqrt[1 + x])
```

Rubi [A] time = 0.0246339, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{\sqrt{1-x}}{3\sqrt{x+1}}-\frac{\sqrt{1-x}}{3(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[1 - x]*(1 + x)^(5/2)),x]

[Out] -Sqrt[1 - x]/(3*(1 + x)^(3/2)) - Sqrt[1 - x]/(3*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 3.32363, size = 31, normalized size = 0.76

$$-\frac{\sqrt{-x+1}}{3\sqrt{x+1}}-\frac{\sqrt{-x+1}}{3\,(x+1)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(1/2)/(1+x)**(5/2),x)

[Out] -sqrt(-x + 1)/(3*sqrt(x + 1)) - sqrt(-x + 1)/(3*(x + 1)**(3/2))
```

Mathematica [A] time = 0.0122937, size = 23, normalized size = 0.56

$$-\frac{\sqrt{1-x}(x+2)}{3(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[1 - x]*(1 + x)^(5/2)),x]
```

```
[Out] -(Sqrt[1 - x]*(2 + x))/(3*(1 + x)^(3/2))
```

Maple [A] time = 0.004, size = 18, normalized size = 0.4

$$-\frac{2+x}{3}\sqrt{1-x}\,(1+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(1/2)/(1+x)^(5/2),x)
```

```
[Out] -1/3*(2+x)/(1+x)^(3/2)*(1-x)^(1/2)
```

Maxima [A] time = 1.48436, size = 51, normalized size = 1.24

$$-\frac{\sqrt{-x^2+1}}{3\,(x^2+2\,x+1)}-\frac{\sqrt{-x^2+1}}{3\,(x+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*sqrt(-x + 1)),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(-x^2 + 1)/(x^2 + 2*x + 1) - 1/3*sqrt(-x^2 + 1)/(x + 1)
```

Fricas [A] time = 0.205187, size = 89, normalized size = 2.17

$$-\frac{x^3-3\,x^2+3\,(x^2+2\,x)\sqrt{x+1}\sqrt{-x+1}-6\,x}{3\left(x^3+(x^2+3\,x+2)\sqrt{x+1}\sqrt{-x+1}-3\,x-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*sqrt(-x + 1)),x, algorithm="fricas")
```

```
[Out] -1/3*(x^3 - 3*x^2 + 3*(x^2 + 2*x)*sqrt(x + 1)*sqrt(-x + 1) - 6*x)
/(x^3 + (x^2 + 3*x + 2)*sqrt(x + 1)*sqrt(-x + 1) - 3*x - 2)
```

Sympy [A] time = 18.8231, size = 66, normalized size = 1.61

$$\begin{cases} -\frac{\sqrt{-1+\frac{2}{x+1}}}{3} - \frac{\sqrt{-1+\frac{2}{x+1}}}{3(x+1)} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{i\sqrt{1-\frac{2}{x+1}}}{3} - \frac{i\sqrt{1-\frac{2}{x+1}}}{3(x+1)} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(1/2)/(1+x)**(5/2),x)
```

```
[Out] Piecewise((-sqrt(-1 + 2/(x + 1))/3 - sqrt(-1 + 2/(x + 1))/(3*(x +
 1)), 2*Abs(1/(x + 1)) > 1), (-I*sqrt(1 - 2/(x + 1))/3 - I*sqrt(1
 - 2/(x + 1))/(3*(x + 1)), True))
```

GIAC/XCAS [A] time = 0.208558, size = 120, normalized size = 2.93

$$\frac{\left(\sqrt{2} - \sqrt{-x + 1}\right)^{3}}{48\,(x + 1)^{\frac{3}{2}}} + \frac{3\left(\sqrt{2} - \sqrt{-x + 1}\right)}{16\,\sqrt{x + 1}} - \frac{(x + 1)^{\frac{3}{2}}\left(\frac{9\left(\sqrt{2}-\sqrt{-x+1}\right)^{2}}{x+1} + 1\right)}{48\left(\sqrt{2} - \sqrt{-x + 1}\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*sqrt(-x + 1)),x, algorithm="giac")
```

```
[Out] 1/48*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + 3/16*(sqrt(2) - s
qrt(-x + 1))/sqrt(x + 1) - 1/48*(x + 1)^(3/2)*(9*(sqrt(2) - sqrt(
-x + 1))^2/(x + 1) + 1)/(sqrt(2) - sqrt(-x + 1))^3
```

3.1132 $\int \frac{1}{(1-x)^{3/2}(1+x)^{5/2}}\,dx$

Optimal. Leaf size=42

$$\frac{2x}{3\sqrt{1-x}\sqrt{x+1}}-\frac{1}{3\sqrt{1-x}(x+1)^{3/2}}$$

```
[Out] -1/(3*Sqrt[1 - x]*(1 + x)^(3/2)) + (2*x)/(3*Sqrt[1 - x]*Sqrt[1 + 
x])
```

Rubi [A] time = 0.0247833, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2x}{3\sqrt{1-x}\sqrt{x+1}}-\frac{1}{3\sqrt{1-x}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(3/2)*(1 + x)^(5/2)),x]
```

```
[Out] -1/(3*Sqrt[1 - x]*(1 + x)^(3/2)) + (2*x)/(3*Sqrt[1 - x]*Sqrt[1 + 
x])
```

Rubi in Sympy [A] time = 3.41403, size = 34, normalized size = 0.81

$$\frac{2x}{3\sqrt{-x+1}\sqrt{x+1}}-\frac{1}{3\sqrt{-x+1}\,(x+1)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(3/2)/(1+x)**(5/2),x)
```

```
[Out] 2*x/(3*sqrt(-x + 1)*sqrt(x + 1)) - 1/(3*sqrt(-x + 1)*(x + 1)**(3/
2))
```

Mathematica [A] time = 0.0224186, size = 30, normalized size = 0.71

$$\frac{2x^2+2x-1}{3\sqrt{1-x}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(3/2)*(1 + x)^(5/2)),x]
```

```
[Out] (-1 + 2*x + 2*x^2)/(3*Sqrt[1 - x]*(1 + x)^(3/2))
```

Maple [A] time = 0.005, size = 25, normalized size = 0.6

$$\frac{2\,x^2+2\,x-1}{3}\frac{1}{\sqrt{1-x}}(1+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(3/2)/(1+x)^(5/2),x)
```

```
[Out] 1/3*(2*x^2+2*x-1)/(1+x)^(3/2)/(1-x)^(1/2)
```

Maxima [A] time = 1.33862, size = 51, normalized size = 1.21

$$\frac{2\,x}{3\,\sqrt{-x^2+1}}-\frac{1}{3\left(\sqrt{-x^2+1}x+\sqrt{-x^2+1}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(3/2)),x, algorithm="maxima")
```

```
[Out] 2/3*x/sqrt(-x^2 + 1) - 1/3/(sqrt(-x^2 + 1)*x + sqrt(-x^2 + 1))
```

Fricas [A] time = 0.206081, size = 120, normalized size = 2.86

$$-\frac{2\,x^4+4\,x^3-3\,x^2-\left(x^3-3\,x^2-6\,x\right)\sqrt{x+1}\sqrt{-x+1}-6\,x}{3\left(2\,x^3+2\,x^2-(x^3+x^2-2\,x-2)\sqrt{x+1}\sqrt{-x+1}-2\,x-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/3*(2*x^4 + 4*x^3 - 3*x^2 - (x^3 - 3*x^2 - 6*x)*sqrt(x + 1)*sqr
t(-x + 1) - 6*x)/(2*x^3 + 2*x^2 - (x^3 + x^2 - 2*x - 2)*sqrt(x +
1)*sqrt(-x + 1) - 2*x - 2)
```

Sympy [A] time = 86.1169, size = 167, normalized size = 3.98

$$\begin{cases} -\frac{2\sqrt{-1+\frac{2}{x+1}}(x+1)^2}{-6x+3(x+1)^2-6} + \frac{2\sqrt{-1+\frac{2}{x+1}}(x+1)}{-6x+3(x+1)^2-6} + \frac{\sqrt{-1+\frac{2}{x+1}}}{-6x+3(x+1)^2-6} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{2i\sqrt{1-\frac{2}{x+1}}(x+1)^2}{-6x+3(x+1)^2-6} + \frac{2i\sqrt{1-\frac{2}{x+1}}(x+1)}{-6x+3(x+1)^2-6} + \frac{i\sqrt{1-\frac{2}{x+1}}}{-6x+3(x+1)^2-6} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(3/2)/(1+x)**(5/2),x)
```

```
[Out] Piecewise((-2*sqrt(-1 + 2/(x + 1))*(x + 1)**2/(-6*x + 3*(x + 1)**
2 - 6) + 2*sqrt(-1 + 2/(x + 1))*(x + 1)/(-6*x + 3*(x + 1)**2 - 6)
 + sqrt(-1 + 2/(x + 1))/(-6*x + 3*(x + 1)**2 - 6), 2*Abs(1/(x + 1
)) > 1), (-2*I*sqrt(1 - 2/(x + 1))*(x + 1)**2/(-6*x + 3*(x + 1)**
2 - 6) + 2*I*sqrt(1 - 2/(x + 1))*(x + 1)/(-6*x + 3*(x + 1)**2 - 6
) + I*sqrt(1 - 2/(x + 1))/(-6*x + 3*(x + 1)**2 - 6), True))
```

GIAC/XCAS [A] time = 0.209701, size = 146, normalized size = 3.48

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^3}{96\,(x+1)^{\frac{3}{2}}} + \frac{7\left(\sqrt{2}-\sqrt{-x+1}\right)}{32\sqrt{x+1}} - \frac{\sqrt{x+1}\sqrt{-x+1}}{4\,(x-1)} - \frac{(x+1)^{\frac{3}{2}}\left(\frac{21\left(\sqrt{2}-\sqrt{-x+1}\right)^2}{x+1}+1\right)}{96\left(\sqrt{2}-\sqrt{-x+1}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(3/2)),x, algorithm="giac")
```

```
[Out] 1/96*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + 7/32*(sqrt(2) - s
qrt(-x + 1))/sqrt(x + 1) - 1/4*sqrt(x + 1)*sqrt(-x + 1)/(x - 1) -
 1/96*(x + 1)^(3/2)*(21*(sqrt(2) - sqrt(-x + 1))^2/(x + 1) + 1)/(
sqrt(2) - sqrt(-x + 1))^3
```

3.1133 $\int \frac{1}{(1-x)^{5/2}(1+x)^{5/2}}\,dx$

Optimal. Leaf size=43

$$\frac{2x}{3\sqrt{1-x}\sqrt{x+1}}+\frac{x}{3(1-x)^{3/2}(x+1)^{3/2}}$$

```
[Out] x/(3*(1 - x)^(3/2)*(1 + x)^(3/2)) + (2*x)/(3*Sqrt[1 - x]*Sqrt[1 +
 x])
```

Rubi [A] time = 0.0237181, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2x}{3\sqrt{1-x}\sqrt{x+1}}+\frac{x}{3(1-x)^{3/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(5/2)*(1 + x)^(5/2)),x]
```

```
[Out] x/(3*(1 - x)^(3/2)*(1 + x)^(3/2)) + (2*x)/(3*Sqrt[1 - x]*Sqrt[1 +
 x])
```

Rubi in Sympy [A] time = 3.87681, size = 34, normalized size = 0.79

$$\frac{2x}{3\sqrt{-x+1}\sqrt{x+1}}+\frac{x}{3\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(5/2)/(1+x)**(5/2),x)
```

```
[Out] 2*x/(3*sqrt(-x + 1)*sqrt(x + 1)) + x/(3*(-x + 1)**(3/2)*(x + 1)**
(3/2))
```

Mathematica [A] time = 0.0173428, size = 23, normalized size = 0.53

$$-\frac{x\left(2x^2-3\right)}{3\left(1-x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(5/2)*(1 + x)^(5/2)),x]
```

```
[Out] -(x*(-3 + 2*x^2))/(3*(1 - x^2)^(3/2))
```

Maple [A] time = 0.004, size = 23, normalized size = 0.5

$$-\frac{x\left(2x^2-3\right)}{3}(1-x)^{-\frac{3}{2}}(1+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(5/2)/(1+x)^(5/2),x)
```

```
[Out] -1/3*x*(2*x^2-3)/(1+x)^(3/2)/(1-x)^(3/2)
```

Maxima [A] time = 1.342, size = 34, normalized size = 0.79

$$\frac{2x}{3\sqrt{-x^2+1}}+\frac{x}{3\left(-x^2+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(5/2)),x, algorithm="maxima")
```

```
[Out] 2/3*x/sqrt(-x^2 + 1) + 1/3*x/(-x^2 + 1)^(3/2)
```

Fricas [A] time = 0.206227, size = 116, normalized size = 2.7

$$\frac{6x^5-17x^3-\left(2x^5-11x^3+12x\right)\sqrt{x+1}\sqrt{-x+1}+12x}{3\left(x^6-6x^4+9x^2+(3x^4-7x^2+4)\sqrt{x+1}\sqrt{-x+1}-4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(5/2)),x, algorithm="fricas")
```

```
[Out] 1/3*(6*x^5 - 17*x^3 - (2*x^5 - 11*x^3 + 12*x)*sqrt(x + 1)*sqrt(-x
 + 1) + 12*x)/(x^6 - 6*x^4 + 9*x^2 + (3*x^4 - 7*x^2 + 4)*sqrt(x +
 1)*sqrt(-x + 1) - 4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(5/2)/(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220602, size = 153, normalized size = 3.56

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}{192\,(x+1)^{\frac{3}{2}}}+\frac{11\left(\sqrt{2}-\sqrt{-x+1}\right)}{64\sqrt{x+1}}-\frac{(4\,x-5)\sqrt{x+1}\sqrt{-x+1}}{12\,(x-1)^{2}}-\frac{(x+1)^{\frac{3}{2}}\left(\frac{33\left(\sqrt{2}-\sqrt{-x+1}\right)^{2}}{x+1}+1\right)}{192\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(5/2)),x, algorithm="giac")
```

```
[Out] 1/192*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + 11/64*(sqrt(2) -
 sqrt(-x + 1))/sqrt(x + 1) - 1/12*(4*x - 5)*sqrt(x + 1)*sqrt(-x +
 1)/(x - 1)^2 - 1/192*(x + 1)^(3/2)*(33*(sqrt(2) - sqrt(-x + 1))^
2/(x + 1) + 1)/(sqrt(2) - sqrt(-x + 1))^3
```

3.1134 $\int \frac{1}{(1-x)^{7/2}(1+x)^{5/2}}\,dx$

Optimal. Leaf size=63

$$\frac{8x}{15\sqrt{1-x}\sqrt{x+1}}+\frac{4x}{15(1-x)^{3/2}(x+1)^{3/2}}+\frac{1}{5(1-x)^{5/2}(x+1)^{3/2}}$$

```
[Out] 1/(5*(1 - x)^(5/2)*(1 + x)^(3/2)) + (4*x)/(15*(1 - x)^(3/2)*(1 +
x)^(3/2)) + (8*x)/(15*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi [A] time = 0.0367401, antiderivative size = 63, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{8x}{15\sqrt{1-x}\sqrt{x+1}}+\frac{4x}{15(1-x)^{3/2}(x+1)^{3/2}}+\frac{1}{5(1-x)^{5/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(7/2)*(1 + x)^(5/2)),x]
```

```
[Out] 1/(5*(1 - x)^(5/2)*(1 + x)^(3/2)) + (4*x)/(15*(1 - x)^(3/2)*(1 +
x)^(3/2)) + (8*x)/(15*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 5.38036, size = 53, normalized size = 0.84

$$\frac{8x}{15\sqrt{-x+1}\sqrt{x+1}}+\frac{4x}{15\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}+\frac{1}{5\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(7/2)/(1+x)**(5/2),x)
```

```
[Out] 8*x/(15*sqrt(-x + 1)*sqrt(x + 1)) + 4*x/(15*(-x + 1)**(3/2)*(x +
1)**(3/2)) + 1/(5*(-x + 1)**(5/2)*(x + 1)**(3/2))
```

Mathematica [A] time = 0.0313996, size = 40, normalized size = 0.63

$$\frac{8x^4-8x^3-12x^2+12x+3}{15(1-x)^{5/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(7/2)*(1 + x)^(5/2)),x]
```

```
[Out] (3 + 12*x - 12*x^2 - 8*x^3 + 8*x^4)/(15*(1 - x)^(5/2)*(1 + x)^(3/
2))
```

Maple [A] time = 0.004, size = 35, normalized size = 0.6

$$\frac{8x^4 - 8x^3 - 12x^2 + 12x + 3}{15}(1-x)^{-\frac{5}{2}}(1+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(7/2)/(1+x)^(5/2),x)
```

```
[Out] 1/15*(8*x^4-8*x^3-12*x^2+12*x+3)/(1+x)^(3/2)/(1-x)^(5/2)
```

Maxima [A] time = 1.34622, size = 70, normalized size = 1.11

$$\frac{8x}{15\sqrt{-x^2+1}} + \frac{4x}{15(-x^2+1)^{\frac{3}{2}}} - \frac{1}{5\left((-x^2+1)^{\frac{3}{2}}x - (-x^2+1)^{\frac{3}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(7/2)),x, algorithm="maxima")
```

```
[Out] 8/15*x/sqrt(-x^2 + 1) + 4/15*x/(-x^2 + 1)^(3/2) - 1/5/((-x^2 + 1)
^(3/2)*x - (-x^2 + 1)^(3/2))
```

Fricas [A] time = 0.210478, size = 232, normalized size = 3.68

$$-\frac{8x^8 - 20x^7 - 64x^6 + 124x^5 + 115x^4 - 220x^3 - 60x^2 + \left(3x^7 + 29x^6 - 59x^5 - 85x^4 + 160x^3 + 60x^2 - 120x\right)\sqrt{x+1}\sqrt{-}}{15\left(4x^7 - 4x^6 - 16x^5 + 16x^4 + 20x^3 - 20x^2 - (x^7 - x^6 - 9x^5 + 9x^4 + 16x^3 - 16x^2 - 8x + 8)\sqrt{x+1}\sqrt{-x+1} - 8\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(7/2)),x, algorithm="fricas")
```

```
[Out] -1/15*(8*x^8 - 20*x^7 - 64*x^6 + 124*x^5 + 115*x^4 - 220*x^3 - 60
*x^2 + (3*x^7 + 29*x^6 - 59*x^5 - 85*x^4 + 160*x^3 + 60*x^2 - 120
*x)*sqrt(x + 1)*sqrt(-x + 1) + 120*x)/(4*x^7 - 4*x^6 - 16*x^5 + 1
```

```
6*x^4 + 20*x^3 - 20*x^2 - (x^7 - x^6 - 9*x^5 + 9*x^4 + 16*x^3 - 1
6*x^2 - 8*x + 8)*sqrt(x + 1)*sqrt(-x + 1) - 8*x + 8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(7/2)/(1+x)**(5/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.213489, size = 161, normalized size = 2.56

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}{384\,(x+1)^{\frac{3}{2}}}+\frac{15\,\left(\sqrt{2}-\sqrt{-x+1}\right)}{128\,\sqrt{x+1}}-\frac{(x+1)^{\frac{3}{2}}\left(\frac{45\,\left(\sqrt{2}-\sqrt{-x+1}\right)^{2}}{x+1}+1\right)}{384\,\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}-\frac{((73\,x-247)(x+1)+360)\sqrt{x+1}\sqrt{-x+1}}{240\,(x-1)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(7/2)),x, algorithm="giac")

[Out] 1/384*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + 15/128*(sqrt(2)
- sqrt(-x + 1))/sqrt(x + 1) - 1/384*(x + 1)^(3/2)*(45*(sqrt(2) -
sqrt(-x + 1))^2/(x + 1) + 1)/(sqrt(2) - sqrt(-x + 1))^3 - 1/240*(
(73*x - 247)*(x + 1) + 360)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^3
```

3.1135 $\int \frac{1}{(1-x)^{9/2}(1+x)^{5/2}}\,dx$

Optimal. Leaf size=83

$$\frac{8x}{21\sqrt{1-x}\sqrt{x+1}}+\frac{4x}{21(1-x)^{3/2}(x+1)^{3/2}}+\frac{1}{7(1-x)^{5/2}(x+1)^{3/2}}+\frac{1}{7(1-x)^{7/2}(x+1)^{3/2}}$$

```
[Out] 1/(7*(1 - x)^(7/2)*(1 + x)^(3/2)) + 1/(7*(1 - x)^(5/2)*(1 + x)^(3
/2)) + (4*x)/(21*(1 - x)^(3/2)*(1 + x)^(3/2)) + (8*x)/(21*Sqrt[1
- x]*Sqrt[1 + x])
```

Rubi [A] time = 0.0509387, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$\frac{8x}{21\sqrt{1-x}\sqrt{x+1}}+\frac{4x}{21(1-x)^{3/2}(x+1)^{3/2}}+\frac{1}{7(1-x)^{5/2}(x+1)^{3/2}}+\frac{1}{7(1-x)^{7/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((1 - x)^(9/2)*(1 + x)^(5/2)),x]
```

```
[Out] 1/(7*(1 - x)^(7/2)*(1 + x)^(3/2)) + 1/(7*(1 - x)^(5/2)*(1 + x)^(3
/2)) + (4*x)/(21*(1 - x)^(3/2)*(1 + x)^(3/2)) + (8*x)/(21*Sqrt[1
- x]*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 7.1652, size = 70, normalized size = 0.84

$$\frac{8x}{21\sqrt{-x+1}\sqrt{x+1}}+\frac{4x}{21\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}+\frac{1}{7\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{3}{2}}}+\frac{1}{7\left(-x+1\right)^{\frac{7}{2}}\left(x+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(1-x)**(9/2)/(1+x)**(5/2),x)
```

```
[Out] 8*x/(21*sqrt(-x + 1)*sqrt(x + 1)) + 4*x/(21*(-x + 1)**(3/2)*(x +
1)**(3/2)) + 1/(7*(-x + 1)**(5/2)*(x + 1)**(3/2)) + 1/(7*(-x + 1)
**(7/2)*(x + 1)**(3/2))
```

Mathematica [A] time = 0.0366742, size = 45, normalized size = 0.54

$$\frac{-8x^5+16x^4+4x^3-24x^2+9x+6}{21(1-x)^{7/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(9/2)*(1 + x)^(5/2)),x]
```

```
[Out] (6 + 9*x - 24*x^2 + 4*x^3 + 16*x^4 - 8*x^5)/(21*(1 - x)^(7/2)*(1
+ x)^(3/2))
```

Maple [A] time = 0.006, size = 40, normalized size = 0.5

$$-\frac{8x^5 - 16x^4 - 4x^3 + 24x^2 - 9x - 6}{21}(1-x)^{-\frac{7}{2}}(1+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(9/2)/(1+x)^(5/2),x)
```

```
[Out] -1/21*(8*x^5-16*x^4-4*x^3+24*x^2-9*x-6)/(1+x)^(3/2)/(1-x)^(7/2)
```

Maxima [A] time = 1.34598, size = 123, normalized size = 1.48

$$\frac{8x}{21\sqrt{-x^2+1}} + \frac{4x}{21(-x^2+1)^{\frac{3}{2}}} + \frac{1}{7\left((-x^2+1)^{\frac{3}{2}}x^2 - 2(-x^2+1)^{\frac{3}{2}}x + (-x^2+1)^{\frac{3}{2}}\right)} - \frac{1}{7\left((-x^2+1)^{\frac{3}{2}}x - (-x^2+1)^{\frac{3}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(9/2)),x, algorithm="maxima")
```

```
[Out] 8/21*x/sqrt(-x^2 + 1) + 4/21*x/(-x^2 + 1)^(3/2) + 1/7/((-x^2 + 1)
^(3/2)*x^2 - 2*(-x^2 + 1)^(3/2)*x + (-x^2 + 1)^(3/2)) - 1/7/((-x^
2 + 1)^(3/2)*x - (-x^2 + 1)^(3/2))
```

Fricas [A] time = 0.208142, size = 286, normalized size = 3.45

$$\frac{6x^{10} + 28x^9 - 158x^8 - 12x^7 + 602x^6 - 329x^5 - 784x^4 + 644x^3 + 336x^2 - \left(8x^9 - 46x^8 - 40x^7 + 336x^6 - 133x^5 - 616\right.}{21\left(x^{10} - 2x^9 - 13x^8 + 28x^7 + 27x^6 - 82x^5 - 3x^4 + 88x^3 - 28x^2 + (5x^8 - 10x^7 - 20x^6 + 50x^5 + 11x^4 - 72x^3 + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(9/2)),x, algorithm="fricas")
```

```
[Out] 1/21*(6*x^10 + 28*x^9 - 158*x^8 - 12*x^7 + 602*x^6 - 329*x^5 - 78
4*x^4 + 644*x^3 + 336*x^2 - (8*x^9 - 46*x^8 - 40*x^7 + 336*x^6 -
133*x^5 - 616*x^4 + 476*x^3 + 336*x^2 - 336*x)*sqrt(x + 1)*sqrt(-
x + 1) - 336*x)/(x^10 - 2*x^9 - 13*x^8 + 28*x^7 + 27*x^6 - 82*x^5
 - 3*x^4 + 88*x^3 - 28*x^2 + (5*x^8 - 10*x^7 - 20*x^6 + 50*x^5 +
11*x^4 - 72*x^3 + 20*x^2 + 32*x - 16)*sqrt(x + 1)*sqrt(-x + 1) -
32*x + 16)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(9/2)/(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.214652, size = 169, normalized size = 2.04

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}{768\,(x+1)^{\frac{3}{2}}}+\frac{19\left(\sqrt{2}-\sqrt{-x+1}\right)}{256\sqrt{x+1}}-\frac{(x+1)^{\frac{3}{2}}\left(\frac{57\left(\sqrt{2}-\sqrt{-x+1}\right)^{2}}{x+1}+1\right)}{768\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}-\frac{(((79\,x-432)(x+1)+1120)(x+1)-840)\sqrt{x+1}\sqrt{-x+1}}{336\,(x-1)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(9/2)),x, algorithm="giac")
```

```
[Out] 1/768*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + 19/256*(sqrt(2)
- sqrt(-x + 1))/sqrt(x + 1) - 1/768*(x + 1)^(3/2)*(57*(sqrt(2) -
sqrt(-x + 1))^2/(x + 1) + 1)/(sqrt(2) - sqrt(-x + 1))^3 - 1/336*(
((79*x - 432)*(x + 1) + 1120)*(x + 1) - 840)*sqrt(x + 1)*sqrt(-x
+ 1)/(x - 1)^4
```

3.1136 $\int \frac{1}{(1-x)^{11/2}(1+x)^{5/2}}\,dx$

Optimal. Leaf size=103

$$\frac{16x}{63\sqrt{1-x}\sqrt{x+1}}+\frac{8x}{63(1-x)^{3/2}(x+1)^{3/2}}+\frac{2}{21(1-x)^{5/2}(x+1)^{3/2}}+\frac{2}{21(1-x)^{7/2}(x+1)^{3/2}}+\frac{1}{9(1-x)^{9/2}(x+1)^{3/2}}$$

```
[Out] 1/(9*(1 - x)^(9/2)*(1 + x)^(3/2)) + 2/(21*(1 - x)^(7/2)*(1 + x)^(
3/2)) + 2/(21*(1 - x)^(5/2)*(1 + x)^(3/2)) + (8*x)/(63*(1 - x)^(3
/2)*(1 + x)^(3/2)) + (16*x)/(63*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi [A] time = 0.0668988, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{16x}{63\sqrt{1-x}\sqrt{x+1}}+\frac{8x}{63(1-x)^{3/2}(x+1)^{3/2}}+\frac{2}{21(1-x)^{5/2}(x+1)^{3/2}}+\frac{2}{21(1-x)^{7/2}(x+1)^{3/2}}+\frac{1}{9(1-x)^{9/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - x)^(11/2)*(1 + x)^(5/2)),x]
```

```
[Out] 1/(9*(1 - x)^(9/2)*(1 + x)^(3/2)) + 2/(21*(1 - x)^(7/2)*(1 + x)^(
3/2)) + 2/(21*(1 - x)^(5/2)*(1 + x)^(3/2)) + (8*x)/(63*(1 - x)^(3
/2)*(1 + x)^(3/2)) + (16*x)/(63*Sqrt[1 - x]*Sqrt[1 + x])
```

Rubi in Sympy [A] time = 9.02867, size = 87, normalized size = 0.84

$$\frac{16x}{63\sqrt{-x+1}\sqrt{x+1}}+\frac{8x}{63\left(-x+1\right)^{\frac{3}{2}}\left(x+1\right)^{\frac{3}{2}}}+\frac{2}{21\left(-x+1\right)^{\frac{5}{2}}\left(x+1\right)^{\frac{3}{2}}}+\frac{2}{21\left(-x+1\right)^{\frac{7}{2}}\left(x+1\right)^{\frac{3}{2}}}+\frac{1}{9\left(-x+1\right)^{\frac{9}{2}}\left(x+1\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(1-x)**(11/2)/(1+x)**(5/2),x)
```

```
[Out] 16*x/(63*sqrt(-x + 1)*sqrt(x + 1)) + 8*x/(63*(-x + 1)**(3/2)*(x +
 1)**(3/2)) + 2/(21*(-x + 1)**(5/2)*(x + 1)**(3/2)) + 2/(21*(-x +
 1)**(7/2)*(x + 1)**(3/2)) + 1/(9*(-x + 1)**(9/2)*(x + 1)**(3/2))
```

Mathematica [A] time = 0.0379807, size = 50, normalized size = 0.49

$$\frac{16x^6 - 48x^5 + 24x^4 + 56x^3 - 66x^2 + 6x + 19}{63(1-x)^{9/2}(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - x)^(11/2)*(1 + x)^(5/2)),x]
```

```
[Out] (19 + 6*x - 66*x^2 + 56*x^3 + 24*x^4 - 48*x^5 + 16*x^6)/(63*(1 -
x)^(9/2)*(1 + x)^(3/2))
```

Maple [A] time = 0.006, size = 45, normalized size = 0.4

$$\frac{16\,x^6 - 48\,x^5 + 24\,x^4 + 56\,x^3 - 66\,x^2 + 6\,x + 19}{63}(1-x)^{-\frac{9}{2}}(1+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(1-x)^(11/2)/(1+x)^(5/2),x)
```

```
[Out] 1/63*(16*x^6-48*x^5+24*x^4+56*x^3-66*x^2+6*x+19)/(1+x)^(3/2)/(1-x
)^(9/2)
```

Maxima [A] time = 1.35096, size = 197, normalized size = 1.91

$$\frac{16\,x}{63\,\sqrt{-x^2+1}} + \frac{8\,x}{63\,(-x^2+1)^{\frac{3}{2}}} - \frac{1}{9\left((-x^2+1)^{\frac{3}{2}}x^3 - 3\,(-x^2+1)^{\frac{3}{2}}x^2 + 3\,(-x^2+1)^{\frac{3}{2}}x - (-x^2+1)^{\frac{3}{2}}\right)} + \frac{2}{21\left((-x^2+1)^{\frac{3}{2}}x^2 - 2\,(-x^2+1)^{\frac{3}{2}}x + (-x^2+1)^{\frac{3}{2}}\right)} - \frac{2}{21\left((-x^2+1)^{\frac{3}{2}}x - (-x^2+1)^{\frac{3}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(11/2)),x, algorithm="maxima")
```

```
[Out] 16/63*x/sqrt(-x^2 + 1) + 8/63*x/(-x^2 + 1)^(3/2) - 1/9/((-x^2 + 1
)^(3/2)*x^3 - 3*(-x^2 + 1)^(3/2)*x^2 + 3*(-x^2 + 1)^(3/2)*x - (-x
^2 + 1)^(3/2)) + 2/21/((-x^2 + 1)^(3/2)*x^2 - 2*(-x^2 + 1)^(3/2)*
x + (-x^2 + 1)^(3/2)) - 2/21/((-x^2 + 1)^(3/2)*x - (-x^2 + 1)^(3/
2))
```

Fricas [A] time = 0.207142, size = 333, normalized size = 3.23

$$-\frac{16\,x^{12}-162\,x^{11}+78\,x^{10}+1414\,x^{9}-2124\,x^{8}-2736\,x^{7}+6825\,x^{6}+126\,x^{5}-7812\,x^{4}+3360\,x^{3}+3024\,x^{2}+\left(19\,x^{11}+39\,x\right.}{63\left(6\,x^{11}-18\,x^{10}-26\,x^{9}+126\,x^{8}-30\,x^{7}-262\,x^{6}+210\,x^{5}+186\,x^{4}-256\,x^{3}-\left(x^{11}-3\,x^{10}-16\,x^{9}+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(11/2)),x, algorithm="fricas")
```

```
[Out] -1/63*(16*x^12 - 162*x^11 + 78*x^10 + 1414*x^9 - 2124*x^8 - 2736*
x^7 + 6825*x^6 + 126*x^5 - 7812*x^4 + 3360*x^3 + 3024*x^2 + (19*x
^11 + 39*x^10 - 592*x^9 + 696*x^8 + 2043*x^7 - 4053*x^6 - 1050*x^
5 + 6300*x^4 - 2352*x^3 - 3024*x^2 + 2016*x)*sqrt(x + 1)*sqrt(-x
+ 1) - 2016*x)/(6*x^11 - 18*x^10 - 26*x^9 + 126*x^8 - 30*x^7 - 26
2*x^6 + 210*x^5 + 186*x^4 - 256*x^3 - (x^11 - 3*x^10 - 16*x^9 + 5
6*x^8 + 9*x^7 - 179*x^6 + 118*x^5 + 174*x^4 - 208*x^3 - 16*x^2 +
96*x - 32)*sqrt(x + 1)*sqrt(-x + 1) + 96*x - 32)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(1-x)**(11/2)/(1+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.214695, size = 177, normalized size = 1.72

$$\frac{\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}{1536\,(x+1)^{\frac{3}{2}}}+\frac{23\left(\sqrt{2}-\sqrt{-x+1}\right)}{512\,\sqrt{x+1}}-\frac{(x+1)^{\frac{3}{2}}\left(\frac{69\left(\sqrt{2}-\sqrt{-x+1}\right)^{2}}{x+1}+1\right)}{1536\left(\sqrt{2}-\sqrt{-x+1}\right)^{3}}-\frac{((((667\,x-5021)(x+1)+18396)(x+1)-26880)(x+1)+15120)\sqrt{x+1}\sqrt{-x+1}}{4032\,(x-1)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 1)^(5/2)*(-x + 1)^(11/2)),x, algorithm="giac")
```

```
[Out] 1/1536*(sqrt(2) - sqrt(-x + 1))^3/(x + 1)^(3/2) + 23/512*(sqrt(2)
 - sqrt(-x + 1))/sqrt(x + 1) - 1/1536*(x + 1)^(3/2)*(69*(sqrt(2)
- sqrt(-x + 1))^2/(x + 1) + 1)/(sqrt(2) - sqrt(-x + 1))^3 - 1/403
2*((((667*x - 5021)*(x + 1) + 18396)*(x + 1) - 26880)*(x + 1) + 1
5120)*sqrt(x + 1)*sqrt(-x + 1)/(x - 1)^5
```

3.1137 $\int (a+ax)^{5/2}(c-cx)^{5/2}\,dx$

Optimal. Leaf size=126

$$\frac{5}{8}a^{5/2}c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)+\frac{5}{16}a^2c^2x\sqrt{ax+a}\sqrt{c-cx}+\frac{5}{24}acx(ax+a)^{3/2}(c-cx)^{3/2}+\frac{1}{6}x(ax+a)^{5/2}(c-cx)^{5/2}$$

```
[Out] (5*a^2*c^2*x*Sqrt[a + a*x]*Sqrt[c - c*x])/16 + (5*a*c*x*(a + a*x)
^(3/2)*(c - c*x)^(3/2))/24 + (x*(a + a*x)^(5/2)*(c - c*x)^(5/2))/
6 + (5*a^(5/2)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + a*x])/(Sqrt[a]*Sq
rt[c - c*x])])/8
```

Rubi [A] time = 0.127767, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{5}{8}a^{5/2}c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)+\frac{5}{16}a^2c^2x\sqrt{ax+a}\sqrt{c-cx}+\frac{5}{24}acx(ax+a)^{3/2}(c-cx)^{3/2}+\frac{1}{6}x(ax+a)^{5/2}(c-cx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + a*x)^(5/2)*(c - c*x)^(5/2),x]
```

```
[Out] (5*a^2*c^2*x*Sqrt[a + a*x]*Sqrt[c - c*x])/16 + (5*a*c*x*(a + a*x)
^(3/2)*(c - c*x)^(3/2))/24 + (x*(a + a*x)^(5/2)*(c - c*x)^(5/2))/
6 + (5*a^(5/2)*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + a*x])/(Sqrt[a]*Sq
rt[c - c*x])])/8
```

Rubi in Sympy [A] time = 19.1528, size = 116, normalized size = 0.92

$$-\frac{5a^{\frac{5}{2}}c^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{a}\sqrt{-cx+c}}{\sqrt{c}\sqrt{ax+a}}\right)}{8}+\frac{5a^2c^2x\sqrt{ax+a}\sqrt{-cx+c}}{16}+\frac{5acx\,(ax+a)^{\frac{3}{2}}\,(-cx+c)^{\frac{3}{2}}}{24}+\frac{x\,(ax+a)^{\frac{5}{2}}\,(-cx+c)^{\frac{5}{2}}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+a)**(5/2)*(-c*x+c)**(5/2),x)
```

```
[Out] -5*a**(5/2)*c**(5/2)*atan(sqrt(a)*sqrt(-c*x + c)/(sqrt(c)*sqrt(a*
x + a)))/8 + 5*a**2*c**2*x*sqrt(a*x + a)*sqrt(-c*x + c)/16 + 5*a*
c*x*(a*x + a)**(3/2)*(-c*x + c)**(3/2)/24 + x*(a*x + a)**(5/2)*(-
```

```
c*x + c)**(5/2)/6
```

Mathematica [A] time = 0.180811, size = 91, normalized size = 0.72

$$\frac{c^2(a(x+1))^{5/2}\left(x\sqrt{x+1}\left(8x^4-26x^2+33\right)\sqrt{c-cx}-30\sqrt{c}\tan^{-1}\left(\frac{\sqrt{x+1}\sqrt{c-cx}}{\sqrt{c}(x-1)}\right)\right)}{48(x+1)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + a*x)^(5/2)*(c - c*x)^(5/2),x]
```

```
[Out] (c^2*(a*(1 + x))^(5/2)*(x*Sqrt[1 + x]*Sqrt[c - c*x]*(33 - 26*x^2
+ 8*x^4) - 30*Sqrt[c]*ArcTan[(Sqrt[1 + x]*Sqrt[c - c*x])/(Sqrt[c]
*(-1 + x))]))/(48*(1 + x)^(5/2))
```

Maple [B] time = 0.02, size = 193, normalized size = 1.5

$$-\frac{1}{6\,c}\,(ax+a)^{\frac{5}{2}}\,(-cx+c)^{\frac{7}{2}}-\frac{a}{6\,c}\,(ax+a)^{\frac{3}{2}}\,(-cx+c)^{\frac{7}{2}}-\frac{a^2}{8\,c}\sqrt{ax+a}\,(-cx+c)^{\frac{7}{2}}+\frac{a^2}{24}\,(-cx+c)^{\frac{5}{2}}\sqrt{ax+a}+\frac{5\,a^2c}{48}\,(-cx+c)^{\frac{3}{2}}\sqrt{ax+a}+\frac{5\,a^2c^2}{16}\sqrt{ax+a}\sqrt{-cx+c}+\frac{5\,a^3c^3}{16}\sqrt{(-cx+c)\,(ax+a)}\arctan\left(x\sqrt{ac}\frac{1}{\sqrt{-acx^2+ac}}\right)\frac{1}{\sqrt{ax+a}}\frac{1}{\sqrt{-cx+c}}\frac{1}{\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+a)^(5/2)*(-c*x+c)^(5/2),x)
```

```
[Out] -1/6/c*(a*x+a)^(5/2)*(-c*x+c)^(7/2)-1/6*a/c*(a*x+a)^(3/2)*(-c*x+c
)^(7/2)-1/8*a^2/c*(a*x+a)^(1/2)*(-c*x+c)^(7/2)+1/24*a^2*(-c*x+c)^
(5/2)*(a*x+a)^(1/2)+5/48*a^2*c*(-c*x+c)^(3/2)*(a*x+a)^(1/2)+5/16*
a^2*c^2*(-c*x+c)^(1/2)*(a*x+a)^(1/2)+5/16*a^3*c^3*((-c*x+c)*(a*x+
a))^(1/2)/(-c*x+c)^(1/2)/(a*x+a)^(1/2)/(a*c)^(1/2)*arctan((a*c)^(
1/2)*x/(-a*c*x^2+a*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^(5/2)*(-c*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.220706, size = 1, normalized size = 0.01

$$\left[\frac{5}{32}\sqrt{-ac}a^2c^2\log\left(2\,acx^2+2\,\sqrt{-ac}\sqrt{ax+a}\sqrt{-cx+c}x-ac\right)+\frac{1}{48}\left(8\,a^2c^2x^5-26\,a^2c^2x^3+33\,a^2c^2x\right)\sqrt{ax+a}\sqrt{-cx+c},\ \frac{5}{16}\sqrt{ac}a^2c^2\arctan\left(\frac{acx}{\sqrt{ac}\sqrt{ax+a}\sqrt{-cx+c}}\right)+\frac{1}{48}\left(8\,a^2c^2x^5-26\,a^2c^2x^3+33\,a^2c^2x\right)\sqrt{ax+a}\sqrt{-cx+c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^(5/2)*(-c*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [5/32*sqrt(-a*c)*a^2*c^2*log(2*a*c*x^2 + 2*sqrt(-a*c)*sqrt(a*x +
a)*sqrt(-c*x + c)*x - a*c) + 1/48*(8*a^2*c^2*x^5 - 26*a^2*c^2*x^3
 + 33*a^2*c^2*x)*sqrt(a*x + a)*sqrt(-c*x + c), 5/16*sqrt(a*c)*a^2
*c^2*arctan(a*c*x/(sqrt(a*c)*sqrt(a*x + a)*sqrt(-c*x + c))) + 1/4
8*(8*a^2*c^2*x^5 - 26*a^2*c^2*x^3 + 33*a^2*c^2*x)*sqrt(a*x + a)*s
qrt(-c*x + c)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+a)**(5/2)*(-c*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.33746, size = 478, normalized size = 3.79

$$-\frac{\left(\frac{6\,a^3c\ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2\,a^2c}\right|\right)}{\sqrt{-ac}}-\sqrt{-(ax+a)ac+2\,a^2c}\left(\left(2\left((ax+a)\left(4\,(ax+a)\left(\frac{ax+a}{a^4}-\frac{5}{a^3}\right)+\frac{39}{a^2}\right)-\frac{37}{a}\right)(ax+a)+\right.\right.\right.}{48\,a}$$

$$-\frac{\left(\frac{2\,a^3c\ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2\,a^2c}\right|\right)}{\sqrt{-ac}}-\sqrt{-(ax+a)ac+2\,a^2c}\sqrt{ax+a}ax\right)c^2|a|}{2\,a}$$

$$+\frac{\left(\frac{2\,a^3c\ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2\,a^2c}\right|\right)}{\sqrt{-ac}}-\sqrt{-(ax+a)ac+2\,a^2c}\left((ax+a)\left(2\,(ax+a)\left(\frac{ax+a}{a^2}-\frac{3}{a}\right)+5\right)-a\right)\sqrt{ax+a}\right)c^2|a|}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^(5/2)*(-c*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] -1/48*(6*a^3*c*ln(abs(-sqrt(-a*c)*sqrt(a*x + a) + sqrt(-(a*x + a)
*a*c + 2*a^2*c)))/sqrt(-a*c) - sqrt(-(a*x + a)*a*c + 2*a^2*c)*((2
*((a*x + a)*(4*(a*x + a)*((a*x + a)/a^4 - 5/a^3) + 39/a^2) - 37/a
)*(a*x + a) + 31)*(a*x + a) - 3*a)*sqrt(a*x + a))*c^2*abs(a)/a -
1/2*(2*a^3*c*ln(abs(-sqrt(-a*c)*sqrt(a*x + a) + sqrt(-(a*x + a)*a
*c + 2*a^2*c)))/sqrt(-a*c) - sqrt(-(a*x + a)*a*c + 2*a^2*c)*sqrt(
a*x + a)*a*x)*c^2*abs(a)/a + 1/4*(2*a^3*c*ln(abs(-sqrt(-a*c)*sqrt
(a*x + a) + sqrt(-(a*x + a)*a*c + 2*a^2*c)))/sqrt(-a*c) - sqrt(-(
a*x + a)*a*c + 2*a^2*c)*((a*x + a)*(2*(a*x + a)*((a*x + a)/a^2 -
3/a) + 5) - a)*sqrt(a*x + a))*c^2*abs(a)/a
```

3.1138 $\int (a+ax)^{3/2}(c-cx)^{3/2}\,dx$

Optimal. Leaf size=96

$$\frac{3}{4}a^{3/2}c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)+\frac{3}{8}acx\sqrt{ax+a}\sqrt{c-cx}+\frac{1}{4}x(ax+a)^{3/2}(c-cx)^{3/2}$$

```
[Out] (3*a*c*x*Sqrt[a + a*x]*Sqrt[c - c*x])/8 + (x*(a + a*x)^(3/2)*(c -
 c*x)^(3/2))/4 + (3*a^(3/2)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + a*x]
)/(Sqrt[a]*Sqrt[c - c*x])])/4
```

Rubi [A] time = 0.0880958, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$\frac{3}{4}a^{3/2}c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)+\frac{3}{8}acx\sqrt{ax+a}\sqrt{c-cx}+\frac{1}{4}x(ax+a)^{3/2}(c-cx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + a*x)^(3/2)*(c - c*x)^(3/2),x]
```

```
[Out] (3*a*c*x*Sqrt[a + a*x]*Sqrt[c - c*x])/8 + (x*(a + a*x)^(3/2)*(c -
 c*x)^(3/2))/4 + (3*a^(3/2)*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a + a*x]
)/(Sqrt[a]*Sqrt[c - c*x])])/4
```

Rubi in Sympy [A] time = 13.8433, size = 87, normalized size = 0.91

$$\frac{3a^{\frac{3}{2}}c^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{-cx+c}}\right)}{4}+\frac{3acx\sqrt{ax+a}\sqrt{-cx+c}}{8}+\frac{x\left(ax+a\right)^{\frac{3}{2}}\left(-cx+c\right)^{\frac{3}{2}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+a)**(3/2)*(-c*x+c)**(3/2),x)
```

```
[Out] 3*a**(3/2)*c**(3/2)*atan(sqrt(c)*sqrt(a*x + a)/(sqrt(a)*sqrt(-c*x
 + c)))/4 + 3*a*c*x*sqrt(a*x + a)*sqrt(-c*x + c)/8 + x*(a*x + a)*
*(3/2)*(-c*x + c)**(3/2)/4
```

Mathematica [A] time = 0.111019, size = 84, normalized size = 0.88

$$-\frac{c(a(x+1))^{3/2}\left(x\sqrt{x+1}\left(2x^2-5\right)\sqrt{c-cx}+6\sqrt{c}\tan^{-1}\left(\frac{\sqrt{x+1}\sqrt{c-cx}}{\sqrt{c}(x-1)}\right)\right)}{8(x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + a*x)^(3/2)*(c - c*x)^(3/2),x]
```

```
[Out] -(c*(a*(1 + x))^(3/2)*(x*Sqrt[1 + x]*Sqrt[c - c*x]*(-5 + 2*x^2) +
 6*Sqrt[c]*ArcTan[(Sqrt[1 + x]*Sqrt[c - c*x])/(Sqrt[c]*(-1 + x))]
))/(8*(1 + x)^(3/2))
```

Maple [B] time = 0.009, size = 143, normalized size = 1.5

$$-\frac{1}{4c}(ax+a)^{\frac{3}{2}}(-cx+c)^{\frac{5}{2}}-\frac{a}{4c}\sqrt{ax+a}\,(-cx+c)^{\frac{5}{2}}+\frac{a}{8}\sqrt{ax+a}\,(-cx+c)^{\frac{3}{2}}+\frac{3\,ac}{8}\sqrt{ax+a}\sqrt{-cx+c}+\frac{3\,a^2c^2}{8}\sqrt{(-cx+c)(ax+a)}\arctan\left(x\sqrt{ac}\frac{1}{\sqrt{-acx^2+ac}}\right)\frac{1}{\sqrt{ax+a}}\frac{1}{\sqrt{-cx+c}}\frac{1}{\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+a)^(3/2)*(-c*x+c)^(3/2),x)
```

```
[Out] -1/4/c*(a*x+a)^(3/2)*(-c*x+c)^(5/2)-1/4*a/c*(a*x+a)^(1/2)*(-c*x+c
)^(5/2)+1/8*(a*x+a)^(1/2)*(-c*x+c)^(3/2)*a+3/8*a*c*(-c*x+c)^(1/2)
*(a*x+a)^(1/2)+3/8*a^2*c^2*((-c*x+c)*(a*x+a))^(1/2)/(-c*x+c)^(1/2
)/(a*x+a)^(1/2)/(a*c)^(1/2)*arctan((a*c)^(1/2)*x/(-a*c*x^2+a*c)^(
1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^(3/2)*(-c*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219897, size = 1, normalized size = 0.01

$$\left[\frac{3}{16}\sqrt{-ac}\,ac\log\left(2\,acx^2+2\sqrt{-ac}\sqrt{ax+a}\sqrt{-cx+c}\,x-ac\right)-\frac{1}{8}\left(2\,acx^3-5\,acx\right)\sqrt{ax+a}\sqrt{-cx+c},\ \frac{3}{8}\sqrt{ac}\,ac\arctan\left(\frac{acx}{\sqrt{ac}\sqrt{ax+a}\sqrt{-cx+c}}\right)-\frac{1}{8}\left(2\,acx^3-5\,acx\right)\sqrt{ax+a}\sqrt{-cx+c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^(3/2)*(-c*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [3/16*sqrt(-a*c)*a*c*log(2*a*c*x^2 + 2*sqrt(-a*c)*sqrt(a*x + a)*s
qrt(-c*x + c)*x - a*c) - 1/8*(2*a*c*x^3 - 5*a*c*x)*sqrt(a*x + a)*
sqrt(-c*x + c), 3/8*sqrt(a*c)*a*c*arctan(a*c*x/(sqrt(a*c)*sqrt(a*
x + a)*sqrt(-c*x + c))) - 1/8*(2*a*c*x^3 - 5*a*c*x)*sqrt(a*x + a)
*sqrt(-c*x + c)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a(x+1))^{\frac{3}{2}}(-c(x-1))^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+a)**(3/2)*(-c*x+c)**(3/2),x)
```

```
[Out] Integral((a*(x + 1))**(3/2)*(-c*(x - 1))**(3/2), x)
```

GIAC/XCAS [A] time = 0.296639, size = 277, normalized size = 2.89

$$-\frac{\left(\frac{2a^3c\ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2a^2c}\right|\right)}{\sqrt{-ac}}-\sqrt{-(ax+a)ac+2a^2c}\sqrt{ax+a}\,ax\right)c|a|}{2a^2}+\frac{\left(\frac{2a^3c\ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2a^2c}\right|\right)}{\sqrt{-ac}}-\sqrt{-(ax+a)ac+2a^2c}\left((ax+a)\left(2(ax+a)\left(\frac{ax+a}{a^2}-\frac{3}{a}\right)+5\right)-a\right)\sqrt{ax+a}\right)c|a|}{8a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^(3/2)*(-c*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] -1/2*(2*a^3*c*ln(abs(-sqrt(-a*c)*sqrt(a*x + a) + sqrt(-(a*x + a)*
a*c + 2*a^2*c)))/sqrt(-a*c) - sqrt(-(a*x + a)*a*c + 2*a^2*c)*sqrt
(a*x + a)*a*x)*c*abs(a)/a^2 + 1/8*(2*a^3*c*ln(abs(-sqrt(-a*c)*sqr
t(a*x + a) + sqrt(-(a*x + a)*a*c + 2*a^2*c)))/sqrt(-a*c) - sqrt(-
(a*x + a)*a*c + 2*a^2*c)*((a*x + a)*(2*(a*x + a)*((a*x + a)/a^2 -
 3/a) + 5) - a)*sqrt(a*x + a))*c*abs(a)/a^2
```

3.1139 $\int \sqrt{a+ax}\sqrt{c-cx}\,dx$

Optimal. Leaf size=67

$$\frac{1}{2}x\sqrt{ax+a}\sqrt{c-cx}+\sqrt{a}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)$$

```
[Out] (x*Sqrt[a + a*x]*Sqrt[c - c*x])/2 + Sqrt[a]*Sqrt[c]*ArcTan[(Sqrt[
c]*Sqrt[a + a*x])/(Sqrt[a]*Sqrt[c - c*x])]
```

Rubi [A] time = 0.0605251, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$\frac{1}{2}x\sqrt{ax+a}\sqrt{c-cx}+\sqrt{a}\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + a*x]*Sqrt[c - c*x],x]
```

```
[Out] (x*Sqrt[a + a*x]*Sqrt[c - c*x])/2 + Sqrt[a]*Sqrt[c]*ArcTan[(Sqrt[
c]*Sqrt[a + a*x])/(Sqrt[a]*Sqrt[c - c*x])]
```

Rubi in Sympy [A] time = 9.91485, size = 58, normalized size = 0.87

$$\sqrt{a}\sqrt{c}\operatorname{atan}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{-cx+c}}\right)+\frac{x\sqrt{ax+a}\sqrt{-cx+c}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+a)**(1/2)*(-c*x+c)**(1/2),x)
```

```
[Out] sqrt(a)*sqrt(c)*atan(sqrt(c)*sqrt(a*x + a)/(sqrt(a)*sqrt(-c*x + c
))) + x*sqrt(a*x + a)*sqrt(-c*x + c)/2
```

Mathematica [A] time = 0.0613148, size = 76, normalized size = 1.13

$$\frac{\sqrt{a(x+1)}\left(x\sqrt{x+1}\sqrt{c-cx}-2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{x+1}\sqrt{c-cx}}{\sqrt{c}(x-1)}\right)\right)}{2\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + a*x]*Sqrt[c - c*x],x]
```

```
[Out] (Sqrt[a*(1 + x)]*(x*Sqrt[1 + x]*Sqrt[c - c*x] - 2*Sqrt[c]*ArcTan[
(Sqrt[1 + x]*Sqrt[c - c*x])/(Sqrt[c]*(-1 + x))]))/(2*Sqrt[1 + x])
```

Maple [A] time = 0.007, size = 98, normalized size = 1.5

$$-\frac{1}{2c}\sqrt{ax+a}\,(-cx+c)^{\frac{3}{2}}+\frac{1}{2}\sqrt{ax+a}\sqrt{-cx+c}+\frac{ac}{2}\sqrt{(-cx+c)(ax+a)}\arctan\left(x\sqrt{ac}\frac{1}{\sqrt{-acx^2+ac}}\right)\frac{1}{\sqrt{ax+a}}\frac{1}{\sqrt{-cx+c}}\frac{1}{\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+a)^(1/2)*(-c*x+c)^(1/2),x)
```

```
[Out] -1/2/c*(a*x+a)^(1/2)*(-c*x+c)^(3/2)+1/2*(a*x+a)^(1/2)*(-c*x+c)^(1
/2)+1/2*a*c*((-c*x+c)*(a*x+a))^(1/2)/(-c*x+c)^(1/2)/(a*x+a)^(1/2)
/(a*c)^(1/2)*arctan((a*c)^(1/2)*x/(-a*c*x^2+a*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(a*x + a)*sqrt(-c*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.216058, size = 1, normalized size = 0.01

$$\left[\frac{1}{2}\sqrt{ax+a}\sqrt{-cx+c}\,x+\frac{1}{4}\sqrt{-ac}\log\left(2\,acx^2+2\sqrt{-ac}\sqrt{ax+a}\sqrt{-cx+c}\,x-ac\right),\ \frac{1}{2}\sqrt{ax+a}\sqrt{-cx+c}\,x+\frac{1}{2}\sqrt{ac}\arctan\left(\frac{acx}{\sqrt{ac}\sqrt{ax+a}\sqrt{-cx+c}}\right)\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(a*x + a)*sqrt(-c*x + c),x, algorithm="fricas")
```

```
[Out] [1/2*sqrt(a*x + a)*sqrt(-c*x + c)*x + 1/4*sqrt(-a*c)*log(2*a*c*x^
2 + 2*sqrt(-a*c)*sqrt(a*x + a)*sqrt(-c*x + c)*x - a*c), 1/2*sqrt(
a*x + a)*sqrt(-c*x + c)*x + 1/2*sqrt(a*c)*arctan(a*c*x/(sqrt(a*c)
*sqrt(a*x + a)*sqrt(-c*x + c)))]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a(x+1)}\sqrt{-c(x-1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+a)**(1/2)*(-c*x+c)**(1/2),x)
```

```
[Out] Integral(sqrt(a*(x + 1))*sqrt(-c*(x - 1)), x)
```

GIAC/XCAS [A] time = 0.24585, size = 115, normalized size = 1.72

$$-\frac{\left(\frac{2\,a^3 c \ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2\,a^2c}\right|\right)}{\sqrt{-ac}}-\sqrt{-(ax+a)ac+2\,a^2c}\sqrt{ax+a}\,ax\right)|a|}{2\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(a*x + a)*sqrt(-c*x + c),x, algorithm="giac")
```

```
[Out] -1/2*(2*a^3*c*ln(abs(-sqrt(-a*c)*sqrt(a*x + a) + sqrt(-(a*x + a)*
a*c + 2*a^2*c)))/sqrt(-a*c) - sqrt(-(a*x + a)*a*c + 2*a^2*c)*sqrt
(a*x + a)*a*x)*abs(a)/a^3
```

3.1140 $\int \frac{1}{\sqrt{a+ax}\sqrt{c-cx}}\,dx$

Optimal. Leaf size=43

$$\frac{2\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)}{\sqrt{a}\sqrt{c}}$$

```
[Out] (2*ArcTan[(Sqrt[c]*Sqrt[a + a*x])/(Sqrt[a]*Sqrt[c - c*x])])/(Sqrt
[a]*Sqrt[c])
```

Rubi [A] time = 0.0388987, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{2\tan^{-1}\left(\frac{\sqrt{c}\sqrt{ax+a}}{\sqrt{a}\sqrt{c-cx}}\right)}{\sqrt{a}\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + a*x]*Sqrt[c - c*x]),x]
```

```
[Out] (2*ArcTan[(Sqrt[c]*Sqrt[a + a*x])/(Sqrt[a]*Sqrt[c - c*x])])/(Sqrt
[a]*Sqrt[c])
```

Rubi in Sympy [A] time = 6.48174, size = 41, normalized size = 0.95

$$-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{a}\sqrt{-cx+c}}{\sqrt{c}\sqrt{ax+a}}\right)}{\sqrt{a}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a*x+a)**(1/2)/(-c*x+c)**(1/2),x)
```

```
[Out] -2*atan(sqrt(a)*sqrt(-c*x + c)/(sqrt(c)*sqrt(a*x + a)))/(sqrt(a)*
sqrt(c))
```

Mathematica [A] time = 0.0317823, size = 52, normalized size = 1.21

$$-\frac{2\sqrt{x+1}\tan^{-1}\left(\frac{\sqrt{x+1}\sqrt{-c(x-1)}}{\sqrt{c}(x-1)}\right)}{\sqrt{c}\sqrt{a(x+1)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + a*x]*Sqrt[c - c*x]),x]
```

```
[Out] (-2*Sqrt[1 + x]*ArcTan[(Sqrt[-(c*(-1 + x))]*Sqrt[1 + x])/(Sqrt[c]
*(-1 + x))])/(Sqrt[c]*Sqrt[a*(1 + x)])
```

Maple [A] time = 0.007, size = 57, normalized size = 1.3

$$1\sqrt{(-cx+c)(ax+a)}\arctan\left(x\sqrt{ac}\frac{1}{\sqrt{-acx^2+ac}}\right)\frac{1}{\sqrt{ax+a}}\frac{1}{\sqrt{-cx+c}}\frac{1}{\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a*x+a)^(1/2)/(-c*x+c)^(1/2),x)
```

```
[Out] ((-c*x+c)*(a*x+a))^(1/2)/(a*x+a)^(1/2)/(-c*x+c)^(1/2)/(a*c)^(1/2)
*arctan((a*c)^(1/2)*x/(-a*c*x^2+a*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(a*x + a)*sqrt(-c*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22343, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(2\sqrt{ax+a}\sqrt{-cx+c}x+\sqrt{-ac}\left(2x^2-1\right)\right)}{2\sqrt{-ac}},\ \frac{\arctan\left(\frac{\sqrt{ac}x}{\sqrt{ax+a}\sqrt{-cx+c}}\right)}{\sqrt{ac}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(a*x + a)*sqrt(-c*x + c)),x, algorithm="fricas")
```

```
[Out] [1/2*log(2*sqrt(a*x + a)*sqrt(-c*x + c)*x + sqrt(-a*c)*(2*x^2 - 1
))/sqrt(-a*c), arctan(sqrt(a*c)*x/(sqrt(a*x + a)*sqrt(-c*x + c)))]
```

```
/sqrt(a*c)]
```

Sympy [A] time = 9.65252, size = 85, normalized size = 1.98

$$-\frac{iG_{6,6}^{6,2}\left(\begin{matrix}\frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1\\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{1}{x^2}\right)}{4\pi^{\frac{3}{2}}\sqrt{a}\sqrt{c}}+\frac{G_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0\end{matrix}\middle|\frac{e^{-2i\pi}}{x^2}\right)}{4\pi^{\frac{3}{2}}\sqrt{a}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*x+a)**(1/2)/(-c*x+c)**(1/2),x)
```

```
[Out] -I*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1,
 0), ()), x**(-2))/(4*pi**(3/2)*sqrt(a)*sqrt(c)) + meijerg(((-1/2
, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), exp
_polar(-2*I*pi)/x**2)/(4*pi**(3/2)*sqrt(a)*sqrt(c))
```

GIAC/XCAS [A] time = 0.246815, size = 66, normalized size = 1.53

$$-\frac{2\,a\ln\left(\left|-\sqrt{-ac}\sqrt{ax+a}+\sqrt{-(ax+a)ac+2\,a^2c}\right|\right)}{\sqrt{-ac}|a|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(a*x + a)*sqrt(-c*x + c)),x, algorithm="giac")
```

```
[Out] -2*a*ln(abs(-sqrt(-a*c)*sqrt(a*x + a) + sqrt(-(a*x + a)*a*c + 2*a
^2*c)))/(sqrt(-a*c)*abs(a))
```

3.1141 $\int \frac{1}{(a+ax)^{3/2}(c-cx)^{3/2}}\,dx$

Optimal. Leaf size=27

$$\frac{x}{ac\sqrt{ax+a}\sqrt{c-cx}}$$

```
[Out] x/(a*c*Sqrt[a + a*x]*Sqrt[c - c*x])
```

Rubi [A] time = 0.0226106, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.05$

$$\frac{x}{ac\sqrt{ax+a}\sqrt{c-cx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + a*x)^(3/2)*(c - c*x)^(3/2)),x]

[Out] x/(a*c*Sqrt[a + a*x]*Sqrt[c - c*x])
```

Rubi in Sympy [A] time = 4.16744, size = 20, normalized size = 0.74

$$\frac{x}{ac\sqrt{ax+a}\sqrt{-cx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a*x+a)**(3/2)/(-c*x+c)**(3/2),x)

[Out] x/(a*c*sqrt(a*x + a)*sqrt(-c*x + c))
```

Mathematica [A] time = 0.0414199, size = 33, normalized size = 1.22

$$-\frac{x(x+1)\sqrt{c-cx}}{c^2(x-1)(a(x+1))^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + a*x)^(3/2)*(c - c*x)^(3/2)),x]
```

```
[Out] -((x*(1 + x)*Sqrt[c - c*x])/(c^2*(-1 + x)*(a*(1 + x))^(3/2)))
```

Maple [A] time = 0.005, size = 25, normalized size = 0.9

$$-(1+x)(-1+x)x(ax+a)^{-\frac{3}{2}}(-cx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a*x+a)^(3/2)/(-c*x+c)^(3/2),x)
```

```
[Out] -(1+x)*(-1+x)*x/(a*x+a)^(3/2)/(-c*x+c)^(3/2)
```

Maxima [A] time = 1.34945, size = 28, normalized size = 1.04

$$\frac{x}{\sqrt{-acx^2+ac}ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(3/2)*(-c*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] x/(sqrt(-a*c*x^2 + a*c)*a*c)
```

Fricas [A] time = 0.207142, size = 53, normalized size = 1.96

$$-\frac{\sqrt{ax+a}\sqrt{-cx+c}x}{a^2c^2x^2-a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(3/2)*(-c*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] -sqrt(a*x + a)*sqrt(-c*x + c)*x/(a^2*c^2*x^2 - a^2*c^2)
```

Sympy [A] time = 20.1819, size = 82, normalized size = 3.04

$$-\frac{iG_{6,6}^{5,3}\left(\begin{matrix}\frac{3}{4},\frac{5}{4},1 & \frac{1}{2},\frac{3}{2},2\\ \frac{3}{4},1,\frac{5}{4},\frac{3}{2},2 & 0\end{matrix}\middle|\frac{1}{x^2}\right)}{2\pi^{\frac{3}{2}}a^{\frac{3}{2}}c^{\frac{3}{2}}}+\frac{G_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1 & \\ \frac{1}{4},\frac{3}{4} & -\frac{1}{2},0,1,0\end{matrix}\middle|\frac{e^{-2i\pi}}{x^2}\right)}{2\pi^{\frac{3}{2}}a^{\frac{3}{2}}c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*x+a)**(3/2)/(-c*x+c)**(3/2),x)
```

```
[Out] -I*meijerg(((3/4, 5/4, 1), (1/2, 3/2, 2)), ((3/4, 1, 5/4, 3/2, 2)
, (0,)), x**(-2))/(2*pi**(3/2)*a**(3/2)*c**(3/2)) + meijerg(((-1/
2, 0, 1/4, 1/2, 3/4, 1), ()), ((1/4, 3/4), (-1/2, 0, 1, 0)), exp_
polar(-2*I*pi)/x**2)/(2*pi**(3/2)*a**(3/2)*c**(3/2))
```

GIAC/XCAS [A] time = 0.214495, size = 157, normalized size = 5.81

$$-\frac{2\sqrt{-ac}a}{\left(2a^2c-\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2a^2c}\right)^2\right)c|a|}-\frac{\sqrt{-(ax+a)ac+2a^2c}\sqrt{ax+a}}{2\left((ax+a)ac-2a^2c\right)c|a|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((a*x + a)^(3/2)*(-c*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(-a*c)*a/((2*a^2*c - (sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*
x + a)*a*c + 2*a^2*c))^2)*c*abs(a)) - 1/2*sqrt(-(a*x + a)*a*c + 2
*a^2*c)*sqrt(a*x + a)/(((a*x + a)*a*c - 2*a^2*c)*c*abs(a))
```

3.1142 $\int \frac{1}{(a+ax)^{5/2}(c-cx)^{5/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2x}{3a^2c^2\sqrt{ax+a}\sqrt{c-cx}}+\frac{x}{3ac(ax+a)^{3/2}(c-cx)^{3/2}}$$

```
[Out] x/(3*a*c*(a + a*x)^(3/2)*(c - c*x)^(3/2)) + (2*x)/(3*a^2*c^2*Sqrt
[a + a*x]*Sqrt[c - c*x])
```

Rubi [A] time = 0.0491331, antiderivative size = 61, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2x}{3a^2c^2\sqrt{ax+a}\sqrt{c-cx}}+\frac{x}{3ac(ax+a)^{3/2}(c-cx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + a*x)^(5/2)*(c - c*x)^(5/2)),x]
```

```
[Out] x/(3*a*c*(a + a*x)^(3/2)*(c - c*x)^(3/2)) + (2*x)/(3*a^2*c^2*Sqrt
[a + a*x]*Sqrt[c - c*x])
```

Rubi in Sympy [A] time = 8.36274, size = 51, normalized size = 0.84

$$\frac{x}{3ac\,(ax+a)^{\frac{3}{2}}\,(-cx+c)^{\frac{3}{2}}}+\frac{2x}{3a^2c^2\sqrt{ax+a}\sqrt{-cx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a*x+a)**(5/2)/(-c*x+c)**(5/2),x)
```

```
[Out] x/(3*a*c*(a*x + a)**(3/2)*(-c*x + c)**(3/2)) + 2*x/(3*a**2*c**2*s
qrt(a*x + a)*sqrt(-c*x + c))
```

Mathematica [A] time = 0.0609904, size = 42, normalized size = 0.69

$$-\frac{x(x+1)\left(2x^2-3\right)\sqrt{c-cx}}{3c^3(x-1)^2(a(x+1))^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + a*x)^(5/2)*(c - c*x)^(5/2)),x]
```

```
[Out] -(x*(1 + x)*Sqrt[c - c*x]*(-3 + 2*x^2))/(3*c^3*(-1 + x)^2*(a*(1 +
 x))^(5/2))
```

Maple [A] time = 0.005, size = 32, normalized size = 0.5

$$\frac{(1+x)(-1+x)x\left(2x^{2}-3\right)}{3}(ax+a)^{-\frac{5}{2}}(-cx+c)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a*x+a)^(5/2)/(-c*x+c)^(5/2),x)
```

```
[Out] 1/3*(1+x)*(-1+x)*x*(2*x^2-3)/(a*x+a)^(5/2)/(-c*x+c)^(5/2)
```

Maxima [A] time = 1.34875, size = 61, normalized size = 1.

$$\frac{x}{3\left(-acx^{2}+ac\right)^{\frac{3}{2}}ac}+\frac{2x}{3\sqrt{-acx^{2}+ac}a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(5/2)*(-c*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] 1/3*x/((-a*c*x^2 + a*c)^(3/2)*a*c) + 2/3*x/(sqrt(-a*c*x^2 + a*c)*
a^2*c^2)
```

Fricas [A] time = 0.210542, size = 77, normalized size = 1.26

$$-\frac{\left(2x^{3}-3x\right)\sqrt{ax+a}\sqrt{-cx+c}}{3\left(a^{3}c^{3}x^{4}-2a^{3}c^{3}x^{2}+a^{3}c^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(5/2)*(-c*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] -1/3*(2*x^3 - 3*x)*sqrt(a*x + a)*sqrt(-c*x + c)/(a^3*c^3*x^4 - 2*
a^3*c^3*x^2 + a^3*c^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*x+a)**(5/2)/(-c*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.263013, size = 320, normalized size = 5.25

$$-\frac{\sqrt{-(ax+a)ac+2\,a^2c}\sqrt{ax+a}\left(\frac{4\,(ax+a)|a|}{a^2c}-\frac{9\,|a|}{ac}\right)}{12\,((ax+a)ac-2\,a^2c)^2}$$
$$-\frac{16\,\sqrt{-ac}a^4c^2-18\,\sqrt{-ac}\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^2c}\right)^2a^2c+3\,\sqrt{-ac}\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^2c}\right)^4}{3\left(2\,a^2c-\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^2c}\right)^2\right)^3c^2|a|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((a*x + a)^(5/2)*(-c*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/12*sqrt(-(a*x + a)*a*c + 2*a^2*c)*sqrt(a*x + a)*(4*(a*x + a)*a
bs(a)/(a^2*c) - 9*abs(a)/(a*c))/((a*x + a)*a*c - 2*a^2*c)^2 - 1/3
*(16*sqrt(-a*c)*a^4*c^2 - 18*sqrt(-a*c)*(sqrt(-a*c)*sqrt(a*x + a)
 - sqrt(-(a*x + a)*a*c + 2*a^2*c))^2*a^2*c + 3*sqrt(-a*c)*(sqrt(-
a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^4)/((2*a^2*c
 - (sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^2)
^3*c^2*abs(a))
```

3.1143 $\int \frac{1}{(a+ax)^{7/2}(c-cx)^{7/2}}\,dx$

Optimal. Leaf size=91

$$\frac{8x}{15a^3c^3\sqrt{ax+a}\sqrt{c-cx}}+\frac{4x}{15a^2c^2(ax+a)^{3/2}(c-cx)^{3/2}}+\frac{x}{5ac(ax+a)^{5/2}(c-cx)^{5/2}}$$

```
[Out] x/(5*a*c*(a + a*x)^(5/2)*(c - c*x)^(5/2)) + (4*x)/(15*a^2*c^2*(a
+ a*x)^(3/2)*(c - c*x)^(3/2)) + (8*x)/(15*a^3*c^3*Sqrt[a + a*x]*S
qrt[c - c*x])
```

Rubi [A] time = 0.0783818, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{8x}{15a^3c^3\sqrt{ax+a}\sqrt{c-cx}}+\frac{4x}{15a^2c^2(ax+a)^{3/2}(c-cx)^{3/2}}+\frac{x}{5ac(ax+a)^{5/2}(c-cx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + a*x)^(7/2)*(c - c*x)^(7/2)),x]
```

```
[Out] x/(5*a*c*(a + a*x)^(5/2)*(c - c*x)^(5/2)) + (4*x)/(15*a^2*c^2*(a
+ a*x)^(3/2)*(c - c*x)^(3/2)) + (8*x)/(15*a^3*c^3*Sqrt[a + a*x]*S
qrt[c - c*x])
```

Rubi in Sympy [A] time = 13.1547, size = 80, normalized size = 0.88

$$\frac{x}{5ac\,(ax+a)^{\frac{5}{2}}\,(-cx+c)^{\frac{5}{2}}}+\frac{4x}{15a^2c^2\,(ax+a)^{\frac{3}{2}}\,(-cx+c)^{\frac{3}{2}}}+\frac{8x}{15a^3c^3\sqrt{ax+a}\sqrt{-cx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a*x+a)**(7/2)/(-c*x+c)**(7/2),x)
```

```
[Out] x/(5*a*c*(a*x + a)**(5/2)*(-c*x + c)**(5/2)) + 4*x/(15*a**2*c**2*
(a*x + a)**(3/2)*(-c*x + c)**(3/2)) + 8*x/(15*a**3*c**3*sqrt(a*x
+ a)*sqrt(-c*x + c))
```

Mathematica [A] time = 0.077784, size = 47, normalized size = 0.52

$$-\frac{x(x+1)\left(8x^4-20x^2+15\right)\sqrt{c-cx}}{15c^4(x-1)^3(a(x+1))^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + a*x)^(7/2)*(c - c*x)^(7/2)),x]
```

```
[Out] -(x*(1 + x)*Sqrt[c - c*x]*(15 - 20*x^2 + 8*x^4))/(15*c^4*(-1 + x)
^3*(a*(1 + x))^(7/2))
```

Maple [A] time = 0.004, size = 37, normalized size = 0.4

$$-\frac{(1+x)(-1+x)x\left(8x^4-20x^2+15\right)}{15}(ax+a)^{-\frac{7}{2}}(-cx+c)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a*x+a)^(7/2)/(-c*x+c)^(7/2),x)
```

```
[Out] -1/15*(1+x)*(-1+x)*x*(8*x^4-20*x^2+15)/(a*x+a)^(7/2)/(-c*x+c)^(7/
2)
```

Maxima [A] time = 1.34905, size = 90, normalized size = 0.99

$$\frac{x}{5\left(-acx^2+ac\right)^{\frac{5}{2}}ac}+\frac{4x}{15\left(-acx^2+ac\right)^{\frac{3}{2}}a^2c^2}+\frac{8x}{15\sqrt{-acx^2+ac}a^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(7/2)*(-c*x + c)^(7/2)),x, algorithm="maxima")
```

```
[Out] 1/5*x/((-a*c*x^2 + a*c)^(5/2)*a*c) + 4/15*x/((-a*c*x^2 + a*c)^(3/
2)*a^2*c^2) + 8/15*x/(sqrt(-a*c*x^2 + a*c)*a^3*c^3)
```

Fricas [A] time = 0.206526, size = 100, normalized size = 1.1

$$-\frac{\left(8x^5-20x^3+15x\right)\sqrt{ax+a}\sqrt{-cx+c}}{15\left(a^4c^4x^6-3a^4c^4x^4+3a^4c^4x^2-a^4c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(7/2)*(-c*x + c)^(7/2)),x, algorithm="fricas")
```

```
[Out] -1/15*(8*x^5 - 20*x^3 + 15*x)*sqrt(a*x + a)*sqrt(-c*x + c)/(a^4*c
^4*x^6 - 3*a^4*c^4*x^4 + 3*a^4*c^4*x^2 - a^4*c^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a*x+a)**(7/2)/(-c*x+c)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.307291, size = 450, normalized size = 4.95

$$-\frac{\sqrt{-(ax+a)ac+2\,a^2c}\sqrt{ax+a}\left((ax+a)\left(\frac{64\,(ax+a)}{c|a|}-\frac{275\,a}{c|a|}\right)+\frac{300\,a^2}{c|a|}\right)}{240\,((ax+a)ac-2\,a^2c)^3}+\frac{1024\,a^8c^4-2200\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^2c}\right)^2a^6c^3+1660\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^2c}\right)^4a^4c^2-45}{60\left(2\,a^2c-\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(7/2)*(-c*x + c)^(7/2)),x, algorithm="giac")
```

```
[Out] -1/240*sqrt(-(a*x + a)*a*c + 2*a^2*c)*sqrt(a*x + a)*((a*x + a)*(6
4*(a*x + a)/(c*abs(a)) - 275*a/(c*abs(a))) + 300*a^2/(c*abs(a)))/
((a*x + a)*a*c - 2*a^2*c)^3 + 1/60*(1024*a^8*c^4 - 2200*(sqrt(-a*
c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^2*a^6*c^3 + 16
60*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^4*
a^4*c^2 - 450*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2
*a^2*c))^6*a^2*c + 45*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)
*a*c + 2*a^2*c))^8)/((2*a^2*c - (sqrt(-a*c)*sqrt(a*x + a) - sqrt(
-(a*x + a)*a*c + 2*a^2*c))^2)^5*sqrt(-a*c)*c^2*abs(a))
```

3.1144 $\int \frac{1}{(a+ax)^{9/2}(c-cx)^{9/2}}\,dx$

Optimal. Leaf size=121

$$\frac{16x}{35a^4c^4\sqrt{ax+a}\sqrt{c-cx}}+\frac{8x}{35a^3c^3(ax+a)^{3/2}(c-cx)^{3/2}}+\frac{6x}{35a^2c^2(ax+a)^{5/2}(c-cx)^{5/2}}+\frac{x}{7ac(ax+a)^{7/2}(c-cx)^{7/2}}$$

```
[Out] x/(7*a*c*(a + a*x)^(7/2)*(c - c*x)^(7/2)) + (6*x)/(35*a^2*c^2*(a
+ a*x)^(5/2)*(c - c*x)^(5/2)) + (8*x)/(35*a^3*c^3*(a + a*x)^(3/2)
*(c - c*x)^(3/2)) + (16*x)/(35*a^4*c^4*Sqrt[a + a*x]*Sqrt[c - c*x
])
```

Rubi [A] time = 0.108639, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{16x}{35a^4c^4\sqrt{ax+a}\sqrt{c-cx}}+\frac{8x}{35a^3c^3(ax+a)^{3/2}(c-cx)^{3/2}}+\frac{6x}{35a^2c^2(ax+a)^{5/2}(c-cx)^{5/2}}+\frac{x}{7ac(ax+a)^{7/2}(c-cx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + a*x)^(9/2)*(c - c*x)^(9/2)),x]
```

```
[Out] x/(7*a*c*(a + a*x)^(7/2)*(c - c*x)^(7/2)) + (6*x)/(35*a^2*c^2*(a
+ a*x)^(5/2)*(c - c*x)^(5/2)) + (8*x)/(35*a^3*c^3*(a + a*x)^(3/2)
*(c - c*x)^(3/2)) + (16*x)/(35*a^4*c^4*Sqrt[a + a*x]*Sqrt[c - c*x
])
```

Rubi in Sympy [A] time = 19.853, size = 109, normalized size = 0.9

$$\frac{x}{7ac\,(ax+a)^{\frac{7}{2}}\,(-cx+c)^{\frac{7}{2}}}+\frac{6x}{35a^2c^2\,(ax+a)^{\frac{5}{2}}\,(-cx+c)^{\frac{5}{2}}}+\frac{8x}{35a^3c^3\,(ax+a)^{\frac{3}{2}}\,(-cx+c)^{\frac{3}{2}}}+\frac{16x}{35a^4c^4\sqrt{ax+a}\sqrt{-cx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a*x+a)**(9/2)/(-c*x+c)**(9/2),x)
```

```
[Out] x/(7*a*c*(a*x + a)**(7/2)*(-c*x + c)**(7/2)) + 6*x/(35*a**2*c**2*
(a*x + a)**(5/2)*(-c*x + c)**(5/2)) + 8*x/(35*a**3*c**3*(a*x + a)
```

```
**(3/2)*(-c*x + c)**(3/2)) + 16*x/(35*a**4*c**4*sqrt(a*x + a)*sqr
t(-c*x + c))
```

Mathematica [A] time = 0.0938597, size = 54, normalized size = 0.45

$$-\frac{x\left(16x^6-56x^4+70x^2-35\right)\sqrt{a(x+1)}\sqrt{c-cx}}{35a^5c^5\left(x^2-1\right)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + a*x)^(9/2)*(c - c*x)^(9/2)),x]
```

```
[Out] -(x*Sqrt[a*(1 + x)]*Sqrt[c - c*x]*(-35 + 70*x^2 - 56*x^4 + 16*x^6
))/(35*a^5*c^5*(-1 + x^2)^4)
```

Maple [A] time = 0.006, size = 42, normalized size = 0.4

$$\frac{(1+x)(-1+x)x\left(16x^6-56x^4+70x^2-35\right)}{35}(ax+a)^{-\frac{9}{2}}(-cx+c)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a*x+a)^(9/2)/(-c*x+c)^(9/2),x)
```

```
[Out] 1/35*(1+x)*(-1+x)*x*(16*x^6-56*x^4+70*x^2-35)/(a*x+a)^(9/2)/(-c*x
+c)^(9/2)
```

Maxima [A] time = 1.33319, size = 120, normalized size = 0.99

$$\frac{x}{7\left(-acx^2+ac\right)^{\frac{7}{2}}ac}+\frac{6x}{35\left(-acx^2+ac\right)^{\frac{5}{2}}a^2c^2}+\frac{8x}{35\left(-acx^2+ac\right)^{\frac{3}{2}}a^3c^3}+\frac{16x}{35\sqrt{-acx^2+ac}a^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((a*x + a)^(9/2)*(-c*x + c)^(9/2)),x, algorithm="maxima")
```

```
[Out] 1/7*x/((-a*c*x^2 + a*c)^(7/2)*a*c) + 6/35*x/((-a*c*x^2 + a*c)^(5/
2)*a^2*c^2) + 8/35*x/((-a*c*x^2 + a*c)^(3/2)*a^3*c^3) + 16/35*x/(
sqrt(-a*c*x^2 + a*c)*a^4*c^4)
```

Fricas [A] time = 0.209836, size = 120, normalized size = 0.99

$$-\frac{\left(16\,x^{7}-56\,x^{5}+70\,x^{3}-35\,x\right)\sqrt{ax+a}\sqrt{-cx+c}}{35\,\left(a^{5}c^{5}x^{8}-4\,a^{5}c^{5}x^{6}+6\,a^{5}c^{5}x^{4}-4\,a^{5}c^{5}x^{2}+a^{5}c^{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + a)^(9/2)*(-c*x + c)^(9/2)),x, algorithm="fricas")
```

```
[Out] -1/35*(16*x^7 - 56*x^5 + 70*x^3 - 35*x)*sqrt(a*x + a)*sqrt(-c*x +
 c)/(a^5*c^5*x^8 - 4*a^5*c^5*x^6 + 6*a^5*c^5*x^4 - 4*a^5*c^5*x^2
+ a^5*c^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a*x+a)**(9/2)/(-c*x+c)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.414531, size = 590, normalized size = 4.88

$$-\frac{\sqrt{-(ax+a)ac+2\,a^{2}c}\left((ax+a)\left((ax+a)\left(\frac{256\,(ax+a)|a|}{a^{2}c}-\frac{1617\,|a|}{ac}\right)+\frac{3430\,|a|}{c}\right)-\frac{2450\,a|a|}{c}\right)\sqrt{ax+a}}{1120\,\left((ax+a)ac-2\,a^{2}c\right)^{4}}+\frac{16384\,a^{12}c^{6}-51744\,\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^{2}c}\right)^{2}a^{10}c^{5}+66416\,\left(\sqrt{-ac}\sqrt{ax+a}-\sqrt{-(ax+a)ac+2\,a^{2}c}\right)^{4}a^{8}c^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((a*x + a)^(9/2)*(-c*x + c)^(9/2)),x, algorithm="giac")
```

```
[Out] -1/1120*sqrt(-(a*x + a)*a*c + 2*a^2*c)*((a*x + a)*((a*x + a)*(256
*(a*x + a)*abs(a)/(a^2*c) - 1617*abs(a)/(a*c)) + 3430*abs(a)/c) -
 2450*a*abs(a)/c)*sqrt(a*x + a)/((a*x + a)*a*c - 2*a^2*c)^4 + 1/2
80*(16384*a^12*c^6 - 51744*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x
 + a)*a*c + 2*a^2*c))^2*a^10*c^5 + 66416*(sqrt(-a*c)*sqrt(a*x + a
) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^4*a^8*c^4 - 43120*(sqrt(-a*c)
*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^6*a^6*c^3 + 1428
```

```
0*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2*a^2*c))^8*a
^4*c^2 - 2450*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x + a)*a*c + 2
*a^2*c))^10*a^2*c + 175*(sqrt(-a*c)*sqrt(a*x + a) - sqrt(-(a*x +
a)*a*c + 2*a^2*c))^12)/((2*a^2*c - (sqrt(-a*c)*sqrt(a*x + a) - sq
rt(-(a*x + a)*a*c + 2*a^2*c))^2)^7*sqrt(-a*c)*a*c^3*abs(a))
```

3.1145 $\int (a+bx)^{5/2}(ac-bcx)^{5/2}\,dx$

Optimal. Leaf size=136

$$\frac{5a^6c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{8b}+\frac{5}{16}a^4c^2x\sqrt{a+bx}\sqrt{ac-bcx}+\frac{5}{24}a^2cx(a+bx)^{3/2}(ac-bcx)^{3/2}+\frac{1}{6}x(a+bx)^{5/2}(ac-bcx)^{5/2}$$

```
[Out] (5*a^4*c^2*x*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])/16 + (5*a^2*c*x*(a
+ b*x)^(3/2)*(a*c - b*c*x)^(3/2))/24 + (x*(a + b*x)^(5/2)*(a*c -
b*c*x)^(5/2))/6 + (5*a^6*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + b*x])/S
qrt[a*c - b*c*x]])/(8*b)
```

Rubi [A] time = 0.151592, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13

$$\frac{5a^6c^{5/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{8b}+\frac{5}{16}a^4c^2x\sqrt{a+bx}\sqrt{ac-bcx}+\frac{5}{24}a^2cx(a+bx)^{3/2}(ac-bcx)^{3/2}+\frac{1}{6}x(a+bx)^{5/2}(ac-bcx)^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)*(a*c - b*c*x)^(5/2),x]
```

```
[Out] (5*a^4*c^2*x*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])/16 + (5*a^2*c*x*(a
+ b*x)^(3/2)*(a*c - b*c*x)^(3/2))/24 + (x*(a + b*x)^(5/2)*(a*c -
b*c*x)^(5/2))/6 + (5*a^6*c^(5/2)*ArcTan[(Sqrt[c]*Sqrt[a + b*x])/S
qrt[a*c - b*c*x]])/(8*b)
```

Rubi in Sympy [A] time = 25.4125, size = 126, normalized size = 0.93

$$-\frac{5a^6c^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{ac-bcx}}{\sqrt{c}\sqrt{a+bx}}\right)}{8b}+\frac{5a^4c^2x\sqrt{a+bx}\sqrt{ac-bcx}}{16}+\frac{5a^2cx\,(a+bx)^{\frac{3}{2}}\,(ac-bcx)^{\frac{3}{2}}}{24}+\frac{x\,(a+bx)^{\frac{5}{2}}\,(ac-bcx)^{\frac{5}{2}}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)*(-b*c*x+a*c)**(5/2),x)
```

```
[Out] -5*a**6*c**(5/2)*atan(sqrt(a*c - b*c*x)/(sqrt(c)*sqrt(a + b*x)))/
(8*b) + 5*a**4*c**2*x*sqrt(a + b*x)*sqrt(a*c - b*c*x)/16 + 5*a**2
```

```
*c*x*(a + b*x)**(3/2)*(a*c - b*c*x)**(3/2)/24 + x*(a + b*x)**(5/2
)*(a*c - b*c*x)**(5/2)/6
```

Mathematica [A] time = 0.177654, size = 105, normalized size = 0.77

$$\frac{(c(a-bx))^{5/2}\left(15a^6\tan^{-1}\left(\frac{bx}{\sqrt{a-bx}\sqrt{a+bx}}\right)+bx\sqrt{a-bx}\sqrt{a+bx}\left(33a^4-26a^2b^2x^2+8b^4x^4\right)\right)}{48b(a-bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)*(a*c - b*c*x)^(5/2),x]
```

```
[Out] ((c*(a - b*x))^(5/2)*(b*x*Sqrt[a - b*x]*Sqrt[a + b*x]*(33*a^4 - 2
6*a^2*b^2*x^2 + 8*b^4*x^4) + 15*a^6*ArcTan[(b*x)/(Sqrt[a - b*x]*S
qrt[a + b*x])]))/(48*b*(a - b*x)^(5/2))
```

Maple [B] time = 0.02, size = 243, normalized size = 1.8

$$-\frac{1}{6\,bc}(bx+a)^{\frac{5}{2}}(-bcx+ac)^{\frac{7}{2}}-\frac{a}{6\,bc}(bx+a)^{\frac{3}{2}}(-bcx+ac)^{\frac{7}{2}}-\frac{a^2}{8\,bc}\sqrt{bx+a}(-bcx+ac)^{\frac{7}{2}}+\frac{a^3}{24\,b}(-bcx+ac)^{\frac{5}{2}}\sqrt{bx+a}+\frac{5\,a^4c}{48\,b}(-bcx+ac)^{\frac{3}{2}}\sqrt{bx+a}+\frac{5\,a^5c^2}{16\,b}\sqrt{bx+a}\sqrt{-bcx+ac}+\frac{5\,a^6c^3}{16}\sqrt{(bx+a)(-bcx+ac)}\arctan\left(x\sqrt{b^2c}\frac{1}{\sqrt{-b^2cx^2+a^2c}}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{-bcx+ac}}\frac{1}{\sqrt{b^2c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)*(-b*c*x+a*c)^(5/2),x)
```

```
[Out] -1/6/b/c*(b*x+a)^(5/2)*(-b*c*x+a*c)^(7/2)-1/6*a/b/c*(b*x+a)^(3/2)
*(-b*c*x+a*c)^(7/2)-1/8*a^2/b/c*(b*x+a)^(1/2)*(-b*c*x+a*c)^(7/2)+
1/24*a^3/b*(-b*c*x+a*c)^(5/2)*(b*x+a)^(1/2)+5/48*a^4*c/b*(-b*c*x+
a*c)^(3/2)*(b*x+a)^(1/2)+5/16*a^5*c^2/b*(-b*c*x+a*c)^(1/2)*(b*x+a
)^(1/2)+5/16*a^6*c^3*((b*x+a)*(-b*c*x+a*c))^(1/2)/(-b*c*x+a*c)^(1
/2)/(b*x+a)^(1/2)/(b^2*c)^(1/2)*arctan((b^2*c)^(1/2)*x/(-b^2*c*x^
2+a^2*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b*c*x + a*c)^(5/2)*(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240066, size = 1, normalized size = 0.01

$$\left[\frac{15\,a^6\sqrt{-c}c^2\log\left(2\,b^2cx^2+2\,\sqrt{-bcx+ac}\sqrt{bx+a}b\sqrt{-c}x-a^2c\right)+2\left(8\,b^5c^2x^5-26\,a^2b^3c^2x^3+33\,a^4bc^2x\right)\sqrt{-bcx+ac}\sqrt{bx+a}}{96\,b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b*c*x + a*c)^(5/2)*(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/96*(15*a^6*sqrt(-c)*c^2*log(2*b^2*c*x^2 + 2*sqrt(-b*c*x + a*c)
*sqrt(b*x + a)*b*sqrt(-c)*x - a^2*c) + 2*(8*b^5*c^2*x^5 - 26*a^2*
b^3*c^2*x^3 + 33*a^4*b*c^2*x)*sqrt(-b*c*x + a*c)*sqrt(b*x + a))/b
, 1/48*(15*a^6*c^(5/2)*arctan(b*sqrt(c)*x/(sqrt(-b*c*x + a*c)*sqr
t(b*x + a))) + (8*b^5*c^2*x^5 - 26*a^2*b^3*c^2*x^3 + 33*a^4*b*c^2
*x)*sqrt(-b*c*x + a*c)*sqrt(b*x + a))/b]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**(5/2)*(-b*c*x+a*c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b*c*x + a*c)^(5/2)*(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1146 $\int (a+bx)^{3/2}(ac-bcx)^{3/2}\,dx$

Optimal. Leaf size=103

$$\frac{3a^4c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{4b}+\frac{3}{8}a^2cx\sqrt{a+bx}\sqrt{ac-bcx}+\frac{1}{4}x(a+bx)^{3/2}(ac-bcx)^{3/2}$$

```
[Out] (3*a^2*c*x*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])/8 + (x*(a + b*x)^(3/2
)*(a*c - b*c*x)^(3/2))/4 + (3*a^4*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a
+ b*x])/Sqrt[a*c - b*c*x]])/(4*b)
```

Rubi [A] time = 0.108795, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.13

$$\frac{3a^4c^{3/2}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{4b}+\frac{3}{8}a^2cx\sqrt{a+bx}\sqrt{ac-bcx}+\frac{1}{4}x(a+bx)^{3/2}(ac-bcx)^{3/2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(a*c - b*c*x)^(3/2),x]
```

```
[Out] (3*a^2*c*x*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])/8 + (x*(a + b*x)^(3/2
)*(a*c - b*c*x)^(3/2))/4 + (3*a^4*c^(3/2)*ArcTan[(Sqrt[c]*Sqrt[a
+ b*x])/Sqrt[a*c - b*c*x]])/(4*b)
```

Rubi in Sympy [A] time = 18.605, size = 94, normalized size = 0.91

$$\frac{3a^4c^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{4b}+\frac{3a^2cx\sqrt{a+bx}\sqrt{ac-bcx}}{8}+\frac{x\,(a+bx)^{\frac{3}{2}}\,(ac-bcx)^{\frac{3}{2}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(-b*c*x+a*c)**(3/2),x)
```

```
[Out] 3*a**4*c**(3/2)*atan(sqrt(c)*sqrt(a + b*x)/sqrt(a*c - b*c*x))/(4*
b) + 3*a**2*c*x*sqrt(a + b*x)*sqrt(a*c - b*c*x)/8 + x*(a + b*x)**
(3/2)*(a*c - b*c*x)**(3/2)/4
```

Mathematica [A] time = 0.114805, size = 94, normalized size = 0.91

$$\frac{(c(a-bx))^{3/2}\left(3a^4\tan^{-1}\left(\frac{bx}{\sqrt{a-bx}\sqrt{a+bx}}\right)+bx\sqrt{a-bx}\sqrt{a+bx}\left(5a^2-2b^2x^2\right)\right)}{8b(a-bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(a*c - b*c*x)^(3/2),x]
```

```
[Out] ((c*(a - b*x))^(3/2)*(b*x*Sqrt[a - b*x]*Sqrt[a + b*x]*(5*a^2 - 2*
b^2*x^2) + 3*a^4*ArcTan[(b*x)/(Sqrt[a - b*x]*Sqrt[a + b*x])]))/(8
*b*(a - b*x)^(3/2))
```

Maple [B] time = 0.008, size = 185, normalized size = 1.8

$$-\frac{1}{4\,bc}(bx+a)^{\frac{3}{2}}(-bcx+ac)^{\frac{5}{2}}-\frac{a}{4\,bc}\sqrt{bx+a}\,(-bcx+ac)^{\frac{5}{2}}+\frac{a^2}{8\,b}(-bcx+ac)^{\frac{3}{2}}\sqrt{bx+a}+\frac{3\,a^3c}{8\,b}\sqrt{bx+a}\sqrt{-bcx+ac}+\frac{3\,a^4c^2}{8}\sqrt{(bx+a)(-bcx+ac)}\arctan\left(x\sqrt{b^2c}\frac{1}{\sqrt{-b^2cx^2+a^2c}}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{-bcx+ac}}\frac{1}{\sqrt{b^2c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(-b*c*x+a*c)^(3/2),x)
```

```
[Out] -1/4/b/c*(b*x+a)^(3/2)*(-b*c*x+a*c)^(5/2)-1/4*a/b/c*(b*x+a)^(1/2)
*(-b*c*x+a*c)^(5/2)+1/8*a^2/b*(-b*c*x+a*c)^(3/2)*(b*x+a)^(1/2)+3/
8*a^3*c/b*(-b*c*x+a*c)^(1/2)*(b*x+a)^(1/2)+3/8*a^4*c^2*((b*x+a)*(
-b*c*x+a*c))^(1/2)/(-b*c*x+a*c)^(1/2)/(b*x+a)^(1/2)/(b^2*c)^(1/2)
*arctan((b^2*c)^(1/2)*x/(-b^2*c*x^2+a^2*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-b*c*x + a*c)^(3/2)*(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228616, size = 1, normalized size = 0.01

$$\left[\frac{3\,a^4\sqrt{-c}c\log\left(2\,b^2cx^2+2\,\sqrt{-bcx+ac}\sqrt{bx+a}b\sqrt{-c}x-a^2c\right)-2\left(2\,b^3cx^3-5\,a^2bcx\right)\sqrt{-bcx+ac}\sqrt{bx+a}}{16\,b},\ \frac{3\,a^4c^{\frac{3}{2}}\arctan\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^(3/2)*(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/16*(3*a^4*sqrt(-c)*c*log(2*b^2*c*x^2 + 2*sqrt(-b*c*x + a*c)*sq
rt(b*x + a)*b*sqrt(-c)*x - a^2*c) - 2*(2*b^3*c*x^3 - 5*a^2*b*c*x)
*sqrt(-b*c*x + a*c)*sqrt(b*x + a))/b, 1/8*(3*a^4*c^(3/2)*arctan(b
*sqrt(c)*x/(sqrt(-b*c*x + a*c)*sqrt(b*x + a))) - (2*b^3*c*x^3 - 5
*a^2*b*c*x)*sqrt(-b*c*x + a*c)*sqrt(b*x + a))/b]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (-c(-a+bx))^{\frac{3}{2}}(a+bx)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(-b*c*x+a*c)**(3/2),x)
```

```
[Out] Integral((-c*(-a + b*x))**(3/2)*(a + b*x)**(3/2), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^(3/2)*(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1147 $\int \sqrt{a+bx}\sqrt{ac-bcx}\,dx$

Optimal. Leaf size=69

$$\frac{a^2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{b}+\frac{1}{2}x\sqrt{a+bx}\sqrt{ac-bcx}$$

```
[Out] (x*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])/2 + (a^2*Sqrt[c]*ArcTan[(Sqrt
[c]*Sqrt[a + b*x])/Sqrt[a*c - b*c*x]])/b
```

Rubi [A] time = 0.0715188, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.13$

$$\frac{a^2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{b}+\frac{1}{2}x\sqrt{a+bx}\sqrt{ac-bcx}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*Sqrt[a*c - b*c*x],x]
```

```
[Out] (x*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])/2 + (a^2*Sqrt[c]*ArcTan[(Sqrt
[c]*Sqrt[a + b*x])/Sqrt[a*c - b*c*x]])/b
```

Rubi in Sympy [A] time = 12.5883, size = 60, normalized size = 0.87

$$\frac{a^2\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{b}+\frac{x\sqrt{a+bx}\sqrt{ac-bcx}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(-b*c*x+a*c)**(1/2),x)
```

```
[Out] a**2*sqrt(c)*atan(sqrt(c)*sqrt(a + b*x)/sqrt(a*c - b*c*x))/b + x*
sqrt(a + b*x)*sqrt(a*c - b*c*x)/2
```

Mathematica [A] time = 0.054807, size = 79, normalized size = 1.14

$$\frac{\sqrt{c(a-bx)}\left(a^2\tan^{-1}\left(\frac{bx}{\sqrt{a-bx}\sqrt{a+bx}}\right)+bx\sqrt{a-bx}\sqrt{a+bx}\right)}{2b\sqrt{a-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*Sqrt[a*c - b*c*x],x]
```

```
[Out] (Sqrt[c*(a - b*x)]*(b*x*Sqrt[a - b*x]*Sqrt[a + b*x] + a^2*ArcTan[
(b*x)/(Sqrt[a - b*x]*Sqrt[a + b*x])]))/(2*b*Sqrt[a - b*x])
```

Maple [B] time = 0.007, size = 127, normalized size = 1.8

$$-\frac{1}{2\,bc}\sqrt{bx+a}\,(-bcx+ac)^{\frac{3}{2}}+\frac{a}{2\,b}\sqrt{bx+a}\sqrt{-bcx+ac}+\frac{a^2c}{2}\sqrt{(bx+a)(-bcx+ac)}\arctan\left(x\sqrt{b^2c}\frac{1}{\sqrt{-b^2cx^2+a^2c}}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{-bcx+ac}}\frac{1}{\sqrt{b^2c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(-b*c*x+a*c)^(1/2),x)
```

```
[Out] -1/2/b/c*(b*x+a)^(1/2)*(-b*c*x+a*c)^(3/2)+1/2*a/b*(-b*c*x+a*c)^(1
/2)*(b*x+a)^(1/2)+1/2*a^2*c*((b*x+a)*(-b*c*x+a*c))^(1/2)/(-b*c*x+
a*c)^(1/2)/(b*x+a)^(1/2)/(b^2*c)^(1/2)*arctan((b^2*c)^(1/2)*x/(-b
^2*c*x^2+a^2*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*c*x + a*c)*sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227085, size = 1, normalized size = 0.01

$$\left[\frac{a^2\sqrt{-c}\log\left(2\,b^2cx^2+2\,\sqrt{-bcx+ac}\sqrt{bx+a}b\sqrt{-c}x-a^2c\right)+2\,\sqrt{-bcx+ac}\sqrt{bx+a}bx}{4\,b},\frac{a^2\sqrt{c}\arctan\left(\frac{b\sqrt{c}x}{\sqrt{-bcx+ac}\sqrt{bx+a}}\right)+\sqrt{-}}{2\,b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*c*x + a*c)*sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/4*(a^2*sqrt(-c)*log(2*b^2*c*x^2 + 2*sqrt(-b*c*x + a*c)*sqrt(b*
x + a)*b*sqrt(-c)*x - a^2*c) + 2*sqrt(-b*c*x + a*c)*sqrt(b*x + a)
*b*x)/b, 1/2*(a^2*sqrt(c)*arctan(b*sqrt(c)*x/(sqrt(-b*c*x + a*c)*
sqrt(b*x + a))) + sqrt(-b*c*x + a*c)*sqrt(b*x + a)*b*x)/b]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{-c(-a+bx)}\sqrt{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(-b*c*x+a*c)**(1/2),x)
```

```
[Out] Integral(sqrt(-c*(-a + b*x))*sqrt(a + b*x), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(-b*c*x + a*c)*sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1148 $\int \frac{1}{\sqrt{a+bx}\sqrt{ac-bcx}}\,dx$

Optimal. Leaf size=39

$$\frac{2\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{b\sqrt{c}}$$

```
[Out] (2*ArcTan[(Sqrt[c]*Sqrt[a + b*x])/Sqrt[a*c - b*c*x]])/(b*Sqrt[c])
```

Rubi [A] time = 0.0430537, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{2\tan^{-1}\left(\frac{\sqrt{c}\sqrt{a+bx}}{\sqrt{ac-bcx}}\right)}{b\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*Sqrt[a*c - b*c*x]),x]

[Out] (2*ArcTan[(Sqrt[c]*Sqrt[a + b*x])/Sqrt[a*c - b*c*x]])/(b*Sqrt[c])
```

Rubi in Sympy [A] time = 7.54457, size = 36, normalized size = 0.92

$$-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{ac-bcx}}{\sqrt{c}\sqrt{a+bx}}\right)}{b\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(-b*c*x+a*c)**(1/2),x)

[Out] -2*atan(sqrt(a*c - b*c*x)/(sqrt(c)*sqrt(a + b*x)))/(b*sqrt(c))
```

Mathematica [A] time = 0.0345239, size = 49, normalized size = 1.26

$$\frac{\sqrt{a-bx}\tan^{-1}\left(\frac{bx}{\sqrt{a-bx}\sqrt{a+bx}}\right)}{b\sqrt{c(a-bx)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*Sqrt[a*c - b*c*x]),x]
```

```
[Out] (Sqrt[a - b*x]*ArcTan[(b*x)/(Sqrt[a - b*x]*Sqrt[a + b*x])])/(b*Sq
rt[c*(a - b*x)])
```

Maple [B] time = 0.007, size = 71, normalized size = 1.8

$$1\sqrt{(bx+a)(-bcx+ac)}\arctan\left(x\sqrt{b^2c}\frac{1}{\sqrt{-b^2cx^2+a^2c}}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{-bcx+ac}}\frac{1}{\sqrt{b^2c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(-b*c*x+a*c)^(1/2),x)
```

```
[Out] ((b*x+a)*(-b*c*x+a*c))^(1/2)/(b*x+a)^(1/2)/(-b*c*x+a*c)^(1/2)/(b^
2*c)^(1/2)*arctan((b^2*c)^(1/2)*x/(-b^2*c*x^2+a^2*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-b*c*x + a*c)*sqrt(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221725, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(2\sqrt{-bcx+ac}\sqrt{bx+a}bx+\left(2b^2x^2-a^2\right)\sqrt{-c}\right)}{2b\sqrt{-c}}, \frac{\arctan\left(\frac{b\sqrt{c}x}{\sqrt{-bcx+ac}\sqrt{bx+a}}\right)}{b\sqrt{c}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(-b*c*x + a*c)*sqrt(b*x + a)),x, algorithm="fricas")
```

```
[Out] [1/2*log(2*sqrt(-b*c*x + a*c)*sqrt(b*x + a)*b*x + (2*b^2*x^2 - a^
2)*sqrt(-c))/(b*sqrt(-c)), arctan(b*sqrt(c)*x/(sqrt(-b*c*x + a*c)
*sqrt(b*x + a)))/(b*sqrt(c))]
```

Sympy [A] time = 10.8277, size = 90, normalized size = 2.31

$$-\frac{iG_{6,6}^{6,2}\left(\begin{matrix}\frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1\\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{a^2}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b\sqrt{c}}+\frac{G_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0\end{matrix}\middle|\frac{a^2e^{-2i\pi}}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(-b*c*x+a*c)**(1/2),x)
```

```
[Out] -I*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1,
 0), ()), a**2/(b**2*x**2))/(4*pi**(3/2)*b*sqrt(c)) + meijerg(((-
1/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)),
a**2*exp_polar(-2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b*sqrt(c))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*c*x + a*c)*sqrt(b*x + a)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1149 $\int \frac{1}{(a+bx)^{3/2}(ac-bcx)^{3/2}}\,dx$

Optimal. Leaf size=30

$$\frac{x}{a^2c\sqrt{a+bx}\sqrt{ac-bcx}}$$

```
[Out] x/(a^2*c*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])
```

Rubi [A] time = 0.0285572, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$

$$\frac{x}{a^2c\sqrt{a+bx}\sqrt{ac-bcx}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)^(3/2)*(a*c - b*c*x)^(3/2)),x]

[Out] x/(a^2*c*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])
```

Rubi in Sympy [A] time = 5.87272, size = 26, normalized size = 0.87

$$\frac{x}{a^2c\sqrt{a+bx}\sqrt{ac-bcx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(3/2)/(-b*c*x+a*c)**(3/2),x)

[Out] x/(a**2*c*sqrt(a + b*x)*sqrt(a*c - b*c*x))
```

Mathematica [A] time = 0.0353952, size = 29, normalized size = 0.97

$$\frac{x}{a^2c\sqrt{a+bx}\sqrt{c(a-bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)^(3/2)*(a*c - b*c*x)^(3/2)),x]
```

```
[Out] x/(a^2*c*Sqrt[c*(a - b*x)]*Sqrt[a + b*x])
```

Maple [A] time = 0.004, size = 30, normalized size = 1.

$$\frac{x(-bx+a)}{a^2}\frac{1}{\sqrt{bx+a}}(-bcx+ac)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(-b*c*x+a*c)^(3/2),x)
```

```
[Out] 1/(b*x+a)^(1/2)*(-b*x+a)/a^2*x/(-b*c*x+a*c)^(3/2)
```

Maxima [A] time = 1.3395, size = 34, normalized size = 1.13

$$\frac{x}{\sqrt{-b^2cx^2+a^2c}a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*c*x + a*c)^(3/2)*(b*x + a)^(3/2)),x, algorithm="maxima")
```

```
[Out] x/(sqrt(-b^2*c*x^2 + a^2*c)*a^2*c)
```

Fricas [A] time = 0.215964, size = 61, normalized size = 2.03

$$-\frac{\sqrt{-bcx+ac}\sqrt{bx+a}x}{a^2b^2c^2x^2-a^4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*c*x + a*c)^(3/2)*(b*x + a)^(3/2)),x, algorithm="fricas")
```

```
[Out] -sqrt(-b*c*x + a*c)*sqrt(b*x + a)*x/(a^2*b^2*c^2*x^2 - a^4*c^2)
```

Sympy [A] time = 20.9491, size = 94, normalized size = 3.13

$$-\frac{iG_{6,6}^{5,3}\left(\begin{matrix} \frac{3}{4},\frac{5}{4},1 & \frac{1}{2},\frac{3}{2},2 \\ \frac{3}{4},1,\frac{5}{4},\frac{3}{2},2 & 0 \end{matrix}\middle|\frac{a^2}{b^2x^2}\right)}{2\pi^{\frac{3}{2}}a^2bc^{\frac{3}{2}}}+\frac{G_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1 & \\ \frac{1}{4},\frac{3}{4} & -\frac{1}{2},0,1,0 \end{matrix}\middle|\frac{a^2e^{-2i\pi}}{b^2x^2}\right)}{2\pi^{\frac{3}{2}}a^2bc^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(-b*c*x+a*c)**(3/2),x)
```

```
[Out] -I*meijerg(((3/4, 5/4, 1), (1/2, 3/2, 2)), ((3/4, 1, 5/4, 3/2, 2)
, (0,)), a**2/(b**2*x**2))/(2*pi**(3/2)*a**2*b*c**(3/2)) + meijer
g(((-1/2, 0, 1/4, 1/2, 3/4, 1), ()), ((1/4, 3/4), (-1/2, 0, 1, 0)
), a**2*exp_polar(-2*I*pi)/(b**2*x**2))/(2*pi**(3/2)*a**2*b*c**(3
/2))
```

GIAC/XCAS [A] time = 0.245496, size = 155, normalized size = 5.17

$$\frac{2\sqrt{-c}c}{\left(2\,ac^2-\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bcx-ac)c}\right)^2\right)ab|c|}-\frac{\sqrt{-bcx+ac}}{2\sqrt{2\,ac^2+(bcx-ac)c}a^2b|c|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(3/2)*(b*x + a)^(3/2)),x, algorithm="giac")
```

```
[Out] 2*sqrt(-c)*c/((2*a*c^2 - (sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*
c^2 + (b*c*x - a*c)*c))^2)*a*b*abs(c)) - 1/2*sqrt(-b*c*x + a*c)/(
sqrt(2*a*c^2 + (b*c*x - a*c)*c)*a^2*b*abs(c))
```

3.1150 $\int \frac{1}{(a+bx)^{5/2}(ac-bcx)^{5/2}}\,dx$

Optimal. Leaf size=67

$$\frac{2x}{3a^4c^2\sqrt{a+bx}\sqrt{ac-bcx}}+\frac{x}{3a^2c(a+bx)^{3/2}(ac-bcx)^{3/2}}$$

```
[Out] x/(3*a^2*c*(a + b*x)^(3/2)*(a*c - b*c*x)^(3/2)) + (2*x)/(3*a^4*c^
2*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])
```

Rubi [A] time = 0.0622127, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{2x}{3a^4c^2\sqrt{a+bx}\sqrt{ac-bcx}}+\frac{x}{3a^2c(a+bx)^{3/2}(ac-bcx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(a*c - b*c*x)^(5/2)),x]
```

```
[Out] x/(3*a^2*c*(a + b*x)^(3/2)*(a*c - b*c*x)^(3/2)) + (2*x)/(3*a^4*c^
2*Sqrt[a + b*x]*Sqrt[a*c - b*c*x])
```

Rubi in Sympy [A] time = 11.1355, size = 60, normalized size = 0.9

$$\frac{x}{3a^2c\left(a+bx\right)^{\frac{3}{2}}\left(ac-bcx\right)^{\frac{3}{2}}}+\frac{2x}{3a^4c^2\sqrt{a+bx}\sqrt{ac-bcx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(-b*c*x+a*c)**(5/2),x)
```

```
[Out] x/(3*a**2*c*(a + b*x)**(3/2)*(a*c - b*c*x)**(3/2)) + 2*x/(3*a**4*
c**2*sqrt(a + b*x)*sqrt(a*c - b*c*x))
```

Mathematica [A] time = 0.0545734, size = 46, normalized size = 0.69

$$\frac{3a^2x-2b^2x^3}{3a^4c(a+bx)^{3/2}(c(a-bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(a*c - b*c*x)^(5/2)),x]
```

```
[Out] (3*a^2*x - 2*b^2*x^3)/(3*a^4*c*(c*(a - b*x))^(3/2)*(a + b*x)^(3/2
))
```

Maple [A] time = 0.006, size = 45, normalized size = 0.7

$$\frac{(-bx+a)\,x\left(-2\,b^{2}x^{2}+3\,a^{2}\right)}{3\,a^{4}}\,(bx+a)^{-\frac{3}{2}}\,(-bcx+ac)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(-b*c*x+a*c)^(5/2),x)
```

```
[Out] 1/3*(-b*x+a)*x*(-2*b^2*x^2+3*a^2)/(b*x+a)^(3/2)/a^4/(-b*c*x+a*c)^
(5/2)
```

Maxima [A] time = 1.32085, size = 72, normalized size = 1.07

$$\frac{x}{3\,(-b^{2}cx^{2}+a^{2}c)^{\frac{3}{2}}a^{2}c}+\frac{2\,x}{3\,\sqrt{-b^{2}cx^{2}+a^{2}c}a^{4}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(5/2)*(b*x + a)^(5/2)),x, algorithm="maxima")
```

```
[Out] 1/3*x/((-b^2*c*x^2 + a^2*c)^(3/2)*a^2*c) + 2/3*x/(sqrt(-b^2*c*x^2
 + a^2*c)*a^4*c^2)
```

Fricas [A] time = 0.216363, size = 97, normalized size = 1.45

$$-\frac{\left(2\,b^{2}x^{3}-3\,a^{2}x\right)\sqrt{-bcx+ac}\sqrt{bx+a}}{3\,(a^{4}b^{4}c^{3}x^{4}-2\,a^{6}b^{2}c^{3}x^{2}+a^{8}c^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(5/2)*(b*x + a)^(5/2)),x, algorithm="fricas")
```

```
[Out] -1/3*(2*b^2*x^3 - 3*a^2*x)*sqrt(-b*c*x + a*c)*sqrt(b*x + a)/(a^4*
b^4*c^3*x^4 - 2*a^6*b^2*c^3*x^2 + a^8*c^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(-b*c*x+a*c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.257858, size = 339, normalized size = 5.06

$$-\frac{\sqrt{-bcx+ac}\left(\frac{9\,|c|}{a^3bc}+\frac{4\,(bcx-ac)|c|}{a^4bc^2}\right)}{12\,(2\,ac^2+(bcx-ac)c)^{\frac{3}{2}}}+\frac{16\,a^2\sqrt{-c}c^4-18\,a\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bcx-ac)c}\right)^2\sqrt{-c}c^2+3\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bcx-ac)c}\right)^4\sqrt{-c}}{3\left(2\,ac^2-\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bcx-ac)c}\right)^2\right)^3a^3b|c|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(5/2)*(b*x + a)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/12*sqrt(-b*c*x + a*c)*(9*abs(c)/(a^3*b*c) + 4*(b*c*x - a*c)*ab
s(c)/(a^4*b*c^2))/(2*a*c^2 + (b*c*x - a*c)*c)^(3/2) + 1/3*(16*a^2
*sqrt(-c)*c^4 - 18*a*(sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2
+ (b*c*x - a*c)*c))^2*sqrt(-c)*c^2 + 3*(sqrt(-b*c*x + a*c)*sqrt(-
c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^4*sqrt(-c))/((2*a*c^2 - (sq
rt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^2)^3
*a^3*b*abs(c))
```

3.1151 $\int \frac{1}{(a+bx)^{7/2}(ac-bcx)^{7/2}}\,dx$

Optimal. Leaf size=100

$$\frac{8x}{15a^6c^3\sqrt{a+bx}\sqrt{ac-bcx}}+\frac{4x}{15a^4c^2(a+bx)^{3/2}(ac-bcx)^{3/2}}+\frac{x}{5a^2c(a+bx)^{5/2}(ac-bcx)^{5/2}}$$

```
[Out] x/(5*a^2*c*(a + b*x)^(5/2)*(a*c - b*c*x)^(5/2)) + (4*x)/(15*a^4*c
^2*(a + b*x)^(3/2)*(a*c - b*c*x)^(3/2)) + (8*x)/(15*a^6*c^3*Sqrt[
a + b*x]*Sqrt[a*c - b*c*x])
```

Rubi [A] time = 0.0986098, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{8x}{15a^6c^3\sqrt{a+bx}\sqrt{ac-bcx}}+\frac{4x}{15a^4c^2(a+bx)^{3/2}(ac-bcx)^{3/2}}+\frac{x}{5a^2c(a+bx)^{5/2}(ac-bcx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/2)*(a*c - b*c*x)^(7/2)),x]
```

```
[Out] x/(5*a^2*c*(a + b*x)^(5/2)*(a*c - b*c*x)^(5/2)) + (4*x)/(15*a^4*c
^2*(a + b*x)^(3/2)*(a*c - b*c*x)^(3/2)) + (8*x)/(15*a^6*c^3*Sqrt[
a + b*x]*Sqrt[a*c - b*c*x])
```

Rubi in Sympy [A] time = 17.6681, size = 92, normalized size = 0.92

$$\frac{x}{5a^2c\,(a+bx)^{\frac{5}{2}}\,(ac-bcx)^{\frac{5}{2}}}+\frac{4x}{15a^4c^2\,(a+bx)^{\frac{3}{2}}\,(ac-bcx)^{\frac{3}{2}}}+\frac{8x}{15a^6c^3\sqrt{a+bx}\sqrt{ac-bcx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/2)/(-b*c*x+a*c)**(7/2),x)
```

```
[Out] x/(5*a**2*c*(a + b*x)**(5/2)*(a*c - b*c*x)**(5/2)) + 4*x/(15*a**4
*c**2*(a + b*x)**(3/2)*(a*c - b*c*x)**(3/2)) + 8*x/(15*a**6*c**3*
sqrt(a + b*x)*sqrt(a*c - b*c*x))
```

Mathematica [A] time = 0.0713898, size = 57, normalized size = 0.57

$$\frac{15a^4x-20a^2b^2x^3+8b^4x^5}{15a^6c(a+bx)^{5/2}(c(a-bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/2)*(a*c - b*c*x)^(7/2)),x]
```

```
[Out] (15*a^4*x - 20*a^2*b^2*x^3 + 8*b^4*x^5)/(15*a^6*c*(c*(a - b*x))^(
5/2)*(a + b*x)^(5/2))
```

Maple [A] time = 0.006, size = 56, normalized size = 0.6

$$\frac{(-bx+a)\,x\left(8\,x^4b^4-20\,x^2a^2b^2+15\,a^4\right)}{15\,a^6}(bx+a)^{-\frac{5}{2}}(-bcx+ac)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/2)/(-b*c*x+a*c)^(7/2),x)
```

```
[Out] 1/15*(-b*x+a)*x*(8*b^4*x^4-20*a^2*b^2*x^2+15*a^4)/(b*x+a)^(5/2)/a
^6/(-b*c*x+a*c)^(7/2)
```

Maxima [A] time = 1.33626, size = 107, normalized size = 1.07

$$\frac{x}{5\,(-b^2cx^2+a^2c)^{\frac{5}{2}}a^2c}+\frac{4\,x}{15\,(-b^2cx^2+a^2c)^{\frac{3}{2}}a^4c^2}+\frac{8\,x}{15\,\sqrt{-b^2cx^2+a^2c}a^6c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*c*x + a*c)^(7/2)*(b*x + a)^(7/2)),x, algorithm="maxima")
```

```
[Out] 1/5*x/((-b^2*c*x^2 + a^2*c)^(5/2)*a^2*c) + 4/15*x/((-b^2*c*x^2 +
a^2*c)^(3/2)*a^4*c^2) + 8/15*x/(sqrt(-b^2*c*x^2 + a^2*c)*a^6*c^3)
```

Fricas [A] time = 0.242713, size = 132, normalized size = 1.32

$$-\frac{\left(8\,b^4x^5-20\,a^2b^2x^3+15\,a^4x\right)\sqrt{-bcx+ac}\sqrt{bx+a}}{15\,(a^6b^6c^4x^6-3\,a^8b^4c^4x^4+3\,a^{10}b^2c^4x^2-a^{12}c^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-b*c*x + a*c)^(7/2)*(b*x + a)^(7/2)),x, algorithm="fricas")
```

```
[Out] -1/15*(8*b^4*x^5 - 20*a^2*b^2*x^3 + 15*a^4*x)*sqrt(-b*c*x + a*c)*
sqrt(b*x + a)/(a^6*b^6*c^4*x^6 - 3*a^8*b^4*c^4*x^4 + 3*a^10*b^2*c
```

```
^4*x^2 - a^12*c^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/2)/(-b*c*x+a*c)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.321724, size = 494, normalized size = 4.94

$$-\frac{\sqrt{-bcx+ac}\left((bcx-ac)\left(\frac{275\,c}{a^5b|c|}+\frac{64\,(bcx-ac)}{a^6b|c|}\right)+\frac{300\,c^2}{a^4b|c|}\right)}{240\,(2\,ac^2+(bcx-ac)c)^{\frac{5}{2}}}-\frac{1024\,a^4c^8-2200\,a^3\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bcx-ac)c}\right)^2c^6+1660\,a^2\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bcx-ac)c}\right)^4c^4}{60\left(2\,ac^2-\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^2+(bc}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(7/2)*(b*x + a)^(7/2)),x, algorithm="giac")
```

```
[Out] -1/240*sqrt(-b*c*x + a*c)*((b*c*x - a*c)*(275*c/(a^5*b*abs(c)) +
64*(b*c*x - a*c)/(a^6*b*abs(c))) + 300*c^2/(a^4*b*abs(c)))/(2*a*c
^2 + (b*c*x - a*c)*c)^(5/2) - 1/60*(1024*a^4*c^8 - 2200*a^3*(sqrt
(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^2*c^6
+ 1660*a^2*(sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x -
 a*c)*c))^4*c^4 - 450*a*(sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c
^2 + (b*c*x - a*c)*c))^6*c^2 + 45*(sqrt(-b*c*x + a*c)*sqrt(-c) -
sqrt(2*a*c^2 + (b*c*x - a*c)*c))^8)/((2*a*c^2 - (sqrt(-b*c*x + a*
c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^2)^5*a^5*b*sqrt(-c
)*abs(c))
```

3.1152 $\int \frac{1}{(a+bx)^{9/2}(ac-bcx)^{9/2}}\,dx$

Optimal. Leaf size=133

$$\frac{16x}{35a^8c^4\sqrt{a+bx}\sqrt{ac-bcx}}+\frac{8x}{35a^6c^3(a+bx)^{3/2}(ac-bcx)^{3/2}}+\frac{6x}{35a^4c^2(a+bx)^{5/2}(ac-bcx)^{5/2}}+\frac{x}{7a^2c(a+bx)^{7/2}(ac-bcx)^{7/2}}$$

```
[Out] x/(7*a^2*c*(a + b*x)^(7/2)*(a*c - b*c*x)^(7/2)) + (6*x)/(35*a^4*c
^2*(a + b*x)^(5/2)*(a*c - b*c*x)^(5/2)) + (8*x)/(35*a^6*c^3*(a +
b*x)^(3/2)*(a*c - b*c*x)^(3/2)) + (16*x)/(35*a^8*c^4*Sqrt[a + b*x
]*Sqrt[a*c - b*c*x])
```

Rubi [A] time = 0.139418, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087

$$\frac{16x}{35a^8c^4\sqrt{a+bx}\sqrt{ac-bcx}}+\frac{8x}{35a^6c^3(a+bx)^{3/2}(ac-bcx)^{3/2}}+\frac{6x}{35a^4c^2(a+bx)^{5/2}(ac-bcx)^{5/2}}+\frac{x}{7a^2c(a+bx)^{7/2}(ac-bcx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(9/2)*(a*c - b*c*x)^(9/2)),x]
```

```
[Out] x/(7*a^2*c*(a + b*x)^(7/2)*(a*c - b*c*x)^(7/2)) + (6*x)/(35*a^4*c
^2*(a + b*x)^(5/2)*(a*c - b*c*x)^(5/2)) + (8*x)/(35*a^6*c^3*(a +
b*x)^(3/2)*(a*c - b*c*x)^(3/2)) + (16*x)/(35*a^8*c^4*Sqrt[a + b*x
]*Sqrt[a*c - b*c*x])
```

Rubi in Sympy [A] time = 25.5007, size = 124, normalized size = 0.93

$$\frac{x}{7a^2c\,(a+bx)^{\frac{7}{2}}\,(ac-bcx)^{\frac{7}{2}}}+\frac{6x}{35a^4c^2\,(a+bx)^{\frac{5}{2}}\,(ac-bcx)^{\frac{5}{2}}}+\frac{8x}{35a^6c^3\,(a+bx)^{\frac{3}{2}}\,(ac-bcx)^{\frac{3}{2}}}+\frac{16x}{35a^8c^4\sqrt{a+bx}\sqrt{ac-bcx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/2)/(-b*c*x+a*c)**(9/2),x)
```

```
[Out] x/(7*a**2*c*(a + b*x)**(7/2)*(a*c - b*c*x)**(7/2)) + 6*x/(35*a**4
*c**2*(a + b*x)**(5/2)*(a*c - b*c*x)**(5/2)) + 8*x/(35*a**6*c**3*
```

```
(a + b*x)**(3/2)*(a*c - b*c*x)**(3/2)) + 16*x/(35*a**8*c**4*sqrt(
a + b*x)*sqrt(a*c - b*c*x))
```

Mathematica [A] time = 0.091926, size = 76, normalized size = 0.57

$$\frac{(35a^6x - 70a^4b^2x^3 + 56a^2b^4x^5 - 16b^6x^7)\sqrt{c(a - bx)}}{35a^8c^5(a - bx)^4(a + bx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/2)*(a*c - b*c*x)^(9/2)),x]
```

```
[Out] (Sqrt[c*(a - b*x)]*(35*a^6*x - 70*a^4*b^2*x^3 + 56*a^2*b^4*x^5 -
16*b^6*x^7))/(35*a^8*c^5*(a - b*x)^4*(a + b*x)^(7/2))
```

Maple [A] time = 0.006, size = 67, normalized size = 0.5

$$\frac{(-bx + a)\,x\,(-16\,b^6x^6 + 56\,b^4x^4a^2 - 70\,b^2x^2a^4 + 35\,a^6)}{35\,a^8}(bx + a)^{-\frac{7}{2}}(-bcx + ac)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/2)/(-b*c*x+a*c)^(9/2),x)
```

```
[Out] 1/35*(-b*x+a)*x*(-16*b^6*x^6+56*a^2*b^4*x^4-70*a^4*b^2*x^2+35*a^6
)/(b*x+a)^(7/2)/a^8/(-b*c*x+a*c)^(9/2)
```

Maxima [A] time = 1.34131, size = 142, normalized size = 1.07

$$\frac{x}{7\,(-b^2cx^2 + a^2c)^{\frac{7}{2}}a^2c} + \frac{6\,x}{35\,(-b^2cx^2 + a^2c)^{\frac{5}{2}}a^4c^2} + \frac{8\,x}{35\,(-b^2cx^2 + a^2c)^{\frac{3}{2}}a^6c^3} + \frac{16\,x}{35\,\sqrt{-b^2cx^2 + a^2c}a^8c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(9/2)*(b*x + a)^(9/2)),x, algorithm="maxima")
```

```
[Out] 1/7*x/((-b^2*c*x^2 + a^2*c)^(7/2)*a^2*c) + 6/35*x/((-b^2*c*x^2 +
a^2*c)^(5/2)*a^4*c^2) + 8/35*x/((-b^2*c*x^2 + a^2*c)^(3/2)*a^6*c^
3) + 16/35*x/(sqrt(-b^2*c*x^2 + a^2*c)*a^8*c^4)
```

Fricas [A] time = 0.329653, size = 165, normalized size = 1.24

$$-\frac{\left(16\,b^{6}x^{7}-56\,a^{2}b^{4}x^{5}+70\,a^{4}b^{2}x^{3}-35\,a^{6}x\right)\sqrt{-bcx+ac}\sqrt{bx+a}}{35\,\left(a^{8}b^{8}c^{5}x^{8}-4\,a^{10}b^{6}c^{5}x^{6}+6\,a^{12}b^{4}c^{5}x^{4}-4\,a^{14}b^{2}c^{5}x^{2}+a^{16}c^{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(9/2)*(b*x + a)^(9/2)),x, algorithm="fricas")
```

```
[Out] -1/35*(16*b^6*x^7 - 56*a^2*b^4*x^5 + 70*a^4*b^2*x^3 - 35*a^6*x)*s
qrt(-b*c*x + a*c)*sqrt(b*x + a)/(a^8*b^8*c^5*x^8 - 4*a^10*b^6*c^5
*x^6 + 6*a^12*b^4*c^5*x^4 - 4*a^14*b^2*c^5*x^2 + a^16*c^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(9/2)/(-b*c*x+a*c)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.491468, size = 657, normalized size = 4.94

$$-\frac{\sqrt{-bcx+ac}\left((bcx-ac)\left((bcx-ac)\left(\frac{1617\,|c|}{a^{7}bc}+\frac{256\,(bcx-ac)|c|}{a^{8}bc^{2}}\right)+\frac{3430\,|c|}{a^{6}b}\right)+\frac{2450\,c|c|}{a^{5}b}\right)}{1120\,\left(2\,ac^{2}+(bcx-ac)c\right)^{\frac{7}{2}}}$$
$$-\frac{16384\,a^{6}c^{12}-51744\,a^{5}\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^{2}+(bcx-ac)c}\right)^{2}c^{10}+66416\,a^{4}\left(\sqrt{-bcx+ac}\sqrt{-c}-\sqrt{2\,ac^{2}+(bcx-ac)c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c*x + a*c)^(9/2)*(b*x + a)^(9/2)),x, algorithm="giac")
```

```
[Out] -1/1120*sqrt(-b*c*x + a*c)*((b*c*x - a*c)*((b*c*x - a*c)*(1617*ab
s(c)/(a^7*b*c) + 256*(b*c*x - a*c)*abs(c)/(a^8*b*c^2)) + 3430*abs
(c)/(a^6*b)) + 2450*c*abs(c)/(a^5*b))/(2*a*c^2 + (b*c*x - a*c)*c)
^(7/2) - 1/280*(16384*a^6*c^12 - 51744*a^5*(sqrt(-b*c*x + a*c)*sq
rt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^2*c^10 + 66416*a^4*(sqr
t(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^4*c^8
 - 43120*a^3*(sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x
```

```
 - a*c)*c))^6*c^6 + 14280*a^2*(sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt
(2*a*c^2 + (b*c*x - a*c)*c))^8*c^4 - 2450*a*(sqrt(-b*c*x + a*c)*s
qrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^10*c^2 + 175*(sqrt(-b*
c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)*c))^12)/((2*a*
c^2 - (sqrt(-b*c*x + a*c)*sqrt(-c) - sqrt(2*a*c^2 + (b*c*x - a*c)
*c))^2)^7*a^7*b*sqrt(-c)*c*abs(c))
```

3.1153 $\int (3-6x)^{5/2}(2+4x)^{5/2}\,dx$

Optimal. Leaf size=100

$$6\sqrt{6}(1-2x)^{5/2}x(2x+1)^{5/2}+15\sqrt{\frac{3}{2}}(1-2x)^{3/2}x(2x+1)^{3/2}+\frac{45}{2}\sqrt{\frac{3}{2}}\sqrt{1-2x}x\sqrt{2x+1}+\frac{45}{4}\sqrt{\frac{3}{2}}\sin^{-1}(2x)$$

```
[Out] (45*Sqrt[3/2]*Sqrt[1 - 2*x]*x*Sqrt[1 + 2*x])/2 + 15*Sqrt[3/2]*(1
- 2*x)^(3/2)*x*(1 + 2*x)^(3/2) + 6*Sqrt[6]*(1 - 2*x)^(5/2)*x*(1 +
 2*x)^(5/2) + (45*Sqrt[3/2]*ArcSin[2*x])/4
```

Rubi [A] time = 0.0739814, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$6\sqrt{6}(1-2x)^{5/2}x(2x+1)^{5/2}+15\sqrt{\frac{3}{2}}(1-2x)^{3/2}x(2x+1)^{3/2}+\frac{45}{2}\sqrt{\frac{3}{2}}\sqrt{1-2x}x\sqrt{2x+1}+\frac{45}{4}\sqrt{\frac{3}{2}}\sin^{-1}(2x)$$

Antiderivative was successfully verified.

```
[In]  Int[(3 - 6*x)^(5/2)*(2 + 4*x)^(5/2),x]
```

```
[Out] (45*Sqrt[3/2]*Sqrt[1 - 2*x]*x*Sqrt[1 + 2*x])/2 + 15*Sqrt[3/2]*(1
- 2*x)^(3/2)*x*(1 + 2*x)^(3/2) + 6*Sqrt[6]*(1 - 2*x)^(5/2)*x*(1 +
 2*x)^(5/2) + (45*Sqrt[3/2]*ArcSin[2*x])/4
```

Rubi in Sympy [A] time = 8.49076, size = 76, normalized size = 0.76

$$\frac{x\left(-6x+3\right)^{\frac{5}{2}}\left(4x+2\right)^{\frac{5}{2}}}{6}+\frac{5x\left(-6x+3\right)^{\frac{3}{2}}\left(4x+2\right)^{\frac{3}{2}}}{4}+\frac{45x\sqrt{-6x+3}\sqrt{4x+2}}{4}+\frac{45\sqrt{6}\operatorname{asin}\left(2x\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-6*x)**(5/2)*(2+4*x)**(5/2),x)
```

```
[Out] x*(-6*x + 3)**(5/2)*(4*x + 2)**(5/2)/6 + 5*x*(-6*x + 3)**(3/2)*(4
*x + 2)**(3/2)/4 + 45*x*sqrt(-6*x + 3)*sqrt(4*x + 2)/4 + 45*sqrt(
6)*asin(2*x)/8
```

Mathematica [A] time = 0.0980716, size = 51, normalized size = 0.51

$$\frac{3}{2}\sqrt{\frac{3}{2}}\left(x\sqrt{1-4x^2}\left(128x^4-104x^2+33\right)-15\sin^{-1}\left(\sqrt{\frac{1}{2}-x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(3 - 6*x)^(5/2)*(2 + 4*x)^(5/2),x]
```

```
[Out] (3*Sqrt[3/2]*(x*Sqrt[1 - 4*x^2]*(33 - 104*x^2 + 128*x^4) - 15*Arc
Sin[Sqrt[1/2 - x]]))/2
```

Maple [A] time = 0.012, size = 134, normalized size = 1.3

$$\frac{1}{24}(3-6x)^{\frac{5}{2}}(2+4x)^{\frac{7}{2}}+\frac{1}{8}(3-6x)^{\frac{3}{2}}(2+4x)^{\frac{7}{2}}+\frac{9}{32}\sqrt{3-6x}(2+4x)^{\frac{7}{2}} -\frac{3}{16}(2+4x)^{\frac{5}{2}}\sqrt{3-6x}-\frac{15}{16}(2+4x)^{\frac{3}{2}}\sqrt{3-6x}-\frac{45}{8}\sqrt{3-6x}\sqrt{2+4x} +\frac{45\arcsin(2x)\sqrt{6}}{8}\sqrt{(2+4x)(3-6x)}\frac{1}{\sqrt{3-6x}}\frac{1}{\sqrt{2+4x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3-6*x)^(5/2)*(2+4*x)^(5/2),x)
```

```
[Out] 1/24*(3-6*x)^(5/2)*(2+4*x)^(7/2)+1/8*(3-6*x)^(3/2)*(2+4*x)^(7/2)+
9/32*(3-6*x)^(1/2)*(2+4*x)^(7/2)-3/16*(2+4*x)^(5/2)*(3-6*x)^(1/2)
-15/16*(2+4*x)^(3/2)*(3-6*x)^(1/2)-45/8*(3-6*x)^(1/2)*(2+4*x)^(1/
2)+45/8*((2+4*x)*(3-6*x))^(1/2)/(2+4*x)^(1/2)/(3-6*x)^(1/2)*6^(1/
2)*arcsin(2*x)
```

Maxima [A] time = 1.51885, size = 62, normalized size = 0.62

$$\frac{1}{6}\left(-24x^2+6\right)^{\frac{5}{2}}x+\frac{5}{4}\left(-24x^2+6\right)^{\frac{3}{2}}x+\frac{45}{4}\sqrt{-24x^2+6}x+\frac{45}{8}\sqrt{6}\arcsin(2x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^(5/2)*(-6*x + 3)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(-24*x^2 + 6)^(5/2)*x + 5/4*(-24*x^2 + 6)^(3/2)*x + 45/4*sqrt
(-24*x^2 + 6)*x + 45/8*sqrt(6)*arcsin(2*x)
```

Fricas [A] time = 0.222389, size = 93, normalized size = 0.93

$$\frac{3}{8}\sqrt{2}\left(\sqrt{2}\left(128x^5-104x^3+33x\right)\sqrt{4x+2}\sqrt{-6x+3}-15\sqrt{3}\arctan\left(\frac{\sqrt{3}\sqrt{2}\sqrt{4x+2}\sqrt{-6x+3}}{12x}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^(5/2)*(-6*x + 3)^(5/2),x, algorithm="fricas")
```

```
[Out] 3/8*sqrt(2)*(sqrt(2)*(128*x^5 - 104*x^3 + 33*x)*sqrt(4*x + 2)*sqr
t(-6*x + 3) - 15*sqrt(3)*arctan(1/12*sqrt(3)*sqrt(2)*sqrt(4*x + 2
)*sqrt(-6*x + 3)/x))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-6*x)**(5/2)*(2+4*x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.235326, size = 174, normalized size = 1.74

$$\frac{3}{8}\sqrt{3}\sqrt{2}\left(\left(\left(2\left(\left(8\left(2x+1\right)\left(x-2\right)+39\right)\left(2x+1\right)-37\right)\left(2x+1\right)+31\right)\left(2x+1\right)-3\right)\sqrt{2x+1}\sqrt{-2x+1}-12\left(\left(4\left(2x+1\right)\left(x-1\right)+5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^(5/2)*(-6*x + 3)^(5/2),x, algorithm="giac")
```

```
[Out] 3/8*sqrt(3)*sqrt(2)*(((2*((8*(2*x + 1)*(x - 2) + 39)*(2*x + 1) -
37)*(2*x + 1) + 31)*(2*x + 1) - 3)*sqrt(2*x + 1)*sqrt(-2*x + 1) -
 12*((4*(2*x + 1)*(x - 1) + 5)*(2*x + 1) - 1)*sqrt(2*x + 1)*sqrt(
-2*x + 1) + 48*sqrt(2*x + 1)*x*sqrt(-2*x + 1) + 30*arcsin(1/2*sqr
t(2)*sqrt(2*x + 1)))
```

3.1154 $\int (3-6x)^{3/2}(2+4x)^{3/2}\,dx$

Optimal. Leaf size=74

$$3\sqrt{\frac{3}{2}}(1-2x)^{3/2}x(2x+1)^{3/2}+\frac{9}{2}\sqrt{\frac{3}{2}}\sqrt{1-2x}x\sqrt{2x+1}+\frac{9}{4}\sqrt{\frac{3}{2}}\sin^{-1}(2x)$$

```
[Out] (9*Sqrt[3/2]*Sqrt[1 - 2*x]*x*Sqrt[1 + 2*x])/2 + 3*Sqrt[3/2]*(1 -
2*x)^(3/2)*x*(1 + 2*x)^(3/2) + (9*Sqrt[3/2]*ArcSin[2*x])/4
```

Rubi [A] time = 0.0525844, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$3\sqrt{\frac{3}{2}}(1-2x)^{3/2}x(2x+1)^{3/2}+\frac{9}{2}\sqrt{\frac{3}{2}}\sqrt{1-2x}x\sqrt{2x+1}+\frac{9}{4}\sqrt{\frac{3}{2}}\sin^{-1}(2x)$$

Antiderivative was successfully verified.

```
[In]  Int[(3 - 6*x)^(3/2)*(2 + 4*x)^(3/2),x]
```

```
[Out] (9*Sqrt[3/2]*Sqrt[1 - 2*x]*x*Sqrt[1 + 2*x])/2 + 3*Sqrt[3/2]*(1 -
2*x)^(3/2)*x*(1 + 2*x)^(3/2) + (9*Sqrt[3/2]*ArcSin[2*x])/4
```

Rubi in Sympy [A] time = 6.53922, size = 54, normalized size = 0.73

$$\frac{x\left(-6x+3\right)^{\frac{3}{2}}\left(4x+2\right)^{\frac{3}{2}}}{4}+\frac{9x\sqrt{-6x+3}\sqrt{4x+2}}{4}+\frac{9\sqrt{6}\,\mathrm{asin}\left(2x\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-6*x)**(3/2)*(2+4*x)**(3/2),x)
```

```
[Out] x*(-6*x + 3)**(3/2)*(4*x + 2)**(3/2)/4 + 9*x*sqrt(-6*x + 3)*sqrt(
4*x + 2)/4 + 9*sqrt(6)*asin(2*x)/8
```

Mathematica [A] time = 0.0744172, size = 46, normalized size = 0.62

$$-\frac{3}{2}\sqrt{\frac{3}{2}}\left(x\sqrt{1-4x^2}\left(8x^2-5\right)+3\sin^{-1}\left(\sqrt{\frac{1}{2}-x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(3 - 6*x)^(3/2)*(2 + 4*x)^(3/2),x]
```

```
[Out] (-3*Sqrt[3/2]*(x*Sqrt[1 - 4*x^2]*(-5 + 8*x^2) + 3*ArcSin[Sqrt[1/2
 - x]]))/2
```

Maple [B] time = 0.007, size = 102, normalized size = 1.4

$$\frac{1}{16}(3-6x)^{\frac{3}{2}}(2+4x)^{\frac{5}{2}}+\frac{3}{16}(2+4x)^{\frac{5}{2}}\sqrt{3-6x}-\frac{3}{16}(2+4x)^{\frac{3}{2}}\sqrt{3-6x}-\frac{9}{8}\sqrt{3-6x}\sqrt{2+4x}+\frac{9\arcsin(2x)\sqrt{6}}{8}\sqrt{(2+4x)(3-6x)}\frac{1}{\sqrt{3-6x}}\frac{1}{\sqrt{2+4x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3-6*x)^(3/2)*(2+4*x)^(3/2),x)
```

```
[Out] 1/16*(3-6*x)^(3/2)*(2+4*x)^(5/2)+3/16*(2+4*x)^(5/2)*(3-6*x)^(1/2)
-3/16*(2+4*x)^(3/2)*(3-6*x)^(1/2)-9/8*(3-6*x)^(1/2)*(2+4*x)^(1/2)
+9/8*((2+4*x)*(3-6*x))^(1/2)/(2+4*x)^(1/2)/(3-6*x)^(1/2)*6^(1/2)*
arcsin(2*x)
```

Maxima [A] time = 1.50349, size = 46, normalized size = 0.62

$$\frac{1}{4}\left(-24x^2+6\right)^{\frac{3}{2}}x+\frac{9}{4}\sqrt{-24x^2+6}x+\frac{9}{8}\sqrt{6}\arcsin(2x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^(3/2)*(-6*x + 3)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(-24*x^2 + 6)^(3/2)*x + 9/4*sqrt(-24*x^2 + 6)*x + 9/8*sqrt(6)
*arcsin(2*x)
```

Fricas [A] time = 0.211253, size = 86, normalized size = 1.16

$$-\frac{3}{8}\sqrt{2}\left(\sqrt{2}\left(8x^3-5x\right)\sqrt{4x+2}\sqrt{-6x+3}+3\sqrt{3}\arctan\left(\frac{\sqrt{3}\sqrt{2}\sqrt{4x+2}\sqrt{-6x+3}}{12x}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^(3/2)*(-6*x + 3)^(3/2),x, algorithm="fricas")
```

```
[Out] -3/8*sqrt(2)*(sqrt(2)*(8*x^3 - 5*x)*sqrt(4*x + 2)*sqrt(-6*x + 3)
+ 3*sqrt(3)*arctan(1/12*sqrt(3)*sqrt(2)*sqrt(4*x + 2)*sqrt(-6*x +
 3)/x))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-6*x)**(3/2)*(2+4*x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.231057, size = 103, normalized size = 1.39

$$-\frac{3}{8}\sqrt{3}\sqrt{2}\left(((4(2x+1)(x-1)+5)(2x+1)-1)\sqrt{2x+1}\sqrt{-2x+1}-8\sqrt{2x+1}x\sqrt{-2x+1}-6\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{2x+1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^(3/2)*(-6*x + 3)^(3/2),x, algorithm="giac")
```

```
[Out] -3/8*sqrt(3)*sqrt(2)*(((4*(2*x + 1)*(x - 1) + 5)*(2*x + 1) - 1)*s
qrt(2*x + 1)*sqrt(-2*x + 1) - 8*sqrt(2*x + 1)*x*sqrt(-2*x + 1) -
6*arcsin(1/2*sqrt(2)*sqrt(2*x + 1)))
```

3.1155 $\int \sqrt{3-6x}\sqrt{2+4x}\,dx$

Optimal. Leaf size=43

$$\sqrt{\frac{3}{2}}\sqrt{1-2x}\sqrt{2x+1}x+\frac{1}{2}\sqrt{\frac{3}{2}}\sin^{-1}(2x)$$

```
[Out] Sqrt[3/2]*Sqrt[1 - 2*x]*x*Sqrt[1 + 2*x] + (Sqrt[3/2]*ArcSin[2*x])
/2
```

Rubi [A] time = 0.0347786, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\sqrt{\frac{3}{2}}\sqrt{1-2x}\sqrt{2x+1}x+\frac{1}{2}\sqrt{\frac{3}{2}}\sin^{-1}(2x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[3 - 6*x]*Sqrt[2 + 4*x],x]
```

```
[Out] Sqrt[3/2]*Sqrt[1 - 2*x]*x*Sqrt[1 + 2*x] + (Sqrt[3/2]*ArcSin[2*x])
/2
```

Rubi in Sympy [A] time = 4.69022, size = 31, normalized size = 0.72

$$\frac{x\sqrt{-6x+3}\sqrt{4x+2}}{2}+\frac{\sqrt{6}\operatorname{asin}(2x)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-6*x)**(1/2)*(2+4*x)**(1/2),x)
```

```
[Out] x*sqrt(-6*x + 3)*sqrt(4*x + 2)/2 + sqrt(6)*asin(2*x)/4
```

Mathematica [A] time = 0.036952, size = 36, normalized size = 0.84

$$\sqrt{\frac{3}{2}}\left(x\sqrt{1-4x^2}-\sin^{-1}\left(\sqrt{\frac{1}{2}-x}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[3 - 6*x]*Sqrt[2 + 4*x],x]
```

```
[Out] Sqrt[3/2]*(x*Sqrt[1 - 4*x^2] - ArcSin[Sqrt[1/2 - x]])
```

Maple [B] time = 0.006, size = 70, normalized size = 1.6

$$-\frac{1}{12}\sqrt{2+4x}\,(3-6x)^{\frac{3}{2}}+\frac{1}{4}\sqrt{3-6x}\sqrt{2+4x}+\frac{\arcsin(2x)\sqrt{6}}{4}\sqrt{(2+4x)(3-6x)}\frac{1}{\sqrt{3-6x}}\frac{1}{\sqrt{2+4x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3-6*x)^(1/2)*(2+4*x)^(1/2),x)
```

```
[Out] -1/12*(2+4*x)^(1/2)*(3-6*x)^(3/2)+1/4*(3-6*x)^(1/2)*(2+4*x)^(1/2)
+1/4*((2+4*x)*(3-6*x))^(1/2)/(2+4*x)^(1/2)/(3-6*x)^(1/2)*6^(1/2)*
arcsin(2*x)
```

Maxima [A] time = 1.49876, size = 30, normalized size = 0.7

$$\frac{1}{2}\sqrt{-24x^2+6}x+\frac{1}{4}\sqrt{6}\arcsin(2x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 2)*sqrt(-6*x + 3),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(-24*x^2 + 6)*x + 1/4*sqrt(6)*arcsin(2*x)
```

Fricas [A] time = 0.210349, size = 76, normalized size = 1.77

$$\frac{1}{4}\sqrt{2}\left(\sqrt{2}\sqrt{4x+2}x\sqrt{-6x+3}-\sqrt{3}\arctan\left(\frac{\sqrt{3}\sqrt{2}\sqrt{4x+2}\sqrt{-6x+3}}{12x}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 2)*sqrt(-6*x + 3),x, algorithm="fricas")
```

```
[Out] 1/4*sqrt(2)*(sqrt(2)*sqrt(4*x + 2)*x*sqrt(-6*x + 3) - sqrt(3)*arc
tan(1/12*sqrt(3)*sqrt(2)*sqrt(4*x + 2)*sqrt(-6*x + 3)/x))
```

Sympy [A] time = 20.542, size = 187, normalized size = 4.35

$$\begin{cases} -\frac{\sqrt{6}i\operatorname{acosh}\left(\sqrt{x+\frac{1}{2}}\right)}{2} + \frac{\sqrt{6}i\left(x+\frac{1}{2}\right)^{\frac{5}{2}}}{\sqrt{x-\frac{1}{2}}} - \frac{3\sqrt{6}i\left(x+\frac{1}{2}\right)^{\frac{3}{2}}}{2\sqrt{x-\frac{1}{2}}} + \frac{\sqrt{6}i\sqrt{x+\frac{1}{2}}}{2\sqrt{x-\frac{1}{2}}} & \text{for } \left|x+\frac{1}{2}\right| > 1 \\ \frac{\sqrt{6}\operatorname{asin}\left(\sqrt{x+\frac{1}{2}}\right)}{2} - \frac{\sqrt{6}\left(x+\frac{1}{2}\right)^{\frac{5}{2}}}{\sqrt{-x+\frac{1}{2}}} + \frac{3\sqrt{6}\left(x+\frac{1}{2}\right)^{\frac{3}{2}}}{2\sqrt{-x+\frac{1}{2}}} - \frac{\sqrt{6}\sqrt{x+\frac{1}{2}}}{2\sqrt{-x+\frac{1}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-6*x)**(1/2)*(2+4*x)**(1/2),x)
```

```
[Out] Piecewise((-sqrt(6)*I*acosh(sqrt(x + 1/2))/2 + sqrt(6)*I*(x + 1/2
)**(5/2)/sqrt(x - 1/2) - 3*sqrt(6)*I*(x + 1/2)**(3/2)/(2*sqrt(x -
 1/2)) + sqrt(6)*I*sqrt(x + 1/2)/(2*sqrt(x - 1/2)), Abs(x + 1/2)
> 1), (sqrt(6)*asin(sqrt(x + 1/2))/2 - sqrt(6)*(x + 1/2)**(5/2)/s
qrt(-x + 1/2) + 3*sqrt(6)*(x + 1/2)**(3/2)/(2*sqrt(-x + 1/2)) - s
qrt(6)*sqrt(x + 1/2)/(2*sqrt(-x + 1/2)), True))
```

GIAC/XCAS [A] time = 0.227093, size = 51, normalized size = 1.19

$$\frac{1}{2}\sqrt{3}\sqrt{2}\left(\sqrt{2x+1}x\sqrt{-2x+1} + \arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{2x+1}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(4*x + 2)*sqrt(-6*x + 3),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(3)*sqrt(2)*(sqrt(2*x + 1)*x*sqrt(-2*x + 1) + arcsin(1/2*
sqrt(2)*sqrt(2*x + 1)))
```

3.1156 $\int \frac{1}{\sqrt{3-6x}\sqrt{2+4x}}\,dx$

Optimal. Leaf size=13

$$\frac{\sin^{-1}(2x)}{2\sqrt{6}}$$

```
[Out] ArcSin[2*x]/(2*Sqrt[6])
```

Rubi [A] time = 0.0177504, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{\sin^{-1}(2x)}{2\sqrt{6}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[3 - 6*x]*Sqrt[2 + 4*x]),x]
```

```
[Out] ArcSin[2*x]/(2*Sqrt[6])
```

Rubi in Sympy [A] time = 2.95253, size = 10, normalized size = 0.77

$$\frac{\sqrt{6}\,\mathrm{asin}\,(2x)}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-6*x)**(1/2)/(2+4*x)**(1/2),x)
```

```
[Out] sqrt(6)*asin(2*x)/12
```

Mathematica [A] time = 0.0252982, size = 13, normalized size = 1.

$$\frac{\sin^{-1}(2x)}{2\sqrt{6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[3 - 6*x]*Sqrt[2 + 4*x]),x]
```

```
[Out] ArcSin[2*x]/(2*Sqrt[6])
```

Maple [B] time = 0.005, size = 37, normalized size = 2.9

$$\frac{\arcsin\left(2\,x\right)\sqrt{6}}{12}\sqrt{\left(2+4\,x\right)\left(3-6\,x\right)}\frac{1}{\sqrt{3-6\,x}}\frac{1}{\sqrt{2+4\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-6*x)^(1/2)/(2+4*x)^(1/2),x)
```

```
[Out] 1/12*((2+4*x)*(3-6*x))^(1/2)/(2+4*x)^(1/2)/(3-6*x)^(1/2)*6^(1/2)*
arcsin(2*x)
```

Maxima [A] time = 1.49726, size = 12, normalized size = 0.92

$$\frac{1}{12}\sqrt{6}\arcsin\left(2\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(4*x + 2)*sqrt(-6*x + 3)),x, algorithm="maxima")
```

```
[Out] 1/12*sqrt(6)*arcsin(2*x)
```

Fricas [A] time = 0.208616, size = 38, normalized size = 2.92

$$-\frac{1}{12}\sqrt{6}\arctan\left(\frac{\sqrt{6}\sqrt{4\,x+2}\sqrt{-6\,x+3}}{12\,x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(4*x + 2)*sqrt(-6*x + 3)),x, algorithm="fricas")
```

```
[Out] -1/12*sqrt(6)*arctan(1/12*sqrt(6)*sqrt(4*x + 2)*sqrt(-6*x + 3)/x)
```

Sympy [A] time = 19.3453, size = 41, normalized size = 3.15

$$\begin{cases} -\frac{\sqrt{6}i \operatorname{acosh}\left(\sqrt{x+\frac{1}{2}}\right)}{6} & \text{for } \left|x+\frac{1}{2}\right| > 1 \\ \frac{\sqrt{6} \operatorname{asin}\left(\sqrt{x+\frac{1}{2}}\right)}{6} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-6*x)**(1/2)/(2+4*x)**(1/2),x)
```

```
[Out] Piecewise((-sqrt(6)*I*acosh(sqrt(x + 1/2))/6, Abs(x + 1/2) > 1),
(sqrt(6)*asin(sqrt(x + 1/2))/6, True))
```

GIAC/XCAS [A] time = 0.215817, size = 20, normalized size = 1.54

$$\frac{1}{6}\sqrt{6}\arcsin\left(\frac{1}{2}\sqrt{4x+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(4*x + 2)*sqrt(-6*x + 3)),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(6)*arcsin(1/2*sqrt(4*x + 2))
```

3.1157 $\int \frac{1}{(3-6x)^{3/2}(2+4x)^{3/2}}\,dx$

Optimal. Leaf size=28

$$\frac{x}{6\sqrt{6}\sqrt{1-2x}\sqrt{2x+1}}$$

```
[Out] x/(6*Sqrt[6]*Sqrt[1 - 2*x]*Sqrt[1 + 2*x])
```

Rubi [A] time = 0.01856, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{x}{6\sqrt{6}\sqrt{1-2x}\sqrt{2x+1}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((3 - 6*x)^(3/2)*(2 + 4*x)^(3/2)),x]
```

```
[Out] x/(6*Sqrt[6]*Sqrt[1 - 2*x]*Sqrt[1 + 2*x])
```

Rubi in Sympy [A] time = 2.86188, size = 19, normalized size = 0.68

$$\frac{x}{6\sqrt{-6x+3}\sqrt{4x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-6*x)**(3/2)/(2+4*x)**(3/2),x)
```

```
[Out] x/(6*sqrt(-6*x + 3)*sqrt(4*x + 2))
```

Mathematica [A] time = 0.049143, size = 16, normalized size = 0.57

$$\frac{x}{6\sqrt{6-24x^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - 6*x)^(3/2)*(2 + 4*x)^(3/2)),x]
```

```
[Out] x/(6*Sqrt[6 - 24*x^2])
```

Maple [A] time = 0.004, size = 28, normalized size = 1.

$$-(-1+2x)(1+2x)x(3-6x)^{-\frac{3}{2}}(2+4x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(3-6*x)^(3/2)/(2+4*x)^(3/2),x)
```

```
[Out] -(-1+2*x)*(1+2*x)*x/(3-6*x)^(3/2)/(2+4*x)^(3/2)
```

Maxima [A] time = 1.33208, size = 16, normalized size = 0.57

$$\frac{x}{6\sqrt{-24x^2+6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((4*x + 2)^(3/2)*(-6*x + 3)^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/6*x/sqrt(-24*x^2 + 6)
```

Fricas [A] time = 0.207193, size = 35, normalized size = 1.25

$$-\frac{\sqrt{4x+2}x\sqrt{-6x+3}}{36(4x^2-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((4*x + 2)^(3/2)*(-6*x + 3)^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/36*sqrt(4*x + 2)*x*sqrt(-6*x + 3)/(4*x^2 - 1)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-6*x)**(3/2)/(2+4*x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219771, size = 96, normalized size = 3.43

$$-\frac{\sqrt{6}\left(\sqrt{-4\,x+2}-2\right)}{288\,\sqrt{4\,x+2}}-\frac{\sqrt{6}\sqrt{4\,x+2}\sqrt{-4\,x+2}}{288\,(2\,x-1)}+\frac{\sqrt{6}\sqrt{4\,x+2}}{288\,\left(\sqrt{-4\,x+2}-2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((4*x + 2)^(3/2)*(-6*x + 3)^(3/2)),x, algorithm="giac")
```

```
[Out] -1/288*sqrt(6)*(sqrt(-4*x + 2) - 2)/sqrt(4*x + 2) - 1/288*sqrt(6)
*sqrt(4*x + 2)*sqrt(-4*x + 2)/(2*x - 1) + 1/288*sqrt(6)*sqrt(4*x
+ 2)/(sqrt(-4*x + 2) - 2)
```

3.1158 $\int \frac{1}{(3-6x)^{5/2}(2+4x)^{5/2}}\,dx$

Optimal. Leaf size=57

$$\frac{x}{54\sqrt{6}\sqrt{1-2x}\sqrt{2x+1}}+\frac{x}{108\sqrt{6}(1-2x)^{3/2}(2x+1)^{3/2}}$$

```
[Out] x/(108*Sqrt[6]*(1 - 2*x)^(3/2)*(1 + 2*x)^(3/2)) + x/(54*Sqrt[6]*S
qrt[1 - 2*x]*Sqrt[1 + 2*x])
```

Rubi [A] time = 0.038157, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{x}{54\sqrt{6}\sqrt{1-2x}\sqrt{2x+1}}+\frac{x}{108\sqrt{6}(1-2x)^{3/2}(2x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((3 - 6*x)^(5/2)*(2 + 4*x)^(5/2)),x]
```

```
[Out] x/(108*Sqrt[6]*(1 - 2*x)^(3/2)*(1 + 2*x)^(3/2)) + x/(54*Sqrt[6]*S
qrt[1 - 2*x]*Sqrt[1 + 2*x])
```

Rubi in Sympy [A] time = 4.72321, size = 39, normalized size = 0.68

$$\frac{x}{54\sqrt{-6x+3}\sqrt{4x+2}}+\frac{x}{18\left(-6x+3\right)^{\frac{3}{2}}\left(4x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-6*x)**(5/2)/(2+4*x)**(5/2),x)
```

```
[Out] x/(54*sqrt(-6*x + 3)*sqrt(4*x + 2)) + x/(18*(-6*x + 3)**(3/2)*(4*
x + 2)**(3/2))
```

Mathematica [A] time = 0.0751714, size = 37, normalized size = 0.65

$$\frac{x\left(8x^2-3\right)}{108\sqrt{6-12x}(2x-1)(2x+1)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - 6*x)^(5/2)*(2 + 4*x)^(5/2)),x]
```

```
[Out] (x*(-3 + 8*x^2))/(108*Sqrt[6 - 12*x]*(-1 + 2*x)*(1 + 2*x)^(3/2))
```

Maple [A] time = 0.004, size = 35, normalized size = 0.6

$$\frac{(-1+2x)(1+2x)x(8x^2-3)}{3}(3-6x)^{-\frac{5}{2}}(2+4x)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-6*x)^(5/2)/(2+4*x)^(5/2),x)
```

```
[Out] 1/3*(-1+2*x)*(1+2*x)*x*(8*x^2-3)/(3-6*x)^(5/2)/(2+4*x)^(5/2)
```

Maxima [A] time = 1.34786, size = 34, normalized size = 0.6

$$\frac{x}{54\sqrt{-24x^2+6}}+\frac{x}{18(-24x^2+6)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((4*x + 2)^(5/2)*(-6*x + 3)^(5/2)),x, algorithm="maxima")
```

```
[Out] 1/54*x/sqrt(-24*x^2 + 6) + 1/18*x/(-24*x^2 + 6)^(3/2)
```

Fricas [A] time = 0.203992, size = 53, normalized size = 0.93

$$-\frac{(8x^3-3x)\sqrt{4x+2}\sqrt{-6x+3}}{648(16x^4-8x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((4*x + 2)^(5/2)*(-6*x + 3)^(5/2)),x, algorithm="fricas")
```

```
[Out] -1/648*(8*x^3 - 3*x)*sqrt(4*x + 2)*sqrt(-6*x + 3)/(16*x^4 - 8*x^2
 + 1)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-6*x)**(5/2)/(2+4*x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223316, size = 174, normalized size = 3.05

$$-\frac{\sqrt{6}\left(\sqrt{-4x+2}-2\right)^{3}}{82944\,(4x+2)^{\frac{3}{2}}}-\frac{11\sqrt{6}\left(\sqrt{-4x+2}-2\right)}{27648\sqrt{4x+2}}-\frac{\left(4\sqrt{6}(2x+1)-9\sqrt{6}\right)\sqrt{4x+2}\sqrt{-4x+2}}{10368\,(2x-1)^{2}}+\frac{\sqrt{6}(4x+2)^{\frac{3}{2}}\left(\frac{33\left(\sqrt{-4x+2}-2\right)^{2}}{2x+1}+2\right)}{165888\left(\sqrt{-4x+2}-2\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((4*x + 2)^(5/2)*(-6*x + 3)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/82944*sqrt(6)*(sqrt(-4*x + 2) - 2)^3/(4*x + 2)^(3/2) - 11/2764
8*sqrt(6)*(sqrt(-4*x + 2) - 2)/sqrt(4*x + 2) - 1/10368*(4*sqrt(6)
*(2*x + 1) - 9*sqrt(6))*sqrt(4*x + 2)*sqrt(-4*x + 2)/(2*x - 1)^2
+ 1/165888*sqrt(6)*(4*x + 2)^(3/2)*(33*(sqrt(-4*x + 2) - 2)^2/(2*
x + 1) + 2)/(sqrt(-4*x + 2) - 2)^3
```

3.1159 $\int \frac{1}{(3-6x)^{7/2}(2+4x)^{7/2}}\,dx$

Optimal. Leaf size=85

$$\frac{x}{405\sqrt{6}\sqrt{1-2x}\sqrt{2x+1}}+\frac{x}{810\sqrt{6}(1-2x)^{3/2}(2x+1)^{3/2}}+\frac{x}{1080\sqrt{6}(1-2x)^{5/2}(2x+1)^{5/2}}$$

```
[Out] x/(1080*Sqrt[6]*(1 - 2*x)^(5/2)*(1 + 2*x)^(5/2)) + x/(810*Sqrt[6]
*(1 - 2*x)^(3/2)*(1 + 2*x)^(3/2)) + x/(405*Sqrt[6]*Sqrt[1 - 2*x]*
Sqrt[1 + 2*x])
```

Rubi [A] time = 0.0585249, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{x}{405\sqrt{6}\sqrt{1-2x}\sqrt{2x+1}}+\frac{x}{810\sqrt{6}(1-2x)^{3/2}(2x+1)^{3/2}}+\frac{x}{1080\sqrt{6}(1-2x)^{5/2}(2x+1)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((3 - 6*x)^(7/2)*(2 + 4*x)^(7/2)),x]
```

```
[Out] x/(1080*Sqrt[6]*(1 - 2*x)^(5/2)*(1 + 2*x)^(5/2)) + x/(810*Sqrt[6]
*(1 - 2*x)^(3/2)*(1 + 2*x)^(3/2)) + x/(405*Sqrt[6]*Sqrt[1 - 2*x]*
Sqrt[1 + 2*x])
```

Rubi in Sympy [A] time = 6.82881, size = 60, normalized size = 0.71

$$\frac{x}{405\sqrt{-6x+3}\sqrt{4x+2}}+\frac{x}{135\,(-6x+3)^{\frac{3}{2}}\,(4x+2)^{\frac{3}{2}}}+\frac{x}{30\,(-6x+3)^{\frac{5}{2}}\,(4x+2)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-6*x)**(7/2)/(2+4*x)**(7/2),x)
```

```
[Out] x/(405*sqrt(-6*x + 3)*sqrt(4*x + 2)) + x/(135*(-6*x + 3)**(3/2)*(
4*x + 2)**(3/2)) + x/(30*(-6*x + 3)**(5/2)*(4*x + 2)**(5/2))
```

Mathematica [A] time = 0.097901, size = 42, normalized size = 0.49

$$\frac{x\left(128x^4-80x^2+15\right)}{3240\sqrt{6-12x}(1-2x)^2(2x+1)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - 6*x)^(7/2)*(2 + 4*x)^(7/2)),x]
```

```
[Out] (x*(15 - 80*x^2 + 128*x^4))/(3240*Sqrt[6 - 12*x]*(1 - 2*x)^2*(1 +
 2*x)^(5/2))
```

Maple [A] time = 0.006, size = 40, normalized size = 0.5

$$-\frac{(-1+2x)(1+2x)x\left(128x^4-80x^2+15\right)}{15}(3-6x)^{-\frac{7}{2}}(2+4x)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-6*x)^(7/2)/(2+4*x)^(7/2),x)
```

```
[Out] -1/15*(-1+2*x)*(1+2*x)*x*(128*x^4-80*x^2+15)/(3-6*x)^(7/2)/(2+4*x
)^(7/2)
```

Maxima [A] time = 1.31932, size = 50, normalized size = 0.59

$$\frac{x}{405\sqrt{-24x^2+6}}+\frac{x}{135\left(-24x^2+6\right)^{\frac{3}{2}}}+\frac{x}{30\left(-24x^2+6\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((4*x + 2)^(7/2)*(-6*x + 3)^(7/2)),x, algorithm="maxima")
```

```
[Out] 1/405*x/sqrt(-24*x^2 + 6) + 1/135*x/(-24*x^2 + 6)^(3/2) + 1/30*x/
(-24*x^2 + 6)^(5/2)
```

Fricas [A] time = 0.206792, size = 66, normalized size = 0.78

$$-\frac{\left(128x^5-80x^3+15x\right)\sqrt{4x+2}\sqrt{-6x+3}}{19440\left(64x^6-48x^4+12x^2-1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((4*x + 2)^(7/2)*(-6*x + 3)^(7/2)),x, algorithm="fricas")
```

```
[Out] -1/19440*(128*x^5 - 80*x^3 + 15*x)*sqrt(4*x + 2)*sqrt(-6*x + 3)/(
64*x^6 - 48*x^4 + 12*x^2 - 1)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(3-6*x)**(7/2)/(2+4*x)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.230325, size = 248, normalized size = 2.92

$$-\frac{\sqrt{6}\left(\sqrt{-4\,x+2}-2\right)^{5}}{13271040\,(4\,x+2)^{\frac{5}{2}}}-\frac{17\,\sqrt{6}\left(\sqrt{-4\,x+2}-2\right)^{3}}{7962624\,(4\,x+2)^{\frac{3}{2}}}-\frac{71\,\sqrt{6}\left(\sqrt{-4\,x+2}-2\right)}{1327104\,\sqrt{4\,x+2}}-\frac{\left(\left(64\,\sqrt{6}(2\,x+1)-275\,\sqrt{6}\right)(2\,x+1)+300\,\sqrt{6}\right)\sqrt{4\,x+2}\sqrt{-4\,x+2}}{1244160\,(2\,x-1)^{3}}+\frac{\sqrt{6}\left(\frac{1065\left(\sqrt{-4\,x+2}-2\right)^{4}}{(2\,x+1)^{2}}+\frac{85\left(\sqrt{-4\,x+2}-2\right)^{2}}{2\,x+1}+6\right)(4\,x+2)^{\frac{5}{2}}}{79626240\left(\sqrt{-4\,x+2}-2\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((4*x + 2)^(7/2)*(-6*x + 3)^(7/2)),x, algorithm="giac")
```

```
[Out] -1/13271040*sqrt(6)*(sqrt(-4*x + 2) - 2)^5/(4*x + 2)^(5/2) - 17/7
962624*sqrt(6)*(sqrt(-4*x + 2) - 2)^3/(4*x + 2)^(3/2) - 71/132710
4*sqrt(6)*(sqrt(-4*x + 2) - 2)/sqrt(4*x + 2) - 1/1244160*((64*sqr
t(6)*(2*x + 1) - 275*sqrt(6))*(2*x + 1) + 300*sqrt(6))*sqrt(4*x +
 2)*sqrt(-4*x + 2)/(2*x - 1)^3 + 1/79626240*sqrt(6)*(1065*(sqrt(-
4*x + 2) - 2)^4/(2*x + 1)^2 + 85*(sqrt(-4*x + 2) - 2)^2/(2*x + 1)
 + 6)*(4*x + 2)^(5/2)/(sqrt(-4*x + 2) - 2)^5
```

3.1160 $\int (3-x)^{3/2}(-2+x)^{3/2}\,dx$

Optimal. Leaf size=91

$$-\frac{1}{4}(x-2)^{3/2}(3-x)^{5/2}-\frac{1}{8}\sqrt{x-2}(3-x)^{5/2}+\frac{1}{32}\sqrt{x-2}(3-x)^{3/2}+\frac{3}{64}\sqrt{x-2}\sqrt{3-x}-\frac{3}{128}\sin^{-1}(5-2x)$$

```
[Out] (3*Sqrt[3 - x]*Sqrt[-2 + x])/64 + ((3 - x)^(3/2)*Sqrt[-2 + x])/32
 - ((3 - x)^(5/2)*Sqrt[-2 + x])/8 - ((3 - x)^(5/2)*(-2 + x)^(3/2)
)/4 - (3*ArcSin[5 - 2*x])/128
```

Rubi [A] time = 0.0704417, antiderivative size = 91, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{1}{4}(x-2)^{3/2}(3-x)^{5/2}-\frac{1}{8}\sqrt{x-2}(3-x)^{5/2}+\frac{1}{32}\sqrt{x-2}(3-x)^{3/2}+\frac{3}{64}\sqrt{x-2}\sqrt{3-x}-\frac{3}{128}\sin^{-1}(5-2x)$$

Antiderivative was successfully verified.

```
[In]  Int[(3 - x)^(3/2)*(-2 + x)^(3/2),x]
```

```
[Out] (3*Sqrt[3 - x]*Sqrt[-2 + x])/64 + ((3 - x)^(3/2)*Sqrt[-2 + x])/32
 - ((3 - x)^(5/2)*Sqrt[-2 + x])/8 - ((3 - x)^(5/2)*(-2 + x)^(3/2)
)/4 - (3*ArcSin[5 - 2*x])/128
```

Rubi in Sympy [A] time = 9.96285, size = 85, normalized size = 0.93

$$-\frac{(-x+3)^{\frac{5}{2}}(x-2)^{\frac{3}{2}}}{4}-\frac{(-x+3)^{\frac{5}{2}}\sqrt{x-2}}{8}+\frac{(-x+3)^{\frac{3}{2}}\sqrt{x-2}}{32}+\frac{3\sqrt{-x+3}\sqrt{x-2}}{64}-\frac{3\operatorname{atan}\left(\frac{-2x+5}{2\sqrt{-x^2+5x-6}}\right)}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-x)**(3/2)*(-2+x)**(3/2),x)
```

```
[Out] -(-x + 3)**(5/2)*(x - 2)**(3/2)/4 - (-x + 3)**(5/2)*sqrt(x - 2)/8
 + (-x + 3)**(3/2)*sqrt(x - 2)/32 + 3*sqrt(-x + 3)*sqrt(x - 2)/64
 - 3*atan((-2*x + 5)/(2*sqrt(-x**2 + 5*x - 6)))/128
```

Mathematica [A] time = 0.0559513, size = 73, normalized size = 0.8

$$-\frac{\sqrt{-x^2+5x-6}\left(\sqrt{x-3}\sqrt{x-2}\left(16x^3-120x^2+290x-225\right)+3\sinh^{-1}\left(\sqrt{x-3}\right)\right)}{64\sqrt{x-3}\sqrt{x-2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(3 - x)^(3/2)*(-2 + x)^(3/2),x]
```

```
[Out] -(Sqrt[-6 + 5*x - x^2]*(Sqrt[-3 + x]*Sqrt[-2 + x]*(-225 + 290*x -
 120*x^2 + 16*x^3) + 3*ArcSinh[Sqrt[-3 + x]]))/(64*Sqrt[-3 + x]*S
qrt[-2 + x])
```

Maple [A] time = 0.01, size = 89, normalized size = 1.

$$\frac{1}{4}(3-x)^{\frac{3}{2}}(-2+x)^{\frac{5}{2}}+\frac{1}{8}\sqrt{3-x}\,(-2+x)^{\frac{5}{2}}-\frac{1}{32}\sqrt{3-x}\,(-2+x)^{\frac{3}{2}} -\frac{3}{64}\sqrt{3-x}\sqrt{-2+x}+\frac{3\arcsin(-5+2x)}{128}\sqrt{(-2+x)(3-x)}\frac{1}{\sqrt{3-x}}\frac{1}{\sqrt{-2+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3-x)^(3/2)*(-2+x)^(3/2),x)
```

```
[Out] 1/4*(3-x)^(3/2)*(-2+x)^(5/2)+1/8*(3-x)^(1/2)*(-2+x)^(5/2)-1/32*(3
-x)^(1/2)*(-2+x)^(3/2)-3/64*(3-x)^(1/2)*(-2+x)^(1/2)+3/128*((-2+x
)*(3-x))^(1/2)/(-2+x)^(1/2)/(3-x)^(1/2)*arcsin(-5+2*x)
```

Maxima [A] time = 1.49351, size = 90, normalized size = 0.99

$$\frac{1}{4}\left(-x^2+5x-6\right)^{\frac{3}{2}}x-\frac{5}{8}\left(-x^2+5x-6\right)^{\frac{3}{2}}+\frac{3}{32}\sqrt{-x^2+5x-6}\,x-\frac{15}{64}\sqrt{-x^2+5x-6}+\frac{3}{128}\arcsin(2x-5)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x - 2)^(3/2)*(-x + 3)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(-x^2 + 5*x - 6)^(3/2)*x - 5/8*(-x^2 + 5*x - 6)^(3/2) + 3/32*
sqrt(-x^2 + 5*x - 6)*x - 15/64*sqrt(-x^2 + 5*x - 6) + 3/128*arcsi
n(2*x - 5)
```

Fricas [A] time = 0.216903, size = 70, normalized size = 0.77

$$-\frac{1}{64}\left(16x^3-120x^2+290x-225\right)\sqrt{x-2}\sqrt{-x+3}+\frac{3}{128}\arctan\left(\frac{2x-5}{2\sqrt{x-2}\sqrt{-x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x - 2)^(3/2)*(-x + 3)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/64*(16*x^3 - 120*x^2 + 290*x - 225)*sqrt(x - 2)*sqrt(-x + 3) +
 3/128*arctan(1/2*(2*x - 5)/(sqrt(x - 2)*sqrt(-x + 3)))
```

Sympy [A] time = 38.4191, size = 199, normalized size = 2.19

$$\begin{cases} -\frac{3i\operatorname{acosh}\left(\sqrt{x-2}\right)}{64} - \frac{i(x-2)^{\frac{9}{2}}}{4\sqrt{x-3}} + \frac{5i(x-2)^{\frac{7}{2}}}{8\sqrt{x-3}} - \frac{13i(x-2)^{\frac{5}{2}}}{32\sqrt{x-3}} - \frac{i(x-2)^{\frac{3}{2}}}{64\sqrt{x-3}} + \frac{3i\sqrt{x-2}}{64\sqrt{x-3}} & \text{for } |x-2| > 1 \\ \frac{3\operatorname{asin}\left(\sqrt{x-2}\right)}{64} + \frac{(x-2)^{\frac{9}{2}}}{4\sqrt{-x+3}} - \frac{5(x-2)^{\frac{7}{2}}}{8\sqrt{-x+3}} + \frac{13(x-2)^{\frac{5}{2}}}{32\sqrt{-x+3}} + \frac{(x-2)^{\frac{3}{2}}}{64\sqrt{-x+3}} - \frac{3\sqrt{x-2}}{64\sqrt{-x+3}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-x)**(3/2)*(-2+x)**(3/2),x)
```

```
[Out] Piecewise((-3*I*acosh(sqrt(x - 2))/64 - I*(x - 2)**(9/2)/(4*sqrt(
x - 3)) + 5*I*(x - 2)**(7/2)/(8*sqrt(x - 3)) - 13*I*(x - 2)**(5/2
)/(32*sqrt(x - 3)) - I*(x - 2)**(3/2)/(64*sqrt(x - 3)) + 3*I*sqrt
(x - 2)/(64*sqrt(x - 3)), Abs(x - 2) > 1), (3*asin(sqrt(x - 2))/6
4 + (x - 2)**(9/2)/(4*sqrt(-x + 3)) - 5*(x - 2)**(7/2)/(8*sqrt(-x
 + 3)) + 13*(x - 2)**(5/2)/(32*sqrt(-x + 3)) + (x - 2)**(3/2)/(64
*sqrt(-x + 3)) - 3*sqrt(x - 2)/(64*sqrt(-x + 3)), True))
```

GIAC/XCAS [A] time = 0.225351, size = 117, normalized size = 1.29

$$-\frac{1}{192}\,(2\,(4\,(6\,x+19)(x-2)+155)(x-2)-303)\sqrt{x-2}\sqrt{-x+3} + \frac{5}{24}\,(2\,(4\,x+3)(x-2)-15)\sqrt{x-2}\sqrt{-x+3} - \frac{3}{2}\,(2\,x-5)\sqrt{x-2}\sqrt{-x+3} + \frac{3}{64}\,\arcsin\left(\sqrt{x-2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x - 2)^(3/2)*(-x + 3)^(3/2),x, algorithm="giac")
```

```
[Out] -1/192*(2*(4*(6*x + 19)*(x - 2) + 155)*(x - 2) - 303)*sqrt(x - 2)
*sqrt(-x + 3) + 5/24*(2*(4*x + 3)*(x - 2) - 15)*sqrt(x - 2)*sqrt(
-x + 3) - 3/2*(2*x - 5)*sqrt(x - 2)*sqrt(-x + 3) + 3/64*arcsin(sq
rt(x - 2))
```

3.1161 $\int \sqrt{3-x}\sqrt{-2+x}\,dx$

Optimal. Leaf size=51

$$-\frac{1}{2}\sqrt{x-2}(3-x)^{3/2}+\frac{1}{4}\sqrt{x-2}\sqrt{3-x}-\frac{1}{8}\sin^{-1}(5-2x)$$

```
[Out] (Sqrt[3 - x]*Sqrt[-2 + x])/4 - ((3 - x)^(3/2)*Sqrt[-2 + x])/2 - A
rcSin[5 - 2*x]/8
```

Rubi [A] time = 0.040138, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{1}{2}\sqrt{x-2}(3-x)^{3/2}+\frac{1}{4}\sqrt{x-2}\sqrt{3-x}-\frac{1}{8}\sin^{-1}(5-2x)$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[3 - x]*Sqrt[-2 + x],x]
```

```
[Out] (Sqrt[3 - x]*Sqrt[-2 + x])/4 - ((3 - x)^(3/2)*Sqrt[-2 + x])/2 - A
rcSin[5 - 2*x]/8
```

Rubi in Sympy [A] time = 6.16512, size = 51, normalized size = 1.

$$-\frac{(-x+3)^{\frac{3}{2}}\sqrt{x-2}}{2}+\frac{\sqrt{-x+3}\sqrt{x-2}}{4}-\frac{\operatorname{atan}\left(\frac{-2x+5}{2\sqrt{-x^2+5x-6}}\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-x)**(1/2)*(-2+x)**(1/2),x)
```

```
[Out] -(-x + 3)**(3/2)*sqrt(x - 2)/2 + sqrt(-x + 3)*sqrt(x - 2)/4 - ata
n((-2*x + 5)/(2*sqrt(-x**2 + 5*x - 6)))/8
```

Mathematica [A] time = 0.036225, size = 63, normalized size = 1.24

$$\frac{\sqrt{-x^2+5x-6}\left(\sqrt{x-3}\sqrt{x-2}(2x-5)-\sinh^{-1}\left(\sqrt{x-3}\right)\right)}{4\sqrt{x-3}\sqrt{x-2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[3 - x]*Sqrt[-2 + x],x]
```

```
[Out] (Sqrt[-6 + 5*x - x^2]*(Sqrt[-3 + x]*Sqrt[-2 + x]*(-5 + 2*x) - Arc
Sinh[Sqrt[-3 + x]]))/(4*Sqrt[-3 + x]*Sqrt[-2 + x])
```

Maple [A] time = 0.008, size = 61, normalized size = 1.2

$$-\frac{1}{2}(3-x)^{\frac{3}{2}}\sqrt{-2+x}+\frac{1}{4}\sqrt{3-x}\sqrt{-2+x}+\frac{\arcsin(-5+2x)}{8}\sqrt{(-2+x)(3-x)}\frac{1}{\sqrt{3-x}}\frac{1}{\sqrt{-2+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3-x)^(1/2)*(-2+x)^(1/2),x)
```

```
[Out] -1/2*(3-x)^(3/2)*(-2+x)^(1/2)+1/4*(3-x)^(1/2)*(-2+x)^(1/2)+1/8*((
-2+x)*(3-x))^(1/2)/(-2+x)^(1/2)/(3-x)^(1/2)*arcsin(-5+2*x)
```

Maxima [A] time = 1.48902, size = 51, normalized size = 1.

$$\frac{1}{2}\sqrt{-x^2+5x-6}x-\frac{5}{4}\sqrt{-x^2+5x-6}+\frac{1}{8}\arcsin(2x-5)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 2)*sqrt(-x + 3),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(-x^2 + 5*x - 6)*x - 5/4*sqrt(-x^2 + 5*x - 6) + 1/8*arcsi
n(2*x - 5)
```

Fricas [A] time = 0.216452, size = 57, normalized size = 1.12

$$\frac{1}{4}(2x-5)\sqrt{x-2}\sqrt{-x+3}+\frac{1}{8}\arctan\left(\frac{2x-5}{2\sqrt{x-2}\sqrt{-x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 2)*sqrt(-x + 3),x, algorithm="fricas")
```

```
[Out] 1/4*(2*x - 5)*sqrt(x - 2)*sqrt(-x + 3) + 1/8*arctan(1/2*(2*x - 5)
/(sqrt(x - 2)*sqrt(-x + 3)))
```

Sympy [A] time = 9.57374, size = 124, normalized size = 2.43

$$\begin{cases} -\frac{i \operatorname{acosh}\left(\sqrt{x-2}\right)}{4} + \frac{i(x-2)^{\frac{5}{2}}}{2\sqrt{x-3}} - \frac{3i(x-2)^{\frac{3}{2}}}{4\sqrt{x-3}} + \frac{i\sqrt{x-2}}{4\sqrt{x-3}} & \text{for } |x-2| > 1 \\ \frac{\operatorname{asin}\left(\sqrt{x-2}\right)}{4} - \frac{(x-2)^{\frac{5}{2}}}{2\sqrt{-x+3}} + \frac{3(x-2)^{\frac{3}{2}}}{4\sqrt{-x+3}} - \frac{\sqrt{x-2}}{4\sqrt{-x+3}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-x)**(1/2)*(-2+x)**(1/2),x)
```

```
[Out] Piecewise((-I*acosh(sqrt(x - 2))/4 + I*(x - 2)**(5/2)/(2*sqrt(x -
 3)) - 3*I*(x - 2)**(3/2)/(4*sqrt(x - 3)) + I*sqrt(x - 2)/(4*sqrt
(x - 3)), Abs(x - 2) > 1), (asin(sqrt(x - 2))/4 - (x - 2)**(5/2)/
(2*sqrt(-x + 3)) + 3*(x - 2)**(3/2)/(4*sqrt(-x + 3)) - sqrt(x - 2
)/(4*sqrt(-x + 3)), True))
```

GIAC/XCAS [A] time = 0.218295, size = 38, normalized size = 0.75

$$\frac{1}{4}(2x-5)\sqrt{x-2}\sqrt{-x+3} + \frac{1}{4}\arcsin\left(\sqrt{x-2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 2)*sqrt(-x + 3),x, algorithm="giac")
```

```
[Out] 1/4*(2*x - 5)*sqrt(x - 2)*sqrt(-x + 3) + 1/4*arcsin(sqrt(x - 2))
```

3.1162 $\int \frac{1}{\sqrt{3-x}\sqrt{-2+x}}\,dx$

Optimal. Leaf size=8

$$-\sin^{-1}(5-2x)$$

```
[Out] -ArcSin[5 - 2*x]
```

Rubi [A] time = 0.0159681, antiderivative size = 8, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$-\sin^{-1}(5-2x)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[3 - x]*Sqrt[-2 + x]),x]

[Out] -ArcSin[5 - 2*x]
```

Rubi in Sympy [A] time = 3.08624, size = 20, normalized size = 2.5

$$-\operatorname{atan}\left(\frac{-2x+5}{2\sqrt{-x^2+5x-6}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-x)**(1/2)/(-2+x)**(1/2),x)

[Out] -atan((-2*x + 5)/(2*sqrt(-x**2 + 5*x - 6)))
```

Mathematica [B] time = 0.0137138, size = 36, normalized size = 4.5

$$\frac{2\sqrt{x-3}\sqrt{x-2}\sinh^{-1}\left(\sqrt{x-3}\right)}{\sqrt{-(x-3)(x-2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[3 - x]*Sqrt[-2 + x]),x]
```

```
[Out] (2*Sqrt[-3 + x]*Sqrt[-2 + x]*ArcSinh[Sqrt[-3 + x]])/Sqrt[-((-3 +
x)*(-2 + x))]
```

Maple [B] time = 0.006, size = 31, normalized size = 3.9

$$\arcsin\left(-5+2x\right)\sqrt{\left(-2+x\right)\left(3-x\right)}\frac{1}{\sqrt{3-x}}\frac{1}{\sqrt{-2+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-x)^(1/2)/(-2+x)^(1/2),x)
```

```
[Out] ((-2+x)*(3-x))^(1/2)/(-2+x)^(1/2)/(3-x)^(1/2)*arcsin(-5+2*x)
```

Maxima [A] time = 1.47485, size = 8, normalized size = 1.

$$\arcsin\left(2x-5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x - 2)*sqrt(-x + 3)),x, algorithm="maxima")
```

```
[Out] arcsin(2*x - 5)
```

Fricas [A] time = 0.209715, size = 27, normalized size = 3.38

$$\arctan\left(\frac{2x-5}{2\sqrt{x-2}\sqrt{-x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x - 2)*sqrt(-x + 3)),x, algorithm="fricas")
```

```
[Out] arctan(1/2*(2*x - 5)/(sqrt(x - 2)*sqrt(-x + 3)))
```

Sympy [A] time = 5.07244, size = 26, normalized size = 3.25

$$\begin{cases} -2i\operatorname{acosh}\left(\sqrt{x-2}\right) & \text{for}\ \left|x-2\right| > 1 \\ 2\operatorname{asin}\left(\sqrt{x-2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-x)**(1/2)/(-2+x)**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(x - 2)), Abs(x - 2) > 1), (2*asin(sqrt
(x - 2)), True))
```

GIAC/XCAS [A] time = 0.220987, size = 11, normalized size = 1.38

$$2 \arcsin\left(\sqrt{x-2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x - 2)*sqrt(-x + 3)),x, algorithm="giac")
```

```
[Out] 2*arcsin(sqrt(x - 2))
```

3.1163 $\int \frac{1}{(3-x)^{3/2}(-2+x)^{3/2}}\,dx$

Optimal. Leaf size=37

$$\frac{2}{\sqrt{3-x}\sqrt{x-2}}-\frac{4\sqrt{3-x}}{\sqrt{x-2}}$$

```
[Out] 2/(Sqrt[3 - x]*Sqrt[-2 + x]) - (4*Sqrt[3 - x])/Sqrt[-2 + x]
```

Rubi [A] time = 0.0257071, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2}{\sqrt{3-x}\sqrt{x-2}}-\frac{4\sqrt{3-x}}{\sqrt{x-2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((3 - x)^(3/2)*(-2 + x)^(3/2)),x]

[Out] 2/(Sqrt[3 - x]*Sqrt[-2 + x]) - (4*Sqrt[3 - x])/Sqrt[-2 + x]
```

Rubi in Sympy [A] time = 3.64084, size = 29, normalized size = 0.78

$$\frac{4\sqrt{x-2}}{\sqrt{-x+3}}-\frac{2}{\sqrt{-x+3}\sqrt{x-2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-x)**(3/2)/(-2+x)**(3/2),x)

[Out] 4*sqrt(x - 2)/sqrt(-x + 3) - 2/(sqrt(-x + 3)*sqrt(x - 2))
```

Mathematica [A] time = 0.013086, size = 21, normalized size = 0.57

$$\frac{2(2x-5)}{\sqrt{-x^2+5x-6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - x)^(3/2)*(-2 + x)^(3/2)),x]
```

```
[Out] (2*(-5 + 2*x))/Sqrt[-6 + 5*x - x^2]
```

Maple [A] time = 0.004, size = 20, normalized size = 0.5

$$2\,\frac{-5+2\,x}{\sqrt{3-x}\sqrt{-2+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(3-x)^(3/2)/(-2+x)^(3/2),x)
```

```
[Out] 2*(-5+2*x)/(-2+x)^(1/2)/(3-x)^(1/2)
```

Maxima [A] time = 1.33223, size = 41, normalized size = 1.11

$$\frac{4\,x}{\sqrt{-x^2+5\,x-6}}-\frac{10}{\sqrt{-x^2+5\,x-6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((x - 2)^(3/2)*(-x + 3)^(3/2)),x, algorithm="maxima")
```

```
[Out] 4*x/sqrt(-x^2 + 5*x - 6) - 10/sqrt(-x^2 + 5*x - 6)
```

Fricas [A] time = 0.207504, size = 39, normalized size = 1.05

$$-\frac{2\,(2\,x-5)\sqrt{x-2}\sqrt{-x+3}}{x^2-5\,x+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((x - 2)^(3/2)*(-x + 3)^(3/2)),x, algorithm="fricas")
```

```
[Out] -2*(2*x - 5)*sqrt(x - 2)*sqrt(-x + 3)/(x^2 - 5*x + 6)
```

Sympy [A] time = 13.3961, size = 100, normalized size = 2.7

$$\begin{cases} -\frac{4i\sqrt{x-3}(x-2)}{(x-2)^{\frac{3}{2}}-\sqrt{x-2}}+\frac{2i\sqrt{x-3}}{(x-2)^{\frac{3}{2}}-\sqrt{x-2}} & \text{for } |x-2|>1 \\ -\frac{4\sqrt{-x+3}(x-2)}{(x-2)^{\frac{3}{2}}-\sqrt{x-2}}+\frac{2\sqrt{-x+3}}{(x-2)^{\frac{3}{2}}-\sqrt{x-2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-x)**(3/2)/(-2+x)**(3/2),x)
```

```
[Out] Piecewise((-4*I*sqrt(x - 3)*(x - 2)/((x - 2)**(3/2) - sqrt(x - 2)
) + 2*I*sqrt(x - 3)/((x - 2)**(3/2) - sqrt(x - 2)), Abs(x - 2) >
1), (-4*sqrt(-x + 3)*(x - 2)/((x - 2)**(3/2) - sqrt(x - 2)) + 2*s
qrt(-x + 3)/((x - 2)**(3/2) - sqrt(x - 2)), True))
```

GIAC/XCAS [A] time = 0.220804, size = 72, normalized size = 1.95

$$-\frac{\sqrt{-x+3}-1}{\sqrt{x-2}}-\frac{2\sqrt{x-2}\sqrt{-x+3}}{x-3}+\frac{\sqrt{x-2}}{\sqrt{-x+3}-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x - 2)^(3/2)*(-x + 3)^(3/2)),x, algorithm="giac")
```

```
[Out] -(sqrt(-x + 3) - 1)/sqrt(x - 2) - 2*sqrt(x - 2)*sqrt(-x + 3)/(x -
 3) + sqrt(x - 2)/(sqrt(-x + 3) - 1)
```

3.1164 $\int \frac{1}{(3-x)^{5/2}(-2+x)^{5/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{32\sqrt{3-x}}{3\sqrt{x-2}}-\frac{16\sqrt{3-x}}{3(x-2)^{3/2}}+\frac{4}{(x-2)^{3/2}\sqrt{3-x}}+\frac{2}{3(x-2)^{3/2}(3-x)^{3/2}}$$

```
[Out] 2/(3*(3 - x)^(3/2)*(-2 + x)^(3/2)) + 4/(Sqrt[3 - x]*(-2 + x)^(3/2
)) - (16*Sqrt[3 - x])/(3*(-2 + x)^(3/2)) - (32*Sqrt[3 - x])/(3*Sq
rt[-2 + x])
```

Rubi [A] time = 0.0535757, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{32\sqrt{3-x}}{3\sqrt{x-2}}-\frac{16\sqrt{3-x}}{3(x-2)^{3/2}}+\frac{4}{(x-2)^{3/2}\sqrt{3-x}}+\frac{2}{3(x-2)^{3/2}(3-x)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((3 - x)^(5/2)*(-2 + x)^(5/2)),x]
```

```
[Out] 2/(3*(3 - x)^(3/2)*(-2 + x)^(3/2)) + 4/(Sqrt[3 - x]*(-2 + x)^(3/2
)) - (16*Sqrt[3 - x])/(3*(-2 + x)^(3/2)) - (32*Sqrt[3 - x])/(3*Sq
rt[-2 + x])
```

Rubi in Sympy [A] time = 6.68575, size = 65, normalized size = 0.82

$$\frac{32\sqrt{x-2}}{3\sqrt{-x+3}}+\frac{16\sqrt{x-2}}{3\left(-x+3\right)^{\frac{3}{2}}}-\frac{4}{\left(-x+3\right)^{\frac{3}{2}}\sqrt{x-2}}-\frac{2}{3\left(-x+3\right)^{\frac{3}{2}}\left(x-2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(3-x)**(5/2)/(-2+x)**(5/2),x)
```

```
[Out] 32*sqrt(x - 2)/(3*sqrt(-x + 3)) + 16*sqrt(x - 2)/(3*(-x + 3)**(3/
2)) - 4/((-x + 3)**(3/2)*sqrt(x - 2)) - 2/(3*(-x + 3)**(3/2)*(x -
 2)**(3/2))
```

Mathematica [A] time = 0.024145, size = 43, normalized size = 0.54

$$\frac{2\left(16x^3-120x^2+294x-235\right)}{3(x-3)(x-2)\sqrt{-x^2+5x-6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - x)^(5/2)*(-2 + x)^(5/2)),x]
```

```
[Out] (2*(-235 + 294*x - 120*x^2 + 16*x^3))/(3*(-3 + x)*(-2 + x)*Sqrt[-
6 + 5*x - x^2])
```

Maple [A] time = 0.004, size = 30, normalized size = 0.4

$$-\frac{32 x^3 - 240 x^2 + 588 x - 470}{3} (3-x)^{-\frac{3}{2}} (-2+x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-x)^(5/2)/(-2+x)^(5/2),x)
```

```
[Out] -2/3*(16*x^3-120*x^2+294*x-235)/(-2+x)^(3/2)/(3-x)^(3/2)
```

Maxima [A] time = 1.48786, size = 80, normalized size = 1.01

$$\frac{32 x}{3 \sqrt{-x^2 + 5 x - 6}} - \frac{80}{3 \sqrt{-x^2 + 5 x - 6}} + \frac{4 x}{3 (-x^2 + 5 x - 6)^{\frac{3}{2}}} - \frac{10}{3 (-x^2 + 5 x - 6)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x - 2)^(5/2)*(-x + 3)^(5/2)),x, algorithm="maxima")
```

```
[Out] 32/3*x/sqrt(-x^2 + 5*x - 6) - 80/3/sqrt(-x^2 + 5*x - 6) + 4/3*x/(
-x^2 + 5*x - 6)^(3/2) - 10/3/(-x^2 + 5*x - 6)^(3/2)
```

Fricas [A] time = 0.210469, size = 66, normalized size = 0.84

$$-\frac{2 (16 x^3 - 120 x^2 + 294 x - 235) \sqrt{x-2} \sqrt{-x+3}}{3 (x^4 - 10 x^3 + 37 x^2 - 60 x + 36)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x - 2)^(5/2)*(-x + 3)^(5/2)),x, algorithm="fricas")
```

```
[Out] -2/3*(16*x^3 - 120*x^2 + 294*x - 235)*sqrt(x - 2)*sqrt(-x + 3)/(x
^4 - 10*x^3 + 37*x^2 - 60*x + 36)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-x)**(5/2)/(-2+x)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.218095, size = 131, normalized size = 1.66

$$-\frac{\left(\sqrt{-x+3}-1\right)^{3}}{12\,(x-2)^{\frac{3}{2}}}-\frac{11\left(\sqrt{-x+3}-1\right)}{4\sqrt{x-2}}-\frac{2\,(8\,x-25)\sqrt{x-2}\sqrt{-x+3}}{3\,(x-3)^{2}}+\frac{(x-2)^{\frac{3}{2}}\left(\frac{33\left(\sqrt{-x+3}-1\right)^{2}}{x-2}+1\right)}{12\left(\sqrt{-x+3}-1\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x - 2)^(5/2)*(-x + 3)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/12*(sqrt(-x + 3) - 1)^3/(x - 2)^(3/2) - 11/4*(sqrt(-x + 3) - 1
)/sqrt(x - 2) - 2/3*(8*x - 25)*sqrt(x - 2)*sqrt(-x + 3)/(x - 3)^2
 + 1/12*(x - 2)^(3/2)*(33*(sqrt(-x + 3) - 1)^2/(x - 2) + 1)/(sqrt
(-x + 3) - 1)^3
```

3.1165 $\int \frac{1}{(3-x)^{3/2}(3+x)^{3/2}} \, dx$

Optimal. Leaf size=21

$$\frac{x}{9\sqrt{3-x}\sqrt{x+3}}$$

```
[Out] x/(9*Sqrt[3 - x]*Sqrt[3 + x])
```

Rubi [A] time = 0.0124701, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{x}{9\sqrt{3-x}\sqrt{x+3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((3 - x)^(3/2)*(3 + x)^(3/2)),x]

[Out] x/(9*Sqrt[3 - x]*Sqrt[3 + x])
```

Rubi in Sympy [A] time = 2.68114, size = 15, normalized size = 0.71

$$\frac{x}{9\sqrt{-x+3}\sqrt{x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-x)**(3/2)/(3+x)**(3/2),x)

[Out] x/(9*sqrt(-x + 3)*sqrt(x + 3))
```

Mathematica [A] time = 0.011753, size = 16, normalized size = 0.76

$$\frac{x}{9\sqrt{9-x^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - x)^(3/2)*(3 + x)^(3/2)),x]
```

```
[Out] x/(9*Sqrt[9 - x^2])
```

Maple [A] time = 0.004, size = 16, normalized size = 0.8

$$\frac{x}{9}\frac{1}{\sqrt{3-x}}\frac{1}{\sqrt{3+x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(3-x)^(3/2)/(3+x)^(3/2),x)
```

```
[Out] 1/9*x/(3-x)^(1/2)/(3+x)^(1/2)
```

Maxima [A] time = 1.34142, size = 16, normalized size = 0.76

$$\frac{x}{9\sqrt{-x^2+9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((x + 3)^(3/2)*(-x + 3)^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/9*x/sqrt(-x^2 + 9)
```

Fricas [A] time = 0.204027, size = 55, normalized size = 2.62

$$-\frac{\sqrt{x+3}x\sqrt{-x+3}-3\,x}{9\left(x^2+3\,\sqrt{x+3}\sqrt{-x+3}-9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((x + 3)^(3/2)*(-x + 3)^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/9*(sqrt(x + 3)*x*sqrt(-x + 3) - 3*x)/(x^2 + 3*sqrt(x + 3)*sqrt
(-x + 3) - 9)
```

Sympy [A] time = 11.6488, size = 75, normalized size = 3.57

$$\begin{cases} \frac{1}{9\sqrt{-1+\frac{6}{x+3}}} - \frac{1}{3\sqrt{-1+\frac{6}{x+3}}(x+3)} & \text{for } 6\left|\frac{1}{x+3}\right| > 1 \\ -\frac{i\sqrt{1-\frac{6}{x+3}}(x+3)}{9x-27} + \frac{3i\sqrt{1-\frac{6}{x+3}}}{9x-27} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-x)**(3/2)/(3+x)**(3/2),x)
```

```
[Out] Piecewise((1/(9*sqrt(-1 + 6/(x + 3))) - 1/(3*sqrt(-1 + 6/(x + 3))
*(x + 3)), 6*Abs(1/(x + 3)) > 1), (-I*sqrt(1 - 6/(x + 3))*(x + 3)
/(9*x - 27) + 3*I*sqrt(1 - 6/(x + 3))/(9*x - 27), True))
```

GIAC/XCAS [A] time = 0.225636, size = 84, normalized size = 4.

$$\frac{\sqrt{6} - \sqrt{-x+3}}{36\sqrt{x+3}} - \frac{\sqrt{x+3}\sqrt{-x+3}}{18(x-3)} - \frac{\sqrt{x+3}}{36\left(\sqrt{6} - \sqrt{-x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 3)^(3/2)*(-x + 3)^(3/2)),x, algorithm="giac")
```

```
[Out] 1/36*(sqrt(6) - sqrt(-x + 3))/sqrt(x + 3) - 1/18*sqrt(x + 3)*sqrt
(-x + 3)/(x - 3) - 1/36*sqrt(x + 3)/(sqrt(6) - sqrt(-x + 3))
```

3.1166 $\int \frac{1}{(3-bx)^{3/2}(3+bx)^{3/2}}\,dx$

Optimal. Leaf size=24

$$\frac{x}{9\sqrt{3-bx}\sqrt{bx+3}}$$

```
[Out] x/(9*Sqrt[3 - b*x]*Sqrt[3 + b*x])
```

Rubi [A] time = 0.0200175, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.05$

$$\frac{x}{9\sqrt{3-bx}\sqrt{bx+3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((3 - b*x)^(3/2)*(3 + b*x)^(3/2)),x]
```

```
[Out] x/(9*Sqrt[3 - b*x]*Sqrt[3 + b*x])
```

Rubi in Sympy [A] time = 3.84959, size = 19, normalized size = 0.79

$$\frac{x}{9\sqrt{-bx+3}\sqrt{bx+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+3)**(3/2)/(b*x+3)**(3/2),x)
```

```
[Out] x/(9*sqrt(-b*x + 3)*sqrt(b*x + 3))
```

Mathematica [A] time = 0.0190428, size = 19, normalized size = 0.79

$$\frac{x}{9\sqrt{9-b^2x^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((3 - b*x)^(3/2)*(3 + b*x)^(3/2)),x]
```

```
[Out] x/(9*Sqrt[9 - b^2*x^2])
```

Maple [A] time = 0.004, size = 19, normalized size = 0.8

$$\frac{x}{9}\frac{1}{\sqrt{-bx+3}}\frac{1}{\sqrt{bx+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(-b*x+3)^(3/2)/(b*x+3)^(3/2),x)
```

```
[Out] 1/9*x/(-b*x+3)^(1/2)/(b*x+3)^(1/2)
```

Maxima [A] time = 1.35052, size = 20, normalized size = 0.83

$$\frac{x}{9\sqrt{-b^2x^2+9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 3)^(3/2)*(-b*x + 3)^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/9*x/sqrt(-b^2*x^2 + 9)
```

Fricas [A] time = 0.201369, size = 69, normalized size = 2.88

$$-\frac{\sqrt{bx+3}\sqrt{-bx+3}x-3\,x}{9\left(b^2x^2+3\,\sqrt{bx+3}\sqrt{-bx+3}-9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 3)^(3/2)*(-b*x + 3)^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/9*(sqrt(b*x + 3)*sqrt(-b*x + 3)*x - 3*x)/(b^2*x^2 + 3*sqrt(b*x
 + 3)*sqrt(-b*x + 3) - 9)
```

Sympy [A] time = 20.4051, size = 73, normalized size = 3.04

$$-\frac{iG_{6,6}^{5,3}\left(\begin{matrix} \frac{3}{4}, \frac{5}{4}, 1 & \frac{1}{2}, \frac{3}{2}, 2 \\ \frac{3}{4}, 1, \frac{5}{4}, \frac{3}{2}, 2 & 0 \end{matrix} \middle| \frac{9}{b^2x^2}\right)}{18\pi^{\frac{3}{2}}b} + \frac{G_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2}, 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1 & \\ \frac{1}{4}, \frac{3}{4} & -\frac{1}{2}, 0, 1, 0 \end{matrix} \middle| \frac{9e^{-2i\pi}}{b^2x^2}\right)}{18\pi^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+3)**(3/2)/(b*x+3)**(3/2),x)
```

```
[Out] -I*meijerg(((3/4, 5/4, 1), (1/2, 3/2, 2)), ((3/4, 1, 5/4, 3/2, 2)
, (0,)), 9/(b**2*x**2))/(18*pi**(3/2)*b) + meijerg(((-1/2, 0, 1/4
, 1/2, 3/4, 1), ()), ((1/4, 3/4), (-1/2, 0, 1, 0)), 9*exp_polar(-
2*I*pi)/(b**2*x**2))/(18*pi**(3/2)*b)
```

GIAC/XCAS [A] time = 0.21655, size = 111, normalized size = 4.62

$$\frac{\sqrt{6} - \sqrt{-bx + 3}}{36\sqrt{bx + 3}b} - \frac{\sqrt{bx + 3}\sqrt{-bx + 3}}{18(bx - 3)b} - \frac{\sqrt{bx + 3}}{36\,b\left(\sqrt{6} - \sqrt{-bx + 3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + 3)^(3/2)*(-b*x + 3)^(3/2)),x, algorithm="giac")
```

```
[Out] 1/36*(sqrt(6) - sqrt(-b*x + 3))/(sqrt(b*x + 3)*b) - 1/18*sqrt(b*x
 + 3)*sqrt(-b*x + 3)/((b*x - 3)*b) - 1/36*sqrt(b*x + 3)/(b*(sqrt(
6) - sqrt(-b*x + 3)))
```

3.1167 $\int \frac{1}{(6-2x)^{3/2}(3+x)^{3/2}}\,dx$

Optimal. Leaf size=26

$$\frac{x}{18\sqrt{2}\sqrt{3-x}\sqrt{x+3}}$$

```
[Out] x/(18*Sqrt[2]*Sqrt[3 - x]*Sqrt[3 + x])
```

Rubi [A] time = 0.0148015, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{x}{18\sqrt{2}\sqrt{3-x}\sqrt{x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((6 - 2*x)^(3/2)*(3 + x)^(3/2)),x]

[Out] x/(18*Sqrt[2]*Sqrt[3 - x]*Sqrt[3 + x])
```

Rubi in Sympy [A] time = 2.65766, size = 17, normalized size = 0.65

$$\frac{x}{18\sqrt{-2x+6}\sqrt{x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(6-2*x)**(3/2)/(3+x)**(3/2),x)

[Out] x/(18*sqrt(-2*x + 6)*sqrt(x + 3))
```

Mathematica [A] time = 0.0382908, size = 21, normalized size = 0.81

$$\frac{x}{18\sqrt{2}\sqrt{9-x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((6 - 2*x)^(3/2)*(3 + x)^(3/2)),x]
```

```
[Out] x/(18*Sqrt[2]*Sqrt[9 - x^2])
```

Maple [A] time = 0.003, size = 19, normalized size = 0.7

$$-\frac{(-3+x)\,x}{9}\frac{1}{\sqrt{3+x}}\,(6-2\,x)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(6-2*x)^(3/2)/(3+x)^(3/2),x)
```

```
[Out] -1/9*(-3+x)/(3+x)^(1/2)*x/(6-2*x)^(3/2)
```

Maxima [A] time = 1.34648, size = 16, normalized size = 0.62

$$\frac{x}{18\,\sqrt{-2\,x^2+18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 3)^(3/2)*(-2*x + 6)^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/18*x/sqrt(-2*x^2 + 18)
```

Fricas [A] time = 0.201888, size = 30, normalized size = 1.15

$$-\frac{\sqrt{x+3}x\sqrt{-2\,x+6}}{36\,(x^2-9)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 3)^(3/2)*(-2*x + 6)^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/36*sqrt(x + 3)*x*sqrt(-2*x + 6)/(x^2 - 9)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(6-2*x)**(3/2)/(3+x)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.222175, size = 96, normalized size = 3.69

$$\frac{\sqrt{2}\left(\sqrt{6}-\sqrt{-x+3}\right)}{144\sqrt{x+3}}-\frac{\sqrt{2}\sqrt{x+3}\sqrt{-x+3}}{72\,(x-3)}-\frac{\sqrt{2}\sqrt{x+3}}{144\left(\sqrt{6}-\sqrt{-x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((x + 3)^(3/2)*(-2*x + 6)^(3/2)),x, algorithm="giac")
```

```
[Out] 1/144*sqrt(2)*(sqrt(6) - sqrt(-x + 3))/sqrt(x + 3) - 1/72*sqrt(2)
*sqrt(x + 3)*sqrt(-x + 3)/(x - 3) - 1/144*sqrt(2)*sqrt(x + 3)/(sq
rt(6) - sqrt(-x + 3))
```

3.1168 $\int \frac{1}{(6-2bx)^{3/2}(3+bx)^{3/2}}\,dx$

Optimal. Leaf size=29

$$\frac{x}{18\sqrt{2}\sqrt{3-bx}\sqrt{bx+3}}$$

```
[Out] x/(18*Sqrt[2]*Sqrt[3 - b*x]*Sqrt[3 + b*x])
```

Rubi [A] time = 0.0229281, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.05$

$$\frac{x}{18\sqrt{2}\sqrt{3-bx}\sqrt{bx+3}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((6 - 2*b*x)^(3/2)*(3 + b*x)^(3/2)),x]
```

```
[Out] x/(18*Sqrt[2]*Sqrt[3 - b*x]*Sqrt[3 + b*x])
```

Rubi in Sympy [A] time = 3.72135, size = 20, normalized size = 0.69

$$\frac{x}{18\sqrt{-2bx+6}\sqrt{bx+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(-2*b*x+6)**(3/2)/(b*x+3)**(3/2),x)
```

```
[Out] x/(18*sqrt(-2*b*x + 6)*sqrt(b*x + 3))
```

Mathematica [A] time = 0.0547824, size = 19, normalized size = 0.66

$$\frac{x}{18\sqrt{18-2b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((6 - 2*b*x)^(3/2)*(3 + b*x)^(3/2)),x]
```

```
[Out] x/(18*Sqrt[18 - 2*b^2*x^2])
```

Maple [A] time = 0.005, size = 24, normalized size = 0.8

$$-\frac{(bx-3)\,x}{9}\frac{1}{\sqrt{bx+3}}(-2\,bx+6)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-2*b*x+6)^(3/2)/(b*x+3)^(3/2),x)
```

```
[Out] -1/9*(b*x-3)/(b*x+3)^(1/2)*x/(-2*b*x+6)^(3/2)
```

Maxima [A] time = 1.34414, size = 20, normalized size = 0.69

$$\frac{x}{18\,\sqrt{-2\,b^2x^2+18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 3)^(3/2)*(-2*b*x + 6)^(3/2)),x, algorithm="maxima")
```

```
[Out] 1/18*x/sqrt(-2*b^2*x^2 + 18)
```

Fricas [A] time = 0.202442, size = 39, normalized size = 1.34

$$-\frac{\sqrt{bx+3}\sqrt{-2\,bx+6}x}{36\,(b^2x^2-9)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 3)^(3/2)*(-2*b*x + 6)^(3/2)),x, algorithm="fricas")
```

```
[Out] -1/36*sqrt(b*x + 3)*sqrt(-2*b*x + 6)*x/(b^2*x^2 - 9)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-2*b*x+6)**(3/2)/(b*x+3)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220371, size = 123, normalized size = 4.24

$$\frac{\sqrt{2}\left(\sqrt{6}-\sqrt{-bx+3}\right)}{144\sqrt{bx+3}b}-\frac{\sqrt{2}\sqrt{bx+3}\sqrt{-bx+3}}{72\,(bx-3)b}-\frac{\sqrt{2}\sqrt{bx+3}}{144\,b\left(\sqrt{6}-\sqrt{-bx+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + 3)^(3/2)*(-2*b*x + 6)^(3/2)),x, algorithm="giac")
```

```
[Out] 1/144*sqrt(2)*(sqrt(6) - sqrt(-b*x + 3))/(sqrt(b*x + 3)*b) - 1/72
*sqrt(2)*sqrt(b*x + 3)*sqrt(-b*x + 3)/((b*x - 3)*b) - 1/144*sqrt(
2)*sqrt(b*x + 3)/(b*(sqrt(6) - sqrt(-b*x + 3)))
```

3.1169 $\int \frac{1}{\sqrt{a+bx}\sqrt{-ad+bdx}}\,dx$

Optimal. Leaf size=39

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bdx-ad}}\right)}{b\sqrt{d}}$$

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[-(a*d) + b*d*x]])/(b*Sqrt
[d])
```

Rubi [A] time = 0.048064, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{bdx-ad}}\right)}{b\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[a + b*x]*Sqrt[-(a*d) + b*d*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/Sqrt[-(a*d) + b*d*x]])/(b*Sqrt
[d])
```

Rubi in Sympy [A] time = 7.33575, size = 34, normalized size = 0.87

$$\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{-ad+bdx}}{\sqrt{d}\sqrt{a+bx}}\right)}{b\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(1/2)/(b*d*x-a*d)**(1/2),x)
```

```
[Out] 2*atanh(sqrt(-a*d + b*d*x)/(sqrt(d)*sqrt(a + b*x)))/(b*sqrt(d))
```

Mathematica [A] time = 0.0631371, size = 43, normalized size = 1.1

$$\frac{\log\left(\sqrt{d}\sqrt{a+bx}\sqrt{-d(a-bx)}+bdx\right)}{b\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*Sqrt[-(a*d) + b*d*x]),x]
```

```
[Out] Log[b*d*x + Sqrt[d]*Sqrt[-(d*(a - b*x))]*Sqrt[a + b*x]]/(b*Sqrt[d
])
```

Maple [B] time = 0.013, size = 76, normalized size = 2.

$$1\sqrt{(bx+a)(bdx-ad)}\ln\left(b^2dx\frac{1}{\sqrt{b^2d}}+\sqrt{b^2dx^2-a^2d}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{bdx-ad}}\frac{1}{\sqrt{b^2d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(b*d*x-a*d)^(1/2),x)
```

```
[Out] ((b*x+a)*(b*d*x-a*d))^(1/2)/(b*x+a)^(1/2)/(b*d*x-a*d)^(1/2)*ln(b^
2*d*x/(b^2*d)^(1/2)+(b^2*d*x^2-a^2*d)^(1/2))/(b^2*d)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*d*x - a*d)*sqrt(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215054, size = 1, normalized size = 0.03

$$\left[\frac{\log\left(2\sqrt{bdx-ad}\sqrt{bx+a}bx+\left(2b^2x^2-a^2\right)\sqrt{d}\right)}{2b\sqrt{d}},\frac{\arctan\left(\frac{b\sqrt{-d}x}{\sqrt{bdx-ad}\sqrt{bx+a}}\right)}{b\sqrt{-d}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*d*x - a*d)*sqrt(b*x + a)),x, algorithm="fricas")
```

```
[Out] [1/2*log(2*sqrt(b*d*x - a*d)*sqrt(b*x + a)*b*x + (2*b^2*x^2 - a^2
)*sqrt(d))/(b*sqrt(d)), arctan(b*sqrt(-d)*x/(sqrt(b*d*x - a*d)*sq
```

```
rt(b*x + a)))/(b*sqrt(-d))]
```

Sympy [A] time = 10.76, size = 88, normalized size = 2.26

$$\frac{G_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1 \\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix} \middle| \frac{a^2}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b\sqrt{d}} - \frac{iG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0 \end{matrix} \middle| \frac{a^2e^{2i\pi}}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(b*d*x-a*d)**(1/2),x)
```

```
[Out] meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0)
, ()), a**2/(b**2*x**2))/(4*pi**(3/2)*b*sqrt(d)) - I*meijerg(((-1
/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), a
**2*exp_polar(2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b*sqrt(d))
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*d*x - a*d)*sqrt(b*x + a)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1170 $\int \frac{1}{\sqrt[4]{6-3ex}(2+ex)^{3/4}}\,dx$

Optimal. Leaf size=229

$$-\frac{\log\left(\frac{\sqrt{2-ex}-\sqrt{2}\sqrt[4]{ex+2}\sqrt[4]{2-ex}+\sqrt{ex+2}}{\sqrt{ex+2}}\right)}{\sqrt{2}\sqrt[4]{3}e}+\frac{\log\left(\frac{\sqrt{2-ex}+\sqrt{2}\sqrt[4]{ex+2}\sqrt[4]{2-ex}+\sqrt{ex+2}}{\sqrt{ex+2}}\right)}{\sqrt{2}\sqrt[4]{3}e}+\frac{\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{2-ex}}{\sqrt[4]{ex+2}}\right)}{\sqrt[4]{3}e}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{2-ex}}{\sqrt[4]{ex+2}}+1\right)}{\sqrt[4]{3}e}$$

```
[Out] (Sqrt[2]*ArcTan[1 - (Sqrt[2]*(2 - e*x)^(1/4))/(2 + e*x)^(1/4)])/(
3^(1/4)*e) - (Sqrt[2]*ArcTan[1 + (Sqrt[2]*(2 - e*x)^(1/4))/(2 + e
*x)^(1/4)])/(3^(1/4)*e) - Log[(Sqrt[2 - e*x] - Sqrt[2]*(2 - e*x)^
(1/4)*(2 + e*x)^(1/4) + Sqrt[2 + e*x])/Sqrt[2 + e*x]]/(Sqrt[2]*3^
(1/4)*e) + Log[(Sqrt[2 - e*x] + Sqrt[2]*(2 - e*x)^(1/4)*(2 + e*x)
^(1/4) + Sqrt[2 + e*x])/Sqrt[2 + e*x]]/(Sqrt[2]*3^(1/4)*e)
```

Rubi [A] time = 0.303, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.35$

$$-\frac{\log\left(\frac{\sqrt{2-ex}-\sqrt{2}\sqrt[4]{ex+2}\sqrt[4]{2-ex}+\sqrt{ex+2}}{\sqrt{ex+2}}\right)}{\sqrt{2}\sqrt[4]{3}e}+\frac{\log\left(\frac{\sqrt{2-ex}+\sqrt{2}\sqrt[4]{ex+2}\sqrt[4]{2-ex}+\sqrt{ex+2}}{\sqrt{ex+2}}\right)}{\sqrt{2}\sqrt[4]{3}e}+\frac{\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{2-ex}}{\sqrt[4]{ex+2}}\right)}{\sqrt[4]{3}e}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{2-ex}}{\sqrt[4]{ex+2}}+1\right)}{\sqrt[4]{3}e}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((6 - 3*e*x)^(1/4)*(2 + e*x)^(3/4)),x]
```

```
[Out] (Sqrt[2]*ArcTan[1 - (Sqrt[2]*(2 - e*x)^(1/4))/(2 + e*x)^(1/4)])/(
3^(1/4)*e) - (Sqrt[2]*ArcTan[1 + (Sqrt[2]*(2 - e*x)^(1/4))/(2 + e
*x)^(1/4)])/(3^(1/4)*e) - Log[(Sqrt[2 - e*x] - Sqrt[2]*(2 - e*x)^
(1/4)*(2 + e*x)^(1/4) + Sqrt[2 + e*x])/Sqrt[2 + e*x]]/(Sqrt[2]*3^
(1/4)*e) + Log[(Sqrt[2 - e*x] + Sqrt[2]*(2 - e*x)^(1/4)*(2 + e*x)
^(1/4) + Sqrt[2 + e*x])/Sqrt[2 + e*x]]/(Sqrt[2]*3^(1/4)*e)
```

Rubi in Sympy [A] time = 34.0129, size = 230, normalized size = 1.

$$-\frac{\sqrt{2}\cdot 3^{\frac{3}{4}}\log\left(-\frac{\sqrt{2}\sqrt[4]{3}\sqrt[4]{-3ex+6}}{\sqrt[4]{ex+2}}+\frac{\sqrt{-3ex+6}}{\sqrt{ex+2}}+\sqrt{3}\right)}{6e}+\frac{\sqrt{2}\cdot 3^{\frac{3}{4}}\log\left(\frac{\sqrt{2}\sqrt[4]{3}\sqrt[4]{-3ex+6}}{\sqrt[4]{ex+2}}+\frac{\sqrt{-3ex+6}}{\sqrt{ex+2}}+\sqrt{3}\right)}{6e}-\frac{\sqrt{2}\cdot 3^{\frac{3}{4}}\operatorname{atan}\left(\frac{\sqrt{2}\cdot 3^{\frac{3}{4}}\sqrt[4]{-3ex+6}}{3\sqrt[4]{ex+2}}-1\right)}{3e}-\frac{\sqrt{2}\cdot 3^{\frac{3}{4}}\operatorname{atan}\left(\frac{\sqrt{2}\cdot 3^{\frac{3}{4}}\sqrt[4]{-3ex+6}}{3\sqrt[4]{ex+2}}+1\right)}{3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-3*e*x+6)**(1/4)/(e*x+2)**(3/4),x)
```

```
[Out] -sqrt(2)*3**(3/4)*log(-sqrt(2)*3**(1/4)*(-3*e*x + 6)**(1/4)/(e*x
+ 2)**(1/4) + sqrt(-3*e*x + 6)/sqrt(e*x + 2) + sqrt(3))/(6*e) + s
qrt(2)*3**(3/4)*log(sqrt(2)*3**(1/4)*(-3*e*x + 6)**(1/4)/(e*x + 2
)**(1/4) + sqrt(-3*e*x + 6)/sqrt(e*x + 2) + sqrt(3))/(6*e) - sqrt
(2)*3**(3/4)*atan(sqrt(2)*3**(3/4)*(-3*e*x + 6)**(1/4)/(3*(e*x +
2)**(1/4)) - 1)/(3*e) - sqrt(2)*3**(3/4)*atan(sqrt(2)*3**(3/4)*(-
3*e*x + 6)**(1/4)/(3*(e*x + 2)**(1/4)) + 1)/(3*e)
```

Mathematica [C] time = 0.0417485, size = 43, normalized size = 0.19

$$\frac{2\sqrt{2}\sqrt[4]{ex+2}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{4}(ex+2)\right)}{\sqrt[4]{3}e}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((6 - 3*e*x)^(1/4)*(2 + e*x)^(3/4)),x]
```

```
[Out] (2*Sqrt[2]*(2 + e*x)^(1/4)*Hypergeometric2F1[1/4, 1/4, 5/4, (2 +
e*x)/4])/(3^(1/4)*e)
```

Maple [F] time = 0.152, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{-3\,ex+6}}\left(ex+2\right)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-3*e*x+6)^(1/4)/(e*x+2)^(3/4),x)
```

```
[Out] int(1/(-3*e*x+6)^(1/4)/(e*x+2)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex+2)^{\frac{3}{4}}(-3\,ex+6)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*x + 2)^(3/4)*(-3*e*x + 6)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((e*x + 2)^(3/4)*(-3*e*x + 6)^(1/4)), x)
```

Fricas [A] time = 0.231495, size = 689, normalized size = 3.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((e*x + 2)^(3/4)*(-3*e*x + 6)^(1/4)),x, algorithm="fricas")
```

```
[Out] 2*sqrt(2)*(1/3)^(1/4)*(e^(-4))^(1/4)*arctan(3*sqrt(2)*(1/3)^(1/4)
*(e^2*x - 2*e)*(e^(-4))^(1/4)/(2*sqrt(3)*(e*x - 2)*sqrt((sqrt(2)*
(1/3)^(1/4)*(e*x + 2)^(1/4)*(-3*e*x + 6)^(3/4)*e*(e^(-4))^(1/4) +
 3*sqrt(1/3)*(e^3*x - 2*e^2)*sqrt(e^(-4)) - sqrt(e*x + 2)*sqrt(-3
*e*x + 6))/(e*x - 2)) + 3*sqrt(2)*(1/3)^(1/4)*(e^2*x - 2*e)*(e^(-
4))^(1/4) + 2*(e*x + 2)^(1/4)*(-3*e*x + 6)^(3/4))) + 2*sqrt(2)*(1
/3)^(1/4)*(e^(-4))^(1/4)*arctan(3*sqrt(2)*(1/3)^(1/4)*(e^2*x - 2*
e)*(e^(-4))^(1/4)/(2*sqrt(3)*(e*x - 2)*sqrt(-(sqrt(2)*(1/3)^(1/4)
*(e*x + 2)^(1/4)*(-3*e*x + 6)^(3/4)*e*(e^(-4))^(1/4) - 3*sqrt(1/3
)*(e^3*x - 2*e^2)*sqrt(e^(-4)) + sqrt(e*x + 2)*sqrt(-3*e*x + 6))/
(e*x - 2)) - 3*sqrt(2)*(1/3)^(1/4)*(e^2*x - 2*e)*(e^(-4))^(1/4) +
 2*(e*x + 2)^(1/4)*(-3*e*x + 6)^(3/4))) - 1/2*sqrt(2)*(1/3)^(1/4)
*(e^(-4))^(1/4)*log(3*(sqrt(2)*(1/3)^(1/4)*(e*x + 2)^(1/4)*(-3*e*
x + 6)^(3/4)*e*(e^(-4))^(1/4) + 3*sqrt(1/3)*(e^3*x - 2*e^2)*sqrt(
e^(-4)) - sqrt(e*x + 2)*sqrt(-3*e*x + 6))/(e*x - 2)) + 1/2*sqrt(2
)*(1/3)^(1/4)*(e^(-4))^(1/4)*log(-3*(sqrt(2)*(1/3)^(1/4)*(e*x + 2
)^(1/4)*(-3*e*x + 6)^(3/4)*e*(e^(-4))^(1/4) - 3*sqrt(1/3)*(e^3*x
- 2*e^2)*sqrt(e^(-4)) + sqrt(e*x + 2)*sqrt(-3*e*x + 6))/(e*x - 2)
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-3*e*x+6)**(1/4)/(e*x+2)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ex+2)^{\frac{3}{4}}(-3\,ex+6)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((e*x + 2)^(3/4)*(-3*e*x + 6)^(1/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((e*x + 2)^(3/4)*(-3*e*x + 6)^(1/4)), x)
```

3.1171 $\int \frac{(a-iax)^{7/4}}{\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=144

$$-\frac{14a^2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{14a^2x}{5\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{14}{15}i(a-iax)^{3/4}(a+iax)^{3/4}-\frac{2i(a-iax)^{7/4}(a+iax)^{3/4}}{5a}$$

```
[Out] (14*a^2*x)/(5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - ((14*I)/15)*
(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4) - (((2*I)/5)*(a - I*a*x)^(7/4
)*(a + I*a*x)^(3/4))/a - (14*a^2*(1 + x^2)^(1/4)*EllipticE[ArcTan
[x]/2, 2])/(5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.11211, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{14a^2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{14a^2x}{5\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{14}{15}i(a-iax)^{3/4}(a+iax)^{3/4}-\frac{2i(a-iax)^{7/4}(a+iax)^{3/4}}{5a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(7/4)/(a + I*a*x)^(1/4),x]
```

```
[Out] (14*a^2*x)/(5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - ((14*I)/15)*
(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4) - (((2*I)/5)*(a - I*a*x)^(7/4
)*(a + I*a*x)^(3/4))/a - (14*a^2*(1 + x^2)^(1/4)*EllipticE[ArcTan
[x]/2, 2])/(5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{7a^2\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{5\left(a^2x^2+a^2\right)^{\frac{3}{4}}}-\frac{14i\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{15}-\frac{2i\left(-iax+a\right)^{\frac{7}{4}}\left(iax+a\right)^{\frac{3}{4}}}{5a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] 7*a**2*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2
 + a**2)**(-1/4), x)/(5*(a**2*x**2 + a**2)**(3/4)) - 14*I*(-I*a*x
```

```
 + a)**(3/4)*(I*a*x + a)**(3/4)/15 - 2*I*(-I*a*x + a)**(7/4)*(I*a
*x + a)**(3/4)/(5*a)
```

Mathematica [C] time = 0.0816059, size = 84, normalized size = 0.58

$$\frac{2a(a-iax)^{3/4}\left(7i2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)-3ix^2+7x-10i\right)}{15\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(7/4)/(a + I*a*x)^(1/4),x]
```

```
[Out] (2*a*(a - I*a*x)^(3/4)*(-10*I + 7*x - (3*I)*x^2 + (7*I)*2^(3/4)*(
1 + I*x)^(1/4)*Hypergeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/
(15*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.266, size = 104, normalized size = 0.7

$$-\frac{(20\,i+6\,x)\,(x+i)\,(x-i)\,a^2}{15}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}+\frac{7\,xa^2}{5}{}_2\mathrm{F}_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(7/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] -2/15*(10*I+3*x)*(x+I)*(x-I)*a^2/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^
(1/4)+7/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)*a^2*(-a^2
*(-1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{7}{4}}}{(i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}\left(3\,x^2+10i\,x-21\right)-15\,x\mathrm{integral}\left(\frac{14\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(x^4+x^2)},x\right)}{15\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(1/4),x, algorithm="fricas")
```

```
[Out] -1/15*(2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(3*x^2 + 10*I*x - 2
1) - 15*x*integral(14/5*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(x^4
 + x^2), x))/x
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(1/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1172 $\int \frac{(a-iax)^{3/4}}{\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=106

$$-\frac{2a\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{2ax}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i(a-iax)^{3/4}(a+iax)^{3/4}}{3a}$$

```
[Out] (2*a*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (((2*I)/3)*(a - I
*a*x)^(3/4)*(a + I*a*x)^(3/4))/a - (2*a*(1 + x^2)^(1/4)*EllipticE
[ArcTan[x]/2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.07669, antiderivative size = 106, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{2a\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{2ax}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i(a-iax)^{3/4}(a+iax)^{3/4}}{3a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(3/4)/(a + I*a*x)^(1/4),x]
```

```
[Out] (2*a*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (((2*I)/3)*(a - I
*a*x)^(3/4)*(a + I*a*x)^(3/4))/a - (2*a*(1 + x^2)^(1/4)*EllipticE
[ArcTan[x]/2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{a^3\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\left(a^2x^2+a^2\right)^{\frac{5}{4}}}\,dx}{\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{2x\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{a\left(x^2+1\right)}-\frac{2i\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -a**3*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2
+ a**2)**(-5/4), x)/(a**2*x**2 + a**2)**(3/4) + 2*x*(-I*a*x + a)*
*(3/4)*(I*a*x + a)**(3/4)/(a*(x**2 + 1)) - 2*I*(-I*a*x + a)**(3/4
)*(I*a*x + a)**(3/4)/(3*a)
```

Mathematica [C] time = 0.0532324, size = 74, normalized size = 0.7

$$\frac{2(a-iax)^{3/4}\left(i2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-i\right)}{3\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(3/4)/(a + I*a*x)^(1/4),x]
```

```
[Out] (2*(a - I*a*x)^(3/4)*(-I + x + I*2^(3/4)*(1 + I*x)^(1/4)*Hypergeo
metric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(3*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.058, size = 94, normalized size = 0.9

$$-\frac{2i}{3}(x+i)(x-i)a\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}+ax{}_2\mathrm{F}_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2(-1+ix)(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(3/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] -2/3*I*(x+I)*(x-I)*a/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)+1/(a^2
)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)*a*(-a^2*(-1+I*x)*(1+I*x
))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-i\,ax+a)^{\frac{3}{4}}}{(i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\,ax\text{integral}\left(\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{ax^4+ax^2},x\right)-2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}(i\,x-3)}{3\,ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(1/4),x, algorithm="fricas")
```

```
[Out] 1/3*(3*a*x*integral(2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a*x^4
 + a*x^2), x) - 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(I*x - 3))
/(a*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-a\,(ix-1))^{\frac{3}{4}}}{\sqrt[4]{a\,(ix+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(3/4)/(a*(I*x + 1))**(1/4), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(1/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1173 $\int \frac{1}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=71

$$\frac{2x}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

```
[Out] (2*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (2*(1 + x^2)^(1/4)*
EllipticE[ArcTan[x]/2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0445768, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2x}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (2*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (2*(1 + x^2)^(1/4)*
EllipticE[ArcTan[x]/2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{(a^2x^2+a^2)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] (-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2
)**(-1/4), x)/(a**2*x**2 + a**2)**(3/4)
```

Mathematica [C] time = 0.0435202, size = 70, normalized size = 0.99

$$\frac{2i2^{3/4}\sqrt[4]{1+ix}(a-iax)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)}{3a\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (((2*I)/3)*2^(3/4)*(1 + I*x)^(1/4)*(a - I*a*x)^(3/4)*Hypergeometr
ic2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(a*(a + I*a*x)^(1/4))
```

Maple [F] time = 0.054, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{a-iax}}\frac{1}{\sqrt[4]{a+iax}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{a^2x\text{integral}\left(\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^2x^4+a^2x^2},x\right)+2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)),x, algorithm="fricas")
```

```
[Out] (a^2*x*integral(2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a^2*x^4 +
 a^2*x^2), x) + 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4))/(a^2*x)
```

Sympy [A] time = 11.3314, size = 102, normalized size = 1.44

$$-\frac{iG_{6,6}^{5,3}\left(\begin{matrix}\frac{1}{8},\frac{5}{8},1 & \frac{1}{4},\frac{1}{2},\frac{3}{4}\\ -\frac{1}{4},\frac{1}{8},\frac{1}{4},\frac{5}{8},\frac{3}{4} & 0\end{matrix}\middle|\frac{e^{-3i\pi}}{x^2}\right)e^{\frac{i\pi}{4}}}{4\pi\sqrt{a}\left(\frac{1}{4}\right)}+\frac{iG_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{3}{8},0,\frac{1}{8},\frac{1}{2},1 & \\ -\frac{3}{8},\frac{1}{8} & -\frac{1}{2},-\frac{1}{4},0,0\end{matrix}\middle|\frac{e^{-i\pi}}{x^2}\right)}{4\pi\sqrt{a}\left(\frac{1}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -I*meijerg(((1/8, 5/8, 1), (1/4, 1/2, 3/4)), ((-1/4, 1/8, 1/4, 5/
8, 3/4), (0,)), exp_polar(-3*I*pi)/x**2)*exp(I*pi/4)/(4*pi*sqrt(a
)*gamma(1/4)) + I*meijerg(((-1/2, -3/8, 0, 1/8, 1/2, 1), ()), ((-
3/8, 1/8), (-1/2, -1/4, 0, 0)), exp_polar(-I*pi)/x**2)/(4*pi*sqrt
(a)*gamma(1/4))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1174 $\int \frac{1}{(a-iax)^{5/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=78

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

```
[Out] (-2*I)/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)^(1/
4)*EllipticE[ArcTan[x]/2, 2])/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1
/4))
```

Rubi [A] time = 0.0642417, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.16$

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (-2*I)/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)^(1/
4)*EllipticE[ArcTan[x]/2, 2])/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1
/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2i}{a\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}-\frac{(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{a\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{2x(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}}{a^3\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -2*I/(a*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)) - (-I*a*x + a)**(
3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-1/4), x)/(
a*(a**2*x**2 + a**2)**(3/4)) + 2*x*(-I*a*x + a)**(3/4)*(I*a*x + a
)**(3/4)/(a**3*(x**2 + 1))
```

Mathematica [C] time = 0.092477, size = 82, normalized size = 1.05

$$\frac{-2\,2^{3/4}\sqrt[4]{1+ix}(x+i)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+6x-6i}{3a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (-6*I + 6*x - 2*2^(3/4)*(1 + I*x)^(1/4)*(I + x)*Hypergeometric2F1
[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(3*a*(a - I*a*x)^(1/4)*(a + I*a*x
)^(1/4))
```

Maple [C] time = 0.082, size = 94, normalized size = 1.2

$$2\,\frac{x-i}{\sqrt[4]{-a\,(-1+ix)}\sqrt[4]{a\,(1+ix)}a}-\frac{x}{a}{}_2F_1(\frac{1}{4},\frac{1}{2};\ \frac{3}{2};\ -x^2)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(5/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2*(x-I)/a/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-1/(a^2)^(1/4)*x*h
ypergeom([1/4,1/2],[3/2],-x^2)/a*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-
a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(a^3x^2+i\,a^3x\right)\text{integral}\left(-\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^3x^4+a^3x^2},x\right)-2i\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^3x^2+i\,a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(5/4)),x, algorithm="fricas")
```

```
[Out] ((a^3*x^2 + I*a^3*x)*integral(-2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(
3/4)/(a^3*x^4 + a^3*x^2), x) - 2*I*(I*a*x + a)^(3/4)*(-I*a*x + a)
^(3/4))/(a^3*x^2 + I*a^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{a\,(ix+1)}\,(-a\,(ix-1))^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(1/4)*(-a*(I*x - 1))**(5/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(5/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1175 $\int \frac{1}{(a-iax)^{9/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=82

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{4i}{5a(a-iax)^{5/4}\sqrt[4]{a+iax}}$$

```
[Out] ((-4*I)/5)/(a*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)
^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^2*(a - I*a*x)^(1/4)*(a + I
*a*x)^(1/4))
```

Rubi [A] time = 0.0643351, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{4i}{5a(a-iax)^{5/4}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] ((-4*I)/5)/(a*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)
^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^2*(a - I*a*x)^(1/4)*(a + I
*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{4i}{5a\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}-\frac{\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{5a^2\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{2x\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{5a^4\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -4*I/(5*a*(-I*a*x + a)**(5/4)*(I*a*x + a)**(1/4)) - (-I*a*x + a)*
*(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-1/4), x)
/(5*a**2*(a**2*x**2 + a**2)**(3/4)) + 2*x*(-I*a*x + a)**(3/4)*(I*
a*x + a)**(3/4)/(5*a**4*(x**2 + 1))
```

Mathematica [C] time = 0.103856, size = 97, normalized size = 1.18

$$\frac{6\left(x^2+ix+2\right)-2\,2^{3/4}\sqrt[4]{1+ix}(x+i)^2\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)}{15a^2(x+i)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (6*(2 + I*x + x^2) - 2*2^(3/4)*(1 + I*x)^(1/4)*(I + x)^2*Hypergeo
metric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(15*a^2*(I + x)*(a - I*a
*x)^(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.193, size = 105, normalized size = 1.3

$$\frac{2x^2+4+2ix}{(5x+5i)a^2}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}} - \frac{x}{5a^2}{}_2\mathrm{F}_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2(-1+ix)(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(9/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/5*(x^2+2+I*x)/(x+I)/a^2/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-1
/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)/a^2*(-a^2*(-1+I*
x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(9/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(9/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}(2\,x+4i)+\left(5\,a^4x^2+10i\,a^4x-5\,a^4\right)\mathrm{integral}\left(-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(a^4x^2+a^4)},x\right)}{5\,a^4x^2+10i\,a^4x-5\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(9/4)),x, algorithm="fricas")
```

```
[Out] ((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(2*x + 4*I) + (5*a^4*x^2 +
10*I*a^4*x - 5*a^4)*integral(-1/5*(I*a*x + a)^(3/4)*(-I*a*x + a)^
(3/4)/(a^4*x^2 + a^4), x))/(5*a^4*x^2 + 10*I*a^4*x - 5*a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(9/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1176 $\int \frac{1}{(a-iax)^{13/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=115

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{15a^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i(a+iax)^{3/4}}{9a^2(a-iax)^{9/4}}-\frac{4i}{15a^2(a-iax)^{5/4}\sqrt[4]{a+iax}}$$

```
[Out] ((-4*I)/15)/(a^2*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) - (((2*I)/9
)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(9/4)) + (2*(1 + x^2)^(1/4)
*EllipticE[ArcTan[x]/2, 2])/(15*a^3*(a - I*a*x)^(1/4)*(a + I*a*x)
^(1/4))
```

Rubi [A] time = 0.0961207, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{15a^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i(a+iax)^{3/4}}{9a^2(a-iax)^{9/4}}-\frac{4i}{15a^2(a-iax)^{5/4}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] ((-4*I)/15)/(a^2*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) - (((2*I)/9
)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(9/4)) + (2*(1 + x^2)^(1/4)
*EllipticE[ArcTan[x]/2, 2])/(15*a^3*(a - I*a*x)^(1/4)*(a + I*a*x)
^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{(a^2x^2+a^2)^{\frac{5}{4}}}\,dx}{15a\,(a^2x^2+a^2)^{\frac{3}{4}}}-\frac{4i}{15a^2\,(-iax+a)^{\frac{5}{4}}\sqrt[4]{iax+a}}-\frac{2i\,(iax+a)^{\frac{3}{4}}}{9a^2\,(-iax+a)^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] (-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2
)**(-5/4), x)/(15*a*(a**2*x**2 + a**2)**(3/4)) - 4*I/(15*a**2*(-I
*a*x + a)**(5/4)*(I*a*x + a)**(1/4)) - 2*I*(I*a*x + a)**(3/4)/(9*
a**2*(-I*a*x + a)**(9/4))
```

Mathematica [C] time = 0.118992, size = 103, normalized size = 0.9

$$\frac{-2\, 2^{3/4}\sqrt[4]{1+ix}(x+i)^3\, {}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+6x^3+12ix^2-4x+22i}{45a^3(x+i)^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (22*I - 4*x + (12*I)*x^2 + 6*x^3 - 2*2^(3/4)*(1 + I*x)^(1/4)*(I +
 x)^3*Hypergeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(45*a^3*(I
 + x)^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.089, size = 113, normalized size = 1.

$$\frac{12\,ix^2+6\,x^3-4\,x+22\,i}{45\,(x+i)^2\,a^3}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}-\frac{x}{15\,a^3}{}_2F_1(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(13/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/45*(6*I*x^2+3*x^3-2*x+11*I)/(x+I)^2/a^3/(-a*(-1+I*x))^(1/4)/(a*
(1+I*x))^(1/4)-1/15/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)
/a^3*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x)
)^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{13}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(13/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(13/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}\left(3\,x^2+9i\,x-11\right)+\left(45\,a^5x^3+135i\,a^5x^2-135\,a^5x-45i\,a^5\right)\mathrm{integral}\left(-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{15\,(a^5x^2+a^5)},x\right)}{45\,a^5x^3+135i\,a^5x^2-135\,a^5x-45i\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(13/4)),x, algorithm="fricas")
```

```
[Out] (2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(3*x^2 + 9*I*x - 11) + (4
5*a^5*x^3 + 135*I*a^5*x^2 - 135*a^5*x - 45*I*a^5)*integral(-1/15*
(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a^5*x^2 + a^5), x))/(45*a^5
*x^3 + 135*I*a^5*x^2 - 135*a^5*x - 45*I*a^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(13/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1177 $\int \frac{1}{(a-iax)^{17/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=148

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{39a^4\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{10i(a+iax)^{3/4}}{117a^3(a-iax)^{9/4}}-\frac{4i}{39a^3(a-iax)^{5/4}\sqrt[4]{a+iax}}-\frac{2i(a+iax)^{3/4}}{13a^2(a-iax)^{13/4}}$$

```
[Out] ((-4*I)/39)/(a^3*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) - (((2*I)/1
3)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(13/4)) - (((10*I)/117)*(a
 + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(9/4)) + (2*(1 + x^2)^(1/4)*Ell
ipticE[ArcTan[x]/2, 2])/(39*a^4*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Rubi [A] time = 0.129395, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{39a^4\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{10i(a+iax)^{3/4}}{117a^3(a-iax)^{9/4}}-\frac{4i}{39a^3(a-iax)^{5/4}\sqrt[4]{a+iax}}-\frac{2i(a+iax)^{3/4}}{13a^2(a-iax)^{13/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(17/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] ((-4*I)/39)/(a^3*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) - (((2*I)/1
3)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(13/4)) - (((10*I)/117)*(a
 + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(9/4)) + (2*(1 + x^2)^(1/4)*Ell
ipticE[ArcTan[x]/2, 2])/(39*a^4*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2i\left(iax+a\right)^{\frac{3}{4}}}{13a^2\left(-iax+a\right)^{\frac{13}{4}}}-\frac{4i}{39a^3\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}-\frac{10i\left(iax+a\right)^{\frac{3}{4}}}{117a^3\left(-iax+a\right)^{\frac{9}{4}}}-\frac{\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{39a^4\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{2x\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{39a^6\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(17/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(3/4)/(13*a**2*(-I*a*x + a)**(13/4)) - 4*I/(39*
a**3*(-I*a*x + a)**(5/4)*(I*a*x + a)**(1/4)) - 10*I*(I*a*x + a)**
(3/4)/(117*a**3*(-I*a*x + a)**(9/4)) - (-I*a*x + a)**(3/4)*(I*a*x
 + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-1/4), x)/(39*a**4*(a*
*2*x**2 + a**2)**(3/4)) + 2*x*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3
/4)/(39*a**6*(x**2 + 1))
```

Mathematica [C] time = 0.138672, size = 102, normalized size = 0.69

$$-\frac{2\left(2^{3/4}\sqrt[4]{1+ix}(x+i)^4\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)-3x^4-9ix^3+8x^2+20\right)}{117a^4(x+i)^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(17/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (-2*(20 + 8*x^2 - (9*I)*x^3 - 3*x^4 + 2^(3/4)*(1 + I*x)^(1/4)*(I
+ x)^4*Hypergeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(117*a^4
*(I + x)^3*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.1, size = 114, normalized size = 0.8

$$\frac{18\,ix^3+6\,x^4-40-16\,x^2}{117\,(x+i)^3\,a^4}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}-\frac{x}{39\,a^4}{}_2\mathrm{F}_1(\frac{1}{4},\frac{1}{2};\,\frac{3}{2};\,-x^2)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(17/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/117*(9*I*x^3+3*x^4-20-8*x^2)/(x+I)^3/a^4/(-a*(-1+I*x))^(1/4)/(a
*(1+I*x))^(1/4)-1/39/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2
)/a^4*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x
))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{17}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(17/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(17/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(6\,x^3+24i\,x^2-40\,x-40i\right)(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}+\left(117\,a^6x^4+468i\,a^6x^3-702\,a^6x^2-468i\,a^6x+117\,a^6\right)\text{integral}\left(-\frac{(i\,ax+}{3}\right.}{117\,a^6x^4+468i\,a^6x^3-702\,a^6x^2-468i\,a^6x+117\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(17/4)),x, algorithm="fricas")
```

```
[Out] ((6*x^3 + 24*I*x^2 - 40*x - 40*I)*(I*a*x + a)^(3/4)*(-I*a*x + a)^
(3/4) + (117*a^6*x^4 + 468*I*a^6*x^3 - 702*a^6*x^2 - 468*I*a^6*x
+ 117*a^6)*integral(-1/39*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a
^6*x^2 + a^6), x))/(117*a^6*x^4 + 468*I*a^6*x^3 - 702*a^6*x^2 - 4
68*I*a^6*x + 117*a^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(17/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(17/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1178 $\int \frac{\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=256

$$-\frac{i\sqrt[4]{a-iax}(a+iax)^{3/4}}{a}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}+\frac{i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

```
[Out] ((-I)*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4))/a - (I*ArcTan[1 - (Sqr
t[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + (I*ArcTan[1
 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((I/
2)*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a*x)
^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + ((I/2)*Log[1 + Sqrt[a - I*a
*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/
4)])/Sqrt[2]
```

Rubi [A] time = 0.297254, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32

$$-\frac{i\sqrt[4]{a-iax}(a+iax)^{3/4}}{a}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}+\frac{i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(1/4)/(a + I*a*x)^(1/4),x]
```

```
[Out] ((-I)*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4))/a - (I*ArcTan[1 - (Sqr
t[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + (I*ArcTan[1
 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((I/
2)*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a*x)
^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + ((I/2)*Log[1 + Sqrt[a - I*a
*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/
4)])/Sqrt[2]
```

Rubi in Sympy [A] time = 36.3058, size = 212, normalized size = 0.83

$$-\frac{\sqrt{2}i\log\left(-\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}+\frac{\sqrt{2}i\log\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}+\frac{\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}-1\right)}{2}+\frac{\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+1\right)}{2}-\frac{i\sqrt[4]{-iax+a}\,(iax+a)^{\frac{3}{4}}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -sqrt(2)*I*log(-sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) +
sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1)/4 + sqrt(2)*I*log(sqrt(2)*(
-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + sqrt(-I*a*x + a)/sqrt(I*a
*x + a) + 1)/4 + sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*
x + a)**(1/4) - 1)/2 + sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/4)
/(I*a*x + a)**(1/4) + 1)/2 - I*(-I*a*x + a)**(1/4)*(I*a*x + a)**(
3/4)/a
```

Mathematica [C] time = 0.0554601, size = 71, normalized size = 0.28

$$\frac{\sqrt[4]{a-iax}\left(i2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-i\right)}{\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(1/4)/(a + I*a*x)^(1/4),x]
```

```
[Out] ((a - I*a*x)^(1/4)*(-I + x + I*2^(3/4)*(1 + I*x)^(1/4)*Hypergeome
tric2F1[1/4, 1/4, 5/4, 1/2 - (I/2)*x]))/(a + I*a*x)^(1/4)
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{a-iax}\frac{1}{\sqrt[4]{a+iax}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(1/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] int((a-I*a*x)^(1/4)/(a+I*a*x)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4), x)
```

Fricas [A] time = 0.218075, size = 262, normalized size = 1.02

$$\frac{\sqrt{i}a\log\left(\frac{\sqrt{i}(ax-i\,a)+(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{x-i}\right)-\sqrt{i}a\log\left(-\frac{\sqrt{i}(ax-i\,a)-(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{x-i}\right)+\sqrt{-i}a\log\left(\frac{\sqrt{-i}(ax-i\,a)+(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{x-i}\right)}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(I)*a*log((sqrt(I)*(a*x - I*a) + (I*a*x + a)^(3/4)*(-I*a
*x + a)^(1/4))/(x - I)) - sqrt(I)*a*log(-(sqrt(I)*(a*x - I*a) - (
I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(x - I)) + sqrt(-I)*a*log((s
qrt(-I)*(a*x - I*a) + (I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(x -
I)) - sqrt(-I)*a*log(-(sqrt(-I)*(a*x - I*a) - (I*a*x + a)^(3/4)*(
-I*a*x + a)^(1/4))/(x - I)) - 2*I*(I*a*x + a)^(3/4)*(-I*a*x + a)^
(1/4))/a
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{-a\,(ix-1)}}{\sqrt[4]{a\,(ix+1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(1/4)/(a*(I*x + 1))**(1/4), x)
```

GIAC/XCAS [A] time = 0.252811, size = 252, normalized size = 0.98

$$\frac{1}{2} i \sqrt{2} \arctan\left(\frac{1}{2} \sqrt{2}\left(\sqrt{2} + \frac{2 (-i ax + a)^{\frac{1}{4}}}{(i ax + a)^{\frac{1}{4}}}\right)\right) + \frac{1}{2} i \sqrt{2} \arctan\left(-\frac{1}{2} \sqrt{2}\left(\sqrt{2} - \frac{2 (-i ax + a)^{\frac{1}{4}}}{(i ax + a)^{\frac{1}{4}}}\right)\right) + \frac{1}{4} i \sqrt{2} \ln\left(\frac{\sqrt{2}(-i ax + a)^{\frac{1}{4}}}{(i ax + a)^{\frac{1}{4}}} + \frac{\sqrt{-i ax + a}}{\sqrt{i ax + a}} + 1\right) - \frac{1}{4} i \sqrt{2} \ln\left(-\frac{\sqrt{2}(-i ax + a)^{\frac{1}{4}}}{(i ax + a)^{\frac{1}{4}}} + \frac{\sqrt{-i ax + a}}{\sqrt{i ax + a}} + 1\right) + \frac{i (-i ax + a)^{\frac{1}{4}} (-i ax - a)}{(i ax + a)^{\frac{1}{4}} a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4),x, algorithm="giac")
```

```
[Out] 1/2*I*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*(-I*a*x + a)^(1/4)/
(I*a*x + a)^(1/4))) + 1/2*I*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)
- 2*(-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4))) + 1/4*I*sqrt(2)*ln(sqr
t(2)*(-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4) + sqrt(-I*a*x + a)/sqrt
(I*a*x + a) + 1) - 1/4*I*sqrt(2)*ln(-sqrt(2)*(-I*a*x + a)^(1/4)/(
I*a*x + a)^(1/4) + sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1) + I*(-I*
a*x + a)^(1/4)*(-I*a*x - a)/((I*a*x + a)^(1/4)*a)
```

3.1179 $\int \frac{1}{(a-iax)^{3/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=233

$$-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}+\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

```
[Out] ((-I)*Sqrt[2]*ArcTan[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^
(1/4)])/a + (I*Sqrt[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a
+ I*a*x)^(1/4)])/a - (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] -
 (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) + (I
*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(
1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a)
```

Rubi [A] time = 0.20261, antiderivative size = 233, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.28$

$$-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}+\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(1/4)),x]
```


```
[Out] ((-I)*Sqrt[2]*ArcTan[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^
(1/4)])/a + (I*Sqrt[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a
+ I*a*x)^(1/4)])/a - (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] -
 (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) + (I
*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(
1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a)
```

Rubi in Sympy [A] time = 28.338, size = 192, normalized size = 0.82

$$-\frac{\sqrt{2}i\log\left(-\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{2a}+\frac{\sqrt{2}i\log\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{2a}+\frac{\sqrt{2}i\operatorname{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}-1\right)}{a}+\frac{\sqrt{2}i\operatorname{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+1\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -sqrt(2)*I*log(-sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) +
sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1)/(2*a) + sqrt(2)*I*log(sqrt(
2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + sqrt(-I*a*x + a)/sqrt
(I*a*x + a) + 1)/(2*a) + sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/
4)/(I*a*x + a)**(1/4) - 1)/a + sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a
)**(1/4)/(I*a*x + a)**(1/4) + 1)/a
```

Mathematica [C] time = 0.0433785, size = 68, normalized size = 0.29

$$\frac{2i2^{3/4}\sqrt[4]{1+ix}\sqrt[4]{a-iax}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)}{a\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] ((2*I)*2^(3/4)*(1 + I*x)^(1/4)*(a - I*a*x)^(1/4)*Hypergeometric2F
1[1/4, 1/4, 5/4, 1/2 - (I/2)*x])/(a*(a + I*a*x)^(1/4))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\left(a-iax\right)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a+iax}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)), x)
```

Fricas [A] time = 0.222234, size = 306, normalized size = 1.31

$$\frac{1}{2}\sqrt{\frac{4i}{a^2}}\log\left(\frac{\left(a^2x-i\,a^2\right)\sqrt{\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right)-\frac{1}{2}\sqrt{\frac{4i}{a^2}}\log\left(-\frac{\left(a^2x-i\,a^2\right)\sqrt{\frac{4i}{a^2}}-2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right)+\frac{1}{2}\sqrt{-\frac{4i}{a^2}}\log\left(\frac{\left(a^2x-i\,a^2\right)\sqrt{-\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right)-\frac{1}{2}\sqrt{-\frac{4i}{a^2}}\log\left(-\frac{\left(a^2x-i\,a^2\right)\sqrt{-\frac{4i}{a^2}}-2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(4*I/a^2)*log(((a^2*x - I*a^2)*sqrt(4*I/a^2) + 2*(I*a*x +
 a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I)) - 1/2*sqrt(4*I/a^2)*lo
g(-((a^2*x - I*a^2)*sqrt(4*I/a^2) - 2*(I*a*x + a)^(3/4)*(-I*a*x +
 a)^(1/4))/(2*x - 2*I)) + 1/2*sqrt(-4*I/a^2)*log(((a^2*x - I*a^2)
*sqrt(-4*I/a^2) + 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x -
2*I)) - 1/2*sqrt(-4*I/a^2)*log(-((a^2*x - I*a^2)*sqrt(-4*I/a^2) -
 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{a\,(ix+1)}\,(-a\,(ix-1))^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(1/4)*(-a*(I*x - 1))**(3/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1180 $\int \frac{1}{(a-iax)^{7/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=33

$$-\frac{2i(a+iax)^{3/4}}{3a^2(a-iax)^{3/4}}$$

```
[Out] (((-2*I)/3)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(3/4))
```

Rubi [A] time = 0.0230548, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.04$

$$-\frac{2i(a+iax)^{3/4}}{3a^2(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (((-2*I)/3)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 5.7752, size = 29, normalized size = 0.88

$$-\frac{2i\left(iax+a\right)^{\frac{3}{4}}}{3a^2\left(-iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(3/4)/(3*a**2*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0331662, size = 33, normalized size = 1.

$$-\frac{2i(a+iax)^{3/4}}{3a^2(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (((-2*I)/3)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(3/4))
```

Maple [A] time = 0.074, size = 31, normalized size = 0.9

$$\frac{2x-2i}{3a}(-a(-1+ix))^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/3/a/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(x-I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(7/4)), x)
```

Fricas [A] time = 0.205049, size = 35, normalized size = 1.06

$$\frac{2x-2i}{3(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(7/4)),x, algorithm="fricas")
```

```
[Out] 1/3*(2*x - 2*I)/((I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)*a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(7/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1181 $\int \frac{1}{(a-iax)^{11/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=67

$$-\frac{4i(a+iax)^{3/4}}{21a^3(a-iax)^{3/4}}-\frac{2i(a+iax)^{3/4}}{7a^2(a-iax)^{7/4}}$$

```
[Out] (((-2*I)/7)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(7/4)) - (((4*I)/
21)*(a + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(3/4))
```

Rubi [A] time = 0.0506923, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$-\frac{4i(a+iax)^{3/4}}{21a^3(a-iax)^{3/4}}-\frac{2i(a+iax)^{3/4}}{7a^2(a-iax)^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (((-2*I)/7)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(7/4)) - (((4*I)/
21)*(a + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 12.0996, size = 58, normalized size = 0.87

$$-\frac{2i\,(iax+a)^{\frac{3}{4}}}{7a^2\,(-iax+a)^{\frac{7}{4}}}-\frac{4i\,(iax+a)^{\frac{3}{4}}}{21a^3\,(-iax+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(3/4)/(7*a**2*(-I*a*x + a)**(7/4)) - 4*I*(I*a*x
 + a)**(3/4)/(21*a**3*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0441887, size = 45, normalized size = 0.67

$$\frac{2(5-2ix)(a+iax)^{3/4}}{21a^3(x+i)(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (2*(5 - (2*I)*x)*(a + I*a*x)^(3/4))/(21*a^3*(I + x)*(a - I*a*x)^(
3/4))
```

Maple [A] time = 0.069, size = 44, normalized size = 0.7

$$\frac{4x^2 + 10 + 6ix}{21a^2(x+i)}(-a(-1+ix))^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/21/a^2/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(2*x^2+5+3*I*x)/(x
+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{11}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(11/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(11/4)), x)
```

Fricas [A] time = 0.206083, size = 55, normalized size = 0.82

$$\frac{2\left(2x^2 + 3i\,x + 5\right)}{21\,(a^2x + i\,a^2)(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(11/4)),x, algorithm="fricas")
```

```
[Out] 2/21*(2*x^2 + 3*I*x + 5)/((a^2*x + I*a^2)*(I*a*x + a)^(1/4)*(-I*a
*x + a)^(3/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(11/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1182 $\int \frac{1}{(a-iax)^{15/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=100

$$-\frac{16i(a+iax)^{3/4}}{231a^4(a-iax)^{3/4}}-\frac{8i(a+iax)^{3/4}}{77a^3(a-iax)^{7/4}}-\frac{2i(a+iax)^{3/4}}{11a^2(a-iax)^{11/4}}$$

```
[Out] (((-2*I)/11)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(11/4)) - (((8*I
)/77)*(a + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(7/4)) - (((16*I)/231)*
(a + I*a*x)^(3/4))/(a^4*(a - I*a*x)^(3/4))
```

Rubi [A] time = 0.0814795, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$-\frac{16i(a+iax)^{3/4}}{231a^4(a-iax)^{3/4}}-\frac{8i(a+iax)^{3/4}}{77a^3(a-iax)^{7/4}}-\frac{2i(a+iax)^{3/4}}{11a^2(a-iax)^{11/4}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a - I*a*x)^(15/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (((-2*I)/11)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(11/4)) - (((8*I
)/77)*(a + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(7/4)) - (((16*I)/231)*
(a + I*a*x)^(3/4))/(a^4*(a - I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 18.3467, size = 87, normalized size = 0.87

$$-\frac{2i\left(iax+a\right)^{\frac{3}{4}}}{11a^2\left(-iax+a\right)^{\frac{11}{4}}}-\frac{8i\left(iax+a\right)^{\frac{3}{4}}}{77a^3\left(-iax+a\right)^{\frac{7}{4}}}-\frac{16i\left(iax+a\right)^{\frac{3}{4}}}{231a^4\left(-iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a-I*a*x)**(15/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(3/4)/(11*a**2*(-I*a*x + a)**(11/4)) - 8*I*(I*a
*x + a)**(3/4)/(77*a**3*(-I*a*x + a)**(7/4)) - 16*I*(I*a*x + a)**
(3/4)/(231*a**4*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0524535, size = 52, normalized size = 0.52

$$\frac{2\left(-8ix^2+28x+41i\right)(a+iax)^{3/4}}{231a^4(x+i)^2(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(15/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (2*(a + I*a*x)^(3/4)*(41*I + 28*x - (8*I)*x^2))/(231*a^4*(I + x)^
2*(a - I*a*x)^(3/4))
```

Maple [A] time = 0.068, size = 50, normalized size = 0.5

$$\frac{40\,ix^{2}+16\,x^{3}-26\,x+82\,i}{231\,a^{3}\left(x+i\right)^{2}}\left(-a\left(-1+ix\right)\right)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a\left(1+ix\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(15/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/231/a^3/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(20*I*x^2+8*x^3-1
3*x+41*I)/(x+I)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(i\,ax+a\right)^{\frac{1}{4}}\left(-i\,ax+a\right)^{\frac{15}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(15/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(15/4)), x)
```

Fricas [A] time = 0.205212, size = 73, normalized size = 0.73

$$\frac{16\,x^{3}+40i\,x^{2}-26\,x+82i}{\left(231\,a^{3}x^{2}+462i\,a^{3}x-231\,a^{3}\right)\left(i\,ax+a\right)^{\frac{1}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(15/4)),x, algorithm="fricas")
```

```
[Out] (16*x^3 + 40*I*x^2 - 26*x + 82*I)/((231*a^3*x^2 + 462*I*a^3*x - 2
31*a^3)*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(15/4)/(a+I*a*x)**(1/4),x)

[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(15/4)),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.1183 $\int \frac{1}{(a-iax)^{19/4}\sqrt[4]{a+iax}}\,dx$

Optimal. Leaf size=133

$$-\frac{32i(a+iax)^{3/4}}{1155a^5(a-iax)^{3/4}}-\frac{16i(a+iax)^{3/4}}{385a^4(a-iax)^{7/4}}-\frac{4i(a+iax)^{3/4}}{55a^3(a-iax)^{11/4}}-\frac{2i(a+iax)^{3/4}}{15a^2(a-iax)^{15/4}}$$

```
[Out] (((-2*I)/15)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(15/4)) - (((4*I
)/55)*(a + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(11/4)) - (((16*I)/385)
*(a + I*a*x)^(3/4))/(a^4*(a - I*a*x)^(7/4)) - (((32*I)/1155)*(a +
 I*a*x)^(3/4))/(a^5*(a - I*a*x)^(3/4))
```

Rubi [A] time = 0.116078, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$-\frac{32i(a+iax)^{3/4}}{1155a^5(a-iax)^{3/4}}-\frac{16i(a+iax)^{3/4}}{385a^4(a-iax)^{7/4}}-\frac{4i(a+iax)^{3/4}}{55a^3(a-iax)^{11/4}}-\frac{2i(a+iax)^{3/4}}{15a^2(a-iax)^{15/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(19/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (((-2*I)/15)*(a + I*a*x)^(3/4))/(a^2*(a - I*a*x)^(15/4)) - (((4*I
)/55)*(a + I*a*x)^(3/4))/(a^3*(a - I*a*x)^(11/4)) - (((16*I)/385)
*(a + I*a*x)^(3/4))/(a^4*(a - I*a*x)^(7/4)) - (((32*I)/1155)*(a +
 I*a*x)^(3/4))/(a^5*(a - I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 25.8857, size = 116, normalized size = 0.87

$$-\frac{2i\,(iax+a)^{\frac{3}{4}}}{15a^2\,(-iax+a)^{\frac{15}{4}}}-\frac{4i\,(iax+a)^{\frac{3}{4}}}{55a^3\,(-iax+a)^{\frac{11}{4}}}-\frac{16i\,(iax+a)^{\frac{3}{4}}}{385a^4\,(-iax+a)^{\frac{7}{4}}}-\frac{32i\,(iax+a)^{\frac{3}{4}}}{1155a^5\,(-iax+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(19/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(3/4)/(15*a**2*(-I*a*x + a)**(15/4)) - 4*I*(I*a
*x + a)**(3/4)/(55*a**3*(-I*a*x + a)**(11/4)) - 16*I*(I*a*x + a)*
*(3/4)/(385*a**4*(-I*a*x + a)**(7/4)) - 32*I*(I*a*x + a)**(3/4)/(
1155*a**5*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0611999, size = 57, normalized size = 0.43

$$\frac{2\left(-16ix^3+72x^2+138ix-159\right)(a+iax)^{3/4}}{1155a^5(x+i)^3(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(19/4)*(a + I*a*x)^(1/4)),x]
```

```
[Out] (2*(a + I*a*x)^(3/4)*(-159 + (138*I)*x + 72*x^2 - (16*I)*x^3))/(1
155*a^5*(I + x)^3*(a - I*a*x)^(3/4))
```

Maple [A] time = 0.072, size = 55, normalized size = 0.4

$$\frac{112\,ix^3+32\,x^4-42\,ix-318-132\,x^2}{1155\,a^4\,(x+i)^3}\left(-a\left(-1+ix\right)\right)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a\left(1+ix\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(19/4)/(a+I*a*x)^(1/4),x)
```

```
[Out] 2/1155/a^4/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(56*I*x^3+16*x^4
-21*I*x-159-66*x^2)/(x+I)^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(i\,ax+a\right)^{\frac{1}{4}}\left(-i\,ax+a\right)^{\frac{19}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(19/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(19/4)), x)
```

Fricas [A] time = 0.21272, size = 90, normalized size = 0.68

$$\frac{32\,x^4+112i\,x^3-132\,x^2-42i\,x-318}{\left(1155\,a^4x^3+3465i\,a^4x^2-3465\,a^4x-1155i\,a^4\right)\left(i\,ax+a\right)^{\frac{1}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(19/4)),x, algorithm="fricas")
```

```
[Out] (32*x^4 + 112*I*x^3 - 132*x^2 - 42*I*x - 318)/((1155*a^4*x^3 + 34
65*I*a^4*x^2 - 3465*a^4*x - 1155*I*a^4)*(I*a*x + a)^(1/4)*(-I*a*x
 + a)^(3/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(19/4)/(a+I*a*x)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(1/4)*(-I*a*x + a)^(19/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1184 $\int \frac{(a-iax)^{3/4}}{(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=256

$$-\frac{i(a-iax)^{3/4}\sqrt[4]{a+iax}}{a}+\frac{3i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{3i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{3i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}+\frac{3i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

```
[Out] ((-I)*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4))/a - ((3*I)*ArcTan[1 -
(Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + ((3*I)*
ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2
] + (((3*I)/2)*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]
*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - (((3*I)/2)*Log[
1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))
/(a + I*a*x)^(1/4)])/Sqrt[2]
```

Rubi [A] time = 0.251839, antiderivative size = 256, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.32$

$$-\frac{i(a-iax)^{3/4}\sqrt[4]{a+iax}}{a}+\frac{3i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{3i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{3i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}+\frac{3i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(3/4)/(a + I*a*x)^(3/4),x]
```


```
[Out] ((-I)*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4))/a - ((3*I)*ArcTan[1 -
(Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + ((3*I)*
ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2
] + (((3*I)/2)*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]
*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - (((3*I)/2)*Log[
1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))
/(a + I*a*x)^(1/4)])/Sqrt[2]
```

Rubi in Sympy [A] time = 39.0268, size = 219, normalized size = 0.86

$$\frac{3\sqrt{2}i\log\left(-\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}-\frac{3\sqrt{2}i\log\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}+\frac{3\sqrt{2}i\operatorname{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}-1\right)}{2}+\frac{3\sqrt{2}i\operatorname{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+1\right)}{2}-\frac{i\left(-iax+a\right)^{\frac{3}{4}}\sqrt[4]{iax+a}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] 3*sqrt(2)*I*log(-sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) +
 sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1)/4 - 3*sqrt(2)*I*log(sqrt(2
)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + sqrt(-I*a*x + a)/sqrt(
I*a*x + a) + 1)/4 + 3*sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/4)/
(I*a*x + a)**(1/4) - 1)/2 + 3*sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)
**(1/4)/(I*a*x + a)**(1/4) + 1)/2 - I*(-I*a*x + a)**(3/4)*(I*a*x
+ a)**(1/4)/a
```

Mathematica [C] time = 0.0625548, size = 71, normalized size = 0.28

$$\frac{(a-iax)^{3/4}\left(i\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-i\right)}{(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(3/4)/(a + I*a*x)^(3/4),x]
```

```
[Out] ((a - I*a*x)^(3/4)*(-I + x + I*2^(1/4)*(1 + I*x)^(3/4)*Hypergeome
tric2F1[3/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(a + I*a*x)^(3/4)
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int 1\left(a-iax\right)^{\frac{3}{4}}\left(a+iax\right)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(3/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int((a-I*a*x)^(3/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{3}{4}}}{(i\,ax+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(3/4), x)
```

Fricas [A] time = 0.223305, size = 275, normalized size = 1.07

$$\frac{\sqrt{9i}a\log\left(\frac{\sqrt{9i}(ax+i\,a)+3\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{3\,x+3i}\right)-\sqrt{9i}a\log\left(-\frac{\sqrt{9i}(ax+i\,a)-3\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{3\,x+3i}\right)+\sqrt{-9i}a\log\left(\frac{\sqrt{-9i}(ax+i\,a)+3\,(i\,ax+a)^{\frac{1}{4}}(-}{3\,x+3i}\right.}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(3/4),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(9*I)*a*log((sqrt(9*I)*(a*x + I*a) + 3*(I*a*x + a)^(1/4)
*(-I*a*x + a)^(3/4))/(3*x + 3*I)) - sqrt(9*I)*a*log(-(sqrt(9*I)*(
a*x + I*a) - 3*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/(3*x + 3*I))
 + sqrt(-9*I)*a*log((sqrt(-9*I)*(a*x + I*a) + 3*(I*a*x + a)^(1/4)
*(-I*a*x + a)^(3/4))/(3*x + 3*I)) - sqrt(-9*I)*a*log(-(sqrt(-9*I)
*(a*x + I*a) - 3*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/(3*x + 3*I
)) - 2*I*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/a
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-a\,(ix-1))^{\frac{3}{4}}}{(a\,(ix+1))^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(3/4)/(a*(I*x + 1))**(3/4), x)
```

GIAC/XCAS [A] time = 0.246625, size = 242, normalized size = 0.95

$$\frac{3}{2}i\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2(-iax+a)^{\frac{1}{4}}}{(iax+a)^{\frac{1}{4}}}\right)\right)+\frac{3}{2}i\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2(-iax+a)^{\frac{1}{4}}}{(iax+a)^{\frac{1}{4}}}\right)\right)-\frac{3}{4}i\sqrt{2}\ln\left(\frac{\sqrt{2}(-iax+a)^{\frac{1}{4}}}{(iax+a)^{\frac{1}{4}}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)+\frac{3}{4}i\sqrt{2}\ln\left(-\frac{\sqrt{2}(-iax+a)^{\frac{1}{4}}}{(iax+a)^{\frac{1}{4}}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)-\frac{i(iax+a)^{\frac{1}{4}}(-iax+a)^{\frac{3}{4}}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(3/4),x, algorithm="giac")
```

```
[Out] 3/2*I*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*(-I*a*x + a)^(1/4)/
(I*a*x + a)^(1/4))) + 3/2*I*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2)
- 2*(-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4))) - 3/4*I*sqrt(2)*ln(sqr
t(2)*(-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4) + sqrt(-I*a*x + a)/sqrt
(I*a*x + a) + 1) + 3/4*I*sqrt(2)*ln(-sqrt(2)*(-I*a*x + a)^(1/4)/(
I*a*x + a)^(1/4) + sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1) - I*(I*a
*x + a)^(1/4)*(-I*a*x + a)^(3/4)/a
```

3.1185 $\int \frac{1}{\sqrt[4]{a-iax}(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=233

$$\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}+\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

```
[Out] ((-I)*Sqrt[2]*ArcTan[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^
(1/4)])/a + (I*Sqrt[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a
+ I*a*x)^(1/4)])/a + (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] -
 (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) - (I
*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(
1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a)
```

Rubi [A] time = 0.204025, antiderivative size = 233, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.28$

$$\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}+\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] ((-I)*Sqrt[2]*ArcTan[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^
(1/4)])/a + (I*Sqrt[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a
+ I*a*x)^(1/4)])/a + (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] -
 (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) - (I
*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(
1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a)
```

Rubi in Sympy [A] time = 30.1555, size = 192, normalized size = 0.82

$$\frac{\sqrt{2}i\log\left(-\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{2a}-\frac{\sqrt{2}i\log\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{2a}+\frac{\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}-1\right)}{a}+\frac{\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+1\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] sqrt(2)*I*log(-sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + s
qrt(-I*a*x + a)/sqrt(I*a*x + a) + 1)/(2*a) - sqrt(2)*I*log(sqrt(2
)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + sqrt(-I*a*x + a)/sqrt(
I*a*x + a) + 1)/(2*a) + sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/4
)/(I*a*x + a)**(1/4) - 1)/a + sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)
**(1/4)/(I*a*x + a)**(1/4) + 1)/a
```

Mathematica [C] time = 0.0439935, size = 70, normalized size = 0.3

$$\frac{2i\sqrt[4]{2}(1+ix)^{3/4}(a-iax)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)}{3a(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (((2*I)/3)*2^(1/4)*(1 + I*x)^(3/4)*(a - I*a*x)^(3/4)*Hypergeometr
ic2F1[3/4, 3/4, 7/4, 1/2 - (I/2)*x])/(a*(a + I*a*x)^(3/4))
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{a-iax}}(a+iax)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)), x)
```

Fricas [A] time = 0.222383, size = 306, normalized size = 1.31

$$\frac{1}{2}\sqrt{\frac{4i}{a^2}}\log\left(\frac{(a^2x+i\,a^2)\sqrt{\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{2\,x+2i}\right)-\frac{1}{2}\sqrt{\frac{4i}{a^2}}\log\left(-\frac{(a^2x+i\,a^2)\sqrt{\frac{4i}{a^2}}-2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{2\,x+2i}\right)+\frac{1}{2}\sqrt{-\frac{4i}{a^2}}\log\left(\frac{(a^2x+i\,a^2)\sqrt{-\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{2\,x+2i}\right)-\frac{1}{2}\sqrt{-\frac{4i}{a^2}}\log\left(-\frac{(a^2x+i\,a^2)\sqrt{-\frac{4i}{a^2}}-2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{2\,x+2i}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(4*I/a^2)*log(((a^2*x + I*a^2)*sqrt(4*I/a^2) + 2*(I*a*x +
 a)^(1/4)*(-I*a*x + a)^(3/4))/(2*x + 2*I)) - 1/2*sqrt(4*I/a^2)*lo
g(-((a^2*x + I*a^2)*sqrt(4*I/a^2) - 2*(I*a*x + a)^(1/4)*(-I*a*x +
 a)^(3/4))/(2*x + 2*I)) + 1/2*sqrt(-4*I/a^2)*log(((a^2*x + I*a^2)
*sqrt(-4*I/a^2) + 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/(2*x +
2*I)) - 1/2*sqrt(-4*I/a^2)*log(-((a^2*x + I*a^2)*sqrt(-4*I/a^2) -
 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/(2*x + 2*I))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a\,(ix+1))^{\frac{3}{4}}\sqrt[4]{-a\,(ix-1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(3/4)*(-a*(I*x - 1))**(1/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1186 $\int \frac{1}{(a-iax)^{5/4}(a+iax)^{3/4}} \, dx$

Optimal. Leaf size=31

$$-\frac{2i\sqrt[4]{a+iax}}{a^2\sqrt[4]{a-iax}}$$

```
[Out] ((-2*I)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(1/4))
```

Rubi [A] time = 0.0233917, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.04$

$$-\frac{2i\sqrt[4]{a+iax}}{a^2\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] ((-2*I)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 5.39696, size = 27, normalized size = 0.87

$$-\frac{2i\sqrt[4]{iax+a}}{a^2\sqrt[4]{-iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(1/4)/(a**2*(-I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.0304198, size = 31, normalized size = 1.

$$-\frac{2i\sqrt[4]{a+iax}}{a^2\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] ((-2*I)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(1/4))
```

Maple [A] time = 0.053, size = 31, normalized size = 1.

$$2\,\frac{x-i}{a\left(a\left(1+ix\right)\right)^{3/4}\sqrt[4]{-a\left(-1+ix\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a-I*a*x)^(5/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] 2/a/(a*(1+I*x))^(3/4)/(-a*(-1+I*x))^(1/4)*(x-I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(5/4)), x)
```

Fricas [A] time = 0.205152, size = 42, normalized size = 1.35

$$\frac{2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^3x+i\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(5/4)),x, algorithm="fricas")
```

```
[Out] 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)/(a^3*x + I*a^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a\left(ix+1\right)\right)^{\frac{3}{4}}\left(-a\left(ix-1\right)\right)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(3/4)*(-a*(I*x - 1))**(5/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(5/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1187 $\int \frac{1}{(a-iax)^{9/4}(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=67

$$-\frac{4i\sqrt[4]{a+iax}}{5a^3\sqrt[4]{a-iax}}-\frac{2i\sqrt[4]{a+iax}}{5a^2(a-iax)^{5/4}}$$

```
[Out] (((-2*I)/5)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(5/4)) - (((4*I)/
5)*(a + I*a*x)^(1/4))/(a^3*(a - I*a*x)^(1/4))
```

Rubi [A] time = 0.0505762, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$-\frac{4i\sqrt[4]{a+iax}}{5a^3\sqrt[4]{a-iax}}-\frac{2i\sqrt[4]{a+iax}}{5a^2(a-iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (((-2*I)/5)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(5/4)) - (((4*I)/
5)*(a + I*a*x)^(1/4))/(a^3*(a - I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 11.4968, size = 58, normalized size = 0.87

$$-\frac{2i\sqrt[4]{iax+a}}{5a^2\left(-iax+a\right)^{\frac{5}{4}}}-\frac{4i\sqrt[4]{iax+a}}{5a^3\sqrt[4]{-iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(1/4)/(5*a**2*(-I*a*x + a)**(5/4)) - 4*I*(I*a*x
 + a)**(1/4)/(5*a**3*(-I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.0400398, size = 45, normalized size = 0.67

$$\frac{2(3-2ix)\sqrt[4]{a+iax}}{5a^3(x+i)\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(3/4)),x]

[Out] (2*(3 - (2*I)*x)*(a + I*a*x)^(1/4))/(5*a^3*(I + x)*(a - I*a*x)^(1
/4))
```

Maple [A] time = 0.063, size = 44, normalized size = 0.7

$$\frac{4\,x^{2}+6+2\,ix}{5\,a^{2}\left(x+i\right)}\left(a\left(1+ix\right)\right)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{-a\left(-1+ix\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(9/4)/(a+I*a*x)^(3/4),x)

[Out] 2/5/a^2/(a*(1+I*x))^(3/4)/(-a*(-1+I*x))^(1/4)*(2*x^2+3+I*x)/(x+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(9/4)),x, algorithm="maxima")

[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(9/4)), x)
```

Fricas [A] time = 0.206297, size = 59, normalized size = 0.88

$$\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}(4\,x+6i)}{5\,a^{4}x^{2}+10i\,a^{4}x-5\,a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(9/4)),x, algorithm="fricas")

[Out] (I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)*(4*x + 6*I)/(5*a^4*x^2 + 10*
I*a^4*x - 5*a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(3/4),x)

[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(9/4)),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.1188 $\int \frac{1}{(a-iax)^{13/4}(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=100

$$-\frac{16i\sqrt[4]{a+iax}}{45a^4\sqrt[4]{a-iax}}-\frac{8i\sqrt[4]{a+iax}}{45a^3(a-iax)^{5/4}}-\frac{2i\sqrt[4]{a+iax}}{9a^2(a-iax)^{9/4}}$$

```
[Out] (((-2*I)/9)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(9/4)) - (((8*I)/
45)*(a + I*a*x)^(1/4))/(a^3*(a - I*a*x)^(5/4)) - (((16*I)/45)*(a
+ I*a*x)^(1/4))/(a^4*(a - I*a*x)^(1/4))
```

Rubi [A] time = 0.0809087, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$-\frac{16i\sqrt[4]{a+iax}}{45a^4\sqrt[4]{a-iax}}-\frac{8i\sqrt[4]{a+iax}}{45a^3(a-iax)^{5/4}}-\frac{2i\sqrt[4]{a+iax}}{9a^2(a-iax)^{9/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (((-2*I)/9)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(9/4)) - (((8*I)/
45)*(a + I*a*x)^(1/4))/(a^3*(a - I*a*x)^(5/4)) - (((16*I)/45)*(a
+ I*a*x)^(1/4))/(a^4*(a - I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 18.3032, size = 87, normalized size = 0.87

$$-\frac{2i\sqrt[4]{iax+a}}{9a^2\left(-iax+a\right)^{\frac{9}{4}}}-\frac{8i\sqrt[4]{iax+a}}{45a^3\left(-iax+a\right)^{\frac{5}{4}}}-\frac{16i\sqrt[4]{iax+a}}{45a^4\sqrt[4]{-iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(1/4)/(9*a**2*(-I*a*x + a)**(9/4)) - 8*I*(I*a*x
 + a)**(1/4)/(45*a**3*(-I*a*x + a)**(5/4)) - 16*I*(I*a*x + a)**(1
/4)/(45*a**4*(-I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.0497746, size = 52, normalized size = 0.52

$$\frac{2\left(-8ix^2+20x+17i\right)\sqrt[4]{a+iax}}{45a^4(x+i)^2\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (2*(a + I*a*x)^(1/4)*(17*I + 20*x - (8*I)*x^2))/(45*a^4*(I + x)^2
*(a - I*a*x)^(1/4))
```

Maple [A] time = 0.065, size = 50, normalized size = 0.5

$$\frac{24\,ix^{2}+16\,x^{3}+6\,x+34\,i}{45\,a^{3}\left(x+i\right)^{2}}\left(a\left(1+ix\right)\right)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{-a\left(-1+ix\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(13/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] 2/45/a^3/(a*(1+I*x))^(3/4)/(-a*(-1+I*x))^(1/4)*(12*I*x^2+8*x^3+3*
x+17*I)/(x+I)^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(i\,ax+a\right)^{\frac{3}{4}}\left(-i\,ax+a\right)^{\frac{13}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(13/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(13/4)), x)
```

Fricas [A] time = 0.211563, size = 78, normalized size = 0.78

$$\frac{2\left(i\,ax+a\right)^{\frac{1}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}\left(8\,x^{2}+20i\,x-17\right)}{45\,a^{5}x^{3}+135i\,a^{5}x^{2}-135\,a^{5}x-45i\,a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(13/4)),x, algorithm="fricas")
```

```
[Out] 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)*(8*x^2 + 20*I*x - 17)/(45*
a^5*x^3 + 135*I*a^5*x^2 - 135*a^5*x - 45*I*a^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(13/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1189 $\int \frac{(a-iax)^{5/4}}{(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=112

$$\frac{10a^2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{10}{3}i\sqrt[4]{a-iax}\sqrt[4]{a+iax}-\frac{2i(a-iax)^{5/4}\sqrt[4]{a+iax}}{3a}$$

```
[Out] ((-10*I)/3)*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4) - (((2*I)/3)*(a -
 I*a*x)^(5/4)*(a + I*a*x)^(1/4))/a + (10*a^2*(1 + x^2)^(3/4)*Elli
pticF[ArcTan[x]/2, 2])/(3*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.0888289, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.16$

$$\frac{10a^2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{10}{3}i\sqrt[4]{a-iax}\sqrt[4]{a+iax}-\frac{2i(a-iax)^{5/4}\sqrt[4]{a+iax}}{3a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(5/4)/(a + I*a*x)^(3/4),x]
```

```
[Out] ((-10*I)/3)*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4) - (((2*I)/3)*(a -
 I*a*x)^(5/4)*(a + I*a*x)^(1/4))/a + (10*a^2*(1 + x^2)^(3/4)*Elli
pticF[ArcTan[x]/2, 2])/(3*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 21.1376, size = 90, normalized size = 0.8

$$-\frac{10i\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}{3}+\frac{10\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{3\sqrt[4]{x^2+1}}-\frac{2i\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -10*I*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)/3 + 10*(-I*a*x + a)*
*(1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(3*(x**2 + 1)*
*(1/4)) - 2*I*(-I*a*x + a)**(5/4)*(I*a*x + a)**(1/4)/(3*a)
```

Mathematica [C] time = 0.0682025, size = 80, normalized size = 0.71

$$-\frac{2ia\sqrt[4]{a-iax}\left(-5\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x^2+5ix+6\right)}{3(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(5/4)/(a + I*a*x)^(3/4),x]
```

```
[Out] (((-2*I)/3)*a*(a - I*a*x)^(1/4)*(6 + (5*I)*x + x^2 - 5*2^(1/4)*(1
 + I*x)^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(
a + I*a*x)^(3/4)
```

Maple [F] time = 0.087, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{\frac{5}{4}}\,(a+iax)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(5/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int((a-I*a*x)^(5/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{5}{4}}}{(i\,ax+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$-\frac{1}{3}\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}(2\,x+12i)+\mathrm{integral}\left(\frac{5\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(x^2+1)},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(3/4),x, algorithm="fricas")
```

```
[Out] -1/3*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)*(2*x + 12*I) + integral
(5/3*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)/(x^2 + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(3/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1190 $\int \frac{\sqrt[4]{a-iax}}{(a+iax)^{3/4}} dx$

Optimal. Leaf size=76

$$\frac{2a\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i\sqrt[4]{a-iax}\sqrt[4]{a+iax}}{a}$$

```
[Out] ((-2*I)*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))/a + (2*a*(1 + x^2)^(
3/4)*EllipticF[ArcTan[x]/2, 2])/((a - I*a*x)^(3/4)*(a + I*a*x)^(3
/4))
```

Rubi [A] time = 0.0598307, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2a\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i\sqrt[4]{a-iax}\sqrt[4]{a+iax}}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(1/4)/(a + I*a*x)^(3/4),x]
```

```
[Out] ((-2*I)*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))/a + (2*a*(1 + x^2)^(
3/4)*EllipticF[ArcTan[x]/2, 2])/((a - I*a*x)^(3/4)*(a + I*a*x)^(3
/4))
```

Rubi in Sympy [A] time = 14.3364, size = 63, normalized size = 0.83

$$-\frac{2i\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}{a}+\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{a\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -2*I*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)/a + 2*(-I*a*x + a)**(
1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(a*(x**2 + 1)**(
1/4))
```

Mathematica [C] time = 0.0509695, size = 72, normalized size = 0.95

$$\frac{2\sqrt[4]{a-iax}\left(i\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-i\right)}{(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(1/4)/(a + I*a*x)^(3/4),x]
```

```
[Out] (2*(a - I*a*x)^(1/4)*(-I + x + I*2^(1/4)*(1 + I*x)^(3/4)*Hypergeo
metric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(a + I*a*x)^(3/4)
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{a-iax}\,(a+iax)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(1/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int((a-I*a*x)^(1/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{a\mathrm{integral}\left(\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{ax^2+a},x\right)-2i\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(3/4),x, algorithm="fricas")
```

```
[Out] (a*integral((I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)/(a*x^2 + a), x)
- 2*I*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4))/a
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{-a\left(ix-1\right)}}{\left(a\left(ix+1\right)\right)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(1/4)/(a*(I*x + 1))**(3/4), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(3/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1191 $\int \frac{1}{(a-iax)^{3/4}(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=43

$$\frac{2\left(x^2+1\right)^{3/4} F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{(a-iax)^{3/4}(a+iax)^{3/4}}$$

```
[Out] (2*(1 + x^2)^(3/4)*EllipticF[ArcTan[x]/2, 2])/((a - I*a*x)^(3/4)*
(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.0309907, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{2\left(x^2+1\right)^{3/4} F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (2*(1 + x^2)^(3/4)*EllipticF[ArcTan[x]/2, 2])/((a - I*a*x)^(3/4)*
(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 7.89936, size = 39, normalized size = 0.91

$$\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{a^2\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] 2*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)
/(a**2*(x**2 + 1)**(1/4))
```

Mathematica [C] time = 0.0402222, size = 68, normalized size = 1.58

$$\frac{2i\sqrt[4]{2}(1+ix)^{3/4}\sqrt[4]{a-iax}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)}{a(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] ((2*I)*2^(1/4)*(1 + I*x)^(3/4)*(a - I*a*x)^(1/4)*Hypergeometric2F
1[1/4, 3/4, 5/4, 1/2 - (I/2)*x])/(a*(a + I*a*x)^(3/4))
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1 (a - iax)^{-\frac{3}{4}} (a + iax)^{-\frac{3}{4}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax + a)^{\frac{3}{4}}(-i\,ax + a)^{\frac{3}{4}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(i\,ax + a)^{\frac{1}{4}}(-i\,ax + a)^{\frac{1}{4}}}{a^2x^2 + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)),x, algorithm="fricas")
```

```
[Out] integral((I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)/(a^2*x^2 + a^2), x)
```

Sympy [A] time = 37.1135, size = 100, normalized size = 2.33

$$-\frac{iG_{6,6}^{5,3}\left(\begin{matrix}\frac{3}{8},\frac{7}{8},1 & \frac{1}{2},\frac{3}{4},\frac{5}{4}\\ \frac{1}{4},\frac{3}{8},\frac{3}{4},\frac{7}{8},\frac{5}{4} & 0\end{matrix}\middle|\frac{e^{-3i\pi}}{x^2}\right)e^{\frac{3i\pi}{4}}}{4\pi a^{\frac{3}{2}}\left(\frac{3}{4}\right)}+\frac{iG_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{8},0,\frac{3}{8},\frac{1}{2},1 & \\ -\frac{1}{8},\frac{3}{8} & -\frac{1}{2},0,\frac{1}{4},0\end{matrix}\middle|\frac{e^{-i\pi}}{x^2}\right)}{4\pi a^{\frac{3}{2}}\left(\frac{3}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -I*meijerg(((3/8, 7/8, 1), (1/2, 3/4, 5/4)), ((1/4, 3/8, 3/4, 7/8
, 5/4), (0,)), exp_polar(-3*I*pi)/x**2)*exp(3*I*pi/4)/(4*pi*a**(3
/2)*gamma(3/4)) + I*meijerg(((-1/2, -1/8, 0, 3/8, 1/2, 1), ()), (
(-1/8, 3/8), (-1/2, 0, 1/4, 0)), exp_polar(-I*pi)/x**2)/(4*pi*a**
(3/2)*gamma(3/4))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1192 $\int \frac{1}{(a-iax)^{7/4}(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=82

$$\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i\sqrt[4]{a+iax}}{3a^2(a-iax)^{3/4}}$$

```
[Out] (((-2*I)/3)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(3/4)) + (2*(1 +
x^2)^(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*a*(a - I*a*x)^(3/4)*(a +
 I*a*x)^(3/4))
```

Rubi [A] time = 0.060776, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i\sqrt[4]{a+iax}}{3a^2(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (((-2*I)/3)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(3/4)) + (2*(1 +
x^2)^(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*a*(a - I*a*x)^(3/4)*(a +
 I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 14.2798, size = 70, normalized size = 0.85

$$-\frac{2i\sqrt[4]{iax+a}}{3a^2\left(-iax+a\right)^{\frac{3}{4}}}+\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{3a^3\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(1/4)/(3*a**2*(-I*a*x + a)**(3/4)) + 2*(-I*a*x
+ a)**(1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(3*a**3*(
x**2 + 1)**(1/4))
```

Mathematica [C] time = 0.0737164, size = 79, normalized size = 0.96

$$\frac{2\left(\sqrt[4]{2}(1+ix)^{3/4}(x+i)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-i\right)}{3a(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (2*(-I + x + 2^(1/4)*(1 + I*x)^(3/4)*(I + x)*Hypergeometric2F1[1/
4, 3/4, 5/4, 1/2 - (I/2)*x]))/(3*a*(a - I*a*x)^(3/4)*(a + I*a*x)^
(3/4))
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{-\frac{7}{4}}\,(a+iax)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(7/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\left(a^3x+i\,a^3\right)\text{integral}\left(\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(a^3x^2+a^3)},x\right)+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\left(a^3x+i\,a^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(7/4)),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a^3*x + I*a^3)*integral(1/3*(I*a*x + a)^(1/4)*(-I*a*x + a
)^(1/4)/(a^3*x^2 + a^3), x) + 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1
/4))/(a^3*x + I*a^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(7/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1193 $\int \frac{1}{(a-iax)^{11/4}(a+iax)^{3/4}}\,dx$

Optimal. Leaf size=115

$$-\frac{2i\sqrt[4]{a+iax}}{7a^3(a-iax)^{3/4}}+\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{7a^2(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i\sqrt[4]{a+iax}}{7a^2(a-iax)^{7/4}}$$

```
[Out] (((-2*I)/7)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(7/4)) - (((2*I)/
7)*(a + I*a*x)^(1/4))/(a^3*(a - I*a*x)^(3/4)) + (2*(1 + x^2)^(3/4
)*EllipticF[ArcTan[x]/2, 2])/(7*a^2*(a - I*a*x)^(3/4)*(a + I*a*x)
^(3/4))
```

Rubi [A] time = 0.0923829, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$-\frac{2i\sqrt[4]{a+iax}}{7a^3(a-iax)^{3/4}}+\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{7a^2(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i\sqrt[4]{a+iax}}{7a^2(a-iax)^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (((-2*I)/7)*(a + I*a*x)^(1/4))/(a^2*(a - I*a*x)^(7/4)) - (((2*I)/
7)*(a + I*a*x)^(1/4))/(a^3*(a - I*a*x)^(3/4)) + (2*(1 + x^2)^(3/4
)*EllipticF[ArcTan[x]/2, 2])/(7*a^2*(a - I*a*x)^(3/4)*(a + I*a*x)
^(3/4))
```

Rubi in Sympy [A] time = 21.1772, size = 99, normalized size = 0.86

$$-\frac{2i\sqrt[4]{iax+a}}{7a^2\left(-iax+a\right)^{\frac{7}{4}}}-\frac{2i\sqrt[4]{iax+a}}{7a^3\left(-iax+a\right)^{\frac{3}{4}}}+\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{7a^4\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] -2*I*(I*a*x + a)**(1/4)/(7*a**2*(-I*a*x + a)**(7/4)) - 2*I*(I*a*x
 + a)**(1/4)/(7*a**3*(-I*a*x + a)**(3/4)) + 2*(-I*a*x + a)**(1/4)
*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(7*a**4*(x**2 + 1)**
(1/4))
```

Mathematica [C] time = 0.104467, size = 93, normalized size = 0.81

$$\frac{2\left(\sqrt[4]{2}(1+ix)^{3/4}(x+i)^2\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x^2+ix+2\right)}{7a^2(x+i)(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(3/4)),x]
```

```
[Out] (2*(2 + I*x + x^2 + 2^(1/4)*(1 + I*x)^(3/4)*(I + x)^2*Hypergeomet
ric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(7*a^2*(I + x)*(a - I*a*x)
^(3/4)*(a + I*a*x)^(3/4))
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{-\frac{11}{4}}\,(a+iax)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(3/4),x)
```

```
[Out] int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{11}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(11/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(11/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(7\,a^4x^2+14i\,a^4x-7\,a^4\right)\operatorname{integral}\left(\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{7\,(a^4x^2+a^4)},x\right)+(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}(2\,x+4i)}{7\,a^4x^2+14i\,a^4x-7\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(11/4)),x, algorithm="fricas")
```

```
[Out] ((7*a^4*x^2 + 14*I*a^4*x - 7*a^4)*integral(1/7*(I*a*x + a)^(1/4)*
(-I*a*x + a)^(1/4)/(a^4*x^2 + a^4), x) + (I*a*x + a)^(1/4)*(-I*a*
x + a)^(1/4)*(2*x + 4*I))/(7*a^4*x^2 + 14*I*a^4*x - 7*a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(3/4)*(-I*a*x + a)^(11/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1194 $\int \frac{(a-iax)^{7/4}}{(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=291

$$\frac{4i(a-iax)^{7/4}}{3a(a+iax)^{3/4}}+\frac{7i\sqrt[4]{a+iax}(a-iax)^{3/4}}{3a}-\frac{7i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{7i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{7i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}-\frac{7i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

```
[Out] (((4*I)/3)*(a - I*a*x)^(7/4))/(a*(a + I*a*x)^(3/4)) + (((7*I)/3)*
(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4))/a + ((7*I)*ArcTan[1 - (Sqrt[
2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((7*I)*ArcTan
[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((
(7*I)/2)*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a -
I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + (((7*I)/2)*Log[1 + Sq
rt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a +
I*a*x)^(1/4)])/Sqrt[2]
```

Rubi [A] time = 0.315044, antiderivative size = 291, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.36$

$$\frac{4i(a-iax)^{7/4}}{3a(a+iax)^{3/4}}+\frac{7i\sqrt[4]{a+iax}(a-iax)^{3/4}}{3a}-\frac{7i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{7i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{7i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}-\frac{7i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(7/4)/(a + I*a*x)^(7/4),x]
```


```
[Out] (((4*I)/3)*(a - I*a*x)^(7/4))/(a*(a + I*a*x)^(3/4)) + (((7*I)/3)*
(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4))/a + ((7*I)*ArcTan[1 - (Sqrt[
2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((7*I)*ArcTan
[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((
(7*I)/2)*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a -
I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + (((7*I)/2)*Log[1 + Sq
rt[a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a +
I*a*x)^(1/4)])/Sqrt[2]
```

Rubi in Sympy [A] time = 48.4153, size = 250, normalized size = 0.86

$$-\frac{7\sqrt{2}i\log\left(-\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}+\frac{7\sqrt{2}i\log\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4} - \frac{7\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}-1\right)}{2}-\frac{7\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+1\right)}{2} + \frac{4i\left(-iax+a\right)^{\frac{7}{4}}}{3a\left(iax+a\right)^{\frac{3}{4}}}+\frac{7i\left(-iax+a\right)^{\frac{3}{4}}\sqrt[4]{iax+a}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] -7*sqrt(2)*I*log(-sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4)
+ sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1)/4 + 7*sqrt(2)*I*log(sqrt(
2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + sqrt(-I*a*x + a)/sqrt
(I*a*x + a) + 1)/4 - 7*sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/4)
/(I*a*x + a)**(1/4) - 1)/2 - 7*sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a
)**(1/4)/(I*a*x + a)**(1/4) + 1)/2 + 4*I*(-I*a*x + a)**(7/4)/(3*a
*(I*a*x + a)**(3/4)) + 7*I*(-I*a*x + a)**(3/4)*(I*a*x + a)**(1/4)
/(3*a)
```

Mathematica [C] time = 0.0689304, size = 76, normalized size = 0.26

$$\frac{(a-iax)^{3/4}\left(-7i\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)-3x+11i\right)}{3(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(7/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] ((a - I*a*x)^(3/4)*(11*I - 3*x - (7*I)*2^(1/4)*(1 + I*x)^(3/4)*Hy
pergeometric2F1[3/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(3*(a + I*a*x)^(3
/4))
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int 1\left(a-iax\right)^{\frac{7}{4}}\left(a+iax\right)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(7/4)/(a+I*a*x)^(7/4),x)

[Out] int((a-I*a*x)^(7/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax + a)^{\frac{7}{4}}}{(i\,ax + a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(7/4),x, algorithm="maxima")

[Out] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(7/4), x)
```

Fricas [A] time = 0.233022, size = 370, normalized size = 1.27

$$6i\,ax^2 - 3\sqrt{49i}(i\,ax + a)^{\frac{3}{4}}(-i\,ax + a)^{\frac{1}{4}}\log\left(\frac{\sqrt{49i}(ax+i\,a)+7\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{7\,x+7i}\right) + 3\sqrt{49i}(i\,ax + a)^{\frac{3}{4}}(-i\,ax + a)^{\frac{1}{4}}\log\left(-\frac{\sqrt{49i}(ax+i\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(7/4),x, algorithm="fricas")

[Out] 1/6*(6*I*a*x^2 - 3*sqrt(49*I)*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4
)*log((sqrt(49*I)*(a*x + I*a) + 7*(I*a*x + a)^(1/4)*(-I*a*x + a)^
(3/4))/(7*x + 7*I)) + 3*sqrt(49*I)*(I*a*x + a)^(3/4)*(-I*a*x + a)
^(1/4)*log(-(sqrt(49*I)*(a*x + I*a) - 7*(I*a*x + a)^(1/4)*(-I*a*x
 + a)^(3/4))/(7*x + 7*I)) - 3*sqrt(-49*I)*(I*a*x + a)^(3/4)*(-I*a
*x + a)^(1/4)*log((sqrt(-49*I)*(a*x + I*a) + 7*(I*a*x + a)^(1/4)*
(-I*a*x + a)^(3/4))/(7*x + 7*I)) + 3*sqrt(-49*I)*(I*a*x + a)^(3/4
)*(-I*a*x + a)^(1/4)*log(-(sqrt(-49*I)*(a*x + I*a) - 7*(I*a*x + a
)^(1/4)*(-I*a*x + a)^(3/4))/(7*x + 7*I)) + 16*a*x + 22*I*a)/((I*a
*x + a)^(3/4)*(-I*a*x + a)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(7/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1195 $\int \frac{(a-iax)^{3/4}}{(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=266

$$\frac{4i(a-iax)^{3/4}}{3a(a+iax)^{3/4}}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}-\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

```
[Out] (((4*I)/3)*(a - I*a*x)^(3/4))/(a*(a + I*a*x)^(3/4)) + (I*Sqrt[2]*
ArcTan[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a - (I
*Sqrt[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)
])/a - (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a -
 I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) + (I*Log[1 + Sqrt[
a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a
*x)^(1/4)])/(Sqrt[2]*a)
```

Rubi [A] time = 0.226521, antiderivative size = 266, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.32

$$\frac{4i(a-iax)^{3/4}}{3a(a+iax)^{3/4}}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}-\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(3/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((4*I)/3)*(a - I*a*x)^(3/4))/(a*(a + I*a*x)^(3/4)) + (I*Sqrt[2]*
ArcTan[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a - (I
*Sqrt[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)
])/a - (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a -
 I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) + (I*Log[1 + Sqrt[
a - I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a
*x)^(1/4)])/(Sqrt[2]*a)
```

Rubi in Sympy [A] time = 34.1044, size = 219, normalized size = 0.82

$$\frac{4i\left(-iax+a\right)^{\frac{3}{4}}}{3a\left(iax+a\right)^{\frac{3}{4}}}-\frac{\sqrt{2}i\log\left(1+\frac{\sqrt{iax+a}}{\sqrt{-iax+a}}-\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{2a}+\frac{\sqrt{2}i\log\left(1+\frac{\sqrt{iax+a}}{\sqrt{-iax+a}}+\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{2a}-\frac{\sqrt{2}i\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{a}+\frac{\sqrt{2}i\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 4*I*(-I*a*x + a)**(3/4)/(3*a*(I*a*x + a)**(3/4)) - sqrt(2)*I*log(
1 + sqrt(I*a*x + a)/sqrt(-I*a*x + a) - sqrt(2)*(I*a*x + a)**(1/4)
/(-I*a*x + a)**(1/4))/(2*a) + sqrt(2)*I*log(1 + sqrt(I*a*x + a)/s
qrt(-I*a*x + a) + sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)**(1/4))
/(2*a) - sqrt(2)*I*atan(1 - sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x +
a)**(1/4))/a + sqrt(2)*I*atan(1 + sqrt(2)*(I*a*x + a)**(1/4)/(-I*
a*x + a)**(1/4))/a
```

Mathematica [C] time = 0.0524964, size = 73, normalized size = 0.27

$$-\frac{2i(a-iax)^{3/4}\left(-2+\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{3a(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(3/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((-2*I)/3)*(a - I*a*x)^(3/4)*(-2 + 2^(1/4)*(1 + I*x)^(3/4)*Hyper
geometric2F1[3/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(a*(a + I*a*x)^(3/4)
)
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int 1\left(a-iax\right)^{\frac{3}{4}}\left(a+iax\right)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(3/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int((a-I*a*x)^(3/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{3}{4}}}{(i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(7/4), x)
```

Fricas [A] time = 0.233128, size = 423, normalized size = 1.59

$$-\frac{3\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}\sqrt{\frac{4i}{a^2}}\log\left(\frac{\left(a^2x+i\,a^2\right)\sqrt{\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}{2\,x+2i}\right)-3\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}\sqrt{\frac{4i}{a^2}}\log\left(-\frac{\left(a^2x+i\,a^2\right)\sqrt{\frac{4i}{a^2}}-2}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(7/4),x, algorithm="fricas")
```

```
[Out] -1/6*(3*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)*sqrt(4*I/a^2)*log(((
a^2*x + I*a^2)*sqrt(4*I/a^2) + 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(
3/4))/(2*x + 2*I)) - 3*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)*sqrt(
4*I/a^2)*log(-((a^2*x + I*a^2)*sqrt(4*I/a^2) - 2*(I*a*x + a)^(1/4
)*(-I*a*x + a)^(3/4))/(2*x + 2*I)) + 3*(I*a*x + a)^(3/4)*(-I*a*x
+ a)^(1/4)*sqrt(-4*I/a^2)*log(((a^2*x + I*a^2)*sqrt(-4*I/a^2) + 2
*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/(2*x + 2*I)) - 3*(I*a*x +
a)^(3/4)*(-I*a*x + a)^(1/4)*sqrt(-4*I/a^2)*log(-((a^2*x + I*a^2)*
sqrt(-4*I/a^2) - 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4))/(2*x + 2
*I)) - 8*x - 8*I)/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(7/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1196 $\int \frac{1}{\sqrt[4]{a-iax}(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=33

$$\frac{2i(a-iax)^{3/4}}{3a^2(a+iax)^{3/4}}$$

```
[Out] (((2*I)/3)*(a - I*a*x)^(3/4))/(a^2*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.0234852, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.04$

$$\frac{2i(a-iax)^{3/4}}{3a^2(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (((2*I)/3)*(a - I*a*x)^(3/4))/(a^2*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 6.06922, size = 27, normalized size = 0.82

$$\frac{2i\left(-iax+a\right)^{\frac{3}{4}}}{3a^2\left(iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*I*(-I*a*x + a)**(3/4)/(3*a**2*(I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0327272, size = 38, normalized size = 1.15

$$\frac{2(a-iax)^{3/4}\sqrt[4]{a+iax}}{3a^3(x-i)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(7/4)),x]
```

[Out] (2*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4))/(3*a^3*(-I + x))

Maple [A] time = 0.053, size = 31, normalized size = 0.9

$$\frac{2x+2i}{3a}(a(1+ix))^{-\frac{3}{4}}\frac{1}{\sqrt[4]{-a(-1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(7/4),x)

[Out] 2/3/a/(a*(1+I*x))^(3/4)/(-a*(-1+I*x))^(1/4)*(x+I)

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{7}{4}}(-i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(1/4)),x, algorithm="maxima")

[Out] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(1/4)), x)

Fricas [A] time = 0.210255, size = 35, normalized size = 1.06

$$\frac{2x+2i}{3\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(1/4)),x, algorithm="fricas")

[Out] 1/3*(2*x + 2*I)/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)*a)

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a(ix+1))^{\frac{7}{4}}\sqrt[4]{-a(ix-1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(7/4)*(-a*(I*x - 1))**(1/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(1/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1197 $\int \frac{1}{(a-iax)^{5/4}(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=65

$$\frac{4i(a-iax)^{3/4}}{3a^3(a+iax)^{3/4}}-\frac{2i}{a^2\sqrt[4]{a-iax}(a+iax)^{3/4}}$$

```
[Out] (-2*I)/(a^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4)) + (((4*I)/3)*(a
- I*a*x)^(3/4))/(a^3*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.0515329, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{4i(a-iax)^{3/4}}{3a^3(a+iax)^{3/4}}-\frac{2i}{a^2\sqrt[4]{a-iax}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (-2*I)/(a^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4)) + (((4*I)/3)*(a
- I*a*x)^(3/4))/(a^3*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 10.9833, size = 56, normalized size = 0.86

$$\frac{2i}{3a^2\sqrt[4]{-iax+a}\,(iax+a)^{\frac{3}{4}}}-\frac{4i\sqrt[4]{iax+a}}{3a^3\sqrt[4]{-iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*I/(3*a**2*(-I*a*x + a)**(1/4)*(I*a*x + a)**(3/4)) - 4*I*(I*a*x
+ a)**(1/4)/(3*a**3*(-I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.0436556, size = 47, normalized size = 0.72

$$-\frac{2i(2x-i)\sqrt[4]{a+iax}}{3a^3(x-i)\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (((-2*I)/3)*(-I + 2*x)*(a + I*a*x)^(1/4))/(a^3*(-I + x)*(a - I*a*
x)^(1/4))
```

Maple [A] time = 0.065, size = 33, normalized size = 0.5

$$\frac{4x-2i}{3a^2}(a(1+ix))^{-\frac{3}{4}}\frac{1}{\sqrt[4]{-a(-1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(5/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] 2/3/a^2/(a*(1+I*x))^(3/4)/(-a*(-1+I*x))^(1/4)*(2*x-I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{7}{4}}(-i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(5/4)), x)
```

Fricas [A] time = 0.21455, size = 35, normalized size = 0.54

$$\frac{4x-2i}{3(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(5/4)),x, algorithm="fricas")
```

```
[Out] 1/3*(4*x - 2*I)/((I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)*a^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(5/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1198 $\int \frac{1}{(a-iax)^{9/4}(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=100

$$\frac{16i(a-iax)^{3/4}}{15a^4(a+iax)^{3/4}}-\frac{8i}{5a^3(a+iax)^{3/4}\sqrt[4]{a-iax}}-\frac{2i}{5a^2(a+iax)^{3/4}(a-iax)^{5/4}}$$

```
[Out] ((-2*I)/5)/(a^2*(a - I*a*x)^(5/4)*(a + I*a*x)^(3/4)) - ((8*I)/5)/
(a^3*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4)) + (((16*I)/15)*(a - I*a
*x)^(3/4))/(a^4*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.0811371, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{16i(a-iax)^{3/4}}{15a^4(a+iax)^{3/4}}-\frac{8i}{5a^3(a+iax)^{3/4}\sqrt[4]{a-iax}}-\frac{2i}{5a^2(a+iax)^{3/4}(a-iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] ((-2*I)/5)/(a^2*(a - I*a*x)^(5/4)*(a + I*a*x)^(3/4)) - ((8*I)/5)/
(a^3*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4)) + (((16*I)/15)*(a - I*a
*x)^(3/4))/(a^4*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 18.0188, size = 85, normalized size = 0.85

$$\frac{2i}{3a^2\left(-iax+a\right)^{\frac{5}{4}}\left(iax+a\right)^{\frac{3}{4}}}-\frac{8i\sqrt[4]{iax+a}}{15a^3\left(-iax+a\right)^{\frac{5}{4}}}-\frac{16i\sqrt[4]{iax+a}}{15a^4\sqrt[4]{-iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*I/(3*a**2*(-I*a*x + a)**(5/4)*(I*a*x + a)**(3/4)) - 8*I*(I*a*x
+ a)**(1/4)/(15*a**3*(-I*a*x + a)**(5/4)) - 16*I*(I*a*x + a)**(1/
4)/(15*a**4*(-I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.05523, size = 52, normalized size = 0.52

$$\frac{2\left(-8ix^2+4x-7i\right)\sqrt[4]{a+iax}}{15a^4\left(x^2+1\right)\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (2*(a + I*a*x)^(1/4)*(-7*I + 4*x - (8*I)*x^2))/(15*a^4*(a - I*a*x
)^(1/4)*(1 + x^2))
```

Maple [A] time = 0.188, size = 44, normalized size = 0.4

$$\frac{16\,x^2+8\,ix+14}{15\,a^3\,(x+i)}\,(a\,(1+ix))^{-\frac{3}{4}}\,\frac{1}{\sqrt[4]{-a\,(-1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(9/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] 2/15/a^3/(a*(1+I*x))^(3/4)/(-a*(-1+I*x))^(1/4)*(8*x^2+4*I*x+7)/(x
+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(9/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.207937, size = 55, normalized size = 0.55

$$\frac{2\left(8\,x^2+4i\,x+7\right)}{15\,(a^3x+i\,a^3)(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(9/4)),x, algorithm="fricas")
```

```
[Out] 2/15*(8*x^2 + 4*I*x + 7)/((a^3*x + I*a^3)*(I*a*x + a)^(3/4)*(-I*a
*x + a)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(9/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1199 $\int \frac{(a-iax)^{9/4}}{(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=139

$$-\frac{10a^2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{(a+iax)^{3/4}(a-iax)^{3/4}}+\frac{4i(a-iax)^{9/4}}{3a(a+iax)^{3/4}}+\frac{2i\sqrt[4]{a+iax}(a-iax)^{5/4}}{a}+10i\sqrt[4]{a+iax}\sqrt[4]{a-iax}$$

```
[Out] (((4*I)/3)*(a - I*a*x)^(9/4))/(a*(a + I*a*x)^(3/4)) + (10*I)*(a -
 I*a*x)^(1/4)*(a + I*a*x)^(1/4) + ((2*I)*(a - I*a*x)^(5/4)*(a + I
*a*x)^(1/4))/a - (10*a^2*(1 + x^2)^(3/4)*EllipticF[ArcTan[x]/2, 2
])/((a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.120654, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\frac{10a^2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{(a+iax)^{3/4}(a-iax)^{3/4}}+\frac{4i(a-iax)^{9/4}}{3a(a+iax)^{3/4}}+\frac{2i\sqrt[4]{a+iax}(a-iax)^{5/4}}{a}+10i\sqrt[4]{a+iax}\sqrt[4]{a-iax}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(9/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((4*I)/3)*(a - I*a*x)^(9/4))/(a*(a + I*a*x)^(3/4)) + (10*I)*(a -
 I*a*x)^(1/4)*(a + I*a*x)^(1/4) + ((2*I)*(a - I*a*x)^(5/4)*(a + I
*a*x)^(1/4))/a - (10*a^2*(1 + x^2)^(3/4)*EllipticF[ArcTan[x]/2, 2
])/((a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 28.3696, size = 112, normalized size = 0.81

$$10i\sqrt[4]{-iax+a}\sqrt[4]{iax+a}-\frac{10\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{\sqrt[4]{x^2+1}}+\frac{4i\left(-iax+a\right)^{\frac{9}{4}}}{3a\left(iax+a\right)^{\frac{3}{4}}}+\frac{2i\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(9/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 10*I*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4) - 10*(-I*a*x + a)**(1
/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(x**2 + 1)**(1/4)
 + 4*I*(-I*a*x + a)**(9/4)/(3*a*(I*a*x + a)**(3/4)) + 2*I*(-I*a*x
 + a)**(5/4)*(I*a*x + a)**(1/4)/a
```

Mathematica [C] time = 0.0710493, size = 80, normalized size = 0.58

$$\frac{2ia\sqrt[4]{a-iax}\left(-15\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x^2+11ix+20\right)}{3(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(9/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((2*I)/3)*a*(a - I*a*x)^(1/4)*(20 + (11*I)*x + x^2 - 15*2^(1/4)*
(1 + I*x)^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))
/(a + I*a*x)^(3/4)
```

Maple [F] time = 0.071, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{\frac{9}{4}}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(9/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int((a-I*a*x)^(9/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{9}{4}}}{(i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(9/4)/(I*a*x + a)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(9/4)/(I*a*x + a)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{(3\,x-3i)\text{integral}\left(-\frac{5\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{x^2+1},x\right)+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}\left(x^2+11i\,x+20\right)}{3\,x-3i}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(9/4)/(I*a*x + a)^(7/4),x, algorithm="fricas")
```

```
[Out] ((3*x - 3*I)*integral(-5*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)/(x^
2 + 1), x) + 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)*(x^2 + 11*I*x
 + 20))/(3*x - 3*I)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(9/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(9/4)/(I*a*x + a)^(7/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1200 $\int \frac{(a-iax)^{5/4}}{(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=113

$$-\frac{10a\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3(a+iax)^{3/4}(a-iax)^{3/4}}+\frac{4i(a-iax)^{5/4}}{3a(a+iax)^{3/4}}+\frac{10i\sqrt[4]{a+iax}\sqrt[4]{a-iax}}{3a}$$

```
[Out] (((4*I)/3)*(a - I*a*x)^(5/4))/(a*(a + I*a*x)^(3/4)) + (((10*I)/3)
*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))/a - (10*a*(1 + x^2)^(3/4)*E
llipticF[ArcTan[x]/2, 2])/(3*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.0898349, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{10a\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3(a+iax)^{3/4}(a-iax)^{3/4}}+\frac{4i(a-iax)^{5/4}}{3a(a+iax)^{3/4}}+\frac{10i\sqrt[4]{a+iax}\sqrt[4]{a-iax}}{3a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(5/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((4*I)/3)*(a - I*a*x)^(5/4))/(a*(a + I*a*x)^(3/4)) + (((10*I)/3)
*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))/a - (10*a*(1 + x^2)^(3/4)*E
llipticF[ArcTan[x]/2, 2])/(3*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 20.1689, size = 94, normalized size = 0.83

$$\frac{4i\left(-iax+a\right)^{\frac{5}{4}}}{3a\left(iax+a\right)^{\frac{3}{4}}}+\frac{10i\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}{3a}-\frac{10\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{3a\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 4*I*(-I*a*x + a)**(5/4)/(3*a*(I*a*x + a)**(3/4)) + 10*I*(-I*a*x +
 a)**(1/4)*(I*a*x + a)**(1/4)/(3*a) - 10*(-I*a*x + a)**(1/4)*(I*a
*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(3*a*(x**2 + 1)**(1/4))
```

Mathematica [C] time = 0.0504748, size = 76, normalized size = 0.67

$$-\frac{2\sqrt[4]{a-iax}\left(5i\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+3x-7i\right)}{3(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(5/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (-2*(a - I*a*x)^(1/4)*(-7*I + 3*x + (5*I)*2^(1/4)*(1 + I*x)^(3/4)
*Hypergeometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(3*(a + I*a*x)
^(3/4))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{\frac{5}{4}}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(5/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int((a-I*a*x)^(5/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{5}{4}}}{(i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\,(ax-i\,a)\text{integral}\left(-\frac{5\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(ax^2+a)},x\right)-2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}(-3i\,x-7)}{3\,(ax-i\,a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(7/4),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a*x - I*a)*integral(-5/3*(I*a*x + a)^(1/4)*(-I*a*x + a)^(
1/4)/(a*x^2 + a), x) - 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)*(-3
*I*x - 7))/(a*x - I*a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(7/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1201 $\int \frac{\sqrt[4]{a-iax}}{(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=79

$$\frac{4i\sqrt[4]{a-iax}}{3a(a+iax)^{3/4}}-\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3(a-iax)^{3/4}(a+iax)^{3/4}}$$

```
[Out] (((4*I)/3)*(a - I*a*x)^(1/4))/(a*(a + I*a*x)^(3/4)) - (2*(1 + x^2
)^(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*(a - I*a*x)^(3/4)*(a + I*a*
x)^(3/4))
```

Rubi [A] time = 0.0580244, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{4i\sqrt[4]{a-iax}}{3a(a+iax)^{3/4}}-\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(1/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((4*I)/3)*(a - I*a*x)^(1/4))/(a*(a + I*a*x)^(3/4)) - (2*(1 + x^2
)^(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*(a - I*a*x)^(3/4)*(a + I*a*
x)^(3/4))
```

Rubi in Sympy [A] time = 13.3636, size = 68, normalized size = 0.86

$$\frac{4i\sqrt[4]{-iax+a}}{3a\left(iax+a\right)^{\frac{3}{4}}}-\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{3a^2\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 4*I*(-I*a*x + a)**(1/4)/(3*a*(I*a*x + a)**(3/4)) - 2*(-I*a*x + a)
**(1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(3*a**2*(x**2
 + 1)**(1/4))
```

Mathematica [C] time = 0.0508079, size = 73, normalized size = 0.92

$$-\frac{2i\sqrt[4]{a-iax}\left(-2+\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{3a(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(1/4)/(a + I*a*x)^(7/4),x]
```

```
[Out] (((-2*I)/3)*(a - I*a*x)^(1/4)*(-2 + 2^(1/4)*(1 + I*x)^(3/4)*Hyper
geometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(a*(a + I*a*x)^(3/4)
)
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{a-iax}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(1/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int((a-I*a*x)^(1/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\left(a^2x-i\,a^2\right)\text{integral}\left(-\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(a^2x^2+a^2)},x\right)+4\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(a^2x-i\,a^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(7/4),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a^2*x - I*a^2)*integral(-1/3*(I*a*x + a)^(1/4)*(-I*a*x +
a)^(1/4)/(a^2*x^2 + a^2), x) + 4*(I*a*x + a)^(1/4)*(-I*a*x + a)^(
1/4))/(a^2*x - I*a^2)
```

Sympy [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{-a\left(ix-1\right)}}{\left(a\left(ix+1\right)\right)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(1/4)/(a*(I*x + 1))**(7/4), x)
```

GIAC/XCAS [F(-2)]   time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(7/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1202 $\int \frac{1}{(a-iax)^{3/4}(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=82

$$\frac{2i\sqrt[4]{a-iax}}{3a^2(a+iax)^{3/4}}+\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a(a-iax)^{3/4}(a+iax)^{3/4}}$$

```
[Out] (((2*I)/3)*(a - I*a*x)^(1/4))/(a^2*(a + I*a*x)^(3/4)) + (2*(1 + x
^2)^(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*a*(a - I*a*x)^(3/4)*(a +
I*a*x)^(3/4))
```

Rubi [A] time = 0.0617705, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.16$

$$\frac{2i\sqrt[4]{a-iax}}{3a^2(a+iax)^{3/4}}+\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (((2*I)/3)*(a - I*a*x)^(1/4))/(a^2*(a + I*a*x)^(3/4)) + (2*(1 + x
^2)^(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*a*(a - I*a*x)^(3/4)*(a +
I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 12.8959, size = 70, normalized size = 0.85

$$\frac{2i\sqrt[4]{-iax+a}}{3a^2\left(iax+a\right)^{\frac{3}{4}}}+\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{3a^3\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*I*(-I*a*x + a)**(1/4)/(3*a**2*(I*a*x + a)**(3/4)) + 2*(-I*a*x +
 a)**(1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(3*a**3*(x
**2 + 1)**(1/4))
```

Mathematica [C] time = 0.0492796, size = 73, normalized size = 0.89

$$\frac{2i\sqrt[4]{a-iax}\left(1+\sqrt[4]{2}(1+ix)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{3a^2(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (((2*I)/3)*(a - I*a*x)^(1/4)*(1 + 2^(1/4)*(1 + I*x)^(3/4)*Hyperge
ometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(a^2*(a + I*a*x)^(3/4)
)
```

Maple [F] time = 0.062, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{-\frac{3}{4}}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{7}{4}}(-i\,ax+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\left(a^3x-i\,a^3\right)\mathrm{integral}\left(\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(a^3x^2+a^3)},x\right)+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(a^3x-i\,a^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(3/4)),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a^3*x - I*a^3)*integral(1/3*(I*a*x + a)^(1/4)*(-I*a*x + a
)^(1/4)/(a^3*x^2 + a^3), x) + 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1
```

```
/4))/(a^3*x - I*a^3)
```

Sympy **[F(-1)]** time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(7/4),x)

[Out] Timed out
```

GIAC/XCAS **[F(-2)]** time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(3/4)),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.1203 $\int \frac{1}{(a-iax)^{7/4}(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=81

$$\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a^2(a-iax)^{3/4}(a+iax)^{3/4}}+\frac{2x}{3a^2(a-iax)^{3/4}(a+iax)^{3/4}}$$

```
[Out] (2*x)/(3*a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4)) + (2*(1 + x^2)^
(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*a^2*(a - I*a*x)^(3/4)*(a + I*
a*x)^(3/4))
```

Rubi [A] time = 0.0491225, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a^2(a-iax)^{3/4}(a+iax)^{3/4}}+\frac{2x}{3a^2(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (2*x)/(3*a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4)) + (2*(1 + x^2)^
(3/4)*EllipticF[ArcTan[x]/2, 2])/(3*a^2*(a - I*a*x)^(3/4)*(a + I*
a*x)^(3/4))
```

Rubi in Sympy [A] time = 10.2986, size = 75, normalized size = 0.93

$$\frac{2x\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}{3a^4\left(x^2+1\right)}+\frac{2\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{3a^4\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*x*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)/(3*a**4*(x**2 + 1)) +
2*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)*elliptic_f(atan(x)/2, 2)
/(3*a**4*(x**2 + 1)**(1/4))
```

Mathematica [C] time = 0.0835872, size = 76, normalized size = 0.94

$$\frac{2\left(x+\sqrt[4]{2}(1+ix)^{3/4}(x+i)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{3a^2(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (2*(x + 2^(1/4)*(1 + I*x)^(3/4)*(I + x)*Hypergeometric2F1[1/4, 3/
4, 5/4, 1/2 - (I/2)*x]))/(3*a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/
4))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{-\frac{7}{4}}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{7}{4}}(-i\,ax+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(7/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\left(a^4x^2+a^4\right)\mathrm{integral}\left(\frac{(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{3\,(a^4x^2+a^4)},x\right)+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}x}{3\,(a^4x^2+a^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(7/4)),x, algorithm="fricas")
```

```
[Out] 1/3*(3*(a^4*x^2 + a^4)*integral(1/3*(I*a*x + a)^(1/4)*(-I*a*x + a
)^(1/4)/(a^4*x^2 + a^4), x) + 2*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1
```

```
/4)*x)/(a^4*x^2 + a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(7/4),x)

[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(7/4)),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.1204 $\int \frac{1}{(a-iax)^{11/4}(a+iax)^{7/4}} \, dx$

Optimal. Leaf size=114

$$\frac{10\left(x^2+1\right)^{3/4} F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{21a^3(a-iax)^{3/4}(a+iax)^{3/4}}+\frac{10x}{21a^3(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i}{7a^2(a-iax)^{7/4}(a+iax)^{3/4}}$$

```
[Out] ((-2*I)/7)/(a^2*(a - I*a*x)^(7/4)*(a + I*a*x)^(3/4)) + (10*x)/(21
*a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4)) + (10*(1 + x^2)^(3/4)*E
llipticF[ArcTan[x]/2, 2])/(21*a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(
3/4))
```

Rubi [A] time = 0.081453, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{10\left(x^2+1\right)^{3/4} F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{21a^3(a-iax)^{3/4}(a+iax)^{3/4}}+\frac{10x}{21a^3(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i}{7a^2(a-iax)^{7/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] ((-2*I)/7)/(a^2*(a - I*a*x)^(7/4)*(a + I*a*x)^(3/4)) + (10*x)/(21
*a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4)) + (10*(1 + x^2)^(3/4)*E
llipticF[ArcTan[x]/2, 2])/(21*a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(
3/4))
```

Rubi in Sympy [A] time = 26.5213, size = 128, normalized size = 1.12

$$\frac{2i}{3a^2\left(-iax+a\right)^{\frac{7}{4}}\left(iax+a\right)^{\frac{3}{4}}}-\frac{10i\sqrt[4]{iax+a}}{21a^3\left(-iax+a\right)^{\frac{7}{4}}}-\frac{10i\sqrt[4]{iax+a}}{21a^4\left(-iax+a\right)^{\frac{3}{4}}}+\frac{10\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{21a^5\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*I/(3*a**2*(-I*a*x + a)**(7/4)*(I*a*x + a)**(3/4)) - 10*I*(I*a*x
 + a)**(1/4)/(21*a**3*(-I*a*x + a)**(7/4)) - 10*I*(I*a*x + a)**(1
/4)/(21*a**4*(-I*a*x + a)**(3/4)) + 10*(-I*a*x + a)**(1/4)*(I*a*x
 + a)**(1/4)*elliptic_f(atan(x)/2, 2)/(21*a**5*(x**2 + 1)**(1/4))
```

Mathematica [C] time = 0.116651, size = 96, normalized size = 0.84

$$\frac{2\left(5\sqrt[4]{2}(1+ix)^{3/4}(x+i)^2\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+5x^2+5ix+3\right)}{21a^3(x+i)(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (2*(3 + (5*I)*x + 5*x^2 + 5*2^(1/4)*(1 + I*x)^(3/4)*(I + x)^2*Hyp
ergeometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(21*a^3*(I + x)*(a
 - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Maple [F] time = 0.092, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{-\frac{11}{4}}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(11/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(21\,a^5x^3+21i\,a^5x^2+21\,a^5x+21i\,a^5\right)\text{integral}\left(\frac{5\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{21\,(a^5x^2+a^5)},x\right)+2\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}\left(5\,x^2+5i\,x+3\right)}{21\,a^5x^3+21i\,a^5x^2+21\,a^5x+21i\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(11/4)),x, algorithm="fricas")
```

```
[Out] ((21*a^5*x^3 + 21*I*a^5*x^2 + 21*a^5*x + 21*I*a^5)*integral(5/21*
(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)/(a^5*x^2 + a^5), x) + 2*(I*a
*x + a)^(1/4)*(-I*a*x + a)^(1/4)*(5*x^2 + 5*I*x + 3))/(21*a^5*x^3
 + 21*I*a^5*x^2 + 21*a^5*x + 21*I*a^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(11/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1205 $\int \frac{1}{(a-iax)^{15/4}(a+iax)^{7/4}}\,dx$

Optimal. Leaf size=147

$$\frac{10\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{33a^4(a-iax)^{3/4}(a+iax)^{3/4}}+\frac{10x}{33a^4(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i}{11a^3(a-iax)^{7/4}(a+iax)^{3/4}}-\frac{2i}{11a^2(a-iax)^{11/4}(a+iax)^{3/4}}$$

```
[Out] ((-2*I)/11)/(a^2*(a - I*a*x)^(11/4)*(a + I*a*x)^(3/4)) - ((2*I)/1
1)/(a^3*(a - I*a*x)^(7/4)*(a + I*a*x)^(3/4)) + (10*x)/(33*a^4*(a
- I*a*x)^(3/4)*(a + I*a*x)^(3/4)) + (10*(1 + x^2)^(3/4)*EllipticF
[ArcTan[x]/2, 2])/(33*a^4*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi [A] time = 0.116468, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{10\left(x^2+1\right)^{3/4}F\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{33a^4(a-iax)^{3/4}(a+iax)^{3/4}}+\frac{10x}{33a^4(a-iax)^{3/4}(a+iax)^{3/4}}-\frac{2i}{11a^3(a-iax)^{7/4}(a+iax)^{3/4}}-\frac{2i}{11a^2(a-iax)^{11/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(15/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] ((-2*I)/11)/(a^2*(a - I*a*x)^(11/4)*(a + I*a*x)^(3/4)) - ((2*I)/1
1)/(a^3*(a - I*a*x)^(7/4)*(a + I*a*x)^(3/4)) + (10*x)/(33*a^4*(a
- I*a*x)^(3/4)*(a + I*a*x)^(3/4)) + (10*(1 + x^2)^(3/4)*EllipticF
[ArcTan[x]/2, 2])/(33*a^4*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Rubi in Sympy [A] time = 34.5147, size = 156, normalized size = 1.06

$$\frac{2i}{3a^2\left(-iax+a\right)^{\frac{11}{4}}\left(iax+a\right)^{\frac{3}{4}}}-\frac{14i\sqrt[4]{iax+a}}{33a^3\left(-iax+a\right)^{\frac{11}{4}}}-\frac{10i\sqrt[4]{iax+a}}{33a^4\left(-iax+a\right)^{\frac{7}{4}}}-\frac{10i\sqrt[4]{iax+a}}{33a^5\left(-iax+a\right)^{\frac{3}{4}}}+\frac{10\sqrt[4]{-iax+a}\sqrt[4]{iax+a}F\left(\frac{\operatorname{atan}(x)}{2}\middle|2\right)}{33a^6\sqrt[4]{x^2+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(15/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] 2*I/(3*a**2*(-I*a*x + a)**(11/4)*(I*a*x + a)**(3/4)) - 14*I*(I*a*
x + a)**(1/4)/(33*a**3*(-I*a*x + a)**(11/4)) - 10*I*(I*a*x + a)**
(1/4)/(33*a**4*(-I*a*x + a)**(7/4)) - 10*I*(I*a*x + a)**(1/4)/(33
*a**5*(-I*a*x + a)**(3/4)) + 10*(-I*a*x + a)**(1/4)*(I*a*x + a)**
(1/4)*elliptic_f(atan(x)/2, 2)/(33*a**6*(x**2 + 1)**(1/4))
```

Mathematica [C] time = 0.135512, size = 103, normalized size = 0.7

$$\frac{2\left(5\sqrt[4]{2}(1+ix)^{3/4}(x+i)^3\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+5x^3+10ix^2-2x+6i\right)}{33a^4(x+i)^2(a-iax)^{3/4}(a+iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(15/4)*(a + I*a*x)^(7/4)),x]
```

```
[Out] (2*(6*I - 2*x + (10*I)*x^2 + 5*x^3 + 5*2^(1/4)*(1 + I*x)^(3/4)*(I
 + x)^3*Hypergeometric2F1[1/4, 3/4, 5/4, 1/2 - (I/2)*x]))/(33*a^4
*(I + x)^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(3/4))
```

Maple [F] time = 0.112, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{-\frac{15}{4}}\,(a+iax)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(15/4)/(a+I*a*x)^(7/4),x)
```

```
[Out] int(1/(a-I*a*x)^(15/4)/(a+I*a*x)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(15/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(33\,a^6x^4 + 66i\,a^6x^3 + 66i\,a^6x - 33\,a^6\right)\text{integral}\left(\frac{5\,(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{1}{4}}}{33\,(a^6x^2+a^6)}, x\right) + \left(10\,x^3 + 20i\,x^2 - 4\,x + 12i\right)(i\,ax + a)^{\frac{1}{4}}(-i\,ax + a)^{\frac{1}{4}}}{33\,a^6x^4 + 66i\,a^6x^3 + 66i\,a^6x - 33\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(15/4)),x, algorithm="fricas")
```

```
[Out] ((33*a^6*x^4 + 66*I*a^6*x^3 + 66*I*a^6*x - 33*a^6)*integral(5/33*
(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4)/(a^6*x^2 + a^6), x) + (10*x^
3 + 20*I*x^2 - 4*x + 12*I)*(I*a*x + a)^(1/4)*(-I*a*x + a)^(1/4))/
(33*a^6*x^4 + 66*I*a^6*x^3 + 66*I*a^6*x - 33*a^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(15/4)/(a+I*a*x)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(7/4)*(-I*a*x + a)^(15/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1206 $\int \frac{(a-iax)^{7/4}}{(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=137

$$\frac{14a\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a+iax}\sqrt[4]{a-iax}}+\frac{4i(a-iax)^{7/4}}{a\sqrt[4]{a+iax}}+\frac{14i(a+iax)^{3/4}(a-iax)^{3/4}}{3a}-\frac{14ax}{\sqrt[4]{a+iax}\sqrt[4]{a-iax}}$$

```
[Out] (-14*a*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + ((4*I)*(a - I*a
*x)^(7/4))/(a*(a + I*a*x)^(1/4)) + (((14*I)/3)*(a - I*a*x)^(3/4)*
(a + I*a*x)^(3/4))/a + (14*a*(1 + x^2)^(1/4)*EllipticE[ArcTan[x]/
2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.107614, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.24

$$\frac{14a\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a+iax}\sqrt[4]{a-iax}}+\frac{4i(a-iax)^{7/4}}{a\sqrt[4]{a+iax}}+\frac{14i(a+iax)^{3/4}(a-iax)^{3/4}}{3a}-\frac{14ax}{\sqrt[4]{a+iax}\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(7/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] (-14*a*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + ((4*I)*(a - I*a
*x)^(7/4))/(a*(a + I*a*x)^(1/4)) + (((14*I)/3)*(a - I*a*x)^(3/4)*
(a + I*a*x)^(3/4))/a + (14*a*(1 + x^2)^(1/4)*EllipticE[ArcTan[x]/
2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{7a\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{4i\left(-iax+a\right)^{\frac{7}{4}}}{a\sqrt[4]{iax+a}}+\frac{14i\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] -7*a*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 +
 a**2)**(-1/4), x)/(a**2*x**2 + a**2)**(3/4) + 4*I*(-I*a*x + a)**
(7/4)/(a*(I*a*x + a)**(1/4)) + 14*I*(-I*a*x + a)**(3/4)*(I*a*x +
a)**(3/4)/(3*a)
```

Mathematica [C] time = 0.0699576, size = 74, normalized size = 0.54

$$-\frac{2(a-iax)^{3/4}\left(7i2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-13i\right)}{3\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(7/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] (-2*(a - I*a*x)^(3/4)*(-13*I + x + (7*I)*2^(3/4)*(1 + I*x)^(1/4)*
Hypergeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(3*(a + I*a*x)^
(1/4))
```

Maple [C] time = 0.077, size = 96, normalized size = 0.7

$$\frac{2i}{3}\left(x^2+13-12ix\right)a\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}-7\frac{x{}_2F_1(1/4,1/2;\ 3/2;\ -x^2)a\sqrt[4]{-a^2(-1+ix)(1+ix)}}{\sqrt[4]{a^2}\sqrt[4]{-a(-1+ix)}\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(7/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2/3*I*(x^2+13-12*I*x)*a/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-7/(
a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)*a*(-a^2*(-1+I*x)*(1+
I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-i\,ax+a)^{\frac{7}{4}}}{(i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}\left(2i\,x^2-16\,x+42i\right)+\left(3\,ax^2-3i\,ax\right)\text{integral}\left(-\frac{14\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{ax^4+ax^2},x\right)}{3\,ax^2-3i\,ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(5/4),x, algorithm="fricas")
```

```
[Out] ((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(2*I*x^2 - 16*x + 42*I) + (
3*a*x^2 - 3*I*a*x)*integral(-14*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3
/4)/(a*x^4 + a*x^2), x))/(3*a*x^2 - 3*I*a*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(5/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1207 $\int \frac{(a-iax)^{3/4}}{(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=102

$$\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{6x}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{4i(a-iax)^{3/4}}{a\sqrt[4]{a+iax}}$$

```
[Out] (-6*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + ((4*I)*(a - I*a*x)
^(3/4))/(a*(a + I*a*x)^(1/4)) + (6*(1 + x^2)^(1/4)*EllipticE[ArcT
an[x]/2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0712439, antiderivative size = 102, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{6x}{\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{4i(a-iax)^{3/4}}{a\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(3/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] (-6*x)/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + ((4*I)*(a - I*a*x)
^(3/4))/(a*(a + I*a*x)^(1/4)) + (6*(1 + x^2)^(1/4)*EllipticE[ArcT
an[x]/2, 2])/((a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{3a^2(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{(a^2x^2+a^2)^{\frac{5}{4}}}\,dx}{(a^2x^2+a^2)^{\frac{3}{4}}}+\frac{4i(-iax+a)^{\frac{3}{4}}}{a\sqrt[4]{iax+a}}-\frac{6x(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}}{a^2(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 3*a**2*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2
 + a**2)**(-5/4), x)/(a**2*x**2 + a**2)**(3/4) + 4*I*(-I*a*x + a)
**(3/4)/(a*(I*a*x + a)**(1/4)) - 6*x*(-I*a*x + a)**(3/4)*(I*a*x +
 a)**(3/4)/(a**2*(x**2 + 1))
```

Mathematica [C] time = 0.0523255, size = 71, normalized size = 0.7

$$-\frac{2i(a-iax)^{3/4}\left(-2+2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{a\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(3/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] ((-2*I)*(a - I*a*x)^(3/4)*(-2 + 2^(3/4)*(1 + I*x)^(1/4)*Hypergeom
etric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(a*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.065, size = 88, normalized size = 0.9

$$4\,\frac{x+i}{\sqrt[4]{-a\,(-1+ix)}\sqrt[4]{a\,(1+ix)}}-3\,\frac{x{}_2F_1(1/4,1/2;\,3/2;\,-x^2)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}}{\sqrt[4]{a^2}\sqrt[4]{-a\,(-1+ix)}\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(3/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 4*(x+I)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-3/(a^2)^(1/4)*x*hyp
ergeom([1/4,1/2],[3/2],-x^2)*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-a*(-
1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-i\,ax+a)^{\frac{3}{4}}}{(i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}(2\,x-6i)-\left(a^2x^2-i\,a^2x\right)\mathrm{integral}\left(-\frac{6\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^2x^4+a^2x^2},x\right)}{a^2x^2-i\,a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(5/4),x, algorithm="fricas")
```

```
[Out] -((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(2*x - 6*I) - (a^2*x^2 - I
*a^2*x)*integral(-6*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a^2*x^4
 + a^2*x^2), x))/(a^2*x^2 - I*a^2*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-a(ix-1))^{\frac{3}{4}}}{(a(ix+1))^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(3/4)/(a*(I*x + 1))**(5/4), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(5/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1208 $\int \frac{1}{\sqrt[4]{a-iax}(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=78

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{2i}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

```
[Out] (2*I)/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)^(1/4
)*EllipticE[ArcTan[x]/2, 2])/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Rubi [A] time = 0.0614982, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{2i}{a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (2*I)/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)^(1/4
)*EllipticE[ArcTan[x]/2, 2])/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2i}{a\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}-\frac{(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{a\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{2x(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}}{a^3\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 2*I/(a*(-I*a*x + a)**(1/4)*(I*a*x + a)**(1/4)) - (-I*a*x + a)**(3
/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-1/4), x)/(a
*(a**2*x**2 + a**2)**(3/4)) + 2*x*(-I*a*x + a)**(3/4)*(I*a*x + a)
**(3/4)/(a**3*(x**2 + 1))
```

Mathematica [C] time = 0.0550192, size = 73, normalized size = 0.94

$$-\frac{2i(a-iax)^{3/4}\left(-3+2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{3a^2\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (((-2*I)/3)*(a - I*a*x)^(3/4)*(-3 + 2^(3/4)*(1 + I*x)^(1/4)*Hyper
geometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(a^2*(a + I*a*x)^(1/
4))
```

Maple [C] time = 0.053, size = 94, normalized size = 1.2

$$2\frac{x+i}{\sqrt[4]{-a(-1+ix)}\sqrt[4]{a(1+ix)}a}-\frac{x}{a}{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2(-1+ix)(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2*(x+I)/a/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-1/(a^2)^(1/4)*x*h
ypergeom([1/4,1/2],[3/2],-x^2)/a*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-
a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(i\,ax+a)^{\frac{5}{4}}(-i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(a^3x^2-i\,a^3x\right)\text{integral}\left(-\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^3x^4+a^3x^2},x\right)+2i\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^3x^2-i\,a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(1/4)),x, algorithm="fricas")
```

```
[Out] ((a^3*x^2 - I*a^3*x)*integral(-2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(
3/4)/(a^3*x^4 + a^3*x^2), x) + 2*I*(I*a*x + a)^(3/4)*(-I*a*x + a)
^(3/4))/(a^3*x^2 - I*a^3*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a(ix+1))^{\frac{5}{4}}\sqrt[4]{-a(ix-1)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(5/4)*(-a*(I*x - 1))**(1/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(1/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1209 $\int \frac{1}{(a-iax)^{5/4}(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=46

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

```
[Out] (2*(1 + x^2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(a^2*(a - I*a*x)^(1
/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0328834, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.12$

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (2*(1 + x^2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(a^2*(a - I*a*x)^(1
/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{(a^2x^2+a^2)^{\frac{5}{4}}}\,dx}{(a^2x^2+a^2)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] (-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2
)**(-5/4), x)/(a**2*x**2 + a**2)**(3/4)
```

Mathematica [C] time = 0.0805656, size = 79, normalized size = 1.72

$$\frac{6x-2\,2^{3/4}\sqrt[4]{1+ix}(x+i)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)}{3a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (6*x - 2*2^(3/4)*(1 + I*x)^(1/4)*(I + x)*Hypergeometric2F1[1/4, 3
/4, 7/4, 1/2 - (I/2)*x])/(3*a^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Maple [C] time = 0.057, size = 91, normalized size = 2.

$$2\frac{x}{\sqrt[4]{-a(-1+ix)}\sqrt[4]{a(1+ix)}a^2}-\frac{x}{a^2}{}_2F_1\left(\frac{1}{4},\frac{1}{2};\ \frac{3}{2};\ -x^2\right)\sqrt[4]{-a^2(-1+ix)(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(5/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2*x/a^2/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-1/(a^2)^(1/4)*x*hyp
ergeom([1/4,1/2],[3/2],-x^2)/a^2*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-
a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(i\,ax+a)^{\frac{5}{4}}(-i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}x+\left(a^4x^2+a^4\right)\text{integral}\left(-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{a^4x^2+a^4},x\right)}{a^4x^2+a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(5/4)),x, algorithm="fricas")
```

```
[Out] (2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*x + (a^4*x^2 + a^4)*integ
ral(-(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a^4*x^2 + a^4), x))/(a
^4*x^2 + a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(5/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1210 $\int \frac{1}{(a-iax)^{9/4}(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=82

$$\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{5a^2(a-iax)^{5/4}\sqrt[4]{a+iax}}$$

```
[Out] ((-2*I)/5)/(a^2*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) + (6*(1 + x^
2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^3*(a - I*a*x)^(1/4)*(a +
 I*a*x)^(1/4))
```

Rubi [A] time = 0.0627701, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{5a^2(a-iax)^{5/4}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] ((-2*I)/5)/(a^2*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) + (6*(1 + x^
2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^3*(a - I*a*x)^(1/4)*(a +
 I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{3\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\left(a^2x^2+a^2\right)^{\frac{5}{4}}}\,dx}{5a\left(a^2x^2+a^2\right)^{\frac{3}{4}}}-\frac{2i}{5a^2\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 3*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a*
*2)**(-5/4), x)/(5*a*(a**2*x**2 + a**2)**(3/4)) - 2*I/(5*a**2*(-I
*a*x + a)**(5/4)*(I*a*x + a)**(1/4))
```

Mathematica [C] time = 0.10652, size = 96, normalized size = 1.17

$$\frac{-2\,2^{3/4}\sqrt[4]{1+ix}(x+i)^2\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+6x^2+6ix+2}{5a^3(x+i)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (2 + (6*I)*x + 6*x^2 - 2*2^(3/4)*(1 + I*x)^(1/4)*(I + x)^2*Hyperg
eometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(5*a^3*(I + x)*(a - I*
a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.089, size = 107, normalized size = 1.3

$$\frac{6\,ix+6\,x^2+2}{(5\,x+5\,i)\,a^3}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}-\frac{3\,x}{5\,a^3}{}_2\mathrm{F}_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(9/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2/5*(3*I*x+3*x^2+1)/(x+I)/a^3/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/
4)-3/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)/a^3*(-a^2*(-
1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(9/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}\left(3\,x^2+3i\,x+1\right)+\left(5\,a^5x^3+5i\,a^5x^2+5\,a^5x+5i\,a^5\right)\mathrm{integral}\left(-\frac{3\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(a^5x^2+a^5)},x\right)}{5\,a^5x^3+5i\,a^5x^2+5\,a^5x+5i\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(9/4)),x, algorithm="fricas")
```

```
[Out] (2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(3*x^2 + 3*I*x + 1) + (5*
a^5*x^3 + 5*I*a^5*x^2 + 5*a^5*x + 5*I*a^5)*integral(-3/5*(I*a*x +
 a)^(3/4)*(-I*a*x + a)^(3/4)/(a^5*x^2 + a^5), x))/(5*a^5*x^3 + 5*
I*a^5*x^2 + 5*a^5*x + 5*I*a^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(9/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1211 $\int \frac{1}{(a-iax)^{13/4}(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=115

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a^4\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{9a^3(a-iax)^{5/4}\sqrt[4]{a+iax}}-\frac{2i}{9a^2(a-iax)^{9/4}\sqrt[4]{a+iax}}$$

```
[Out] ((-2*I)/9)/(a^2*(a - I*a*x)^(9/4)*(a + I*a*x)^(1/4)) - ((2*I)/9)/
(a^3*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)^(1/4)*El
lipticE[ArcTan[x]/2, 2])/(3*a^4*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Rubi [A] time = 0.0954007, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{3a^4\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{9a^3(a-iax)^{5/4}\sqrt[4]{a+iax}}-\frac{2i}{9a^2(a-iax)^{9/4}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] ((-2*I)/9)/(a^2*(a - I*a*x)^(9/4)*(a + I*a*x)^(1/4)) - ((2*I)/9)/
(a^3*(a - I*a*x)^(5/4)*(a + I*a*x)^(1/4)) + (2*(1 + x^2)^(1/4)*El
lipticE[ArcTan[x]/2, 2])/(3*a^4*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/
4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2i}{a^2(-iax+a)^{\frac{9}{4}}\sqrt[4]{iax+a}}-\frac{4i}{3a^3(-iax+a)^{\frac{5}{4}}\sqrt[4]{iax+a}}-\frac{10i(iax+a)^{\frac{3}{4}}}{9a^3(-iax+a)^{\frac{9}{4}}}-\frac{(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{3a^4(a^2x^2+a^2)^{\frac{3}{4}}}+\frac{2x(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}}{3a^6(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 2*I/(a**2*(-I*a*x + a)**(9/4)*(I*a*x + a)**(1/4)) - 4*I/(3*a**3*(
-I*a*x + a)**(5/4)*(I*a*x + a)**(1/4)) - 10*I*(I*a*x + a)**(3/4)/
(9*a**3*(-I*a*x + a)**(9/4)) - (-I*a*x + a)**(3/4)*(I*a*x + a)**(
```

```
3/4)*Integral((a**2*x**2 + a**2)**(-1/4), x)/(3*a**4*(a**2*x**2 +
 a**2)**(3/4)) + 2*x*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)/(3*a*
*6*(x**2 + 1))
```

Mathematica [C] time = 0.129478, size = 103, normalized size = 0.9

$$\frac{-2\,2^{3/4}\sqrt[4]{1+ix}(x+i)^3\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+6x^3+12ix^2-4x+4i}{9a^4(x+i)^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (4*I - 4*x + (12*I)*x^2 + 6*x^3 - 2*2^(3/4)*(1 + I*x)^(1/4)*(I +
x)^3*Hypergeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(9*a^4*(I +
 x)^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.102, size = 113, normalized size = 1.

$$\frac{12\,ix^2+6\,x^3-4\,x+4\,i}{9\,(x+i)^2\,a^4}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}} - \frac{x}{3\,a^4}{}_2F_1\left(\frac{1}{4},\frac{1}{2};\,\frac{3}{2};\,-x^2\right)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(13/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2/9*(6*I*x^2+3*x^3-2*x+2*I)/(x+I)^2/a^4/(-a*(-1+I*x))^(1/4)/(a*(1
+I*x))^(1/4)-1/3/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)/a^
4*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(
1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(13/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(6\,x^{3}+12i\,x^{2}-4\,x+4i\right)\left(i\,ax+a\right)^{\frac{3}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}+\left(9\,a^{6}x^{4}+18i\,a^{6}x^{3}+18i\,a^{6}x-9\,a^{6}\right)\mathrm{integral}\left(-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{3\,(a^{6}x^{2}+a^{6})},x\right)}{9\,a^{6}x^{4}+18i\,a^{6}x^{3}+18i\,a^{6}x-9\,a^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(13/4)),x, algorithm="fricas")
```

```
[Out] ((6*x^3 + 12*I*x^2 - 4*x + 4*I)*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3
/4) + (9*a^6*x^4 + 18*I*a^6*x^3 + 18*I*a^6*x - 9*a^6)*integral(-1
/3*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a^6*x^2 + a^6), x))/(9*a
^6*x^4 + 18*I*a^6*x^3 + 18*I*a^6*x - 9*a^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(13/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1212 $\int \frac{(a-iax)^{5/4}}{(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=287

$$\frac{4i(a-iax)^{5/4}}{a\sqrt[4]{a+iax}}+\frac{5i(a+iax)^{3/4}\sqrt[4]{a-iax}}{a}+\frac{5i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{5i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{5i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}-\frac{5i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

```
[Out] ((4*I)*(a - I*a*x)^(5/4))/(a*(a + I*a*x)^(1/4)) + ((5*I)*(a - I*a
*x)^(1/4)*(a + I*a*x)^(3/4))/a + ((5*I)*ArcTan[1 - (Sqrt[2]*(a -
I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((5*I)*ArcTan[1 + (Sq
rt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + (((5*I)/2)
*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a*x)^(
1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - (((5*I)/2)*Log[1 + Sqrt[a - I
*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(
1/4)])/Sqrt[2]
```

Rubi [A] time = 0.302966, antiderivative size = 287, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 9, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.36$

$$\frac{4i(a-iax)^{5/4}}{a\sqrt[4]{a+iax}}+\frac{5i(a+iax)^{3/4}\sqrt[4]{a-iax}}{a}+\frac{5i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}-\frac{5i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{2\sqrt{2}}+\frac{5i\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}-\frac{5i\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(5/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] ((4*I)*(a - I*a*x)^(5/4))/(a*(a + I*a*x)^(1/4)) + ((5*I)*(a - I*a
*x)^(1/4)*(a + I*a*x)^(3/4))/a + ((5*I)*ArcTan[1 - (Sqrt[2]*(a -
I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - ((5*I)*ArcTan[1 + (Sq
rt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] + (((5*I)/2)
*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a*x)^(
1/4))/(a + I*a*x)^(1/4)])/Sqrt[2] - (((5*I)/2)*Log[1 + Sqrt[a - I
*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(
1/4)])/Sqrt[2]
```

Rubi in Sympy [A] time = 45.5538, size = 246, normalized size = 0.86

$$\frac{5\sqrt{2}i\log\left(-\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}-\frac{5\sqrt{2}i\log\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+\frac{\sqrt{-iax+a}}{\sqrt{iax+a}}+1\right)}{4}-\frac{5\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}-1\right)}{2}-\frac{5\sqrt{2}i\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-iax+a}}{\sqrt[4]{iax+a}}+1\right)}{2}+\frac{4i(-iax+a)^{\frac{5}{4}}}{a\sqrt[4]{iax+a}}+\frac{5i\sqrt[4]{-iax+a}\,(iax+a)^{\frac{3}{4}}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 5*sqrt(2)*I*log(-sqrt(2)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) +
 sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1)/4 - 5*sqrt(2)*I*log(sqrt(2
)*(-I*a*x + a)**(1/4)/(I*a*x + a)**(1/4) + sqrt(-I*a*x + a)/sqrt(
I*a*x + a) + 1)/4 - 5*sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)**(1/4)/
(I*a*x + a)**(1/4) - 1)/2 - 5*sqrt(2)*I*atan(sqrt(2)*(-I*a*x + a)
**(1/4)/(I*a*x + a)**(1/4) + 1)/2 + 4*I*(-I*a*x + a)**(5/4)/(a*(I
*a*x + a)**(1/4)) + 5*I*(-I*a*x + a)**(1/4)*(I*a*x + a)**(3/4)/a
```

Mathematica [C] time = 0.0612595, size = 72, normalized size = 0.25

$$-\frac{\sqrt[4]{a-iax}\left(5i2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)+x-9i\right)}{\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(5/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] -(((a - I*a*x)^(1/4)*(-9*I + x + (5*I)*2^(3/4)*(1 + I*x)^(1/4)*Hy
pergeometric2F1[1/4, 1/4, 5/4, 1/2 - (I/2)*x]))/(a + I*a*x)^(1/4)
)
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\,(a-iax)^{\frac{5}{4}}\,(a+iax)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(5/4)/(a+I*a*x)^(5/4),x)

[Out] int((a-I*a*x)^(5/4)/(a+I*a*x)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{5}{4}}}{(i\,ax+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(5/4),x, algorithm="maxima")

[Out] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(5/4), x)
```

Fricas [A] time = 0.239538, size = 323, normalized size = 1.13

$$-\frac{\sqrt{25i}(ax-i\,a)\log\left(\frac{\sqrt{25i}(ax-i\,a)+5\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{5\,x-5i}\right)-\sqrt{25i}(ax-i\,a)\log\left(-\frac{\sqrt{25i}(ax-i\,a)-5\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{5\,x-5i}\right)+\sqrt{-25i}(ax-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(5/4),x, algorithm="fricas")

[Out] -1/2*(sqrt(25*I)*(a*x - I*a)*log((sqrt(25*I)*(a*x - I*a) + 5*(I*a
*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(5*x - 5*I)) - sqrt(25*I)*(a*x
- I*a)*log(-(sqrt(25*I)*(a*x - I*a) - 5*(I*a*x + a)^(3/4)*(-I*a*x
 + a)^(1/4))/(5*x - 5*I)) + sqrt(-25*I)*(a*x - I*a)*log((sqrt(-25
*I)*(a*x - I*a) + 5*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(5*x -
5*I)) - sqrt(-25*I)*(a*x - I*a)*log(-(sqrt(-25*I)*(a*x - I*a) - 5
*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(5*x - 5*I)) + 2*(I*a*x +
a)^(3/4)*(-I*a*x + a)^(1/4)*(-I*x - 9))/(a*x - I*a)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(5/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1213 $\int \frac{\sqrt[4]{a-iax}}{(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=264

$$\frac{4i\sqrt[4]{a-iax}}{a\sqrt[4]{a+iax}}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}-\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

```
[Out] ((4*I)*(a - I*a*x)^(1/4))/(a*(a + I*a*x)^(1/4)) + (I*Sqrt[2]*ArcT
an[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a - (I*Sqr
t[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a
 + (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a
*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) - (I*Log[1 + Sqrt[a -
I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^
(1/4)])/(Sqrt[2]*a)
```

Rubi [A] time = 0.223806, antiderivative size = 264, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.32$

$$\frac{4i\sqrt[4]{a-iax}}{a\sqrt[4]{a+iax}}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}-\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(1/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] ((4*I)*(a - I*a*x)^(1/4))/(a*(a + I*a*x)^(1/4)) + (I*Sqrt[2]*ArcT
an[1 - (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a - (I*Sqr
t[2]*ArcTan[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a
 + (I*Log[1 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a
*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sqrt[2]*a) - (I*Log[1 + Sqrt[a -
I*a*x]/Sqrt[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^
(1/4)])/(Sqrt[2]*a)
```

Rubi in Sympy [A] time = 35.4123, size = 218, normalized size = 0.83

$$\frac{4i\sqrt[4]{-iax+a}}{a\sqrt[4]{iax+a}}+\frac{\sqrt{2}i\log\left(1+\frac{\sqrt{iax+a}}{\sqrt{-iax+a}}-\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{2a}-\frac{\sqrt{2}i\log\left(1+\frac{\sqrt{iax+a}}{\sqrt{-iax+a}}+\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{2a}-\frac{\sqrt{2}i\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{a}+\frac{\sqrt{2}i\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 4*I*(-I*a*x + a)**(1/4)/(a*(I*a*x + a)**(1/4)) + sqrt(2)*I*log(1
+ sqrt(I*a*x + a)/sqrt(-I*a*x + a) - sqrt(2)*(I*a*x + a)**(1/4)/(
-I*a*x + a)**(1/4))/(2*a) - sqrt(2)*I*log(1 + sqrt(I*a*x + a)/sqr
t(-I*a*x + a) + sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)**(1/4))/(
2*a) - sqrt(2)*I*atan(1 - sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)
**(1/4))/a + sqrt(2)*I*atan(1 + sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*
x + a)**(1/4))/a
```

Mathematica [C] time = 0.0523719, size = 71, normalized size = 0.27

$$-\frac{2i\sqrt[4]{a-iax}\left(-2+2^{3/4}\sqrt[4]{1+ix}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)\right)}{a\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(1/4)/(a + I*a*x)^(5/4),x]
```

```
[Out] ((-2*I)*(a - I*a*x)^(1/4)*(-2 + 2^(3/4)*(1 + I*x)^(1/4)*Hypergeom
etric2F1[1/4, 1/4, 5/4, 1/2 - (I/2)*x]))/(a*(a + I*a*x)^(1/4))
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{a-iax}\,(a+iax)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(1/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] int((a-I*a*x)^(1/4)/(a+I*a*x)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax + a)^{\frac{1}{4}}}{(i\,ax + a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(5/4), x)
```

Fricas [A] time = 0.242823, size = 408, normalized size = 1.55

$$-\frac{\left(a^2x - i\,a^2\right)\sqrt{\frac{4i}{a^2}}\log\left(\frac{\left(a^2x-i\,a^2\right)\sqrt{\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right) - \left(a^2x - i\,a^2\right)\sqrt{\frac{4i}{a^2}}\log\left(-\frac{\left(a^2x-i\,a^2\right)\sqrt{\frac{4i}{a^2}}-2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right) + \left(a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(5/4),x, algorithm="fricas")
```

```
[Out] -1/2*((a^2*x - I*a^2)*sqrt(4*I/a^2)*log(((a^2*x - I*a^2)*sqrt(4*I
/a^2) + 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I)) - (a
^2*x - I*a^2)*sqrt(4*I/a^2)*log(-((a^2*x - I*a^2)*sqrt(4*I/a^2) -
 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I)) + (a^2*x -
I*a^2)*sqrt(-4*I/a^2)*log(((a^2*x - I*a^2)*sqrt(-4*I/a^2) + 2*(I*
a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I)) - (a^2*x - I*a^2)
*sqrt(-4*I/a^2)*log(-((a^2*x - I*a^2)*sqrt(-4*I/a^2) - 2*(I*a*x +
 a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I)) - 8*(I*a*x + a)^(3/4)*
(-I*a*x + a)^(1/4))/(a^2*x - I*a^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{-a\,(ix-1)}}{(a\,(ix+1))^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Integral((-a*(I*x - 1))**(1/4)/(a*(I*x + 1))**(5/4), x)
```

GIAC/XCAS [A] time = 0.247305, size = 244, normalized size = 0.92

$$-\frac{2i\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\left(\sqrt{2}+\frac{2(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{1}{4}}}\right)\right)+2i\sqrt{2}\arctan\left(-\frac{1}{2}\sqrt{2}\left(\sqrt{2}-\frac{2(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{1}{4}}}\right)\right)+i\sqrt{2}\ln\left(\frac{\sqrt{2}(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{1}{4}}}+\frac{\sqrt{-i\,ax+a}}{\sqrt{i\,ax+a}}+1\right)}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(5/4),x, algorithm="giac")
```

```
[Out] -1/2*(2*I*sqrt(2)*arctan(1/2*sqrt(2)*(sqrt(2) + 2*(-I*a*x + a)^(1
/4)/(I*a*x + a)^(1/4))) + 2*I*sqrt(2)*arctan(-1/2*sqrt(2)*(sqrt(2
) - 2*(-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4))) + I*sqrt(2)*ln(sqrt(
2)*(-I*a*x + a)^(1/4)/(I*a*x + a)^(1/4) + sqrt(-I*a*x + a)/sqrt(I
*a*x + a) + 1) - I*sqrt(2)*ln(-sqrt(2)*(-I*a*x + a)^(1/4)/(I*a*x
+ a)^(1/4) + sqrt(-I*a*x + a)/sqrt(I*a*x + a) + 1) - 8*I*(-I*a*x
+ a)^(1/4)/(I*a*x + a)^(1/4))/a
```

3.1214 $\int \frac{1}{(a-iax)^{3/4}(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=31

$$\frac{2i\sqrt[4]{a-iax}}{a^2\sqrt[4]{a+iax}}$$

```
[Out] ((2*I)*(a - I*a*x)^(1/4))/(a^2*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0234144, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.04

$$\frac{2i\sqrt[4]{a-iax}}{a^2\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] ((2*I)*(a - I*a*x)^(1/4))/(a^2*(a + I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 6.0226, size = 26, normalized size = 0.84

$$\frac{2i\sqrt[4]{-iax+a}}{a^2\sqrt[4]{iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 2*I*(-I*a*x + a)**(1/4)/(a**2*(I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.0312271, size = 36, normalized size = 1.16

$$\frac{2\sqrt[4]{a-iax}(a+iax)^{3/4}}{a^3(x-i)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (2*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4))/(a^3*(-I + x))
```

Maple [A] time = 0.054, size = 31, normalized size = 1.

$$2\,{\frac {x+i}{a \left(-a \left(-1+ix \right) \right) ^{3/4}\sqrt [4]{a \left(1+ix \right) }}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2/a/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(x+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{{\left(i\,a x + a\right)}^{\frac{5}{4}} {\left(-i\,a x + a\right)}^{\frac{3}{4}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(3/4)), x)
```

Fricas [A] time = 0.212869, size = 42, normalized size = 1.35

$$\frac{2 \,{\left(i\,a x + a\right)}^{\frac{3}{4}}{\left(-i\,a x + a\right)}^{\frac{1}{4}}}{a^{3} x - i\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(3/4)),x, algorithm="fricas")
```

```
[Out] 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)/(a^3*x - I*a^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a \left(i x + 1\right)\right)^{\frac{5}{4}} \left(- a \left(i x - 1\right)\right)^{\frac{3}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Integral(1/((a*(I*x + 1))**(5/4)*(-a*(I*x - 1))**(3/4)), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(3/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1215 $\int \frac{1}{(a-iax)^{7/4}(a+iax)^{5/4}} \, dx$

Optimal. Leaf size=67

$$\frac{4i\sqrt[4]{a-iax}}{3a^3\sqrt[4]{a+iax}}-\frac{2i}{3a^2(a-iax)^{3/4}\sqrt[4]{a+iax}}$$

```
[Out] ((-2*I)/3)/(a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4)) + (((4*I)/3)
*(a - I*a*x)^(1/4))/(a^3*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0523563, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{4i\sqrt[4]{a-iax}}{3a^3\sqrt[4]{a+iax}}-\frac{2i}{3a^2(a-iax)^{3/4}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] ((-2*I)/3)/(a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4)) + (((4*I)/3)
*(a - I*a*x)^(1/4))/(a^3*(a + I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 11.8001, size = 54, normalized size = 0.81

$$\frac{2i}{a^2\left(-iax+a\right)^{\frac{3}{4}}\sqrt[4]{iax+a}}-\frac{4i\left(iax+a\right)^{\frac{3}{4}}}{3a^3\left(-iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 2*I/(a**2*(-I*a*x + a)**(3/4)*(I*a*x + a)**(1/4)) - 4*I*(I*a*x +
a)**(3/4)/(3*a**3*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0441605, size = 45, normalized size = 0.67

$$\frac{2(1-2ix)(a+iax)^{3/4}}{3a^3(x-i)(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (2*(1 - (2*I)*x)*(a + I*a*x)^(3/4))/(3*a^3*(-I + x)*(a - I*a*x)^(
3/4))
```

Maple [A] time = 0.059, size = 33, normalized size = 0.5

$$\frac{4x+2i}{3a^2}\left(-a\left(-1+ix\right)\right)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a\left(1+ix\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2/3/a^2/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(2*x+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(i\,ax+a\right)^{\frac{5}{4}}\left(-i\,ax+a\right)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(7/4)), x)
```

Fricas [A] time = 0.225401, size = 35, normalized size = 0.52

$$\frac{4x+2i}{3\left(i\,ax+a\right)^{\frac{1}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(7/4)),x, algorithm="fricas")
```

```
[Out] 1/3*(4*x + 2*I)/((I*a*x + a)^(1/4)*(-I*a*x + a)^(3/4)*a^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(7/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1216 $\int \frac{1}{(a-iax)^{11/4}(a+iax)^{5/4}}\,dx$

Optimal. Leaf size=100

$$\frac{16i\sqrt[4]{a-iax}}{21a^4\sqrt[4]{a+iax}}-\frac{8i}{21a^3\sqrt[4]{a+iax}(a-iax)^{3/4}}-\frac{2i}{7a^2\sqrt[4]{a+iax}(a-iax)^{7/4}}$$

```
[Out] ((-2*I)/7)/(a^2*(a - I*a*x)^(7/4)*(a + I*a*x)^(1/4)) - ((8*I)/21)
/(a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4)) + (((16*I)/21)*(a - I*
a*x)^(1/4))/(a^4*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0802857, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.08

$$\frac{16i\sqrt[4]{a-iax}}{21a^4\sqrt[4]{a+iax}}-\frac{8i}{21a^3\sqrt[4]{a+iax}(a-iax)^{3/4}}-\frac{2i}{7a^2\sqrt[4]{a+iax}(a-iax)^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] ((-2*I)/7)/(a^2*(a - I*a*x)^(7/4)*(a + I*a*x)^(1/4)) - ((8*I)/21)
/(a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(1/4)) + (((16*I)/21)*(a - I*
a*x)^(1/4))/(a^4*(a + I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 19.3285, size = 83, normalized size = 0.83

$$\frac{2i}{a^2\left(-iax+a\right)^{\frac{7}{4}}\sqrt[4]{iax+a}}-\frac{8i\left(iax+a\right)^{\frac{3}{4}}}{7a^3\left(-iax+a\right)^{\frac{7}{4}}}-\frac{16i\left(iax+a\right)^{\frac{3}{4}}}{21a^4\left(-iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(5/4),x)
```

```
[Out] 2*I/(a**2*(-I*a*x + a)**(7/4)*(I*a*x + a)**(1/4)) - 8*I*(I*a*x +
a)**(3/4)/(7*a**3*(-I*a*x + a)**(7/4)) - 16*I*(I*a*x + a)**(3/4)/
(21*a**4*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.061136, size = 52, normalized size = 0.52

$$\frac{2\left(-8ix^2+12x+i\right)(a+iax)^{3/4}}{21a^4\left(x^2+1\right)(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(5/4)),x]
```

```
[Out] (2*(a + I*a*x)^(3/4)*(I + 12*x - (8*I)*x^2))/(21*a^4*(a - I*a*x)^
(3/4)*(1 + x^2))
```

Maple [A] time = 0.072, size = 44, normalized size = 0.4

$$\frac{16x^2+24ix-2}{21a^3(x+i)}(-a(-1+ix))^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(5/4),x)
```

```
[Out] 2/21/a^3/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(8*x^2+12*I*x-1)/(
x+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(11/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.218367, size = 55, normalized size = 0.55

$$\frac{2\left(8x^2+12ix-1\right)}{21(a^3x+ia^3)(iax+a)^{\frac{1}{4}}(-iax+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(11/4)),x, algorithm="fricas")
```

```
[Out] 2/21*(8*x^2 + 12*I*x - 1)/((a^3*x + I*a^3)*(I*a*x + a)^(1/4)*(-I*
a*x + a)^(3/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(5/4),x)

[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(5/4)*(-I*a*x + a)^(11/4)),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.1217 $\int \frac{(a-iax)^{7/4}}{(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=141

$$-\frac{42\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5\sqrt[4]{a+iax}\sqrt[4]{a-iax}}+\frac{4i(a-iax)^{7/4}}{5a(a+iax)^{5/4}}-\frac{28i(a-iax)^{3/4}}{5a\sqrt[4]{a+iax}}+\frac{42x}{5\sqrt[4]{a+iax}\sqrt[4]{a-iax}}$$

```
[Out] (((4*I)/5)*(a - I*a*x)^(7/4))/(a*(a + I*a*x)^(5/4)) + (42*x)/(5*(
a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (((28*I)/5)*(a - I*a*x)^(3/
4))/(a*(a + I*a*x)^(1/4)) - (42*(1 + x^2)^(1/4)*EllipticE[ArcTan[
x]/2, 2])/(5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.102779, antiderivative size = 141, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{42\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5\sqrt[4]{a+iax}\sqrt[4]{a-iax}}+\frac{4i(a-iax)^{7/4}}{5a(a+iax)^{5/4}}-\frac{28i(a-iax)^{3/4}}{5a\sqrt[4]{a+iax}}+\frac{42x}{5\sqrt[4]{a+iax}\sqrt[4]{a-iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(7/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (((4*I)/5)*(a - I*a*x)^(7/4))/(a*(a + I*a*x)^(5/4)) + (42*x)/(5*(
a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (((28*I)/5)*(a - I*a*x)^(3/
4))/(a*(a + I*a*x)^(1/4)) - (42*(1 + x^2)^(1/4)*EllipticE[ArcTan[
x]/2, 2])/(5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{21\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{5\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{4i\left(-iax+a\right)^{\frac{7}{4}}}{5a\left(iax+a\right)^{\frac{5}{4}}}-\frac{28i\left(-iax+a\right)^{\frac{3}{4}}}{5a\sqrt[4]{iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 21*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a
**2)**(-1/4), x)/(5*(a**2*x**2 + a**2)**(3/4)) + 4*I*(-I*a*x + a)
**(7/4)/(5*a*(I*a*x + a)**(5/4)) - 28*I*(-I*a*x + a)**(3/4)/(5*a*
(I*a*x + a)**(1/4))
```

Mathematica [C] time = 0.096575, size = 84, normalized size = 0.6

$$\frac{2(a-iax)^{3/4}\left(7\,2^{3/4}(1+ix)^{5/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)-16ix-12\right)}{5a(x-i)\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(7/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (2*(a - I*a*x)^(3/4)*(-12 - (16*I)*x + 7*2^(3/4)*(1 + I*x)^(5/4)*
Hypergeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(5*a*(-I + x)*(
a + I*a*x)^(1/4))
```

Maple [C] time = 0.081, size = 101, normalized size = 0.7

$$-\frac{32\,x^2+24+8\,ix}{5\,x-5\,i}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}+\frac{21\,x}{5}{}_2\mathrm{F}_1(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(7/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] -8/5*(4*x^2+3+I*x)/(x-I)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)+21
/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)*(-a^2*(-1+I*x)*(
1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-i\,ax+a)^{\frac{7}{4}}}{(i\,ax+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(9/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}\left(5\,x^2-30i\,x-21\right)+5\,\left(a^2x^3-2i\,a^2x^2-a^2x\right)\text{integral}\left(\frac{42\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(a^2x^4+a^2x^2)},x\right)}{5\,(a^2x^3-2i\,a^2x^2-a^2x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(9/4),x, algorithm="fricas")
```

```
[Out] 1/5*(2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(5*x^2 - 30*I*x - 21)
 + 5*(a^2*x^3 - 2*I*a^2*x^2 - a^2*x)*integral(42/5*(I*a*x + a)^(3
/4)*(-I*a*x + a)^(3/4)/(a^2*x^4 + a^2*x^2), x))/(a^2*x^3 - 2*I*a^
2*x^2 - a^2*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a-I*a*x)**(7/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(7/4)/(I*a*x + a)^(9/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1218 $\int \frac{(a-iax)^{3/4}}{(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=115

$$-\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{6i}{5a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{4i(a-iax)^{3/4}}{5a(a+iax)^{5/4}}$$

```
[Out] (((4*I)/5)*(a - I*a*x)^(3/4))/(a*(a + I*a*x)^(5/4)) - ((6*I)/5)/(
a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (6*(1 + x^2)^(1/4)*Ellip
ticE[ArcTan[x]/2, 2])/(5*a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.091102, antiderivative size = 115, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$-\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{6i}{5a\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{4i(a-iax)^{3/4}}{5a(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(3/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (((4*I)/5)*(a - I*a*x)^(3/4))/(a*(a + I*a*x)^(5/4)) - ((6*I)/5)/(
a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)) - (6*(1 + x^2)^(1/4)*Ellip
ticE[ArcTan[x]/2, 2])/(5*a*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{3a\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\left(a^2x^2+a^2\right)^{\frac{5}{4}}}\,dx}{5\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{4i\left(-iax+a\right)^{\frac{3}{4}}}{5a\left(iax+a\right)^{\frac{5}{4}}}-\frac{6i}{5a\sqrt[4]{-iax+a}\sqrt[4]{iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] -3*a*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 +
 a**2)**(-5/4), x)/(5*(a**2*x**2 + a**2)**(3/4)) + 4*I*(-I*a*x +
a)**(3/4)/(5*a*(I*a*x + a)**(5/4)) - 6*I/(5*a*(-I*a*x + a)**(1/4)
*(I*a*x + a)**(1/4))
```

Mathematica [C] time = 0.0798959, size = 83, normalized size = 0.72

$$\frac{2(a-iax)^{3/4}\left(2^{3/4}(1+ix)^{5/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)-3ix-1\right)}{5a^2(x-i)\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(3/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (2*(a - I*a*x)^(3/4)*(-1 - (3*I)*x + 2^(3/4)*(1 + I*x)^(5/4)*Hype
rgeometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(5*a^2*(-I + x)*(a
+ I*a*x)^(1/4))
```

Maple [C] time = 0.058, size = 107, normalized size = 0.9

$$-\frac{6x^2+2+4ix}{(5x-5i)a}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}+\frac{3x}{5a}{}_2\mathrm{F}_1(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2)\sqrt[4]{-a^2(-1+ix)(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(3/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] -2/5*(3*x^2+1+2*I*x)/(x-I)/a/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4
)+3/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)/a*(-a^2*(-1+I
*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(-iax+a)^{\frac{3}{4}}}{(iax+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(9/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$-\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}(5i\,x+3)-5\,\left(a^3x^3-2i\,a^3x^2-a^3x\right)\mathrm{integral}\left(\frac{6\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(a^3x^4+a^3x^2)},x\right)}{5\,(a^3x^3-2i\,a^3x^2-a^3x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(9/4),x, algorithm="fricas")
```

```
[Out] -1/5*(2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(5*I*x + 3) - 5*(a^3
*x^3 - 2*I*a^3*x^2 - a^3*x)*integral(6/5*(I*a*x + a)^(3/4)*(-I*a*
x + a)^(3/4)/(a^3*x^4 + a^3*x^2), x))/(a^3*x^3 - 2*I*a^3*x^2 - a^
3*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(3/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(3/4)/(I*a*x + a)^(9/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1219 $\int \frac{1}{\sqrt[4]{a-iax}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=82

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{4i}{5a\sqrt[4]{a-iax}(a+iax)^{5/4}}$$

```
[Out] ((4*I)/5)/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(5/4)) + (2*(1 + x^2)^
(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^2*(a - I*a*x)^(1/4)*(a + I*
a*x)^(1/4))
```

Rubi [A] time = 0.0621999, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.16

$$\frac{2\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{4i}{5a\sqrt[4]{a-iax}(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] ((4*I)/5)/(a*(a - I*a*x)^(1/4)*(a + I*a*x)^(5/4)) + (2*(1 + x^2)^
(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^2*(a - I*a*x)^(1/4)*(a + I*
a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{4i}{5a\sqrt[4]{-iax+a}\,(iax+a)^{\frac{5}{4}}}-\frac{(-iax+a)^{\frac{3}{4}}\,(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{5a^2\,(a^2x^2+a^2)^{\frac{3}{4}}}+\frac{2x\,(-iax+a)^{\frac{3}{4}}\,(iax+a)^{\frac{3}{4}}}{5a^4\,(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 4*I/(5*a*(-I*a*x + a)**(1/4)*(I*a*x + a)**(5/4)) - (-I*a*x + a)**
(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-1/4), x)/
(5*a**2*(a**2*x**2 + a**2)**(3/4)) + 2*x*(-I*a*x + a)**(3/4)*(I*a
*x + a)**(3/4)/(5*a**4*(x**2 + 1))
```

Mathematica [C] time = 0.0821035, size = 84, normalized size = 1.02

$$\frac{2(a-iax)^{3/4}\left(-2^{3/4}(1+ix)^{5/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+3ix+6\right)}{15a^3(x-i)\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(1/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2*(a - I*a*x)^(3/4)*(6 + (3*I)*x - 2^(3/4)*(1 + I*x)^(5/4)*Hyper
geometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x]))/(15*a^3*(-I + x)*(a
+ I*a*x)^(1/4))
```

Maple [C] time = 0.059, size = 105, normalized size = 1.3

$$\frac{2x^2+4-2ix}{(5x-5i)a^2}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}} - \frac{x}{5a^2}{}_2\mathrm{F}_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2(-1+ix)(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a(-1+ix)}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(1/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/5*(x^2+2-I*x)/(x-I)/a^2/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-1
/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)/a^2*(-a^2*(-1+I*
x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{9}{4}}(-i\,ax+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}(2\,x-4i)+\left(5\,a^4x^2-10i\,a^4x-5\,a^4\right)\mathrm{integral}\left(-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(a^4x^2+a^4)},x\right)}{5\,a^4x^2-10i\,a^4x-5\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(1/4)),x, algorithm="fricas")
```

```
[Out] ((I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(2*x - 4*I) + (5*a^4*x^2 -
10*I*a^4*x - 5*a^4)*integral(-1/5*(I*a*x + a)^(3/4)*(-I*a*x + a)^
(3/4)/(a^4*x^2 + a^4), x))/(5*a^4*x^2 - 10*I*a^4*x - 5*a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(1/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(1/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1220 $\int \frac{1}{(a-iax)^{5/4}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=82

$$\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{2i}{5a^2\sqrt[4]{a-iax}(a+iax)^{5/4}}$$

```
[Out] ((2*I)/5)/(a^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(5/4)) + (6*(1 + x^2
)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^3*(a - I*a*x)^(1/4)*(a +
I*a*x)^(1/4))
```

Rubi [A] time = 0.0868619, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{2i}{5a^2\sqrt[4]{a-iax}(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] ((2*I)/5)/(a^2*(a - I*a*x)^(1/4)*(a + I*a*x)^(5/4)) + (6*(1 + x^2
)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^3*(a - I*a*x)^(1/4)*(a +
I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2i}{5a^2\sqrt[4]{-iax+a}\,(iax+a)^{\frac{5}{4}}}-\frac{3\,(-iax+a)^{\frac{3}{4}}\,(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{5a^3\,(a^2x^2+a^2)^{\frac{3}{4}}}+\frac{6x\,(-iax+a)^{\frac{3}{4}}\,(iax+a)^{\frac{3}{4}}}{5a^5\,(x^2+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I/(5*a**2*(-I*a*x + a)**(1/4)*(I*a*x + a)**(5/4)) - 3*(-I*a*x +
 a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-1/4)
, x)/(5*a**3*(a**2*x**2 + a**2)**(3/4)) + 6*x*(-I*a*x + a)**(3/4)
*(I*a*x + a)**(3/4)/(5*a**5*(x**2 + 1))
```

Mathematica [C] time = 0.106502, size = 94, normalized size = 1.15

$$\frac{-2\,2^{3/4}\sqrt[4]{1+ix}\left(x^2+1\right)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+6x^2-6ix+2}{5a^3(x-i)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(5/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2 - (6*I)*x + 6*x^2 - 2*2^(3/4)*(1 + I*x)^(1/4)*(1 + x^2)*Hyperg
eometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(5*a^3*(-I + x)*(a - I
*a*x)^(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.087, size = 107, normalized size = 1.3

$$\frac{-6\,ix+6\,x^2+2}{(5\,x-5\,i)\,a^3}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}} - \frac{3\,x}{5\,a^3}{}_2\mathrm{F}_1(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(5/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/5*(-3*I*x+3*x^2+1)/(x-I)/a^3/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1
/4)-3/5/(a^2)^(1/4)*x*hypergeom([1/4,1/2],[3/2],-x^2)/a^3*(-a^2*(
-1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(5/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}\left(3\,x^2-3i\,x+1\right)+\left(5\,a^5x^3-5i\,a^5x^2+5\,a^5x-5i\,a^5\right)\mathrm{integral}\left(-\frac{3\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}}{5\,(a^5x^2+a^5)},x\right)}{5\,a^5x^3-5i\,a^5x^2+5\,a^5x-5i\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(5/4)),x, algorithm="fricas")
```

```
[Out] (2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)*(3*x^2 - 3*I*x + 1) + (5*
a^5*x^3 - 5*I*a^5*x^2 + 5*a^5*x - 5*I*a^5)*integral(-3/5*(I*a*x +
 a)^(3/4)*(-I*a*x + a)^(3/4)/(a^5*x^2 + a^5), x))/(5*a^5*x^3 - 5*
I*a^5*x^2 + 5*a^5*x - 5*I*a^5)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(5/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(5/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1221 $\int \frac{1}{(a-iax)^{9/4}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=88

$$\frac{2x}{5a^4(x^2+1)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^4\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

```
[Out] (2*x)/(5*a^4*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)*(1 + x^2)) + (6*
(1 + x^2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^4*(a - I*a*x)^(1/
4)*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0526494, antiderivative size = 88, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.16$

$$\frac{2x}{5a^4(x^2+1)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{6\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{5a^4\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2*x)/(5*a^4*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)*(1 + x^2)) + (6*
(1 + x^2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(5*a^4*(a - I*a*x)^(1/
4)*(a + I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-\frac{3(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{5a^4(a^2x^2+a^2)^{\frac{3}{4}}}+\frac{6x(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}}{5a^6(x^2+1)}+\frac{2x(-iax+a)^{\frac{3}{4}}(iax+a)^{\frac{3}{4}}}{5a^6(x^2+1)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] -3*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a
**2)**(-1/4), x)/(5*a**4*(a**2*x**2 + a**2)**(3/4)) + 6*x*(-I*a*x
 + a)**(3/4)*(I*a*x + a)**(3/4)/(5*a**6*(x**2 + 1)) + 2*x*(-I*a*x
 + a)**(3/4)*(I*a*x + a)**(3/4)/(5*a**6*(x**2 + 1)**2)
```

Mathematica [C] time = 0.134028, size = 98, normalized size = 1.11

$$\frac{-2\ 2^{3/4}\sqrt[4]{1+ix}(x-i)(x+i)^2\ {}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+6x^3+8x}{5a^4\left(x^2+1\right)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(9/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (8*x + 6*x^3 - 2*2^(3/4)*(1 + I*x)^(1/4)*(-I + x)*(I + x)^2*Hyper
geometric2F1[1/4, 3/4, 7/4, 1/2 - (I/2)*x])/(5*a^4*(a - I*a*x)^(1
/4)*(a + I*a*x)^(1/4)*(1 + x^2))
```

Maple [F] time = 0.061, size = 0, normalized size = 0.

$$\int 1\left(a-iax\right)^{-\frac{9}{4}}\left(a+iax\right)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(9/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] int(1/(a-I*a*x)^(9/4)/(a+I*a*x)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(i\,ax+a\right)^{\frac{9}{4}}\left(-i\,ax+a\right)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(9/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(9/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{2\left(3\,x^3+4\,x\right)\left(i\,ax+a\right)^{\frac{3}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}+5\left(a^6x^4+2\,a^6x^2+a^6\right)\mathrm{integral}\left(-\frac{3\left(i\,ax+a\right)^{\frac{3}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}}{5\left(a^6x^2+a^6\right)},x\right)}{5\left(a^6x^4+2\,a^6x^2+a^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(9/4)),x, algorithm="fricas")
```

```
[Out] 1/5*(2*(3*x^3 + 4*x)*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4) + 5*(a^
6*x^4 + 2*a^6*x^2 + a^6)*integral(-3/5*(I*a*x + a)^(3/4)*(-I*a*x
+ a)^(3/4)/(a^6*x^2 + a^6), x))/(a^6*x^4 + 2*a^6*x^2 + a^6)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(9/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(9/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1222 $\int \frac{1}{(a-iax)^{13/4}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=121

$$\frac{14x}{45a^5\left(x^2+1\right)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{14\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{15a^5\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{9a^2(a-iax)^{9/4}(a+iax)^{5/4}}$$

```
[Out] ((-2*I)/9)/(a^2*(a - I*a*x)^(9/4)*(a + I*a*x)^(5/4)) + (14*x)/(45
*a^5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)*(1 + x^2)) + (14*(1 + x^
2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(15*a^5*(a - I*a*x)^(1/4)*(a
+ I*a*x)^(1/4))
```

Rubi [A] time = 0.0864495, antiderivative size = 121, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.2$

$$\frac{14x}{45a^5\left(x^2+1\right)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{14\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{15a^5\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{9a^2(a-iax)^{9/4}(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] ((-2*I)/9)/(a^2*(a - I*a*x)^(9/4)*(a + I*a*x)^(5/4)) + (14*x)/(45
*a^5*(a - I*a*x)^(1/4)*(a + I*a*x)^(1/4)*(1 + x^2)) + (14*(1 + x^
2)^(1/4)*EllipticE[ArcTan[x]/2, 2])/(15*a^5*(a - I*a*x)^(1/4)*(a
+ I*a*x)^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2i}{5a^2\left(-iax+a\right)^{\frac{9}{4}}\left(iax+a\right)^{\frac{5}{4}}}+\frac{14i}{5a^3\left(-iax+a\right)^{\frac{9}{4}}\sqrt[4]{iax+a}}+\frac{7\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\left(a^2x^2+a^2\right)^{\frac{5}{4}}}\,dx}{15a^3\left(a^2x^2+a^2\right)^{\frac{3}{4}}}-\frac{28i}{15a^4\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}-\frac{14i\left(iax+a\right)^{\frac{3}{4}}}{9a^4\left(-iax+a\right)^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I/(5*a**2*(-I*a*x + a)**(9/4)*(I*a*x + a)**(5/4)) + 14*I/(5*a**
3*(-I*a*x + a)**(9/4)*(I*a*x + a)**(1/4)) + 7*(-I*a*x + a)**(3/4)
*(I*a*x + a)**(3/4)*Integral((a**2*x**2 + a**2)**(-5/4), x)/(15*a
```

```
**3*(a**2*x**2 + a**2)**(3/4)) - 28*I/(15*a**4*(-I*a*x + a)**(5/4
)*(I*a*x + a)**(1/4)) - 14*I*(I*a*x + a)**(3/4)/(9*a**4*(-I*a*x +
 a)**(9/4))
```

Mathematica [C] time = 0.162132, size = 120, normalized size = 0.99

$$\frac{2\left(-7\, 2^{3/4}\sqrt[4]{1+ix}(x-i)(x+i)^3\, {}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+21x^4+21ix^3+28x^2+28ix+5\right)}{45a^5(x-i)(x+i)^2\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(13/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2*(5 + (28*I)*x + 28*x^2 + (21*I)*x^3 + 21*x^4 - 7*2^(3/4)*(1 +
I*x)^(1/4)*(-I + x)*(I + x)^3*Hypergeometric2F1[1/4, 3/4, 7/4, 1/
2 - (I/2)*x]))/(45*a^5*(-I + x)*(I + x)^2*(a - I*a*x)^(1/4)*(a +
I*a*x)^(1/4))
```

Maple [C] time = 0.116, size = 124, normalized size = 1.

$$\frac{42\,ix^3+42\,x^4+56\,ix+56\,x^2+10}{(45\,x-45\,i)\,(x+i)^2\,a^5}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}-\frac{7\,x}{15\,a^5}{}_2\mathrm{F}_1\left(\frac{1}{4},\frac{1}{2};\,\frac{3}{2};\,-x^2\right)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(13/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/45*(21*I*x^3+21*x^4+28*I*x+28*x^2+5)/(x-I)/(x+I)^2/a^5/(-a*(-1+
I*x))^(1/4)/(a*(1+I*x))^(1/4)-7/15/(a^2)^(1/4)*x*hypergeom([1/4,1
/2],[3/2],-x^2)/a^5*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-a*(-1+I*x))^(
1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(13/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(42\,x^4+42i\,x^3+56\,x^2+56i\,x+10\right)(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{3}{4}}+\left(45\,a^7x^5+45i\,a^7x^4+90\,a^7x^3+90i\,a^7x^2+45\,a^7x+45i\,a^7\right)\text{inte}}{45\,a^7x^5+45i\,a^7x^4+90\,a^7x^3+90i\,a^7x^2+45\,a^7x+45i\,a^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(13/4)),x, algorithm="fricas")
```

```
[Out] ((42*x^4 + 42*I*x^3 + 56*x^2 + 56*I*x + 10)*(I*a*x + a)^(3/4)*(-I
*a*x + a)^(3/4) + (45*a^7*x^5 + 45*I*a^7*x^4 + 90*a^7*x^3 + 90*I*
a^7*x^2 + 45*a^7*x + 45*I*a^7)*integral(-7/15*(I*a*x + a)^(3/4)*(
-I*a*x + a)^(3/4)/(a^7*x^2 + a^7), x))/(45*a^7*x^5 + 45*I*a^7*x^4
 + 90*a^7*x^3 + 90*I*a^7*x^2 + 45*a^7*x + 45*I*a^7)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(13/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(13/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1223 $\int \frac{1}{(a-iax)^{17/4}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=154

$$\frac{14x}{65a^6\left(x^2+1\right)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{42\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{65a^6\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{13a^3(a-iax)^{9/4}(a+iax)^{5/4}}-\frac{2i}{13a^2(a-iax)^{13/4}(a+iax)^{5/4}}$$

```
[Out] ((-2*I)/13)/(a^2*(a - I*a*x)^(13/4)*(a + I*a*x)^(5/4)) - ((2*I)/1
3)/(a^3*(a - I*a*x)^(9/4)*(a + I*a*x)^(5/4)) + (14*x)/(65*a^6*(a
- I*a*x)^(1/4)*(a + I*a*x)^(1/4)*(1 + x^2)) + (42*(1 + x^2)^(1/4)
*EllipticE[ArcTan[x]/2, 2])/(65*a^6*(a - I*a*x)^(1/4)*(a + I*a*x)
^(1/4))
```

Rubi [A] time = 0.126479, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$\frac{14x}{65a^6\left(x^2+1\right)\sqrt[4]{a-iax}\sqrt[4]{a+iax}}+\frac{42\sqrt[4]{x^2+1}E\left(\frac{1}{2}\tan^{-1}(x)\middle|2\right)}{65a^6\sqrt[4]{a-iax}\sqrt[4]{a+iax}}-\frac{2i}{13a^3(a-iax)^{9/4}(a+iax)^{5/4}}-\frac{2i}{13a^2(a-iax)^{13/4}(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(17/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] ((-2*I)/13)/(a^2*(a - I*a*x)^(13/4)*(a + I*a*x)^(5/4)) - ((2*I)/1
3)/(a^3*(a - I*a*x)^(9/4)*(a + I*a*x)^(5/4)) + (14*x)/(65*a^6*(a
- I*a*x)^(1/4)*(a + I*a*x)^(1/4)*(1 + x^2)) + (42*(1 + x^2)^(1/4)
*EllipticE[ArcTan[x]/2, 2])/(65*a^6*(a - I*a*x)^(1/4)*(a + I*a*x)
^(1/4))
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2i}{5a^2\left(-iax+a\right)^{\frac{13}{4}}\left(iax+a\right)^{\frac{5}{4}}}+\frac{18i}{5a^3\left(-iax+a\right)^{\frac{13}{4}}\sqrt[4]{iax+a}}-\frac{126i\left(iax+a\right)^{\frac{3}{4}}}{65a^4\left(-iax+a\right)^{\frac{13}{4}}}-\frac{84i}{65a^5\left(-iax+a\right)^{\frac{5}{4}}\sqrt[4]{iax+a}}-\frac{14i\left(iax+a\right)^{\frac{3}{4}}}{13a^5\left(-iax+a\right)^{\frac{9}{4}}}-\frac{21\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}\int\frac{1}{\sqrt[4]{a^2x^2+a^2}}\,dx}{65a^6\left(a^2x^2+a^2\right)^{\frac{3}{4}}}+\frac{42x\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{3}{4}}}{65a^8\left(x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(17/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I/(5*a**2*(-I*a*x + a)**(13/4)*(I*a*x + a)**(5/4)) + 18*I/(5*a*
*3*(-I*a*x + a)**(13/4)*(I*a*x + a)**(1/4)) - 126*I*(I*a*x + a)**
(3/4)/(65*a**4*(-I*a*x + a)**(13/4)) - 84*I/(65*a**5*(-I*a*x + a)
**(5/4)*(I*a*x + a)**(1/4)) - 14*I*(I*a*x + a)**(3/4)/(13*a**5*(-
I*a*x + a)**(9/4)) - 21*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)*In
tegral((a**2*x**2 + a**2)**(-1/4), x)/(65*a**6*(a**2*x**2 + a**2)
**(3/4)) + 42*x*(-I*a*x + a)**(3/4)*(I*a*x + a)**(3/4)/(65*a**8*(
x**2 + 1))
```

Mathematica [C] time = 0.187928, size = 127, normalized size = 0.82

$$\frac{2\left(-7\,2^{3/4}\sqrt[4]{1+ix}(x-i)(x+i)^4\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{1}{2}-\frac{ix}{2}\right)+21x^5+42ix^4+7x^3+56ix^2-23x+10i\right)}{65a^6(x-i)(x+i)^3\sqrt[4]{a-iax}\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(17/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2*(10*I - 23*x + (56*I)*x^2 + 7*x^3 + (42*I)*x^4 + 21*x^5 - 7*2^
(3/4)*(1 + I*x)^(1/4)*(-I + x)*(I + x)^4*Hypergeometric2F1[1/4, 3
/4, 7/4, 1/2 - (I/2)*x]))/(65*a^6*(-I + x)*(I + x)^3*(a - I*a*x)^
(1/4)*(a + I*a*x)^(1/4))
```

Maple [C] time = 0.128, size = 130, normalized size = 0.8

$$\frac{84\,ix^4+42\,x^5+112\,ix^2-46\,x+14\,x^3+20\,i}{(65\,x-65\,i)\,(x+i)^3\,a^6}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}-\frac{21\,x}{65\,a^6}{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{3}{2};-x^2\right)\sqrt[4]{-a^2\,(-1+ix)\,(1+ix)}\frac{1}{\sqrt[4]{a^2}}\frac{1}{\sqrt[4]{-a\,(-1+ix)}}\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(17/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/65*(42*I*x^4+21*x^5+56*I*x^2-23*x+7*x^3+10*I)/(x-I)/(x+I)^3/a^6
/(-a*(-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)-21/65/(a^2)^(1/4)*x*hyperg
eom([1/4,1/2],[3/2],-x^2)/a^6*(-a^2*(-1+I*x)*(1+I*x))^(1/4)/(-a*(
-1+I*x))^(1/4)/(a*(1+I*x))^(1/4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(17/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\frac{\left(42\,x^5+84i\,x^4+14\,x^3+112i\,x^2-46\,x+20i\right)\left(i\,ax+a\right)^{\frac{3}{4}}\left(-i\,ax+a\right)^{\frac{3}{4}}+\left(65\,a^8x^6+130i\,a^8x^5+65\,a^8x^4+260i\,a^8x^3-65\,a^8x^2\right.}{65\,a^8x^6+130i\,a^8x^5+65\,a^8x^4+260i\,a^8x^3-65\,a^8x^2+130i\,a^8x-65\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(17/4)),x, algorithm="fricas")
```

```
[Out] ((42*x^5 + 84*I*x^4 + 14*x^3 + 112*I*x^2 - 46*x + 20*I)*(I*a*x +
a)^(3/4)*(-I*a*x + a)^(3/4) + (65*a^8*x^6 + 130*I*a^8*x^5 + 65*a^
8*x^4 + 260*I*a^8*x^3 - 65*a^8*x^2 + 130*I*a^8*x - 65*a^8)*integr
al(-21/65*(I*a*x + a)^(3/4)*(-I*a*x + a)^(3/4)/(a^8*x^2 + a^8), x
))/(65*a^8*x^6 + 130*I*a^8*x^5 + 65*a^8*x^4 + 260*I*a^8*x^3 - 65*
a^8*x^2 + 130*I*a^8*x - 65*a^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(17/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(17/4)),x, algorithm="giac")

[Out] Exception raised: TypeError
```

3.1224 $\int \frac{(a-iax)^{5/4}}{(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=297

$$\frac{4i(a-iax)^{5/4}}{5a(a+iax)^{5/4}}-\frac{4i\sqrt[4]{a-iax}}{a\sqrt[4]{a+iax}}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}+\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

```
[Out] (((4*I)/5)*(a - I*a*x)^(5/4))/(a*(a + I*a*x)^(5/4)) - ((4*I)*(a -
 I*a*x)^(1/4))/(a*(a + I*a*x)^(1/4)) - (I*Sqrt[2]*ArcTan[1 - (Sqr
t[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a + (I*Sqrt[2]*ArcTan
[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a - (I*Log[1
 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a*x)^(1/4))/
(a + I*a*x)^(1/4)])/(Sqrt[2]*a) + (I*Log[1 + Sqrt[a - I*a*x]/Sqrt
[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sq
rt[2]*a)
```

Rubi [A] time = 0.244222, antiderivative size = 297, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.32$

$$\frac{4i(a-iax)^{5/4}}{5a(a+iax)^{5/4}}-\frac{4i\sqrt[4]{a-iax}}{a\sqrt[4]{a+iax}}-\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}+\frac{i\log\left(\frac{\sqrt{a-iax}}{\sqrt{a+iax}}+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}+1\right)}{\sqrt{2}a}-\frac{i\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}+\frac{i\sqrt{2}\tan^{-1}\left(1+\frac{\sqrt{2}\sqrt[4]{a-iax}}{\sqrt[4]{a+iax}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(5/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (((4*I)/5)*(a - I*a*x)^(5/4))/(a*(a + I*a*x)^(5/4)) - ((4*I)*(a -
 I*a*x)^(1/4))/(a*(a + I*a*x)^(1/4)) - (I*Sqrt[2]*ArcTan[1 - (Sqr
t[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a + (I*Sqrt[2]*ArcTan
[1 + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/a - (I*Log[1
 + Sqrt[a - I*a*x]/Sqrt[a + I*a*x] - (Sqrt[2]*(a - I*a*x)^(1/4))/
(a + I*a*x)^(1/4)])/(Sqrt[2]*a) + (I*Log[1 + Sqrt[a - I*a*x]/Sqrt
[a + I*a*x] + (Sqrt[2]*(a - I*a*x)^(1/4))/(a + I*a*x)^(1/4)])/(Sq
rt[2]*a)
```

Rubi in Sympy [A] time = 44.0861, size = 245, normalized size = 0.82

$$\frac{4i\left(-iax+a\right)^{\frac{5}{4}}}{5a\left(iax+a\right)^{\frac{5}{4}}}-\frac{4i\sqrt[4]{-iax+a}}{a\sqrt[4]{iax+a}}-\frac{\sqrt{2}i\log\left(1+\frac{\sqrt{iax+a}}{\sqrt{-iax+a}}-\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{2a}+\frac{\sqrt{2}i\log\left(1+\frac{\sqrt{iax+a}}{\sqrt{-iax+a}}+\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{2a}+\frac{\sqrt{2}i\operatorname{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{a}-\frac{\sqrt{2}i\operatorname{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{iax+a}}{\sqrt[4]{-iax+a}}\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 4*I*(-I*a*x + a)**(5/4)/(5*a*(I*a*x + a)**(5/4)) - 4*I*(-I*a*x +
a)**(1/4)/(a*(I*a*x + a)**(1/4)) - sqrt(2)*I*log(1 + sqrt(I*a*x +
 a)/sqrt(-I*a*x + a) - sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)**(
1/4))/(2*a) + sqrt(2)*I*log(1 + sqrt(I*a*x + a)/sqrt(-I*a*x + a)
+ sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)**(1/4))/(2*a) + sqrt(2)
*I*atan(1 - sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)**(1/4))/a - s
qrt(2)*I*atan(1 + sqrt(2)*(I*a*x + a)**(1/4)/(-I*a*x + a)**(1/4))
/a
```

Mathematica [C] time = 0.0894426, size = 84, normalized size = 0.28

$$\frac{2\sqrt[4]{a-iax}\left(5\,2^{3/4}(1+ix)^{5/4}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{2}-\frac{ix}{2}\right)-12ix-8\right)}{5a(x-i)\sqrt[4]{a+iax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(5/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (2*(a - I*a*x)^(1/4)*(-8 - (12*I)*x + 5*2^(3/4)*(1 + I*x)^(5/4)*H
ypergeometric2F1[1/4, 1/4, 5/4, 1/2 - (I/2)*x]))/(5*a*(-I + x)*(a
 + I*a*x)^(1/4))
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int 1\left(a-iax\right)^{\frac{5}{4}}\left(a+iax\right)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(5/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] int((a-I*a*x)^(5/4)/(a+I*a*x)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{5}{4}}}{(i\,ax+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(9/4), x)
```

Fricas [A] time = 0.254097, size = 474, normalized size = 1.6

$$\left(5\,a^2x^2-10i\,a^2x-5\,a^2\right)\sqrt{\frac{4i}{a^2}}\log\left(\frac{\left(a^2x-i\,a^2\right)\sqrt{\frac{4i}{a^2}}+2\,(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}}{2\,x-2i}\right)-\left(5\,a^2x^2-10i\,a^2x-5\,a^2\right)\sqrt{\frac{4i}{a^2}}\log\left(-\frac{\left(a^2x-i\,a^2\right)\sqrt{\frac{4i}{a^2}}-2}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(9/4),x, algorithm="fricas")
```

```
[Out] ((5*a^2*x^2 - 10*I*a^2*x - 5*a^2)*sqrt(4*I/a^2)*log(((a^2*x - I*a
^2)*sqrt(4*I/a^2) + 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4))/(2*x
- 2*I)) - (5*a^2*x^2 - 10*I*a^2*x - 5*a^2)*sqrt(4*I/a^2)*log(-((a
^2*x - I*a^2)*sqrt(4*I/a^2) - 2*(I*a*x + a)^(3/4)*(-I*a*x + a)^(1
/4))/(2*x - 2*I)) + (5*a^2*x^2 - 10*I*a^2*x - 5*a^2)*sqrt(-4*I/a^
2)*log(((a^2*x - I*a^2)*sqrt(-4*I/a^2) + 2*(I*a*x + a)^(3/4)*(-I*
a*x + a)^(1/4))/(2*x - 2*I)) - (5*a^2*x^2 - 10*I*a^2*x - 5*a^2)*s
qrt(-4*I/a^2)*log(-((a^2*x - I*a^2)*sqrt(-4*I/a^2) - 2*(I*a*x + a
)^(3/4)*(-I*a*x + a)^(1/4))/(2*x - 2*I)) - (I*a*x + a)^(3/4)*(-I*
a*x + a)^(1/4)*(48*x - 32*I))/(10*a^2*x^2 - 20*I*a^2*x - 10*a^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((a-I*a*x)**(5/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(5/4)/(I*a*x + a)^(9/4),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1225 $\int \frac{\sqrt[4]{a-iax}}{(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=33

$$\frac{2i(a-iax)^{5/4}}{5a^2(a+iax)^{5/4}}$$

```
[Out] (((2*I)/5)*(a - I*a*x)^(5/4))/(a^2*(a + I*a*x)^(5/4))
```

Rubi [A] time = 0.0234605, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.04$

$$\frac{2i(a-iax)^{5/4}}{5a^2(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a - I*a*x)^(1/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (((2*I)/5)*(a - I*a*x)^(5/4))/(a^2*(a + I*a*x)^(5/4))
```

Rubi in Sympy [A] time = 5.88938, size = 27, normalized size = 0.82

$$\frac{2i\left(-iax+a\right)^{\frac{5}{4}}}{5a^2\left(iax+a\right)^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I*(-I*a*x + a)**(5/4)/(5*a**2*(I*a*x + a)**(5/4))
```

Mathematica [A] time = 0.0303027, size = 43, normalized size = 1.3

$$-\frac{2(x+i)\sqrt[4]{a-iax}(a+iax)^{3/4}}{5a^3(x-i)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a - I*a*x)^(1/4)/(a + I*a*x)^(9/4),x]
```

```
[Out] (-2*(I + x)*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4))/(5*a^3*(-I + x)^
2)
```

Maple [B] time = 0.062, size = 50, normalized size = 1.5

$$\frac{2x^2-2+4ix}{5a^2(-1+ix)(x-i)}\sqrt[4]{-a(-1+ix)}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a-I*a*x)^(1/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/5/a^2*(-a*(-1+I*x))^(1/4)/(-1+I*x)/(a*(1+I*x))^(1/4)*(x^2-1+2*I
*x)/(x-I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-i\,ax+a)^{\frac{1}{4}}}{(i\,ax+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(9/4), x)
```

Fricas [A] time = 0.225519, size = 61, normalized size = 1.85

$$-\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}(2\,x+2i)}{5\,a^3x^2-10i\,a^3x-5\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(9/4),x, algorithm="fricas")
```

```
[Out] -(I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)*(2*x + 2*I)/(5*a^3*x^2 - 10
*I*a^3*x - 5*a^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a-I*a*x)**(1/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224942, size = 46, normalized size = 1.39

$$-\frac{(-i\,ax+a)^{\frac{1}{4}}\left(-\frac{4i\,a}{i\,ax+a}+2i\right)}{5\,(i\,ax+a)^{\frac{1}{4}}a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-I*a*x + a)^(1/4)/(I*a*x + a)^(9/4),x, algorithm="giac")
```

```
[Out] -1/5*(-I*a*x + a)^(1/4)*(-4*I*a/(I*a*x + a) + 2*I)/((I*a*x + a)^(
1/4)*a^2)
```

3.1226 $\int \frac{1}{(a-iax)^{3/4}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=67

$$\frac{4i\sqrt[4]{a-iax}}{5a^3\sqrt[4]{a+iax}}+\frac{2i\sqrt[4]{a-iax}}{5a^2(a+iax)^{5/4}}$$

```
[Out] (((2*I)/5)*(a - I*a*x)^(1/4))/(a^2*(a + I*a*x)^(5/4)) + (((4*I)/5
)*(a - I*a*x)^(1/4))/(a^3*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0511653, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{4i\sqrt[4]{a-iax}}{5a^3\sqrt[4]{a+iax}}+\frac{2i\sqrt[4]{a-iax}}{5a^2(a+iax)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (((2*I)/5)*(a - I*a*x)^(1/4))/(a^2*(a + I*a*x)^(5/4)) + (((4*I)/5
)*(a - I*a*x)^(1/4))/(a^3*(a + I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 11.6826, size = 56, normalized size = 0.84

$$\frac{2i\sqrt[4]{-iax+a}}{5a^2\left(iax+a\right)^{\frac{5}{4}}}+\frac{4i\sqrt[4]{-iax+a}}{5a^3\sqrt[4]{iax+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I*(-I*a*x + a)**(1/4)/(5*a**2*(I*a*x + a)**(5/4)) + 4*I*(-I*a*x
 + a)**(1/4)/(5*a**3*(I*a*x + a)**(1/4))
```

Mathematica [A] time = 0.0377538, size = 45, normalized size = 0.67

$$\frac{2(2x-3i)\sqrt[4]{a-iax}(a+iax)^{3/4}}{5a^4(x-i)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(3/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2*(-3*I + 2*x)*(a - I*a*x)^(1/4)*(a + I*a*x)^(3/4))/(5*a^4*(-I +
 x)^2)
```

Maple [A] time = 0.061, size = 44, normalized size = 0.7

$$\frac{4x^2+6-2ix}{5a^2(x-i)}(-a(-1+ix))^{-\frac{3}{4}}\frac{1}{\sqrt[4]{a(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(3/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/5/a^2/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(2*x^2+3-I*x)/(x-I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(i\,ax+a)^{\frac{9}{4}}(-i\,ax+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(3/4)), x)
```

Fricas [A] time = 0.237875, size = 59, normalized size = 0.88

$$\frac{(i\,ax+a)^{\frac{3}{4}}(-i\,ax+a)^{\frac{1}{4}}(4\,x-6i)}{5\,a^4x^2-10i\,a^4x-5\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(3/4)),x, algorithm="fricas")
```

```
[Out] (I*a*x + a)^(3/4)*(-I*a*x + a)^(1/4)*(4*x - 6*I)/(5*a^4*x^2 - 10*
I*a^4*x - 5*a^4)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(3/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(3/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1227 $\int \frac{1}{(a-iax)^{7/4}(a+iax)^{9/4}} \, dx$

Optimal. Leaf size=100

$$\frac{16i\sqrt[4]{a-iax}}{15a^4\sqrt[4]{a+iax}}+\frac{8i\sqrt[4]{a-iax}}{15a^3(a+iax)^{5/4}}-\frac{2i}{3a^2(a+iax)^{5/4}(a-iax)^{3/4}}$$

```
[Out] ((-2*I)/3)/(a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(5/4)) + (((8*I)/15
)*(a - I*a*x)^(1/4))/(a^3*(a + I*a*x)^(5/4)) + (((16*I)/15)*(a -
I*a*x)^(1/4))/(a^4*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.0809503, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{16i\sqrt[4]{a-iax}}{15a^4\sqrt[4]{a+iax}}+\frac{8i\sqrt[4]{a-iax}}{15a^3(a+iax)^{5/4}}-\frac{2i}{3a^2(a+iax)^{5/4}(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] ((-2*I)/3)/(a^2*(a - I*a*x)^(3/4)*(a + I*a*x)^(5/4)) + (((8*I)/15
)*(a - I*a*x)^(1/4))/(a^3*(a + I*a*x)^(5/4)) + (((16*I)/15)*(a -
I*a*x)^(1/4))/(a^4*(a + I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 16.575, size = 85, normalized size = 0.85

$$\frac{2i}{5a^2\left(-iax+a\right)^{\frac{3}{4}}\left(iax+a\right)^{\frac{5}{4}}}+\frac{8i}{5a^3\left(-iax+a\right)^{\frac{3}{4}}\sqrt[4]{iax+a}}-\frac{16i\left(iax+a\right)^{\frac{3}{4}}}{15a^4\left(-iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I/(5*a**2*(-I*a*x + a)**(3/4)*(I*a*x + a)**(5/4)) + 8*I/(5*a**3
*(-I*a*x + a)**(3/4)*(I*a*x + a)**(1/4)) - 16*I*(I*a*x + a)**(3/4
)/(15*a**4*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.0519934, size = 52, normalized size = 0.52

$$-\frac{2i\left(8x^2-4ix+7\right)(a+iax)^{3/4}}{15a^4(x-i)^2(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(7/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (((-2*I)/15)*(a + I*a*x)^(3/4)*(7 - (4*I)*x + 8*x^2))/(a^4*(-I +
x)^2*(a - I*a*x)^(3/4))
```

Maple [A] time = 0.072, size = 44, normalized size = 0.4

$$\frac{16\,x^{2}-8\,ix+14}{15\,a^{3}\,(x-i)}\,(-a\,(-1+ix))^{-\frac{3}{4}}\,\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(7/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/15/a^3/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(8*x^2-4*I*x+7)/(x
-I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(7/4)),x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError
```

Fricas [A] time = 0.244274, size = 55, normalized size = 0.55

$$\frac{2\left(8\,x^{2}-4i\,x+7\right)}{15\,(a^{3}x-i\,a^{3})(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(7/4)),x, algorithm="fricas")
```

```
[Out] 2/15*(8*x^2 - 4*I*x + 7)/((a^3*x - I*a^3)*(I*a*x + a)^(1/4)*(-I*a
*x + a)^(3/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(a-I*a*x)**(7/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(7/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1228 $\int \frac{1}{(a-iax)^{11/4}(a+iax)^{9/4}}\,dx$

Optimal. Leaf size=133

$$\frac{32i\sqrt[4]{a-iax}}{35a^5\sqrt[4]{a+iax}}+\frac{16i\sqrt[4]{a-iax}}{35a^4(a+iax)^{5/4}}-\frac{4i}{7a^3(a+iax)^{5/4}(a-iax)^{3/4}}-\frac{2i}{7a^2(a+iax)^{5/4}(a-iax)^{7/4}}$$

```
[Out] ((-2*I)/7)/(a^2*(a - I*a*x)^(7/4)*(a + I*a*x)^(5/4)) - ((4*I)/7)/
(a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(5/4)) + (((16*I)/35)*(a - I*a
*x)^(1/4))/(a^4*(a + I*a*x)^(5/4)) + (((32*I)/35)*(a - I*a*x)^(1/
4))/(a^5*(a + I*a*x)^(1/4))
```

Rubi [A] time = 0.114492, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.08$

$$\frac{32i\sqrt[4]{a-iax}}{35a^5\sqrt[4]{a+iax}}+\frac{16i\sqrt[4]{a-iax}}{35a^4(a+iax)^{5/4}}-\frac{4i}{7a^3(a+iax)^{5/4}(a-iax)^{3/4}}-\frac{2i}{7a^2(a+iax)^{5/4}(a-iax)^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] ((-2*I)/7)/(a^2*(a - I*a*x)^(7/4)*(a + I*a*x)^(5/4)) - ((4*I)/7)/
(a^3*(a - I*a*x)^(3/4)*(a + I*a*x)^(5/4)) + (((16*I)/35)*(a - I*a
*x)^(1/4))/(a^4*(a + I*a*x)^(5/4)) + (((32*I)/35)*(a - I*a*x)^(1/
4))/(a^5*(a + I*a*x)^(1/4))
```

Rubi in Sympy [A] time = 23.8811, size = 114, normalized size = 0.86

$$\frac{2i}{5a^2\left(-iax+a\right)^{\frac{7}{4}}\left(iax+a\right)^{\frac{5}{4}}}+\frac{12i}{5a^3\left(-iax+a\right)^{\frac{7}{4}}\sqrt[4]{iax+a}}-\frac{48i\left(iax+a\right)^{\frac{3}{4}}}{35a^4\left(-iax+a\right)^{\frac{7}{4}}}-\frac{32i\left(iax+a\right)^{\frac{3}{4}}}{35a^5\left(-iax+a\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] 2*I/(5*a**2*(-I*a*x + a)**(7/4)*(I*a*x + a)**(5/4)) + 12*I/(5*a**
3*(-I*a*x + a)**(7/4)*(I*a*x + a)**(1/4)) - 48*I*(I*a*x + a)**(3/
4)/(35*a**4*(-I*a*x + a)**(7/4)) - 32*I*(I*a*x + a)**(3/4)/(35*a*
*5*(-I*a*x + a)**(3/4))
```

Mathematica [A] time = 0.062245, size = 64, normalized size = 0.48

$$\frac{2\left(-16ix^3+8x^2-22ix+9\right)(a+iax)^{3/4}}{35a^5(x-i)^2(x+i)(a-iax)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a - I*a*x)^(11/4)*(a + I*a*x)^(9/4)),x]
```

```
[Out] (2*(a + I*a*x)^(3/4)*(9 - (22*I)*x + 8*x^2 - (16*I)*x^3))/(35*a^5
*(-I + x)^2*(I + x)*(a - I*a*x)^(3/4))
```

Maple [A] time = 0.08, size = 56, normalized size = 0.4

$$\frac{32\,x^3+16\,ix^2+44\,x+18\,i}{35\,a^4\,(x-i)\,(x+i)}\,(-a\,(-1+ix))^{-\frac{3}{4}}\,\frac{1}{\sqrt[4]{a\,(1+ix)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(a-I*a*x)^(11/4)/(a+I*a*x)^(9/4),x)
```

```
[Out] 2/35/a^4/(-a*(-1+I*x))^(3/4)/(a*(1+I*x))^(1/4)*(16*x^3+8*I*x^2+22
*x+9*I)/(x-I)/(x+I)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(i\,ax+a)^{\frac{9}{4}}(-i\,ax+a)^{\frac{11}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(11/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(11/4)), x)
```

Fricas [A] time = 0.243909, size = 62, normalized size = 0.47

$$\frac{32\,x^3+16i\,x^2+44\,x+18i}{35\,(a^4x^2+a^4)(i\,ax+a)^{\frac{1}{4}}(-i\,ax+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(11/4)),x, algorithm="fricas")
```

```
[Out] 1/35*(32*x^3 + 16*I*x^2 + 44*x + 18*I)/((a^4*x^2 + a^4)*(I*a*x +
a)^(1/4)*(-I*a*x + a)^(3/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(a-I*a*x)**(11/4)/(a+I*a*x)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((I*a*x + a)^(9/4)*(-I*a*x + a)^(11/4)),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError
```

3.1229 $\int (a+bx)^2(ac-bcx)^n\,dx$

Optimal. Leaf size=83

$$-\frac{4a^2(ac-bcx)^{n+1}}{bc(n+1)}-\frac{(ac-bcx)^{n+3}}{bc^3(n+3)}+\frac{4a(ac-bcx)^{n+2}}{bc^2(n+2)}$$

```
[Out] (-4*a^2*(a*c - b*c*x)^(1 + n))/(b*c*(1 + n)) + (4*a*(a*c - b*c*x)
^(2 + n))/(b*c^2*(2 + n)) - (a*c - b*c*x)^(3 + n)/(b*c^3*(3 + n))
```

Rubi [A] time = 0.0770858, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{4a^2(ac-bcx)^{n+1}}{bc(n+1)}-\frac{(ac-bcx)^{n+3}}{bc^3(n+3)}+\frac{4a(ac-bcx)^{n+2}}{bc^2(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(a*c - b*c*x)^n,x]
```

```
[Out] (-4*a^2*(a*c - b*c*x)^(1 + n))/(b*c*(1 + n)) + (4*a*(a*c - b*c*x)
^(2 + n))/(b*c^2*(2 + n)) - (a*c - b*c*x)^(3 + n)/(b*c^3*(3 + n))
```

Rubi in Sympy [A] time = 18.998, size = 66, normalized size = 0.8

$$-\frac{4a^2\left(ac-bcx\right)^{n+1}}{bc\left(n+1\right)}+\frac{4a\left(ac-bcx\right)^{n+2}}{bc^2\left(n+2\right)}-\frac{\left(ac-bcx\right)^{n+3}}{bc^3\left(n+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(-b*c*x+a*c)**n,x)
```

```
[Out] -4*a**2*(a*c - b*c*x)**(n + 1)/(b*c*(n + 1)) + 4*a*(a*c - b*c*x)*
*(n + 2)/(b*c**2*(n + 2)) - (a*c - b*c*x)**(n + 3)/(b*c**3*(n + 3
))
```

Mathematica [A] time = 0.0582491, size = 77, normalized size = 0.93

$$\frac{(bx-a)\left(a^2\left(n^2+7n+14\right)+2ab\left(n^2+5n+4\right)x+b^2\left(n^2+3n+2\right)x^2\right)(c(a-bx))^n}{b(n+1)(n+2)(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(a*c - b*c*x)^n,x]
```

```
[Out] ((c*(a - b*x))^n*(-a + b*x)*(a^2*(14 + 7*n + n^2) + 2*a*b*(4 + 5*
n + n^2)*x + b^2*(2 + 3*n + n^2)*x^2))/(b*(1 + n)*(2 + n)*(3 + n)
)
```

Maple [A] time = 0.01, size = 103, normalized size = 1.2

$$-\frac{\left(b^{2}n^{2}x^{2}+2\,abn^{2}x+3\,b^{2}nx^{2}+a^{2}n^{2}+10\,abnx+2\,b^{2}x^{2}+7\,a^{2}n+8\,abx+14\,a^{2}\right)\left(-bx+a\right)\left(-bcx+ac\right)^{n}}{b\left(n^{3}+6\,n^{2}+11\,n+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(-b*c*x+a*c)^n,x)
```

```
[Out] -(-b*x+a)*(b^2*n^2*x^2+2*a*b*n^2*x+3*b^2*n*x^2+a^2*n^2+10*a*b*n*x
+2*b^2*x^2+7*a^2*n+8*a*b*x+14*a^2)*(-b*c*x+a*c)^n/b/(n^3+6*n^2+11
*n+6)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(-b*c*x + a*c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240046, size = 173, normalized size = 2.08

$$-\frac{\left(a^{3}n^{2}+7\,a^{3}n-\left(b^{3}n^{2}+3\,b^{3}n+2\,b^{3}\right)x^{3}+14\,a^{3}-\left(ab^{2}n^{2}+7\,ab^{2}n+6\,ab^{2}\right)x^{2}+\left(a^{2}bn^{2}+3\,a^{2}bn-6\,a^{2}b\right)x\right)\left(-bcx+ac\right)^{n}}{bn^{3}+6\,bn^{2}+11\,bn+6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(-b*c*x + a*c)^n,x, algorithm="fricas")
```

```
[Out] -(a^3*n^2 + 7*a^3*n - (b^3*n^2 + 3*b^3*n + 2*b^3)*x^3 + 14*a^3 -
(a*b^2*n^2 + 7*a*b^2*n + 6*a*b^2)*x^2 + (a^2*b*n^2 + 3*a^2*b*n -
6*a^2*b)*x)*(-b*c*x + a*c)^n/(b*n^3 + 6*b*n^2 + 11*b*n + 6*b)
```

Sympy [A] time = 3.21102, size = 819, normalized size = 9.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(-b*c*x+a*c)**n,x)
```

```
[Out] Piecewise((a**2*x*(a*c)**n, Eq(b, 0)), (-a**2*log(-a/b + x)/(a**2
*b*c**3 - 2*a*b**2*c**3*x + b**3*c**3*x**2) - 2*a**2/(a**2*b*c**3
 - 2*a*b**2*c**3*x + b**3*c**3*x**2) + 2*a*b*x*log(-a/b + x)/(a**
2*b*c**3 - 2*a*b**2*c**3*x + b**3*c**3*x**2) + 4*a*b*x/(a**2*b*c*
*3 - 2*a*b**2*c**3*x + b**3*c**3*x**2) - b**2*x**2*log(-a/b + x)/
(a**2*b*c**3 - 2*a*b**2*c**3*x + b**3*c**3*x**2), Eq(n, -3)), (-4
*a**2*log(-a/b + x)/(-a*b*c**2 + b**2*c**2*x) - 5*a**2/(-a*b*c**2
 + b**2*c**2*x) + 4*a*b*x*log(-a/b + x)/(-a*b*c**2 + b**2*c**2*x)
 + b**2*x**2/(-a*b*c**2 + b**2*c**2*x), Eq(n, -2)), (-4*a**2*log(
-a/b + x)/(b*c) - 3*a*x/c - b*x**2/(2*c), Eq(n, -1)), (-a**3*n**2
*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) - 7*a**3*n*(
a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) - 14*a**3*(a*c
 - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) - a**2*b*n**2*x*(
a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) - 3*a**2*b*n*x
*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) + 6*a**2*b*x
*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) + a*b**2*n**
2*x**2*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) + 7*a*
b**2*n*x**2*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b) +
 6*a*b**2*x**2*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n + 6*b
) + b**3*n**2*x**3*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*n +
 6*b) + 3*b**3*n*x**3*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b*
n + 6*b) + 2*b**3*x**3*(a*c - b*c*x)**n/(b*n**3 + 6*b*n**2 + 11*b
*n + 6*b), True))
```

GIAC/XCAS [A] time = 0.222816, size = 378, normalized size = 4.55

$$\frac{b^3n^2x^3e^{(n\ln(-bcx+ac))} + ab^2n^2x^2e^{(n\ln(-bcx+ac))} + 3\,b^3nx^3e^{(n\ln(-bcx+ac))} - a^2bn^2xe^{(n\ln(-bcx+ac))} + 7\,ab^2nx^2e^{(n\ln(-bcx+ac))} + 2\,b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(-b*c*x + a*c)^n,x, algorithm="giac")
```

```
[Out] (b^3*n^2*x^3*e^(n*ln(-b*c*x + a*c)) + a*b^2*n^2*x^2*e^(n*ln(-b*c*
x + a*c)) + 3*b^3*n*x^3*e^(n*ln(-b*c*x + a*c)) - a^2*b*n^2*x*e^(n
*ln(-b*c*x + a*c)) + 7*a*b^2*n*x^2*e^(n*ln(-b*c*x + a*c)) + 2*b^3
*x^3*e^(n*ln(-b*c*x + a*c)) - a^3*n^2*e^(n*ln(-b*c*x + a*c)) - 3*
a^2*b*n*x*e^(n*ln(-b*c*x + a*c)) + 6*a*b^2*x^2*e^(n*ln(-b*c*x + a
*c)) - 7*a^3*n*e^(n*ln(-b*c*x + a*c)) + 6*a^2*b*x*e^(n*ln(-b*c*x
+ a*c)) - 14*a^3*e^(n*ln(-b*c*x + a*c)))/(b*n^3 + 6*b*n^2 + 11*b*
```

n + 6*b)

3.1230 $\int (a+bx)(ac-bcx)^n\,dx$

Optimal. Leaf size=53

$$\frac{(ac-bcx)^{n+2}}{bc^2(n+2)}-\frac{2a(ac-bcx)^{n+1}}{bc(n+1)}$$

```
[Out] (-2*a*(a*c - b*c*x)^(1 + n))/(b*c*(1 + n)) + (a*c - b*c*x)^(2 + n
)/(b*c^2*(2 + n))
```

Rubi [A] time = 0.0469815, antiderivative size = 53, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$\frac{(ac-bcx)^{n+2}}{bc^2(n+2)}-\frac{2a(ac-bcx)^{n+1}}{bc(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(a*c - b*c*x)^n,x]
```

```
[Out] (-2*a*(a*c - b*c*x)^(1 + n))/(b*c*(1 + n)) + (a*c - b*c*x)^(2 + n
)/(b*c^2*(2 + n))
```

Rubi in Sympy [A] time = 11.877, size = 41, normalized size = 0.77

$$-\frac{2a\left(ac-bcx\right)^{n+1}}{bc\left(n+1\right)}+\frac{\left(ac-bcx\right)^{n+2}}{bc^2\left(n+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(-b*c*x+a*c)**n,x)
```

```
[Out] -2*a*(a*c - b*c*x)**(n + 1)/(b*c*(n + 1)) + (a*c - b*c*x)**(n + 2
)/(b*c**2*(n + 2))
```

Mathematica [A] time = 0.0269806, size = 43, normalized size = 0.81

$$\frac{(bx-a)(a(n+3)+b(n+1)x)(c(a-bx))^n}{b(n+1)(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(a*c - b*c*x)^n,x]
```

```
[Out] ((c*(a - b*x))^n*(-a + b*x)*(a*(3 + n) + b*(1 + n)*x))/(b*(1 + n)
*(2 + n))
```

Maple [A] time = 0.003, size = 47, normalized size = 0.9

$$-\frac{(-bcx+ac)^n\,(bnx+an+bx+3\,a)\,(-bx+a)}{b\,(n^2+3\,n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(-b*c*x+a*c)^n,x)
```

```
[Out] -(-b*c*x+a*c)^n*(b*n*x+a*n+b*x+3*a)*(-b*x+a)/b/(n^2+3*n+2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(-b*c*x + a*c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22065, size = 78, normalized size = 1.47

$$-\frac{\left(a^2n-2\,abx-\left(b^2n+b^2\right)x^2+3\,a^2\right)(-bcx+ac)^n}{bn^2+3\,bn+2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(-b*c*x + a*c)^n,x, algorithm="fricas")
```

```
[Out] -(a^2*n - 2*a*b*x - (b^2*n + b^2)*x^2 + 3*a^2)*(-b*c*x + a*c)^n/(
b*n^2 + 3*b*n + 2*b)
```

Sympy [A] time = 1.77955, size = 245, normalized size = 4.62

$$\begin{cases} ax(ac)^n & \text{for } b=0 \\ -\frac{a\log\left(-\frac{a}{b}+x\right)}{-abc^2+b^2c^2x} - \frac{2a}{-abc^2+b^2c^2x} + \frac{bx\log\left(-\frac{a}{b}+x\right)}{-abc^2+b^2c^2x} & \text{for } n=-2 \\ -\frac{2a\log\left(-\frac{a}{b}+x\right)}{bc} - \frac{x}{c} & \text{for } n=-1 \\ -\frac{a^2n(ac-bcx)^n}{bn^2+3bn+2b} - \frac{3a^2(ac-bcx)^n}{bn^2+3bn+2b} + \frac{2abx(ac-bcx)^n}{bn^2+3bn+2b} + \frac{b^2nx^2(ac-bcx)^n}{bn^2+3bn+2b} + \frac{b^2x^2(ac-bcx)^n}{bn^2+3bn+2b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(-b*c*x+a*c)**n,x)
```

```
[Out] Piecewise((a*x*(a*c)**n, Eq(b, 0)), (-a*log(-a/b + x)/(-a*b*c**2
+ b**2*c**2*x) - 2*a/(-a*b*c**2 + b**2*c**2*x) + b*x*log(-a/b + x
)/(-a*b*c**2 + b**2*c**2*x), Eq(n, -2)), (-2*a*log(-a/b + x)/(b*c
) - x/c, Eq(n, -1)), (-a**2*n*(a*c - b*c*x)**n/(b*n**2 + 3*b*n +
2*b) - 3*a**2*(a*c - b*c*x)**n/(b*n**2 + 3*b*n + 2*b) + 2*a*b*x*(
a*c - b*c*x)**n/(b*n**2 + 3*b*n + 2*b) + b**2*n*x**2*(a*c - b*c*x
)**n/(b*n**2 + 3*b*n + 2*b) + b**2*x**2*(a*c - b*c*x)**n/(b*n**2
+ 3*b*n + 2*b), True))
```

GIAC/XCAS [A] time = 0.22111, size = 153, normalized size = 2.89

$$\frac{b^2nx^2e^{(n\ln(-bcx+ac))} + b^2x^2e^{(n\ln(-bcx+ac))} - a^2ne^{(n\ln(-bcx+ac))} + 2\,abxe^{(n\ln(-bcx+ac))} - 3\,a^2e^{(n\ln(-bcx+ac))}}{bn^2 + 3\,bn + 2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(-b*c*x + a*c)^n,x, algorithm="giac")
```

```
[Out] (b^2*n*x^2*e^(n*ln(-b*c*x + a*c)) + b^2*x^2*e^(n*ln(-b*c*x + a*c)
) - a^2*n*e^(n*ln(-b*c*x + a*c)) + 2*a*b*x*e^(n*ln(-b*c*x + a*c))
 - 3*a^2*e^(n*ln(-b*c*x + a*c)))/(b*n^2 + 3*b*n + 2*b)
```

3.1231 $\int \frac{(ac-bcx)^n}{a+bx}\,dx$

Optimal. Leaf size=52

$$-\frac{(ac-bcx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a-bx}{2a}\right)}{2abc(n+1)}$$

```
[Out] -((a*c - b*c*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (a - b
*x)/(2*a)])/(2*a*b*c*(1 + n))
```

Rubi [A] time = 0.0390882, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{(ac-bcx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{a-bx}{2a}\right)}{2abc(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a*c - b*c*x)^n/(a + b*x),x]
```

```
[Out] -((a*c - b*c*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (a - b
*x)/(2*a)])/(2*a*b*c*(1 + n))
```

Rubi in Sympy [A] time = 7.82872, size = 37, normalized size = 0.71

$$-\frac{(ac-bcx)^{n+1}\,{}_2F_1\left(\begin{matrix}1,n+1\\n+2\end{matrix}\middle|\frac{\frac{a}{2}-\frac{bx}{2}}{a}\right)}{2abc\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*c*x+a*c)**n/(b*x+a),x)
```

```
[Out] -(a*c - b*c*x)**(n + 1)*hyper((1, n + 1), (n + 2,), (a/2 - b*x/2)
/a)/(2*a*b*c*(n + 1))
```

Mathematica [A] time = 0.0362592, size = 58, normalized size = 1.12

$$\frac{\left(\frac{bx-a}{a+bx}\right)^{-n}(c(a-bx))^n\,{}_2F_1\left(-n,-n;1-n;\frac{2a}{a+bx}\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*c - b*c*x)^n/(a + b*x),x]
```

```
[Out] ((c*(a - b*x))^n*Hypergeometric2F1[-n, -n, 1 - n, (2*a)/(a + b*x)
])/(b*n*((-a + b*x)/(a + b*x))^n)
```

Maple [F] time = 0.095, size = 0, normalized size = 0.

$$\int \frac{(-bcx + ac)^n}{bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*c*x+a*c)^n/(b*x+a),x)
```

```
[Out] int((-b*c*x+a*c)^n/(b*x+a),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-bcx + ac)^n}{bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^n/(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((-b*c*x + a*c)^n/(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(-bcx + ac)^n}{bx + a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^n/(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((-b*c*x + a*c)^n/(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-c(-a+bx))^n}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)**n/(b*x+a),x)

[Out] Integral((-c*(-a + b*x))**n/(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-bcx+ac)^n}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^n/(b*x + a),x, algorithm="giac")

[Out] integrate((-b*c*x + a*c)^n/(b*x + a), x)
```

3.1232 $\int \frac{(ac-bcx)^n}{(a+bx)^2}\,dx$

Optimal. Leaf size=52

$$-\frac{(ac-bcx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{a-bx}{2a}\right)}{4a^2bc(n+1)}$$

```
[Out] -((a*c - b*c*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, (a - b
*x)/(2*a)])/(4*a^2*b*c*(1 + n))
```

Rubi [A] time = 0.0389448, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{(ac-bcx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{a-bx}{2a}\right)}{4a^2bc(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a*c - b*c*x)^n/(a + b*x)^2,x]
```

```
[Out] -((a*c - b*c*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, (a - b
*x)/(2*a)])/(4*a^2*b*c*(1 + n))
```

Rubi in Sympy [A] time = 8.17525, size = 39, normalized size = 0.75

$$-\frac{(ac-bcx)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\ n+2\end{matrix}\middle|\frac{\frac{a}{2}-\frac{bx}{2}}{a}\right)}{4a^2bc\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-b*c*x+a*c)**n/(b*x+a)**2,x)
```

```
[Out] -(a*c - b*c*x)**(n + 1)*hyper((2, n + 1), (n + 2,), (a/2 - b*x/2)
/a)/(4*a**2*b*c*(n + 1))
```

Mathematica [A] time = 0.0358064, size = 52, normalized size = 1.

$$-\frac{(a-bx)(c(a-bx))^n\,{}_2F_1\left(2,n+1;n+2;\frac{a-bx}{2a}\right)}{4a^2b(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a*c - b*c*x)^n/(a + b*x)^2,x]
```

```
[Out] -((a - b*x)*(c*(a - b*x))^n*Hypergeometric2F1[2, 1 + n, 2 + n, (a
 - b*x)/(2*a)])/(4*a^2*b*(1 + n))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int \frac{(-bcx + ac)^n}{(bx + a)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-b*c*x+a*c)^n/(b*x+a)^2,x)
```

```
[Out] int((-b*c*x+a*c)^n/(b*x+a)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-bcx + ac)^n}{(bx + a)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^n/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] integrate((-b*c*x + a*c)^n/(b*x + a)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(-bcx + ac)^n}{b^2x^2 + 2\,abx + a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^n/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] integral((-b*c*x + a*c)^n/(b^2*x^2 + 2*a*b*x + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-c\,(-a+bx))^n}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x+a*c)**n/(b*x+a)**2,x)
```

```
[Out] Integral((-c*(-a + b*x))**n/(a + b*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-bcx+ac)^n}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^n/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] integrate((-b*c*x + a*c)^n/(b*x + a)^2, x)
```

3.1233 $\int (a+ax)^m(c-cx)^m\,dx$

Optimal. Leaf size=41

$$x\left(1-x^2\right)^{-m}(ax+a)^m(c-cx)^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};x^2\right)$$

```
[Out] (x*(a + a*x)^m*(c - c*x)^m*Hypergeometric2F1[1/2, -m, 3/2, x^2])/
(1 - x^2)^m
```

Rubi [A] time = 0.0318149, antiderivative size = 41, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.188$

$$x\left(1-x^2\right)^{-m}(ax+a)^m(c-cx)^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(a + a*x)^m*(c - c*x)^m,x]
```

```
[Out] (x*(a + a*x)^m*(c - c*x)^m*Hypergeometric2F1[1/2, -m, 3/2, x^2])/
(1 - x^2)^m
```

Rubi in Sympy [A] time = 5.25611, size = 31, normalized size = 0.76

$$x\left(-x^2+1\right)^{-m}(ax+a)^m(-cx+c)^m\,{}_2F_1\left(\left.\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\right|x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((a*x+a)**m*(-c*x+c)**m,x)
```

```
[Out] x*(-x**2 + 1)**(-m)*(a*x + a)**m*(-c*x + c)**m*hyper((-m, 1/2), (
3/2,), x**2)
```

Mathematica [A] time = 0.0285089, size = 41, normalized size = 1.

$$x\left(1-x^2\right)^{-m}(a(x+1))^m(c-cx)^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + a*x)^m*(c - c*x)^m,x]
```

```
[Out] (x*(a*(1 + x))^m*(c - c*x)^m*Hypergeometric2F1[1/2, -m, 3/2, x^2]
)/(1 - x^2)^m
```

Maple [F] time = 0.148, size = 0, normalized size = 0.

$$\int (ax+a)^m (-cx+c)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((a*x+a)^m*(-c*x+c)^m,x)
```

```
[Out] int((a*x+a)^m*(-c*x+c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (ax+a)^m(-cx+c)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^m*(-c*x + c)^m,x, algorithm="maxima")
```

```
[Out] integrate((a*x + a)^m*(-c*x + c)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((ax+a)^m(-cx+c)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^m*(-c*x + c)^m,x, algorithm="fricas")
```

```
[Out] integral((a*x + a)^m*(-c*x + c)^m, x)
```

Sympy [A] time = 15.206, size = 124, normalized size = 3.02

$$\frac{a^m c^m G_{6,6}^{5,3}\left(\begin{matrix} -\frac{m}{2}, -\frac{m}{2}+\frac{1}{2}, 1 & \frac{1}{2}, -m, -m+\frac{1}{2} \\ -m-\frac{1}{2}, -m, -m+\frac{1}{2}, -\frac{m}{2}, -\frac{m}{2}+\frac{1}{2} & 0 \end{matrix} \middle| \frac{e^{-2i\pi}}{x^2}\right) e^{-i\pi m}}{4\pi\,(-m)} - \frac{a^m c^m G_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2}, 0, \frac{1}{2}, -\frac{m}{2}-\frac{1}{2}, -\frac{m}{2}, 1 & \\ -\frac{m}{2}-\frac{1}{2}, -\frac{m}{2} & -\frac{1}{2}, 0, -m-\frac{1}{2}, 0 \end{matrix} \middle| \frac{1}{x^2}\right)}{4\pi\,(-m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x+a)**m*(-c*x+c)**m,x)
```

```
[Out] a**m*c**m*meijerg(((-m/2, -m/2 + 1/2, 1), (1/2, -m, -m + 1/2)), (
(-m - 1/2, -m, -m + 1/2, -m/2, -m/2 + 1/2), (0,)), exp_polar(-2*I
*pi)/x**2)*exp(-I*pi*m)/(4*pi*gamma(-m)) - a**m*c**m*meijerg(((-1
/2, 0, 1/2, -m/2 - 1/2, -m/2, 1), ()), ((-m/2 - 1/2, -m/2), (-1/2
, 0, -m - 1/2, 0)), x**(-2))/(4*pi*gamma(-m))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (ax+a)^m(-cx+c)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((a*x + a)^m*(-c*x + c)^m,x, algorithm="giac")
```

```
[Out] integrate((a*x + a)^m*(-c*x + c)^m, x)
```

3.1234 $\int (a+bx)^m (ac-bcx)^m \,dx$

Optimal. Leaf size=57

$$x(a+bx)^m\left(1-\frac{b^2x^2}{a^2}\right)^{-m}(ac-bcx)^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{b^2x^2}{a^2}\right)$$

```
[Out] (x*(a + b*x)^m*(a*c - b*c*x)^m*Hypergeometric2F1[1/2, -m, 3/2, (b
^2*x^2)/a^2])/(1 - (b^2*x^2)/a^2)^m
```

Rubi [A] time = 0.0469697, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$x(a+bx)^m\left(1-\frac{b^2x^2}{a^2}\right)^{-m}(ac-bcx)^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{b^2x^2}{a^2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^m*(a*c - b*c*x)^m,x]
```

```
[Out] (x*(a + b*x)^m*(a*c - b*c*x)^m*Hypergeometric2F1[1/2, -m, 3/2, (b
^2*x^2)/a^2])/(1 - (b^2*x^2)/a^2)^m
```

Rubi in Sympy [A] time = 22.6077, size = 48, normalized size = 0.84

$$x\left(1-\frac{b^2x^2}{a^2}\right)^{-m}(a+bx)^m(ac-bcx)^m\,{}_2F_1\left(\begin{matrix}-m,\frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle|\frac{b^2x^2}{a^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**m*(-b*c*x+a*c)**m,x)
```

```
[Out] x*(1 - b**2*x**2/a**2)**(-m)*(a + b*x)**m*(a*c - b*c*x)**m*hyper(
(-m, 1/2), (3/2,), b**2*x**2/a**2)
```

Mathematica [A] time = 0.0456993, size = 56, normalized size = 0.98

$$x(a+bx)^m\left(1-\frac{b^2x^2}{a^2}\right)^{-m}(c(a-bx))^m\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};\frac{b^2x^2}{a^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(a*c - b*c*x)^m,x]
```

```
[Out] (x*(c*(a - b*x))^m*(a + b*x)^m*Hypergeometric2F1[1/2, -m, 3/2, (b
^2*x^2)/a^2])/(1 - (b^2*x^2)/a^2)^m
```

Maple [F] time = 0.142, size = 0, normalized size = 0.

$$\int (bx + a)^m (-bcx + ac)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(-b*c*x+a*c)^m,x)
```

```
[Out] int((b*x+a)^m*(-b*c*x+a*c)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (-bcx + ac)^m (bx + a)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^m*(b*x + a)^m,x, algorithm="maxima")
```

```
[Out] integrate((-b*c*x + a*c)^m*(b*x + a)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((-bcx + ac)^m (bx + a)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^m*(b*x + a)^m,x, algorithm="fricas")
```

```
[Out] integral((-b*c*x + a*c)^m*(b*x + a)^m, x)
```

Sympy [A] time = 17.9697, size = 146, normalized size = 2.56

$$\frac{aa^{2m}c^mG_{6,6}^{5,3}\left(\begin{matrix} -\frac{m}{2},-\frac{m}{2}+\frac{1}{2},1 & \frac{1}{2},-m,-m+\frac{1}{2} \\ -m-\frac{1}{2},-m,-m+\frac{1}{2},-\frac{m}{2},-\frac{m}{2}+\frac{1}{2} & 0 \end{matrix}\middle|\frac{a^2e^{-2i\pi}}{b^2x^2}\right)e^{-i\pi m}}{4\pi b\,\Gamma(-m)} - \frac{aa^{2m}c^mG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},0,\frac{1}{2},-\frac{m}{2}-\frac{1}{2},-\frac{m}{2},1 & \\ -\frac{m}{2}-\frac{1}{2},-\frac{m}{2} & -\frac{1}{2},0,-m-\frac{1}{2},0 \end{matrix}\middle|\frac{a^2}{b^2x^2}\right)}{4\pi b\,\Gamma(-m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(-b*c*x+a*c)**m,x)
```

```
[Out] a*a**(2*m)*c**m*meijerg(((-m/2, -m/2 + 1/2, 1), (1/2, -m, -m + 1/
2)), ((-m - 1/2, -m, -m + 1/2, -m/2, -m/2 + 1/2), (0,)), a**2*exp
_polar(-2*I*pi)/(b**2*x**2))*exp(-I*pi*m)/(4*pi*b*gamma(-m)) - a*
a**(2*m)*c**m*meijerg(((-1/2, 0, 1/2, -m/2 - 1/2, -m/2, 1), ()),
((-m/2 - 1/2, -m/2), (-1/2, 0, -m - 1/2, 0)), a**2/(b**2*x**2))/(
4*pi*b*gamma(-m))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (-bcx+ac)^m(bx+a)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-b*c*x + a*c)^m*(b*x + a)^m,x, algorithm="giac")
```

```
[Out] integrate((-b*c*x + a*c)^m*(b*x + a)^m, x)
```

3.1235 $\int (3-6x)^m(2+4x)^m\,dx$

Optimal. Leaf size=20

$$6^m x\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};4x^2\right)$$

```
[Out] 6^m*x*Hypergeometric2F1[1/2, -m, 3/2, 4*x^2]
```

Rubi [A] time = 0.0181907, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$6^m x\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};4x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(3 - 6*x)^m*(2 + 4*x)^m,x]

[Out] 6^m*x*Hypergeometric2F1[1/2, -m, 3/2, 4*x^2]
```

Rubi in Sympy [A] time = 2.99985, size = 15, normalized size = 0.75

$$6^m x_2F_1\left(\begin{matrix}-m, \frac{1}{2}\\ \frac{3}{2}\end{matrix}\middle| 4x^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-6*x)**m*(2+4*x)**m,x)

[Out] 6**m*x*hyper((-m, 1/2), (3/2,), 4*x**2)
```

Mathematica [B] time = 0.0260978, size = 42, normalized size = 2.1

$$x(3-6x)^m(4x+2)^m\left(1-4x^2\right)^{-m}\,{}_2F_1\left(\frac{1}{2},-m;\frac{3}{2};4x^2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(3 - 6*x)^m*(2 + 4*x)^m,x]
```

```
[Out] ((3 - 6*x)^m*x*(2 + 4*x)^m*Hypergeometric2F1[1/2, -m, 3/2, 4*x^2]
)/(1 - 4*x^2)^m
```

Maple [F] time = 0.23, size = 0, normalized size = 0.

$$\int (3-6x)^m (2+4x)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((3-6*x)^m*(2+4*x)^m,x)
```

```
[Out] int((3-6*x)^m*(2+4*x)^m,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (4x+2)^m(-6x+3)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^m*(-6*x + 3)^m,x, algorithm="maxima")
```

```
[Out] integrate((4*x + 2)^m*(-6*x + 3)^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((4x+2)^m(-6x+3)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^m*(-6*x + 3)^m,x, algorithm="fricas")
```

```
[Out] integral((4*x + 2)^m*(-6*x + 3)^m, x)
```

Sympy [A] time = 16.288, size = 42, normalized size = 2.1

$$\frac{24^m \left(x+\frac{1}{2}\right)\left(x+\frac{1}{2}\right)^m (m+1)\, {}_2F_1\left(\begin{matrix} -m, m+1 \\ m+2 \end{matrix}\middle| \left(x+\frac{1}{2}\right)e^{2i\pi}\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-6*x)**m*(2+4*x)**m,x)
```

```
[Out] 24**m*(x + 1/2)*(x + 1/2)**m*gamma(m + 1)*hyper((-m, m + 1), (m +
 2,), (x + 1/2)*exp_polar(2*I*pi))/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (4x+2)^m(-6x+3)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((4*x + 2)^m*(-6*x + 3)^m,x, algorithm="giac")
```

```
[Out] integrate((4*x + 2)^m*(-6*x + 3)^m, x)
```

3.1236 $\int (a+bx)^4(c+dx)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^5(bc-ad)}{5b^2}+\frac{d(a+bx)^6}{6b^2}$$

```
[Out] ((b*c - a*d)*(a + b*x)^5)/(5*b^2) + (d*(a + b*x)^6)/(6*b^2)
```

Rubi [A] time = 0.0452104, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{(a+bx)^5(bc-ad)}{5b^2}+\frac{d(a+bx)^6}{6b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x),x]

[Out] ((b*c - a*d)*(a + b*x)^5)/(5*b^2) + (d*(a + b*x)^6)/(6*b^2)
```

Rubi in Sympy [A] time = 12.0252, size = 31, normalized size = 0.82

$$\frac{d\left(a+bx\right)^6}{6b^2}-\frac{\left(a+bx\right)^5\left(ad-bc\right)}{5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c),x)

[Out] d*(a + b*x)**6/(6*b**2) - (a + b*x)**5*(a*d - b*c)/(5*b**2)
```

Mathematica [B] time = 0.0273502, size = 84, normalized size = 2.21

$$\frac{1}{30}x\left(15a^4(2c+dx)+20a^3bx(3c+2dx)+15a^2b^2x^2(4c+3dx)+6ab^3x^3(5c+4dx)+b^4x^4(6c+5dx)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x),x]
```

```
[Out] (x*(15*a^4*(2*c + d*x) + 20*a^3*b*x*(3*c + 2*d*x) + 15*a^2*b^2*x^
2*(4*c + 3*d*x) + 6*a*b^3*x^3*(5*c + 4*d*x) + b^4*x^4*(6*c + 5*d*
x)))/30
```

Maple [B] time = 0.001, size = 97, normalized size = 2.6

$$\frac{b^4dx^6}{6}+\frac{(4\,ab^3d+b^4c)\,x^5}{5}+\frac{(6\,a^2b^2d+4\,ab^3c)\,x^4}{4}+\frac{(4\,a^3bd+6\,a^2b^2c)\,x^3}{3}+\frac{(a^4d+4\,a^3bc)\,x^2}{2}+a^4cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c),x)
```

```
[Out] 1/6*b^4*d*x^6+1/5*(4*a*b^3*d+b^4*c)*x^5+1/4*(6*a^2*b^2*d+4*a*b^3*
c)*x^4+1/3*(4*a^3*b*d+6*a^2*b^2*c)*x^3+1/2*(a^4*d+4*a^3*b*c)*x^2+
a^4*c*x
```

Maxima [A] time = 1.35712, size = 130, normalized size = 3.42

$$\frac{1}{6}\,b^4dx^6+a^4cx+\frac{1}{5}\,(b^4c+4\,ab^3d)\,x^5+\frac{1}{2}\,(2\,ab^3c+3\,a^2b^2d)\,x^4+\frac{2}{3}\,(3\,a^2b^2c+2\,a^3bd)\,x^3+\frac{1}{2}\,(4\,a^3bc+a^4d)\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/6*b^4*d*x^6 + a^4*c*x + 1/5*(b^4*c + 4*a*b^3*d)*x^5 + 1/2*(2*a*
b^3*c + 3*a^2*b^2*d)*x^4 + 2/3*(3*a^2*b^2*c + 2*a^3*b*d)*x^3 + 1/
2*(4*a^3*b*c + a^4*d)*x^2
```

Fricas [A] time = 0.176899, size = 1, normalized size = 0.03

$$\frac{1}{6}x^6db^4+\frac{1}{5}x^5cb^4+\frac{4}{5}x^5db^3a+x^4cb^3a+\frac{3}{2}x^4db^2a^2+2x^3cb^2a^2+\frac{4}{3}x^3dba^3+2x^2cba^3+\frac{1}{2}x^2da^4+xca^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*d*b^4 + 1/5*x^5*c*b^4 + 4/5*x^5*d*b^3*a + x^4*c*b^3*a + 3
/2*x^4*d*b^2*a^2 + 2*x^3*c*b^2*a^2 + 4/3*x^3*d*b*a^3 + 2*x^2*c*b*
a^3 + 1/2*x^2*d*a^4 + x*c*a^4
```

Sympy [A] time = 0.137085, size = 100, normalized size = 2.63

$$a^4cx + \frac{b^4dx^6}{6} + x^5\left(\frac{4ab^3d}{5} + \frac{b^4c}{5}\right) + x^4\left(\frac{3a^2b^2d}{2} + ab^3c\right) + x^3\left(\frac{4a^3bd}{3} + 2a^2b^2c\right) + x^2\left(\frac{a^4d}{2} + 2a^3bc\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c),x)
```

```
[Out] a**4*c*x + b**4*d*x**6/6 + x**5*(4*a*b**3*d/5 + b**4*c/5) + x**4*
(3*a**2*b**2*d/2 + a*b**3*c) + x**3*(4*a**3*b*d/3 + 2*a**2*b**2*c
) + x**2*(a**4*d/2 + 2*a**3*b*c)
```

GIAC/XCAS [A] time = 0.220299, size = 131, normalized size = 3.45

$$\frac{1}{6}\,b^4dx^6 + \frac{1}{5}\,b^4cx^5 + \frac{4}{5}\,ab^3dx^5 + ab^3cx^4 + \frac{3}{2}\,a^2b^2dx^4 + 2\,a^2b^2cx^3 + \frac{4}{3}\,a^3bdx^3 + 2\,a^3bcx^2 + \frac{1}{2}\,a^4dx^2 + a^4cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c),x, algorithm="giac")
```

```
[Out] 1/6*b^4*d*x^6 + 1/5*b^4*c*x^5 + 4/5*a*b^3*d*x^5 + a*b^3*c*x^4 + 3
/2*a^2*b^2*d*x^4 + 2*a^2*b^2*c*x^3 + 4/3*a^3*b*d*x^3 + 2*a^3*b*c*
x^2 + 1/2*a^4*d*x^2 + a^4*c*x
```

3.1237 $\int (a+bx)^3(c+dx)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^4(bc-ad)}{4b^2}+\frac{d(a+bx)^5}{5b^2}$$

```
[Out] ((b*c - a*d)*(a + b*x)^4)/(4*b^2) + (d*(a + b*x)^5)/(5*b^2)
```

Rubi [A] time = 0.0391669, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{(a+bx)^4(bc-ad)}{4b^2}+\frac{d(a+bx)^5}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^3*(c + d*x),x]

[Out] ((b*c - a*d)*(a + b*x)^4)/(4*b^2) + (d*(a + b*x)^5)/(5*b^2)
```

Rubi in Sympy [A] time = 10.5834, size = 31, normalized size = 0.82

$$\frac{d\left(a+bx\right)^5}{5b^2}-\frac{\left(a+bx\right)^4\left(ad-bc\right)}{4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**3*(d*x+c),x)

[Out] d*(a + b*x)**5/(5*b**2) - (a + b*x)**4*(a*d - b*c)/(4*b**2)
```

Mathematica [A] time = 0.0163307, size = 67, normalized size = 1.76

$$a^3cx+\frac{1}{2}a^2x^2(ad+3bc)+\frac{1}{4}b^2x^4(3ad+bc)+abx^3(ad+bc)+\frac{1}{5}b^3dx^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^3*(c + d*x),x]
```

```
[Out] a^3*c*x + (a^2*(3*b*c + a*d)*x^2)/2 + a*b*(b*c + a*d)*x^3 + (b^2*
(b*c + 3*a*d)*x^4)/4 + (b^3*d*x^5)/5
```

Maple [B] time = 0.003, size = 73, normalized size = 1.9

$$\frac{b^3dx^5}{5} + \frac{(3\,ab^2d + b^3c)\,x^4}{4} + \frac{(3\,a^2bd + 3\,ab^2c)\,x^3}{3} + \frac{(a^3d + 3\,a^2bc)\,x^2}{2} + a^3cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c),x)
```

```
[Out] 1/5*b^3*d*x^5+1/4*(3*a*b^2*d+b^3*c)*x^4+1/3*(3*a^2*b*d+3*a*b^2*c)
*x^3+1/2*(a^3*d+3*a^2*b*c)*x^2+a^3*c*x
```

Maxima [A] time = 1.34244, size = 93, normalized size = 2.45

$$\frac{1}{5}\,b^3dx^5 + a^3cx + \frac{1}{4}\,(b^3c + 3\,ab^2d)\,x^4 + (ab^2c + a^2bd)\,x^3 + \frac{1}{2}\,(3\,a^2bc + a^3d)\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/5*b^3*d*x^5 + a^3*c*x + 1/4*(b^3*c + 3*a*b^2*d)*x^4 + (a*b^2*c
+ a^2*b*d)*x^3 + 1/2*(3*a^2*b*c + a^3*d)*x^2
```

Fricas [A] time = 0.175011, size = 1, normalized size = 0.03

$$\frac{1}{5}x^5db^3 + \frac{1}{4}x^4cb^3 + \frac{3}{4}x^4db^2a + x^3cb^2a + x^3dba^2 + \frac{3}{2}x^2cba^2 + \frac{1}{2}x^2da^3 + xca^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*d*b^3 + 1/4*x^4*c*b^3 + 3/4*x^4*d*b^2*a + x^3*c*b^2*a + x
^3*d*b*a^2 + 3/2*x^2*c*b*a^2 + 1/2*x^2*d*a^3 + x*c*a^3
```

Sympy [A] time = 0.134906, size = 73, normalized size = 1.92

$$a^3cx + \frac{b^3dx^5}{5} + x^4\left(\frac{3ab^2d}{4} + \frac{b^3c}{4}\right) + x^3\left(a^2bd + ab^2c\right) + x^2\left(\frac{a^3d}{2} + \frac{3a^2bc}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c),x)
```

```
[Out] a**3*c*x + b**3*d*x**5/5 + x**4*(3*a*b**2*d/4 + b**3*c/4) + x**3*
(a**2*b*d + a*b**2*c) + x**2*(a**3*d/2 + 3*a**2*b*c/2)
```

GIAC/XCAS [A] time = 0.219049, size = 97, normalized size = 2.55

$$\frac{1}{5}\,b^3dx^5 + \frac{1}{4}\,b^3cx^4 + \frac{3}{4}\,ab^2dx^4 + ab^2cx^3 + a^2bdx^3 + \frac{3}{2}\,a^2bcx^2 + \frac{1}{2}\,a^3dx^2 + a^3cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c),x, algorithm="giac")
```

```
[Out] 1/5*b^3*d*x^5 + 1/4*b^3*c*x^4 + 3/4*a*b^2*d*x^4 + a*b^2*c*x^3 + a
^2*b*d*x^3 + 3/2*a^2*b*c*x^2 + 1/2*a^3*d*x^2 + a^3*c*x
```

3.1238 $\int (a+bx)^2(c+dx)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^3(bc-ad)}{3b^2}+\frac{d(a+bx)^4}{4b^2}$$

```
[Out] ((b*c - a*d)*(a + b*x)^3)/(3*b^2) + (d*(a + b*x)^4)/(4*b^2)
```

Rubi [A] time = 0.0613215, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{(a+bx)^3(bc-ad)}{3b^2}+\frac{d(a+bx)^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x),x]

[Out] ((b*c - a*d)*(a + b*x)^3)/(3*b^2) + (d*(a + b*x)^4)/(4*b^2)
```

Rubi in Sympy [A] time = 9.5052, size = 31, normalized size = 0.82

$$\frac{d\left(a+bx\right)^4}{4b^2}-\frac{\left(a+bx\right)^3\left(ad-bc\right)}{3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c),x)

[Out] d*(a + b*x)**4/(4*b**2) - (a + b*x)**3*(a*d - b*c)/(3*b**2)
```

Mathematica [A] time = 0.0138735, size = 46, normalized size = 1.21

$$\frac{1}{12}x\left(6a^2(2c+dx)+4abx(3c+2dx)+b^2x^2(4c+3dx)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x),x]
```

```
[Out] (x*(6*a^2*(2*c + d*x) + 4*a*b*x*(3*c + 2*d*x) + b^2*x^2*(4*c + 3*
d*x)))/12
```

Maple [A] time = 0.002, size = 49, normalized size = 1.3

$$\frac{b^2dx^4}{4}+\frac{\left(2\,abd+b^2c\right)x^3}{3}+\frac{\left(a^2d+2\,abc\right)x^2}{2}+a^2cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c),x)
```

```
[Out] 1/4*b^2*d*x^4+1/3*(2*a*b*d+b^2*c)*x^3+1/2*(a^2*d+2*a*b*c)*x^2+a^2
*c*x
```

Maxima [A] time = 1.47947, size = 65, normalized size = 1.71

$$\frac{1}{4}\,b^2dx^4+a^2cx+\frac{1}{3}\left(b^2c+2\,abd\right)x^3+\frac{1}{2}\left(2\,abc+a^2d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/4*b^2*d*x^4 + a^2*c*x + 1/3*(b^2*c + 2*a*b*d)*x^3 + 1/2*(2*a*b*
c + a^2*d)*x^2
```

Fricas [A] time = 0.175676, size = 1, normalized size = 0.03

$$\frac{1}{4}x^4db^2+\frac{1}{3}x^3cb^2+\frac{2}{3}x^3dba+x^2cba+\frac{1}{2}x^2da^2+xca^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*d*b^2 + 1/3*x^3*c*b^2 + 2/3*x^3*d*b*a + x^2*c*b*a + 1/2*x
^2*d*a^2 + x*c*a^2
```

Sympy [A] time = 0.096459, size = 49, normalized size = 1.29

$$a^2cx + \frac{b^2dx^4}{4} + x^3\left(\frac{2abd}{3} + \frac{b^2c}{3}\right) + x^2\left(\frac{a^2d}{2} + abc\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c),x)
```

```
[Out] a**2*c*x + b**2*d*x**4/4 + x**3*(2*a*b*d/3 + b**2*c/3) + x**2*(a*
*2*d/2 + a*b*c)
```

GIAC/XCAS [A] time = 0.219529, size = 66, normalized size = 1.74

$$\frac{1}{4}b^2dx^4 + \frac{1}{3}b^2cx^3 + \frac{2}{3}abdx^3 + abcx^2 + \frac{1}{2}a^2dx^2 + a^2cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c),x, algorithm="giac")
```

```
[Out] 1/4*b^2*d*x^4 + 1/3*b^2*c*x^3 + 2/3*a*b*d*x^3 + a*b*c*x^2 + 1/2*a
^2*d*x^2 + a^2*c*x
```

3.1239 $\int (a+bx)(c+dx)\,dx$

Optimal. Leaf size=28

$$\frac{1}{2}x^2(ad+bc)+acx+\frac{1}{3}bdx^3$$

```
[Out] a*c*x + ((b*c + a*d)*x^2)/2 + (b*d*x^3)/3
```

Rubi [A] time = 0.0369833, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091

$$\frac{1}{2}x^2(ad+bc)+acx+\frac{1}{3}bdx^3$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x),x]

[Out] a*c*x + ((b*c + a*d)*x^2)/2 + (b*d*x^3)/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{bdx^3}{3}+c\int a\,dx+(ad+bc)\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c),x)

[Out] b*d*x**3/3 + c*Integral(a, x) + (a*d + b*c)*Integral(x, x)
```

Mathematica [A] time = 0.00576673, size = 28, normalized size = 1.

$$\frac{1}{2}x^2(ad+bc)+acx+\frac{1}{3}bdx^3$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x),x]
```

```
[Out] a*c*x + ((b*c + a*d)*x^2)/2 + (b*d*x^3)/3
```

Maple [A] time = 0., size = 25, normalized size = 0.9

$$acx + \frac{(ad + bc)\,x^2}{2} + \frac{bdx^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(d*x+c),x)
```

```
[Out] a*c*x+1/2*(a*d+b*c)*x^2+1/3*b*d*x^3
```

Maxima [A] time = 1.35602, size = 32, normalized size = 1.14

$$\frac{1}{3}\,bdx^3 + acx + \frac{1}{2}\,(bc + ad)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/3*b*d*x^3 + a*c*x + 1/2*(b*c + a*d)*x^2
```

Fricas [A] time = 0.175859, size = 1, normalized size = 0.04

$$\frac{1}{3}x^3db + \frac{1}{2}x^2cb + \frac{1}{2}x^2da + xca$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)*(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/3*x^3*d*b + 1/2*x^2*c*b + 1/2*x^2*d*a + x*c*a
```

Sympy [A] time = 0.065288, size = 26, normalized size = 0.93

$$acx + \frac{bdx^3}{3} + x^2\left(\frac{ad}{2} + \frac{bc}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c),x)
```

```
[Out] a*c*x + b*d*x**3/3 + x**2*(a*d/2 + b*c/2)
```

GIAC/XCAS [A] time = 0.21851, size = 35, normalized size = 1.25

$$\frac{1}{3}\,bdx^3 + \frac{1}{2}\,bcx^2 + \frac{1}{2}\,adx^2 + acx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c),x, algorithm="giac")
```

```
[Out] 1/3*b*d*x^3 + 1/2*b*c*x^2 + 1/2*a*d*x^2 + a*c*x
```

3.1240 $\int (c + dx)\, dx$

Optimal. Leaf size=12

$$cx + \frac{dx^2}{2}$$

[Out] c*x + (d*x^2)/2

Rubi [A] time = 0.00747544, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$cx + \frac{dx^2}{2}$$

Antiderivative was successfully verified.

[In] Int[c + d*x,x]

[Out] c*x + (d*x^2)/2

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$d \int x\, dx + \int c\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(d*x+c,x)

[Out] d*Integral(x, x) + Integral(c, x)

Mathematica [A] time = 0.000056637, size = 12, normalized size = 1.

$$cx + \frac{dx^2}{2}$$

Antiderivative was successfully verified.

[In] Integrate[c + d*x,x]

```
[Out] c*x + (d*x^2)/2
```

Maple [A] time = 0., size = 11, normalized size = 0.9

$$cx + \frac{dx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(d*x+c,x)

[Out] c*x+1/2*d*x^2
```

Maxima [A] time = 1.34011, size = 14, normalized size = 1.17

$$\frac{1}{2}\,dx^2 + cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x + c,x, algorithm="maxima")

[Out] 1/2*d*x^2 + c*x
```

Fricas [A] time = 0.174211, size = 1, normalized size = 0.08

$$\frac{1}{2}x^2d + xc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x + c,x, algorithm="fricas")

[Out] 1/2*x^2*d + x*c
```

Sympy [A] time = 0.052889, size = 8, normalized size = 0.67

$$cx + \frac{dx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x+c,x)

[Out] c*x + d*x**2/2
```

GIAC/XCAS [A] time = 0.218852, size = 14, normalized size = 1.17

$$\frac{1}{2}\,dx^2 + cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x + c,x, algorithm="giac")

[Out] 1/2*d*x^2 + c*x
```

3.1241 $\int \frac{c+dx}{a+bx} dx$

Optimal. Leaf size=25

$$\frac{(bc-ad)\log(a+bx)}{b^2}+\frac{dx}{b}$$

```
[Out] (d*x)/b + ((b*c - a*d)*Log[a + b*x])/b^2
```

Rubi [A] time = 0.0407364, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{(bc-ad)\log(a+bx)}{b^2}+\frac{dx}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)/(a + b*x),x]
```

```
[Out] (d*x)/b + ((b*c - a*d)*Log[a + b*x])/b^2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int d\,dx}{b}-\frac{(ad-bc)\log(a+bx)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)/(b*x+a),x)
```

```
[Out] Integral(d, x)/b - (a*d - b*c)*log(a + b*x)/b**2
```

Mathematica [A] time = 0.0121552, size = 25, normalized size = 1.

$$\frac{(bc-ad)\log(a+bx)}{b^2}+\frac{dx}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)/(a + b*x),x]
```

```
[Out] (d*x)/b + ((b*c - a*d)*Log[a + b*x])/b^2
```

Maple [A] time = 0.004, size = 32, normalized size = 1.3

$$\frac{dx}{b}-\frac{a\ln(bx+a)\,d}{b^2}+\frac{c\ln(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(b*x+a),x)
```

```
[Out] d*x/b-1/b^2*ln(b*x+a)*a*d+c*ln(b*x+a)/b
```

Maxima [A] time = 1.34197, size = 34, normalized size = 1.36

$$\frac{dx}{b}+\frac{(bc-ad)\log(bx+a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)/(b*x + a),x, algorithm="maxima")
```

```
[Out] d*x/b + (b*c - a*d)*log(b*x + a)/b^2
```

Fricas [A] time = 0.196054, size = 32, normalized size = 1.28

$$\frac{bdx+(bc-ad)\log(bx+a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)/(b*x + a),x, algorithm="fricas")
```

```
[Out] (b*d*x + (b*c - a*d)*log(b*x + a))/b^2
```

Sympy [A] time = 1.13274, size = 20, normalized size = 0.8

$$\frac{dx}{b}-\frac{(ad-bc)\log(a+bx)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)/(b*x+a),x)
```

```
[Out] d*x/b - (a*d - b*c)*log(a + b*x)/b**2
```

GIAC/XCAS [A] time = 0.219165, size = 35, normalized size = 1.4

$$\frac{dx}{b} + \frac{(bc - ad)\ln(|bx + a|)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a),x, algorithm="giac")
```

```
[Out] d*x/b + (b*c - a*d)*ln(abs(b*x + a))/b^2
```

3.1242 $\int \frac{c+dx}{(a+bx)^2}\,dx$

Optimal. Leaf size=32

$$\frac{d\log(a+bx)}{b^2}-\frac{bc-ad}{b^2(a+bx)}$$

```
[Out] -((b*c - a*d)/(b^2*(a + b*x))) + (d*Log[a + b*x])/b^2
```

Rubi [A] time = 0.0463047, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{d\log(a+bx)}{b^2}-\frac{bc-ad}{b^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)/(a + b*x)^2,x]

[Out] -((b*c - a*d)/(b^2*(a + b*x))) + (d*Log[a + b*x])/b^2
```

Rubi in Sympy [A] time = 8.04372, size = 26, normalized size = 0.81

$$\frac{d\log\left(a+bx\right)}{b^2}+\frac{ad-bc}{b^2\left(a+bx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)/(b*x+a)**2,x)

[Out] d*log(a + b*x)/b**2 + (a*d - b*c)/(b**2*(a + b*x))
```

Mathematica [A] time = 0.0167105, size = 31, normalized size = 0.97

$$\frac{ad-bc}{b^2(a+bx)}+\frac{d\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)/(a + b*x)^2,x]
```

```
[Out] (-(b*c) + a*d)/(b^2*(a + b*x)) + (d*Log[a + b*x])/b^2
```

Maple [A] time = 0.008, size = 39, normalized size = 1.2

$$\frac{d\ln\left(bx+a\right)}{b^2}+\frac{ad}{\left(bx+a\right)b^2}-\frac{c}{\left(bx+a\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)/(b*x+a)^2,x)
```

```
[Out] d*ln(b*x+a)/b^2+1/(b*x+a)/b^2*a*d-1/(b*x+a)/b*c
```

Maxima [A] time = 1.38737, size = 47, normalized size = 1.47

$$-\frac{bc-ad}{b^3x+ab^2}+\frac{d\log\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -(b*c - a*d)/(b^3*x + a*b^2) + d*log(b*x + a)/b^2
```

Fricas [A] time = 0.195961, size = 53, normalized size = 1.66

$$-\frac{bc-ad-\left(bdx+ad\right)\log\left(bx+a\right)}{b^3x+ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] -(b*c - a*d - (b*d*x + a*d)*log(b*x + a))/(b^3*x + a*b^2)
```

Sympy [A] time = 1.30461, size = 27, normalized size = 0.84

$$\frac{ad-bc}{ab^2+b^3x}+\frac{d\log\left(a+bx\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)/(b*x+a)**2,x)
```

```
[Out] (a*d - b*c)/(a*b**2 + b**3*x) + d*log(a + b*x)/b**2
```

GIAC/XCAS [A] time = 0.218068, size = 77, normalized size = 2.41

$$-\frac{d\left(\frac{\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b}-\frac{a}{(bx+a)b}\right)}{b}-\frac{c}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] -d*(ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b - a/((b*x + a)*b))/b
- c/((b*x + a)*b)
```

3.1243 $\int \frac{c+dx}{(a+bx)^3}\,dx$

Optimal. Leaf size=28

$$-\frac{(c+dx)^2}{2(a+bx)^2(bc-ad)}$$

```
[Out] -(c + d*x)^2/(2*(b*c - a*d)*(a + b*x)^2)
```

Rubi [A] time = 0.019517, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$-\frac{(c+dx)^2}{2(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)/(a + b*x)^3,x]

[Out] -(c + d*x)^2/(2*(b*c - a*d)*(a + b*x)^2)
```

Rubi in Sympy [A] time = 3.4632, size = 20, normalized size = 0.71

$$\frac{(c+dx)^2}{2\,(a+bx)^2\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)/(b*x+a)**3,x)

[Out] (c + d*x)**2/(2*(a + b*x)**2*(a*d - b*c))
```

Mathematica [A] time = 0.0150629, size = 26, normalized size = 0.93

$$-\frac{ad+b(c+2dx)}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)/(a + b*x)^3,x]
```

```
[Out] -(a*d + b*(c + 2*d*x))/(2*b^2*(a + b*x)^2)
```

Maple [A] time = 0.007, size = 35, normalized size = 1.3

$$-\frac{-ad+bc}{2\,b^2\,(bx+a)^2}-\frac{d}{b^2\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)/(b*x+a)^3,x)
```

```
[Out] -1/2*(-a*d+b*c)/b^2/(b*x+a)^2-d/b^2/(b*x+a)
```

Maxima [A] time = 1.3463, size = 51, normalized size = 1.82

$$-\frac{2\,bdx+bc+ad}{2\,(b^4x^2+2\,ab^3x+a^2b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*d*x + b*c + a*d)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

Fricas [A] time = 0.196578, size = 51, normalized size = 1.82

$$-\frac{2\,bdx+bc+ad}{2\,(b^4x^2+2\,ab^3x+a^2b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*d*x + b*c + a*d)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

Sympy [A] time = 1.58441, size = 39, normalized size = 1.39

$$-\frac{ad+bc+2bdx}{2a^2b^2+4ab^3x+2b^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)/(b*x+a)**3,x)
```

```
[Out] -(a*d + b*c + 2*b*d*x)/(2*a**2*b**2 + 4*a*b**3*x + 2*b**4*x**2)
```

GIAC/XCAS [A] time = 0.215906, size = 32, normalized size = 1.14

$$-\frac{2\,bdx+bc+ad}{2\,(bx+a)^{2}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*d*x + b*c + a*d)/((b*x + a)^2*b^2)
```

3.1244 $\int \frac{c+dx}{(a+bx)^4}\,dx$

Optimal. Leaf size=38

$$-\frac{bc-ad}{3b^2(a+bx)^3}-\frac{d}{2b^2(a+bx)^2}$$

```
[Out] -(b*c - a*d)/(3*b^2*(a + b*x)^3) - d/(2*b^2*(a + b*x)^2)
```

Rubi [A] time = 0.0482038, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{bc-ad}{3b^2(a+bx)^3}-\frac{d}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)/(a + b*x)^4,x]

[Out] -(b*c - a*d)/(3*b^2*(a + b*x)^3) - d/(2*b^2*(a + b*x)^2)
```

Rubi in Sympy [A] time = 8.31886, size = 31, normalized size = 0.82

$$-\frac{d}{2b^2\left(a+bx\right)^2}+\frac{ad-bc}{3b^2\left(a+bx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)/(b*x+a)**4,x)

[Out] -d/(2*b**2*(a + b*x)**2) + (a*d - b*c)/(3*b**2*(a + b*x)**3)
```

Mathematica [A] time = 0.0135679, size = 27, normalized size = 0.71

$$-\frac{ad+2bc+3bdx}{6b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)/(a + b*x)^4,x]
```

```
[Out] -(2*b*c + a*d + 3*b*d*x)/(6*b^2*(a + b*x)^3)
```

Maple [A] time = 0.008, size = 35, normalized size = 0.9

$$-\frac{-ad+bc}{3\,b^2\,(bx+a)^3}-\frac{d}{2\,b^2\,(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)/(b*x+a)^4,x)
```

```
[Out] -1/3*(-a*d+b*c)/b^2/(b*x+a)^3-1/2*d/b^2/(b*x+a)^2
```

Maxima [A] time = 1.34477, size = 68, normalized size = 1.79

$$-\frac{3\,bdx+2\,bc+ad}{6\,(b^5x^3+3\,ab^4x^2+3\,a^2b^3x+a^3b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(3*b*d*x + 2*b*c + a*d)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x
 + a^3*b^2)
```

Fricas [A] time = 0.205423, size = 68, normalized size = 1.79

$$-\frac{3\,bdx+2\,bc+ad}{6\,(b^5x^3+3\,ab^4x^2+3\,a^2b^3x+a^3b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(3*b*d*x + 2*b*c + a*d)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x
 + a^3*b^2)
```

Sympy [A] time = 1.84827, size = 53, normalized size = 1.39

$$-\frac{ad+2bc+3bdx}{6a^3b^2+18a^2b^3x+18ab^4x^2+6b^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)/(b*x+a)**4,x)
```

```
[Out] -(a*d + 2*b*c + 3*b*d*x)/(6*a**3*b**2 + 18*a**2*b**3*x + 18*a*b**
4*x**2 + 6*b**5*x**3)
```

GIAC/XCAS [A] time = 0.216728, size = 34, normalized size = 0.89

$$-\frac{3\,bdx + 2\,bc + ad}{6\,(bx + a)^3 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -1/6*(3*b*d*x + 2*b*c + a*d)/((b*x + a)^3*b^2)
```

3.1245 $\int \frac{c+dx}{(a+bx)^5} \, dx$

Optimal. Leaf size=38

$$-\frac{bc-ad}{4b^2(a+bx)^4}-\frac{d}{3b^2(a+bx)^3}$$

```
[Out] -(b*c - a*d)/(4*b^2*(a + b*x)^4) - d/(3*b^2*(a + b*x)^3)
```

Rubi [A] time = 0.0480787, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$-\frac{bc-ad}{4b^2(a+bx)^4}-\frac{d}{3b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)/(a + b*x)^5,x]

[Out] -(b*c - a*d)/(4*b^2*(a + b*x)^4) - d/(3*b^2*(a + b*x)^3)
```

Rubi in Sympy [A] time = 8.54797, size = 31, normalized size = 0.82

$$-\frac{d}{3b^2\left(a+bx\right)^3}+\frac{ad-bc}{4b^2\left(a+bx\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)/(b*x+a)**5,x)

[Out] -d/(3*b**2*(a + b*x)**3) + (a*d - b*c)/(4*b**2*(a + b*x)**4)
```

Mathematica [A] time = 0.0149042, size = 27, normalized size = 0.71

$$-\frac{ad+3bc+4bdx}{12b^2(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)/(a + b*x)^5,x]
```

```
[Out] -(3*b*c + a*d + 4*b*d*x)/(12*b^2*(a + b*x)^4)
```

Maple [A] time = 0.009, size = 35, normalized size = 0.9

$$-\frac{-ad+bc}{4\,b^2\,(bx+a)^4}-\frac{d}{3\,b^2\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)/(b*x+a)^5,x)
```

```
[Out] -1/4*(-a*d+b*c)/b^2/(b*x+a)^4-1/3*d/b^2/(b*x+a)^3
```

Maxima [A] time = 1.34367, size = 82, normalized size = 2.16

$$-\frac{4\,bdx+3\,bc+ad}{12\,(b^6x^4+4\,ab^5x^3+6\,a^2b^4x^2+4\,a^3b^3x+a^4b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(4*b*d*x + 3*b*c + a*d)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*
x^2 + 4*a^3*b^3*x + a^4*b^2)
```

Fricas [A] time = 0.196378, size = 82, normalized size = 2.16

$$-\frac{4\,bdx+3\,bc+ad}{12\,(b^6x^4+4\,ab^5x^3+6\,a^2b^4x^2+4\,a^3b^3x+a^4b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(4*b*d*x + 3*b*c + a*d)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*
x^2 + 4*a^3*b^3*x + a^4*b^2)
```

Sympy [A] time = 2.22688, size = 65, normalized size = 1.71

$$-\frac{ad+3bc+4bdx}{12a^4b^2+48a^3b^3x+72a^2b^4x^2+48ab^5x^3+12b^6x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)/(b*x+a)**5,x)
```

```
[Out] -(a*d + 3*b*c + 4*b*d*x)/(12*a**4*b**2 + 48*a**3*b**3*x + 72*a**2
*b**4*x**2 + 48*a*b**5*x**3 + 12*b**6*x**4)
```

GIAC/XCAS [A] time = 0.216161, size = 55, normalized size = 1.45

$$-\frac{c}{4\,(bx+a)^4 b}-\frac{d}{3\,(bx+a)^3 b^2}+\frac{ad}{4\,(bx+a)^4 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] -1/4*c/((b*x + a)^4*b) - 1/3*d/((b*x + a)^3*b^2) + 1/4*a*d/((b*x
+ a)^4*b^2)
```

3.1246 $\int (a+bx)^4(c+dx)^2\,dx$

Optimal. Leaf size=65

$$\frac{d(a+bx)^6(bc-ad)}{3b^3}+\frac{(a+bx)^5(bc-ad)^2}{5b^3}+\frac{d^2(a+bx)^7}{7b^3}$$

```
[Out] ((b*c - a*d)^2*(a + b*x)^5)/(5*b^3) + (d*(b*c - a*d)*(a + b*x)^6)
/(3*b^3) + (d^2*(a + b*x)^7)/(7*b^3)
```

Rubi [A] time = 0.170197, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{d(a+bx)^6(bc-ad)}{3b^3}+\frac{(a+bx)^5(bc-ad)^2}{5b^3}+\frac{d^2(a+bx)^7}{7b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x)^2,x]
```

```
[Out] ((b*c - a*d)^2*(a + b*x)^5)/(5*b^3) + (d*(b*c - a*d)*(a + b*x)^6)
/(3*b^3) + (d^2*(a + b*x)^7)/(7*b^3)
```

Rubi in Sympy [A] time = 22.9038, size = 54, normalized size = 0.83

$$\frac{d^2\left(a+bx\right)^7}{7b^3}-\frac{d\left(a+bx\right)^6\left(ad-bc\right)}{3b^3}+\frac{\left(a+bx\right)^5\left(ad-bc\right)^2}{5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**2,x)
```

```
[Out] d**2*(a + b*x)**7/(7*b**3) - d*(a + b*x)**6*(a*d - b*c)/(3*b**3)
+ (a + b*x)**5*(a*d - b*c)**2/(5*b**3)
```

Mathematica [B] time = 0.0396075, size = 148, normalized size = 2.28

$$a^4c^2x+a^3cx^2(ad+2bc)+\frac{1}{5}b^2x^5\left(6a^2d^2+8abcd+b^2c^2\right)+abx^4\left(a^2d^2+3abcd+b^2c^2\right)$$
$$+\frac{1}{3}a^2x^3\left(a^2d^2+8abcd+6b^2c^2\right)+\frac{1}{3}b^3dx^6(2ad+bc)+\frac{1}{7}b^4d^2x^7$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x)^2,x]
```

```
[Out] a^4*c^2*x + a^3*c*(2*b*c + a*d)*x^2 + (a^2*(6*b^2*c^2 + 8*a*b*c*d
 + a^2*d^2)*x^3)/3 + a*b*(b^2*c^2 + 3*a*b*c*d + a^2*d^2)*x^4 + (b
^2*(b^2*c^2 + 8*a*b*c*d + 6*a^2*d^2)*x^5)/5 + (b^3*d*(b*c + 2*a*d
)*x^6)/3 + (b^4*d^2*x^7)/7
```

Maple [B] time = 0.002, size = 163, normalized size = 2.5

$$\frac{b^4d^2x^7}{7}+\frac{\left(4\,ab^3d^2+2\,b^4cd\right)x^6}{6}+\frac{\left(6\,a^2b^2d^2+8\,ab^3cd+b^4c^2\right)x^5}{5}+\frac{\left(4\,a^3bd^2+12\,a^2b^2cd+4\,ab^3c^2\right)x^4}{4}+\frac{\left(a^4d^2+8\,a^3bcd+6\,a^2b^2c^2\right)x^3}{3}+\frac{\left(2\,a^4cd+4\,a^3bc^2\right)x^2}{2}+a^4c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c)^2,x)
```

```
[Out] 1/7*b^4*d^2*x^7+1/6*(4*a*b^3*d^2+2*b^4*c*d)*x^6+1/5*(6*a^2*b^2*d^
2+8*a*b^3*c*d+b^4*c^2)*x^5+1/4*(4*a^3*b*d^2+12*a^2*b^2*c*d+4*a*b^
3*c^2)*x^4+1/3*(a^4*d^2+8*a^3*b*c*d+6*a^2*b^2*c^2)*x^3+1/2*(2*a^4
*c*d+4*a^3*b*c^2)*x^2+a^4*c^2*x
```

Maxima [A] time = 1.33093, size = 211, normalized size = 3.25

$$\frac{1}{7}\,b^4d^2x^7+a^4c^2x+\frac{1}{3}\left(b^4cd+2\,ab^3d^2\right)x^6+\frac{1}{5}\left(b^4c^2+8\,ab^3cd+6\,a^2b^2d^2\right)x^5+\left(ab^3c^2+3\,a^2b^2cd+a^3bd^2\right)x^4+\frac{1}{3}\left(6\,a^2b^2c^2+8\,a^3bcd+a^4d^2\right)x^3+\left(2\,a^3bc^2+a^4cd\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] 1/7*b^4*d^2*x^7 + a^4*c^2*x + 1/3*(b^4*c*d + 2*a*b^3*d^2)*x^6 + 1
/5*(b^4*c^2 + 8*a*b^3*c*d + 6*a^2*b^2*d^2)*x^5 + (a*b^3*c^2 + 3*a
^2*b^2*c*d + a^3*b*d^2)*x^4 + 1/3*(6*a^2*b^2*c^2 + 8*a^3*b*c*d +
a^4*d^2)*x^3 + (2*a^3*b*c^2 + a^4*c*d)*x^2
```

Fricas [A] time = 0.180637, size = 1, normalized size = 0.02

$$\frac{1}{7}x^7d^2b^4 + \frac{1}{3}x^6dcb^4 + \frac{2}{3}x^6d^2b^3a + \frac{1}{5}x^5c^2b^4 + \frac{8}{5}x^5dcb^3a + \frac{6}{5}x^5d^2b^2a^2 + x^4c^2b^3a + 3x^4dcb^2a^2 + x^4d^2ba^3 + 2x^3c^2b^2a^2 + \frac{8}{3}x^3dcba^3 + \frac{1}{3}x^3d^2a^4 + 2x^2c^2ba^3 + x^2dca^4 + xc^2a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*d^2*b^4 + 1/3*x^6*d*c*b^4 + 2/3*x^6*d^2*b^3*a + 1/5*x^5*c
^2*b^4 + 8/5*x^5*d*c*b^3*a + 6/5*x^5*d^2*b^2*a^2 + x^4*c^2*b^3*a
+ 3*x^4*d*c*b^2*a^2 + x^4*d^2*b*a^3 + 2*x^3*c^2*b^2*a^2 + 8/3*x^3
*d*c*b*a^3 + 1/3*x^3*d^2*a^4 + 2*x^2*c^2*b*a^3 + x^2*d*c*a^4 + x*
c^2*a^4
```

Sympy [A] time = 0.174155, size = 168, normalized size = 2.58

$$a^4c^2x + \frac{b^4d^2x^7}{7} + x^6\left(\frac{2ab^3d^2}{3} + \frac{b^4cd}{3}\right) + x^5\left(\frac{6a^2b^2d^2}{5} + \frac{8ab^3cd}{5} + \frac{b^4c^2}{5}\right) + x^4\left(a^3bd^2 + 3a^2b^2cd + ab^3c^2\right) + x^3\left(\frac{a^4d^2}{3} + \frac{8a^3bcd}{3} + 2a^2b^2c^2\right) + x^2\left(a^4cd + 2a^3bc^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**2,x)
```

```
[Out] a**4*c**2*x + b**4*d**2*x**7/7 + x**6*(2*a*b**3*d**2/3 + b**4*c*d
/3) + x**5*(6*a**2*b**2*d**2/5 + 8*a*b**3*c*d/5 + b**4*c**2/5) +
x**4*(a**3*b*d**2 + 3*a**2*b**2*c*d + a*b**3*c**2) + x**3*(a**4*d
**2/3 + 8*a**3*b*c*d/3 + 2*a**2*b**2*c**2) + x**2*(a**4*c*d + 2*a
**3*b*c**2)
```

GIAC/XCAS [A] time = 0.216144, size = 230, normalized size = 3.54

$$\frac{1}{7}\,b^4d^2x^7 + \frac{1}{3}\,b^4cdx^6 + \frac{2}{3}\,ab^3d^2x^6 + \frac{1}{5}\,b^4c^2x^5 + \frac{8}{5}\,ab^3cdx^5 + \frac{6}{5}\,a^2b^2d^2x^5 + ab^3c^2x^4 + 3\,a^2b^2cdx^4 + a^3bd^2x^4 + 2\,a^2b^2c^2x^3 + \frac{8}{3}\,a^3bcdx^3 + \frac{1}{3}\,a^4d^2x^3 + 2\,a^3bc^2x^2 + a^4cdx^2 + a^4c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/7*b^4*d^2*x^7 + 1/3*b^4*c*d*x^6 + 2/3*a*b^3*d^2*x^6 + 1/5*b^4*c
^2*x^5 + 8/5*a*b^3*c*d*x^5 + 6/5*a^2*b^2*d^2*x^5 + a*b^3*c^2*x^4
+ 3*a^2*b^2*c*d*x^4 + a^3*b*d^2*x^4 + 2*a^2*b^2*c^2*x^3 + 8/3*a^3
*b*c*d*x^3 + 1/3*a^4*d^2*x^3 + 2*a^3*b*c^2*x^2 + a^4*c*d*x^2 + a^
4*c^2*x
```

3.1247 $\int (a+bx)^3(c+dx)^2\,dx$

Optimal. Leaf size=65

$$\frac{2d(a+bx)^5(bc-ad)}{5b^3}+\frac{(a+bx)^4(bc-ad)^2}{4b^3}+\frac{d^2(a+bx)^6}{6b^3}$$

```
[Out] ((b*c - a*d)^2*(a + b*x)^4)/(4*b^3) + (2*d*(b*c - a*d)*(a + b*x)^
5)/(5*b^3) + (d^2*(a + b*x)^6)/(6*b^3)
```

Rubi [A] time = 0.139477, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2d(a+bx)^5(bc-ad)}{5b^3}+\frac{(a+bx)^4(bc-ad)^2}{4b^3}+\frac{d^2(a+bx)^6}{6b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^2,x]
```

```
[Out] ((b*c - a*d)^2*(a + b*x)^4)/(4*b^3) + (2*d*(b*c - a*d)*(a + b*x)^
5)/(5*b^3) + (d^2*(a + b*x)^6)/(6*b^3)
```

Rubi in Sympy [A] time = 19.7189, size = 56, normalized size = 0.86

$$\frac{d^2\left(a+bx\right)^6}{6b^3}-\frac{2d\left(a+bx\right)^5\left(ad-bc\right)}{5b^3}+\frac{\left(a+bx\right)^4\left(ad-bc\right)^2}{4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**2,x)
```

```
[Out] d**2*(a + b*x)**6/(6*b**3) - 2*d*(a + b*x)**5*(a*d - b*c)/(5*b**3
) + (a + b*x)**4*(a*d - b*c)**2/(4*b**3)
```

Mathematica [A] time = 0.0274062, size = 122, normalized size = 1.88

$$a^3c^2x+\frac{1}{4}bx^4\left(3a^2d^2+6abcd+b^2c^2\right)+\frac{1}{3}ax^3\left(a^2d^2+6abcd+3b^2c^2\right)\\+\frac{1}{2}a^2cx^2(2ad+3bc)+\frac{1}{5}b^2dx^5(3ad+2bc)+\frac{1}{6}b^3d^2x^6$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^2,x]
```

```
[Out] a^3*c^2*x + (a^2*c*(3*b*c + 2*a*d)*x^2)/2 + (a*(3*b^2*c^2 + 6*a*b
*c*d + a^2*d^2)*x^3)/3 + (b*(b^2*c^2 + 6*a*b*c*d + 3*a^2*d^2)*x^4
)/4 + (b^2*d*(2*b*c + 3*a*d)*x^5)/5 + (b^3*d^2*x^6)/6
```

Maple [B] time = 0.002, size = 125, normalized size = 1.9

$$\frac{b^3d^2x^6}{6}+\frac{\left(3\,ab^2d^2+2\,b^3cd\right)x^5}{5}+\frac{\left(3\,a^2bd^2+6\,ab^2cd+b^3c^2\right)x^4}{4}+\frac{\left(a^3d^2+6\,a^2bcd+3\,ab^2c^2\right)x^3}{3}+\frac{\left(2\,a^3cd+3\,a^2bc^2\right)x^2}{2}+a^3c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^2,x)
```

```
[Out] 1/6*b^3*d^2*x^6+1/5*(3*a*b^2*d^2+2*b^3*c*d)*x^5+1/4*(3*a^2*b*d^2+
6*a*b^2*c*d+b^3*c^2)*x^4+1/3*(a^3*d^2+6*a^2*b*c*d+3*a*b^2*c^2)*x^
3+1/2*(2*a^3*c*d+3*a^2*b*c^2)*x^2+a^3*c^2*x
```

Maxima [A] time = 1.35051, size = 167, normalized size = 2.57

$$\frac{1}{6}\,b^3d^2x^6+a^3c^2x+\frac{1}{5}\left(2\,b^3cd+3\,ab^2d^2\right)x^5+\frac{1}{4}\left(b^3c^2+6\,ab^2cd+3\,a^2bd^2\right)x^4+\frac{1}{3}\left(3\,ab^2c^2+6\,a^2bcd+a^3d^2\right)x^3+\frac{1}{2}\left(3\,a^2bc^2+2\,a^3cd\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] 1/6*b^3*d^2*x^6 + a^3*c^2*x + 1/5*(2*b^3*c*d + 3*a*b^2*d^2)*x^5 +
 1/4*(b^3*c^2 + 6*a*b^2*c*d + 3*a^2*b*d^2)*x^4 + 1/3*(3*a*b^2*c^2
 + 6*a^2*b*c*d + a^3*d^2)*x^3 + 1/2*(3*a^2*b*c^2 + 2*a^3*c*d)*x^2
```

Fricas [A] time = 0.179296, size = 1, normalized size = 0.02

$$\frac{1}{6}x^6d^2b^3+\frac{2}{5}x^5dcb^3+\frac{3}{5}x^5d^2b^2a+\frac{1}{4}x^4c^2b^3+\frac{3}{2}x^4dcb^2a+\frac{3}{4}x^4d^2ba^2+x^3c^2b^2a+2x^3dcba^2+\frac{1}{3}x^3d^2a^3+\frac{3}{2}x^2c^2ba^2+x^2dca^3+xc^2a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*d^2*b^3 + 2/5*x^5*d*c*b^3 + 3/5*x^5*d^2*b^2*a + 1/4*x^4*c
^2*b^3 + 3/2*x^4*d*c*b^2*a + 3/4*x^4*d^2*b*a^2 + x^3*c^2*b^2*a +
2*x^3*d*c*b*a^2 + 1/3*x^3*d^2*a^3 + 3/2*x^2*c^2*b*a^2 + x^2*d*c*a
^3 + x*c^2*a^3
```

Sympy [A] time = 0.157803, size = 133, normalized size = 2.05

$$a^3c^2x + \frac{b^3d^2x^6}{6} + x^5\left(\frac{3ab^2d^2}{5} + \frac{2b^3cd}{5}\right) + x^4\left(\frac{3a^2bd^2}{4} + \frac{3ab^2cd}{2} + \frac{b^3c^2}{4}\right) + x^3\left(\frac{a^3d^2}{3} + 2a^2bcd + ab^2c^2\right) + x^2\left(a^3cd + \frac{3a^2bc^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**2,x)
```

```
[Out] a**3*c**2*x + b**3*d**2*x**6/6 + x**5*(3*a*b**2*d**2/5 + 2*b**3*c
*d/5) + x**4*(3*a**2*b*d**2/4 + 3*a*b**2*c*d/2 + b**3*c**2/4) + x
**3*(a**3*d**2/3 + 2*a**2*b*c*d + a*b**2*c**2) + x**2*(a**3*c*d +
 3*a**2*b*c**2/2)
```

GIAC/XCAS [A] time = 0.215007, size = 176, normalized size = 2.71

$$\frac{1}{6}b^3d^2x^6 + \frac{2}{5}b^3cdx^5 + \frac{3}{5}ab^2d^2x^5 + \frac{1}{4}b^3c^2x^4 + \frac{3}{2}ab^2cdx^4 + \frac{3}{4}a^2bd^2x^4 + ab^2c^2x^3 + 2a^2bcdx^3 + \frac{1}{3}a^3d^2x^3 + \frac{3}{2}a^2bc^2x^2 + a^3cdx^2 + a^3c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/6*b^3*d^2*x^6 + 2/5*b^3*c*d*x^5 + 3/5*a*b^2*d^2*x^5 + 1/4*b^3*c
^2*x^4 + 3/2*a*b^2*c*d*x^4 + 3/4*a^2*b*d^2*x^4 + a*b^2*c^2*x^3 +
2*a^2*b*c*d*x^3 + 1/3*a^3*d^2*x^3 + 3/2*a^2*b*c^2*x^2 + a^3*c*d*x
^2 + a^3*c^2*x
```

3.1248 $\int (a+bx)^2(c+dx)^2\,dx$

Optimal. Leaf size=65

$$\frac{d(a+bx)^4(bc-ad)}{2b^3}+\frac{(a+bx)^3(bc-ad)^2}{3b^3}+\frac{d^2(a+bx)^5}{5b^3}$$

```
[Out] ((b*c - a*d)^2*(a + b*x)^3)/(3*b^3) + (d*(b*c - a*d)*(a + b*x)^4)
/(2*b^3) + (d^2*(a + b*x)^5)/(5*b^3)
```

Rubi [A] time = 0.105204, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{d(a+bx)^4(bc-ad)}{2b^3}+\frac{(a+bx)^3(bc-ad)^2}{3b^3}+\frac{d^2(a+bx)^5}{5b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^2,x]
```

```
[Out] ((b*c - a*d)^2*(a + b*x)^3)/(3*b^3) + (d*(b*c - a*d)*(a + b*x)^4)
/(2*b^3) + (d^2*(a + b*x)^5)/(5*b^3)
```

Rubi in Sympy [A] time = 17.8437, size = 54, normalized size = 0.83

$$\frac{d^2\left(a+bx\right)^5}{5b^3}-\frac{d\left(a+bx\right)^4\left(ad-bc\right)}{2b^3}+\frac{\left(a+bx\right)^3\left(ad-bc\right)^2}{3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**2,x)
```

```
[Out] d**2*(a + b*x)**5/(5*b**3) - d*(a + b*x)**4*(a*d - b*c)/(2*b**3)
+ (a + b*x)**3*(a*d - b*c)**2/(3*b**3)
```

Mathematica [A] time = 0.017857, size = 79, normalized size = 1.22

$$\frac{1}{3}x^3\left(a^2d^2+4abcd+b^2c^2\right)+a^2c^2x+\frac{1}{2}bdx^4(ad+bc)+acx^2(ad+bc)+\frac{1}{5}b^2d^2x^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^2,x]
```

```
[Out] a^2*c^2*x + a*c*(b*c + a*d)*x^2 + ((b^2*c^2 + 4*a*b*c*d + a^2*d^2
)*x^3)/3 + (b*d*(b*c + a*d)*x^4)/2 + (b^2*d^2*x^5)/5
```

Maple [A] time = 0., size = 87, normalized size = 1.3

$$\frac{b^2d^2x^5}{5}+\frac{\left(2\,abd^2+2\,b^2cd\right)x^4}{4}+\frac{\left(a^2d^2+4\,abcd+b^2c^2\right)x^3}{3}+\frac{\left(2\,a^2cd+2\,abc^2\right)x^2}{2}+a^2c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^2,x)
```

```
[Out] 1/5*b^2*d^2*x^5+1/4*(2*a*b*d^2+2*b^2*c*d)*x^4+1/3*(a^2*d^2+4*a*b*
c*d+b^2*c^2)*x^3+1/2*(2*a^2*c*d+2*a*b*c^2)*x^2+a^2*c^2*x
```

Maxima [A] time = 1.33197, size = 109, normalized size = 1.68

$$\frac{1}{5}\,b^2d^2x^5+a^2c^2x+\frac{1}{2}\left(b^2cd+abd^2\right)x^4+\frac{1}{3}\left(b^2c^2+4\,abcd+a^2d^2\right)x^3+\left(abc^2+a^2cd\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] 1/5*b^2*d^2*x^5 + a^2*c^2*x + 1/2*(b^2*c*d + a*b*d^2)*x^4 + 1/3*(
b^2*c^2 + 4*a*b*c*d + a^2*d^2)*x^3 + (a*b*c^2 + a^2*c*d)*x^2
```

Fricas [A] time = 0.178271, size = 1, normalized size = 0.02

$$\frac{1}{5}x^5d^2b^2+\frac{1}{2}x^4dcb^2+\frac{1}{2}x^4d^2ba+\frac{1}{3}x^3c^2b^2+\frac{4}{3}x^3dcba+\frac{1}{3}x^3d^2a^2+x^2c^2ba+x^2dca^2+xc^2a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/5*x^5*d^2*b^2 + 1/2*x^4*d*c*b^2 + 1/2*x^4*d^2*b*a + 1/3*x^3*c^2
*b^2 + 4/3*x^3*d*c*b*a + 1/3*x^3*d^2*a^2 + x^2*c^2*b*a + x^2*d*c*
a^2 + x*c^2*a^2
```

Sympy [A] time = 0.154673, size = 87, normalized size = 1.34

$$a^2c^2x + \frac{b^2d^2x^5}{5} + x^4\left(\frac{abd^2}{2} + \frac{b^2cd}{2}\right) + x^3\left(\frac{a^2d^2}{3} + \frac{4abcd}{3} + \frac{b^2c^2}{3}\right) + x^2\left(a^2cd + abc^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**2,x)
```

```
[Out] a**2*c**2*x + b**2*d**2*x**5/5 + x**4*(a*b*d**2/2 + b**2*c*d/2) +
 x**3*(a**2*d**2/3 + 4*a*b*c*d/3 + b**2*c**2/3) + x**2*(a**2*c*d
+ a*b*c**2)
```

GIAC/XCAS [A] time = 0.222626, size = 120, normalized size = 1.85

$$\frac{1}{5}b^2d^2x^5 + \frac{1}{2}b^2cdx^4 + \frac{1}{2}abd^2x^4 + \frac{1}{3}b^2c^2x^3 + \frac{4}{3}abcdx^3 + \frac{1}{3}a^2d^2x^3 + abc^2x^2 + a^2cdx^2 + a^2c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/5*b^2*d^2*x^5 + 1/2*b^2*c*d*x^4 + 1/2*a*b*d^2*x^4 + 1/3*b^2*c^2
*x^3 + 4/3*a*b*c*d*x^3 + 1/3*a^2*d^2*x^3 + a*b*c^2*x^2 + a^2*c*d*
x^2 + a^2*c^2*x
```

3.1249 $\int (a+bx)(c+dx)^2\,dx$

Optimal. Leaf size=38

$$\frac{b(c+dx)^4}{4d^2}-\frac{(c+dx)^3(bc-ad)}{3d^2}$$

```
[Out] -((b*c - a*d)*(c + d*x)^3)/(3*d^2) + (b*(c + d*x)^4)/(4*d^2)
```

Rubi [A] time = 0.0646625, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{b(c+dx)^4}{4d^2}-\frac{(c+dx)^3(bc-ad)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^2,x]

[Out] -((b*c - a*d)*(c + d*x)^3)/(3*d^2) + (b*(c + d*x)^4)/(4*d^2)
```

Rubi in Sympy [A] time = 9.38052, size = 31, normalized size = 0.82

$$\frac{b\left(c+dx\right)^4}{4d^2}+\frac{\left(c+dx\right)^3\left(ad-bc\right)}{3d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**2,x)

[Out] b*(c + d*x)**4/(4*d**2) + (c + d*x)**3*(a*d - b*c)/(3*d**2)
```

Mathematica [A] time = 0.0157489, size = 47, normalized size = 1.24

$$\frac{1}{12}x\left(4dx^2(ad+2bc)+6cx(2ad+bc)+12ac^2+3bd^2x^3\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^2,x]
```

```
[Out] (x*(12*a*c^2 + 6*c*(b*c + 2*a*d)*x + 4*d*(2*b*c + a*d)*x^2 + 3*b*
d^2*x^3))/12
```

Maple [A] time = 0., size = 49, normalized size = 1.3

$$\frac{bd^2x^4}{4} + \frac{\left(ad^2 + 2\,bcd\right)x^3}{3} + \frac{\left(2\,acd + bc^2\right)x^2}{2} + ac^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^2,x)
```

```
[Out] 1/4*b*d^2*x^4+1/3*(a*d^2+2*b*c*d)*x^3+1/2*(2*a*c*d+b*c^2)*x^2+a*c
^2*x
```

Maxima [A] time = 1.37426, size = 65, normalized size = 1.71

$$\frac{1}{4}\,bd^2x^4 + ac^2x + \frac{1}{3}\left(2\,bcd + ad^2\right)x^3 + \frac{1}{2}\left(bc^2 + 2\,acd\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] 1/4*b*d^2*x^4 + a*c^2*x + 1/3*(2*b*c*d + a*d^2)*x^3 + 1/2*(b*c^2
+ 2*a*c*d)*x^2
```

Fricas [A] time = 0.179914, size = 1, normalized size = 0.03

$$\frac{1}{4}x^4d^2b + \frac{2}{3}x^3dcb + \frac{1}{3}x^3d^2a + \frac{1}{2}x^2c^2b + x^2dca + xc^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/4*x^4*d^2*b + 2/3*x^3*d*c*b + 1/3*x^3*d^2*a + 1/2*x^2*c^2*b + x
^2*d*c*a + x*c^2*a
```

Sympy [A] time = 0.09534, size = 49, normalized size = 1.29

$$ac^2x + \frac{bd^2x^4}{4} + x^3\left(\frac{ad^2}{3} + \frac{2bcd}{3}\right) + x^2\left(acd + \frac{bc^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**2,x)
```

```
[Out] a*c**2*x + b*d**2*x**4/4 + x**3*(a*d**2/3 + 2*b*c*d/3) + x**2*(a*
c*d + b*c**2/2)
```

GIAC/XCAS [A] time = 0.218163, size = 66, normalized size = 1.74

$$\frac{1}{4}bd^2x^4 + \frac{2}{3}bcdx^3 + \frac{1}{3}ad^2x^3 + \frac{1}{2}bc^2x^2 + acdx^2 + ac^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/4*b*d^2*x^4 + 2/3*b*c*d*x^3 + 1/3*a*d^2*x^3 + 1/2*b*c^2*x^2 + a
*c*d*x^2 + a*c^2*x
```

3.1250 $\int (c+dx)^2 \, dx$

Optimal. Leaf size=14

$$\frac{(c+dx)^3}{3d}$$

```
[Out] (c + d*x)^3/(3*d)
```

Rubi [A] time = 0.0071257, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(c+dx)^3}{3d}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^2,x]
```

```
[Out] (c + d*x)^3/(3*d)
```

Rubi in Sympy [A] time = 1.2854, size = 8, normalized size = 0.57

$$\frac{(c+dx)^3}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**2,x)
```

```
[Out] (c + d*x)**3/(3*d)
```

Mathematica [A] time = 0.00186038, size = 14, normalized size = 1.

$$\frac{(c+dx)^3}{3d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^2,x]
```

```
[Out] (c + d*x)^3/(3*d)
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$\frac{(dx+c)^3}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^2,x)
```

```
[Out] 1/3*(d*x+c)^3/d
```

Maxima [A] time = 1.33643, size = 27, normalized size = 1.93

$$\frac{1}{3}\,d^2x^3+cdx^2+c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^2,x, algorithm="maxima")
```

```
[Out] 1/3*d^2*x^3 + c*d*x^2 + c^2*x
```

Fricas [A] time = 0.17405, size = 1, normalized size = 0.07

$$\frac{1}{3}x^3d^2+x^2dc+xc^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/3*x^3*d^2 + x^2*d*c + x*c^2
```

Sympy [A] time = 0.073741, size = 19, normalized size = 1.36

$$c^2x+cdx^2+\frac{d^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2,x)
```

```
[Out] c**2*x + c*d*x**2 + d**2*x**3/3
```

GIAC/XCAS [A] time = 0.2195, size = 16, normalized size = 1.14

$$\frac{(dx+c)^3}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/3*(d*x + c)^3/d
```

3.1251 $\int \frac{(c+dx)^2}{a+bx}\,dx$

Optimal. Leaf size=49

$$\frac{(bc-ad)^2\log(a+bx)}{b^3}+\frac{dx(bc-ad)}{b^2}+\frac{(c+dx)^2}{2b}$$

```
[Out] (d*(b*c - a*d)*x)/b^2 + (c + d*x)^2/(2*b) + ((b*c - a*d)^2*Log[a
+ b*x])/b^3
```

Rubi [A] time = 0.0489942, antiderivative size = 49, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^2\log(a+bx)}{b^3}+\frac{dx(bc-ad)}{b^2}+\frac{(c+dx)^2}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x),x]
```

```
[Out] (d*(b*c - a*d)*x)/b^2 + (c + d*x)^2/(2*b) + ((b*c - a*d)^2*Log[a
+ b*x])/b^3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(c+dx)^2}{2b}-\frac{(ad-bc)\int d\,dx}{b^2}+\frac{(ad-bc)^2\log(a+bx)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a),x)
```

```
[Out] (c + d*x)**2/(2*b) - (a*d - b*c)*Integral(d, x)/b**2 + (a*d - b*c
)**2*log(a + b*x)/b**3
```

Mathematica [A] time = 0.0269893, size = 43, normalized size = 0.88

$$\frac{bdx(-2ad+4bc+bdx)+2(bc-ad)^2\log(a+bx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x),x]
```

```
[Out] (b*d*x*(4*b*c - 2*a*d + b*d*x) + 2*(b*c - a*d)^2*Log[a + b*x])/(2
*b^3)
```

Maple [A] time = 0.005, size = 74, normalized size = 1.5

$$\frac{d^2x^2}{2\,b}-\frac{ad^2x}{b^2}+2\,\frac{dxc}{b}+\frac{a^2\ln\left(bx+a\right)d^2}{b^3}-2\,\frac{a\ln\left(bx+a\right)cd}{b^2}+\frac{\ln\left(bx+a\right)c^2}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a),x)
```

```
[Out] 1/2*d^2/b*x^2-d^2/b^2*a*x+2*d/b*x*c+1/b^3*ln(b*x+a)*a^2*d^2-2/b^2
*ln(b*x+a)*a*c*d+1/b*ln(b*x+a)*c^2
```

Maxima [A] time = 1.35723, size = 82, normalized size = 1.67

$$\frac{bd^2x^2+2\left(2\,bcd-ad^2\right)x}{2\,b^2}+\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\log\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2*(b*d^2*x^2 + 2*(2*b*c*d - a*d^2)*x)/b^2 + (b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*log(b*x + a)/b^3
```

Fricas [A] time = 0.198662, size = 85, normalized size = 1.73

$$\frac{b^2d^2x^2+2\left(2\,b^2cd-abd^2\right)x+2\left(b^2c^2-2\,abcd+a^2d^2\right)\log\left(bx+a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*d^2*x^2 + 2*(2*b^2*c*d - a*b*d^2)*x + 2*(b^2*c^2 - 2*a*b
*c*d + a^2*d^2)*log(b*x + a))/b^3
```

Sympy [A] time = 1.48758, size = 44, normalized size = 0.9

$$\frac{d^2x^2}{2b} - \frac{x\left(ad^2 - 2bcd\right)}{b^2} + \frac{(ad - bc)^2 \log\left(a + bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a),x)
```

```
[Out] d**2*x**2/(2*b) - x*(a*d**2 - 2*b*c*d)/b**2 + (a*d - b*c)**2*log(
a + b*x)/b**3
```

GIAC/XCAS [A] time = 0.223692, size = 81, normalized size = 1.65

$$\frac{bd^2x^2 + 4\,bcdx - 2\,ad^2x}{2\,b^2} + \frac{\left(b^2c^2 - 2\,abcd + a^2d^2\right)\ln\left(|bx + a|\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a),x, algorithm="giac")
```

```
[Out] 1/2*(b*d^2*x^2 + 4*b*c*d*x - 2*a*d^2*x)/b^2 + (b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*ln(abs(b*x + a))/b^3
```

3.1252 $\int \frac{(c+dx)^2}{(a+bx)^2} \, dx$

Optimal. Leaf size=51

$$-\frac{(bc-ad)^2}{b^3(a+bx)}+\frac{2d(bc-ad)\log(a+bx)}{b^3}+\frac{d^2x}{b^2}$$

```
[Out] (d^2*x)/b^2 - (b*c - a*d)^2/(b^3*(a + b*x)) + (2*d*(b*c - a*d)*Lo
g[a + b*x])/b^3
```

Rubi [A] time = 0.0763172, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(bc-ad)^2}{b^3(a+bx)}+\frac{2d(bc-ad)\log(a+bx)}{b^3}+\frac{d^2x}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x)^2,x]
```

```
[Out] (d^2*x)/b^2 - (b*c - a*d)^2/(b^3*(a + b*x)) + (2*d*(b*c - a*d)*Lo
g[a + b*x])/b^3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$d^2\int\frac{1}{b^2}\,dx-\frac{2d\,(ad-bc)\log\left(a+bx\right)}{b^3}-\frac{(ad-bc)^2}{b^3\left(a+bx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a)**2,x)
```

```
[Out] d**2*Integral(b**(-2), x) - 2*d*(a*d - b*c)*log(a + b*x)/b**3 - (
a*d - b*c)**2/(b**3*(a + b*x))
```

Mathematica [A] time = 0.0583607, size = 47, normalized size = 0.92

$$\frac{-\frac{(bc-ad)^2}{a+bx}+2d(bc-ad)\log(a+bx)+bd^2x}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x)^2,x]
```

```
[Out] (b*d^2*x - (b*c - a*d)^2/(a + b*x) + 2*d*(b*c - a*d)*Log[a + b*x]
)/b^3
```

Maple [A] time = 0.01, size = 86, normalized size = 1.7

$$\frac{d^2x}{b^2} - 2\frac{d^2 \ln(bx+a)a}{b^3} + 2\frac{d\ln(bx+a)c}{b^2} - \frac{a^2d^2}{(bx+a)b^3} + 2\frac{acd}{(bx+a)b^2} - \frac{c^2}{(bx+a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a)^2,x)
```

```
[Out] d^2*x/b^2-2/b^3*d^2*ln(b*x+a)*a+2/b^2*d*ln(b*x+a)*c-1/(b*x+a)/b^3
*a^2*d^2+2/(b*x+a)/b^2*a*c*d-1/(b*x+a)/b*c^2
```

Maxima [A] time = 1.34132, size = 90, normalized size = 1.76

$$\frac{d^2x}{b^2} - \frac{b^2c^2 - 2\,abcd + a^2d^2}{b^4x + ab^3} + \frac{2\left(bcd - ad^2\right)\log(bx+a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] d^2*x/b^2 - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(b^4*x + a*b^3) + 2*(
b*c*d - a*d^2)*log(b*x + a)/b^3
```

Fricas [A] time = 0.195854, size = 124, normalized size = 2.43

$$\frac{b^2d^2x^2 + abd^2x - b^2c^2 + 2\,abcd - a^2d^2 + 2\left(abcd - a^2d^2 + \left(b^2cd - abd^2\right)x\right)\log(bx+a)}{b^4x + ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] (b^2*d^2*x^2 + a*b*d^2*x - b^2*c^2 + 2*a*b*c*d - a^2*d^2 + 2*(a*b
*c*d - a^2*d^2 + (b^2*c*d - a*b*d^2)*x)*log(b*x + a))/(b^4*x + a*
b^3)
```

Sympy [A] time = 1.96088, size = 60, normalized size = 1.18

$$-\frac{a^2d^2-2abcd+b^2c^2}{ab^3+b^4x}+\frac{d^2x}{b^2}-\frac{2d\,(ad-bc)\log{(a+bx)}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a)**2,x)
```

```
[Out] -(a**2*d**2 - 2*a*b*c*d + b**2*c**2)/(a*b**3 + b**4*x) + d**2*x/b
**2 - 2*d*(a*d - b*c)*log(a + b*x)/b**3
```

GIAC/XCAS [A] time = 0.229156, size = 132, normalized size = 2.59

$$\frac{(bx+a)d^2}{b^3}-\frac{2\left(bcd-ad^2\right)\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^3}-\frac{\frac{b^3c^2}{bx+a}-\frac{2\,ab^2cd}{bx+a}+\frac{a^2bd^2}{bx+a}}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] (b*x + a)*d^2/b^3 - 2*(b*c*d - a*d^2)*ln(abs(b*x + a)/((b*x + a)^
2*abs(b)))/b^3 - (b^3*c^2/(b*x + a) - 2*a*b^2*c*d/(b*x + a) + a^2
*b*d^2/(b*x + a))/b^4
```

3.1253 $\int \frac{(c+dx)^2}{(a+bx)^3} \, dx$

Optimal. Leaf size=59

$$-\frac{2d(bc-ad)}{b^3(a+bx)}-\frac{(bc-ad)^2}{2b^3(a+bx)^2}+\frac{d^2\log(a+bx)}{b^3}$$

```
[Out] -(b*c - a*d)^2/(2*b^3*(a + b*x)^2) - (2*d*(b*c - a*d))/(b^3*(a +
b*x)) + (d^2*Log[a + b*x])/b^3
```

Rubi [A] time = 0.0760872, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2d(bc-ad)}{b^3(a+bx)}-\frac{(bc-ad)^2}{2b^3(a+bx)^2}+\frac{d^2\log(a+bx)}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x)^3,x]
```

```
[Out] -(b*c - a*d)^2/(2*b^3*(a + b*x)^2) - (2*d*(b*c - a*d))/(b^3*(a +
b*x)) + (d^2*Log[a + b*x])/b^3
```

Rubi in Sympy [A] time = 15.6892, size = 51, normalized size = 0.86

$$\frac{d^2\log\left(a+bx\right)}{b^3}+\frac{2d\left(ad-bc\right)}{b^3\left(a+bx\right)}-\frac{\left(ad-bc\right)^2}{2b^3\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a)**3,x)
```

```
[Out] d**2*log(a + b*x)/b**3 + 2*d*(a*d - b*c)/(b**3*(a + b*x)) - (a*d
- b*c)**2/(2*b**3*(a + b*x)**2)
```

Mathematica [A] time = 0.0378367, size = 49, normalized size = 0.83

$$\frac{2d^2\log(a+bx)-\frac{(bc-ad)(3ad+b(c+4dx))}{(a+bx)^2}}{2b^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x)^3,x]
```

```
[Out] (-(((b*c - a*d)*(3*a*d + b*(c + 4*d*x)))/(a + b*x)^2) + 2*d^2*Log
[a + b*x])/(2*b^3)
```

Maple [A] time = 0.01, size = 92, normalized size = 1.6

$$\frac{d^2\ln(bx+a)}{b^3}-\frac{a^2d^2}{2\,b^3\,(bx+a)^2}+\frac{acd}{b^2\,(bx+a)^2}-\frac{c^2}{2\,b\,(bx+a)^2}+2\,\frac{ad^2}{b^3\,(bx+a)}-2\,\frac{cd}{b^2\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a)^3,x)
```

```
[Out] d^2*ln(b*x+a)/b^3-1/2/b^3/(b*x+a)^2*a^2*d^2+1/b^2/(b*x+a)^2*a*c*d
-1/2/b/(b*x+a)^2*c^2+2/b^3*d^2/(b*x+a)*a-2/b^2*d/(b*x+a)*c
```

Maxima [A] time = 1.3382, size = 107, normalized size = 1.81

$$-\frac{b^2c^2+2\,abcd-3\,a^2d^2+4\left(b^2cd-abd^2\right)x}{2\left(b^5x^2+2\,ab^4x+a^2b^3\right)}+\frac{d^2\log(bx+a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2 + 4*(b^2*c*d - a*b*d^2)*x)/
(b^5*x^2 + 2*a*b^4*x + a^2*b^3) + d^2*log(b*x + a)/b^3
```

Fricas [A] time = 0.202141, size = 134, normalized size = 2.27

$$-\frac{b^2c^2+2\,abcd-3\,a^2d^2+4\left(b^2cd-abd^2\right)x-2\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\log(bx+a)}{2\left(b^5x^2+2\,ab^4x+a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2 + 4*(b^2*c*d - a*b*d^2)*x -
 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a))/(b^5*x^2 +
```

```
2*a*b^4*x + a^2*b^3)
```

Sympy [A] time = 2.40037, size = 80, normalized size = 1.36

$$\frac{3a^2d^2 - 2abcd - b^2c^2 + x\left(4abd^2 - 4b^2cd\right)}{2a^2b^3 + 4ab^4x + 2b^5x^2} + \frac{d^2\log\left(a + bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a)**3,x)
```

```
[Out] (3*a**2*d**2 - 2*a*b*c*d - b**2*c**2 + x*(4*a*b*d**2 - 4*b**2*c*d
))/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) + d**2*log(a + b*x)/b
**3
```

GIAC/XCAS [A] time = 0.227758, size = 92, normalized size = 1.56

$$\frac{d^2\ln\left(|bx + a|\right)}{b^3} - \frac{4\left(bcd - ad^2\right)x + \frac{b^2c^2 + 2\,abcd - 3\,a^2d^2}{b}}{2\left(bx + a\right)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] d^2*ln(abs(b*x + a))/b^3 - 1/2*(4*(b*c*d - a*d^2)*x + (b^2*c^2 +
2*a*b*c*d - 3*a^2*d^2)/b)/((b*x + a)^2*b^2)
```

3.1254 $\int \frac{(c+dx)^2}{(a+bx)^4} dx$

Optimal. Leaf size=28

$$-\frac{(c+dx)^3}{3(a+bx)^3(bc-ad)}$$

```
[Out] -(c + d*x)^3/(3*(b*c - a*d)*(a + b*x)^3)
```

Rubi [A] time = 0.0166158, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{(c+dx)^3}{3(a+bx)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x)^4,x]

[Out] -(c + d*x)^3/(3*(b*c - a*d)*(a + b*x)^3)
```

Rubi in Sympy [A] time = 3.71565, size = 20, normalized size = 0.71

$$\frac{(c+dx)^3}{3\left(a+bx\right)^3\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a)**4,x)

[Out] (c + d*x)**3/(3*(a + b*x)**3*(a*d - b*c))
```

Mathematica [A] time = 0.0393221, size = 53, normalized size = 1.89

$$-\frac{a^2d^2 + abd(c+3dx) + b^2\left(c^2+3cdx+3d^2x^2\right)}{3b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x)^4,x]
```

```
[Out] -(a^2*d^2 + a*b*d*(c + 3*d*x) + b^2*(c^2 + 3*c*d*x + 3*d^2*x^2))/
(3*b^3*(a + b*x)^3)
```

Maple [B] time = 0.008, size = 70, normalized size = 2.5

$$-\frac{a^2d^2-2\,abcd+b^2c^2}{3\,b^3\,(bx+a)^3}+\frac{d\,(ad-bc)}{b^3\,(bx+a)^2}-\frac{d^2}{b^3\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a)^4,x)
```

```
[Out] -1/3*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^3/(b*x+a)^3+d*(a*d-b*c)/b^3/(b
*x+a)^2-d^2/b^3/(b*x+a)
```

Maxima [A] time = 1.34039, size = 113, normalized size = 4.04

$$-\frac{3\,b^2d^2x^2+b^2c^2+abcd+a^2d^2+3\,\left(b^2cd+abd^2\right)x}{3\,(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(3*b^2*d^2*x^2 + b^2*c^2 + a*b*c*d + a^2*d^2 + 3*(b^2*c*d +
a*b*d^2)*x)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

Fricas [A] time = 0.197228, size = 113, normalized size = 4.04

$$-\frac{3\,b^2d^2x^2+b^2c^2+abcd+a^2d^2+3\,\left(b^2cd+abd^2\right)x}{3\,(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*d^2*x^2 + b^2*c^2 + a*b*c*d + a^2*d^2 + 3*(b^2*c*d +
a*b*d^2)*x)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

Sympy [A] time = 2.92313, size = 88, normalized size = 3.14

$$-\frac{a^2d^2 + abcd + b^2c^2 + 3b^2d^2x^2 + x\left(3abd^2 + 3b^2cd\right)}{3a^3b^3 + 9a^2b^4x + 9ab^5x^2 + 3b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a)**4,x)
```

```
[Out] -(a**2*d**2 + a*b*c*d + b**2*c**2 + 3*b**2*d**2*x**2 + x*(3*a*b*d
**2 + 3*b**2*c*d))/(3*a**3*b**3 + 9*a**2*b**4*x + 9*a*b**5*x**2 +
 3*b**6*x**3)
```

GIAC/XCAS [A] time = 0.223177, size = 80, normalized size = 2.86

$$-\frac{3\,b^2d^2x^2 + 3\,b^2cdx + 3\,abd^2x + b^2c^2 + abcd + a^2d^2}{3\,(bx+a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -1/3*(3*b^2*d^2*x^2 + 3*b^2*c*d*x + 3*a*b*d^2*x + b^2*c^2 + a*b*c
*d + a^2*d^2)/((b*x + a)^3*b^3)
```

3.1255 $\int \frac{(c+dx)^2}{(a+bx)^5}\,dx$

Optimal. Leaf size=65

$$-\frac{2d(bc-ad)}{3b^3(a+bx)^3}-\frac{(bc-ad)^2}{4b^3(a+bx)^4}-\frac{d^2}{2b^3(a+bx)^2}$$

```
[Out] -(b*c - a*d)^2/(4*b^3*(a + b*x)^4) - (2*d*(b*c - a*d))/(3*b^3*(a
+ b*x)^3) - d^2/(2*b^3*(a + b*x)^2)
```

Rubi [A] time = 0.0780983, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2d(bc-ad)}{3b^3(a+bx)^3}-\frac{(bc-ad)^2}{4b^3(a+bx)^4}-\frac{d^2}{2b^3(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x)^5,x]
```

```
[Out] -(b*c - a*d)^2/(4*b^3*(a + b*x)^4) - (2*d*(b*c - a*d))/(3*b^3*(a
+ b*x)^3) - d^2/(2*b^3*(a + b*x)^2)
```

Rubi in Sympy [A] time = 16.3452, size = 56, normalized size = 0.86

$$-\frac{d^2}{2b^3\left(a+bx\right)^2}+\frac{2d\left(ad-bc\right)}{3b^3\left(a+bx\right)^3}-\frac{\left(ad-bc\right)^2}{4b^3\left(a+bx\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a)**5,x)
```

```
[Out] -d**2/(2*b**3*(a + b*x)**2) + 2*d*(a*d - b*c)/(3*b**3*(a + b*x)**
3) - (a*d - b*c)**2/(4*b**3*(a + b*x)**4)
```

Mathematica [A] time = 0.029984, size = 56, normalized size = 0.86

$$-\frac{a^2d^2+2abd(c+2dx)+b^2\left(3c^2+8cdx+6d^2x^2\right)}{12b^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x)^5,x]
```

```
[Out] -(a^2*d^2 + 2*a*b*d*(c + 2*d*x) + b^2*(3*c^2 + 8*c*d*x + 6*d^2*x^
2))/(12*b^3*(a + b*x)^4)
```

Maple [A] time = 0.009, size = 71, normalized size = 1.1

$$-\frac{a^2d^2-2\,abcd+b^2c^2}{4\,b^3\left(bx+a\right)^4}+\frac{2\,d\left(ad-bc\right)}{3\,b^3\left(bx+a\right)^3}-\frac{d^2}{2\,b^3\left(bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a)^5,x)
```

```
[Out] -1/4*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^3/(b*x+a)^4+2/3*d*(a*d-b*c)/b^
3/(b*x+a)^3-1/2*d^2/b^3/(b*x+a)^2
```

Maxima [A] time = 1.35441, size = 132, normalized size = 2.03

$$-\frac{6\,b^2d^2x^2+3\,b^2c^2+2\,abcd+a^2d^2+4\left(2\,b^2cd+abd^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(6*b^2*d^2*x^2 + 3*b^2*c^2 + 2*a*b*c*d + a^2*d^2 + 4*(2*b^2
*c*d + a*b*d^2)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3
*b^4*x + a^4*b^3)
```

Fricas [A] time = 0.197798, size = 132, normalized size = 2.03

$$-\frac{6\,b^2d^2x^2+3\,b^2c^2+2\,abcd+a^2d^2+4\left(2\,b^2cd+abd^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*d^2*x^2 + 3*b^2*c^2 + 2*a*b*c*d + a^2*d^2 + 4*(2*b^2
*c*d + a*b*d^2)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3
```

```
*b^4*x + a^4*b^3)
```

Sympy [A] time = 3.48789, size = 104, normalized size = 1.6

$$-\frac{a^2d^2 + 2abcd + 3b^2c^2 + 6b^2d^2x^2 + x\left(4abd^2 + 8b^2cd\right)}{12a^4b^3 + 48a^3b^4x + 72a^2b^5x^2 + 48ab^6x^3 + 12b^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a)**5,x)
```

```
[Out] -(a**2*d**2 + 2*a*b*c*d + 3*b**2*c**2 + 6*b**2*d**2*x**2 + x*(4*a
*b*d**2 + 8*b**2*c*d))/(12*a**4*b**3 + 48*a**3*b**4*x + 72*a**2*b
**5*x**2 + 48*a*b**6*x**3 + 12*b**7*x**4)
```

GIAC/XCAS [A] time = 0.226507, size = 126, normalized size = 1.94

$$-\frac{\frac{3\,b^3c^2}{(bx+a)^4} + \frac{8\,b^2cd}{(bx+a)^3} - \frac{6\,ab^2cd}{(bx+a)^4} + \frac{6\,bd^2}{(bx+a)^2} - \frac{8\,abd^2}{(bx+a)^3} + \frac{3\,a^2bd^2}{(bx+a)^4}}{12\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] -1/12*(3*b^3*c^2/(b*x + a)^4 + 8*b^2*c*d/(b*x + a)^3 - 6*a*b^2*c*
d/(b*x + a)^4 + 6*b*d^2/(b*x + a)^2 - 8*a*b*d^2/(b*x + a)^3 + 3*a
^2*b*d^2/(b*x + a)^4)/b^4
```

3.1256 $\int \frac{(c+dx)^2}{(a+bx)^6} dx$

Optimal. Leaf size=65

$$-\frac{d(bc-ad)}{2b^3(a+bx)^4}-\frac{(bc-ad)^2}{5b^3(a+bx)^5}-\frac{d^2}{3b^3(a+bx)^3}$$

```
[Out] -(b*c - a*d)^2/(5*b^3*(a + b*x)^5) - (d*(b*c - a*d))/(2*b^3*(a +
b*x)^4) - d^2/(3*b^3*(a + b*x)^3)
```

Rubi [A] time = 0.0764155, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{d(bc-ad)}{2b^3(a+bx)^4}-\frac{(bc-ad)^2}{5b^3(a+bx)^5}-\frac{d^2}{3b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x)^6,x]
```

```
[Out] -(b*c - a*d)^2/(5*b^3*(a + b*x)^5) - (d*(b*c - a*d))/(2*b^3*(a +
b*x)^4) - d^2/(3*b^3*(a + b*x)^3)
```

Rubi in Sympy [A] time = 16.7249, size = 54, normalized size = 0.83

$$-\frac{d^2}{3b^3\left(a+bx\right)^3}+\frac{d\left(ad-bc\right)}{2b^3\left(a+bx\right)^4}-\frac{\left(ad-bc\right)^2}{5b^3\left(a+bx\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a)**6,x)
```

```
[Out] -d**2/(3*b**3*(a + b*x)**3) + d*(a*d - b*c)/(2*b**3*(a + b*x)**4)
 - (a*d - b*c)**2/(5*b**3*(a + b*x)**5)
```

Mathematica [A] time = 0.0415572, size = 57, normalized size = 0.88

$$-\frac{a^2d^2+abd(3c+5dx)+b^2\left(6c^2+15cdx+10d^2x^2\right)}{30b^3(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x)^6,x]
```

```
[Out] -(a^2*d^2 + a*b*d*(3*c + 5*d*x) + b^2*(6*c^2 + 15*c*d*x + 10*d^2*
x^2))/(30*b^3*(a + b*x)^5)
```

Maple [A] time = 0.008, size = 71, normalized size = 1.1

$$-\frac{a^2d^2-2\,abcd+b^2c^2}{5\,b^3\,(bx+a)^5}+\frac{d\,(ad-bc)}{2\,b^3\,(bx+a)^4}-\frac{d^2}{3\,b^3\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a)^6,x)
```

```
[Out] -1/5*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^3/(b*x+a)^5+1/2*d*(a*d-b*c)/b^
3/(b*x+a)^4-1/3*d^2/b^3/(b*x+a)^3
```

Maxima [A] time = 1.35372, size = 147, normalized size = 2.26

$$-\frac{10\,b^2d^2x^2+6\,b^2c^2+3\,abcd+a^2d^2+5\,\left(3\,b^2cd+abd^2\right)x}{30\,(b^8x^5+5\,ab^7x^4+10\,a^2b^6x^3+10\,a^3b^5x^2+5\,a^4b^4x+a^5b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] -1/30*(10*b^2*d^2*x^2 + 6*b^2*c^2 + 3*a*b*c*d + a^2*d^2 + 5*(3*b^
2*c*d + a*b*d^2)*x)/(b^8*x^5 + 5*a*b^7*x^4 + 10*a^2*b^6*x^3 + 10*
a^3*b^5*x^2 + 5*a^4*b^4*x + a^5*b^3)
```

Fricas [A] time = 0.208306, size = 147, normalized size = 2.26

$$-\frac{10\,b^2d^2x^2+6\,b^2c^2+3\,abcd+a^2d^2+5\,\left(3\,b^2cd+abd^2\right)x}{30\,(b^8x^5+5\,ab^7x^4+10\,a^2b^6x^3+10\,a^3b^5x^2+5\,a^4b^4x+a^5b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] -1/30*(10*b^2*d^2*x^2 + 6*b^2*c^2 + 3*a*b*c*d + a^2*d^2 + 5*(3*b^
2*c*d + a*b*d^2)*x)/(b^8*x^5 + 5*a*b^7*x^4 + 10*a^2*b^6*x^3 + 10*
```

```
a^3*b^5*x^2 + 5*a^4*b^4*x + a^5*b^3)
```

Sympy [A] time = 4.2647, size = 116, normalized size = 1.78

$$-\frac{a^2d^2 + 3abcd + 6b^2c^2 + 10b^2d^2x^2 + x\left(5abd^2 + 15b^2cd\right)}{30a^5b^3 + 150a^4b^4x + 300a^3b^5x^2 + 300a^2b^6x^3 + 150ab^7x^4 + 30b^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a)**6,x)
```

```
[Out] -(a**2*d**2 + 3*a*b*c*d + 6*b**2*c**2 + 10*b**2*d**2*x**2 + x*(5*
a*b*d**2 + 15*b**2*c*d))/(30*a**5*b**3 + 150*a**4*b**4*x + 300*a*
*3*b**5*x**2 + 300*a**2*b**6*x**3 + 150*a*b**7*x**4 + 30*b**8*x**
5)
```

GIAC/XCAS [A] time = 0.222472, size = 82, normalized size = 1.26

$$-\frac{10\,b^2d^2x^2 + 15\,b^2cdx + 5\,abd^2x + 6\,b^2c^2 + 3\,abcd + a^2d^2}{30\,(bx+a)^5b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^6,x, algorithm="giac")
```

```
[Out] -1/30*(10*b^2*d^2*x^2 + 15*b^2*c*d*x + 5*a*b*d^2*x + 6*b^2*c^2 +
3*a*b*c*d + a^2*d^2)/((b*x + a)^5*b^3)
```

3.1257 $\int \frac{(c+dx)^2}{(a+bx)^7} dx$

Optimal. Leaf size=65

$$-\frac{2d(bc-ad)}{5b^3(a+bx)^5}-\frac{(bc-ad)^2}{6b^3(a+bx)^6}-\frac{d^2}{4b^3(a+bx)^4}$$

```
[Out] -(b*c - a*d)^2/(6*b^3*(a + b*x)^6) - (2*d*(b*c - a*d))/(5*b^3*(a
+ b*x)^5) - d^2/(4*b^3*(a + b*x)^4)
```

Rubi [A] time = 0.0763137, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2d(bc-ad)}{5b^3(a+bx)^5}-\frac{(bc-ad)^2}{6b^3(a+bx)^6}-\frac{d^2}{4b^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^2/(a + b*x)^7,x]
```

```
[Out] -(b*c - a*d)^2/(6*b^3*(a + b*x)^6) - (2*d*(b*c - a*d))/(5*b^3*(a
+ b*x)^5) - d^2/(4*b^3*(a + b*x)^4)
```

Rubi in Sympy [A] time = 16.7905, size = 56, normalized size = 0.86

$$-\frac{d^2}{4b^3\left(a+bx\right)^4}+\frac{2d\left(ad-bc\right)}{5b^3\left(a+bx\right)^5}-\frac{\left(ad-bc\right)^2}{6b^3\left(a+bx\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**2/(b*x+a)**7,x)
```

```
[Out] -d**2/(4*b**3*(a + b*x)**4) + 2*d*(a*d - b*c)/(5*b**3*(a + b*x)**
5) - (a*d - b*c)**2/(6*b**3*(a + b*x)**6)
```

Mathematica [A] time = 0.0333793, size = 58, normalized size = 0.89

$$-\frac{a^2d^2+2abd(2c+3dx)+b^2\left(10c^2+24cdx+15d^2x^2\right)}{60b^3(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^2/(a + b*x)^7,x]
```

```
[Out] -(a^2*d^2 + 2*a*b*d*(2*c + 3*d*x) + b^2*(10*c^2 + 24*c*d*x + 15*d
^2*x^2))/(60*b^3*(a + b*x)^6)
```

Maple [A] time = 0.008, size = 71, normalized size = 1.1

$$\frac{2\,d\,(ad-bc)}{5\,b^3\,(bx+a)^5}-\frac{a^2d^2-2\,abcd+b^2c^2}{6\,b^3\,(bx+a)^6}-\frac{d^2}{4\,b^3\,(bx+a)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^2/(b*x+a)^7,x)
```

```
[Out] 2/5*d*(a*d-b*c)/b^3/(b*x+a)^5-1/6*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^3
/(b*x+a)^6-1/4*d^2/b^3/(b*x+a)^4
```

Maxima [A] time = 1.37374, size = 162, normalized size = 2.49

$$-\frac{15\,b^2d^2x^2+10\,b^2c^2+4\,abcd+a^2d^2+6\,\left(4\,b^2cd+abd^2\right)x}{60\,(b^9x^6+6\,ab^8x^5+15\,a^2b^7x^4+20\,a^3b^6x^3+15\,a^4b^5x^2+6\,a^5b^4x+a^6b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(15*b^2*d^2*x^2 + 10*b^2*c^2 + 4*a*b*c*d + a^2*d^2 + 6*(4*b
^2*c*d + a*b*d^2)*x)/(b^9*x^6 + 6*a*b^8*x^5 + 15*a^2*b^7*x^4 + 20
*a^3*b^6*x^3 + 15*a^4*b^5*x^2 + 6*a^5*b^4*x + a^6*b^3)
```

Fricas [A] time = 0.217441, size = 162, normalized size = 2.49

$$-\frac{15\,b^2d^2x^2+10\,b^2c^2+4\,abcd+a^2d^2+6\,\left(4\,b^2cd+abd^2\right)x}{60\,(b^9x^6+6\,ab^8x^5+15\,a^2b^7x^4+20\,a^3b^6x^3+15\,a^4b^5x^2+6\,a^5b^4x+a^6b^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*d^2*x^2 + 10*b^2*c^2 + 4*a*b*c*d + a^2*d^2 + 6*(4*b
^2*c*d + a*b*d^2)*x)/(b^9*x^6 + 6*a*b^8*x^5 + 15*a^2*b^7*x^4 + 20
```

```
*a^3*b^6*x^3 + 15*a^4*b^5*x^2 + 6*a^5*b^4*x + a^6*b^3)
```

Sympy [A] time = 4.91956, size = 128, normalized size = 1.97

$$-\frac{a^2d^2 + 4abcd + 10b^2c^2 + 15b^2d^2x^2 + x\left(6abd^2 + 24b^2cd\right)}{60a^6b^3 + 360a^5b^4x + 900a^4b^5x^2 + 1200a^3b^6x^3 + 900a^2b^7x^4 + 360ab^8x^5 + 60b^9x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**2/(b*x+a)**7,x)
```

```
[Out] -(a**2*d**2 + 4*a*b*c*d + 10*b**2*c**2 + 15*b**2*d**2*x**2 + x*(6
*a*b*d**2 + 24*b**2*c*d))/(60*a**6*b**3 + 360*a**5*b**4*x + 900*a
**4*b**5*x**2 + 1200*a**3*b**6*x**3 + 900*a**2*b**7*x**4 + 360*a*
b**8*x**5 + 60*b**9*x**6)
```

GIAC/XCAS [A] time = 0.223323, size = 82, normalized size = 1.26

$$-\frac{15\,b^2d^2x^2 + 24\,b^2cdx + 6\,abd^2x + 10\,b^2c^2 + 4\,abcd + a^2d^2}{60\,(bx + a)^6b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/60*(15*b^2*d^2*x^2 + 24*b^2*c*d*x + 6*a*b*d^2*x + 10*b^2*c^2 +
 4*a*b*c*d + a^2*d^2)/((b*x + a)^6*b^3)
```

3.1258 $\int (a+bx)^5(c+dx)^3\,dx$

Optimal. Leaf size=92

$$\frac{3d^2(a+bx)^8(bc-ad)}{8b^4}+\frac{3d(a+bx)^7(bc-ad)^2}{7b^4}+\frac{(a+bx)^6(bc-ad)^3}{6b^4}+\frac{d^3(a+bx)^9}{9b^4}$$

```
[Out] ((b*c - a*d)^3*(a + b*x)^6)/(6*b^4) + (3*d*(b*c - a*d)^2*(a + b*x
)^7)/(7*b^4) + (3*d^2*(b*c - a*d)*(a + b*x)^8)/(8*b^4) + (d^3*(a
+ b*x)^9)/(9*b^4)
```

Rubi [A] time = 0.305025, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{3d^2(a+bx)^8(bc-ad)}{8b^4}+\frac{3d(a+bx)^7(bc-ad)^2}{7b^4}+\frac{(a+bx)^6(bc-ad)^3}{6b^4}+\frac{d^3(a+bx)^9}{9b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(c + d*x)^3,x]
```

```
[Out] ((b*c - a*d)^3*(a + b*x)^6)/(6*b^4) + (3*d*(b*c - a*d)^2*(a + b*x
)^7)/(7*b^4) + (3*d^2*(b*c - a*d)*(a + b*x)^8)/(8*b^4) + (d^3*(a
+ b*x)^9)/(9*b^4)
```

Rubi in Sympy [A] time = 38.8278, size = 82, normalized size = 0.89

$$\frac{d^3\left(a+bx\right)^9}{9b^4}-\frac{3d^2\left(a+bx\right)^8\left(ad-bc\right)}{8b^4}+\frac{3d\left(a+bx\right)^7\left(ad-bc\right)^2}{7b^4}-\frac{\left(a+bx\right)^6\left(ad-bc\right)^3}{6b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(d*x+c)**3,x)
```

```
[Out] d**3*(a + b*x)**9/(9*b**4) - 3*d**2*(a + b*x)**8*(a*d - b*c)/(8*b
**4) + 3*d*(a + b*x)**7*(a*d - b*c)**2/(7*b**4) - (a + b*x)**6*(a
*d - b*c)**3/(6*b**4)
```

Mathematica [B] time = 0.114544, size = 235, normalized size = 2.55

$$\frac{1}{504}x\left(126a^5\left(4c^3+6c^2dx+4cd^2x^2+d^3x^3\right)+126a^4bx\left(10c^3+20c^2dx+15cd^2x^2+4d^3x^3\right)+84a^3b^2x^2\left(20c^3+45c^2dx+36cd^2x^2+10d^3x^3\right)+36a^2b^3x^3\left(35c^3+84c^2dx+70cd^2x^2+20d^3x^3\right)+9ab^4x^4\left(56c^3+140c^2dx+120cd^2x^2+35d^3x^3\right)+b^5x^5\left(84c^3+216c^2dx+189cd^2x^2+56d^3x^3\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(c + d*x)^3,x]
```

```
[Out] (x*(126*a^5*(4*c^3 + 6*c^2*d*x + 4*c*d^2*x^2 + d^3*x^3) + 126*a^4
*b*x*(10*c^3 + 20*c^2*d*x + 15*c*d^2*x^2 + 4*d^3*x^3) + 84*a^3*b^
2*x^2*(20*c^3 + 45*c^2*d*x + 36*c*d^2*x^2 + 10*d^3*x^3) + 36*a^2*
b^3*x^3*(35*c^3 + 84*c^2*d*x + 70*c*d^2*x^2 + 20*d^3*x^3) + 9*a*b
^4*x^4*(56*c^3 + 140*c^2*d*x + 120*c*d^2*x^2 + 35*d^3*x^3) + b^5*
x^5*(84*c^3 + 216*c^2*d*x + 189*c*d^2*x^2 + 56*d^3*x^3)))/504
```

Maple [B] time = 0.001, size = 281, normalized size = 3.1

$$\frac{b^5d^3x^9}{9}+\frac{\left(5\,ab^4d^3+3\,b^5cd^2\right)x^8}{8}+\frac{\left(10\,a^2b^3d^3+15\,ab^4cd^2+3\,b^5c^2d\right)x^7}{7}+\frac{\left(10\,a^3b^2d^3+30\,a^2b^3cd^2+15\,ab^4c^2d+b^5c^3\right)x^6}{6}+\frac{\left(5\,a^4bd^3+30\,a^3b^2cd^2+30\,a^2b^3c^2d+5\,ab^4c^3\right)x^5}{5}+\frac{\left(a^5d^3+15\,a^4bcd^2+30\,a^3b^2c^2d+10\,a^2b^3c^3\right)x^4}{4}+\frac{\left(3\,a^5cd^2+15\,a^4bc^2d+10\,a^3b^2c^3\right)x^3}{3}+\frac{\left(3\,a^5c^2d+5\,a^4bc^3\right)x^2}{2}+a^5c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(d*x+c)^3,x)
```

```
[Out] 1/9*b^5*d^3*x^9+1/8*(5*a*b^4*d^3+3*b^5*c*d^2)*x^8+1/7*(10*a^2*b^3
*d^3+15*a*b^4*c*d^2+3*b^5*c^2*d)*x^7+1/6*(10*a^3*b^2*d^3+30*a^2*b
^3*c*d^2+15*a*b^4*c^2*d+b^5*c^3)*x^6+1/5*(5*a^4*b*d^3+30*a^3*b^2*
c*d^2+30*a^2*b^3*c^2*d+5*a*b^4*c^3)*x^5+1/4*(a^5*d^3+15*a^4*b*c*d
^2+30*a^3*b^2*c^2*d+10*a^2*b^3*c^3)*x^4+1/3*(3*a^5*c*d^2+15*a^4*b
*c^2*d+10*a^3*b^2*c^3)*x^3+1/2*(3*a^5*c^2*d+5*a^4*b*c^3)*x^2+a^5*
c^3*x
```

Maxima [A] time = 1.34427, size = 374, normalized size = 4.07

$$\frac{1}{9}\,b^5d^3x^9+a^5c^3x+\frac{1}{8}\left(3\,b^5cd^2+5\,ab^4d^3\right)x^8+\frac{1}{7}\left(3\,b^5c^2d+15\,ab^4cd^2+10\,a^2b^3d^3\right)x^7+\frac{1}{6}\left(b^5c^3+15\,ab^4c^2d+30\,a^2b^3cd^2+10\,a^3b^2d^3\right)x^6+\left(ab^4c^3+6\,a^2b^3c^2d+6\,a^3b^2cd^2+a^4bd^3\right)x^5+\frac{1}{4}\left(10\,a^2b^3c^3+30\,a^3b^2c^2d+15\,a^4bcd^2+a^5d^3\right)x^4+\frac{1}{3}\left(10\,a^3b^2c^3+15\,a^4bc^2d+3\,a^5cd^2\right)x^3+\frac{1}{2}\left(5\,a^4bc^3+3\,a^5c^2d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/9*b^5*d^3*x^9 + a^5*c^3*x + 1/8*(3*b^5*c*d^2 + 5*a*b^4*d^3)*x^8
 + 1/7*(3*b^5*c^2*d + 15*a*b^4*c*d^2 + 10*a^2*b^3*d^3)*x^7 + 1/6*
(b^5*c^3 + 15*a*b^4*c^2*d + 30*a^2*b^3*c*d^2 + 10*a^3*b^2*d^3)*x^
6 + (a*b^4*c^3 + 6*a^2*b^3*c^2*d + 6*a^3*b^2*c*d^2 + a^4*b*d^3)*x
^5 + 1/4*(10*a^2*b^3*c^3 + 30*a^3*b^2*c^2*d + 15*a^4*b*c*d^2 + a^
5*d^3)*x^4 + 1/3*(10*a^3*b^2*c^3 + 15*a^4*b*c^2*d + 3*a^5*c*d^2)*
x^3 + 1/2*(5*a^4*b*c^3 + 3*a^5*c^2*d)*x^2
```

Fricas [A] time = 0.177384, size = 1, normalized size = 0.01

$$\frac{1}{9}x^9d^3b^5+\frac{3}{8}x^8d^2cb^5+\frac{5}{8}x^8d^3b^4a+\frac{3}{7}x^7dc^2b^5+\frac{15}{7}x^7d^2cb^4a+\frac{10}{7}x^7d^3b^3a^2+\frac{1}{6}x^6c^3b^5+\frac{5}{2}x^6dc^2b^4a+5x^6d^2cb^3a^2+\frac{5}{3}x^6d^3b^2a^3+x^5c^3b^4a+6x^5dc^2b^3a^2+6x^5d^2cb^2a^3+x^5d^3ba^4+\frac{5}{2}x^4c^3b^3a^2+\frac{15}{2}x^4dc^2b^2a^3+\frac{15}{4}x^4d^2cba^4+\frac{1}{4}x^4d^3a^5+\frac{10}{3}x^3c^3b^2a^3+5x^3dc^2ba^4+x^3d^2ca^5+\frac{5}{2}x^2c^3ba^4+\frac{3}{2}x^2dc^2a^5+xc^3a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*d^3*b^5 + 3/8*x^8*d^2*c*b^5 + 5/8*x^8*d^3*b^4*a + 3/7*x^7
*d*c^2*b^5 + 15/7*x^7*d^2*c*b^4*a + 10/7*x^7*d^3*b^3*a^2 + 1/6*x^
6*c^3*b^5 + 5/2*x^6*d*c^2*b^4*a + 5*x^6*d^2*c*b^3*a^2 + 5/3*x^6*d
^3*b^2*a^3 + x^5*c^3*b^4*a + 6*x^5*d*c^2*b^3*a^2 + 6*x^5*d^2*c*b^
2*a^3 + x^5*d^3*b*a^4 + 5/2*x^4*c^3*b^3*a^2 + 15/2*x^4*d*c^2*b^2*
a^3 + 15/4*x^4*d^2*c*b*a^4 + 1/4*x^4*d^3*a^5 + 10/3*x^3*c^3*b^2*a
^3 + 5*x^3*d*c^2*b*a^4 + x^3*d^2*c*a^5 + 5/2*x^2*c^3*b*a^4 + 3/2*
x^2*d*c^2*a^5 + x*c^3*a^5
```

Sympy [A] time = 0.229578, size = 308, normalized size = 3.35

$$a^5c^3x+\frac{b^5d^3x^9}{9}+x^8\left(\frac{5ab^4d^3}{8}+\frac{3b^5cd^2}{8}\right)+x^7\left(\frac{10a^2b^3d^3}{7}+\frac{15ab^4cd^2}{7}+\frac{3b^5c^2d}{7}\right)+x^6\left(\frac{5a^3b^2d^3}{3}+5a^2b^3cd^2+\frac{5ab^4c^2d}{2}+\frac{b^5c^3}{6}\right)+x^5\left(a^4bd^3+6a^3b^2cd^2+6a^2b^3c^2d+ab^4c^3\right)+x^4\left(\frac{a^5d^3}{4}+\frac{15a^4bcd^2}{4}+\frac{15a^3b^2c^2d}{2}+\frac{5a^2b^3c^3}{2}\right)+x^3\left(a^5cd^2+5a^4bc^2d+\frac{10a^3b^2c^3}{3}\right)+x^2\left(\frac{3a^5c^2d}{2}+\frac{5a^4bc^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(d*x+c)**3,x)
```

```
[Out] a**5*c**3*x + b**5*d**3*x**9/9 + x**8*(5*a*b**4*d**3/8 + 3*b**5*c
*d**2/8) + x**7*(10*a**2*b**3*d**3/7 + 15*a*b**4*c*d**2/7 + 3*b**
5*c**2*d/7) + x**6*(5*a**3*b**2*d**3/3 + 5*a**2*b**3*c*d**2 + 5*a
*b**4*c**2*d/2 + b**5*c**3/6) + x**5*(a**4*b*d**3 + 6*a**3*b**2*c
*d**2 + 6*a**2*b**3*c**2*d + a*b**4*c**3) + x**4*(a**5*d**3/4 + 1
5*a**4*b*c*d**2/4 + 15*a**3*b**2*c**2*d/2 + 5*a**2*b**3*c**3/2) +
 x**3*(a**5*c*d**2 + 5*a**4*b*c**2*d + 10*a**3*b**2*c**3/3) + x**
2*(3*a**5*c**2*d/2 + 5*a**4*b*c**3/2)
```

GIAC/XCAS [A] time = 0.213472, size = 409, normalized size = 4.45

$$\frac{1}{9}\,b^5d^3x^9 + \frac{3}{8}\,b^5cd^2x^8 + \frac{5}{8}\,ab^4d^3x^8 + \frac{3}{7}\,b^5c^2dx^7 + \frac{15}{7}\,ab^4cd^2x^7 + \frac{10}{7}\,a^2b^3d^3x^7 + \frac{1}{6}\,b^5c^3x^6 + \frac{5}{2}\,ab^4c^2dx^6 + 5\,a^2b^3cd^2x^6 + \frac{5}{3}\,a^3b^2d^3x^6 + ab^4c^3x^5 + 6\,a^2b^3c^2dx^5 + 6\,a^3b^2cd^2x^5 + a^4bd^3x^5 + \frac{5}{2}\,a^2b^3c^3x^4 + \frac{15}{2}\,a^3b^2c^2dx^4 + \frac{15}{4}\,a^4bcd^2x^4 + \frac{1}{4}\,a^5d^3x^4 + \frac{10}{3}\,a^3b^2c^3x^3 + 5\,a^4bc^2dx^3 + a^5cd^2x^3 + \frac{5}{2}\,a^4bc^3x^2 + \frac{3}{2}\,a^5c^2dx^2 + a^5c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/9*b^5*d^3*x^9 + 3/8*b^5*c*d^2*x^8 + 5/8*a*b^4*d^3*x^8 + 3/7*b^5
*c^2*d*x^7 + 15/7*a*b^4*c*d^2*x^7 + 10/7*a^2*b^3*d^3*x^7 + 1/6*b^
5*c^3*x^6 + 5/2*a*b^4*c^2*d*x^6 + 5*a^2*b^3*c*d^2*x^6 + 5/3*a^3*b
^2*d^3*x^6 + a*b^4*c^3*x^5 + 6*a^2*b^3*c^2*d*x^5 + 6*a^3*b^2*c*d^
2*x^5 + a^4*b*d^3*x^5 + 5/2*a^2*b^3*c^3*x^4 + 15/2*a^3*b^2*c^2*d*
x^4 + 15/4*a^4*b*c*d^2*x^4 + 1/4*a^5*d^3*x^4 + 10/3*a^3*b^2*c^3*x
^3 + 5*a^4*b*c^2*d*x^3 + a^5*c*d^2*x^3 + 5/2*a^4*b*c^3*x^2 + 3/2*
a^5*c^2*d*x^2 + a^5*c^3*x
```

3.1259 $\int (a+bx)^4(c+dx)^3\,dx$

Optimal. Leaf size=92

$$\frac{3d^2(a+bx)^7(bc-ad)}{7b^4}+\frac{d(a+bx)^6(bc-ad)^2}{2b^4}+\frac{(a+bx)^5(bc-ad)^3}{5b^4}+\frac{d^3(a+bx)^8}{8b^4}$$

```
[Out] ((b*c - a*d)^3*(a + b*x)^5)/(5*b^4) + (d*(b*c - a*d)^2*(a + b*x)^
6)/(2*b^4) + (3*d^2*(b*c - a*d)*(a + b*x)^7)/(7*b^4) + (d^3*(a +
b*x)^8)/(8*b^4)
```

Rubi [A] time = 0.255455, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{3d^2(a+bx)^7(bc-ad)}{7b^4}+\frac{d(a+bx)^6(bc-ad)^2}{2b^4}+\frac{(a+bx)^5(bc-ad)^3}{5b^4}+\frac{d^3(a+bx)^8}{8b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x)^3,x]
```

```
[Out] ((b*c - a*d)^3*(a + b*x)^5)/(5*b^4) + (d*(b*c - a*d)^2*(a + b*x)^
6)/(2*b^4) + (3*d^2*(b*c - a*d)*(a + b*x)^7)/(7*b^4) + (d^3*(a +
b*x)^8)/(8*b^4)
```

Rubi in Sympy [A] time = 36.1538, size = 80, normalized size = 0.87

$$\frac{d^3\,(a+bx)^8}{8b^4}-\frac{3d^2\,(a+bx)^7\,(ad-bc)}{7b^4}+\frac{d\,(a+bx)^6\,(ad-bc)^2}{2b^4}-\frac{(a+bx)^5\,(ad-bc)^3}{5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**3,x)
```

```
[Out] d**3*(a + b*x)**8/(8*b**4) - 3*d**2*(a + b*x)**7*(a*d - b*c)/(7*b
**4) + d*(a + b*x)**6*(a*d - b*c)**2/(2*b**4) - (a + b*x)**5*(a*d
 - b*c)**3/(5*b**4)
```

Mathematica [B] time = 0.0465297, size = 217, normalized size = 2.36

$$a^4c^3x + \frac{1}{2}a^3c^2x^2(3ad + 4bc) + \frac{1}{2}b^2dx^6\left(2a^2d^2 + 4abcd + b^2c^2\right) + a^2cx^3\left(a^2d^2 + 4abcd + 2b^2c^2\right) + \frac{1}{5}bx^5\left(4a^3d^3 + 18a^2bcd^2 + 12ab^2c^2d + b^3c^3\right) + \frac{1}{4}ax^4\left(a^3d^3 + 12a^2bcd^2 + 18ab^2c^2d + 4b^3c^3\right) + \frac{1}{7}b^3d^2x^7(4ad + 3bc) + \frac{1}{8}b^4d^3x^8$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x)^3,x]
```

```
[Out] a^4*c^3*x + (a^3*c^2*(4*b*c + 3*a*d)*x^2)/2 + a^2*c*(2*b^2*c^2 +
4*a*b*c*d + a^2*d^2)*x^3 + (a*(4*b^3*c^3 + 18*a*b^2*c^2*d + 12*a^
2*b*c*d^2 + a^3*d^3)*x^4)/4 + (b*(b^3*c^3 + 12*a*b^2*c^2*d + 18*a
^2*b*c*d^2 + 4*a^3*d^3)*x^5)/5 + (b^2*d*(b^2*c^2 + 4*a*b*c*d + 2*
a^2*d^2)*x^6)/2 + (b^3*d^2*(3*b*c + 4*a*d)*x^7)/7 + (b^4*d^3*x^8)
/8
```

Maple [B] time = 0.001, size = 229, normalized size = 2.5

$$\frac{b^4d^3x^8}{8} + \frac{\left(4\,ab^3d^3 + 3\,b^4cd^2\right)x^7}{7} + \frac{\left(6\,a^2b^2d^3 + 12\,ab^3cd^2 + 3\,b^4c^2d\right)x^6}{6} + \frac{\left(4\,a^3bd^3 + 18\,a^2b^2cd^2 + 12\,ab^3c^2d + b^4c^3\right)x^5}{5} + \frac{\left(a^4d^3 + 12\,a^3bcd^2 + 18\,a^2b^2c^2d + 4\,ab^3c^3\right)x^4}{4} + \frac{\left(3\,a^4cd^2 + 12\,a^3bc^2d + 6\,a^2b^2c^3\right)x^3}{3} + \frac{\left(3\,a^4c^2d + 4\,a^3bc^3\right)x^2}{2} + a^4c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c)^3,x)
```

```
[Out] 1/8*b^4*d^3*x^8+1/7*(4*a*b^3*d^3+3*b^4*c*d^2)*x^7+1/6*(6*a^2*b^2*
d^3+12*a*b^3*c*d^2+3*b^4*c^2*d)*x^6+1/5*(4*a^3*b*d^3+18*a^2*b^2*c
*d^2+12*a*b^3*c^2*d+b^4*c^3)*x^5+1/4*(a^4*d^3+12*a^3*b*c*d^2+18*a
^2*b^2*c^2*d+4*a*b^3*c^3)*x^4+1/3*(3*a^4*c*d^2+12*a^3*b*c^2*d+6*a
^2*b^2*c^3)*x^3+1/2*(3*a^4*c^2*d+4*a^3*b*c^3)*x^2+a^4*c^3*x
```

Maxima [A] time = 1.35427, size = 304, normalized size = 3.3

$$\frac{1}{8}\,b^4d^3x^8 + a^4c^3x + \frac{1}{7}\left(3\,b^4cd^2 + 4\,ab^3d^3\right)x^7 + \frac{1}{2}\left(b^4c^2d + 4\,ab^3cd^2 + 2\,a^2b^2d^3\right)x^6 + \frac{1}{5}\left(b^4c^3 + 12\,ab^3c^2d + 18\,a^2b^2cd^2 + 4\,a^3bd^3\right)x^5 + \frac{1}{4}\left(4\,ab^3c^3 + 18\,a^2b^2c^2d + 12\,a^3bcd^2 + a^4d^3\right)x^4 + \left(2\,a^2b^2c^3 + 4\,a^3bc^2d + a^4cd^2\right)x^3 + \frac{1}{2}\left(4\,a^3bc^3 + 3\,a^4c^2d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/8*b^4*d^3*x^8 + a^4*c^3*x + 1/7*(3*b^4*c*d^2 + 4*a*b^3*d^3)*x^7
 + 1/2*(b^4*c^2*d + 4*a*b^3*c*d^2 + 2*a^2*b^2*d^3)*x^6 + 1/5*(b^4
*c^3 + 12*a*b^3*c^2*d + 18*a^2*b^2*c*d^2 + 4*a^3*b*d^3)*x^5 + 1/4
*(4*a*b^3*c^3 + 18*a^2*b^2*c^2*d + 12*a^3*b*c*d^2 + a^4*d^3)*x^4
+ (2*a^2*b^2*c^3 + 4*a^3*b*c^2*d + a^4*c*d^2)*x^3 + 1/2*(4*a^3*b*
c^3 + 3*a^4*c^2*d)*x^2
```

Fricas [A] time = 0.190238, size = 1, normalized size = 0.01

$$\frac{1}{8}x^8d^3b^4 + \frac{3}{7}x^7d^2cb^4 + \frac{4}{7}x^7d^3b^3a + \frac{1}{2}x^6dc^2b^4 + 2x^6d^2cb^3a + x^6d^3b^2a^2 + \frac{1}{5}x^5c^3b^4 + \frac{12}{5}x^5dc^2b^3a + \frac{18}{5}x^5d^2cb^2a^2 + \frac{4}{5}x^5d^3ba^3 + x^4c^3b^3a + \frac{9}{2}x^4dc^2b^2a^2 + 3x^4d^2cba^3 + \frac{1}{4}x^4d^3a^4 + 2x^3c^3b^2a^2 + 4x^3dc^2ba^3 + x^3d^2ca^4 + 2x^2c^3ba^3 + \frac{3}{2}x^2dc^2a^4 + xc^3a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*d^3*b^4 + 3/7*x^7*d^2*c*b^4 + 4/7*x^7*d^3*b^3*a + 1/2*x^6
*d*c^2*b^4 + 2*x^6*d^2*c*b^3*a + x^6*d^3*b^2*a^2 + 1/5*x^5*c^3*b^
4 + 12/5*x^5*d*c^2*b^3*a + 18/5*x^5*d^2*c*b^2*a^2 + 4/5*x^5*d^3*b
*a^3 + x^4*c^3*b^3*a + 9/2*x^4*d*c^2*b^2*a^2 + 3*x^4*d^2*c*b*a^3
+ 1/4*x^4*d^3*a^4 + 2*x^3*c^3*b^2*a^2 + 4*x^3*d*c^2*b*a^3 + x^3*d
^2*c*a^4 + 2*x^2*c^3*b*a^3 + 3/2*x^2*d*c^2*a^4 + x*c^3*a^4
```

Sympy [A] time = 0.199411, size = 243, normalized size = 2.64

$$a^4c^3x + \frac{b^4d^3x^8}{8} + x^7\left(\frac{4ab^3d^3}{7} + \frac{3b^4cd^2}{7}\right) + x^6\left(a^2b^2d^3 + 2ab^3cd^2 + \frac{b^4c^2d}{2}\right) + x^5\left(\frac{4a^3bd^3}{5} + \frac{18a^2b^2cd^2}{5} + \frac{12ab^3c^2d}{5} + \frac{b^4c^3}{5}\right) + x^4\left(\frac{a^4d^3}{4} + 3a^3bcd^2 + \frac{9a^2b^2c^2d}{2} + ab^3c^3\right) + x^3\left(a^4cd^2 + 4a^3bc^2d + 2a^2b^2c^3\right) + x^2\left(\frac{3a^4c^2d}{2} + 2a^3bc^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**3,x)
```

```
[Out] a**4*c**3*x + b**4*d**3*x**8/8 + x**7*(4*a*b**3*d**3/7 + 3*b**4*c
*d**2/7) + x**6*(a**2*b**2*d**3 + 2*a*b**3*c*d**2 + b**4*c**2*d/2
```

```
) + x**5*(4*a**3*b*d**3/5 + 18*a**2*b**2*c*d**2/5 + 12*a*b**3*c**
2*d/5 + b**4*c**3/5) + x**4*(a**4*d**3/4 + 3*a**3*b*c*d**2 + 9*a*
*2*b**2*c**2*d/2 + a*b**3*c**3) + x**3*(a**4*c*d**2 + 4*a**3*b*c*
*2*d + 2*a**2*b**2*c**3) + x**2*(3*a**4*c**2*d/2 + 2*a**3*b*c**3)
```

GIAC/XCAS [A] time = 0.21844, size = 331, normalized size = 3.6

$$\frac{1}{8}\,b^4d^3x^8 + \frac{3}{7}\,b^4cd^2x^7 + \frac{4}{7}\,ab^3d^3x^7 + \frac{1}{2}\,b^4c^2dx^6 + 2\,ab^3cd^2x^6 + a^2b^2d^3x^6 + \frac{1}{5}\,b^4c^3x^5 + \frac{12}{5}\,ab^3c^2dx^5 + \frac{18}{5}\,a^2b^2cd^2x^5 + \frac{4}{5}\,a^3bd^3x^5 + ab^3c^3x^4 + \frac{9}{2}\,a^2b^2c^2dx^4 + 3\,a^3bcd^2x^4 + \frac{1}{4}\,a^4d^3x^4 + 2\,a^2b^2c^3x^3 + 4\,a^3bc^2dx^3 + a^4cd^2x^3 + 2\,a^3bc^3x^2 + \frac{3}{2}\,a^4c^2dx^2 + a^4c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/8*b^4*d^3*x^8 + 3/7*b^4*c*d^2*x^7 + 4/7*a*b^3*d^3*x^7 + 1/2*b^4
*c^2*d*x^6 + 2*a*b^3*c*d^2*x^6 + a^2*b^2*d^3*x^6 + 1/5*b^4*c^3*x^
5 + 12/5*a*b^3*c^2*d*x^5 + 18/5*a^2*b^2*c*d^2*x^5 + 4/5*a^3*b*d^3
*x^5 + a*b^3*c^3*x^4 + 9/2*a^2*b^2*c^2*d*x^4 + 3*a^3*b*c*d^2*x^4
+ 1/4*a^4*d^3*x^4 + 2*a^2*b^2*c^3*x^3 + 4*a^3*b*c^2*d*x^3 + a^4*c
*d^2*x^3 + 2*a^3*b*c^3*x^2 + 3/2*a^4*c^2*d*x^2 + a^4*c^3*x
```

3.1260 $\int (a+bx)^3 (c+dx)^3 \, dx$

Optimal. Leaf size=92

$$\frac{d^2(a+bx)^6(bc-ad)}{2b^4}+\frac{3d(a+bx)^5(bc-ad)^2}{5b^4}+\frac{(a+bx)^4(bc-ad)^3}{4b^4}+\frac{d^3(a+bx)^7}{7b^4}$$

```
[Out] ((b*c - a*d)^3*(a + b*x)^4)/(4*b^4) + (3*d*(b*c - a*d)^2*(a + b*x
)^5)/(5*b^4) + (d^2*(b*c - a*d)*(a + b*x)^6)/(2*b^4) + (d^3*(a +
b*x)^7)/(7*b^4)
```

Rubi [A] time = 0.179506, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{d^2(a+bx)^6(bc-ad)}{2b^4}+\frac{3d(a+bx)^5(bc-ad)^2}{5b^4}+\frac{(a+bx)^4(bc-ad)^3}{4b^4}+\frac{d^3(a+bx)^7}{7b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^3,x]
```

```
[Out] ((b*c - a*d)^3*(a + b*x)^4)/(4*b^4) + (3*d*(b*c - a*d)^2*(a + b*x
)^5)/(5*b^4) + (d^2*(b*c - a*d)*(a + b*x)^6)/(2*b^4) + (d^3*(a +
b*x)^7)/(7*b^4)
```

Rubi in Sympy [A] time = 29.1398, size = 80, normalized size = 0.87

$$\frac{d^3\left(a+bx\right)^7}{7b^4}-\frac{d^2\left(a+bx\right)^6\left(ad-bc\right)}{2b^4}+\frac{3d\left(a+bx\right)^5\left(ad-bc\right)^2}{5b^4}-\frac{\left(a+bx\right)^4\left(ad-bc\right)^3}{4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**3,x)
```

```
[Out] d**3*(a + b*x)**7/(7*b**4) - d**2*(a + b*x)**6*(a*d - b*c)/(2*b**
4) + 3*d*(a + b*x)**5*(a*d - b*c)**2/(5*b**4) - (a + b*x)**4*(a*d
 - b*c)**3/(4*b**4)
```

Mathematica [A] time = 0.0351396, size = 161, normalized size = 1.75

$$a^3c^3x+\frac{3}{5}bdx^5\left(a^2d^2+3abcd+b^2c^2\right)+acx^3\left(a^2d^2+3abcd+b^2c^2\right)+\frac{3}{2}a^2c^2x^2(ad+bc)$$
$$+\frac{1}{4}x^4\left(a^3d^3+9a^2bcd^2+9ab^2c^2d+b^3c^3\right)+\frac{1}{2}b^2d^2x^6(ad+bc)+\frac{1}{7}b^3d^3x^7$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^3,x]
```

```
[Out] a^3*c^3*x + (3*a^2*c^2*(b*c + a*d)*x^2)/2 + a*c*(b^2*c^2 + 3*a*b*
c*d + a^2*d^2)*x^3 + ((b^3*c^3 + 9*a*b^2*c^2*d + 9*a^2*b*c*d^2 +
a^3*d^3)*x^4)/4 + (3*b*d*(b^2*c^2 + 3*a*b*c*d + a^2*d^2)*x^5)/5 +
 (b^2*d^2*(b*c + a*d)*x^6)/2 + (b^3*d^3*x^7)/7
```

Maple [B] time = 0.001, size = 177, normalized size = 1.9

$$\frac{b^3d^3x^7}{7}+\frac{\left(3\,ab^2d^3+3\,b^3cd^2\right)x^6}{6}+\frac{\left(3\,a^2bd^3+9\,ab^2cd^2+3\,b^3c^2d\right)x^5}{5}+\frac{\left(a^3d^3+9\,a^2bcd^2+9\,ab^2c^2d+b^3c^3\right)x^4}{4}+\frac{\left(3\,a^3cd^2+9\,a^2bc^2d+3\,ab^2c^3\right)x^3}{3}+\frac{\left(3\,a^3c^2d+3\,a^2bc^3\right)x^2}{2}+a^3c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^3,x)
```

```
[Out] 1/7*b^3*d^3*x^7+1/6*(3*a*b^2*d^3+3*b^3*c*d^2)*x^6+1/5*(3*a^2*b*d^
3+9*a*b^2*c*d^2+3*b^3*c^2*d)*x^5+1/4*(a^3*d^3+9*a^2*b*c*d^2+9*a*b
^2*c^2*d+b^3*c^3)*x^4+1/3*(3*a^3*c*d^2+9*a^2*b*c^2*d+3*a*b^2*c^3)
*x^3+1/2*(3*a^3*c^2*d+3*a^2*b*c^3)*x^2+a^3*c^3*x
```

Maxima [A] time = 1.36666, size = 225, normalized size = 2.45

$$\frac{1}{7}\,b^3d^3x^7+a^3c^3x+\frac{1}{2}\left(b^3cd^2+ab^2d^3\right)x^6+\frac{3}{5}\left(b^3c^2d+3\,ab^2cd^2+a^2bd^3\right)x^5+\frac{1}{4}\left(b^3c^3+9\,ab^2c^2d+9\,a^2bcd^2+a^3d^3\right)x^4+\left(ab^2c^3+3\,a^2bc^2d+a^3cd^2\right)x^3+\frac{3}{2}\left(a^2bc^3+a^3c^2d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/7*b^3*d^3*x^7 + a^3*c^3*x + 1/2*(b^3*c*d^2 + a*b^2*d^3)*x^6 + 3
/5*(b^3*c^2*d + 3*a*b^2*c*d^2 + a^2*b*d^3)*x^5 + 1/4*(b^3*c^3 + 9
*a*b^2*c^2*d + 9*a^2*b*c*d^2 + a^3*d^3)*x^4 + (a*b^2*c^3 + 3*a^2*
b*c^2*d + a^3*c*d^2)*x^3 + 3/2*(a^2*b*c^3 + a^3*c^2*d)*x^2
```

Fricas [A] time = 0.181809, size = 1, normalized size = 0.01

$$\frac{1}{7}x^7d^3b^3+\frac{1}{2}x^6d^2cb^3+\frac{1}{2}x^6d^3b^2a+\frac{3}{5}x^5dc^2b^3+\frac{9}{5}x^5d^2cb^2a+\frac{3}{5}x^5d^3ba^2+\frac{1}{4}x^4c^3b^3+\frac{9}{4}x^4dc^2b^2a+\frac{9}{4}x^4d^2cba^2+\frac{1}{4}x^4d^3a^3+x^3c^3b^2a+3x^3dc^2ba^2+x^3d^2ca^3+\frac{3}{2}x^2c^3ba^2+\frac{3}{2}x^2dc^2a^3+xc^3a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*d^3*b^3 + 1/2*x^6*d^2*c*b^3 + 1/2*x^6*d^3*b^2*a + 3/5*x^5
*d*c^2*b^3 + 9/5*x^5*d^2*c*b^2*a + 3/5*x^5*d^3*b*a^2 + 1/4*x^4*c^
3*b^3 + 9/4*x^4*d*c^2*b^2*a + 9/4*x^4*d^2*c*b*a^2 + 1/4*x^4*d^3*a
^3 + x^3*c^3*b^2*a + 3*x^3*d*c^2*b*a^2 + x^3*d^2*c*a^3 + 3/2*x^2*
c^3*b*a^2 + 3/2*x^2*d*c^2*a^3 + x*c^3*a^3
```

Sympy [A] time = 0.167046, size = 190, normalized size = 2.07

$$a^3c^3x+\frac{b^3d^3x^7}{7}+x^6\left(\frac{ab^2d^3}{2}+\frac{b^3cd^2}{2}\right)+x^5\left(\frac{3a^2bd^3}{5}+\frac{9ab^2cd^2}{5}+\frac{3b^3c^2d}{5}\right)+x^4\left(\frac{a^3d^3}{4}+\frac{9a^2bcd^2}{4}+\frac{9ab^2c^2d}{4}+\frac{b^3c^3}{4}\right)+x^3\left(a^3cd^2+3a^2bc^2d+ab^2c^3\right)+x^2\left(\frac{3a^3c^2d}{2}+\frac{3a^2bc^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**3,x)
```

```
[Out] a**3*c**3*x + b**3*d**3*x**7/7 + x**6*(a*b**2*d**3/2 + b**3*c*d**
2/2) + x**5*(3*a**2*b*d**3/5 + 9*a*b**2*c*d**2/5 + 3*b**3*c**2*d/
5) + x**4*(a**3*d**3/4 + 9*a**2*b*c*d**2/4 + 9*a*b**2*c**2*d/4 +
b**3*c**3/4) + x**3*(a**3*c*d**2 + 3*a**2*b*c**2*d + a*b**2*c**3)
 + x**2*(3*a**3*c**2*d/2 + 3*a**2*b*c**3/2)
```

GIAC/XCAS [A] time = 0.220735, size = 254, normalized size = 2.76

$$\frac{1}{7}\,b^3d^3x^7+\frac{1}{2}\,b^3cd^2x^6+\frac{1}{2}\,ab^2d^3x^6+\frac{3}{5}\,b^3c^2dx^5+\frac{9}{5}\,ab^2cd^2x^5+\frac{3}{5}\,a^2bd^3x^5+\frac{1}{4}\,b^3c^3x^4+\frac{9}{4}\,ab^2c^2dx^4+\frac{9}{4}\,a^2bcd^2x^4+\frac{1}{4}\,a^3d^3x^4+ab^2c^3x^3+3\,a^2bc^2dx^3+a^3cd^2x^3+\frac{3}{2}\,a^2bc^3x^2+\frac{3}{2}\,a^3c^2dx^2+a^3c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/7*b^3*d^3*x^7 + 1/2*b^3*c*d^2*x^6 + 1/2*a*b^2*d^3*x^6 + 3/5*b^3
*c^2*d*x^5 + 9/5*a*b^2*c*d^2*x^5 + 3/5*a^2*b*d^3*x^5 + 1/4*b^3*c^
3*x^4 + 9/4*a*b^2*c^2*d*x^4 + 9/4*a^2*b*c*d^2*x^4 + 1/4*a^3*d^3*x
^4 + a*b^2*c^3*x^3 + 3*a^2*b*c^2*d*x^3 + a^3*c*d^2*x^3 + 3/2*a^2*
b*c^3*x^2 + 3/2*a^3*c^2*d*x^2 + a^3*c^3*x
```

3.1261 $\int (a+bx)^2(c+dx)^3\,dx$

Optimal. Leaf size=65

$$-\frac{2b(c+dx)^5(bc-ad)}{5d^3}+\frac{(c+dx)^4(bc-ad)^2}{4d^3}+\frac{b^2(c+dx)^6}{6d^3}$$

```
[Out] ((b*c - a*d)^2*(c + d*x)^4)/(4*d^3) - (2*b*(b*c - a*d)*(c + d*x)^
5)/(5*d^3) + (b^2*(c + d*x)^6)/(6*d^3)
```

Rubi [A] time = 0.140652, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{2b(c+dx)^5(bc-ad)}{5d^3}+\frac{(c+dx)^4(bc-ad)^2}{4d^3}+\frac{b^2(c+dx)^6}{6d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^3,x]
```

```
[Out] ((b*c - a*d)^2*(c + d*x)^4)/(4*d^3) - (2*b*(b*c - a*d)*(c + d*x)^
5)/(5*d^3) + (b^2*(c + d*x)^6)/(6*d^3)
```

Rubi in Sympy [A] time = 20.1618, size = 56, normalized size = 0.86

$$\frac{b^2\left(c+dx\right)^6}{6d^3}+\frac{2b\left(c+dx\right)^5\left(ad-bc\right)}{5d^3}+\frac{\left(c+dx\right)^4\left(ad-bc\right)^2}{4d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**3,x)
```

```
[Out] b**2*(c + d*x)**6/(6*d**3) + 2*b*(c + d*x)**5*(a*d - b*c)/(5*d**3
) + (c + d*x)**4*(a*d - b*c)**2/(4*d**3)
```

Mathematica [A] time = 0.0256111, size = 122, normalized size = 1.88

$$\frac{1}{4}dx^4\left(a^2d^2+6abcd+3b^2c^2\right)+\frac{1}{3}cx^3\left(3a^2d^2+6abcd+b^2c^2\right)+a^2c^3x+\frac{1}{2}ac^2x^2(3ad+2bc)+\frac{1}{5}bd^2x^5(2ad+3bc)+\frac{1}{6}b^2d^3x^6$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^3,x]
```

```
[Out] a^2*c^3*x + (a*c^2*(2*b*c + 3*a*d)*x^2)/2 + (c*(b^2*c^2 + 6*a*b*c
*d + 3*a^2*d^2)*x^3)/3 + (d*(3*b^2*c^2 + 6*a*b*c*d + a^2*d^2)*x^4
)/4 + (b*d^2*(3*b*c + 2*a*d)*x^5)/5 + (b^2*d^3*x^6)/6
```

Maple [B] time = 0.002, size = 125, normalized size = 1.9

$$\frac{b^2d^3x^6}{6}+\frac{\left(2\,abd^3+3\,b^2cd^2\right)x^5}{5}+\frac{\left(a^2d^3+6\,abcd^2+3\,b^2c^2d\right)x^4}{4}+\frac{\left(3\,a^2cd^2+6\,abc^2d+b^2c^3\right)x^3}{3}+\frac{\left(3\,a^2c^2d+2\,abc^3\right)x^2}{2}+a^2c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^3,x)
```

```
[Out] 1/6*b^2*d^3*x^6+1/5*(2*a*b*d^3+3*b^2*c*d^2)*x^5+1/4*(a^2*d^3+6*a*
b*c*d^2+3*b^2*c^2*d)*x^4+1/3*(3*a^2*c*d^2+6*a*b*c^2*d+b^2*c^3)*x^
3+1/2*(3*a^2*c^2*d+2*a*b*c^3)*x^2+a^2*c^3*x
```

Maxima [A] time = 1.34897, size = 167, normalized size = 2.57

$$\frac{1}{6}\,b^2d^3x^6+a^2c^3x+\frac{1}{5}\left(3\,b^2cd^2+2\,abd^3\right)x^5+\frac{1}{4}\left(3\,b^2c^2d+6\,abcd^2+a^2d^3\right)x^4+\frac{1}{3}\left(b^2c^3+6\,abc^2d+3\,a^2cd^2\right)x^3+\frac{1}{2}\left(2\,abc^3+3\,a^2c^2d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/6*b^2*d^3*x^6 + a^2*c^3*x + 1/5*(3*b^2*c*d^2 + 2*a*b*d^3)*x^5 +
 1/4*(3*b^2*c^2*d + 6*a*b*c*d^2 + a^2*d^3)*x^4 + 1/3*(b^2*c^3 + 6
*a*b*c^2*d + 3*a^2*c*d^2)*x^3 + 1/2*(2*a*b*c^3 + 3*a^2*c^2*d)*x^2
```

Fricas [A] time = 0.186121, size = 1, normalized size = 0.02

$$\frac{1}{6}x^6d^3b^2+\frac{3}{5}x^5d^2cb^2+\frac{2}{5}x^5d^3ba+\frac{3}{4}x^4dc^2b^2+\frac{3}{2}x^4d^2cba+\frac{1}{4}x^4d^3a^2+\frac{1}{3}x^3c^3b^2+2x^3dc^2ba+x^3d^2ca^2+x^2c^3ba+\frac{3}{2}x^2dc^2a^2+xc^3a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*d^3*b^2 + 3/5*x^5*d^2*c*b^2 + 2/5*x^5*d^3*b*a + 3/4*x^4*d
*c^2*b^2 + 3/2*x^4*d^2*c*b*a + 1/4*x^4*d^3*a^2 + 1/3*x^3*c^3*b^2
+ 2*x^3*d*c^2*b*a + x^3*d^2*c*a^2 + x^2*c^3*b*a + 3/2*x^2*d*c^2*a
^2 + x*c^3*a^2
```

Sympy [A] time = 0.152008, size = 133, normalized size = 2.05

$$a^2c^3x + \frac{b^2d^3x^6}{6} + x^5\left(\frac{2abd^3}{5} + \frac{3b^2cd^2}{5}\right) + x^4\left(\frac{a^2d^3}{4} + \frac{3abcd^2}{2} + \frac{3b^2c^2d}{4}\right) + x^3\left(a^2cd^2 + 2abc^2d + \frac{b^2c^3}{3}\right) + x^2\left(\frac{3a^2c^2d}{2} + abc^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**3,x)
```

```
[Out] a**2*c**3*x + b**2*d**3*x**6/6 + x**5*(2*a*b*d**3/5 + 3*b**2*c*d*
*2/5) + x**4*(a**2*d**3/4 + 3*a*b*c*d**2/2 + 3*b**2*c**2*d/4) + x
**3*(a**2*c*d**2 + 2*a*b*c**2*d + b**2*c**3/3) + x**2*(3*a**2*c**
2*d/2 + a*b*c**3)
```

GIAC/XCAS [A] time = 0.223482, size = 176, normalized size = 2.71

$$\frac{1}{6}\,b^2d^3x^6 + \frac{3}{5}\,b^2cd^2x^5 + \frac{2}{5}\,abd^3x^5 + \frac{3}{4}\,b^2c^2dx^4 + \frac{3}{2}\,abcd^2x^4 + \frac{1}{4}\,a^2d^3x^4 + \frac{1}{3}\,b^2c^3x^3 + 2\,abc^2dx^3 + a^2cd^2x^3 + abc^3x^2 + \frac{3}{2}\,a^2c^2dx^2 + a^2c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/6*b^2*d^3*x^6 + 3/5*b^2*c*d^2*x^5 + 2/5*a*b*d^3*x^5 + 3/4*b^2*c
^2*d*x^4 + 3/2*a*b*c*d^2*x^4 + 1/4*a^2*d^3*x^4 + 1/3*b^2*c^3*x^3
+ 2*a*b*c^2*d*x^3 + a^2*c*d^2*x^3 + a*b*c^3*x^2 + 3/2*a^2*c^2*d*x
^2 + a^2*c^3*x
```

3.1262 $\int (a+bx)(c+dx)^3\,dx$

Optimal. Leaf size=38

$$\frac{b(c+dx)^5}{5d^2}-\frac{(c+dx)^4(bc-ad)}{4d^2}$$

```
[Out] -((b*c - a*d)*(c + d*x)^4)/(4*d^2) + (b*(c + d*x)^5)/(5*d^2)
```

Rubi [A] time = 0.0446895, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{b(c+dx)^5}{5d^2}-\frac{(c+dx)^4(bc-ad)}{4d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^3,x]

[Out] -((b*c - a*d)*(c + d*x)^4)/(4*d^2) + (b*(c + d*x)^5)/(5*d^2)
```

Rubi in Sympy [A] time = 10.5174, size = 31, normalized size = 0.82

$$\frac{b\,(c+dx)^5}{5d^2}+\frac{(c+dx)^4\,(ad-bc)}{4d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**3,x)

[Out] b*(c + d*x)**5/(5*d**2) + (c + d*x)**4*(a*d - b*c)/(4*d**2)
```

Mathematica [A] time = 0.0120813, size = 67, normalized size = 1.76

$$\frac{1}{2}c^2x^2(3ad+bc)+\frac{1}{4}d^2x^4(ad+3bc)+cdx^3(ad+bc)+ac^3x+\frac{1}{5}bd^3x^5$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^3,x]
```

```
[Out] a*c^3*x + (c^2*(b*c + 3*a*d)*x^2)/2 + c*d*(b*c + a*d)*x^3 + (d^2*
(3*b*c + a*d)*x^4)/4 + (b*d^3*x^5)/5
```

Maple [B] time = 0.002, size = 73, normalized size = 1.9

$$\frac{bd^3x^5}{5} + \frac{\left(ad^3 + 3\,bcd^2\right)x^4}{4} + \frac{\left(3\,acd^2 + 3\,bc^2d\right)x^3}{3} + \frac{\left(3\,ac^2d + bc^3\right)x^2}{2} + ac^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^3,x)
```

```
[Out] 1/5*b*d^3*x^5+1/4*(a*d^3+3*b*c*d^2)*x^4+1/3*(3*a*c*d^2+3*b*c^2*d)
*x^3+1/2*(3*a*c^2*d+b*c^3)*x^2+a*c^3*x
```

Maxima [A] time = 1.33622, size = 93, normalized size = 2.45

$$\frac{1}{5}\,bd^3x^5 + ac^3x + \frac{1}{4}\left(3\,bcd^2 + ad^3\right)x^4 + \left(bc^2d + acd^2\right)x^3 + \frac{1}{2}\left(bc^3 + 3\,ac^2d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/5*b*d^3*x^5 + a*c^3*x + 1/4*(3*b*c*d^2 + a*d^3)*x^4 + (b*c^2*d
+ a*c*d^2)*x^3 + 1/2*(b*c^3 + 3*a*c^2*d)*x^2
```

Fricas [A] time = 0.176874, size = 1, normalized size = 0.03

$$\frac{1}{5}x^5d^3b + \frac{3}{4}x^4d^2cb + \frac{1}{4}x^4d^3a + x^3dc^2b + x^3d^2ca + \frac{1}{2}x^2c^3b + \frac{3}{2}x^2dc^2a + xc^3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/5*x^5*d^3*b + 3/4*x^4*d^2*c*b + 1/4*x^4*d^3*a + x^3*d*c^2*b + x
^3*d^2*c*a + 1/2*x^2*c^3*b + 3/2*x^2*d*c^2*a + x*c^3*a
```

Sympy [A] time = 0.114205, size = 73, normalized size = 1.92

$$ac^3x + \frac{bd^3x^5}{5} + x^4\left(\frac{ad^3}{4} + \frac{3bcd^2}{4}\right) + x^3\left(acd^2 + bc^2d\right) + x^2\left(\frac{3ac^2d}{2} + \frac{bc^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**3,x)
```

```
[Out] a*c**3*x + b*d**3*x**5/5 + x**4*(a*d**3/4 + 3*b*c*d**2/4) + x**3*
(a*c*d**2 + b*c**2*d) + x**2*(3*a*c**2*d/2 + b*c**3/2)
```

GIAC/XCAS [A] time = 0.219603, size = 97, normalized size = 2.55

$$\frac{1}{5}\,bd^3x^5 + \frac{3}{4}\,bcd^2x^4 + \frac{1}{4}\,ad^3x^4 + bc^2dx^3 + acd^2x^3 + \frac{1}{2}\,bc^3x^2 + \frac{3}{2}\,ac^2dx^2 + ac^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/5*b*d^3*x^5 + 3/4*b*c*d^2*x^4 + 1/4*a*d^3*x^4 + b*c^2*d*x^3 + a
*c*d^2*x^3 + 1/2*b*c^3*x^2 + 3/2*a*c^2*d*x^2 + a*c^3*x
```

3.1263 $\int (c+dx)^3\,dx$

Optimal. Leaf size=14

$$\frac{(c+dx)^4}{4d}$$

```
[Out] (c + d*x)^4/(4*d)
```

Rubi [A] time = 0.00710458, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(c+dx)^4}{4d}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3,x]
```

```
[Out] (c + d*x)^4/(4*d)
```

Rubi in Sympy [A] time = 1.3032, size = 8, normalized size = 0.57

$$\frac{(c+dx)^4}{4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3,x)
```

```
[Out] (c + d*x)**4/(4*d)
```

Mathematica [A] time = 0.00203093, size = 14, normalized size = 1.

$$\frac{(c+dx)^4}{4d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3,x]
```

```
[Out] (c + d*x)^4/(4*d)
```

Maple [A] time = 0.002, size = 13, normalized size = 0.9

$$\frac{(dx+c)^4}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3,x)
```

```
[Out] 1/4*(d*x+c)^4/d
```

Maxima [A] time = 1.34283, size = 42, normalized size = 3.

$$\frac{1}{4}\,d^3x^4 + cd^2x^3 + \frac{3}{2}\,c^2dx^2 + c^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/4*d^3*x^4 + c*d^2*x^3 + 3/2*c^2*d*x^2 + c^3*x
```

Fricas [A] time = 0.180621, size = 1, normalized size = 0.07

$$\frac{1}{4}x^4d^3 + x^3d^2c + \frac{3}{2}x^2dc^2 + xc^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/4*x^4*d^3 + x^3*d^2*c + 3/2*x^2*d*c^2 + x*c^3
```

Sympy [A] time = 0.077014, size = 32, normalized size = 2.29

$$c^3x + \frac{3c^2dx^2}{2} + cd^2x^3 + \frac{d^3x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3,x)
```

```
[Out] c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x**4/4
```

GIAC/XCAS [A] time = 0.218597, size = 16, normalized size = 1.14

$$\frac{(dx+c)^4}{4\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3,x, algorithm="giac")
```

```
[Out] 1/4*(d*x + c)^4/d
```

3.1264 $\int \frac{(c+dx)^3}{a+bx}\,dx$

Optimal. Leaf size=73

$$\frac{(bc-ad)^3\log(a+bx)}{b^4}+\frac{dx(bc-ad)^2}{b^3}+\frac{(c+dx)^2(bc-ad)}{2b^2}+\frac{(c+dx)^3}{3b}$$

```
[Out] (d*(b*c - a*d)^2*x)/b^3 + ((b*c - a*d)*(c + d*x)^2)/(2*b^2) + (c
+ d*x)^3/(3*b) + ((b*c - a*d)^3*Log[a + b*x])/b^4
```

Rubi [A] time = 0.0696603, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^3\log(a+bx)}{b^4}+\frac{dx(bc-ad)^2}{b^3}+\frac{(c+dx)^2(bc-ad)}{2b^2}+\frac{(c+dx)^3}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x),x]
```

```
[Out] (d*(b*c - a*d)^2*x)/b^3 + ((b*c - a*d)*(c + d*x)^2)/(2*b^2) + (c
+ d*x)^3/(3*b) + ((b*c - a*d)^3*Log[a + b*x])/b^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(c+dx)^3}{3b}-\frac{(c+dx)^2\,(ad-bc)}{2b^2}+\frac{(ad-bc)^2\int d\,dx}{b^3}-\frac{(ad-bc)^3\log\,(a+bx)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a),x)
```

```
[Out] (c + d*x)**3/(3*b) - (c + d*x)**2*(a*d - b*c)/(2*b**2) + (a*d - b
*c)**2*Integral(d, x)/b**3 - (a*d - b*c)**3*log(a + b*x)/b**4
```

Mathematica [A] time = 0.0468068, size = 74, normalized size = 1.01

$$\frac{bdx\left(6a^2d^2-3abd(6c+dx)+b^2\left(18c^2+9cdx+2d^2x^2\right)\right)+6(bc-ad)^3\log(a+bx)}{6b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x),x]
```

```
[Out] (b*d*x*(6*a^2*d^2 - 3*a*b*d*(6*c + d*x) + b^2*(18*c^2 + 9*c*d*x +
 2*d^2*x^2)) + 6*(b*c - a*d)^3*Log[a + b*x])/(6*b^4)
```

Maple [A] time = 0.006, size = 133, normalized size = 1.8

$$\frac{d^3x^3}{3\,b}-\frac{d^3x^2a}{2\,b^2}+\frac{3\,d^2x^2c}{2\,b}+\frac{a^2d^3x}{b^3}-3\,\frac{acd^2x}{b^2}+3\,\frac{dc^2x}{b}-\frac{a^3\ln\left(bx+a\right)d^3}{b^4}+3\,\frac{a^2\ln\left(bx+a\right)cd^2}{b^3}-3\,\frac{a\ln\left(bx+a\right)c^2d}{b^2}+\frac{\ln\left(bx+a\right)c^3}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a),x)
```

```
[Out] 1/3*d^3/b*x^3-1/2*d^3/b^2*x^2*a+3/2*d^2/b*x^2*c+d^3/b^3*a^2*x-3*d
^2/b^2*a*c*x+3*d/b*c^2*x-1/b^4*ln(b*x+a)*a^3*d^3+3/b^3*ln(b*x+a)*
a^2*c*d^2-3/b^2*ln(b*x+a)*a*c^2*d+1/b*ln(b*x+a)*c^3
```

Maxima [A] time = 1.34725, size = 154, normalized size = 2.11

$$\frac{2\,b^2d^3x^3+3\left(3\,b^2cd^2-abd^3\right)x^2+6\left(3\,b^2c^2d-3\,abcd^2+a^2d^3\right)x}{6\,b^3}+\frac{\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)\log\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a),x, algorithm="maxima")
```

```
[Out] 1/6*(2*b^2*d^3*x^3 + 3*(3*b^2*c*d^2 - a*b*d^3)*x^2 + 6*(3*b^2*c^2
*d - 3*a*b*c*d^2 + a^2*d^3)*x)/b^3 + (b^3*c^3 - 3*a*b^2*c^2*d + 3
*a^2*b*c*d^2 - a^3*d^3)*log(b*x + a)/b^4
```

Fricas [A] time = 0.201948, size = 157, normalized size = 2.15

$$\frac{2\,b^3d^3x^3+3\left(3\,b^3cd^2-ab^2d^3\right)x^2+6\left(3\,b^3c^2d-3\,ab^2cd^2+a^2bd^3\right)x+6\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)\log\left(bx+a\right)}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*d^3*x^3 + 3*(3*b^3*c*d^2 - a*b^2*d^3)*x^2 + 6*(3*b^3*c
^2*d - 3*a*b^2*c*d^2 + a^2*b*d^3)*x + 6*(b^3*c^3 - 3*a*b^2*c^2*d
+ 3*a^2*b*c*d^2 - a^3*d^3)*log(b*x + a))/b^4
```

Sympy [A] time = 1.77168, size = 82, normalized size = 1.12

$$\frac{d^3x^3}{3b} - \frac{x^2\left(ad^3 - 3bcd^2\right)}{2b^2} + \frac{x\left(a^2d^3 - 3abcd^2 + 3b^2c^2d\right)}{b^3} - \frac{(ad - bc)^3\log\left(a + bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a),x)
```

```
[Out] d**3*x**3/(3*b) - x**2*(a*d**3 - 3*b*c*d**2)/(2*b**2) + x*(a**2*d
**3 - 3*a*b*c*d**2 + 3*b**2*c**2*d)/b**3 - (a*d - b*c)**3*log(a +
 b*x)/b**4
```

GIAC/XCAS [A] time = 0.223938, size = 155, normalized size = 2.12

$$\frac{2\,b^2d^3x^3 + 9\,b^2cd^2x^2 - 3\,abd^3x^2 + 18\,b^2c^2dx - 18\,abcd^2x + 6\,a^2d^3x}{6\,b^3} + \frac{\left(b^3c^3 - 3\,ab^2c^2d + 3\,a^2bcd^2 - a^3d^3\right)\ln\left(|bx + a|\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a),x, algorithm="giac")
```

```
[Out] 1/6*(2*b^2*d^3*x^3 + 9*b^2*c*d^2*x^2 - 3*a*b*d^3*x^2 + 18*b^2*c^2
*d*x - 18*a*b*c*d^2*x + 6*a^2*d^3*x)/b^3 + (b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*ln(abs(b*x + a))/b^4
```

3.1265 $\int \frac{(c+dx)^3}{(a+bx)^2}\,dx$

Optimal. Leaf size=75

$$-\frac{(bc-ad)^3}{b^4(a+bx)}+\frac{3d(bc-ad)^2\log(a+bx)}{b^4}+\frac{d^2x(3bc-2ad)}{b^3}+\frac{d^3x^2}{2b^2}$$

```
[Out] (d^2*(3*b*c - 2*a*d)*x)/b^3 + (d^3*x^2)/(2*b^2) - (b*c - a*d)^3/(
b^4*(a + b*x)) + (3*d*(b*c - a*d)^2*Log[a + b*x])/b^4
```

Rubi [A] time = 0.125652, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(bc-ad)^3}{b^4(a+bx)}+\frac{3d(bc-ad)^2\log(a+bx)}{b^4}+\frac{d^2x(3bc-2ad)}{b^3}+\frac{d^3x^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^2,x]
```

```
[Out] (d^2*(3*b*c - 2*a*d)*x)/b^3 + (d^3*x^2)/(2*b^2) - (b*c - a*d)^3/(
b^4*(a + b*x)) + (3*d*(b*c - a*d)^2*Log[a + b*x])/b^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-d^2\left(2ad-3bc\right)\int\frac{1}{b^3}\,dx+\frac{d^3\int x\,dx}{b^2}+\frac{3d\left(ad-bc\right)^2\log\left(a+bx\right)}{b^4}+\frac{\left(ad-bc\right)^3}{b^4\left(a+bx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**2,x)
```

```
[Out] -d**2*(2*a*d - 3*b*c)*Integral(b**(-3), x) + d**3*Integral(x, x)/
b**2 + 3*d*(a*d - b*c)**2*log(a + b*x)/b**4 + (a*d - b*c)**3/(b**
4*(a + b*x))
```

Mathematica [A] time = 0.0878888, size = 72, normalized size = 0.96

$$\frac{2bd^2x(3bc-2ad)-\frac{2(bc-ad)^3}{a+bx}+6d(bc-ad)^2\log(a+bx)+b^2d^3x^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^2,x]
```

```
[Out] (2*b*d^2*(3*b*c - 2*a*d)*x + b^2*d^3*x^2 - (2*(b*c - a*d)^3)/(a +
 b*x) + 6*d*(b*c - a*d)^2*Log[a + b*x])/(2*b^4)
```

Maple [B] time = 0.011, size = 149, normalized size = 2.

$$\frac{d^3x^2}{2\,b^2}-2\,\frac{ad^3x}{b^3}+3\,\frac{d^2xc}{b^2}+3\,\frac{d^3\ln(bx+a)\,a^2}{b^4}-6\,\frac{d^2\ln(bx+a)\,ac}{b^3} +3\,\frac{d\ln(bx+a)\,c^2}{b^2}+\frac{a^3d^3}{b^4\,(bx+a)}-3\,\frac{a^2cd^2}{b^3\,(bx+a)}+3\,\frac{ac^2d}{b^2\,(bx+a)}-\frac{c^3}{b\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^2,x)
```

```
[Out] 1/2*d^3*x^2/b^2-2*d^3/b^3*a*x+3*d^2/b^2*x*c+3/b^4*d^3*ln(b*x+a)*a
^2-6/b^3*d^2*ln(b*x+a)*a*c+3/b^2*d*ln(b*x+a)*c^2+1/b^4/(b*x+a)*a^
3*d^3-3/b^3/(b*x+a)*a^2*c*d^2+3/b^2/(b*x+a)*a*c^2*d-1/b/(b*x+a)*c
^3
```

Maxima [A] time = 1.4101, size = 159, normalized size = 2.12

$$-\frac{b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3}{b^5x+ab^4}+\frac{bd^3x^2+2\left(3\,bcd^2-2\,ad^3\right)x}{2\,b^3}+\frac{3\left(b^2c^2d-2\,abcd^2+a^2d^3\right)\log(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)/(b^5*x + a*b
^4) + 1/2*(b*d^3*x^2 + 2*(3*b*c*d^2 - 2*a*d^3)*x)/b^3 + 3*(b^2*c^
2*d - 2*a*b*c*d^2 + a^2*d^3)*log(b*x + a)/b^4
```

Fricas [A] time = 0.223571, size = 234, normalized size = 3.12

$$\frac{b^3d^3x^3-2\,b^3c^3+6\,ab^2c^2d-6\,a^2bcd^2+2\,a^3d^3+3\left(2\,b^3cd^2-ab^2d^3\right)x^2+2\left(3\,ab^2cd^2-2\,a^2bd^3\right)x+6\left(ab^2c^2d-2\,a^2bcd^2+\right.}{2\left(b^5x+ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*d^3*x^3 - 2*b^3*c^3 + 6*a*b^2*c^2*d - 6*a^2*b*c*d^2 + 2*
a^3*d^3 + 3*(2*b^3*c*d^2 - a*b^2*d^3)*x^2 + 2*(3*a*b^2*c*d^2 - 2*
a^2*b*d^3)*x + 6*(a*b^2*c^2*d - 2*a^2*b*c*d^2 + a^3*d^3 + (b^3*c^
2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a))/(b^5*x + a*b^4)
```

Sympy [A] time = 2.6553, size = 100, normalized size = 1.33

$$\frac{a^3d^3 - 3a^2bcd^2 + 3ab^2c^2d - b^3c^3}{ab^4 + b^5x} + \frac{d^3x^2}{2b^2} - \frac{x\left(2ad^3 - 3bcd^2\right)}{b^3} + \frac{3d\left(ad - bc\right)^2\log\left(a + bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**2,x)
```

```
[Out] (a**3*d**3 - 3*a**2*b*c*d**2 + 3*a*b**2*c**2*d - b**3*c**3)/(a*b*
*4 + b**5*x) + d**3*x**2/(2*b**2) - x*(2*a*d**3 - 3*b*c*d**2)/b**
3 + 3*d*(a*d - b*c)**2*log(a + b*x)/b**4
```

GIAC/XCAS [A] time = 0.217654, size = 225, normalized size = 3.

$$\frac{\left(d^3 + \frac{6\left(b^2cd^2 - abd^3\right)}{(bx+a)b}\right)(bx+a)^2}{2\,b^4} - \frac{3\left(b^2c^2d - 2\,abcd^2 + a^2d^3\right)\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^4} - \frac{\frac{b^5c^3}{bx+a} - \frac{3\,ab^4c^2d}{bx+a} + \frac{3\,a^2b^3cd^2}{bx+a} - \frac{a^3b^2d^3}{bx+a}}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(d^3 + 6*(b^2*c*d^2 - a*b*d^3)/((b*x + a)*b))*(b*x + a)^2/b^4
 - 3*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*ln(abs(b*x + a)/((b*x +
a)^2*abs(b)))/b^4 - (b^5*c^3/(b*x + a) - 3*a*b^4*c^2*d/(b*x + a)
+ 3*a^2*b^3*c*d^2/(b*x + a) - a^3*b^2*d^3/(b*x + a))/b^6
```

3.1266 $\int \frac{(c+dx)^3}{(a+bx)^3}\,dx$

Optimal. Leaf size=78

$$\frac{3d^2(bc-ad)\log(a+bx)}{b^4}-\frac{3d(bc-ad)^2}{b^4(a+bx)}-\frac{(bc-ad)^3}{2b^4(a+bx)^2}+\frac{d^3x}{b^3}$$

```
[Out] (d^3*x)/b^3 - (b*c - a*d)^3/(2*b^4*(a + b*x)^2) - (3*d*(b*c - a*d
)^2)/(b^4*(a + b*x)) + (3*d^2*(b*c - a*d)*Log[a + b*x])/b^4
```

Rubi [A] time = 0.122965, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{3d^2(bc-ad)\log(a+bx)}{b^4}-\frac{3d(bc-ad)^2}{b^4(a+bx)}-\frac{(bc-ad)^3}{2b^4(a+bx)^2}+\frac{d^3x}{b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^3,x]
```

```
[Out] (d^3*x)/b^3 - (b*c - a*d)^3/(2*b^4*(a + b*x)^2) - (3*d*(b*c - a*d
)^2)/(b^4*(a + b*x)) + (3*d^2*(b*c - a*d)*Log[a + b*x])/b^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$d^3\int \frac{1}{b^3}\,dx-\frac{3d^2\left(ad-bc\right)\log\left(a+bx\right)}{b^4}-\frac{3d\left(ad-bc\right)^2}{b^4\left(a+bx\right)}+\frac{\left(ad-bc\right)^3}{2b^4\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**3,x)
```

```
[Out] d**3*Integral(b**(-3), x) - 3*d**2*(a*d - b*c)*log(a + b*x)/b**4
- 3*d*(a*d - b*c)**2/(b**4*(a + b*x)) + (a*d - b*c)**3/(2*b**4*(a
 + b*x)**2)
```

Mathematica [A] time = 0.067806, size = 114, normalized size = 1.46

$$\frac{-5a^3d^3+a^2bd^2(9c-4dx)+ab^2d\left(-3c^2+12cdx+4d^2x^2\right)-6d^2(a+bx)^2(ad-bc)\log(a+bx)+b^3\left(-\left(c^3+6c^2dx-2d^3x^3\right)\right)}{2b^4(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^3,x]
```

```
[Out] (-5*a^3*d^3 + a^2*b*d^2*(9*c - 4*d*x) + a*b^2*d*(-3*c^2 + 12*c*d*
x + 4*d^2*x^2) - b^3*(c^3 + 6*c^2*d*x - 2*d^3*x^3) - 6*d^2*(-(b*c
) + a*d)*(a + b*x)^2*Log[a + b*x])/(2*b^4*(a + b*x)^2)
```

Maple [B] time = 0.011, size = 160, normalized size = 2.1

$$\frac{d^3x}{b^3} - 3\,\frac{d^3\ln(bx+a)\,a}{b^4} + 3\,\frac{d^2\ln(bx+a)\,c}{b^3} + \frac{a^3d^3}{2\,b^4(bx+a)^2} - \frac{3\,a^2cd^2}{2\,b^3(bx+a)^2} + \frac{3\,ac^2d}{2\,b^2(bx+a)^2} - \frac{c^3}{2\,b\,(bx+a)^2} - 3\,\frac{a^2d^3}{b^4(bx+a)} + 6\,\frac{acd^2}{b^3(bx+a)} - 3\,\frac{dc^2}{b^2(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^3,x)
```

```
[Out] d^3*x/b^3-3/b^4*d^3*ln(b*x+a)*a+3/b^3*d^2*ln(b*x+a)*c+1/2/b^4/(b*
x+a)^2*a^3*d^3-3/2/b^3/(b*x+a)^2*a^2*c*d^2+3/2/b^2/(b*x+a)^2*a*c^
2*d-1/2/b/(b*x+a)^2*c^3-3/b^4*d^3/(b*x+a)*a^2+6/b^3*d^2/(b*x+a)*a
*c-3/b^2*d/(b*x+a)*c^2
```

Maxima [A] time = 1.35826, size = 169, normalized size = 2.17

$$\frac{d^3x}{b^3} - \frac{b^3c^3 + 3\,ab^2c^2d - 9\,a^2bcd^2 + 5\,a^3d^3 + 6\,(b^3c^2d - 2\,ab^2cd^2 + a^2bd^3)\,x}{2\,(b^6x^2 + 2\,ab^5x + a^2b^4)} + \frac{3\,(bcd^2 - ad^3)\log(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] d^3*x/b^3 - 1/2*(b^3*c^3 + 3*a*b^2*c^2*d - 9*a^2*b*c*d^2 + 5*a^3*
d^3 + 6*(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^6*x^2 + 2*a
*b^5*x + a^2*b^4) + 3*(b*c*d^2 - a*d^3)*log(b*x + a)/b^4
```

Fricas [A] time = 0.214254, size = 254, normalized size = 3.26

$$\frac{2\,b^3d^3x^3 + 4\,ab^2d^3x^2 - b^3c^3 - 3\,ab^2c^2d + 9\,a^2bcd^2 - 5\,a^3d^3 - 2\,(3\,b^3c^2d - 6\,ab^2cd^2 + 2\,a^2bd^3)\,x + 6\,(a^2bcd^2 - a^3d^3 + (b^3cd}{2\,(b^6x^2 + 2\,ab^5x + a^2b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*d^3*x^3 + 4*a*b^2*d^3*x^2 - b^3*c^3 - 3*a*b^2*c^2*d +
9*a^2*b*c*d^2 - 5*a^3*d^3 - 2*(3*b^3*c^2*d - 6*a*b^2*c*d^2 + 2*a^
2*b*d^3)*x + 6*(a^2*b*c*d^2 - a^3*d^3 + (b^3*c*d^2 - a*b^2*d^3)*x
^2 + 2*(a*b^2*c*d^2 - a^2*b*d^3)*x)*log(b*x + a))/(b^6*x^2 + 2*a*
b^5*x + a^2*b^4)
```

Sympy [A] time = 3.95345, size = 128, normalized size = 1.64

$$-\frac{5a^3d^3 - 9a^2bcd^2 + 3ab^2c^2d + b^3c^3 + x\left(6a^2bd^3 - 12ab^2cd^2 + 6b^3c^2d\right)}{2a^2b^4 + 4ab^5x + 2b^6x^2} + \frac{d^3x}{b^3} - \frac{3d^2\left(ad - bc\right)\log\left(a + bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**3,x)
```

```
[Out] -(5*a**3*d**3 - 9*a**2*b*c*d**2 + 3*a*b**2*c**2*d + b**3*c**3 + x
*(6*a**2*b*d**3 - 12*a*b**2*c*d**2 + 6*b**3*c**2*d))/(2*a**2*b**4
 + 4*a*b**5*x + 2*b**6*x**2) + d**3*x/b**3 - 3*d**2*(a*d - b*c)*l
og(a + b*x)/b**4
```

GIAC/XCAS [A] time = 0.224564, size = 151, normalized size = 1.94

$$\frac{d^3x}{b^3} + \frac{3\left(bcd^2 - ad^3\right)\ln\left(|bx + a|\right)}{b^4} - \frac{b^3c^3 + 3\,ab^2c^2d - 9\,a^2bcd^2 + 5\,a^3d^3 + 6\left(b^3c^2d - 2\,ab^2cd^2 + a^2bd^3\right)x}{2\left(bx + a\right)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] d^3*x/b^3 + 3*(b*c*d^2 - a*d^3)*ln(abs(b*x + a))/b^4 - 1/2*(b^3*c
^3 + 3*a*b^2*c^2*d - 9*a^2*b*c*d^2 + 5*a^3*d^3 + 6*(b^3*c^2*d - 2
*a*b^2*c*d^2 + a^2*b*d^3)*x)/((b*x + a)^2*b^4)
```

3.1267 $\int \frac{(c+dx)^3}{(a+bx)^4}\,dx$

Optimal. Leaf size=86

$$-\frac{3d^2(bc-ad)}{b^4(a+bx)}-\frac{3d(bc-ad)^2}{2b^4(a+bx)^2}-\frac{(bc-ad)^3}{3b^4(a+bx)^3}+\frac{d^3\log(a+bx)}{b^4}$$

```
[Out] -(b*c - a*d)^3/(3*b^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2)/(2*b^4*(
a + b*x)^2) - (3*d^2*(b*c - a*d))/(b^4*(a + b*x)) + (d^3*Log[a +
b*x])/b^4
```

Rubi [A] time = 0.121418, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3d^2(bc-ad)}{b^4(a+bx)}-\frac{3d(bc-ad)^2}{2b^4(a+bx)^2}-\frac{(bc-ad)^3}{3b^4(a+bx)^3}+\frac{d^3\log(a+bx)}{b^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^4,x]
```

```
[Out] -(b*c - a*d)^3/(3*b^4*(a + b*x)^3) - (3*d*(b*c - a*d)^2)/(2*b^4*(
a + b*x)^2) - (3*d^2*(b*c - a*d))/(b^4*(a + b*x)) + (d^3*Log[a +
b*x])/b^4
```

Rubi in Sympy [A] time = 24.5038, size = 76, normalized size = 0.88

$$\frac{d^3\log\left(a+bx\right)}{b^4}+\frac{3d^2\left(ad-bc\right)}{b^4\left(a+bx\right)}-\frac{3d\left(ad-bc\right)^2}{2b^4\left(a+bx\right)^2}+\frac{\left(ad-bc\right)^3}{3b^4\left(a+bx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**4,x)
```

```
[Out] d**3*log(a + b*x)/b**4 + 3*d**2*(a*d - b*c)/(b**4*(a + b*x)) - 3*
d*(a*d - b*c)**2/(2*b**4*(a + b*x)**2) + (a*d - b*c)**3/(3*b**4*(
a + b*x)**3)
```

Mathematica [A] time = 0.0688824, size = 80, normalized size = 0.93

$$\frac{6d^3\log(a+bx)-\frac{(bc-ad)\left(11a^2d^2+abd(5c+27dx)+b^2\left(2c^2+9cdx+18d^2x^2\right)\right)}{(a+bx)^3}}{6b^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^4,x]
```

```
[Out] (-(((b*c - a*d)*(11*a^2*d^2 + a*b*d*(5*c + 27*d*x) + b^2*(2*c^2 +
 9*c*d*x + 18*d^2*x^2)))/(a + b*x)^3) + 6*d^3*Log[a + b*x])/(6*b^
4)
```

Maple [B] time = 0.01, size = 166, normalized size = 1.9

$$\frac{d^3\ln(bx+a)}{b^4}+\frac{a^3d^3}{3\,(bx+a)^3\,b^4}-\frac{a^2cd^2}{(bx+a)^3\,b^3}+\frac{ac^2d}{(bx+a)^3\,b^2}-\frac{c^3}{3\,(bx+a)^3\,b}-\frac{3\,a^2d^3}{2\,b^4\,(bx+a)^2}+3\,\frac{acd^2}{b^3\,(bx+a)^2}-\frac{3\,c^2d}{2\,b^2\,(bx+a)^2}+3\,\frac{ad^3}{b^4\,(bx+a)}-3\,\frac{cd^2}{b^3\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^4,x)
```

```
[Out] d^3*ln(b*x+a)/b^4+1/3/(b*x+a)^3/b^4*a^3*d^3-1/(b*x+a)^3/b^3*a^2*c
*d^2+1/(b*x+a)^3/b^2*a*c^2*d-1/3/(b*x+a)^3/b*c^3-3/2*d^3/b^4/(b*x
+a)^2*a^2+3*d^2/b^3/(b*x+a)^2*a*c-3/2*d/b^2/(b*x+a)^2*c^2+3/b^4*d
^3/(b*x+a)*a-3/b^3*d^2/(b*x+a)*c
```

Maxima [A] time = 1.36991, size = 192, normalized size = 2.23

$$-\frac{2\,b^3c^3+3\,ab^2c^2d+6\,a^2bcd^2-11\,a^3d^3+18\,\left(b^3cd^2-ab^2d^3\right)x^2+9\,\left(b^3c^2d+2\,ab^2cd^2-3\,a^2bd^3\right)x}{6\,\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}+\frac{d^3\log(bx+a)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(2*b^3*c^3 + 3*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 11*a^3*d^3 + 18
*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 9*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a
^2*b*d^3)*x)/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4) + d^
3*log(b*x + a)/b^4
```

Fricas [A] time = 0.213334, size = 238, normalized size = 2.77

$$-\frac{2\,b^3c^3 + 3\,ab^2c^2d + 6\,a^2bcd^2 - 11\,a^3d^3 + 18\left(b^3cd^2 - ab^2d^3\right)x^2 + 9\left(b^3c^2d + 2\,ab^2cd^2 - 3\,a^2bd^3\right)x - 6\left(b^3d^3x^3 + 3\,ab^2d^3x^2\right.}{6\left(b^7x^3 + 3\,ab^6x^2 + 3\,a^2b^5x + a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(2*b^3*c^3 + 3*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 11*a^3*d^3 + 18
*(b^3*c*d^2 - a*b^2*d^3)*x^2 + 9*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a
^2*b*d^3)*x - 6*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x +
a^3*d^3)*log(b*x + a))/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3
*b^4)
```

Sympy [A] time = 4.81183, size = 148, normalized size = 1.72

$$\frac{11a^3d^3 - 6a^2bcd^2 - 3ab^2c^2d - 2b^3c^3 + x^2\left(18ab^2d^3 - 18b^3cd^2\right) + x\left(27a^2bd^3 - 18ab^2cd^2 - 9b^3c^2d\right)}{6a^3b^4 + 18a^2b^5x + 18ab^6x^2 + 6b^7x^3} + \frac{d^3\log\left(a + bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**4,x)
```

```
[Out] (11*a**3*d**3 - 6*a**2*b*c*d**2 - 3*a*b**2*c**2*d - 2*b**3*c**3 +
 x**2*(18*a*b**2*d**3 - 18*b**3*c*d**2) + x*(27*a**2*b*d**3 - 18*
a*b**2*c*d**2 - 9*b**3*c**2*d))/(6*a**3*b**4 + 18*a**2*b**5*x + 1
8*a*b**6*x**2 + 6*b**7*x**3) + d**3*log(a + b*x)/b**4
```

GIAC/XCAS [A] time = 0.216612, size = 159, normalized size = 1.85

$$\frac{d^3\ln\left(|bx + a|\right)}{b^4} - \frac{18\left(b^2cd^2 - abd^3\right)x^2 + 9\left(b^2c^2d + 2\,abcd^2 - 3\,a^2d^3\right)x + \frac{2\,b^3c^3 + 3\,ab^2c^2d + 6\,a^2bcd^2 - 11\,a^3d^3}{b}}{6\left(bx + a\right)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] d^3*ln(abs(b*x + a))/b^4 - 1/6*(18*(b^2*c*d^2 - a*b*d^3)*x^2 + 9*
(b^2*c^2*d + 2*a*b*c*d^2 - 3*a^2*d^3)*x + (2*b^3*c^3 + 3*a*b^2*c^
2*d + 6*a^2*b*c*d^2 - 11*a^3*d^3)/b)/((b*x + a)^3*b^3)
```

3.1268 $\int \frac{(c+dx)^3}{(a+bx)^5}\,dx$

Optimal. Leaf size=28

$$-\frac{(c+dx)^4}{4(a+bx)^4(bc-ad)}$$

[Out] -(c + d*x)^4/(4*(b*c - a*d)*(a + b*x)^4)

Rubi [A] time = 0.0180374, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(c+dx)^4}{4(a+bx)^4(bc-ad)}$$

Antiderivative was successfully verified.

[In] Int[(c + d*x)^3/(a + b*x)^5,x]

[Out] -(c + d*x)^4/(4*(b*c - a*d)*(a + b*x)^4)

Rubi in Sympy [A] time = 3.69746, size = 20, normalized size = 0.71

$$\frac{(c+dx)^4}{4\,(a+bx)^4\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate((d*x+c)**3/(b*x+a)**5,x)

[Out] (c + d*x)**4/(4*(a + b*x)**4*(a*d - b*c))

Mathematica [B] time = 0.0528481, size = 91, normalized size = 3.25

$$-\frac{a^3d^3+a^2bd^2(c+4dx)+ab^2d\left(c^2+4cdx+6d^2x^2\right)+b^3\left(c^3+4c^2dx+6cd^2x^2+4d^3x^3\right)}{4b^4(a+bx)^4}$$

Antiderivative was successfully verified.

[In] Integrate[(c + d*x)^3/(a + b*x)^5,x]

```
[Out] -(a^3*d^3 + a^2*b*d^2*(c + 4*d*x) + a*b^2*d*(c^2 + 4*c*d*x + 6*d^
2*x^2) + b^3*(c^3 + 4*c^2*d*x + 6*c*d^2*x^2 + 4*d^3*x^3))/(4*b^4*
(a + b*x)^4)
```

Maple [B] time = 0.008, size = 122, normalized size = 4.4

$$-\frac{-a^3d^3+3\,a^2bcd^2-3\,ab^2c^2d+b^3c^3}{4\,b^4\,(bx+a)^4}-\frac{d\left(a^2d^2-2\,abcd+b^2c^2\right)}{b^4\,(bx+a)^3}+\frac{3\,d^2\,(ad-bc)}{2\,b^4\,(bx+a)^2}-\frac{d^3}{b^4\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^5,x)
```

```
[Out] -1/4*(-a^3*d^3+3*a^2*b*c*d^2-3*a*b^2*c^2*d+b^3*c^3)/b^4/(b*x+a)^4
-d*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^4/(b*x+a)^3+3/2*d^2*(a*d-b*c)/b^
4/(b*x+a)^2-d^3/b^4/(b*x+a)
```

Maxima [A] time = 1.36289, size = 193, normalized size = 6.89

$$-\frac{4\,b^3d^3x^3+b^3c^3+ab^2c^2d+a^2bcd^2+a^3d^3+6\left(b^3cd^2+ab^2d^3\right)x^2+4\left(b^3c^2d+ab^2cd^2+a^2bd^3\right)x}{4\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] -1/4*(4*b^3*d^3*x^3 + b^3*c^3 + a*b^2*c^2*d + a^2*b*c*d^2 + a^3*d
^3 + 6*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + a*b^2*c*d^2 +
 a^2*b*d^3)*x)/(b^8*x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5
*x + a^4*b^4)
```

Fricas [A] time = 0.213857, size = 193, normalized size = 6.89

$$-\frac{4\,b^3d^3x^3+b^3c^3+ab^2c^2d+a^2bcd^2+a^3d^3+6\left(b^3cd^2+ab^2d^3\right)x^2+4\left(b^3c^2d+ab^2cd^2+a^2bd^3\right)x}{4\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] -1/4*(4*b^3*d^3*x^3 + b^3*c^3 + a*b^2*c^2*d + a^2*b*c*d^2 + a^3*d
^3 + 6*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + a*b^2*c*d^2 +
```

```
 a^2*b*d^3)*x)/(b^8*x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5
*x + a^4*b^4)
```

Sympy [A] time = 6.46359, size = 153, normalized size = 5.46

$$-\frac{a^3d^3+a^2bcd^2+ab^2c^2d+b^3c^3+4b^3d^3x^3+x^2\left(6ab^2d^3+6b^3cd^2\right)+x\left(4a^2bd^3+4ab^2cd^2+4b^3c^2d\right)}{4a^4b^4+16a^3b^5x+24a^2b^6x^2+16ab^7x^3+4b^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**5,x)
```

```
[Out] -(a**3*d**3 + a**2*b*c*d**2 + a*b**2*c**2*d + b**3*c**3 + 4*b**3*
d**3*x**3 + x**2*(6*a*b**2*d**3 + 6*b**3*c*d**2) + x*(4*a**2*b*d*
*3 + 4*a*b**2*c*d**2 + 4*b**3*c**2*d))/(4*a**4*b**4 + 16*a**3*b**
5*x + 24*a**2*b**6*x**2 + 16*a*b**7*x**3 + 4*b**8*x**4)
```

GIAC/XCAS [A] time = 0.219563, size = 232, normalized size = 8.29

$$-\frac{\frac{b^{11}c^3}{(bx+a)^4}+\frac{4\,b^{10}c^2d}{(bx+a)^3}-\frac{3\,ab^{10}c^2d}{(bx+a)^4}+\frac{6\,b^9cd^2}{(bx+a)^2}-\frac{8\,ab^9cd^2}{(bx+a)^3}+\frac{3\,a^2b^9cd^2}{(bx+a)^4}+\frac{4\,b^8d^3}{bx+a}-\frac{6\,ab^8d^3}{(bx+a)^2}+\frac{4\,a^2b^8d^3}{(bx+a)^3}-\frac{a^3b^8d^3}{(bx+a)^4}}{4\,b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] -1/4*(b^11*c^3/(b*x + a)^4 + 4*b^10*c^2*d/(b*x + a)^3 - 3*a*b^10*
c^2*d/(b*x + a)^4 + 6*b^9*c*d^2/(b*x + a)^2 - 8*a*b^9*c*d^2/(b*x
+ a)^3 + 3*a^2*b^9*c*d^2/(b*x + a)^4 + 4*b^8*d^3/(b*x + a) - 6*a*
b^8*d^3/(b*x + a)^2 + 4*a^2*b^8*d^3/(b*x + a)^3 - a^3*b^8*d^3/(b*
x + a)^4)/b^12
```

3.1269 $\int \frac{(c+dx)^3}{(a+bx)^6}\,dx$

Optimal. Leaf size=58

$$\frac{d(c+dx)^4}{20(a+bx)^4(bc-ad)^2}-\frac{(c+dx)^4}{5(a+bx)^5(bc-ad)}$$

```
[Out] -(c + d*x)^4/(5*(b*c - a*d)*(a + b*x)^5) + (d*(c + d*x)^4)/(20*(b
*c - a*d)^2*(a + b*x)^4)
```

Rubi [A] time = 0.0392504, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{d(c+dx)^4}{20(a+bx)^4(bc-ad)^2}-\frac{(c+dx)^4}{5(a+bx)^5(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^6,x]
```

```
[Out] -(c + d*x)^4/(5*(b*c - a*d)*(a + b*x)^5) + (d*(c + d*x)^4)/(20*(b
*c - a*d)^2*(a + b*x)^4)
```

Rubi in Sympy [A] time = 7.71727, size = 46, normalized size = 0.79

$$\frac{d\left(c+dx\right)^4}{20\left(a+bx\right)^4\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^4}{5\left(a+bx\right)^5\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**6,x)
```

```
[Out] d*(c + d*x)**4/(20*(a + b*x)**4*(a*d - b*c)**2) + (c + d*x)**4/(5
*(a + b*x)**5*(a*d - b*c))
```

Mathematica [A] time = 0.0640932, size = 97, normalized size = 1.67

$$-\frac{a^3d^3+a^2bd^2(2c+5dx)+ab^2d\left(3c^2+10cdx+10d^2x^2\right)+b^3\left(4c^3+15c^2dx+20cd^2x^2+10d^3x^3\right)}{20b^4(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^6,x]
```

```
[Out] -(a^3*d^3 + a^2*b*d^2*(2*c + 5*d*x) + a*b^2*d*(3*c^2 + 10*c*d*x +
 10*d^2*x^2) + b^3*(4*c^3 + 15*c^2*d*x + 20*c*d^2*x^2 + 10*d^3*x^
3))/(20*b^4*(a + b*x)^5)
```

Maple [B] time = 0.007, size = 121, normalized size = 2.1

$$-\frac{-a^3d^3+3a^2bcd^2-3ab^2c^2d+b^3c^3}{5b^4(bx+a)^5}-\frac{3d(a^2d^2-2abcd+b^2c^2)}{4b^4(bx+a)^4}+\frac{d^2(ad-bc)}{b^4(bx+a)^3}-\frac{d^3}{2b^4(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^6,x)
```

```
[Out] -1/5*(-a^3*d^3+3*a^2*b*c*d^2-3*a*b^2*c^2*d+b^3*c^3)/b^4/(b*x+a)^5
-3/4*d*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^4/(b*x+a)^4+d^2*(a*d-b*c)/b^
4/(b*x+a)^3-1/2*d^3/b^4/(b*x+a)^2
```

Maxima [A] time = 1.36538, size = 216, normalized size = 3.72

$$-\frac{10b^3d^3x^3+4b^3c^3+3ab^2c^2d+2a^2bcd^2+a^3d^3+10(2b^3cd^2+ab^2d^3)x^2+5(3b^3c^2d+2ab^2cd^2+a^2bd^3)x}{20(b^9x^5+5ab^8x^4+10a^2b^7x^3+10a^3b^6x^2+5a^4b^5x+a^5b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(10*b^3*d^3*x^3 + 4*b^3*c^3 + 3*a*b^2*c^2*d + 2*a^2*b*c*d^2
 + a^3*d^3 + 10*(2*b^3*c*d^2 + a*b^2*d^3)*x^2 + 5*(3*b^3*c^2*d +
2*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^9*x^5 + 5*a*b^8*x^4 + 10*a^2*b^7
*x^3 + 10*a^3*b^6*x^2 + 5*a^4*b^5*x + a^5*b^4)
```

Fricas [A] time = 0.224366, size = 216, normalized size = 3.72

$$-\frac{10b^3d^3x^3+4b^3c^3+3ab^2c^2d+2a^2bcd^2+a^3d^3+10(2b^3cd^2+ab^2d^3)x^2+5(3b^3c^2d+2ab^2cd^2+a^2bd^3)x}{20(b^9x^5+5ab^8x^4+10a^2b^7x^3+10a^3b^6x^2+5a^4b^5x+a^5b^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] -1/20*(10*b^3*d^3*x^3 + 4*b^3*c^3 + 3*a*b^2*c^2*d + 2*a^2*b*c*d^2
 + a^3*d^3 + 10*(2*b^3*c*d^2 + a*b^2*d^3)*x^2 + 5*(3*b^3*c^2*d +
2*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^9*x^5 + 5*a*b^8*x^4 + 10*a^2*b^7
*x^3 + 10*a^3*b^6*x^2 + 5*a^4*b^5*x + a^5*b^4)
```

Sympy [A] time = 7.94557, size = 170, normalized size = 2.93

$$-\frac{a^3d^3+2a^2bcd^2+3ab^2c^2d+4b^3c^3+10b^3d^3x^3+x^2\left(10ab^2d^3+20b^3cd^2\right)+x\left(5a^2bd^3+10ab^2cd^2+15b^3c^2d\right)}{20a^5b^4+100a^4b^5x+200a^3b^6x^2+200a^2b^7x^3+100ab^8x^4+20b^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**6,x)
```

```
[Out] -(a**3*d**3 + 2*a**2*b*c*d**2 + 3*a*b**2*c**2*d + 4*b**3*c**3 + 1
0*b**3*d**3*x**3 + x**2*(10*a*b**2*d**3 + 20*b**3*c*d**2) + x*(5*
a**2*b*d**3 + 10*a*b**2*c*d**2 + 15*b**3*c**2*d))/(20*a**5*b**4 +
 100*a**4*b**5*x + 200*a**3*b**6*x**2 + 200*a**2*b**7*x**3 + 100*
a*b**8*x**4 + 20*b**9*x**5)
```

GIAC/XCAS [A] time = 0.220012, size = 154, normalized size = 2.66

$$-\frac{10\,b^3d^3x^3+20\,b^3cd^2x^2+10\,ab^2d^3x^2+15\,b^3c^2dx+10\,ab^2cd^2x+5\,a^2bd^3x+4\,b^3c^3+3\,ab^2c^2d+2\,a^2bcd^2+a^3d^3}{20\,(bx+a)^5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^6,x, algorithm="giac")
```

```
[Out] -1/20*(10*b^3*d^3*x^3 + 20*b^3*c*d^2*x^2 + 10*a*b^2*d^3*x^2 + 15*
b^3*c^2*d*x + 10*a*b^2*c*d^2*x + 5*a^2*b*d^3*x + 4*b^3*c^3 + 3*a*
b^2*c^2*d + 2*a^2*b*c*d^2 + a^3*d^3)/((b*x + a)^5*b^4)
```

3.1270 $\int \frac{(c+dx)^3}{(a+bx)^7} \, dx$

Optimal. Leaf size=92

$$-\frac{3d^2(bc-ad)}{4b^4(a+bx)^4}-\frac{3d(bc-ad)^2}{5b^4(a+bx)^5}-\frac{(bc-ad)^3}{6b^4(a+bx)^6}-\frac{d^3}{3b^4(a+bx)^3}$$

```
[Out] -(b*c - a*d)^3/(6*b^4*(a + b*x)^6) - (3*d*(b*c - a*d)^2)/(5*b^4*(
a + b*x)^5) - (3*d^2*(b*c - a*d))/(4*b^4*(a + b*x)^4) - d^3/(3*b^
4*(a + b*x)^3)
```

Rubi [A] time = 0.126946, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3d^2(bc-ad)}{4b^4(a+bx)^4}-\frac{3d(bc-ad)^2}{5b^4(a+bx)^5}-\frac{(bc-ad)^3}{6b^4(a+bx)^6}-\frac{d^3}{3b^4(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^7,x]
```

```
[Out] -(b*c - a*d)^3/(6*b^4*(a + b*x)^6) - (3*d*(b*c - a*d)^2)/(5*b^4*(
a + b*x)^5) - (3*d^2*(b*c - a*d))/(4*b^4*(a + b*x)^4) - d^3/(3*b^
4*(a + b*x)^3)
```

Rubi in Sympy [A] time = 25.9294, size = 82, normalized size = 0.89

$$-\frac{d^3}{3b^4\left(a+bx\right)^3}+\frac{3d^2\left(ad-bc\right)}{4b^4\left(a+bx\right)^4}-\frac{3d\left(ad-bc\right)^2}{5b^4\left(a+bx\right)^5}+\frac{\left(ad-bc\right)^3}{6b^4\left(a+bx\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**7,x)
```

```
[Out] -d**3/(3*b**4*(a + b*x)**3) + 3*d**2*(a*d - b*c)/(4*b**4*(a + b*x
)**4) - 3*d*(a*d - b*c)**2/(5*b**4*(a + b*x)**5) + (a*d - b*c)**3
/(6*b**4*(a + b*x)**6)
```

Mathematica [A] time = 0.0500447, size = 97, normalized size = 1.05

$$-\frac{a^3d^3+3a^2bd^2(c+2dx)+3ab^2d\left(2c^2+6cdx+5d^2x^2\right)+b^3\left(10c^3+36c^2dx+45cd^2x^2+20d^3x^3\right)}{60b^4(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^7,x]
```

```
[Out] -(a^3*d^3 + 3*a^2*b*d^2*(c + 2*d*x) + 3*a*b^2*d*(2*c^2 + 6*c*d*x
+ 5*d^2*x^2) + b^3*(10*c^3 + 36*c^2*d*x + 45*c*d^2*x^2 + 20*d^3*x
^3))/(60*b^4*(a + b*x)^6)
```

Maple [A] time = 0.008, size = 122, normalized size = 1.3

$$-\frac{3\,d\left(a^{2}d^{2}-2\,abcd+b^{2}c^{2}\right)}{5\,b^{4}\left(bx+a\right)^{5}}-\frac{-a^{3}d^{3}+3\,a^{2}bcd^{2}-3\,ab^{2}c^{2}d+b^{3}c^{3}}{6\,b^{4}\left(bx+a\right)^{6}}+\frac{3\,d^{2}\left(ad-bc\right)}{4\,b^{4}\left(bx+a\right)^{4}}-\frac{d^{3}}{3\,b^{4}\left(bx+a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^7,x)
```

```
[Out] -3/5*d*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^4/(b*x+a)^5-1/6*(-a^3*d^3+3*
a^2*b*c*d^2-3*a*b^2*c^2*d+b^3*c^3)/b^4/(b*x+a)^6+3/4*d^2*(a*d-b*c
)/b^4/(b*x+a)^4-1/3*d^3/b^4/(b*x+a)^3
```

Maxima [A] time = 1.36267, size = 231, normalized size = 2.51

$$-\frac{20\,b^{3}d^{3}x^{3}+10\,b^{3}c^{3}+6\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}+a^{3}d^{3}+15\left(3\,b^{3}cd^{2}+ab^{2}d^{3}\right)x^{2}+6\left(6\,b^{3}c^{2}d+3\,ab^{2}cd^{2}+a^{2}bd^{3}\right)x}{60\left(b^{10}x^{6}+6\,ab^{9}x^{5}+15\,a^{2}b^{8}x^{4}+20\,a^{3}b^{7}x^{3}+15\,a^{4}b^{6}x^{2}+6\,a^{5}b^{5}x+a^{6}b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*b^3*d^3*x^3 + 10*b^3*c^3 + 6*a*b^2*c^2*d + 3*a^2*b*c*d^
2 + a^3*d^3 + 15*(3*b^3*c*d^2 + a*b^2*d^3)*x^2 + 6*(6*b^3*c^2*d +
 3*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^10*x^6 + 6*a*b^9*x^5 + 15*a^2*b
^8*x^4 + 20*a^3*b^7*x^3 + 15*a^4*b^6*x^2 + 6*a^5*b^5*x + a^6*b^4)
```

Fricas [A] time = 0.225886, size = 231, normalized size = 2.51

$$-\frac{20\,b^{3}d^{3}x^{3}+10\,b^{3}c^{3}+6\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}+a^{3}d^{3}+15\left(3\,b^{3}cd^{2}+ab^{2}d^{3}\right)x^{2}+6\left(6\,b^{3}c^{2}d+3\,ab^{2}cd^{2}+a^{2}bd^{3}\right)x}{60\left(b^{10}x^{6}+6\,ab^{9}x^{5}+15\,a^{2}b^{8}x^{4}+20\,a^{3}b^{7}x^{3}+15\,a^{4}b^{6}x^{2}+6\,a^{5}b^{5}x+a^{6}b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*b^3*d^3*x^3 + 10*b^3*c^3 + 6*a*b^2*c^2*d + 3*a^2*b*c*d^
2 + a^3*d^3 + 15*(3*b^3*c*d^2 + a*b^2*d^3)*x^2 + 6*(6*b^3*c^2*d +
 3*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^10*x^6 + 6*a*b^9*x^5 + 15*a^2*b
^8*x^4 + 20*a^3*b^7*x^3 + 15*a^4*b^6*x^2 + 6*a^5*b^5*x + a^6*b^4)
```

Sympy [A] time = 10.2813, size = 182, normalized size = 1.98

$$-\frac{a^3d^3 + 3a^2bcd^2 + 6ab^2c^2d + 10b^3c^3 + 20b^3d^3x^3 + x^2\left(15ab^2d^3 + 45b^3cd^2\right) + x\left(6a^2bd^3 + 18ab^2cd^2 + 36b^3c^2d\right)}{60a^6b^4 + 360a^5b^5x + 900a^4b^6x^2 + 1200a^3b^7x^3 + 900a^2b^8x^4 + 360ab^9x^5 + 60b^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**7,x)
```

```
[Out] -(a**3*d**3 + 3*a**2*b*c*d**2 + 6*a*b**2*c**2*d + 10*b**3*c**3 +
20*b**3*d**3*x**3 + x**2*(15*a*b**2*d**3 + 45*b**3*c*d**2) + x*(6
*a**2*b*d**3 + 18*a*b**2*c*d**2 + 36*b**3*c**2*d))/(60*a**6*b**4
+ 360*a**5*b**5*x + 900*a**4*b**6*x**2 + 1200*a**3*b**7*x**3 + 90
0*a**2*b**8*x**4 + 360*a*b**9*x**5 + 60*b**10*x**6)
```

GIAC/XCAS [A] time = 0.220256, size = 154, normalized size = 1.67

$$-\frac{20\,b^3d^3x^3 + 45\,b^3cd^2x^2 + 15\,ab^2d^3x^2 + 36\,b^3c^2dx + 18\,ab^2cd^2x + 6\,a^2bd^3x + 10\,b^3c^3 + 6\,ab^2c^2d + 3\,a^2bcd^2 + a^3d^3}{60\,(bx + a)^6b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*b^3*d^3*x^3 + 45*b^3*c*d^2*x^2 + 15*a*b^2*d^3*x^2 + 36*
b^3*c^2*d*x + 18*a*b^2*c*d^2*x + 6*a^2*b*d^3*x + 10*b^3*c^3 + 6*a
*b^2*c^2*d + 3*a^2*b*c*d^2 + a^3*d^3)/((b*x + a)^6*b^4)
```

3.1271 $\int \frac{(c+dx)^3}{(a+bx)^8}\,dx$

Optimal. Leaf size=92

$$-\frac{3d^2(bc-ad)}{5b^4(a+bx)^5}-\frac{d(bc-ad)^2}{2b^4(a+bx)^6}-\frac{(bc-ad)^3}{7b^4(a+bx)^7}-\frac{d^3}{4b^4(a+bx)^4}$$

```
[Out] -(b*c - a*d)^3/(7*b^4*(a + b*x)^7) - (d*(b*c - a*d)^2)/(2*b^4*(a
+ b*x)^6) - (3*d^2*(b*c - a*d))/(5*b^4*(a + b*x)^5) - d^3/(4*b^4*
(a + b*x)^4)
```

Rubi [A] time = 0.122575, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3d^2(bc-ad)}{5b^4(a+bx)^5}-\frac{d(bc-ad)^2}{2b^4(a+bx)^6}-\frac{(bc-ad)^3}{7b^4(a+bx)^7}-\frac{d^3}{4b^4(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^8,x]
```

```
[Out] -(b*c - a*d)^3/(7*b^4*(a + b*x)^7) - (d*(b*c - a*d)^2)/(2*b^4*(a
+ b*x)^6) - (3*d^2*(b*c - a*d))/(5*b^4*(a + b*x)^5) - d^3/(4*b^4*
(a + b*x)^4)
```

Rubi in Sympy [A] time = 26.435, size = 80, normalized size = 0.87

$$-\frac{d^3}{4b^4\,(a+bx)^4}+\frac{3d^2\,(ad-bc)}{5b^4\,(a+bx)^5}-\frac{d\,(ad-bc)^2}{2b^4\,(a+bx)^6}+\frac{(ad-bc)^3}{7b^4\,(a+bx)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**8,x)
```

```
[Out] -d**3/(4*b**4*(a + b*x)**4) + 3*d**2*(a*d - b*c)/(5*b**4*(a + b*x
)**5) - d*(a*d - b*c)**2/(2*b**4*(a + b*x)**6) + (a*d - b*c)**3/(
7*b**4*(a + b*x)**7)
```

Mathematica [A] time = 0.0506232, size = 97, normalized size = 1.05

$$-\frac{a^3d^3+a^2bd^2(4c+7dx)+ab^2d\left(10c^2+28cdx+21d^2x^2\right)+b^3\left(20c^3+70c^2dx+84cd^2x^2+35d^3x^3\right)}{140b^4(a+bx)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^8,x]
```

```
[Out] -(a^3*d^3 + a^2*b*d^2*(4*c + 7*d*x) + a*b^2*d*(10*c^2 + 28*c*d*x
+ 21*d^2*x^2) + b^3*(20*c^3 + 70*c^2*d*x + 84*c*d^2*x^2 + 35*d^3*
x^3))/(140*b^4*(a + b*x)^7)
```

Maple [A] time = 0.009, size = 122, normalized size = 1.3

$$\frac{3\,d^{2}\left(ad-bc\right)}{5\,b^{4}\left(bx+a\right)^{5}}-\frac{d\left(a^{2}d^{2}-2\,abcd+b^{2}c^{2}\right)}{2\,b^{4}\left(bx+a\right)^{6}}-\frac{-a^{3}d^{3}+3\,a^{2}bcd^{2}-3\,ab^{2}c^{2}d+b^{3}c^{3}}{7\,b^{4}\left(bx+a\right)^{7}}-\frac{d^{3}}{4\,b^{4}\left(bx+a\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^8,x)
```

```
[Out] 3/5*d^2*(a*d-b*c)/b^4/(b*x+a)^5-1/2*d*(a^2*d^2-2*a*b*c*d+b^2*c^2)
/b^4/(b*x+a)^6-1/7*(-a^3*d^3+3*a^2*b*c*d^2-3*a*b^2*c^2*d+b^3*c^3)
/b^4/(b*x+a)^7-1/4*d^3/b^4/(b*x+a)^4
```

Maxima [A] time = 1.35788, size = 246, normalized size = 2.67

$$-\frac{35\,b^{3}d^{3}x^{3}+20\,b^{3}c^{3}+10\,ab^{2}c^{2}d+4\,a^{2}bcd^{2}+a^{3}d^{3}+21\left(4\,b^{3}cd^{2}+ab^{2}d^{3}\right)x^{2}+7\left(10\,b^{3}c^{2}d+4\,ab^{2}cd^{2}+a^{2}bd^{3}\right)x}{140\left(b^{11}x^{7}+7\,ab^{10}x^{6}+21\,a^{2}b^{9}x^{5}+35\,a^{3}b^{8}x^{4}+35\,a^{4}b^{7}x^{3}+21\,a^{5}b^{6}x^{2}+7\,a^{6}b^{5}x+a^{7}b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^8,x, algorithm="maxima")
```

```
[Out] -1/140*(35*b^3*d^3*x^3 + 20*b^3*c^3 + 10*a*b^2*c^2*d + 4*a^2*b*c*
d^2 + a^3*d^3 + 21*(4*b^3*c*d^2 + a*b^2*d^3)*x^2 + 7*(10*b^3*c^2*
d + 4*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^11*x^7 + 7*a*b^10*x^6 + 21*a
^2*b^9*x^5 + 35*a^3*b^8*x^4 + 35*a^4*b^7*x^3 + 21*a^5*b^6*x^2 + 7
*a^6*b^5*x + a^7*b^4)
```

Fricas [A] time = 0.220522, size = 246, normalized size = 2.67

$$-\frac{35\,b^{3}d^{3}x^{3}+20\,b^{3}c^{3}+10\,ab^{2}c^{2}d+4\,a^{2}bcd^{2}+a^{3}d^{3}+21\left(4\,b^{3}cd^{2}+ab^{2}d^{3}\right)x^{2}+7\left(10\,b^{3}c^{2}d+4\,ab^{2}cd^{2}+a^{2}bd^{3}\right)x}{140\left(b^{11}x^{7}+7\,ab^{10}x^{6}+21\,a^{2}b^{9}x^{5}+35\,a^{3}b^{8}x^{4}+35\,a^{4}b^{7}x^{3}+21\,a^{5}b^{6}x^{2}+7\,a^{6}b^{5}x+a^{7}b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^8,x, algorithm="fricas")
```

```
[Out] -1/140*(35*b^3*d^3*x^3 + 20*b^3*c^3 + 10*a*b^2*c^2*d + 4*a^2*b*c*
d^2 + a^3*d^3 + 21*(4*b^3*c*d^2 + a*b^2*d^3)*x^2 + 7*(10*b^3*c^2*
d + 4*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^11*x^7 + 7*a*b^10*x^6 + 21*a
^2*b^9*x^5 + 35*a^3*b^8*x^4 + 35*a^4*b^7*x^3 + 21*a^5*b^6*x^2 + 7
*a^6*b^5*x + a^7*b^4)
```

Sympy [A] time = 11.9931, size = 194, normalized size = 2.11

$$-\frac{a^3d^3 + 4a^2bcd^2 + 10ab^2c^2d + 20b^3c^3 + 35b^3d^3x^3 + x^2\left(21ab^2d^3 + 84b^3cd^2\right) + x\left(7a^2bd^3 + 28ab^2cd^2 + 70b^3c^2d\right)}{140a^7b^4 + 980a^6b^5x + 2940a^5b^6x^2 + 4900a^4b^7x^3 + 4900a^3b^8x^4 + 2940a^2b^9x^5 + 980ab^{10}x^6 + 140b^{11}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**8,x)
```

```
[Out] -(a**3*d**3 + 4*a**2*b*c*d**2 + 10*a*b**2*c**2*d + 20*b**3*c**3 +
 35*b**3*d**3*x**3 + x**2*(21*a*b**2*d**3 + 84*b**3*c*d**2) + x*(
7*a**2*b*d**3 + 28*a*b**2*c*d**2 + 70*b**3*c**2*d))/(140*a**7*b**
4 + 980*a**6*b**5*x + 2940*a**5*b**6*x**2 + 4900*a**4*b**7*x**3 +
 4900*a**3*b**8*x**4 + 2940*a**2*b**9*x**5 + 980*a*b**10*x**6 + 1
40*b**11*x**7)
```

GIAC/XCAS [A] time = 0.22187, size = 154, normalized size = 1.67

$$-\frac{35\,b^3d^3x^3 + 84\,b^3cd^2x^2 + 21\,ab^2d^3x^2 + 70\,b^3c^2dx + 28\,ab^2cd^2x + 7\,a^2bd^3x + 20\,b^3c^3 + 10\,ab^2c^2d + 4\,a^2bcd^2 + a^3d^3}{140\,(bx + a)^7b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^8,x, algorithm="giac")
```

```
[Out] -1/140*(35*b^3*d^3*x^3 + 84*b^3*c*d^2*x^2 + 21*a*b^2*d^3*x^2 + 70
*b^3*c^2*d*x + 28*a*b^2*c*d^2*x + 7*a^2*b*d^3*x + 20*b^3*c^3 + 10
*a*b^2*c^2*d + 4*a^2*b*c*d^2 + a^3*d^3)/((b*x + a)^7*b^4)
```

3.1272 $\int \frac{(c+dx)^3}{(a+bx)^9} dx$

Optimal. Leaf size=92

$$-\frac{d^2(bc-ad)}{2b^4(a+bx)^6}-\frac{3d(bc-ad)^2}{7b^4(a+bx)^7}-\frac{(bc-ad)^3}{8b^4(a+bx)^8}-\frac{d^3}{5b^4(a+bx)^5}$$

```
[Out] -(b*c - a*d)^3/(8*b^4*(a + b*x)^8) - (3*d*(b*c - a*d)^2)/(7*b^4*(
a + b*x)^7) - (d^2*(b*c - a*d))/(2*b^4*(a + b*x)^6) - d^3/(5*b^4*
(a + b*x)^5)
```

Rubi [A] time = 0.120279, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{d^2(bc-ad)}{2b^4(a+bx)^6}-\frac{3d(bc-ad)^2}{7b^4(a+bx)^7}-\frac{(bc-ad)^3}{8b^4(a+bx)^8}-\frac{d^3}{5b^4(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^3/(a + b*x)^9,x]
```

```
[Out] -(b*c - a*d)^3/(8*b^4*(a + b*x)^8) - (3*d*(b*c - a*d)^2)/(7*b^4*(
a + b*x)^7) - (d^2*(b*c - a*d))/(2*b^4*(a + b*x)^6) - d^3/(5*b^4*
(a + b*x)^5)
```

Rubi in Sympy [A] time = 26.3082, size = 80, normalized size = 0.87

$$-\frac{d^3}{5b^4\,(a+bx)^5}+\frac{d^2\,(ad-bc)}{2b^4\,(a+bx)^6}-\frac{3d\,(ad-bc)^2}{7b^4\,(a+bx)^7}+\frac{(ad-bc)^3}{8b^4\,(a+bx)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**3/(b*x+a)**9,x)
```

```
[Out] -d**3/(5*b**4*(a + b*x)**5) + d**2*(a*d - b*c)/(2*b**4*(a + b*x)*
*6) - 3*d*(a*d - b*c)**2/(7*b**4*(a + b*x)**7) + (a*d - b*c)**3/(
8*b**4*(a + b*x)**8)
```

Mathematica [A] time = 0.0568495, size = 97, normalized size = 1.05

$$-\frac{a^3d^3+a^2bd^2(5c+8dx)+ab^2d\left(15c^2+40cdx+28d^2x^2\right)+b^3\left(35c^3+120c^2dx+140cd^2x^2+56d^3x^3\right)}{280b^4(a+bx)^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^3/(a + b*x)^9,x]
```

```
[Out] -(a^3*d^3 + a^2*b*d^2*(5*c + 8*d*x) + a*b^2*d*(15*c^2 + 40*c*d*x
+ 28*d^2*x^2) + b^3*(35*c^3 + 120*c^2*d*x + 140*c*d^2*x^2 + 56*d^
3*x^3))/(280*b^4*(a + b*x)^8)
```

Maple [A] time = 0.009, size = 122, normalized size = 1.3

$$-\frac{d^3}{5\,b^4\,(bx+a)^5}+\frac{d^2\,(ad-bc)}{2\,b^4\,(bx+a)^6}-\frac{3\,d\,\left(a^2d^2-2\,abcd+b^2c^2\right)}{7\,b^4\,(bx+a)^7}-\frac{-a^3d^3+3\,a^2bcd^2-3\,ab^2c^2d+b^3c^3}{8\,b^4\,(bx+a)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^3/(b*x+a)^9,x)
```

```
[Out] -1/5*d^3/b^4/(b*x+a)^5+1/2*d^2*(a*d-b*c)/b^4/(b*x+a)^6-3/7*d*(a^2
*d^2-2*a*b*c*d+b^2*c^2)/b^4/(b*x+a)^7-1/8*(-a^3*d^3+3*a^2*b*c*d^2
-3*a*b^2*c^2*d+b^3*c^3)/b^4/(b*x+a)^8
```

Maxima [A] time = 1.35459, size = 261, normalized size = 2.84

$$-\frac{56\,b^3d^3x^3+35\,b^3c^3+15\,ab^2c^2d+5\,a^2bcd^2+a^3d^3+28\,\left(5\,b^3cd^2+ab^2d^3\right)x^2+8\,\left(15\,b^3c^2d+5\,ab^2cd^2+a^2bd^3\right)x}{280\,\left(b^{12}x^8+8\,ab^{11}x^7+28\,a^2b^{10}x^6+56\,a^3b^9x^5+70\,a^4b^8x^4+56\,a^5b^7x^3+28\,a^6b^6x^2+8\,a^7b^5x+a^8b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^9,x, algorithm="maxima")
```

```
[Out] -1/280*(56*b^3*d^3*x^3 + 35*b^3*c^3 + 15*a*b^2*c^2*d + 5*a^2*b*c*
d^2 + a^3*d^3 + 28*(5*b^3*c*d^2 + a*b^2*d^3)*x^2 + 8*(15*b^3*c^2*
d + 5*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^12*x^8 + 8*a*b^11*x^7 + 28*a
^2*b^10*x^6 + 56*a^3*b^9*x^5 + 70*a^4*b^8*x^4 + 56*a^5*b^7*x^3 +
28*a^6*b^6*x^2 + 8*a^7*b^5*x + a^8*b^4)
```

Fricas [A] time = 0.20505, size = 261, normalized size = 2.84

$$-\frac{56\,b^3d^3x^3+35\,b^3c^3+15\,ab^2c^2d+5\,a^2bcd^2+a^3d^3+28\,\left(5\,b^3cd^2+ab^2d^3\right)x^2+8\,\left(15\,b^3c^2d+5\,ab^2cd^2+a^2bd^3\right)x}{280\,\left(b^{12}x^8+8\,ab^{11}x^7+28\,a^2b^{10}x^6+56\,a^3b^9x^5+70\,a^4b^8x^4+56\,a^5b^7x^3+28\,a^6b^6x^2+8\,a^7b^5x+a^8b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^9,x, algorithm="fricas")
```

```
[Out] -1/280*(56*b^3*d^3*x^3 + 35*b^3*c^3 + 15*a*b^2*c^2*d + 5*a^2*b*c*
d^2 + a^3*d^3 + 28*(5*b^3*c*d^2 + a*b^2*d^3)*x^2 + 8*(15*b^3*c^2*
d + 5*a*b^2*c*d^2 + a^2*b*d^3)*x)/(b^12*x^8 + 8*a*b^11*x^7 + 28*a
^2*b^10*x^6 + 56*a^3*b^9*x^5 + 70*a^4*b^8*x^4 + 56*a^5*b^7*x^3 +
28*a^6*b^6*x^2 + 8*a^7*b^5*x + a^8*b^4)
```

Sympy [A] time = 15.3567, size = 206, normalized size = 2.24

$$-\frac{a^3d^3+5a^2bcd^2+15ab^2c^2d+35b^3c^3+56b^3d^3x^3+x^2\left(28ab^2d^3+140b^3cd^2\right)+x\left(8a^2bd^3+40ab^2cd^2+120b^3c^2d\right)}{280a^8b^4+2240a^7b^5x+7840a^6b^6x^2+15680a^5b^7x^3+19600a^4b^8x^4+15680a^3b^9x^5+7840a^2b^{10}x^6+2240ab^{11}x^7+280b^{12}x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**3/(b*x+a)**9,x)
```

```
[Out] -(a**3*d**3 + 5*a**2*b*c*d**2 + 15*a*b**2*c**2*d + 35*b**3*c**3 +
 56*b**3*d**3*x**3 + x**2*(28*a*b**2*d**3 + 140*b**3*c*d**2) + x*
(8*a**2*b*d**3 + 40*a*b**2*c*d**2 + 120*b**3*c**2*d))/(280*a**8*b
**4 + 2240*a**7*b**5*x + 7840*a**6*b**6*x**2 + 15680*a**5*b**7*x*
*3 + 19600*a**4*b**8*x**4 + 15680*a**3*b**9*x**5 + 7840*a**2*b**1
0*x**6 + 2240*a*b**11*x**7 + 280*b**12*x**8)
```

GIAC/XCAS [A] time = 0.218354, size = 154, normalized size = 1.67

$$-\frac{56\,b^3d^3x^3+140\,b^3cd^2x^2+28\,ab^2d^3x^2+120\,b^3c^2dx+40\,ab^2cd^2x+8\,a^2bd^3x+35\,b^3c^3+15\,ab^2c^2d+5\,a^2bcd^2+a^3d^3}{280\,(bx+a)^8b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3/(b*x + a)^9,x, algorithm="giac")
```

```
[Out] -1/280*(56*b^3*d^3*x^3 + 140*b^3*c*d^2*x^2 + 28*a*b^2*d^3*x^2 + 1
20*b^3*c^2*d*x + 40*a*b^2*c*d^2*x + 8*a^2*b*d^3*x + 35*b^3*c^3 +
15*a*b^2*c^2*d + 5*a^2*b*c*d^2 + a^3*d^3)/((b*x + a)^8*b^4)
```

3.1273 $\int (a+bx)^9(c+dx)^7\,dx$

Optimal. Leaf size=200

$$\frac{7d^6(a+bx)^{16}(bc-ad)}{16b^8}+\frac{7d^5(a+bx)^{15}(bc-ad)^2}{5b^8}+\frac{5d^4(a+bx)^{14}(bc-ad)^3}{2b^8}+\frac{35d^3(a+bx)^{13}(bc-ad)^4}{13b^8}+\frac{7d^2(a+bx)^{12}(bc-ad)^5}{4b^8}+\frac{7d(a+bx)^{11}(bc-ad)^6}{11b^8}+\frac{(a+bx)^{10}(bc-ad)^7}{10b^8}+\frac{d^7(a+bx)^{17}}{17b^8}$$

```
[Out] ((b*c - a*d)^7*(a + b*x)^10)/(10*b^8) + (7*d*(b*c - a*d)^6*(a + b
*x)^11)/(11*b^8) + (7*d^2*(b*c - a*d)^5*(a + b*x)^12)/(4*b^8) + (
35*d^3*(b*c - a*d)^4*(a + b*x)^13)/(13*b^8) + (5*d^4*(b*c - a*d)^
3*(a + b*x)^14)/(2*b^8) + (7*d^5*(b*c - a*d)^2*(a + b*x)^15)/(5*b
^8) + (7*d^6*(b*c - a*d)*(a + b*x)^16)/(16*b^8) + (d^7*(a + b*x)^
17)/(17*b^8)
```

Rubi [A] time = 1.37335, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{7d^6(a+bx)^{16}(bc-ad)}{16b^8}+\frac{7d^5(a+bx)^{15}(bc-ad)^2}{5b^8}+\frac{5d^4(a+bx)^{14}(bc-ad)^3}{2b^8}+\frac{35d^3(a+bx)^{13}(bc-ad)^4}{13b^8}+\frac{7d^2(a+bx)^{12}(bc-ad)^5}{4b^8}+\frac{7d(a+bx)^{11}(bc-ad)^6}{11b^8}+\frac{(a+bx)^{10}(bc-ad)^7}{10b^8}+\frac{d^7(a+bx)^{17}}{17b^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^9*(c + d*x)^7,x]
```

```
[Out] ((b*c - a*d)^7*(a + b*x)^10)/(10*b^8) + (7*d*(b*c - a*d)^6*(a + b
*x)^11)/(11*b^8) + (7*d^2*(b*c - a*d)^5*(a + b*x)^12)/(4*b^8) + (
35*d^3*(b*c - a*d)^4*(a + b*x)^13)/(13*b^8) + (5*d^4*(b*c - a*d)^
3*(a + b*x)^14)/(2*b^8) + (7*d^5*(b*c - a*d)^2*(a + b*x)^15)/(5*b
^8) + (7*d^6*(b*c - a*d)*(a + b*x)^16)/(16*b^8) + (d^7*(a + b*x)^
17)/(17*b^8)
```

Rubi in Sympy [A] time = 138.645, size = 184, normalized size = 0.92

$$\frac{d^7(a+bx)^{17}}{17b^8}-\frac{7d^6(a+bx)^{16}(ad-bc)}{16b^8}+\frac{7d^5(a+bx)^{15}(ad-bc)^2}{5b^8}-\frac{5d^4(a+bx)^{14}(ad-bc)^3}{2b^8}+\frac{35d^3(a+bx)^{13}(ad-bc)^4}{13b^8}-\frac{7d^2(a+bx)^{12}(ad-bc)^5}{4b^8}+\frac{7d(a+bx)^{11}(ad-bc)^6}{11b^8}-\frac{(a+bx)^{10}(ad-bc)^7}{10b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**9*(d*x+c)**7,x)
```

```
[Out] d**7*(a + b*x)**17/(17*b**8) - 7*d**6*(a + b*x)**16*(a*d - b*c)/(
16*b**8) + 7*d**5*(a + b*x)**15*(a*d - b*c)**2/(5*b**8) - 5*d**4*
(a + b*x)**14*(a*d - b*c)**3/(2*b**8) + 35*d**3*(a + b*x)**13*(a*
d - b*c)**4/(13*b**8) - 7*d**2*(a + b*x)**12*(a*d - b*c)**5/(4*b*
*8) + 7*d*(a + b*x)**11*(a*d - b*c)**6/(11*b**8) - (a + b*x)**10*
(a*d - b*c)**7/(10*b**8)
```

Mathematica [B] time = 0.218364, size = 993, normalized size = 4.96

$$\frac{1}{17}b^9d^7x^{17}+\frac{1}{16}b^8d^6(7bc+9ad)x^{16}+\frac{1}{5}b^7d^5\left(7b^2c^2+21abdc+12a^2d^2\right)x^{15}+\frac{1}{2}b^6d^4\left(5b^3c^3+27ab^2dc^2+36a^2bd^2c+12a^3d^3\right)x^{14}+\frac{7}{13}b^5d^3\left(5b^4c^4+45ab^3dc^3+108a^2b^2d^2c^2+84a^3bd^3c+18a^4d^4\right)x^{13}+\frac{7}{4}b^4d^2\left(b^5c^5+15ab^4dc^4+60a^2b^3d^2c^3+84a^3b^2d^3c^2+42a^4bd^4c+6a^5d^5\right)x^{12}+\frac{7}{11}b^3d\left(b^6c^6+27ab^5dc^5+180a^2b^4d^2c^4+420a^3b^3d^3c^3+378a^4b^2d^4c^2+126a^5bd^5c+12a^6d^6\right)x^{11}+\frac{1}{10}b^2\left(b^7c^7+63ab^6dc^6+756a^2b^5d^2c^5+2940a^3b^4d^3c^4+4410a^4b^3d^4c^3+2646a^5b^2d^5c^2+588a^6bd^6c+36a^7d^7\right)x^{10}+ab\left(b^7c^7+28ab^6dc^6+196a^2b^5d^2c^5+490a^3b^4d^3c^4+490a^4b^3d^4c^3+196a^5b^2d^5c^2+28a^6bd^6c+a^7d^7\right)x^9+\frac{1}{8}a^2\left(36b^7c^7+588ab^6dc^6+2646a^2b^5d^2c^5+4410a^3b^4d^3c^4+2940a^4b^3d^4c^3+756a^5b^2d^5c^2+63a^6bd^6c+a^7d^7\right)x^8+a^3c\left(12b^6c^6+126ab^5dc^5+378a^2b^4d^2c^4+420a^3b^3d^3c^3+180a^4b^2d^4c^2+27a^5bd^5c+a^6d^6\right)x^7+\frac{7}{2}a^4c^2\left(6b^5c^5+42ab^4dc^4+84a^2b^3d^2c^3+60a^3b^2d^3c^2+15a^4bd^4c+a^5d^5\right)x^6+\frac{7}{5}a^5c^3\left(18b^4c^4+84ab^3dc^3+108a^2b^2d^2c^2+45a^3bd^3c+5a^4d^4\right)x^5+\frac{7}{4}a^6c^4\left(12b^3c^3+36ab^2dc^2+27a^2bd^2c+5a^3d^3\right)x^4+a^7c^5\left(12b^2c^2+21abdc+7a^2d^2\right)x^3+\frac{1}{2}a^8c^6(9bc+7ad)x^2+a^9c^7x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^9*(c + d*x)^7,x]
```

```
[Out] a^9*c^7*x + (a^8*c^6*(9*b*c + 7*a*d)*x^2)/2 + a^7*c^5*(12*b^2*c^2
 + 21*a*b*c*d + 7*a^2*d^2)*x^3 + (7*a^6*c^4*(12*b^3*c^3 + 36*a*b^
2*c^2*d + 27*a^2*b*c*d^2 + 5*a^3*d^3)*x^4)/4 + (7*a^5*c^3*(18*b^4
*c^4 + 84*a*b^3*c^3*d + 108*a^2*b^2*c^2*d^2 + 45*a^3*b*c*d^3 + 5*
a^4*d^4)*x^5)/5 + (7*a^4*c^2*(6*b^5*c^5 + 42*a*b^4*c^4*d + 84*a^2
```

```
*b^3*c^3*d^2 + 60*a^3*b^2*c^2*d^3 + 15*a^4*b*c*d^4 + a^5*d^5)*x^6
)/2 + a^3*c*(12*b^6*c^6 + 126*a*b^5*c^5*d + 378*a^2*b^4*c^4*d^2 +
 420*a^3*b^3*c^3*d^3 + 180*a^4*b^2*c^2*d^4 + 27*a^5*b*c*d^5 + a^6
*d^6)*x^7 + (a^2*(36*b^7*c^7 + 588*a*b^6*c^6*d + 2646*a^2*b^5*c^5
*d^2 + 4410*a^3*b^4*c^4*d^3 + 2940*a^4*b^3*c^3*d^4 + 756*a^5*b^2*
c^2*d^5 + 63*a^6*b*c*d^6 + a^7*d^7)*x^8)/8 + a*b*(b^7*c^7 + 28*a*
b^6*c^6*d + 196*a^2*b^5*c^5*d^2 + 490*a^3*b^4*c^4*d^3 + 490*a^4*b
^3*c^3*d^4 + 196*a^5*b^2*c^2*d^5 + 28*a^6*b*c*d^6 + a^7*d^7)*x^9
+ (b^2*(b^7*c^7 + 63*a*b^6*c^6*d + 756*a^2*b^5*c^5*d^2 + 2940*a^3
*b^4*c^4*d^3 + 4410*a^4*b^3*c^3*d^4 + 2646*a^5*b^2*c^2*d^5 + 588*
a^6*b*c*d^6 + 36*a^7*d^7)*x^10)/10 + (7*b^3*d*(b^6*c^6 + 27*a*b^5
*c^5*d + 180*a^2*b^4*c^4*d^2 + 420*a^3*b^3*c^3*d^3 + 378*a^4*b^2*
c^2*d^4 + 126*a^5*b*c*d^5 + 12*a^6*d^6)*x^11)/11 + (7*b^4*d^2*(b^
5*c^5 + 15*a*b^4*c^4*d + 60*a^2*b^3*c^3*d^2 + 84*a^3*b^2*c^2*d^3
+ 42*a^4*b*c*d^4 + 6*a^5*d^5)*x^12)/4 + (7*b^5*d^3*(5*b^4*c^4 + 4
5*a*b^3*c^3*d + 108*a^2*b^2*c^2*d^2 + 84*a^3*b*c*d^3 + 18*a^4*d^4
)*x^13)/13 + (b^6*d^4*(5*b^3*c^3 + 27*a*b^2*c^2*d + 36*a^2*b*c*d^
2 + 12*a^3*d^3)*x^14)/2 + (b^7*d^5*(7*b^2*c^2 + 21*a*b*c*d + 12*a
^2*d^2)*x^15)/5 + (b^8*d^6*(7*b*c + 9*a*d)*x^16)/16 + (b^9*d^7*x^
17)/17
```

Maple [B] time = 0.005, size = 1033, normalized size = 5.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^9*(d*x+c)^7,x)
```

```
[Out] 1/17*b^9*d^7*x^17+1/16*(9*a*b^8*d^7+7*b^9*c*d^6)*x^16+1/15*(36*a^
2*b^7*d^7+63*a*b^8*c*d^6+21*b^9*c^2*d^5)*x^15+1/14*(84*a^3*b^6*d^
7+252*a^2*b^7*c*d^6+189*a*b^8*c^2*d^5+35*b^9*c^3*d^4)*x^14+1/13*(
126*a^4*b^5*d^7+588*a^3*b^6*c*d^6+756*a^2*b^7*c^2*d^5+315*a*b^8*c
^3*d^4+35*b^9*c^4*d^3)*x^13+1/12*(126*a^5*b^4*d^7+882*a^4*b^5*c*d
^6+1764*a^3*b^6*c^2*d^5+1260*a^2*b^7*c^3*d^4+315*a*b^8*c^4*d^3+21
*b^9*c^5*d^2)*x^12+1/11*(84*a^6*b^3*d^7+882*a^5*b^4*c*d^6+2646*a^
4*b^5*c^2*d^5+2940*a^3*b^6*c^3*d^4+1260*a^2*b^7*c^4*d^3+189*a*b^8
*c^5*d^2+7*b^9*c^6*d)*x^11+1/10*(36*a^7*b^2*d^7+588*a^6*b^3*c*d^6
+2646*a^5*b^4*c^2*d^5+4410*a^4*b^5*c^3*d^4+2940*a^3*b^6*c^4*d^3+7
56*a^2*b^7*c^5*d^2+63*a*b^8*c^6*d+b^9*c^7)*x^10+1/9*(9*a^8*b*d^7+
252*a^7*b^2*c*d^6+1764*a^6*b^3*c^2*d^5+4410*a^5*b^4*c^3*d^4+4410*
a^4*b^5*c^4*d^3+1764*a^3*b^6*c^5*d^2+252*a^2*b^7*c^6*d+9*a*b^8*c^
7)*x^9+1/8*(a^9*d^7+63*a^8*b*c*d^6+756*a^7*b^2*c^2*d^5+2940*a^6*b
^3*c^3*d^4+4410*a^5*b^4*c^4*d^3+2646*a^4*b^5*c^5*d^2+588*a^3*b^6*
c^6*d+36*a^2*b^7*c^7)*x^8+1/7*(7*a^9*c*d^6+189*a^8*b*c^2*d^5+1260
*a^7*b^2*c^3*d^4+2940*a^6*b^3*c^4*d^3+2646*a^5*b^4*c^5*d^2+882*a^
4*b^5*c^6*d+84*a^3*b^6*c^7)*x^7+1/6*(21*a^9*c^2*d^5+315*a^8*b*c^3
*d^4+1260*a^7*b^2*c^4*d^3+1764*a^6*b^3*c^5*d^2+882*a^5*b^4*c^6*d+
126*a^4*b^5*c^7)*x^6+1/5*(35*a^9*c^3*d^4+315*a^8*b*c^4*d^3+756*a^
7*b^2*c^5*d^2+588*a^6*b^3*c^6*d+126*a^5*b^4*c^7)*x^5+1/4*(35*a^9*
c^4*d^3+189*a^8*b*c^5*d^2+252*a^7*b^2*c^6*d+84*a^6*b^3*c^7)*x^4+1
/3*(21*a^9*c^5*d^2+63*a^8*b*c^6*d+36*a^7*b^2*c^7)*x^3+1/2*(7*a^9*
```

```
c^6*d+9*a^8*b*c^7)*x^2+a^9*c^7*x
```

Maxima [A] time = 1.35715, size = 1381, normalized size = 6.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/17*b^9*d^7*x^17 + a^9*c^7*x + 1/16*(7*b^9*c*d^6 + 9*a*b^8*d^7)*
x^16 + 1/5*(7*b^9*c^2*d^5 + 21*a*b^8*c*d^6 + 12*a^2*b^7*d^7)*x^15
 + 1/2*(5*b^9*c^3*d^4 + 27*a*b^8*c^2*d^5 + 36*a^2*b^7*c*d^6 + 12*
a^3*b^6*d^7)*x^14 + 7/13*(5*b^9*c^4*d^3 + 45*a*b^8*c^3*d^4 + 108*
a^2*b^7*c^2*d^5 + 84*a^3*b^6*c*d^6 + 18*a^4*b^5*d^7)*x^13 + 7/4*(
b^9*c^5*d^2 + 15*a*b^8*c^4*d^3 + 60*a^2*b^7*c^3*d^4 + 84*a^3*b^6*
c^2*d^5 + 42*a^4*b^5*c*d^6 + 6*a^5*b^4*d^7)*x^12 + 7/11*(b^9*c^6*
d + 27*a*b^8*c^5*d^2 + 180*a^2*b^7*c^4*d^3 + 420*a^3*b^6*c^3*d^4
+ 378*a^4*b^5*c^2*d^5 + 126*a^5*b^4*c*d^6 + 12*a^6*b^3*d^7)*x^11
+ 1/10*(b^9*c^7 + 63*a*b^8*c^6*d + 756*a^2*b^7*c^5*d^2 + 2940*a^3
*b^6*c^4*d^3 + 4410*a^4*b^5*c^3*d^4 + 2646*a^5*b^4*c^2*d^5 + 588*
a^6*b^3*c*d^6 + 36*a^7*b^2*d^7)*x^10 + (a*b^8*c^7 + 28*a^2*b^7*c^
6*d + 196*a^3*b^6*c^5*d^2 + 490*a^4*b^5*c^4*d^3 + 490*a^5*b^4*c^3
*d^4 + 196*a^6*b^3*c^2*d^5 + 28*a^7*b^2*c*d^6 + a^8*b*d^7)*x^9 +
1/8*(36*a^2*b^7*c^7 + 588*a^3*b^6*c^6*d + 2646*a^4*b^5*c^5*d^2 +
4410*a^5*b^4*c^4*d^3 + 2940*a^6*b^3*c^3*d^4 + 756*a^7*b^2*c^2*d^5
 + 63*a^8*b*c*d^6 + a^9*d^7)*x^8 + (12*a^3*b^6*c^7 + 126*a^4*b^5*
c^6*d + 378*a^5*b^4*c^5*d^2 + 420*a^6*b^3*c^4*d^3 + 180*a^7*b^2*c
^3*d^4 + 27*a^8*b*c^2*d^5 + a^9*c*d^6)*x^7 + 7/2*(6*a^4*b^5*c^7 +
 42*a^5*b^4*c^6*d + 84*a^6*b^3*c^5*d^2 + 60*a^7*b^2*c^4*d^3 + 15*
a^8*b*c^3*d^4 + a^9*c^2*d^5)*x^6 + 7/5*(18*a^5*b^4*c^7 + 84*a^6*b
^3*c^6*d + 108*a^7*b^2*c^5*d^2 + 45*a^8*b*c^4*d^3 + 5*a^9*c^3*d^4
)*x^5 + 7/4*(12*a^6*b^3*c^7 + 36*a^7*b^2*c^6*d + 27*a^8*b*c^5*d^2
 + 5*a^9*c^4*d^3)*x^4 + (12*a^7*b^2*c^7 + 21*a^8*b*c^6*d + 7*a^9*
c^5*d^2)*x^3 + 1/2*(9*a^8*b*c^7 + 7*a^9*c^6*d)*x^2
```

Fricas [A] time = 0.210706, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/17*x^17*d^7*b^9 + 7/16*x^16*d^6*c*b^9 + 9/16*x^16*d^7*b^8*a + 7
/5*x^15*d^5*c^2*b^9 + 21/5*x^15*d^6*c*b^8*a + 12/5*x^15*d^7*b^7*a
^2 + 5/2*x^14*d^4*c^3*b^9 + 27/2*x^14*d^5*c^2*b^8*a + 18*x^14*d^6
```

```
*c*b^7*a^2 + 6*x^14*d^7*b^6*a^3 + 35/13*x^13*d^3*c^4*b^9 + 315/13
*x^13*d^4*c^3*b^8*a + 756/13*x^13*d^5*c^2*b^7*a^2 + 588/13*x^13*d
^6*c*b^6*a^3 + 126/13*x^13*d^7*b^5*a^4 + 7/4*x^12*d^2*c^5*b^9 + 1
05/4*x^12*d^3*c^4*b^8*a + 105*x^12*d^4*c^3*b^7*a^2 + 147*x^12*d^5
*c^2*b^6*a^3 + 147/2*x^12*d^6*c*b^5*a^4 + 21/2*x^12*d^7*b^4*a^5 +
 7/11*x^11*d*c^6*b^9 + 189/11*x^11*d^2*c^5*b^8*a + 1260/11*x^11*d
^3*c^4*b^7*a^2 + 2940/11*x^11*d^4*c^3*b^6*a^3 + 2646/11*x^11*d^5*
c^2*b^5*a^4 + 882/11*x^11*d^6*c*b^4*a^5 + 84/11*x^11*d^7*b^3*a^6
+ 1/10*x^10*c^7*b^9 + 63/10*x^10*d*c^6*b^8*a + 378/5*x^10*d^2*c^5
*b^7*a^2 + 294*x^10*d^3*c^4*b^6*a^3 + 441*x^10*d^4*c^3*b^5*a^4 +
1323/5*x^10*d^5*c^2*b^4*a^5 + 294/5*x^10*d^6*c*b^3*a^6 + 18/5*x^1
0*d^7*b^2*a^7 + x^9*c^7*b^8*a + 28*x^9*d*c^6*b^7*a^2 + 196*x^9*d^
2*c^5*b^6*a^3 + 490*x^9*d^3*c^4*b^5*a^4 + 490*x^9*d^4*c^3*b^4*a^5
 + 196*x^9*d^5*c^2*b^3*a^6 + 28*x^9*d^6*c*b^2*a^7 + x^9*d^7*b*a^8
 + 9/2*x^8*c^7*b^7*a^2 + 147/2*x^8*d*c^6*b^6*a^3 + 1323/4*x^8*d^2
*c^5*b^5*a^4 + 2205/4*x^8*d^3*c^4*b^4*a^5 + 735/2*x^8*d^4*c^3*b^3
*a^6 + 189/2*x^8*d^5*c^2*b^2*a^7 + 63/8*x^8*d^6*c*b*a^8 + 1/8*x^8
*d^7*a^9 + 12*x^7*c^7*b^6*a^3 + 126*x^7*d*c^6*b^5*a^4 + 378*x^7*d
^2*c^5*b^4*a^5 + 420*x^7*d^3*c^4*b^3*a^6 + 180*x^7*d^4*c^3*b^2*a^
7 + 27*x^7*d^5*c^2*b*a^8 + x^7*d^6*c*a^9 + 21*x^6*c^7*b^5*a^4 + 1
47*x^6*d*c^6*b^4*a^5 + 294*x^6*d^2*c^5*b^3*a^6 + 210*x^6*d^3*c^4*
b^2*a^7 + 105/2*x^6*d^4*c^3*b*a^8 + 7/2*x^6*d^5*c^2*a^9 + 126/5*x
^5*c^7*b^4*a^5 + 588/5*x^5*d*c^6*b^3*a^6 + 756/5*x^5*d^2*c^5*b^2*
a^7 + 63*x^5*d^3*c^4*b*a^8 + 7*x^5*d^4*c^3*a^9 + 21*x^4*c^7*b^3*a
^6 + 63*x^4*d*c^6*b^2*a^7 + 189/4*x^4*d^2*c^5*b*a^8 + 35/4*x^4*d^
3*c^4*a^9 + 12*x^3*c^7*b^2*a^7 + 21*x^3*d*c^6*b*a^8 + 7*x^3*d^2*c
^5*a^9 + 9/2*x^2*c^7*b*a^8 + 7/2*x^2*d*c^6*a^9 + x*c^7*a^9
```

Sympy [A] time = 0.547523, size = 1163, normalized size = 5.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**9*(d*x+c)**7,x)
```

```
[Out] a**9*c**7*x + b**9*d**7*x**17/17 + x**16*(9*a*b**8*d**7/16 + 7*b*
*9*c*d**6/16) + x**15*(12*a**2*b**7*d**7/5 + 21*a*b**8*c*d**6/5 +
 7*b**9*c**2*d**5/5) + x**14*(6*a**3*b**6*d**7 + 18*a**2*b**7*c*d
**6 + 27*a*b**8*c**2*d**5/2 + 5*b**9*c**3*d**4/2) + x**13*(126*a*
*4*b**5*d**7/13 + 588*a**3*b**6*c*d**6/13 + 756*a**2*b**7*c**2*d*
*5/13 + 315*a*b**8*c**3*d**4/13 + 35*b**9*c**4*d**3/13) + x**12*(
21*a**5*b**4*d**7/2 + 147*a**4*b**5*c*d**6/2 + 147*a**3*b**6*c**2
*d**5 + 105*a**2*b**7*c**3*d**4 + 105*a*b**8*c**4*d**3/4 + 7*b**9
*c**5*d**2/4) + x**11*(84*a**6*b**3*d**7/11 + 882*a**5*b**4*c*d**
6/11 + 2646*a**4*b**5*c**2*d**5/11 + 2940*a**3*b**6*c**3*d**4/11
+ 1260*a**2*b**7*c**4*d**3/11 + 189*a*b**8*c**5*d**2/11 + 7*b**9*
c**6*d/11) + x**10*(18*a**7*b**2*d**7/5 + 294*a**6*b**3*c*d**6/5
+ 1323*a**5*b**4*c**2*d**5/5 + 441*a**4*b**5*c**3*d**4 + 294*a**3
*b**6*c**4*d**3 + 378*a**2*b**7*c**5*d**2/5 + 63*a*b**8*c**6*d/10
 + b**9*c**7/10) + x**9*(a**8*b*d**7 + 28*a**7*b**2*c*d**6 + 196*
a**6*b**3*c**2*d**5 + 490*a**5*b**4*c**3*d**4 + 490*a**4*b**5*c**
```

```
4*d**3 + 196*a**3*b**6*c**5*d**2 + 28*a**2*b**7*c**6*d + a*b**8*c
**7) + x**8*(a**9*d**7/8 + 63*a**8*b*c*d**6/8 + 189*a**7*b**2*c**
2*d**5/2 + 735*a**6*b**3*c**3*d**4/2 + 2205*a**5*b**4*c**4*d**3/4
 + 1323*a**4*b**5*c**5*d**2/4 + 147*a**3*b**6*c**6*d/2 + 9*a**2*b
**7*c**7/2) + x**7*(a**9*c*d**6 + 27*a**8*b*c**2*d**5 + 180*a**7*
b**2*c**3*d**4 + 420*a**6*b**3*c**4*d**3 + 378*a**5*b**4*c**5*d**
2 + 126*a**4*b**5*c**6*d + 12*a**3*b**6*c**7) + x**6*(7*a**9*c**2
*d**5/2 + 105*a**8*b*c**3*d**4/2 + 210*a**7*b**2*c**4*d**3 + 294*
a**6*b**3*c**5*d**2 + 147*a**5*b**4*c**6*d + 21*a**4*b**5*c**7) +
 x**5*(7*a**9*c**3*d**4 + 63*a**8*b*c**4*d**3 + 756*a**7*b**2*c**
5*d**2/5 + 588*a**6*b**3*c**6*d/5 + 126*a**5*b**4*c**7/5) + x**4*
(35*a**9*c**4*d**3/4 + 189*a**8*b*c**5*d**2/4 + 63*a**7*b**2*c**6
*d + 21*a**6*b**3*c**7) + x**3*(7*a**9*c**5*d**2 + 21*a**8*b*c**6
*d + 12*a**7*b**2*c**7) + x**2*(7*a**9*c**6*d/2 + 9*a**8*b*c**7/2
)
```

GIAC/XCAS [A] time = 0.22065, size = 1, normalized size = 0.

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] Done
```

3.1274 $\int (a+bx)^8(c+dx)^7\,dx$

Optimal. Leaf size=200

$$\frac{7d^6(a+bx)^{15}(bc-ad)}{15b^8}+\frac{3d^5(a+bx)^{14}(bc-ad)^2}{2b^8}+\frac{35d^4(a+bx)^{13}(bc-ad)^3}{13b^8}+\frac{35d^3(a+bx)^{12}(bc-ad)^4}{12b^8}+\frac{21d^2(a+bx)^{11}(bc-ad)^5}{11b^8}+\frac{7d(a+bx)^{10}(bc-ad)^6}{10b^8}+\frac{(a+bx)^9(bc-ad)^7}{9b^8}+\frac{d^7(a+bx)^{16}}{16b^8}$$

```
[Out] ((b*c - a*d)^7*(a + b*x)^9)/(9*b^8) + (7*d*(b*c - a*d)^6*(a + b*x
)^10)/(10*b^8) + (21*d^2*(b*c - a*d)^5*(a + b*x)^11)/(11*b^8) + (
35*d^3*(b*c - a*d)^4*(a + b*x)^12)/(12*b^8) + (35*d^4*(b*c - a*d)
^3*(a + b*x)^13)/(13*b^8) + (3*d^5*(b*c - a*d)^2*(a + b*x)^14)/(2
*b^8) + (7*d^6*(b*c - a*d)*(a + b*x)^15)/(15*b^8) + (d^7*(a + b*x
)^16)/(16*b^8)
```

Rubi [A] time = 1.23807, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{7d^6(a+bx)^{15}(bc-ad)}{15b^8}+\frac{3d^5(a+bx)^{14}(bc-ad)^2}{2b^8}+\frac{35d^4(a+bx)^{13}(bc-ad)^3}{13b^8}+\frac{35d^3(a+bx)^{12}(bc-ad)^4}{12b^8}+\frac{21d^2(a+bx)^{11}(bc-ad)^5}{11b^8}+\frac{7d(a+bx)^{10}(bc-ad)^6}{10b^8}+\frac{(a+bx)^9(bc-ad)^7}{9b^8}+\frac{d^7(a+bx)^{16}}{16b^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^8*(c + d*x)^7,x]
```

```
[Out] ((b*c - a*d)^7*(a + b*x)^9)/(9*b^8) + (7*d*(b*c - a*d)^6*(a + b*x
)^10)/(10*b^8) + (21*d^2*(b*c - a*d)^5*(a + b*x)^11)/(11*b^8) + (
35*d^3*(b*c - a*d)^4*(a + b*x)^12)/(12*b^8) + (35*d^4*(b*c - a*d)
^3*(a + b*x)^13)/(13*b^8) + (3*d^5*(b*c - a*d)^2*(a + b*x)^14)/(2
*b^8) + (7*d^6*(b*c - a*d)*(a + b*x)^15)/(15*b^8) + (d^7*(a + b*x
)^16)/(16*b^8)
```

Rubi in Sympy [A] time = 123.539, size = 184, normalized size = 0.92

$$\frac{d^7\left(a+bx\right)^{16}}{16b^8}-\frac{7d^6\left(a+bx\right)^{15}\left(ad-bc\right)}{15b^8}+\frac{3d^5\left(a+bx\right)^{14}\left(ad-bc\right)^2}{2b^8}-\frac{35d^4\left(a+bx\right)^{13}\left(ad-bc\right)^3}{13b^8}+\frac{35d^3\left(a+bx\right)^{12}\left(ad-bc\right)^4}{12b^8}-\frac{21d^2\left(a+bx\right)^{11}\left(ad-bc\right)^5}{11b^8}+\frac{7d\left(a+bx\right)^{10}\left(ad-bc\right)^6}{10b^8}-\frac{\left(a+bx\right)^9\left(ad-bc\right)^7}{9b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**8*(d*x+c)**7,x)
```

```
[Out] d**7*(a + b*x)**16/(16*b**8) - 7*d**6*(a + b*x)**15*(a*d - b*c)/(
15*b**8) + 3*d**5*(a + b*x)**14*(a*d - b*c)**2/(2*b**8) - 35*d**4
*(a + b*x)**13*(a*d - b*c)**3/(13*b**8) + 35*d**3*(a + b*x)**12*(
a*d - b*c)**4/(12*b**8) - 21*d**2*(a + b*x)**11*(a*d - b*c)**5/(1
1*b**8) + 7*d*(a + b*x)**10*(a*d - b*c)**6/(10*b**8) - (a + b*x)*
*9*(a*d - b*c)**7/(9*b**8)
```

Mathematica [B] time = 0.193822, size = 897, normalized size = 4.48

$$\begin{aligned}
&\frac{1}{16}b^8d^7x^{16} + \frac{1}{15}b^7d^6(7bc+8ad)x^{15} + \frac{1}{2}b^6d^5\left(3b^2c^2+8abdc+4a^2d^2\right)x^{14} \\
&+ \frac{7}{13}b^5d^4\left(5b^3c^3+24ab^2dc^2+28a^2bd^2c+8a^3d^3\right)x^{13} \\
&+ \frac{7}{12}b^4d^3\left(5b^4c^4+40ab^3dc^3+84a^2b^2d^2c^2+56a^3bd^3c+10a^4d^4\right)x^{12} \\
&+ \frac{7}{11}b^3d^2\left(3b^5c^5+40ab^4dc^4+140a^2b^3d^2c^3+168a^3b^2d^3c^2+70a^4bd^4c+8a^5d^5\right)x^{11} \\
&+ \frac{7}{10}b^2d\left(b^6c^6+24ab^5dc^5+140a^2b^4d^2c^4+280a^3b^3d^3c^3+210a^4b^2d^4c^2\right. \\
&\left.+56a^5bd^5c+4a^6d^6\right)x^{10} + \frac{1}{9}b\left(b^7c^7+56ab^6dc^6+588a^2b^5d^2c^5+1960a^3b^4d^3c^4\right. \\
&\left.+2450a^4b^3d^4c^3+1176a^5b^2d^5c^2+196a^6bd^6c+8a^7d^7\right)x^9 + \frac{1}{8}a\left(8b^7c^7+196ab^6dc^6\right. \\
&\left.+1176a^2b^5d^2c^5+2450a^3b^4d^3c^4+1960a^4b^3d^4c^3+588a^5b^2d^5c^2+56a^6bd^6c+a^7d^7\right)x^8 \\
&+a^2c\left(4b^6c^6+56ab^5dc^5+210a^2b^4d^2c^4+280a^3b^3d^3c^3+140a^4b^2d^4c^2+24a^5bd^5c+a^6d^6\right)x^7 \\
&+ \frac{7}{6}a^3c^2\left(8b^5c^5+70ab^4dc^4+168a^2b^3d^2c^3+140a^3b^2d^3c^2+40a^4bd^4c+3a^5d^5\right)x^6 \\
&+ \frac{7}{5}a^4c^3\left(10b^4c^4+56ab^3dc^3+84a^2b^2d^2c^2+40a^3bd^3c+5a^4d^4\right)x^5 \\
&+ \frac{7}{4}a^5c^4\left(8b^3c^3+28ab^2dc^2+24a^2bd^2c+5a^3d^3\right)x^4 \\
&+ \frac{7}{3}a^6c^5\left(4b^2c^2+8abdc+3a^2d^2\right)x^3 + \frac{1}{2}a^7c^6(8bc+7ad)x^2 + a^8c^7x
\end{aligned}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^8*(c + d*x)^7,x]
```

```
[Out] a^8*c^7*x + (a^7*c^6*(8*b*c + 7*a*d)*x^2)/2 + (7*a^6*c^5*(4*b^2*c
^2 + 8*a*b*c*d + 3*a^2*d^2)*x^3)/3 + (7*a^5*c^4*(8*b^3*c^3 + 28*a
*b^2*c^2*d + 24*a^2*b*c*d^2 + 5*a^3*d^3)*x^4)/4 + (7*a^4*c^3*(10*
b^4*c^4 + 56*a*b^3*c^3*d + 84*a^2*b^2*c^2*d^2 + 40*a^3*b*c*d^3 +
5*a^4*d^4)*x^5)/5 + (7*a^3*c^2*(8*b^5*c^5 + 70*a*b^4*c^4*d + 168*
a^2*b^3*c^3*d^2 + 140*a^3*b^2*c^2*d^3 + 40*a^4*b*c*d^4 + 3*a^5*d^
5)*x^6)/6 + a^2*c*(4*b^6*c^6 + 56*a*b^5*c^5*d + 210*a^2*b^4*c^4*d
^2 + 280*a^3*b^3*c^3*d^3 + 140*a^4*b^2*c^2*d^4 + 24*a^5*b*c*d^5 +
```

```
 a^6*d^6)*x^7 + (a*(8*b^7*c^7 + 196*a*b^6*c^6*d + 1176*a^2*b^5*c^
5*d^2 + 2450*a^3*b^4*c^4*d^3 + 1960*a^4*b^3*c^3*d^4 + 588*a^5*b^2
*c^2*d^5 + 56*a^6*b*c*d^6 + a^7*d^7)*x^8)/8 + (b*(b^7*c^7 + 56*a*
b^6*c^6*d + 588*a^2*b^5*c^5*d^2 + 1960*a^3*b^4*c^4*d^3 + 2450*a^4
*b^3*c^3*d^4 + 1176*a^5*b^2*c^2*d^5 + 196*a^6*b*c*d^6 + 8*a^7*d^7
)*x^9)/9 + (7*b^2*d*(b^6*c^6 + 24*a*b^5*c^5*d + 140*a^2*b^4*c^4*d
^2 + 280*a^3*b^3*c^3*d^3 + 210*a^4*b^2*c^2*d^4 + 56*a^5*b*c*d^5 +
 4*a^6*d^6)*x^10)/10 + (7*b^3*d^2*(3*b^5*c^5 + 40*a*b^4*c^4*d + 1
40*a^2*b^3*c^3*d^2 + 168*a^3*b^2*c^2*d^3 + 70*a^4*b*c*d^4 + 8*a^5
*d^5)*x^11)/11 + (7*b^4*d^3*(5*b^4*c^4 + 40*a*b^3*c^3*d + 84*a^2*
b^2*c^2*d^2 + 56*a^3*b*c*d^3 + 10*a^4*d^4)*x^12)/12 + (7*b^5*d^4*
(5*b^3*c^3 + 24*a*b^2*c^2*d + 28*a^2*b*c*d^2 + 8*a^3*d^3)*x^13)/1
3 + (b^6*d^5*(3*b^2*c^2 + 8*a*b*c*d + 4*a^2*d^2)*x^14)/2 + (b^7*d
^6*(7*b*c + 8*a*d)*x^15)/15 + (b^8*d^7*x^16)/16
```

Maple [B] time = 0.004, size = 925, normalized size = 4.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^8*(d*x+c)^7,x)
```

```
[Out] 1/16*b^8*d^7*x^16+1/15*(8*a*b^7*d^7+7*b^8*c*d^6)*x^15+1/14*(28*a^
2*b^6*d^7+56*a*b^7*c*d^6+21*b^8*c^2*d^5)*x^14+1/13*(56*a^3*b^5*d^
7+196*a^2*b^6*c*d^6+168*a*b^7*c^2*d^5+35*b^8*c^3*d^4)*x^13+1/12*(
70*a^4*b^4*d^7+392*a^3*b^5*c*d^6+588*a^2*b^6*c^2*d^5+280*a*b^7*c^
3*d^4+35*b^8*c^4*d^3)*x^12+1/11*(56*a^5*b^3*d^7+490*a^4*b^4*c*d^6
+1176*a^3*b^5*c^2*d^5+980*a^2*b^6*c^3*d^4+280*a*b^7*c^4*d^3+21*b^
8*c^5*d^2)*x^11+1/10*(28*a^6*b^2*d^7+392*a^5*b^3*c*d^6+1470*a^4*b
^4*c^2*d^5+1960*a^3*b^5*c^3*d^4+980*a^2*b^6*c^4*d^3+168*a*b^7*c^5
*d^2+7*b^8*c^6*d)*x^10+1/9*(8*a^7*b*d^7+196*a^6*b^2*c*d^6+1176*a^
5*b^3*c^2*d^5+2450*a^4*b^4*c^3*d^4+1960*a^3*b^5*c^4*d^3+588*a^2*b
^6*c^5*d^2+56*a*b^7*c^6*d+b^8*c^7)*x^9+1/8*(a^8*d^7+56*a^7*b*c*d^
6+588*a^6*b^2*c^2*d^5+1960*a^5*b^3*c^3*d^4+2450*a^4*b^4*c^4*d^3+1
176*a^3*b^5*c^5*d^2+196*a^2*b^6*c^6*d+8*a*b^7*c^7)*x^8+1/7*(7*a^8
*c*d^6+168*a^7*b*c^2*d^5+980*a^6*b^2*c^3*d^4+1960*a^5*b^3*c^4*d^3
+1470*a^4*b^4*c^5*d^2+392*a^3*b^5*c^6*d+28*a^2*b^6*c^7)*x^7+1/6*(
21*a^8*c^2*d^5+280*a^7*b*c^3*d^4+980*a^6*b^2*c^4*d^3+1176*a^5*b^3
*c^5*d^2+490*a^4*b^4*c^6*d+56*a^3*b^5*c^7)*x^6+1/5*(35*a^8*c^3*d^
4+280*a^7*b*c^4*d^3+588*a^6*b^2*c^5*d^2+392*a^5*b^3*c^6*d+70*a^4*
b^4*c^7)*x^5+1/4*(35*a^8*c^4*d^3+168*a^7*b*c^5*d^2+196*a^6*b^2*c^
6*d+56*a^5*b^3*c^7)*x^4+1/3*(21*a^8*c^5*d^2+56*a^7*b*c^6*d+28*a^6
*b^2*c^7)*x^3+1/2*(7*a^8*c^6*d+8*a^7*b*c^7)*x^2+a^8*c^7*x
```

Maple [A] time = 1.36316, size = 1243, normalized size = 6.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/16*b^8*d^7*x^16 + a^8*c^7*x + 1/15*(7*b^8*c*d^6 + 8*a*b^7*d^7)*
x^15 + 1/2*(3*b^8*c^2*d^5 + 8*a*b^7*c*d^6 + 4*a^2*b^6*d^7)*x^14 +
 7/13*(5*b^8*c^3*d^4 + 24*a*b^7*c^2*d^5 + 28*a^2*b^6*c*d^6 + 8*a^
3*b^5*d^7)*x^13 + 7/12*(5*b^8*c^4*d^3 + 40*a*b^7*c^3*d^4 + 84*a^2
*b^6*c^2*d^5 + 56*a^3*b^5*c*d^6 + 10*a^4*b^4*d^7)*x^12 + 7/11*(3*
b^8*c^5*d^2 + 40*a*b^7*c^4*d^3 + 140*a^2*b^6*c^3*d^4 + 168*a^3*b^
5*c^2*d^5 + 70*a^4*b^4*c*d^6 + 8*a^5*b^3*d^7)*x^11 + 7/10*(b^8*c^
6*d + 24*a*b^7*c^5*d^2 + 140*a^2*b^6*c^4*d^3 + 280*a^3*b^5*c^3*d^
4 + 210*a^4*b^4*c^2*d^5 + 56*a^5*b^3*c*d^6 + 4*a^6*b^2*d^7)*x^10
+ 1/9*(b^8*c^7 + 56*a*b^7*c^6*d + 588*a^2*b^6*c^5*d^2 + 1960*a^3*
b^5*c^4*d^3 + 2450*a^4*b^4*c^3*d^4 + 1176*a^5*b^3*c^2*d^5 + 196*a
^6*b^2*c*d^6 + 8*a^7*b*d^7)*x^9 + 1/8*(8*a*b^7*c^7 + 196*a^2*b^6*
c^6*d + 1176*a^3*b^5*c^5*d^2 + 2450*a^4*b^4*c^4*d^3 + 1960*a^5*b^
3*c^3*d^4 + 588*a^6*b^2*c^2*d^5 + 56*a^7*b*c*d^6 + a^8*d^7)*x^8 +
 (4*a^2*b^6*c^7 + 56*a^3*b^5*c^6*d + 210*a^4*b^4*c^5*d^2 + 280*a^
5*b^3*c^4*d^3 + 140*a^6*b^2*c^3*d^4 + 24*a^7*b*c^2*d^5 + a^8*c*d^
6)*x^7 + 7/6*(8*a^3*b^5*c^7 + 70*a^4*b^4*c^6*d + 168*a^5*b^3*c^5*
d^2 + 140*a^6*b^2*c^4*d^3 + 40*a^7*b*c^3*d^4 + 3*a^8*c^2*d^5)*x^6
 + 7/5*(10*a^4*b^4*c^7 + 56*a^5*b^3*c^6*d + 84*a^6*b^2*c^5*d^2 +
40*a^7*b*c^4*d^3 + 5*a^8*c^3*d^4)*x^5 + 7/4*(8*a^5*b^3*c^7 + 28*a
^6*b^2*c^6*d + 24*a^7*b*c^5*d^2 + 5*a^8*c^4*d^3)*x^4 + 7/3*(4*a^6
*b^2*c^7 + 8*a^7*b*c^6*d + 3*a^8*c^5*d^2)*x^3 + 1/2*(8*a^7*b*c^7
+ 7*a^8*c^6*d)*x^2
```

Fricas [A] time = 0.198929, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/16*x^16*d^7*b^8 + 7/15*x^15*d^6*c*b^8 + 8/15*x^15*d^7*b^7*a + 3
/2*x^14*d^5*c^2*b^8 + 4*x^14*d^6*c*b^7*a + 2*x^14*d^7*b^6*a^2 + 3
5/13*x^13*d^4*c^3*b^8 + 168/13*x^13*d^5*c^2*b^7*a + 196/13*x^13*d
^6*c*b^6*a^2 + 56/13*x^13*d^7*b^5*a^3 + 35/12*x^12*d^3*c^4*b^8 +
70/3*x^12*d^4*c^3*b^7*a + 49*x^12*d^5*c^2*b^6*a^2 + 98/3*x^12*d^6
*c*b^5*a^3 + 35/6*x^12*d^7*b^4*a^4 + 21/11*x^11*d^2*c^5*b^8 + 280
/11*x^11*d^3*c^4*b^7*a + 980/11*x^11*d^4*c^3*b^6*a^2 + 1176/11*x^
11*d^5*c^2*b^5*a^3 + 490/11*x^11*d^6*c*b^4*a^4 + 56/11*x^11*d^7*b
^3*a^5 + 7/10*x^10*d*c^6*b^8 + 84/5*x^10*d^2*c^5*b^7*a + 98*x^10*
d^3*c^4*b^6*a^2 + 196*x^10*d^4*c^3*b^5*a^3 + 147*x^10*d^5*c^2*b^4
*a^4 + 196/5*x^10*d^6*c*b^3*a^5 + 14/5*x^10*d^7*b^2*a^6 + 1/9*x^9
*c^7*b^8 + 56/9*x^9*d*c^6*b^7*a + 196/3*x^9*d^2*c^5*b^6*a^2 + 196
0/9*x^9*d^3*c^4*b^5*a^3 + 2450/9*x^9*d^4*c^3*b^4*a^4 + 392/3*x^9*
d^5*c^2*b^3*a^5 + 196/9*x^9*d^6*c*b^2*a^6 + 8/9*x^9*d^7*b*a^7 + x
^8*c^7*b^7*a + 49/2*x^8*d*c^6*b^6*a^2 + 147*x^8*d^2*c^5*b^5*a^3 +
```

```
 1225/4*x^8*d^3*c^4*b^4*a^4 + 245*x^8*d^4*c^3*b^3*a^5 + 147/2*x^8
*d^5*c^2*b^2*a^6 + 7*x^8*d^6*c*b*a^7 + 1/8*x^8*d^7*a^8 + 4*x^7*c^
7*b^6*a^2 + 56*x^7*d*c^6*b^5*a^3 + 210*x^7*d^2*c^5*b^4*a^4 + 280*
x^7*d^3*c^4*b^3*a^5 + 140*x^7*d^4*c^3*b^2*a^6 + 24*x^7*d^5*c^2*b*
a^7 + x^7*d^6*c*a^8 + 28/3*x^6*c^7*b^5*a^3 + 245/3*x^6*d*c^6*b^4*
a^4 + 196*x^6*d^2*c^5*b^3*a^5 + 490/3*x^6*d^3*c^4*b^2*a^6 + 140/3
*x^6*d^4*c^3*b*a^7 + 7/2*x^6*d^5*c^2*a^8 + 14*x^5*c^7*b^4*a^4 + 3
92/5*x^5*d*c^6*b^3*a^5 + 588/5*x^5*d^2*c^5*b^2*a^6 + 56*x^5*d^3*c
^4*b*a^7 + 7*x^5*d^4*c^3*a^8 + 14*x^4*c^7*b^3*a^5 + 49*x^4*d*c^6*
b^2*a^6 + 42*x^4*d^2*c^5*b*a^7 + 35/4*x^4*d^3*c^4*a^8 + 28/3*x^3*
c^7*b^2*a^6 + 56/3*x^3*d*c^6*b*a^7 + 7*x^3*d^2*c^5*a^8 + 4*x^2*c^
7*b*a^7 + 7/2*x^2*d*c^6*a^8 + x*c^7*a^8
```

Sympy [A] time = 0.493418, size = 1046, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**8*(d*x+c)**7,x)
```

```
[Out] a**8*c**7*x + b**8*d**7*x**16/16 + x**15*(8*a*b**7*d**7/15 + 7*b*
*8*c*d**6/15) + x**14*(2*a**2*b**6*d**7 + 4*a*b**7*c*d**6 + 3*b**
8*c**2*d**5/2) + x**13*(56*a**3*b**5*d**7/13 + 196*a**2*b**6*c*d*
*6/13 + 168*a*b**7*c**2*d**5/13 + 35*b**8*c**3*d**4/13) + x**12*(
35*a**4*b**4*d**7/6 + 98*a**3*b**5*c*d**6/3 + 49*a**2*b**6*c**2*d
**5 + 70*a*b**7*c**3*d**4/3 + 35*b**8*c**4*d**3/12) + x**11*(56*a
**5*b**3*d**7/11 + 490*a**4*b**4*c*d**6/11 + 1176*a**3*b**5*c**2*
d**5/11 + 980*a**2*b**6*c**3*d**4/11 + 280*a*b**7*c**4*d**3/11 +
21*b**8*c**5*d**2/11) + x**10*(14*a**6*b**2*d**7/5 + 196*a**5*b**
3*c*d**6/5 + 147*a**4*b**4*c**2*d**5 + 196*a**3*b**5*c**3*d**4 +
98*a**2*b**6*c**4*d**3 + 84*a*b**7*c**5*d**2/5 + 7*b**8*c**6*d/10
) + x**9*(8*a**7*b*d**7/9 + 196*a**6*b**2*c*d**6/9 + 392*a**5*b**
3*c**2*d**5/3 + 2450*a**4*b**4*c**3*d**4/9 + 1960*a**3*b**5*c**4*
d**3/9 + 196*a**2*b**6*c**5*d**2/3 + 56*a*b**7*c**6*d/9 + b**8*c*
*7/9) + x**8*(a**8*d**7/8 + 7*a**7*b*c*d**6 + 147*a**6*b**2*c**2*
d**5/2 + 245*a**5*b**3*c**3*d**4 + 1225*a**4*b**4*c**4*d**3/4 + 1
47*a**3*b**5*c**5*d**2 + 49*a**2*b**6*c**6*d/2 + a*b**7*c**7) + x
**7*(a**8*c*d**6 + 24*a**7*b*c**2*d**5 + 140*a**6*b**2*c**3*d**4
+ 280*a**5*b**3*c**4*d**3 + 210*a**4*b**4*c**5*d**2 + 56*a**3*b**
5*c**6*d + 4*a**2*b**6*c**7) + x**6*(7*a**8*c**2*d**5/2 + 140*a**
7*b*c**3*d**4/3 + 490*a**6*b**2*c**4*d**3/3 + 196*a**5*b**3*c**5*
d**2 + 245*a**4*b**4*c**6*d/3 + 28*a**3*b**5*c**7/3) + x**5*(7*a*
*8*c**3*d**4 + 56*a**7*b*c**4*d**3 + 588*a**6*b**2*c**5*d**2/5 +
392*a**5*b**3*c**6*d/5 + 14*a**4*b**4*c**7) + x**4*(35*a**8*c**4*
d**3/4 + 42*a**7*b*c**5*d**2 + 49*a**6*b**2*c**6*d + 14*a**5*b**3
*c**7) + x**3*(7*a**8*c**5*d**2 + 56*a**7*b*c**6*d/3 + 28*a**6*b*
*2*c**7/3) + x**2*(7*a**8*c**6*d/2 + 4*a**7*b*c**7)
```

GIAC/XCAS [A] time = 0.21863, size = 1, normalized size = 0.

$$\text{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] Done
```

3.1275 $\int (a+bx)^7(c+dx)^7\,dx$

Optimal. Leaf size=200

$$\frac{d^6(a+bx)^{14}(bc-ad)}{2b^8}+\frac{21d^5(a+bx)^{13}(bc-ad)^2}{13b^8}+\frac{35d^4(a+bx)^{12}(bc-ad)^3}{12b^8}+\frac{35d^3(a+bx)^{11}(bc-ad)^4}{11b^8}+\frac{21d^2(a+bx)^{10}(bc-ad)^5}{10b^8}+\frac{7d(a+bx)^9(bc-ad)^6}{9b^8}+\frac{(a+bx)^8(bc-ad)^7}{8b^8}+\frac{d^7(a+bx)^{15}}{15b^8}$$

```
[Out] ((b*c - a*d)^7*(a + b*x)^8)/(8*b^8) + (7*d*(b*c - a*d)^6*(a + b*x
)^9)/(9*b^8) + (21*d^2*(b*c - a*d)^5*(a + b*x)^10)/(10*b^8) + (35
*d^3*(b*c - a*d)^4*(a + b*x)^11)/(11*b^8) + (35*d^4*(b*c - a*d)^3
*(a + b*x)^12)/(12*b^8) + (21*d^5*(b*c - a*d)^2*(a + b*x)^13)/(13
*b^8) + (d^6*(b*c - a*d)*(a + b*x)^14)/(2*b^8) + (d^7*(a + b*x)^1
5)/(15*b^8)
```

Rubi [A] time = 0.893588, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{d^6(a+bx)^{14}(bc-ad)}{2b^8}+\frac{21d^5(a+bx)^{13}(bc-ad)^2}{13b^8}+\frac{35d^4(a+bx)^{12}(bc-ad)^3}{12b^8}+\frac{35d^3(a+bx)^{11}(bc-ad)^4}{11b^8}+\frac{21d^2(a+bx)^{10}(bc-ad)^5}{10b^8}+\frac{7d(a+bx)^9(bc-ad)^6}{9b^8}+\frac{(a+bx)^8(bc-ad)^7}{8b^8}+\frac{d^7(a+bx)^{15}}{15b^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7*(c + d*x)^7,x]
```

```
[Out] ((b*c - a*d)^7*(a + b*x)^8)/(8*b^8) + (7*d*(b*c - a*d)^6*(a + b*x
)^9)/(9*b^8) + (21*d^2*(b*c - a*d)^5*(a + b*x)^10)/(10*b^8) + (35
*d^3*(b*c - a*d)^4*(a + b*x)^11)/(11*b^8) + (35*d^4*(b*c - a*d)^3
*(a + b*x)^12)/(12*b^8) + (21*d^5*(b*c - a*d)^2*(a + b*x)^13)/(13
*b^8) + (d^6*(b*c - a*d)*(a + b*x)^14)/(2*b^8) + (d^7*(a + b*x)^1
5)/(15*b^8)
```

Rubi in Sympy [A] time = 107.709, size = 182, normalized size = 0.91

$$\frac{d^7\,(a+bx)^{15}}{15b^8}-\frac{d^6\,(a+bx)^{14}\,(ad-bc)}{2b^8}+\frac{21d^5\,(a+bx)^{13}\,(ad-bc)^2}{13b^8}-\frac{35d^4\,(a+bx)^{12}\,(ad-bc)^3}{12b^8}+\frac{35d^3\,(a+bx)^{11}\,(ad-bc)^4}{11b^8}-\frac{21d^2\,(a+bx)^{10}\,(ad-bc)^5}{10b^8}+\frac{7d\,(a+bx)^9\,(ad-bc)^6}{9b^8}-\frac{(a+bx)^8\,(ad-bc)^7}{8b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7*(d*x+c)**7,x)
```

```
[Out] d**7*(a + b*x)**15/(15*b**8) - d**6*(a + b*x)**14*(a*d - b*c)/(2*
b**8) + 21*d**5*(a + b*x)**13*(a*d - b*c)**2/(13*b**8) - 35*d**4*
(a + b*x)**12*(a*d - b*c)**3/(12*b**8) + 35*d**3*(a + b*x)**11*(a
*d - b*c)**4/(11*b**8) - 21*d**2*(a + b*x)**10*(a*d - b*c)**5/(10
*b**8) + 7*d*(a + b*x)**9*(a*d - b*c)**6/(9*b**8) - (a + b*x)**8*
(a*d - b*c)**7/(8*b**8)
```

Mathematica [B] time = 0.156137, size = 785, normalized size = 3.92

$$\begin{aligned}
&a^7c^7x+\frac{7}{2}a^6c^6x^2(ad+bc)+\frac{7}{13}b^5d^5x^{13}\left(3a^2d^2+7abcd+3b^2c^2\right)\\
&+\frac{7}{3}a^5c^5x^3\left(3a^2d^2+7abcd+3b^2c^2\right)+\frac{7}{12}b^4d^4x^{12}\left(5a^3d^3+21a^2bcd^2+21ab^2c^2d+5b^3c^3\right)\\
&+\frac{7}{4}a^4c^4x^4\left(5a^3d^3+21a^2bcd^2+21ab^2c^2d+5b^3c^3\right)\\
&+\frac{7}{11}b^3d^3x^{11}\left(5a^4d^4+35a^3bcd^3+63a^2b^2c^2d^2+35ab^3c^3d+5b^4c^4\right)\\
&+\frac{7}{5}a^3c^3x^5\left(5a^4d^4+35a^3bcd^3+63a^2b^2c^2d^2+35ab^3c^3d+5b^4c^4\right)\\
&+\frac{7}{10}b^2d^2x^{10}\left(3a^5d^5+35a^4bcd^4+105a^3b^2c^2d^3+105a^2b^3c^3d^2+35ab^4c^4d+3b^5c^5\right)\\
&+\frac{7}{6}a^2c^2x^6\left(3a^5d^5+35a^4bcd^4+105a^3b^2c^2d^3+105a^2b^3c^3d^2+35ab^4c^4d+3b^5c^5\right)\\
&+\frac{7}{9}bdx^9\left(a^6d^6+21a^5bcd^5+105a^4b^2c^2d^4+175a^3b^3c^3d^3+105a^2b^4c^4d^2+21ab^5c^5d+b^6c^6\right)\\
&+acx^7\left(a^6d^6+21a^5bcd^5+105a^4b^2c^2d^4+175a^3b^3c^3d^3+105a^2b^4c^4d^2+21ab^5c^5d+b^6c^6\right)\\
&+\frac{1}{8}x^8\left(a^7d^7+49a^6bcd^6+441a^5b^2c^2d^5+1225a^4b^3c^3d^4+1225a^3b^4c^4d^3\right.\\
&\left.+441a^2b^5c^5d^2+49ab^6c^6d+b^7c^7\right)+\frac{1}{2}b^6d^6x^{14}(ad+bc)+\frac{1}{15}b^7d^7x^{15}
\end{aligned}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7*(c + d*x)^7,x]
```

```
[Out] a^7*c^7*x + (7*a^6*c^6*(b*c + a*d)*x^2)/2 + (7*a^5*c^5*(3*b^2*c^2
 + 7*a*b*c*d + 3*a^2*d^2)*x^3)/3 + (7*a^4*c^4*(5*b^3*c^3 + 21*a*b
^2*c^2*d + 21*a^2*b*c*d^2 + 5*a^3*d^3)*x^4)/4 + (7*a^3*c^3*(5*b^4
*c^4 + 35*a*b^3*c^3*d + 63*a^2*b^2*c^2*d^2 + 35*a^3*b*c*d^3 + 5*a
^4*d^4)*x^5)/5 + (7*a^2*c^2*(3*b^5*c^5 + 35*a*b^4*c^4*d + 105*a^2
*b^3*c^3*d^2 + 105*a^3*b^2*c^2*d^3 + 35*a^4*b*c*d^4 + 3*a^5*d^5)*
x^6)/6 + a*c*(b^6*c^6 + 21*a*b^5*c^5*d + 105*a^2*b^4*c^4*d^2 + 17
5*a^3*b^3*c^3*d^3 + 105*a^4*b^2*c^2*d^4 + 21*a^5*b*c*d^5 + a^6*d^
6)*x^7 + ((b^7*c^7 + 49*a*b^6*c^6*d + 441*a^2*b^5*c^5*d^2 + 1225*
a^3*b^4*c^4*d^3 + 1225*a^4*b^3*c^3*d^4 + 441*a^5*b^2*c^2*d^5 + 49
*a^6*b*c*d^6 + a^7*d^7)*x^8)/8 + (7*b*d*(b^6*c^6 + 21*a*b^5*c^5*d
```

```
 + 105*a^2*b^4*c^4*d^2 + 175*a^3*b^3*c^3*d^3 + 105*a^4*b^2*c^2*d^
4 + 21*a^5*b*c*d^5 + a^6*d^6)*x^9)/9 + (7*b^2*d^2*(3*b^5*c^5 + 35
*a*b^4*c^4*d + 105*a^2*b^3*c^3*d^2 + 105*a^3*b^2*c^2*d^3 + 35*a^4
*b*c*d^4 + 3*a^5*d^5)*x^10)/10 + (7*b^3*d^3*(5*b^4*c^4 + 35*a*b^3
*c^3*d + 63*a^2*b^2*c^2*d^2 + 35*a^3*b*c*d^3 + 5*a^4*d^4)*x^11)/1
1 + (7*b^4*d^4*(5*b^3*c^3 + 21*a*b^2*c^2*d + 21*a^2*b*c*d^2 + 5*a
^3*d^3)*x^12)/12 + (7*b^5*d^5*(3*b^2*c^2 + 7*a*b*c*d + 3*a^2*d^2)
*x^13)/13 + (b^6*d^6*(b*c + a*d)*x^14)/2 + (b^7*d^7*x^15)/15
```

Maple [B] time = 0.004, size = 817, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7*(d*x+c)^7,x)
```

```
[Out] 1/15*b^7*d^7*x^15+1/14*(7*a*b^6*d^7+7*b^7*c*d^6)*x^14+1/13*(21*a^
2*b^5*d^7+49*a*b^6*c*d^6+21*b^7*c^2*d^5)*x^13+1/12*(35*a^3*b^4*d^
7+147*a^2*b^5*c*d^6+147*a*b^6*c^2*d^5+35*b^7*c^3*d^4)*x^12+1/11*(
35*a^4*b^3*d^7+245*a^3*b^4*c*d^6+441*a^2*b^5*c^2*d^5+245*a*b^6*c^
3*d^4+35*b^7*c^4*d^3)*x^11+1/10*(21*a^5*b^2*d^7+245*a^4*b^3*c*d^6
+735*a^3*b^4*c^2*d^5+735*a^2*b^5*c^3*d^4+245*a*b^6*c^4*d^3+21*b^7
*c^5*d^2)*x^10+1/9*(7*a^6*b*d^7+147*a^5*b^2*c*d^6+735*a^4*b^3*c^2
*d^5+1225*a^3*b^4*c^3*d^4+735*a^2*b^5*c^4*d^3+147*a*b^6*c^5*d^2+7
*b^7*c^6*d)*x^9+1/8*(a^7*d^7+49*a^6*b*c*d^6+441*a^5*b^2*c^2*d^5+1
225*a^4*b^3*c^3*d^4+1225*a^3*b^4*c^4*d^3+441*a^2*b^5*c^5*d^2+49*a
*b^6*c^6*d+b^7*c^7)*x^8+1/7*(7*a^7*c*d^6+147*a^6*b*c^2*d^5+735*a^
5*b^2*c^3*d^4+1225*a^4*b^3*c^4*d^3+735*a^3*b^4*c^5*d^2+147*a^2*b^
5*c^6*d+7*a*b^6*c^7)*x^7+1/6*(21*a^7*c^2*d^5+245*a^6*b*c^3*d^4+73
5*a^5*b^2*c^4*d^3+735*a^4*b^3*c^5*d^2+245*a^3*b^4*c^6*d+21*a^2*b^
5*c^7)*x^6+1/5*(35*a^7*c^3*d^4+245*a^6*b*c^4*d^3+441*a^5*b^2*c^5*
d^2+245*a^4*b^3*c^6*d+35*a^3*b^4*c^7)*x^5+1/4*(35*a^7*c^4*d^3+147
*a^6*b*c^5*d^2+147*a^5*b^2*c^6*d+35*a^4*b^3*c^7)*x^4+1/3*(21*a^7*
c^5*d^2+49*a^6*b*c^6*d+21*a^5*b^2*c^7)*x^3+1/2*(7*a^7*c^6*d+7*a^6
*b*c^7)*x^2+a^7*c^7*x
```

Maxima [A] time = 1.34894, size = 1089, normalized size = 5.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/15*b^7*d^7*x^15 + a^7*c^7*x + 1/2*(b^7*c*d^6 + a*b^6*d^7)*x^14
+ 7/13*(3*b^7*c^2*d^5 + 7*a*b^6*c*d^6 + 3*a^2*b^5*d^7)*x^13 + 7/1
```

```
2*(5*b^7*c^3*d^4 + 21*a*b^6*c^2*d^5 + 21*a^2*b^5*c*d^6 + 5*a^3*b^
4*d^7)*x^12 + 7/11*(5*b^7*c^4*d^3 + 35*a*b^6*c^3*d^4 + 63*a^2*b^5
*c^2*d^5 + 35*a^3*b^4*c*d^6 + 5*a^4*b^3*d^7)*x^11 + 7/10*(3*b^7*c
^5*d^2 + 35*a*b^6*c^4*d^3 + 105*a^2*b^5*c^3*d^4 + 105*a^3*b^4*c^2
*d^5 + 35*a^4*b^3*c*d^6 + 3*a^5*b^2*d^7)*x^10 + 7/9*(b^7*c^6*d +
21*a*b^6*c^5*d^2 + 105*a^2*b^5*c^4*d^3 + 175*a^3*b^4*c^3*d^4 + 10
5*a^4*b^3*c^2*d^5 + 21*a^5*b^2*c*d^6 + a^6*b*d^7)*x^9 + 1/8*(b^7*
c^7 + 49*a*b^6*c^6*d + 441*a^2*b^5*c^5*d^2 + 1225*a^3*b^4*c^4*d^3
 + 1225*a^4*b^3*c^3*d^4 + 441*a^5*b^2*c^2*d^5 + 49*a^6*b*c*d^6 +
a^7*d^7)*x^8 + (a*b^6*c^7 + 21*a^2*b^5*c^6*d + 105*a^3*b^4*c^5*d^
2 + 175*a^4*b^3*c^4*d^3 + 105*a^5*b^2*c^3*d^4 + 21*a^6*b*c^2*d^5
+ a^7*c*d^6)*x^7 + 7/6*(3*a^2*b^5*c^7 + 35*a^3*b^4*c^6*d + 105*a^
4*b^3*c^5*d^2 + 105*a^5*b^2*c^4*d^3 + 35*a^6*b*c^3*d^4 + 3*a^7*c^
2*d^5)*x^6 + 7/5*(5*a^3*b^4*c^7 + 35*a^4*b^3*c^6*d + 63*a^5*b^2*c
^5*d^2 + 35*a^6*b*c^4*d^3 + 5*a^7*c^3*d^4)*x^5 + 7/4*(5*a^4*b^3*c
^7 + 21*a^5*b^2*c^6*d + 21*a^6*b*c^5*d^2 + 5*a^7*c^4*d^3)*x^4 + 7
/3*(3*a^5*b^2*c^7 + 7*a^6*b*c^6*d + 3*a^7*c^5*d^2)*x^3 + 7/2*(a^6
*b*c^7 + a^7*c^6*d)*x^2
```

Fricas [A] time = 0.189082, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/15*x^15*d^7*b^7 + 1/2*x^14*d^6*c*b^7 + 1/2*x^14*d^7*b^6*a + 21/
13*x^13*d^5*c^2*b^7 + 49/13*x^13*d^6*c*b^6*a + 21/13*x^13*d^7*b^5
*a^2 + 35/12*x^12*d^4*c^3*b^7 + 49/4*x^12*d^5*c^2*b^6*a + 49/4*x^
12*d^6*c*b^5*a^2 + 35/12*x^12*d^7*b^4*a^3 + 35/11*x^11*d^3*c^4*b^
7 + 245/11*x^11*d^4*c^3*b^6*a + 441/11*x^11*d^5*c^2*b^5*a^2 + 245
/11*x^11*d^6*c*b^4*a^3 + 35/11*x^11*d^7*b^3*a^4 + 21/10*x^10*d^2*
c^5*b^7 + 49/2*x^10*d^3*c^4*b^6*a + 147/2*x^10*d^4*c^3*b^5*a^2 +
147/2*x^10*d^5*c^2*b^4*a^3 + 49/2*x^10*d^6*c*b^3*a^4 + 21/10*x^10
*d^7*b^2*a^5 + 7/9*x^9*d*c^6*b^7 + 49/3*x^9*d^2*c^5*b^6*a + 245/3
*x^9*d^3*c^4*b^5*a^2 + 1225/9*x^9*d^4*c^3*b^4*a^3 + 245/3*x^9*d^5
*c^2*b^3*a^4 + 49/3*x^9*d^6*c*b^2*a^5 + 7/9*x^9*d^7*b*a^6 + 1/8*x
^8*c^7*b^7 + 49/8*x^8*d*c^6*b^6*a + 441/8*x^8*d^2*c^5*b^5*a^2 + 1
225/8*x^8*d^3*c^4*b^4*a^3 + 1225/8*x^8*d^4*c^3*b^3*a^4 + 441/8*x^
8*d^5*c^2*b^2*a^5 + 49/8*x^8*d^6*c*b*a^6 + 1/8*x^8*d^7*a^7 + x^7*
c^7*b^6*a + 21*x^7*d*c^6*b^5*a^2 + 105*x^7*d^2*c^5*b^4*a^3 + 175*
x^7*d^3*c^4*b^3*a^4 + 105*x^7*d^4*c^3*b^2*a^5 + 21*x^7*d^5*c^2*b*
a^6 + x^7*d^6*c*a^7 + 7/2*x^6*c^7*b^5*a^2 + 245/6*x^6*d*c^6*b^4*a
^3 + 245/2*x^6*d^2*c^5*b^3*a^4 + 245/2*x^6*d^3*c^4*b^2*a^5 + 245/
6*x^6*d^4*c^3*b*a^6 + 7/2*x^6*d^5*c^2*a^7 + 7*x^5*c^7*b^4*a^3 + 4
9*x^5*d*c^6*b^3*a^4 + 441/5*x^5*d^2*c^5*b^2*a^5 + 49*x^5*d^3*c^4*
b*a^6 + 7*x^5*d^4*c^3*a^7 + 35/4*x^4*c^7*b^3*a^4 + 147/4*x^4*d*c^
6*b^2*a^5 + 147/4*x^4*d^2*c^5*b*a^6 + 35/4*x^4*d^3*c^4*a^7 + 7*x^
3*c^7*b^2*a^5 + 49/3*x^3*d*c^6*b*a^6 + 7*x^3*d^2*c^5*a^7 + 7/2*x^
2*c^7*b*a^6 + 7/2*x^2*d*c^6*a^7 + x*c^7*a^7
```

Sympy [A] time = 0.450143, size = 935, normalized size = 4.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7*(d*x+c)**7,x)
```

```
[Out] a**7*c**7*x + b**7*d**7*x**15/15 + x**14*(a*b**6*d**7/2 + b**7*c*
d**6/2) + x**13*(21*a**2*b**5*d**7/13 + 49*a*b**6*c*d**6/13 + 21*
b**7*c**2*d**5/13) + x**12*(35*a**3*b**4*d**7/12 + 49*a**2*b**5*c
*d**6/4 + 49*a*b**6*c**2*d**5/4 + 35*b**7*c**3*d**4/12) + x**11*(
35*a**4*b**3*d**7/11 + 245*a**3*b**4*c*d**6/11 + 441*a**2*b**5*c*
*2*d**5/11 + 245*a*b**6*c**3*d**4/11 + 35*b**7*c**4*d**3/11) + x*
*10*(21*a**5*b**2*d**7/10 + 49*a**4*b**3*c*d**6/2 + 147*a**3*b**4
*c**2*d**5/2 + 147*a**2*b**5*c**3*d**4/2 + 49*a*b**6*c**4*d**3/2
+ 21*b**7*c**5*d**2/10) + x**9*(7*a**6*b*d**7/9 + 49*a**5*b**2*c*
d**6/3 + 245*a**4*b**3*c**2*d**5/3 + 1225*a**3*b**4*c**3*d**4/9 +
 245*a**2*b**5*c**4*d**3/3 + 49*a*b**6*c**5*d**2/3 + 7*b**7*c**6*
d/9) + x**8*(a**7*d**7/8 + 49*a**6*b*c*d**6/8 + 441*a**5*b**2*c**
2*d**5/8 + 1225*a**4*b**3*c**3*d**4/8 + 1225*a**3*b**4*c**4*d**3/
8 + 441*a**2*b**5*c**5*d**2/8 + 49*a*b**6*c**6*d/8 + b**7*c**7/8)
 + x**7*(a**7*c*d**6 + 21*a**6*b*c**2*d**5 + 105*a**5*b**2*c**3*d
**4 + 175*a**4*b**3*c**4*d**3 + 105*a**3*b**4*c**5*d**2 + 21*a**2
*b**5*c**6*d + a*b**6*c**7) + x**6*(7*a**7*c**2*d**5/2 + 245*a**6
*b*c**3*d**4/6 + 245*a**5*b**2*c**4*d**3/2 + 245*a**4*b**3*c**5*d
**2/2 + 245*a**3*b**4*c**6*d/6 + 7*a**2*b**5*c**7/2) + x**5*(7*a*
*7*c**3*d**4 + 49*a**6*b*c**4*d**3 + 441*a**5*b**2*c**5*d**2/5 +
49*a**4*b**3*c**6*d + 7*a**3*b**4*c**7) + x**4*(35*a**7*c**4*d**3
/4 + 147*a**6*b*c**5*d**2/4 + 147*a**5*b**2*c**6*d/4 + 35*a**4*b*
*3*c**7/4) + x**3*(7*a**7*c**5*d**2 + 49*a**6*b*c**6*d/3 + 7*a**5
*b**2*c**7) + x**2*(7*a**7*c**6*d/2 + 7*a**6*b*c**7/2)
```

GIAC/XCAS [A] time = 0.2215, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] Done
```

3.1276 $\int (a+bx)^6(c+dx)^7\,dx$

Optimal. Leaf size=173

$$-\frac{6b^5(c+dx)^{13}(bc-ad)}{13d^7}+\frac{5b^4(c+dx)^{12}(bc-ad)^2}{4d^7}-\frac{20b^3(c+dx)^{11}(bc-ad)^3}{11d^7}+\frac{3b^2(c+dx)^{10}(bc-ad)^4}{2d^7}-\frac{2b(c+dx)^9(bc-ad)^5}{3d^7}+\frac{(c+dx)^8(bc-ad)^6}{8d^7}+\frac{b^6(c+dx)^{14}}{14d^7}$$

```
[Out] ((b*c - a*d)^6*(c + d*x)^8)/(8*d^7) - (2*b*(b*c - a*d)^5*(c + d*x
)^9)/(3*d^7) + (3*b^2*(b*c - a*d)^4*(c + d*x)^10)/(2*d^7) - (20*b
^3*(b*c - a*d)^3*(c + d*x)^11)/(11*d^7) + (5*b^4*(b*c - a*d)^2*(c
 + d*x)^12)/(4*d^7) - (6*b^5*(b*c - a*d)*(c + d*x)^13)/(13*d^7) +
 (b^6*(c + d*x)^14)/(14*d^7)
```

Rubi [A] time = 0.83232, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{6b^5(c+dx)^{13}(bc-ad)}{13d^7}+\frac{5b^4(c+dx)^{12}(bc-ad)^2}{4d^7}-\frac{20b^3(c+dx)^{11}(bc-ad)^3}{11d^7}+\frac{3b^2(c+dx)^{10}(bc-ad)^4}{2d^7}-\frac{2b(c+dx)^9(bc-ad)^5}{3d^7}+\frac{(c+dx)^8(bc-ad)^6}{8d^7}+\frac{b^6(c+dx)^{14}}{14d^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^6*(c + d*x)^7,x]
```

```
[Out] ((b*c - a*d)^6*(c + d*x)^8)/(8*d^7) - (2*b*(b*c - a*d)^5*(c + d*x
)^9)/(3*d^7) + (3*b^2*(b*c - a*d)^4*(c + d*x)^10)/(2*d^7) - (20*b
^3*(b*c - a*d)^3*(c + d*x)^11)/(11*d^7) + (5*b^4*(b*c - a*d)^2*(c
 + d*x)^12)/(4*d^7) - (6*b^5*(b*c - a*d)*(c + d*x)^13)/(13*d^7) +
 (b^6*(c + d*x)^14)/(14*d^7)
```

Rubi in Sympy [A] time = 89.1341, size = 158, normalized size = 0.91

$$\frac{b^6\left(c+dx\right)^{14}}{14d^7}+\frac{6b^5\left(c+dx\right)^{13}\left(ad-bc\right)}{13d^7}+\frac{5b^4\left(c+dx\right)^{12}\left(ad-bc\right)^2}{4d^7}+\frac{20b^3\left(c+dx\right)^{11}\left(ad-bc\right)^3}{11d^7}+\frac{3b^2\left(c+dx\right)^{10}\left(ad-bc\right)^4}{2d^7}+\frac{2b\left(c+dx\right)^9\left(ad-bc\right)^5}{3d^7}+\frac{\left(c+dx\right)^8\left(ad-bc\right)^6}{8d^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**6*(d*x+c)**7,x)
```

```
[Out] b**6*(c + d*x)**14/(14*d**7) + 6*b**5*(c + d*x)**13*(a*d - b*c)/(
13*d**7) + 5*b**4*(c + d*x)**12*(a*d - b*c)**2/(4*d**7) + 20*b**3
*(c + d*x)**11*(a*d - b*c)**3/(11*d**7) + 3*b**2*(c + d*x)**10*(a
*d - b*c)**4/(2*d**7) + 2*b*(c + d*x)**9*(a*d - b*c)**5/(3*d**7)
+ (c + d*x)**8*(a*d - b*c)**6/(8*d**7)
```

Mathematica [B] time = 0.142766, size = 684, normalized size = 3.95

$$a^6c^7x+\frac{1}{2}a^5c^6x^2(7ad+6bc)+\frac{1}{4}b^4d^5x^{12}\left(5a^2d^2+14abcd+7b^2c^2\right)$$
$$+a^4c^5x^3\left(7a^2d^2+14abcd+5b^2c^2\right)+\frac{1}{11}b^3d^4x^{11}\left(20a^3d^3+105a^2bcd^2+126ab^2c^2d+35b^3c^3\right)$$
$$+\frac{1}{4}a^3c^4x^4\left(35a^3d^3+126a^2bcd^2+105ab^2c^2d+20b^3c^3\right)$$
$$+\frac{1}{2}b^2d^3x^{10}\left(3a^4d^4+28a^3bcd^3+63a^2b^2c^2d^2+42ab^3c^3d+7b^4c^4\right)$$
$$+a^2c^3x^5\left(7a^4d^4+42a^3bcd^3+63a^2b^2c^2d^2+28ab^3c^3d+3b^4c^4\right)$$
$$+\frac{1}{3}bd^2x^9\left(2a^5d^5+35a^4bcd^4+140a^3b^2c^2d^3+175a^2b^3c^3d^2+70ab^4c^4d+7b^5c^5\right)$$
$$+\frac{1}{2}ac^2x^6\left(7a^5d^5+70a^4bcd^4+175a^3b^2c^2d^3+140a^2b^3c^3d^2+35ab^4c^4d+2b^5c^5\right)$$
$$+\frac{1}{8}dx^8\left(a^6d^6+42a^5bcd^5+315a^4b^2c^2d^4+700a^3b^3c^3d^3+525a^2b^4c^4d^2+126ab^5c^5d+7b^6c^6\right)$$
$$+\frac{1}{7}cx^7\left(7a^6d^6+126a^5bcd^5+525a^4b^2c^2d^4+700a^3b^3c^3d^3+315a^2b^4c^4d^2+42ab^5c^5d+b^6c^6\right)$$
$$+\frac{1}{13}b^5d^6x^{13}(6ad+7bc)+\frac{1}{14}b^6d^7x^{14}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^6*(c + d*x)^7,x]
```

```
[Out] a^6*c^7*x + (a^5*c^6*(6*b*c + 7*a*d)*x^2)/2 + a^4*c^5*(5*b^2*c^2
+ 14*a*b*c*d + 7*a^2*d^2)*x^3 + (a^3*c^4*(20*b^3*c^3 + 105*a*b^2*
c^2*d + 126*a^2*b*c*d^2 + 35*a^3*d^3)*x^4)/4 + a^2*c^3*(3*b^4*c^4
 + 28*a*b^3*c^3*d + 63*a^2*b^2*c^2*d^2 + 42*a^3*b*c*d^3 + 7*a^4*d
^4)*x^5 + (a*c^2*(2*b^5*c^5 + 35*a*b^4*c^4*d + 140*a^2*b^3*c^3*d^
2 + 175*a^3*b^2*c^2*d^3 + 70*a^4*b*c*d^4 + 7*a^5*d^5)*x^6)/2 + (c
*(b^6*c^6 + 42*a*b^5*c^5*d + 315*a^2*b^4*c^4*d^2 + 700*a^3*b^3*c^
3*d^3 + 525*a^4*b^2*c^2*d^4 + 126*a^5*b*c*d^5 + 7*a^6*d^6)*x^7)/7
 + (d*(7*b^6*c^6 + 126*a*b^5*c^5*d + 525*a^2*b^4*c^4*d^2 + 700*a^
3*b^3*c^3*d^3 + 315*a^4*b^2*c^2*d^4 + 42*a^5*b*c*d^5 + a^6*d^6)*x
^8)/8 + (b*d^2*(7*b^5*c^5 + 70*a*b^4*c^4*d + 175*a^2*b^3*c^3*d^2
+ 140*a^3*b^2*c^2*d^3 + 35*a^4*b*c*d^4 + 2*a^5*d^5)*x^9)/3 + (b^2
*d^3*(7*b^4*c^4 + 42*a*b^3*c^3*d + 63*a^2*b^2*c^2*d^2 + 28*a^3*b*
c*d^3 + 3*a^4*d^4)*x^10)/2 + (b^3*d^4*(35*b^3*c^3 + 126*a*b^2*c^2
*d + 105*a^2*b*c*d^2 + 20*a^3*d^3)*x^11)/11 + (b^4*d^5*(7*b^2*c^2
 + 14*a*b*c*d + 5*a^2*d^2)*x^12)/4 + (b^5*d^6*(7*b*c + 6*a*d)*x^1
3)/13 + (b^6*d^7*x^14)/14
```

Maple [B] time = 0.003, size = 709, normalized size = 4.1

$$\frac{b^6d^7x^{14}}{14}+\frac{(6\,ab^5d^7+7\,b^6cd^6)\,x^{13}}{13}+\frac{(15\,a^2b^4d^7+42\,ab^5cd^6+21\,b^6c^2d^5)\,x^{12}}{12}+\frac{(20\,a^3b^3d^7+105\,a^2b^4cd^6+126\,ab^5c^2d^5+35\,b^6c^3d^4)\,x^{11}}{11}+\frac{(15\,a^4b^2d^7+140\,a^3b^3cd^6+315\,a^2b^4c^2d^5+210\,ab^5c^3d^4+35\,b^6c^4d^3)\,x^{10}}{10}+\frac{(6\,a^5bd^7+105\,a^4b^2cd^6+420\,a^3b^3c^2d^5+525\,a^2b^4c^3d^4+210\,ab^5c^4d^3+21\,b^6c^5d^2)\,x^9}{9}+\frac{(a^6d^7+42\,a^5bcd^6+315\,a^4b^2c^2d^5+700\,a^3b^3c^3d^4+525\,a^2b^4c^4d^3+126\,ab^5c^5d^2+7\,b^6c^6d)\,x^8}{8}+\frac{(7\,a^6cd^6+126\,a^5bc^2d^5+525\,a^4b^2c^3d^4+700\,a^3b^3c^4d^3+315\,a^2b^4c^5d^2+42\,ab^5c^6d+b^6c^7)\,x^7}{7}+\frac{(21\,a^6c^2d^5+210\,a^5bc^3d^4+525\,a^4b^2c^4d^3+420\,a^3b^3c^5d^2+105\,a^2b^4c^6d+6\,ab^5c^7)\,x^6}{6}+\frac{(35\,a^6c^3d^4+210\,a^5bc^4d^3+315\,a^4b^2c^5d^2+140\,a^3b^3c^6d+15\,a^2b^4c^7)\,x^5}{5}+\frac{(35\,a^6c^4d^3+126\,a^5bc^5d^2+105\,a^4b^2c^6d+20\,a^3b^3c^7)\,x^4}{4}+\frac{(21\,a^6c^5d^2+42\,a^5bc^6d+15\,a^4b^2c^7)\,x^3}{3}+\frac{(7\,a^6c^6d+6\,a^5bc^7)\,x^2}{2}+a^6c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^6*(d*x+c)^7,x)
```

```
[Out] 1/14*b^6*d^7*x^14+1/13*(6*a*b^5*d^7+7*b^6*c*d^6)*x^13+1/12*(15*a^
2*b^4*d^7+42*a*b^5*c*d^6+21*b^6*c^2*d^5)*x^12+1/11*(20*a^3*b^3*d^
7+105*a^2*b^4*c*d^6+126*a*b^5*c^2*d^5+35*b^6*c^3*d^4)*x^11+1/10*(
15*a^4*b^2*d^7+140*a^3*b^3*c*d^6+315*a^2*b^4*c^2*d^5+210*a*b^5*c^
3*d^4+35*b^6*c^4*d^3)*x^10+1/9*(6*a^5*b*d^7+105*a^4*b^2*c*d^6+420
*a^3*b^3*c^2*d^5+525*a^2*b^4*c^3*d^4+210*a*b^5*c^4*d^3+21*b^6*c^5
*d^2)*x^9+1/8*(a^6*d^7+42*a^5*b*c*d^6+315*a^4*b^2*c^2*d^5+700*a^3
*b^3*c^3*d^4+525*a^2*b^4*c^4*d^3+126*a*b^5*c^5*d^2+7*b^6*c^6*d)*x
^8+1/7*(7*a^6*c*d^6+126*a^5*b*c^2*d^5+525*a^4*b^2*c^3*d^4+700*a^3
*b^3*c^4*d^3+315*a^2*b^4*c^5*d^2+42*a*b^5*c^6*d+b^6*c^7)*x^7+1/6*
(21*a^6*c^2*d^5+210*a^5*b*c^3*d^4+525*a^4*b^2*c^4*d^3+420*a^3*b^3
*c^5*d^2+105*a^2*b^4*c^6*d+6*a*b^5*c^7)*x^6+1/5*(35*a^6*c^3*d^4+2
10*a^5*b*c^4*d^3+315*a^4*b^2*c^5*d^2+140*a^3*b^3*c^6*d+15*a^2*b^4
*c^7)*x^5+1/4*(35*a^6*c^4*d^3+126*a^5*b*c^5*d^2+105*a^4*b^2*c^6*d
+20*a^3*b^3*c^7)*x^4+1/3*(21*a^6*c^5*d^2+42*a^5*b*c^6*d+15*a^4*b^
2*c^7)*x^3+1/2*(7*a^6*c^6*d+6*a^5*b*c^7)*x^2+a^6*c^7*x
```

Maxima [A] time = 1.34514, size = 953, normalized size = 5.51

$$\frac{1}{14}\,b^6d^7x^{14}+a^6c^7x+\frac{1}{13}\,\left(7\,b^6cd^6+6\,ab^5d^7\right)x^{13}+\frac{1}{4}\,\left(7\,b^6c^2d^5+14\,ab^5cd^6+5\,a^2b^4d^7\right)x^{12}+\frac{1}{11}\,\left(35\,b^6c^3d^4+126\,ab^5c^2d^5+105\,a^2b^4cd^6+20\,a^3b^3d^7\right)x^{11}+\frac{1}{2}\,\left(7\,b^6c^4d^3+42\,ab^5c^3d^4+63\,a^2b^4c^2d^5+28\,a^3b^3cd^6+3\,a^4b^2d^7\right)x^{10}+\frac{1}{3}\,\left(7\,b^6c^5d^2+70\,ab^5c^4d^3+175\,a^2b^4c^3d^4+140\,a^3b^3c^2d^5+35\,a^4b^2cd^6+2\,a^5bd^7\right)x^9+\frac{1}{8}\,\left(7\,b^6c^6d+126\,ab^5c^5d^2+525\,a^2b^4c^4d^3+700\,a^3b^3c^3d^4+315\,a^4b^2c^2d^5+42\,a^5bcd^6+a^6d^7\right)x^8+\frac{1}{7}\,\left(b^6c^7+42\,ab^5c^6d+315\,a^2b^4c^5d^2+700\,a^3b^3c^4d^3+525\,a^4b^2c^3d^4+126\,a^5bc^2d^5+7\,a^6cd^6\right)x^7+\frac{1}{2}\,\left(2\,ab^5c^7+35\,a^2b^4c^6d+140\,a^3b^3c^5d^2+175\,a^4b^2c^4d^3+70\,a^5bc^3d^4+7\,a^6c^2d^5\right)x^6+\left(3\,a^2b^4c^7+28\,a^3b^3c^6d+63\,a^4b^2c^5d^2+42\,a^5bc^4d^3+7\,a^6c^3d^4\right)x^5+\frac{1}{4}\,\left(20\,a^3b^3c^7+105\,a^4b^2c^6d+126\,a^5bc^5d^2+35\,a^6c^4d^3\right)x^4+\left(5\,a^4b^2c^7+14\,a^5bc^6d+7\,a^6c^5d^2\right)x^3+\frac{1}{2}\,\left(6\,a^5bc^7+7\,a^6c^6d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/14*b^6*d^7*x^14 + a^6*c^7*x + 1/13*(7*b^6*c*d^6 + 6*a*b^5*d^7)*
x^13 + 1/4*(7*b^6*c^2*d^5 + 14*a*b^5*c*d^6 + 5*a^2*b^4*d^7)*x^12
+ 1/11*(35*b^6*c^3*d^4 + 126*a*b^5*c^2*d^5 + 105*a^2*b^4*c*d^6 +
20*a^3*b^3*d^7)*x^11 + 1/2*(7*b^6*c^4*d^3 + 42*a*b^5*c^3*d^4 + 63
*a^2*b^4*c^2*d^5 + 28*a^3*b^3*c*d^6 + 3*a^4*b^2*d^7)*x^10 + 1/3*(
7*b^6*c^5*d^2 + 70*a*b^5*c^4*d^3 + 175*a^2*b^4*c^3*d^4 + 140*a^3*
b^3*c^2*d^5 + 35*a^4*b^2*c*d^6 + 2*a^5*b*d^7)*x^9 + 1/8*(7*b^6*c^
6*d + 126*a*b^5*c^5*d^2 + 525*a^2*b^4*c^4*d^3 + 700*a^3*b^3*c^3*d
^4 + 315*a^4*b^2*c^2*d^5 + 42*a^5*b*c*d^6 + a^6*d^7)*x^8 + 1/7*(b
^6*c^7 + 42*a*b^5*c^6*d + 315*a^2*b^4*c^5*d^2 + 700*a^3*b^3*c^4*d
^3 + 525*a^4*b^2*c^3*d^4 + 126*a^5*b*c^2*d^5 + 7*a^6*c*d^6)*x^7 +
 1/2*(2*a*b^5*c^7 + 35*a^2*b^4*c^6*d + 140*a^3*b^3*c^5*d^2 + 175*
a^4*b^2*c^4*d^3 + 70*a^5*b*c^3*d^4 + 7*a^6*c^2*d^5)*x^6 + (3*a^2*
b^4*c^7 + 28*a^3*b^3*c^6*d + 63*a^4*b^2*c^5*d^2 + 42*a^5*b*c^4*d^
3 + 7*a^6*c^3*d^4)*x^5 + 1/4*(20*a^3*b^3*c^7 + 105*a^4*b^2*c^6*d
+ 126*a^5*b*c^5*d^2 + 35*a^6*c^4*d^3)*x^4 + (5*a^4*b^2*c^7 + 14*a
^5*b*c^6*d + 7*a^6*c^5*d^2)*x^3 + 1/2*(6*a^5*b*c^7 + 7*a^6*c^6*d)
*x^2
```

Fricas [A] time = 0.18081, size = 1, normalized size = 0.01

$$\frac{1}{14}x^{14}d^7b^6 + \frac{7}{13}x^{13}d^6cb^6 + \frac{6}{13}x^{13}d^7b^5a + \frac{7}{4}x^{12}d^5c^2b^6 + \frac{7}{2}x^{12}d^6cb^5a + \frac{5}{4}x^{12}d^7b^4a^2 + \frac{35}{11}x^{11}d^4c^3b^6 + \frac{126}{11}x^{11}d^5c^2b^5a + \frac{105}{11}x^{11}d^6cb^4a^2 + \frac{20}{11}x^{11}d^7b^3a^3 + \frac{7}{2}x^{10}d^3c^4b^6 + 21x^{10}d^4c^3b^5a + \frac{63}{2}x^{10}d^5c^2b^4a^2 + 14x^{10}d^6cb^3a^3 + \frac{3}{2}x^{10}d^7b^2a^4 + \frac{7}{3}x^9d^2c^5b^6 + \frac{70}{3}x^9d^3c^4b^5a + \frac{175}{3}x^9d^4c^3b^4a^2 + \frac{140}{3}x^9d^5c^2b^3a^3 + \frac{35}{3}x^9d^6cb^2a^4 + \frac{2}{3}x^9d^7ba^5 + \frac{7}{8}x^8dc^6b^6 + \frac{63}{4}x^8d^2c^5b^5a + \frac{525}{8}x^8d^3c^4b^4a^2 + \frac{175}{2}x^8d^4c^3b^3a^3 + \frac{315}{8}x^8d^5c^2b^2a^4 + \frac{21}{4}x^8d^6cba^5 + \frac{1}{8}x^8d^7a^6 + \frac{1}{7}x^7c^7b^6 + 6x^7dc^6b^5a + 45x^7d^2c^5b^4a^2 + 100x^7d^3c^4b^3a^3 + 75x^7d^4c^3b^2a^4 + 18x^7d^5c^2ba^5 + x^7d^6ca^6 + x^6c^7b^5a + \frac{35}{2}x^6dc^6b^4a^2 + 70x^6d^2c^5b^3a^3 + \frac{175}{2}x^6d^3c^4b^2a^4 + 35x^6d^4c^3ba^5 + \frac{7}{2}x^6d^5c^2a^6 + 3x^5c^7b^4a^2 + 28x^5dc^6b^3a^3 + 63x^5d^2c^5b^2a^4 + 42x^5d^3c^4ba^5 + 7x^5d^4c^3a^6 + 5x^4c^7b^3a^3 + \frac{105}{4}x^4dc^6b^2a^4 + \frac{63}{2}x^4d^2c^5ba^5 + \frac{35}{4}x^4d^3c^4a^6 + 5x^3c^7b^2a^4 + 14x^3dc^6ba^5 + 7x^3d^2c^5a^6 + 3x^2c^7ba^5 + \frac{7}{2}x^2dc^6a^6 + xc^7a^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*d^7*b^6 + 7/13*x^13*d^6*c*b^6 + 6/13*x^13*d^7*b^5*a + 7
/4*x^12*d^5*c^2*b^6 + 7/2*x^12*d^6*c*b^5*a + 5/4*x^12*d^7*b^4*a^2
 + 35/11*x^11*d^4*c^3*b^6 + 126/11*x^11*d^5*c^2*b^5*a + 105/11*x^
11*d^6*c*b^4*a^2 + 20/11*x^11*d^7*b^3*a^3 + 7/2*x^10*d^3*c^4*b^6
+ 21*x^10*d^4*c^3*b^5*a + 63/2*x^10*d^5*c^2*b^4*a^2 + 14*x^10*d^6
*c*b^3*a^3 + 3/2*x^10*d^7*b^2*a^4 + 7/3*x^9*d^2*c^5*b^6 + 70/3*x^
9*d^3*c^4*b^5*a + 175/3*x^9*d^4*c^3*b^4*a^2 + 140/3*x^9*d^5*c^2*b
^3*a^3 + 35/3*x^9*d^6*c*b^2*a^4 + 2/3*x^9*d^7*b*a^5 + 7/8*x^8*d*c
^6*b^6 + 63/4*x^8*d^2*c^5*b^5*a + 525/8*x^8*d^3*c^4*b^4*a^2 + 175
/2*x^8*d^4*c^3*b^3*a^3 + 315/8*x^8*d^5*c^2*b^2*a^4 + 21/4*x^8*d^6
*c*b*a^5 + 1/8*x^8*d^7*a^6 + 1/7*x^7*c^7*b^6 + 6*x^7*d*c^6*b^5*a
+ 45*x^7*d^2*c^5*b^4*a^2 + 100*x^7*d^3*c^4*b^3*a^3 + 75*x^7*d^4*c
^3*b^2*a^4 + 18*x^7*d^5*c^2*b*a^5 + x^7*d^6*c*a^6 + x^6*c^7*b^5*a
 + 35/2*x^6*d*c^6*b^4*a^2 + 70*x^6*d^2*c^5*b^3*a^3 + 175/2*x^6*d^
3*c^4*b^2*a^4 + 35*x^6*d^4*c^3*b*a^5 + 7/2*x^6*d^5*c^2*a^6 + 3*x^
5*c^7*b^4*a^2 + 28*x^5*d*c^6*b^3*a^3 + 63*x^5*d^2*c^5*b^2*a^4 + 4
2*x^5*d^3*c^4*b*a^5 + 7*x^5*d^4*c^3*a^6 + 5*x^4*c^7*b^3*a^3 + 105
/4*x^4*d*c^6*b^2*a^4 + 63/2*x^4*d^2*c^5*b*a^5 + 35/4*x^4*d^3*c^4*
a^6 + 5*x^3*c^7*b^2*a^4 + 14*x^3*d*c^6*b*a^5 + 7*x^3*d^2*c^5*a^6
+ 3*x^2*c^7*b*a^5 + 7/2*x^2*d*c^6*a^6 + x*c^7*a^6
```

Sympy [A] time = 0.402927, size = 796, normalized size = 4.6

$$a^6c^7x + \frac{b^6d^7x^{14}}{14} + x^{13}\left(\frac{6ab^5d^7}{13} + \frac{7b^6cd^6}{13}\right) + x^{12}\left(\frac{5a^2b^4d^7}{4} + \frac{7ab^5cd^6}{2} + \frac{7b^6c^2d^5}{4}\right) + x^{11}\left(\frac{20a^3b^3d^7}{11} + \frac{105a^2b^4cd^6}{11} + \frac{126ab^5c^2d^5}{11} + \frac{35b^6c^3d^4}{11}\right) + x^{10}\left(\frac{3a^4b^2d^7}{2} + 14a^3b^3cd^6 + \frac{63a^2b^4c^2d^5}{2} + 21ab^5c^3d^4 + \frac{7b^6c^4d^3}{2}\right) + x^9\left(\frac{2a^5bd^7}{3} + \frac{35a^4b^2cd^6}{3} + \frac{140a^3b^3c^2d^5}{3} + \frac{175a^2b^4c^3d^4}{3} + \frac{70ab^5c^4d^3}{3} + \frac{7b^6c^5d^2}{3}\right) + x^8\left(\frac{a^6d^7}{8} + \frac{21a^5bcd^6}{4} + \frac{315a^4b^2c^2d^5}{8} + \frac{175a^3b^3c^3d^4}{2} + \frac{525a^2b^4c^4d^3}{8} + \frac{63ab^5c^5d^2}{4} + \frac{7b^6c^6d}{8}\right) + x^7\left(a^6cd^6 + 18a^5bc^2d^5 + 75a^4b^2c^3d^4 + 100a^3b^3c^4d^3 + 45a^2b^4c^5d^2 + 6ab^5c^6d + \frac{b^6c^7}{7}\right) + x^6\left(\frac{7a^6c^2d^5}{2} + 35a^5bc^3d^4 + \frac{175a^4b^2c^4d^3}{2} + 70a^3b^3c^5d^2 + \frac{35a^2b^4c^6d}{2} + ab^5c^7\right) + x^5\left(7a^6c^3d^4 + 42a^5bc^4d^3 + 63a^4b^2c^5d^2 + 28a^3b^3c^6d + 3a^2b^4c^7\right) + x^4\left(\frac{35a^6c^4d^3}{4} + \frac{63a^5bc^5d^2}{2} + \frac{105a^4b^2c^6d}{4} + 5a^3b^3c^7\right) + x^3\left(7a^6c^5d^2 + 14a^5bc^6d + 5a^4b^2c^7\right) + x^2\left(\frac{7a^6c^6d}{2} + 3a^5bc^7\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**6*(d*x+c)**7,x)
```

```
[Out] a**6*c**7*x + b**6*d**7*x**14/14 + x**13*(6*a*b**5*d**7/13 + 7*b*
*6*c*d**6/13) + x**12*(5*a**2*b**4*d**7/4 + 7*a*b**5*c*d**6/2 + 7
*b**6*c**2*d**5/4) + x**11*(20*a**3*b**3*d**7/11 + 105*a**2*b**4*
c*d**6/11 + 126*a*b**5*c**2*d**5/11 + 35*b**6*c**3*d**4/11) + x**
10*(3*a**4*b**2*d**7/2 + 14*a**3*b**3*c*d**6 + 63*a**2*b**4*c**2*
d**5/2 + 21*a*b**5*c**3*d**4 + 7*b**6*c**4*d**3/2) + x**9*(2*a**5
*b*d**7/3 + 35*a**4*b**2*c*d**6/3 + 140*a**3*b**3*c**2*d**5/3 + 1
75*a**2*b**4*c**3*d**4/3 + 70*a*b**5*c**4*d**3/3 + 7*b**6*c**5*d*
*2/3) + x**8*(a**6*d**7/8 + 21*a**5*b*c*d**6/4 + 315*a**4*b**2*c*
*2*d**5/8 + 175*a**3*b**3*c**3*d**4/2 + 525*a**2*b**4*c**4*d**3/8
 + 63*a*b**5*c**5*d**2/4 + 7*b**6*c**6*d/8) + x**7*(a**6*c*d**6 +
 18*a**5*b*c**2*d**5 + 75*a**4*b**2*c**3*d**4 + 100*a**3*b**3*c**
4*d**3 + 45*a**2*b**4*c**5*d**2 + 6*a*b**5*c**6*d + b**6*c**7/7)
+ x**6*(7*a**6*c**2*d**5/2 + 35*a**5*b*c**3*d**4 + 175*a**4*b**2*
c**4*d**3/2 + 70*a**3*b**3*c**5*d**2 + 35*a**2*b**4*c**6*d/2 + a*
b**5*c**7) + x**5*(7*a**6*c**3*d**4 + 42*a**5*b*c**4*d**3 + 63*a*
*4*b**2*c**5*d**2 + 28*a**3*b**3*c**6*d + 3*a**2*b**4*c**7) + x**
4*(35*a**6*c**4*d**3/4 + 63*a**5*b*c**5*d**2/2 + 105*a**4*b**2*c*
*6*d/4 + 5*a**3*b**3*c**7) + x**3*(7*a**6*c**5*d**2 + 14*a**5*b*c
**6*d + 5*a**4*b**2*c**7) + x**2*(7*a**6*c**6*d/2 + 3*a**5*b*c**7
)
```

GIAC/XCAS [A] time = 0.219337, size = 1077, normalized size = 6.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/14*b^6*d^7*x^14 + 7/13*b^6*c*d^6*x^13 + 6/13*a*b^5*d^7*x^13 + 7
/4*b^6*c^2*d^5*x^12 + 7/2*a*b^5*c*d^6*x^12 + 5/4*a^2*b^4*d^7*x^12
 + 35/11*b^6*c^3*d^4*x^11 + 126/11*a*b^5*c^2*d^5*x^11 + 105/11*a^
2*b^4*c*d^6*x^11 + 20/11*a^3*b^3*d^7*x^11 + 7/2*b^6*c^4*d^3*x^10
+ 21*a*b^5*c^3*d^4*x^10 + 63/2*a^2*b^4*c^2*d^5*x^10 + 14*a^3*b^3*
c*d^6*x^10 + 3/2*a^4*b^2*d^7*x^10 + 7/3*b^6*c^5*d^2*x^9 + 70/3*a*
b^5*c^4*d^3*x^9 + 175/3*a^2*b^4*c^3*d^4*x^9 + 140/3*a^3*b^3*c^2*d
^5*x^9 + 35/3*a^4*b^2*c*d^6*x^9 + 2/3*a^5*b*d^7*x^9 + 7/8*b^6*c^6
*d*x^8 + 63/4*a*b^5*c^5*d^2*x^8 + 525/8*a^2*b^4*c^4*d^3*x^8 + 175
/2*a^3*b^3*c^3*d^4*x^8 + 315/8*a^4*b^2*c^2*d^5*x^8 + 21/4*a^5*b*c
*d^6*x^8 + 1/8*a^6*d^7*x^8 + 1/7*b^6*c^7*x^7 + 6*a*b^5*c^6*d*x^7
+ 45*a^2*b^4*c^5*d^2*x^7 + 100*a^3*b^3*c^4*d^3*x^7 + 75*a^4*b^2*c
^3*d^4*x^7 + 18*a^5*b*c^2*d^5*x^7 + a^6*c*d^6*x^7 + a*b^5*c^7*x^6
 + 35/2*a^2*b^4*c^6*d*x^6 + 70*a^3*b^3*c^5*d^2*x^6 + 175/2*a^4*b^
2*c^4*d^3*x^6 + 35*a^5*b*c^3*d^4*x^6 + 7/2*a^6*c^2*d^5*x^6 + 3*a^
2*b^4*c^7*x^5 + 28*a^3*b^3*c^6*d*x^5 + 63*a^4*b^2*c^5*d^2*x^5 + 4
2*a^5*b*c^4*d^3*x^5 + 7*a^6*c^3*d^4*x^5 + 5*a^3*b^3*c^7*x^4 + 105
/4*a^4*b^2*c^6*d*x^4 + 63/2*a^5*b*c^5*d^2*x^4 + 35/4*a^6*c^4*d^3*
x^4 + 5*a^4*b^2*c^7*x^3 + 14*a^5*b*c^6*d*x^3 + 7*a^6*c^5*d^2*x^3
+ 3*a^5*b*c^7*x^2 + 7/2*a^6*c^6*d*x^2 + a^6*c^7*x
```

3.1277 $\int (a+bx)^5(c+dx)^7\,dx$

Optimal. Leaf size=144

$$-\frac{5b^4(c+dx)^{12}(bc-ad)}{12d^6}+\frac{10b^3(c+dx)^{11}(bc-ad)^2}{11d^6}-\frac{b^2(c+dx)^{10}(bc-ad)^3}{d^6}+\frac{5b(c+dx)^9(bc-ad)^4}{9d^6}-\frac{(c+dx)^8(bc-ad)^5}{8d^6}+\frac{b^5(c+dx)^{13}}{13d^6}$$

```
[Out] -((b*c - a*d)^5*(c + d*x)^8)/(8*d^6) + (5*b*(b*c - a*d)^4*(c + d*
x)^9)/(9*d^6) - (b^2*(b*c - a*d)^3*(c + d*x)^10)/d^6 + (10*b^3*(b
*c - a*d)^2*(c + d*x)^11)/(11*d^6) - (5*b^4*(b*c - a*d)*(c + d*x)
^12)/(12*d^6) + (b^5*(c + d*x)^13)/(13*d^6)
```

Rubi [A] time = 0.701997, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{5b^4(c+dx)^{12}(bc-ad)}{12d^6}+\frac{10b^3(c+dx)^{11}(bc-ad)^2}{11d^6}-\frac{b^2(c+dx)^{10}(bc-ad)^3}{d^6}+\frac{5b(c+dx)^9(bc-ad)^4}{9d^6}-\frac{(c+dx)^8(bc-ad)^5}{8d^6}+\frac{b^5(c+dx)^{13}}{13d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(c + d*x)^7,x]
```

```
[Out] -((b*c - a*d)^5*(c + d*x)^8)/(8*d^6) + (5*b*(b*c - a*d)^4*(c + d*
x)^9)/(9*d^6) - (b^2*(b*c - a*d)^3*(c + d*x)^10)/d^6 + (10*b^3*(b
*c - a*d)^2*(c + d*x)^11)/(11*d^6) - (5*b^4*(b*c - a*d)*(c + d*x)
^12)/(12*d^6) + (b^5*(c + d*x)^13)/(13*d^6)
```

Rubi in Sympy [A] time = 71.1042, size = 129, normalized size = 0.9

$$\frac{b^5\left(c+dx\right)^{13}}{13d^6}+\frac{5b^4\left(c+dx\right)^{12}\left(ad-bc\right)}{12d^6}+\frac{10b^3\left(c+dx\right)^{11}\left(ad-bc\right)^2}{11d^6}+\frac{b^2\left(c+dx\right)^{10}\left(ad-bc\right)^3}{d^6}+\frac{5b\left(c+dx\right)^9\left(ad-bc\right)^4}{9d^6}+\frac{\left(c+dx\right)^8\left(ad-bc\right)^5}{8d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(d*x+c)**7,x)
```

```
[Out] b**5*(c + d*x)**13/(13*d**6) + 5*b**4*(c + d*x)**12*(a*d - b*c)/(
12*d**6) + 10*b**3*(c + d*x)**11*(a*d - b*c)**2/(11*d**6) + b**2*
```

```
(c + d*x)**10*(a*d - b*c)**3/d**6 + 5*b*(c + d*x)**9*(a*d - b*c)*
*4/(9*d**6) + (c + d*x)**8*(a*d - b*c)**5/(8*d**6)
```

Mathematica [B] time = 0.122534, size = 574, normalized size = 3.99

$$a^5c^7x + \frac{1}{2}a^4c^6x^2(7ad + 5bc) + \frac{1}{11}b^3d^5x^{11}\left(10a^2d^2 + 35abcd + 21b^2c^2\right) + \frac{1}{3}a^3c^5x^3\left(21a^2d^2 + 35abcd + 10b^2c^2\right) + \frac{1}{2}b^2d^4x^{10}\left(2a^3d^3 + 14a^2bcd^2 + 21ab^2c^2d + 7b^3c^3\right) + \frac{5}{4}a^2c^4x^4\left(7a^3d^3 + 21a^2bcd^2 + 14ab^2c^2d + 2b^3c^3\right) + \frac{5}{9}bd^3x^9\left(a^4d^4 + 14a^3bcd^3 + 42a^2b^2c^2d^2 + 35ab^3c^3d + 7b^4c^4\right) + ac^3x^5\left(7a^4d^4 + 35a^3bcd^3 + 42a^2b^2c^2d^2 + 14ab^3c^3d + b^4c^4\right) + \frac{1}{8}d^2x^8\left(a^5d^5 + 35a^4bcd^4 + 210a^3b^2c^2d^3 + 350a^2b^3c^3d^2 + 175ab^4c^4d + 21b^5c^5\right) + cdx^7\left(a^5d^5 + 15a^4bcd^4 + 50a^3b^2c^2d^3 + 50a^2b^3c^3d^2 + 15ab^4c^4d + b^5c^5\right) + \frac{1}{6}c^2x^6\left(21a^5d^5 + 175a^4bcd^4 + 350a^3b^2c^2d^3 + 210a^2b^3c^3d^2 + 35ab^4c^4d + b^5c^5\right) + \frac{1}{12}b^4d^6x^{12}(5ad + 7bc) + \frac{1}{13}b^5d^7x^{13}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(c + d*x)^7,x]
```

```
[Out] a^5*c^7*x + (a^4*c^6*(5*b*c + 7*a*d)*x^2)/2 + (a^3*c^5*(10*b^2*c^
2 + 35*a*b*c*d + 21*a^2*d^2)*x^3)/3 + (5*a^2*c^4*(2*b^3*c^3 + 14*
a*b^2*c^2*d + 21*a^2*b*c*d^2 + 7*a^3*d^3)*x^4)/4 + a*c^3*(b^4*c^4
 + 14*a*b^3*c^3*d + 42*a^2*b^2*c^2*d^2 + 35*a^3*b*c*d^3 + 7*a^4*d
^4)*x^5 + (c^2*(b^5*c^5 + 35*a*b^4*c^4*d + 210*a^2*b^3*c^3*d^2 +
350*a^3*b^2*c^2*d^3 + 175*a^4*b*c*d^4 + 21*a^5*d^5)*x^6)/6 + c*d*
(b^5*c^5 + 15*a*b^4*c^4*d + 50*a^2*b^3*c^3*d^2 + 50*a^3*b^2*c^2*d
^3 + 15*a^4*b*c*d^4 + a^5*d^5)*x^7 + (d^2*(21*b^5*c^5 + 175*a*b^4
*c^4*d + 350*a^2*b^3*c^3*d^2 + 210*a^3*b^2*c^2*d^3 + 35*a^4*b*c*d
^4 + a^5*d^5)*x^8)/8 + (5*b*d^3*(7*b^4*c^4 + 35*a*b^3*c^3*d + 42*
a^2*b^2*c^2*d^2 + 14*a^3*b*c*d^3 + a^4*d^4)*x^9)/9 + (b^2*d^4*(7*
b^3*c^3 + 21*a*b^2*c^2*d + 14*a^2*b*c*d^2 + 2*a^3*d^3)*x^10)/2 +
(b^3*d^5*(21*b^2*c^2 + 35*a*b*c*d + 10*a^2*d^2)*x^11)/11 + (b^4*d
^6*(7*b*c + 5*a*d)*x^12)/12 + (b^5*d^7*x^13)/13
```

Maple [B] time = 0.004, size = 601, normalized size = 4.2

$$\frac{b^5d^7x^{13}}{13}+\frac{\left(5\,ab^4d^7+7\,b^5cd^6\right)x^{12}}{12}+\frac{\left(10\,a^2b^3d^7+35\,ab^4cd^6+21\,b^5c^2d^5\right)x^{11}}{11}+\frac{\left(10\,a^3b^2d^7+70\,a^2b^3cd^6+105\,ab^4c^2d^5+35\,b^5c^3d^4\right)x^{10}}{10}+\frac{\left(5\,a^4bd^7+70\,a^3b^2cd^6+210\,a^2b^3c^2d^5+175\,ab^4c^3d^4+35\,b^5c^4d^3\right)x^9}{9}+\frac{\left(a^5d^7+35\,a^4bcd^6+210\,a^3b^2c^2d^5+350\,a^2b^3c^3d^4+175\,ab^4c^4d^3+21\,b^5c^5d^2\right)x^8}{8}+\frac{\left(7\,a^5cd^6+105\,a^4bc^2d^5+350\,a^3b^2c^3d^4+350\,a^2b^3c^4d^3+105\,ab^4c^5d^2+7\,b^5c^6d\right)x^7}{7}+\frac{\left(21\,a^5c^2d^5+175\,a^4bc^3d^4+350\,a^3b^2c^4d^3+210\,a^2b^3c^5d^2+35\,ab^4c^6d+b^5c^7\right)x^6}{6}+\frac{\left(35\,a^5c^3d^4+175\,a^4bc^4d^3+210\,a^3b^2c^5d^2+70\,a^2b^3c^6d+5\,ab^4c^7\right)x^5}{5}+\frac{\left(35\,a^5c^4d^3+105\,a^4bc^5d^2+70\,a^3b^2c^6d+10\,a^2b^3c^7\right)x^4}{4}+\frac{\left(21\,a^5c^5d^2+35\,a^4bc^6d+10\,a^3b^2c^7\right)x^3}{3}+\frac{\left(7\,a^5c^6d+5\,a^4bc^7\right)x^2}{2}+a^5c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(d*x+c)^7,x)
```

```
[Out] 1/13*b^5*d^7*x^13+1/12*(5*a*b^4*d^7+7*b^5*c*d^6)*x^12+1/11*(10*a^
2*b^3*d^7+35*a*b^4*c*d^6+21*b^5*c^2*d^5)*x^11+1/10*(10*a^3*b^2*d^
7+70*a^2*b^3*c*d^6+105*a*b^4*c^2*d^5+35*b^5*c^3*d^4)*x^10+1/9*(5*
a^4*b*d^7+70*a^3*b^2*c*d^6+210*a^2*b^3*c^2*d^5+175*a*b^4*c^3*d^4+
35*b^5*c^4*d^3)*x^9+1/8*(a^5*d^7+35*a^4*b*c*d^6+210*a^3*b^2*c^2*d
^5+350*a^2*b^3*c^3*d^4+175*a*b^4*c^4*d^3+21*b^5*c^5*d^2)*x^8+1/7*
(7*a^5*c*d^6+105*a^4*b*c^2*d^5+350*a^3*b^2*c^3*d^4+350*a^2*b^3*c^
4*d^3+105*a*b^4*c^5*d^2+7*b^5*c^6*d)*x^7+1/6*(21*a^5*c^2*d^5+175*
a^4*b*c^3*d^4+350*a^3*b^2*c^4*d^3+210*a^2*b^3*c^5*d^2+35*a*b^4*c^
6*d+b^5*c^7)*x^6+1/5*(35*a^5*c^3*d^4+175*a^4*b*c^4*d^3+210*a^3*b^
2*c^5*d^2+70*a^2*b^3*c^6*d+5*a*b^4*c^7)*x^5+1/4*(35*a^5*c^4*d^3+1
05*a^4*b*c^5*d^2+70*a^3*b^2*c^6*d+10*a^2*b^3*c^7)*x^4+1/3*(21*a^5
*c^5*d^2+35*a^4*b*c^6*d+10*a^3*b^2*c^7)*x^3+1/2*(7*a^5*c^6*d+5*a^
4*b*c^7)*x^2+a^5*c^7*x
```

Maxima [A] time = 1.33926, size = 802, normalized size = 5.57

$$\frac{1}{13}\,b^5d^7x^{13}+a^5c^7x+\frac{1}{12}\left(7\,b^5cd^6+5\,ab^4d^7\right)x^{12}+\frac{1}{11}\left(21\,b^5c^2d^5+35\,ab^4cd^6+10\,a^2b^3d^7\right)x^{11}+\frac{1}{2}\left(7\,b^5c^3d^4+21\,ab^4c^2d^5+14\,a^2b^3cd^6+2\,a^3b^2d^7\right)x^{10}+\frac{5}{9}\left(7\,b^5c^4d^3+35\,ab^4c^3d^4+42\,a^2b^3c^2d^5+14\,a^3b^2cd^6+a^4bd^7\right)x^9+\frac{1}{8}\left(21\,b^5c^5d^2+175\,ab^4c^4d^3+350\,a^2b^3c^3d^4+210\,a^3b^2c^2d^5+35\,a^4bcd^6+a^5d^7\right)x^8+\left(b^5c^6d+15\,ab^4c^5d^2+50\,a^2b^3c^4d^3+50\,a^3b^2c^3d^4+15\,a^4bc^2d^5+a^5cd^6\right)x^7+\frac{1}{6}\left(b^5c^7+35\,ab^4c^6d+210\,a^2b^3c^5d^2+350\,a^3b^2c^4d^3+175\,a^4bc^3d^4+21\,a^5c^2d^5\right)x^6+\left(ab^4c^7+14\,a^2b^3c^6d+42\,a^3b^2c^5d^2+35\,a^4bc^4d^3+7\,a^5c^3d^4\right)x^5+\frac{5}{4}\left(2\,a^2b^3c^7+14\,a^3b^2c^6d+21\,a^4bc^5d^2+7\,a^5c^4d^3\right)x^4+\frac{1}{3}\left(10\,a^3b^2c^7+35\,a^4bc^6d+21\,a^5c^5d^2\right)x^3+\frac{1}{2}\left(5\,a^4bc^7+7\,a^5c^6d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/13*b^5*d^7*x^13 + a^5*c^7*x + 1/12*(7*b^5*c*d^6 + 5*a*b^4*d^7)*
x^12 + 1/11*(21*b^5*c^2*d^5 + 35*a*b^4*c*d^6 + 10*a^2*b^3*d^7)*x^
11 + 1/2*(7*b^5*c^3*d^4 + 21*a*b^4*c^2*d^5 + 14*a^2*b^3*c*d^6 + 2
*a^3*b^2*d^7)*x^10 + 5/9*(7*b^5*c^4*d^3 + 35*a*b^4*c^3*d^4 + 42*a
^2*b^3*c^2*d^5 + 14*a^3*b^2*c*d^6 + a^4*b*d^7)*x^9 + 1/8*(21*b^5*
c^5*d^2 + 175*a*b^4*c^4*d^3 + 350*a^2*b^3*c^3*d^4 + 210*a^3*b^2*c
^2*d^5 + 35*a^4*b*c*d^6 + a^5*d^7)*x^8 + (b^5*c^6*d + 15*a*b^4*c^
5*d^2 + 50*a^2*b^3*c^4*d^3 + 50*a^3*b^2*c^3*d^4 + 15*a^4*b*c^2*d^
5 + a^5*c*d^6)*x^7 + 1/6*(b^5*c^7 + 35*a*b^4*c^6*d + 210*a^2*b^3*
c^5*d^2 + 350*a^3*b^2*c^4*d^3 + 175*a^4*b*c^3*d^4 + 21*a^5*c^2*d^
5)*x^6 + (a*b^4*c^7 + 14*a^2*b^3*c^6*d + 42*a^3*b^2*c^5*d^2 + 35*
a^4*b*c^4*d^3 + 7*a^5*c^3*d^4)*x^5 + 5/4*(2*a^2*b^3*c^7 + 14*a^3*
b^2*c^6*d + 21*a^4*b*c^5*d^2 + 7*a^5*c^4*d^3)*x^4 + 1/3*(10*a^3*b
^2*c^7 + 35*a^4*b*c^6*d + 21*a^5*c^5*d^2)*x^3 + 1/2*(5*a^4*b*c^7
+ 7*a^5*c^6*d)*x^2
```

Fricas [A] time = 0.179958, size = 1, normalized size = 0.01

$$\frac{1}{13}x^{13}d^7b^5 + \frac{7}{12}x^{12}d^6cb^5 + \frac{5}{12}x^{12}d^7b^4a + \frac{21}{11}x^{11}d^5c^2b^5 + \frac{35}{11}x^{11}d^6cb^4a + \frac{10}{11}x^{11}d^7b^3a^2 + \frac{7}{2}x^{10}d^4c^3b^5 + \frac{21}{2}x^{10}d^5c^2b^4a + 7x^{10}d^6cb^3a^2 + x^{10}d^7b^2a^3 + \frac{35}{9}x^9d^3c^4b^5 + \frac{175}{9}x^9d^4c^3b^4a + \frac{70}{3}x^9d^5c^2b^3a^2 + \frac{70}{9}x^9d^6cb^2a^3 + \frac{5}{9}x^9d^7ba^4 + \frac{21}{8}x^8d^2c^5b^5 + \frac{175}{8}x^8d^3c^4b^4a + \frac{175}{4}x^8d^4c^3b^3a^2 + \frac{105}{4}x^8d^5c^2b^2a^3 + \frac{35}{8}x^8d^6cba^4 + \frac{1}{8}x^8d^7a^5 + x^7dc^6b^5 + 15x^7d^2c^5b^4a + 50x^7d^3c^4b^3a^2 + 50x^7d^4c^3b^2a^3 + 15x^7d^5c^2ba^4 + x^7d^6ca^5 + \frac{1}{6}x^6c^7b^5 + \frac{35}{6}x^6dc^6b^4a + 35x^6d^2c^5b^3a^2 + \frac{175}{3}x^6d^3c^4b^2a^3 + \frac{175}{6}x^6d^4c^3ba^4 + \frac{7}{2}x^6d^5c^2a^5 + x^5c^7b^4a + 14x^5dc^6b^3a^2 + 42x^5d^2c^5b^2a^3 + 35x^5d^3c^4ba^4 + 7x^5d^4c^3a^5 + \frac{5}{2}x^4c^7b^3a^2 + \frac{35}{2}x^4dc^6b^2a^3 + \frac{105}{4}x^4d^2c^5ba^4 + \frac{35}{4}x^4d^3c^4a^5 + \frac{10}{3}x^3c^7b^2a^3 + \frac{35}{3}x^3dc^6ba^4 + 7x^3d^2c^5a^5 + \frac{5}{2}x^2c^7ba^4 + \frac{7}{2}x^2dc^6a^5 + xc^7a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*d^7*b^5 + 7/12*x^12*d^6*c*b^5 + 5/12*x^12*d^7*b^4*a + 2
1/11*x^11*d^5*c^2*b^5 + 35/11*x^11*d^6*c*b^4*a + 10/11*x^11*d^7*b
^3*a^2 + 7/2*x^10*d^4*c^3*b^5 + 21/2*x^10*d^5*c^2*b^4*a + 7*x^10*
d^6*c*b^3*a^2 + x^10*d^7*b^2*a^3 + 35/9*x^9*d^3*c^4*b^5 + 175/9*x
^9*d^4*c^3*b^4*a + 70/3*x^9*d^5*c^2*b^3*a^2 + 70/9*x^9*d^6*c*b^2*
a^3 + 5/9*x^9*d^7*b*a^4 + 21/8*x^8*d^2*c^5*b^5 + 175/8*x^8*d^3*c^
4*b^4*a + 175/4*x^8*d^4*c^3*b^3*a^2 + 105/4*x^8*d^5*c^2*b^2*a^3 +
 35/8*x^8*d^6*c*b*a^4 + 1/8*x^8*d^7*a^5 + x^7*d*c^6*b^5 + 15*x^7*
d^2*c^5*b^4*a + 50*x^7*d^3*c^4*b^3*a^2 + 50*x^7*d^4*c^3*b^2*a^3 +
 15*x^7*d^5*c^2*b*a^4 + x^7*d^6*c*a^5 + 1/6*x^6*c^7*b^5 + 35/6*x^
6*d*c^6*b^4*a + 35*x^6*d^2*c^5*b^3*a^2 + 175/3*x^6*d^3*c^4*b^2*a^
3 + 175/6*x^6*d^4*c^3*b*a^4 + 7/2*x^6*d^5*c^2*a^5 + x^5*c^7*b^4*a
 + 14*x^5*d*c^6*b^3*a^2 + 42*x^5*d^2*c^5*b^2*a^3 + 35*x^5*d^3*c^4
*b*a^4 + 7*x^5*d^4*c^3*a^5 + 5/2*x^4*c^7*b^3*a^2 + 35/2*x^4*d*c^6
*b^2*a^3 + 105/4*x^4*d^2*c^5*b*a^4 + 35/4*x^4*d^3*c^4*a^5 + 10/3*
x^3*c^7*b^2*a^3 + 35/3*x^3*d*c^6*b*a^4 + 7*x^3*d^2*c^5*a^5 + 5/2*
x^2*c^7*b*a^4 + 7/2*x^2*d*c^6*a^5 + x*c^7*a^5
```

Sympy [A] time = 0.368807, size = 673, normalized size = 4.67

$$a^5c^7x + \frac{b^5d^7x^{13}}{13} + x^{12}\left(\frac{5ab^4d^7}{12} + \frac{7b^5cd^6}{12}\right) + x^{11}\left(\frac{10a^2b^3d^7}{11} + \frac{35ab^4cd^6}{11} + \frac{21b^5c^2d^5}{11}\right) + x^{10}\left(a^3b^2d^7 + 7a^2b^3cd^6 + \frac{21ab^4c^2d^5}{2} + \frac{7b^5c^3d^4}{2}\right) + x^9\left(\frac{5a^4bd^7}{9} + \frac{70a^3b^2cd^6}{9} + \frac{70a^2b^3c^2d^5}{3} + \frac{175ab^4c^3d^4}{9} + \frac{35b^5c^4d^3}{9}\right) + x^8\left(\frac{a^5d^7}{8} + \frac{35a^4bcd^6}{8} + \frac{105a^3b^2c^2d^5}{4} + \frac{175a^2b^3c^3d^4}{4} + \frac{175ab^4c^4d^3}{8} + \frac{21b^5c^5d^2}{8}\right) + x^7\left(a^5cd^6 + 15a^4bc^2d^5 + 50a^3b^2c^3d^4 + 50a^2b^3c^4d^3 + 15ab^4c^5d^2 + b^5c^6d\right) + x^6\left(\frac{7a^5c^2d^5}{2} + \frac{175a^4bc^3d^4}{6} + \frac{175a^3b^2c^4d^3}{3} + 35a^2b^3c^5d^2 + \frac{35ab^4c^6d}{6} + \frac{b^5c^7}{6}\right) + x^5\left(7a^5c^3d^4 + 35a^4bc^4d^3 + 42a^3b^2c^5d^2 + 14a^2b^3c^6d + ab^4c^7\right) + x^4\left(\frac{35a^5c^4d^3}{4} + \frac{105a^4bc^5d^2}{4} + \frac{35a^3b^2c^6d}{2} + \frac{5a^2b^3c^7}{2}\right) + x^3\left(7a^5c^5d^2 + \frac{35a^4bc^6d}{3} + \frac{10a^3b^2c^7}{3}\right) + x^2\left(\frac{7a^5c^6d}{2} + \frac{5a^4bc^7}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(d*x+c)**7,x)
```

```
[Out] a**5*c**7*x + b**5*d**7*x**13/13 + x**12*(5*a*b**4*d**7/12 + 7*b*
*5*c*d**6/12) + x**11*(10*a**2*b**3*d**7/11 + 35*a*b**4*c*d**6/11
 + 21*b**5*c**2*d**5/11) + x**10*(a**3*b**2*d**7 + 7*a**2*b**3*c*
d**6 + 21*a*b**4*c**2*d**5/2 + 7*b**5*c**3*d**4/2) + x**9*(5*a**4
*b*d**7/9 + 70*a**3*b**2*c*d**6/9 + 70*a**2*b**3*c**2*d**5/3 + 17
5*a*b**4*c**3*d**4/9 + 35*b**5*c**4*d**3/9) + x**8*(a**5*d**7/8 +
 35*a**4*b*c*d**6/8 + 105*a**3*b**2*c**2*d**5/4 + 175*a**2*b**3*c
**3*d**4/4 + 175*a*b**4*c**4*d**3/8 + 21*b**5*c**5*d**2/8) + x**7
*(a**5*c*d**6 + 15*a**4*b*c**2*d**5 + 50*a**3*b**2*c**3*d**4 + 50
*a**2*b**3*c**4*d**3 + 15*a*b**4*c**5*d**2 + b**5*c**6*d) + x**6*
(7*a**5*c**2*d**5/2 + 175*a**4*b*c**3*d**4/6 + 175*a**3*b**2*c**4
*d**3/3 + 35*a**2*b**3*c**5*d**2 + 35*a*b**4*c**6*d/6 + b**5*c**7
/6) + x**5*(7*a**5*c**3*d**4 + 35*a**4*b*c**4*d**3 + 42*a**3*b**2
*c**5*d**2 + 14*a**2*b**3*c**6*d + a*b**4*c**7) + x**4*(35*a**5*c
**4*d**3/4 + 105*a**4*b*c**5*d**2/4 + 35*a**3*b**2*c**6*d/2 + 5*a
**2*b**3*c**7/2) + x**3*(7*a**5*c**5*d**2 + 35*a**4*b*c**6*d/3 +
10*a**3*b**2*c**7/3) + x**2*(7*a**5*c**6*d/2 + 5*a**4*b*c**7/2)
```

GIAC/XCAS [A] time = 0.215069, size = 905, normalized size = 6.28

$$\frac{1}{13}b^5d^7x^{13} + \frac{7}{12}b^5cd^6x^{12} + \frac{5}{12}ab^4d^7x^{12} + \frac{21}{11}b^5c^2d^5x^{11} + \frac{35}{11}ab^4cd^6x^{11} + \frac{10}{11}a^2b^3d^7x^{11} + \frac{7}{2}b^5c^3d^4x^{10} + \frac{21}{2}ab^4c^2d^5x^{10} + 7a^2b^3cd^6x^{10} + a^3b^2d^7x^{10} + \frac{35}{9}b^5c^4d^3x^9 + \frac{175}{9}ab^4c^3d^4x^9 + \frac{70}{3}a^2b^3c^2d^5x^9 + \frac{70}{9}a^3b^2cd^6x^9 + \frac{5}{9}a^4bd^7x^9 + \frac{21}{8}b^5c^5d^2x^8 + \frac{175}{8}ab^4c^4d^3x^8 + \frac{175}{4}a^2b^3c^3d^4x^8 + \frac{105}{4}a^3b^2c^2d^5x^8 + \frac{35}{8}a^4bcd^6x^8 + \frac{1}{8}a^5d^7x^8 + b^5c^6dx^7 + 15ab^4c^5d^2x^7 + 50a^2b^3c^4d^3x^7 + 50a^3b^2c^3d^4x^7 + 15a^4bc^2d^5x^7 + a^5cd^6x^7 + \frac{1}{6}b^5c^7x^6 + \frac{35}{6}ab^4c^6dx^6 + 35a^2b^3c^5d^2x^6 + \frac{175}{3}a^3b^2c^4d^3x^6 + \frac{175}{6}a^4bc^3d^4x^6 + \frac{7}{2}a^5c^2d^5x^6 + ab^4c^7x^5 + 14a^2b^3c^6dx^5 + 42a^3b^2c^5d^2x^5 + 35a^4bc^4d^3x^5 + 7a^5c^3d^4x^5 + \frac{5}{2}a^2b^3c^7x^4 + \frac{35}{2}a^3b^2c^6dx^4 + \frac{105}{4}a^4bc^5d^2x^4 + \frac{35}{4}a^5c^4d^3x^4 + \frac{10}{3}a^3b^2c^7x^3 + \frac{35}{3}a^4bc^6dx^3 + 7a^5c^5d^2x^3 + \frac{5}{2}a^4bc^7x^2 + \frac{7}{2}a^5c^6dx^2 + a^5c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/13*b^5*d^7*x^13 + 7/12*b^5*c*d^6*x^12 + 5/12*a*b^4*d^7*x^12 + 2
1/11*b^5*c^2*d^5*x^11 + 35/11*a*b^4*c*d^6*x^11 + 10/11*a^2*b^3*d^
7*x^11 + 7/2*b^5*c^3*d^4*x^10 + 21/2*a*b^4*c^2*d^5*x^10 + 7*a^2*b
^3*c*d^6*x^10 + a^3*b^2*d^7*x^10 + 35/9*b^5*c^4*d^3*x^9 + 175/9*a
*b^4*c^3*d^4*x^9 + 70/3*a^2*b^3*c^2*d^5*x^9 + 70/9*a^3*b^2*c*d^6*
x^9 + 5/9*a^4*b*d^7*x^9 + 21/8*b^5*c^5*d^2*x^8 + 175/8*a*b^4*c^4*
d^3*x^8 + 175/4*a^2*b^3*c^3*d^4*x^8 + 105/4*a^3*b^2*c^2*d^5*x^8 +
 35/8*a^4*b*c*d^6*x^8 + 1/8*a^5*d^7*x^8 + b^5*c^6*d*x^7 + 15*a*b^
4*c^5*d^2*x^7 + 50*a^2*b^3*c^4*d^3*x^7 + 50*a^3*b^2*c^3*d^4*x^7 +
 15*a^4*b*c^2*d^5*x^7 + a^5*c*d^6*x^7 + 1/6*b^5*c^7*x^6 + 35/6*a*
b^4*c^6*d*x^6 + 35*a^2*b^3*c^5*d^2*x^6 + 175/3*a^3*b^2*c^4*d^3*x^
6 + 175/6*a^4*b*c^3*d^4*x^6 + 7/2*a^5*c^2*d^5*x^6 + a*b^4*c^7*x^5
 + 14*a^2*b^3*c^6*d*x^5 + 42*a^3*b^2*c^5*d^2*x^5 + 35*a^4*b*c^4*d
^3*x^5 + 7*a^5*c^3*d^4*x^5 + 5/2*a^2*b^3*c^7*x^4 + 35/2*a^3*b^2*c
^6*d*x^4 + 105/4*a^4*b*c^5*d^2*x^4 + 35/4*a^5*c^4*d^3*x^4 + 10/3*
a^3*b^2*c^7*x^3 + 35/3*a^4*b*c^6*d*x^3 + 7*a^5*c^5*d^2*x^3 + 5/2*
a^4*b*c^7*x^2 + 7/2*a^5*c^6*d*x^2 + a^5*c^7*x
```

3.1278 $\int (a+bx)^4(c+dx)^7\,dx$

Optimal. Leaf size=119

$$-\frac{4b^3(c+dx)^{11}(bc-ad)}{11d^5}+\frac{3b^2(c+dx)^{10}(bc-ad)^2}{5d^5}-\frac{4b(c+dx)^9(bc-ad)^3}{9d^5}+\frac{(c+dx)^8(bc-ad)^4}{8d^5}+\frac{b^4(c+dx)^{12}}{12d^5}$$

```
[Out] ((b*c - a*d)^4*(c + d*x)^8)/(8*d^5) - (4*b*(b*c - a*d)^3*(c + d*x
)^9)/(9*d^5) + (3*b^2*(b*c - a*d)^2*(c + d*x)^10)/(5*d^5) - (4*b^
3*(b*c - a*d)*(c + d*x)^11)/(11*d^5) + (b^4*(c + d*x)^12)/(12*d^5
)
```

Rubi [A] time = 0.535715, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{4b^3(c+dx)^{11}(bc-ad)}{11d^5}+\frac{3b^2(c+dx)^{10}(bc-ad)^2}{5d^5}-\frac{4b(c+dx)^9(bc-ad)^3}{9d^5}+\frac{(c+dx)^8(bc-ad)^4}{8d^5}+\frac{b^4(c+dx)^{12}}{12d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x)^7,x]
```

```
[Out] ((b*c - a*d)^4*(c + d*x)^8)/(8*d^5) - (4*b*(b*c - a*d)^3*(c + d*x
)^9)/(9*d^5) + (3*b^2*(b*c - a*d)^2*(c + d*x)^10)/(5*d^5) - (4*b^
3*(b*c - a*d)*(c + d*x)^11)/(11*d^5) + (b^4*(c + d*x)^12)/(12*d^5
)
```

Rubi in Sympy [A] time = 53.9745, size = 107, normalized size = 0.9

$$\frac{b^4\left(c+dx\right)^{12}}{12d^5}+\frac{4b^3\left(c+dx\right)^{11}\left(ad-bc\right)}{11d^5}+\frac{3b^2\left(c+dx\right)^{10}\left(ad-bc\right)^2}{5d^5}+\frac{4b\left(c+dx\right)^9\left(ad-bc\right)^3}{9d^5}+\frac{\left(c+dx\right)^8\left(ad-bc\right)^4}{8d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**7,x)
```

```
[Out] b**4*(c + d*x)**12/(12*d**5) + 4*b**3*(c + d*x)**11*(a*d - b*c)/(
11*d**5) + 3*b**2*(c + d*x)**10*(a*d - b*c)**2/(5*d**5) + 4*b*(c
```

```
+ d*x)**9*(a*d - b*c)**3/(9*d**5) + (c + d*x)**8*(a*d - b*c)**4/(
8*d**5)
```

Mathematica [B] time = 0.101348, size = 473, normalized size = 3.97

$$a^4c^7x+\frac{1}{2}a^3c^6x^2(7ad+4bc)+\frac{1}{10}b^2d^5x^{10}\left(6a^2d^2+28abcd+21b^2c^2\right)+\frac{1}{3}a^2c^5x^3\left(21a^2d^2+28abcd+6b^2c^2\right)+\frac{1}{9}bd^4x^9\left(4a^3d^3+42a^2bcd^2+84ab^2c^2d+35b^3c^3\right)+\frac{1}{4}ac^4x^4\left(35a^3d^3+84a^2bcd^2+42ab^2c^2d+4b^3c^3\right)+\frac{1}{8}d^3x^8\left(a^4d^4+28a^3bcd^3+126a^2b^2c^2d^2+140ab^3c^3d+35b^4c^4\right)+cd^2x^7\left(a^4d^4+12a^3bcd^3+30a^2b^2c^2d^2+20ab^3c^3d+3b^4c^4\right)+\frac{7}{6}c^2dx^6\left(3a^4d^4+20a^3bcd^3+30a^2b^2c^2d^2+12ab^3c^3d+b^4c^4\right)+\frac{1}{5}c^3x^5\left(35a^4d^4+140a^3bcd^3+126a^2b^2c^2d^2+28ab^3c^3d+b^4c^4\right)+\frac{1}{11}b^3d^6x^{11}(4ad+7bc)+\frac{1}{12}b^4d^7x^{12}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x)^7,x]
```

```
[Out] a^4*c^7*x + (a^3*c^6*(4*b*c + 7*a*d)*x^2)/2 + (a^2*c^5*(6*b^2*c^2
 + 28*a*b*c*d + 21*a^2*d^2)*x^3)/3 + (a*c^4*(4*b^3*c^3 + 42*a*b^2
*c^2*d + 84*a^2*b*c*d^2 + 35*a^3*d^3)*x^4)/4 + (c^3*(b^4*c^4 + 28
*a*b^3*c^3*d + 126*a^2*b^2*c^2*d^2 + 140*a^3*b*c*d^3 + 35*a^4*d^4
)*x^5)/5 + (7*c^2*d*(b^4*c^4 + 12*a*b^3*c^3*d + 30*a^2*b^2*c^2*d^
2 + 20*a^3*b*c*d^3 + 3*a^4*d^4)*x^6)/6 + c*d^2*(3*b^4*c^4 + 20*a*
b^3*c^3*d + 30*a^2*b^2*c^2*d^2 + 12*a^3*b*c*d^3 + a^4*d^4)*x^7 +
(d^3*(35*b^4*c^4 + 140*a*b^3*c^3*d + 126*a^2*b^2*c^2*d^2 + 28*a^3
*b*c*d^3 + a^4*d^4)*x^8)/8 + (b*d^4*(35*b^3*c^3 + 84*a*b^2*c^2*d
+ 42*a^2*b*c*d^2 + 4*a^3*d^3)*x^9)/9 + (b^2*d^5*(21*b^2*c^2 + 28*
a*b*c*d + 6*a^2*d^2)*x^10)/10 + (b^3*d^6*(7*b*c + 4*a*d)*x^11)/11
 + (b^4*d^7*x^12)/12
```

Maple [B] time = 0.001, size = 493, normalized size = 4.1

$$\frac{b^4d^7x^{12}}{12}+\frac{(4\,ab^3d^7+7\,b^4cd^6)\,x^{11}}{11}+\frac{(6\,a^2b^2d^7+28\,ab^3cd^6+21\,b^4c^2d^5)\,x^{10}}{10}+\frac{(4\,a^3bd^7+42\,a^2b^2cd^6+84\,ab^3c^2d^5+35\,b^4c^3d^4)\,x^9}{9}+\frac{(a^4d^7+28\,a^3bcd^6+126\,a^2b^2c^2d^5+140\,ab^3c^3d^4+35\,b^4c^4d^3)\,x^8}{8}+\frac{(7\,a^4cd^6+84\,a^3bc^2d^5+210\,a^2b^2c^3d^4+140\,ab^3c^4d^3+21\,b^4c^5d^2)\,x^7}{7}+\frac{(21\,a^4c^2d^5+140\,a^3bc^3d^4+210\,a^2b^2c^4d^3+84\,ab^3c^5d^2+7\,b^4c^6d)\,x^6}{6}+\frac{(35\,a^4c^3d^4+140\,a^3bc^4d^3+126\,a^2b^2c^5d^2+28\,ab^3c^6d+b^4c^7)\,x^5}{5}+\frac{(35\,a^4c^4d^3+84\,a^3bc^5d^2+42\,a^2b^2c^6d+4\,ab^3c^7)\,x^4}{4}+\frac{(21\,a^4c^5d^2+28\,a^3bc^6d+6\,a^2b^2c^7)\,x^3}{3}+\frac{(7\,a^4c^6d+4\,a^3bc^7)\,x^2}{2}+a^4c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c)^7,x)
```

```
[Out] 1/12*b^4*d^7*x^12+1/11*(4*a*b^3*d^7+7*b^4*c*d^6)*x^11+1/10*(6*a^2
*b^2*d^7+28*a*b^3*c*d^6+21*b^4*c^2*d^5)*x^10+1/9*(4*a^3*b*d^7+42*
a^2*b^2*c*d^6+84*a*b^3*c^2*d^5+35*b^4*c^3*d^4)*x^9+1/8*(a^4*d^7+2
8*a^3*b*c*d^6+126*a^2*b^2*c^2*d^5+140*a*b^3*c^3*d^4+35*b^4*c^4*d^
3)*x^8+1/7*(7*a^4*c*d^6+84*a^3*b*c^2*d^5+210*a^2*b^2*c^3*d^4+140*
a*b^3*c^4*d^3+21*b^4*c^5*d^2)*x^7+1/6*(21*a^4*c^2*d^5+140*a^3*b*c
^3*d^4+210*a^2*b^2*c^4*d^3+84*a*b^3*c^5*d^2+7*b^4*c^6*d)*x^6+1/5*
(35*a^4*c^3*d^4+140*a^3*b*c^4*d^3+126*a^2*b^2*c^5*d^2+28*a*b^3*c^
6*d+b^4*c^7)*x^5+1/4*(35*a^4*c^4*d^3+84*a^3*b*c^5*d^2+42*a^2*b^2*
c^6*d+4*a*b^3*c^7)*x^4+1/3*(21*a^4*c^5*d^2+28*a^3*b*c^6*d+6*a^2*b
^2*c^7)*x^3+1/2*(7*a^4*c^6*d+4*a^3*b*c^7)*x^2+a^4*c^7*x
```

Maxima [A] time = 1.34548, size = 660, normalized size = 5.55

$$\frac{1}{12}\,b^4d^7x^{12} + a^4c^7x + \frac{1}{11}\left(7\,b^4cd^6 + 4\,ab^3d^7\right)x^{11} + \frac{1}{10}\left(21\,b^4c^2d^5 + 28\,ab^3cd^6 + 6\,a^2b^2d^7\right)x^{10} + \frac{1}{9}\left(35\,b^4c^3d^4 + 84\,ab^3c^2d^5 + 42\,a^2b^2cd^6 + 4\,a^3bd^7\right)x^9 + \frac{1}{8}\left(35\,b^4c^4d^3 + 140\,ab^3c^3d^4 + 126\,a^2b^2c^2d^5 + 28\,a^3bcd^6 + a^4d^7\right)x^8 + \left(3\,b^4c^5d^2 + 20\,ab^3c^4d^3 + 30\,a^2b^2c^3d^4 + 12\,a^3bc^2d^5 + a^4cd^6\right)x^7 + \frac{7}{6}\left(b^4c^6d + 12\,ab^3c^5d^2 + 30\,a^2b^2c^4d^3 + 20\,a^3bc^3d^4 + 3\,a^4c^2d^5\right)x^6 + \frac{1}{5}\left(b^4c^7 + 28\,ab^3c^6d + 126\,a^2b^2c^5d^2 + 140\,a^3bc^4d^3 + 35\,a^4c^3d^4\right)x^5 + \frac{1}{4}\left(4\,ab^3c^7 + 42\,a^2b^2c^6d + 84\,a^3bc^5d^2 + 35\,a^4c^4d^3\right)x^4 + \frac{1}{3}\left(6\,a^2b^2c^7 + 28\,a^3bc^6d + 21\,a^4c^5d^2\right)x^3 + \frac{1}{2}\left(4\,a^3bc^7 + 7\,a^4c^6d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/12*b^4*d^7*x^12 + a^4*c^7*x + 1/11*(7*b^4*c*d^6 + 4*a*b^3*d^7)*
x^11 + 1/10*(21*b^4*c^2*d^5 + 28*a*b^3*c*d^6 + 6*a^2*b^2*d^7)*x^1
0 + 1/9*(35*b^4*c^3*d^4 + 84*a*b^3*c^2*d^5 + 42*a^2*b^2*c*d^6 + 4
*a^3*b*d^7)*x^9 + 1/8*(35*b^4*c^4*d^3 + 140*a*b^3*c^3*d^4 + 126*a
^2*b^2*c^2*d^5 + 28*a^3*b*c*d^6 + a^4*d^7)*x^8 + (3*b^4*c^5*d^2 +
 20*a*b^3*c^4*d^3 + 30*a^2*b^2*c^3*d^4 + 12*a^3*b*c^2*d^5 + a^4*c
*d^6)*x^7 + 7/6*(b^4*c^6*d + 12*a*b^3*c^5*d^2 + 30*a^2*b^2*c^4*d^
3 + 20*a^3*b*c^3*d^4 + 3*a^4*c^2*d^5)*x^6 + 1/5*(b^4*c^7 + 28*a*b
^3*c^6*d + 126*a^2*b^2*c^5*d^2 + 140*a^3*b*c^4*d^3 + 35*a^4*c^3*d
^4)*x^5 + 1/4*(4*a*b^3*c^7 + 42*a^2*b^2*c^6*d + 84*a^3*b*c^5*d^2
+ 35*a^4*c^4*d^3)*x^4 + 1/3*(6*a^2*b^2*c^7 + 28*a^3*b*c^6*d + 21*
a^4*c^5*d^2)*x^3 + 1/2*(4*a^3*b*c^7 + 7*a^4*c^6*d)*x^2
```

Fricas [A] time = 0.176601, size = 1, normalized size = 0.01

$$\frac{1}{12}x^{12}d^7b^4 + \frac{7}{11}x^{11}d^6cb^4 + \frac{4}{11}x^{11}d^7b^3a + \frac{21}{10}x^{10}d^5c^2b^4 + \frac{14}{5}x^{10}d^6cb^3a + \frac{3}{5}x^{10}d^7b^2a^2 + \frac{35}{9}x^9d^4c^3b^4 + \frac{28}{3}x^9d^5c^2b^3a + \frac{14}{3}x^9d^6cb^2a^2 + \frac{4}{9}x^9d^7ba^3 + \frac{35}{8}x^8d^3c^4b^4 + \frac{35}{2}x^8d^4c^3b^3a + \frac{63}{4}x^8d^5c^2b^2a^2 + \frac{7}{2}x^8d^6cba^3 + \frac{1}{8}x^8d^7a^4 + 3x^7d^2c^5b^4 + 20x^7d^3c^4b^3a + 30x^7d^4c^3b^2a^2 + 12x^7d^5c^2ba^3 + x^7d^6ca^4 + \frac{7}{6}x^6dc^6b^4 + 14x^6d^2c^5b^3a + 35x^6d^3c^4b^2a^2 + \frac{70}{3}x^6d^4c^3ba^3 + \frac{7}{2}x^6d^5c^2a^4 + \frac{1}{5}x^5c^7b^4 + \frac{28}{5}x^5dc^6b^3a + \frac{126}{5}x^5d^2c^5b^2a^2 + 28x^5d^3c^4ba^3 + 7x^5d^4c^3a^4 + x^4c^7b^3a + \frac{21}{2}x^4dc^6b^2a^2 + 21x^4d^2c^5ba^3 + \frac{35}{4}x^4d^3c^4a^4 + 2x^3c^7b^2a^2 + \frac{28}{3}x^3dc^6ba^3 + 7x^3d^2c^5a^4 + 2x^2c^7ba^3 + \frac{7}{2}x^2dc^6a^4 + xc^7a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*d^7*b^4 + 7/11*x^11*d^6*c*b^4 + 4/11*x^11*d^7*b^3*a + 2
1/10*x^10*d^5*c^2*b^4 + 14/5*x^10*d^6*c*b^3*a + 3/5*x^10*d^7*b^2*
a^2 + 35/9*x^9*d^4*c^3*b^4 + 28/3*x^9*d^5*c^2*b^3*a + 14/3*x^9*d^
6*c*b^2*a^2 + 4/9*x^9*d^7*b*a^3 + 35/8*x^8*d^3*c^4*b^4 + 35/2*x^8
*d^4*c^3*b^3*a + 63/4*x^8*d^5*c^2*b^2*a^2 + 7/2*x^8*d^6*c*b*a^3 +
 1/8*x^8*d^7*a^4 + 3*x^7*d^2*c^5*b^4 + 20*x^7*d^3*c^4*b^3*a + 30*
x^7*d^4*c^3*b^2*a^2 + 12*x^7*d^5*c^2*b*a^3 + x^7*d^6*c*a^4 + 7/6*
x^6*d*c^6*b^4 + 14*x^6*d^2*c^5*b^3*a + 35*x^6*d^3*c^4*b^2*a^2 + 7
0/3*x^6*d^4*c^3*b*a^3 + 7/2*x^6*d^5*c^2*a^4 + 1/5*x^5*c^7*b^4 + 2
8/5*x^5*d*c^6*b^3*a + 126/5*x^5*d^2*c^5*b^2*a^2 + 28*x^5*d^3*c^4*
b*a^3 + 7*x^5*d^4*c^3*a^4 + x^4*c^7*b^3*a + 21/2*x^4*d*c^6*b^2*a^
2 + 21*x^4*d^2*c^5*b*a^3 + 35/4*x^4*d^3*c^4*a^4 + 2*x^3*c^7*b^2*a
^2 + 28/3*x^3*d*c^6*b*a^3 + 7*x^3*d^2*c^5*a^4 + 2*x^2*c^7*b*a^3 +
 7/2*x^2*d*c^6*a^4 + x*c^7*a^4
```

Sympy [A] time = 0.30977, size = 549, normalized size = 4.61

$$a^{4}c^{7}x + \frac{b^{4}d^{7}x^{12}}{12} + x^{11}\left(\frac{4ab^{3}d^{7}}{11} + \frac{7b^{4}cd^{6}}{11}\right) + x^{10}\left(\frac{3a^{2}b^{2}d^{7}}{5} + \frac{14ab^{3}cd^{6}}{5} + \frac{21b^{4}c^{2}d^{5}}{10}\right) + x^{9}\left(\frac{4a^{3}bd^{7}}{9} + \frac{14a^{2}b^{2}cd^{6}}{3} + \frac{28ab^{3}c^{2}d^{5}}{3} + \frac{35b^{4}c^{3}d^{4}}{9}\right) + x^{8}\left(\frac{a^{4}d^{7}}{8} + \frac{7a^{3}bcd^{6}}{2} + \frac{63a^{2}b^{2}c^{2}d^{5}}{4} + \frac{35ab^{3}c^{3}d^{4}}{2} + \frac{35b^{4}c^{4}d^{3}}{8}\right) + x^{7}\left(a^{4}cd^{6} + 12a^{3}bc^{2}d^{5} + 30a^{2}b^{2}c^{3}d^{4} + 20ab^{3}c^{4}d^{3} + 3b^{4}c^{5}d^{2}\right) + x^{6}\left(\frac{7a^{4}c^{2}d^{5}}{2} + \frac{70a^{3}bc^{3}d^{4}}{3} + 35a^{2}b^{2}c^{4}d^{3} + 14ab^{3}c^{5}d^{2} + \frac{7b^{4}c^{6}d}{6}\right) + x^{5}\left(7a^{4}c^{3}d^{4} + 28a^{3}bc^{4}d^{3} + \frac{126a^{2}b^{2}c^{5}d^{2}}{5} + \frac{28ab^{3}c^{6}d}{5} + \frac{b^{4}c^{7}}{5}\right) + x^{4}\left(\frac{35a^{4}c^{4}d^{3}}{4} + 21a^{3}bc^{5}d^{2} + \frac{21a^{2}b^{2}c^{6}d}{2} + ab^{3}c^{7}\right) + x^{3}\left(7a^{4}c^{5}d^{2} + \frac{28a^{3}bc^{6}d}{3} + 2a^{2}b^{2}c^{7}\right) + x^{2}\left(\frac{7a^{4}c^{6}d}{2} + 2a^{3}bc^{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**7,x)
```

```
[Out] a**4*c**7*x + b**4*d**7*x**12/12 + x**11*(4*a*b**3*d**7/11 + 7*b*
*4*c*d**6/11) + x**10*(3*a**2*b**2*d**7/5 + 14*a*b**3*c*d**6/5 +
21*b**4*c**2*d**5/10) + x**9*(4*a**3*b*d**7/9 + 14*a**2*b**2*c*d*
*6/3 + 28*a*b**3*c**2*d**5/3 + 35*b**4*c**3*d**4/9) + x**8*(a**4*
d**7/8 + 7*a**3*b*c*d**6/2 + 63*a**2*b**2*c**2*d**5/4 + 35*a*b**3
*c**3*d**4/2 + 35*b**4*c**4*d**3/8) + x**7*(a**4*c*d**6 + 12*a**3
```

```
*b*c**2*d**5 + 30*a**2*b**2*c**3*d**4 + 20*a*b**3*c**4*d**3 + 3*b
**4*c**5*d**2) + x**6*(7*a**4*c**2*d**5/2 + 70*a**3*b*c**3*d**4/3
 + 35*a**2*b**2*c**4*d**3 + 14*a*b**3*c**5*d**2 + 7*b**4*c**6*d/6
) + x**5*(7*a**4*c**3*d**4 + 28*a**3*b*c**4*d**3 + 126*a**2*b**2*
c**5*d**2/5 + 28*a*b**3*c**6*d/5 + b**4*c**7/5) + x**4*(35*a**4*c
**4*d**3/4 + 21*a**3*b*c**5*d**2 + 21*a**2*b**2*c**6*d/2 + a*b**3
*c**7) + x**3*(7*a**4*c**5*d**2 + 28*a**3*b*c**6*d/3 + 2*a**2*b**
2*c**7) + x**2*(7*a**4*c**6*d/2 + 2*a**3*b*c**7)
```

GIAC/XCAS [A] time = 0.222991, size = 737, normalized size = 6.19

$$\frac{1}{12}\,b^4d^7x^{12} + \frac{7}{11}\,b^4cd^6x^{11} + \frac{4}{11}\,ab^3d^7x^{11} + \frac{21}{10}\,b^4c^2d^5x^{10} + \frac{14}{5}\,ab^3cd^6x^{10} + \frac{3}{5}\,a^2b^2d^7x^{10} + \frac{35}{9}\,b^4c^3d^4x^9 + \frac{28}{3}\,ab^3c^2d^5x^9 + \frac{14}{3}\,a^2b^2cd^6x^9 + \frac{4}{9}\,a^3bd^7x^9 + \frac{35}{8}\,b^4c^4d^3x^8 + \frac{35}{2}\,ab^3c^3d^4x^8 + \frac{63}{4}\,a^2b^2c^2d^5x^8 + \frac{7}{2}\,a^3bcd^6x^8 + \frac{1}{8}\,a^4d^7x^8 + 3\,b^4c^5d^2x^7 + 20\,ab^3c^4d^3x^7 + 30\,a^2b^2c^3d^4x^7 + 12\,a^3bc^2d^5x^7 + a^4cd^6x^7 + \frac{7}{6}\,b^4c^6dx^6 + 14\,ab^3c^5d^2x^6 + 35\,a^2b^2c^4d^3x^6 + \frac{70}{3}\,a^3bc^3d^4x^6 + \frac{7}{2}\,a^4c^2d^5x^6 + \frac{1}{5}\,b^4c^7x^5 + \frac{28}{5}\,ab^3c^6dx^5 + \frac{126}{5}\,a^2b^2c^5d^2x^5 + 28\,a^3bc^4d^3x^5 + 7\,a^4c^3d^4x^5 + ab^3c^7x^4 + \frac{21}{2}\,a^2b^2c^6dx^4 + 21\,a^3bc^5d^2x^4 + \frac{35}{4}\,a^4c^4d^3x^4 + 2\,a^2b^2c^7x^3 + \frac{28}{3}\,a^3bc^6dx^3 + 7\,a^4c^5d^2x^3 + 2\,a^3bc^7x^2 + \frac{7}{2}\,a^4c^6dx^2 + a^4c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/12*b^4*d^7*x^12 + 7/11*b^4*c*d^6*x^11 + 4/11*a*b^3*d^7*x^11 + 2
1/10*b^4*c^2*d^5*x^10 + 14/5*a*b^3*c*d^6*x^10 + 3/5*a^2*b^2*d^7*x
^10 + 35/9*b^4*c^3*d^4*x^9 + 28/3*a*b^3*c^2*d^5*x^9 + 14/3*a^2*b^
2*c*d^6*x^9 + 4/9*a^3*b*d^7*x^9 + 35/8*b^4*c^4*d^3*x^8 + 35/2*a*b
^3*c^3*d^4*x^8 + 63/4*a^2*b^2*c^2*d^5*x^8 + 7/2*a^3*b*c*d^6*x^8 +
 1/8*a^4*d^7*x^8 + 3*b^4*c^5*d^2*x^7 + 20*a*b^3*c^4*d^3*x^7 + 30*
a^2*b^2*c^3*d^4*x^7 + 12*a^3*b*c^2*d^5*x^7 + a^4*c*d^6*x^7 + 7/6*
b^4*c^6*d*x^6 + 14*a*b^3*c^5*d^2*x^6 + 35*a^2*b^2*c^4*d^3*x^6 + 7
0/3*a^3*b*c^3*d^4*x^6 + 7/2*a^4*c^2*d^5*x^6 + 1/5*b^4*c^7*x^5 + 2
8/5*a*b^3*c^6*d*x^5 + 126/5*a^2*b^2*c^5*d^2*x^5 + 28*a^3*b*c^4*d^
3*x^5 + 7*a^4*c^3*d^4*x^5 + a*b^3*c^7*x^4 + 21/2*a^2*b^2*c^6*d*x^
4 + 21*a^3*b*c^5*d^2*x^4 + 35/4*a^4*c^4*d^3*x^4 + 2*a^2*b^2*c^7*x
^3 + 28/3*a^3*b*c^6*d*x^3 + 7*a^4*c^5*d^2*x^3 + 2*a^3*b*c^7*x^2 +
 7/2*a^4*c^6*d*x^2 + a^4*c^7*x
```

3.1279 $\int (a+bx)^3(c+dx)^7\,dx$

Optimal. Leaf size=92

$$-\frac{3b^2(c+dx)^{10}(bc-ad)}{10d^4}+\frac{b(c+dx)^9(bc-ad)^2}{3d^4}-\frac{(c+dx)^8(bc-ad)^3}{8d^4}+\frac{b^3(c+dx)^{11}}{11d^4}$$

```
[Out] -((b*c - a*d)^3*(c + d*x)^8)/(8*d^4) + (b*(b*c - a*d)^2*(c + d*x)
^9)/(3*d^4) - (3*b^2*(b*c - a*d)*(c + d*x)^10)/(10*d^4) + (b^3*(c
 + d*x)^11)/(11*d^4)
```

Rubi [A] time = 0.408671, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{3b^2(c+dx)^{10}(bc-ad)}{10d^4}+\frac{b(c+dx)^9(bc-ad)^2}{3d^4}-\frac{(c+dx)^8(bc-ad)^3}{8d^4}+\frac{b^3(c+dx)^{11}}{11d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^7,x]
```

```
[Out] -((b*c - a*d)^3*(c + d*x)^8)/(8*d^4) + (b*(b*c - a*d)^2*(c + d*x)
^9)/(3*d^4) - (3*b^2*(b*c - a*d)*(c + d*x)^10)/(10*d^4) + (b^3*(c
 + d*x)^11)/(11*d^4)
```

Rubi in Sympy [A] time = 39.0861, size = 80, normalized size = 0.87

$$\frac{b^3\left(c+dx\right)^{11}}{11d^4}+\frac{3b^2\left(c+dx\right)^{10}\left(ad-bc\right)}{10d^4}+\frac{b\left(c+dx\right)^9\left(ad-bc\right)^2}{3d^4}+\frac{\left(c+dx\right)^8\left(ad-bc\right)^3}{8d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**7,x)
```

```
[Out] b**3*(c + d*x)**11/(11*d**4) + 3*b**2*(c + d*x)**10*(a*d - b*c)/(
10*d**4) + b*(c + d*x)**9*(a*d - b*c)**2/(3*d**4) + (c + d*x)**8*
(a*d - b*c)**3/(8*d**4)
```

Mathematica [B] time = 0.0762292, size = 360, normalized size = 3.91

$$a^3c^7x+\frac{1}{3}bd^5x^9\left(a^2d^2+7abcd+7b^2c^2\right)+ac^5x^3\left(7a^2d^2+7abcd+b^2c^2\right)+\frac{1}{2}a^2c^6x^2(7ad+3bc)+cd^3x^7\left(a^3d^3+9a^2bcd^2+15ab^2c^2d+5b^3c^3\right)+\frac{7}{2}c^2d^2x^6\left(a^3d^3+5a^2bcd^2+5ab^2c^2d+b^3c^3\right)+\frac{7}{5}c^3dx^5\left(5a^3d^3+15a^2bcd^2+9ab^2c^2d+b^3c^3\right)+\frac{1}{8}d^4x^8\left(a^3d^3+21a^2bcd^2+63ab^2c^2d+35b^3c^3\right)+\frac{1}{4}c^4x^4\left(35a^3d^3+63a^2bcd^2+21ab^2c^2d+b^3c^3\right)+\frac{1}{10}b^2d^6x^{10}(3ad+7bc)+\frac{1}{11}b^3d^7x^{11}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^7,x]
```

```
[Out] a^3*c^7*x + (a^2*c^6*(3*b*c + 7*a*d)*x^2)/2 + a*c^5*(b^2*c^2 + 7*
a*b*c*d + 7*a^2*d^2)*x^3 + (c^4*(b^3*c^3 + 21*a*b^2*c^2*d + 63*a^
2*b*c*d^2 + 35*a^3*d^3)*x^4)/4 + (7*c^3*d*(b^3*c^3 + 9*a*b^2*c^2*
d + 15*a^2*b*c*d^2 + 5*a^3*d^3)*x^5)/5 + (7*c^2*d^2*(b^3*c^3 + 5*
a*b^2*c^2*d + 5*a^2*b*c*d^2 + a^3*d^3)*x^6)/2 + c*d^3*(5*b^3*c^3
+ 15*a*b^2*c^2*d + 9*a^2*b*c*d^2 + a^3*d^3)*x^7 + (d^4*(35*b^3*c^
3 + 63*a*b^2*c^2*d + 21*a^2*b*c*d^2 + a^3*d^3)*x^8)/8 + (b*d^5*(7
*b^2*c^2 + 7*a*b*c*d + a^2*d^2)*x^9)/3 + (b^2*d^6*(7*b*c + 3*a*d)
*x^10)/10 + (b^3*d^7*x^11)/11
```

Maple [B] time = 0.002, size = 385, normalized size = 4.2

$$\frac{b^3d^7x^{11}}{11}+\frac{\left(3\,ab^2d^7+7\,b^3cd^6\right)x^{10}}{10}+\frac{\left(3\,a^2bd^7+21\,ab^2cd^6+21\,b^3c^2d^5\right)x^9}{9}+\frac{\left(a^3d^7+21\,a^2bcd^6+63\,ab^2c^2d^5+35\,b^3c^3d^4\right)x^8}{8}+\frac{\left(7\,a^3cd^6+63\,a^2bc^2d^5+105\,ab^2c^3d^4+35\,b^3c^4d^3\right)x^7}{7}+\frac{\left(21\,a^3c^2d^5+105\,a^2bc^3d^4+105\,ab^2c^4d^3+21\,b^3c^5d^2\right)x^6}{6}+\frac{\left(35\,a^3c^3d^4+105\,a^2bc^4d^3+63\,ab^2c^5d^2+7\,b^3c^6d\right)x^5}{5}+\frac{\left(35\,a^3c^4d^3+63\,a^2bc^5d^2+21\,ab^2c^6d+b^3c^7\right)x^4}{4}+\frac{\left(21\,a^3c^5d^2+21\,a^2bc^6d+3\,ab^2c^7\right)x^3}{3}+\frac{\left(7\,a^3c^6d+3\,a^2bc^7\right)x^2}{2}+a^3c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^7,x)
```

```
[Out] 1/11*b^3*d^7*x^11+1/10*(3*a*b^2*d^7+7*b^3*c*d^6)*x^10+1/9*(3*a^2*
b*d^7+21*a*b^2*c*d^6+21*b^3*c^2*d^5)*x^9+1/8*(a^3*d^7+21*a^2*b*c*
```

```
d^6+63*a*b^2*c^2*d^5+35*b^3*c^3*d^4)*x^8+1/7*(7*a^3*c*d^6+63*a^2*
b*c^2*d^5+105*a*b^2*c^3*d^4+35*b^3*c^4*d^3)*x^7+1/6*(21*a^3*c^2*d
^5+105*a^2*b*c^3*d^4+105*a*b^2*c^4*d^3+21*b^3*c^5*d^2)*x^6+1/5*(3
5*a^3*c^3*d^4+105*a^2*b*c^4*d^3+63*a*b^2*c^5*d^2+7*b^3*c^6*d)*x^5
+1/4*(35*a^3*c^4*d^3+63*a^2*b*c^5*d^2+21*a*b^2*c^6*d+b^3*c^7)*x^4
+1/3*(21*a^3*c^5*d^2+21*a^2*b*c^6*d+3*a*b^2*c^7)*x^3+1/2*(7*a^3*c
^6*d+3*a^2*b*c^7)*x^2+a^3*c^7*x
```

Maxima [A] time = 1.35881, size = 508, normalized size = 5.52

$$\frac{1}{11}\,b^3d^7x^{11}+a^3c^7x+\frac{1}{10}\left(7\,b^3cd^6+3\,ab^2d^7\right)x^{10}+\frac{1}{3}\left(7\,b^3c^2d^5+7\,ab^2cd^6+a^2bd^7\right)x^9+\frac{1}{8}\left(35\,b^3c^3d^4+63\,ab^2c^2d^5+21\,a^2bcd^6+a^3d^7\right)x^8+\left(5\,b^3c^4d^3+15\,ab^2c^3d^4+9\,a^2bc^2d^5+a^3cd^6\right)x^7+\frac{7}{2}\left(b^3c^5d^2+5\,ab^2c^4d^3+5\,a^2bc^3d^4+a^3c^2d^5\right)x^6+\frac{7}{5}\left(b^3c^6d+9\,ab^2c^5d^2+15\,a^2bc^4d^3+5\,a^3c^3d^4\right)x^5+\frac{1}{4}\left(b^3c^7+21\,ab^2c^6d+63\,a^2bc^5d^2+35\,a^3c^4d^3\right)x^4+\left(ab^2c^7+7\,a^2bc^6d+7\,a^3c^5d^2\right)x^3+\frac{1}{2}\left(3\,a^2bc^7+7\,a^3c^6d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/11*b^3*d^7*x^11 + a^3*c^7*x + 1/10*(7*b^3*c*d^6 + 3*a*b^2*d^7)*
x^10 + 1/3*(7*b^3*c^2*d^5 + 7*a*b^2*c*d^6 + a^2*b*d^7)*x^9 + 1/8*
(35*b^3*c^3*d^4 + 63*a*b^2*c^2*d^5 + 21*a^2*b*c*d^6 + a^3*d^7)*x^
8 + (5*b^3*c^4*d^3 + 15*a*b^2*c^3*d^4 + 9*a^2*b*c^2*d^5 + a^3*c*d
^6)*x^7 + 7/2*(b^3*c^5*d^2 + 5*a*b^2*c^4*d^3 + 5*a^2*b*c^3*d^4 +
a^3*c^2*d^5)*x^6 + 7/5*(b^3*c^6*d + 9*a*b^2*c^5*d^2 + 15*a^2*b*c^
4*d^3 + 5*a^3*c^3*d^4)*x^5 + 1/4*(b^3*c^7 + 21*a*b^2*c^6*d + 63*a
^2*b*c^5*d^2 + 35*a^3*c^4*d^3)*x^4 + (a*b^2*c^7 + 7*a^2*b*c^6*d +
 7*a^3*c^5*d^2)*x^3 + 1/2*(3*a^2*b*c^7 + 7*a^3*c^6*d)*x^2
```

Fricas [A] time = 0.189904, size = 1, normalized size = 0.01

$$\frac{1}{11}x^{11}d^7b^3+\frac{7}{10}x^{10}d^6cb^3+\frac{3}{10}x^{10}d^7b^2a+\frac{7}{3}x^9d^5c^2b^3+\frac{7}{3}x^9d^6cb^2a+\frac{1}{3}x^9d^7ba^2+\frac{35}{8}x^8d^4c^3b^3+\frac{63}{8}x^8d^5c^2b^2a+\frac{21}{8}x^8d^6cba^2+\frac{1}{8}x^8d^7a^3+5x^7d^3c^4b^3+15x^7d^4c^3b^2a+9x^7d^5c^2ba^2+x^7d^6ca^3+\frac{7}{2}x^6d^2c^5b^3+\frac{35}{2}x^6d^3c^4b^2a+\frac{35}{2}x^6d^4c^3ba^2+\frac{7}{2}x^6d^5c^2a^3+\frac{7}{5}x^5dc^6b^3+\frac{63}{5}x^5d^2c^5b^2a+21x^5d^3c^4ba^2+7x^5d^4c^3a^3+\frac{1}{4}x^4c^7b^3+\frac{21}{4}x^4dc^6b^2a+\frac{63}{4}x^4d^2c^5ba^2+\frac{35}{4}x^4d^3c^4a^3+x^3c^7b^2a+7x^3dc^6ba^2+7x^3d^2c^5a^3+\frac{3}{2}x^2c^7ba^2+\frac{7}{2}x^2dc^6a^3+xc^7a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*d^7*b^3 + 7/10*x^10*d^6*c*b^3 + 3/10*x^10*d^7*b^2*a + 7
/3*x^9*d^5*c^2*b^3 + 7/3*x^9*d^6*c*b^2*a + 1/3*x^9*d^7*b*a^2 + 35
/8*x^8*d^4*c^3*b^3 + 63/8*x^8*d^5*c^2*b^2*a + 21/8*x^8*d^6*c*b*a^
2 + 1/8*x^8*d^7*a^3 + 5*x^7*d^3*c^4*b^3 + 15*x^7*d^4*c^3*b^2*a +
9*x^7*d^5*c^2*b*a^2 + x^7*d^6*c*a^3 + 7/2*x^6*d^2*c^5*b^3 + 35/2*
x^6*d^3*c^4*b^2*a + 35/2*x^6*d^4*c^3*b*a^2 + 7/2*x^6*d^5*c^2*a^3
+ 7/5*x^5*d*c^6*b^3 + 63/5*x^5*d^2*c^5*b^2*a + 21*x^5*d^3*c^4*b*a
^2 + 7*x^5*d^4*c^3*a^3 + 1/4*x^4*c^7*b^3 + 21/4*x^4*d*c^6*b^2*a +
 63/4*x^4*d^2*c^5*b*a^2 + 35/4*x^4*d^3*c^4*a^3 + x^3*c^7*b^2*a +
7*x^3*d*c^6*b*a^2 + 7*x^3*d^2*c^5*a^3 + 3/2*x^2*c^7*b*a^2 + 7/2*x
^2*d*c^6*a^3 + x*c^7*a^3
```

Sympy [A] time = 0.271954, size = 427, normalized size = 4.64

$$a^{3}c^{7}x + \frac{b^{3}d^{7}x^{11}}{11} + x^{10}\left(\frac{3ab^{2}d^{7}}{10} + \frac{7b^{3}cd^{6}}{10}\right) + x^{9}\left(\frac{a^{2}bd^{7}}{3} + \frac{7ab^{2}cd^{6}}{3} + \frac{7b^{3}c^{2}d^{5}}{3}\right) + x^{8}\left(\frac{a^{3}d^{7}}{8} + \frac{21a^{2}bcd^{6}}{8} + \frac{63ab^{2}c^{2}d^{5}}{8} + \frac{35b^{3}c^{3}d^{4}}{8}\right) + x^{7}\left(a^{3}cd^{6} + 9a^{2}bc^{2}d^{5} + 15ab^{2}c^{3}d^{4} + 5b^{3}c^{4}d^{3}\right) + x^{6}\left(\frac{7a^{3}c^{2}d^{5}}{2} + \frac{35a^{2}bc^{3}d^{4}}{2} + \frac{35ab^{2}c^{4}d^{3}}{2} + \frac{7b^{3}c^{5}d^{2}}{2}\right) + x^{5}\left(7a^{3}c^{3}d^{4} + 21a^{2}bc^{4}d^{3} + \frac{63ab^{2}c^{5}d^{2}}{5} + \frac{7b^{3}c^{6}d}{5}\right) + x^{4}\left(\frac{35a^{3}c^{4}d^{3}}{4} + \frac{63a^{2}bc^{5}d^{2}}{4} + \frac{21ab^{2}c^{6}d}{4} + \frac{b^{3}c^{7}}{4}\right) + x^{3}\left(7a^{3}c^{5}d^{2} + 7a^{2}bc^{6}d + ab^{2}c^{7}\right) + x^{2}\left(\frac{7a^{3}c^{6}d}{2} + \frac{3a^{2}bc^{7}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**7,x)
```

```
[Out] a**3*c**7*x + b**3*d**7*x**11/11 + x**10*(3*a*b**2*d**7/10 + 7*b*
*3*c*d**6/10) + x**9*(a**2*b*d**7/3 + 7*a*b**2*c*d**6/3 + 7*b**3*
c**2*d**5/3) + x**8*(a**3*d**7/8 + 21*a**2*b*c*d**6/8 + 63*a*b**2
*c**2*d**5/8 + 35*b**3*c**3*d**4/8) + x**7*(a**3*c*d**6 + 9*a**2*
b*c**2*d**5 + 15*a*b**2*c**3*d**4 + 5*b**3*c**4*d**3) + x**6*(7*a
**3*c**2*d**5/2 + 35*a**2*b*c**3*d**4/2 + 35*a*b**2*c**4*d**3/2 +
 7*b**3*c**5*d**2/2) + x**5*(7*a**3*c**3*d**4 + 21*a**2*b*c**4*d*
*3 + 63*a*b**2*c**5*d**2/5 + 7*b**3*c**6*d/5) + x**4*(35*a**3*c**
4*d**3/4 + 63*a**2*b*c**5*d**2/4 + 21*a*b**2*c**6*d/4 + b**3*c**7
/4) + x**3*(7*a**3*c**5*d**2 + 7*a**2*b*c**6*d + a*b**2*c**7) + x
**2*(7*a**3*c**6*d/2 + 3*a**2*b*c**7/2)
```

GIAC/XCAS [A] time = 0.217043, size = 567, normalized size = 6.16

$$\frac{1}{11}\,b^3d^7x^{11}+\frac{7}{10}\,b^3cd^6x^{10}+\frac{3}{10}\,ab^2d^7x^{10}+\frac{7}{3}\,b^3c^2d^5x^9+\frac{7}{3}\,ab^2cd^6x^9+\frac{1}{3}\,a^2bd^7x^9+\frac{35}{8}\,b^3c^3d^4x^8+\frac{63}{8}\,ab^2c^2d^5x^8+\frac{21}{8}\,a^2bcd^6x^8+\frac{1}{8}\,a^3d^7x^8+5\,b^3c^4d^3x^7+15\,ab^2c^3d^4x^7+9\,a^2bc^2d^5x^7+a^3cd^6x^7+\frac{7}{2}\,b^3c^5d^2x^6+\frac{35}{2}\,ab^2c^4d^3x^6+\frac{35}{2}\,a^2bc^3d^4x^6+\frac{7}{2}\,a^3c^2d^5x^6+\frac{7}{5}\,b^3c^6dx^5+\frac{63}{5}\,ab^2c^5d^2x^5+21\,a^2bc^4d^3x^5+7\,a^3c^3d^4x^5+\frac{1}{4}\,b^3c^7x^4+\frac{21}{4}\,ab^2c^6dx^4+\frac{63}{4}\,a^2bc^5d^2x^4+\frac{35}{4}\,a^3c^4d^3x^4+ab^2c^7x^3+7\,a^2bc^6dx^3+7\,a^3c^5d^2x^3+\frac{3}{2}\,a^2bc^7x^2+\frac{7}{2}\,a^3c^6dx^2+a^3c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/11*b^3*d^7*x^11 + 7/10*b^3*c*d^6*x^10 + 3/10*a*b^2*d^7*x^10 + 7
/3*b^3*c^2*d^5*x^9 + 7/3*a*b^2*c*d^6*x^9 + 1/3*a^2*b*d^7*x^9 + 35
/8*b^3*c^3*d^4*x^8 + 63/8*a*b^2*c^2*d^5*x^8 + 21/8*a^2*b*c*d^6*x^
8 + 1/8*a^3*d^7*x^8 + 5*b^3*c^4*d^3*x^7 + 15*a*b^2*c^3*d^4*x^7 +
9*a^2*b*c^2*d^5*x^7 + a^3*c*d^6*x^7 + 7/2*b^3*c^5*d^2*x^6 + 35/2*
a*b^2*c^4*d^3*x^6 + 35/2*a^2*b*c^3*d^4*x^6 + 7/2*a^3*c^2*d^5*x^6
+ 7/5*b^3*c^6*d*x^5 + 63/5*a*b^2*c^5*d^2*x^5 + 21*a^2*b*c^4*d^3*x
^5 + 7*a^3*c^3*d^4*x^5 + 1/4*b^3*c^7*x^4 + 21/4*a*b^2*c^6*d*x^4 +
 63/4*a^2*b*c^5*d^2*x^4 + 35/4*a^3*c^4*d^3*x^4 + a*b^2*c^7*x^3 +
7*a^2*b*c^6*d*x^3 + 7*a^3*c^5*d^2*x^3 + 3/2*a^2*b*c^7*x^2 + 7/2*a
^3*c^6*d*x^2 + a^3*c^7*x
```

3.1280 $\int (a+bx)^2(c+dx)^7\,dx$

Optimal. Leaf size=65

$$-\frac{2b(c+dx)^9(bc-ad)}{9d^3}+\frac{(c+dx)^8(bc-ad)^2}{8d^3}+\frac{b^2(c+dx)^{10}}{10d^3}$$

```
[Out] ((b*c - a*d)^2*(c + d*x)^8)/(8*d^3) - (2*b*(b*c - a*d)*(c + d*x)^
9)/(9*d^3) + (b^2*(c + d*x)^10)/(10*d^3)
```

Rubi [A] time = 0.308068, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2b(c+dx)^9(bc-ad)}{9d^3}+\frac{(c+dx)^8(bc-ad)^2}{8d^3}+\frac{b^2(c+dx)^{10}}{10d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^7,x]
```

```
[Out] ((b*c - a*d)^2*(c + d*x)^8)/(8*d^3) - (2*b*(b*c - a*d)*(c + d*x)^
9)/(9*d^3) + (b^2*(c + d*x)^10)/(10*d^3)
```

Rubi in Sympy [A] time = 30.5033, size = 56, normalized size = 0.86

$$\frac{b^2\left(c+dx\right)^{10}}{10d^3}+\frac{2b\left(c+dx\right)^9\left(ad-bc\right)}{9d^3}+\frac{\left(c+dx\right)^8\left(ad-bc\right)^2}{8d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**7,x)
```

```
[Out] b**2*(c + d*x)**10/(10*d**3) + 2*b*(c + d*x)**9*(a*d - b*c)/(9*d*
*3) + (c + d*x)**8*(a*d - b*c)**2/(8*d**3)
```

Mathematica [B] time = 0.0524055, size = 261, normalized size = 4.02

$$\frac{1}{8}d^5x^8\left(a^2d^2+14abcd+21b^2c^2\right)+cd^4x^7\left(a^2d^2+6abcd+5b^2c^2\right)+\frac{7}{6}c^2d^3x^6\left(3a^2d^2+10abcd+5b^2c^2\right)+\frac{1}{3}c^5x^3\left(21a^2d^2+14abcd+b^2c^2\right)+\frac{7}{4}c^4dx^4\left(5a^2d^2+6abcd+b^2c^2\right)+\frac{7}{5}c^3d^2x^5\left(5a^2d^2+10abcd+3b^2c^2\right)+a^2c^7x+\frac{1}{2}ac^6x^2(7ad+2bc)+\frac{1}{9}bd^6x^9(2ad+7bc)+\frac{1}{10}b^2d^7x^{10}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^7,x]
```

```
[Out] a^2*c^7*x + (a*c^6*(2*b*c + 7*a*d)*x^2)/2 + (c^5*(b^2*c^2 + 14*a*
b*c*d + 21*a^2*d^2)*x^3)/3 + (7*c^4*d*(b^2*c^2 + 6*a*b*c*d + 5*a^
2*d^2)*x^4)/4 + (7*c^3*d^2*(3*b^2*c^2 + 10*a*b*c*d + 5*a^2*d^2)*x
^5)/5 + (7*c^2*d^3*(5*b^2*c^2 + 10*a*b*c*d + 3*a^2*d^2)*x^6)/6 +
c*d^4*(5*b^2*c^2 + 6*a*b*c*d + a^2*d^2)*x^7 + (d^5*(21*b^2*c^2 +
14*a*b*c*d + a^2*d^2)*x^8)/8 + (b*d^6*(7*b*c + 2*a*d)*x^9)/9 + (b
^2*d^7*x^10)/10
```

Maple [B] time = 0.001, size = 277, normalized size = 4.3

$$\frac{b^2d^7x^{10}}{10}+\frac{\left(2\,abd^7+7\,b^2cd^6\right)x^9}{9}+\frac{\left(a^2d^7+14\,abcd^6+21\,b^2c^2d^5\right)x^8}{8}+\frac{\left(7\,a^2cd^6+42\,abc^2d^5+35\,b^2c^3d^4\right)x^7}{7}+\frac{\left(21\,a^2c^2d^5+70\,abc^3d^4+35\,b^2c^4d^3\right)x^6}{6}+\frac{\left(35\,a^2c^3d^4+70\,abc^4d^3+21\,b^2c^5d^2\right)x^5}{5}+\frac{\left(35\,a^2c^4d^3+42\,abc^5d^2+7\,b^2c^6d\right)x^4}{4}+\frac{\left(21\,a^2c^5d^2+14\,abc^6d+b^2c^7\right)x^3}{3}+\frac{\left(7\,a^2c^6d+2\,abc^7\right)x^2}{2}+a^2c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^7,x)
```

```
[Out] 1/10*b^2*d^7*x^10+1/9*(2*a*b*d^7+7*b^2*c*d^6)*x^9+1/8*(a^2*d^7+14
*a*b*c*d^6+21*b^2*c^2*d^5)*x^8+1/7*(7*a^2*c*d^6+42*a*b*c^2*d^5+35
*b^2*c^3*d^4)*x^7+1/6*(21*a^2*c^2*d^5+70*a*b*c^3*d^4+35*b^2*c^4*d
^3)*x^6+1/5*(35*a^2*c^3*d^4+70*a*b*c^4*d^3+21*b^2*c^5*d^2)*x^5+1/
4*(35*a^2*c^4*d^3+42*a*b*c^5*d^2+7*b^2*c^6*d)*x^4+1/3*(21*a^2*c^5
*d^2+14*a*b*c^6*d+b^2*c^7)*x^3+1/2*(7*a^2*c^6*d+2*a*b*c^7)*x^2+a^
2*c^7*x
```

Maxima [A] time = 1.33362, size = 369, normalized size = 5.68

$$\frac{1}{10}\,b^2d^7x^{10}+a^2c^7x+\frac{1}{9}\left(7\,b^2cd^6+2\,abd^7\right)x^9+\frac{1}{8}\left(21\,b^2c^2d^5+14\,abcd^6+a^2d^7\right)x^8+\left(5\,b^2c^3d^4+6\,abc^2d^5+a^2cd^6\right)x^7+\frac{7}{6}\left(5\,b^2c^4d^3+10\,abc^3d^4+3\,a^2c^2d^5\right)x^6+\frac{7}{5}\left(3\,b^2c^5d^2+10\,abc^4d^3+5\,a^2c^3d^4\right)x^5+\frac{7}{4}\left(b^2c^6d+6\,abc^5d^2+5\,a^2c^4d^3\right)x^4+\frac{1}{3}\left(b^2c^7+14\,abc^6d+21\,a^2c^5d^2\right)x^3+\frac{1}{2}\left(2\,abc^7+7\,a^2c^6d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/10*b^2*d^7*x^10 + a^2*c^7*x + 1/9*(7*b^2*c*d^6 + 2*a*b*d^7)*x^9
 + 1/8*(21*b^2*c^2*d^5 + 14*a*b*c*d^6 + a^2*d^7)*x^8 + (5*b^2*c^3
*d^4 + 6*a*b*c^2*d^5 + a^2*c*d^6)*x^7 + 7/6*(5*b^2*c^4*d^3 + 10*a
*b*c^3*d^4 + 3*a^2*c^2*d^5)*x^6 + 7/5*(3*b^2*c^5*d^2 + 10*a*b*c^4
*d^3 + 5*a^2*c^3*d^4)*x^5 + 7/4*(b^2*c^6*d + 6*a*b*c^5*d^2 + 5*a^
2*c^4*d^3)*x^4 + 1/3*(b^2*c^7 + 14*a*b*c^6*d + 21*a^2*c^5*d^2)*x^
3 + 1/2*(2*a*b*c^7 + 7*a^2*c^6*d)*x^2
```

Fricas [A] time = 0.184473, size = 1, normalized size = 0.02

$$\frac{1}{10}x^{10}d^7b^2 + \frac{7}{9}x^9d^6cb^2 + \frac{2}{9}x^9d^7ba + \frac{21}{8}x^8d^5c^2b^2 + \frac{7}{4}x^8d^6cba + \frac{1}{8}x^8d^7a^2 + 5x^7d^4c^3b^2 + 6x^7d^5c^2ba + x^7d^6ca^2 + \frac{35}{6}x^6d^3c^4b^2 + \frac{35}{3}x^6d^4c^3ba + \frac{7}{2}x^6d^5c^2a^2 + \frac{21}{5}x^5d^2c^5b^2 + 14x^5d^3c^4ba + 7x^5d^4c^3a^2 + \frac{7}{4}x^4dc^6b^2 + \frac{21}{2}x^4d^2c^5ba + \frac{35}{4}x^4d^3c^4a^2 + \frac{1}{3}x^3c^7b^2 + \frac{14}{3}x^3dc^6ba + 7x^3d^2c^5a^2 + x^2c^7ba + \frac{7}{2}x^2dc^6a^2 + xc^7a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*d^7*b^2 + 7/9*x^9*d^6*c*b^2 + 2/9*x^9*d^7*b*a + 21/8*x^
8*d^5*c^2*b^2 + 7/4*x^8*d^6*c*b*a + 1/8*x^8*d^7*a^2 + 5*x^7*d^4*c
^3*b^2 + 6*x^7*d^5*c^2*b*a + x^7*d^6*c*a^2 + 35/6*x^6*d^3*c^4*b^2
 + 35/3*x^6*d^4*c^3*b*a + 7/2*x^6*d^5*c^2*a^2 + 21/5*x^5*d^2*c^5*
b^2 + 14*x^5*d^3*c^4*b*a + 7*x^5*d^4*c^3*a^2 + 7/4*x^4*d*c^6*b^2
+ 21/2*x^4*d^2*c^5*b*a + 35/4*x^4*d^3*c^4*a^2 + 1/3*x^3*c^7*b^2 +
 14/3*x^3*d*c^6*b*a + 7*x^3*d^2*c^5*a^2 + x^2*c^7*b*a + 7/2*x^2*d
*c^6*a^2 + x*c^7*a^2
```

Sympy [A] time = 0.22705, size = 303, normalized size = 4.66

$$a^2c^7x + \frac{b^2d^7x^{10}}{10} + x^9\left(\frac{2abd^7}{9} + \frac{7b^2cd^6}{9}\right) + x^8\left(\frac{a^2d^7}{8} + \frac{7abcd^6}{4} + \frac{21b^2c^2d^5}{8}\right) + x^7\left(a^2cd^6 + 6abc^2d^5 + 5b^2c^3d^4\right) + x^6\left(\frac{7a^2c^2d^5}{2} + \frac{35abc^3d^4}{3} + \frac{35b^2c^4d^3}{6}\right) + x^5\left(7a^2c^3d^4 + 14abc^4d^3 + \frac{21b^2c^5d^2}{5}\right) + x^4\left(\frac{35a^2c^4d^3}{4} + \frac{21abc^5d^2}{2} + \frac{7b^2c^6d}{4}\right) + x^3\left(7a^2c^5d^2 + \frac{14abc^6d}{3} + \frac{b^2c^7}{3}\right) + x^2\left(\frac{7a^2c^6d}{2} + abc^7\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**7,x)
```

```
[Out] a**2*c**7*x + b**2*d**7*x**10/10 + x**9*(2*a*b*d**7/9 + 7*b**2*c*
d**6/9) + x**8*(a**2*d**7/8 + 7*a*b*c*d**6/4 + 21*b**2*c**2*d**5/
8) + x**7*(a**2*c*d**6 + 6*a*b*c**2*d**5 + 5*b**2*c**3*d**4) + x*
*6*(7*a**2*c**2*d**5/2 + 35*a*b*c**3*d**4/3 + 35*b**2*c**4*d**3/6
) + x**5*(7*a**2*c**3*d**4 + 14*a*b*c**4*d**3 + 21*b**2*c**5*d**2
/5) + x**4*(35*a**2*c**4*d**3/4 + 21*a*b*c**5*d**2/2 + 7*b**2*c**
6*d/4) + x**3*(7*a**2*c**5*d**2 + 14*a*b*c**6*d/3 + b**2*c**7/3)
+ x**2*(7*a**2*c**6*d/2 + a*b*c**7)
```

GIAC/XCAS [A] time = 0.219244, size = 397, normalized size = 6.11

$$\frac{1}{10}\,b^2d^7x^{10}+\frac{7}{9}\,b^2cd^6x^9+\frac{2}{9}\,abd^7x^9+\frac{21}{8}\,b^2c^2d^5x^8+\frac{7}{4}\,abcd^6x^8+\frac{1}{8}\,a^2d^7x^8+5\,b^2c^3d^4x^7+6\,abc^2d^5x^7+a^2cd^6x^7+\frac{35}{6}\,b^2c^4d^3x^6+\frac{35}{3}\,abc^3d^4x^6+\frac{7}{2}\,a^2c^2d^5x^6+\frac{21}{5}\,b^2c^5d^2x^5+14\,abc^4d^3x^5+7\,a^2c^3d^4x^5+\frac{7}{4}\,b^2c^6dx^4+\frac{21}{2}\,abc^5d^2x^4+\frac{35}{4}\,a^2c^4d^3x^4+\frac{1}{3}\,b^2c^7x^3+\frac{14}{3}\,abc^6dx^3+7\,a^2c^5d^2x^3+abc^7x^2+\frac{7}{2}\,a^2c^6dx^2+a^2c^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/10*b^2*d^7*x^10 + 7/9*b^2*c*d^6*x^9 + 2/9*a*b*d^7*x^9 + 21/8*b^
2*c^2*d^5*x^8 + 7/4*a*b*c*d^6*x^8 + 1/8*a^2*d^7*x^8 + 5*b^2*c^3*d
^4*x^7 + 6*a*b*c^2*d^5*x^7 + a^2*c*d^6*x^7 + 35/6*b^2*c^4*d^3*x^6
 + 35/3*a*b*c^3*d^4*x^6 + 7/2*a^2*c^2*d^5*x^6 + 21/5*b^2*c^5*d^2*
x^5 + 14*a*b*c^4*d^3*x^5 + 7*a^2*c^3*d^4*x^5 + 7/4*b^2*c^6*d*x^4
+ 21/2*a*b*c^5*d^2*x^4 + 35/4*a^2*c^4*d^3*x^4 + 1/3*b^2*c^7*x^3 +
 14/3*a*b*c^6*d*x^3 + 7*a^2*c^5*d^2*x^3 + a*b*c^7*x^2 + 7/2*a^2*c
^6*d*x^2 + a^2*c^7*x
```

3.1281 $\int (a+bx)(c+dx)^7\,dx$

Optimal. Leaf size=38

$$\frac{b(c+dx)^9}{9d^2}-\frac{(c+dx)^8(bc-ad)}{8d^2}$$

```
[Out] -((b*c - a*d)*(c + d*x)^8)/(8*d^2) + (b*(c + d*x)^9)/(9*d^2)
```

Rubi [A] time = 0.0472733, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{b(c+dx)^9}{9d^2}-\frac{(c+dx)^8(bc-ad)}{8d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^7,x]
```

```
[Out] -((b*c - a*d)*(c + d*x)^8)/(8*d^2) + (b*(c + d*x)^9)/(9*d^2)
```

Rubi in Sympy [A] time = 18.8744, size = 31, normalized size = 0.82

$$\frac{b\,(c+dx)^9}{9d^2}+\frac{(c+dx)^8\,(ad-bc)}{8d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**7,x)
```

```
[Out] b*(c + d*x)**9/(9*d**2) + (c + d*x)**8*(a*d - b*c)/(8*d**2)
```

Mathematica [B] time = 0.0276433, size = 151, normalized size = 3.97

$$\frac{1}{2}c^6x^2(7ad+bc)+\frac{7}{3}c^5dx^3(3ad+bc)+\frac{7}{4}c^4d^2x^4(5ad+3bc)+7c^3d^3x^5(ad+bc)+\frac{7}{6}c^2d^4x^6(3ad+5bc)+\frac{1}{8}d^6x^8(ad+7bc)+cd^5x^7(ad+3bc)+ac^7x+\frac{1}{9}bd^7x^9$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^7,x]
```

```
[Out] a*c^7*x + (c^6*(b*c + 7*a*d)*x^2)/2 + (7*c^5*d*(b*c + 3*a*d)*x^3)
/3 + (7*c^4*d^2*(3*b*c + 5*a*d)*x^4)/4 + 7*c^3*d^3*(b*c + a*d)*x^
5 + (7*c^2*d^4*(5*b*c + 3*a*d)*x^6)/6 + c*d^5*(3*b*c + a*d)*x^7 +
 (d^6*(7*b*c + a*d)*x^8)/8 + (b*d^7*x^9)/9
```

Maple [B] time = 0.003, size = 169, normalized size = 4.5

$$\frac{bd^7x^9}{9}+\frac{\left(ad^7+7\,bcd^6\right)x^8}{8}+\frac{\left(7\,acd^6+21\,bc^2d^5\right)x^7}{7}+\frac{\left(21\,ac^2d^5+35\,bc^3d^4\right)x^6}{6}+\frac{\left(35\,ac^3d^4+35\,bc^4d^3\right)x^5}{5}+\frac{\left(35\,ac^4d^3+21\,bc^5d^2\right)x^4}{4}+\frac{\left(21\,ac^5d^2+7\,bc^6d\right)x^3}{3}+\frac{\left(7\,ac^6d+bc^7\right)x^2}{2}+ac^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^7,x)
```

```
[Out] 1/9*b*d^7*x^9+1/8*(a*d^7+7*b*c*d^6)*x^8+1/7*(7*a*c*d^6+21*b*c^2*d
^5)*x^7+1/6*(21*a*c^2*d^5+35*b*c^3*d^4)*x^6+1/5*(35*a*c^3*d^4+35*
b*c^4*d^3)*x^5+1/4*(35*a*c^4*d^3+21*b*c^5*d^2)*x^4+1/3*(21*a*c^5*
d^2+7*b*c^6*d)*x^3+1/2*(7*a*c^6*d+b*c^7)*x^2+a*c^7*x
```

Maxima [A] time = 1.34474, size = 220, normalized size = 5.79

$$\frac{1}{9}\,bd^7x^9+ac^7x+\frac{1}{8}\left(7\,bcd^6+ad^7\right)x^8+\left(3\,bc^2d^5+acd^6\right)x^7+\frac{7}{6}\left(5\,bc^3d^4+3\,ac^2d^5\right)x^6+7\left(bc^4d^3+ac^3d^4\right)x^5+\frac{7}{4}\left(3\,bc^5d^2+5\,ac^4d^3\right)x^4+\frac{7}{3}\left(bc^6d+3\,ac^5d^2\right)x^3+\frac{1}{2}\left(bc^7+7\,ac^6d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/9*b*d^7*x^9 + a*c^7*x + 1/8*(7*b*c*d^6 + a*d^7)*x^8 + (3*b*c^2*
d^5 + a*c*d^6)*x^7 + 7/6*(5*b*c^3*d^4 + 3*a*c^2*d^5)*x^6 + 7*(b*c
^4*d^3 + a*c^3*d^4)*x^5 + 7/4*(3*b*c^5*d^2 + 5*a*c^4*d^3)*x^4 + 7
/3*(b*c^6*d + 3*a*c^5*d^2)*x^3 + 1/2*(b*c^7 + 7*a*c^6*d)*x^2
```

Fricas [A] time = 0.175705, size = 1, normalized size = 0.03

$$\frac{1}{9}x^9d^7b+\frac{7}{8}x^8d^6cb+\frac{1}{8}x^8d^7a+3x^7d^5c^2b+x^7d^6ca+\frac{35}{6}x^6d^4c^3b+\frac{7}{2}x^6d^5c^2a+7x^5d^3c^4b+7x^5d^4c^3a+\frac{21}{4}x^4d^2c^5b+\frac{35}{4}x^4d^3c^4a+\frac{7}{3}x^3dc^6b+7x^3d^2c^5a+\frac{1}{2}x^2c^7b+\frac{7}{2}x^2dc^6a+xc^7a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*d^7*b + 7/8*x^8*d^6*c*b + 1/8*x^8*d^7*a + 3*x^7*d^5*c^2*b
 + x^7*d^6*c*a + 35/6*x^6*d^4*c^3*b + 7/2*x^6*d^5*c^2*a + 7*x^5*d
^3*c^4*b + 7*x^5*d^4*c^3*a + 21/4*x^4*d^2*c^5*b + 35/4*x^4*d^3*c^
4*a + 7/3*x^3*d*c^6*b + 7*x^3*d^2*c^5*a + 1/2*x^2*c^7*b + 7/2*x^2
*d*c^6*a + x*c^7*a
```

Sympy [A] time = 0.178682, size = 178, normalized size = 4.68

$$ac^7x + \frac{bd^7x^9}{9} + x^8\left(\frac{ad^7}{8} + \frac{7bcd^6}{8}\right) + x^7\left(acd^6 + 3bc^2d^5\right) + x^6\left(\frac{7ac^2d^5}{2} + \frac{35bc^3d^4}{6}\right) + x^5\left(7ac^3d^4 + 7bc^4d^3\right) + x^4\left(\frac{35ac^4d^3}{4} + \frac{21bc^5d^2}{4}\right) + x^3\left(7ac^5d^2 + \frac{7bc^6d}{3}\right) + x^2\left(\frac{7ac^6d}{2} + \frac{bc^7}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**7,x)
```

```
[Out] a*c**7*x + b*d**7*x**9/9 + x**8*(a*d**7/8 + 7*b*c*d**6/8) + x**7*
(a*c*d**6 + 3*b*c**2*d**5) + x**6*(7*a*c**2*d**5/2 + 35*b*c**3*d*
*4/6) + x**5*(7*a*c**3*d**4 + 7*b*c**4*d**3) + x**4*(35*a*c**4*d*
*3/4 + 21*b*c**5*d**2/4) + x**3*(7*a*c**5*d**2 + 7*b*c**6*d/3) +
x**2*(7*a*c**6*d/2 + b*c**7/2)
```

GIAC/XCAS [A] time = 0.21844, size = 228, normalized size = 6.

$$\frac{1}{9}bd^7x^9 + \frac{7}{8}bcd^6x^8 + \frac{1}{8}ad^7x^8 + 3bc^2d^5x^7 + acd^6x^7 + \frac{35}{6}bc^3d^4x^6 + \frac{7}{2}ac^2d^5x^6 + 7bc^4d^3x^5 + 7ac^3d^4x^5 + \frac{21}{4}bc^5d^2x^4 + \frac{35}{4}ac^4d^3x^4 + \frac{7}{3}bc^6dx^3 + 7ac^5d^2x^3 + \frac{1}{2}bc^7x^2 + \frac{7}{2}ac^6dx^2 + ac^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/9*b*d^7*x^9 + 7/8*b*c*d^6*x^8 + 1/8*a*d^7*x^8 + 3*b*c^2*d^5*x^7
 + a*c*d^6*x^7 + 35/6*b*c^3*d^4*x^6 + 7/2*a*c^2*d^5*x^6 + 7*b*c^4
*d^3*x^5 + 7*a*c^3*d^4*x^5 + 21/4*b*c^5*d^2*x^4 + 35/4*a*c^4*d^3*
x^4 + 7/3*b*c^6*d*x^3 + 7*a*c^5*d^2*x^3 + 1/2*b*c^7*x^2 + 7/2*a*c
^6*d*x^2 + a*c^7*x
```

3.1282 $\int (c+dx)^7\,dx$

Optimal. Leaf size=14

$$\frac{(c+dx)^8}{8d}$$

```
[Out] (c + d*x)^8/(8*d)
```

Rubi [A] time = 0.00710682, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{(c+dx)^8}{8d}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^7,x]
```

```
[Out] (c + d*x)^8/(8*d)
```

Rubi in Sympy [A] time = 1.29931, size = 8, normalized size = 0.57

$$\frac{(c+dx)^8}{8d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**7,x)
```

```
[Out] (c + d*x)**8/(8*d)
```

Mathematica [A] time = 0.00147576, size = 14, normalized size = 1.

$$\frac{(c+dx)^8}{8d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^7,x]
```

```
[Out] (c + d*x)^8/(8*d)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$\frac{(dx+c)^8}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7,x)
```

```
[Out] 1/8*(d*x+c)^8/d
```

Maxima [A] time = 1.33371, size = 16, normalized size = 1.14

$$\frac{(dx+c)^8}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7,x, algorithm="maxima")
```

```
[Out] 1/8*(d*x + c)^8/d
```

Fricas [A] time = 0.177554, size = 1, normalized size = 0.07

$$\frac{1}{8}x^8d^7 + x^7d^6c + \frac{7}{2}x^6d^5c^2 + 7x^5d^4c^3 + \frac{35}{4}x^4d^3c^4 + 7x^3d^2c^5 + \frac{7}{2}x^2dc^6 + xc^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*d^7 + x^7*d^6*c + 7/2*x^6*d^5*c^2 + 7*x^5*d^4*c^3 + 35/4*
x^4*d^3*c^4 + 7*x^3*d^2*c^5 + 7/2*x^2*d*c^6 + x*c^7
```

Sympy [A] time = 0.114348, size = 83, normalized size = 5.93

$$c^7x + \frac{7c^6dx^2}{2} + 7c^5d^2x^3 + \frac{35c^4d^3x^4}{4} + 7c^3d^4x^5 + \frac{7c^2d^5x^6}{2} + cd^6x^7 + \frac{d^7x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7,x)
```

```
[Out] c**7*x + 7*c**6*d*x**2/2 + 7*c**5*d**2*x**3 + 35*c**4*d**3*x**4/4
 + 7*c**3*d**4*x**5 + 7*c**2*d**5*x**6/2 + c*d**6*x**7 + d**7*x**
8/8
```

GIAC/XCAS [A] time = 0.216408, size = 16, normalized size = 1.14

$$\frac{(dx+c)^8}{8\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7,x, algorithm="giac")
```

```
[Out] 1/8*(d*x + c)^8/d
```

3.1283 $\int \frac{(c+dx)^7}{a+bx}\,dx$

Optimal. Leaf size=169

$$\frac{(bc-ad)^7\log(a+bx)}{b^8}+\frac{dx(bc-ad)^6}{b^7}+\frac{(c+dx)^2(bc-ad)^5}{2b^6}+\frac{(c+dx)^3(bc-ad)^4}{3b^5}+\frac{(c+dx)^4(bc-ad)^3}{4b^4}+\frac{(c+dx)^5(bc-ad)^2}{5b^3}+\frac{(c+dx)^6(bc-ad)}{6b^2}+\frac{(c+dx)^7}{7b}$$

```
[Out] (d*(b*c - a*d)^6*x)/b^7 + ((b*c - a*d)^5*(c + d*x)^2)/(2*b^6) + (
(b*c - a*d)^4*(c + d*x)^3)/(3*b^5) + ((b*c - a*d)^3*(c + d*x)^4)/
(4*b^4) + ((b*c - a*d)^2*(c + d*x)^5)/(5*b^3) + ((b*c - a*d)*(c +
 d*x)^6)/(6*b^2) + (c + d*x)^7/(7*b) + ((b*c - a*d)^7*Log[a + b*x
])/b^8
```

Rubi [A] time = 0.15522, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^7\log(a+bx)}{b^8}+\frac{dx(bc-ad)^6}{b^7}+\frac{(c+dx)^2(bc-ad)^5}{2b^6}+\frac{(c+dx)^3(bc-ad)^4}{3b^5}+\frac{(c+dx)^4(bc-ad)^3}{4b^4}+\frac{(c+dx)^5(bc-ad)^2}{5b^3}+\frac{(c+dx)^6(bc-ad)}{6b^2}+\frac{(c+dx)^7}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x),x]
```

```
[Out] (d*(b*c - a*d)^6*x)/b^7 + ((b*c - a*d)^5*(c + d*x)^2)/(2*b^6) + (
(b*c - a*d)^4*(c + d*x)^3)/(3*b^5) + ((b*c - a*d)^3*(c + d*x)^4)/
(4*b^4) + ((b*c - a*d)^2*(c + d*x)^5)/(5*b^3) + ((b*c - a*d)*(c +
 d*x)^6)/(6*b^2) + (c + d*x)^7/(7*b) + ((b*c - a*d)^7*Log[a + b*x
])/b^8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(c+dx)^7}{7b}-\frac{(c+dx)^6\,(ad-bc)}{6b^2}+\frac{(c+dx)^5\,(ad-bc)^2}{5b^3}-\frac{(c+dx)^4\,(ad-bc)^3}{4b^4}+\frac{(c+dx)^3\,(ad-bc)^4}{3b^5}-\frac{(c+dx)^2\,(ad-bc)^5}{2b^6}+\frac{(ad-bc)^6\int d\,dx}{b^7}-\frac{(ad-bc)^7\log(a+bx)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a),x)
```

```
[Out] (c + d*x)**7/(7*b) - (c + d*x)**6*(a*d - b*c)/(6*b**2) + (c + d*x
)**5*(a*d - b*c)**2/(5*b**3) - (c + d*x)**4*(a*d - b*c)**3/(4*b**
4) + (c + d*x)**3*(a*d - b*c)**4/(3*b**5) - (c + d*x)**2*(a*d - b
*c)**5/(2*b**6) + (a*d - b*c)**6*Integral(d, x)/b**7 - (a*d - b*c
)**7*log(a + b*x)/b**8
```

Mathematica [A] time = 0.364639, size = 304, normalized size = 1.8

$$\frac{dx\left(420a^6d^6-210a^5bd^5(14c+dx)+70a^4b^2d^4\left(126c^2+21cdx+2d^2x^2\right)-35a^3b^3d^3\left(420c^3+126c^2dx+28cd^2x^2+3d^3x^3\right)+\cdots\right)}{\cdots}$$

$$+\frac{(bc-ad)^7\log(a+bx)}{b^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x),x]
```

```
[Out] (d*x*(420*a^6*d^6 - 210*a^5*b*d^5*(14*c + d*x) + 70*a^4*b^2*d^4*(
126*c^2 + 21*c*d*x + 2*d^2*x^2) - 35*a^3*b^3*d^3*(420*c^3 + 126*c
^2*d*x + 28*c*d^2*x^2 + 3*d^3*x^3) + 21*a^2*b^4*d^2*(700*c^4 + 35
0*c^3*d*x + 140*c^2*d^2*x^2 + 35*c*d^3*x^3 + 4*d^4*x^4) - 7*a*b^5
*d*(1260*c^5 + 1050*c^4*d*x + 700*c^3*d^2*x^2 + 315*c^2*d^3*x^3 +
 84*c*d^4*x^4 + 10*d^5*x^5) + b^6*(2940*c^6 + 4410*c^5*d*x + 4900
*c^4*d^2*x^2 + 3675*c^3*d^3*x^3 + 1764*c^2*d^4*x^4 + 490*c*d^5*x^
5 + 60*d^6*x^6)))/(420*b^7) + ((b*c - a*d)^7*Log[a + b*x])/b^8
```

Maple [B] time = 0.008, size = 539, normalized size = 3.2

$$\frac{7 d^6 x^6 c}{6 b}+\frac{a^6 d^7 x}{b^7}-\frac{\ln(bx+a) a^7 d^7}{b^8}-\frac{d^7 x^6 a}{6 b^2}-\frac{d^7 x^2 a^5}{2 b^6}+\frac{21 d^2 x^2 c^5}{2 b}+\frac{d^7 x^5 a^2}{5 b^3}+\frac{21 d^5 x^5 c^2}{5 b}$$
$$-\frac{d^7 x^4 a^3}{4 b^4}+\frac{35 d^4 x^4 c^3}{4 b}+\frac{d^7 x^3 a^4}{3 b^5}+\frac{35 d^3 x^3 c^4}{3 b}+7\frac{d c^6 x}{b}-35\frac{a^3 \ln(bx+a) c^4 d^3}{b^4}$$
$$+21\frac{a^2 \ln(bx+a) c^5 d^2}{b^3}-7\frac{a^5 c d^6 x}{b^6}-21\frac{a c^5 d^2 x}{b^2}-\frac{7 d^6 x^3 a^3 c}{3 b^4}+7\frac{d^5 x^3 a^2 c^2}{b^3}$$
$$-35\frac{a^3 c^3 d^4 x}{b^4}+35\frac{a^2 c^4 d^3 x}{b^3}-21\frac{\ln(bx+a) a^5 c^2 d^5}{b^6}+35\frac{a^4 \ln(bx+a) c^3 d^4}{b^5}-\frac{35 d^3 x^2 a c^4}{2 b^2}$$
$$-\frac{35 d^4 x^3 a c^3}{3 b^2}+\frac{7 d^6 x^2 a^4 c}{2 b^5}-\frac{21 d^5 x^4 a c^2}{4 b^2}+\frac{7 d^6 x^4 a^2 c}{4 b^3}-\frac{7 d^6 x^5 a c}{5 b^2}+\frac{\ln(bx+a) c^7}{b}+\frac{d^7 x^7}{7 b}$$
$$-7\frac{a \ln(bx+a) c^6 d}{b^2}+7\frac{\ln(bx+a) a^6 c d^6}{b^7}+21\frac{a^4 c^2 d^5 x}{b^5}-\frac{21 d^5 x^2 a^3 c^2}{2 b^4}+\frac{35 d^4 x^2 a^2 c^3}{2 b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a),x)
```

```
[Out] 7/6*d^6/b*x^6*c+d^7/b^7*a^6*x-1/b^8*ln(b*x+a)*a^7*d^7-1/6*d^7/b^2
*x^6*a-1/2*d^7/b^6*x^2*a^5+21/2*d^2/b*x^2*c^5+1/5*d^7/b^3*x^5*a^2
+21/5*d^5/b*x^5*c^2-1/4*d^7/b^4*x^4*a^3+35/4*d^4/b*x^4*c^3+1/3*d^
7/b^5*x^3*a^4+35/3*d^3/b*x^3*c^4+7*d/b*c^6*x-35/b^4*ln(b*x+a)*a^3
*c^4*d^3+21/b^3*ln(b*x+a)*a^2*c^5*d^2-7*d^6/b^6*a^5*c*x-21*d^2/b^
2*a*c^5*x-7/3*d^6/b^4*x^3*a^3*c+7*d^5/b^3*x^3*a^2*c^2-35*d^4/b^4*
a^3*c^3*x+35*d^3/b^3*a^2*c^4*x-21/b^6*ln(b*x+a)*a^5*c^2*d^5+35/b^
5*ln(b*x+a)*a^4*c^3*d^4-35/2*d^3/b^2*x^2*a*c^4-35/3*d^4/b^2*x^3*a
*c^3+7/2*d^6/b^5*x^2*a^4*c-21/4*d^5/b^2*x^4*a*c^2+7/4*d^6/b^3*x^4
*a^2*c-7/5*d^6/b^2*x^5*a*c+1/b*ln(b*x+a)*c^7+1/7*d^7/b*x^7-7/b^2*
ln(b*x+a)*a*c^6*d+7/b^7*ln(b*x+a)*a^6*c*d^6+21*d^5/b^5*a^4*c^2*x-
21/2*d^5/b^4*x^2*a^3*c^2+35/2*d^4/b^3*x^2*a^2*c^3
```

Maxima [A] time = 1.34242, size = 621, normalized size = 3.67

$$\frac{60\,b^6d^7x^7 + 70\left(7\,b^6cd^6 - ab^5d^7\right)x^6 + 84\left(21\,b^6c^2d^5 - 7\,ab^5cd^6 + a^2b^4d^7\right)x^5 + 105\left(35\,b^6c^3d^4 - 21\,ab^5c^2d^5 + 7\,a^2b^4cd^6 - a^3 \cdots\right.}{\cdots} + \frac{\left(b^7c^7 - 7\,ab^6c^6d + 21\,a^2b^5c^5d^2 - 35\,a^3b^4c^4d^3 + 35\,a^4b^3c^3d^4 - 21\,a^5b^2c^2d^5 + 7\,a^6bcd^6 - a^7d^7\right)\log\left(bx + a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a),x, algorithm="maxima")
```

```
[Out] 1/420*(60*b^6*d^7*x^7 + 70*(7*b^6*c*d^6 - a*b^5*d^7)*x^6 + 84*(21
*b^6*c^2*d^5 - 7*a*b^5*c*d^6 + a^2*b^4*d^7)*x^5 + 105*(35*b^6*c^3
*d^4 - 21*a*b^5*c^2*d^5 + 7*a^2*b^4*c*d^6 - a^3*b^3*d^7)*x^4 + 14
0*(35*b^6*c^4*d^3 - 35*a*b^5*c^3*d^4 + 21*a^2*b^4*c^2*d^5 - 7*a^3
*b^3*c*d^6 + a^4*b^2*d^7)*x^3 + 210*(21*b^6*c^5*d^2 - 35*a*b^5*c^
4*d^3 + 35*a^2*b^4*c^3*d^4 - 21*a^3*b^3*c^2*d^5 + 7*a^4*b^2*c*d^6
 - a^5*b*d^7)*x^2 + 420*(7*b^6*c^6*d - 21*a*b^5*c^5*d^2 + 35*a^2*
b^4*c^4*d^3 - 35*a^3*b^3*c^3*d^4 + 21*a^4*b^2*c^2*d^5 - 7*a^5*b*c
*d^6 + a^6*d^7)*x)/b^7 + (b^7*c^7 - 7*a*b^6*c^6*d + 21*a^2*b^5*c^
5*d^2 - 35*a^3*b^4*c^4*d^3 + 35*a^4*b^3*c^3*d^4 - 21*a^5*b^2*c^2*
d^5 + 7*a^6*b*c*d^6 - a^7*d^7)*log(b*x + a)/b^8
```

Fricas [A] time = 0.229996, size = 624, normalized size = 3.69

$$\frac{60\,b^7d^7x^7 + 70\left(7\,b^7cd^6 - ab^6d^7\right)x^6 + 84\left(21\,b^7c^2d^5 - 7\,ab^6cd^6 + a^2b^5d^7\right)x^5 + 105\left(35\,b^7c^3d^4 - 21\,ab^6c^2d^5 + 7\,a^2b^5cd^6 - a^3 \cdots\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/420*(60*b^7*d^7*x^7 + 70*(7*b^7*c*d^6 - a*b^6*d^7)*x^6 + 84*(21
*b^7*c^2*d^5 - 7*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 105*(35*b^7*c^3
```

```
*d^4 - 21*a*b^6*c^2*d^5 + 7*a^2*b^5*c*d^6 - a^3*b^4*d^7)*x^4 + 14
0*(35*b^7*c^4*d^3 - 35*a*b^6*c^3*d^4 + 21*a^2*b^5*c^2*d^5 - 7*a^3
*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 210*(21*b^7*c^5*d^2 - 35*a*b^6*c^
4*d^3 + 35*a^2*b^5*c^3*d^4 - 21*a^3*b^4*c^2*d^5 + 7*a^4*b^3*c*d^6
 - a^5*b^2*d^7)*x^2 + 420*(7*b^7*c^6*d - 21*a*b^6*c^5*d^2 + 35*a^
2*b^5*c^4*d^3 - 35*a^3*b^4*c^3*d^4 + 21*a^4*b^3*c^2*d^5 - 7*a^5*b
^2*c*d^6 + a^6*b*d^7)*x + 420*(b^7*c^7 - 7*a*b^6*c^6*d + 21*a^2*b
^5*c^5*d^2 - 35*a^3*b^4*c^4*d^3 + 35*a^4*b^3*c^3*d^4 - 21*a^5*b^2
*c^2*d^5 + 7*a^6*b*c*d^6 - a^7*d^7)*log(b*x + a))/b^8
```

Sympy [A] time = 3.51965, size = 384, normalized size = 2.27

$$\frac{d^7x^7}{7b} - \frac{x^6\left(ad^7 - 7bcd^6\right)}{6b^2} + \frac{x^5\left(a^2d^7 - 7abcd^6 + 21b^2c^2d^5\right)}{5b^3} - \frac{x^4\left(a^3d^7 - 7a^2bcd^6 + 21ab^2c^2d^5 - 35b^3c^3d^4\right)}{4b^4} + \frac{x^3\left(a^4d^7 - 7a^3bcd^6 + 21a^2b^2c^2d^5 - 35ab^3c^3d^4 + 35b^4c^4d^3\right)}{3b^5} - \frac{x^2\left(a^5d^7 - 7a^4bcd^6 + 21a^3b^2c^2d^5 - 35a^2b^3c^3d^4 + 35ab^4c^4d^3 - 21b^5c^5d^2\right)}{2b^6} + \frac{x\left(a^6d^7 - 7a^5bcd^6 + 21a^4b^2c^2d^5 - 35a^3b^3c^3d^4 + 35a^2b^4c^4d^3 - 21ab^5c^5d^2 + 7b^6c^6d\right)}{b^7} - \frac{(ad - bc)^7\log(a + bx)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a),x)
```

```
[Out] d**7*x**7/(7*b) - x**6*(a*d**7 - 7*b*c*d**6)/(6*b**2) + x**5*(a**
2*d**7 - 7*a*b*c*d**6 + 21*b**2*c**2*d**5)/(5*b**3) - x**4*(a**3*
d**7 - 7*a**2*b*c*d**6 + 21*a*b**2*c**2*d**5 - 35*b**3*c**3*d**4)
/(4*b**4) + x**3*(a**4*d**7 - 7*a**3*b*c*d**6 + 21*a**2*b**2*c**2
*d**5 - 35*a*b**3*c**3*d**4 + 35*b**4*c**4*d**3)/(3*b**5) - x**2*
(a**5*d**7 - 7*a**4*b*c*d**6 + 21*a**3*b**2*c**2*d**5 - 35*a**2*b
**3*c**3*d**4 + 35*a*b**4*c**4*d**3 - 21*b**5*c**5*d**2)/(2*b**6)
 + x*(a**6*d**7 - 7*a**5*b*c*d**6 + 21*a**4*b**2*c**2*d**5 - 35*a
**3*b**3*c**3*d**4 + 35*a**2*b**4*c**4*d**3 - 21*a*b**5*c**5*d**2
 + 7*b**6*c**6*d)/b**7 - (a*d - b*c)**7*log(a + b*x)/b**8
```

GIAC/XCAS [A] time = 0.219086, size = 671, normalized size = 3.97

$$\frac{60\,b^6d^7x^7 + 490\,b^6cd^6x^6 - 70\,ab^5d^7x^6 + 1764\,b^6c^2d^5x^5 - 588\,ab^5cd^6x^5 + 84\,a^2b^4d^7x^5 + 3675\,b^6c^3d^4x^4 - 2205\,ab^5c^2d^5x^4 + 7}{} + \frac{\left(b^7c^7 - 7\,ab^6c^6d + 21\,a^2b^5c^5d^2 - 35\,a^3b^4c^4d^3 + 35\,a^4b^3c^3d^4 - 21\,a^5b^2c^2d^5 + 7\,a^6bcd^6 - a^7d^7\right)\ln\left(|bx + a|\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a),x, algorithm="giac")
```

```
[Out] 1/420*(60*b^6*d^7*x^7 + 490*b^6*c*d^6*x^6 - 70*a*b^5*d^7*x^6 + 17
64*b^6*c^2*d^5*x^5 - 588*a*b^5*c*d^6*x^5 + 84*a^2*b^4*d^7*x^5 + 3
675*b^6*c^3*d^4*x^4 - 2205*a*b^5*c^2*d^5*x^4 + 735*a^2*b^4*c*d^6*
x^4 - 105*a^3*b^3*d^7*x^4 + 4900*b^6*c^4*d^3*x^3 - 4900*a*b^5*c^3
*d^4*x^3 + 2940*a^2*b^4*c^2*d^5*x^3 - 980*a^3*b^3*c*d^6*x^3 + 140
*a^4*b^2*d^7*x^3 + 4410*b^6*c^5*d^2*x^2 - 7350*a*b^5*c^4*d^3*x^2
+ 7350*a^2*b^4*c^3*d^4*x^2 - 4410*a^3*b^3*c^2*d^5*x^2 + 1470*a^4*
b^2*c*d^6*x^2 - 210*a^5*b*d^7*x^2 + 2940*b^6*c^6*d*x - 8820*a*b^5
*c^5*d^2*x + 14700*a^2*b^4*c^4*d^3*x - 14700*a^3*b^3*c^3*d^4*x +
8820*a^4*b^2*c^2*d^5*x - 2940*a^5*b*c*d^6*x + 420*a^6*d^7*x)/b^7
+ (b^7*c^7 - 7*a*b^6*c^6*d + 21*a^2*b^5*c^5*d^2 - 35*a^3*b^4*c^4*
d^3 + 35*a^4*b^3*c^3*d^4 - 21*a^5*b^2*c^2*d^5 + 7*a^6*b*c*d^6 - a
^7*d^7)*ln(abs(b*x + a))/b^8
```

3.1284 $\int \frac{(c+dx)^7}{(a+bx)^2}\,dx$

Optimal. Leaf size=187

$$\frac{7d^6(a+bx)^5(bc-ad)}{5b^8}+\frac{21d^5(a+bx)^4(bc-ad)^2}{4b^8}+\frac{35d^4(a+bx)^3(bc-ad)^3}{3b^8}+\frac{35d^3(a+bx)^2(bc-ad)^4}{2b^8}-\frac{(bc-ad)^7}{b^8(a+bx)}+\frac{7d(bc-ad)^6\log(a+bx)}{b^8}+\frac{d^7(a+bx)^6}{6b^8}+\frac{21d^2x(bc-ad)^5}{b^7}$$

```
[Out] (21*d^2*(b*c - a*d)^5*x)/b^7 - (b*c - a*d)^7/(b^8*(a + b*x)) + (3
5*d^3*(b*c - a*d)^4*(a + b*x)^2)/(2*b^8) + (35*d^4*(b*c - a*d)^3*
(a + b*x)^3)/(3*b^8) + (21*d^5*(b*c - a*d)^2*(a + b*x)^4)/(4*b^8)
 + (7*d^6*(b*c - a*d)*(a + b*x)^5)/(5*b^8) + (d^7*(a + b*x)^6)/(6
*b^8) + (7*d*(b*c - a*d)^6*Log[a + b*x])/b^8
```

Rubi [A] time = 0.492174, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{7d^6(a+bx)^5(bc-ad)}{5b^8}+\frac{21d^5(a+bx)^4(bc-ad)^2}{4b^8}+\frac{35d^4(a+bx)^3(bc-ad)^3}{3b^8}+\frac{35d^3(a+bx)^2(bc-ad)^4}{2b^8}-\frac{(bc-ad)^7}{b^8(a+bx)}+\frac{7d(bc-ad)^6\log(a+bx)}{b^8}+\frac{d^7(a+bx)^6}{6b^8}+\frac{21d^2x(bc-ad)^5}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^2,x]
```

```
[Out] (21*d^2*(b*c - a*d)^5*x)/b^7 - (b*c - a*d)^7/(b^8*(a + b*x)) + (3
5*d^3*(b*c - a*d)^4*(a + b*x)^2)/(2*b^8) + (35*d^4*(b*c - a*d)^3*
(a + b*x)^3)/(3*b^8) + (21*d^5*(b*c - a*d)^2*(a + b*x)^4)/(4*b^8)
 + (7*d^6*(b*c - a*d)*(a + b*x)^5)/(5*b^8) + (d^7*(a + b*x)^6)/(6
*b^8) + (7*d*(b*c - a*d)^6*Log[a + b*x])/b^8
```

Rubi in Sympy [A] time = 77.3604, size = 172, normalized size = 0.92

$$-\frac{21d^2x\,(ad-bc)^5}{b^7}+\frac{d^7\,(a+bx)^6}{6b^8}-\frac{7d^6\,(a+bx)^5\,(ad-bc)}{5b^8}+\frac{21d^5\,(a+bx)^4\,(ad-bc)^2}{4b^8}-\frac{35d^4\,(a+bx)^3\,(ad-bc)^3}{3b^8}+\frac{35d^3\,(a+bx)^2\,(ad-bc)^4}{2b^8}+\frac{7d\,(ad-bc)^6\log(a+bx)}{b^8}+\frac{(ad-bc)^7}{b^8\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**2,x)
```

```
[Out] -21*d**2*x*(a*d - b*c)**5/b**7 + d**7*(a + b*x)**6/(6*b**8) - 7*d
**6*(a + b*x)**5*(a*d - b*c)/(5*b**8) + 21*d**5*(a + b*x)**4*(a*d
 - b*c)**2/(4*b**8) - 35*d**4*(a + b*x)**3*(a*d - b*c)**3/(3*b**8
) + 35*d**3*(a + b*x)**2*(a*d - b*c)**4/(2*b**8) + 7*d*(a*d - b*c
)**6*log(a + b*x)/b**8 + (a*d - b*c)**7/(b**8*(a + b*x))
```

Mathematica [B] time = 0.213495, size = 388, normalized size = 2.07

$$\frac{60a^7d^7 - 60a^6bd^6(7c + 6dx) + 210a^5b^2d^5\left(6c^2 + 10cdx - d^2x^2\right) + 70a^4b^3d^4\left(-30c^3 - 72c^2dx + 18cd^2x^2 + d^3x^3\right) - 35a^3b^4d^3}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^2,x]
```

```
[Out] (60*a^7*d^7 - 60*a^6*b*d^6*(7*c + 6*d*x) + 210*a^5*b^2*d^5*(6*c^2
 + 10*c*d*x - d^2*x^2) + 70*a^4*b^3*d^4*(-30*c^3 - 72*c^2*d*x + 1
8*c*d^2*x^2 + d^3*x^3) - 35*a^3*b^4*d^3*(-60*c^4 - 180*c^3*d*x +
90*c^2*d^2*x^2 + 12*c*d^3*x^3 + d^4*x^4) + 21*a^2*b^5*d^2*(-60*c^
5 - 200*c^4*d*x + 200*c^3*d^2*x^2 + 50*c^2*d^3*x^3 + 10*c*d^4*x^4
 + d^5*x^5) - 7*a*b^6*d*(-60*c^6 - 180*c^5*d*x + 450*c^4*d^2*x^2
+ 200*c^3*d^3*x^3 + 75*c^2*d^4*x^4 + 18*c*d^5*x^5 + 2*d^6*x^6) +
b^7*(-60*c^7 + 1260*c^5*d^2*x^2 + 1050*c^4*d^3*x^3 + 700*c^3*d^4*
x^4 + 315*c^2*d^5*x^5 + 84*c*d^6*x^6 + 10*d^7*x^7) + 420*d*(b*c -
 a*d)^6*(a + b*x)*Log[a + b*x])/(60*b^8*(a + b*x))
```

Maple [B] time = 0.015, size = 571, normalized size = 3.1

$$\begin{aligned}
&\frac{21\,d^5x^4c^2}{4\,b^2} - \frac{4\,d^7x^3a^3}{3\,b^5} + \frac{35\,d^4x^3c^3}{3\,b^2} + \frac{5\,d^7x^2a^4}{2\,b^6} + \frac{35\,d^3x^2c^4}{2\,b^2} - 6\,\frac{a^5d^7x}{b^7} + 21\,\frac{c^5d^2x}{b^2} \\
&+ 7\,\frac{d^7\ln(bx+a)\,a^6}{b^8} + 7\,\frac{d\ln(bx+a)\,c^6}{b^2} + \frac{a^7d^7}{b^8\,(bx+a)} - \frac{2\,d^7x^5a}{5\,b^3} + \frac{7\,d^6x^5c}{5\,b^2} \\
&+ \frac{3\,d^7x^4a^2}{4\,b^4} - \frac{c^7}{b\,(bx+a)} + \frac{d^7x^6}{6\,b^2} - 70\,\frac{ac^4d^3x}{b^3} - 14\,\frac{d^5x^3ac^2}{b^3} - 14\,\frac{d^6x^2a^3c}{b^5} \\
&+ \frac{63\,d^5x^2a^2c^2}{2\,b^4} - 35\,\frac{d^4x^2ac^3}{b^3} - \frac{7\,d^6x^4ac}{2\,b^3} + 7\,\frac{d^6x^3a^2c}{b^4} + 105\,\frac{a^2c^3d^4x}{b^4} \\
&+ 35\,\frac{a^4cd^6x}{b^6} - 84\,\frac{a^3c^2d^5x}{b^5} - 7\,\frac{a^6cd^6}{b^7\,(bx+a)} + 21\,\frac{a^5c^2d^5}{b^6\,(bx+a)} - 35\,\frac{a^4c^3d^4}{b^5\,(bx+a)} \\
&- 42\,\frac{d^2\ln(bx+a)\,ac^5}{b^3} + 35\,\frac{a^3c^4d^3}{b^4\,(bx+a)} - 42\,\frac{d^6\ln(bx+a)\,a^5c}{b^7} + 105\,\frac{d^5\ln(bx+a)\,a^4c^2}{b^6} \\
&- 140\,\frac{d^4\ln(bx+a)\,a^3c^3}{b^5} + 105\,\frac{d^3\ln(bx+a)\,a^2c^4}{b^4} - 21\,\frac{a^2c^5d^2}{b^3\,(bx+a)} + 7\,\frac{ac^6d}{b^2\,(bx+a)}
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^2,x)
```

```
[Out] 21/4*d^5/b^2*x^4*c^2-4/3*d^7/b^5*x^3*a^3+35/3*d^4/b^2*x^3*c^3+5/2
*d^7/b^6*x^2*a^4+35/2*d^3/b^2*x^2*c^4-6*d^7/b^7*a^5*x+21*d^2/b^2*
c^5*x+7/b^8*d^7*ln(b*x+a)*a^6+7/b^2*d*ln(b*x+a)*c^6+1/b^8/(b*x+a)
*a^7*d^7-2/5*d^7/b^3*x^5*a+7/5*d^6/b^2*x^5*c+3/4*d^7/b^4*x^4*a^2-
1/b/(b*x+a)*c^7+1/6*d^7/b^2*x^6-70*d^3/b^3*a*c^4*x-14*d^5/b^3*x^3
*a*c^2-14*d^6/b^5*x^2*a^3*c+63/2*d^5/b^4*x^2*a^2*c^2-35*d^4/b^3*x
^2*a*c^3-7/2*d^6/b^3*x^4*a*c+7*d^6/b^4*x^3*a^2*c+105*d^4/b^4*a^2*
c^3*x+35*d^6/b^6*a^4*c*x-84*d^5/b^5*a^3*c^2*x-7/b^7/(b*x+a)*a^6*c
*d^6+21/b^6/(b*x+a)*a^5*c^2*d^5-35/b^5/(b*x+a)*a^4*c^3*d^4-42/b^3
*d^2*ln(b*x+a)*a*c^5+35/b^4/(b*x+a)*a^3*c^4*d^3-42/b^7*d^6*ln(b*x
+a)*a^5*c+105/b^6*d^5*ln(b*x+a)*a^4*c^2-140/b^5*d^4*ln(b*x+a)*a^3
*c^3+105/b^4*d^3*ln(b*x+a)*a^2*c^4-21/b^3/(b*x+a)*a^2*c^5*d^2+7/b
^2/(b*x+a)*a*c^6*d
```

Maxima [A] time = 1.40486, size = 630, normalized size = 3.37

$$-\frac{b^7c^7 - 7\,ab^6c^6d + 21\,a^2b^5c^5d^2 - 35\,a^3b^4c^4d^3 + 35\,a^4b^3c^3d^4 - 21\,a^5b^2c^2d^5 + 7\,a^6bcd^6 - a^7d^7}{b^9x + ab^8}$$
$$+\frac{10\,b^5d^7x^6 + 12\left(7\,b^5cd^6 - 2\,ab^4d^7\right)x^5 + 15\left(21\,b^5c^2d^5 - 14\,ab^4cd^6 + 3\,a^2b^3d^7\right)x^4 + 20\left(35\,b^5c^3d^4 - 42\,ab^4c^2d^5 + 21\,a^2b^3cd^6 \right.}{}$$
$$+\frac{7\left(b^6c^6d - 6\,ab^5c^5d^2 + 15\,a^2b^4c^4d^3 - 20\,a^3b^3c^3d^4 + 15\,a^4b^2c^2d^5 - 6\,a^5bcd^6 + a^6d^7\right)\log\left(bx + a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -(b^7*c^7 - 7*a*b^6*c^6*d + 21*a^2*b^5*c^5*d^2 - 35*a^3*b^4*c^4*d
^3 + 35*a^4*b^3*c^3*d^4 - 21*a^5*b^2*c^2*d^5 + 7*a^6*b*c*d^6 - a^
7*d^7)/(b^9*x + a*b^8) + 1/60*(10*b^5*d^7*x^6 + 12*(7*b^5*c*d^6 -
 2*a*b^4*d^7)*x^5 + 15*(21*b^5*c^2*d^5 - 14*a*b^4*c*d^6 + 3*a^2*b
^3*d^7)*x^4 + 20*(35*b^5*c^3*d^4 - 42*a*b^4*c^2*d^5 + 21*a^2*b^3*
c*d^6 - 4*a^3*b^2*d^7)*x^3 + 30*(35*b^5*c^4*d^3 - 70*a*b^4*c^3*d^
4 + 63*a^2*b^3*c^2*d^5 - 28*a^3*b^2*c*d^6 + 5*a^4*b*d^7)*x^2 + 60
*(21*b^5*c^5*d^2 - 70*a*b^4*c^4*d^3 + 105*a^2*b^3*c^3*d^4 - 84*a^
3*b^2*c^2*d^5 + 35*a^4*b*c*d^6 - 6*a^5*d^7)*x)/b^7 + 7*(b^6*c^6*d
 - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15
*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)*log(b*x + a)/b^8
```

Fricas [A] time = 0.226378, size = 853, normalized size = 4.56

$$\frac{10\,b^7d^7x^7 - 60\,b^7c^7 + 420\,ab^6c^6d - 1260\,a^2b^5c^5d^2 + 2100\,a^3b^4c^4d^3 - 2100\,a^4b^3c^3d^4 + 1260\,a^5b^2c^2d^5 - 420\,a^6bcd^6 + 60\,a^7d^7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*b^7*d^7*x^7 - 60*b^7*c^7 + 420*a*b^6*c^6*d - 1260*a^2*b^
5*c^5*d^2 + 2100*a^3*b^4*c^4*d^3 - 2100*a^4*b^3*c^3*d^4 + 1260*a^
5*b^2*c^2*d^5 - 420*a^6*b*c*d^6 + 60*a^7*d^7 + 14*(6*b^7*c*d^6 -
a*b^6*d^7)*x^6 + 21*(15*b^7*c^2*d^5 - 6*a*b^6*c*d^6 + a^2*b^5*d^7
)*x^5 + 35*(20*b^7*c^3*d^4 - 15*a*b^6*c^2*d^5 + 6*a^2*b^5*c*d^6 -
 a^3*b^4*d^7)*x^4 + 70*(15*b^7*c^4*d^3 - 20*a*b^6*c^3*d^4 + 15*a^
2*b^5*c^2*d^5 - 6*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 210*(6*b^7*c
^5*d^2 - 15*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 - 15*a^3*b^4*c^2*d
^5 + 6*a^4*b^3*c*d^6 - a^5*b^2*d^7)*x^2 + 60*(21*a*b^6*c^5*d^2 -
70*a^2*b^5*c^4*d^3 + 105*a^3*b^4*c^3*d^4 - 84*a^4*b^3*c^2*d^5 + 3
5*a^5*b^2*c*d^6 - 6*a^6*b*d^7)*x + 420*(a*b^6*c^6*d - 6*a^2*b^5*c
^5*d^2 + 15*a^3*b^4*c^4*d^3 - 20*a^4*b^3*c^3*d^4 + 15*a^5*b^2*c^2
*d^5 - 6*a^6*b*c*d^6 + a^7*d^7 + (b^7*c^6*d - 6*a*b^6*c^5*d^2 + 1
5*a^2*b^5*c^4*d^3 - 20*a^3*b^4*c^3*d^4 + 15*a^4*b^3*c^2*d^5 - 6*a
^5*b^2*c*d^6 + a^6*b*d^7)*x)*log(b*x + a))/(b^9*x + a*b^8)
```

Sympy [A] time = 6.29156, size = 410, normalized size = 2.19

$$\frac{a^7d^7 - 7a^6bcd^6 + 21a^5b^2c^2d^5 - 35a^4b^3c^3d^4 + 35a^3b^4c^4d^3 - 21a^2b^5c^5d^2 + 7ab^6c^6d - b^7c^7}{ab^8 + b^9x} + \frac{d^7x^6}{6b^2} - \frac{x^5\left(2ad^7 - 7bcd^6\right)}{5b^3} + \frac{x^4\left(3a^2d^7 - 14abcd^6 + 21b^2c^2d^5\right)}{4b^4} - \frac{x^3\left(4a^3d^7 - 21a^2bcd^6 + 42ab^2c^2d^5 - 35b^3c^3d^4\right)}{3b^5} + \frac{x^2\left(5a^4d^7 - 28a^3bcd^6 + 63a^2b^2c^2d^5 - 70ab^3c^3d^4 + 35b^4c^4d^3\right)}{2b^6} - \frac{x\left(6a^5d^7 - 35a^4bcd^6 + 84a^3b^2c^2d^5 - 105a^2b^3c^3d^4 + 70ab^4c^4d^3 - 21b^5c^5d^2\right)}{b^7} + \frac{7d\left(ad - bc\right)^6\log\left(a + bx\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**2,x)
```

```
[Out] (a**7*d**7 - 7*a**6*b*c*d**6 + 21*a**5*b**2*c**2*d**5 - 35*a**4*b
**3*c**3*d**4 + 35*a**3*b**4*c**4*d**3 - 21*a**2*b**5*c**5*d**2 +
 7*a*b**6*c**6*d - b**7*c**7)/(a*b**8 + b**9*x) + d**7*x**6/(6*b*
*2) - x**5*(2*a*d**7 - 7*b*c*d**6)/(5*b**3) + x**4*(3*a**2*d**7 -
 14*a*b*c*d**6 + 21*b**2*c**2*d**5)/(4*b**4) - x**3*(4*a**3*d**7
- 21*a**2*b*c*d**6 + 42*a*b**2*c**2*d**5 - 35*b**3*c**3*d**4)/(3*
b**5) + x**2*(5*a**4*d**7 - 28*a**3*b*c*d**6 + 63*a**2*b**2*c**2*
d**5 - 70*a*b**3*c**3*d**4 + 35*b**4*c**4*d**3)/(2*b**6) - x*(6*a
**5*d**7 - 35*a**4*b*c*d**6 + 84*a**3*b**2*c**2*d**5 - 105*a**2*b
**3*c**3*d**4 + 70*a*b**4*c**4*d**3 - 21*b**5*c**5*d**2)/b**7 + 7
*d*(a*d - b*c)**6*log(a + b*x)/b**8
```

GIAC/XCAS [A] time = 0.218383, size = 765, normalized size = 4.09

$$\frac{\left(10\,d^7+\frac{84\,(b^2cd^6-abd^7)}{(bx+a)b}+\frac{315\,(b^4c^2d^5-2\,ab^3cd^6+a^2b^2d^7)}{(bx+a)^2b^2}+\frac{700\,(b^6c^3d^4-3\,ab^5c^2d^5+3\,a^2b^4cd^6-a^3b^3d^7)}{(bx+a)^3b^3}+\frac{1050\,(b^8c^4d^3-4\,ab^7c^3d^4+6\,a^2b^6c^2d^5-4}{(bx+a)^4b^4}\right.}{60\,b^8}$$

$$-\frac{7\left(b^6c^6d-6\,ab^5c^5d^2+15\,a^2b^4c^4d^3-20\,a^3b^3c^3d^4+15\,a^4b^2c^2d^5-6\,a^5bcd^6+a^6d^7\right)\ln\left(\frac{|bx+a|}{(bx+a)^2|b|}\right)}{b^8}$$

$$-\frac{\frac{b^{13}c^7}{bx+a}-\frac{7\,ab^{12}c^6d}{bx+a}+\frac{21\,a^2b^{11}c^5d^2}{bx+a}-\frac{35\,a^3b^{10}c^4d^3}{bx+a}+\frac{35\,a^4b^9c^3d^4}{bx+a}-\frac{21\,a^5b^8c^2d^5}{bx+a}+\frac{7\,a^6b^7cd^6}{bx+a}-\frac{a^7b^6d^7}{bx+a}}{b^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*d^7 + 84*(b^2*c*d^6 - a*b*d^7)/((b*x + a)*b) + 315*(b^4*
c^2*d^5 - 2*a*b^3*c*d^6 + a^2*b^2*d^7)/((b*x + a)^2*b^2) + 700*(b
^6*c^3*d^4 - 3*a*b^5*c^2*d^5 + 3*a^2*b^4*c*d^6 - a^3*b^3*d^7)/((b
*x + a)^3*b^3) + 1050*(b^8*c^4*d^3 - 4*a*b^7*c^3*d^4 + 6*a^2*b^6*
c^2*d^5 - 4*a^3*b^5*c*d^6 + a^4*b^4*d^7)/((b*x + a)^4*b^4) + 1260
*(b^10*c^5*d^2 - 5*a*b^9*c^4*d^3 + 10*a^2*b^8*c^3*d^4 - 10*a^3*b^
7*c^2*d^5 + 5*a^4*b^6*c*d^6 - a^5*b^5*d^7)/((b*x + a)^5*b^5))*(b*
x + a)^6/b^8 - 7*(b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^
3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6
*d^7)*ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b^8 - (b^13*c^7/(b*x
+ a) - 7*a*b^12*c^6*d/(b*x + a) + 21*a^2*b^11*c^5*d^2/(b*x + a) -
 35*a^3*b^10*c^4*d^3/(b*x + a) + 35*a^4*b^9*c^3*d^4/(b*x + a) - 2
1*a^5*b^8*c^2*d^5/(b*x + a) + 7*a^6*b^7*c*d^6/(b*x + a) - a^7*b^6
*d^7/(b*x + a))/b^14
```

3.1285 $\int \frac{(c+dx)^7}{(a+bx)^3}\,dx$

Optimal. Leaf size=185

$$\frac{7d^6(a+bx)^4(bc-ad)}{4b^8}+\frac{7d^5(a+bx)^3(bc-ad)^2}{b^8}+\frac{35d^4(a+bx)^2(bc-ad)^3}{2b^8}+\frac{21d^2(bc-ad)^5\log(a+bx)}{b^8}-\frac{7d(bc-ad)^6}{b^8(a+bx)}-\frac{(bc-ad)^7}{2b^8(a+bx)^2}+\frac{d^7(a+bx)^5}{5b^8}+\frac{35d^3x(bc-ad)^4}{b^7}$$

```
[Out] (35*d^3*(b*c - a*d)^4*x)/b^7 - (b*c - a*d)^7/(2*b^8*(a + b*x)^2)
- (7*d*(b*c - a*d)^6)/(b^8*(a + b*x)) + (35*d^4*(b*c - a*d)^3*(a
+ b*x)^2)/(2*b^8) + (7*d^5*(b*c - a*d)^2*(a + b*x)^3)/b^8 + (7*d^
6*(b*c - a*d)*(a + b*x)^4)/(4*b^8) + (d^7*(a + b*x)^5)/(5*b^8) +
(21*d^2*(b*c - a*d)^5*Log[a + b*x])/b^8
```

Rubi [A] time = 0.469966, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{7d^6(a+bx)^4(bc-ad)}{4b^8}+\frac{7d^5(a+bx)^3(bc-ad)^2}{b^8}+\frac{35d^4(a+bx)^2(bc-ad)^3}{2b^8}+\frac{21d^2(bc-ad)^5\log(a+bx)}{b^8}-\frac{7d(bc-ad)^6}{b^8(a+bx)}-\frac{(bc-ad)^7}{2b^8(a+bx)^2}+\frac{d^7(a+bx)^5}{5b^8}+\frac{35d^3x(bc-ad)^4}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^3,x]
```

```
[Out] (35*d^3*(b*c - a*d)^4*x)/b^7 - (b*c - a*d)^7/(2*b^8*(a + b*x)^2)
- (7*d*(b*c - a*d)^6)/(b^8*(a + b*x)) + (35*d^4*(b*c - a*d)^3*(a
+ b*x)^2)/(2*b^8) + (7*d^5*(b*c - a*d)^2*(a + b*x)^3)/b^8 + (7*d^
6*(b*c - a*d)*(a + b*x)^4)/(4*b^8) + (d^7*(a + b*x)^5)/(5*b^8) +
(21*d^2*(b*c - a*d)^5*Log[a + b*x])/b^8
```

Rubi in Sympy [A] time = 79.0877, size = 170, normalized size = 0.92

$$\frac{35d^3x\left(ad-bc\right)^4}{b^7}+\frac{d^7\left(a+bx\right)^5}{5b^8}-\frac{7d^6\left(a+bx\right)^4\left(ad-bc\right)}{4b^8}+\frac{7d^5\left(a+bx\right)^3\left(ad-bc\right)^2}{b^8}-\frac{35d^4\left(a+bx\right)^2\left(ad-bc\right)^3}{2b^8}-\frac{21d^2\left(ad-bc\right)^5\log\left(a+bx\right)}{b^8}-\frac{7d\left(ad-bc\right)^6}{b^8\left(a+bx\right)}+\frac{\left(ad-bc\right)^7}{2b^8\left(a+bx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**3,x)
```

```
[Out] 35*d**3*x*(a*d - b*c)**4/b**7 + d**7*(a + b*x)**5/(5*b**8) - 7*d*
*6*(a + b*x)**4*(a*d - b*c)/(4*b**8) + 7*d**5*(a + b*x)**3*(a*d -
 b*c)**2/b**8 - 35*d**4*(a + b*x)**2*(a*d - b*c)**3/(2*b**8) - 21
*d**2*(a*d - b*c)**5*log(a + b*x)/b**8 - 7*d*(a*d - b*c)**6/(b**8
*(a + b*x)) + (a*d - b*c)**7/(2*b**8*(a + b*x)**2)
```

Mathematica [B] time = 0.22916, size = 389, normalized size = 2.1

$$\frac{-130a^7d^7+10a^6bd^6(77c+16dx)+10a^5b^2d^5\left(-189c^2-56cdx+50d^2x^2\right)+70a^4b^3d^4\left(35c^3+6c^2dx-34cd^2x^2+2d^3x^3\right)-3}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^3,x]
```

```
[Out] (-130*a^7*d^7 + 10*a^6*b*d^6*(77*c + 16*d*x) + 10*a^5*b^2*d^5*(-1
89*c^2 - 56*c*d*x + 50*d^2*x^2) + 70*a^4*b^3*d^4*(35*c^3 + 6*c^2*
d*x - 34*c*d^2*x^2 + 2*d^3*x^3) - 35*a^3*b^4*d^3*(50*c^4 - 20*c^3
*d*x - 126*c^2*d^2*x^2 + 20*c*d^3*x^3 + d^4*x^4) + 7*a^2*b^5*d^2*
(90*c^5 - 200*c^4*d*x - 550*c^3*d^2*x^2 + 200*c^2*d^3*x^3 + 25*c*
d^4*x^4 + 2*d^5*x^5) - 7*a*b^6*d*(10*c^6 - 120*c^5*d*x - 200*c^4*
d^2*x^2 + 200*c^3*d^3*x^3 + 50*c^2*d^4*x^4 + 10*c*d^5*x^5 + d^6*x
^6) + b^7*(-10*c^7 - 140*c^6*d*x + 700*c^4*d^3*x^3 + 350*c^3*d^4*
x^4 + 140*c^2*d^5*x^5 + 35*c*d^6*x^6 + 4*d^7*x^7) - 420*d^2*(-(b*
c) + a*d)^5*(a + b*x)^2*Log[a + b*x])/(20*b^8*(a + b*x)^2)
```

Maple [B] time = 0.017, size = 599, normalized size = 3.2

$$\begin{aligned}&\frac{a^7d^7}{2\,(bx+a)^2\,b^8}-21\,\frac{d^7\ln(bx+a)\,a^5}{b^8}+21\,\frac{d^2\ln(bx+a)\,c^5}{b^3}-5\,\frac{d^7x^2a^3}{b^6}+\frac{35\,d^4x^2c^3}{2\,b^3}\\&+15\,\frac{a^4d^7x}{b^7}+35\,\frac{c^4d^3x}{b^3}+7\,\frac{d^5x^3c^2}{b^3}-\frac{3\,d^7x^4a}{4\,b^4}+\frac{7\,d^6x^4c}{4\,b^3}+2\,\frac{d^7x^3a^2}{b^5}-7\,\frac{a^6d^7}{b^8\,(bx+a)}\\&-7\,\frac{dc^6}{b^2\,(bx+a)}+\frac{d^7x^5}{5\,b^3}-\frac{c^7}{2\,(bx+a)^2\,b}+\frac{35\,a^3c^4d^3}{2\,(bx+a)^2\,b^4}-\frac{21\,a^2c^5d^2}{2\,(bx+a)^2\,b^3}+\frac{7\,ac^6d}{2\,(bx+a)^2\,b^2}\\&+42\,\frac{a^5cd^6}{b^7\,(bx+a)}-105\,\frac{a^4c^2d^5}{b^6\,(bx+a)}+140\,\frac{a^3c^3d^4}{b^5\,(bx+a)}-105\,\frac{a^2c^4d^3}{b^4\,(bx+a)}+42\,\frac{ac^5d^2}{b^3\,(bx+a)}\\&-\frac{63\,d^5x^2ac^2}{2\,b^4}-70\,\frac{a^3cd^6x}{b^6}+126\,\frac{a^2c^2d^5x}{b^5}-105\,\frac{ac^3d^4x}{b^4}+105\,\frac{d^6\ln(bx+a)\,a^4c}{b^7}\\&-210\,\frac{d^5\ln(bx+a)\,a^3c^2}{b^6}+210\,\frac{d^4\ln(bx+a)\,a^2c^3}{b^5}-105\,\frac{d^3\ln(bx+a)\,ac^4}{b^4}\\&-\frac{7\,a^6cd^6}{2\,(bx+a)^2\,b^7}-7\,\frac{d^6x^3ac}{b^4}+21\,\frac{d^6x^2a^2c}{b^5}+\frac{21\,a^5c^2d^5}{2\,(bx+a)^2\,b^6}-\frac{35\,a^4c^3d^4}{2\,(bx+a)^2\,b^5}\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^3,x)
```

```
[Out] 1/2/(b*x+a)^2/b^8*a^7*d^7-21/b^8*d^7*ln(b*x+a)*a^5+21/b^3*d^2*ln(
b*x+a)*c^5-5*d^7/b^6*x^2*a^3+35/2*d^4/b^3*x^2*c^3+15*d^7/b^7*a^4*
x+35*d^3/b^3*c^4*x+7*d^5/b^3*x^3*c^2-3/4*d^7/b^4*x^4*a+7/4*d^6/b^
3*x^4*c+2*d^7/b^5*x^3*a^2-7/b^8*d^7/(b*x+a)*a^6-7/b^2*d/(b*x+a)*c
^6+1/5*d^7/b^3*x^5-1/2/(b*x+a)^2/b*c^7+35/2/(b*x+a)^2/b^4*a^3*c^4
*d^3-21/2/(b*x+a)^2/b^3*a^2*c^5*d^2+7/2/(b*x+a)^2/b^2*a*c^6*d+42/
b^7*d^6/(b*x+a)*a^5*c-105/b^6*d^5/(b*x+a)*a^4*c^2+140/b^5*d^4/(b*
x+a)*a^3*c^3-105/b^4*d^3/(b*x+a)*a^2*c^4+42/b^3*d^2/(b*x+a)*a*c^5
-63/2*d^5/b^4*x^2*a*c^2-70*d^6/b^6*a^3*c*x+126*d^5/b^5*a^2*c^2*x-
105*d^4/b^4*a*c^3*x+105/b^7*d^6*ln(b*x+a)*a^4*c-210/b^6*d^5*ln(b*
x+a)*a^3*c^2+210/b^5*d^4*ln(b*x+a)*a^2*c^3-105/b^4*d^3*ln(b*x+a)*
a*c^4-7/2/(b*x+a)^2/b^7*a^6*c*d^6-7*d^6/b^4*x^3*a*c+21*d^6/b^5*x^
2*a^2*c+21/2/(b*x+a)^2/b^6*a^5*c^2*d^5-35/2/(b*x+a)^2/b^5*a^4*c^3
*d^4
```

Maxima [A] time = 1.36101, size = 639, normalized size = 3.45

$$-\frac{b^{7} c^{7} + 7 \, a b^{6} c^{6} d - 63 \, a^{2} b^{5} c^{5} d^{2} + 175 \, a^{3} b^{4} c^{4} d^{3} - 245 \, a^{4} b^{3} c^{3} d^{4} + 189 \, a^{5} b^{2} c^{2} d^{5} - 77 \, a^{6} b c d^{6} + 13 \, a^{7} d^{7} + 14 \, \left(b^{7} c^{6} d - 6 \, a b^{6} c^{5} d\right.}{2 \, {\left(b^{10} x^{2} + 2 \, a b^{9} x + a^{2} b^{8}\right)}} + \frac{4 \, b^{4} d^{7} x^{5} + 5 \, {\left(7 \, b^{4} c d^{6} - 3 \, a b^{3} d^{7}\right)} x^{4} + 20 \, {\left(7 \, b^{4} c^{2} d^{5} - 7 \, a b^{3} c d^{6} + 2 \, a^{2} b^{2} d^{7}\right)} x^{3} + 10 \, \left(35 \, b^{4} c^{3} d^{4} - 63 \, a b^{3} c^{2} d^{5} + 42 \, a^{2} b^{2} c d^{6} - 1\right.}{20 \, b^{7}} + \frac{21 \, {\left(b^{5} c^{5} d^{2} - 5 \, a b^{4} c^{4} d^{3} + 10 \, a^{2} b^{3} c^{3} d^{4} - 10 \, a^{3} b^{2} c^{2} d^{5} + 5 \, a^{4} b c d^{6} - a^{5} d^{7}\right)} \log\left(b x + a\right)}{b^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b^7*c^7 + 7*a*b^6*c^6*d - 63*a^2*b^5*c^5*d^2 + 175*a^3*b^4*
c^4*d^3 - 245*a^4*b^3*c^3*d^4 + 189*a^5*b^2*c^2*d^5 - 77*a^6*b*c*
d^6 + 13*a^7*d^7 + 14*(b^7*c^6*d - 6*a*b^6*c^5*d^2 + 15*a^2*b^5*c
^4*d^3 - 20*a^3*b^4*c^3*d^4 + 15*a^4*b^3*c^2*d^5 - 6*a^5*b^2*c*d^
6 + a^6*b*d^7)*x)/(b^10*x^2 + 2*a*b^9*x + a^2*b^8) + 1/20*(4*b^4*
d^7*x^5 + 5*(7*b^4*c*d^6 - 3*a*b^3*d^7)*x^4 + 20*(7*b^4*c^2*d^5 -
 7*a*b^3*c*d^6 + 2*a^2*b^2*d^7)*x^3 + 10*(35*b^4*c^3*d^4 - 63*a*b
^3*c^2*d^5 + 42*a^2*b^2*c*d^6 - 10*a^3*b*d^7)*x^2 + 20*(35*b^4*c^
4*d^3 - 105*a*b^3*c^3*d^4 + 126*a^2*b^2*c^2*d^5 - 70*a^3*b*c*d^6
+ 15*a^4*d^7)*x)/b^7 + 21*(b^5*c^5*d^2 - 5*a*b^4*c^4*d^3 + 10*a^2
*b^3*c^3*d^4 - 10*a^3*b^2*c^2*d^5 + 5*a^4*b*c*d^6 - a^5*d^7)*log(
b*x + a)/b^8
```

Fricas [A] time = 0.208704, size = 949, normalized size = 5.13

$$\frac{4 \, b^{7} d^{7} x^{7} - 10 \, b^{7} c^{7} - 70 \, a b^{6} c^{6} d + 630 \, a^{2} b^{5} c^{5} d^{2} - 1750 \, a^{3} b^{4} c^{4} d^{3} + 2450 \, a^{4} b^{3} c^{3} d^{4} - 1890 \, a^{5} b^{2} c^{2} d^{5} + 770 \, a^{6} b c d^{6} - 130 \, a^{7} d^{7} + }{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*b^7*d^7*x^7 - 10*b^7*c^7 - 70*a*b^6*c^6*d + 630*a^2*b^5*c
^5*d^2 - 1750*a^3*b^4*c^4*d^3 + 2450*a^4*b^3*c^3*d^4 - 1890*a^5*b
^2*c^2*d^5 + 770*a^6*b*c*d^6 - 130*a^7*d^7 + 7*(5*b^7*c*d^6 - a*b
^6*d^7)*x^6 + 14*(10*b^7*c^2*d^5 - 5*a*b^6*c*d^6 + a^2*b^5*d^7)*x
^5 + 35*(10*b^7*c^3*d^4 - 10*a*b^6*c^2*d^5 + 5*a^2*b^5*c*d^6 - a^
3*b^4*d^7)*x^4 + 140*(5*b^7*c^4*d^3 - 10*a*b^6*c^3*d^4 + 10*a^2*b
^5*c^2*d^5 - 5*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 10*(140*a*b^6*c
^4*d^3 - 385*a^2*b^5*c^3*d^4 + 441*a^3*b^4*c^2*d^5 - 238*a^4*b^3*
c*d^6 + 50*a^5*b^2*d^7)*x^2 - 20*(7*b^7*c^6*d - 42*a*b^6*c^5*d^2
+ 70*a^2*b^5*c^4*d^3 - 35*a^3*b^4*c^3*d^4 - 21*a^4*b^3*c^2*d^5 +
28*a^5*b^2*c*d^6 - 8*a^6*b*d^7)*x + 420*(a^2*b^5*c^5*d^2 - 5*a^3*
b^4*c^4*d^3 + 10*a^4*b^3*c^3*d^4 - 10*a^5*b^2*c^2*d^5 + 5*a^6*b*c
*d^6 - a^7*d^7 + (b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*
d^4 - 10*a^3*b^4*c^2*d^5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*x^2 + 2
*(a*b^6*c^5*d^2 - 5*a^2*b^5*c^4*d^3 + 10*a^3*b^4*c^3*d^4 - 10*a^4
*b^3*c^2*d^5 + 5*a^5*b^2*c*d^6 - a^6*b*d^7)*x)*log(b*x + a))/(b^1
0*x^2 + 2*a*b^9*x + a^2*b^8)
```

Sympy [A] time = 11.8936, size = 437, normalized size = 2.36

$$-\frac{13a^7d^7 - 77a^6bcd^6 + 189a^5b^2c^2d^5 - 245a^4b^3c^3d^4 + 175a^3b^4c^4d^3 - 63a^2b^5c^5d^2 + 7ab^6c^6d + b^7c^7 + x\left(14a^6bd^7 - 84a^5b^2cd^6\right.}{2a^2b^8 + 4ab^9x + 2b^{10}x^2}$$
$$+\frac{d^7x^5}{5b^3} - \frac{x^4\left(3ad^7 - 7bcd^6\right)}{4b^4} + \frac{x^3\left(2a^2d^7 - 7abcd^6 + 7b^2c^2d^5\right)}{b^5}$$
$$-\frac{x^2\left(10a^3d^7 - 42a^2bcd^6 + 63ab^2c^2d^5 - 35b^3c^3d^4\right)}{2b^6}$$
$$+\frac{x\left(15a^4d^7 - 70a^3bcd^6 + 126a^2b^2c^2d^5 - 105ab^3c^3d^4 + 35b^4c^4d^3\right)}{b^7} - \frac{21d^2(ad - bc)^5\log(a + bx)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**3,x)
```

```
[Out] -(13*a**7*d**7 - 77*a**6*b*c*d**6 + 189*a**5*b**2*c**2*d**5 - 245
*a**4*b**3*c**3*d**4 + 175*a**3*b**4*c**4*d**3 - 63*a**2*b**5*c**
5*d**2 + 7*a*b**6*c**6*d + b**7*c**7 + x*(14*a**6*b*d**7 - 84*a**
5*b**2*c*d**6 + 210*a**4*b**3*c**2*d**5 - 280*a**3*b**4*c**3*d**4
 + 210*a**2*b**5*c**4*d**3 - 84*a*b**6*c**5*d**2 + 14*b**7*c**6*d
))/(2*a**2*b**8 + 4*a*b**9*x + 2*b**10*x**2) + d**7*x**5/(5*b**3)
 - x**4*(3*a*d**7 - 7*b*c*d**6)/(4*b**4) + x**3*(2*a**2*d**7 - 7*
a*b*c*d**6 + 7*b**2*c**2*d**5)/b**5 - x**2*(10*a**3*d**7 - 42*a**
2*b*c*d**6 + 63*a*b**2*c**2*d**5 - 35*b**3*c**3*d**4)/(2*b**6) +
x*(15*a**4*d**7 - 70*a**3*b*c*d**6 + 126*a**2*b**2*c**2*d**5 - 10
5*a*b**3*c**3*d**4 + 35*b**4*c**4*d**3)/b**7 - 21*d**2*(a*d - b*c
)**5*log(a + b*x)/b**8
```

GIAC/XCAS [A] time = 0.221382, size = 644, normalized size = 3.48

$$\frac{21\left(b^5c^5d^2 - 5\,ab^4c^4d^3 + 10\,a^2b^3c^3d^4 - 10\,a^3b^2c^2d^5 + 5\,a^4bcd^6 - a^5d^7\right)\ln\left(|bx + a|\right)}{b^8}$$
$$-\frac{b^7c^7 + 7\,ab^6c^6d - 63\,a^2b^5c^5d^2 + 175\,a^3b^4c^4d^3 - 245\,a^4b^3c^3d^4 + 189\,a^5b^2c^2d^5 - 77\,a^6bcd^6 + 13\,a^7d^7 + 14\left(b^7c^6d - 6\,ab^6c^5d\right.}{2\,(bx + a)^2b^8}$$
$$+\frac{4\,b^{12}d^7x^5 + 35\,b^{12}cd^6x^4 - 15\,ab^{11}d^7x^4 + 140\,b^{12}c^2d^5x^3 - 140\,ab^{11}cd^6x^3 + 40\,a^2b^{10}d^7x^3 + 350\,b^{12}c^3d^4x^2 - 630\,ab^{11}c^2d^5x^2}{20\,b^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 21*(b^5*c^5*d^2 - 5*a*b^4*c^4*d^3 + 10*a^2*b^3*c^3*d^4 - 10*a^3*b
^2*c^2*d^5 + 5*a^4*b*c*d^6 - a^5*d^7)*ln(abs(b*x + a))/b^8 - 1/2*
(b^7*c^7 + 7*a*b^6*c^6*d - 63*a^2*b^5*c^5*d^2 + 175*a^3*b^4*c^4*d
^3 - 245*a^4*b^3*c^3*d^4 + 189*a^5*b^2*c^2*d^5 - 77*a^6*b*c*d^6 +
 13*a^7*d^7 + 14*(b^7*c^6*d - 6*a*b^6*c^5*d^2 + 15*a^2*b^5*c^4*d^
3 - 20*a^3*b^4*c^3*d^4 + 15*a^4*b^3*c^2*d^5 - 6*a^5*b^2*c*d^6 + a
^6*b*d^7)*x)/((b*x + a)^2*b^8) + 1/20*(4*b^12*d^7*x^5 + 35*b^12*c
*d^6*x^4 - 15*a*b^11*d^7*x^4 + 140*b^12*c^2*d^5*x^3 - 140*a*b^11*
c*d^6*x^3 + 40*a^2*b^10*d^7*x^3 + 350*b^12*c^3*d^4*x^2 - 630*a*b^
11*c^2*d^5*x^2 + 420*a^2*b^10*c*d^6*x^2 - 100*a^3*b^9*d^7*x^2 + 7
00*b^12*c^4*d^3*x - 2100*a*b^11*c^3*d^4*x + 2520*a^2*b^10*c^2*d^5
*x - 1400*a^3*b^9*c*d^6*x + 300*a^4*b^8*d^7*x)/b^15
```

3.1286 $\int \frac{(c+dx)^7}{(a+bx)^4}\,dx$

Optimal. Leaf size=187

$$\frac{7d^6(a+bx)^3(bc-ad)}{3b^8}+\frac{21d^5(a+bx)^2(bc-ad)^2}{2b^8}+\frac{35d^3(bc-ad)^4\log(a+bx)}{b^8}-\frac{21d^2(bc-ad)^5}{b^8(a+bx)}-\frac{7d(bc-ad)^6}{2b^8(a+bx)^2}-\frac{(bc-ad)^7}{3b^8(a+bx)^3}+\frac{d^7(a+bx)^4}{4b^8}+\frac{35d^4x(bc-ad)^3}{b^7}$$

```
[Out] (35*d^4*(b*c - a*d)^3*x)/b^7 - (b*c - a*d)^7/(3*b^8*(a + b*x)^3)
- (7*d*(b*c - a*d)^6)/(2*b^8*(a + b*x)^2) - (21*d^2*(b*c - a*d)^5
)/(b^8*(a + b*x)) + (21*d^5*(b*c - a*d)^2*(a + b*x)^2)/(2*b^8) +
(7*d^6*(b*c - a*d)*(a + b*x)^3)/(3*b^8) + (d^7*(a + b*x)^4)/(4*b^
8) + (35*d^3*(b*c - a*d)^4*Log[a + b*x])/b^8
```

Rubi [A] time = 0.476113, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{7d^6(a+bx)^3(bc-ad)}{3b^8}+\frac{21d^5(a+bx)^2(bc-ad)^2}{2b^8}+\frac{35d^3(bc-ad)^4\log(a+bx)}{b^8}-\frac{21d^2(bc-ad)^5}{b^8(a+bx)}-\frac{7d(bc-ad)^6}{2b^8(a+bx)^2}-\frac{(bc-ad)^7}{3b^8(a+bx)^3}+\frac{d^7(a+bx)^4}{4b^8}+\frac{35d^4x(bc-ad)^3}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^4,x]
```

```
[Out] (35*d^4*(b*c - a*d)^3*x)/b^7 - (b*c - a*d)^7/(3*b^8*(a + b*x)^3)
- (7*d*(b*c - a*d)^6)/(2*b^8*(a + b*x)^2) - (21*d^2*(b*c - a*d)^5
)/(b^8*(a + b*x)) + (21*d^5*(b*c - a*d)^2*(a + b*x)^2)/(2*b^8) +
(7*d^6*(b*c - a*d)*(a + b*x)^3)/(3*b^8) + (d^7*(a + b*x)^4)/(4*b^
8) + (35*d^3*(b*c - a*d)^4*Log[a + b*x])/b^8
```

Rubi in Sympy [A] time = 71.1405, size = 172, normalized size = 0.92

$$-\frac{35d^4x\left(ad-bc\right)^3}{b^7}+\frac{d^7\left(a+bx\right)^4}{4b^8}-\frac{7d^6\left(a+bx\right)^3\left(ad-bc\right)}{3b^8}+\frac{21d^5\left(a+bx\right)^2\left(ad-bc\right)^2}{2b^8}+\frac{35d^3\left(ad-bc\right)^4\log\left(a+bx\right)}{b^8}+\frac{21d^2\left(ad-bc\right)^5}{b^8\left(a+bx\right)}-\frac{7d\left(ad-bc\right)^6}{2b^8\left(a+bx\right)^2}+\frac{\left(ad-bc\right)^7}{3b^8\left(a+bx\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**4,x)
```

```
[Out] -35*d**4*x*(a*d - b*c)**3/b**7 + d**7*(a + b*x)**4/(4*b**8) - 7*d
**6*(a + b*x)**3*(a*d - b*c)/(3*b**8) + 21*d**5*(a + b*x)**2*(a*d
 - b*c)**2/(2*b**8) + 35*d**3*(a*d - b*c)**4*log(a + b*x)/b**8 +
21*d**2*(a*d - b*c)**5/(b**8*(a + b*x)) - 7*d*(a*d - b*c)**6/(2*b
**8*(a + b*x)**2) + (a*d - b*c)**7/(3*b**8*(a + b*x)**3)
```

Mathematica [A] time = 0.1722, size = 199, normalized size = 1.06

$$\frac{6b^2d^5x^2\left(10a^2d^2-28abcd+21b^2c^2\right)+12bd^4x\left(-20a^3d^3+70a^2bcd^2-84ab^2c^2d+35b^3c^3\right)+4b^3d^6x^3(7bc-4ad)+420d^3(b}{12b^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^4,x]
```

```
[Out] (12*b*d^4*(35*b^3*c^3 - 84*a*b^2*c^2*d + 70*a^2*b*c*d^2 - 20*a^3*
d^3)*x + 6*b^2*d^5*(21*b^2*c^2 - 28*a*b*c*d + 10*a^2*d^2)*x^2 + 4
*b^3*d^6*(7*b*c - 4*a*d)*x^3 + 3*b^4*d^7*x^4 - (4*(b*c - a*d)^7)/
(a + b*x)^3 - (42*d*(b*c - a*d)^6)/(a + b*x)^2 + (252*d^2*(-(b*c)
 + a*d)^5)/(a + b*x) + 420*d^3*(b*c - a*d)^4*Log[a + b*x])/(12*b^
8)
```

Maple [B] time = 0.018, size = 622, normalized size = 3.3

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^4,x)
```

```
[Out] 1/3/b^8/(b*x+a)^3*a^7*d^7-7/2/b^8*d^7/(b*x+a)^2*a^6-7/2/b^2*d/(b*
x+a)^2*c^6+21/b^8*d^7/(b*x+a)*a^5-21/b^3*d^2/(b*x+a)*c^5-4/3*d^7/
b^5*x^3*a+7/3*d^6/b^4*x^3*c+5*d^7/b^6*x^2*a^2+21/2*d^5/b^4*x^2*c^
2-20*d^7/b^7*a^3*x+35*d^4/b^4*c^3*x+35/b^8*d^7*ln(b*x+a)*a^4+35/b
^4*d^3*ln(b*x+a)*c^4+70*d^6/b^6*a^2*c*x-14*d^6/b^5*x^2*a*c-1/3/b/
(b*x+a)^3*c^7+1/4*d^7/b^4*x^4-105/b^7*d^6/(b*x+a)*a^4*c+210/b^6*d
^5/(b*x+a)*a^3*c^2-210/b^5*d^4/(b*x+a)*a^2*c^3+105/b^4*d^3/(b*x+a
)*a*c^4-140/b^7*d^6*ln(b*x+a)*a^3*c+210/b^6*d^5*ln(b*x+a)*a^2*c^2
-140/b^5*d^4*ln(b*x+a)*a*c^3-7/3/b^7/(b*x+a)^3*a^6*c*d^6+7/b^6/(b
*x+a)^3*a^5*c^2*d^5-35/3/b^5/(b*x+a)^3*a^4*c^3*d^4+35/3/b^4/(b*x+
a)^3*a^3*c^4*d^3-7/b^3/(b*x+a)^3*a^2*c^5*d^2+7/3/b^2/(b*x+a)^3*a*
c^6*d-84*d^5/b^5*a*c^2*x-105/2/b^4*d^3/(b*x+a)^2*a^2*c^4+21/b^3*d
^2/(b*x+a)^2*a*c^5+21/b^7*d^6/(b*x+a)^2*a^5*c-105/2/b^6*d^5/(b*x+
a)^2*a^4*c^2+70/b^5*d^4/(b*x+a)^2*a^3*c^3
```

Maxima [A] time = 1.37739, size = 653, normalized size = 3.49

$$-\frac{2\,b^7c^7 + 7\,ab^6c^6d + 42\,a^2b^5c^5d^2 - 385\,a^3b^4c^4d^3 + 910\,a^4b^3c^3d^4 - 987\,a^5b^2c^2d^5 + 518\,a^6bcd^6 - 107\,a^7d^7 + 126\,\left(b^7c^5d^2 - 5\,a\right.}{}$$
$$+\frac{3\,b^3d^7x^4 + 4\left(7\,b^3cd^6 - 4\,ab^2d^7\right)x^3 + 6\left(21\,b^3c^2d^5 - 28\,ab^2cd^6 + 10\,a^2bd^7\right)x^2 + 12\left(35\,b^3c^3d^4 - 84\,ab^2c^2d^5 + 70\,a^2bcd^6 - 2\right.}{12\,b^7}$$
$$+\frac{35\left(b^4c^4d^3 - 4\,ab^3c^3d^4 + 6\,a^2b^2c^2d^5 - 4\,a^3bcd^6 + a^4d^7\right)\log\left(bx + a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/6*(2*b^7*c^7 + 7*a*b^6*c^6*d + 42*a^2*b^5*c^5*d^2 - 385*a^3*b^
4*c^4*d^3 + 910*a^4*b^3*c^3*d^4 - 987*a^5*b^2*c^2*d^5 + 518*a^6*b
*c*d^6 - 107*a^7*d^7 + 126*(b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^
2*b^5*c^3*d^4 - 10*a^3*b^4*c^2*d^5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^
7)*x^2 + 21*(b^7*c^6*d + 6*a*b^6*c^5*d^2 - 45*a^2*b^5*c^4*d^3 + 1
00*a^3*b^4*c^3*d^4 - 105*a^4*b^3*c^2*d^5 + 54*a^5*b^2*c*d^6 - 11*
a^6*b*d^7)*x)/(b^11*x^3 + 3*a*b^10*x^2 + 3*a^2*b^9*x + a^3*b^8) +
 1/12*(3*b^3*d^7*x^4 + 4*(7*b^3*c*d^6 - 4*a*b^2*d^7)*x^3 + 6*(21*
b^3*c^2*d^5 - 28*a*b^2*c*d^6 + 10*a^2*b*d^7)*x^2 + 12*(35*b^3*c^3
*d^4 - 84*a*b^2*c^2*d^5 + 70*a^2*b*c*d^6 - 20*a^3*d^7)*x)/b^7 + 3
5*(b^4*c^4*d^3 - 4*a*b^3*c^3*d^4 + 6*a^2*b^2*c^2*d^5 - 4*a^3*b*c*
d^6 + a^4*d^7)*log(b*x + a)/b^8
```

Fricas [A] time = 0.20226, size = 998, normalized size = 5.34

$$\frac{3\,b^7d^7x^7 - 4\,b^7c^7 - 14\,ab^6c^6d - 84\,a^2b^5c^5d^2 + 770\,a^3b^4c^4d^3 - 1820\,a^4b^3c^3d^4 + 1974\,a^5b^2c^2d^5 - 1036\,a^6bcd^6 + 214\,a^7d^7 + 7\,\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^7*d^7*x^7 - 4*b^7*c^7 - 14*a*b^6*c^6*d - 84*a^2*b^5*c^5
*d^2 + 770*a^3*b^4*c^4*d^3 - 1820*a^4*b^3*c^3*d^4 + 1974*a^5*b^2*
c^2*d^5 - 1036*a^6*b*c*d^6 + 214*a^7*d^7 + 7*(4*b^7*c*d^6 - a*b^6
*d^7)*x^6 + 21*(6*b^7*c^2*d^5 - 4*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5
+ 105*(4*b^7*c^3*d^4 - 6*a*b^6*c^2*d^5 + 4*a^2*b^5*c*d^6 - a^3*b^
4*d^7)*x^4 + 2*(630*a*b^6*c^3*d^4 - 1323*a^2*b^5*c^2*d^5 + 1022*a
^3*b^4*c*d^6 - 278*a^4*b^3*d^7)*x^3 - 6*(42*b^7*c^5*d^2 - 210*a*b
^6*c^4*d^3 + 210*a^2*b^5*c^3*d^4 + 63*a^3*b^4*c^2*d^5 - 182*a^4*b
^3*c*d^6 + 68*a^5*b^2*d^7)*x^2 - 6*(7*b^7*c^6*d + 42*a*b^6*c^5*d^
2 - 315*a^2*b^5*c^4*d^3 + 630*a^3*b^4*c^3*d^4 - 567*a^4*b^3*c^2*d
^5 + 238*a^5*b^2*c*d^6 - 37*a^6*b*d^7)*x + 420*(a^3*b^4*c^4*d^3 -
 4*a^4*b^3*c^3*d^4 + 6*a^5*b^2*c^2*d^5 - 4*a^6*b*c*d^6 + a^7*d^7
+ (b^7*c^4*d^3 - 4*a*b^6*c^3*d^4 + 6*a^2*b^5*c^2*d^5 - 4*a^3*b^4*
c*d^6 + a^4*b^3*d^7)*x^3 + 3*(a*b^6*c^4*d^3 - 4*a^2*b^5*c^3*d^4 +
```

```
6*a^3*b^4*c^2*d^5 - 4*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 3*(a^2*
b^5*c^4*d^3 - 4*a^3*b^4*c^3*d^4 + 6*a^4*b^3*c^2*d^5 - 4*a^5*b^2*c
*d^6 + a^6*b*d^7)*x)*log(b*x + a))/(b^11*x^3 + 3*a*b^10*x^2 + 3*a
^2*b^9*x + a^3*b^8)
```

Sympy [A] time = 24.3712, size = 468, normalized size = 2.5

$$\frac{107a^7d^7 - 518a^6bcd^6 + 987a^5b^2c^2d^5 - 910a^4b^3c^3d^4 + 385a^3b^4c^4d^3 - 42a^2b^5c^5d^2 - 7ab^6c^6d - 2b^7c^7 + x^2\left(126a^5b^2d^7 - 630a\right.}{}$$

$$+\frac{d^7x^4}{4b^4} - \frac{x^3\left(4ad^7 - 7bcd^6\right)}{3b^5} + \frac{x^2\left(10a^2d^7 - 28abcd^6 + 21b^2c^2d^5\right)}{2b^6} - \frac{x\left(20a^3d^7 - 70a^2bcd^6 + 84ab^2c^2d^5 - 35b^3c^3d^4\right)}{b^7} + \frac{35d^3\left(ad - bc\right)^4\log\left(a + bx\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**4,x)
```

```
[Out] (107*a**7*d**7 - 518*a**6*b*c*d**6 + 987*a**5*b**2*c**2*d**5 - 91
0*a**4*b**3*c**3*d**4 + 385*a**3*b**4*c**4*d**3 - 42*a**2*b**5*c*
*5*d**2 - 7*a*b**6*c**6*d - 2*b**7*c**7 + x**2*(126*a**5*b**2*d**
7 - 630*a**4*b**3*c*d**6 + 1260*a**3*b**4*c**2*d**5 - 1260*a**2*b
**5*c**3*d**4 + 630*a*b**6*c**4*d**3 - 126*b**7*c**5*d**2) + x*(2
31*a**6*b*d**7 - 1134*a**5*b**2*c*d**6 + 2205*a**4*b**3*c**2*d**5
 - 2100*a**3*b**4*c**3*d**4 + 945*a**2*b**5*c**4*d**3 - 126*a*b**
6*c**5*d**2 - 21*b**7*c**6*d))/(6*a**3*b**8 + 18*a**2*b**9*x + 18
*a*b**10*x**2 + 6*b**11*x**3) + d**7*x**4/(4*b**4) - x**3*(4*a*d*
*7 - 7*b*c*d**6)/(3*b**5) + x**2*(10*a**2*d**7 - 28*a*b*c*d**6 +
21*b**2*c**2*d**5)/(2*b**6) - x*(20*a**3*d**7 - 70*a**2*b*c*d**6
+ 84*a*b**2*c**2*d**5 - 35*b**3*c**3*d**4)/b**7 + 35*d**3*(a*d -
b*c)**4*log(a + b*x)/b**8
```

GIAC/XCAS [A] time = 0.227247, size = 635, normalized size = 3.4

$$\frac{35\left(b^4c^4d^3 - 4\,ab^3c^3d^4 + 6\,a^2b^2c^2d^5 - 4\,a^3bcd^6 + a^4d^7\right)\ln\left(|bx + a|\right)}{b^8} - \frac{2\,b^7c^7 + 7\,ab^6c^6d + 42\,a^2b^5c^5d^2 - 385\,a^3b^4c^4d^3 + 910\,a^4b^3c^3d^4 - 987\,a^5b^2c^2d^5 + 518\,a^6bcd^6 - 107\,a^7d^7 + 126\left(b^7c^5d^2 - 5\,a\right.}{}$$

$$+\frac{3\,b^{12}d^7x^4 + 28\,b^{12}cd^6x^3 - 16\,ab^{11}d^7x^3 + 126\,b^{12}c^2d^5x^2 - 168\,ab^{11}cd^6x^2 + 60\,a^2b^{10}d^7x^2 + 420\,b^{12}c^3d^4x - 1008\,ab^{11}c^2d^5x +}{12\,b^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] 35*(b^4*c^4*d^3 - 4*a*b^3*c^3*d^4 + 6*a^2*b^2*c^2*d^5 - 4*a^3*b*c
*d^6 + a^4*d^7)*ln(abs(b*x + a))/b^8 - 1/6*(2*b^7*c^7 + 7*a*b^6*c
^6*d + 42*a^2*b^5*c^5*d^2 - 385*a^3*b^4*c^4*d^3 + 910*a^4*b^3*c^3
*d^4 - 987*a^5*b^2*c^2*d^5 + 518*a^6*b*c*d^6 - 107*a^7*d^7 + 126*
(b^7*c^5*d^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*
c^2*d^5 + 5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*x^2 + 21*(b^7*c^6*d + 6*
a*b^6*c^5*d^2 - 45*a^2*b^5*c^4*d^3 + 100*a^3*b^4*c^3*d^4 - 105*a^
4*b^3*c^2*d^5 + 54*a^5*b^2*c*d^6 - 11*a^6*b*d^7)*x)/((b*x + a)^3*
b^8) + 1/12*(3*b^12*d^7*x^4 + 28*b^12*c*d^6*x^3 - 16*a*b^11*d^7*x
^3 + 126*b^12*c^2*d^5*x^2 - 168*a*b^11*c*d^6*x^2 + 60*a^2*b^10*d^
7*x^2 + 420*b^12*c^3*d^4*x - 1008*a*b^11*c^2*d^5*x + 840*a^2*b^10
*c*d^6*x - 240*a^3*b^9*d^7*x)/b^16
```

3.1287 $\int \frac{(c+dx)^7}{(a+bx)^5} dx$

Optimal. Leaf size=187

$$\frac{7d^6(a+bx)^2(bc-ad)}{2b^8}+\frac{35d^4(bc-ad)^3\log(a+bx)}{b^8}-\frac{35d^3(bc-ad)^4}{b^8(a+bx)}-\frac{21d^2(bc-ad)^5}{2b^8(a+bx)^2}-\frac{7d(bc-ad)^6}{3b^8(a+bx)^3}-\frac{(bc-ad)^7}{4b^8(a+bx)^4}+\frac{d^7(a+bx)^3}{3b^8}+\frac{21d^5x(bc-ad)^2}{b^7}$$

```
[Out] (21*d^5*(b*c - a*d)^2*x)/b^7 - (b*c - a*d)^7/(4*b^8*(a + b*x)^4)
- (7*d*(b*c - a*d)^6)/(3*b^8*(a + b*x)^3) - (21*d^2*(b*c - a*d)^5
)/(2*b^8*(a + b*x)^2) - (35*d^3*(b*c - a*d)^4)/(b^8*(a + b*x)) +
(7*d^6*(b*c - a*d)*(a + b*x)^2)/(2*b^8) + (d^7*(a + b*x)^3)/(3*b^
8) + (35*d^4*(b*c - a*d)^3*Log[a + b*x])/b^8
```

Rubi [A] time = 0.447685, antiderivative size = 187, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{7d^6(a+bx)^2(bc-ad)}{2b^8}+\frac{35d^4(bc-ad)^3\log(a+bx)}{b^8}-\frac{35d^3(bc-ad)^4}{b^8(a+bx)}-\frac{21d^2(bc-ad)^5}{2b^8(a+bx)^2}-\frac{7d(bc-ad)^6}{3b^8(a+bx)^3}-\frac{(bc-ad)^7}{4b^8(a+bx)^4}+\frac{d^7(a+bx)^3}{3b^8}+\frac{21d^5x(bc-ad)^2}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^5,x]
```

```
[Out] (21*d^5*(b*c - a*d)^2*x)/b^7 - (b*c - a*d)^7/(4*b^8*(a + b*x)^4)
- (7*d*(b*c - a*d)^6)/(3*b^8*(a + b*x)^3) - (21*d^2*(b*c - a*d)^5
)/(2*b^8*(a + b*x)^2) - (35*d^3*(b*c - a*d)^4)/(b^8*(a + b*x)) +
(7*d^6*(b*c - a*d)*(a + b*x)^2)/(2*b^8) + (d^7*(a + b*x)^3)/(3*b^
8) + (35*d^4*(b*c - a*d)^3*Log[a + b*x])/b^8
```

Rubi in Sympy [A] time = 65.4729, size = 172, normalized size = 0.92

$$\frac{21d^5x(ad-bc)^2}{b^7}+\frac{d^7(a+bx)^3}{3b^8}-\frac{7d^6(a+bx)^2(ad-bc)}{2b^8}-\frac{35d^4(ad-bc)^3\log(a+bx)}{b^8}-\frac{35d^3(ad-bc)^4}{b^8(a+bx)}+\frac{21d^2(ad-bc)^5}{2b^8(a+bx)^2}-\frac{7d(ad-bc)^6}{3b^8(a+bx)^3}+\frac{(ad-bc)^7}{4b^8(a+bx)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**5,x)
```

```
[Out] 21*d**5*x*(a*d - b*c)**2/b**7 + d**7*(a + b*x)**3/(3*b**8) - 7*d*
*6*(a + b*x)**2*(a*d - b*c)/(2*b**8) - 35*d**4*(a*d - b*c)**3*log
(a + b*x)/b**8 - 35*d**3*(a*d - b*c)**4/(b**8*(a + b*x)) + 21*d**
2*(a*d - b*c)**5/(2*b**8*(a + b*x)**2) - 7*d*(a*d - b*c)**6/(3*b*
*8*(a + b*x)**3) + (a*d - b*c)**7/(4*b**8*(a + b*x)**4)
```

Mathematica [A] time = 0.180831, size = 173, normalized size = 0.93

$$\frac{12bd^5x\left(15a^2d^2-35abcd+21b^2c^2\right)+6b^2d^6x^2(7bc-5ad)+420d^4(bc-ad)^3\log(a+bx)-\frac{420d^3(bc-ad)^4}{a+bx}+\frac{126d^2(ad-bc)^5}{(a+bx)^2}-28}{12b^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^5,x]
```

```
[Out] (12*b*d^5*(21*b^2*c^2 - 35*a*b*c*d + 15*a^2*d^2)*x + 6*b^2*d^6*(7
*b*c - 5*a*d)*x^2 + 4*b^3*d^7*x^3 - (3*(b*c - a*d)^7)/(a + b*x)^4
 - (28*d*(b*c - a*d)^6)/(a + b*x)^3 + (126*d^2*(-(b*c) + a*d)^5)/
(a + b*x)^2 - (420*d^3*(b*c - a*d)^4)/(a + b*x) + 420*d^4*(b*c -
a*d)^3*Log[a + b*x])/(12*b^8)
```

Maple [B] time = 0.02, size = 641, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^5,x)
```

```
[Out] 21/2/b^8*d^7/(b*x+a)^2*a^5-21/2/b^3*d^2/(b*x+a)^2*c^5-35/b^8*d^7/
(b*x+a)*a^4-35/b^4*d^3/(b*x+a)*c^4-5/2*d^7/b^6*x^2*a+7/2*d^6/b^5*
x^2*c+15*d^7/b^7*a^2*x+21*d^5/b^5*c^2*x-35/b^8*d^7*ln(b*x+a)*a^3+
35/b^5*d^4*ln(b*x+a)*c^3+1/4/b^8/(b*x+a)^4*a^7*d^7-7/3/b^8*d^7/(b
*x+a)^3*a^6-7/3/b^2*d/(b*x+a)^3*c^6+140/b^5*d^4/(b*x+a)*a*c^3+105
/2/b^4*d^3/(b*x+a)^2*a*c^4-105/2/b^7*d^6/(b*x+a)^2*a^4*c+105/b^6*
d^5/(b*x+a)^2*a^3*c^2-105/b^5*d^4/(b*x+a)^2*a^2*c^3+21/4/b^6/(b*x
+a)^4*a^5*c^2*d^5-35/4/b^5/(b*x+a)^4*a^4*c^3*d^4+35/4/b^4/(b*x+a)
^4*a^3*c^4*d^3-21/4/b^3/(b*x+a)^4*a^2*c^5*d^2+7/4/b^2/(b*x+a)^4*a
*c^6*d+14/b^7*d^6/(b*x+a)^3*a^5*c-35/b^6*d^5/(b*x+a)^3*a^4*c^2+14
0/3/b^5*d^4/(b*x+a)^3*a^3*c^3-35/b^4*d^3/(b*x+a)^3*a^2*c^4+14/b^3
*d^2/(b*x+a)^3*a*c^5-7/4/b^7/(b*x+a)^4*a^6*c*d^6+105/b^7*d^6*ln(b
*x+a)*a^2*c-105/b^6*d^5*ln(b*x+a)*a*c^2+140/b^7*d^6/(b*x+a)*a^3*c
-210/b^6*d^5/(b*x+a)*a^2*c^2-35*d^6/b^6*a*c*x+1/3*d^7/b^5*x^3-1/4
/b/(b*x+a)^4*c^7
```

Maxima [A] time = 1.40942, size = 667, normalized size = 3.57

$$-\frac{3\,b^7c^7+7\,ab^6c^6d+21\,a^2b^5c^5d^2+105\,a^3b^4c^4d^3-875\,a^4b^3c^3d^4+1617\,a^5b^2c^2d^5-1197\,a^6bcd^6+319\,a^7d^7+420\,\left(b^7c^4d^3-\right.}{}$$

$$+\frac{2\,b^2d^7x^3+3\,\left(7\,b^2cd^6-5\,abd^7\right)x^2+6\,\left(21\,b^2c^2d^5-35\,abcd^6+15\,a^2d^7\right)x}{6\,b^7}$$

$$+\frac{35\,\left(b^3c^3d^4-3\,ab^2c^2d^5+3\,a^2bcd^6-a^3d^7\right)\log\left(bx+a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(3*b^7*c^7 + 7*a*b^6*c^6*d + 21*a^2*b^5*c^5*d^2 + 105*a^3*b
^4*c^4*d^3 - 875*a^4*b^3*c^3*d^4 + 1617*a^5*b^2*c^2*d^5 - 1197*a^
6*b*c*d^6 + 319*a^7*d^7 + 420*(b^7*c^4*d^3 - 4*a*b^6*c^3*d^4 + 6*
a^2*b^5*c^2*d^5 - 4*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 126*(b^7*c
^5*d^2 + 5*a*b^6*c^4*d^3 - 30*a^2*b^5*c^3*d^4 + 50*a^3*b^4*c^2*d^
5 - 35*a^4*b^3*c*d^6 + 9*a^5*b^2*d^7)*x^2 + 28*(b^7*c^6*d + 3*a*b
^6*c^5*d^2 + 15*a^2*b^5*c^4*d^3 - 110*a^3*b^4*c^3*d^4 + 195*a^4*b
^3*c^2*d^5 - 141*a^5*b^2*c*d^6 + 37*a^6*b*d^7)*x)/(b^12*x^4 + 4*a
*b^11*x^3 + 6*a^2*b^10*x^2 + 4*a^3*b^9*x + a^4*b^8) + 1/6*(2*b^2*
d^7*x^3 + 3*(7*b^2*c*d^6 - 5*a*b*d^7)*x^2 + 6*(21*b^2*c^2*d^5 - 3
5*a*b*c*d^6 + 15*a^2*d^7)*x)/b^7 + 35*(b^3*c^3*d^4 - 3*a*b^2*c^2*
d^5 + 3*a^2*b*c*d^6 - a^3*d^7)*log(b*x + a)/b^8
```

Fricas [A] time = 0.212734, size = 1018, normalized size = 5.44

$$\frac{4\,b^7d^7x^7-3\,b^7c^7-7\,ab^6c^6d-21\,a^2b^5c^5d^2-105\,a^3b^4c^4d^3+875\,a^4b^3c^3d^4-1617\,a^5b^2c^2d^5+1197\,a^6bcd^6-319\,a^7d^7+14\,\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*b^7*d^7*x^7 - 3*b^7*c^7 - 7*a*b^6*c^6*d - 21*a^2*b^5*c^5*
d^2 - 105*a^3*b^4*c^4*d^3 + 875*a^4*b^3*c^3*d^4 - 1617*a^5*b^2*c^
2*d^5 + 1197*a^6*b*c*d^6 - 319*a^7*d^7 + 14*(3*b^7*c*d^6 - a*b^6*
d^7)*x^6 + 84*(3*b^7*c^2*d^5 - 3*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 +
 4*(252*a*b^6*c^2*d^5 - 357*a^2*b^5*c*d^6 + 139*a^3*b^4*d^7)*x^4
- 4*(105*b^7*c^4*d^3 - 420*a*b^6*c^3*d^4 + 252*a^2*b^5*c^2*d^5 +
168*a^3*b^4*c*d^6 - 136*a^4*b^3*d^7)*x^3 - 6*(21*b^7*c^5*d^2 + 10
5*a*b^6*c^4*d^3 - 630*a^2*b^5*c^3*d^4 + 882*a^3*b^4*c^2*d^5 - 462
*a^4*b^3*c*d^6 + 74*a^5*b^2*d^7)*x^2 - 4*(7*b^7*c^6*d + 21*a*b^6*
c^5*d^2 + 105*a^2*b^5*c^4*d^3 - 770*a^3*b^4*c^3*d^4 + 1302*a^4*b^
3*c^2*d^5 - 882*a^5*b^2*c*d^6 + 214*a^6*b*d^7)*x + 420*(a^4*b^3*c
^3*d^4 - 3*a^5*b^2*c^2*d^5 + 3*a^6*b*c*d^6 - a^7*d^7 + (b^7*c^3*d
^4 - 3*a*b^6*c^2*d^5 + 3*a^2*b^5*c*d^6 - a^3*b^4*d^7)*x^4 + 4*(a*
b^6*c^3*d^4 - 3*a^2*b^5*c^2*d^5 + 3*a^3*b^4*c*d^6 - a^4*b^3*d^7)*
```

```
x^3 + 6*(a^2*b^5*c^3*d^4 - 3*a^3*b^4*c^2*d^5 + 3*a^4*b^3*c*d^6 -
a^5*b^2*d^7)*x^2 + 4*(a^3*b^4*c^3*d^4 - 3*a^4*b^3*c^2*d^5 + 3*a^5
*b^2*c*d^6 - a^6*b*d^7)*x)*log(b*x + a))/(b^12*x^4 + 4*a*b^11*x^3
 + 6*a^2*b^10*x^2 + 4*a^3*b^9*x + a^4*b^8)
```

Sympy [A] time = 66.4729, size = 495, normalized size = 2.65

$$-\frac{319a^7d^7 - 1197a^6bcd^6 + 1617a^5b^2c^2d^5 - 875a^4b^3c^3d^4 + 105a^3b^4c^4d^3 + 21a^2b^5c^5d^2 + 7ab^6c^6d + 3b^7c^7 + x^3\left(420a^4b^3d^7 - 1\right.}{}$$

$$+\frac{d^7x^3}{3b^5} - \frac{x^2\left(5ad^7 - 7bcd^6\right)}{2b^6} + \frac{x\left(15a^2d^7 - 35abcd^6 + 21b^2c^2d^5\right)}{b^7} - \frac{35d^4\left(ad - bc\right)^3\log\left(a + bx\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**5,x)
```

```
[Out] -(319*a**7*d**7 - 1197*a**6*b*c*d**6 + 1617*a**5*b**2*c**2*d**5 -
 875*a**4*b**3*c**3*d**4 + 105*a**3*b**4*c**4*d**3 + 21*a**2*b**5
*c**5*d**2 + 7*a*b**6*c**6*d + 3*b**7*c**7 + x**3*(420*a**4*b**3*
d**7 - 1680*a**3*b**4*c*d**6 + 2520*a**2*b**5*c**2*d**5 - 1680*a*
b**6*c**3*d**4 + 420*b**7*c**4*d**3) + x**2*(1134*a**5*b**2*d**7
- 4410*a**4*b**3*c*d**6 + 6300*a**3*b**4*c**2*d**5 - 3780*a**2*b*
*5*c**3*d**4 + 630*a*b**6*c**4*d**3 + 126*b**7*c**5*d**2) + x*(10
36*a**6*b*d**7 - 3948*a**5*b**2*c*d**6 + 5460*a**4*b**3*c**2*d**5
 - 3080*a**3*b**4*c**3*d**4 + 420*a**2*b**5*c**4*d**3 + 84*a*b**6
*c**5*d**2 + 28*b**7*c**6*d))/(12*a**4*b**8 + 48*a**3*b**9*x + 72
*a**2*b**10*x**2 + 48*a*b**11*x**3 + 12*b**12*x**4) + d**7*x**3/(
3*b**5) - x**2*(5*a*d**7 - 7*b*c*d**6)/(2*b**6) + x*(15*a**2*d**7
 - 35*a*b*c*d**6 + 21*b**2*c**2*d**5)/b**7 - 35*d**4*(a*d - b*c)*
*3*log(a + b*x)/b**8
```

GIAC/XCAS [A] time = 0.229891, size = 891, normalized size = 4.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] 1/6*(2*d^7 + 21*(b^2*c*d^6 - a*b*d^7)/((b*x + a)*b) + 126*(b^4*c^
2*d^5 - 2*a*b^3*c*d^6 + a^2*b^2*d^7)/((b*x + a)^2*b^2))*(b*x + a)
^3/b^8 - 35*(b^3*c^3*d^4 - 3*a*b^2*c^2*d^5 + 3*a^2*b*c*d^6 - a^3*
d^7)*ln(abs(b*x + a)/((b*x + a)^2*abs(b)))/b^8 - 1/12*(3*b^43*c^7
/(b*x + a)^4 + 28*b^42*c^6*d/(b*x + a)^3 - 21*a*b^42*c^6*d/(b*x +
 a)^4 + 126*b^41*c^5*d^2/(b*x + a)^2 - 168*a*b^41*c^5*d^2/(b*x +
a)^3 + 63*a^2*b^41*c^5*d^2/(b*x + a)^4 + 420*b^40*c^4*d^3/(b*x +
a) - 630*a*b^40*c^4*d^3/(b*x + a)^2 + 420*a^2*b^40*c^4*d^3/(b*x +
```

```
 a)^3 - 105*a^3*b^40*c^4*d^3/(b*x + a)^4 - 1680*a*b^39*c^3*d^4/(b
*x + a) + 1260*a^2*b^39*c^3*d^4/(b*x + a)^2 - 560*a^3*b^39*c^3*d^
4/(b*x + a)^3 + 105*a^4*b^39*c^3*d^4/(b*x + a)^4 + 2520*a^2*b^38*
c^2*d^5/(b*x + a) - 1260*a^3*b^38*c^2*d^5/(b*x + a)^2 + 420*a^4*b
^38*c^2*d^5/(b*x + a)^3 - 63*a^5*b^38*c^2*d^5/(b*x + a)^4 - 1680*
a^3*b^37*c*d^6/(b*x + a) + 630*a^4*b^37*c*d^6/(b*x + a)^2 - 168*a
^5*b^37*c*d^6/(b*x + a)^3 + 21*a^6*b^37*c*d^6/(b*x + a)^4 + 420*a
^4*b^36*d^7/(b*x + a) - 126*a^5*b^36*d^7/(b*x + a)^2 + 28*a^6*b^3
6*d^7/(b*x + a)^3 - 3*a^7*b^36*d^7/(b*x + a)^4)/b^44
```

3.1288 $\int \frac{(c+dx)^7}{(a+bx)^6}\,dx$

Optimal. Leaf size=181

$$\frac{21d^5(bc-ad)^2\log(a+bx)}{b^8}-\frac{35d^4(bc-ad)^3}{b^8(a+bx)}-\frac{35d^3(bc-ad)^4}{2b^8(a+bx)^2}-\frac{7d^2(bc-ad)^5}{b^8(a+bx)^3}-\frac{7d(bc-ad)^6}{4b^8(a+bx)^4}-\frac{(bc-ad)^7}{5b^8(a+bx)^5}+\frac{d^6x(7bc-6ad)}{b^7}+\frac{d^7x^2}{2b^6}$$

```
[Out] (d^6*(7*b*c - 6*a*d)*x)/b^7 + (d^7*x^2)/(2*b^6) - (b*c - a*d)^7/(
5*b^8*(a + b*x)^5) - (7*d*(b*c - a*d)^6)/(4*b^8*(a + b*x)^4) - (7
*d^2*(b*c - a*d)^5)/(b^8*(a + b*x)^3) - (35*d^3*(b*c - a*d)^4)/(2
*b^8*(a + b*x)^2) - (35*d^4*(b*c - a*d)^3)/(b^8*(a + b*x)) + (21*
d^5*(b*c - a*d)^2*Log[a + b*x])/b^8
```

Rubi [A] time = 0.44521, antiderivative size = 181, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{21d^5(bc-ad)^2\log(a+bx)}{b^8}-\frac{35d^4(bc-ad)^3}{b^8(a+bx)}-\frac{35d^3(bc-ad)^4}{2b^8(a+bx)^2}-\frac{7d^2(bc-ad)^5}{b^8(a+bx)^3}-\frac{7d(bc-ad)^6}{4b^8(a+bx)^4}-\frac{(bc-ad)^7}{5b^8(a+bx)^5}+\frac{d^6x(7bc-6ad)}{b^7}+\frac{d^7x^2}{2b^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^6,x]
```

```
[Out] (d^6*(7*b*c - 6*a*d)*x)/b^7 + (d^7*x^2)/(2*b^6) - (b*c - a*d)^7/(
5*b^8*(a + b*x)^5) - (7*d*(b*c - a*d)^6)/(4*b^8*(a + b*x)^4) - (7
*d^2*(b*c - a*d)^5)/(b^8*(a + b*x)^3) - (35*d^3*(b*c - a*d)^4)/(2
*b^8*(a + b*x)^2) - (35*d^4*(b*c - a*d)^3)/(b^8*(a + b*x)) + (21*
d^5*(b*c - a*d)^2*Log[a + b*x])/b^8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-d^6\left(6ad-7bc\right)\int\frac{1}{b^7}\,dx+\frac{d^7\int x\,dx}{b^6}+\frac{21d^5\left(ad-bc\right)^2\log\left(a+bx\right)}{b^8}+\frac{35d^4\left(ad-bc\right)^3}{b^8\left(a+bx\right)}-\frac{35d^3\left(ad-bc\right)^4}{2b^8\left(a+bx\right)^2}+\frac{7d^2\left(ad-bc\right)^5}{b^8\left(a+bx\right)^3}-\frac{7d\left(ad-bc\right)^6}{4b^8\left(a+bx\right)^4}+\frac{\left(ad-bc\right)^7}{5b^8\left(a+bx\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**6,x)
```

```
[Out] -d**6*(6*a*d - 7*b*c)*Integral(b**(-7), x) + d**7*Integral(x, x)/
b**6 + 21*d**5*(a*d - b*c)**2*log(a + b*x)/b**8 + 35*d**4*(a*d -
b*c)**3/(b**8*(a + b*x)) - 35*d**3*(a*d - b*c)**4/(2*b**8*(a + b*
x)**2) + 7*d**2*(a*d - b*c)**5/(b**8*(a + b*x)**3) - 7*d*(a*d - b
*c)**6/(4*b**8*(a + b*x)**4) + (a*d - b*c)**7/(5*b**8*(a + b*x)**
5)
```

Mathematica [B] time = 0.2691, size = 389, normalized size = 2.15

$$\frac{459a^7d^7 + 3a^6bd^6(625dx - 406c) + a^5b^2d^5\left(959c^2 - 5250cdx + 2700d^2x^2\right) + 5a^4b^3d^4\left(-28c^3 + 875c^2dx - 1680cd^2x^2 + 260d\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^6,x]
```

```
[Out] (459*a^7*d^7 + 3*a^6*b*d^6*(-406*c + 625*d*x) + a^5*b^2*d^5*(959*
c^2 - 5250*c*d*x + 2700*d^2*x^2) + 5*a^4*b^3*d^4*(-28*c^3 + 875*c
^2*d*x - 1680*c*d^2*x^2 + 260*d^3*x^3) - 5*a^3*b^4*d^3*(7*c^4 + 1
40*c^3*d*x - 1540*c^2*d^2*x^2 + 1120*c*d^3*x^3 + 80*d^4*x^4) - a^
2*b^5*d^2*(14*c^5 + 175*c^4*d*x + 1400*c^3*d^2*x^2 - 6300*c^2*d^3
*x^3 + 700*c*d^4*x^4 + 500*d^5*x^5) - 7*a*b^6*d*(c^6 + 10*c^5*d*x
 + 50*c^4*d^2*x^2 + 200*c^3*d^3*x^3 - 300*c^2*d^4*x^4 - 100*c*d^5
*x^5 + 10*d^6*x^6) - b^7*(4*c^7 + 35*c^6*d*x + 140*c^5*d^2*x^2 +
350*c^4*d^3*x^3 + 700*c^3*d^4*x^4 - 140*c*d^6*x^6 - 10*d^7*x^7) +
 420*d^5*(b*c - a*d)^2*(a + b*x)^5*Log[a + b*x])/(20*b^8*(a + b*x
)^5)
```

Maple [B] time = 0.02, size = 656, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^6,x)
```

```
[Out] 1/2*d^7*x^2/b^6-35/b^5*d^4/(b*x+a)*c^3+1/5/b^8/(b*x+a)^5*a^7*d^7+
21/b^8*d^7*ln(b*x+a)*a^2+21/b^6*d^5*ln(b*x+a)*c^2-7/4/b^8*d^7/(b*
x+a)^4*a^6-7/4/b^2*d/(b*x+a)^4*c^6+7/b^8*d^7/(b*x+a)^3*a^5-7/b^3*
d^2/(b*x+a)^3*c^5-35/2/b^8*d^7/(b*x+a)^2*a^4-35/2/b^4*d^3/(b*x+a)
^2*c^4+35/b^8*d^7/(b*x+a)*a^3-6*d^7/b^7*a*x+7*d^6/b^6*x*c-35/b^7*
d^6/(b*x+a)^3*a^4*c+70/b^6*d^5/(b*x+a)^3*a^3*c^2-70/b^5*d^4/(b*x+
a)^3*a^2*c^3-7/5/b^7/(b*x+a)^5*a^6*c*d^6+21/5/b^6/(b*x+a)^5*a^5*c
^2*d^5+70/b^5*d^4/(b*x+a)^2*a*c^3-7/b^5/(b*x+a)^5*a^4*c^3*d^4+7/b
^4/(b*x+a)^5*a^3*c^4*d^3-21/5/b^3/(b*x+a)^5*a^2*c^5*d^2+7/5/b^2/(
b*x+a)^5*a*c^6*d-42/b^7*d^6*ln(b*x+a)*a*c+21/2/b^7*d^6/(b*x+a)^4*
a^5*c-105/4/b^6*d^5/(b*x+a)^4*a^4*c^2+35/b^5*d^4/(b*x+a)^4*a^3*c^
```

```
3-105/4/b^4*d^3/(b*x+a)^4*a^2*c^4+21/2/b^3*d^2/(b*x+a)^4*a*c^5+35
/b^4*d^3/(b*x+a)^3*a*c^4+70/b^7*d^6/(b*x+a)^2*a^3*c-105/b^6*d^5/(
b*x+a)^2*a^2*c^2-105/b^7*d^6/(b*x+a)*a^2*c+105/b^6*d^5/(b*x+a)*a*
c^2-1/5/b/(b*x+a)^5*c^7
```

Maxima [A] time = 1.43137, size = 680, normalized size = 3.76

$$-\frac{4\,b^7c^7+7\,ab^6c^6d+14\,a^2b^5c^5d^2+35\,a^3b^4c^4d^3+140\,a^4b^3c^3d^4-959\,a^5b^2c^2d^5+1218\,a^6bcd^6-459\,a^7d^7+700\left(b^7c^3d^4-3\,a\right.}{}$$

$$+\frac{bd^7x^2+2\left(7\,bcd^6-6\,ad^7\right)x}{2\,b^7}+\frac{21\left(b^2c^2d^5-2\,abcd^6+a^2d^7\right)\log\left(bx+a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] -1/20*(4*b^7*c^7 + 7*a*b^6*c^6*d + 14*a^2*b^5*c^5*d^2 + 35*a^3*b^
4*c^4*d^3 + 140*a^4*b^3*c^3*d^4 - 959*a^5*b^2*c^2*d^5 + 1218*a^6*
b*c*d^6 - 459*a^7*d^7 + 700*(b^7*c^3*d^4 - 3*a*b^6*c^2*d^5 + 3*a^
2*b^5*c*d^6 - a^3*b^4*d^7)*x^4 + 350*(b^7*c^4*d^3 + 4*a*b^6*c^3*d
^4 - 18*a^2*b^5*c^2*d^5 + 20*a^3*b^4*c*d^6 - 7*a^4*b^3*d^7)*x^3 +
 70*(2*b^7*c^5*d^2 + 5*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 - 110*a
^3*b^4*c^2*d^5 + 130*a^4*b^3*c*d^6 - 47*a^5*b^2*d^7)*x^2 + 35*(b^
7*c^6*d + 2*a*b^6*c^5*d^2 + 5*a^2*b^5*c^4*d^3 + 20*a^3*b^4*c^3*d^
4 - 125*a^4*b^3*c^2*d^5 + 154*a^5*b^2*c*d^6 - 57*a^6*b*d^7)*x)/(b
^13*x^5 + 5*a*b^12*x^4 + 10*a^2*b^11*x^3 + 10*a^3*b^10*x^2 + 5*a^
4*b^9*x + a^5*b^8) + 1/2*(b*d^7*x^2 + 2*(7*b*c*d^6 - 6*a*d^7)*x)/
b^7 + 21*(b^2*c^2*d^5 - 2*a*b*c*d^6 + a^2*d^7)*log(b*x + a)/b^8
```

Fricas [A] time = 0.227736, size = 988, normalized size = 5.46

$$\frac{10\,b^7d^7x^7-4\,b^7c^7-7\,ab^6c^6d-14\,a^2b^5c^5d^2-35\,a^3b^4c^4d^3-140\,a^4b^3c^3d^4+959\,a^5b^2c^2d^5-1218\,a^6bcd^6+459\,a^7d^7+70\left(2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*b^7*d^7*x^7 - 4*b^7*c^7 - 7*a*b^6*c^6*d - 14*a^2*b^5*c^5
*d^2 - 35*a^3*b^4*c^4*d^3 - 140*a^4*b^3*c^3*d^4 + 959*a^5*b^2*c^2
*d^5 - 1218*a^6*b*c*d^6 + 459*a^7*d^7 + 70*(2*b^7*c*d^6 - a*b^6*d
^7)*x^6 + 100*(7*a*b^6*c*d^6 - 5*a^2*b^5*d^7)*x^5 - 100*(7*b^7*c^
3*d^4 - 21*a*b^6*c^2*d^5 + 7*a^2*b^5*c*d^6 + 4*a^3*b^4*d^7)*x^4 -
 50*(7*b^7*c^4*d^3 + 28*a*b^6*c^3*d^4 - 126*a^2*b^5*c^2*d^5 + 112
*a^3*b^4*c*d^6 - 26*a^4*b^3*d^7)*x^3 - 10*(14*b^7*c^5*d^2 + 35*a*
b^6*c^4*d^3 + 140*a^2*b^5*c^3*d^4 - 770*a^3*b^4*c^2*d^5 + 840*a^4
*b^3*c*d^6 - 270*a^5*b^2*d^7)*x^2 - 5*(7*b^7*c^6*d + 14*a*b^6*c^5
```

```
*d^2 + 35*a^2*b^5*c^4*d^3 + 140*a^3*b^4*c^3*d^4 - 875*a^4*b^3*c^2
*d^5 + 1050*a^5*b^2*c*d^6 - 375*a^6*b*d^7)*x + 420*(a^5*b^2*c^2*d
^5 - 2*a^6*b*c*d^6 + a^7*d^7 + (b^7*c^2*d^5 - 2*a*b^6*c*d^6 + a^2
*b^5*d^7)*x^5 + 5*(a*b^6*c^2*d^5 - 2*a^2*b^5*c*d^6 + a^3*b^4*d^7)
*x^4 + 10*(a^2*b^5*c^2*d^5 - 2*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 +
 10*(a^3*b^4*c^2*d^5 - 2*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 5*(a^
4*b^3*c^2*d^5 - 2*a^5*b^2*c*d^6 + a^6*b*d^7)*x)*log(b*x + a))/(b^
13*x^5 + 5*a*b^12*x^4 + 10*a^2*b^11*x^3 + 10*a^3*b^10*x^2 + 5*a^4
*b^9*x + a^5*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224238, size = 625, normalized size = 3.45

$$\frac{21\left(b^2c^2d^5 - 2\,abcd^6 + a^2d^7\right)\ln\left(|bx+a|\right)}{b^8} + \frac{b^6d^7x^2 + 14\,b^6cd^6x - 12\,ab^5d^7x}{2\,b^{12}} - \frac{4\,b^7c^7 + 7\,ab^6c^6d + 14\,a^2b^5c^5d^2 + 35\,a^3b^4c^4d^3 + 140\,a^4b^3c^3d^4 - 959\,a^5b^2c^2d^5 + 1218\,a^6bcd^6 - 459\,a^7d^7 + 700\,(b^7c^3d^4 - 3\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^6,x, algorithm="giac")
```

```
[Out] 21*(b^2*c^2*d^5 - 2*a*b*c*d^6 + a^2*d^7)*ln(abs(b*x + a))/b^8 + 1
/2*(b^6*d^7*x^2 + 14*b^6*c*d^6*x - 12*a*b^5*d^7*x)/b^12 - 1/20*(4
*b^7*c^7 + 7*a*b^6*c^6*d + 14*a^2*b^5*c^5*d^2 + 35*a^3*b^4*c^4*d^
3 + 140*a^4*b^3*c^3*d^4 - 959*a^5*b^2*c^2*d^5 + 1218*a^6*b*c*d^6
- 459*a^7*d^7 + 700*(b^7*c^3*d^4 - 3*a*b^6*c^2*d^5 + 3*a^2*b^5*c*
d^6 - a^3*b^4*d^7)*x^4 + 350*(b^7*c^4*d^3 + 4*a*b^6*c^3*d^4 - 18*
a^2*b^5*c^2*d^5 + 20*a^3*b^4*c*d^6 - 7*a^4*b^3*d^7)*x^3 + 70*(2*b
^7*c^5*d^2 + 5*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 - 110*a^3*b^4*c
^2*d^5 + 130*a^4*b^3*c*d^6 - 47*a^5*b^2*d^7)*x^2 + 35*(b^7*c^6*d
+ 2*a*b^6*c^5*d^2 + 5*a^2*b^5*c^4*d^3 + 20*a^3*b^4*c^3*d^4 - 125*
a^4*b^3*c^2*d^5 + 154*a^5*b^2*c*d^6 - 57*a^6*b*d^7)*x)/((b*x + a)
^5*b^8)
```

3.1289 $\int \frac{(c+dx)^7}{(a+bx)^7}\,dx$

Optimal. Leaf size=186

$$\frac{7d^6(bc-ad)\log(a+bx)}{b^8}-\frac{21d^5(bc-ad)^2}{b^8(a+bx)}-\frac{35d^4(bc-ad)^3}{2b^8(a+bx)^2}-\frac{35d^3(bc-ad)^4}{3b^8(a+bx)^3}-\frac{21d^2(bc-ad)^5}{4b^8(a+bx)^4}-\frac{7d(bc-ad)^6}{5b^8(a+bx)^5}-\frac{(bc-ad)^7}{6b^8(a+bx)^6}+\frac{d^7x}{b^7}$$

```
[Out] (d^7*x)/b^7 - (b*c - a*d)^7/(6*b^8*(a + b*x)^6) - (7*d*(b*c - a*d
)^6)/(5*b^8*(a + b*x)^5) - (21*d^2*(b*c - a*d)^5)/(4*b^8*(a + b*x
)^4) - (35*d^3*(b*c - a*d)^4)/(3*b^8*(a + b*x)^3) - (35*d^4*(b*c
- a*d)^3)/(2*b^8*(a + b*x)^2) - (21*d^5*(b*c - a*d)^2)/(b^8*(a +
b*x)) + (7*d^6*(b*c - a*d)*Log[a + b*x])/b^8
```

Rubi [A] time = 0.424064, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{7d^6(bc-ad)\log(a+bx)}{b^8}-\frac{21d^5(bc-ad)^2}{b^8(a+bx)}-\frac{35d^4(bc-ad)^3}{2b^8(a+bx)^2}-\frac{35d^3(bc-ad)^4}{3b^8(a+bx)^3}-\frac{21d^2(bc-ad)^5}{4b^8(a+bx)^4}-\frac{7d(bc-ad)^6}{5b^8(a+bx)^5}-\frac{(bc-ad)^7}{6b^8(a+bx)^6}+\frac{d^7x}{b^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^7,x]
```


```
[Out] (d^7*x)/b^7 - (b*c - a*d)^7/(6*b^8*(a + b*x)^6) - (7*d*(b*c - a*d
)^6)/(5*b^8*(a + b*x)^5) - (21*d^2*(b*c - a*d)^5)/(4*b^8*(a + b*x
)^4) - (35*d^3*(b*c - a*d)^4)/(3*b^8*(a + b*x)^3) - (35*d^4*(b*c
- a*d)^3)/(2*b^8*(a + b*x)^2) - (21*d^5*(b*c - a*d)^2)/(b^8*(a +
b*x)) + (7*d^6*(b*c - a*d)*Log[a + b*x])/b^8
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$d^7\int \frac{1}{b^7}\,dx-\frac{7d^6\left(ad-bc\right)\log\left(a+bx\right)}{b^8}-\frac{21d^5\left(ad-bc\right)^2}{b^8\left(a+bx\right)}+\frac{35d^4\left(ad-bc\right)^3}{2b^8\left(a+bx\right)^2}-\frac{35d^3\left(ad-bc\right)^4}{3b^8\left(a+bx\right)^3}+\frac{21d^2\left(ad-bc\right)^5}{4b^8\left(a+bx\right)^4}-\frac{7d\left(ad-bc\right)^6}{5b^8\left(a+bx\right)^5}+\frac{\left(ad-bc\right)^7}{6b^8\left(a+bx\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**7,x)
```

```
[Out] d**7*Integral(b**(-7), x) - 7*d**6*(a*d - b*c)*log(a + b*x)/b**8
- 21*d**5*(a*d - b*c)**2/(b**8*(a + b*x)) + 35*d**4*(a*d - b*c)**
3/(2*b**8*(a + b*x)**2) - 35*d**3*(a*d - b*c)**4/(3*b**8*(a + b*x
)**3) + 21*d**2*(a*d - b*c)**5/(4*b**8*(a + b*x)**4) - 7*d*(a*d -
 b*c)**6/(5*b**8*(a + b*x)**5) + (a*d - b*c)**7/(6*b**8*(a + b*x)
**6)
```

Mathematica [B] time = 0.577239, size = 390, normalized size = 2.1

$$-\frac{669a^7d^7+3a^6bd^6(1198dx-343c)+3a^5b^2d^5\left(70c^2-1918cdx+2575d^2x^2\right)+5a^4b^3d^4\left(14c^3+252c^2dx-2625cd^2x^2+164\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^7,x]
```

```
[Out] -(669*a^7*d^7 + 3*a^6*b*d^6*(-343*c + 1198*d*x) + 3*a^5*b^2*d^5*(
70*c^2 - 1918*c*d*x + 2575*d^2*x^2) + 5*a^4*b^3*d^4*(14*c^3 + 252
*c^2*d*x - 2625*c*d^2*x^2 + 1640*d^3*x^3) + 5*a^3*b^4*d^3*(7*c^4
+ 84*c^3*d*x + 630*c^2*d^2*x^2 - 3080*c*d^3*x^3 + 810*d^4*x^4) +
3*a^2*b^5*d^2*(7*c^5 + 70*c^4*d*x + 350*c^3*d^2*x^2 + 1400*c^2*d^
3*x^3 - 3150*c*d^4*x^4 + 120*d^5*x^5) + a*b^6*d*(14*c^6 + 126*c^5
*d*x + 525*c^4*d^2*x^2 + 1400*c^3*d^3*x^3 + 3150*c^2*d^4*x^4 - 25
20*c*d^5*x^5 - 360*d^6*x^6) + b^7*(10*c^7 + 84*c^6*d*x + 315*c^5*
d^2*x^2 + 700*c^4*d^3*x^3 + 1050*c^3*d^4*x^4 + 1260*c^2*d^5*x^5 -
 60*d^7*x^7) + 420*d^6*(-(b*c) + a*d)*(a + b*x)^6*Log[a + b*x])/(
60*b^8*(a + b*x)^6)
```

Maple [B] time = 0.019, size = 666, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^7,x)
```

```
[Out] d^7*x/b^7+35/2/b^8*d^7/(b*x+a)^2*a^3-35/2/b^5*d^4/(b*x+a)^2*c^3-2
1/b^8*d^7/(b*x+a)*a^2-21/b^6*d^5/(b*x+a)*c^2+7/b^7*d^6*ln(b*x+a)*
c+1/6/b^8/(b*x+a)^6*a^7*d^7+21/4/b^8*d^7/(b*x+a)^4*a^5-21/4/b^3*d
^2/(b*x+a)^4*c^5-35/3/b^8*d^7/(b*x+a)^3*a^4-35/3/b^4*d^3/(b*x+a)^
3*c^4-7/5/b^8*d^7/(b*x+a)^5*a^6-7/5/b^2*d/(b*x+a)^5*c^6-7/b^8*d^7
*ln(b*x+a)*a-1/6/b/(b*x+a)^6*c^7+28/b^5*d^4/(b*x+a)^5*a^3*c^3-21/
b^4*d^3/(b*x+a)^5*a^2*c^4+42/5/b^3*d^2/(b*x+a)^5*a*c^5-21/b^6*d^5
/(b*x+a)^5*a^4*c^2+105/4/b^4*d^3/(b*x+a)^4*a*c^4+140/3/b^7*d^6/(b
*x+a)^3*a^3*c+42/5/b^7*d^6/(b*x+a)^5*a^5*c-35/6/b^5/(b*x+a)^6*a^4
*c^3*d^4+35/6/b^4/(b*x+a)^6*a^3*c^4*d^3-7/2/b^3/(b*x+a)^6*a^2*c^5
*d^2+7/6/b^2/(b*x+a)^6*a*c^6*d-105/4/b^7*d^6/(b*x+a)^4*a^4*c+105/
```

```
2/b^6*d^5/(b*x+a)^4*a^3*c^2-105/2/b^5*d^4/(b*x+a)^4*a^2*c^3-105/2
/b^7*d^6/(b*x+a)^2*a^2*c+105/2/b^6*d^5/(b*x+a)^2*a*c^2+42/b^7*d^6
/(b*x+a)*a*c-7/6/b^7/(b*x+a)^6*a^6*c*d^6+7/2/b^6/(b*x+a)^6*a^5*c^
2*d^5-70/b^6*d^5/(b*x+a)^3*a^2*c^2+140/3/b^5*d^4/(b*x+a)^3*a*c^3
```

Maxima [A] time = 1.44381, size = 697, normalized size = 3.75

$$\frac{d^7x}{b^7} - \frac{10\,b^7c^7 + 14\,ab^6c^6d + 21\,a^2b^5c^5d^2 + 35\,a^3b^4c^4d^3 + 70\,a^4b^3c^3d^4 + 210\,a^5b^2c^2d^5 - 1029\,a^6bcd^6 + 669\,a^7d^7 + 1260\,\left(b^7c^2d^5 - \right.}{}$$

$$+ \frac{7\left(bcd^6 - ad^7\right)\log\left(bx + a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] d^7*x/b^7 - 1/60*(10*b^7*c^7 + 14*a*b^6*c^6*d + 21*a^2*b^5*c^5*d^
2 + 35*a^3*b^4*c^4*d^3 + 70*a^4*b^3*c^3*d^4 + 210*a^5*b^2*c^2*d^5
 - 1029*a^6*b*c*d^6 + 669*a^7*d^7 + 1260*(b^7*c^2*d^5 - 2*a*b^6*c
*d^6 + a^2*b^5*d^7)*x^5 + 1050*(b^7*c^3*d^4 + 3*a*b^6*c^2*d^5 - 9
*a^2*b^5*c*d^6 + 5*a^3*b^4*d^7)*x^4 + 700*(b^7*c^4*d^3 + 2*a*b^6*
c^3*d^4 + 6*a^2*b^5*c^2*d^5 - 22*a^3*b^4*c*d^6 + 13*a^4*b^3*d^7)*
x^3 + 105*(3*b^7*c^5*d^2 + 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 +
 30*a^3*b^4*c^2*d^5 - 125*a^4*b^3*c*d^6 + 77*a^5*b^2*d^7)*x^2 + 4
2*(2*b^7*c^6*d + 3*a*b^6*c^5*d^2 + 5*a^2*b^5*c^4*d^3 + 10*a^3*b^4
*c^3*d^4 + 30*a^4*b^3*c^2*d^5 - 137*a^5*b^2*c*d^6 + 87*a^6*b*d^7)
*x)/(b^14*x^6 + 6*a*b^13*x^5 + 15*a^2*b^12*x^4 + 20*a^3*b^11*x^3
+ 15*a^4*b^10*x^2 + 6*a^5*b^9*x + a^6*b^8) + 7*(b*c*d^6 - a*d^7)*
log(b*x + a)/b^8
```

Fricas [A] time = 0.225912, size = 934, normalized size = 5.02

$$\frac{60\,b^7d^7x^7 + 360\,ab^6d^7x^6 - 10\,b^7c^7 - 14\,ab^6c^6d - 21\,a^2b^5c^5d^2 - 35\,a^3b^4c^4d^3 - 70\,a^4b^3c^3d^4 - 210\,a^5b^2c^2d^5 + 1029\,a^6bcd^6 - }{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*b^7*d^7*x^7 + 360*a*b^6*d^7*x^6 - 10*b^7*c^7 - 14*a*b^6*
c^6*d - 21*a^2*b^5*c^5*d^2 - 35*a^3*b^4*c^4*d^3 - 70*a^4*b^3*c^3*
d^4 - 210*a^5*b^2*c^2*d^5 + 1029*a^6*b*c*d^6 - 669*a^7*d^7 - 180*
(7*b^7*c^2*d^5 - 14*a*b^6*c*d^6 + 2*a^2*b^5*d^7)*x^5 - 150*(7*b^7
*c^3*d^4 + 21*a*b^6*c^2*d^5 - 63*a^2*b^5*c*d^6 + 27*a^3*b^4*d^7)*
```

```
x^4 - 100*(7*b^7*c^4*d^3 + 14*a*b^6*c^3*d^4 + 42*a^2*b^5*c^2*d^5
- 154*a^3*b^4*c*d^6 + 82*a^4*b^3*d^7)*x^3 - 15*(21*b^7*c^5*d^2 +
35*a*b^6*c^4*d^3 + 70*a^2*b^5*c^3*d^4 + 210*a^3*b^4*c^2*d^5 - 875
*a^4*b^3*c*d^6 + 515*a^5*b^2*d^7)*x^2 - 6*(14*b^7*c^6*d + 21*a*b^
6*c^5*d^2 + 35*a^2*b^5*c^4*d^3 + 70*a^3*b^4*c^3*d^4 + 210*a^4*b^3
*c^2*d^5 - 959*a^5*b^2*c*d^6 + 599*a^6*b*d^7)*x + 420*(a^6*b*c*d^
6 - a^7*d^7 + (b^7*c*d^6 - a*b^6*d^7)*x^6 + 6*(a*b^6*c*d^6 - a^2*
b^5*d^7)*x^5 + 15*(a^2*b^5*c*d^6 - a^3*b^4*d^7)*x^4 + 20*(a^3*b^4
*c*d^6 - a^4*b^3*d^7)*x^3 + 15*(a^4*b^3*c*d^6 - a^5*b^2*d^7)*x^2
+ 6*(a^5*b^2*c*d^6 - a^6*b*d^7)*x)*log(b*x + a))/(b^14*x^6 + 6*a*
b^13*x^5 + 15*a^2*b^12*x^4 + 20*a^3*b^11*x^3 + 15*a^4*b^10*x^2 +
6*a^5*b^9*x + a^6*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**7,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.22422, size = 620, normalized size = 3.33

$$\frac{d^7x}{b^7} + \frac{7\left(bcd^6 - ad^7\right)\ln\left(|bx + a|\right)}{b^8} - \frac{10\,b^7c^7 + 14\,ab^6c^6d + 21\,a^2b^5c^5d^2 + 35\,a^3b^4c^4d^3 + 70\,a^4b^3c^3d^4 + 210\,a^5b^2c^2d^5 - 1029\,a^6bcd^6 + 669\,a^7d^7 + 1260\left(b^7c^2d^5 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] d^7*x/b^7 + 7*(b*c*d^6 - a*d^7)*ln(abs(b*x + a))/b^8 - 1/60*(10*b
^7*c^7 + 14*a*b^6*c^6*d + 21*a^2*b^5*c^5*d^2 + 35*a^3*b^4*c^4*d^3
 + 70*a^4*b^3*c^3*d^4 + 210*a^5*b^2*c^2*d^5 - 1029*a^6*b*c*d^6 +
669*a^7*d^7 + 1260*(b^7*c^2*d^5 - 2*a*b^6*c*d^6 + a^2*b^5*d^7)*x^
5 + 1050*(b^7*c^3*d^4 + 3*a*b^6*c^2*d^5 - 9*a^2*b^5*c*d^6 + 5*a^3
*b^4*d^7)*x^4 + 700*(b^7*c^4*d^3 + 2*a*b^6*c^3*d^4 + 6*a^2*b^5*c^
2*d^5 - 22*a^3*b^4*c*d^6 + 13*a^4*b^3*d^7)*x^3 + 105*(3*b^7*c^5*d
^2 + 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 + 30*a^3*b^4*c^2*d^5 -
125*a^4*b^3*c*d^6 + 77*a^5*b^2*d^7)*x^2 + 42*(2*b^7*c^6*d + 3*a*b
^6*c^5*d^2 + 5*a^2*b^5*c^4*d^3 + 10*a^3*b^4*c^3*d^4 + 30*a^4*b^3*
c^2*d^5 - 137*a^5*b^2*c*d^6 + 87*a^6*b*d^7)*x)/((b*x + a)^6*b^8)
```

3.1290 $\int \frac{(c+dx)^7}{(a+bx)^8} dx$

Optimal. Leaf size=194

$$-\frac{7d^6(bc-ad)}{b^8(a+bx)}-\frac{21d^5(bc-ad)^2}{2b^8(a+bx)^2}-\frac{35d^4(bc-ad)^3}{3b^8(a+bx)^3}-\frac{35d^3(bc-ad)^4}{4b^8(a+bx)^4}-\frac{21d^2(bc-ad)^5}{5b^8(a+bx)^5}-\frac{7d(bc-ad)^6}{6b^8(a+bx)^6}-\frac{(bc-ad)^7}{7b^8(a+bx)^7}+\frac{d^7\log(a+bx)}{b^8}$$

```
[Out] -(b*c - a*d)^7/(7*b^8*(a + b*x)^7) - (7*d*(b*c - a*d)^6)/(6*b^8*(
a + b*x)^6) - (21*d^2*(b*c - a*d)^5)/(5*b^8*(a + b*x)^5) - (35*d^
3*(b*c - a*d)^4)/(4*b^8*(a + b*x)^4) - (35*d^4*(b*c - a*d)^3)/(3*
b^8*(a + b*x)^3) - (21*d^5*(b*c - a*d)^2)/(2*b^8*(a + b*x)^2) - (
7*d^6*(b*c - a*d))/(b^8*(a + b*x)) + (d^7*Log[a + b*x])/b^8
```

Rubi [A] time = 0.399958, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{7d^6(bc-ad)}{b^8(a+bx)}-\frac{21d^5(bc-ad)^2}{2b^8(a+bx)^2}-\frac{35d^4(bc-ad)^3}{3b^8(a+bx)^3}-\frac{35d^3(bc-ad)^4}{4b^8(a+bx)^4}-\frac{21d^2(bc-ad)^5}{5b^8(a+bx)^5}-\frac{7d(bc-ad)^6}{6b^8(a+bx)^6}-\frac{(bc-ad)^7}{7b^8(a+bx)^7}+\frac{d^7\log(a+bx)}{b^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^8,x]
```


```
[Out] -(b*c - a*d)^7/(7*b^8*(a + b*x)^7) - (7*d*(b*c - a*d)^6)/(6*b^8*(
a + b*x)^6) - (21*d^2*(b*c - a*d)^5)/(5*b^8*(a + b*x)^5) - (35*d^
3*(b*c - a*d)^4)/(4*b^8*(a + b*x)^4) - (35*d^4*(b*c - a*d)^3)/(3*
b^8*(a + b*x)^3) - (21*d^5*(b*c - a*d)^2)/(2*b^8*(a + b*x)^2) - (
7*d^6*(b*c - a*d))/(b^8*(a + b*x)) + (d^7*Log[a + b*x])/b^8
```

Rubi in Sympy [A] time = 70.1387, size = 178, normalized size = 0.92

$$\frac{d^7\log\left(a+bx\right)}{b^8}+\frac{7d^6\left(ad-bc\right)}{b^8\left(a+bx\right)}-\frac{21d^5\left(ad-bc\right)^2}{2b^8\left(a+bx\right)^2}+\frac{35d^4\left(ad-bc\right)^3}{3b^8\left(a+bx\right)^3}-\frac{35d^3\left(ad-bc\right)^4}{4b^8\left(a+bx\right)^4}+\frac{21d^2\left(ad-bc\right)^5}{5b^8\left(a+bx\right)^5}-\frac{7d\left(ad-bc\right)^6}{6b^8\left(a+bx\right)^6}+\frac{\left(ad-bc\right)^7}{7b^8\left(a+bx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**8,x)
```

```
[Out] d**7*log(a + b*x)/b**8 + 7*d**6*(a*d - b*c)/(b**8*(a + b*x)) - 21
*d**5*(a*d - b*c)**2/(2*b**8*(a + b*x)**2) + 35*d**4*(a*d - b*c)*
*3/(3*b**8*(a + b*x)**3) - 35*d**3*(a*d - b*c)**4/(4*b**8*(a + b*
x)**4) + 21*d**2*(a*d - b*c)**5/(5*b**8*(a + b*x)**5) - 7*d*(a*d
- b*c)**6/(6*b**8*(a + b*x)**6) + (a*d - b*c)**7/(7*b**8*(a + b*x
)**7)
```

Mathematica [A] time = 0.355885, size = 308, normalized size = 1.59

$$\frac{d^7 \log(a+bx)}{b^8} - \frac{(bc-ad)\left(1089a^6d^6 + 3a^5bd^5(223c+2401dx) + 3a^4b^2d^4\left(153c^2+1421cdx+6713d^2x^2\right) + a^3b^3d^3\left(319c^3+2793c^2dx+113\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^8,x]
```

```
[Out] -((b*c - a*d)*(1089*a^6*d^6 + 3*a^5*b*d^5*(223*c + 2401*d*x) + 3*
a^4*b^2*d^4*(153*c^2 + 1421*c*d*x + 6713*d^2*x^2) + a^3*b^3*d^3*(
319*c^3 + 2793*c^2*d*x + 11319*c*d^2*x^2 + 30625*d^3*x^3) + a^2*b
^4*d^2*(214*c^4 + 1813*c^3*d*x + 6909*c^2*d^2*x^2 + 15925*c*d^3*x
^3 + 26950*d^4*x^4) + a*b^5*d*(130*c^5 + 1078*c^4*d*x + 3969*c^3*
d^2*x^2 + 8575*c^2*d^3*x^3 + 12250*c*d^4*x^4 + 13230*d^5*x^5) + b
^6*(60*c^6 + 490*c^5*d*x + 1764*c^4*d^2*x^2 + 3675*c^3*d^3*x^3 +
4900*c^2*d^4*x^4 + 4410*c*d^5*x^5 + 2940*d^6*x^6)))/(420*b^8*(a +
 b*x)^7) + (d^7*Log[a + b*x])/b^8
```

Maple [B] time = 0.016, size = 672, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^8,x)
```

```
[Out] -35/3*d^4/b^5/(b*x+a)^3*c^3-21/2*d^7/b^8/(b*x+a)^2*a^2-21/2*d^5/b
^6/(b*x+a)^2*c^2+7/b^8*d^7/(b*x+a)*a-7/b^7*d^6/(b*x+a)*c+21/5*d^7
/b^8/(b*x+a)^5*a^5-21/5*d^2/b^3/(b*x+a)^5*c^5-7/6*d^7/b^8/(b*x+a)
^6*a^6-7/6*d/b^2/(b*x+a)^6*c^6+1/7/b^8/(b*x+a)^7*a^7*d^7-35/4*d^7
/b^8/(b*x+a)^4*a^4-35/4*d^3/b^4/(b*x+a)^4*c^4+35/3*d^7/b^8/(b*x+a
)^3*a^3-1/7/b/(b*x+a)^7*c^7+7*d^6/b^7/(b*x+a)^6*a^5*c-42*d^4/b^5/
(b*x+a)^5*a^2*c^3+21*d^3/b^4/(b*x+a)^5*a*c^4+d^7*ln(b*x+a)/b^8+42
*d^5/b^6/(b*x+a)^5*a^3*c^2+35*d^4/b^5/(b*x+a)^4*a*c^3-35*d^6/b^7/
(b*x+a)^3*a^2*c+35*d^5/b^6/(b*x+a)^3*a*c^2+21*d^6/b^7/(b*x+a)^2*a
*c+5/b^4/(b*x+a)^7*a^3*c^4*d^3-3/b^3/(b*x+a)^7*a^2*c^5*d^2+1/b^2/
(b*x+a)^7*a*c^6*d-35/2*d^5/b^6/(b*x+a)^6*a^4*c^2+70/3*d^4/b^5/(b*
```

```
x+a)^6*a^3*c^3-35/2*d^3/b^4/(b*x+a)^6*a^2*c^4+7*d^2/b^3/(b*x+a)^6
*a*c^5-1/b^7/(b*x+a)^7*c*d^6*a^6+3/b^6/(b*x+a)^7*a^5*c^2*d^5-5/b^
5/(b*x+a)^7*a^4*c^3*d^4-21*d^6/b^7/(b*x+a)^5*a^4*c+35*d^6/b^7/(b*
x+a)^4*a^3*c-105/2*d^5/b^6/(b*x+a)^4*a^2*c^2
```

Maxima [A] time = 1.404, size = 721, normalized size = 3.72

$$-\frac{60\,b^7c^7 + 70\,ab^6c^6d + 84\,a^2b^5c^5d^2 + 105\,a^3b^4c^4d^3 + 140\,a^4b^3c^3d^4 + 210\,a^5b^2c^2d^5 + 420\,a^6bcd^6 - 1089\,a^7d^7 + 2940\,\big(b^7cd^6 -}{}$$

$$+\frac{d^7\log\left(bx+a\right)}{b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(60*b^7*c^7 + 70*a*b^6*c^6*d + 84*a^2*b^5*c^5*d^2 + 105*a^
3*b^4*c^4*d^3 + 140*a^4*b^3*c^3*d^4 + 210*a^5*b^2*c^2*d^5 + 420*a
^6*b*c*d^6 - 1089*a^7*d^7 + 2940*(b^7*c*d^6 - a*b^6*d^7)*x^6 + 44
10*(b^7*c^2*d^5 + 2*a*b^6*c*d^6 - 3*a^2*b^5*d^7)*x^5 + 2450*(2*b^
7*c^3*d^4 + 3*a*b^6*c^2*d^5 + 6*a^2*b^5*c*d^6 - 11*a^3*b^4*d^7)*x
^4 + 1225*(3*b^7*c^4*d^3 + 4*a*b^6*c^3*d^4 + 6*a^2*b^5*c^2*d^5 +
12*a^3*b^4*c*d^6 - 25*a^4*b^3*d^7)*x^3 + 147*(12*b^7*c^5*d^2 + 15
*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 + 30*a^3*b^4*c^2*d^5 + 60*a^4
*b^3*c*d^6 - 137*a^5*b^2*d^7)*x^2 + 49*(10*b^7*c^6*d + 12*a*b^6*c
^5*d^2 + 15*a^2*b^5*c^4*d^3 + 20*a^3*b^4*c^3*d^4 + 30*a^4*b^3*c^2
*d^5 + 60*a^5*b^2*c*d^6 - 147*a^6*b*d^7)*x)/(b^15*x^7 + 7*a*b^14*
x^6 + 21*a^2*b^13*x^5 + 35*a^3*b^12*x^4 + 35*a^4*b^11*x^3 + 21*a^
5*b^10*x^2 + 7*a^6*b^9*x + a^7*b^8) + d^7*log(b*x + a)/b^8
```

Fricas [A] time = 0.233825, size = 842, normalized size = 4.34

$$-\frac{60\,b^7c^7 + 70\,ab^6c^6d + 84\,a^2b^5c^5d^2 + 105\,a^3b^4c^4d^3 + 140\,a^4b^3c^3d^4 + 210\,a^5b^2c^2d^5 + 420\,a^6bcd^6 - 1089\,a^7d^7 + 2940\,\big(b^7cd^6 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^8,x, algorithm="fricas")
```

```
[Out] -1/420*(60*b^7*c^7 + 70*a*b^6*c^6*d + 84*a^2*b^5*c^5*d^2 + 105*a^
3*b^4*c^4*d^3 + 140*a^4*b^3*c^3*d^4 + 210*a^5*b^2*c^2*d^5 + 420*a
^6*b*c*d^6 - 1089*a^7*d^7 + 2940*(b^7*c*d^6 - a*b^6*d^7)*x^6 + 44
10*(b^7*c^2*d^5 + 2*a*b^6*c*d^6 - 3*a^2*b^5*d^7)*x^5 + 2450*(2*b^
7*c^3*d^4 + 3*a*b^6*c^2*d^5 + 6*a^2*b^5*c*d^6 - 11*a^3*b^4*d^7)*x
^4 + 1225*(3*b^7*c^4*d^3 + 4*a*b^6*c^3*d^4 + 6*a^2*b^5*c^2*d^5 +
12*a^3*b^4*c*d^6 - 25*a^4*b^3*d^7)*x^3 + 147*(12*b^7*c^5*d^2 + 15
*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 + 30*a^3*b^4*c^2*d^5 + 60*a^4
```

```
*b^3*c*d^6 - 137*a^5*b^2*d^7)*x^2 + 49*(10*b^7*c^6*d + 12*a*b^6*c
^5*d^2 + 15*a^2*b^5*c^4*d^3 + 20*a^3*b^4*c^3*d^4 + 30*a^4*b^3*c^2
*d^5 + 60*a^5*b^2*c*d^6 - 147*a^6*b*d^7)*x - 420*(b^7*d^7*x^7 + 7
*a*b^6*d^7*x^6 + 21*a^2*b^5*d^7*x^5 + 35*a^3*b^4*d^7*x^4 + 35*a^4
*b^3*d^7*x^3 + 21*a^5*b^2*d^7*x^2 + 7*a^6*b*d^7*x + a^7*d^7)*log(
b*x + a))/(b^15*x^7 + 7*a*b^14*x^6 + 21*a^2*b^13*x^5 + 35*a^3*b^1
2*x^4 + 35*a^4*b^11*x^3 + 21*a^5*b^10*x^2 + 7*a^6*b^9*x + a^7*b^8
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.22569, size = 629, normalized size = 3.24

$$\frac{d^7\ln\left(|bx+a|\right)}{b^8} - \frac{2940\left(b^6cd^6 - ab^5d^7\right)x^6 + 4410\left(b^6c^2d^5 + 2\,ab^5cd^6 - 3\,a^2b^4d^7\right)x^5 + 2450\left(2\,b^6c^3d^4 + 3\,ab^5c^2d^5 + 6\,a^2b^4cd^6 - 11\,a^3b^3d^7\right)x^4 \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^8,x, algorithm="giac")
```

```
[Out] d^7*ln(abs(b*x + a))/b^8 - 1/420*(2940*(b^6*c*d^6 - a*b^5*d^7)*x^
6 + 4410*(b^6*c^2*d^5 + 2*a*b^5*c*d^6 - 3*a^2*b^4*d^7)*x^5 + 2450
*(2*b^6*c^3*d^4 + 3*a*b^5*c^2*d^5 + 6*a^2*b^4*c*d^6 - 11*a^3*b^3*
d^7)*x^4 + 1225*(3*b^6*c^4*d^3 + 4*a*b^5*c^3*d^4 + 6*a^2*b^4*c^2*
d^5 + 12*a^3*b^3*c*d^6 - 25*a^4*b^2*d^7)*x^3 + 147*(12*b^6*c^5*d^
2 + 15*a*b^5*c^4*d^3 + 20*a^2*b^4*c^3*d^4 + 30*a^3*b^3*c^2*d^5 +
60*a^4*b^2*c*d^6 - 137*a^5*b*d^7)*x^2 + 49*(10*b^6*c^6*d + 12*a*b
^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 + 20*a^3*b^3*c^3*d^4 + 30*a^4*b^2
*c^2*d^5 + 60*a^5*b*c*d^6 - 147*a^6*d^7)*x + (60*b^7*c^7 + 70*a*b
^6*c^6*d + 84*a^2*b^5*c^5*d^2 + 105*a^3*b^4*c^4*d^3 + 140*a^4*b^3
*c^3*d^4 + 210*a^5*b^2*c^2*d^5 + 420*a^6*b*c*d^6 - 1089*a^7*d^7)/
b)/((b*x + a)^7*b^7)
```

3.1291 $\int \frac{(c+dx)^7}{(a+bx)^9} \, dx$

Optimal. Leaf size=28

$$-\frac{(c+dx)^8}{8(a+bx)^8(bc-ad)}$$

```
[Out] -(c + d*x)^8/(8*(b*c - a*d)*(a + b*x)^8)
```

Rubi [A] time = 0.0210174, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(c+dx)^8}{8(a+bx)^8(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^9,x]
```

```
[Out] -(c + d*x)^8/(8*(b*c - a*d)*(a + b*x)^8)
```

Rubi in Sympy [A] time = 3.96815, size = 20, normalized size = 0.71

$$\frac{(c+dx)^8}{8\,(a+bx)^8\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**9,x)
```

```
[Out] (c + d*x)**8/(8*(a + b*x)**8*(a*d - b*c))
```

Mathematica [B] time = 0.276817, size = 353, normalized size = 12.61

$$-\frac{a^7d^7 + a^6bd^6(c+8dx) + a^5b^2d^5\left(c^2+8cdx+28d^2x^2\right) + a^4b^3d^4\left(c^3+8c^2dx+28cd^2x^2+56d^3x^3\right) + a^3b^4d^3\left(c^4+8c^3dx+28\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^9,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(c + 8*d*x) + a^5*b^2*d^5*(c^2 + 8*c*d*x +
28*d^2*x^2) + a^4*b^3*d^4*(c^3 + 8*c^2*d*x + 28*c*d^2*x^2 + 56*d^
3*x^3) + a^3*b^4*d^3*(c^4 + 8*c^3*d*x + 28*c^2*d^2*x^2 + 56*c*d^3
*x^3 + 70*d^4*x^4) + a^2*b^5*d^2*(c^5 + 8*c^4*d*x + 28*c^3*d^2*x^
2 + 56*c^2*d^3*x^3 + 70*c*d^4*x^4 + 56*d^5*x^5) + a*b^6*d*(c^6 +
8*c^5*d*x + 28*c^4*d^2*x^2 + 56*c^3*d^3*x^3 + 70*c^2*d^4*x^4 + 56
*c*d^5*x^5 + 28*d^6*x^6) + b^7*(c^7 + 8*c^6*d*x + 28*c^5*d^2*x^2
+ 56*c^4*d^3*x^3 + 70*c^3*d^4*x^4 + 56*c^2*d^5*x^5 + 28*c*d^6*x^6
 + 8*d^7*x^7))/(8*b^8*(a + b*x)^8)
```

Maple [B] time = 0.012, size = 464, normalized size = 16.6

$$-7\,\frac{d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{b^8\,(bx+a)^5}+\frac{7\,d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{2\,b^8\,(bx+a)^6}-\frac{d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{b^8\,(bx+a)^7}+\frac{35\,d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{4\,b^8\,(bx+a)^4}-7\,\frac{d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{b^8\,(bx+a)^3}+\frac{7\,d^6\,(ad-bc)}{2\,b^8\,(bx+a)^2}-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{8\,b^8\,(bx+a)^8}-\frac{d^7}{b^8\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^9,x)
```

```
[Out] -7*d^3*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4
*c^4)/b^8/(b*x+a)^5+7/2*d^2*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2
*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^6-d*(a
^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2
*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^8/(b*x+a)^7+35/4*d^4*(a^3*d
^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^4-7*d^5*(a^2*
d^2-2*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^3+7/2*d^6*(a*d-b*c)/b^8/(b*x+a
)^2-1/8*(-a^7*d^7+7*a^6*b*c*d^6-21*a^5*b^2*c^2*d^5+35*a^4*b^3*c^3
*d^4-35*a^3*b^4*c^4*d^3+21*a^2*b^5*c^5*d^2-7*a*b^6*c^6*d+b^7*c^7)
/b^8/(b*x+a)^8-d^7/b^8/(b*x+a)
```

Maxima [A] time = 1.45871, size = 687, normalized size = 24.54

$$-\frac{8\,b^7d^7x^7+b^7c^7+ab^6c^6d+a^2b^5c^5d^2+a^3b^4c^4d^3+a^4b^3c^3d^4+a^5b^2c^2d^5+a^6bcd^6+a^7d^7+28\left(b^7cd^6+ab^6d^7\right)x^6+56\left(b^7c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^9,x, algorithm="maxima")
```

```
[Out] -1/8*(8*b^7*d^7*x^7 + b^7*c^7 + a*b^6*c^6*d + a^2*b^5*c^5*d^2 + a
^3*b^4*c^4*d^3 + a^4*b^3*c^3*d^4 + a^5*b^2*c^2*d^5 + a^6*b*c*d^6
+ a^7*d^7 + 28*(b^7*c*d^6 + a*b^6*d^7)*x^6 + 56*(b^7*c^2*d^5 + a*
b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 70*(b^7*c^3*d^4 + a*b^6*c^2*d^5 +
a^2*b^5*c*d^6 + a^3*b^4*d^7)*x^4 + 56*(b^7*c^4*d^3 + a*b^6*c^3*d^
4 + a^2*b^5*c^2*d^5 + a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 28*(b^7*
c^5*d^2 + a*b^6*c^4*d^3 + a^2*b^5*c^3*d^4 + a^3*b^4*c^2*d^5 + a^4
*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 8*(b^7*c^6*d + a*b^6*c^5*d^2 + a^
2*b^5*c^4*d^3 + a^3*b^4*c^3*d^4 + a^4*b^3*c^2*d^5 + a^5*b^2*c*d^6
 + a^6*b*d^7)*x)/(b^16*x^8 + 8*a*b^15*x^7 + 28*a^2*b^14*x^6 + 56*
a^3*b^13*x^5 + 70*a^4*b^12*x^4 + 56*a^5*b^11*x^3 + 28*a^6*b^10*x^
2 + 8*a^7*b^9*x + a^8*b^8)
```

Fricas [A] time = 0.201173, size = 687, normalized size = 24.54

$$-\frac{8\,b^7d^7x^7 + b^7c^7 + ab^6c^6d + a^2b^5c^5d^2 + a^3b^4c^4d^3 + a^4b^3c^3d^4 + a^5b^2c^2d^5 + a^6bcd^6 + a^7d^7 + 28\left(b^7cd^6 + ab^6d^7\right)x^6 + 56\left(b^7c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^9,x, algorithm="fricas")
```

```
[Out] -1/8*(8*b^7*d^7*x^7 + b^7*c^7 + a*b^6*c^6*d + a^2*b^5*c^5*d^2 + a
^3*b^4*c^4*d^3 + a^4*b^3*c^3*d^4 + a^5*b^2*c^2*d^5 + a^6*b*c*d^6
+ a^7*d^7 + 28*(b^7*c*d^6 + a*b^6*d^7)*x^6 + 56*(b^7*c^2*d^5 + a*
b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 70*(b^7*c^3*d^4 + a*b^6*c^2*d^5 +
a^2*b^5*c*d^6 + a^3*b^4*d^7)*x^4 + 56*(b^7*c^4*d^3 + a*b^6*c^3*d^
4 + a^2*b^5*c^2*d^5 + a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 28*(b^7*
c^5*d^2 + a*b^6*c^4*d^3 + a^2*b^5*c^3*d^4 + a^3*b^4*c^2*d^5 + a^4
*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 8*(b^7*c^6*d + a*b^6*c^5*d^2 + a^
2*b^5*c^4*d^3 + a^3*b^4*c^3*d^4 + a^4*b^3*c^2*d^5 + a^5*b^2*c*d^6
 + a^6*b*d^7)*x)/(b^16*x^8 + 8*a*b^15*x^7 + 28*a^2*b^14*x^6 + 56*
a^3*b^13*x^5 + 70*a^4*b^12*x^4 + 56*a^5*b^11*x^3 + 28*a^6*b^10*x^
2 + 8*a^7*b^9*x + a^8*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**9,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223175, size = 660, normalized size = 23.57

$$-\frac{8\,b^{7}d^{7}x^{7} + 28\,b^{7}cd^{6}x^{6} + 28\,ab^{6}d^{7}x^{6} + 56\,b^{7}c^{2}d^{5}x^{5} + 56\,ab^{6}cd^{6}x^{5} + 56\,a^{2}b^{5}d^{7}x^{5} + 70\,b^{7}c^{3}d^{4}x^{4} + 70\,ab^{6}c^{2}d^{5}x^{4} + 70\,a^{2}b^{5}cd^{6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^9,x, algorithm="giac")
```

```
[Out] -1/8*(8*b^7*d^7*x^7 + 28*b^7*c*d^6*x^6 + 28*a*b^6*d^7*x^6 + 56*b^
7*c^2*d^5*x^5 + 56*a*b^6*c*d^6*x^5 + 56*a^2*b^5*d^7*x^5 + 70*b^7*
c^3*d^4*x^4 + 70*a*b^6*c^2*d^5*x^4 + 70*a^2*b^5*c*d^6*x^4 + 70*a^
3*b^4*d^7*x^4 + 56*b^7*c^4*d^3*x^3 + 56*a*b^6*c^3*d^4*x^3 + 56*a^
2*b^5*c^2*d^5*x^3 + 56*a^3*b^4*c*d^6*x^3 + 56*a^4*b^3*d^7*x^3 + 2
8*b^7*c^5*d^2*x^2 + 28*a*b^6*c^4*d^3*x^2 + 28*a^2*b^5*c^3*d^4*x^2
 + 28*a^3*b^4*c^2*d^5*x^2 + 28*a^4*b^3*c*d^6*x^2 + 28*a^5*b^2*d^7
*x^2 + 8*b^7*c^6*d*x + 8*a*b^6*c^5*d^2*x + 8*a^2*b^5*c^4*d^3*x +
8*a^3*b^4*c^3*d^4*x + 8*a^4*b^3*c^2*d^5*x + 8*a^5*b^2*c*d^6*x + 8
*a^6*b*d^7*x + b^7*c^7 + a*b^6*c^6*d + a^2*b^5*c^5*d^2 + a^3*b^4*
c^4*d^3 + a^4*b^3*c^3*d^4 + a^5*b^2*c^2*d^5 + a^6*b*c*d^6 + a^7*d
^7)/((b*x + a)^8*b^8)
```

3.1292 $\int \frac{(c+dx)^7}{(a+bx)^{10}} dx$

Optimal. Leaf size=58

$$\frac{d(c+dx)^8}{72(a+bx)^8(bc-ad)^2} - \frac{(c+dx)^8}{9(a+bx)^9(bc-ad)}$$

```
[Out] -(c + d*x)^8/(9*(b*c - a*d)*(a + b*x)^9) + (d*(c + d*x)^8)/(72*(b
*c - a*d)^2*(a + b*x)^8)
```

Rubi [A] time = 0.0425833, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{d(c+dx)^8}{72(a+bx)^8(bc-ad)^2} - \frac{(c+dx)^8}{9(a+bx)^9(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^10,x]
```

```
[Out] -(c + d*x)^8/(9*(b*c - a*d)*(a + b*x)^9) + (d*(c + d*x)^8)/(72*(b
*c - a*d)^2*(a + b*x)^8)
```

Rubi in Sympy [A] time = 7.83487, size = 46, normalized size = 0.79

$$\frac{d\,(c+dx)^8}{72\,(a+bx)^8\,(ad-bc)^2} + \frac{(c+dx)^8}{9\,(a+bx)^9\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**10,x)
```

```
[Out] d*(c + d*x)**8/(72*(a + b*x)**8*(a*d - b*c)**2) + (c + d*x)**8/(9
*(a + b*x)**9*(a*d - b*c))
```

Mathematica [B] time = 0.236641, size = 367, normalized size = 6.33

$$-\frac{a^7d^7 + a^6bd^6(2c+9dx) + 3a^5b^2d^5\left(c^2+6cdx+12d^2x^2\right) + a^4b^3d^4\left(4c^3+27c^2dx+72cd^2x^2+84d^3x^3\right) + a^3b^4d^3\left(5c^4+36c^3\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^10,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(2*c + 9*d*x) + 3*a^5*b^2*d^5*(c^2 + 6*c*d*
x + 12*d^2*x^2) + a^4*b^3*d^4*(4*c^3 + 27*c^2*d*x + 72*c*d^2*x^2
+ 84*d^3*x^3) + a^3*b^4*d^3*(5*c^4 + 36*c^3*d*x + 108*c^2*d^2*x^2
 + 168*c*d^3*x^3 + 126*d^4*x^4) + 3*a^2*b^5*d^2*(2*c^5 + 15*c^4*d
*x + 48*c^3*d^2*x^2 + 84*c^2*d^3*x^3 + 84*c*d^4*x^4 + 42*d^5*x^5)
 + a*b^6*d*(7*c^6 + 54*c^5*d*x + 180*c^4*d^2*x^2 + 336*c^3*d^3*x^
3 + 378*c^2*d^4*x^4 + 252*c*d^5*x^5 + 84*d^6*x^6) + b^7*(8*c^7 +
63*c^6*d*x + 216*c^5*d^2*x^2 + 420*c^4*d^3*x^3 + 504*c^3*d^4*x^4
+ 378*c^2*d^5*x^5 + 168*c*d^6*x^6 + 36*d^7*x^7))/(72*b^8*(a + b*x
)^9)
```

Maple [B] time = 0.011, size = 464, normalized size = 8.

$$7\,\frac{d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{b^8\left(bx+a\right)^5}-\frac{35\,d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{6\,b^8\left(bx+a\right)^6}+3\,\frac{d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{b^8\left(bx+a\right)^7}-\frac{21\,d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{4\,b^8\left(bx+a\right)^4}+\frac{7\,d^6\left(ad-bc\right)}{3\,b^8\left(bx+a\right)^3}-\frac{d^7}{2\,b^8\left(bx+a\right)^2}-\frac{7\,d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{8\,b^8\left(bx+a\right)^8}-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{9\,b^8\left(bx+a\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^10,x)
```

```
[Out] 7*d^4*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^5
-35/6*d^3*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+
b^4*c^4)/b^8/(b*x+a)^6+3*d^2*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^
2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^7-21/
4*d^5*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^4+7/3*d^6*(a*d-b*c)
/b^8/(b*x+a)^3-1/2*d^7/b^8/(b*x+a)^2-7/8*d*(a^6*d^6-6*a^5*b*c*d^5
+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5
*c^5*d+b^6*c^6)/b^8/(b*x+a)^8-1/9*(-a^7*d^7+7*a^6*b*c*d^6-21*a^5*
b^2*c^2*d^5+35*a^4*b^3*c^3*d^4-35*a^3*b^4*c^4*d^3+21*a^2*b^5*c^5*
d^2-7*a*b^6*c^6*d+b^7*c^7)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.40237, size = 740, normalized size = 12.76

$$-\frac{36\,b^7d^7x^7 + 8\,b^7c^7 + 7\,ab^6c^6d + 6\,a^2b^5c^5d^2 + 5\,a^3b^4c^4d^3 + 4\,a^4b^3c^3d^4 + 3\,a^5b^2c^2d^5 + 2\,a^6bcd^6 + a^7d^7 + 84\,\left(2\,b^7cd^6 + ab^6d^7\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] -1/72*(36*b^7*d^7*x^7 + 8*b^7*c^7 + 7*a*b^6*c^6*d + 6*a^2*b^5*c^5
*d^2 + 5*a^3*b^4*c^4*d^3 + 4*a^4*b^3*c^3*d^4 + 3*a^5*b^2*c^2*d^5
+ 2*a^6*b*c*d^6 + a^7*d^7 + 84*(2*b^7*c*d^6 + a*b^6*d^7)*x^6 + 12
6*(3*b^7*c^2*d^5 + 2*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 126*(4*b^7*
c^3*d^4 + 3*a*b^6*c^2*d^5 + 2*a^2*b^5*c*d^6 + a^3*b^4*d^7)*x^4 +
84*(5*b^7*c^4*d^3 + 4*a*b^6*c^3*d^4 + 3*a^2*b^5*c^2*d^5 + 2*a^3*b
^4*c*d^6 + a^4*b^3*d^7)*x^3 + 36*(6*b^7*c^5*d^2 + 5*a*b^6*c^4*d^3
 + 4*a^2*b^5*c^3*d^4 + 3*a^3*b^4*c^2*d^5 + 2*a^4*b^3*c*d^6 + a^5*
b^2*d^7)*x^2 + 9*(7*b^7*c^6*d + 6*a*b^6*c^5*d^2 + 5*a^2*b^5*c^4*d
^3 + 4*a^3*b^4*c^3*d^4 + 3*a^4*b^3*c^2*d^5 + 2*a^5*b^2*c*d^6 + a^
6*b*d^7)*x)/(b^17*x^9 + 9*a*b^16*x^8 + 36*a^2*b^15*x^7 + 84*a^3*b
^14*x^6 + 126*a^4*b^13*x^5 + 126*a^5*b^12*x^4 + 84*a^6*b^11*x^3 +
 36*a^7*b^10*x^2 + 9*a^8*b^9*x + a^9*b^8)
```

Fricas [A] time = 0.209326, size = 740, normalized size = 12.76

$$-\frac{36\,b^7d^7x^7 + 8\,b^7c^7 + 7\,ab^6c^6d + 6\,a^2b^5c^5d^2 + 5\,a^3b^4c^4d^3 + 4\,a^4b^3c^3d^4 + 3\,a^5b^2c^2d^5 + 2\,a^6bcd^6 + a^7d^7 + 84\,\left(2\,b^7cd^6 + ab^6d^7\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] -1/72*(36*b^7*d^7*x^7 + 8*b^7*c^7 + 7*a*b^6*c^6*d + 6*a^2*b^5*c^5
*d^2 + 5*a^3*b^4*c^4*d^3 + 4*a^4*b^3*c^3*d^4 + 3*a^5*b^2*c^2*d^5
+ 2*a^6*b*c*d^6 + a^7*d^7 + 84*(2*b^7*c*d^6 + a*b^6*d^7)*x^6 + 12
6*(3*b^7*c^2*d^5 + 2*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 126*(4*b^7*
c^3*d^4 + 3*a*b^6*c^2*d^5 + 2*a^2*b^5*c*d^6 + a^3*b^4*d^7)*x^4 +
84*(5*b^7*c^4*d^3 + 4*a*b^6*c^3*d^4 + 3*a^2*b^5*c^2*d^5 + 2*a^3*b
^4*c*d^6 + a^4*b^3*d^7)*x^3 + 36*(6*b^7*c^5*d^2 + 5*a*b^6*c^4*d^3
 + 4*a^2*b^5*c^3*d^4 + 3*a^3*b^4*c^2*d^5 + 2*a^4*b^3*c*d^6 + a^5*
b^2*d^7)*x^2 + 9*(7*b^7*c^6*d + 6*a*b^6*c^5*d^2 + 5*a^2*b^5*c^4*d
^3 + 4*a^3*b^4*c^3*d^4 + 3*a^4*b^3*c^2*d^5 + 2*a^5*b^2*c*d^6 + a^
6*b*d^7)*x)/(b^17*x^9 + 9*a*b^16*x^8 + 36*a^2*b^15*x^7 + 84*a^3*b
^14*x^6 + 126*a^4*b^13*x^5 + 126*a^5*b^12*x^4 + 84*a^6*b^11*x^3 +
 36*a^7*b^10*x^2 + 9*a^8*b^9*x + a^9*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223323, size = 670, normalized size = 11.55

$$-\frac{36\,b^7d^7x^7 + 168\,b^7cd^6x^6 + 84\,ab^6d^7x^6 + 378\,b^7c^2d^5x^5 + 252\,ab^6cd^6x^5 + 126\,a^2b^5d^7x^5 + 504\,b^7c^3d^4x^4 + 378\,ab^6c^2d^5x^4 + 25}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] -1/72*(36*b^7*d^7*x^7 + 168*b^7*c*d^6*x^6 + 84*a*b^6*d^7*x^6 + 37
8*b^7*c^2*d^5*x^5 + 252*a*b^6*c*d^6*x^5 + 126*a^2*b^5*d^7*x^5 + 5
04*b^7*c^3*d^4*x^4 + 378*a*b^6*c^2*d^5*x^4 + 252*a^2*b^5*c*d^6*x^
4 + 126*a^3*b^4*d^7*x^4 + 420*b^7*c^4*d^3*x^3 + 336*a*b^6*c^3*d^4
*x^3 + 252*a^2*b^5*c^2*d^5*x^3 + 168*a^3*b^4*c*d^6*x^3 + 84*a^4*b
^3*d^7*x^3 + 216*b^7*c^5*d^2*x^2 + 180*a*b^6*c^4*d^3*x^2 + 144*a^
2*b^5*c^3*d^4*x^2 + 108*a^3*b^4*c^2*d^5*x^2 + 72*a^4*b^3*c*d^6*x^
2 + 36*a^5*b^2*d^7*x^2 + 63*b^7*c^6*d*x + 54*a*b^6*c^5*d^2*x + 45
*a^2*b^5*c^4*d^3*x + 36*a^3*b^4*c^3*d^4*x + 27*a^4*b^3*c^2*d^5*x
+ 18*a^5*b^2*c*d^6*x + 9*a^6*b*d^7*x + 8*b^7*c^7 + 7*a*b^6*c^6*d
+ 6*a^2*b^5*c^5*d^2 + 5*a^3*b^4*c^4*d^3 + 4*a^4*b^3*c^3*d^4 + 3*a
^5*b^2*c^2*d^5 + 2*a^6*b*c*d^6 + a^7*d^7)/((b*x + a)^9*b^8)
```

3.1293 $\int \frac{(c+dx)^7}{(a+bx)^{11}}\,dx$

Optimal. Leaf size=89

$$-\frac{d^2(c+dx)^8}{360(a+bx)^8(bc-ad)^3}+\frac{d(c+dx)^8}{45(a+bx)^9(bc-ad)^2}-\frac{(c+dx)^8}{10(a+bx)^{10}(bc-ad)}$$

```
[Out] -(c + d*x)^8/(10*(b*c - a*d)*(a + b*x)^10) + (d*(c + d*x)^8)/(45*
(b*c - a*d)^2*(a + b*x)^9) - (d^2*(c + d*x)^8)/(360*(b*c - a*d)^3
*(a + b*x)^8)
```

Rubi [A] time = 0.0664003, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{d^2(c+dx)^8}{360(a+bx)^8(bc-ad)^3}+\frac{d(c+dx)^8}{45(a+bx)^9(bc-ad)^2}-\frac{(c+dx)^8}{10(a+bx)^{10}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^11,x]
```

```
[Out] -(c + d*x)^8/(10*(b*c - a*d)*(a + b*x)^10) + (d*(c + d*x)^8)/(45*
(b*c - a*d)^2*(a + b*x)^9) - (d^2*(c + d*x)^8)/(360*(b*c - a*d)^3
*(a + b*x)^8)
```

Rubi in Sympy [A] time = 13.7679, size = 73, normalized size = 0.82

$$\frac{d^2\left(c+dx\right)^8}{360\left(a+bx\right)^8\left(ad-bc\right)^3}+\frac{d\left(c+dx\right)^8}{45\left(a+bx\right)^9\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^8}{10\left(a+bx\right)^{10}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**11,x)
```

```
[Out] d**2*(c + d*x)**8/(360*(a + b*x)**8*(a*d - b*c)**3) + d*(c + d*x)
**8/(45*(a + b*x)**9*(a*d - b*c)**2) + (c + d*x)**8/(10*(a + b*x)
**10*(a*d - b*c))
```

Mathematica [B] time = 0.292095, size = 371, normalized size = 4.17

$$-\frac{a^7d^7+a^6bd^6(3c+10dx)+3a^5b^2d^5\left(2c^2+10cdx+15d^2x^2\right)+5a^4b^3d^4\left(2c^3+12c^2dx+27cd^2x^2+24d^3x^3\right)+5a^3b^4d^3\left(3c^4\cdots\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^11,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(3*c + 10*d*x) + 3*a^5*b^2*d^5*(2*c^2 + 10*
c*d*x + 15*d^2*x^2) + 5*a^4*b^3*d^4*(2*c^3 + 12*c^2*d*x + 27*c*d^
2*x^2 + 24*d^3*x^3) + 5*a^3*b^4*d^3*(3*c^4 + 20*c^3*d*x + 54*c^2*
d^2*x^2 + 72*c*d^3*x^3 + 42*d^4*x^4) + 3*a^2*b^5*d^2*(7*c^5 + 50*
c^4*d*x + 150*c^3*d^2*x^2 + 240*c^2*d^3*x^3 + 210*c*d^4*x^4 + 84*
d^5*x^5) + a*b^6*d*(28*c^6 + 210*c^5*d*x + 675*c^4*d^2*x^2 + 1200
*c^3*d^3*x^3 + 1260*c^2*d^4*x^4 + 756*c*d^5*x^5 + 210*d^6*x^6) +
b^7*(36*c^7 + 280*c^6*d*x + 945*c^5*d^2*x^2 + 1800*c^4*d^3*x^3 +
2100*c^3*d^4*x^4 + 1512*c^2*d^5*x^5 + 630*c*d^6*x^6 + 120*d^7*x^7
))/(360*b^8*(a + b*x)^10)
```

Maple [B] time = 0.013, size = 464, normalized size = 5.2

$$-\frac{21\,d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{5\,b^8\,(bx+a)^5}+\frac{35\,d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{6\,b^8\,(bx+a)^6}-5\,\frac{d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{b^8\,(bx+a)^7}+\frac{7\,d^6\,(ad-bc)}{4\,b^8\,(bx+a)^4}-\frac{d^7}{3\,b^8\,(bx+a)^3}+\frac{21\,d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{8\,b^8\,(bx+a)^8}-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{10\,b^8\,(bx+a)^{10}}-\frac{7\,d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{9\,b^8\,(bx+a)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^11,x)
```

```
[Out] -21/5*d^5*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^5+35/6*d^4*(a^3
*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^6-5*d^3*(a^
4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^8/
(b*x+a)^7+7/4*d^6*(a*d-b*c)/b^8/(b*x+a)^4-1/3*d^7/b^8/(b*x+a)^3+2
1/8*d^2*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*
d^2+5*a*b^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^8-1/10*(-a^7*d^7+7*a^6*b*c
*d^6-21*a^5*b^2*c^2*d^5+35*a^4*b^3*c^3*d^4-35*a^3*b^4*c^4*d^3+21*
a^2*b^5*c^5*d^2-7*a*b^6*c^6*d+b^7*c^7)/b^8/(b*x+a)^10-7/9*d*(a^6*
d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^
4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.38467, size = 755, normalized size = 8.48

$$-\frac{120\,b^7d^7x^7+36\,b^7c^7+28\,ab^6c^6d+21\,a^2b^5c^5d^2+15\,a^3b^4c^4d^3+10\,a^4b^3c^3d^4+6\,a^5b^2c^2d^5+3\,a^6bcd^6+a^7d^7+210\left(3\,b^7cd^6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^11,x, algorithm="maxima")
```

```
[Out] -1/360*(120*b^7*d^7*x^7 + 36*b^7*c^7 + 28*a*b^6*c^6*d + 21*a^2*b^
5*c^5*d^2 + 15*a^3*b^4*c^4*d^3 + 10*a^4*b^3*c^3*d^4 + 6*a^5*b^2*c
^2*d^5 + 3*a^6*b*c*d^6 + a^7*d^7 + 210*(3*b^7*c*d^6 + a*b^6*d^7)*
x^6 + 252*(6*b^7*c^2*d^5 + 3*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 210
*(10*b^7*c^3*d^4 + 6*a*b^6*c^2*d^5 + 3*a^2*b^5*c*d^6 + a^3*b^4*d^
7)*x^4 + 120*(15*b^7*c^4*d^3 + 10*a*b^6*c^3*d^4 + 6*a^2*b^5*c^2*d
^5 + 3*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 45*(21*b^7*c^5*d^2 + 15
*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 + 6*a^3*b^4*c^2*d^5 + 3*a^4*b
^3*c*d^6 + a^5*b^2*d^7)*x^2 + 10*(28*b^7*c^6*d + 21*a*b^6*c^5*d^2
 + 15*a^2*b^5*c^4*d^3 + 10*a^3*b^4*c^3*d^4 + 6*a^4*b^3*c^2*d^5 +
3*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^18*x^10 + 10*a*b^17*x^9 + 45*a
^2*b^16*x^8 + 120*a^3*b^15*x^7 + 210*a^4*b^14*x^6 + 252*a^5*b^13*
x^5 + 210*a^6*b^12*x^4 + 120*a^7*b^11*x^3 + 45*a^8*b^10*x^2 + 10*
a^9*b^9*x + a^10*b^8)
```

Fricas [A] time = 0.220096, size = 755, normalized size = 8.48

$$-\frac{120\,b^7d^7x^7+36\,b^7c^7+28\,ab^6c^6d+21\,a^2b^5c^5d^2+15\,a^3b^4c^4d^3+10\,a^4b^3c^3d^4+6\,a^5b^2c^2d^5+3\,a^6bcd^6+a^7d^7+210\left(3\,b^7cd^6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^11,x, algorithm="fricas")
```

```
[Out] -1/360*(120*b^7*d^7*x^7 + 36*b^7*c^7 + 28*a*b^6*c^6*d + 21*a^2*b^
5*c^5*d^2 + 15*a^3*b^4*c^4*d^3 + 10*a^4*b^3*c^3*d^4 + 6*a^5*b^2*c
^2*d^5 + 3*a^6*b*c*d^6 + a^7*d^7 + 210*(3*b^7*c*d^6 + a*b^6*d^7)*
x^6 + 252*(6*b^7*c^2*d^5 + 3*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 210
*(10*b^7*c^3*d^4 + 6*a*b^6*c^2*d^5 + 3*a^2*b^5*c*d^6 + a^3*b^4*d^
7)*x^4 + 120*(15*b^7*c^4*d^3 + 10*a*b^6*c^3*d^4 + 6*a^2*b^5*c^2*d
^5 + 3*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 45*(21*b^7*c^5*d^2 + 15
*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 + 6*a^3*b^4*c^2*d^5 + 3*a^4*b
^3*c*d^6 + a^5*b^2*d^7)*x^2 + 10*(28*b^7*c^6*d + 21*a*b^6*c^5*d^2
 + 15*a^2*b^5*c^4*d^3 + 10*a^3*b^4*c^3*d^4 + 6*a^4*b^3*c^2*d^5 +
3*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^18*x^10 + 10*a*b^17*x^9 + 45*a
^2*b^16*x^8 + 120*a^3*b^15*x^7 + 210*a^4*b^14*x^6 + 252*a^5*b^13*
x^5 + 210*a^6*b^12*x^4 + 120*a^7*b^11*x^3 + 45*a^8*b^10*x^2 + 10*
a^9*b^9*x + a^10*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**11,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220765, size = 670, normalized size = 7.53

$$-\frac{120\,b^7d^7x^7 + 630\,b^7cd^6x^6 + 210\,ab^6d^7x^6 + 1512\,b^7c^2d^5x^5 + 756\,ab^6cd^6x^5 + 252\,a^2b^5d^7x^5 + 2100\,b^7c^3d^4x^4 + 1260\,ab^6c^2d^5x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^11,x, algorithm="giac")
```

```
[Out] -1/360*(120*b^7*d^7*x^7 + 630*b^7*c*d^6*x^6 + 210*a*b^6*d^7*x^6 +
 1512*b^7*c^2*d^5*x^5 + 756*a*b^6*c*d^6*x^5 + 252*a^2*b^5*d^7*x^5
 + 2100*b^7*c^3*d^4*x^4 + 1260*a*b^6*c^2*d^5*x^4 + 630*a^2*b^5*c*
d^6*x^4 + 210*a^3*b^4*d^7*x^4 + 1800*b^7*c^4*d^3*x^3 + 1200*a*b^6
*c^3*d^4*x^3 + 720*a^2*b^5*c^2*d^5*x^3 + 360*a^3*b^4*c*d^6*x^3 +
120*a^4*b^3*d^7*x^3 + 945*b^7*c^5*d^2*x^2 + 675*a*b^6*c^4*d^3*x^2
 + 450*a^2*b^5*c^3*d^4*x^2 + 270*a^3*b^4*c^2*d^5*x^2 + 135*a^4*b^
3*c*d^6*x^2 + 45*a^5*b^2*d^7*x^2 + 280*b^7*c^6*d*x + 210*a*b^6*c^
5*d^2*x + 150*a^2*b^5*c^4*d^3*x + 100*a^3*b^4*c^3*d^4*x + 60*a^4*
b^3*c^2*d^5*x + 30*a^5*b^2*c*d^6*x + 10*a^6*b*d^7*x + 36*b^7*c^7
+ 28*a*b^6*c^6*d + 21*a^2*b^5*c^5*d^2 + 15*a^3*b^4*c^4*d^3 + 10*a
^4*b^3*c^3*d^4 + 6*a^5*b^2*c^2*d^5 + 3*a^6*b*c*d^6 + a^7*d^7)/((b
*x + a)^10*b^8)
```

3.1294 $\int \frac{(c+dx)^7}{(a+bx)^{12}}\,dx$

Optimal. Leaf size=120

$$\frac{d^3(c+dx)^8}{1320(a+bx)^8(bc-ad)^4}-\frac{d^2(c+dx)^8}{165(a+bx)^9(bc-ad)^3}+\frac{3d(c+dx)^8}{110(a+bx)^{10}(bc-ad)^2}-\frac{(c+dx)^8}{11(a+bx)^{11}(bc-ad)}$$

```
[Out] -(c + d*x)^8/(11*(b*c - a*d)*(a + b*x)^11) + (3*d*(c + d*x)^8)/(1
10*(b*c - a*d)^2*(a + b*x)^10) - (d^2*(c + d*x)^8)/(165*(b*c - a*
d)^3*(a + b*x)^9) + (d^3*(c + d*x)^8)/(1320*(b*c - a*d)^4*(a + b*
x)^8)
```

Rubi [A] time = 0.0935707, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{d^3(c+dx)^8}{1320(a+bx)^8(bc-ad)^4}-\frac{d^2(c+dx)^8}{165(a+bx)^9(bc-ad)^3}+\frac{3d(c+dx)^8}{110(a+bx)^{10}(bc-ad)^2}-\frac{(c+dx)^8}{11(a+bx)^{11}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^12,x]
```

```
[Out] -(c + d*x)^8/(11*(b*c - a*d)*(a + b*x)^11) + (3*d*(c + d*x)^8)/(1
10*(b*c - a*d)^2*(a + b*x)^10) - (d^2*(c + d*x)^8)/(165*(b*c - a*
d)^3*(a + b*x)^9) + (d^3*(c + d*x)^8)/(1320*(b*c - a*d)^4*(a + b*
x)^8)
```

Rubi in Sympy [A] time = 21.8695, size = 102, normalized size = 0.85

$$\frac{d^3\left(c+dx\right)^8}{1320\left(a+bx\right)^8\left(ad-bc\right)^4}+\frac{d^2\left(c+dx\right)^8}{165\left(a+bx\right)^9\left(ad-bc\right)^3}+\frac{3d\left(c+dx\right)^8}{110\left(a+bx\right)^{10}\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^8}{11\left(a+bx\right)^{11}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**12,x)
```

```
[Out] d**3*(c + d*x)**8/(1320*(a + b*x)**8*(a*d - b*c)**4) + d**2*(c +
d*x)**8/(165*(a + b*x)**9*(a*d - b*c)**3) + 3*d*(c + d*x)**8/(110
*(a + b*x)**10*(a*d - b*c)**2) + (c + d*x)**8/(11*(a + b*x)**11*(
a*d - b*c))
```

Mathematica [B] time = 0.283144, size = 369, normalized size = 3.08

$$-\frac{a^7d^7+a^6bd^6(4c+11dx)+a^5b^2d^5\left(10c^2+44cdx+55d^2x^2\right)+5a^4b^3d^4\left(4c^3+22c^2dx+44cd^2x^2+33d^3x^3\right)+5a^3b^4d^3\left(7c^4\cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^12,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(4*c + 11*d*x) + a^5*b^2*d^5*(10*c^2 + 44*c
*d*x + 55*d^2*x^2) + 5*a^4*b^3*d^4*(4*c^3 + 22*c^2*d*x + 44*c*d^2
*x^2 + 33*d^3*x^3) + 5*a^3*b^4*d^3*(7*c^4 + 44*c^3*d*x + 110*c^2*
d^2*x^2 + 132*c*d^3*x^3 + 66*d^4*x^4) + a^2*b^5*d^2*(56*c^5 + 385
*c^4*d*x + 1100*c^3*d^2*x^2 + 1650*c^2*d^3*x^3 + 1320*c*d^4*x^4 +
 462*d^5*x^5) + a*b^6*d*(84*c^6 + 616*c^5*d*x + 1925*c^4*d^2*x^2
+ 3300*c^3*d^3*x^3 + 3300*c^2*d^4*x^4 + 1848*c*d^5*x^5 + 462*d^6*
x^6) + b^7*(120*c^7 + 924*c^6*d*x + 3080*c^5*d^2*x^2 + 5775*c^4*d
^3*x^3 + 6600*c^3*d^4*x^4 + 4620*c^2*d^5*x^5 + 1848*c*d^6*x^6 + 3
30*d^7*x^7))/(1320*b^8*(a + b*x)^11)
```

Maple [B] time = 0.012, size = 464, normalized size = 3.9

$$\frac{7\,d^6\,(ad-bc)}{5\,b^8\,(bx+a)^5}-\frac{7\,d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{2\,b^8\,(bx+a)^6}+5\,\frac{d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{b^8\,(bx+a)^7}-\frac{d^7}{4\,b^8\,(bx+a)^4}-\frac{35\,d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{8\,b^8\,(bx+a)^8}-\frac{7\,d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{10\,b^8\,(bx+a)^{10}}-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{11\,b^8\,(bx+a)^{11}}+\frac{7\,d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{3\,b^8\,(bx+a)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^12,x)
```

```
[Out] 7/5*d^6*(a*d-b*c)/b^8/(b*x+a)^5-7/2*d^5*(a^2*d^2-2*a*b*c*d+b^2*c^
2)/b^8/(b*x+a)^6+5*d^4*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c
^3)/b^8/(b*x+a)^7-1/4*d^7/b^8/(b*x+a)^4-35/8*d^3*(a^4*d^4-4*a^3*b
*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^8/(b*x+a)^8-7/1
0*d*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+
15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^8/(b*x+a)^10-1/11*(-a
^7*d^7+7*a^6*b*c*d^6-21*a^5*b^2*c^2*d^5+35*a^4*b^3*c^3*d^4-35*a^3
*b^4*c^4*d^3+21*a^2*b^5*c^5*d^2-7*a*b^6*c^6*d+b^7*c^7)/b^8/(b*x+a
)^11+7/3*d^2*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3
```

```
*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.40959, size = 770, normalized size = 6.42

$$-\frac{330\,b^{7}d^{7}x^{7}+120\,b^{7}c^{7}+84\,ab^{6}c^{6}d+56\,a^{2}b^{5}c^{5}d^{2}+35\,a^{3}b^{4}c^{4}d^{3}+20\,a^{4}b^{3}c^{3}d^{4}+10\,a^{5}b^{2}c^{2}d^{5}+4\,a^{6}bcd^{6}+a^{7}d^{7}+462\,\left(4\,b^{7}c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^12,x, algorithm="maxima")
```

```
[Out] -1/1320*(330*b^7*d^7*x^7 + 120*b^7*c^7 + 84*a*b^6*c^6*d + 56*a^2*
b^5*c^5*d^2 + 35*a^3*b^4*c^4*d^3 + 20*a^4*b^3*c^3*d^4 + 10*a^5*b^
2*c^2*d^5 + 4*a^6*b*c*d^6 + a^7*d^7 + 462*(4*b^7*c*d^6 + a*b^6*d^
7)*x^6 + 462*(10*b^7*c^2*d^5 + 4*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 +
 330*(20*b^7*c^3*d^4 + 10*a*b^6*c^2*d^5 + 4*a^2*b^5*c*d^6 + a^3*b
^4*d^7)*x^4 + 165*(35*b^7*c^4*d^3 + 20*a*b^6*c^3*d^4 + 10*a^2*b^5
*c^2*d^5 + 4*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 55*(56*b^7*c^5*d^
2 + 35*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 + 10*a^3*b^4*c^2*d^5 +
4*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 11*(84*b^7*c^6*d + 56*a*b^6*
c^5*d^2 + 35*a^2*b^5*c^4*d^3 + 20*a^3*b^4*c^3*d^4 + 10*a^4*b^3*c^
2*d^5 + 4*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^19*x^11 + 11*a*b^18*x^
10 + 55*a^2*b^17*x^9 + 165*a^3*b^16*x^8 + 330*a^4*b^15*x^7 + 462*
a^5*b^14*x^6 + 462*a^6*b^13*x^5 + 330*a^7*b^12*x^4 + 165*a^8*b^11
*x^3 + 55*a^9*b^10*x^2 + 11*a^10*b^9*x + a^11*b^8)
```

Fricas [A] time = 0.214616, size = 770, normalized size = 6.42

$$-\frac{330\,b^{7}d^{7}x^{7}+120\,b^{7}c^{7}+84\,ab^{6}c^{6}d+56\,a^{2}b^{5}c^{5}d^{2}+35\,a^{3}b^{4}c^{4}d^{3}+20\,a^{4}b^{3}c^{3}d^{4}+10\,a^{5}b^{2}c^{2}d^{5}+4\,a^{6}bcd^{6}+a^{7}d^{7}+462\,\left(4\,b^{7}c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^12,x, algorithm="fricas")
```

```
[Out] -1/1320*(330*b^7*d^7*x^7 + 120*b^7*c^7 + 84*a*b^6*c^6*d + 56*a^2*
b^5*c^5*d^2 + 35*a^3*b^4*c^4*d^3 + 20*a^4*b^3*c^3*d^4 + 10*a^5*b^
2*c^2*d^5 + 4*a^6*b*c*d^6 + a^7*d^7 + 462*(4*b^7*c*d^6 + a*b^6*d^
7)*x^6 + 462*(10*b^7*c^2*d^5 + 4*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 +
 330*(20*b^7*c^3*d^4 + 10*a*b^6*c^2*d^5 + 4*a^2*b^5*c*d^6 + a^3*b
^4*d^7)*x^4 + 165*(35*b^7*c^4*d^3 + 20*a*b^6*c^3*d^4 + 10*a^2*b^5
*c^2*d^5 + 4*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 55*(56*b^7*c^5*d^
2 + 35*a*b^6*c^4*d^3 + 20*a^2*b^5*c^3*d^4 + 10*a^3*b^4*c^2*d^5 +
4*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 11*(84*b^7*c^6*d + 56*a*b^6*
c^5*d^2 + 35*a^2*b^5*c^4*d^3 + 20*a^3*b^4*c^3*d^4 + 10*a^4*b^3*c^
2*d^5 + 4*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^19*x^11 + 11*a*b^18*x^
10 + 55*a^2*b^17*x^9 + 165*a^3*b^16*x^8 + 330*a^4*b^15*x^7 + 462*
```

```
a^5*b^14*x^6 + 462*a^6*b^13*x^5 + 330*a^7*b^12*x^4 + 165*a^8*b^11
*x^3 + 55*a^9*b^10*x^2 + 11*a^10*b^9*x + a^11*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**12,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219888, size = 670, normalized size = 5.58

$$-\frac{330\,b^7d^7x^7 + 1848\,b^7cd^6x^6 + 462\,ab^6d^7x^6 + 4620\,b^7c^2d^5x^5 + 1848\,ab^6cd^6x^5 + 462\,a^2b^5d^7x^5 + 6600\,b^7c^3d^4x^4 + 3300\,ab^6c^2d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^12,x, algorithm="giac")
```

```
[Out] -1/1320*(330*b^7*d^7*x^7 + 1848*b^7*c*d^6*x^6 + 462*a*b^6*d^7*x^6
 + 4620*b^7*c^2*d^5*x^5 + 1848*a*b^6*c*d^6*x^5 + 462*a^2*b^5*d^7*
x^5 + 6600*b^7*c^3*d^4*x^4 + 3300*a*b^6*c^2*d^5*x^4 + 1320*a^2*b^
5*c*d^6*x^4 + 330*a^3*b^4*d^7*x^4 + 5775*b^7*c^4*d^3*x^3 + 3300*a
*b^6*c^3*d^4*x^3 + 1650*a^2*b^5*c^2*d^5*x^3 + 660*a^3*b^4*c*d^6*x
^3 + 165*a^4*b^3*d^7*x^3 + 3080*b^7*c^5*d^2*x^2 + 1925*a*b^6*c^4*
d^3*x^2 + 1100*a^2*b^5*c^3*d^4*x^2 + 550*a^3*b^4*c^2*d^5*x^2 + 22
0*a^4*b^3*c*d^6*x^2 + 55*a^5*b^2*d^7*x^2 + 924*b^7*c^6*d*x + 616*
a*b^6*c^5*d^2*x + 385*a^2*b^5*c^4*d^3*x + 220*a^3*b^4*c^3*d^4*x +
 110*a^4*b^3*c^2*d^5*x + 44*a^5*b^2*c*d^6*x + 11*a^6*b*d^7*x + 12
0*b^7*c^7 + 84*a*b^6*c^6*d + 56*a^2*b^5*c^5*d^2 + 35*a^3*b^4*c^4*
d^3 + 20*a^4*b^3*c^3*d^4 + 10*a^5*b^2*c^2*d^5 + 4*a^6*b*c*d^6 + a
^7*d^7)/((b*x + a)^11*b^8)
```

3.1295 $\int \frac{(c+dx)^7}{(a+bx)^{13}} \, dx$

Optimal. Leaf size=151

$$-\frac{d^4(c+dx)^8}{3960(a+bx)^8(bc-ad)^5}+\frac{d^3(c+dx)^8}{495(a+bx)^9(bc-ad)^4}-\frac{d^2(c+dx)^8}{110(a+bx)^{10}(bc-ad)^3}+\frac{d(c+dx)^8}{33(a+bx)^{11}(bc-ad)^2}-\frac{(c+dx)^8}{12(a+bx)^{12}(bc-ad)}$$

```
[Out] -(c + d*x)^8/(12*(b*c - a*d)*(a + b*x)^12) + (d*(c + d*x)^8)/(33*
(b*c - a*d)^2*(a + b*x)^11) - (d^2*(c + d*x)^8)/(110*(b*c - a*d)^
3*(a + b*x)^10) + (d^3*(c + d*x)^8)/(495*(b*c - a*d)^4*(a + b*x)^
9) - (d^4*(c + d*x)^8)/(3960*(b*c - a*d)^5*(a + b*x)^8)
```

Rubi [A] time = 0.136383, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$-\frac{d^4(c+dx)^8}{3960(a+bx)^8(bc-ad)^5}+\frac{d^3(c+dx)^8}{495(a+bx)^9(bc-ad)^4}-\frac{d^2(c+dx)^8}{110(a+bx)^{10}(bc-ad)^3}+\frac{d(c+dx)^8}{33(a+bx)^{11}(bc-ad)^2}-\frac{(c+dx)^8}{12(a+bx)^{12}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^13,x]
```

```
[Out] -(c + d*x)^8/(12*(b*c - a*d)*(a + b*x)^12) + (d*(c + d*x)^8)/(33*
(b*c - a*d)^2*(a + b*x)^11) - (d^2*(c + d*x)^8)/(110*(b*c - a*d)^
3*(a + b*x)^10) + (d^3*(c + d*x)^8)/(495*(b*c - a*d)^4*(a + b*x)^
9) - (d^4*(c + d*x)^8)/(3960*(b*c - a*d)^5*(a + b*x)^8)
```

Rubi in Sympy [A] time = 31.8089, size = 128, normalized size = 0.85

$$\frac{d^4\left(c+dx\right)^8}{3960\left(a+bx\right)^8\left(ad-bc\right)^5}+\frac{d^3\left(c+dx\right)^8}{495\left(a+bx\right)^9\left(ad-bc\right)^4}+\frac{d^2\left(c+dx\right)^8}{110\left(a+bx\right)^{10}\left(ad-bc\right)^3}+\frac{d\left(c+dx\right)^8}{33\left(a+bx\right)^{11}\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^8}{12\left(a+bx\right)^{12}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**13,x)
```

```
[Out] d**4*(c + d*x)**8/(3960*(a + b*x)**8*(a*d - b*c)**5) + d**3*(c +
d*x)**8/(495*(a + b*x)**9*(a*d - b*c)**4) + d**2*(c + d*x)**8/(11
0*(a + b*x)**10*(a*d - b*c)**3) + d*(c + d*x)**8/(33*(a + b*x)**1
1*(a*d - b*c)**2) + (c + d*x)**8/(12*(a + b*x)**12*(a*d - b*c))
```

Mathematica [B] time = 0.29688, size = 371, normalized size = 2.46

$$-\frac{a^7d^7 + a^6bd^6(5c + 12dx) + 3a^5b^2d^5\left(5c^2 + 20cdx + 22d^2x^2\right) + 5a^4b^3d^4\left(7c^3 + 36c^2dx + 66cd^2x^2 + 44d^3x^3\right) + 5a^3b^4d^3\left(14c^4\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^13,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(5*c + 12*d*x) + 3*a^5*b^2*d^5*(5*c^2 + 20*
c*d*x + 22*d^2*x^2) + 5*a^4*b^3*d^4*(7*c^3 + 36*c^2*d*x + 66*c*d^
2*x^2 + 44*d^3*x^3) + 5*a^3*b^4*d^3*(14*c^4 + 84*c^3*d*x + 198*c^
2*d^2*x^2 + 220*c*d^3*x^3 + 99*d^4*x^4) + 3*a^2*b^5*d^2*(42*c^5 +
 280*c^4*d*x + 770*c^3*d^2*x^2 + 1100*c^2*d^3*x^3 + 825*c*d^4*x^4
 + 264*d^5*x^5) + a*b^6*d*(210*c^6 + 1512*c^5*d*x + 4620*c^4*d^2*
x^2 + 7700*c^3*d^3*x^3 + 7425*c^2*d^4*x^4 + 3960*c*d^5*x^5 + 924*
d^6*x^6) + b^7*(330*c^7 + 2520*c^6*d*x + 8316*c^5*d^2*x^2 + 15400
*c^4*d^3*x^3 + 17325*c^3*d^4*x^4 + 11880*c^2*d^5*x^5 + 4620*c*d^6
*x^6 + 792*d^7*x^7))/(3960*b^8*(a + b*x)^12)
```

Maple [B] time = 0.013, size = 464, normalized size = 3.1

$$-\frac{d^7}{5\,b^8\,(bx+a)^5}+\frac{7\,d^6\,(ad-bc)}{6\,b^8\,(bx+a)^6}-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{12\,b^8\,(bx+a)^{12}}-3\,\frac{d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{b^8\,(bx+a)^7}+\frac{35\,d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{8\,b^8\,(bx+a)^8}+\frac{21\,d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{10\,b^8\,(bx+a)^{10}}-\frac{7\,d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{11\,b^8\,(bx+a)^{11}}-\frac{35\,d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{9\,b^8\,(bx+a)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^13,x)
```

```
[Out] -1/5*d^7/b^8/(b*x+a)^5+7/6*d^6*(a*d-b*c)/b^8/(b*x+a)^6-1/12*(-a^7
*d^7+7*a^6*b*c*d^6-21*a^5*b^2*c^2*d^5+35*a^4*b^3*c^3*d^4-35*a^3*b
^4*c^4*d^3+21*a^2*b^5*c^5*d^2-7*a*b^6*c^6*d+b^7*c^7)/b^8/(b*x+a)^
12-3*d^5*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^7+35/8*d^4*(a^3*
d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^8+21/10*d^2*
(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*
b^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^10-7/11*d*(a^6*d^6-6*a^5*b*c*d^5+1
5*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c
^5*d+b^6*c^6)/b^8/(b*x+a)^11-35/9*d^3*(a^4*d^4-4*a^3*b*c*d^3+6*a^
2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.40713, size = 784, normalized size = 5.19

$$-\frac{792\,b^7d^7x^7 + 330\,b^7c^7 + 210\,ab^6c^6d + 126\,a^2b^5c^5d^2 + 70\,a^3b^4c^4d^3 + 35\,a^4b^3c^3d^4 + 15\,a^5b^2c^2d^5 + 5\,a^6bcd^6 + a^7d^7 + 924\,(5\,b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^13,x, algorithm="maxima")
```

```
[Out] -1/3960*(792*b^7*d^7*x^7 + 330*b^7*c^7 + 210*a*b^6*c^6*d + 126*a^
2*b^5*c^5*d^2 + 70*a^3*b^4*c^4*d^3 + 35*a^4*b^3*c^3*d^4 + 15*a^5*
b^2*c^2*d^5 + 5*a^6*b*c*d^6 + a^7*d^7 + 924*(5*b^7*c*d^6 + a*b^6*
d^7)*x^6 + 792*(15*b^7*c^2*d^5 + 5*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5
 + 495*(35*b^7*c^3*d^4 + 15*a*b^6*c^2*d^5 + 5*a^2*b^5*c*d^6 + a^3
*b^4*d^7)*x^4 + 220*(70*b^7*c^4*d^3 + 35*a*b^6*c^3*d^4 + 15*a^2*b
^5*c^2*d^5 + 5*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 66*(126*b^7*c^5
*d^2 + 70*a*b^6*c^4*d^3 + 35*a^2*b^5*c^3*d^4 + 15*a^3*b^4*c^2*d^5
 + 5*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 12*(210*b^7*c^6*d + 126*a
*b^6*c^5*d^2 + 70*a^2*b^5*c^4*d^3 + 35*a^3*b^4*c^3*d^4 + 15*a^4*b
^3*c^2*d^5 + 5*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^20*x^12 + 12*a*b^
19*x^11 + 66*a^2*b^18*x^10 + 220*a^3*b^17*x^9 + 495*a^4*b^16*x^8
+ 792*a^5*b^15*x^7 + 924*a^6*b^14*x^6 + 792*a^7*b^13*x^5 + 495*a^
8*b^12*x^4 + 220*a^9*b^11*x^3 + 66*a^10*b^10*x^2 + 12*a^11*b^9*x
+ a^12*b^8)
```

Fricas [A] time = 0.228861, size = 784, normalized size = 5.19

$$-\frac{792\,b^7d^7x^7 + 330\,b^7c^7 + 210\,ab^6c^6d + 126\,a^2b^5c^5d^2 + 70\,a^3b^4c^4d^3 + 35\,a^4b^3c^3d^4 + 15\,a^5b^2c^2d^5 + 5\,a^6bcd^6 + a^7d^7 + 924\,(5\,b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^13,x, algorithm="fricas")
```

```
[Out] -1/3960*(792*b^7*d^7*x^7 + 330*b^7*c^7 + 210*a*b^6*c^6*d + 126*a^
2*b^5*c^5*d^2 + 70*a^3*b^4*c^4*d^3 + 35*a^4*b^3*c^3*d^4 + 15*a^5*
```

```
b^2*c^2*d^5 + 5*a^6*b*c*d^6 + a^7*d^7 + 924*(5*b^7*c*d^6 + a*b^6*
d^7)*x^6 + 792*(15*b^7*c^2*d^5 + 5*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5
 + 495*(35*b^7*c^3*d^4 + 15*a*b^6*c^2*d^5 + 5*a^2*b^5*c*d^6 + a^3
*b^4*d^7)*x^4 + 220*(70*b^7*c^4*d^3 + 35*a*b^6*c^3*d^4 + 15*a^2*b
^5*c^2*d^5 + 5*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 66*(126*b^7*c^5
*d^2 + 70*a*b^6*c^4*d^3 + 35*a^2*b^5*c^3*d^4 + 15*a^3*b^4*c^2*d^5
 + 5*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 12*(210*b^7*c^6*d + 126*a
*b^6*c^5*d^2 + 70*a^2*b^5*c^4*d^3 + 35*a^3*b^4*c^3*d^4 + 15*a^4*b
^3*c^2*d^5 + 5*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^20*x^12 + 12*a*b^
19*x^11 + 66*a^2*b^18*x^10 + 220*a^3*b^17*x^9 + 495*a^4*b^16*x^8
+ 792*a^5*b^15*x^7 + 924*a^6*b^14*x^6 + 792*a^7*b^13*x^5 + 495*a^
8*b^12*x^4 + 220*a^9*b^11*x^3 + 66*a^10*b^10*x^2 + 12*a^11*b^9*x
+ a^12*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**13,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.228662, size = 670, normalized size = 4.44

$$-\frac{792\,b^7d^7x^7 + 4620\,b^7cd^6x^6 + 924\,ab^6d^7x^6 + 11880\,b^7c^2d^5x^5 + 3960\,ab^6cd^6x^5 + 792\,a^2b^5d^7x^5 + 17325\,b^7c^3d^4x^4 + 7425\,ab^6c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^13,x, algorithm="giac")

[Out] -1/3960*(792*b^7*d^7*x^7 + 4620*b^7*c*d^6*x^6 + 924*a*b^6*d^7*x^6
 + 11880*b^7*c^2*d^5*x^5 + 3960*a*b^6*c*d^6*x^5 + 792*a^2*b^5*d^7
*x^5 + 17325*b^7*c^3*d^4*x^4 + 7425*a*b^6*c^2*d^5*x^4 + 2475*a^2*
b^5*c*d^6*x^4 + 495*a^3*b^4*d^7*x^4 + 15400*b^7*c^4*d^3*x^3 + 770
0*a*b^6*c^3*d^4*x^3 + 3300*a^2*b^5*c^2*d^5*x^3 + 1100*a^3*b^4*c*d
^6*x^3 + 220*a^4*b^3*d^7*x^3 + 8316*b^7*c^5*d^2*x^2 + 4620*a*b^6*
c^4*d^3*x^2 + 2310*a^2*b^5*c^3*d^4*x^2 + 990*a^3*b^4*c^2*d^5*x^2
+ 330*a^4*b^3*c*d^6*x^2 + 66*a^5*b^2*d^7*x^2 + 2520*b^7*c^6*d*x +
 1512*a*b^6*c^5*d^2*x + 840*a^2*b^5*c^4*d^3*x + 420*a^3*b^4*c^3*d
^4*x + 180*a^4*b^3*c^2*d^5*x + 60*a^5*b^2*c*d^6*x + 12*a^6*b*d^7*
x + 330*b^7*c^7 + 210*a*b^6*c^6*d + 126*a^2*b^5*c^5*d^2 + 70*a^3*
b^4*c^4*d^3 + 35*a^4*b^3*c^3*d^4 + 15*a^5*b^2*c^2*d^5 + 5*a^6*b*c
*d^6 + a^7*d^7)/((b*x + a)^12*b^8)
```

3.1296 $\int \frac{(c+dx)^7}{(a+bx)^{14}}\,dx$

Optimal. Leaf size=198

$$-\frac{d^6(bc-ad)}{b^8(a+bx)^7}-\frac{21d^5(bc-ad)^2}{8b^8(a+bx)^8}-\frac{35d^4(bc-ad)^3}{9b^8(a+bx)^9}-\frac{7d^3(bc-ad)^4}{2b^8(a+bx)^{10}}-\frac{21d^2(bc-ad)^5}{11b^8(a+bx)^{11}}-\frac{7d(bc-ad)^6}{12b^8(a+bx)^{12}}-\frac{(bc-ad)^7}{13b^8(a+bx)^{13}}-\frac{d^7}{6b^8(a+bx)^6}$$

```
[Out] -(b*c - a*d)^7/(13*b^8*(a + b*x)^13) - (7*d*(b*c - a*d)^6)/(12*b^
8*(a + b*x)^12) - (21*d^2*(b*c - a*d)^5)/(11*b^8*(a + b*x)^11) -
(7*d^3*(b*c - a*d)^4)/(2*b^8*(a + b*x)^10) - (35*d^4*(b*c - a*d)^
3)/(9*b^8*(a + b*x)^9) - (21*d^5*(b*c - a*d)^2)/(8*b^8*(a + b*x)^
8) - (d^6*(b*c - a*d))/(b^8*(a + b*x)^7) - d^7/(6*b^8*(a + b*x)^6
)
```

Rubi [A] time = 0.411383, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{d^6(bc-ad)}{b^8(a+bx)^7}-\frac{21d^5(bc-ad)^2}{8b^8(a+bx)^8}-\frac{35d^4(bc-ad)^3}{9b^8(a+bx)^9}-\frac{7d^3(bc-ad)^4}{2b^8(a+bx)^{10}}-\frac{21d^2(bc-ad)^5}{11b^8(a+bx)^{11}}-\frac{7d(bc-ad)^6}{12b^8(a+bx)^{12}}-\frac{(bc-ad)^7}{13b^8(a+bx)^{13}}-\frac{d^7}{6b^8(a+bx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^14,x]
```

```
[Out] -(b*c - a*d)^7/(13*b^8*(a + b*x)^13) - (7*d*(b*c - a*d)^6)/(12*b^
8*(a + b*x)^12) - (21*d^2*(b*c - a*d)^5)/(11*b^8*(a + b*x)^11) -
(7*d^3*(b*c - a*d)^4)/(2*b^8*(a + b*x)^10) - (35*d^4*(b*c - a*d)^
3)/(9*b^8*(a + b*x)^9) - (21*d^5*(b*c - a*d)^2)/(8*b^8*(a + b*x)^
8) - (d^6*(b*c - a*d))/(b^8*(a + b*x)^7) - d^7/(6*b^8*(a + b*x)^6
)
```

Rubi in Sympy [A] time = 81.8883, size = 180, normalized size = 0.91

$$-\frac{d^7}{6b^8\left(a+bx\right)^6}+\frac{d^6\left(ad-bc\right)}{b^8\left(a+bx\right)^7}-\frac{21d^5\left(ad-bc\right)^2}{8b^8\left(a+bx\right)^8}+\frac{35d^4\left(ad-bc\right)^3}{9b^8\left(a+bx\right)^9}-\frac{7d^3\left(ad-bc\right)^4}{2b^8\left(a+bx\right)^{10}}+\frac{21d^2\left(ad-bc\right)^5}{11b^8\left(a+bx\right)^{11}}-\frac{7d\left(ad-bc\right)^6}{12b^8\left(a+bx\right)^{12}}+\frac{\left(ad-bc\right)^7}{13b^8\left(a+bx\right)^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**14,x)
```

```
[Out] -d**7/(6*b**8*(a + b*x)**6) + d**6*(a*d - b*c)/(b**8*(a + b*x)**7
) - 21*d**5*(a*d - b*c)**2/(8*b**8*(a + b*x)**8) + 35*d**4*(a*d -
 b*c)**3/(9*b**8*(a + b*x)**9) - 7*d**3*(a*d - b*c)**4/(2*b**8*(a
 + b*x)**10) + 21*d**2*(a*d - b*c)**5/(11*b**8*(a + b*x)**11) - 7
*d*(a*d - b*c)**6/(12*b**8*(a + b*x)**12) + (a*d - b*c)**7/(13*b*
*8*(a + b*x)**13)
```

Mathematica [A] time = 0.245387, size = 369, normalized size = 1.86

$$-\frac{a^7d^7 + a^6bd^6(6c + 13dx) + 3a^5b^2d^5\left(7c^2 + 26cdx + 26d^2x^2\right) + a^4b^3d^4\left(56c^3 + 273c^2dx + 468cd^2x^2 + 286d^3x^3\right) + a^3b^4d^3\left(12\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^14,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(6*c + 13*d*x) + 3*a^5*b^2*d^5*(7*c^2 + 26*
c*d*x + 26*d^2*x^2) + a^4*b^3*d^4*(56*c^3 + 273*c^2*d*x + 468*c*d
^2*x^2 + 286*d^3*x^3) + a^3*b^4*d^3*(126*c^4 + 728*c^3*d*x + 1638
*c^2*d^2*x^2 + 1716*c*d^3*x^3 + 715*d^4*x^4) + 3*a^2*b^5*d^2*(84*
c^5 + 546*c^4*d*x + 1456*c^3*d^2*x^2 + 2002*c^2*d^3*x^3 + 1430*c*
d^4*x^4 + 429*d^5*x^5) + a*b^6*d*(462*c^6 + 3276*c^5*d*x + 9828*c
^4*d^2*x^2 + 16016*c^3*d^3*x^3 + 15015*c^2*d^4*x^4 + 7722*c*d^5*x
^5 + 1716*d^6*x^6) + b^7*(792*c^7 + 6006*c^6*d*x + 19656*c^5*d^2*
x^2 + 36036*c^4*d^3*x^3 + 40040*c^3*d^4*x^4 + 27027*c^2*d^5*x^5 +
 10296*c*d^6*x^6 + 1716*d^7*x^7))/(10296*b^8*(a + b*x)^13)
```

Maple [B] time = 0.011, size = 463, normalized size = 2.3

$$\begin{aligned}
&-\frac{d^7}{6\,b^8\,(bx+a)^6}\\
&-\frac{7\,d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{12\,b^8\,(bx+a)^{12}}\\
&+\frac{d^6\,(ad-bc)}{b^8\,(bx+a)^7}-\frac{21\,d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{8\,b^8\,(bx+a)^8}\\
&-\frac{7\,d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{2\,b^8\,(bx+a)^{10}}\\
&+\frac{21\,d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{11\,b^8\,(bx+a)^{11}}\\
&-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{13\,b^8\,(bx+a)^{13}}\\
&+\frac{35\,d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{9\,b^8\,(bx+a)^9}
\end{aligned}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^14,x)
```

```
[Out] -1/6*d^7/b^8/(b*x+a)^6-7/12*d*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c
^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^
6)/b^8/(b*x+a)^12+d^6*(a*d-b*c)/b^8/(b*x+a)^7-21/8*d^5*(a^2*d^2-2
*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^8-7/2*d^3*(a^4*d^4-4*a^3*b*c*d^3+6*
a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^8/(b*x+a)^10+21/11*d^2*(
a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b
^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^11-1/13*(-a^7*d^7+7*a^6*b*c*d^6-21*
a^5*b^2*c^2*d^5+35*a^4*b^3*c^3*d^4-35*a^3*b^4*c^4*d^3+21*a^2*b^5*
c^5*d^2-7*a*b^6*c^6*d+b^7*c^7)/b^8/(b*x+a)^13+35/9*d^4*(a^3*d^3-3
*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.39982, size = 799, normalized size = 4.04

$$-\frac{1716\,b^7d^7x^7 + 792\,b^7c^7 + 462\,ab^6c^6d + 252\,a^2b^5c^5d^2 + 126\,a^3b^4c^4d^3 + 56\,a^4b^3c^3d^4 + 21\,a^5b^2c^2d^5 + 6\,a^6bcd^6 + a^7d^7 + 1716}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^14,x, algorithm="maxima")
```

```
[Out] -1/10296*(1716*b^7*d^7*x^7 + 792*b^7*c^7 + 462*a*b^6*c^6*d + 252*
a^2*b^5*c^5*d^2 + 126*a^3*b^4*c^4*d^3 + 56*a^4*b^3*c^3*d^4 + 21*a
^5*b^2*c^2*d^5 + 6*a^6*b*c*d^6 + a^7*d^7 + 1716*(6*b^7*c*d^6 + a*
b^6*d^7)*x^6 + 1287*(21*b^7*c^2*d^5 + 6*a*b^6*c*d^6 + a^2*b^5*d^7
)*x^5 + 715*(56*b^7*c^3*d^4 + 21*a*b^6*c^2*d^5 + 6*a^2*b^5*c*d^6
+ a^3*b^4*d^7)*x^4 + 286*(126*b^7*c^4*d^3 + 56*a*b^6*c^3*d^4 + 21
*a^2*b^5*c^2*d^5 + 6*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 78*(252*b
^7*c^5*d^2 + 126*a*b^6*c^4*d^3 + 56*a^2*b^5*c^3*d^4 + 21*a^3*b^4*
c^2*d^5 + 6*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 13*(462*b^7*c^6*d
+ 252*a*b^6*c^5*d^2 + 126*a^2*b^5*c^4*d^3 + 56*a^3*b^4*c^3*d^4 +
21*a^4*b^3*c^2*d^5 + 6*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^21*x^13 +
 13*a*b^20*x^12 + 78*a^2*b^19*x^11 + 286*a^3*b^18*x^10 + 715*a^4*
b^17*x^9 + 1287*a^5*b^16*x^8 + 1716*a^6*b^15*x^7 + 1716*a^7*b^14*
x^6 + 1287*a^8*b^13*x^5 + 715*a^9*b^12*x^4 + 286*a^10*b^11*x^3 +
78*a^11*b^10*x^2 + 13*a^12*b^9*x + a^13*b^8)
```

Fricas [A] time = 0.229904, size = 799, normalized size = 4.04

$$-\frac{1716\,b^7d^7x^7 + 792\,b^7c^7 + 462\,ab^6c^6d + 252\,a^2b^5c^5d^2 + 126\,a^3b^4c^4d^3 + 56\,a^4b^3c^3d^4 + 21\,a^5b^2c^2d^5 + 6\,a^6bcd^6 + a^7d^7 + 1716}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^14,x, algorithm="fricas")
```

```
[Out] -1/10296*(1716*b^7*d^7*x^7 + 792*b^7*c^7 + 462*a*b^6*c^6*d + 252*
a^2*b^5*c^5*d^2 + 126*a^3*b^4*c^4*d^3 + 56*a^4*b^3*c^3*d^4 + 21*a
^5*b^2*c^2*d^5 + 6*a^6*b*c*d^6 + a^7*d^7 + 1716*(6*b^7*c*d^6 + a*
b^6*d^7)*x^6 + 1287*(21*b^7*c^2*d^5 + 6*a*b^6*c*d^6 + a^2*b^5*d^7
)*x^5 + 715*(56*b^7*c^3*d^4 + 21*a*b^6*c^2*d^5 + 6*a^2*b^5*c*d^6
+ a^3*b^4*d^7)*x^4 + 286*(126*b^7*c^4*d^3 + 56*a*b^6*c^3*d^4 + 21
*a^2*b^5*c^2*d^5 + 6*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 78*(252*b
^7*c^5*d^2 + 126*a*b^6*c^4*d^3 + 56*a^2*b^5*c^3*d^4 + 21*a^3*b^4*
c^2*d^5 + 6*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 13*(462*b^7*c^6*d
+ 252*a*b^6*c^5*d^2 + 126*a^2*b^5*c^4*d^3 + 56*a^3*b^4*c^3*d^4 +
21*a^4*b^3*c^2*d^5 + 6*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^21*x^13 +
 13*a*b^20*x^12 + 78*a^2*b^19*x^11 + 286*a^3*b^18*x^10 + 715*a^4*
b^17*x^9 + 1287*a^5*b^16*x^8 + 1716*a^6*b^15*x^7 + 1716*a^7*b^14*
x^6 + 1287*a^8*b^13*x^5 + 715*a^9*b^12*x^4 + 286*a^10*b^11*x^3 +
78*a^11*b^10*x^2 + 13*a^12*b^9*x + a^13*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**14,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225605, size = 670, normalized size = 3.38

$$-\frac{1716\,b^7d^7x^7 + 10296\,b^7cd^6x^6 + 1716\,ab^6d^7x^6 + 27027\,b^7c^2d^5x^5 + 7722\,ab^6cd^6x^5 + 1287\,a^2b^5d^7x^5 + 40040\,b^7c^3d^4x^4 + 1501}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^14,x, algorithm="giac")
```

```
[Out] -1/10296*(1716*b^7*d^7*x^7 + 10296*b^7*c*d^6*x^6 + 1716*a*b^6*d^7
*x^6 + 27027*b^7*c^2*d^5*x^5 + 7722*a*b^6*c*d^6*x^5 + 1287*a^2*b^
5*d^7*x^5 + 40040*b^7*c^3*d^4*x^4 + 15015*a*b^6*c^2*d^5*x^4 + 429
0*a^2*b^5*c*d^6*x^4 + 715*a^3*b^4*d^7*x^4 + 36036*b^7*c^4*d^3*x^3
 + 16016*a*b^6*c^3*d^4*x^3 + 6006*a^2*b^5*c^2*d^5*x^3 + 1716*a^3*
b^4*c*d^6*x^3 + 286*a^4*b^3*d^7*x^3 + 19656*b^7*c^5*d^2*x^2 + 982
8*a*b^6*c^4*d^3*x^2 + 4368*a^2*b^5*c^3*d^4*x^2 + 1638*a^3*b^4*c^2
*d^5*x^2 + 468*a^4*b^3*c*d^6*x^2 + 78*a^5*b^2*d^7*x^2 + 6006*b^7*
c^6*d*x + 3276*a*b^6*c^5*d^2*x + 1638*a^2*b^5*c^4*d^3*x + 728*a^3
```

```
*b^4*c^3*d^4*x + 273*a^4*b^3*c^2*d^5*x + 78*a^5*b^2*c*d^6*x + 13*
a^6*b*d^7*x + 792*b^7*c^7 + 462*a*b^6*c^6*d + 252*a^2*b^5*c^5*d^2
 + 126*a^3*b^4*c^4*d^3 + 56*a^4*b^3*c^3*d^4 + 21*a^5*b^2*c^2*d^5
+ 6*a^6*b*c*d^6 + a^7*d^7)/((b*x + a)^13*b^8)
```

3.1297 $\int \frac{(c+dx)^7}{(a+bx)^{15}}\,dx$

Optimal. Leaf size=200

$$-\frac{7d^6(bc-ad)}{8b^8(a+bx)^8}-\frac{7d^5(bc-ad)^2}{3b^8(a+bx)^9}-\frac{7d^4(bc-ad)^3}{2b^8(a+bx)^{10}}-\frac{35d^3(bc-ad)^4}{11b^8(a+bx)^{11}}-\frac{7d^2(bc-ad)^5}{4b^8(a+bx)^{12}}-\frac{7d(bc-ad)^6}{13b^8(a+bx)^{13}}-\frac{(bc-ad)^7}{14b^8(a+bx)^{14}}-\frac{d^7}{7b^8(a+bx)^7}$$

```
[Out] -(b*c - a*d)^7/(14*b^8*(a + b*x)^14) - (7*d*(b*c - a*d)^6)/(13*b^
8*(a + b*x)^13) - (7*d^2*(b*c - a*d)^5)/(4*b^8*(a + b*x)^12) - (3
5*d^3*(b*c - a*d)^4)/(11*b^8*(a + b*x)^11) - (7*d^4*(b*c - a*d)^3
)/(2*b^8*(a + b*x)^10) - (7*d^5*(b*c - a*d)^2)/(3*b^8*(a + b*x)^9
) - (7*d^6*(b*c - a*d))/(8*b^8*(a + b*x)^8) - d^7/(7*b^8*(a + b*x
)^7)
```

Rubi [A] time = 0.4104, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{7d^6(bc-ad)}{8b^8(a+bx)^8}-\frac{7d^5(bc-ad)^2}{3b^8(a+bx)^9}-\frac{7d^4(bc-ad)^3}{2b^8(a+bx)^{10}}-\frac{35d^3(bc-ad)^4}{11b^8(a+bx)^{11}}-\frac{7d^2(bc-ad)^5}{4b^8(a+bx)^{12}}-\frac{7d(bc-ad)^6}{13b^8(a+bx)^{13}}-\frac{(bc-ad)^7}{14b^8(a+bx)^{14}}-\frac{d^7}{7b^8(a+bx)^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^15,x]
```

```
[Out] -(b*c - a*d)^7/(14*b^8*(a + b*x)^14) - (7*d*(b*c - a*d)^6)/(13*b^
8*(a + b*x)^13) - (7*d^2*(b*c - a*d)^5)/(4*b^8*(a + b*x)^12) - (3
5*d^3*(b*c - a*d)^4)/(11*b^8*(a + b*x)^11) - (7*d^4*(b*c - a*d)^3
)/(2*b^8*(a + b*x)^10) - (7*d^5*(b*c - a*d)^2)/(3*b^8*(a + b*x)^9
) - (7*d^6*(b*c - a*d))/(8*b^8*(a + b*x)^8) - d^7/(7*b^8*(a + b*x
)^7)
```

Rubi in Sympy [A] time = 90.36, size = 184, normalized size = 0.92

$$-\frac{d^7}{7b^8\,(a+bx)^7}+\frac{7d^6\,(ad-bc)}{8b^8\,(a+bx)^8}-\frac{7d^5\,(ad-bc)^2}{3b^8\,(a+bx)^9}+\frac{7d^4\,(ad-bc)^3}{2b^8\,(a+bx)^{10}}-\frac{35d^3\,(ad-bc)^4}{11b^8\,(a+bx)^{11}}+\frac{7d^2\,(ad-bc)^5}{4b^8\,(a+bx)^{12}}-\frac{7d\,(ad-bc)^6}{13b^8\,(a+bx)^{13}}+\frac{(ad-bc)^7}{14b^8\,(a+bx)^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**15,x)
```

```
[Out] -d**7/(7*b**8*(a + b*x)**7) + 7*d**6*(a*d - b*c)/(8*b**8*(a + b*x
)**8) - 7*d**5*(a*d - b*c)**2/(3*b**8*(a + b*x)**9) + 7*d**4*(a*d
 - b*c)**3/(2*b**8*(a + b*x)**10) - 35*d**3*(a*d - b*c)**4/(11*b*
*8*(a + b*x)**11) + 7*d**2*(a*d - b*c)**5/(4*b**8*(a + b*x)**12)
- 7*d*(a*d - b*c)**6/(13*b**8*(a + b*x)**13) + (a*d - b*c)**7/(14
*b**8*(a + b*x)**14)
```

Mathematica [A] time = 0.279385, size = 371, normalized size = 1.86

$$-\frac{a^7d^7 + 7a^6bd^6(c+2dx) + 7a^5b^2d^5\left(4c^2+14cdx+13d^2x^2\right) + 7a^4b^3d^4\left(12c^3+56c^2dx+91cd^2x^2+52d^3x^3\right) + 7a^3b^4d^3\left(30c^4\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^15,x]
```

```
[Out] -(a^7*d^7 + 7*a^6*b*d^6*(c + 2*d*x) + 7*a^5*b^2*d^5*(4*c^2 + 14*c
*d*x + 13*d^2*x^2) + 7*a^4*b^3*d^4*(12*c^3 + 56*c^2*d*x + 91*c*d^
2*x^2 + 52*d^3*x^3) + 7*a^3*b^4*d^3*(30*c^4 + 168*c^3*d*x + 364*c
^2*d^2*x^2 + 364*c*d^3*x^3 + 143*d^4*x^4) + 7*a^2*b^5*d^2*(66*c^5
 + 420*c^4*d*x + 1092*c^3*d^2*x^2 + 1456*c^2*d^3*x^3 + 1001*c*d^4
*x^4 + 286*d^5*x^5) + 7*a*b^6*d*(132*c^6 + 924*c^5*d*x + 2730*c^4
*d^2*x^2 + 4368*c^3*d^3*x^3 + 4004*c^2*d^4*x^4 + 2002*c*d^5*x^5 +
 429*d^6*x^6) + b^7*(1716*c^7 + 12936*c^6*d*x + 42042*c^5*d^2*x^2
 + 76440*c^4*d^3*x^3 + 84084*c^3*d^4*x^4 + 56056*c^2*d^5*x^5 + 21
021*c*d^6*x^6 + 3432*d^7*x^7))/(24024*b^8*(a + b*x)^14)
```

Maple [B] time = 0.011, size = 464, normalized size = 2.3

$$-\frac{-a^7d^7+7\,cd^6a^6b-21\,a^5c^2d^5b^2+35\,a^4b^3c^3d^4-35\,a^3b^4c^4d^3+21\,a^2c^5d^2b^5-7\,ab^6c^6d+c^7b^7}{14\,b^8\,(bx+a)^{14}}+\frac{7\,d^2\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{4\,b^8\,(bx+a)^{12}}-\frac{d^7}{7\,b^8\,(bx+a)^7}+\frac{7\,d^6\,(ad-bc)}{8\,b^8\,(bx+a)^8}+\frac{7\,d^4\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{2\,b^8\,(bx+a)^{10}}-\frac{35\,d^3\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{11\,b^8\,(bx+a)^{11}}-\frac{7\,d\left(a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6\right)}{13\,b^8\,(bx+a)^{13}}-\frac{7\,d^5\left(a^2d^2-2\,abcd+b^2c^2\right)}{3\,b^8\,(bx+a)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^15,x)
```

```
[Out] -1/14*(-a^7*d^7+7*a^6*b*c*d^6-21*a^5*b^2*c^2*d^5+35*a^4*b^3*c^3*d
^4-35*a^3*b^4*c^4*d^3+21*a^2*b^5*c^5*d^2-7*a*b^6*c^6*d+b^7*c^7)/b
^8/(b*x+a)^14+7/4*d^2*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-1
0*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^8/(b*x+a)^12-1/7*d^7/b
^8/(b*x+a)^7+7/8*d^6*(a*d-b*c)/b^8/(b*x+a)^8+7/2*d^4*(a^3*d^3-3*a
^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^10-35/11*d^3*(a^4*d
^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^8/(b*
x+a)^11-7/13*d*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b
^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^8/(b*x+a)^
13-7/3*d^5*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.40705, size = 814, normalized size = 4.07

$$-\frac{3432\,b^7d^7x^7 + 1716\,b^7c^7 + 924\,ab^6c^6d + 462\,a^2b^5c^5d^2 + 210\,a^3b^4c^4d^3 + 84\,a^4b^3c^3d^4 + 28\,a^5b^2c^2d^5 + 7\,a^6bcd^6 + a^7d^7 + 3003}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^15,x, algorithm="maxima")
```

```
[Out] -1/24024*(3432*b^7*d^7*x^7 + 1716*b^7*c^7 + 924*a*b^6*c^6*d + 462
*a^2*b^5*c^5*d^2 + 210*a^3*b^4*c^4*d^3 + 84*a^4*b^3*c^3*d^4 + 28*
a^5*b^2*c^2*d^5 + 7*a^6*b*c*d^6 + a^7*d^7 + 3003*(7*b^7*c*d^6 + a
*b^6*d^7)*x^6 + 2002*(28*b^7*c^2*d^5 + 7*a*b^6*c*d^6 + a^2*b^5*d^
7)*x^5 + 1001*(84*b^7*c^3*d^4 + 28*a*b^6*c^2*d^5 + 7*a^2*b^5*c*d^
6 + a^3*b^4*d^7)*x^4 + 364*(210*b^7*c^4*d^3 + 84*a*b^6*c^3*d^4 +
28*a^2*b^5*c^2*d^5 + 7*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 91*(462
*b^7*c^5*d^2 + 210*a*b^6*c^4*d^3 + 84*a^2*b^5*c^3*d^4 + 28*a^3*b^
4*c^2*d^5 + 7*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 14*(924*b^7*c^6*
d + 462*a*b^6*c^5*d^2 + 210*a^2*b^5*c^4*d^3 + 84*a^3*b^4*c^3*d^4
+ 28*a^4*b^3*c^2*d^5 + 7*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^22*x^14
 + 14*a*b^21*x^13 + 91*a^2*b^20*x^12 + 364*a^3*b^19*x^11 + 1001*a
^4*b^18*x^10 + 2002*a^5*b^17*x^9 + 3003*a^6*b^16*x^8 + 3432*a^7*b
^15*x^7 + 3003*a^8*b^14*x^6 + 2002*a^9*b^13*x^5 + 1001*a^10*b^12*
x^4 + 364*a^11*b^11*x^3 + 91*a^12*b^10*x^2 + 14*a^13*b^9*x + a^14
*b^8)
```

Fricas [A] time = 0.22894, size = 814, normalized size = 4.07

$$-\frac{3432\,b^7d^7x^7 + 1716\,b^7c^7 + 924\,ab^6c^6d + 462\,a^2b^5c^5d^2 + 210\,a^3b^4c^4d^3 + 84\,a^4b^3c^3d^4 + 28\,a^5b^2c^2d^5 + 7\,a^6bcd^6 + a^7d^7 + 3003}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^15,x, algorithm="fricas")
```

```
[Out] -1/24024*(3432*b^7*d^7*x^7 + 1716*b^7*c^7 + 924*a*b^6*c^6*d + 462
*a^2*b^5*c^5*d^2 + 210*a^3*b^4*c^4*d^3 + 84*a^4*b^3*c^3*d^4 + 28*
a^5*b^2*c^2*d^5 + 7*a^6*b*c*d^6 + a^7*d^7 + 3003*(7*b^7*c*d^6 + a
*b^6*d^7)*x^6 + 2002*(28*b^7*c^2*d^5 + 7*a*b^6*c*d^6 + a^2*b^5*d^
7)*x^5 + 1001*(84*b^7*c^3*d^4 + 28*a*b^6*c^2*d^5 + 7*a^2*b^5*c*d^
6 + a^3*b^4*d^7)*x^4 + 364*(210*b^7*c^4*d^3 + 84*a*b^6*c^3*d^4 +
28*a^2*b^5*c^2*d^5 + 7*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 91*(462
*b^7*c^5*d^2 + 210*a*b^6*c^4*d^3 + 84*a^2*b^5*c^3*d^4 + 28*a^3*b^
4*c^2*d^5 + 7*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 14*(924*b^7*c^6*
d + 462*a*b^6*c^5*d^2 + 210*a^2*b^5*c^4*d^3 + 84*a^3*b^4*c^3*d^4
+ 28*a^4*b^3*c^2*d^5 + 7*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b^22*x^14
 + 14*a*b^21*x^13 + 91*a^2*b^20*x^12 + 364*a^3*b^19*x^11 + 1001*a
^4*b^18*x^10 + 2002*a^5*b^17*x^9 + 3003*a^6*b^16*x^8 + 3432*a^7*b
^15*x^7 + 3003*a^8*b^14*x^6 + 2002*a^9*b^13*x^5 + 1001*a^10*b^12*
x^4 + 364*a^11*b^11*x^3 + 91*a^12*b^10*x^2 + 14*a^13*b^9*x + a^14
*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**15,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.21808, size = 670, normalized size = 3.35

$$-\frac{3432\, b^7 d^7 x^7 + 21021\, b^7 c d^6 x^6 + 3003\, a b^6 d^7 x^6 + 56056\, b^7 c^2 d^5 x^5 + 14014\, a b^6 c d^6 x^5 + 2002\, a^2 b^5 d^7 x^5 + 84084\, b^7 c^3 d^4 x^4 + 280}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^15,x, algorithm="giac")
```

```
[Out] -1/24024*(3432*b^7*d^7*x^7 + 21021*b^7*c*d^6*x^6 + 3003*a*b^6*d^7
*x^6 + 56056*b^7*c^2*d^5*x^5 + 14014*a*b^6*c*d^6*x^5 + 2002*a^2*b
^5*d^7*x^5 + 84084*b^7*c^3*d^4*x^4 + 28028*a*b^6*c^2*d^5*x^4 + 70
07*a^2*b^5*c*d^6*x^4 + 1001*a^3*b^4*d^7*x^4 + 76440*b^7*c^4*d^3*x
^3 + 30576*a*b^6*c^3*d^4*x^3 + 10192*a^2*b^5*c^2*d^5*x^3 + 2548*a
^3*b^4*c*d^6*x^3 + 364*a^4*b^3*d^7*x^3 + 42042*b^7*c^5*d^2*x^2 +
19110*a*b^6*c^4*d^3*x^2 + 7644*a^2*b^5*c^3*d^4*x^2 + 2548*a^3*b^4
*c^2*d^5*x^2 + 637*a^4*b^3*c*d^6*x^2 + 91*a^5*b^2*d^7*x^2 + 12936
*b^7*c^6*d*x + 6468*a*b^6*c^5*d^2*x + 2940*a^2*b^5*c^4*d^3*x + 11
76*a^3*b^4*c^3*d^4*x + 392*a^4*b^3*c^2*d^5*x + 98*a^5*b^2*c*d^6*x
 + 14*a^6*b*d^7*x + 1716*b^7*c^7 + 924*a*b^6*c^6*d + 462*a^2*b^5*
```

```
c^5*d^2 + 210*a^3*b^4*c^4*d^3 + 84*a^4*b^3*c^3*d^4 + 28*a^5*b^2*c
^2*d^5 + 7*a^6*b*c*d^6 + a^7*d^7)/((b*x + a)^14*b^8)
```

3.1298 $\int \frac{(c+dx)^7}{(a+bx)^{16}}\,dx$

Optimal. Leaf size=200

$$-\frac{7d^6(bc-ad)}{9b^8(a+bx)^9}-\frac{21d^5(bc-ad)^2}{10b^8(a+bx)^{10}}-\frac{35d^4(bc-ad)^3}{11b^8(a+bx)^{11}}-\frac{35d^3(bc-ad)^4}{12b^8(a+bx)^{12}}-\frac{21d^2(bc-ad)^5}{13b^8(a+bx)^{13}}-\frac{d(bc-ad)^6}{2b^8(a+bx)^{14}}-\frac{(bc-ad)^7}{15b^8(a+bx)^{15}}-\frac{d^7}{8b^8(a+bx)^8}$$

```
[Out] -(b*c - a*d)^7/(15*b^8*(a + b*x)^15) - (d*(b*c - a*d)^6)/(2*b^8*(
a + b*x)^14) - (21*d^2*(b*c - a*d)^5)/(13*b^8*(a + b*x)^13) - (35
*d^3*(b*c - a*d)^4)/(12*b^8*(a + b*x)^12) - (35*d^4*(b*c - a*d)^3
)/(11*b^8*(a + b*x)^11) - (21*d^5*(b*c - a*d)^2)/(10*b^8*(a + b*x
)^10) - (7*d^6*(b*c - a*d))/(9*b^8*(a + b*x)^9) - d^7/(8*b^8*(a +
 b*x)^8)
```

Rubi [A] time = 0.402818, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{7d^6(bc-ad)}{9b^8(a+bx)^9}-\frac{21d^5(bc-ad)^2}{10b^8(a+bx)^{10}}-\frac{35d^4(bc-ad)^3}{11b^8(a+bx)^{11}}-\frac{35d^3(bc-ad)^4}{12b^8(a+bx)^{12}}-\frac{21d^2(bc-ad)^5}{13b^8(a+bx)^{13}}-\frac{d(bc-ad)^6}{2b^8(a+bx)^{14}}-\frac{(bc-ad)^7}{15b^8(a+bx)^{15}}-\frac{d^7}{8b^8(a+bx)^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^7/(a + b*x)^16,x]
```

```
[Out] -(b*c - a*d)^7/(15*b^8*(a + b*x)^15) - (d*(b*c - a*d)^6)/(2*b^8*(
a + b*x)^14) - (21*d^2*(b*c - a*d)^5)/(13*b^8*(a + b*x)^13) - (35
*d^3*(b*c - a*d)^4)/(12*b^8*(a + b*x)^12) - (35*d^4*(b*c - a*d)^3
)/(11*b^8*(a + b*x)^11) - (21*d^5*(b*c - a*d)^2)/(10*b^8*(a + b*x
)^10) - (7*d^6*(b*c - a*d))/(9*b^8*(a + b*x)^9) - d^7/(8*b^8*(a +
 b*x)^8)
```

Rubi in Sympy [A] time = 102.598, size = 182, normalized size = 0.91

$$-\frac{d^7}{8b^8\left(a+bx\right)^8}+\frac{7d^6\left(ad-bc\right)}{9b^8\left(a+bx\right)^9}-\frac{21d^5\left(ad-bc\right)^2}{10b^8\left(a+bx\right)^{10}}+\frac{35d^4\left(ad-bc\right)^3}{11b^8\left(a+bx\right)^{11}}-\frac{35d^3\left(ad-bc\right)^4}{12b^8\left(a+bx\right)^{12}}+\frac{21d^2\left(ad-bc\right)^5}{13b^8\left(a+bx\right)^{13}}-\frac{d\left(ad-bc\right)^6}{2b^8\left(a+bx\right)^{14}}+\frac{\left(ad-bc\right)^7}{15b^8\left(a+bx\right)^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**7/(b*x+a)**16,x)
```

```
[Out] -d**7/(8*b**8*(a + b*x)**8) + 7*d**6*(a*d - b*c)/(9*b**8*(a + b*x
)**9) - 21*d**5*(a*d - b*c)**2/(10*b**8*(a + b*x)**10) + 35*d**4*
(a*d - b*c)**3/(11*b**8*(a + b*x)**11) - 35*d**3*(a*d - b*c)**4/(
12*b**8*(a + b*x)**12) + 21*d**2*(a*d - b*c)**5/(13*b**8*(a + b*x
)**13) - d*(a*d - b*c)**6/(2*b**8*(a + b*x)**14) + (a*d - b*c)**7
/(15*b**8*(a + b*x)**15)
```

Mathematica [A] time = 0.274504, size = 371, normalized size = 1.86

$$-\frac{a^7d^7 + a^6bd^6(8c + 15dx) + 3a^5b^2d^5\left(12c^2 + 40cdx + 35d^2x^2\right) + 5a^4b^3d^4\left(24c^3 + 108c^2dx + 168cd^2x^2 + 91d^3x^3\right) + 5a^3b^4d^3\,(}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^7/(a + b*x)^16,x]
```

```
[Out] -(a^7*d^7 + a^6*b*d^6*(8*c + 15*d*x) + 3*a^5*b^2*d^5*(12*c^2 + 40
*c*d*x + 35*d^2*x^2) + 5*a^4*b^3*d^4*(24*c^3 + 108*c^2*d*x + 168*
c*d^2*x^2 + 91*d^3*x^3) + 5*a^3*b^4*d^3*(66*c^4 + 360*c^3*d*x + 7
56*c^2*d^2*x^2 + 728*c*d^3*x^3 + 273*d^4*x^4) + 3*a^2*b^5*d^2*(26
4*c^5 + 1650*c^4*d*x + 4200*c^3*d^2*x^2 + 5460*c^2*d^3*x^3 + 3640
*c*d^4*x^4 + 1001*d^5*x^5) + a*b^6*d*(1716*c^6 + 11880*c^5*d*x +
34650*c^4*d^2*x^2 + 54600*c^3*d^3*x^3 + 49140*c^2*d^4*x^4 + 24024
*c*d^5*x^5 + 5005*d^6*x^6) + b^7*(3432*c^7 + 25740*c^6*d*x + 8316
0*c^5*d^2*x^2 + 150150*c^4*d^3*x^3 + 163800*c^3*d^4*x^4 + 108108*
c^2*d^5*x^5 + 40040*c*d^6*x^6 + 6435*d^7*x^7))/(51480*b^8*(a + b*
x)^15)
```

Maple [B] time = 0.01, size = 464, normalized size = 2.3

$$-\frac{d\left(a^6d^6 - 6\,a^5bcd^5 + 15\,a^4b^2c^2d^4 - 20\,a^3b^3c^3d^3 + 15\,a^2b^4c^4d^2 - 6\,ab^5c^5d + b^6c^6\right)}{2\,b^8\,(bx+a)^{14}} - \frac{35\,d^3\left(a^4d^4 - 4\,a^3bcd^3 + 6\,a^2b^2c^2d^2 - 4\,ab^3c^3d + b^4c^4\right)}{12\,b^8\,(bx+a)^{12}} - \frac{-a^7d^7 + 7\,cd^6a^6b - 21\,a^5c^2d^5b^2 + 35\,a^4b^3c^3d^4 - 35\,a^3b^4c^4d^3 + 21\,a^2c^5d^2b^5 - 7\,ab^6c^6d + c^7b^7}{15\,b^8\,(bx+a)^{15}} - \frac{d^7}{8\,b^8\,(bx+a)^8} - \frac{21\,d^5\left(a^2d^2 - 2\,abcd + b^2c^2\right)}{10\,b^8\,(bx+a)^{10}} + \frac{35\,d^4\left(a^3d^3 - 3\,a^2bcd^2 + 3\,ab^2c^2d - b^3c^3\right)}{11\,b^8\,(bx+a)^{11}} + \frac{21\,d^2\left(a^5d^5 - 5\,a^4bcd^4 + 10\,a^3b^2c^2d^3 - 10\,a^2b^3c^3d^2 + 5\,ab^4c^4d - b^5c^5\right)}{13\,b^8\,(bx+a)^{13}} + \frac{7\,d^6\,(ad-bc)}{9\,b^8\,(bx+a)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^7/(b*x+a)^16,x)
```

```
[Out] -1/2*d*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d
^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^8/(b*x+a)^14-35/12
*d^3*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c
^4)/b^8/(b*x+a)^12-1/15*(-a^7*d^7+7*a^6*b*c*d^6-21*a^5*b^2*c^2*d^
5+35*a^4*b^3*c^3*d^4-35*a^3*b^4*c^4*d^3+21*a^2*b^5*c^5*d^2-7*a*b^
6*c^6*d+b^7*c^7)/b^8/(b*x+a)^15-1/8*d^7/b^8/(b*x+a)^8-21/10*d^5*(
a^2*d^2-2*a*b*c*d+b^2*c^2)/b^8/(b*x+a)^10+35/11*d^4*(a^3*d^3-3*a^
2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^8/(b*x+a)^11+21/13*d^2*(a^5*d^
5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4
*d-b^5*c^5)/b^8/(b*x+a)^13+7/9*d^6*(a*d-b*c)/b^8/(b*x+a)^9
```

Maxima [A] time = 1.41693, size = 829, normalized size = 4.14

$$-\frac{6435\,b^7d^7x^7 + 3432\,b^7c^7 + 1716\,ab^6c^6d + 792\,a^2b^5c^5d^2 + 330\,a^3b^4c^4d^3 + 120\,a^4b^3c^3d^4 + 36\,a^5b^2c^2d^5 + 8\,a^6bcd^6 + a^7d^7 + 50}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^16,x, algorithm="maxima")
```

```
[Out] -1/51480*(6435*b^7*d^7*x^7 + 3432*b^7*c^7 + 1716*a*b^6*c^6*d + 79
2*a^2*b^5*c^5*d^2 + 330*a^3*b^4*c^4*d^3 + 120*a^4*b^3*c^3*d^4 + 3
6*a^5*b^2*c^2*d^5 + 8*a^6*b*c*d^6 + a^7*d^7 + 5005*(8*b^7*c*d^6 +
 a*b^6*d^7)*x^6 + 3003*(36*b^7*c^2*d^5 + 8*a*b^6*c*d^6 + a^2*b^5*
d^7)*x^5 + 1365*(120*b^7*c^3*d^4 + 36*a*b^6*c^2*d^5 + 8*a^2*b^5*c
*d^6 + a^3*b^4*d^7)*x^4 + 455*(330*b^7*c^4*d^3 + 120*a*b^6*c^3*d^
4 + 36*a^2*b^5*c^2*d^5 + 8*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 105
*(792*b^7*c^5*d^2 + 330*a*b^6*c^4*d^3 + 120*a^2*b^5*c^3*d^4 + 36*
a^3*b^4*c^2*d^5 + 8*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 15*(1716*b
^7*c^6*d + 792*a*b^6*c^5*d^2 + 330*a^2*b^5*c^4*d^3 + 120*a^3*b^4*
c^3*d^4 + 36*a^4*b^3*c^2*d^5 + 8*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b
^23*x^15 + 15*a*b^22*x^14 + 105*a^2*b^21*x^13 + 455*a^3*b^20*x^12
 + 1365*a^4*b^19*x^11 + 3003*a^5*b^18*x^10 + 5005*a^6*b^17*x^9 +
6435*a^7*b^16*x^8 + 6435*a^8*b^15*x^7 + 5005*a^9*b^14*x^6 + 3003*
a^10*b^13*x^5 + 1365*a^11*b^12*x^4 + 455*a^12*b^11*x^3 + 105*a^13
*b^10*x^2 + 15*a^14*b^9*x + a^15*b^8)
```

Fricas [A] time = 0.228946, size = 829, normalized size = 4.14

$$-\frac{6435\,b^7d^7x^7 + 3432\,b^7c^7 + 1716\,ab^6c^6d + 792\,a^2b^5c^5d^2 + 330\,a^3b^4c^4d^3 + 120\,a^4b^3c^3d^4 + 36\,a^5b^2c^2d^5 + 8\,a^6bcd^6 + a^7d^7 + 50}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^16,x, algorithm="fricas")
```

```
[Out] -1/51480*(6435*b^7*d^7*x^7 + 3432*b^7*c^7 + 1716*a*b^6*c^6*d + 79
2*a^2*b^5*c^5*d^2 + 330*a^3*b^4*c^4*d^3 + 120*a^4*b^3*c^3*d^4 + 3
6*a^5*b^2*c^2*d^5 + 8*a^6*b*c*d^6 + a^7*d^7 + 5005*(8*b^7*c*d^6 +
 a*b^6*d^7)*x^6 + 3003*(36*b^7*c^2*d^5 + 8*a*b^6*c*d^6 + a^2*b^5*
d^7)*x^5 + 1365*(120*b^7*c^3*d^4 + 36*a*b^6*c^2*d^5 + 8*a^2*b^5*c
*d^6 + a^3*b^4*d^7)*x^4 + 455*(330*b^7*c^4*d^3 + 120*a*b^6*c^3*d^
4 + 36*a^2*b^5*c^2*d^5 + 8*a^3*b^4*c*d^6 + a^4*b^3*d^7)*x^3 + 105
*(792*b^7*c^5*d^2 + 330*a*b^6*c^4*d^3 + 120*a^2*b^5*c^3*d^4 + 36*
a^3*b^4*c^2*d^5 + 8*a^4*b^3*c*d^6 + a^5*b^2*d^7)*x^2 + 15*(1716*b
^7*c^6*d + 792*a*b^6*c^5*d^2 + 330*a^2*b^5*c^4*d^3 + 120*a^3*b^4*
c^3*d^4 + 36*a^4*b^3*c^2*d^5 + 8*a^5*b^2*c*d^6 + a^6*b*d^7)*x)/(b
^23*x^15 + 15*a*b^22*x^14 + 105*a^2*b^21*x^13 + 455*a^3*b^20*x^12
 + 1365*a^4*b^19*x^11 + 3003*a^5*b^18*x^10 + 5005*a^6*b^17*x^9 +
6435*a^7*b^16*x^8 + 6435*a^8*b^15*x^7 + 5005*a^9*b^14*x^6 + 3003*
a^10*b^13*x^5 + 1365*a^11*b^12*x^4 + 455*a^12*b^11*x^3 + 105*a^13
*b^10*x^2 + 15*a^14*b^9*x + a^15*b^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**7/(b*x+a)**16,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.218157, size = 670, normalized size = 3.35

$$-\frac{6435\,b^7d^7x^7 + 40040\,b^7cd^6x^6 + 5005\,ab^6d^7x^6 + 108108\,b^7c^2d^5x^5 + 24024\,ab^6cd^6x^5 + 3003\,a^2b^5d^7x^5 + 163800\,b^7c^3d^4x^4 + 4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^7/(b*x + a)^16,x, algorithm="giac")
```

```
[Out] -1/51480*(6435*b^7*d^7*x^7 + 40040*b^7*c*d^6*x^6 + 5005*a*b^6*d^7
*x^6 + 108108*b^7*c^2*d^5*x^5 + 24024*a*b^6*c*d^6*x^5 + 3003*a^2*
b^5*d^7*x^5 + 163800*b^7*c^3*d^4*x^4 + 49140*a*b^6*c^2*d^5*x^4 +
10920*a^2*b^5*c*d^6*x^4 + 1365*a^3*b^4*d^7*x^4 + 150150*b^7*c^4*d
^3*x^3 + 54600*a*b^6*c^3*d^4*x^3 + 16380*a^2*b^5*c^2*d^5*x^3 + 36
40*a^3*b^4*c*d^6*x^3 + 455*a^4*b^3*d^7*x^3 + 83160*b^7*c^5*d^2*x^
2 + 34650*a*b^6*c^4*d^3*x^2 + 12600*a^2*b^5*c^3*d^4*x^2 + 3780*a^
3*b^4*c^2*d^5*x^2 + 840*a^4*b^3*c*d^6*x^2 + 105*a^5*b^2*d^7*x^2 +
 25740*b^7*c^6*d*x + 11880*a*b^6*c^5*d^2*x + 4950*a^2*b^5*c^4*d^3
*x + 1800*a^3*b^4*c^3*d^4*x + 540*a^4*b^3*c^2*d^5*x + 120*a^5*b^2
*c*d^6*x + 15*a^6*b*d^7*x + 3432*b^7*c^7 + 1716*a*b^6*c^6*d + 792
```

```
*a^2*b^5*c^5*d^2 + 330*a^3*b^4*c^4*d^3 + 120*a^4*b^3*c^3*d^4 + 36
*a^5*b^2*c^2*d^5 + 8*a^6*b*c*d^6 + a^7*d^7)/((b*x + a)^15*b^8)
```

3.1299 $\int (a+bx)^{12}(c+dx)^{10}\,dx$

Optimal. Leaf size=275

$$\frac{5d^9(a+bx)^{22}(bc-ad)}{11b^{11}}+\frac{15d^8(a+bx)^{21}(bc-ad)^2}{7b^{11}}+\frac{6d^7(a+bx)^{20}(bc-ad)^3}{b^{11}}+\frac{210d^6(a+bx)^{19}(bc-ad)^4}{19b^{11}}+\frac{14d^5(a+bx)^{18}(bc-ad)^5}{b^{11}}+\frac{210d^4(a+bx)^{17}(bc-ad)^6}{17b^{11}}+\frac{15d^3(a+bx)^{16}(bc-ad)^7}{2b^{11}}+\frac{3d^2(a+bx)^{15}(bc-ad)^8}{b^{11}}+\frac{5d(a+bx)^{14}(bc-ad)^9}{7b^{11}}+\frac{(a+bx)^{13}(bc-ad)^{10}}{13b^{11}}+\frac{d^{10}(a+bx)^{23}}{23b^{11}}$$

```
[Out] ((b*c - a*d)^10*(a + b*x)^13)/(13*b^11) + (5*d*(b*c - a*d)^9*(a +
 b*x)^14)/(7*b^11) + (3*d^2*(b*c - a*d)^8*(a + b*x)^15)/b^11 + (1
5*d^3*(b*c - a*d)^7*(a + b*x)^16)/(2*b^11) + (210*d^4*(b*c - a*d)
^6*(a + b*x)^17)/(17*b^11) + (14*d^5*(b*c - a*d)^5*(a + b*x)^18)/
b^11 + (210*d^6*(b*c - a*d)^4*(a + b*x)^19)/(19*b^11) + (6*d^7*(b
*c - a*d)^3*(a + b*x)^20)/b^11 + (15*d^8*(b*c - a*d)^2*(a + b*x)^
21)/(7*b^11) + (5*d^9*(b*c - a*d)*(a + b*x)^22)/(11*b^11) + (d^10
*(a + b*x)^23)/(23*b^11)
```

Rubi [A] time = 3.36298, antiderivative size = 275, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{5d^9(a+bx)^{22}(bc-ad)}{11b^{11}}+\frac{15d^8(a+bx)^{21}(bc-ad)^2}{7b^{11}}+\frac{6d^7(a+bx)^{20}(bc-ad)^3}{b^{11}}+\frac{210d^6(a+bx)^{19}(bc-ad)^4}{19b^{11}}+\frac{14d^5(a+bx)^{18}(bc-ad)^5}{b^{11}}+\frac{210d^4(a+bx)^{17}(bc-ad)^6}{17b^{11}}+\frac{15d^3(a+bx)^{16}(bc-ad)^7}{2b^{11}}+\frac{3d^2(a+bx)^{15}(bc-ad)^8}{b^{11}}+\frac{5d(a+bx)^{14}(bc-ad)^9}{7b^{11}}+\frac{(a+bx)^{13}(bc-ad)^{10}}{13b^{11}}+\frac{d^{10}(a+bx)^{23}}{23b^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^12*(c + d*x)^10,x]
```


```
[Out] ((b*c - a*d)^10*(a + b*x)^13)/(13*b^11) + (5*d*(b*c - a*d)^9*(a +
 b*x)^14)/(7*b^11) + (3*d^2*(b*c - a*d)^8*(a + b*x)^15)/b^11 + (1
5*d^3*(b*c - a*d)^7*(a + b*x)^16)/(2*b^11) + (210*d^4*(b*c - a*d)
^6*(a + b*x)^17)/(17*b^11) + (14*d^5*(b*c - a*d)^5*(a + b*x)^18)/
b^11 + (210*d^6*(b*c - a*d)^4*(a + b*x)^19)/(19*b^11) + (6*d^7*(b
*c - a*d)^3*(a + b*x)^20)/b^11 + (15*d^8*(b*c - a*d)^2*(a + b*x)^
21)/(7*b^11) + (5*d^9*(b*c - a*d)*(a + b*x)^22)/(11*b^11) + (d^10
*(a + b*x)^23)/(23*b^11)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**12*(d*x+c)**10,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.446843, size = 1817, normalized size = 6.61

result too large to display

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^12*(c + d*x)^10,x]
```

```
[Out] a^12*c^10*x + a^11*c^9*(6*b*c + 5*a*d)*x^2 + a^10*c^8*(22*b^2*c^2
 + 40*a*b*c*d + 15*a^2*d^2)*x^3 + 5*a^9*c^7*(11*b^3*c^3 + 33*a*b^
2*c^2*d + 27*a^2*b*c*d^2 + 6*a^3*d^3)*x^4 + a^8*c^6*(99*b^4*c^4 +
 440*a*b^3*c^3*d + 594*a^2*b^2*c^2*d^2 + 288*a^3*b*c*d^3 + 42*a^4
*d^4)*x^5 + 3*a^7*c^5*(44*b^5*c^5 + 275*a*b^4*c^4*d + 550*a^2*b^3
*c^3*d^2 + 440*a^3*b^2*c^2*d^3 + 140*a^4*b*c*d^4 + 14*a^5*d^5)*x^
6 + (3*a^6*c^4*(308*b^6*c^6 + 2640*a*b^5*c^5*d + 7425*a^2*b^4*c^4
*d^2 + 8800*a^3*b^3*c^3*d^3 + 4620*a^4*b^2*c^2*d^4 + 1008*a^5*b*c
*d^5 + 70*a^6*d^6)*x^7)/7 + 3*a^5*c^3*(33*b^7*c^7 + 385*a*b^6*c^6
*d + 1485*a^2*b^5*c^5*d^2 + 2475*a^3*b^4*c^4*d^3 + 1925*a^4*b^3*c
^3*d^4 + 693*a^5*b^2*c^2*d^5 + 105*a^6*b*c*d^6 + 5*a^7*d^7)*x^8 +
 5*a^4*c^2*(11*b^8*c^8 + 176*a*b^7*c^7*d + 924*a^2*b^6*c^6*d^2 +
2112*a^3*b^5*c^5*d^3 + 2310*a^4*b^4*c^4*d^4 + 1232*a^5*b^3*c^3*d^
5 + 308*a^6*b^2*c^2*d^6 + 32*a^7*b*c*d^7 + a^8*d^8)*x^9 + a^3*c*(
22*b^9*c^9 + 495*a*b^8*c^8*d + 3564*a^2*b^7*c^7*d^2 + 11088*a^3*b
^6*c^6*d^3 + 16632*a^4*b^5*c^5*d^4 + 12474*a^5*b^4*c^4*d^5 + 4620
*a^6*b^3*c^3*d^6 + 792*a^7*b^2*c^2*d^7 + 54*a^8*b*c*d^8 + a^9*d^9
)*x^10 + (a^2*(66*b^10*c^10 + 2200*a*b^9*c^9*d + 22275*a^2*b^8*c^
8*d^2 + 95040*a^3*b^7*c^7*d^3 + 194040*a^4*b^6*c^6*d^4 + 199584*a
^5*b^5*c^5*d^5 + 103950*a^6*b^4*c^4*d^6 + 26400*a^7*b^3*c^3*d^7 +
 2970*a^8*b^2*c^2*d^8 + 120*a^9*b*c*d^9 + a^10*d^10)*x^11)/11 + a
*b*(b^10*c^10 + 55*a*b^9*c^9*d + 825*a^2*b^8*c^8*d^2 + 4950*a^3*b
^7*c^7*d^3 + 13860*a^4*b^6*c^6*d^4 + 19404*a^5*b^5*c^5*d^5 + 1386
0*a^6*b^4*c^4*d^6 + 4950*a^7*b^3*c^3*d^7 + 825*a^8*b^2*c^2*d^8 +
55*a^9*b*c*d^9 + a^10*d^10)*x^12 + (b^2*(b^10*c^10 + 120*a*b^9*c^
9*d + 2970*a^2*b^8*c^8*d^2 + 26400*a^3*b^7*c^7*d^3 + 103950*a^4*b
^6*c^6*d^4 + 199584*a^5*b^5*c^5*d^5 + 194040*a^6*b^4*c^4*d^6 + 95
040*a^7*b^3*c^3*d^7 + 22275*a^8*b^2*c^2*d^8 + 2200*a^9*b*c*d^9 +
66*a^10*d^10)*x^13)/13 + (5*b^3*d*(b^9*c^9 + 54*a*b^8*c^8*d + 792
*a^2*b^7*c^7*d^2 + 4620*a^3*b^6*c^6*d^3 + 12474*a^4*b^5*c^5*d^4 +
 16632*a^5*b^4*c^4*d^5 + 11088*a^6*b^3*c^3*d^6 + 3564*a^7*b^2*c^2
*d^7 + 495*a^8*b*c*d^8 + 22*a^9*d^9)*x^14)/7 + 3*b^4*d^2*(b^8*c^8
```

```
 + 32*a*b^7*c^7*d + 308*a^2*b^6*c^6*d^2 + 1232*a^3*b^5*c^5*d^3 +
2310*a^4*b^4*c^4*d^4 + 2112*a^5*b^3*c^3*d^5 + 924*a^6*b^2*c^2*d^6
 + 176*a^7*b*c*d^7 + 11*a^8*d^8)*x^15 + (3*b^5*d^3*(5*b^7*c^7 + 1
05*a*b^6*c^6*d + 693*a^2*b^5*c^5*d^2 + 1925*a^3*b^4*c^4*d^3 + 247
5*a^4*b^3*c^3*d^4 + 1485*a^5*b^2*c^2*d^5 + 385*a^6*b*c*d^6 + 33*a
^7*d^7)*x^16)/2 + (3*b^6*d^4*(70*b^6*c^6 + 1008*a*b^5*c^5*d + 462
0*a^2*b^4*c^4*d^2 + 8800*a^3*b^3*c^3*d^3 + 7425*a^4*b^2*c^2*d^4 +
 2640*a^5*b*c*d^5 + 308*a^6*d^6)*x^17)/17 + b^7*d^5*(14*b^5*c^5 +
 140*a*b^4*c^4*d + 440*a^2*b^3*c^3*d^2 + 550*a^3*b^2*c^2*d^3 + 27
5*a^4*b*c*d^4 + 44*a^5*d^5)*x^18 + (5*b^8*d^6*(42*b^4*c^4 + 288*a
*b^3*c^3*d + 594*a^2*b^2*c^2*d^2 + 440*a^3*b*c*d^3 + 99*a^4*d^4)*
x^19)/19 + b^9*d^7*(6*b^3*c^3 + 27*a*b^2*c^2*d + 33*a^2*b*c*d^2 +
 11*a^3*d^3)*x^20 + (b^10*d^8*(15*b^2*c^2 + 40*a*b*c*d + 22*a^2*d
^2)*x^21)/7 + (b^11*d^9*(5*b*c + 6*a*d)*x^22)/11 + (b^12*d^10*x^2
3)/23
```

Maple [B] time = 0.005, size = 1891, normalized size = 6.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^12*(d*x+c)^10,x)
```

```
[Out] 1/23*b^12*d^10*x^23+1/22*(12*a*b^11*d^10+10*b^12*c*d^9)*x^22+1/21
*(66*a^2*b^10*d^10+120*a*b^11*c*d^9+45*b^12*c^2*d^8)*x^21+1/20*(2
20*a^3*b^9*d^10+660*a^2*b^10*c*d^9+540*a*b^11*c^2*d^8+120*b^12*c^
3*d^7)*x^20+1/19*(495*a^4*b^8*d^10+2200*a^3*b^9*c*d^9+2970*a^2*b^
10*c^2*d^8+1440*a*b^11*c^3*d^7+210*b^12*c^4*d^6)*x^19+1/18*(792*a
^5*b^7*d^10+4950*a^4*b^8*c*d^9+9900*a^3*b^9*c^2*d^8+7920*a^2*b^10
*c^3*d^7+2520*a*b^11*c^4*d^6+252*b^12*c^5*d^5)*x^18+1/17*(924*a^6
*b^6*d^10+7920*a^5*b^7*c*d^9+22275*a^4*b^8*c^2*d^8+26400*a^3*b^9*
c^3*d^7+13860*a^2*b^10*c^4*d^6+3024*a*b^11*c^5*d^5+210*b^12*c^6*d
^4)*x^17+1/16*(792*a^7*b^5*d^10+9240*a^6*b^6*c*d^9+35640*a^5*b^7*
c^2*d^8+59400*a^4*b^8*c^3*d^7+46200*a^3*b^9*c^4*d^6+16632*a^2*b^1
0*c^5*d^5+2520*a*b^11*c^6*d^4+120*b^12*c^7*d^3)*x^16+1/15*(495*a^
8*b^4*d^10+7920*a^7*b^5*c*d^9+41580*a^6*b^6*c^2*d^8+95040*a^5*b^7
*c^3*d^7+103950*a^4*b^8*c^4*d^6+55440*a^3*b^9*c^5*d^5+13860*a^2*b
^10*c^6*d^4+1440*a*b^11*c^7*d^3+45*b^12*c^8*d^2)*x^15+1/14*(220*a
^9*b^3*d^10+4950*a^8*b^4*c*d^9+35640*a^7*b^5*c^2*d^8+110880*a^6*b
^6*c^3*d^7+166320*a^5*b^7*c^4*d^6+124740*a^4*b^8*c^5*d^5+46200*a^
3*b^9*c^6*d^4+7920*a^2*b^10*c^7*d^3+540*a*b^11*c^8*d^2+10*b^12*c^
9*d)*x^14+1/13*(66*a^10*b^2*d^10+2200*a^9*b^3*c*d^9+22275*a^8*b^4
*c^2*d^8+95040*a^7*b^5*c^3*d^7+194040*a^6*b^6*c^4*d^6+199584*a^5*
b^7*c^5*d^5+103950*a^4*b^8*c^6*d^4+26400*a^3*b^9*c^7*d^3+2970*a^2
*b^10*c^8*d^2+120*a*b^11*c^9*d+b^12*c^10)*x^13+1/12*(12*a^11*b*d^
10+660*a^10*b^2*c*d^9+9900*a^9*b^3*c^2*d^8+59400*a^8*b^4*c^3*d^7+
166320*a^7*b^5*c^4*d^6+232848*a^6*b^6*c^5*d^5+166320*a^5*b^7*c^6*
d^4+59400*a^4*b^8*c^7*d^3+9900*a^3*b^9*c^8*d^2+660*a^2*b^10*c^9*d
+12*a*b^11*c^10)*x^12+1/11*(a^12*d^10+120*a^11*b*c*d^9+2970*a^10*
b^2*c^2*d^8+26400*a^9*b^3*c^3*d^7+103950*a^8*b^4*c^4*d^6+199584*a
^7*b^5*c^5*d^5+194040*a^6*b^6*c^6*d^4+95040*a^5*b^7*c^7*d^3+22275
```

```
*a^4*b^8*c^8*d^2+2200*a^3*b^9*c^9*d+66*a^2*b^10*c^10)*x^11+1/10*(
10*a^12*c*d^9+540*a^11*b*c^2*d^8+7920*a^10*b^2*c^3*d^7+46200*a^9*
b^3*c^4*d^6+124740*a^8*b^4*c^5*d^5+166320*a^7*b^5*c^6*d^4+110880*
a^6*b^6*c^7*d^3+35640*a^5*b^7*c^8*d^2+4950*a^4*b^8*c^9*d+220*a^3*
b^9*c^10)*x^10+1/9*(45*a^12*c^2*d^8+1440*a^11*b*c^3*d^7+13860*a^1
0*b^2*c^4*d^6+55440*a^9*b^3*c^5*d^5+103950*a^8*b^4*c^6*d^4+95040*
a^7*b^5*c^7*d^3+41580*a^6*b^6*c^8*d^2+7920*a^5*b^7*c^9*d+495*a^4*
b^8*c^10)*x^9+1/8*(120*a^12*c^3*d^7+2520*a^11*b*c^4*d^6+16632*a^1
0*b^2*c^5*d^5+46200*a^9*b^3*c^6*d^4+59400*a^8*b^4*c^7*d^3+35640*a
^7*b^5*c^8*d^2+9240*a^6*b^6*c^9*d+792*a^5*b^7*c^10)*x^8+1/7*(210*
a^12*c^4*d^6+3024*a^11*b*c^5*d^5+13860*a^10*b^2*c^6*d^4+26400*a^9
*b^3*c^7*d^3+22275*a^8*b^4*c^8*d^2+7920*a^7*b^5*c^9*d+924*a^6*b^6
*c^10)*x^7+1/6*(252*a^12*c^5*d^5+2520*a^11*b*c^6*d^4+7920*a^10*b^
2*c^7*d^3+9900*a^9*b^3*c^8*d^2+4950*a^8*b^4*c^9*d+792*a^7*b^5*c^1
0)*x^6+1/5*(210*a^12*c^6*d^4+1440*a^11*b*c^7*d^3+2970*a^10*b^2*c^
8*d^2+2200*a^9*b^3*c^9*d+495*a^8*b^4*c^10)*x^5+1/4*(120*a^12*c^7*
d^3+540*a^11*b*c^8*d^2+660*a^10*b^2*c^9*d+220*a^9*b^3*c^10)*x^4+1
/3*(45*a^12*c^8*d^2+120*a^11*b*c^9*d+66*a^10*b^2*c^10)*x^3+1/2*(1
0*a^12*c^9*d+12*a^11*b*c^10)*x^2+a^12*c^10*x
```

Maxima [A] time = 1.38848, size = 2534, normalized size = 9.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^12*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/23*b^12*d^10*x^23 + a^12*c^10*x + 1/11*(5*b^12*c*d^9 + 6*a*b^11
*d^10)*x^22 + 1/7*(15*b^12*c^2*d^8 + 40*a*b^11*c*d^9 + 22*a^2*b^1
0*d^10)*x^21 + (6*b^12*c^3*d^7 + 27*a*b^11*c^2*d^8 + 33*a^2*b^10*
c*d^9 + 11*a^3*b^9*d^10)*x^20 + 5/19*(42*b^12*c^4*d^6 + 288*a*b^1
1*c^3*d^7 + 594*a^2*b^10*c^2*d^8 + 440*a^3*b^9*c*d^9 + 99*a^4*b^8
*d^10)*x^19 + (14*b^12*c^5*d^5 + 140*a*b^11*c^4*d^6 + 440*a^2*b^1
0*c^3*d^7 + 550*a^3*b^9*c^2*d^8 + 275*a^4*b^8*c*d^9 + 44*a^5*b^7*
d^10)*x^18 + 3/17*(70*b^12*c^6*d^4 + 1008*a*b^11*c^5*d^5 + 4620*a
^2*b^10*c^4*d^6 + 8800*a^3*b^9*c^3*d^7 + 7425*a^4*b^8*c^2*d^8 + 2
640*a^5*b^7*c*d^9 + 308*a^6*b^6*d^10)*x^17 + 3/2*(5*b^12*c^7*d^3
+ 105*a*b^11*c^6*d^4 + 693*a^2*b^10*c^5*d^5 + 1925*a^3*b^9*c^4*d^
6 + 2475*a^4*b^8*c^3*d^7 + 1485*a^5*b^7*c^2*d^8 + 385*a^6*b^6*c*d
^9 + 33*a^7*b^5*d^10)*x^16 + 3*(b^12*c^8*d^2 + 32*a*b^11*c^7*d^3
+ 308*a^2*b^10*c^6*d^4 + 1232*a^3*b^9*c^5*d^5 + 2310*a^4*b^8*c^4*
d^6 + 2112*a^5*b^7*c^3*d^7 + 924*a^6*b^6*c^2*d^8 + 176*a^7*b^5*c*
d^9 + 11*a^8*b^4*d^10)*x^15 + 5/7*(b^12*c^9*d + 54*a*b^11*c^8*d^2
 + 792*a^2*b^10*c^7*d^3 + 4620*a^3*b^9*c^6*d^4 + 12474*a^4*b^8*c^
5*d^5 + 16632*a^5*b^7*c^4*d^6 + 11088*a^6*b^6*c^3*d^7 + 3564*a^7*
b^5*c^2*d^8 + 495*a^8*b^4*c*d^9 + 22*a^9*b^3*d^10)*x^14 + 1/13*(b
^12*c^10 + 120*a*b^11*c^9*d + 2970*a^2*b^10*c^8*d^2 + 26400*a^3*b
^9*c^7*d^3 + 103950*a^4*b^8*c^6*d^4 + 199584*a^5*b^7*c^5*d^5 + 19
4040*a^6*b^6*c^4*d^6 + 95040*a^7*b^5*c^3*d^7 + 22275*a^8*b^4*c^2*
d^8 + 2200*a^9*b^3*c*d^9 + 66*a^10*b^2*d^10)*x^13 + (a*b^11*c^10
+ 55*a^2*b^10*c^9*d + 825*a^3*b^9*c^8*d^2 + 4950*a^4*b^8*c^7*d^3
```

```
+ 13860*a^5*b^7*c^6*d^4 + 19404*a^6*b^6*c^5*d^5 + 13860*a^7*b^5*c
^4*d^6 + 4950*a^8*b^4*c^3*d^7 + 825*a^9*b^3*c^2*d^8 + 55*a^10*b^2
*c*d^9 + a^11*b*d^10)*x^12 + 1/11*(66*a^2*b^10*c^10 + 2200*a^3*b^
9*c^9*d + 22275*a^4*b^8*c^8*d^2 + 95040*a^5*b^7*c^7*d^3 + 194040*
a^6*b^6*c^6*d^4 + 199584*a^7*b^5*c^5*d^5 + 103950*a^8*b^4*c^4*d^6
 + 26400*a^9*b^3*c^3*d^7 + 2970*a^10*b^2*c^2*d^8 + 120*a^11*b*c*d
^9 + a^12*d^10)*x^11 + (22*a^3*b^9*c^10 + 495*a^4*b^8*c^9*d + 356
4*a^5*b^7*c^8*d^2 + 11088*a^6*b^6*c^7*d^3 + 16632*a^7*b^5*c^6*d^4
 + 12474*a^8*b^4*c^5*d^5 + 4620*a^9*b^3*c^4*d^6 + 792*a^10*b^2*c^
3*d^7 + 54*a^11*b*c^2*d^8 + a^12*c*d^9)*x^10 + 5*(11*a^4*b^8*c^10
 + 176*a^5*b^7*c^9*d + 924*a^6*b^6*c^8*d^2 + 2112*a^7*b^5*c^7*d^3
 + 2310*a^8*b^4*c^6*d^4 + 1232*a^9*b^3*c^5*d^5 + 308*a^10*b^2*c^4
*d^6 + 32*a^11*b*c^3*d^7 + a^12*c^2*d^8)*x^9 + 3*(33*a^5*b^7*c^10
 + 385*a^6*b^6*c^9*d + 1485*a^7*b^5*c^8*d^2 + 2475*a^8*b^4*c^7*d^
3 + 1925*a^9*b^3*c^6*d^4 + 693*a^10*b^2*c^5*d^5 + 105*a^11*b*c^4*
d^6 + 5*a^12*c^3*d^7)*x^8 + 3/7*(308*a^6*b^6*c^10 + 2640*a^7*b^5*
c^9*d + 7425*a^8*b^4*c^8*d^2 + 8800*a^9*b^3*c^7*d^3 + 4620*a^10*b
^2*c^6*d^4 + 1008*a^11*b*c^5*d^5 + 70*a^12*c^4*d^6)*x^7 + 3*(44*a
^7*b^5*c^10 + 275*a^8*b^4*c^9*d + 550*a^9*b^3*c^8*d^2 + 440*a^10*
b^2*c^7*d^3 + 140*a^11*b*c^6*d^4 + 14*a^12*c^5*d^5)*x^6 + (99*a^8
*b^4*c^10 + 440*a^9*b^3*c^9*d + 594*a^10*b^2*c^8*d^2 + 288*a^11*b
*c^7*d^3 + 42*a^12*c^6*d^4)*x^5 + 5*(11*a^9*b^3*c^10 + 33*a^10*b^
2*c^9*d + 27*a^11*b*c^8*d^2 + 6*a^12*c^7*d^3)*x^4 + (22*a^10*b^2*
c^10 + 40*a^11*b*c^9*d + 15*a^12*c^8*d^2)*x^3 + (6*a^11*b*c^10 +
5*a^12*c^9*d)*x^2
```

Fricas [A] time = 0.196184, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^12*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/23*x^23*d^10*b^12 + 5/11*x^22*d^9*c*b^12 + 6/11*x^22*d^10*b^11*
a + 15/7*x^21*d^8*c^2*b^12 + 40/7*x^21*d^9*c*b^11*a + 22/7*x^21*d
^10*b^10*a^2 + 6*x^20*d^7*c^3*b^12 + 27*x^20*d^8*c^2*b^11*a + 33*
x^20*d^9*c*b^10*a^2 + 11*x^20*d^10*b^9*a^3 + 210/19*x^19*d^6*c^4*
b^12 + 1440/19*x^19*d^7*c^3*b^11*a + 2970/19*x^19*d^8*c^2*b^10*a^
2 + 2200/19*x^19*d^9*c*b^9*a^3 + 495/19*x^19*d^10*b^8*a^4 + 14*x^
18*d^5*c^5*b^12 + 140*x^18*d^6*c^4*b^11*a + 440*x^18*d^7*c^3*b^10
*a^2 + 550*x^18*d^8*c^2*b^9*a^3 + 275*x^18*d^9*c*b^8*a^4 + 44*x^1
8*d^10*b^7*a^5 + 210/17*x^17*d^4*c^6*b^12 + 3024/17*x^17*d^5*c^5*
b^11*a + 13860/17*x^17*d^6*c^4*b^10*a^2 + 26400/17*x^17*d^7*c^3*b
^9*a^3 + 22275/17*x^17*d^8*c^2*b^8*a^4 + 7920/17*x^17*d^9*c*b^7*a
^5 + 924/17*x^17*d^10*b^6*a^6 + 15/2*x^16*d^3*c^7*b^12 + 315/2*x^
16*d^4*c^6*b^11*a + 2079/2*x^16*d^5*c^5*b^10*a^2 + 5775/2*x^16*d^
6*c^4*b^9*a^3 + 7425/2*x^16*d^7*c^3*b^8*a^4 + 4455/2*x^16*d^8*c^2
*b^7*a^5 + 1155/2*x^16*d^9*c*b^6*a^6 + 99/2*x^16*d^10*b^5*a^7 + 3
*x^15*d^2*c^8*b^12 + 96*x^15*d^3*c^7*b^11*a + 924*x^15*d^4*c^6*b^
10*a^2 + 3696*x^15*d^5*c^5*b^9*a^3 + 6930*x^15*d^6*c^4*b^8*a^4 +
6336*x^15*d^7*c^3*b^7*a^5 + 2772*x^15*d^8*c^2*b^6*a^6 + 528*x^15*
```

```
d^9*c*b^5*a^7 + 33*x^15*d^10*b^4*a^8 + 5/7*x^14*d*c^9*b^12 + 270/
7*x^14*d^2*c^8*b^11*a + 3960/7*x^14*d^3*c^7*b^10*a^2 + 3300*x^14*
d^4*c^6*b^9*a^3 + 8910*x^14*d^5*c^5*b^8*a^4 + 11880*x^14*d^6*c^4*
b^7*a^5 + 7920*x^14*d^7*c^3*b^6*a^6 + 17820/7*x^14*d^8*c^2*b^5*a^
7 + 2475/7*x^14*d^9*c*b^4*a^8 + 110/7*x^14*d^10*b^3*a^9 + 1/13*x^
13*c^10*b^12 + 120/13*x^13*d*c^9*b^11*a + 2970/13*x^13*d^2*c^8*b^
10*a^2 + 26400/13*x^13*d^3*c^7*b^9*a^3 + 103950/13*x^13*d^4*c^6*b
^8*a^4 + 199584/13*x^13*d^5*c^5*b^7*a^5 + 194040/13*x^13*d^6*c^4*
b^6*a^6 + 95040/13*x^13*d^7*c^3*b^5*a^7 + 22275/13*x^13*d^8*c^2*b
^4*a^8 + 2200/13*x^13*d^9*c*b^3*a^9 + 66/13*x^13*d^10*b^2*a^10 +
x^12*c^10*b^11*a + 55*x^12*d*c^9*b^10*a^2 + 825*x^12*d^2*c^8*b^9*
a^3 + 4950*x^12*d^3*c^7*b^8*a^4 + 13860*x^12*d^4*c^6*b^7*a^5 + 19
404*x^12*d^5*c^5*b^6*a^6 + 13860*x^12*d^6*c^4*b^5*a^7 + 4950*x^12
*d^7*c^3*b^4*a^8 + 825*x^12*d^8*c^2*b^3*a^9 + 55*x^12*d^9*c*b^2*a
^10 + x^12*d^10*b*a^11 + 6*x^11*c^10*b^10*a^2 + 200*x^11*d*c^9*b^
9*a^3 + 2025*x^11*d^2*c^8*b^8*a^4 + 8640*x^11*d^3*c^7*b^7*a^5 + 1
7640*x^11*d^4*c^6*b^6*a^6 + 18144*x^11*d^5*c^5*b^5*a^7 + 9450*x^1
1*d^6*c^4*b^4*a^8 + 2400*x^11*d^7*c^3*b^3*a^9 + 270*x^11*d^8*c^2*
b^2*a^10 + 120/11*x^11*d^9*c*b*a^11 + 1/11*x^11*d^10*a^12 + 22*x^
10*c^10*b^9*a^3 + 495*x^10*d*c^9*b^8*a^4 + 3564*x^10*d^2*c^8*b^7*
a^5 + 11088*x^10*d^3*c^7*b^6*a^6 + 16632*x^10*d^4*c^6*b^5*a^7 + 1
2474*x^10*d^5*c^5*b^4*a^8 + 4620*x^10*d^6*c^4*b^3*a^9 + 792*x^10*
d^7*c^3*b^2*a^10 + 54*x^10*d^8*c^2*b*a^11 + x^10*d^9*c*a^12 + 55*
x^9*c^10*b^8*a^4 + 880*x^9*d*c^9*b^7*a^5 + 4620*x^9*d^2*c^8*b^6*a
^6 + 10560*x^9*d^3*c^7*b^5*a^7 + 11550*x^9*d^4*c^6*b^4*a^8 + 6160
*x^9*d^5*c^5*b^3*a^9 + 1540*x^9*d^6*c^4*b^2*a^10 + 160*x^9*d^7*c^
3*b*a^11 + 5*x^9*d^8*c^2*a^12 + 99*x^8*c^10*b^7*a^5 + 1155*x^8*d*
c^9*b^6*a^6 + 4455*x^8*d^2*c^8*b^5*a^7 + 7425*x^8*d^3*c^7*b^4*a^8
 + 5775*x^8*d^4*c^6*b^3*a^9 + 2079*x^8*d^5*c^5*b^2*a^10 + 315*x^8
*d^6*c^4*b*a^11 + 15*x^8*d^7*c^3*a^12 + 132*x^7*c^10*b^6*a^6 + 79
20/7*x^7*d*c^9*b^5*a^7 + 22275/7*x^7*d^2*c^8*b^4*a^8 + 26400/7*x^
7*d^3*c^7*b^3*a^9 + 1980*x^7*d^4*c^6*b^2*a^10 + 432*x^7*d^5*c^5*b
*a^11 + 30*x^7*d^6*c^4*a^12 + 132*x^6*c^10*b^5*a^7 + 825*x^6*d*c^
9*b^4*a^8 + 1650*x^6*d^2*c^8*b^3*a^9 + 1320*x^6*d^3*c^7*b^2*a^10
+ 420*x^6*d^4*c^6*b*a^11 + 42*x^6*d^5*c^5*a^12 + 99*x^5*c^10*b^4*
a^8 + 440*x^5*d*c^9*b^3*a^9 + 594*x^5*d^2*c^8*b^2*a^10 + 288*x^5*
d^3*c^7*b*a^11 + 42*x^5*d^4*c^6*a^12 + 55*x^4*c^10*b^3*a^9 + 165*
x^4*d*c^9*b^2*a^10 + 135*x^4*d^2*c^8*b*a^11 + 30*x^4*d^3*c^7*a^12
 + 22*x^3*c^10*b^2*a^10 + 40*x^3*d*c^9*b*a^11 + 15*x^3*d^2*c^8*a^
12 + 6*x^2*c^10*b*a^11 + 5*x^2*d*c^9*a^12 + x*c^10*a^12
```

Sympy [A] time = 0.902873, size = 2088, normalized size = 7.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**12*(d*x+c)**10,x)
```

```
[Out] a**12*c**10*x + b**12*d**10*x**23/23 + x**22*(6*a*b**11*d**10/11
+ 5*b**12*c*d**9/11) + x**21*(22*a**2*b**10*d**10/7 + 40*a*b**11*
c*d**9/7 + 15*b**12*c**2*d**8/7) + x**20*(11*a**3*b**9*d**10 + 33
```

*a**2*b**10*c*d**9 + 27*a*b**11*c**2*d**8 + 6*b**12*c**3*d**7) +
x**19*(495*a**4*b**8*d**10/19 + 2200*a**3*b**9*c*d**9/19 + 2970*a
2*b10*c**2*d**8/19 + 1440*a*b**11*c**3*d**7/19 + 210*b**12*c*
*4*d**6/19) + x**18*(44*a**5*b**7*d**10 + 275*a**4*b**8*c*d**9 +
550*a**3*b**9*c**2*d**8 + 440*a**2*b**10*c**3*d**7 + 140*a*b**11*
c**4*d**6 + 14*b**12*c**5*d**5) + x**17*(924*a**6*b**6*d**10/17 +
7920*a**5*b**7*c*d**9/17 + 22275*a**4*b**8*c**2*d**8/17 + 26400*
a**3*b**9*c**3*d**7/17 + 13860*a**2*b**10*c**4*d**6/17 + 3024*a*b
11*c5*d**5/17 + 210*b**12*c**6*d**4/17) + x**16*(99*a**7*b**5
*d**10/2 + 1155*a**6*b**6*c*d**9/2 + 4455*a**5*b**7*c**2*d**8/2 +
7425*a**4*b**8*c**3*d**7/2 + 5775*a**3*b**9*c**4*d**6/2 + 2079*a
2*b10*c**5*d**5/2 + 315*a*b**11*c**6*d**4/2 + 15*b**12*c**7*d
3/2) + x15*(33*a**8*b**4*d**10 + 528*a**7*b**5*c*d**9 + 2772*
a**6*b**6*c**2*d**8 + 6336*a**5*b**7*c**3*d**7 + 6930*a**4*b**8*c
4*d6 + 3696*a**3*b**9*c**5*d**5 + 924*a**2*b**10*c**6*d**4 +
96*a*b**11*c**7*d**3 + 3*b**12*c**8*d**2) + x**14*(110*a**9*b**3*
d**10/7 + 2475*a**8*b**4*c*d**9/7 + 17820*a**7*b**5*c**2*d**8/7 +
7920*a**6*b**6*c**3*d**7 + 11880*a**5*b**7*c**4*d**6 + 8910*a**4
*b**8*c**5*d**5 + 3300*a**3*b**9*c**6*d**4 + 3960*a**2*b**10*c**7
*d**3/7 + 270*a*b**11*c**8*d**2/7 + 5*b**12*c**9*d/7) + x**13*(66
*a**10*b**2*d**10/13 + 2200*a**9*b**3*c*d**9/13 + 22275*a**8*b**4
*c**2*d**8/13 + 95040*a**7*b**5*c**3*d**7/13 + 194040*a**6*b**6*c
4*d6/13 + 199584*a**5*b**7*c**5*d**5/13 + 103950*a**4*b**8*c*
*6*d**4/13 + 26400*a**3*b**9*c**7*d**3/13 + 2970*a**2*b**10*c**8*
d**2/13 + 120*a*b**11*c**9*d/13 + b**12*c**10/13) + x**12*(a**11*
b*d**10 + 55*a**10*b**2*c*d**9 + 825*a**9*b**3*c**2*d**8 + 4950*a
8*b4*c**3*d**7 + 13860*a**7*b**5*c**4*d**6 + 19404*a**6*b**6*
c**5*d**5 + 13860*a**5*b**7*c**6*d**4 + 4950*a**4*b**8*c**7*d**3
+ 825*a**3*b**9*c**8*d**2 + 55*a**2*b**10*c**9*d + a*b**11*c**10)
+ x**11*(a**12*d**10/11 + 120*a**11*b*c*d**9/11 + 270*a**10*b**2
*c**2*d**8 + 2400*a**9*b**3*c**3*d**7 + 9450*a**8*b**4*c**4*d**6
+ 18144*a**7*b**5*c**5*d**5 + 17640*a**6*b**6*c**6*d**4 + 8640*a*
*5*b**7*c**7*d**3 + 2025*a**4*b**8*c**8*d**2 + 200*a**3*b**9*c**9
*d + 6*a**2*b**10*c**10) + x**10*(a**12*c*d**9 + 54*a**11*b*c**2*
d**8 + 792*a**10*b**2*c**3*d**7 + 4620*a**9*b**3*c**4*d**6 + 1247
4*a**8*b**4*c**5*d**5 + 16632*a**7*b**5*c**6*d**4 + 11088*a**6*b*
*6*c**7*d**3 + 3564*a**5*b**7*c**8*d**2 + 495*a**4*b**8*c**9*d +
22*a**3*b**9*c**10) + x**9*(5*a**12*c**2*d**8 + 160*a**11*b*c**3*
d**7 + 1540*a**10*b**2*c**4*d**6 + 6160*a**9*b**3*c**5*d**5 + 115
50*a**8*b**4*c**6*d**4 + 10560*a**7*b**5*c**7*d**3 + 4620*a**6*b*
*6*c**8*d**2 + 880*a**5*b**7*c**9*d + 55*a**4*b**8*c**10) + x**8*
(15*a**12*c**3*d**7 + 315*a**11*b*c**4*d**6 + 2079*a**10*b**2*c**
5*d**5 + 5775*a**9*b**3*c**6*d**4 + 7425*a**8*b**4*c**7*d**3 + 44
55*a**7*b**5*c**8*d**2 + 1155*a**6*b**6*c**9*d + 99*a**5*b**7*c**
10) + x**7*(30*a**12*c**4*d**6 + 432*a**11*b*c**5*d**5 + 1980*a**
10*b**2*c**6*d**4 + 26400*a**9*b**3*c**7*d**3/7 + 22275*a**8*b**4
*c**8*d**2/7 + 7920*a**7*b**5*c**9*d/7 + 132*a**6*b**6*c**10) + x
6*(42*a12*c**5*d**5 + 420*a**11*b*c**6*d**4 + 1320*a**10*b**2
*c**7*d**3 + 1650*a**9*b**3*c**8*d**2 + 825*a**8*b**4*c**9*d + 13
2*a**7*b**5*c**10) + x**5*(42*a**12*c**6*d**4 + 288*a**11*b*c**7*
d**3 + 594*a**10*b**2*c**8*d**2 + 440*a**9*b**3*c**9*d + 99*a**8*
b**4*c**10) + x**4*(30*a**12*c**7*d**3 + 135*a**11*b*c**8*d**2 +
165*a**10*b**2*c**9*d + 55*a**9*b**3*c**10) + x**3*(15*a**12*c**8
*d**2 + 40*a**11*b*c**9*d + 22*a**10*b**2*c**10) + x**2*(5*a**12*
c**9*d + 6*a**11*b*c**10)

GIAC/XCAS [A] time = 0.21906, size = 1, normalized size = 0.

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^12*(d*x + c)^10,x, algorithm="giac")

[Out] Done
```

3.1300 $\int (a+bx)^{11}(c+dx)^{10}\,dx$

Optimal. Leaf size=279

$$\frac{10d^9(a+bx)^{21}(bc-ad)}{21b^{11}}+\frac{9d^8(a+bx)^{20}(bc-ad)^2}{4b^{11}}+\frac{120d^7(a+bx)^{19}(bc-ad)^3}{19b^{11}}+\frac{35d^6(a+bx)^{18}(bc-ad)^4}{3b^{11}}+\frac{252d^5(a+bx)^{17}(bc-ad)^5}{17b^{11}}+\frac{105d^4(a+bx)^{16}(bc-ad)^6}{8b^{11}}+\frac{8d^3(a+bx)^{15}(bc-ad)^7}{b^{11}}+\frac{45d^2(a+bx)^{14}(bc-ad)^8}{14b^{11}}+\frac{10d(a+bx)^{13}(bc-ad)^9}{13b^{11}}+\frac{(a+bx)^{12}(bc-ad)^{10}}{12b^{11}}+\frac{d^{10}(a+bx)^{22}}{22b^{11}}$$

```
[Out] ((b*c - a*d)^10*(a + b*x)^12)/(12*b^11) + (10*d*(b*c - a*d)^9*(a
+ b*x)^13)/(13*b^11) + (45*d^2*(b*c - a*d)^8*(a + b*x)^14)/(14*b^
11) + (8*d^3*(b*c - a*d)^7*(a + b*x)^15)/b^11 + (105*d^4*(b*c - a
*d)^6*(a + b*x)^16)/(8*b^11) + (252*d^5*(b*c - a*d)^5*(a + b*x)^1
7)/(17*b^11) + (35*d^6*(b*c - a*d)^4*(a + b*x)^18)/(3*b^11) + (12
0*d^7*(b*c - a*d)^3*(a + b*x)^19)/(19*b^11) + (9*d^8*(b*c - a*d)^
2*(a + b*x)^20)/(4*b^11) + (10*d^9*(b*c - a*d)*(a + b*x)^21)/(21*
b^11) + (d^10*(a + b*x)^22)/(22*b^11)
```

Rubi [A] time = 2.81847, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{10d^9(a+bx)^{21}(bc-ad)}{21b^{11}}+\frac{9d^8(a+bx)^{20}(bc-ad)^2}{4b^{11}}+\frac{120d^7(a+bx)^{19}(bc-ad)^3}{19b^{11}}+\frac{35d^6(a+bx)^{18}(bc-ad)^4}{3b^{11}}+\frac{252d^5(a+bx)^{17}(bc-ad)^5}{17b^{11}}+\frac{105d^4(a+bx)^{16}(bc-ad)^6}{8b^{11}}+\frac{8d^3(a+bx)^{15}(bc-ad)^7}{b^{11}}+\frac{45d^2(a+bx)^{14}(bc-ad)^8}{14b^{11}}+\frac{10d(a+bx)^{13}(bc-ad)^9}{13b^{11}}+\frac{(a+bx)^{12}(bc-ad)^{10}}{12b^{11}}+\frac{d^{10}(a+bx)^{22}}{22b^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^11*(c + d*x)^10,x]
```


```
[Out] ((b*c - a*d)^10*(a + b*x)^12)/(12*b^11) + (10*d*(b*c - a*d)^9*(a
+ b*x)^13)/(13*b^11) + (45*d^2*(b*c - a*d)^8*(a + b*x)^14)/(14*b^
11) + (8*d^3*(b*c - a*d)^7*(a + b*x)^15)/b^11 + (105*d^4*(b*c - a
*d)^6*(a + b*x)^16)/(8*b^11) + (252*d^5*(b*c - a*d)^5*(a + b*x)^1
7)/(17*b^11) + (35*d^6*(b*c - a*d)^4*(a + b*x)^18)/(3*b^11) + (12
0*d^7*(b*c - a*d)^3*(a + b*x)^19)/(19*b^11) + (9*d^8*(b*c - a*d)^
2*(a + b*x)^20)/(4*b^11) + (10*d^9*(b*c - a*d)*(a + b*x)^21)/(21*
b^11) + (d^10*(a + b*x)^22)/(22*b^11)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**11*(d*x+c)**10,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.387646, size = 1702, normalized size = 6.1

$$\frac{1}{22}b^{11}d^{10}x^{22}+\frac{1}{21}b^{10}d^9(10bc+11ad)x^{21}+\frac{1}{4}b^9d^8\left(9b^2c^2+22abdc+11a^2d^2\right)x^{20}+\frac{5}{19}b^8d^7\left(24b^3c^3+99ab^2dc^2+110a^2bd^2c+33a^3d^3\right)x^{19}+\frac{5}{6}b^7d^6\left(14b^4c^4+88ab^3dc^3+165a^2b^2d^2c^2+110a^3bd^3c+22a^4d^4\right)x^{18}+\frac{3}{17}b^6d^5\left(84b^5c^5+770ab^4dc^4+2200a^2b^3d^2c^3+2475a^3b^2d^3c^2+1100a^4bd^4c+154a^5d^5\right)x^{17}+\frac{3}{8}b^5d^4\left(35b^6c^6+462ab^5dc^5+1925a^2b^4d^2c^4+3300a^3b^3d^3c^3+2475a^4b^2d^4c^2+770a^5bd^5c+77a^6d^6\right)x^{16}+2b^4d^3\left(4b^7c^7+77ab^6dc^6+462a^2b^5d^2c^5+1155a^3b^4d^3c^4+1320a^4b^3d^4c^3+693a^5b^2d^5c^2+154a^6bd^6c+11a^7d^7\right)x^{15}+\frac{15}{14}b^3d^2\left(3b^8c^8+88ab^7dc^7+770a^2b^6d^2c^6+2772a^3b^5d^3c^5+4620a^4b^4d^4c^4+3696a^5b^3d^5c^3+1386a^6b^2d^6c^2+220a^7bd^7c+11a^8d^8\right)x^{14}+\frac{5}{13}b^2d\left(2b^9c^9+99ab^8dc^8+1320a^2b^7d^2c^7+6930a^3b^6d^3c^6+16632a^4b^5d^4c^5+19404a^5b^4d^5c^4+11088a^6b^3d^6c^3+2970a^7b^2d^7c^2+330a^8bd^8c+11a^9d^9\right)x^{13}+\frac{1}{12}b\left(b^{10}c^{10}+110ab^9dc^9+2475a^2b^8d^2c^8+19800a^3b^7d^3c^7+69300a^4b^6d^4c^6+116424a^5b^5d^5c^5+97020a^6b^4d^6c^4+39600a^7b^3d^7c^3+7425a^8b^2d^8c^2+550a^9bd^9c+11a^{10}d^{10}\right)x^{12}+\frac{1}{11}a\left(11b^{10}c^{10}+550ab^9dc^9+7425a^2b^8d^2c^8+39600a^3b^7d^3c^7+97020a^4b^6d^4c^6+116424a^5b^5d^5c^5+69300a^6b^4d^6c^4+19800a^7b^3d^7c^3+2475a^8b^2d^8c^2+110a^9bd^9c+a^{10}d^{10}\right)x^{11}+\frac{1}{2}a^2c\left(11b^9c^9+330ab^8dc^8+2970a^2b^7d^2c^7+11088a^3b^6d^3c^6+19404a^4b^5d^4c^5+16632a^5b^4d^5c^4+6930a^6b^3d^6c^3+1320a^7b^2d^7c^2+99a^8bd^8c+2a^9d^9\right)x^{10}+\frac{5}{3}a^3c^2\left(11b^8c^8+220ab^7dc^7+1386a^2b^6d^2c^6+3696a^3b^5d^3c^5+4620a^4b^4d^4c^4+2772a^5b^3d^5c^3+770a^6b^2d^6c^2+88a^7bd^7c+3a^8d^8\right)x^9+\frac{15}{4}a^4c^3\left(11b^7c^7+154ab^6dc^6+693a^2b^5d^2c^5+1320a^3b^4d^3c^4+1155a^4b^3d^4c^3+462a^5b^2d^5c^2+77a^6bd^6c+4a^7d^7\right)x^8+\frac{6}{7}a^5c^4\left(77b^6c^6+770ab^5dc^5+2475a^2b^4d^2c^4+3300a^3b^3d^3c^3+1925a^4b^2d^4c^2+462a^5bd^5c+35a^6d^6\right)x^7+\frac{1}{2}a^6c^5\left(154b^5c^5+1100ab^4dc^4+2475a^2b^3d^2c^3+2200a^3b^2d^3c^2+770a^4bd^4c+84a^5d^5\right)x^6+3a^7c^6\left(22b^4c^4+110ab^3dc^3+165a^2b^2d^2c^2+88a^3bd^3c+14a^4d^4\right)x^5+\frac{5}{4}a^8c^7\left(33b^3c^3+110ab^2dc^2+99a^2bd^2c+24a^3d^3\right)x^4+\frac{5}{3}a^9c^8\left(11b^2c^2+22abdc+9a^2d^2\right)x^3+\frac{1}{2}a^{10}c^9(11bc+10ad)x^2+a^{11}c^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^11*(c + d*x)^10,x]
```

```
[Out] a^11*c^10*x + (a^10*c^9*(11*b*c + 10*a*d)*x^2)/2 + (5*a^9*c^8*(11
*b^2*c^2 + 22*a*b*c*d + 9*a^2*d^2)*x^3)/3 + (5*a^8*c^7*(33*b^3*c^
3 + 110*a*b^2*c^2*d + 99*a^2*b*c*d^2 + 24*a^3*d^3)*x^4)/4 + 3*a^7
*c^6*(22*b^4*c^4 + 110*a*b^3*c^3*d + 165*a^2*b^2*c^2*d^2 + 88*a^3
*b*c*d^3 + 14*a^4*d^4)*x^5 + (a^6*c^5*(154*b^5*c^5 + 1100*a*b^4*c
^4*d + 2475*a^2*b^3*c^3*d^2 + 2200*a^3*b^2*c^2*d^3 + 770*a^4*b*c*
d^4 + 84*a^5*d^5)*x^6)/2 + (6*a^5*c^4*(77*b^6*c^6 + 770*a*b^5*c^5
*d + 2475*a^2*b^4*c^4*d^2 + 3300*a^3*b^3*c^3*d^3 + 1925*a^4*b^2*c
^2*d^4 + 462*a^5*b*c*d^5 + 35*a^6*d^6)*x^7)/7 + (15*a^4*c^3*(11*b
^7*c^7 + 154*a*b^6*c^6*d + 693*a^2*b^5*c^5*d^2 + 1320*a^3*b^4*c^4
*d^3 + 1155*a^4*b^3*c^3*d^4 + 462*a^5*b^2*c^2*d^5 + 77*a^6*b*c*d^
6 + 4*a^7*d^7)*x^8)/4 + (5*a^3*c^2*(11*b^8*c^8 + 220*a*b^7*c^7*d
+ 1386*a^2*b^6*c^6*d^2 + 3696*a^3*b^5*c^5*d^3 + 4620*a^4*b^4*c^4*
d^4 + 2772*a^5*b^3*c^3*d^5 + 770*a^6*b^2*c^2*d^6 + 88*a^7*b*c*d^7
 + 3*a^8*d^8)*x^9)/3 + (a^2*c*(11*b^9*c^9 + 330*a*b^8*c^8*d + 297
0*a^2*b^7*c^7*d^2 + 11088*a^3*b^6*c^6*d^3 + 19404*a^4*b^5*c^5*d^4
 + 16632*a^5*b^4*c^4*d^5 + 6930*a^6*b^3*c^3*d^6 + 1320*a^7*b^2*c^
2*d^7 + 99*a^8*b*c*d^8 + 2*a^9*d^9)*x^10)/2 + (a*(11*b^10*c^10 +
550*a*b^9*c^9*d + 7425*a^2*b^8*c^8*d^2 + 39600*a^3*b^7*c^7*d^3 +
97020*a^4*b^6*c^6*d^4 + 116424*a^5*b^5*c^5*d^5 + 69300*a^6*b^4*c^
4*d^6 + 19800*a^7*b^3*c^3*d^7 + 2475*a^8*b^2*c^2*d^8 + 110*a^9*b*
c*d^9 + a^10*d^10)*x^11)/11 + (b*(b^10*c^10 + 110*a*b^9*c^9*d + 2
475*a^2*b^8*c^8*d^2 + 19800*a^3*b^7*c^7*d^3 + 69300*a^4*b^6*c^6*d
^4 + 116424*a^5*b^5*c^5*d^5 + 97020*a^6*b^4*c^4*d^6 + 39600*a^7*b
^3*c^3*d^7 + 7425*a^8*b^2*c^2*d^8 + 550*a^9*b*c*d^9 + 11*a^10*d^1
0)*x^12)/12 + (5*b^2*d*(2*b^9*c^9 + 99*a*b^8*c^8*d + 1320*a^2*b^7
*c^7*d^2 + 6930*a^3*b^6*c^6*d^3 + 16632*a^4*b^5*c^5*d^4 + 19404*a
^5*b^4*c^4*d^5 + 11088*a^6*b^3*c^3*d^6 + 2970*a^7*b^2*c^2*d^7 + 3
30*a^8*b*c*d^8 + 11*a^9*d^9)*x^13)/13 + (15*b^3*d^2*(3*b^8*c^8 +
88*a*b^7*c^7*d + 770*a^2*b^6*c^6*d^2 + 2772*a^3*b^5*c^5*d^3 + 462
0*a^4*b^4*c^4*d^4 + 3696*a^5*b^3*c^3*d^5 + 1386*a^6*b^2*c^2*d^6 +
 220*a^7*b*c*d^7 + 11*a^8*d^8)*x^14)/14 + 2*b^4*d^3*(4*b^7*c^7 +
77*a*b^6*c^6*d + 462*a^2*b^5*c^5*d^2 + 1155*a^3*b^4*c^4*d^3 + 132
0*a^4*b^3*c^3*d^4 + 693*a^5*b^2*c^2*d^5 + 154*a^6*b*c*d^6 + 11*a^
7*d^7)*x^15 + (3*b^5*d^4*(35*b^6*c^6 + 462*a*b^5*c^5*d + 1925*a^2
*b^4*c^4*d^2 + 3300*a^3*b^3*c^3*d^3 + 2475*a^4*b^2*c^2*d^4 + 770*
a^5*b*c*d^5 + 77*a^6*d^6)*x^16)/8 + (3*b^6*d^5*(84*b^5*c^5 + 770*
a*b^4*c^4*d + 2200*a^2*b^3*c^3*d^2 + 2475*a^3*b^2*c^2*d^3 + 1100*
a^4*b*c*d^4 + 154*a^5*d^5)*x^17)/17 + (5*b^7*d^6*(14*b^4*c^4 + 88
*a*b^3*c^3*d + 165*a^2*b^2*c^2*d^2 + 110*a^3*b*c*d^3 + 22*a^4*d^4
)*x^18)/6 + (5*b^8*d^7*(24*b^3*c^3 + 99*a*b^2*c^2*d + 110*a^2*b*c
*d^2 + 33*a^3*d^3)*x^19)/19 + (b^9*d^8*(9*b^2*c^2 + 22*a*b*c*d +
11*a^2*d^2)*x^20)/4 + (b^10*d^9*(10*b*c + 11*a*d)*x^21)/21 + (b^1
1*d^10*x^22)/22
```

Maple [B] time = 0.005, size = 1741, normalized size = 6.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^11*(d*x+c)^10,x)
```

```
[Out] 1/22*b^11*d^10*x^22+1/21*(11*a*b^10*d^10+10*b^11*c*d^9)*x^21+1/20
*(55*a^2*b^9*d^10+110*a*b^10*c*d^9+45*b^11*c^2*d^8)*x^20+1/19*(16
5*a^3*b^8*d^10+550*a^2*b^9*c*d^9+495*a*b^10*c^2*d^8+120*b^11*c^3*
d^7)*x^19+1/18*(330*a^4*b^7*d^10+1650*a^3*b^8*c*d^9+2475*a^2*b^9*
c^2*d^8+1320*a*b^10*c^3*d^7+210*b^11*c^4*d^6)*x^18+1/17*(462*a^5*
b^6*d^10+3300*a^4*b^7*c*d^9+7425*a^3*b^8*c^2*d^8+6600*a^2*b^9*c^3
*d^7+2310*a*b^10*c^4*d^6+252*b^11*c^5*d^5)*x^17+1/16*(462*a^6*b^5
*d^10+4620*a^5*b^6*c*d^9+14850*a^4*b^7*c^2*d^8+19800*a^3*b^8*c^3*
d^7+11550*a^2*b^9*c^4*d^6+2772*a*b^10*c^5*d^5+210*b^11*c^6*d^4)*x
^16+1/15*(330*a^7*b^4*d^10+4620*a^6*b^5*c*d^9+20790*a^5*b^6*c^2*d
^8+39600*a^4*b^7*c^3*d^7+34650*a^3*b^8*c^4*d^6+13860*a^2*b^9*c^5*
d^5+2310*a*b^10*c^6*d^4+120*b^11*c^7*d^3)*x^15+1/14*(165*a^8*b^3*
d^10+3300*a^7*b^4*c*d^9+20790*a^6*b^5*c^2*d^8+55440*a^5*b^6*c^3*d
^7+69300*a^4*b^7*c^4*d^6+41580*a^3*b^8*c^5*d^5+11550*a^2*b^9*c^6*
d^4+1320*a*b^10*c^7*d^3+45*b^11*c^8*d^2)*x^14+1/13*(55*a^9*b^2*d^
10+1650*a^8*b^3*c*d^9+14850*a^7*b^4*c^2*d^8+55440*a^6*b^5*c^3*d^7
+97020*a^5*b^6*c^4*d^6+83160*a^4*b^7*c^5*d^5+34650*a^3*b^8*c^6*d^
4+6600*a^2*b^9*c^7*d^3+495*a*b^10*c^8*d^2+10*b^11*c^9*d)*x^13+1/1
2*(11*a^10*b*d^10+550*a^9*b^2*c*d^9+7425*a^8*b^3*c^2*d^8+39600*a^
7*b^4*c^3*d^7+97020*a^6*b^5*c^4*d^6+116424*a^5*b^6*c^5*d^5+69300*
a^4*b^7*c^6*d^4+19800*a^3*b^8*c^7*d^3+2475*a^2*b^9*c^8*d^2+110*a*
b^10*c^9*d+b^11*c^10)*x^12+1/11*(a^11*d^10+110*a^10*b*c*d^9+2475*
a^9*b^2*c^2*d^8+19800*a^8*b^3*c^3*d^7+69300*a^7*b^4*c^4*d^6+11642
4*a^6*b^5*c^5*d^5+97020*a^5*b^6*c^6*d^4+39600*a^4*b^7*c^7*d^3+742
5*a^3*b^8*c^8*d^2+550*a^2*b^9*c^9*d+11*a*b^10*c^10)*x^11+1/10*(10
*a^11*c*d^9+495*a^10*b*c^2*d^8+6600*a^9*b^2*c^3*d^7+34650*a^8*b^3
*c^4*d^6+83160*a^7*b^4*c^5*d^5+97020*a^6*b^5*c^6*d^4+55440*a^5*b^
6*c^7*d^3+14850*a^4*b^7*c^8*d^2+1650*a^3*b^8*c^9*d+55*a^2*b^9*c^1
0)*x^10+1/9*(45*a^11*c^2*d^8+1320*a^10*b*c^3*d^7+11550*a^9*b^2*c^
4*d^6+41580*a^8*b^3*c^5*d^5+69300*a^7*b^4*c^6*d^4+55440*a^6*b^5*c
^7*d^3+20790*a^5*b^6*c^8*d^2+3300*a^4*b^7*c^9*d+165*a^3*b^8*c^10)
*x^9+1/8*(120*a^11*c^3*d^7+2310*a^10*b*c^4*d^6+13860*a^9*b^2*c^5*
d^5+34650*a^8*b^3*c^6*d^4+39600*a^7*b^4*c^7*d^3+20790*a^6*b^5*c^8
*d^2+4620*a^5*b^6*c^9*d+330*a^4*b^7*c^10)*x^8+1/7*(210*a^11*c^4*d
^6+2772*a^10*b*c^5*d^5+11550*a^9*b^2*c^6*d^4+19800*a^8*b^3*c^7*d^
3+14850*a^7*b^4*c^8*d^2+4620*a^6*b^5*c^9*d+462*a^5*b^6*c^10)*x^7+
1/6*(252*a^11*c^5*d^5+2310*a^10*b*c^6*d^4+6600*a^9*b^2*c^7*d^3+74
25*a^8*b^3*c^8*d^2+3300*a^7*b^4*c^9*d+462*a^6*b^5*c^10)*x^6+1/5*(
210*a^11*c^6*d^4+1320*a^10*b*c^7*d^3+2475*a^9*b^2*c^8*d^2+1650*a^
8*b^3*c^9*d+330*a^7*b^4*c^10)*x^5+1/4*(120*a^11*c^7*d^3+495*a^10*
b*c^8*d^2+550*a^9*b^2*c^9*d+165*a^8*b^3*c^10)*x^4+1/3*(45*a^11*c^
8*d^2+110*a^10*b*c^9*d+55*a^9*b^2*c^10)*x^3+1/2*(10*a^11*c^9*d+11
*a^10*b*c^10)*x^2+a^11*c^10*x
```

Maxima [A] time = 1.38534, size = 2349, normalized size = 8.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^11*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/22*b^11*d^10*x^22 + a^11*c^10*x + 1/21*(10*b^11*c*d^9 + 11*a*b^
10*d^10)*x^21 + 1/4*(9*b^11*c^2*d^8 + 22*a*b^10*c*d^9 + 11*a^2*b^
9*d^10)*x^20 + 5/19*(24*b^11*c^3*d^7 + 99*a*b^10*c^2*d^8 + 110*a^
2*b^9*c*d^9 + 33*a^3*b^8*d^10)*x^19 + 5/6*(14*b^11*c^4*d^6 + 88*a
*b^10*c^3*d^7 + 165*a^2*b^9*c^2*d^8 + 110*a^3*b^8*c*d^9 + 22*a^4*
b^7*d^10)*x^18 + 3/17*(84*b^11*c^5*d^5 + 770*a*b^10*c^4*d^6 + 220
0*a^2*b^9*c^3*d^7 + 2475*a^3*b^8*c^2*d^8 + 1100*a^4*b^7*c*d^9 + 1
54*a^5*b^6*d^10)*x^17 + 3/8*(35*b^11*c^6*d^4 + 462*a*b^10*c^5*d^5
 + 1925*a^2*b^9*c^4*d^6 + 3300*a^3*b^8*c^3*d^7 + 2475*a^4*b^7*c^2
*d^8 + 770*a^5*b^6*c*d^9 + 77*a^6*b^5*d^10)*x^16 + 2*(4*b^11*c^7*
d^3 + 77*a*b^10*c^6*d^4 + 462*a^2*b^9*c^5*d^5 + 1155*a^3*b^8*c^4*
d^6 + 1320*a^4*b^7*c^3*d^7 + 693*a^5*b^6*c^2*d^8 + 154*a^6*b^5*c*
d^9 + 11*a^7*b^4*d^10)*x^15 + 15/14*(3*b^11*c^8*d^2 + 88*a*b^10*c
^7*d^3 + 770*a^2*b^9*c^6*d^4 + 2772*a^3*b^8*c^5*d^5 + 4620*a^4*b^
7*c^4*d^6 + 3696*a^5*b^6*c^3*d^7 + 1386*a^6*b^5*c^2*d^8 + 220*a^7
*b^4*c*d^9 + 11*a^8*b^3*d^10)*x^14 + 5/13*(2*b^11*c^9*d + 99*a*b^
10*c^8*d^2 + 1320*a^2*b^9*c^7*d^3 + 6930*a^3*b^8*c^6*d^4 + 16632*
a^4*b^7*c^5*d^5 + 19404*a^5*b^6*c^4*d^6 + 11088*a^6*b^5*c^3*d^7 +
 2970*a^7*b^4*c^2*d^8 + 330*a^8*b^3*c*d^9 + 11*a^9*b^2*d^10)*x^13
 + 1/12*(b^11*c^10 + 110*a*b^10*c^9*d + 2475*a^2*b^9*c^8*d^2 + 19
800*a^3*b^8*c^7*d^3 + 69300*a^4*b^7*c^6*d^4 + 116424*a^5*b^6*c^5*
d^5 + 97020*a^6*b^5*c^4*d^6 + 39600*a^7*b^4*c^3*d^7 + 7425*a^8*b^
3*c^2*d^8 + 550*a^9*b^2*c*d^9 + 11*a^10*b*d^10)*x^12 + 1/11*(11*a
*b^10*c^10 + 550*a^2*b^9*c^9*d + 7425*a^3*b^8*c^8*d^2 + 39600*a^4
*b^7*c^7*d^3 + 97020*a^5*b^6*c^6*d^4 + 116424*a^6*b^5*c^5*d^5 + 6
9300*a^7*b^4*c^4*d^6 + 19800*a^8*b^3*c^3*d^7 + 2475*a^9*b^2*c^2*d
^8 + 110*a^10*b*c*d^9 + a^11*d^10)*x^11 + 1/2*(11*a^2*b^9*c^10 +
330*a^3*b^8*c^9*d + 2970*a^4*b^7*c^8*d^2 + 11088*a^5*b^6*c^7*d^3
+ 19404*a^6*b^5*c^6*d^4 + 16632*a^7*b^4*c^5*d^5 + 6930*a^8*b^3*c^
4*d^6 + 1320*a^9*b^2*c^3*d^7 + 99*a^10*b*c^2*d^8 + 2*a^11*c*d^9)*
x^10 + 5/3*(11*a^3*b^8*c^10 + 220*a^4*b^7*c^9*d + 1386*a^5*b^6*c^
8*d^2 + 3696*a^6*b^5*c^7*d^3 + 4620*a^7*b^4*c^6*d^4 + 2772*a^8*b^
3*c^5*d^5 + 770*a^9*b^2*c^4*d^6 + 88*a^10*b*c^3*d^7 + 3*a^11*c^2*
d^8)*x^9 + 15/4*(11*a^4*b^7*c^10 + 154*a^5*b^6*c^9*d + 693*a^6*b^
5*c^8*d^2 + 1320*a^7*b^4*c^7*d^3 + 1155*a^8*b^3*c^6*d^4 + 462*a^9
*b^2*c^5*d^5 + 77*a^10*b*c^4*d^6 + 4*a^11*c^3*d^7)*x^8 + 6/7*(77*
a^5*b^6*c^10 + 770*a^6*b^5*c^9*d + 2475*a^7*b^4*c^8*d^2 + 3300*a^
8*b^3*c^7*d^3 + 1925*a^9*b^2*c^6*d^4 + 462*a^10*b*c^5*d^5 + 35*a^
11*c^4*d^6)*x^7 + 1/2*(154*a^6*b^5*c^10 + 1100*a^7*b^4*c^9*d + 24
75*a^8*b^3*c^8*d^2 + 2200*a^9*b^2*c^7*d^3 + 770*a^10*b*c^6*d^4 +
84*a^11*c^5*d^5)*x^6 + 3*(22*a^7*b^4*c^10 + 110*a^8*b^3*c^9*d + 1
65*a^9*b^2*c^8*d^2 + 88*a^10*b*c^7*d^3 + 14*a^11*c^6*d^4)*x^5 + 5
/4*(33*a^8*b^3*c^10 + 110*a^9*b^2*c^9*d + 99*a^10*b*c^8*d^2 + 24*
a^11*c^7*d^3)*x^4 + 5/3*(11*a^9*b^2*c^10 + 22*a^10*b*c^9*d + 9*a^
11*c^8*d^2)*x^3 + 1/2*(11*a^10*b*c^10 + 10*a^11*c^9*d)*x^2
```

Fricas [A] time = 0.187653, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^11*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/22*x^22*d^10*b^11 + 10/21*x^21*d^9*c*b^11 + 11/21*x^21*d^10*b^1
0*a + 9/4*x^20*d^8*c^2*b^11 + 11/2*x^20*d^9*c*b^10*a + 11/4*x^20*
d^10*b^9*a^2 + 120/19*x^19*d^7*c^3*b^11 + 495/19*x^19*d^8*c^2*b^1
0*a + 550/19*x^19*d^9*c*b^9*a^2 + 165/19*x^19*d^10*b^8*a^3 + 35/3
*x^18*d^6*c^4*b^11 + 220/3*x^18*d^7*c^3*b^10*a + 275/2*x^18*d^8*c
^2*b^9*a^2 + 275/3*x^18*d^9*c*b^8*a^3 + 55/3*x^18*d^10*b^7*a^4 +
252/17*x^17*d^5*c^5*b^11 + 2310/17*x^17*d^6*c^4*b^10*a + 6600/17*
x^17*d^7*c^3*b^9*a^2 + 7425/17*x^17*d^8*c^2*b^8*a^3 + 3300/17*x^1
7*d^9*c*b^7*a^4 + 462/17*x^17*d^10*b^6*a^5 + 105/8*x^16*d^4*c^6*b
^11 + 693/4*x^16*d^5*c^5*b^10*a + 5775/8*x^16*d^6*c^4*b^9*a^2 + 2
475/2*x^16*d^7*c^3*b^8*a^3 + 7425/8*x^16*d^8*c^2*b^7*a^4 + 1155/4
*x^16*d^9*c*b^6*a^5 + 231/8*x^16*d^10*b^5*a^6 + 8*x^15*d^3*c^7*b^
11 + 154*x^15*d^4*c^6*b^10*a + 924*x^15*d^5*c^5*b^9*a^2 + 2310*x^
15*d^6*c^4*b^8*a^3 + 2640*x^15*d^7*c^3*b^7*a^4 + 1386*x^15*d^8*c^
2*b^6*a^5 + 308*x^15*d^9*c*b^5*a^6 + 22*x^15*d^10*b^4*a^7 + 45/14
*x^14*d^2*c^8*b^11 + 660/7*x^14*d^3*c^7*b^10*a + 825*x^14*d^4*c^6
*b^9*a^2 + 2970*x^14*d^5*c^5*b^8*a^3 + 4950*x^14*d^6*c^4*b^7*a^4
+ 3960*x^14*d^7*c^3*b^6*a^5 + 1485*x^14*d^8*c^2*b^5*a^6 + 1650/7*
x^14*d^9*c*b^4*a^7 + 165/14*x^14*d^10*b^3*a^8 + 10/13*x^13*d*c^9*
b^11 + 495/13*x^13*d^2*c^8*b^10*a + 6600/13*x^13*d^3*c^7*b^9*a^2
+ 34650/13*x^13*d^4*c^6*b^8*a^3 + 83160/13*x^13*d^5*c^5*b^7*a^4 +
 97020/13*x^13*d^6*c^4*b^6*a^5 + 55440/13*x^13*d^7*c^3*b^5*a^6 +
14850/13*x^13*d^8*c^2*b^4*a^7 + 1650/13*x^13*d^9*c*b^3*a^8 + 55/1
3*x^13*d^10*b^2*a^9 + 1/12*x^12*c^10*b^11 + 55/6*x^12*d*c^9*b^10*
a + 825/4*x^12*d^2*c^8*b^9*a^2 + 1650*x^12*d^3*c^7*b^8*a^3 + 5775
*x^12*d^4*c^6*b^7*a^4 + 9702*x^12*d^5*c^5*b^6*a^5 + 8085*x^12*d^6
*c^4*b^5*a^6 + 3300*x^12*d^7*c^3*b^4*a^7 + 2475/4*x^12*d^8*c^2*b^
3*a^8 + 275/6*x^12*d^9*c*b^2*a^9 + 11/12*x^12*d^10*b*a^10 + x^11*
c^10*b^10*a + 50*x^11*d*c^9*b^9*a^2 + 675*x^11*d^2*c^8*b^8*a^3 +
3600*x^11*d^3*c^7*b^7*a^4 + 8820*x^11*d^4*c^6*b^6*a^5 + 10584*x^1
1*d^5*c^5*b^5*a^6 + 6300*x^11*d^6*c^4*b^4*a^7 + 1800*x^11*d^7*c^3
*b^3*a^8 + 225*x^11*d^8*c^2*b^2*a^9 + 10*x^11*d^9*c*b*a^10 + 1/11
*x^11*d^10*a^11 + 11/2*x^10*c^10*b^9*a^2 + 165*x^10*d*c^9*b^8*a^3
 + 1485*x^10*d^2*c^8*b^7*a^4 + 5544*x^10*d^3*c^7*b^6*a^5 + 9702*x
^10*d^4*c^6*b^5*a^6 + 8316*x^10*d^5*c^5*b^4*a^7 + 3465*x^10*d^6*c
^4*b^3*a^8 + 660*x^10*d^7*c^3*b^2*a^9 + 99/2*x^10*d^8*c^2*b*a^10
+ x^10*d^9*c*a^11 + 55/3*x^9*c^10*b^8*a^3 + 1100/3*x^9*d*c^9*b^7*
a^4 + 2310*x^9*d^2*c^8*b^6*a^5 + 6160*x^9*d^3*c^7*b^5*a^6 + 7700*
x^9*d^4*c^6*b^4*a^7 + 4620*x^9*d^5*c^5*b^3*a^8 + 3850/3*x^9*d^6*c
^4*b^2*a^9 + 440/3*x^9*d^7*c^3*b*a^10 + 5*x^9*d^8*c^2*a^11 + 165/
4*x^8*c^10*b^7*a^4 + 1155/2*x^8*d*c^9*b^6*a^5 + 10395/4*x^8*d^2*c
^8*b^5*a^6 + 4950*x^8*d^3*c^7*b^4*a^7 + 17325/4*x^8*d^4*c^6*b^3*a
^8 + 3465/2*x^8*d^5*c^5*b^2*a^9 + 1155/4*x^8*d^6*c^4*b*a^10 + 15*
x^8*d^7*c^3*a^11 + 66*x^7*c^10*b^6*a^5 + 660*x^7*d*c^9*b^5*a^6 +
14850/7*x^7*d^2*c^8*b^4*a^7 + 19800/7*x^7*d^3*c^7*b^3*a^8 + 1650*
x^7*d^4*c^6*b^2*a^9 + 396*x^7*d^5*c^5*b*a^10 + 30*x^7*d^6*c^4*a^1
1 + 77*x^6*c^10*b^5*a^6 + 550*x^6*d*c^9*b^4*a^7 + 2475/2*x^6*d^2*
c^8*b^3*a^8 + 1100*x^6*d^3*c^7*b^2*a^9 + 385*x^6*d^4*c^6*b*a^10 +
 42*x^6*d^5*c^5*a^11 + 66*x^5*c^10*b^4*a^7 + 330*x^5*d*c^9*b^3*a^
8 + 495*x^5*d^2*c^8*b^2*a^9 + 264*x^5*d^3*c^7*b*a^10 + 42*x^5*d^4
*c^6*a^11 + 165/4*x^4*c^10*b^3*a^8 + 275/2*x^4*d*c^9*b^2*a^9 + 49
```

```
5/4*x^4*d^2*c^8*b*a^10 + 30*x^4*d^3*c^7*a^11 + 55/3*x^3*c^10*b^2*
a^9 + 110/3*x^3*d*c^9*b*a^10 + 15*x^3*d^2*c^8*a^11 + 11/2*x^2*c^1
0*b*a^10 + 5*x^2*d*c^9*a^11 + x*c^10*a^11
```

Sympy [A] time = 0.842782, size = 1965, normalized size = 7.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**11*(d*x+c)**10,x)
```

```
[Out] a**11*c**10*x + b**11*d**10*x**22/22 + x**21*(11*a*b**10*d**10/21
 + 10*b**11*c*d**9/21) + x**20*(11*a**2*b**9*d**10/4 + 11*a*b**10
*c*d**9/2 + 9*b**11*c**2*d**8/4) + x**19*(165*a**3*b**8*d**10/19
+ 550*a**2*b**9*c*d**9/19 + 495*a*b**10*c**2*d**8/19 + 120*b**11*
c**3*d**7/19) + x**18*(55*a**4*b**7*d**10/3 + 275*a**3*b**8*c*d**
9/3 + 275*a**2*b**9*c**2*d**8/2 + 220*a*b**10*c**3*d**7/3 + 35*b*
*11*c**4*d**6/3) + x**17*(462*a**5*b**6*d**10/17 + 3300*a**4*b**7
*c*d**9/17 + 7425*a**3*b**8*c**2*d**8/17 + 6600*a**2*b**9*c**3*d*
*7/17 + 2310*a*b**10*c**4*d**6/17 + 252*b**11*c**5*d**5/17) + x**
16*(231*a**6*b**5*d**10/8 + 1155*a**5*b**6*c*d**9/4 + 7425*a**4*b
**7*c**2*d**8/8 + 2475*a**3*b**8*c**3*d**7/2 + 5775*a**2*b**9*c**
4*d**6/8 + 693*a*b**10*c**5*d**5/4 + 105*b**11*c**6*d**4/8) + x**
15*(22*a**7*b**4*d**10 + 308*a**6*b**5*c*d**9 + 1386*a**5*b**6*c*
*2*d**8 + 2640*a**4*b**7*c**3*d**7 + 2310*a**3*b**8*c**4*d**6 + 9
24*a**2*b**9*c**5*d**5 + 154*a*b**10*c**6*d**4 + 8*b**11*c**7*d**
3) + x**14*(165*a**8*b**3*d**10/14 + 1650*a**7*b**4*c*d**9/7 + 14
85*a**6*b**5*c**2*d**8 + 3960*a**5*b**6*c**3*d**7 + 4950*a**4*b**
7*c**4*d**6 + 2970*a**3*b**8*c**5*d**5 + 825*a**2*b**9*c**6*d**4
+ 660*a*b**10*c**7*d**3/7 + 45*b**11*c**8*d**2/14) + x**13*(55*a*
*9*b**2*d**10/13 + 1650*a**8*b**3*c*d**9/13 + 14850*a**7*b**4*c**
2*d**8/13 + 55440*a**6*b**5*c**3*d**7/13 + 97020*a**5*b**6*c**4*d
**6/13 + 83160*a**4*b**7*c**5*d**5/13 + 34650*a**3*b**8*c**6*d**4
/13 + 6600*a**2*b**9*c**7*d**3/13 + 495*a*b**10*c**8*d**2/13 + 10
*b**11*c**9*d/13) + x**12*(11*a**10*b*d**10/12 + 275*a**9*b**2*c*
d**9/6 + 2475*a**8*b**3*c**2*d**8/4 + 3300*a**7*b**4*c**3*d**7 +
8085*a**6*b**5*c**4*d**6 + 9702*a**5*b**6*c**5*d**5 + 5775*a**4*b
**7*c**6*d**4 + 1650*a**3*b**8*c**7*d**3 + 825*a**2*b**9*c**8*d**
2/4 + 55*a*b**10*c**9*d/6 + b**11*c**10/12) + x**11*(a**11*d**10/
11 + 10*a**10*b*c*d**9 + 225*a**9*b**2*c**2*d**8 + 1800*a**8*b**3
*c**3*d**7 + 6300*a**7*b**4*c**4*d**6 + 10584*a**6*b**5*c**5*d**5
 + 8820*a**5*b**6*c**6*d**4 + 3600*a**4*b**7*c**7*d**3 + 675*a**3
*b**8*c**8*d**2 + 50*a**2*b**9*c**9*d + a*b**10*c**10) + x**10*(a
**11*c*d**9 + 99*a**10*b*c**2*d**8/2 + 660*a**9*b**2*c**3*d**7 +
3465*a**8*b**3*c**4*d**6 + 8316*a**7*b**4*c**5*d**5 + 9702*a**6*b
**5*c**6*d**4 + 5544*a**5*b**6*c**7*d**3 + 1485*a**4*b**7*c**8*d*
*2 + 165*a**3*b**8*c**9*d + 11*a**2*b**9*c**10/2) + x**9*(5*a**11
*c**2*d**8 + 440*a**10*b*c**3*d**7/3 + 3850*a**9*b**2*c**4*d**6/3
 + 4620*a**8*b**3*c**5*d**5 + 7700*a**7*b**4*c**6*d**4 + 6160*a**
6*b**5*c**7*d**3 + 2310*a**5*b**6*c**8*d**2 + 1100*a**4*b**7*c**9
*d/3 + 55*a**3*b**8*c**10/3) + x**8*(15*a**11*c**3*d**7 + 1155*a*
```

```
*10*b*c**4*d**6/4 + 3465*a**9*b**2*c**5*d**5/2 + 17325*a**8*b**3*
c**6*d**4/4 + 4950*a**7*b**4*c**7*d**3 + 10395*a**6*b**5*c**8*d**
2/4 + 1155*a**5*b**6*c**9*d/2 + 165*a**4*b**7*c**10/4) + x**7*(30
*a**11*c**4*d**6 + 396*a**10*b*c**5*d**5 + 1650*a**9*b**2*c**6*d*
*4 + 19800*a**8*b**3*c**7*d**3/7 + 14850*a**7*b**4*c**8*d**2/7 +
660*a**6*b**5*c**9*d + 66*a**5*b**6*c**10) + x**6*(42*a**11*c**5*
d**5 + 385*a**10*b*c**6*d**4 + 1100*a**9*b**2*c**7*d**3 + 2475*a*
*8*b**3*c**8*d**2/2 + 550*a**7*b**4*c**9*d + 77*a**6*b**5*c**10)
+ x**5*(42*a**11*c**6*d**4 + 264*a**10*b*c**7*d**3 + 495*a**9*b**
2*c**8*d**2 + 330*a**8*b**3*c**9*d + 66*a**7*b**4*c**10) + x**4*(
30*a**11*c**7*d**3 + 495*a**10*b*c**8*d**2/4 + 275*a**9*b**2*c**9
*d/2 + 165*a**8*b**3*c**10/4) + x**3*(15*a**11*c**8*d**2 + 110*a*
*10*b*c**9*d/3 + 55*a**9*b**2*c**10/3) + x**2*(5*a**11*c**9*d + 1
1*a**10*b*c**10/2)
```

GIAC/XCAS [A] time = 0.221887, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^11*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] Done
```

3.1301 $\int (a+bx)^{10}(c+dx)^{10}\,dx$

Optimal. Leaf size=279

$$\frac{d^9(a+bx)^{20}(bc-ad)}{2b^{11}}+\frac{45d^8(a+bx)^{19}(bc-ad)^2}{19b^{11}}+\frac{20d^7(a+bx)^{18}(bc-ad)^3}{3b^{11}}+\frac{210d^6(a+bx)^{17}(bc-ad)^4}{17b^{11}}+\frac{63d^5(a+bx)^{16}(bc-ad)^5}{4b^{11}}+\frac{14d^4(a+bx)^{15}(bc-ad)^6}{b^{11}}+\frac{60d^3(a+bx)^{14}(bc-ad)^7}{7b^{11}}+\frac{45d^2(a+bx)^{13}(bc-ad)^8}{13b^{11}}+\frac{5d(a+bx)^{12}(bc-ad)^9}{6b^{11}}+\frac{(a+bx)^{11}(bc-ad)^{10}}{11b^{11}}+\frac{d^{10}(a+bx)^{21}}{21b^{11}}$$

```
[Out] ((b*c - a*d)^10*(a + b*x)^11)/(11*b^11) + (5*d*(b*c - a*d)^9*(a +
 b*x)^12)/(6*b^11) + (45*d^2*(b*c - a*d)^8*(a + b*x)^13)/(13*b^11
) + (60*d^3*(b*c - a*d)^7*(a + b*x)^14)/(7*b^11) + (14*d^4*(b*c -
 a*d)^6*(a + b*x)^15)/b^11 + (63*d^5*(b*c - a*d)^5*(a + b*x)^16)/
(4*b^11) + (210*d^6*(b*c - a*d)^4*(a + b*x)^17)/(17*b^11) + (20*d
^7*(b*c - a*d)^3*(a + b*x)^18)/(3*b^11) + (45*d^8*(b*c - a*d)^2*(
a + b*x)^19)/(19*b^11) + (d^9*(b*c - a*d)*(a + b*x)^20)/(2*b^11)
+ (d^10*(a + b*x)^21)/(21*b^11)
```

Rubi [A] time = 2.19278, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{d^9(a+bx)^{20}(bc-ad)}{2b^{11}}+\frac{45d^8(a+bx)^{19}(bc-ad)^2}{19b^{11}}+\frac{20d^7(a+bx)^{18}(bc-ad)^3}{3b^{11}}+\frac{210d^6(a+bx)^{17}(bc-ad)^4}{17b^{11}}+\frac{63d^5(a+bx)^{16}(bc-ad)^5}{4b^{11}}+\frac{14d^4(a+bx)^{15}(bc-ad)^6}{b^{11}}+\frac{60d^3(a+bx)^{14}(bc-ad)^7}{7b^{11}}+\frac{45d^2(a+bx)^{13}(bc-ad)^8}{13b^{11}}+\frac{5d(a+bx)^{12}(bc-ad)^9}{6b^{11}}+\frac{(a+bx)^{11}(bc-ad)^{10}}{11b^{11}}+\frac{d^{10}(a+bx)^{21}}{21b^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^10*(c + d*x)^10,x]
```

```
[Out] ((b*c - a*d)^10*(a + b*x)^11)/(11*b^11) + (5*d*(b*c - a*d)^9*(a +
 b*x)^12)/(6*b^11) + (45*d^2*(b*c - a*d)^8*(a + b*x)^13)/(13*b^11
) + (60*d^3*(b*c - a*d)^7*(a + b*x)^14)/(7*b^11) + (14*d^4*(b*c -
 a*d)^6*(a + b*x)^15)/b^11 + (63*d^5*(b*c - a*d)^5*(a + b*x)^16)/
(4*b^11) + (210*d^6*(b*c - a*d)^4*(a + b*x)^17)/(17*b^11) + (20*d
^7*(b*c - a*d)^3*(a + b*x)^18)/(3*b^11) + (45*d^8*(b*c - a*d)^2*(
a + b*x)^19)/(19*b^11) + (d^9*(b*c - a*d)*(a + b*x)^20)/(2*b^11)
+ (d^10*(a + b*x)^21)/(21*b^11)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**10*(d*x+c)**10,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.331516, size = 1539, normalized size = 5.52

$$\frac{1}{21}b^{10}d^{10}x^{21}+\frac{1}{2}b^9d^9(bc+ad)x^{20}+\frac{5}{19}b^8d^8\left(9b^2c^2+20abdc+9a^2d^2\right)x^{19}+\frac{5}{3}b^7d^7\left(4b^3c^3+15ab^2dc^2+15a^2bd^2c+4a^3d^3\right)x^{18}+\frac{15}{17}b^6d^6\left(14b^4c^4+80ab^3dc^3+135a^2b^2d^2c^2+80a^3bd^3c+14a^4d^4\right)x^{17}+\frac{3}{4}b^5d^5\left(21b^5c^5+175ab^4dc^4+450a^2b^3d^2c^3+450a^3b^2d^3c^2+175a^4bd^4c+21a^5d^5\right)x^{16}+2b^4d^4\left(7b^6c^6+84ab^5dc^5+315a^2b^4d^2c^4+480a^3b^3d^3c^3+315a^4b^2d^4c^2+84a^5bd^5c+7a^6d^6\right)x^{15}+\frac{30}{7}b^3d^3\left(2b^7c^7+35ab^6dc^6+189a^2b^5d^2c^5+420a^3b^4d^3c^4+420a^4b^3d^4c^3+189a^5b^2d^5c^2+35a^6bd^6c+2a^7d^7\right)x^{14}+\frac{15}{13}b^2d^2\left(3b^8c^8+80ab^7dc^7+630a^2b^6d^2c^6+2016a^3b^5d^3c^5+2940a^4b^4d^4c^4+2016a^5b^3d^5c^3+630a^6b^2d^6c^2+80a^7bd^7c+3a^8d^8\right)x^{13}+\frac{5}{6}bd\left(b^9c^9+45ab^8dc^8+540a^2b^7d^2c^7+2520a^3b^6d^3c^6+5292a^4b^5d^4c^5+5292a^5b^4d^5c^4+2520a^6b^3d^6c^3+540a^7b^2d^7c^2+45a^8bd^8c+a^9d^9\right)x^{12}+\frac{1}{11}\left(b^{10}c^{10}+100ab^9dc^9+2025a^2b^8d^2c^8+14400a^3b^7d^3c^7+44100a^4b^6d^4c^6+63504a^5b^5d^5c^5+44100a^6b^4d^6c^4+14400a^7b^3d^7c^3+2025a^8b^2d^8c^2+100a^9bd^9c+a^{10}d^{10}\right)x^{11}+ac\left(b^9c^9+45ab^8dc^8+540a^2b^7d^2c^7+2520a^3b^6d^3c^6+5292a^4b^5d^4c^5+5292a^5b^4d^5c^4+2520a^6b^3d^6c^3+540a^7b^2d^7c^2+45a^8bd^8c+a^9d^9\right)x^{10}+\frac{5}{3}a^2c^2\left(3b^8c^8+80ab^7dc^7+630a^2b^6d^2c^6+2016a^3b^5d^3c^5+2940a^4b^4d^4c^4+2016a^5b^3d^5c^3+630a^6b^2d^6c^2+80a^7bd^7c+3a^8d^8\right)x^9+\frac{15}{2}a^3c^3\left(2b^7c^7+35ab^6dc^6+189a^2b^5d^2c^5+420a^3b^4d^3c^4+420a^4b^3d^4c^3+189a^5b^2d^5c^2+35a^6bd^6c+2a^7d^7\right)x^8+\frac{30}{7}a^4c^4\left(7b^6c^6+84ab^5dc^5+315a^2b^4d^2c^4+480a^3b^3d^3c^3+315a^4b^2d^4c^2+84a^5bd^5c+7a^6d^6\right)x^7+2a^5c^5\left(21b^5c^5+175ab^4dc^4+450a^2b^3d^2c^3+450a^3b^2d^3c^2+175a^4bd^4c+21a^5d^5\right)x^6+3a^6c^6\left(14b^4c^4+80ab^3dc^3+135a^2b^2d^2c^2+80a^3bd^3c+14a^4d^4\right)x^5+\frac{15}{2}a^7c^7\left(4b^3c^3+15ab^2dc^2+15a^2bd^2c+4a^3d^3\right)x^4+\frac{5}{3}a^8c^8\left(9b^2c^2+20abdc+9a^2d^2\right)x^3+5a^9c^9(bc+ad)x^2+a^{10}c^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^10*(c + d*x)^10,x]
```

```
[Out] a^10*c^10*x + 5*a^9*c^9*(b*c + a*d)*x^2 + (5*a^8*c^8*(9*b^2*c^2 +
 20*a*b*c*d + 9*a^2*d^2)*x^3)/3 + (15*a^7*c^7*(4*b^3*c^3 + 15*a*b
```

```
^2*c^2*d + 15*a^2*b*c*d^2 + 4*a^3*d^3)*x^4)/2 + 3*a^6*c^6*(14*b^4
*c^4 + 80*a*b^3*c^3*d + 135*a^2*b^2*c^2*d^2 + 80*a^3*b*c*d^3 + 14
*a^4*d^4)*x^5 + 2*a^5*c^5*(21*b^5*c^5 + 175*a*b^4*c^4*d + 450*a^2
*b^3*c^3*d^2 + 450*a^3*b^2*c^2*d^3 + 175*a^4*b*c*d^4 + 21*a^5*d^5
)*x^6 + (30*a^4*c^4*(7*b^6*c^6 + 84*a*b^5*c^5*d + 315*a^2*b^4*c^4
*d^2 + 480*a^3*b^3*c^3*d^3 + 315*a^4*b^2*c^2*d^4 + 84*a^5*b*c*d^5
 + 7*a^6*d^6)*x^7)/7 + (15*a^3*c^3*(2*b^7*c^7 + 35*a*b^6*c^6*d +
189*a^2*b^5*c^5*d^2 + 420*a^3*b^4*c^4*d^3 + 420*a^4*b^3*c^3*d^4 +
 189*a^5*b^2*c^2*d^5 + 35*a^6*b*c*d^6 + 2*a^7*d^7)*x^8)/2 + (5*a^
2*c^2*(3*b^8*c^8 + 80*a*b^7*c^7*d + 630*a^2*b^6*c^6*d^2 + 2016*a^
3*b^5*c^5*d^3 + 2940*a^4*b^4*c^4*d^4 + 2016*a^5*b^3*c^3*d^5 + 630
*a^6*b^2*c^2*d^6 + 80*a^7*b*c*d^7 + 3*a^8*d^8)*x^9)/3 + a*c*(b^9*
c^9 + 45*a*b^8*c^8*d + 540*a^2*b^7*c^7*d^2 + 2520*a^3*b^6*c^6*d^3
 + 5292*a^4*b^5*c^5*d^4 + 5292*a^5*b^4*c^4*d^5 + 2520*a^6*b^3*c^3
*d^6 + 540*a^7*b^2*c^2*d^7 + 45*a^8*b*c*d^8 + a^9*d^9)*x^10 + ((b
^10*c^10 + 100*a*b^9*c^9*d + 2025*a^2*b^8*c^8*d^2 + 14400*a^3*b^7
*c^7*d^3 + 44100*a^4*b^6*c^6*d^4 + 63504*a^5*b^5*c^5*d^5 + 44100*
a^6*b^4*c^4*d^6 + 14400*a^7*b^3*c^3*d^7 + 2025*a^8*b^2*c^2*d^8 +
100*a^9*b*c*d^9 + a^10*d^10)*x^11)/11 + (5*b*d*(b^9*c^9 + 45*a*b^
8*c^8*d + 540*a^2*b^7*c^7*d^2 + 2520*a^3*b^6*c^6*d^3 + 5292*a^4*b
^5*c^5*d^4 + 5292*a^5*b^4*c^4*d^5 + 2520*a^6*b^3*c^3*d^6 + 540*a^
7*b^2*c^2*d^7 + 45*a^8*b*c*d^8 + a^9*d^9)*x^12)/6 + (15*b^2*d^2*(
3*b^8*c^8 + 80*a*b^7*c^7*d + 630*a^2*b^6*c^6*d^2 + 2016*a^3*b^5*c
^5*d^3 + 2940*a^4*b^4*c^4*d^4 + 2016*a^5*b^3*c^3*d^5 + 630*a^6*b^
2*c^2*d^6 + 80*a^7*b*c*d^7 + 3*a^8*d^8)*x^13)/13 + (30*b^3*d^3*(2
*b^7*c^7 + 35*a*b^6*c^6*d + 189*a^2*b^5*c^5*d^2 + 420*a^3*b^4*c^4
*d^3 + 420*a^4*b^3*c^3*d^4 + 189*a^5*b^2*c^2*d^5 + 35*a^6*b*c*d^6
 + 2*a^7*d^7)*x^14)/7 + 2*b^4*d^4*(7*b^6*c^6 + 84*a*b^5*c^5*d + 3
15*a^2*b^4*c^4*d^2 + 480*a^3*b^3*c^3*d^3 + 315*a^4*b^2*c^2*d^4 +
84*a^5*b*c*d^5 + 7*a^6*d^6)*x^15 + (3*b^5*d^5*(21*b^5*c^5 + 175*a
*b^4*c^4*d + 450*a^2*b^3*c^3*d^2 + 450*a^3*b^2*c^2*d^3 + 175*a^4*
b*c*d^4 + 21*a^5*d^5)*x^16)/4 + (15*b^6*d^6*(14*b^4*c^4 + 80*a*b^
3*c^3*d + 135*a^2*b^2*c^2*d^2 + 80*a^3*b*c*d^3 + 14*a^4*d^4)*x^17
)/17 + (5*b^7*d^7*(4*b^3*c^3 + 15*a*b^2*c^2*d + 15*a^2*b*c*d^2 +
4*a^3*d^3)*x^18)/3 + (5*b^8*d^8*(9*b^2*c^2 + 20*a*b*c*d + 9*a^2*d
^2)*x^19)/19 + (b^9*d^9*(b*c + a*d)*x^20)/2 + (b^10*d^10*x^21)/21
```

Maple [B] time = 0.004, size = 1591, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^10*(d*x+c)^10,x)
```

```
[Out] 1/21*b^10*d^10*x^21+1/20*(10*a*b^9*d^10+10*b^10*c*d^9)*x^20+1/19*
(45*a^2*b^8*d^10+100*a*b^9*c*d^9+45*b^10*c^2*d^8)*x^19+1/18*(120*
a^3*b^7*d^10+450*a^2*b^8*c*d^9+450*a*b^9*c^2*d^8+120*b^10*c^3*d^7
)*x^18+1/17*(210*a^4*b^6*d^10+1200*a^3*b^7*c*d^9+2025*a^2*b^8*c^2
*d^8+1200*a*b^9*c^3*d^7+210*b^10*c^4*d^6)*x^17+1/16*(252*a^5*b^5*
d^10+2100*a^4*b^6*c*d^9+5400*a^3*b^7*c^2*d^8+5400*a^2*b^8*c^3*d^7
+2100*a*b^9*c^4*d^6+252*b^10*c^5*d^5)*x^16+1/15*(210*a^6*b^4*d^10
```

```
+2520*a^5*b^5*c*d^9+9450*a^4*b^6*c^2*d^8+14400*a^3*b^7*c^3*d^7+94
50*a^2*b^8*c^4*d^6+2520*a*b^9*c^5*d^5+210*b^10*c^6*d^4)*x^15+1/14
*(120*a^7*b^3*d^10+2100*a^6*b^4*c*d^9+11340*a^5*b^5*c^2*d^8+25200
*a^4*b^6*c^3*d^7+25200*a^3*b^7*c^4*d^6+11340*a^2*b^8*c^5*d^5+2100
*a*b^9*c^6*d^4+120*b^10*c^7*d^3)*x^14+1/13*(45*a^8*b^2*d^10+1200*
a^7*b^3*c*d^9+9450*a^6*b^4*c^2*d^8+30240*a^5*b^5*c^3*d^7+44100*a^
4*b^6*c^4*d^6+30240*a^3*b^7*c^5*d^5+9450*a^2*b^8*c^6*d^4+1200*a*b
^9*c^7*d^3+45*b^10*c^8*d^2)*x^13+1/12*(10*a^9*b*d^10+450*a^8*b^2*
c*d^9+5400*a^7*b^3*c^2*d^8+25200*a^6*b^4*c^3*d^7+52920*a^5*b^5*c^
4*d^6+52920*a^4*b^6*c^5*d^5+25200*a^3*b^7*c^6*d^4+5400*a^2*b^8*c^
7*d^3+450*a*b^9*c^8*d^2+10*b^10*c^9*d)*x^12+1/11*(a^10*d^10+100*a
^9*b*c*d^9+2025*a^8*b^2*c^2*d^8+14400*a^7*b^3*c^3*d^7+44100*a^6*b
^4*c^4*d^6+63504*a^5*b^5*c^5*d^5+44100*a^4*b^6*c^6*d^4+14400*a^3*
b^7*c^7*d^3+2025*a^2*b^8*c^8*d^2+100*a*b^9*c^9*d+b^10*c^10)*x^11+
1/10*(10*a^10*c*d^9+450*a^9*b*c^2*d^8+5400*a^8*b^2*c^3*d^7+25200*
a^7*b^3*c^4*d^6+52920*a^6*b^4*c^5*d^5+52920*a^5*b^5*c^6*d^4+25200
*a^4*b^6*c^7*d^3+5400*a^3*b^7*c^8*d^2+450*a^2*b^8*c^9*d+10*a*b^9*
c^10)*x^10+1/9*(45*a^10*c^2*d^8+1200*a^9*b*c^3*d^7+9450*a^8*b^2*c
^4*d^6+30240*a^7*b^3*c^5*d^5+44100*a^6*b^4*c^6*d^4+30240*a^5*b^5*
c^7*d^3+9450*a^4*b^6*c^8*d^2+1200*a^3*b^7*c^9*d+45*a^2*b^8*c^10)*
x^9+1/8*(120*a^10*c^3*d^7+2100*a^9*b*c^4*d^6+11340*a^8*b^2*c^5*d^
5+25200*a^7*b^3*c^6*d^4+25200*a^6*b^4*c^7*d^3+11340*a^5*b^5*c^8*d
^2+2100*a^4*b^6*c^9*d+120*a^3*b^7*c^10)*x^8+1/7*(210*a^10*c^4*d^6
+2520*a^9*b*c^5*d^5+9450*a^8*b^2*c^6*d^4+14400*a^7*b^3*c^7*d^3+94
50*a^6*b^4*c^8*d^2+2520*a^5*b^5*c^9*d+210*a^4*b^6*c^10)*x^7+1/6*(
252*a^10*c^5*d^5+2100*a^9*b*c^6*d^4+5400*a^8*b^2*c^7*d^3+5400*a^7
*b^3*c^8*d^2+2100*a^6*b^4*c^9*d+252*a^5*b^5*c^10)*x^6+1/5*(210*a^
10*c^6*d^4+1200*a^9*b*c^7*d^3+2025*a^8*b^2*c^8*d^2+1200*a^7*b^3*c
^9*d+210*a^6*b^4*c^10)*x^5+1/4*(120*a^10*c^7*d^3+450*a^9*b*c^8*d^
2+450*a^8*b^2*c^9*d+120*a^7*b^3*c^10)*x^4+1/3*(45*a^10*c^8*d^2+10
0*a^9*b*c^9*d+45*a^8*b^2*c^10)*x^3+1/2*(10*a^10*c^9*d+10*a^9*b*c^
10)*x^2+a^10*c^10*x
```

Maxima [A] time = 1.36444, size = 2134, normalized size = 7.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/21*b^10*d^10*x^21 + a^10*c^10*x + 1/2*(b^10*c*d^9 + a*b^9*d^10)
*x^20 + 5/19*(9*b^10*c^2*d^8 + 20*a*b^9*c*d^9 + 9*a^2*b^8*d^10)*x
^19 + 5/3*(4*b^10*c^3*d^7 + 15*a*b^9*c^2*d^8 + 15*a^2*b^8*c*d^9 +
 4*a^3*b^7*d^10)*x^18 + 15/17*(14*b^10*c^4*d^6 + 80*a*b^9*c^3*d^7
 + 135*a^2*b^8*c^2*d^8 + 80*a^3*b^7*c*d^9 + 14*a^4*b^6*d^10)*x^17
 + 3/4*(21*b^10*c^5*d^5 + 175*a*b^9*c^4*d^6 + 450*a^2*b^8*c^3*d^7
 + 450*a^3*b^7*c^2*d^8 + 175*a^4*b^6*c*d^9 + 21*a^5*b^5*d^10)*x^1
6 + 2*(7*b^10*c^6*d^4 + 84*a*b^9*c^5*d^5 + 315*a^2*b^8*c^4*d^6 +
480*a^3*b^7*c^3*d^7 + 315*a^4*b^6*c^2*d^8 + 84*a^5*b^5*c*d^9 + 7*
a^6*b^4*d^10)*x^15 + 30/7*(2*b^10*c^7*d^3 + 35*a*b^9*c^6*d^4 + 18
9*a^2*b^8*c^5*d^5 + 420*a^3*b^7*c^4*d^6 + 420*a^4*b^6*c^3*d^7 + 1
```

```
89*a^5*b^5*c^2*d^8 + 35*a^6*b^4*c*d^9 + 2*a^7*b^3*d^10)*x^14 + 15
/13*(3*b^10*c^8*d^2 + 80*a*b^9*c^7*d^3 + 630*a^2*b^8*c^6*d^4 + 20
16*a^3*b^7*c^5*d^5 + 2940*a^4*b^6*c^4*d^6 + 2016*a^5*b^5*c^3*d^7
+ 630*a^6*b^4*c^2*d^8 + 80*a^7*b^3*c*d^9 + 3*a^8*b^2*d^10)*x^13 +
 5/6*(b^10*c^9*d + 45*a*b^9*c^8*d^2 + 540*a^2*b^8*c^7*d^3 + 2520*
a^3*b^7*c^6*d^4 + 5292*a^4*b^6*c^5*d^5 + 5292*a^5*b^5*c^4*d^6 + 2
520*a^6*b^4*c^3*d^7 + 540*a^7*b^3*c^2*d^8 + 45*a^8*b^2*c*d^9 + a^
9*b*d^10)*x^12 + 1/11*(b^10*c^10 + 100*a*b^9*c^9*d + 2025*a^2*b^8
*c^8*d^2 + 14400*a^3*b^7*c^7*d^3 + 44100*a^4*b^6*c^6*d^4 + 63504*
a^5*b^5*c^5*d^5 + 44100*a^6*b^4*c^4*d^6 + 14400*a^7*b^3*c^3*d^7 +
 2025*a^8*b^2*c^2*d^8 + 100*a^9*b*c*d^9 + a^10*d^10)*x^11 + (a*b^
9*c^10 + 45*a^2*b^8*c^9*d + 540*a^3*b^7*c^8*d^2 + 2520*a^4*b^6*c^
7*d^3 + 5292*a^5*b^5*c^6*d^4 + 5292*a^6*b^4*c^5*d^5 + 2520*a^7*b^
3*c^4*d^6 + 540*a^8*b^2*c^3*d^7 + 45*a^9*b*c^2*d^8 + a^10*c*d^9)*
x^10 + 5/3*(3*a^2*b^8*c^10 + 80*a^3*b^7*c^9*d + 630*a^4*b^6*c^8*d
^2 + 2016*a^5*b^5*c^7*d^3 + 2940*a^6*b^4*c^6*d^4 + 2016*a^7*b^3*c
^5*d^5 + 630*a^8*b^2*c^4*d^6 + 80*a^9*b*c^3*d^7 + 3*a^10*c^2*d^8)
*x^9 + 15/2*(2*a^3*b^7*c^10 + 35*a^4*b^6*c^9*d + 189*a^5*b^5*c^8*
d^2 + 420*a^6*b^4*c^7*d^3 + 420*a^7*b^3*c^6*d^4 + 189*a^8*b^2*c^5
*d^5 + 35*a^9*b*c^4*d^6 + 2*a^10*c^3*d^7)*x^8 + 30/7*(7*a^4*b^6*c
^10 + 84*a^5*b^5*c^9*d + 315*a^6*b^4*c^8*d^2 + 480*a^7*b^3*c^7*d^
3 + 315*a^8*b^2*c^6*d^4 + 84*a^9*b*c^5*d^5 + 7*a^10*c^4*d^6)*x^7
+ 2*(21*a^5*b^5*c^10 + 175*a^6*b^4*c^9*d + 450*a^7*b^3*c^8*d^2 +
450*a^8*b^2*c^7*d^3 + 175*a^9*b*c^6*d^4 + 21*a^10*c^5*d^5)*x^6 +
3*(14*a^6*b^4*c^10 + 80*a^7*b^3*c^9*d + 135*a^8*b^2*c^8*d^2 + 80*
a^9*b*c^7*d^3 + 14*a^10*c^6*d^4)*x^5 + 15/2*(4*a^7*b^3*c^10 + 15*
a^8*b^2*c^9*d + 15*a^9*b*c^8*d^2 + 4*a^10*c^7*d^3)*x^4 + 5/3*(9*a
^8*b^2*c^10 + 20*a^9*b*c^9*d + 9*a^10*c^8*d^2)*x^3 + 5*(a^9*b*c^1
0 + a^10*c^9*d)*x^2
```

Fricas [A] time = 0.186404, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/21*x^21*d^10*b^10 + 1/2*x^20*d^9*c*b^10 + 1/2*x^20*d^10*b^9*a +
 45/19*x^19*d^8*c^2*b^10 + 100/19*x^19*d^9*c*b^9*a + 45/19*x^19*d
^10*b^8*a^2 + 20/3*x^18*d^7*c^3*b^10 + 25*x^18*d^8*c^2*b^9*a + 25
*x^18*d^9*c*b^8*a^2 + 20/3*x^18*d^10*b^7*a^3 + 210/17*x^17*d^6*c^
4*b^10 + 1200/17*x^17*d^7*c^3*b^9*a + 2025/17*x^17*d^8*c^2*b^8*a^
2 + 1200/17*x^17*d^9*c*b^7*a^3 + 210/17*x^17*d^10*b^6*a^4 + 63/4*
x^16*d^5*c^5*b^10 + 525/4*x^16*d^6*c^4*b^9*a + 675/2*x^16*d^7*c^3
*b^8*a^2 + 675/2*x^16*d^8*c^2*b^7*a^3 + 525/4*x^16*d^9*c*b^6*a^4
+ 63/4*x^16*d^10*b^5*a^5 + 14*x^15*d^4*c^6*b^10 + 168*x^15*d^5*c^
5*b^9*a + 630*x^15*d^6*c^4*b^8*a^2 + 960*x^15*d^7*c^3*b^7*a^3 + 6
30*x^15*d^8*c^2*b^6*a^4 + 168*x^15*d^9*c*b^5*a^5 + 14*x^15*d^10*b
^4*a^6 + 60/7*x^14*d^3*c^7*b^10 + 150*x^14*d^4*c^6*b^9*a + 810*x^
14*d^5*c^5*b^8*a^2 + 1800*x^14*d^6*c^4*b^7*a^3 + 1800*x^14*d^7*c^
3*b^6*a^4 + 810*x^14*d^8*c^2*b^5*a^5 + 150*x^14*d^9*c*b^4*a^6 + 6
```

```
0/7*x^14*d^10*b^3*a^7 + 45/13*x^13*d^2*c^8*b^10 + 1200/13*x^13*d^
3*c^7*b^9*a + 9450/13*x^13*d^4*c^6*b^8*a^2 + 30240/13*x^13*d^5*c^
5*b^7*a^3 + 44100/13*x^13*d^6*c^4*b^6*a^4 + 30240/13*x^13*d^7*c^3
*b^5*a^5 + 9450/13*x^13*d^8*c^2*b^4*a^6 + 1200/13*x^13*d^9*c*b^3*
a^7 + 45/13*x^13*d^10*b^2*a^8 + 5/6*x^12*d*c^9*b^10 + 75/2*x^12*d
^2*c^8*b^9*a + 450*x^12*d^3*c^7*b^8*a^2 + 2100*x^12*d^4*c^6*b^7*a
^3 + 4410*x^12*d^5*c^5*b^6*a^4 + 4410*x^12*d^6*c^4*b^5*a^5 + 2100
*x^12*d^7*c^3*b^4*a^6 + 450*x^12*d^8*c^2*b^3*a^7 + 75/2*x^12*d^9*
c*b^2*a^8 + 5/6*x^12*d^10*b*a^9 + 1/11*x^11*c^10*b^10 + 100/11*x^
11*d*c^9*b^9*a + 2025/11*x^11*d^2*c^8*b^8*a^2 + 14400/11*x^11*d^3
*c^7*b^7*a^3 + 44100/11*x^11*d^4*c^6*b^6*a^4 + 63504/11*x^11*d^5*
c^5*b^5*a^5 + 44100/11*x^11*d^6*c^4*b^4*a^6 + 14400/11*x^11*d^7*c
^3*b^3*a^7 + 2025/11*x^11*d^8*c^2*b^2*a^8 + 100/11*x^11*d^9*c*b*a
^9 + 1/11*x^11*d^10*a^10 + x^10*c^10*b^9*a + 45*x^10*d*c^9*b^8*a^
2 + 540*x^10*d^2*c^8*b^7*a^3 + 2520*x^10*d^3*c^7*b^6*a^4 + 5292*x
^10*d^4*c^6*b^5*a^5 + 5292*x^10*d^5*c^5*b^4*a^6 + 2520*x^10*d^6*c
^4*b^3*a^7 + 540*x^10*d^7*c^3*b^2*a^8 + 45*x^10*d^8*c^2*b*a^9 + x
^10*d^9*c*a^10 + 5*x^9*c^10*b^8*a^2 + 400/3*x^9*d*c^9*b^7*a^3 + 1
050*x^9*d^2*c^8*b^6*a^4 + 3360*x^9*d^3*c^7*b^5*a^5 + 4900*x^9*d^4
*c^6*b^4*a^6 + 3360*x^9*d^5*c^5*b^3*a^7 + 1050*x^9*d^6*c^4*b^2*a^
8 + 400/3*x^9*d^7*c^3*b*a^9 + 5*x^9*d^8*c^2*a^10 + 15*x^8*c^10*b^
7*a^3 + 525/2*x^8*d*c^9*b^6*a^4 + 2835/2*x^8*d^2*c^8*b^5*a^5 + 31
50*x^8*d^3*c^7*b^4*a^6 + 3150*x^8*d^4*c^6*b^3*a^7 + 2835/2*x^8*d^
5*c^5*b^2*a^8 + 525/2*x^8*d^6*c^4*b*a^9 + 15*x^8*d^7*c^3*a^10 + 3
0*x^7*c^10*b^6*a^4 + 360*x^7*d*c^9*b^5*a^5 + 1350*x^7*d^2*c^8*b^4
*a^6 + 14400/7*x^7*d^3*c^7*b^3*a^7 + 1350*x^7*d^4*c^6*b^2*a^8 + 3
60*x^7*d^5*c^5*b*a^9 + 30*x^7*d^6*c^4*a^10 + 42*x^6*c^10*b^5*a^5
+ 350*x^6*d*c^9*b^4*a^6 + 900*x^6*d^2*c^8*b^3*a^7 + 900*x^6*d^3*c
^7*b^2*a^8 + 350*x^6*d^4*c^6*b*a^9 + 42*x^6*d^5*c^5*a^10 + 42*x^5
*c^10*b^4*a^6 + 240*x^5*d*c^9*b^3*a^7 + 405*x^5*d^2*c^8*b^2*a^8 +
 240*x^5*d^3*c^7*b*a^9 + 42*x^5*d^4*c^6*a^10 + 30*x^4*c^10*b^3*a^
7 + 225/2*x^4*d*c^9*b^2*a^8 + 225/2*x^4*d^2*c^8*b*a^9 + 30*x^4*d^
3*c^7*a^10 + 15*x^3*c^10*b^2*a^8 + 100/3*x^3*d*c^9*b*a^9 + 15*x^3
*d^2*c^8*a^10 + 5*x^2*c^10*b*a^9 + 5*x^2*d*c^9*a^10 + x*c^10*a^10
```

Sympy [A] time = 0.81362, size = 1775, normalized size = 6.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**10*(d*x+c)**10,x)
```

```
[Out] a**10*c**10*x + b**10*d**10*x**21/21 + x**20*(a*b**9*d**10/2 + b*
*10*c*d**9/2) + x**19*(45*a**2*b**8*d**10/19 + 100*a*b**9*c*d**9/
19 + 45*b**10*c**2*d**8/19) + x**18*(20*a**3*b**7*d**10/3 + 25*a*
*2*b**8*c*d**9 + 25*a*b**9*c**2*d**8 + 20*b**10*c**3*d**7/3) + x*
*17*(210*a**4*b**6*d**10/17 + 1200*a**3*b**7*c*d**9/17 + 2025*a**
2*b**8*c**2*d**8/17 + 1200*a*b**9*c**3*d**7/17 + 210*b**10*c**4*d
**6/17) + x**16*(63*a**5*b**5*d**10/4 + 525*a**4*b**6*c*d**9/4 +
675*a**3*b**7*c**2*d**8/2 + 675*a**2*b**8*c**3*d**7/2 + 525*a*b**
9*c**4*d**6/4 + 63*b**10*c**5*d**5/4) + x**15*(14*a**6*b**4*d**10
```

```
 + 168*a**5*b**5*c*d**9 + 630*a**4*b**6*c**2*d**8 + 960*a**3*b**7
*c**3*d**7 + 630*a**2*b**8*c**4*d**6 + 168*a*b**9*c**5*d**5 + 14*
b**10*c**6*d**4) + x**14*(60*a**7*b**3*d**10/7 + 150*a**6*b**4*c*
d**9 + 810*a**5*b**5*c**2*d**8 + 1800*a**4*b**6*c**3*d**7 + 1800*
a**3*b**7*c**4*d**6 + 810*a**2*b**8*c**5*d**5 + 150*a*b**9*c**6*d
**4 + 60*b**10*c**7*d**3/7) + x**13*(45*a**8*b**2*d**10/13 + 1200
*a**7*b**3*c*d**9/13 + 9450*a**6*b**4*c**2*d**8/13 + 30240*a**5*b
**5*c**3*d**7/13 + 44100*a**4*b**6*c**4*d**6/13 + 30240*a**3*b**7
*c**5*d**5/13 + 9450*a**2*b**8*c**6*d**4/13 + 1200*a*b**9*c**7*d*
*3/13 + 45*b**10*c**8*d**2/13) + x**12*(5*a**9*b*d**10/6 + 75*a**
8*b**2*c*d**9/2 + 450*a**7*b**3*c**2*d**8 + 2100*a**6*b**4*c**3*d
**7 + 4410*a**5*b**5*c**4*d**6 + 4410*a**4*b**6*c**5*d**5 + 2100*
a**3*b**7*c**6*d**4 + 450*a**2*b**8*c**7*d**3 + 75*a*b**9*c**8*d*
*2/2 + 5*b**10*c**9*d/6) + x**11*(a**10*d**10/11 + 100*a**9*b*c*d
**9/11 + 2025*a**8*b**2*c**2*d**8/11 + 14400*a**7*b**3*c**3*d**7/
11 + 44100*a**6*b**4*c**4*d**6/11 + 63504*a**5*b**5*c**5*d**5/11
+ 44100*a**4*b**6*c**6*d**4/11 + 14400*a**3*b**7*c**7*d**3/11 + 2
025*a**2*b**8*c**8*d**2/11 + 100*a*b**9*c**9*d/11 + b**10*c**10/1
1) + x**10*(a**10*c*d**9 + 45*a**9*b*c**2*d**8 + 540*a**8*b**2*c*
*3*d**7 + 2520*a**7*b**3*c**4*d**6 + 5292*a**6*b**4*c**5*d**5 + 5
292*a**5*b**5*c**6*d**4 + 2520*a**4*b**6*c**7*d**3 + 540*a**3*b**
7*c**8*d**2 + 45*a**2*b**8*c**9*d + a*b**9*c**10) + x**9*(5*a**10
*c**2*d**8 + 400*a**9*b*c**3*d**7/3 + 1050*a**8*b**2*c**4*d**6 +
3360*a**7*b**3*c**5*d**5 + 4900*a**6*b**4*c**6*d**4 + 3360*a**5*b
**5*c**7*d**3 + 1050*a**4*b**6*c**8*d**2 + 400*a**3*b**7*c**9*d/3
 + 5*a**2*b**8*c**10) + x**8*(15*a**10*c**3*d**7 + 525*a**9*b*c**
4*d**6/2 + 2835*a**8*b**2*c**5*d**5/2 + 3150*a**7*b**3*c**6*d**4
+ 3150*a**6*b**4*c**7*d**3 + 2835*a**5*b**5*c**8*d**2/2 + 525*a**
4*b**6*c**9*d/2 + 15*a**3*b**7*c**10) + x**7*(30*a**10*c**4*d**6
+ 360*a**9*b*c**5*d**5 + 1350*a**8*b**2*c**6*d**4 + 14400*a**7*b*
*3*c**7*d**3/7 + 1350*a**6*b**4*c**8*d**2 + 360*a**5*b**5*c**9*d
+ 30*a**4*b**6*c**10) + x**6*(42*a**10*c**5*d**5 + 350*a**9*b*c**
6*d**4 + 900*a**8*b**2*c**7*d**3 + 900*a**7*b**3*c**8*d**2 + 350*
a**6*b**4*c**9*d + 42*a**5*b**5*c**10) + x**5*(42*a**10*c**6*d**4
 + 240*a**9*b*c**7*d**3 + 405*a**8*b**2*c**8*d**2 + 240*a**7*b**3
*c**9*d + 42*a**6*b**4*c**10) + x**4*(30*a**10*c**7*d**3 + 225*a*
*9*b*c**8*d**2/2 + 225*a**8*b**2*c**9*d/2 + 30*a**7*b**3*c**10) +
 x**3*(15*a**10*c**8*d**2 + 100*a**9*b*c**9*d/3 + 15*a**8*b**2*c*
*10) + x**2*(5*a**10*c**9*d + 5*a**9*b*c**10)
```

GIAC/XCAS [A] time = 0.214677, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^10*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] Done
```

3.1302 $\int (a+bx)^9(c+dx)^{10}\,dx$

Optimal. Leaf size=250

$$-\frac{9b^8(c+dx)^{19}(bc-ad)}{19d^{10}}+\frac{2b^7(c+dx)^{18}(bc-ad)^2}{d^{10}}-\frac{84b^6(c+dx)^{17}(bc-ad)^3}{17d^{10}}+\frac{63b^5(c+dx)^{16}(bc-ad)^4}{8d^{10}}-\frac{42b^4(c+dx)^{15}(bc-ad)^5}{5d^{10}}+\frac{6b^3(c+dx)^{14}(bc-ad)^6}{d^{10}}-\frac{36b^2(c+dx)^{13}(bc-ad)^7}{13d^{10}}+\frac{3b(c+dx)^{12}(bc-ad)^8}{4d^{10}}-\frac{(c+dx)^{11}(bc-ad)^9}{11d^{10}}+\frac{b^9(c+dx)^{20}}{20d^{10}}$$

```
[Out] -((b*c - a*d)^9*(c + d*x)^11)/(11*d^10) + (3*b*(b*c - a*d)^8*(c +
 d*x)^12)/(4*d^10) - (36*b^2*(b*c - a*d)^7*(c + d*x)^13)/(13*d^10
) + (6*b^3*(b*c - a*d)^6*(c + d*x)^14)/d^10 - (42*b^4*(b*c - a*d)
^5*(c + d*x)^15)/(5*d^10) + (63*b^5*(b*c - a*d)^4*(c + d*x)^16)/(
8*d^10) - (84*b^6*(b*c - a*d)^3*(c + d*x)^17)/(17*d^10) + (2*b^7*
(b*c - a*d)^2*(c + d*x)^18)/d^10 - (9*b^8*(b*c - a*d)*(c + d*x)^1
9)/(19*d^10) + (b^9*(c + d*x)^20)/(20*d^10)
```

Rubi [A] time = 2.10657, antiderivative size = 250, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{9b^8(c+dx)^{19}(bc-ad)}{19d^{10}}+\frac{2b^7(c+dx)^{18}(bc-ad)^2}{d^{10}}-\frac{84b^6(c+dx)^{17}(bc-ad)^3}{17d^{10}}+\frac{63b^5(c+dx)^{16}(bc-ad)^4}{8d^{10}}-\frac{42b^4(c+dx)^{15}(bc-ad)^5}{5d^{10}}+\frac{6b^3(c+dx)^{14}(bc-ad)^6}{d^{10}}-\frac{36b^2(c+dx)^{13}(bc-ad)^7}{13d^{10}}+\frac{3b(c+dx)^{12}(bc-ad)^8}{4d^{10}}-\frac{(c+dx)^{11}(bc-ad)^9}{11d^{10}}+\frac{b^9(c+dx)^{20}}{20d^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^9*(c + d*x)^10,x]
```

```
[Out] -((b*c - a*d)^9*(c + d*x)^11)/(11*d^10) + (3*b*(b*c - a*d)^8*(c +
 d*x)^12)/(4*d^10) - (36*b^2*(b*c - a*d)^7*(c + d*x)^13)/(13*d^10
) + (6*b^3*(b*c - a*d)^6*(c + d*x)^14)/d^10 - (42*b^4*(b*c - a*d)
^5*(c + d*x)^15)/(5*d^10) + (63*b^5*(b*c - a*d)^4*(c + d*x)^16)/(
8*d^10) - (84*b^6*(b*c - a*d)^3*(c + d*x)^17)/(17*d^10) + (2*b^7*
(b*c - a*d)^2*(c + d*x)^18)/d^10 - (9*b^8*(b*c - a*d)*(c + d*x)^1
9)/(19*d^10) + (b^9*(c + d*x)^20)/(20*d^10)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**9*(d*x+c)**10,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.339223, size = 1397, normalized size = 5.59

$$\frac{1}{20}b^9d^{10}x^{20}+\frac{1}{19}b^8d^9(10bc+9ad)x^{19}+\frac{1}{2}b^7d^8\left(5b^2c^2+10abdc+4a^2d^2\right)x^{18}+\frac{3}{17}b^6d^7\left(40b^3c^3+135ab^2dc^2+120a^2bd^2c+28a^3d^3\right)x^{17}+\frac{3}{8}b^5d^6\left(35b^4c^4+180ab^3dc^3+270a^2b^2d^2c^2+140a^3bd^3c+21a^4d^4\right)x^{16}+\frac{6}{5}b^4d^5\left(14b^5c^5+105ab^4dc^4+240a^2b^3d^2c^3+210a^3b^2d^3c^2+70a^4bd^4c+7a^5d^5\right)x^{15}+3b^3d^4\left(5b^6c^6+54ab^5dc^5+180a^2b^4d^2c^4+240a^3b^3d^3c^3+135a^4b^2d^4c^2+30a^5bd^5c+2a^6d^6\right)x^{14}+\frac{6}{13}b^2d^3\left(20b^7c^7+315ab^6dc^6+1512a^2b^5d^2c^5+2940a^3b^4d^3c^4+2520a^4b^3d^4c^3+945a^5b^2d^5c^2+140a^6bd^6c+6a^7d^7\right)x^{13}+\frac{3}{4}bd^2\left(5b^8c^8+120ab^7dc^7+840a^2b^6d^2c^6+2352a^3b^5d^3c^5+2940a^4b^4d^4c^4+1680a^5b^3d^5c^3+420a^6b^2d^6c^2+40a^7bd^7c+a^8d^8\right)x^{12}+\frac{1}{11}d\left(10b^9c^9+405ab^8dc^8+4320a^2b^7d^2c^7+17640a^3b^6d^3c^6+31752a^4b^5d^4c^5+26460a^5b^4d^5c^4+10080a^6b^3d^6c^3+1620a^7b^2d^7c^2+90a^8bd^8c+a^9d^9\right)x^{11}+\frac{1}{10}c\left(b^9c^9+90ab^8dc^8+1620a^2b^7d^2c^7+10080a^3b^6d^3c^6+26460a^4b^5d^4c^5+31752a^5b^4d^5c^4+17640a^6b^3d^6c^3+4320a^7b^2d^7c^2+405a^8bd^8c+10a^9d^9\right)x^{10}+ac^2\left(b^8c^8+40ab^7dc^7+420a^2b^6d^2c^6+1680a^3b^5d^3c^5+2940a^4b^4d^4c^4+2352a^5b^3d^5c^3+840a^6b^2d^6c^2+120a^7bd^7c+5a^8d^8\right)x^9+\frac{3}{4}a^2c^3\left(6b^7c^7+140ab^6dc^6+945a^2b^5d^2c^5+2520a^3b^4d^3c^4+2940a^4b^3d^4c^3+1512a^5b^2d^5c^2+315a^6bd^6c+20a^7d^7\right)x^8+6a^3c^4\left(2b^6c^6+30ab^5dc^5+135a^2b^4d^2c^4+240a^3b^3d^3c^3+180a^4b^2d^4c^2+54a^5bd^5c+5a^6d^6\right)x^7+3a^4c^5\left(7b^5c^5+70ab^4dc^4+210a^2b^3d^2c^3+240a^3b^2d^3c^2+105a^4bd^4c+14a^5d^5\right)x^6+\frac{6}{5}a^5c^6\left(21b^4c^4+140ab^3dc^3+270a^2b^2d^2c^2+180a^3bd^3c+35a^4d^4\right)x^5+\frac{3}{4}a^6c^7\left(28b^3c^3+120ab^2dc^2+135a^2bd^2c+40a^3d^3\right)x^4+3a^7c^8\left(4b^2c^2+10abdc+5a^2d^2\right)x^3+\frac{1}{2}a^8c^9(9bc+10ad)x^2+a^9c^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^9*(c + d*x)^10,x]
```

```
[Out] a^9*c^10*x + (a^8*c^9*(9*b*c + 10*a*d)*x^2)/2 + 3*a^7*c^8*(4*b^2*
c^2 + 10*a*b*c*d + 5*a^2*d^2)*x^3 + (3*a^6*c^7*(28*b^3*c^3 + 120*
a*b^2*c^2*d + 135*a^2*b*c*d^2 + 40*a^3*d^3)*x^4)/4 + (6*a^5*c^6*(
21*b^4*c^4 + 140*a*b^3*c^3*d + 270*a^2*b^2*c^2*d^2 + 180*a^3*b*c*
d^3 + 35*a^4*d^4)*x^5)/5 + 3*a^4*c^5*(7*b^5*c^5 + 70*a*b^4*c^4*d
+ 210*a^2*b^3*c^3*d^2 + 240*a^3*b^2*c^2*d^3 + 105*a^4*b*c*d^4 + 1
4*a^5*d^5)*x^6 + 6*a^3*c^4*(2*b^6*c^6 + 30*a*b^5*c^5*d + 135*a^2*
b^4*c^4*d^2 + 240*a^3*b^3*c^3*d^3 + 180*a^4*b^2*c^2*d^4 + 54*a^5*
b*c*d^5 + 5*a^6*d^6)*x^7 + (3*a^2*c^3*(6*b^7*c^7 + 140*a*b^6*c^6*
d + 945*a^2*b^5*c^5*d^2 + 2520*a^3*b^4*c^4*d^3 + 2940*a^4*b^3*c^3
*d^4 + 1512*a^5*b^2*c^2*d^5 + 315*a^6*b*c*d^6 + 20*a^7*d^7)*x^8)/
4 + a*c^2*(b^8*c^8 + 40*a*b^7*c^7*d + 420*a^2*b^6*c^6*d^2 + 1680*
a^3*b^5*c^5*d^3 + 2940*a^4*b^4*c^4*d^4 + 2352*a^5*b^3*c^3*d^5 + 8
40*a^6*b^2*c^2*d^6 + 120*a^7*b*c*d^7 + 5*a^8*d^8)*x^9 + (c*(b^9*c
^9 + 90*a*b^8*c^8*d + 1620*a^2*b^7*c^7*d^2 + 10080*a^3*b^6*c^6*d^
3 + 26460*a^4*b^5*c^5*d^4 + 31752*a^5*b^4*c^4*d^5 + 17640*a^6*b^3
*c^3*d^6 + 4320*a^7*b^2*c^2*d^7 + 405*a^8*b*c*d^8 + 10*a^9*d^9)*x
^10)/10 + (d*(10*b^9*c^9 + 405*a*b^8*c^8*d + 4320*a^2*b^7*c^7*d^2
 + 17640*a^3*b^6*c^6*d^3 + 31752*a^4*b^5*c^5*d^4 + 26460*a^5*b^4*
c^4*d^5 + 10080*a^6*b^3*c^3*d^6 + 1620*a^7*b^2*c^2*d^7 + 90*a^8*b
*c*d^8 + a^9*d^9)*x^11)/11 + (3*b*d^2*(5*b^8*c^8 + 120*a*b^7*c^7*
d + 840*a^2*b^6*c^6*d^2 + 2352*a^3*b^5*c^5*d^3 + 2940*a^4*b^4*c^4
*d^4 + 1680*a^5*b^3*c^3*d^5 + 420*a^6*b^2*c^2*d^6 + 40*a^7*b*c*d^
7 + a^8*d^8)*x^12)/4 + (6*b^2*d^3*(20*b^7*c^7 + 315*a*b^6*c^6*d +
 1512*a^2*b^5*c^5*d^2 + 2940*a^3*b^4*c^4*d^3 + 2520*a^4*b^3*c^3*d
^4 + 945*a^5*b^2*c^2*d^5 + 140*a^6*b*c*d^6 + 6*a^7*d^7)*x^13)/13
+ 3*b^3*d^4*(5*b^6*c^6 + 54*a*b^5*c^5*d + 180*a^2*b^4*c^4*d^2 + 2
40*a^3*b^3*c^3*d^3 + 135*a^4*b^2*c^2*d^4 + 30*a^5*b*c*d^5 + 2*a^6
*d^6)*x^14 + (6*b^4*d^5*(14*b^5*c^5 + 105*a*b^4*c^4*d + 240*a^2*b
^3*c^3*d^2 + 210*a^3*b^2*c^2*d^3 + 70*a^4*b*c*d^4 + 7*a^5*d^5)*x^
15)/5 + (3*b^5*d^6*(35*b^4*c^4 + 180*a*b^3*c^3*d + 270*a^2*b^2*c^
2*d^2 + 140*a^3*b*c*d^3 + 21*a^4*d^4)*x^16)/8 + (3*b^6*d^7*(40*b^
3*c^3 + 135*a*b^2*c^2*d + 120*a^2*b*c*d^2 + 28*a^3*d^3)*x^17)/17
+ (b^7*d^8*(5*b^2*c^2 + 10*a*b*c*d + 4*a^2*d^2)*x^18)/2 + (b^8*d^
9*(10*b*c + 9*a*d)*x^19)/19 + (b^9*d^10*x^20)/20
```

Maple [B] time = 0.003, size = 1441, normalized size = 5.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^9*(d*x+c)^10,x)
```

```
[Out] 1/20*b^9*d^10*x^20+1/19*(9*a*b^8*d^10+10*b^9*c*d^9)*x^19+1/18*(36
*a^2*b^7*d^10+90*a*b^8*c*d^9+45*b^9*c^2*d^8)*x^18+1/17*(84*a^3*b^
6*d^10+360*a^2*b^7*c*d^9+405*a*b^8*c^2*d^8+120*b^9*c^3*d^7)*x^17+
1/16*(126*a^4*b^5*d^10+840*a^3*b^6*c*d^9+1620*a^2*b^7*c^2*d^8+108
0*a*b^8*c^3*d^7+210*b^9*c^4*d^6)*x^16+1/15*(126*a^5*b^4*d^10+1260
*a^4*b^5*c*d^9+3780*a^3*b^6*c^2*d^8+4320*a^2*b^7*c^3*d^7+1890*a*b
^8*c^4*d^6+252*b^9*c^5*d^5)*x^15+1/14*(84*a^6*b^3*d^10+1260*a^5*b
^4*c*d^9+5670*a^4*b^5*c^2*d^8+10080*a^3*b^6*c^3*d^7+7560*a^2*b^7*
```

```
c^4*d^6+2268*a*b^8*c^5*d^5+210*b^9*c^6*d^4)*x^14+1/13*(36*a^7*b^2
*d^10+840*a^6*b^3*c*d^9+5670*a^5*b^4*c^2*d^8+15120*a^4*b^5*c^3*d^
7+17640*a^3*b^6*c^4*d^6+9072*a^2*b^7*c^5*d^5+1890*a*b^8*c^6*d^4+1
20*b^9*c^7*d^3)*x^13+1/12*(9*a^8*b*d^10+360*a^7*b^2*c*d^9+3780*a^
6*b^3*c^2*d^8+15120*a^5*b^4*c^3*d^7+26460*a^4*b^5*c^4*d^6+21168*a
^3*b^6*c^5*d^5+7560*a^2*b^7*c^6*d^4+1080*a*b^8*c^7*d^3+45*b^9*c^8
*d^2)*x^12+1/11*(a^9*d^10+90*a^8*b*c*d^9+1620*a^7*b^2*c^2*d^8+100
80*a^6*b^3*c^3*d^7+26460*a^5*b^4*c^4*d^6+31752*a^4*b^5*c^5*d^5+17
640*a^3*b^6*c^6*d^4+4320*a^2*b^7*c^7*d^3+405*a*b^8*c^8*d^2+10*b^9
*c^9*d)*x^11+1/10*(10*a^9*c*d^9+405*a^8*b*c^2*d^8+4320*a^7*b^2*c^
3*d^7+17640*a^6*b^3*c^4*d^6+31752*a^5*b^4*c^5*d^5+26460*a^4*b^5*c
^6*d^4+10080*a^3*b^6*c^7*d^3+1620*a^2*b^7*c^8*d^2+90*a*b^8*c^9*d+
b^9*c^10)*x^10+1/9*(45*a^9*c^2*d^8+1080*a^8*b*c^3*d^7+7560*a^7*b^
2*c^4*d^6+21168*a^6*b^3*c^5*d^5+26460*a^5*b^4*c^6*d^4+15120*a^4*b
^5*c^7*d^3+3780*a^3*b^6*c^8*d^2+360*a^2*b^7*c^9*d+9*a*b^8*c^10)*x
^9+1/8*(120*a^9*c^3*d^7+1890*a^8*b*c^4*d^6+9072*a^7*b^2*c^5*d^5+1
7640*a^6*b^3*c^6*d^4+15120*a^5*b^4*c^7*d^3+5670*a^4*b^5*c^8*d^2+8
40*a^3*b^6*c^9*d+36*a^2*b^7*c^10)*x^8+1/7*(210*a^9*c^4*d^6+2268*a
^8*b*c^5*d^5+7560*a^7*b^2*c^6*d^4+10080*a^6*b^3*c^7*d^3+5670*a^5*
b^4*c^8*d^2+1260*a^4*b^5*c^9*d+84*a^3*b^6*c^10)*x^7+1/6*(252*a^9*
c^5*d^5+1890*a^8*b*c^6*d^4+4320*a^7*b^2*c^7*d^3+3780*a^6*b^3*c^8*
d^2+1260*a^5*b^4*c^9*d+126*a^4*b^5*c^10)*x^6+1/5*(210*a^9*c^6*d^4
+1080*a^8*b*c^7*d^3+1620*a^7*b^2*c^8*d^2+840*a^6*b^3*c^9*d+126*a^
5*b^4*c^10)*x^5+1/4*(120*a^9*c^7*d^3+405*a^8*b*c^8*d^2+360*a^7*b^
2*c^9*d+84*a^6*b^3*c^10)*x^4+1/3*(45*a^9*c^8*d^2+90*a^8*b*c^9*d+3
6*a^7*b^2*c^10)*x^3+1/2*(10*a^9*c^9*d+9*a^8*b*c^10)*x^2+a^9*c^10*
x
```

Maxima [A] time = 1.36834, size = 1940, normalized size = 7.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/20*b^9*d^10*x^20 + a^9*c^10*x + 1/19*(10*b^9*c*d^9 + 9*a*b^8*d^
10)*x^19 + 1/2*(5*b^9*c^2*d^8 + 10*a*b^8*c*d^9 + 4*a^2*b^7*d^10)*
x^18 + 3/17*(40*b^9*c^3*d^7 + 135*a*b^8*c^2*d^8 + 120*a^2*b^7*c*d
^9 + 28*a^3*b^6*d^10)*x^17 + 3/8*(35*b^9*c^4*d^6 + 180*a*b^8*c^3*
d^7 + 270*a^2*b^7*c^2*d^8 + 140*a^3*b^6*c*d^9 + 21*a^4*b^5*d^10)*
x^16 + 6/5*(14*b^9*c^5*d^5 + 105*a*b^8*c^4*d^6 + 240*a^2*b^7*c^3*
d^7 + 210*a^3*b^6*c^2*d^8 + 70*a^4*b^5*c*d^9 + 7*a^5*b^4*d^10)*x^
15 + 3*(5*b^9*c^6*d^4 + 54*a*b^8*c^5*d^5 + 180*a^2*b^7*c^4*d^6 +
240*a^3*b^6*c^3*d^7 + 135*a^4*b^5*c^2*d^8 + 30*a^5*b^4*c*d^9 + 2*
a^6*b^3*d^10)*x^14 + 6/13*(20*b^9*c^7*d^3 + 315*a*b^8*c^6*d^4 + 1
512*a^2*b^7*c^5*d^5 + 2940*a^3*b^6*c^4*d^6 + 2520*a^4*b^5*c^3*d^7
 + 945*a^5*b^4*c^2*d^8 + 140*a^6*b^3*c*d^9 + 6*a^7*b^2*d^10)*x^13
 + 3/4*(5*b^9*c^8*d^2 + 120*a*b^8*c^7*d^3 + 840*a^2*b^7*c^6*d^4 +
 2352*a^3*b^6*c^5*d^5 + 2940*a^4*b^5*c^4*d^6 + 1680*a^5*b^4*c^3*d
^7 + 420*a^6*b^3*c^2*d^8 + 40*a^7*b^2*c*d^9 + a^8*b*d^10)*x^12 +
1/11*(10*b^9*c^9*d + 405*a*b^8*c^8*d^2 + 4320*a^2*b^7*c^7*d^3 + 1
```

```
7640*a^3*b^6*c^6*d^4 + 31752*a^4*b^5*c^5*d^5 + 26460*a^5*b^4*c^4*
d^6 + 10080*a^6*b^3*c^3*d^7 + 1620*a^7*b^2*c^2*d^8 + 90*a^8*b*c*d
^9 + a^9*d^10)*x^11 + 1/10*(b^9*c^10 + 90*a*b^8*c^9*d + 1620*a^2*
b^7*c^8*d^2 + 10080*a^3*b^6*c^7*d^3 + 26460*a^4*b^5*c^6*d^4 + 317
52*a^5*b^4*c^5*d^5 + 17640*a^6*b^3*c^4*d^6 + 4320*a^7*b^2*c^3*d^7
 + 405*a^8*b*c^2*d^8 + 10*a^9*c*d^9)*x^10 + (a*b^8*c^10 + 40*a^2*
b^7*c^9*d + 420*a^3*b^6*c^8*d^2 + 1680*a^4*b^5*c^7*d^3 + 2940*a^5
*b^4*c^6*d^4 + 2352*a^6*b^3*c^5*d^5 + 840*a^7*b^2*c^4*d^6 + 120*a
^8*b*c^3*d^7 + 5*a^9*c^2*d^8)*x^9 + 3/4*(6*a^2*b^7*c^10 + 140*a^3
*b^6*c^9*d + 945*a^4*b^5*c^8*d^2 + 2520*a^5*b^4*c^7*d^3 + 2940*a^
6*b^3*c^6*d^4 + 1512*a^7*b^2*c^5*d^5 + 315*a^8*b*c^4*d^6 + 20*a^9
*c^3*d^7)*x^8 + 6*(2*a^3*b^6*c^10 + 30*a^4*b^5*c^9*d + 135*a^5*b^
4*c^8*d^2 + 240*a^6*b^3*c^7*d^3 + 180*a^7*b^2*c^6*d^4 + 54*a^8*b*
c^5*d^5 + 5*a^9*c^4*d^6)*x^7 + 3*(7*a^4*b^5*c^10 + 70*a^5*b^4*c^9
*d + 210*a^6*b^3*c^8*d^2 + 240*a^7*b^2*c^7*d^3 + 105*a^8*b*c^6*d^
4 + 14*a^9*c^5*d^5)*x^6 + 6/5*(21*a^5*b^4*c^10 + 140*a^6*b^3*c^9*
d + 270*a^7*b^2*c^8*d^2 + 180*a^8*b*c^7*d^3 + 35*a^9*c^6*d^4)*x^5
 + 3/4*(28*a^6*b^3*c^10 + 120*a^7*b^2*c^9*d + 135*a^8*b*c^8*d^2 +
 40*a^9*c^7*d^3)*x^4 + 3*(4*a^7*b^2*c^10 + 10*a^8*b*c^9*d + 5*a^9
*c^8*d^2)*x^3 + 1/2*(9*a^8*b*c^10 + 10*a^9*c^9*d)*x^2
```

Fricas [A] time = 0.187822, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/20*x^20*d^10*b^9 + 10/19*x^19*d^9*c*b^9 + 9/19*x^19*d^10*b^8*a
+ 5/2*x^18*d^8*c^2*b^9 + 5*x^18*d^9*c*b^8*a + 2*x^18*d^10*b^7*a^2
 + 120/17*x^17*d^7*c^3*b^9 + 405/17*x^17*d^8*c^2*b^8*a + 360/17*x
^17*d^9*c*b^7*a^2 + 84/17*x^17*d^10*b^6*a^3 + 105/8*x^16*d^6*c^4*
b^9 + 135/2*x^16*d^7*c^3*b^8*a + 405/4*x^16*d^8*c^2*b^7*a^2 + 105
/2*x^16*d^9*c*b^6*a^3 + 63/8*x^16*d^10*b^5*a^4 + 84/5*x^15*d^5*c^
5*b^9 + 126*x^15*d^6*c^4*b^8*a + 288*x^15*d^7*c^3*b^7*a^2 + 252*x
^15*d^8*c^2*b^6*a^3 + 84*x^15*d^9*c*b^5*a^4 + 42/5*x^15*d^10*b^4*
a^5 + 15*x^14*d^4*c^6*b^9 + 162*x^14*d^5*c^5*b^8*a + 540*x^14*d^6
*c^4*b^7*a^2 + 720*x^14*d^7*c^3*b^6*a^3 + 405*x^14*d^8*c^2*b^5*a^
4 + 90*x^14*d^9*c*b^4*a^5 + 6*x^14*d^10*b^3*a^6 + 120/13*x^13*d^3
*c^7*b^9 + 1890/13*x^13*d^4*c^6*b^8*a + 9072/13*x^13*d^5*c^5*b^7*
a^2 + 17640/13*x^13*d^6*c^4*b^6*a^3 + 15120/13*x^13*d^7*c^3*b^5*a
^4 + 5670/13*x^13*d^8*c^2*b^4*a^5 + 840/13*x^13*d^9*c*b^3*a^6 + 3
6/13*x^13*d^10*b^2*a^7 + 15/4*x^12*d^2*c^8*b^9 + 90*x^12*d^3*c^7*
b^8*a + 630*x^12*d^4*c^6*b^7*a^2 + 1764*x^12*d^5*c^5*b^6*a^3 + 22
05*x^12*d^6*c^4*b^5*a^4 + 1260*x^12*d^7*c^3*b^4*a^5 + 315*x^12*d^
8*c^2*b^3*a^6 + 30*x^12*d^9*c*b^2*a^7 + 3/4*x^12*d^10*b*a^8 + 10/
11*x^11*d*c^9*b^9 + 405/11*x^11*d^2*c^8*b^8*a + 4320/11*x^11*d^3*
c^7*b^7*a^2 + 17640/11*x^11*d^4*c^6*b^6*a^3 + 31752/11*x^11*d^5*c
^5*b^5*a^4 + 26460/11*x^11*d^6*c^4*b^4*a^5 + 10080/11*x^11*d^7*c^
3*b^3*a^6 + 1620/11*x^11*d^8*c^2*b^2*a^7 + 90/11*x^11*d^9*c*b*a^8
 + 1/11*x^11*d^10*a^9 + 1/10*x^10*c^10*b^9 + 9*x^10*d*c^9*b^8*a +
```

```
 162*x^10*d^2*c^8*b^7*a^2 + 1008*x^10*d^3*c^7*b^6*a^3 + 2646*x^10
*d^4*c^6*b^5*a^4 + 15876/5*x^10*d^5*c^5*b^4*a^5 + 1764*x^10*d^6*c
^4*b^3*a^6 + 432*x^10*d^7*c^3*b^2*a^7 + 81/2*x^10*d^8*c^2*b*a^8 +
 x^10*d^9*c*a^9 + x^9*c^10*b^8*a + 40*x^9*d*c^9*b^7*a^2 + 420*x^9
*d^2*c^8*b^6*a^3 + 1680*x^9*d^3*c^7*b^5*a^4 + 2940*x^9*d^4*c^6*b^
4*a^5 + 2352*x^9*d^5*c^5*b^3*a^6 + 840*x^9*d^6*c^4*b^2*a^7 + 120*
x^9*d^7*c^3*b*a^8 + 5*x^9*d^8*c^2*a^9 + 9/2*x^8*c^10*b^7*a^2 + 10
5*x^8*d*c^9*b^6*a^3 + 2835/4*x^8*d^2*c^8*b^5*a^4 + 1890*x^8*d^3*c
^7*b^4*a^5 + 2205*x^8*d^4*c^6*b^3*a^6 + 1134*x^8*d^5*c^5*b^2*a^7
+ 945/4*x^8*d^6*c^4*b*a^8 + 15*x^8*d^7*c^3*a^9 + 12*x^7*c^10*b^6*
a^3 + 180*x^7*d*c^9*b^5*a^4 + 810*x^7*d^2*c^8*b^4*a^5 + 1440*x^7*
d^3*c^7*b^3*a^6 + 1080*x^7*d^4*c^6*b^2*a^7 + 324*x^7*d^5*c^5*b*a^
8 + 30*x^7*d^6*c^4*a^9 + 21*x^6*c^10*b^5*a^4 + 210*x^6*d*c^9*b^4*
a^5 + 630*x^6*d^2*c^8*b^3*a^6 + 720*x^6*d^3*c^7*b^2*a^7 + 315*x^6
*d^4*c^6*b*a^8 + 42*x^6*d^5*c^5*a^9 + 126/5*x^5*c^10*b^4*a^5 + 16
8*x^5*d*c^9*b^3*a^6 + 324*x^5*d^2*c^8*b^2*a^7 + 216*x^5*d^3*c^7*b
*a^8 + 42*x^5*d^4*c^6*a^9 + 21*x^4*c^10*b^3*a^6 + 90*x^4*d*c^9*b^
2*a^7 + 405/4*x^4*d^2*c^8*b*a^8 + 30*x^4*d^3*c^7*a^9 + 12*x^3*c^1
0*b^2*a^7 + 30*x^3*d*c^9*b*a^8 + 15*x^3*d^2*c^8*a^9 + 9/2*x^2*c^1
0*b*a^8 + 5*x^2*d*c^9*a^9 + x*c^10*a^9
```

Sympy [A] time = 0.720809, size = 1598, normalized size = 6.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**9*(d*x+c)**10,x)
```

```
[Out] a**9*c**10*x + b**9*d**10*x**20/20 + x**19*(9*a*b**8*d**10/19 + 1
0*b**9*c*d**9/19) + x**18*(2*a**2*b**7*d**10 + 5*a*b**8*c*d**9 +
5*b**9*c**2*d**8/2) + x**17*(84*a**3*b**6*d**10/17 + 360*a**2*b**
7*c*d**9/17 + 405*a*b**8*c**2*d**8/17 + 120*b**9*c**3*d**7/17) +
x**16*(63*a**4*b**5*d**10/8 + 105*a**3*b**6*c*d**9/2 + 405*a**2*b
**7*c**2*d**8/4 + 135*a*b**8*c**3*d**7/2 + 105*b**9*c**4*d**6/8)
+ x**15*(42*a**5*b**4*d**10/5 + 84*a**4*b**5*c*d**9 + 252*a**3*b*
*6*c**2*d**8 + 288*a**2*b**7*c**3*d**7 + 126*a*b**8*c**4*d**6 + 8
4*b**9*c**5*d**5/5) + x**14*(6*a**6*b**3*d**10 + 90*a**5*b**4*c*d
**9 + 405*a**4*b**5*c**2*d**8 + 720*a**3*b**6*c**3*d**7 + 540*a**
2*b**7*c**4*d**6 + 162*a*b**8*c**5*d**5 + 15*b**9*c**6*d**4) + x*
*13*(36*a**7*b**2*d**10/13 + 840*a**6*b**3*c*d**9/13 + 5670*a**5*
b**4*c**2*d**8/13 + 15120*a**4*b**5*c**3*d**7/13 + 17640*a**3*b**
6*c**4*d**6/13 + 9072*a**2*b**7*c**5*d**5/13 + 1890*a*b**8*c**6*d
**4/13 + 120*b**9*c**7*d**3/13) + x**12*(3*a**8*b*d**10/4 + 30*a*
*7*b**2*c*d**9 + 315*a**6*b**3*c**2*d**8 + 1260*a**5*b**4*c**3*d*
*7 + 2205*a**4*b**5*c**4*d**6 + 1764*a**3*b**6*c**5*d**5 + 630*a*
*2*b**7*c**6*d**4 + 90*a*b**8*c**7*d**3 + 15*b**9*c**8*d**2/4) +
x**11*(a**9*d**10/11 + 90*a**8*b*c*d**9/11 + 1620*a**7*b**2*c**2*
d**8/11 + 10080*a**6*b**3*c**3*d**7/11 + 26460*a**5*b**4*c**4*d**
6/11 + 31752*a**4*b**5*c**5*d**5/11 + 17640*a**3*b**6*c**6*d**4/1
1 + 4320*a**2*b**7*c**7*d**3/11 + 405*a*b**8*c**8*d**2/11 + 10*b*
*9*c**9*d/11) + x**10*(a**9*c*d**9 + 81*a**8*b*c**2*d**8/2 + 432*
```

```
a**7*b**2*c**3*d**7 + 1764*a**6*b**3*c**4*d**6 + 15876*a**5*b**4*
c**5*d**5/5 + 2646*a**4*b**5*c**6*d**4 + 1008*a**3*b**6*c**7*d**3
 + 162*a**2*b**7*c**8*d**2 + 9*a*b**8*c**9*d + b**9*c**10/10) + x
**9*(5*a**9*c**2*d**8 + 120*a**8*b*c**3*d**7 + 840*a**7*b**2*c**4
*d**6 + 2352*a**6*b**3*c**5*d**5 + 2940*a**5*b**4*c**6*d**4 + 168
0*a**4*b**5*c**7*d**3 + 420*a**3*b**6*c**8*d**2 + 40*a**2*b**7*c*
*9*d + a*b**8*c**10) + x**8*(15*a**9*c**3*d**7 + 945*a**8*b*c**4*
d**6/4 + 1134*a**7*b**2*c**5*d**5 + 2205*a**6*b**3*c**6*d**4 + 18
90*a**5*b**4*c**7*d**3 + 2835*a**4*b**5*c**8*d**2/4 + 105*a**3*b*
*6*c**9*d + 9*a**2*b**7*c**10/2) + x**7*(30*a**9*c**4*d**6 + 324*
a**8*b*c**5*d**5 + 1080*a**7*b**2*c**6*d**4 + 1440*a**6*b**3*c**7
*d**3 + 810*a**5*b**4*c**8*d**2 + 180*a**4*b**5*c**9*d + 12*a**3*
b**6*c**10) + x**6*(42*a**9*c**5*d**5 + 315*a**8*b*c**6*d**4 + 72
0*a**7*b**2*c**7*d**3 + 630*a**6*b**3*c**8*d**2 + 210*a**5*b**4*c
**9*d + 21*a**4*b**5*c**10) + x**5*(42*a**9*c**6*d**4 + 216*a**8*
b*c**7*d**3 + 324*a**7*b**2*c**8*d**2 + 168*a**6*b**3*c**9*d + 12
6*a**5*b**4*c**10/5) + x**4*(30*a**9*c**7*d**3 + 405*a**8*b*c**8*
d**2/4 + 90*a**7*b**2*c**9*d + 21*a**6*b**3*c**10) + x**3*(15*a**
9*c**8*d**2 + 30*a**8*b*c**9*d + 12*a**7*b**2*c**10) + x**2*(5*a*
*9*c**9*d + 9*a**8*b*c**10/2)
```

GIAC/XCAS [A] time = 0.219954, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] Done
```

3.1303 $\int (a+bx)^8(c+dx)^{10}\,dx$

Optimal. Leaf size=225

$$-\frac{4b^7(c+dx)^{18}(bc-ad)}{9d^9}+\frac{28b^6(c+dx)^{17}(bc-ad)^2}{17d^9}-\frac{7b^5(c+dx)^{16}(bc-ad)^3}{2d^9}+\frac{14b^4(c+dx)^{15}(bc-ad)^4}{3d^9}-\frac{4b^3(c+dx)^{14}(bc-ad)^5}{d^9}+\frac{28b^2(c+dx)^{13}(bc-ad)^6}{13d^9}-\frac{2b(c+dx)^{12}(bc-ad)^7}{3d^9}+\frac{(c+dx)^{11}(bc-ad)^8}{11d^9}+\frac{b^8(c+dx)^{19}}{19d^9}$$

```
[Out] ((b*c - a*d)^8*(c + d*x)^11)/(11*d^9) - (2*b*(b*c - a*d)^7*(c + d
*x)^12)/(3*d^9) + (28*b^2*(b*c - a*d)^6*(c + d*x)^13)/(13*d^9) -
(4*b^3*(b*c - a*d)^5*(c + d*x)^14)/d^9 + (14*b^4*(b*c - a*d)^4*(c
 + d*x)^15)/(3*d^9) - (7*b^5*(b*c - a*d)^3*(c + d*x)^16)/(2*d^9)
+ (28*b^6*(b*c - a*d)^2*(c + d*x)^17)/(17*d^9) - (4*b^7*(b*c - a*
d)*(c + d*x)^18)/(9*d^9) + (b^8*(c + d*x)^19)/(19*d^9)
```

Rubi [A] time = 1.85141, antiderivative size = 225, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{4b^7(c+dx)^{18}(bc-ad)}{9d^9}+\frac{28b^6(c+dx)^{17}(bc-ad)^2}{17d^9}-\frac{7b^5(c+dx)^{16}(bc-ad)^3}{2d^9}+\frac{14b^4(c+dx)^{15}(bc-ad)^4}{3d^9}-\frac{4b^3(c+dx)^{14}(bc-ad)^5}{d^9}+\frac{28b^2(c+dx)^{13}(bc-ad)^6}{13d^9}-\frac{2b(c+dx)^{12}(bc-ad)^7}{3d^9}+\frac{(c+dx)^{11}(bc-ad)^8}{11d^9}+\frac{b^8(c+dx)^{19}}{19d^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^8*(c + d*x)^10,x]
```

```
[Out] ((b*c - a*d)^8*(c + d*x)^11)/(11*d^9) - (2*b*(b*c - a*d)^7*(c + d
*x)^12)/(3*d^9) + (28*b^2*(b*c - a*d)^6*(c + d*x)^13)/(13*d^9) -
(4*b^3*(b*c - a*d)^5*(c + d*x)^14)/d^9 + (14*b^4*(b*c - a*d)^4*(c
 + d*x)^15)/(3*d^9) - (7*b^5*(b*c - a*d)^3*(c + d*x)^16)/(2*d^9)
+ (28*b^6*(b*c - a*d)^2*(c + d*x)^17)/(17*d^9) - (4*b^7*(b*c - a*
d)*(c + d*x)^18)/(9*d^9) + (b^8*(c + d*x)^19)/(19*d^9)
```

Rubi in Sympy [A] time = 178.323, size = 207, normalized size = 0.92

$$\frac{b^8\left(c+dx\right)^{19}}{19d^9}+\frac{4b^7\left(c+dx\right)^{18}\left(ad-bc\right)}{9d^9}+\frac{28b^6\left(c+dx\right)^{17}\left(ad-bc\right)^2}{17d^9}+\frac{7b^5\left(c+dx\right)^{16}\left(ad-bc\right)^3}{2d^9}+\frac{14b^4\left(c+dx\right)^{15}\left(ad-bc\right)^4}{3d^9}+\frac{4b^3\left(c+dx\right)^{14}\left(ad-bc\right)^5}{d^9}+\frac{28b^2\left(c+dx\right)^{13}\left(ad-bc\right)^6}{13d^9}+\frac{2b\left(c+dx\right)^{12}\left(ad-bc\right)^7}{3d^9}+\frac{\left(c+dx\right)^{11}\left(ad-bc\right)^8}{11d^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**8*(d*x+c)**10,x)
```

```
[Out] b**8*(c + d*x)**19/(19*d**9) + 4*b**7*(c + d*x)**18*(a*d - b*c)/(
9*d**9) + 28*b**6*(c + d*x)**17*(a*d - b*c)**2/(17*d**9) + 7*b**5
*(c + d*x)**16*(a*d - b*c)**3/(2*d**9) + 14*b**4*(c + d*x)**15*(a
*d - b*c)**4/(3*d**9) + 4*b**3*(c + d*x)**14*(a*d - b*c)**5/d**9
+ 28*b**2*(c + d*x)**13*(a*d - b*c)**6/(13*d**9) + 2*b*(c + d*x)*
*12*(a*d - b*c)**7/(3*d**9) + (c + d*x)**11*(a*d - b*c)**8/(11*d*
*9)
```

Mathematica [B] time = 0.297295, size = 1241, normalized size = 5.52

$$\begin{aligned}
&\frac{1}{19}b^8d^{10}x^{19}+\frac{1}{9}b^7d^9(5bc+4ad)x^{18}+\frac{1}{17}b^6d^8\left(45b^2c^2+80abdc+28a^2d^2\right)x^{17}\\
&+\frac{1}{2}b^5d^7\left(15b^3c^3+45ab^2dc^2+35a^2bd^2c+7a^3d^3\right)x^{16}\\
&+\frac{2}{3}b^4d^6\left(21b^4c^4+96ab^3dc^3+126a^2b^2d^2c^2+56a^3bd^3c+7a^4d^4\right)x^{15}\\
&+2b^3d^5\left(9b^5c^5+60ab^4dc^4+120a^2b^3d^2c^3+90a^3b^2d^3c^2+25a^4bd^4c+2a^5d^5\right)x^{14}\\
&+\frac{14}{13}b^2d^4\left(15b^6c^6+144ab^5dc^5+420a^2b^4d^2c^4+480a^3b^3d^3c^3+225a^4b^2d^4c^2\right.\\
&\left.+40a^5bd^5c+2a^6d^6\right)x^{13}+\frac{2}{3}bd^3\left(15b^7c^7+210ab^6dc^6+882a^2b^5d^2c^5\right.\\
&\left.+1470a^3b^4d^3c^4+1050a^4b^3d^4c^3+315a^5b^2d^5c^2+35a^6bd^6c+a^7d^7\right)x^{12}\\
&+\frac{1}{11}d^2\left(45b^8c^8+960ab^7dc^7+5880a^2b^6d^2c^6+14112a^3b^5d^3c^5\right.\\
&\left.+14700a^4b^4d^4c^4+6720a^5b^3d^5c^3+1260a^6b^2d^6c^2+80a^7bd^7c+a^8d^8\right)x^{11}\\
&+cd\left(b^8c^8+36ab^7dc^7+336a^2b^6d^2c^6+1176a^3b^5d^3c^5+1764a^4b^4d^4c^4\right.\\
&\left.+1176a^5b^3d^5c^3+336a^6b^2d^6c^2+36a^7bd^7c+a^8d^8\right)x^{10}\\
&+\frac{1}{9}c^2\left(b^8c^8+80ab^7dc^7+1260a^2b^6d^2c^6+6720a^3b^5d^3c^5+14700a^4b^4d^4c^4\right.\\
&\left.+14112a^5b^3d^5c^3+5880a^6b^2d^6c^2+960a^7bd^7c+45a^8d^8\right)x^9\\
&+ac^3\left(b^7c^7+35ab^6dc^6+315a^2b^5d^2c^5+1050a^3b^4d^3c^4+1470a^4b^3d^4c^3\right.\\
&\left.+882a^5b^2d^5c^2+210a^6bd^6c+15a^7d^7\right)x^8+2a^2c^4\left(2b^6c^6+40ab^5dc^5\right.\\
&\left.+225a^2b^4d^2c^4+480a^3b^3d^3c^3+420a^4b^2d^4c^2+144a^5bd^5c+15a^6d^6\right)x^7\\
&+\frac{14}{3}a^3c^5\left(2b^5c^5+25ab^4dc^4+90a^2b^3d^2c^3+120a^3b^2d^3c^2+60a^4bd^4c+9a^5d^5\right)x^6\\
&+2a^4c^6\left(7b^4c^4+56ab^3dc^3+126a^2b^2d^2c^2+96a^3bd^3c+21a^4d^4\right)x^5\\
&+2a^5c^7\left(7b^3c^3+35ab^2dc^2+45a^2bd^2c+15a^3d^3\right)x^4\\
&+\frac{1}{3}a^6c^8\left(28b^2c^2+80abdc+45a^2d^2\right)x^3+a^7c^9(4bc+5ad)x^2+a^8c^{10}x
\end{aligned}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^8*(c + d*x)^10,x]
```

```
[Out] a^8*c^10*x + a^7*c^9*(4*b*c + 5*a*d)*x^2 + (a^6*c^8*(28*b^2*c^2 +
 80*a*b*c*d + 45*a^2*d^2)*x^3)/3 + 2*a^5*c^7*(7*b^3*c^3 + 35*a*b^
2*c^2*d + 45*a^2*b*c*d^2 + 15*a^3*d^3)*x^4 + 2*a^4*c^6*(7*b^4*c^4
 + 56*a*b^3*c^3*d + 126*a^2*b^2*c^2*d^2 + 96*a^3*b*c*d^3 + 21*a^4
*d^4)*x^5 + (14*a^3*c^5*(2*b^5*c^5 + 25*a*b^4*c^4*d + 90*a^2*b^3*
c^3*d^2 + 120*a^3*b^2*c^2*d^3 + 60*a^4*b*c*d^4 + 9*a^5*d^5)*x^6)/
3 + 2*a^2*c^4*(2*b^6*c^6 + 40*a*b^5*c^5*d + 225*a^2*b^4*c^4*d^2 +
 480*a^3*b^3*c^3*d^3 + 420*a^4*b^2*c^2*d^4 + 144*a^5*b*c*d^5 + 15
*a^6*d^6)*x^7 + a*c^3*(b^7*c^7 + 35*a*b^6*c^6*d + 315*a^2*b^5*c^5
*d^2 + 1050*a^3*b^4*c^4*d^3 + 1470*a^4*b^3*c^3*d^4 + 882*a^5*b^2*
c^2*d^5 + 210*a^6*b*c*d^6 + 15*a^7*d^7)*x^8 + (c^2*(b^8*c^8 + 80*
a*b^7*c^7*d + 1260*a^2*b^6*c^6*d^2 + 6720*a^3*b^5*c^5*d^3 + 14700
*a^4*b^4*c^4*d^4 + 14112*a^5*b^3*c^3*d^5 + 5880*a^6*b^2*c^2*d^6 +
 960*a^7*b*c*d^7 + 45*a^8*d^8)*x^9)/9 + c*d*(b^8*c^8 + 36*a*b^7*c
^7*d + 336*a^2*b^6*c^6*d^2 + 1176*a^3*b^5*c^5*d^3 + 1764*a^4*b^4*
c^4*d^4 + 1176*a^5*b^3*c^3*d^5 + 336*a^6*b^2*c^2*d^6 + 36*a^7*b*c
*d^7 + a^8*d^8)*x^10 + (d^2*(45*b^8*c^8 + 960*a*b^7*c^7*d + 5880*
a^2*b^6*c^6*d^2 + 14112*a^3*b^5*c^5*d^3 + 14700*a^4*b^4*c^4*d^4 +
 6720*a^5*b^3*c^3*d^5 + 1260*a^6*b^2*c^2*d^6 + 80*a^7*b*c*d^7 + a
^8*d^8)*x^11)/11 + (2*b*d^3*(15*b^7*c^7 + 210*a*b^6*c^6*d + 882*a
^2*b^5*c^5*d^2 + 1470*a^3*b^4*c^4*d^3 + 1050*a^4*b^3*c^3*d^4 + 31
5*a^5*b^2*c^2*d^5 + 35*a^6*b*c*d^6 + a^7*d^7)*x^12)/3 + (14*b^2*d
^4*(15*b^6*c^6 + 144*a*b^5*c^5*d + 420*a^2*b^4*c^4*d^2 + 480*a^3*
b^3*c^3*d^3 + 225*a^4*b^2*c^2*d^4 + 40*a^5*b*c*d^5 + 2*a^6*d^6)*x
^13)/13 + 2*b^3*d^5*(9*b^5*c^5 + 60*a*b^4*c^4*d + 120*a^2*b^3*c^3
*d^2 + 90*a^3*b^2*c^2*d^3 + 25*a^4*b*c*d^4 + 2*a^5*d^5)*x^14 + (2
*b^4*d^6*(21*b^4*c^4 + 96*a*b^3*c^3*d + 126*a^2*b^2*c^2*d^2 + 56*
a^3*b*c*d^3 + 7*a^4*d^4)*x^15)/3 + (b^5*d^7*(15*b^3*c^3 + 45*a*b^
2*c^2*d + 35*a^2*b*c*d^2 + 7*a^3*d^3)*x^16)/2 + (b^6*d^8*(45*b^2*
c^2 + 80*a*b*c*d + 28*a^2*d^2)*x^17)/17 + (b^7*d^9*(5*b*c + 4*a*d
)*x^18)/9 + (b^8*d^10*x^19)/19
```

Maple [B] time = 0.004, size = 1291, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^8*(d*x+c)^10,x)
```

```
[Out] 1/19*b^8*d^10*x^19+1/18*(8*a*b^7*d^10+10*b^8*c*d^9)*x^18+1/17*(28
*a^2*b^6*d^10+80*a*b^7*c*d^9+45*b^8*c^2*d^8)*x^17+1/16*(56*a^3*b^
5*d^10+280*a^2*b^6*c*d^9+360*a*b^7*c^2*d^8+120*b^8*c^3*d^7)*x^16+
1/15*(70*a^4*b^4*d^10+560*a^3*b^5*c*d^9+1260*a^2*b^6*c^2*d^8+960*
a*b^7*c^3*d^7+210*b^8*c^4*d^6)*x^15+1/14*(56*a^5*b^3*d^10+700*a^4
*b^4*c*d^9+2520*a^3*b^5*c^2*d^8+3360*a^2*b^6*c^3*d^7+1680*a*b^7*c
^4*d^6+252*b^8*c^5*d^5)*x^14+1/13*(28*a^6*b^2*d^10+560*a^5*b^3*c*
d^9+3150*a^4*b^4*c^2*d^8+6720*a^3*b^5*c^3*d^7+5880*a^2*b^6*c^4*d^
6+2016*a*b^7*c^5*d^5+210*b^8*c^6*d^4)*x^13+1/12*(8*a^7*b*d^10+280
*a^6*b^2*c*d^9+2520*a^5*b^3*c^2*d^8+8400*a^4*b^4*c^3*d^7+11760*a^
3*b^5*c^4*d^6+7056*a^2*b^6*c^5*d^5+1680*a*b^7*c^6*d^4+120*b^8*c^7
*d^3)*x^12+1/11*(a^8*d^10+80*a^7*b*c*d^9+1260*a^6*b^2*c^2*d^8+672
```

```
0*a^5*b^3*c^3*d^7+14700*a^4*b^4*c^4*d^6+14112*a^3*b^5*c^5*d^5+588
0*a^2*b^6*c^6*d^4+960*a*b^7*c^7*d^3+45*b^8*c^8*d^2)*x^11+1/10*(10
*a^8*c*d^9+360*a^7*b*c^2*d^8+3360*a^6*b^2*c^3*d^7+11760*a^5*b^3*c
^4*d^6+17640*a^4*b^4*c^5*d^5+11760*a^3*b^5*c^6*d^4+3360*a^2*b^6*c
^7*d^3+360*a*b^7*c^8*d^2+10*b^8*c^9*d)*x^10+1/9*(45*a^8*c^2*d^8+9
60*a^7*b*c^3*d^7+5880*a^6*b^2*c^4*d^6+14112*a^5*b^3*c^5*d^5+14700
*a^4*b^4*c^6*d^4+6720*a^3*b^5*c^7*d^3+1260*a^2*b^6*c^8*d^2+80*a*b
^7*c^9*d+b^8*c^10)*x^9+1/8*(120*a^8*c^3*d^7+1680*a^7*b*c^4*d^6+70
56*a^6*b^2*c^5*d^5+11760*a^5*b^3*c^6*d^4+8400*a^4*b^4*c^7*d^3+252
0*a^3*b^5*c^8*d^2+280*a^2*b^6*c^9*d+8*a*b^7*c^10)*x^8+1/7*(210*a^
8*c^4*d^6+2016*a^7*b*c^5*d^5+5880*a^6*b^2*c^6*d^4+6720*a^5*b^3*c^
7*d^3+3150*a^4*b^4*c^8*d^2+560*a^3*b^5*c^9*d+28*a^2*b^6*c^10)*x^7
+1/6*(252*a^8*c^5*d^5+1680*a^7*b*c^6*d^4+3360*a^6*b^2*c^7*d^3+252
0*a^5*b^3*c^8*d^2+700*a^4*b^4*c^9*d+56*a^3*b^5*c^10)*x^6+1/5*(210
*a^8*c^6*d^4+960*a^7*b*c^7*d^3+1260*a^6*b^2*c^8*d^2+560*a^5*b^3*c
^9*d+70*a^4*b^4*c^10)*x^5+1/4*(120*a^8*c^7*d^3+360*a^7*b*c^8*d^2+
280*a^6*b^2*c^9*d+56*a^5*b^3*c^10)*x^4+1/3*(45*a^8*c^8*d^2+80*a^7
*b*c^9*d+28*a^6*b^2*c^10)*x^3+1/2*(10*a^8*c^9*d+8*a^7*b*c^10)*x^2
+a^8*c^10*x
```

Maxima [A] time = 1.3713, size = 1732, normalized size = 7.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/19*b^8*d^10*x^19 + a^8*c^10*x + 1/9*(5*b^8*c*d^9 + 4*a*b^7*d^10
)*x^18 + 1/17*(45*b^8*c^2*d^8 + 80*a*b^7*c*d^9 + 28*a^2*b^6*d^10)
*x^17 + 1/2*(15*b^8*c^3*d^7 + 45*a*b^7*c^2*d^8 + 35*a^2*b^6*c*d^9
 + 7*a^3*b^5*d^10)*x^16 + 2/3*(21*b^8*c^4*d^6 + 96*a*b^7*c^3*d^7
+ 126*a^2*b^6*c^2*d^8 + 56*a^3*b^5*c*d^9 + 7*a^4*b^4*d^10)*x^15 +
 2*(9*b^8*c^5*d^5 + 60*a*b^7*c^4*d^6 + 120*a^2*b^6*c^3*d^7 + 90*a
^3*b^5*c^2*d^8 + 25*a^4*b^4*c*d^9 + 2*a^5*b^3*d^10)*x^14 + 14/13*
(15*b^8*c^6*d^4 + 144*a*b^7*c^5*d^5 + 420*a^2*b^6*c^4*d^6 + 480*a
^3*b^5*c^3*d^7 + 225*a^4*b^4*c^2*d^8 + 40*a^5*b^3*c*d^9 + 2*a^6*b
^2*d^10)*x^13 + 2/3*(15*b^8*c^7*d^3 + 210*a*b^7*c^6*d^4 + 882*a^2
*b^6*c^5*d^5 + 1470*a^3*b^5*c^4*d^6 + 1050*a^4*b^4*c^3*d^7 + 315*
a^5*b^3*c^2*d^8 + 35*a^6*b^2*c*d^9 + a^7*b*d^10)*x^12 + 1/11*(45*
b^8*c^8*d^2 + 960*a*b^7*c^7*d^3 + 5880*a^2*b^6*c^6*d^4 + 14112*a^
3*b^5*c^5*d^5 + 14700*a^4*b^4*c^4*d^6 + 6720*a^5*b^3*c^3*d^7 + 12
60*a^6*b^2*c^2*d^8 + 80*a^7*b*c*d^9 + a^8*d^10)*x^11 + (b^8*c^9*d
 + 36*a*b^7*c^8*d^2 + 336*a^2*b^6*c^7*d^3 + 1176*a^3*b^5*c^6*d^4
+ 1764*a^4*b^4*c^5*d^5 + 1176*a^5*b^3*c^4*d^6 + 336*a^6*b^2*c^3*d
^7 + 36*a^7*b*c^2*d^8 + a^8*c*d^9)*x^10 + 1/9*(b^8*c^10 + 80*a*b^
7*c^9*d + 1260*a^2*b^6*c^8*d^2 + 6720*a^3*b^5*c^7*d^3 + 14700*a^4
*b^4*c^6*d^4 + 14112*a^5*b^3*c^5*d^5 + 5880*a^6*b^2*c^4*d^6 + 960
*a^7*b*c^3*d^7 + 45*a^8*c^2*d^8)*x^9 + (a*b^7*c^10 + 35*a^2*b^6*c
^9*d + 315*a^3*b^5*c^8*d^2 + 1050*a^4*b^4*c^7*d^3 + 1470*a^5*b^3*
c^6*d^4 + 882*a^6*b^2*c^5*d^5 + 210*a^7*b*c^4*d^6 + 15*a^8*c^3*d^
7)*x^8 + 2*(2*a^2*b^6*c^10 + 40*a^3*b^5*c^9*d + 225*a^4*b^4*c^8*d
```

```
^2 + 480*a^5*b^3*c^7*d^3 + 420*a^6*b^2*c^6*d^4 + 144*a^7*b*c^5*d^
5 + 15*a^8*c^4*d^6)*x^7 + 14/3*(2*a^3*b^5*c^10 + 25*a^4*b^4*c^9*d
 + 90*a^5*b^3*c^8*d^2 + 120*a^6*b^2*c^7*d^3 + 60*a^7*b*c^6*d^4 +
9*a^8*c^5*d^5)*x^6 + 2*(7*a^4*b^4*c^10 + 56*a^5*b^3*c^9*d + 126*a
^6*b^2*c^8*d^2 + 96*a^7*b*c^7*d^3 + 21*a^8*c^6*d^4)*x^5 + 2*(7*a^
5*b^3*c^10 + 35*a^6*b^2*c^9*d + 45*a^7*b*c^8*d^2 + 15*a^8*c^7*d^3
)*x^4 + 1/3*(28*a^6*b^2*c^10 + 80*a^7*b*c^9*d + 45*a^8*c^8*d^2)*x
^3 + (4*a^7*b*c^10 + 5*a^8*c^9*d)*x^2
```

Fricas [A] time = 0.200447, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/19*x^19*d^10*b^8 + 5/9*x^18*d^9*c*b^8 + 4/9*x^18*d^10*b^7*a + 4
5/17*x^17*d^8*c^2*b^8 + 80/17*x^17*d^9*c*b^7*a + 28/17*x^17*d^10*
b^6*a^2 + 15/2*x^16*d^7*c^3*b^8 + 45/2*x^16*d^8*c^2*b^7*a + 35/2*
x^16*d^9*c*b^6*a^2 + 7/2*x^16*d^10*b^5*a^3 + 14*x^15*d^6*c^4*b^8
+ 64*x^15*d^7*c^3*b^7*a + 84*x^15*d^8*c^2*b^6*a^2 + 112/3*x^15*d^
9*c*b^5*a^3 + 14/3*x^15*d^10*b^4*a^4 + 18*x^14*d^5*c^5*b^8 + 120*
x^14*d^6*c^4*b^7*a + 240*x^14*d^7*c^3*b^6*a^2 + 180*x^14*d^8*c^2*
b^5*a^3 + 50*x^14*d^9*c*b^4*a^4 + 4*x^14*d^10*b^3*a^5 + 210/13*x^
13*d^4*c^6*b^8 + 2016/13*x^13*d^5*c^5*b^7*a + 5880/13*x^13*d^6*c^
4*b^6*a^2 + 6720/13*x^13*d^7*c^3*b^5*a^3 + 3150/13*x^13*d^8*c^2*b
^4*a^4 + 560/13*x^13*d^9*c*b^3*a^5 + 28/13*x^13*d^10*b^2*a^6 + 10
*x^12*d^3*c^7*b^8 + 140*x^12*d^4*c^6*b^7*a + 588*x^12*d^5*c^5*b^6
*a^2 + 980*x^12*d^6*c^4*b^5*a^3 + 700*x^12*d^7*c^3*b^4*a^4 + 210*
x^12*d^8*c^2*b^3*a^5 + 70/3*x^12*d^9*c*b^2*a^6 + 2/3*x^12*d^10*b*
a^7 + 45/11*x^11*d^2*c^8*b^8 + 960/11*x^11*d^3*c^7*b^7*a + 5880/1
1*x^11*d^4*c^6*b^6*a^2 + 14112/11*x^11*d^5*c^5*b^5*a^3 + 14700/11
*x^11*d^6*c^4*b^4*a^4 + 6720/11*x^11*d^7*c^3*b^3*a^5 + 1260/11*x^
11*d^8*c^2*b^2*a^6 + 80/11*x^11*d^9*c*b*a^7 + 1/11*x^11*d^10*a^8
+ x^10*d*c^9*b^8 + 36*x^10*d^2*c^8*b^7*a + 336*x^10*d^3*c^7*b^6*a
^2 + 1176*x^10*d^4*c^6*b^5*a^3 + 1764*x^10*d^5*c^5*b^4*a^4 + 1176
*x^10*d^6*c^4*b^3*a^5 + 336*x^10*d^7*c^3*b^2*a^6 + 36*x^10*d^8*c^
2*b*a^7 + x^10*d^9*c*a^8 + 1/9*x^9*c^10*b^8 + 80/9*x^9*d*c^9*b^7*
a + 140*x^9*d^2*c^8*b^6*a^2 + 2240/3*x^9*d^3*c^7*b^5*a^3 + 4900/3
*x^9*d^4*c^6*b^4*a^4 + 1568*x^9*d^5*c^5*b^3*a^5 + 1960/3*x^9*d^6*
c^4*b^2*a^6 + 320/3*x^9*d^7*c^3*b*a^7 + 5*x^9*d^8*c^2*a^8 + x^8*c
^10*b^7*a + 35*x^8*d*c^9*b^6*a^2 + 315*x^8*d^2*c^8*b^5*a^3 + 1050
*x^8*d^3*c^7*b^4*a^4 + 1470*x^8*d^4*c^6*b^3*a^5 + 882*x^8*d^5*c^5
*b^2*a^6 + 210*x^8*d^6*c^4*b*a^7 + 15*x^8*d^7*c^3*a^8 + 4*x^7*c^1
0*b^6*a^2 + 80*x^7*d*c^9*b^5*a^3 + 450*x^7*d^2*c^8*b^4*a^4 + 960*
x^7*d^3*c^7*b^3*a^5 + 840*x^7*d^4*c^6*b^2*a^6 + 288*x^7*d^5*c^5*b
*a^7 + 30*x^7*d^6*c^4*a^8 + 28/3*x^6*c^10*b^5*a^3 + 350/3*x^6*d*c
^9*b^4*a^4 + 420*x^6*d^2*c^8*b^3*a^5 + 560*x^6*d^3*c^7*b^2*a^6 +
280*x^6*d^4*c^6*b*a^7 + 42*x^6*d^5*c^5*a^8 + 14*x^5*c^10*b^4*a^4
+ 112*x^5*d*c^9*b^3*a^5 + 252*x^5*d^2*c^8*b^2*a^6 + 192*x^5*d^3*c
^7*b*a^7 + 42*x^5*d^4*c^6*a^8 + 14*x^4*c^10*b^3*a^5 + 70*x^4*d*c^
```

```
9*b^2*a^6 + 90*x^4*d^2*c^8*b*a^7 + 30*x^4*d^3*c^7*a^8 + 28/3*x^3*
c^10*b^2*a^6 + 80/3*x^3*d*c^9*b*a^7 + 15*x^3*d^2*c^8*a^8 + 4*x^2*
c^10*b*a^7 + 5*x^2*d*c^9*a^8 + x*c^10*a^8
```

Sympy [A] time = 0.674398, size = 1428, normalized size = 6.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**8*(d*x+c)**10,x)
```

```
[Out] a**8*c**10*x + b**8*d**10*x**19/19 + x**18*(4*a*b**7*d**10/9 + 5*
b**8*c*d**9/9) + x**17*(28*a**2*b**6*d**10/17 + 80*a*b**7*c*d**9/
17 + 45*b**8*c**2*d**8/17) + x**16*(7*a**3*b**5*d**10/2 + 35*a**2
*b**6*c*d**9/2 + 45*a*b**7*c**2*d**8/2 + 15*b**8*c**3*d**7/2) + x
**15*(14*a**4*b**4*d**10/3 + 112*a**3*b**5*c*d**9/3 + 84*a**2*b**
6*c**2*d**8 + 64*a*b**7*c**3*d**7 + 14*b**8*c**4*d**6) + x**14*(4
*a**5*b**3*d**10 + 50*a**4*b**4*c*d**9 + 180*a**3*b**5*c**2*d**8
+ 240*a**2*b**6*c**3*d**7 + 120*a*b**7*c**4*d**6 + 18*b**8*c**5*d
**5) + x**13*(28*a**6*b**2*d**10/13 + 560*a**5*b**3*c*d**9/13 + 3
150*a**4*b**4*c**2*d**8/13 + 6720*a**3*b**5*c**3*d**7/13 + 5880*a
**2*b**6*c**4*d**6/13 + 2016*a*b**7*c**5*d**5/13 + 210*b**8*c**6*
d**4/13) + x**12*(2*a**7*b*d**10/3 + 70*a**6*b**2*c*d**9/3 + 210*
a**5*b**3*c**2*d**8 + 700*a**4*b**4*c**3*d**7 + 980*a**3*b**5*c**
4*d**6 + 588*a**2*b**6*c**5*d**5 + 140*a*b**7*c**6*d**4 + 10*b**8
*c**7*d**3) + x**11*(a**8*d**10/11 + 80*a**7*b*c*d**9/11 + 1260*a
**6*b**2*c**2*d**8/11 + 6720*a**5*b**3*c**3*d**7/11 + 14700*a**4*
b**4*c**4*d**6/11 + 14112*a**3*b**5*c**5*d**5/11 + 5880*a**2*b**6
*c**6*d**4/11 + 960*a*b**7*c**7*d**3/11 + 45*b**8*c**8*d**2/11) +
 x**10*(a**8*c*d**9 + 36*a**7*b*c**2*d**8 + 336*a**6*b**2*c**3*d*
*7 + 1176*a**5*b**3*c**4*d**6 + 1764*a**4*b**4*c**5*d**5 + 1176*a
**3*b**5*c**6*d**4 + 336*a**2*b**6*c**7*d**3 + 36*a*b**7*c**8*d**
2 + b**8*c**9*d) + x**9*(5*a**8*c**2*d**8 + 320*a**7*b*c**3*d**7/
3 + 1960*a**6*b**2*c**4*d**6/3 + 1568*a**5*b**3*c**5*d**5 + 4900*
a**4*b**4*c**6*d**4/3 + 2240*a**3*b**5*c**7*d**3/3 + 140*a**2*b**
6*c**8*d**2 + 80*a*b**7*c**9*d/9 + b**8*c**10/9) + x**8*(15*a**8*
c**3*d**7 + 210*a**7*b*c**4*d**6 + 882*a**6*b**2*c**5*d**5 + 1470
*a**5*b**3*c**6*d**4 + 1050*a**4*b**4*c**7*d**3 + 315*a**3*b**5*c
**8*d**2 + 35*a**2*b**6*c**9*d + a*b**7*c**10) + x**7*(30*a**8*c*
*4*d**6 + 288*a**7*b*c**5*d**5 + 840*a**6*b**2*c**6*d**4 + 960*a*
*5*b**3*c**7*d**3 + 450*a**4*b**4*c**8*d**2 + 80*a**3*b**5*c**9*d
 + 4*a**2*b**6*c**10) + x**6*(42*a**8*c**5*d**5 + 280*a**7*b*c**6
*d**4 + 560*a**6*b**2*c**7*d**3 + 420*a**5*b**3*c**8*d**2 + 350*a
**4*b**4*c**9*d/3 + 28*a**3*b**5*c**10/3) + x**5*(42*a**8*c**6*d*
*4 + 192*a**7*b*c**7*d**3 + 252*a**6*b**2*c**8*d**2 + 112*a**5*b*
*3*c**9*d + 14*a**4*b**4*c**10) + x**4*(30*a**8*c**7*d**3 + 90*a*
*7*b*c**8*d**2 + 70*a**6*b**2*c**9*d + 14*a**5*b**3*c**10) + x**3
*(15*a**8*c**8*d**2 + 80*a**7*b*c**9*d/3 + 28*a**6*b**2*c**10/3)
+ x**2*(5*a**8*c**9*d + 4*a**7*b*c**10)
```

GIAC/XCAS [A] time = 0.214816, size = 1, normalized size = 0.

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8*(d*x + c)^10,x, algorithm="giac")

[Out] Done
```

3.1304 $\int (a+bx)^7(c+dx)^{10}\,dx$

Optimal. Leaf size=200

$$-\frac{7b^6(c+dx)^{17}(bc-ad)}{17d^8}+\frac{21b^5(c+dx)^{16}(bc-ad)^2}{16d^8}-\frac{7b^4(c+dx)^{15}(bc-ad)^3}{3d^8}+\frac{5b^3(c+dx)^{14}(bc-ad)^4}{2d^8}-\frac{21b^2(c+dx)^{13}(bc-ad)^5}{13d^8}+\frac{7b(c+dx)^{12}(bc-ad)^6}{12d^8}-\frac{(c+dx)^{11}(bc-ad)^7}{11d^8}+\frac{b^7(c+dx)^{18}}{18d^8}$$

```
[Out] -((b*c - a*d)^7*(c + d*x)^11)/(11*d^8) + (7*b*(b*c - a*d)^6*(c +
d*x)^12)/(12*d^8) - (21*b^2*(b*c - a*d)^5*(c + d*x)^13)/(13*d^8)
+ (5*b^3*(b*c - a*d)^4*(c + d*x)^14)/(2*d^8) - (7*b^4*(b*c - a*d)
^3*(c + d*x)^15)/(3*d^8) + (21*b^5*(b*c - a*d)^2*(c + d*x)^16)/(1
6*d^8) - (7*b^6*(b*c - a*d)*(c + d*x)^17)/(17*d^8) + (b^7*(c + d*
x)^18)/(18*d^8)
```

Rubi [A] time = 1.55719, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{7b^6(c+dx)^{17}(bc-ad)}{17d^8}+\frac{21b^5(c+dx)^{16}(bc-ad)^2}{16d^8}-\frac{7b^4(c+dx)^{15}(bc-ad)^3}{3d^8}+\frac{5b^3(c+dx)^{14}(bc-ad)^4}{2d^8}-\frac{21b^2(c+dx)^{13}(bc-ad)^5}{13d^8}+\frac{7b(c+dx)^{12}(bc-ad)^6}{12d^8}-\frac{(c+dx)^{11}(bc-ad)^7}{11d^8}+\frac{b^7(c+dx)^{18}}{18d^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7*(c + d*x)^10,x]
```

```
[Out] -((b*c - a*d)^7*(c + d*x)^11)/(11*d^8) + (7*b*(b*c - a*d)^6*(c +
d*x)^12)/(12*d^8) - (21*b^2*(b*c - a*d)^5*(c + d*x)^13)/(13*d^8)
+ (5*b^3*(b*c - a*d)^4*(c + d*x)^14)/(2*d^8) - (7*b^4*(b*c - a*d)
^3*(c + d*x)^15)/(3*d^8) + (21*b^5*(b*c - a*d)^2*(c + d*x)^16)/(1
6*d^8) - (7*b^6*(b*c - a*d)*(c + d*x)^17)/(17*d^8) + (b^7*(c + d*
x)^18)/(18*d^8)
```

Rubi in Sympy [A] time = 148.316, size = 184, normalized size = 0.92

$$\frac{b^7(c+dx)^{18}}{18d^8}+\frac{7b^6(c+dx)^{17}(ad-bc)}{17d^8}+\frac{21b^5(c+dx)^{16}(ad-bc)^2}{16d^8}+\frac{7b^4(c+dx)^{15}(ad-bc)^3}{3d^8}+\frac{5b^3(c+dx)^{14}(ad-bc)^4}{2d^8}+\frac{21b^2(c+dx)^{13}(ad-bc)^5}{13d^8}+\frac{7b(c+dx)^{12}(ad-bc)^6}{12d^8}+\frac{(c+dx)^{11}(ad-bc)^7}{11d^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7*(d*x+c)**10,x)
```

```
[Out] b**7*(c + d*x)**18/(18*d**8) + 7*b**6*(c + d*x)**17*(a*d - b*c)/(
17*d**8) + 21*b**5*(c + d*x)**16*(a*d - b*c)**2/(16*d**8) + 7*b**
4*(c + d*x)**15*(a*d - b*c)**3/(3*d**8) + 5*b**3*(c + d*x)**14*(a
*d - b*c)**4/(2*d**8) + 21*b**2*(c + d*x)**13*(a*d - b*c)**5/(13*
d**8) + 7*b*(c + d*x)**12*(a*d - b*c)**6/(12*d**8) + (c + d*x)**1
1*(a*d - b*c)**7/(11*d**8)
```

Mathematica [B] time = 0.247643, size = 1105, normalized size = 5.52

$$\frac{1}{18}b^7d^{10}x^{18}+\frac{1}{17}b^6d^9(10bc+7ad)x^{17}+\frac{1}{16}b^5d^8\left(45b^2c^2+70abdc+21a^2d^2\right)x^{16}+\frac{1}{3}b^4d^7\left(24b^3c^3+63ab^2dc^2+42a^2bd^2c+7a^3d^3\right)x^{15}+\frac{5}{2}b^3d^6\left(6b^4c^4+24ab^3dc^3+27a^2b^2d^2c^2+10a^3bd^3c+a^4d^4\right)x^{14}+\frac{7}{13}b^2d^5\left(36b^5c^5+210ab^4dc^4+360a^2b^3d^2c^3+225a^3b^2d^3c^2+50a^4bd^4c+3a^5d^5\right)x^{13}+\frac{7}{12}bd^4\left(30b^6c^6+252ab^5dc^5+630a^2b^4d^2c^4+600a^3b^3d^3c^3+225a^4b^2d^4c^2+30a^5bd^5c+a^6d^6\right)x^{12}+\frac{1}{11}d^3\left(120b^7c^7+1470ab^6dc^6+5292a^2b^5d^2c^5+7350a^3b^4d^3c^4+4200a^4b^3d^4c^3+945a^5b^2d^5c^2+70a^6bd^6c+a^7d^7\right)x^{11}+\frac{1}{2}cd^2\left(9b^7c^7+168ab^6dc^6+882a^2b^5d^2c^5+1764a^3b^4d^3c^4+1470a^4b^3d^4c^3+504a^5b^2d^5c^2+63a^6bd^6c+2a^7d^7\right)x^{10}+\frac{5}{9}c^2d\left(2b^7c^7+63ab^6dc^6+504a^2b^5d^2c^5+1470a^3b^4d^3c^4+1764a^4b^3d^4c^3+882a^5b^2d^5c^2+168a^6bd^6c+9a^7d^7\right)x^9+\frac{1}{8}c^3\left(b^7c^7+70ab^6dc^6+945a^2b^5d^2c^5+4200a^3b^4d^3c^4+7350a^4b^3d^4c^3+5292a^5b^2d^5c^2+1470a^6bd^6c+120a^7d^7\right)x^8+ac^4\left(b^6c^6+30ab^5dc^5+225a^2b^4d^2c^4+600a^3b^3d^3c^3+630a^4b^2d^4c^2+252a^5bd^5c+30a^6d^6\right)x^7+\frac{7}{6}a^2c^5\left(3b^5c^5+50ab^4dc^4+225a^2b^3d^2c^3+360a^3b^2d^3c^2+210a^4bd^4c+36a^5d^5\right)x^6+7a^3c^6\left(b^4c^4+10ab^3dc^3+27a^2b^2d^2c^2+24a^3bd^3c+6a^4d^4\right)x^5+\frac{5}{4}a^4c^7\left(7b^3c^3+42ab^2dc^2+63a^2bd^2c+24a^3d^3\right)x^4+\frac{1}{3}a^5c^8\left(21b^2c^2+70abdc+45a^2d^2\right)x^3+\frac{1}{2}a^6c^9(7bc+10ad)x^2+a^7c^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7*(c + d*x)^10,x]
```

```
[Out] a^7*c^10*x + (a^6*c^9*(7*b*c + 10*a*d)*x^2)/2 + (a^5*c^8*(21*b^2*
c^2 + 70*a*b*c*d + 45*a^2*d^2)*x^3)/3 + (5*a^4*c^7*(7*b^3*c^3 + 4
```

```
2*a*b^2*c^2*d + 63*a^2*b*c*d^2 + 24*a^3*d^3)*x^4)/4 + 7*a^3*c^6*(
b^4*c^4 + 10*a*b^3*c^3*d + 27*a^2*b^2*c^2*d^2 + 24*a^3*b*c*d^3 +
6*a^4*d^4)*x^5 + (7*a^2*c^5*(3*b^5*c^5 + 50*a*b^4*c^4*d + 225*a^2
*b^3*c^3*d^2 + 360*a^3*b^2*c^2*d^3 + 210*a^4*b*c*d^4 + 36*a^5*d^5
)*x^6)/6 + a*c^4*(b^6*c^6 + 30*a*b^5*c^5*d + 225*a^2*b^4*c^4*d^2
+ 600*a^3*b^3*c^3*d^3 + 630*a^4*b^2*c^2*d^4 + 252*a^5*b*c*d^5 + 3
0*a^6*d^6)*x^7 + (c^3*(b^7*c^7 + 70*a*b^6*c^6*d + 945*a^2*b^5*c^5
*d^2 + 4200*a^3*b^4*c^4*d^3 + 7350*a^4*b^3*c^3*d^4 + 5292*a^5*b^2
*c^2*d^5 + 1470*a^6*b*c*d^6 + 120*a^7*d^7)*x^8)/8 + (5*c^2*d*(2*b
^7*c^7 + 63*a*b^6*c^6*d + 504*a^2*b^5*c^5*d^2 + 1470*a^3*b^4*c^4*
d^3 + 1764*a^4*b^3*c^3*d^4 + 882*a^5*b^2*c^2*d^5 + 168*a^6*b*c*d^
6 + 9*a^7*d^7)*x^9)/9 + (c*d^2*(9*b^7*c^7 + 168*a*b^6*c^6*d + 882
*a^2*b^5*c^5*d^2 + 1764*a^3*b^4*c^4*d^3 + 1470*a^4*b^3*c^3*d^4 +
504*a^5*b^2*c^2*d^5 + 63*a^6*b*c*d^6 + 2*a^7*d^7)*x^10)/2 + (d^3*
(120*b^7*c^7 + 1470*a*b^6*c^6*d + 5292*a^2*b^5*c^5*d^2 + 7350*a^3
*b^4*c^4*d^3 + 4200*a^4*b^3*c^3*d^4 + 945*a^5*b^2*c^2*d^5 + 70*a^
6*b*c*d^6 + a^7*d^7)*x^11)/11 + (7*b*d^4*(30*b^6*c^6 + 252*a*b^5*
c^5*d + 630*a^2*b^4*c^4*d^2 + 600*a^3*b^3*c^3*d^3 + 225*a^4*b^2*c
^2*d^4 + 30*a^5*b*c*d^5 + a^6*d^6)*x^12)/12 + (7*b^2*d^5*(36*b^5*
c^5 + 210*a*b^4*c^4*d + 360*a^2*b^3*c^3*d^2 + 225*a^3*b^2*c^2*d^3
 + 50*a^4*b*c*d^4 + 3*a^5*d^5)*x^13)/13 + (5*b^3*d^6*(6*b^4*c^4 +
 24*a*b^3*c^3*d + 27*a^2*b^2*c^2*d^2 + 10*a^3*b*c*d^3 + a^4*d^4)*
x^14)/2 + (b^4*d^7*(24*b^3*c^3 + 63*a*b^2*c^2*d + 42*a^2*b*c*d^2
+ 7*a^3*d^3)*x^15)/3 + (b^5*d^8*(45*b^2*c^2 + 70*a*b*c*d + 21*a^2
*d^2)*x^16)/16 + (b^6*d^9*(10*b*c + 7*a*d)*x^17)/17 + (b^7*d^10*x
^18)/18
```

Maple [B] time = 0.005, size = 1141, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7*(d*x+c)^10,x)
```

```
[Out] 1/18*b^7*d^10*x^18+1/17*(7*a*b^6*d^10+10*b^7*c*d^9)*x^17+1/16*(21
*a^2*b^5*d^10+70*a*b^6*c*d^9+45*b^7*c^2*d^8)*x^16+1/15*(35*a^3*b^
4*d^10+210*a^2*b^5*c*d^9+315*a*b^6*c^2*d^8+120*b^7*c^3*d^7)*x^15+
1/14*(35*a^4*b^3*d^10+350*a^3*b^4*c*d^9+945*a^2*b^5*c^2*d^8+840*a
*b^6*c^3*d^7+210*b^7*c^4*d^6)*x^14+1/13*(21*a^5*b^2*d^10+350*a^4*
b^3*c*d^9+1575*a^3*b^4*c^2*d^8+2520*a^2*b^5*c^3*d^7+1470*a*b^6*c^
4*d^6+252*b^7*c^5*d^5)*x^13+1/12*(7*a^6*b*d^10+210*a^5*b^2*c*d^9+
1575*a^4*b^3*c^2*d^8+4200*a^3*b^4*c^3*d^7+4410*a^2*b^5*c^4*d^6+17
64*a*b^6*c^5*d^5+210*b^7*c^6*d^4)*x^12+1/11*(a^7*d^10+70*a^6*b*c*
d^9+945*a^5*b^2*c^2*d^8+4200*a^4*b^3*c^3*d^7+7350*a^3*b^4*c^4*d^6
+5292*a^2*b^5*c^5*d^5+1470*a*b^6*c^6*d^4+120*b^7*c^7*d^3)*x^11+1/
10*(10*a^7*c*d^9+315*a^6*b*c^2*d^8+2520*a^5*b^2*c^3*d^7+7350*a^4*
b^3*c^4*d^6+8820*a^3*b^4*c^5*d^5+4410*a^2*b^5*c^6*d^4+840*a*b^6*c
^7*d^3+45*b^7*c^8*d^2)*x^10+1/9*(45*a^7*c^2*d^8+840*a^6*b*c^3*d^7
+4410*a^5*b^2*c^4*d^6+8820*a^4*b^3*c^5*d^5+7350*a^3*b^4*c^6*d^4+2
520*a^2*b^5*c^7*d^3+315*a*b^6*c^8*d^2+10*b^7*c^9*d)*x^9+1/8*(120*
a^7*c^3*d^7+1470*a^6*b*c^4*d^6+5292*a^5*b^2*c^5*d^5+7350*a^4*b^3*
```

```
c^6*d^4+4200*a^3*b^4*c^7*d^3+945*a^2*b^5*c^8*d^2+70*a*b^6*c^9*d+b
^7*c^10)*x^8+1/7*(210*a^7*c^4*d^6+1764*a^6*b*c^5*d^5+4410*a^5*b^2
*c^6*d^4+4200*a^4*b^3*c^7*d^3+1575*a^3*b^4*c^8*d^2+210*a^2*b^5*c^
9*d+7*a*b^6*c^10)*x^7+1/6*(252*a^7*c^5*d^5+1470*a^6*b*c^6*d^4+252
0*a^5*b^2*c^7*d^3+1575*a^4*b^3*c^8*d^2+350*a^3*b^4*c^9*d+21*a^2*b
^5*c^10)*x^6+1/5*(210*a^7*c^6*d^4+840*a^6*b*c^7*d^3+945*a^5*b^2*c
^8*d^2+350*a^4*b^3*c^9*d+35*a^3*b^4*c^10)*x^5+1/4*(120*a^7*c^7*d^
3+315*a^6*b*c^8*d^2+210*a^5*b^2*c^9*d+35*a^4*b^3*c^10)*x^4+1/3*(4
5*a^7*c^8*d^2+70*a^6*b*c^9*d+21*a^5*b^2*c^10)*x^3+1/2*(10*a^7*c^9
*d+7*a^6*b*c^10)*x^2+a^7*c^10*x
```

Maxima [A] time = 1.378, size = 1532, normalized size = 7.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/18*b^7*d^10*x^18 + a^7*c^10*x + 1/17*(10*b^7*c*d^9 + 7*a*b^6*d^
10)*x^17 + 1/16*(45*b^7*c^2*d^8 + 70*a*b^6*c*d^9 + 21*a^2*b^5*d^1
0)*x^16 + 1/3*(24*b^7*c^3*d^7 + 63*a*b^6*c^2*d^8 + 42*a^2*b^5*c*d
^9 + 7*a^3*b^4*d^10)*x^15 + 5/2*(6*b^7*c^4*d^6 + 24*a*b^6*c^3*d^7
 + 27*a^2*b^5*c^2*d^8 + 10*a^3*b^4*c*d^9 + a^4*b^3*d^10)*x^14 + 7
/13*(36*b^7*c^5*d^5 + 210*a*b^6*c^4*d^6 + 360*a^2*b^5*c^3*d^7 + 2
25*a^3*b^4*c^2*d^8 + 50*a^4*b^3*c*d^9 + 3*a^5*b^2*d^10)*x^13 + 7/
12*(30*b^7*c^6*d^4 + 252*a*b^6*c^5*d^5 + 630*a^2*b^5*c^4*d^6 + 60
0*a^3*b^4*c^3*d^7 + 225*a^4*b^3*c^2*d^8 + 30*a^5*b^2*c*d^9 + a^6*
b*d^10)*x^12 + 1/11*(120*b^7*c^7*d^3 + 1470*a*b^6*c^6*d^4 + 5292*
a^2*b^5*c^5*d^5 + 7350*a^3*b^4*c^4*d^6 + 4200*a^4*b^3*c^3*d^7 + 9
45*a^5*b^2*c^2*d^8 + 70*a^6*b*c*d^9 + a^7*d^10)*x^11 + 1/2*(9*b^7
*c^8*d^2 + 168*a*b^6*c^7*d^3 + 882*a^2*b^5*c^6*d^4 + 1764*a^3*b^4
*c^5*d^5 + 1470*a^4*b^3*c^4*d^6 + 504*a^5*b^2*c^3*d^7 + 63*a^6*b*
c^2*d^8 + 2*a^7*c*d^9)*x^10 + 5/9*(2*b^7*c^9*d + 63*a*b^6*c^8*d^2
 + 504*a^2*b^5*c^7*d^3 + 1470*a^3*b^4*c^6*d^4 + 1764*a^4*b^3*c^5*
d^5 + 882*a^5*b^2*c^4*d^6 + 168*a^6*b*c^3*d^7 + 9*a^7*c^2*d^8)*x^
9 + 1/8*(b^7*c^10 + 70*a*b^6*c^9*d + 945*a^2*b^5*c^8*d^2 + 4200*a
^3*b^4*c^7*d^3 + 7350*a^4*b^3*c^6*d^4 + 5292*a^5*b^2*c^5*d^5 + 14
70*a^6*b*c^4*d^6 + 120*a^7*c^3*d^7)*x^8 + (a*b^6*c^10 + 30*a^2*b^
5*c^9*d + 225*a^3*b^4*c^8*d^2 + 600*a^4*b^3*c^7*d^3 + 630*a^5*b^2
*c^6*d^4 + 252*a^6*b*c^5*d^5 + 30*a^7*c^4*d^6)*x^7 + 7/6*(3*a^2*b
^5*c^10 + 50*a^3*b^4*c^9*d + 225*a^4*b^3*c^8*d^2 + 360*a^5*b^2*c^
7*d^3 + 210*a^6*b*c^6*d^4 + 36*a^7*c^5*d^5)*x^6 + 7*(a^3*b^4*c^10
 + 10*a^4*b^3*c^9*d + 27*a^5*b^2*c^8*d^2 + 24*a^6*b*c^7*d^3 + 6*a
^7*c^6*d^4)*x^5 + 5/4*(7*a^4*b^3*c^10 + 42*a^5*b^2*c^9*d + 63*a^6
*b*c^8*d^2 + 24*a^7*c^7*d^3)*x^4 + 1/3*(21*a^5*b^2*c^10 + 70*a^6*
b*c^9*d + 45*a^7*c^8*d^2)*x^3 + 1/2*(7*a^6*b*c^10 + 10*a^7*c^9*d)
*x^2
```

Fricas [A] time = 0.214474, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/18*x^18*d^10*b^7 + 10/17*x^17*d^9*c*b^7 + 7/17*x^17*d^10*b^6*a
+ 45/16*x^16*d^8*c^2*b^7 + 35/8*x^16*d^9*c*b^6*a + 21/16*x^16*d^1
0*b^5*a^2 + 8*x^15*d^7*c^3*b^7 + 21*x^15*d^8*c^2*b^6*a + 14*x^15*
d^9*c*b^5*a^2 + 7/3*x^15*d^10*b^4*a^3 + 15*x^14*d^6*c^4*b^7 + 60*
x^14*d^7*c^3*b^6*a + 135/2*x^14*d^8*c^2*b^5*a^2 + 25*x^14*d^9*c*b
^4*a^3 + 5/2*x^14*d^10*b^3*a^4 + 252/13*x^13*d^5*c^5*b^7 + 1470/1
3*x^13*d^6*c^4*b^6*a + 2520/13*x^13*d^7*c^3*b^5*a^2 + 1575/13*x^1
3*d^8*c^2*b^4*a^3 + 350/13*x^13*d^9*c*b^3*a^4 + 21/13*x^13*d^10*b
^2*a^5 + 35/2*x^12*d^4*c^6*b^7 + 147*x^12*d^5*c^5*b^6*a + 735/2*x
^12*d^6*c^4*b^5*a^2 + 350*x^12*d^7*c^3*b^4*a^3 + 525/4*x^12*d^8*c
^2*b^3*a^4 + 35/2*x^12*d^9*c*b^2*a^5 + 7/12*x^12*d^10*b*a^6 + 120
/11*x^11*d^3*c^7*b^7 + 1470/11*x^11*d^4*c^6*b^6*a + 5292/11*x^11*
d^5*c^5*b^5*a^2 + 7350/11*x^11*d^6*c^4*b^4*a^3 + 4200/11*x^11*d^7
*c^3*b^3*a^4 + 945/11*x^11*d^8*c^2*b^2*a^5 + 70/11*x^11*d^9*c*b*a
^6 + 1/11*x^11*d^10*a^7 + 9/2*x^10*d^2*c^8*b^7 + 84*x^10*d^3*c^7*
b^6*a + 441*x^10*d^4*c^6*b^5*a^2 + 882*x^10*d^5*c^5*b^4*a^3 + 735
*x^10*d^6*c^4*b^3*a^4 + 252*x^10*d^7*c^3*b^2*a^5 + 63/2*x^10*d^8*
c^2*b*a^6 + x^10*d^9*c*a^7 + 10/9*x^9*d*c^9*b^7 + 35*x^9*d^2*c^8*
b^6*a + 280*x^9*d^3*c^7*b^5*a^2 + 2450/3*x^9*d^4*c^6*b^4*a^3 + 98
0*x^9*d^5*c^5*b^3*a^4 + 490*x^9*d^6*c^4*b^2*a^5 + 280/3*x^9*d^7*c
^3*b*a^6 + 5*x^9*d^8*c^2*a^7 + 1/8*x^8*c^10*b^7 + 35/4*x^8*d*c^9*
b^6*a + 945/8*x^8*d^2*c^8*b^5*a^2 + 525*x^8*d^3*c^7*b^4*a^3 + 367
5/4*x^8*d^4*c^6*b^3*a^4 + 1323/2*x^8*d^5*c^5*b^2*a^5 + 735/4*x^8*
d^6*c^4*b*a^6 + 15*x^8*d^7*c^3*a^7 + x^7*c^10*b^6*a + 30*x^7*d*c^
9*b^5*a^2 + 225*x^7*d^2*c^8*b^4*a^3 + 600*x^7*d^3*c^7*b^3*a^4 + 6
30*x^7*d^4*c^6*b^2*a^5 + 252*x^7*d^5*c^5*b*a^6 + 30*x^7*d^6*c^4*a
^7 + 7/2*x^6*c^10*b^5*a^2 + 175/3*x^6*d*c^9*b^4*a^3 + 525/2*x^6*d
^2*c^8*b^3*a^4 + 420*x^6*d^3*c^7*b^2*a^5 + 245*x^6*d^4*c^6*b*a^6
+ 42*x^6*d^5*c^5*a^7 + 7*x^5*c^10*b^4*a^3 + 70*x^5*d*c^9*b^3*a^4
+ 189*x^5*d^2*c^8*b^2*a^5 + 168*x^5*d^3*c^7*b*a^6 + 42*x^5*d^4*c^
6*a^7 + 35/4*x^4*c^10*b^3*a^4 + 105/2*x^4*d*c^9*b^2*a^5 + 315/4*x
^4*d^2*c^8*b*a^6 + 30*x^4*d^3*c^7*a^7 + 7*x^3*c^10*b^2*a^5 + 70/3
*x^3*d*c^9*b*a^6 + 15*x^3*d^2*c^8*a^7 + 7/2*x^2*c^10*b*a^6 + 5*x^
2*d*c^9*a^7 + x*c^10*a^7
```

Sympy [A] time = 0.579722, size = 1280, normalized size = 6.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7*(d*x+c)**10,x)
```

```
[Out] a**7*c**10*x + b**7*d**10*x**18/18 + x**17*(7*a*b**6*d**10/17 + 1
0*b**7*c*d**9/17) + x**16*(21*a**2*b**5*d**10/16 + 35*a*b**6*c*d*
*9/8 + 45*b**7*c**2*d**8/16) + x**15*(7*a**3*b**4*d**10/3 + 14*a*
*2*b**5*c*d**9 + 21*a*b**6*c**2*d**8 + 8*b**7*c**3*d**7) + x**14*
(5*a**4*b**3*d**10/2 + 25*a**3*b**4*c*d**9 + 135*a**2*b**5*c**2*d
**8/2 + 60*a*b**6*c**3*d**7 + 15*b**7*c**4*d**6) + x**13*(21*a**5
*b**2*d**10/13 + 350*a**4*b**3*c*d**9/13 + 1575*a**3*b**4*c**2*d*
*8/13 + 2520*a**2*b**5*c**3*d**7/13 + 1470*a*b**6*c**4*d**6/13 +
252*b**7*c**5*d**5/13) + x**12*(7*a**6*b*d**10/12 + 35*a**5*b**2*
c*d**9/2 + 525*a**4*b**3*c**2*d**8/4 + 350*a**3*b**4*c**3*d**7 +
735*a**2*b**5*c**4*d**6/2 + 147*a*b**6*c**5*d**5 + 35*b**7*c**6*d
**4/2) + x**11*(a**7*d**10/11 + 70*a**6*b*c*d**9/11 + 945*a**5*b*
*2*c**2*d**8/11 + 4200*a**4*b**3*c**3*d**7/11 + 7350*a**3*b**4*c*
*4*d**6/11 + 5292*a**2*b**5*c**5*d**5/11 + 1470*a*b**6*c**6*d**4/
11 + 120*b**7*c**7*d**3/11) + x**10*(a**7*c*d**9 + 63*a**6*b*c**2
*d**8/2 + 252*a**5*b**2*c**3*d**7 + 735*a**4*b**3*c**4*d**6 + 882
*a**3*b**4*c**5*d**5 + 441*a**2*b**5*c**6*d**4 + 84*a*b**6*c**7*d
**3 + 9*b**7*c**8*d**2/2) + x**9*(5*a**7*c**2*d**8 + 280*a**6*b*c
**3*d**7/3 + 490*a**5*b**2*c**4*d**6 + 980*a**4*b**3*c**5*d**5 +
2450*a**3*b**4*c**6*d**4/3 + 280*a**2*b**5*c**7*d**3 + 35*a*b**6*
c**8*d**2 + 10*b**7*c**9*d/9) + x**8*(15*a**7*c**3*d**7 + 735*a**
6*b*c**4*d**6/4 + 1323*a**5*b**2*c**5*d**5/2 + 3675*a**4*b**3*c**
6*d**4/4 + 525*a**3*b**4*c**7*d**3 + 945*a**2*b**5*c**8*d**2/8 +
35*a*b**6*c**9*d/4 + b**7*c**10/8) + x**7*(30*a**7*c**4*d**6 + 25
2*a**6*b*c**5*d**5 + 630*a**5*b**2*c**6*d**4 + 600*a**4*b**3*c**7
*d**3 + 225*a**3*b**4*c**8*d**2 + 30*a**2*b**5*c**9*d + a*b**6*c*
*10) + x**6*(42*a**7*c**5*d**5 + 245*a**6*b*c**6*d**4 + 420*a**5*
b**2*c**7*d**3 + 525*a**4*b**3*c**8*d**2/2 + 175*a**3*b**4*c**9*d
/3 + 7*a**2*b**5*c**10/2) + x**5*(42*a**7*c**6*d**4 + 168*a**6*b*
c**7*d**3 + 189*a**5*b**2*c**8*d**2 + 70*a**4*b**3*c**9*d + 7*a**
3*b**4*c**10) + x**4*(30*a**7*c**7*d**3 + 315*a**6*b*c**8*d**2/4
+ 105*a**5*b**2*c**9*d/2 + 35*a**4*b**3*c**10/4) + x**3*(15*a**7*
c**8*d**2 + 70*a**6*b*c**9*d/3 + 7*a**5*b**2*c**10) + x**2*(5*a**
7*c**9*d + 7*a**6*b*c**10/2)
```

GIAC/XCAS [A] time = 0.221162, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] Done
```

3.1305 $\int (a+bx)^6(c+dx)^{10}\,dx$

Optimal. Leaf size=170

$$-\frac{3b^5(c+dx)^{16}(bc-ad)}{8d^7}+\frac{b^4(c+dx)^{15}(bc-ad)^2}{d^7}-\frac{10b^3(c+dx)^{14}(bc-ad)^3}{7d^7}+\frac{15b^2(c+dx)^{13}(bc-ad)^4}{13d^7}-\frac{b(c+dx)^{12}(bc-ad)^5}{2d^7}+\frac{(c+dx)^{11}(bc-ad)^6}{11d^7}+\frac{b^6(c+dx)^{17}}{17d^7}$$

```
[Out] ((b*c - a*d)^6*(c + d*x)^11)/(11*d^7) - (b*(b*c - a*d)^5*(c + d*x
)^12)/(2*d^7) + (15*b^2*(b*c - a*d)^4*(c + d*x)^13)/(13*d^7) - (1
0*b^3*(b*c - a*d)^3*(c + d*x)^14)/(7*d^7) + (b^4*(b*c - a*d)^2*(c
 + d*x)^15)/d^7 - (3*b^5*(b*c - a*d)*(c + d*x)^16)/(8*d^7) + (b^6
*(c + d*x)^17)/(17*d^7)
```

Rubi [A] time = 1.46075, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3b^5(c+dx)^{16}(bc-ad)}{8d^7}+\frac{b^4(c+dx)^{15}(bc-ad)^2}{d^7}-\frac{10b^3(c+dx)^{14}(bc-ad)^3}{7d^7}+\frac{15b^2(c+dx)^{13}(bc-ad)^4}{13d^7}-\frac{b(c+dx)^{12}(bc-ad)^5}{2d^7}+\frac{(c+dx)^{11}(bc-ad)^6}{11d^7}+\frac{b^6(c+dx)^{17}}{17d^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^6*(c + d*x)^10,x]
```

```
[Out] ((b*c - a*d)^6*(c + d*x)^11)/(11*d^7) - (b*(b*c - a*d)^5*(c + d*x
)^12)/(2*d^7) + (15*b^2*(b*c - a*d)^4*(c + d*x)^13)/(13*d^7) - (1
0*b^3*(b*c - a*d)^3*(c + d*x)^14)/(7*d^7) + (b^4*(b*c - a*d)^2*(c
 + d*x)^15)/d^7 - (3*b^5*(b*c - a*d)*(c + d*x)^16)/(8*d^7) + (b^6
*(c + d*x)^17)/(17*d^7)
```

Rubi in Sympy [A] time = 119.466, size = 153, normalized size = 0.9

$$\frac{b^6\left(c+dx\right)^{17}}{17d^7}+\frac{3b^5\left(c+dx\right)^{16}\left(ad-bc\right)}{8d^7}+\frac{b^4\left(c+dx\right)^{15}\left(ad-bc\right)^2}{d^7}+\frac{10b^3\left(c+dx\right)^{14}\left(ad-bc\right)^3}{7d^7}+\frac{15b^2\left(c+dx\right)^{13}\left(ad-bc\right)^4}{13d^7}+\frac{b\left(c+dx\right)^{12}\left(ad-bc\right)^5}{2d^7}+\frac{\left(c+dx\right)^{11}\left(ad-bc\right)^6}{11d^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**6*(d*x+c)**10,x)
```

```
[Out] b**6*(c + d*x)**17/(17*d**7) + 3*b**5*(c + d*x)**16*(a*d - b*c)/(
8*d**7) + b**4*(c + d*x)**15*(a*d - b*c)**2/d**7 + 10*b**3*(c + d
*x)**14*(a*d - b*c)**3/(7*d**7) + 15*b**2*(c + d*x)**13*(a*d - b*
c)**4/(13*d**7) + b*(c + d*x)**12*(a*d - b*c)**5/(2*d**7) + (c +
d*x)**11*(a*d - b*c)**6/(11*d**7)
```

Mathematica [B] time = 0.229511, size = 939, normalized size = 5.52

$$\frac{1}{17}b^6d^{10}x^{17} + \frac{1}{8}b^5d^9(5bc+3ad)x^{16} + b^4d^8\left(3b^2c^2+4abdc+a^2d^2\right)x^{15} + \frac{5}{7}b^3d^7\left(12b^3c^3+27ab^2dc^2+15a^2bd^2c+2a^3d^3\right)x^{14} + \frac{5}{13}b^2d^6\left(42b^4c^4+144ab^3dc^3+135a^2b^2d^2c^2+40a^3bd^3c+3a^4d^4\right)x^{13} + \frac{1}{2}bd^5\left(42b^5c^5+210ab^4dc^4+300a^2b^3d^2c^3+150a^3b^2d^3c^2+25a^4bd^4c+a^5d^5\right)x^{12} + \frac{1}{11}d^4\left(210b^6c^6+1512ab^5dc^5+3150a^2b^4d^2c^4+2400a^3b^3d^3c^3+675a^4b^2d^4c^2+60a^5bd^5c+a^6d^6\right)x^{11} + cd^3\left(12b^6c^6+126ab^5dc^5+378a^2b^4d^2c^4+420a^3b^3d^3c^3+180a^4b^2d^4c^2+27a^5bd^5c+a^6d^6\right)x^{10} + 5c^2d^2\left(b^6c^6+16ab^5dc^5+70a^2b^4d^2c^4+112a^3b^3d^3c^3+70a^4b^2d^4c^2+16a^5bd^5c+a^6d^6\right)x^9 + \frac{5}{4}c^3d\left(b^6c^6+27ab^5dc^5+180a^2b^4d^2c^4+420a^3b^3d^3c^3+378a^4b^2d^4c^2+126a^5bd^5c+12a^6d^6\right)x^8 + \frac{1}{7}c^4\left(b^6c^6+60ab^5dc^5+675a^2b^4d^2c^4+2400a^3b^3d^3c^3+3150a^4b^2d^4c^2+1512a^5bd^5c+210a^6d^6\right)x^7 + ac^5\left(b^5c^5+25ab^4dc^4+150a^2b^3d^2c^3+300a^3b^2d^3c^2+210a^4bd^4c+42a^5d^5\right)x^6 + a^2c^6\left(3b^4c^4+40ab^3dc^3+135a^2b^2d^2c^2+144a^3bd^3c+42a^4d^4\right)x^5 + \frac{5}{2}a^3c^7\left(2b^3c^3+15ab^2dc^2+27a^2bd^2c+12a^3d^3\right)x^4 + 5a^4c^8\left(b^2c^2+4abdc+3a^2d^2\right)x^3 + a^5c^9(3bc+5ad)x^2 + a^6c^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^6*(c + d*x)^10,x]
```

```
[Out] a^6*c^10*x + a^5*c^9*(3*b*c + 5*a*d)*x^2 + 5*a^4*c^8*(b^2*c^2 + 4
*a*b*c*d + 3*a^2*d^2)*x^3 + (5*a^3*c^7*(2*b^3*c^3 + 15*a*b^2*c^2*
d + 27*a^2*b*c*d^2 + 12*a^3*d^3)*x^4)/2 + a^2*c^6*(3*b^4*c^4 + 40
*a*b^3*c^3*d + 135*a^2*b^2*c^2*d^2 + 144*a^3*b*c*d^3 + 42*a^4*d^4
)*x^5 + a*c^5*(b^5*c^5 + 25*a*b^4*c^4*d + 150*a^2*b^3*c^3*d^2 + 3
00*a^3*b^2*c^2*d^3 + 210*a^4*b*c*d^4 + 42*a^5*d^5)*x^6 + (c^4*(b^
6*c^6 + 60*a*b^5*c^5*d + 675*a^2*b^4*c^4*d^2 + 2400*a^3*b^3*c^3*d
^3 + 3150*a^4*b^2*c^2*d^4 + 1512*a^5*b*c*d^5 + 210*a^6*d^6)*x^7)/
7 + (5*c^3*d*(b^6*c^6 + 27*a*b^5*c^5*d + 180*a^2*b^4*c^4*d^2 + 42
0*a^3*b^3*c^3*d^3 + 378*a^4*b^2*c^2*d^4 + 126*a^5*b*c*d^5 + 12*a^
6*d^6)*x^8)/4 + 5*c^2*d^2*(b^6*c^6 + 16*a*b^5*c^5*d + 70*a^2*b^4*
c^4*d^2 + 112*a^3*b^3*c^3*d^3 + 70*a^4*b^2*c^2*d^4 + 16*a^5*b*c*d
^5 + a^6*d^6)*x^9 + c*d^3*(12*b^6*c^6 + 126*a*b^5*c^5*d + 378*a^2
```

```
*b^4*c^4*d^2 + 420*a^3*b^3*c^3*d^3 + 180*a^4*b^2*c^2*d^4 + 27*a^5
*b*c*d^5 + a^6*d^6)*x^10 + (d^4*(210*b^6*c^6 + 1512*a*b^5*c^5*d +
 3150*a^2*b^4*c^4*d^2 + 2400*a^3*b^3*c^3*d^3 + 675*a^4*b^2*c^2*d^
4 + 60*a^5*b*c*d^5 + a^6*d^6)*x^11)/11 + (b*d^5*(42*b^5*c^5 + 210
*a*b^4*c^4*d + 300*a^2*b^3*c^3*d^2 + 150*a^3*b^2*c^2*d^3 + 25*a^4
*b*c*d^4 + a^5*d^5)*x^12)/2 + (5*b^2*d^6*(42*b^4*c^4 + 144*a*b^3*
c^3*d + 135*a^2*b^2*c^2*d^2 + 40*a^3*b*c*d^3 + 3*a^4*d^4)*x^13)/1
3 + (5*b^3*d^7*(12*b^3*c^3 + 27*a*b^2*c^2*d + 15*a^2*b*c*d^2 + 2*
a^3*d^3)*x^14)/7 + b^4*d^8*(3*b^2*c^2 + 4*a*b*c*d + a^2*d^2)*x^15
 + (b^5*d^9*(5*b*c + 3*a*d)*x^16)/8 + (b^6*d^10*x^17)/17
```

Maple [B] time = 0.003, size = 991, normalized size = 5.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^6*(d*x+c)^10,x)
```

```
[Out] 1/17*b^6*d^10*x^17+1/16*(6*a*b^5*d^10+10*b^6*c*d^9)*x^16+1/15*(15
*a^2*b^4*d^10+60*a*b^5*c*d^9+45*b^6*c^2*d^8)*x^15+1/14*(20*a^3*b^
3*d^10+150*a^2*b^4*c*d^9+270*a*b^5*c^2*d^8+120*b^6*c^3*d^7)*x^14+
1/13*(15*a^4*b^2*d^10+200*a^3*b^3*c*d^9+675*a^2*b^4*c^2*d^8+720*a
*b^5*c^3*d^7+210*b^6*c^4*d^6)*x^13+1/12*(6*a^5*b*d^10+150*a^4*b^2
*c*d^9+900*a^3*b^3*c^2*d^8+1800*a^2*b^4*c^3*d^7+1260*a*b^5*c^4*d^
6+252*b^6*c^5*d^5)*x^12+1/11*(a^6*d^10+60*a^5*b*c*d^9+675*a^4*b^2
*c^2*d^8+2400*a^3*b^3*c^3*d^7+3150*a^2*b^4*c^4*d^6+1512*a*b^5*c^5
*d^5+210*b^6*c^6*d^4)*x^11+1/10*(10*a^6*c*d^9+270*a^5*b*c^2*d^8+1
800*a^4*b^2*c^3*d^7+4200*a^3*b^3*c^4*d^6+3780*a^2*b^4*c^5*d^5+126
0*a*b^5*c^6*d^4+120*b^6*c^7*d^3)*x^10+1/9*(45*a^6*c^2*d^8+720*a^5
*b*c^3*d^7+3150*a^4*b^2*c^4*d^6+5040*a^3*b^3*c^5*d^5+3150*a^2*b^4
*c^6*d^4+720*a*b^5*c^7*d^3+45*b^6*c^8*d^2)*x^9+1/8*(120*a^6*c^3*d
^7+1260*a^5*b*c^4*d^6+3780*a^4*b^2*c^5*d^5+4200*a^3*b^3*c^6*d^4+1
800*a^2*b^4*c^7*d^3+270*a*b^5*c^8*d^2+10*b^6*c^9*d)*x^8+1/7*(210*
a^6*c^4*d^6+1512*a^5*b*c^5*d^5+3150*a^4*b^2*c^6*d^4+2400*a^3*b^3*
c^7*d^3+675*a^2*b^4*c^8*d^2+60*a*b^5*c^9*d+b^6*c^10)*x^7+1/6*(252
*a^6*c^5*d^5+1260*a^5*b*c^6*d^4+1800*a^4*b^2*c^7*d^3+900*a^3*b^3*
c^8*d^2+150*a^2*b^4*c^9*d+6*a*b^5*c^10)*x^6+1/5*(210*a^6*c^6*d^4+
720*a^5*b*c^7*d^3+675*a^4*b^2*c^8*d^2+200*a^3*b^3*c^9*d+15*a^2*b^
4*c^10)*x^5+1/4*(120*a^6*c^7*d^3+270*a^5*b*c^8*d^2+150*a^4*b^2*c^
9*d+20*a^3*b^3*c^10)*x^4+1/3*(45*a^6*c^8*d^2+60*a^5*b*c^9*d+15*a^
4*b^2*c^10)*x^3+1/2*(10*a^6*c^9*d+6*a^5*b*c^10)*x^2+a^6*c^10*x
```

Maxima [A] time = 1.37458, size = 1319, normalized size = 7.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/17*b^6*d^10*x^17 + a^6*c^10*x + 1/8*(5*b^6*c*d^9 + 3*a*b^5*d^10
)*x^16 + (3*b^6*c^2*d^8 + 4*a*b^5*c*d^9 + a^2*b^4*d^10)*x^15 + 5/
7*(12*b^6*c^3*d^7 + 27*a*b^5*c^2*d^8 + 15*a^2*b^4*c*d^9 + 2*a^3*b
^3*d^10)*x^14 + 5/13*(42*b^6*c^4*d^6 + 144*a*b^5*c^3*d^7 + 135*a^
2*b^4*c^2*d^8 + 40*a^3*b^3*c*d^9 + 3*a^4*b^2*d^10)*x^13 + 1/2*(42
*b^6*c^5*d^5 + 210*a*b^5*c^4*d^6 + 300*a^2*b^4*c^3*d^7 + 150*a^3*
b^3*c^2*d^8 + 25*a^4*b^2*c*d^9 + a^5*b*d^10)*x^12 + 1/11*(210*b^6
*c^6*d^4 + 1512*a*b^5*c^5*d^5 + 3150*a^2*b^4*c^4*d^6 + 2400*a^3*b
^3*c^3*d^7 + 675*a^4*b^2*c^2*d^8 + 60*a^5*b*c*d^9 + a^6*d^10)*x^1
1 + (12*b^6*c^7*d^3 + 126*a*b^5*c^6*d^4 + 378*a^2*b^4*c^5*d^5 + 4
20*a^3*b^3*c^4*d^6 + 180*a^4*b^2*c^3*d^7 + 27*a^5*b*c^2*d^8 + a^6
*c*d^9)*x^10 + 5*(b^6*c^8*d^2 + 16*a*b^5*c^7*d^3 + 70*a^2*b^4*c^6
*d^4 + 112*a^3*b^3*c^5*d^5 + 70*a^4*b^2*c^4*d^6 + 16*a^5*b*c^3*d^
7 + a^6*c^2*d^8)*x^9 + 5/4*(b^6*c^9*d + 27*a*b^5*c^8*d^2 + 180*a^
2*b^4*c^7*d^3 + 420*a^3*b^3*c^6*d^4 + 378*a^4*b^2*c^5*d^5 + 126*a
^5*b*c^4*d^6 + 12*a^6*c^3*d^7)*x^8 + 1/7*(b^6*c^10 + 60*a*b^5*c^9
*d + 675*a^2*b^4*c^8*d^2 + 2400*a^3*b^3*c^7*d^3 + 3150*a^4*b^2*c^
6*d^4 + 1512*a^5*b*c^5*d^5 + 210*a^6*c^4*d^6)*x^7 + (a*b^5*c^10 +
 25*a^2*b^4*c^9*d + 150*a^3*b^3*c^8*d^2 + 300*a^4*b^2*c^7*d^3 + 2
10*a^5*b*c^6*d^4 + 42*a^6*c^5*d^5)*x^6 + (3*a^2*b^4*c^10 + 40*a^3
*b^3*c^9*d + 135*a^4*b^2*c^8*d^2 + 144*a^5*b*c^7*d^3 + 42*a^6*c^6
*d^4)*x^5 + 5/2*(2*a^3*b^3*c^10 + 15*a^4*b^2*c^9*d + 27*a^5*b*c^8
*d^2 + 12*a^6*c^7*d^3)*x^4 + 5*(a^4*b^2*c^10 + 4*a^5*b*c^9*d + 3*
a^6*c^8*d^2)*x^3 + (3*a^5*b*c^10 + 5*a^6*c^9*d)*x^2
```

Fricas [A] time = 0.212921, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/17*x^17*d^10*b^6 + 5/8*x^16*d^9*c*b^6 + 3/8*x^16*d^10*b^5*a + 3
*x^15*d^8*c^2*b^6 + 4*x^15*d^9*c*b^5*a + x^15*d^10*b^4*a^2 + 60/7
*x^14*d^7*c^3*b^6 + 135/7*x^14*d^8*c^2*b^5*a + 75/7*x^14*d^9*c*b^
4*a^2 + 10/7*x^14*d^10*b^3*a^3 + 210/13*x^13*d^6*c^4*b^6 + 720/13
*x^13*d^7*c^3*b^5*a + 675/13*x^13*d^8*c^2*b^4*a^2 + 200/13*x^13*d
^9*c*b^3*a^3 + 15/13*x^13*d^10*b^2*a^4 + 21*x^12*d^5*c^5*b^6 + 10
5*x^12*d^6*c^4*b^5*a + 150*x^12*d^7*c^3*b^4*a^2 + 75*x^12*d^8*c^2
*b^3*a^3 + 25/2*x^12*d^9*c*b^2*a^4 + 1/2*x^12*d^10*b*a^5 + 210/11
*x^11*d^4*c^6*b^6 + 1512/11*x^11*d^5*c^5*b^5*a + 3150/11*x^11*d^6
*c^4*b^4*a^2 + 2400/11*x^11*d^7*c^3*b^3*a^3 + 675/11*x^11*d^8*c^2
*b^2*a^4 + 60/11*x^11*d^9*c*b*a^5 + 1/11*x^11*d^10*a^6 + 12*x^10*
d^3*c^7*b^6 + 126*x^10*d^4*c^6*b^5*a + 378*x^10*d^5*c^5*b^4*a^2 +
 420*x^10*d^6*c^4*b^3*a^3 + 180*x^10*d^7*c^3*b^2*a^4 + 27*x^10*d^
8*c^2*b*a^5 + x^10*d^9*c*a^6 + 5*x^9*d^2*c^8*b^6 + 80*x^9*d^3*c^7
*b^5*a + 350*x^9*d^4*c^6*b^4*a^2 + 560*x^9*d^5*c^5*b^3*a^3 + 350*
x^9*d^6*c^4*b^2*a^4 + 80*x^9*d^7*c^3*b*a^5 + 5*x^9*d^8*c^2*a^6 +
```

```
5/4*x^8*d*c^9*b^6 + 135/4*x^8*d^2*c^8*b^5*a + 225*x^8*d^3*c^7*b^4
*a^2 + 525*x^8*d^4*c^6*b^3*a^3 + 945/2*x^8*d^5*c^5*b^2*a^4 + 315/
2*x^8*d^6*c^4*b*a^5 + 15*x^8*d^7*c^3*a^6 + 1/7*x^7*c^10*b^6 + 60/
7*x^7*d*c^9*b^5*a + 675/7*x^7*d^2*c^8*b^4*a^2 + 2400/7*x^7*d^3*c^
7*b^3*a^3 + 450*x^7*d^4*c^6*b^2*a^4 + 216*x^7*d^5*c^5*b*a^5 + 30*
x^7*d^6*c^4*a^6 + x^6*c^10*b^5*a + 25*x^6*d*c^9*b^4*a^2 + 150*x^6
*d^2*c^8*b^3*a^3 + 300*x^6*d^3*c^7*b^2*a^4 + 210*x^6*d^4*c^6*b*a^
5 + 42*x^6*d^5*c^5*a^6 + 3*x^5*c^10*b^4*a^2 + 40*x^5*d*c^9*b^3*a^
3 + 135*x^5*d^2*c^8*b^2*a^4 + 144*x^5*d^3*c^7*b*a^5 + 42*x^5*d^4*
c^6*a^6 + 5*x^4*c^10*b^3*a^3 + 75/2*x^4*d*c^9*b^2*a^4 + 135/2*x^4
*d^2*c^8*b*a^5 + 30*x^4*d^3*c^7*a^6 + 5*x^3*c^10*b^2*a^4 + 20*x^3
*d*c^9*b*a^5 + 15*x^3*d^2*c^8*a^6 + 3*x^2*c^10*b*a^5 + 5*x^2*d*c^
9*a^6 + x*c^10*a^6
```

Sympy [A] time = 0.523504, size = 1088, normalized size = 6.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**6*(d*x+c)**10,x)
```

```
[Out] a**6*c**10*x + b**6*d**10*x**17/17 + x**16*(3*a*b**5*d**10/8 + 5*
b**6*c*d**9/8) + x**15*(a**2*b**4*d**10 + 4*a*b**5*c*d**9 + 3*b**
6*c**2*d**8) + x**14*(10*a**3*b**3*d**10/7 + 75*a**2*b**4*c*d**9/
7 + 135*a*b**5*c**2*d**8/7 + 60*b**6*c**3*d**7/7) + x**13*(15*a**
4*b**2*d**10/13 + 200*a**3*b**3*c*d**9/13 + 675*a**2*b**4*c**2*d*
*8/13 + 720*a*b**5*c**3*d**7/13 + 210*b**6*c**4*d**6/13) + x**12*
(a**5*b*d**10/2 + 25*a**4*b**2*c*d**9/2 + 75*a**3*b**3*c**2*d**8
+ 150*a**2*b**4*c**3*d**7 + 105*a*b**5*c**4*d**6 + 21*b**6*c**5*d
**5) + x**11*(a**6*d**10/11 + 60*a**5*b*c*d**9/11 + 675*a**4*b**2
*c**2*d**8/11 + 2400*a**3*b**3*c**3*d**7/11 + 3150*a**2*b**4*c**4
*d**6/11 + 1512*a*b**5*c**5*d**5/11 + 210*b**6*c**6*d**4/11) + x*
*10*(a**6*c*d**9 + 27*a**5*b*c**2*d**8 + 180*a**4*b**2*c**3*d**7
+ 420*a**3*b**3*c**4*d**6 + 378*a**2*b**4*c**5*d**5 + 126*a*b**5*
c**6*d**4 + 12*b**6*c**7*d**3) + x**9*(5*a**6*c**2*d**8 + 80*a**5
*b*c**3*d**7 + 350*a**4*b**2*c**4*d**6 + 560*a**3*b**3*c**5*d**5
+ 350*a**2*b**4*c**6*d**4 + 80*a*b**5*c**7*d**3 + 5*b**6*c**8*d**
2) + x**8*(15*a**6*c**3*d**7 + 315*a**5*b*c**4*d**6/2 + 945*a**4*
b**2*c**5*d**5/2 + 525*a**3*b**3*c**6*d**4 + 225*a**2*b**4*c**7*d
**3 + 135*a*b**5*c**8*d**2/4 + 5*b**6*c**9*d/4) + x**7*(30*a**6*c
**4*d**6 + 216*a**5*b*c**5*d**5 + 450*a**4*b**2*c**6*d**4 + 2400*
a**3*b**3*c**7*d**3/7 + 675*a**2*b**4*c**8*d**2/7 + 60*a*b**5*c**
9*d/7 + b**6*c**10/7) + x**6*(42*a**6*c**5*d**5 + 210*a**5*b*c**6
*d**4 + 300*a**4*b**2*c**7*d**3 + 150*a**3*b**3*c**8*d**2 + 25*a*
*2*b**4*c**9*d + a*b**5*c**10) + x**5*(42*a**6*c**6*d**4 + 144*a*
*5*b*c**7*d**3 + 135*a**4*b**2*c**8*d**2 + 40*a**3*b**3*c**9*d +
3*a**2*b**4*c**10) + x**4*(30*a**6*c**7*d**3 + 135*a**5*b*c**8*d*
*2/2 + 75*a**4*b**2*c**9*d/2 + 5*a**3*b**3*c**10) + x**3*(15*a**6
*c**8*d**2 + 20*a**5*b*c**9*d + 5*a**4*b**2*c**10) + x**2*(5*a**6
*c**9*d + 3*a**5*b*c**10)
```

GIAC/XCAS [A] time = 0.215667, size = 1, normalized size = 0.01

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6*(d*x + c)^10,x, algorithm="giac")

[Out] Done
```

3.1306 $\int (a+bx)^5(c+dx)^{10}\,dx$

Optimal. Leaf size=146

$$-\frac{b^4(c+dx)^{15}(bc-ad)}{3d^6}+\frac{5b^3(c+dx)^{14}(bc-ad)^2}{7d^6}-\frac{10b^2(c+dx)^{13}(bc-ad)^3}{13d^6}+\frac{5b(c+dx)^{12}(bc-ad)^4}{12d^6}-\frac{(c+dx)^{11}(bc-ad)^5}{11d^6}+\frac{b^5(c+dx)^{16}}{16d^6}$$

```
[Out] -((b*c - a*d)^5*(c + d*x)^11)/(11*d^6) + (5*b*(b*c - a*d)^4*(c +
d*x)^12)/(12*d^6) - (10*b^2*(b*c - a*d)^3*(c + d*x)^13)/(13*d^6)
+ (5*b^3*(b*c - a*d)^2*(c + d*x)^14)/(7*d^6) - (b^4*(b*c - a*d)*(
c + d*x)^15)/(3*d^6) + (b^5*(c + d*x)^16)/(16*d^6)
```

Rubi [A] time = 1.07726, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{b^4(c+dx)^{15}(bc-ad)}{3d^6}+\frac{5b^3(c+dx)^{14}(bc-ad)^2}{7d^6}-\frac{10b^2(c+dx)^{13}(bc-ad)^3}{13d^6}+\frac{5b(c+dx)^{12}(bc-ad)^4}{12d^6}-\frac{(c+dx)^{11}(bc-ad)^5}{11d^6}+\frac{b^5(c+dx)^{16}}{16d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(c + d*x)^10,x]
```

```
[Out] -((b*c - a*d)^5*(c + d*x)^11)/(11*d^6) + (5*b*(b*c - a*d)^4*(c +
d*x)^12)/(12*d^6) - (10*b^2*(b*c - a*d)^3*(c + d*x)^13)/(13*d^6)
+ (5*b^3*(b*c - a*d)^2*(c + d*x)^14)/(7*d^6) - (b^4*(b*c - a*d)*(
c + d*x)^15)/(3*d^6) + (b^5*(c + d*x)^16)/(16*d^6)
```

Rubi in Sympy [A] time = 96.4866, size = 131, normalized size = 0.9

$$\frac{b^5\left(c+dx\right)^{16}}{16d^6}+\frac{b^4\left(c+dx\right)^{15}\left(ad-bc\right)}{3d^6}+\frac{5b^3\left(c+dx\right)^{14}\left(ad-bc\right)^2}{7d^6}+\frac{10b^2\left(c+dx\right)^{13}\left(ad-bc\right)^3}{13d^6}+\frac{5b\left(c+dx\right)^{12}\left(ad-bc\right)^4}{12d^6}+\frac{\left(c+dx\right)^{11}\left(ad-bc\right)^5}{11d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(d*x+c)**10,x)
```

```
[Out] b**5*(c + d*x)**16/(16*d**6) + b**4*(c + d*x)**15*(a*d - b*c)/(3*
d**6) + 5*b**3*(c + d*x)**14*(a*d - b*c)**2/(7*d**6) + 10*b**2*(c
```

```
 + d*x)**13*(a*d - b*c)**3/(13*d**6) + 5*b*(c + d*x)**12*(a*d - b
*c)**4/(12*d**6) + (c + d*x)**11*(a*d - b*c)**5/(11*d**6)
```

Mathematica [B] time = 0.172805, size = 811, normalized size = 5.55

$$\frac{1}{16}b^5d^{10}x^{16}+\frac{1}{3}b^4d^9(2bc+ad)x^{15}+\frac{5}{14}b^3d^8\left(9b^2c^2+10abdc+2a^2d^2\right)x^{14}$$
$$+\frac{5}{13}b^2d^7\left(24b^3c^3+45ab^2dc^2+20a^2bd^2c+2a^3d^3\right)x^{13}$$
$$+\frac{5}{12}bd^6\left(42b^4c^4+120ab^3dc^3+90a^2b^2d^2c^2+20a^3bd^3c+a^4d^4\right)x^{12}$$
$$+\frac{1}{11}d^5\left(252b^5c^5+1050ab^4dc^4+1200a^2b^3d^2c^3+450a^3b^2d^3c^2+50a^4bd^4c+a^5d^5\right)x^{11}$$
$$+\frac{1}{2}cd^4\left(42b^5c^5+252ab^4dc^4+420a^2b^3d^2c^3+240a^3b^2d^3c^2+45a^4bd^4c+2a^5d^5\right)x^{10}$$
$$+\frac{5}{3}c^2d^3\left(8b^5c^5+70ab^4dc^4+168a^2b^3d^2c^3+140a^3b^2d^3c^2+40a^4bd^4c+3a^5d^5\right)x^9$$
$$+\frac{15}{8}c^3d^2\left(3b^5c^5+40ab^4dc^4+140a^2b^3d^2c^3+168a^3b^2d^3c^2+70a^4bd^4c+8a^5d^5\right)x^8$$
$$+\frac{5}{7}c^4d\left(2b^5c^5+45ab^4dc^4+240a^2b^3d^2c^3+420a^3b^2d^3c^2+252a^4bd^4c+42a^5d^5\right)x^7$$
$$+\frac{1}{6}c^5\left(b^5c^5+50ab^4dc^4+450a^2b^3d^2c^3+1200a^3b^2d^3c^2+1050a^4bd^4c+252a^5d^5\right)x^6$$
$$+ac^6\left(b^4c^4+20ab^3dc^3+90a^2b^2d^2c^2+120a^3bd^3c+42a^4d^4\right)x^5$$
$$+\frac{5}{4}a^2c^7\left(2b^3c^3+20ab^2dc^2+45a^2bd^2c+24a^3d^3\right)x^4$$
$$+\frac{5}{3}a^3c^8\left(2b^2c^2+10abdc+9a^2d^2\right)x^3+\frac{5}{2}a^4c^9(bc+2ad)x^2+a^5c^{10}x$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(c + d*x)^10,x]
```

```
[Out] a^5*c^10*x + (5*a^4*c^9*(b*c + 2*a*d)*x^2)/2 + (5*a^3*c^8*(2*b^2*
c^2 + 10*a*b*c*d + 9*a^2*d^2)*x^3)/3 + (5*a^2*c^7*(2*b^3*c^3 + 20
*a*b^2*c^2*d + 45*a^2*b*c*d^2 + 24*a^3*d^3)*x^4)/4 + a*c^6*(b^4*c
^4 + 20*a*b^3*c^3*d + 90*a^2*b^2*c^2*d^2 + 120*a^3*b*c*d^3 + 42*a
^4*d^4)*x^5 + (c^5*(b^5*c^5 + 50*a*b^4*c^4*d + 450*a^2*b^3*c^3*d^
2 + 1200*a^3*b^2*c^2*d^3 + 1050*a^4*b*c*d^4 + 252*a^5*d^5)*x^6)/6
 + (5*c^4*d*(2*b^5*c^5 + 45*a*b^4*c^4*d + 240*a^2*b^3*c^3*d^2 + 4
20*a^3*b^2*c^2*d^3 + 252*a^4*b*c*d^4 + 42*a^5*d^5)*x^7)/7 + (15*c
^3*d^2*(3*b^5*c^5 + 40*a*b^4*c^4*d + 140*a^2*b^3*c^3*d^2 + 168*a^
3*b^2*c^2*d^3 + 70*a^4*b*c*d^4 + 8*a^5*d^5)*x^8)/8 + (5*c^2*d^3*(
8*b^5*c^5 + 70*a*b^4*c^4*d + 168*a^2*b^3*c^3*d^2 + 140*a^3*b^2*c^
2*d^3 + 40*a^4*b*c*d^4 + 3*a^5*d^5)*x^9)/3 + (c*d^4*(42*b^5*c^5 +
 252*a*b^4*c^4*d + 420*a^2*b^3*c^3*d^2 + 240*a^3*b^2*c^2*d^3 + 45
*a^4*b*c*d^4 + 2*a^5*d^5)*x^10)/2 + (d^5*(252*b^5*c^5 + 1050*a*b^
4*c^4*d + 1200*a^2*b^3*c^3*d^2 + 450*a^3*b^2*c^2*d^3 + 50*a^4*b*c
*d^4 + a^5*d^5)*x^11)/11 + (5*b*d^6*(42*b^4*c^4 + 120*a*b^3*c^3*d
 + 90*a^2*b^2*c^2*d^2 + 20*a^3*b*c*d^3 + a^4*d^4)*x^12)/12 + (5*b
^2*d^7*(24*b^3*c^3 + 45*a*b^2*c^2*d + 20*a^2*b*c*d^2 + 2*a^3*d^3)
```

```
*x^13)/13 + (5*b^3*d^8*(9*b^2*c^2 + 10*a*b*c*d + 2*a^2*d^2)*x^14)
/14 + (b^4*d^9*(2*b*c + a*d)*x^15)/3 + (b^5*d^10*x^16)/16
```

Maple [B] time = 0.003, size = 841, normalized size = 5.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(d*x+c)^10,x)
```

```
[Out] 1/16*b^5*d^10*x^16+1/15*(5*a*b^4*d^10+10*b^5*c*d^9)*x^15+1/14*(10
*a^2*b^3*d^10+50*a*b^4*c*d^9+45*b^5*c^2*d^8)*x^14+1/13*(10*a^3*b^
2*d^10+100*a^2*b^3*c*d^9+225*a*b^4*c^2*d^8+120*b^5*c^3*d^7)*x^13+
1/12*(5*a^4*b*d^10+100*a^3*b^2*c*d^9+450*a^2*b^3*c^2*d^8+600*a*b^
4*c^3*d^7+210*b^5*c^4*d^6)*x^12+1/11*(a^5*d^10+50*a^4*b*c*d^9+450
*a^3*b^2*c^2*d^8+1200*a^2*b^3*c^3*d^7+1050*a*b^4*c^4*d^6+252*b^5*
c^5*d^5)*x^11+1/10*(10*a^5*c*d^9+225*a^4*b*c^2*d^8+1200*a^3*b^2*c
^3*d^7+2100*a^2*b^3*c^4*d^6+1260*a*b^4*c^5*d^5+210*b^5*c^6*d^4)*x
^10+1/9*(45*a^5*c^2*d^8+600*a^4*b*c^3*d^7+2100*a^3*b^2*c^4*d^6+25
20*a^2*b^3*c^5*d^5+1050*a*b^4*c^6*d^4+120*b^5*c^7*d^3)*x^9+1/8*(1
20*a^5*c^3*d^7+1050*a^4*b*c^4*d^6+2520*a^3*b^2*c^5*d^5+2100*a^2*b
^3*c^6*d^4+600*a*b^4*c^7*d^3+45*b^5*c^8*d^2)*x^8+1/7*(210*a^5*c^4
*d^6+1260*a^4*b*c^5*d^5+2100*a^3*b^2*c^6*d^4+1200*a^2*b^3*c^7*d^3
+225*a*b^4*c^8*d^2+10*b^5*c^9*d)*x^7+1/6*(252*a^5*c^5*d^5+1050*a^
4*b*c^6*d^4+1200*a^3*b^2*c^7*d^3+450*a^2*b^3*c^8*d^2+50*a*b^4*c^9
*d+b^5*c^10)*x^6+1/5*(210*a^5*c^6*d^4+600*a^4*b*c^7*d^3+450*a^3*b
^2*c^8*d^2+100*a^2*b^3*c^9*d+5*a*b^4*c^10)*x^5+1/4*(120*a^5*c^7*d
^3+225*a^4*b*c^8*d^2+100*a^3*b^2*c^9*d+10*a^2*b^3*c^10)*x^4+1/3*(
45*a^5*c^8*d^2+50*a^4*b*c^9*d+10*a^3*b^2*c^10)*x^3+1/2*(10*a^5*c^
9*d+5*a^4*b*c^10)*x^2+a^5*c^10*x
```

Maxima [A] time = 1.34407, size = 1127, normalized size = 7.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/16*b^5*d^10*x^16 + a^5*c^10*x + 1/3*(2*b^5*c*d^9 + a*b^4*d^10)*
x^15 + 5/14*(9*b^5*c^2*d^8 + 10*a*b^4*c*d^9 + 2*a^2*b^3*d^10)*x^1
4 + 5/13*(24*b^5*c^3*d^7 + 45*a*b^4*c^2*d^8 + 20*a^2*b^3*c*d^9 +
2*a^3*b^2*d^10)*x^13 + 5/12*(42*b^5*c^4*d^6 + 120*a*b^4*c^3*d^7 +
 90*a^2*b^3*c^2*d^8 + 20*a^3*b^2*c*d^9 + a^4*b*d^10)*x^12 + 1/11*
(252*b^5*c^5*d^5 + 1050*a*b^4*c^4*d^6 + 1200*a^2*b^3*c^3*d^7 + 45
0*a^3*b^2*c^2*d^8 + 50*a^4*b*c*d^9 + a^5*d^10)*x^11 + 1/2*(42*b^5
```

```
*c^6*d^4 + 252*a*b^4*c^5*d^5 + 420*a^2*b^3*c^4*d^6 + 240*a^3*b^2*
c^3*d^7 + 45*a^4*b*c^2*d^8 + 2*a^5*c*d^9)*x^10 + 5/3*(8*b^5*c^7*d
^3 + 70*a*b^4*c^6*d^4 + 168*a^2*b^3*c^5*d^5 + 140*a^3*b^2*c^4*d^6
 + 40*a^4*b*c^3*d^7 + 3*a^5*c^2*d^8)*x^9 + 15/8*(3*b^5*c^8*d^2 +
40*a*b^4*c^7*d^3 + 140*a^2*b^3*c^6*d^4 + 168*a^3*b^2*c^5*d^5 + 70
*a^4*b*c^4*d^6 + 8*a^5*c^3*d^7)*x^8 + 5/7*(2*b^5*c^9*d + 45*a*b^4
*c^8*d^2 + 240*a^2*b^3*c^7*d^3 + 420*a^3*b^2*c^6*d^4 + 252*a^4*b*
c^5*d^5 + 42*a^5*c^4*d^6)*x^7 + 1/6*(b^5*c^10 + 50*a*b^4*c^9*d +
450*a^2*b^3*c^8*d^2 + 1200*a^3*b^2*c^7*d^3 + 1050*a^4*b*c^6*d^4 +
 252*a^5*c^5*d^5)*x^6 + (a*b^4*c^10 + 20*a^2*b^3*c^9*d + 90*a^3*b
^2*c^8*d^2 + 120*a^4*b*c^7*d^3 + 42*a^5*c^6*d^4)*x^5 + 5/4*(2*a^2
*b^3*c^10 + 20*a^3*b^2*c^9*d + 45*a^4*b*c^8*d^2 + 24*a^5*c^7*d^3)
*x^4 + 5/3*(2*a^3*b^2*c^10 + 10*a^4*b*c^9*d + 9*a^5*c^8*d^2)*x^3
+ 5/2*(a^4*b*c^10 + 2*a^5*c^9*d)*x^2
```

Fricas [A] time = 0.213999, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/16*x^16*d^10*b^5 + 2/3*x^15*d^9*c*b^5 + 1/3*x^15*d^10*b^4*a + 4
5/14*x^14*d^8*c^2*b^5 + 25/7*x^14*d^9*c*b^4*a + 5/7*x^14*d^10*b^3
*a^2 + 120/13*x^13*d^7*c^3*b^5 + 225/13*x^13*d^8*c^2*b^4*a + 100/
13*x^13*d^9*c*b^3*a^2 + 10/13*x^13*d^10*b^2*a^3 + 35/2*x^12*d^6*c
^4*b^5 + 50*x^12*d^7*c^3*b^4*a + 75/2*x^12*d^8*c^2*b^3*a^2 + 25/3
*x^12*d^9*c*b^2*a^3 + 5/12*x^12*d^10*b*a^4 + 252/11*x^11*d^5*c^5*
b^5 + 1050/11*x^11*d^6*c^4*b^4*a + 1200/11*x^11*d^7*c^3*b^3*a^2 +
 450/11*x^11*d^8*c^2*b^2*a^3 + 50/11*x^11*d^9*c*b*a^4 + 1/11*x^11
*d^10*a^5 + 21*x^10*d^4*c^6*b^5 + 126*x^10*d^5*c^5*b^4*a + 210*x^
10*d^6*c^4*b^3*a^2 + 120*x^10*d^7*c^3*b^2*a^3 + 45/2*x^10*d^8*c^2
*b*a^4 + x^10*d^9*c*a^5 + 40/3*x^9*d^3*c^7*b^5 + 350/3*x^9*d^4*c^
6*b^4*a + 280*x^9*d^5*c^5*b^3*a^2 + 700/3*x^9*d^6*c^4*b^2*a^3 + 2
00/3*x^9*d^7*c^3*b*a^4 + 5*x^9*d^8*c^2*a^5 + 45/8*x^8*d^2*c^8*b^5
 + 75*x^8*d^3*c^7*b^4*a + 525/2*x^8*d^4*c^6*b^3*a^2 + 315*x^8*d^5
*c^5*b^2*a^3 + 525/4*x^8*d^6*c^4*b*a^4 + 15*x^8*d^7*c^3*a^5 + 10/
7*x^7*d*c^9*b^5 + 225/7*x^7*d^2*c^8*b^4*a + 1200/7*x^7*d^3*c^7*b^
3*a^2 + 300*x^7*d^4*c^6*b^2*a^3 + 180*x^7*d^5*c^5*b*a^4 + 30*x^7*
d^6*c^4*a^5 + 1/6*x^6*c^10*b^5 + 25/3*x^6*d*c^9*b^4*a + 75*x^6*d^
2*c^8*b^3*a^2 + 200*x^6*d^3*c^7*b^2*a^3 + 175*x^6*d^4*c^6*b*a^4 +
 42*x^6*d^5*c^5*a^5 + x^5*c^10*b^4*a + 20*x^5*d*c^9*b^3*a^2 + 90*
x^5*d^2*c^8*b^2*a^3 + 120*x^5*d^3*c^7*b*a^4 + 42*x^5*d^4*c^6*a^5
+ 5/2*x^4*c^10*b^3*a^2 + 25*x^4*d*c^9*b^2*a^3 + 225/4*x^4*d^2*c^8
*b*a^4 + 30*x^4*d^3*c^7*a^5 + 10/3*x^3*c^10*b^2*a^3 + 50/3*x^3*d*
c^9*b*a^4 + 15*x^3*d^2*c^8*a^5 + 5/2*x^2*c^10*b*a^4 + 5*x^2*d*c^9
*a^5 + x*c^10*a^5
```

Sympy [A] time = 0.464677, size = 940, normalized size = 6.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(d*x+c)**10,x)
```

```
[Out] a**5*c**10*x + b**5*d**10*x**16/16 + x**15*(a*b**4*d**10/3 + 2*b*
*5*c*d**9/3) + x**14*(5*a**2*b**3*d**10/7 + 25*a*b**4*c*d**9/7 +
45*b**5*c**2*d**8/14) + x**13*(10*a**3*b**2*d**10/13 + 100*a**2*b
**3*c*d**9/13 + 225*a*b**4*c**2*d**8/13 + 120*b**5*c**3*d**7/13)
+ x**12*(5*a**4*b*d**10/12 + 25*a**3*b**2*c*d**9/3 + 75*a**2*b**3
*c**2*d**8/2 + 50*a*b**4*c**3*d**7 + 35*b**5*c**4*d**6/2) + x**11
*(a**5*d**10/11 + 50*a**4*b*c*d**9/11 + 450*a**3*b**2*c**2*d**8/1
1 + 1200*a**2*b**3*c**3*d**7/11 + 1050*a*b**4*c**4*d**6/11 + 252*
b**5*c**5*d**5/11) + x**10*(a**5*c*d**9 + 45*a**4*b*c**2*d**8/2 +
 120*a**3*b**2*c**3*d**7 + 210*a**2*b**3*c**4*d**6 + 126*a*b**4*c
**5*d**5 + 21*b**5*c**6*d**4) + x**9*(5*a**5*c**2*d**8 + 200*a**4
*b*c**3*d**7/3 + 700*a**3*b**2*c**4*d**6/3 + 280*a**2*b**3*c**5*d
**5 + 350*a*b**4*c**6*d**4/3 + 40*b**5*c**7*d**3/3) + x**8*(15*a*
*5*c**3*d**7 + 525*a**4*b*c**4*d**6/4 + 315*a**3*b**2*c**5*d**5 +
 525*a**2*b**3*c**6*d**4/2 + 75*a*b**4*c**7*d**3 + 45*b**5*c**8*d
**2/8) + x**7*(30*a**5*c**4*d**6 + 180*a**4*b*c**5*d**5 + 300*a**
3*b**2*c**6*d**4 + 1200*a**2*b**3*c**7*d**3/7 + 225*a*b**4*c**8*d
**2/7 + 10*b**5*c**9*d/7) + x**6*(42*a**5*c**5*d**5 + 175*a**4*b*
c**6*d**4 + 200*a**3*b**2*c**7*d**3 + 75*a**2*b**3*c**8*d**2 + 25
*a*b**4*c**9*d/3 + b**5*c**10/6) + x**5*(42*a**5*c**6*d**4 + 120*
a**4*b*c**7*d**3 + 90*a**3*b**2*c**8*d**2 + 20*a**2*b**3*c**9*d +
 a*b**4*c**10) + x**4*(30*a**5*c**7*d**3 + 225*a**4*b*c**8*d**2/4
 + 25*a**3*b**2*c**9*d + 5*a**2*b**3*c**10/2) + x**3*(15*a**5*c**
8*d**2 + 50*a**4*b*c**9*d/3 + 10*a**3*b**2*c**10/3) + x**2*(5*a**
5*c**9*d + 5*a**4*b*c**10/2)
```

GIAC/XCAS [A] time = 0.219422, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] Done
```

3.1307 $\int (a+bx)^4(c+dx)^{10}\,dx$

Optimal. Leaf size=119

$$-\frac{2b^3(c+dx)^{14}(bc-ad)}{7d^5}+\frac{6b^2(c+dx)^{13}(bc-ad)^2}{13d^5}-\frac{b(c+dx)^{12}(bc-ad)^3}{3d^5}+\frac{(c+dx)^{11}(bc-ad)^4}{11d^5}+\frac{b^4(c+dx)^{15}}{15d^5}$$

```
[Out] ((b*c - a*d)^4*(c + d*x)^11)/(11*d^5) - (b*(b*c - a*d)^3*(c + d*x
)^12)/(3*d^5) + (6*b^2*(b*c - a*d)^2*(c + d*x)^13)/(13*d^5) - (2*
b^3*(b*c - a*d)*(c + d*x)^14)/(7*d^5) + (b^4*(c + d*x)^15)/(15*d^
5)
```

Rubi [A] time = 0.864027, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2b^3(c+dx)^{14}(bc-ad)}{7d^5}+\frac{6b^2(c+dx)^{13}(bc-ad)^2}{13d^5}-\frac{b(c+dx)^{12}(bc-ad)^3}{3d^5}+\frac{(c+dx)^{11}(bc-ad)^4}{11d^5}+\frac{b^4(c+dx)^{15}}{15d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x)^10,x]
```

```
[Out] ((b*c - a*d)^4*(c + d*x)^11)/(11*d^5) - (b*(b*c - a*d)^3*(c + d*x
)^12)/(3*d^5) + (6*b^2*(b*c - a*d)^2*(c + d*x)^13)/(13*d^5) - (2*
b^3*(b*c - a*d)*(c + d*x)^14)/(7*d^5) + (b^4*(c + d*x)^15)/(15*d^
5)
```

Rubi in Sympy [A] time = 75.5168, size = 105, normalized size = 0.88

$$\frac{b^4\left(c+dx\right)^{15}}{15d^5}+\frac{2b^3\left(c+dx\right)^{14}\left(ad-bc\right)}{7d^5}+\frac{6b^2\left(c+dx\right)^{13}\left(ad-bc\right)^2}{13d^5}+\frac{b\left(c+dx\right)^{12}\left(ad-bc\right)^3}{3d^5}+\frac{\left(c+dx\right)^{11}\left(ad-bc\right)^4}{11d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**10,x)
```

```
[Out] b**4*(c + d*x)**15/(15*d**5) + 2*b**3*(c + d*x)**14*(a*d - b*c)/(
7*d**5) + 6*b**2*(c + d*x)**13*(a*d - b*c)**2/(13*d**5) + b*(c +
```

```
d*x)**12*(a*d - b*c)**3/(3*d**5) + (c + d*x)**11*(a*d - b*c)**4/(
11*d**5)
```

Mathematica [B] time = 0.14613, size = 660, normalized size = 5.55

$$a^4c^{10}x+a^3c^9x^2(5ad+2bc)+\frac{1}{13}b^2d^8x^{13}\left(6a^2d^2+40abcd+45b^2c^2\right)+\frac{1}{3}a^2c^8x^3\left(45a^2d^2+40abcd+6b^2c^2\right)+\frac{1}{3}bd^7x^{12}\left(a^3d^3+15a^2bcd^2+45ab^2c^2d+30b^3c^3\right)+ac^7x^4\left(30a^3d^3+45a^2bcd^2+15ab^2c^2d+b^3c^3\right)+\frac{1}{3}c^2d^4x^9\left(15a^4d^4+160a^3bcd^3+420a^2b^2c^2d^2+336ab^3c^3d+70b^4c^4\right)+3c^3d^3x^8\left(5a^4d^4+35a^3bcd^3+63a^2b^2c^2d^2+35ab^3c^3d+5b^4c^4\right)+\frac{3}{7}c^4d^2x^7\left(70a^4d^4+336a^3bcd^3+420a^2b^2c^2d^2+160ab^3c^3d+15b^4c^4\right)+\frac{1}{11}d^6x^{11}\left(a^4d^4+40a^3bcd^3+270a^2b^2c^2d^2+480ab^3c^3d+210b^4c^4\right)+\frac{1}{5}cd^5x^{10}\left(5a^4d^4+90a^3bcd^3+360a^2b^2c^2d^2+420ab^3c^3d+126b^4c^4\right)+\frac{1}{5}c^6x^5\left(210a^4d^4+480a^3bcd^3+270a^2b^2c^2d^2+40ab^3c^3d+b^4c^4\right)+\frac{1}{3}c^5dx^6\left(126a^4d^4+420a^3bcd^3+360a^2b^2c^2d^2+90ab^3c^3d+5b^4c^4\right)+\frac{1}{7}b^3d^9x^{14}(2ad+5bc)+\frac{1}{15}b^4d^{10}x^{15}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x)^10,x]
```

```
[Out] a^4*c^10*x + a^3*c^9*(2*b*c + 5*a*d)*x^2 + (a^2*c^8*(6*b^2*c^2 +
40*a*b*c*d + 45*a^2*d^2)*x^3)/3 + a*c^7*(b^3*c^3 + 15*a*b^2*c^2*d
 + 45*a^2*b*c*d^2 + 30*a^3*d^3)*x^4 + (c^6*(b^4*c^4 + 40*a*b^3*c^
3*d + 270*a^2*b^2*c^2*d^2 + 480*a^3*b*c*d^3 + 210*a^4*d^4)*x^5)/5
 + (c^5*d*(5*b^4*c^4 + 90*a*b^3*c^3*d + 360*a^2*b^2*c^2*d^2 + 420
*a^3*b*c*d^3 + 126*a^4*d^4)*x^6)/3 + (3*c^4*d^2*(15*b^4*c^4 + 160
*a*b^3*c^3*d + 420*a^2*b^2*c^2*d^2 + 336*a^3*b*c*d^3 + 70*a^4*d^4
)*x^7)/7 + 3*c^3*d^3*(5*b^4*c^4 + 35*a*b^3*c^3*d + 63*a^2*b^2*c^2
*d^2 + 35*a^3*b*c*d^3 + 5*a^4*d^4)*x^8 + (c^2*d^4*(70*b^4*c^4 + 3
36*a*b^3*c^3*d + 420*a^2*b^2*c^2*d^2 + 160*a^3*b*c*d^3 + 15*a^4*d
^4)*x^9)/3 + (c*d^5*(126*b^4*c^4 + 420*a*b^3*c^3*d + 360*a^2*b^2*
c^2*d^2 + 90*a^3*b*c*d^3 + 5*a^4*d^4)*x^10)/5 + (d^6*(210*b^4*c^4
 + 480*a*b^3*c^3*d + 270*a^2*b^2*c^2*d^2 + 40*a^3*b*c*d^3 + a^4*d
^4)*x^11)/11 + (b*d^7*(30*b^3*c^3 + 45*a*b^2*c^2*d + 15*a^2*b*c*d
^2 + a^3*d^3)*x^12)/3 + (b^2*d^8*(45*b^2*c^2 + 40*a*b*c*d + 6*a^2
*d^2)*x^13)/13 + (b^3*d^9*(5*b*c + 2*a*d)*x^14)/7 + (b^4*d^10*x^1
5)/15
```

Maple [B] time = 0.003, size = 691, normalized size = 5.8

$$\frac{b^4d^{10}x^{15}}{15}+\frac{(4ab^3d^{10}+10b^4cd^9)x^{14}}{14}+\frac{(6a^2b^2d^{10}+40ab^3cd^9+45b^4c^2d^8)x^{13}}{13}+\frac{(4a^3bd^{10}+60a^2b^2cd^9+180ab^3c^2d^8+120b^4c^3d^7)x^{12}}{12}+\frac{(a^4d^{10}+40a^3bcd^9+270a^2b^2c^2d^8+480ab^3c^3d^7+210b^4c^4d^6)x^{11}}{11}+\frac{(10a^4cd^9+180a^3bc^2d^8+720a^2b^2c^3d^7+840ab^3c^4d^6+252b^4c^5d^5)x^{10}}{10}+\frac{(45a^4c^2d^8+480a^3bc^3d^7+1260a^2b^2c^4d^6+1008ab^3c^5d^5+210b^4c^6d^4)x^9}{9}+\frac{(120a^4c^3d^7+840a^3bc^4d^6+1512a^2b^2c^5d^5+840ab^3c^6d^4+120b^4c^7d^3)x^8}{8}+\frac{(210a^4c^4d^6+1008a^3bc^5d^5+1260a^2b^2c^6d^4+480ab^3c^7d^3+45b^4c^8d^2)x^7}{7}+\frac{(252a^4c^5d^5+840a^3bc^6d^4+720a^2b^2c^7d^3+180ab^3c^8d^2+10b^4c^9d)x^6}{6}+\frac{(210a^4c^6d^4+480a^3bc^7d^3+270a^2b^2c^8d^2+40ab^3c^9d+b^4c^{10})x^5}{5}+\frac{(120a^4c^7d^3+180a^3bc^8d^2+60a^2b^2c^9d+4ab^3c^{10})x^4}{4}+\frac{(45a^4c^8d^2+40a^3bc^9d+6a^2b^2c^{10})x^3}{3}+\frac{(10a^4c^9d+4a^3bc^{10})x^2}{2}+a^4c^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]   int((b*x+a)^4*(d*x+c)^10,x)
```

```
[Out] 1/15*b^4*d^10*x^15+1/14*(4*a*b^3*d^10+10*b^4*c*d^9)*x^14+1/13*(6*
a^2*b^2*d^10+40*a*b^3*c*d^9+45*b^4*c^2*d^8)*x^13+1/12*(4*a^3*b*d^
10+60*a^2*b^2*c*d^9+180*a*b^3*c^2*d^8+120*b^4*c^3*d^7)*x^12+1/11*
(a^4*d^10+40*a^3*b*c*d^9+270*a^2*b^2*c^2*d^8+480*a*b^3*c^3*d^7+21
0*b^4*c^4*d^6)*x^11+1/10*(10*a^4*c*d^9+180*a^3*b*c^2*d^8+720*a^2*
b^2*c^3*d^7+840*a*b^3*c^4*d^6+252*b^4*c^5*d^5)*x^10+1/9*(45*a^4*c
^2*d^8+480*a^3*b*c^3*d^7+1260*a^2*b^2*c^4*d^6+1008*a*b^3*c^5*d^5+
210*b^4*c^6*d^4)*x^9+1/8*(120*a^4*c^3*d^7+840*a^3*b*c^4*d^6+1512*
a^2*b^2*c^5*d^5+840*a*b^3*c^6*d^4+120*b^4*c^7*d^3)*x^8+1/7*(210*a
^4*c^4*d^6+1008*a^3*b*c^5*d^5+1260*a^2*b^2*c^6*d^4+480*a*b^3*c^7*
d^3+45*b^4*c^8*d^2)*x^7+1/6*(252*a^4*c^5*d^5+840*a^3*b*c^6*d^4+72
0*a^2*b^2*c^7*d^3+180*a*b^3*c^8*d^2+10*b^4*c^9*d)*x^6+1/5*(210*a^
4*c^6*d^4+480*a^3*b*c^7*d^3+270*a^2*b^2*c^8*d^2+40*a*b^3*c^9*d+b^
4*c^10)*x^5+1/4*(120*a^4*c^7*d^3+180*a^3*b*c^8*d^2+60*a^2*b^2*c^9
*d+4*a*b^3*c^10)*x^4+1/3*(45*a^4*c^8*d^2+40*a^3*b*c^9*d+6*a^2*b^2
*c^10)*x^3+1/2*(10*a^4*c^9*d+4*a^3*b*c^10)*x^2+a^4*c^10*x
```

Maxima [A] time = 1.35651, size = 926, normalized size = 7.78

$$\frac{1}{15}\,b^4d^{10}x^{15}+a^4c^{10}x+\frac{1}{7}\left(5\,b^4cd^9+2\,ab^3d^{10}\right)x^{14}+\frac{1}{13}\left(45\,b^4c^2d^8+40\,ab^3cd^9+6\,a^2b^2d^{10}\right)x^{13}+\frac{1}{3}\left(30\,b^4c^3d^7+45\,ab^3c^2d^8+15\,a^2b^2cd^9+a^3bd^{10}\right)x^{12}+\frac{1}{11}\left(210\,b^4c^4d^6+480\,ab^3c^3d^7+270\,a^2b^2c^2d^8+40\,a^3bcd^9+a^4d^{10}\right)x^{11}+\frac{1}{5}\left(126\,b^4c^5d^5+420\,ab^3c^4d^6+360\,a^2b^2c^3d^7+90\,a^3bc^2d^8+5\,a^4cd^9\right)x^{10}+\frac{1}{3}\left(70\,b^4c^6d^4+336\,ab^3c^5d^5+420\,a^2b^2c^4d^6+160\,a^3bc^3d^7+15\,a^4c^2d^8\right)x^9+3\left(5\,b^4c^7d^3+35\,ab^3c^6d^4+63\,a^2b^2c^5d^5+35\,a^3bc^4d^6+5\,a^4c^3d^7\right)x^8+\frac{3}{7}\left(15\,b^4c^8d^2+160\,ab^3c^7d^3+420\,a^2b^2c^6d^4+336\,a^3bc^5d^5+70\,a^4c^4d^6\right)x^7+\frac{1}{3}\left(5\,b^4c^9d+90\,ab^3c^8d^2+360\,a^2b^2c^7d^3+420\,a^3bc^6d^4+126\,a^4c^5d^5\right)x^6+\frac{1}{5}\left(b^4c^{10}+40\,ab^3c^9d+270\,a^2b^2c^8d^2+480\,a^3bc^7d^3+210\,a^4c^6d^4\right)x^5+\left(ab^3c^{10}+15\,a^2b^2c^9d+45\,a^3bc^8d^2+30\,a^4c^7d^3\right)x^4+\frac{1}{3}\left(6\,a^2b^2c^{10}+40\,a^3bc^9d+45\,a^4c^8d^2\right)x^3+\left(2\,a^3bc^{10}+5\,a^4c^9d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/15*b^4*d^10*x^15 + a^4*c^10*x + 1/7*(5*b^4*c*d^9 + 2*a*b^3*d^10
)*x^14 + 1/13*(45*b^4*c^2*d^8 + 40*a*b^3*c*d^9 + 6*a^2*b^2*d^10)*
x^13 + 1/3*(30*b^4*c^3*d^7 + 45*a*b^3*c^2*d^8 + 15*a^2*b^2*c*d^9
+ a^3*b*d^10)*x^12 + 1/11*(210*b^4*c^4*d^6 + 480*a*b^3*c^3*d^7 +
270*a^2*b^2*c^2*d^8 + 40*a^3*b*c*d^9 + a^4*d^10)*x^11 + 1/5*(126*
b^4*c^5*d^5 + 420*a*b^3*c^4*d^6 + 360*a^2*b^2*c^3*d^7 + 90*a^3*b*
c^2*d^8 + 5*a^4*c*d^9)*x^10 + 1/3*(70*b^4*c^6*d^4 + 336*a*b^3*c^5
*d^5 + 420*a^2*b^2*c^4*d^6 + 160*a^3*b*c^3*d^7 + 15*a^4*c^2*d^8)*
x^9 + 3*(5*b^4*c^7*d^3 + 35*a*b^3*c^6*d^4 + 63*a^2*b^2*c^5*d^5 +
35*a^3*b*c^4*d^6 + 5*a^4*c^3*d^7)*x^8 + 3/7*(15*b^4*c^8*d^2 + 160
*a*b^3*c^7*d^3 + 420*a^2*b^2*c^6*d^4 + 336*a^3*b*c^5*d^5 + 70*a^4
*c^4*d^6)*x^7 + 1/3*(5*b^4*c^9*d + 90*a*b^3*c^8*d^2 + 360*a^2*b^2
*c^7*d^3 + 420*a^3*b*c^6*d^4 + 126*a^4*c^5*d^5)*x^6 + 1/5*(b^4*c^
10 + 40*a*b^3*c^9*d + 270*a^2*b^2*c^8*d^2 + 480*a^3*b*c^7*d^3 + 2
10*a^4*c^6*d^4)*x^5 + (a*b^3*c^10 + 15*a^2*b^2*c^9*d + 45*a^3*b*c
^8*d^2 + 30*a^4*c^7*d^3)*x^4 + 1/3*(6*a^2*b^2*c^10 + 40*a^3*b*c^9
*d + 45*a^4*c^8*d^2)*x^3 + (2*a^3*b*c^10 + 5*a^4*c^9*d)*x^2
```

Fricas [A] time = 0.20892, size = 1, normalized size = 0.01

$$\frac{1}{15}x^{15}d^{10}b^4+\frac{5}{7}x^{14}d^9cb^4+\frac{2}{7}x^{14}d^{10}b^3a+\frac{45}{13}x^{13}d^8c^2b^4+\frac{40}{13}x^{13}d^9cb^3a+\frac{6}{13}x^{13}d^{10}b^2a^2+10x^{12}d^7c^3b^4+15x^{12}d^8c^2b^3a+5x^{12}d^9cb^2a^2+\frac{1}{3}x^{12}d^{10}ba^3+\frac{210}{11}x^{11}d^6c^4b^4+\frac{480}{11}x^{11}d^7c^3b^3a+\frac{270}{11}x^{11}d^8c^2b^2a^2+\frac{40}{11}x^{11}d^9cba^3+\frac{1}{11}x^{11}d^{10}a^4+\frac{126}{5}x^{10}d^5c^5b^4+84x^{10}d^6c^4b^3a+72x^{10}d^7c^3b^2a^2+18x^{10}d^8c^2ba^3+x^{10}d^9ca^4+\frac{70}{3}x^9d^4c^6b^4+112x^9d^5c^5b^3a+140x^9d^6c^4b^2a^2+\frac{160}{3}x^9d^7c^3ba^3+5x^9d^8c^2a^4+15x^8d^3c^7b^4+105x^8d^4c^6b^3a+189x^8d^5c^5b^2a^2+105x^8d^6c^4ba^3+15x^8d^7c^3a^4+\frac{45}{7}x^7d^2c^8b^4+\frac{480}{7}x^7d^3c^7b^3a+180x^7d^4c^6b^2a^2+144x^7d^5c^5ba^3+30x^7d^6c^4a^4+\frac{5}{3}x^6dc^9b^4+30x^6d^2c^8b^3a+120x^6d^3c^7b^2a^2+140x^6d^4c^6ba^3+42x^6d^5c^5a^4+\frac{1}{5}x^5c^{10}b^4+8x^5dc^9b^3a+54x^5d^2c^8b^2a^2+96x^5d^3c^7ba^3+42x^5d^4c^6a^4+x^4c^{10}b^3a+15x^4dc^9b^2a^2+45x^4d^2c^8ba^3+30x^4d^3c^7a^4+2x^3c^{10}b^2a^2+\frac{40}{3}x^3dc^9ba^3+15x^3d^2c^8a^4+2x^2c^{10}ba^3+5x^2dc^9a^4+xc^{10}a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/15*x^15*d^10*b^4 + 5/7*x^14*d^9*c*b^4 + 2/7*x^14*d^10*b^3*a + 4
5/13*x^13*d^8*c^2*b^4 + 40/13*x^13*d^9*c*b^3*a + 6/13*x^13*d^10*b
^2*a^2 + 10*x^12*d^7*c^3*b^4 + 15*x^12*d^8*c^2*b^3*a + 5*x^12*d^9
*c*b^2*a^2 + 1/3*x^12*d^10*b*a^3 + 210/11*x^11*d^6*c^4*b^4 + 480/
11*x^11*d^7*c^3*b^3*a + 270/11*x^11*d^8*c^2*b^2*a^2 + 40/11*x^11*
d^9*c*b*a^3 + 1/11*x^11*d^10*a^4 + 126/5*x^10*d^5*c^5*b^4 + 84*x^
10*d^6*c^4*b^3*a + 72*x^10*d^7*c^3*b^2*a^2 + 18*x^10*d^8*c^2*b*a^
3 + x^10*d^9*c*a^4 + 70/3*x^9*d^4*c^6*b^4 + 112*x^9*d^5*c^5*b^3*a
 + 140*x^9*d^6*c^4*b^2*a^2 + 160/3*x^9*d^7*c^3*b*a^3 + 5*x^9*d^8*
c^2*a^4 + 15*x^8*d^3*c^7*b^4 + 105*x^8*d^4*c^6*b^3*a + 189*x^8*d^
5*c^5*b^2*a^2 + 105*x^8*d^6*c^4*b*a^3 + 15*x^8*d^7*c^3*a^4 + 45/7
*x^7*d^2*c^8*b^4 + 480/7*x^7*d^3*c^7*b^3*a + 180*x^7*d^4*c^6*b^2*
a^2 + 144*x^7*d^5*c^5*b*a^3 + 30*x^7*d^6*c^4*a^4 + 5/3*x^6*d*c^9*
b^4 + 30*x^6*d^2*c^8*b^3*a + 120*x^6*d^3*c^7*b^2*a^2 + 140*x^6*d^
4*c^6*b*a^3 + 42*x^6*d^5*c^5*a^4 + 1/5*x^5*c^10*b^4 + 8*x^5*d*c^9
*b^3*a + 54*x^5*d^2*c^8*b^2*a^2 + 96*x^5*d^3*c^7*b*a^3 + 42*x^5*d
^4*c^6*a^4 + x^4*c^10*b^3*a + 15*x^4*d*c^9*b^2*a^2 + 45*x^4*d^2*c
^8*b*a^3 + 30*x^4*d^3*c^7*a^4 + 2*x^3*c^10*b^2*a^2 + 40/3*x^3*d*c
^9*b*a^3 + 15*x^3*d^2*c^8*a^4 + 2*x^2*c^10*b*a^3 + 5*x^2*d*c^9*a^
4 + x*c^10*a^4
```

Sympy [A] time = 0.424235, size = 748, normalized size = 6.29

$$a^4c^{10}x + \frac{b^4d^{10}x^{15}}{15} + x^{14}\left(\frac{2ab^3d^{10}}{7} + \frac{5b^4cd^9}{7}\right) + x^{13}\left(\frac{6a^2b^2d^{10}}{13} + \frac{40ab^3cd^9}{13} + \frac{45b^4c^2d^8}{13}\right) + x^{12}\left(\frac{a^3bd^{10}}{3} + 5a^2b^2cd^9 + 15ab^3c^2d^8 + 10b^4c^3d^7\right) + x^{11}\left(\frac{a^4d^{10}}{11} + \frac{40a^3bcd^9}{11} + \frac{270a^2b^2c^2d^8}{11} + \frac{480ab^3c^3d^7}{11} + \frac{210b^4c^4d^6}{11}\right) + x^{10}\left(a^4cd^9 + 18a^3bc^2d^8 + 72a^2b^2c^3d^7 + 84ab^3c^4d^6 + \frac{126b^4c^5d^5}{5}\right) + x^9\left(5a^4c^2d^8 + \frac{160a^3bc^3d^7}{3} + 140a^2b^2c^4d^6 + 112ab^3c^5d^5 + \frac{70b^4c^6d^4}{3}\right) + x^8\left(15a^4c^3d^7 + 105a^3bc^4d^6 + 189a^2b^2c^5d^5 + 105ab^3c^6d^4 + 15b^4c^7d^3\right) + x^7\left(30a^4c^4d^6 + 144a^3bc^5d^5 + 180a^2b^2c^6d^4 + \frac{480ab^3c^7d^3}{7} + \frac{45b^4c^8d^2}{7}\right) + x^6\left(42a^4c^5d^5 + 140a^3bc^6d^4 + 120a^2b^2c^7d^3 + 30ab^3c^8d^2 + \frac{5b^4c^9d}{3}\right) + x^5\left(42a^4c^6d^4 + 96a^3bc^7d^3 + 54a^2b^2c^8d^2 + 8ab^3c^9d + \frac{b^4c^{10}}{5}\right) + x^4\left(30a^4c^7d^3 + 45a^3bc^8d^2 + 15a^2b^2c^9d + ab^3c^{10}\right) + x^3\left(15a^4c^8d^2 + \frac{40a^3bc^9d}{3} + 2a^2b^2c^{10}\right) + x^2\left(5a^4c^9d + 2a^3bc^{10}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**10,x)
```

```
[Out] a**4*c**10*x + b**4*d**10*x**15/15 + x**14*(2*a*b**3*d**10/7 + 5*
b**4*c*d**9/7) + x**13*(6*a**2*b**2*d**10/13 + 40*a*b**3*c*d**9/1
3 + 45*b**4*c**2*d**8/13) + x**12*(a**3*b*d**10/3 + 5*a**2*b**2*c
*d**9 + 15*a*b**3*c**2*d**8 + 10*b**4*c**3*d**7) + x**11*(a**4*d*
*10/11 + 40*a**3*b*c*d**9/11 + 270*a**2*b**2*c**2*d**8/11 + 480*a
*b**3*c**3*d**7/11 + 210*b**4*c**4*d**6/11) + x**10*(a**4*c*d**9
+ 18*a**3*b*c**2*d**8 + 72*a**2*b**2*c**3*d**7 + 84*a*b**3*c**4*d
**6 + 126*b**4*c**5*d**5/5) + x**9*(5*a**4*c**2*d**8 + 160*a**3*b
*c**3*d**7/3 + 140*a**2*b**2*c**4*d**6 + 112*a*b**3*c**5*d**5 + 7
0*b**4*c**6*d**4/3) + x**8*(15*a**4*c**3*d**7 + 105*a**3*b*c**4*d
**6 + 189*a**2*b**2*c**5*d**5 + 105*a*b**3*c**6*d**4 + 15*b**4*c*
*7*d**3) + x**7*(30*a**4*c**4*d**6 + 144*a**3*b*c**5*d**5 + 180*a
**2*b**2*c**6*d**4 + 480*a*b**3*c**7*d**3/7 + 45*b**4*c**8*d**2/7
) + x**6*(42*a**4*c**5*d**5 + 140*a**3*b*c**6*d**4 + 120*a**2*b**
2*c**7*d**3 + 30*a*b**3*c**8*d**2 + 5*b**4*c**9*d/3) + x**5*(42*a
**4*c**6*d**4 + 96*a**3*b*c**7*d**3 + 54*a**2*b**2*c**8*d**2 + 8*
a*b**3*c**9*d + b**4*c**10/5) + x**4*(30*a**4*c**7*d**3 + 45*a**3
*b*c**8*d**2 + 15*a**2*b**2*c**9*d + a*b**3*c**10) + x**3*(15*a**
4*c**8*d**2 + 40*a**3*b*c**9*d/3 + 2*a**2*b**2*c**10) + x**2*(5*a
**4*c**9*d + 2*a**3*b*c**10)
```

GIAC/XCAS [A] time = 0.217414, size = 1041, normalized size = 8.75

$$\frac{1}{15}\,b^{4}d^{10}x^{15}+\frac{5}{7}\,b^{4}cd^{9}x^{14}+\frac{2}{7}\,ab^{3}d^{10}x^{14}+\frac{45}{13}\,b^{4}c^{2}d^{8}x^{13}+\frac{40}{13}\,ab^{3}cd^{9}x^{13}+\frac{6}{13}\,a^{2}b^{2}d^{10}x^{13}+10\,b^{4}c^{3}d^{7}x^{12}+15\,ab^{3}c^{2}d^{8}x^{12}+5\,a^{2}b^{2}cd^{9}x^{12}+\frac{1}{3}\,a^{3}bd^{10}x^{12}+\frac{210}{11}\,b^{4}c^{4}d^{6}x^{11}+\frac{480}{11}\,ab^{3}c^{3}d^{7}x^{11}+\frac{270}{11}\,a^{2}b^{2}c^{2}d^{8}x^{11}+\frac{40}{11}\,a^{3}bcd^{9}x^{11}+\frac{1}{11}\,a^{4}d^{10}x^{11}+\frac{126}{5}\,b^{4}c^{5}d^{5}x^{10}+84\,ab^{3}c^{4}d^{6}x^{10}+72\,a^{2}b^{2}c^{3}d^{7}x^{10}+18\,a^{3}bc^{2}d^{8}x^{10}+a^{4}cd^{9}x^{10}+\frac{70}{3}\,b^{4}c^{6}d^{4}x^{9}+112\,ab^{3}c^{5}d^{5}x^{9}+140\,a^{2}b^{2}c^{4}d^{6}x^{9}+\frac{160}{3}\,a^{3}bc^{3}d^{7}x^{9}+5\,a^{4}c^{2}d^{8}x^{9}+15\,b^{4}c^{7}d^{3}x^{8}+105\,ab^{3}c^{6}d^{4}x^{8}+189\,a^{2}b^{2}c^{5}d^{5}x^{8}+105\,a^{3}bc^{4}d^{6}x^{8}+15\,a^{4}c^{3}d^{7}x^{8}+\frac{45}{7}\,b^{4}c^{8}d^{2}x^{7}+\frac{480}{7}\,ab^{3}c^{7}d^{3}x^{7}+180\,a^{2}b^{2}c^{6}d^{4}x^{7}+144\,a^{3}bc^{5}d^{5}x^{7}+30\,a^{4}c^{4}d^{6}x^{7}+\frac{5}{3}\,b^{4}c^{9}dx^{6}+30\,ab^{3}c^{8}d^{2}x^{6}+120\,a^{2}b^{2}c^{7}d^{3}x^{6}+140\,a^{3}bc^{6}d^{4}x^{6}+42\,a^{4}c^{5}d^{5}x^{6}+\frac{1}{5}\,b^{4}c^{10}x^{5}+8\,ab^{3}c^{9}dx^{5}+54\,a^{2}b^{2}c^{8}d^{2}x^{5}+96\,a^{3}bc^{7}d^{3}x^{5}+42\,a^{4}c^{6}d^{4}x^{5}+ab^{3}c^{10}x^{4}+15\,a^{2}b^{2}c^{9}dx^{4}+45\,a^{3}bc^{8}d^{2}x^{4}+30\,a^{4}c^{7}d^{3}x^{4}+2\,a^{2}b^{2}c^{10}x^{3}+\frac{40}{3}\,a^{3}bc^{9}dx^{3}+15\,a^{4}c^{8}d^{2}x^{3}+2\,a^{3}bc^{10}x^{2}+5\,a^{4}c^{9}dx^{2}+a^{4}c^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] 1/15*b^4*d^10*x^15 + 5/7*b^4*c*d^9*x^14 + 2/7*a*b^3*d^10*x^14 + 4
5/13*b^4*c^2*d^8*x^13 + 40/13*a*b^3*c*d^9*x^13 + 6/13*a^2*b^2*d^1
0*x^13 + 10*b^4*c^3*d^7*x^12 + 15*a*b^3*c^2*d^8*x^12 + 5*a^2*b^2*
c*d^9*x^12 + 1/3*a^3*b*d^10*x^12 + 210/11*b^4*c^4*d^6*x^11 + 480/
11*a*b^3*c^3*d^7*x^11 + 270/11*a^2*b^2*c^2*d^8*x^11 + 40/11*a^3*b
*c*d^9*x^11 + 1/11*a^4*d^10*x^11 + 126/5*b^4*c^5*d^5*x^10 + 84*a*
b^3*c^4*d^6*x^10 + 72*a^2*b^2*c^3*d^7*x^10 + 18*a^3*b*c^2*d^8*x^1
0 + a^4*c*d^9*x^10 + 70/3*b^4*c^6*d^4*x^9 + 112*a*b^3*c^5*d^5*x^9
 + 140*a^2*b^2*c^4*d^6*x^9 + 160/3*a^3*b*c^3*d^7*x^9 + 5*a^4*c^2*
d^8*x^9 + 15*b^4*c^7*d^3*x^8 + 105*a*b^3*c^6*d^4*x^8 + 189*a^2*b^
2*c^5*d^5*x^8 + 105*a^3*b*c^4*d^6*x^8 + 15*a^4*c^3*d^7*x^8 + 45/7
*b^4*c^8*d^2*x^7 + 480/7*a*b^3*c^7*d^3*x^7 + 180*a^2*b^2*c^6*d^4*
x^7 + 144*a^3*b*c^5*d^5*x^7 + 30*a^4*c^4*d^6*x^7 + 5/3*b^4*c^9*d*
x^6 + 30*a*b^3*c^8*d^2*x^6 + 120*a^2*b^2*c^7*d^3*x^6 + 140*a^3*b*
c^6*d^4*x^6 + 42*a^4*c^5*d^5*x^6 + 1/5*b^4*c^10*x^5 + 8*a*b^3*c^9
*d*x^5 + 54*a^2*b^2*c^8*d^2*x^5 + 96*a^3*b*c^7*d^3*x^5 + 42*a^4*c
^6*d^4*x^5 + a*b^3*c^10*x^4 + 15*a^2*b^2*c^9*d*x^4 + 45*a^3*b*c^8
*d^2*x^4 + 30*a^4*c^7*d^3*x^4 + 2*a^2*b^2*c^10*x^3 + 40/3*a^3*b*c
^9*d*x^3 + 15*a^4*c^8*d^2*x^3 + 2*a^3*b*c^10*x^2 + 5*a^4*c^9*d*x^
2 + a^4*c^10*x
```

3.1308 $\int (a+bx)^3(c+dx)^{10}\,dx$

Optimal. Leaf size=92

$$-\frac{3b^2(c+dx)^{13}(bc-ad)}{13d^4}+\frac{b(c+dx)^{12}(bc-ad)^2}{4d^4}-\frac{(c+dx)^{11}(bc-ad)^3}{11d^4}+\frac{b^3(c+dx)^{14}}{14d^4}$$

```
[Out] -((b*c - a*d)^3*(c + d*x)^11)/(11*d^4) + (b*(b*c - a*d)^2*(c + d*
x)^12)/(4*d^4) - (3*b^2*(b*c - a*d)*(c + d*x)^13)/(13*d^4) + (b^3
*(c + d*x)^14)/(14*d^4)
```

Rubi [A] time = 0.68226, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{3b^2(c+dx)^{13}(bc-ad)}{13d^4}+\frac{b(c+dx)^{12}(bc-ad)^2}{4d^4}-\frac{(c+dx)^{11}(bc-ad)^3}{11d^4}+\frac{b^3(c+dx)^{14}}{14d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^10,x]
```

```
[Out] -((b*c - a*d)^3*(c + d*x)^11)/(11*d^4) + (b*(b*c - a*d)^2*(c + d*
x)^12)/(4*d^4) - (3*b^2*(b*c - a*d)*(c + d*x)^13)/(13*d^4) + (b^3
*(c + d*x)^14)/(14*d^4)
```

Rubi in Sympy [A] time = 53.4538, size = 80, normalized size = 0.87

$$\frac{b^3\left(c+dx\right)^{14}}{14d^4}+\frac{3b^2\left(c+dx\right)^{13}\left(ad-bc\right)}{13d^4}+\frac{b\left(c+dx\right)^{12}\left(ad-bc\right)^2}{4d^4}+\frac{\left(c+dx\right)^{11}\left(ad-bc\right)^3}{11d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**10,x)
```

```
[Out] b**3*(c + d*x)**14/(14*d**4) + 3*b**2*(c + d*x)**13*(a*d - b*c)/(
13*d**4) + b*(c + d*x)**12*(a*d - b*c)**2/(4*d**4) + (c + d*x)**1
1*(a*d - b*c)**3/(11*d**4)
```

Mathematica [B] time = 0.114326, size = 511, normalized size = 5.55

$$a^3c^{10}x + \frac{1}{4}bd^8x^{12}\left(a^2d^2 + 10abcd + 15b^2c^2\right) + ac^8x^3\left(15a^2d^2 + 10abcd + b^2c^2\right) + \frac{1}{2}a^2c^9x^2(10ad + 3bc) + \frac{1}{11}d^7x^{11}\left(a^3d^3 + 30a^2bcd^2 + 135ab^2c^2d + 120b^3c^3\right) + \frac{1}{2}cd^6x^{10}\left(2a^3d^3 + 27a^2bcd^2 + 72ab^2c^2d + 42b^3c^3\right) + c^2d^5x^9\left(5a^3d^3 + 40a^2bcd^2 + 70ab^2c^2d + 28b^3c^3\right) + \frac{3}{4}c^3d^4x^8\left(20a^3d^3 + 105a^2bcd^2 + 126ab^2c^2d + 35b^3c^3\right) + \frac{1}{4}c^7x^4\left(120a^3d^3 + 135a^2bcd^2 + 30ab^2c^2d + b^3c^3\right) + c^6dx^5\left(42a^3d^3 + 72a^2bcd^2 + 27ab^2c^2d + 2b^3c^3\right) + \frac{3}{2}c^5d^2x^6\left(28a^3d^3 + 70a^2bcd^2 + 40ab^2c^2d + 5b^3c^3\right) + \frac{6}{7}c^4d^3x^7\left(35a^3d^3 + 126a^2bcd^2 + 105ab^2c^2d + 20b^3c^3\right) + \frac{1}{13}b^2d^9x^{13}(3ad + 10bc) + \frac{1}{14}b^3d^{10}x^{14}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^10,x]
```

```
[Out] a^3*c^10*x + (a^2*c^9*(3*b*c + 10*a*d)*x^2)/2 + a*c^8*(b^2*c^2 +
10*a*b*c*d + 15*a^2*d^2)*x^3 + (c^7*(b^3*c^3 + 30*a*b^2*c^2*d + 1
35*a^2*b*c*d^2 + 120*a^3*d^3)*x^4)/4 + c^6*d*(2*b^3*c^3 + 27*a*b^
2*c^2*d + 72*a^2*b*c*d^2 + 42*a^3*d^3)*x^5 + (3*c^5*d^2*(5*b^3*c^
3 + 40*a*b^2*c^2*d + 70*a^2*b*c*d^2 + 28*a^3*d^3)*x^6)/2 + (6*c^4
*d^3*(20*b^3*c^3 + 105*a*b^2*c^2*d + 126*a^2*b*c*d^2 + 35*a^3*d^3
)*x^7)/7 + (3*c^3*d^4*(35*b^3*c^3 + 126*a*b^2*c^2*d + 105*a^2*b*c
*d^2 + 20*a^3*d^3)*x^8)/4 + c^2*d^5*(28*b^3*c^3 + 70*a*b^2*c^2*d
+ 40*a^2*b*c*d^2 + 5*a^3*d^3)*x^9 + (c*d^6*(42*b^3*c^3 + 72*a*b^2
*c^2*d + 27*a^2*b*c*d^2 + 2*a^3*d^3)*x^10)/2 + (d^7*(120*b^3*c^3
+ 135*a*b^2*c^2*d + 30*a^2*b*c*d^2 + a^3*d^3)*x^11)/11 + (b*d^8*(
15*b^2*c^2 + 10*a*b*c*d + a^2*d^2)*x^12)/4 + (b^2*d^9*(10*b*c + 3
*a*d)*x^13)/13 + (b^3*d^10*x^14)/14
```

Maple [B] time = 0.002, size = 541, normalized size = 5.9

$$\frac{b^{3}d^{10}x^{14}}{14}+\frac{\left(3ab^{2}d^{10}+10b^{3}cd^{9}\right)x^{13}}{13}+\frac{\left(3a^{2}bd^{10}+30ab^{2}cd^{9}+45b^{3}c^{2}d^{8}\right)x^{12}}{12}+\frac{\left(a^{3}d^{10}+30a^{2}bcd^{9}+135ab^{2}c^{2}d^{8}+120b^{3}c^{3}d^{7}\right)x^{11}}{11}+\frac{\left(10a^{3}cd^{9}+135a^{2}bc^{2}d^{8}+360ab^{2}c^{3}d^{7}+210b^{3}c^{4}d^{6}\right)x^{10}}{10}+\frac{\left(45a^{3}c^{2}d^{8}+360a^{2}bc^{3}d^{7}+630ab^{2}c^{4}d^{6}+252b^{3}c^{5}d^{5}\right)x^{9}}{9}+\frac{\left(120a^{3}c^{3}d^{7}+630a^{2}bc^{4}d^{6}+756ab^{2}c^{5}d^{5}+210b^{3}c^{6}d^{4}\right)x^{8}}{8}+\frac{\left(210a^{3}c^{4}d^{6}+756a^{2}bc^{5}d^{5}+630ab^{2}c^{6}d^{4}+120b^{3}c^{7}d^{3}\right)x^{7}}{7}+\frac{\left(252a^{3}c^{5}d^{5}+630a^{2}bc^{6}d^{4}+360ab^{2}c^{7}d^{3}+45b^{3}c^{8}d^{2}\right)x^{6}}{6}+\frac{\left(210a^{3}c^{6}d^{4}+360a^{2}bc^{7}d^{3}+135ab^{2}c^{8}d^{2}+10b^{3}c^{9}d\right)x^{5}}{5}+\frac{\left(120a^{3}c^{7}d^{3}+135a^{2}bc^{8}d^{2}+30ab^{2}c^{9}d+b^{3}c^{10}\right)x^{4}}{4}+\frac{\left(45a^{3}c^{8}d^{2}+30a^{2}bc^{9}d+3ab^{2}c^{10}\right)x^{3}}{3}+\frac{\left(10a^{3}c^{9}d+3a^{2}bc^{10}\right)x^{2}}{2}+a^{3}c^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^10,x)
```

```
[Out] 1/14*b^3*d^10*x^14+1/13*(3*a*b^2*d^10+10*b^3*c*d^9)*x^13+1/12*(3*
a^2*b*d^10+30*a*b^2*c*d^9+45*b^3*c^2*d^8)*x^12+1/11*(a^3*d^10+30*
a^2*b*c*d^9+135*a*b^2*c^2*d^8+120*b^3*c^3*d^7)*x^11+1/10*(10*a^3*
c*d^9+135*a^2*b*c^2*d^8+360*a*b^2*c^3*d^7+210*b^3*c^4*d^6)*x^10+1
/9*(45*a^3*c^2*d^8+360*a^2*b*c^3*d^7+630*a*b^2*c^4*d^6+252*b^3*c^
5*d^5)*x^9+1/8*(120*a^3*c^3*d^7+630*a^2*b*c^4*d^6+756*a*b^2*c^5*d
^5+210*b^3*c^6*d^4)*x^8+1/7*(210*a^3*c^4*d^6+756*a^2*b*c^5*d^5+63
0*a*b^2*c^6*d^4+120*b^3*c^7*d^3)*x^7+1/6*(252*a^3*c^5*d^5+630*a^2
*b*c^6*d^4+360*a*b^2*c^7*d^3+45*b^3*c^8*d^2)*x^6+1/5*(210*a^3*c^6
*d^4+360*a^2*b*c^7*d^3+135*a*b^2*c^8*d^2+10*b^3*c^9*d)*x^5+1/4*(1
20*a^3*c^7*d^3+135*a^2*b*c^8*d^2+30*a*b^2*c^9*d+b^3*c^10)*x^4+1/3
*(45*a^3*c^8*d^2+30*a^2*b*c^9*d+3*a*b^2*c^10)*x^3+1/2*(10*a^3*c^9
*d+3*a^2*b*c^10)*x^2+a^3*c^10*x
```

Maxima [A] time = 1.35931, size = 722, normalized size = 7.85

$$\frac{1}{14}\,b^3d^{10}x^{14} + a^3c^{10}x + \frac{1}{13}\left(10\,b^3cd^9 + 3\,ab^2d^{10}\right)x^{13} + \frac{1}{4}\left(15\,b^3c^2d^8 + 10\,ab^2cd^9 + a^2bd^{10}\right)x^{12} + \frac{1}{11}\left(120\,b^3c^3d^7 + 135\,ab^2c^2d^8 + 30\,a^2bcd^9 + a^3d^{10}\right)x^{11} + \frac{1}{2}\left(42\,b^3c^4d^6 + 72\,ab^2c^3d^7 + 27\,a^2bc^2d^8 + 2\,a^3cd^9\right)x^{10} + \left(28\,b^3c^5d^5 + 70\,ab^2c^4d^6 + 40\,a^2bc^3d^7 + 5\,a^3c^2d^8\right)x^9 + \frac{3}{4}\left(35\,b^3c^6d^4 + 126\,ab^2c^5d^5 + 105\,a^2bc^4d^6 + 20\,a^3c^3d^7\right)x^8 + \frac{6}{7}\left(20\,b^3c^7d^3 + 105\,ab^2c^6d^4 + 126\,a^2bc^5d^5 + 35\,a^3c^4d^6\right)x^7 + \frac{3}{2}\left(5\,b^3c^8d^2 + 40\,ab^2c^7d^3 + 70\,a^2bc^6d^4 + 28\,a^3c^5d^5\right)x^6 + \left(2\,b^3c^9d + 27\,ab^2c^8d^2 + 72\,a^2bc^7d^3 + 42\,a^3c^6d^4\right)x^5 + \frac{1}{4}\left(b^3c^{10} + 30\,ab^2c^9d + 135\,a^2bc^8d^2 + 120\,a^3c^7d^3\right)x^4 + \left(ab^2c^{10} + 10\,a^2bc^9d + 15\,a^3c^8d^2\right)x^3 + \frac{1}{2}\left(3\,a^2bc^{10} + 10\,a^3c^9d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/14*b^3*d^10*x^14 + a^3*c^10*x + 1/13*(10*b^3*c*d^9 + 3*a*b^2*d^
10)*x^13 + 1/4*(15*b^3*c^2*d^8 + 10*a*b^2*c*d^9 + a^2*b*d^10)*x^1
2 + 1/11*(120*b^3*c^3*d^7 + 135*a*b^2*c^2*d^8 + 30*a^2*b*c*d^9 +
a^3*d^10)*x^11 + 1/2*(42*b^3*c^4*d^6 + 72*a*b^2*c^3*d^7 + 27*a^2*
b*c^2*d^8 + 2*a^3*c*d^9)*x^10 + (28*b^3*c^5*d^5 + 70*a*b^2*c^4*d^
6 + 40*a^2*b*c^3*d^7 + 5*a^3*c^2*d^8)*x^9 + 3/4*(35*b^3*c^6*d^4 +
 126*a*b^2*c^5*d^5 + 105*a^2*b*c^4*d^6 + 20*a^3*c^3*d^7)*x^8 + 6/
7*(20*b^3*c^7*d^3 + 105*a*b^2*c^6*d^4 + 126*a^2*b*c^5*d^5 + 35*a^
3*c^4*d^6)*x^7 + 3/2*(5*b^3*c^8*d^2 + 40*a*b^2*c^7*d^3 + 70*a^2*b
*c^6*d^4 + 28*a^3*c^5*d^5)*x^6 + (2*b^3*c^9*d + 27*a*b^2*c^8*d^2
+ 72*a^2*b*c^7*d^3 + 42*a^3*c^6*d^4)*x^5 + 1/4*(b^3*c^10 + 30*a*b
^2*c^9*d + 135*a^2*b*c^8*d^2 + 120*a^3*c^7*d^3)*x^4 + (a*b^2*c^10
 + 10*a^2*b*c^9*d + 15*a^3*c^8*d^2)*x^3 + 1/2*(3*a^2*b*c^10 + 10*
a^3*c^9*d)*x^2
```

Fricas [A] time = 0.193788, size = 1, normalized size = 0.01

$$\frac{1}{14}x^{14}d^{10}b^3 + \frac{10}{13}x^{13}d^9cb^3 + \frac{3}{13}x^{13}d^{10}b^2a + \frac{15}{4}x^{12}d^8c^2b^3 + \frac{5}{2}x^{12}d^9cb^2a + \frac{1}{4}x^{12}d^{10}ba^2 + \frac{120}{11}x^{11}d^7c^3b^3 + \frac{135}{11}x^{11}d^8c^2b^2a + \frac{30}{11}x^{11}d^9cba^2 + \frac{1}{11}x^{11}d^{10}a^3 + 21x^{10}d^6c^4b^3 + 36x^{10}d^7c^3b^2a + \frac{27}{2}x^{10}d^8c^2ba^2 + x^{10}d^9ca^3 + 28x^9d^5c^5b^3 + 70x^9d^6c^4b^2a + 40x^9d^7c^3ba^2 + 5x^9d^8c^2a^3 + \frac{105}{4}x^8d^4c^6b^3 + \frac{189}{2}x^8d^5c^5b^2a + \frac{315}{4}x^8d^6c^4ba^2 + 15x^8d^7c^3a^3 + \frac{120}{7}x^7d^3c^7b^3 + 90x^7d^4c^6b^2a + 108x^7d^5c^5ba^2 + 30x^7d^6c^4a^3 + \frac{15}{2}x^6d^2c^8b^3 + 60x^6d^3c^7b^2a + 105x^6d^4c^6ba^2 + 42x^6d^5c^5a^3 + 2x^5dc^9b^3 + 27x^5d^2c^8b^2a + 72x^5d^3c^7ba^2 + 42x^5d^4c^6a^3 + \frac{1}{4}x^4c^{10}b^3 + \frac{15}{2}x^4dc^9b^2a + \frac{135}{4}x^4d^2c^8ba^2 + 30x^4d^3c^7a^3 + x^3c^{10}b^2a + 10x^3dc^9ba^2 + 15x^3d^2c^8a^3 + \frac{3}{2}x^2c^{10}ba^2 + 5x^2dc^9a^3 + xc^{10}a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*d^10*b^3 + 10/13*x^13*d^9*c*b^3 + 3/13*x^13*d^10*b^2*a
+ 15/4*x^12*d^8*c^2*b^3 + 5/2*x^12*d^9*c*b^2*a + 1/4*x^12*d^10*b*
a^2 + 120/11*x^11*d^7*c^3*b^3 + 135/11*x^11*d^8*c^2*b^2*a + 30/11
*x^11*d^9*c*b*a^2 + 1/11*x^11*d^10*a^3 + 21*x^10*d^6*c^4*b^3 + 36
*x^10*d^7*c^3*b^2*a + 27/2*x^10*d^8*c^2*b*a^2 + x^10*d^9*c*a^3 +
28*x^9*d^5*c^5*b^3 + 70*x^9*d^6*c^4*b^2*a + 40*x^9*d^7*c^3*b*a^2
+ 5*x^9*d^8*c^2*a^3 + 105/4*x^8*d^4*c^6*b^3 + 189/2*x^8*d^5*c^5*b
^2*a + 315/4*x^8*d^6*c^4*b*a^2 + 15*x^8*d^7*c^3*a^3 + 120/7*x^7*d
^3*c^7*b^3 + 90*x^7*d^4*c^6*b^2*a + 108*x^7*d^5*c^5*b*a^2 + 30*x^
7*d^6*c^4*a^3 + 15/2*x^6*d^2*c^8*b^3 + 60*x^6*d^3*c^7*b^2*a + 105
*x^6*d^4*c^6*b*a^2 + 42*x^6*d^5*c^5*a^3 + 2*x^5*d*c^9*b^3 + 27*x^
5*d^2*c^8*b^2*a + 72*x^5*d^3*c^7*b*a^2 + 42*x^5*d^4*c^6*a^3 + 1/4
*x^4*c^10*b^3 + 15/2*x^4*d*c^9*b^2*a + 135/4*x^4*d^2*c^8*b*a^2 +
30*x^4*d^3*c^7*a^3 + x^3*c^10*b^2*a + 10*x^3*d*c^9*b*a^2 + 15*x^3
*d^2*c^8*a^3 + 3/2*x^2*c^10*b*a^2 + 5*x^2*d*c^9*a^3 + x*c^10*a^3
```

Sympy [A] time = 0.350327, size = 586, normalized size = 6.37

$$a^{3}c^{10}x+\frac{b^{3}d^{10}x^{14}}{14}+x^{13}\left(\frac{3ab^{2}d^{10}}{13}+\frac{10b^{3}cd^{9}}{13}\right)+x^{12}\left(\frac{a^{2}bd^{10}}{4}+\frac{5ab^{2}cd^{9}}{2}+\frac{15b^{3}c^{2}d^{8}}{4}\right)+x^{11}\left(\frac{a^{3}d^{10}}{11}+\frac{30a^{2}bcd^{9}}{11}+\frac{135ab^{2}c^{2}d^{8}}{11}+\frac{120b^{3}c^{3}d^{7}}{11}\right)+x^{10}\left(a^{3}cd^{9}+\frac{27a^{2}bc^{2}d^{8}}{2}+36ab^{2}c^{3}d^{7}+21b^{3}c^{4}d^{6}\right)+x^{9}\left(5a^{3}c^{2}d^{8}+40a^{2}bc^{3}d^{7}+70ab^{2}c^{4}d^{6}+28b^{3}c^{5}d^{5}\right)+x^{8}\left(15a^{3}c^{3}d^{7}+\frac{315a^{2}bc^{4}d^{6}}{4}+\frac{189ab^{2}c^{5}d^{5}}{2}+\frac{105b^{3}c^{6}d^{4}}{4}\right)+x^{7}\left(30a^{3}c^{4}d^{6}+108a^{2}bc^{5}d^{5}+90ab^{2}c^{6}d^{4}+\frac{120b^{3}c^{7}d^{3}}{7}\right)+x^{6}\left(42a^{3}c^{5}d^{5}+105a^{2}bc^{6}d^{4}+60ab^{2}c^{7}d^{3}+\frac{15b^{3}c^{8}d^{2}}{2}\right)+x^{5}\left(42a^{3}c^{6}d^{4}+72a^{2}bc^{7}d^{3}+27ab^{2}c^{8}d^{2}+2b^{3}c^{9}d\right)+x^{4}\left(30a^{3}c^{7}d^{3}+\frac{135a^{2}bc^{8}d^{2}}{4}+\frac{15ab^{2}c^{9}d}{2}+\frac{b^{3}c^{10}}{4}\right)+x^{3}\left(15a^{3}c^{8}d^{2}+10a^{2}bc^{9}d+ab^{2}c^{10}\right)+x^{2}\left(5a^{3}c^{9}d+\frac{3a^{2}bc^{10}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**10,x)
```

```
[Out] a**3*c**10*x + b**3*d**10*x**14/14 + x**13*(3*a*b**2*d**10/13 + 1
0*b**3*c*d**9/13) + x**12*(a**2*b*d**10/4 + 5*a*b**2*c*d**9/2 + 1
5*b**3*c**2*d**8/4) + x**11*(a**3*d**10/11 + 30*a**2*b*c*d**9/11
+ 135*a*b**2*c**2*d**8/11 + 120*b**3*c**3*d**7/11) + x**10*(a**3*
c*d**9 + 27*a**2*b*c**2*d**8/2 + 36*a*b**2*c**3*d**7 + 21*b**3*c*
*4*d**6) + x**9*(5*a**3*c**2*d**8 + 40*a**2*b*c**3*d**7 + 70*a*b*
*2*c**4*d**6 + 28*b**3*c**5*d**5) + x**8*(15*a**3*c**3*d**7 + 315
*a**2*b*c**4*d**6/4 + 189*a*b**2*c**5*d**5/2 + 105*b**3*c**6*d**4
/4) + x**7*(30*a**3*c**4*d**6 + 108*a**2*b*c**5*d**5 + 90*a*b**2*
c**6*d**4 + 120*b**3*c**7*d**3/7) + x**6*(42*a**3*c**5*d**5 + 105
*a**2*b*c**6*d**4 + 60*a*b**2*c**7*d**3 + 15*b**3*c**8*d**2/2) +
x**5*(42*a**3*c**6*d**4 + 72*a**2*b*c**7*d**3 + 27*a*b**2*c**8*d*
*2 + 2*b**3*c**9*d) + x**4*(30*a**3*c**7*d**3 + 135*a**2*b*c**8*d
**2/4 + 15*a*b**2*c**9*d/2 + b**3*c**10/4) + x**3*(15*a**3*c**8*d
**2 + 10*a**2*b*c**9*d + a*b**2*c**10) + x**2*(5*a**3*c**9*d + 3*
a**2*b*c**10/2)
```

GIAC/XCAS [A] time = 0.21942, size = 802, normalized size = 8.72

$$\frac{1}{14}b^3d^{10}x^{14} + \frac{10}{13}b^3cd^9x^{13} + \frac{3}{13}ab^2d^{10}x^{13} + \frac{15}{4}b^3c^2d^8x^{12} + \frac{5}{2}ab^2cd^9x^{12} + \frac{1}{4}a^2bd^{10}x^{12} + \frac{120}{11}b^3c^3d^7x^{11} + \frac{135}{11}ab^2c^2d^8x^{11} + \frac{30}{11}a^2bcd^9x^{11} + \frac{1}{11}a^3d^{10}x^{11} + 21\,b^3c^4d^6x^{10} + 36\,ab^2c^3d^7x^{10} + \frac{27}{2}a^2bc^2d^8x^{10} + a^3cd^9x^{10} + 28\,b^3c^5d^5x^9 + 70\,ab^2c^4d^6x^9 + 40\,a^2bc^3d^7x^9 + 5\,a^3c^2d^8x^9 + \frac{105}{4}b^3c^6d^4x^8 + \frac{189}{2}ab^2c^5d^5x^8 + \frac{315}{4}a^2bc^4d^6x^8 + 15\,a^3c^3d^7x^8 + \frac{120}{7}b^3c^7d^3x^7 + 90\,ab^2c^6d^4x^7 + 108\,a^2bc^5d^5x^7 + 30\,a^3c^4d^6x^7 + \frac{15}{2}b^3c^8d^2x^6 + 60\,ab^2c^7d^3x^6 + 105\,a^2bc^6d^4x^6 + 42\,a^3c^5d^5x^6 + 2\,b^3c^9dx^5 + 27\,ab^2c^8d^2x^5 + 72\,a^2bc^7d^3x^5 + 42\,a^3c^6d^4x^5 + \frac{1}{4}b^3c^{10}x^4 + \frac{15}{2}ab^2c^9dx^4 + \frac{135}{4}a^2bc^8d^2x^4 + 30\,a^3c^7d^3x^4 + ab^2c^{10}x^3 + 10\,a^2bc^9dx^3 + 15\,a^3c^8d^2x^3 + \frac{3}{2}a^2bc^{10}x^2 + 5\,a^3c^9dx^2 + a^3c^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] 1/14*b^3*d^10*x^14 + 10/13*b^3*c*d^9*x^13 + 3/13*a*b^2*d^10*x^13
+ 15/4*b^3*c^2*d^8*x^12 + 5/2*a*b^2*c*d^9*x^12 + 1/4*a^2*b*d^10*x
^12 + 120/11*b^3*c^3*d^7*x^11 + 135/11*a*b^2*c^2*d^8*x^11 + 30/11
*a^2*b*c*d^9*x^11 + 1/11*a^3*d^10*x^11 + 21*b^3*c^4*d^6*x^10 + 36
*a*b^2*c^3*d^7*x^10 + 27/2*a^2*b*c^2*d^8*x^10 + a^3*c*d^9*x^10 +
28*b^3*c^5*d^5*x^9 + 70*a*b^2*c^4*d^6*x^9 + 40*a^2*b*c^3*d^7*x^9
+ 5*a^3*c^2*d^8*x^9 + 105/4*b^3*c^6*d^4*x^8 + 189/2*a*b^2*c^5*d^5
*x^8 + 315/4*a^2*b*c^4*d^6*x^8 + 15*a^3*c^3*d^7*x^8 + 120/7*b^3*c
^7*d^3*x^7 + 90*a*b^2*c^6*d^4*x^7 + 108*a^2*b*c^5*d^5*x^7 + 30*a^
3*c^4*d^6*x^7 + 15/2*b^3*c^8*d^2*x^6 + 60*a*b^2*c^7*d^3*x^6 + 105
*a^2*b*c^6*d^4*x^6 + 42*a^3*c^5*d^5*x^6 + 2*b^3*c^9*d*x^5 + 27*a*
b^2*c^8*d^2*x^5 + 72*a^2*b*c^7*d^3*x^5 + 42*a^3*c^6*d^4*x^5 + 1/4
*b^3*c^10*x^4 + 15/2*a*b^2*c^9*d*x^4 + 135/4*a^2*b*c^8*d^2*x^4 +
30*a^3*c^7*d^3*x^4 + a*b^2*c^10*x^3 + 10*a^2*b*c^9*d*x^3 + 15*a^3
*c^8*d^2*x^3 + 3/2*a^2*b*c^10*x^2 + 5*a^3*c^9*d*x^2 + a^3*c^10*x
```

3.1309 $\int (a+bx)^2(c+dx)^{10}\,dx$

Optimal. Leaf size=65

$$-\frac{b(c+dx)^{12}(bc-ad)}{6d^3}+\frac{(c+dx)^{11}(bc-ad)^2}{11d^3}+\frac{b^2(c+dx)^{13}}{13d^3}$$

```
[Out] ((b*c - a*d)^2*(c + d*x)^11)/(11*d^3) - (b*(b*c - a*d)*(c + d*x)^
12)/(6*d^3) + (b^2*(c + d*x)^13)/(13*d^3)
```

Rubi [A] time = 0.483769, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{b(c+dx)^{12}(bc-ad)}{6d^3}+\frac{(c+dx)^{11}(bc-ad)^2}{11d^3}+\frac{b^2(c+dx)^{13}}{13d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^10,x]
```

```
[Out] ((b*c - a*d)^2*(c + d*x)^11)/(11*d^3) - (b*(b*c - a*d)*(c + d*x)^
12)/(6*d^3) + (b^2*(c + d*x)^13)/(13*d^3)
```

Rubi in Sympy [A] time = 35.9241, size = 54, normalized size = 0.83

$$\frac{b^2\,(c+dx)^{13}}{13d^3}+\frac{b\,(c+dx)^{12}\,(ad-bc)}{6d^3}+\frac{(c+dx)^{11}\,(ad-bc)^2}{11d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**10,x)
```

```
[Out] b**2*(c + d*x)**13/(13*d**3) + b*(c + d*x)**12*(a*d - b*c)/(6*d**
3) + (c + d*x)**11*(a*d - b*c)**2/(11*d**3)
```

Mathematica [B] time = 0.0731577, size = 358, normalized size = 5.51

$$\frac{1}{11}d^8x^{11}\left(a^2d^2+20abcd+45b^2c^2\right)+cd^7x^{10}\left(a^2d^2+9abcd+12b^2c^2\right)+\frac{5}{3}c^2d^6x^9\left(3a^2d^2+16abcd+14b^2c^2\right)+\frac{1}{3}c^8x^3\left(45a^2d^2+20abcd+b^2c^2\right)+\frac{5}{2}c^7dx^4\left(12a^2d^2+9abcd+b^2c^2\right)+3c^6d^2x^5\left(14a^2d^2+16abcd+3b^2c^2\right)+2c^5d^3x^6\left(21a^2d^2+35abcd+10b^2c^2\right)+6c^4d^4x^7\left(5a^2d^2+12abcd+5b^2c^2\right)+\frac{3}{2}c^3d^5x^8\left(10a^2d^2+35abcd+21b^2c^2\right)+a^2c^{10}x+ac^9x^2(5ad+bc)+\frac{1}{6}bd^9x^{12}(ad+5bc)+\frac{1}{13}b^2d^{10}x^{13}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^10,x]
```

```
[Out] a^2*c^10*x + a*c^9*(b*c + 5*a*d)*x^2 + (c^8*(b^2*c^2 + 20*a*b*c*d
 + 45*a^2*d^2)*x^3)/3 + (5*c^7*d*(b^2*c^2 + 9*a*b*c*d + 12*a^2*d^
2)*x^4)/2 + 3*c^6*d^2*(3*b^2*c^2 + 16*a*b*c*d + 14*a^2*d^2)*x^5 +
 2*c^5*d^3*(10*b^2*c^2 + 35*a*b*c*d + 21*a^2*d^2)*x^6 + 6*c^4*d^4
*(5*b^2*c^2 + 12*a*b*c*d + 5*a^2*d^2)*x^7 + (3*c^3*d^5*(21*b^2*c^
2 + 35*a*b*c*d + 10*a^2*d^2)*x^8)/2 + (5*c^2*d^6*(14*b^2*c^2 + 16
*a*b*c*d + 3*a^2*d^2)*x^9)/3 + c*d^7*(12*b^2*c^2 + 9*a*b*c*d + a^
2*d^2)*x^10 + (d^8*(45*b^2*c^2 + 20*a*b*c*d + a^2*d^2)*x^11)/11 +
 (b*d^9*(5*b*c + a*d)*x^12)/6 + (b^2*d^10*x^13)/13
```

Maple [B] time = 0.003, size = 391, normalized size = 6.

$$\frac{b^2d^{10}x^{13}}{13}+\frac{\left(2\,abd^{10}+10\,b^2cd^9\right)x^{12}}{12}+\frac{\left(a^2d^{10}+20\,abcd^9+45\,b^2c^2d^8\right)x^{11}}{11}+\frac{\left(10\,a^2cd^9+90\,abc^2d^8+120\,b^2c^3d^7\right)x^{10}}{10}+\frac{\left(45\,a^2c^2d^8+240\,abc^3d^7+210\,b^2c^4d^6\right)x^9}{9}+\frac{\left(120\,a^2c^3d^7+420\,abc^4d^6+252\,b^2c^5d^5\right)x^8}{8}+\frac{\left(210\,a^2c^4d^6+504\,abc^5d^5+210\,b^2c^6d^4\right)x^7}{7}+\frac{\left(252\,a^2c^5d^5+420\,abc^6d^4+120\,b^2c^7d^3\right)x^6}{6}+\frac{\left(210\,a^2c^6d^4+240\,abc^7d^3+45\,b^2c^8d^2\right)x^5}{5}+\frac{\left(120\,a^2c^7d^3+90\,abc^8d^2+10\,b^2c^9d\right)x^4}{4}+\frac{\left(45\,a^2c^8d^2+20\,abc^9d+b^2c^{10}\right)x^3}{3}+\frac{\left(10\,a^2c^9d+2\,abc^{10}\right)x^2}{2}+a^2c^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^10,x)
```

```
[Out] 1/13*b^2*d^10*x^13+1/12*(2*a*b*d^10+10*b^2*c*d^9)*x^12+1/11*(a^2*
d^10+20*a*b*c*d^9+45*b^2*c^2*d^8)*x^11+1/10*(10*a^2*c*d^9+90*a*b*
```

```
c^2*d^8+120*b^2*c^3*d^7)*x^10+1/9*(45*a^2*c^2*d^8+240*a*b*c^3*d^7
+210*b^2*c^4*d^6)*x^9+1/8*(120*a^2*c^3*d^7+420*a*b*c^4*d^6+252*b^
2*c^5*d^5)*x^8+1/7*(210*a^2*c^4*d^6+504*a*b*c^5*d^5+210*b^2*c^6*d
^4)*x^7+1/6*(252*a^2*c^5*d^5+420*a*b*c^6*d^4+120*b^2*c^7*d^3)*x^6
+1/5*(210*a^2*c^6*d^4+240*a*b*c^7*d^3+45*b^2*c^8*d^2)*x^5+1/4*(12
0*a^2*c^7*d^3+90*a*b*c^8*d^2+10*b^2*c^9*d)*x^4+1/3*(45*a^2*c^8*d^
2+20*a*b*c^9*d+b^2*c^10)*x^3+1/2*(10*a^2*c^9*d+2*a*b*c^10)*x^2+a^
2*c^10*x
```

Maxima [A] time = 1.34004, size = 518, normalized size = 7.97

$$\frac{1}{13}\,b^2d^{10}x^{13}+a^2c^{10}x+\frac{1}{6}\left(5\,b^2cd^9+abd^{10}\right)x^{12}+\frac{1}{11}\left(45\,b^2c^2d^8+20\,abcd^9+a^2d^{10}\right)x^{11}+\left(12\,b^2c^3d^7+9\,abc^2d^8+a^2cd^9\right)x^{10}+\frac{5}{3}\left(14\,b^2c^4d^6+16\,abc^3d^7+3\,a^2c^2d^8\right)x^9+\frac{3}{2}\left(21\,b^2c^5d^5+35\,abc^4d^6+10\,a^2c^3d^7\right)x^8+6\left(5\,b^2c^6d^4+12\,abc^5d^5+5\,a^2c^4d^6\right)x^7+2\left(10\,b^2c^7d^3+35\,abc^6d^4+21\,a^2c^5d^5\right)x^6+3\left(3\,b^2c^8d^2+16\,abc^7d^3+14\,a^2c^6d^4\right)x^5+\frac{5}{2}\left(b^2c^9d+9\,abc^8d^2+12\,a^2c^7d^3\right)x^4+\frac{1}{3}\left(b^2c^{10}+20\,abc^9d+45\,a^2c^8d^2\right)x^3+\left(abc^{10}+5\,a^2c^9d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/13*b^2*d^10*x^13 + a^2*c^10*x + 1/6*(5*b^2*c*d^9 + a*b*d^10)*x^
12 + 1/11*(45*b^2*c^2*d^8 + 20*a*b*c*d^9 + a^2*d^10)*x^11 + (12*b
^2*c^3*d^7 + 9*a*b*c^2*d^8 + a^2*c*d^9)*x^10 + 5/3*(14*b^2*c^4*d^
6 + 16*a*b*c^3*d^7 + 3*a^2*c^2*d^8)*x^9 + 3/2*(21*b^2*c^5*d^5 + 3
5*a*b*c^4*d^6 + 10*a^2*c^3*d^7)*x^8 + 6*(5*b^2*c^6*d^4 + 12*a*b*c
^5*d^5 + 5*a^2*c^4*d^6)*x^7 + 2*(10*b^2*c^7*d^3 + 35*a*b*c^6*d^4
+ 21*a^2*c^5*d^5)*x^6 + 3*(3*b^2*c^8*d^2 + 16*a*b*c^7*d^3 + 14*a^
2*c^6*d^4)*x^5 + 5/2*(b^2*c^9*d + 9*a*b*c^8*d^2 + 12*a^2*c^7*d^3)
*x^4 + 1/3*(b^2*c^10 + 20*a*b*c^9*d + 45*a^2*c^8*d^2)*x^3 + (a*b*
c^10 + 5*a^2*c^9*d)*x^2
```

Fricas [A] time = 0.17607, size = 1, normalized size = 0.02

$$\frac{1}{13}x^{13}d^{10}b^2+\frac{5}{6}x^{12}d^9cb^2+\frac{1}{6}x^{12}d^{10}ba+\frac{45}{11}x^{11}d^8c^2b^2+\frac{20}{11}x^{11}d^9cba+\frac{1}{11}x^{11}d^{10}a^2+12x^{10}d^7c^3b^2+9x^{10}d^8c^2ba+x^{10}d^9ca^2+\frac{70}{3}x^9d^6c^4b^2+\frac{80}{3}x^9d^7c^3ba+5x^9d^8c^2a^2+\frac{63}{2}x^8d^5c^5b^2+\frac{105}{2}x^8d^6c^4ba+15x^8d^7c^3a^2+30x^7d^4c^6b^2+72x^7d^5c^5ba+30x^7d^6c^4a^2+20x^6d^3c^7b^2+70x^6d^4c^6ba+42x^6d^5c^5a^2+9x^5d^2c^8b^2+48x^5d^3c^7ba+42x^5d^4c^6a^2+\frac{5}{2}x^4dc^9b^2+\frac{45}{2}x^4d^2c^8ba+30x^4d^3c^7a^2+\frac{1}{3}x^3c^{10}b^2+\frac{20}{3}x^3dc^9ba+15x^3d^2c^8a^2+x^2c^{10}ba+5x^2dc^9a^2+xc^{10}a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*d^10*b^2 + 5/6*x^12*d^9*c*b^2 + 1/6*x^12*d^10*b*a + 45/
11*x^11*d^8*c^2*b^2 + 20/11*x^11*d^9*c*b*a + 1/11*x^11*d^10*a^2 +
 12*x^10*d^7*c^3*b^2 + 9*x^10*d^8*c^2*b*a + x^10*d^9*c*a^2 + 70/3
*x^9*d^6*c^4*b^2 + 80/3*x^9*d^7*c^3*b*a + 5*x^9*d^8*c^2*a^2 + 63/
2*x^8*d^5*c^5*b^2 + 105/2*x^8*d^6*c^4*b*a + 15*x^8*d^7*c^3*a^2 +
30*x^7*d^4*c^6*b^2 + 72*x^7*d^5*c^5*b*a + 30*x^7*d^6*c^4*a^2 + 20
*x^6*d^3*c^7*b^2 + 70*x^6*d^4*c^6*b*a + 42*x^6*d^5*c^5*a^2 + 9*x^
5*d^2*c^8*b^2 + 48*x^5*d^3*c^7*b*a + 42*x^5*d^4*c^6*a^2 + 5/2*x^4
*d*c^9*b^2 + 45/2*x^4*d^2*c^8*b*a + 30*x^4*d^3*c^7*a^2 + 1/3*x^3*
c^10*b^2 + 20/3*x^3*d*c^9*b*a + 15*x^3*d^2*c^8*a^2 + x^2*c^10*b*a
 + 5*x^2*d*c^9*a^2 + x*c^10*a^2
```

Sympy [A] time = 0.293743, size = 415, normalized size = 6.38

$$a^{2}c^{10}x + \frac{b^{2}d^{10}x^{13}}{13} + x^{12}\left(\frac{abd^{10}}{6} + \frac{5b^{2}cd^{9}}{6}\right) + x^{11}\left(\frac{a^{2}d^{10}}{11} + \frac{20abcd^{9}}{11} + \frac{45b^{2}c^{2}d^{8}}{11}\right) + x^{10}\left(a^{2}cd^{9} + 9abc^{2}d^{8} + 12b^{2}c^{3}d^{7}\right) + x^{9}\left(5a^{2}c^{2}d^{8} + \frac{80abc^{3}d^{7}}{3} + \frac{70b^{2}c^{4}d^{6}}{3}\right) + x^{8}\left(15a^{2}c^{3}d^{7} + \frac{105abc^{4}d^{6}}{2} + \frac{63b^{2}c^{5}d^{5}}{2}\right) + x^{7}\left(30a^{2}c^{4}d^{6} + 72abc^{5}d^{5} + 30b^{2}c^{6}d^{4}\right) + x^{6}\left(42a^{2}c^{5}d^{5} + 70abc^{6}d^{4} + 20b^{2}c^{7}d^{3}\right) + x^{5}\left(42a^{2}c^{6}d^{4} + 48abc^{7}d^{3} + 9b^{2}c^{8}d^{2}\right) + x^{4}\left(30a^{2}c^{7}d^{3} + \frac{45abc^{8}d^{2}}{2} + \frac{5b^{2}c^{9}d}{2}\right) + x^{3}\left(15a^{2}c^{8}d^{2} + \frac{20abc^{9}d}{3} + \frac{b^{2}c^{10}}{3}\right) + x^{2}\left(5a^{2}c^{9}d + abc^{10}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**10,x)
```

```
[Out] a**2*c**10*x + b**2*d**10*x**13/13 + x**12*(a*b*d**10/6 + 5*b**2*
c*d**9/6) + x**11*(a**2*d**10/11 + 20*a*b*c*d**9/11 + 45*b**2*c**
2*d**8/11) + x**10*(a**2*c*d**9 + 9*a*b*c**2*d**8 + 12*b**2*c**3*
d**7) + x**9*(5*a**2*c**2*d**8 + 80*a*b*c**3*d**7/3 + 70*b**2*c**
4*d**6/3) + x**8*(15*a**2*c**3*d**7 + 105*a*b*c**4*d**6/2 + 63*b*
*2*c**5*d**5/2) + x**7*(30*a**2*c**4*d**6 + 72*a*b*c**5*d**5 + 30
*b**2*c**6*d**4) + x**6*(42*a**2*c**5*d**5 + 70*a*b*c**6*d**4 + 2
0*b**2*c**7*d**3) + x**5*(42*a**2*c**6*d**4 + 48*a*b*c**7*d**3 +
9*b**2*c**8*d**2) + x**4*(30*a**2*c**7*d**3 + 45*a*b*c**8*d**2/2
+ 5*b**2*c**9*d/2) + x**3*(15*a**2*c**8*d**2 + 20*a*b*c**9*d/3 +
b**2*c**10/3) + x**2*(5*a**2*c**9*d + a*b*c**10)
```

<u>GIAC/XCAS</u> [A] time = 0.218442, size = 563, normalized size = 8.66

$$\frac{1}{13}\,b^2d^{10}x^{13}+\frac{5}{6}\,b^2cd^9x^{12}+\frac{1}{6}\,abd^{10}x^{12}+\frac{45}{11}\,b^2c^2d^8x^{11}+\frac{20}{11}\,abcd^9x^{11}+\frac{1}{11}\,a^2d^{10}x^{11}+12\,b^2c^3d^7x^{10}+9\,abc^2d^8x^{10}+a^2cd^9x^{10}+\frac{70}{3}\,b^2c^4d^6x^9+\frac{80}{3}\,abc^3d^7x^9+5\,a^2c^2d^8x^9+\frac{63}{2}\,b^2c^5d^5x^8+\frac{105}{2}\,abc^4d^6x^8+15\,a^2c^3d^7x^8+30\,b^2c^6d^4x^7+72\,abc^5d^5x^7+30\,a^2c^4d^6x^7+20\,b^2c^7d^3x^6+70\,abc^6d^4x^6+42\,a^2c^5d^5x^6+9\,b^2c^8d^2x^5+48\,abc^7d^3x^5+42\,a^2c^6d^4x^5+\frac{5}{2}\,b^2c^9dx^4+\frac{45}{2}\,abc^8d^2x^4+30\,a^2c^7d^3x^4+\frac{1}{3}\,b^2c^{10}x^3+\frac{20}{3}\,abc^9dx^3+15\,a^2c^8d^2x^3+abc^{10}x^2+5\,a^2c^9dx^2+a^2c^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] 1/13*b^2*d^10*x^13 + 5/6*b^2*c*d^9*x^12 + 1/6*a*b*d^10*x^12 + 45/
11*b^2*c^2*d^8*x^11 + 20/11*a*b*c*d^9*x^11 + 1/11*a^2*d^10*x^11 +
 12*b^2*c^3*d^7*x^10 + 9*a*b*c^2*d^8*x^10 + a^2*c*d^9*x^10 + 70/3
*b^2*c^4*d^6*x^9 + 80/3*a*b*c^3*d^7*x^9 + 5*a^2*c^2*d^8*x^9 + 63/
2*b^2*c^5*d^5*x^8 + 105/2*a*b*c^4*d^6*x^8 + 15*a^2*c^3*d^7*x^8 +
30*b^2*c^6*d^4*x^7 + 72*a*b*c^5*d^5*x^7 + 30*a^2*c^4*d^6*x^7 + 20
*b^2*c^7*d^3*x^6 + 70*a*b*c^6*d^4*x^6 + 42*a^2*c^5*d^5*x^6 + 9*b^
2*c^8*d^2*x^5 + 48*a*b*c^7*d^3*x^5 + 42*a^2*c^6*d^4*x^5 + 5/2*b^2
*c^9*d*x^4 + 45/2*a*b*c^8*d^2*x^4 + 30*a^2*c^7*d^3*x^4 + 1/3*b^2*
c^10*x^3 + 20/3*a*b*c^9*d*x^3 + 15*a^2*c^8*d^2*x^3 + a*b*c^10*x^2
 + 5*a^2*c^9*d*x^2 + a^2*c^10*x
```

3.1310 $\int (a+bx)(c+dx)^{10}\,dx$

Optimal. Leaf size=38

$$\frac{b(c+dx)^{12}}{12d^2}-\frac{(c+dx)^{11}(bc-ad)}{11d^2}$$

```
[Out] -((b*c - a*d)*(c + d*x)^11)/(11*d^2) + (b*(c + d*x)^12)/(12*d^2)
```

Rubi [A] time = 0.051812, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{b(c+dx)^{12}}{12d^2}-\frac{(c+dx)^{11}(bc-ad)}{11d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^10,x]
```

```
[Out] -((b*c - a*d)*(c + d*x)^11)/(11*d^2) + (b*(c + d*x)^12)/(12*d^2)
```

Rubi in Sympy [A] time = 19.7508, size = 31, normalized size = 0.82

$$\frac{b\,(c+dx)^{12}}{12d^2}+\frac{(c+dx)^{11}\,(ad-bc)}{11d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**10,x)
```

```
[Out] b*(c + d*x)**12/(12*d**2) + (c + d*x)**11*(a*d - b*c)/(11*d**2)
```

Mathematica [B] time = 0.0436914, size = 220, normalized size = 5.79

$$\frac{1}{2}c^9x^2(10ad+bc)+\frac{5}{3}c^8dx^3(9ad+2bc)+\frac{15}{4}c^7d^2x^4(8ad+3bc)+6c^6d^3x^5(7ad+4bc)+7c^5d^4x^6(6ad+5bc)+6c^4d^5x^7(5ad+6bc)+\frac{15}{4}c^3d^6x^8(4ad+7bc)+\frac{5}{3}c^2d^7x^9(3ad+8bc)+\frac{1}{11}d^9x^{11}(ad+10bc)+\frac{1}{2}cd^8x^{10}(2ad+9bc)+ac^{10}x+\frac{1}{12}bd^{10}x^{12}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^10,x]
```

```
[Out] a*c^10*x + (c^9*(b*c + 10*a*d)*x^2)/2 + (5*c^8*d*(2*b*c + 9*a*d)*
x^3)/3 + (15*c^7*d^2*(3*b*c + 8*a*d)*x^4)/4 + 6*c^6*d^3*(4*b*c +
7*a*d)*x^5 + 7*c^5*d^4*(5*b*c + 6*a*d)*x^6 + 6*c^4*d^5*(6*b*c + 5
*a*d)*x^7 + (15*c^3*d^6*(7*b*c + 4*a*d)*x^8)/4 + (5*c^2*d^7*(8*b*
c + 3*a*d)*x^9)/3 + (c*d^8*(9*b*c + 2*a*d)*x^10)/2 + (d^9*(10*b*c
 + a*d)*x^11)/11 + (b*d^10*x^12)/12
```

Maple [B] time = 0.003, size = 241, normalized size = 6.3

$$\frac{bd^{10}x^{12}}{12}+\frac{\left(ad^{10}+10\,bcd^{9}\right)x^{11}}{11}+\frac{\left(10\,acd^{9}+45\,bc^{2}d^{8}\right)x^{10}}{10}+\frac{\left(45\,ac^{2}d^{8}+120\,bc^{3}d^{7}\right)x^{9}}{9}+\frac{\left(120\,ac^{3}d^{7}+210\,bc^{4}d^{6}\right)x^{8}}{8}+\frac{\left(210\,ac^{4}d^{6}+252\,bc^{5}d^{5}\right)x^{7}}{7}+\frac{\left(252\,ac^{5}d^{5}+210\,bc^{6}d^{4}\right)x^{6}}{6}+\frac{\left(210\,ac^{6}d^{4}+120\,bc^{7}d^{3}\right)x^{5}}{5}+\frac{\left(120\,ac^{7}d^{3}+45\,bc^{8}d^{2}\right)x^{4}}{4}+\frac{\left(45\,ac^{8}d^{2}+10\,bc^{9}d\right)x^{3}}{3}+\frac{\left(10\,ac^{9}d+bc^{10}\right)x^{2}}{2}+ac^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^10,x)
```

```
[Out] 1/12*b*d^10*x^12+1/11*(a*d^10+10*b*c*d^9)*x^11+1/10*(10*a*c*d^9+4
5*b*c^2*d^8)*x^10+1/9*(45*a*c^2*d^8+120*b*c^3*d^7)*x^9+1/8*(120*a
*c^3*d^7+210*b*c^4*d^6)*x^8+1/7*(210*a*c^4*d^6+252*b*c^5*d^5)*x^7
+1/6*(252*a*c^5*d^5+210*b*c^6*d^4)*x^6+1/5*(210*a*c^6*d^4+120*b*c
^7*d^3)*x^5+1/4*(120*a*c^7*d^3+45*b*c^8*d^2)*x^4+1/3*(45*a*c^8*d^
2+10*b*c^9*d)*x^3+1/2*(10*a*c^9*d+b*c^10)*x^2+a*c^10*x
```

Maxima [A] time = 1.38164, size = 324, normalized size = 8.53

$$\frac{1}{12}\,bd^{10}x^{12}+ac^{10}x+\frac{1}{11}\left(10\,bcd^{9}+ad^{10}\right)x^{11}+\frac{1}{2}\left(9\,bc^{2}d^{8}+2\,acd^{9}\right)x^{10}+\frac{5}{3}\left(8\,bc^{3}d^{7}+3\,ac^{2}d^{8}\right)x^{9}+\frac{15}{4}\left(7\,bc^{4}d^{6}+4\,ac^{3}d^{7}\right)x^{8}+6\left(6\,bc^{5}d^{5}+5\,ac^{4}d^{6}\right)x^{7}+7\left(5\,bc^{6}d^{4}+6\,ac^{5}d^{5}\right)x^{6}+6\left(4\,bc^{7}d^{3}+7\,ac^{6}d^{4}\right)x^{5}+\frac{15}{4}\left(3\,bc^{8}d^{2}+8\,ac^{7}d^{3}\right)x^{4}+\frac{5}{3}\left(2\,bc^{9}d+9\,ac^{8}d^{2}\right)x^{3}+\frac{1}{2}\left(bc^{10}+10\,ac^{9}d\right)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/12*b*d^10*x^12 + a*c^10*x + 1/11*(10*b*c*d^9 + a*d^10)*x^11 + 1
/2*(9*b*c^2*d^8 + 2*a*c*d^9)*x^10 + 5/3*(8*b*c^3*d^7 + 3*a*c^2*d^
```

```
8)*x^9 + 15/4*(7*b*c^4*d^6 + 4*a*c^3*d^7)*x^8 + 6*(6*b*c^5*d^5 +
5*a*c^4*d^6)*x^7 + 7*(5*b*c^6*d^4 + 6*a*c^5*d^5)*x^6 + 6*(4*b*c^7
*d^3 + 7*a*c^6*d^4)*x^5 + 15/4*(3*b*c^8*d^2 + 8*a*c^7*d^3)*x^4 +
5/3*(2*b*c^9*d + 9*a*c^8*d^2)*x^3 + 1/2*(b*c^10 + 10*a*c^9*d)*x^2
```

Fricas [A] time = 0.182911, size = 1, normalized size = 0.03

$$\frac{1}{12}x^{12}d^{10}b + \frac{10}{11}x^{11}d^{9}cb + \frac{1}{11}x^{11}d^{10}a + \frac{9}{2}x^{10}d^{8}c^{2}b + x^{10}d^{9}ca + \frac{40}{3}x^{9}d^{7}c^{3}b + 5x^{9}d^{8}c^{2}a + \frac{105}{4}x^{8}d^{6}c^{4}b + 15x^{8}d^{7}c^{3}a + 36x^{7}d^{5}c^{5}b + 30x^{7}d^{6}c^{4}a + 35x^{6}d^{4}c^{6}b + 42x^{6}d^{5}c^{5}a + 24x^{5}d^{3}c^{7}b + 42x^{5}d^{4}c^{6}a + \frac{45}{4}x^{4}d^{2}c^{8}b + 30x^{4}d^{3}c^{7}a + \frac{10}{3}x^{3}dc^{9}b + 15x^{3}d^{2}c^{8}a + \frac{1}{2}x^{2}c^{10}b + 5x^{2}dc^{9}a + xc^{10}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*d^10*b + 10/11*x^11*d^9*c*b + 1/11*x^11*d^10*a + 9/2*x^
10*d^8*c^2*b + x^10*d^9*c*a + 40/3*x^9*d^7*c^3*b + 5*x^9*d^8*c^2*
a + 105/4*x^8*d^6*c^4*b + 15*x^8*d^7*c^3*a + 36*x^7*d^5*c^5*b + 3
0*x^7*d^6*c^4*a + 35*x^6*d^4*c^6*b + 42*x^6*d^5*c^5*a + 24*x^5*d^
3*c^7*b + 42*x^5*d^4*c^6*a + 45/4*x^4*d^2*c^8*b + 30*x^4*d^3*c^7*
a + 10/3*x^3*d*c^9*b + 15*x^3*d^2*c^8*a + 1/2*x^2*c^10*b + 5*x^2*
d*c^9*a + x*c^10*a
```

Sympy [A] time = 0.234692, size = 248, normalized size = 6.53

$$ac^{10}x + \frac{bd^{10}x^{12}}{12} + x^{11}\left(\frac{ad^{10}}{11} + \frac{10bcd^{9}}{11}\right) + x^{10}\left(acd^{9} + \frac{9bc^{2}d^{8}}{2}\right) + x^{9}\left(5ac^{2}d^{8} + \frac{40bc^{3}d^{7}}{3}\right) + x^{8}\left(15ac^{3}d^{7} + \frac{105bc^{4}d^{6}}{4}\right) + x^{7}\left(30ac^{4}d^{6} + 36bc^{5}d^{5}\right) + x^{6}\left(42ac^{5}d^{5} + 35bc^{6}d^{4}\right) + x^{5}\left(42ac^{6}d^{4} + 24bc^{7}d^{3}\right) + x^{4}\left(30ac^{7}d^{3} + \frac{45bc^{8}d^{2}}{4}\right) + x^{3}\left(15ac^{8}d^{2} + \frac{10bc^{9}d}{3}\right) + x^{2}\left(5ac^{9}d + \frac{bc^{10}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**10,x)
```

```
[Out] a*c**10*x + b*d**10*x**12/12 + x**11*(a*d**10/11 + 10*b*c*d**9/11
) + x**10*(a*c*d**9 + 9*b*c**2*d**8/2) + x**9*(5*a*c**2*d**8 + 40
*b*c**3*d**7/3) + x**8*(15*a*c**3*d**7 + 105*b*c**4*d**6/4) + x**
7*(30*a*c**4*d**6 + 36*b*c**5*d**5) + x**6*(42*a*c**5*d**5 + 35*b
*c**6*d**4) + x**5*(42*a*c**6*d**4 + 24*b*c**7*d**3) + x**4*(30*a
*c**7*d**3 + 45*b*c**8*d**2/4) + x**3*(15*a*c**8*d**2 + 10*b*c**9
```

```
*d/3) + x**2*(5*a*c**9*d + b*c**10/2)
```

GIAC/XCAS [A] time = 0.224368, size = 325, normalized size = 8.55

$$\frac{1}{12}\,bd^{10}x^{12} + \frac{10}{11}\,bcd^{9}x^{11} + \frac{1}{11}\,ad^{10}x^{11} + \frac{9}{2}\,bc^{2}d^{8}x^{10} + acd^{9}x^{10} + \frac{40}{3}\,bc^{3}d^{7}x^{9} + 5\,ac^{2}d^{8}x^{9} + \frac{105}{4}\,bc^{4}d^{6}x^{8} + 15\,ac^{3}d^{7}x^{8} + 36\,bc^{5}d^{5}x^{7} + 30\,ac^{4}d^{6}x^{7} + 35\,bc^{6}d^{4}x^{6} + 42\,ac^{5}d^{5}x^{6} + 24\,bc^{7}d^{3}x^{5} + 42\,ac^{6}d^{4}x^{5} + \frac{45}{4}\,bc^{8}d^{2}x^{4} + 30\,ac^{7}d^{3}x^{4} + \frac{10}{3}\,bc^{9}dx^{3} + 15\,ac^{8}d^{2}x^{3} + \frac{1}{2}\,bc^{10}x^{2} + 5\,ac^{9}dx^{2} + ac^{10}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^10,x, algorithm="giac")
```

```
[Out] 1/12*b*d^10*x^12 + 10/11*b*c*d^9*x^11 + 1/11*a*d^10*x^11 + 9/2*b*
c^2*d^8*x^10 + a*c*d^9*x^10 + 40/3*b*c^3*d^7*x^9 + 5*a*c^2*d^8*x^
9 + 105/4*b*c^4*d^6*x^8 + 15*a*c^3*d^7*x^8 + 36*b*c^5*d^5*x^7 + 3
0*a*c^4*d^6*x^7 + 35*b*c^6*d^4*x^6 + 42*a*c^5*d^5*x^6 + 24*b*c^7*
d^3*x^5 + 42*a*c^6*d^4*x^5 + 45/4*b*c^8*d^2*x^4 + 30*a*c^7*d^3*x^
4 + 10/3*b*c^9*d*x^3 + 15*a*c^8*d^2*x^3 + 1/2*b*c^10*x^2 + 5*a*c^
9*d*x^2 + a*c^10*x
```

3.1311 $\int (c+dx)^{10}\,dx$

Optimal. Leaf size=14

$$\frac{(c+dx)^{11}}{11d}$$

```
[Out] (c + d*x)^11/(11*d)
```

Rubi [A] time = 0.00718554, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{(c+dx)^{11}}{11d}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^10,x]

[Out] (c + d*x)^11/(11*d)
```

Rubi in Sympy [A] time = 1.31196, size = 8, normalized size = 0.57

$$\frac{(c+dx)^{11}}{11d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**10,x)

[Out] (c + d*x)**11/(11*d)
```

Mathematica [A] time = 0.00156408, size = 14, normalized size = 1.

$$\frac{(c+dx)^{11}}{11d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^10,x]
```

```
[Out] (c + d*x)^11/(11*d)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$\frac{(dx+c)^{11}}{11\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10,x)
```

```
[Out] 1/11*(d*x+c)^11/d
```

Maxima [A] time = 1.37311, size = 16, normalized size = 1.14

$$\frac{(dx+c)^{11}}{11\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10,x, algorithm="maxima")
```

```
[Out] 1/11*(d*x + c)^11/d
```

Fricas [A] time = 0.18771, size = 1, normalized size = 0.07

$$\frac{1}{11}x^{11}d^{10} + x^{10}d^{9}c + 5x^{9}d^{8}c^{2} + 15x^{8}d^{7}c^{3} + 30x^{7}d^{6}c^{4} + 42x^{6}d^{5}c^{5} + 42x^{5}d^{4}c^{6} + 30x^{4}d^{3}c^{7} + 15x^{3}d^{2}c^{8} + 5x^{2}dc^{9} + xc^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*d^10 + x^10*d^9*c + 5*x^9*d^8*c^2 + 15*x^8*d^7*c^3 + 30
*x^7*d^6*c^4 + 42*x^6*d^5*c^5 + 42*x^5*d^4*c^6 + 30*x^4*d^3*c^7 +
 15*x^3*d^2*c^8 + 5*x^2*d*c^9 + x*c^10
```

Sympy [A] time = 0.175096, size = 114, normalized size = 8.14

$$c^{10}x + 5c^9dx^2 + 15c^8d^2x^3 + 30c^7d^3x^4 + 42c^6d^4x^5 + 42c^5d^5x^6 + 30c^4d^6x^7 + 15c^3d^7x^8 + 5c^2d^8x^9 + cd^9x^{10} + \frac{d^{10}x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10,x)
```

```
[Out] c**10*x + 5*c**9*d*x**2 + 15*c**8*d**2*x**3 + 30*c**7*d**3*x**4 +
 42*c**6*d**4*x**5 + 42*c**5*d**5*x**6 + 30*c**4*d**6*x**7 + 15*c
**3*d**7*x**8 + 5*c**2*d**8*x**9 + c*d**9*x**10 + d**10*x**11/11
```

GIAC/XCAS [A] time = 0.217057, size = 16, normalized size = 1.14

$$\frac{(dx + c)^{11}}{11\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10,x, algorithm="giac")
```

```
[Out] 1/11*(d*x + c)^11/d
```

3.1312 $\int \frac{(c+dx)^{10}}{a+bx}\,dx$

Optimal. Leaf size=241

$$\frac{(bc-ad)^{10}\log(a+bx)}{b^{11}}+\frac{dx(bc-ad)^9}{b^{10}}+\frac{(c+dx)^2(bc-ad)^8}{2b^9}+\frac{(c+dx)^3(bc-ad)^7}{3b^8}+\frac{(c+dx)^4(bc-ad)^6}{4b^7}+\frac{(c+dx)^5(bc-ad)^5}{5b^6}+\frac{(c+dx)^6(bc-ad)^4}{6b^5}+\frac{(c+dx)^7(bc-ad)^3}{7b^4}+\frac{(c+dx)^8(bc-ad)^2}{8b^3}+\frac{(c+dx)^9(bc-ad)}{9b^2}+\frac{(c+dx)^{10}}{10b}$$

```
[Out] (d*(b*c - a*d)^9*x)/b^10 + ((b*c - a*d)^8*(c + d*x)^2)/(2*b^9) +
((b*c - a*d)^7*(c + d*x)^3)/(3*b^8) + ((b*c - a*d)^6*(c + d*x)^4)
/(4*b^7) + ((b*c - a*d)^5*(c + d*x)^5)/(5*b^6) + ((b*c - a*d)^4*(
c + d*x)^6)/(6*b^5) + ((b*c - a*d)^3*(c + d*x)^7)/(7*b^4) + ((b*c
 - a*d)^2*(c + d*x)^8)/(8*b^3) + ((b*c - a*d)*(c + d*x)^9)/(9*b^2
) + (c + d*x)^10/(10*b) + ((b*c - a*d)^10*Log[a + b*x])/b^11
```

Rubi [A] time = 0.225503, antiderivative size = 241, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^{10}\log(a+bx)}{b^{11}}+\frac{dx(bc-ad)^9}{b^{10}}+\frac{(c+dx)^2(bc-ad)^8}{2b^9}+\frac{(c+dx)^3(bc-ad)^7}{3b^8}+\frac{(c+dx)^4(bc-ad)^6}{4b^7}+\frac{(c+dx)^5(bc-ad)^5}{5b^6}+\frac{(c+dx)^6(bc-ad)^4}{6b^5}+\frac{(c+dx)^7(bc-ad)^3}{7b^4}+\frac{(c+dx)^8(bc-ad)^2}{8b^3}+\frac{(c+dx)^9(bc-ad)}{9b^2}+\frac{(c+dx)^{10}}{10b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x),x]
```

```
[Out] (d*(b*c - a*d)^9*x)/b^10 + ((b*c - a*d)^8*(c + d*x)^2)/(2*b^9) +
((b*c - a*d)^7*(c + d*x)^3)/(3*b^8) + ((b*c - a*d)^6*(c + d*x)^4)
/(4*b^7) + ((b*c - a*d)^5*(c + d*x)^5)/(5*b^6) + ((b*c - a*d)^4*(
c + d*x)^6)/(6*b^5) + ((b*c - a*d)^3*(c + d*x)^7)/(7*b^4) + ((b*c
 - a*d)^2*(c + d*x)^8)/(8*b^3) + ((b*c - a*d)*(c + d*x)^9)/(9*b^2
) + (c + d*x)^10/(10*b) + ((b*c - a*d)^10*Log[a + b*x])/b^11
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(c+dx)^{10}}{10b}-\frac{(c+dx)^9(ad-bc)}{9b^2}+\frac{(c+dx)^8(ad-bc)^2}{8b^3}-\frac{(c+dx)^7(ad-bc)^3}{7b^4}+\frac{(c+dx)^6(ad-bc)^4}{6b^5}-\frac{(c+dx)^5(ad-bc)^5}{5b^6}+\frac{(c+dx)^4(ad-bc)^6}{4b^7}-\frac{(c+dx)^3(ad-bc)^7}{3b^8}+\frac{(c+dx)^2(ad-bc)^8}{2b^9}-\frac{(ad-bc)^9\int d\,dx}{b^{10}}+\frac{(ad-bc)^{10}\log(a+bx)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a),x)
```

```
[Out] (c + d*x)**10/(10*b) - (c + d*x)**9*(a*d - b*c)/(9*b**2) + (c + d
*x)**8*(a*d - b*c)**2/(8*b**3) - (c + d*x)**7*(a*d - b*c)**3/(7*b
**4) + (c + d*x)**6*(a*d - b*c)**4/(6*b**5) - (c + d*x)**5*(a*d -
 b*c)**5/(5*b**6) + (c + d*x)**4*(a*d - b*c)**6/(4*b**7) - (c + d
*x)**3*(a*d - b*c)**7/(3*b**8) + (c + d*x)**2*(a*d - b*c)**8/(2*b
**9) - (a*d - b*c)**9*Integral(d, x)/b**10 + (a*d - b*c)**10*log(
a + b*x)/b**11
```

Mathematica [B] time = 0.864701, size = 591, normalized size = 2.45

$$\frac{dx\left(-2520a^9d^9+1260a^8bd^8(20c+dx)-840a^7b^2d^7\left(135c^2+15cdx+d^2x^2\right)+210a^6b^3d^6\left(1440c^3+270c^2dx+40cd^2x^2+3d\right.\right.}{}$$

$$+\frac{(bc-ad)^{10}\log(a+bx)}{b^{11}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x),x]
```

```
[Out] (d*x*(-2520*a^9*d^9 + 1260*a^8*b*d^8*(20*c + d*x) - 840*a^7*b^2*d
^7*(135*c^2 + 15*c*d*x + d^2*x^2) + 210*a^6*b^3*d^6*(1440*c^3 + 2
70*c^2*d*x + 40*c*d^2*x^2 + 3*d^3*x^3) - 252*a^5*b^4*d^5*(2100*c^
4 + 600*c^3*d*x + 150*c^2*d^2*x^2 + 25*c*d^3*x^3 + 2*d^4*x^4) + 2
10*a^4*b^5*d^4*(3024*c^5 + 1260*c^4*d*x + 480*c^3*d^2*x^2 + 135*c
^2*d^3*x^3 + 24*c*d^4*x^4 + 2*d^5*x^5) - 120*a^3*b^6*d^3*(4410*c^
6 + 2646*c^5*d*x + 1470*c^4*d^2*x^2 + 630*c^3*d^3*x^3 + 189*c^2*d
^4*x^4 + 35*c*d^5*x^5 + 3*d^6*x^6) + 45*a^2*b^7*d^2*(6720*c^7 + 5
880*c^6*d*x + 4704*c^5*d^2*x^2 + 2940*c^4*d^3*x^3 + 1344*c^3*d^4*
x^4 + 420*c^2*d^5*x^5 + 80*c*d^6*x^6 + 7*d^7*x^7) - 10*a*b^8*d*(1
1340*c^8 + 15120*c^7*d*x + 17640*c^6*d^2*x^2 + 15876*c^5*d^3*x^3
+ 10584*c^4*d^4*x^4 + 5040*c^3*d^5*x^5 + 1620*c^2*d^6*x^6 + 315*c
*d^7*x^7 + 28*d^8*x^8) + b^9*(25200*c^9 + 56700*c^8*d*x + 100800*
c^7*d^2*x^2 + 132300*c^6*d^3*x^3 + 127008*c^5*d^4*x^4 + 88200*c^4
*d^5*x^5 + 43200*c^3*d^6*x^6 + 14175*c^2*d^7*x^7 + 2800*c*d^8*x^8
 + 252*d^9*x^9)))/(2520*b^10) + ((b*c - a*d)^10*Log[a + b*x])/b^1
```

1

Maple [B] time = 0.012, size = 1022, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a),x)
```

```
[Out] 252/5*d^5/b*x^5*c^5+40*d^3/b*x^3*c^7+1/2*d^10/b^9*x^2*a^8+45/2*d^
2/b*x^2*c^8+105/2*d^4/b*x^4*c^6-1/3*d^10/b^8*x^3*a^7+1/8*d^10/b^3
*x^8*a^2+1/4*d^10/b^7*x^4*a^6-1/5*d^10/b^6*x^5*a^5+35*d^6/b*x^6*c
^4+120/7*d^7/b*x^7*c^3+1/6*d^10/b^5*x^6*a^4-1/9*d^10/b^2*x^9*a+10
/9*d^9/b*x^9*c+45/8*d^8/b*x^8*c^2-1/7*d^10/b^4*x^7*a^3+10*d/b*c^9
*x-d^10/b^10*a^9*x+1/b^11*ln(b*x+a)*a^10*d^10+1/b*ln(b*x+a)*c^10+
1/10*d^10/b*x^10-45/7*d^8/b^2*x^7*a*c^2-5/4*d^9/b^2*x^8*a*c-10/b^
10*ln(b*x+a)*a^9*c*d^9+45/b^9*ln(b*x+a)*a^8*c^2*d^8+105*d^6/b^5*x
^2*a^4*c^4-126*d^5/b^4*x^2*a^3*c^5+105*d^4/b^3*x^2*a^2*c^6-60*d^3
/b^2*x^2*a*c^7+10*d^9/b^9*a^8*c*x+45/4*d^8/b^5*x^4*a^4*c^2-30*d^7
/b^4*x^4*a^3*c^3-45*d^8/b^8*a^7*c^2*x+120*d^7/b^7*a^6*c^3*x-210*d
^4/b^4*a^3*c^6*x+120*d^3/b^3*a^2*c^7*x-15*d^8/b^6*x^3*a^5*c^2+40*
d^7/b^5*x^3*a^4*c^3-42*d^6/b^2*x^5*a*c^4-20*d^7/b^2*x^6*a*c^3+2*d
^9/b^5*x^5*a^4*c-5/3*d^9/b^4*x^6*a^3*c+15/2*d^8/b^3*x^6*a^2*c^2-9
*d^8/b^4*x^5*a^3*c^2+24*d^7/b^3*x^5*a^2*c^3+10/7*d^9/b^3*x^7*a^2*
c-252/b^6*ln(b*x+a)*a^5*c^5*d^5+210/b^5*ln(b*x+a)*a^4*c^6*d^4-120
/b^4*ln(b*x+a)*a^3*c^7*d^3+45/b^3*ln(b*x+a)*a^2*c^8*d^2-10/b^2*ln
(b*x+a)*a*c^9*d+105/2*d^6/b^3*x^4*a^2*c^4-45*d^2/b^2*a*c^8*x-5*d^
9/b^8*x^2*a^7*c+45/2*d^8/b^7*x^2*a^6*c^2-60*d^7/b^6*x^2*a^5*c^3-2
10*d^6/b^6*a^5*c^4*x+252*d^5/b^5*a^4*c^5*x-70*d^6/b^4*x^3*a^3*c^4
+84*d^5/b^3*x^3*a^2*c^5-70*d^4/b^2*x^3*a*c^6-5/2*d^9/b^6*x^4*a^5*
c-63*d^5/b^2*x^4*a*c^5+10/3*d^9/b^7*x^3*a^6*c-120/b^8*ln(b*x+a)*a
^7*c^3*d^7+210/b^7*ln(b*x+a)*a^6*c^4*d^6
```

Maxima [A] time = 1.38896, size = 1169, normalized size = 4.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a),x, algorithm="maxima")
```

```
[Out] 1/2520*(252*b^9*d^10*x^10 + 280*(10*b^9*c*d^9 - a*b^8*d^10)*x^9 +
 315*(45*b^9*c^2*d^8 - 10*a*b^8*c*d^9 + a^2*b^7*d^10)*x^8 + 360*(
120*b^9*c^3*d^7 - 45*a*b^8*c^2*d^8 + 10*a^2*b^7*c*d^9 - a^3*b^6*d
^10)*x^7 + 420*(210*b^9*c^4*d^6 - 120*a*b^8*c^3*d^7 + 45*a^2*b^7*
c^2*d^8 - 10*a^3*b^6*c*d^9 + a^4*b^5*d^10)*x^6 + 504*(252*b^9*c^5
```

```
*d^5 - 210*a*b^8*c^4*d^6 + 120*a^2*b^7*c^3*d^7 - 45*a^3*b^6*c^2*d
^8 + 10*a^4*b^5*c*d^9 - a^5*b^4*d^10)*x^5 + 630*(210*b^9*c^6*d^4
- 252*a*b^8*c^5*d^5 + 210*a^2*b^7*c^4*d^6 - 120*a^3*b^6*c^3*d^7 +
 45*a^4*b^5*c^2*d^8 - 10*a^5*b^4*c*d^9 + a^6*b^3*d^10)*x^4 + 840*
(120*b^9*c^7*d^3 - 210*a*b^8*c^6*d^4 + 252*a^2*b^7*c^5*d^5 - 210*
a^3*b^6*c^4*d^6 + 120*a^4*b^5*c^3*d^7 - 45*a^5*b^4*c^2*d^8 + 10*a
^6*b^3*c*d^9 - a^7*b^2*d^10)*x^3 + 1260*(45*b^9*c^8*d^2 - 120*a*b
^8*c^7*d^3 + 210*a^2*b^7*c^6*d^4 - 252*a^3*b^6*c^5*d^5 + 210*a^4*
b^5*c^4*d^6 - 120*a^5*b^4*c^3*d^7 + 45*a^6*b^3*c^2*d^8 - 10*a^7*b
^2*c*d^9 + a^8*b*d^10)*x^2 + 2520*(10*b^9*c^9*d - 45*a*b^8*c^8*d^
2 + 120*a^2*b^7*c^7*d^3 - 210*a^3*b^6*c^6*d^4 + 252*a^4*b^5*c^5*d
^5 - 210*a^5*b^4*c^4*d^6 + 120*a^6*b^3*c^3*d^7 - 45*a^7*b^2*c^2*d
^8 + 10*a^8*b*c*d^9 - a^9*d^10)*x)/b^10 + (b^10*c^10 - 10*a*b^9*c
^9*d + 45*a^2*b^8*c^8*d^2 - 120*a^3*b^7*c^7*d^3 + 210*a^4*b^6*c^6
*d^4 - 252*a^5*b^5*c^5*d^5 + 210*a^6*b^4*c^4*d^6 - 120*a^7*b^3*c^
3*d^7 + 45*a^8*b^2*c^2*d^8 - 10*a^9*b*c*d^9 + a^10*d^10)*log(b*x
+ a)/b^11
```

Fricas [A] time = 0.209371, size = 1172, normalized size = 4.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a),x, algorithm="fricas")
```

```
[Out] 1/2520*(252*b^10*d^10*x^10 + 280*(10*b^10*c*d^9 - a*b^9*d^10)*x^9
 + 315*(45*b^10*c^2*d^8 - 10*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 36
0*(120*b^10*c^3*d^7 - 45*a*b^9*c^2*d^8 + 10*a^2*b^8*c*d^9 - a^3*b
^7*d^10)*x^7 + 420*(210*b^10*c^4*d^6 - 120*a*b^9*c^3*d^7 + 45*a^2
*b^8*c^2*d^8 - 10*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 504*(252*b^
10*c^5*d^5 - 210*a*b^9*c^4*d^6 + 120*a^2*b^8*c^3*d^7 - 45*a^3*b^7
*c^2*d^8 + 10*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x^5 + 630*(210*b^10*c
^6*d^4 - 252*a*b^9*c^5*d^5 + 210*a^2*b^8*c^4*d^6 - 120*a^3*b^7*c^
3*d^7 + 45*a^4*b^6*c^2*d^8 - 10*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4
 + 840*(120*b^10*c^7*d^3 - 210*a*b^9*c^6*d^4 + 252*a^2*b^8*c^5*d^
5 - 210*a^3*b^7*c^4*d^6 + 120*a^4*b^6*c^3*d^7 - 45*a^5*b^5*c^2*d^
8 + 10*a^6*b^4*c*d^9 - a^7*b^3*d^10)*x^3 + 1260*(45*b^10*c^8*d^2
- 120*a*b^9*c^7*d^3 + 210*a^2*b^8*c^6*d^4 - 252*a^3*b^7*c^5*d^5 +
 210*a^4*b^6*c^4*d^6 - 120*a^5*b^5*c^3*d^7 + 45*a^6*b^4*c^2*d^8 -
 10*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 2520*(10*b^10*c^9*d - 45*
a*b^9*c^8*d^2 + 120*a^2*b^8*c^7*d^3 - 210*a^3*b^7*c^6*d^4 + 252*a
^4*b^6*c^5*d^5 - 210*a^5*b^5*c^4*d^6 + 120*a^6*b^4*c^3*d^7 - 45*a
^7*b^3*c^2*d^8 + 10*a^8*b^2*c*d^9 - a^9*b*d^10)*x + 2520*(b^10*c^
10 - 10*a*b^9*c^9*d + 45*a^2*b^8*c^8*d^2 - 120*a^3*b^7*c^7*d^3 +
210*a^4*b^6*c^6*d^4 - 252*a^5*b^5*c^5*d^5 + 210*a^6*b^4*c^4*d^6 -
 120*a^7*b^3*c^3*d^7 + 45*a^8*b^2*c^2*d^8 - 10*a^9*b*c*d^9 + a^10
*d^10)*log(b*x + a))/b^11
```

Sympy [A] time = 5.41552, size = 772, normalized size = 3.2

$$\frac{d^{10}x^{10}}{10b} - \frac{x^9\left(ad^{10} - 10bcd^9\right)}{9b^2} + \frac{x^8\left(a^2d^{10} - 10abcd^9 + 45b^2c^2d^8\right)}{8b^3}$$
$$- \frac{x^7\left(a^3d^{10} - 10a^2bcd^9 + 45ab^2c^2d^8 - 120b^3c^3d^7\right)}{7b^4}$$
$$+ \frac{x^6\left(a^4d^{10} - 10a^3bcd^9 + 45a^2b^2c^2d^8 - 120ab^3c^3d^7 + 210b^4c^4d^6\right)}{6b^5}$$
$$- \frac{x^5\left(a^5d^{10} - 10a^4bcd^9 + 45a^3b^2c^2d^8 - 120a^2b^3c^3d^7 + 210ab^4c^4d^6 - 252b^5c^5d^5\right)}{5b^6}$$
$$+ \frac{x^4\left(a^6d^{10} - 10a^5bcd^9 + 45a^4b^2c^2d^8 - 120a^3b^3c^3d^7 + 210a^2b^4c^4d^6 - 252ab^5c^5d^5 + 210b^6c^6d^4\right)}{4b^7}$$
$$- \frac{x^3\left(a^7d^{10} - 10a^6bcd^9 + 45a^5b^2c^2d^8 - 120a^4b^3c^3d^7 + 210a^3b^4c^4d^6 - 252a^2b^5c^5d^5 + 210ab^6c^6d^4 - 120b^7c^7d^3\right)}{3b^8}$$
$$+ \frac{x^2\left(a^8d^{10} - 10a^7bcd^9 + 45a^6b^2c^2d^8 - 120a^5b^3c^3d^7 + 210a^4b^4c^4d^6 - 252a^3b^5c^5d^5 + 210a^2b^6c^6d^4 - 120ab^7c^7d^3 + 45b^8c^8d^2\right)}{2b^9}$$
$$- \frac{x\left(a^9d^{10} - 10a^8bcd^9 + 45a^7b^2c^2d^8 - 120a^6b^3c^3d^7 + 210a^5b^4c^4d^6 - 252a^4b^5c^5d^5 + 210a^3b^6c^6d^4 - 120a^2b^7c^7d^3 + 45ab^8c^8d\right.}{b^{10}}$$
$$+ \frac{(ad - bc)^{10}\log(a + bx)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a),x)
```

```
[Out] d**10*x**10/(10*b) - x**9*(a*d**10 - 10*b*c*d**9)/(9*b**2) + x**8
*(a**2*d**10 - 10*a*b*c*d**9 + 45*b**2*c**2*d**8)/(8*b**3) - x**7
*(a**3*d**10 - 10*a**2*b*c*d**9 + 45*a*b**2*c**2*d**8 - 120*b**3*
c**3*d**7)/(7*b**4) + x**6*(a**4*d**10 - 10*a**3*b*c*d**9 + 45*a*
*2*b**2*c**2*d**8 - 120*a*b**3*c**3*d**7 + 210*b**4*c**4*d**6)/(6
*b**5) - x**5*(a**5*d**10 - 10*a**4*b*c*d**9 + 45*a**3*b**2*c**2*
d**8 - 120*a**2*b**3*c**3*d**7 + 210*a*b**4*c**4*d**6 - 252*b**5*
c**5*d**5)/(5*b**6) + x**4*(a**6*d**10 - 10*a**5*b*c*d**9 + 45*a*
*4*b**2*c**2*d**8 - 120*a**3*b**3*c**3*d**7 + 210*a**2*b**4*c**4*
d**6 - 252*a*b**5*c**5*d**5 + 210*b**6*c**6*d**4)/(4*b**7) - x**3
*(a**7*d**10 - 10*a**6*b*c*d**9 + 45*a**5*b**2*c**2*d**8 - 120*a*
*4*b**3*c**3*d**7 + 210*a**3*b**4*c**4*d**6 - 252*a**2*b**5*c**5*
d**5 + 210*a*b**6*c**6*d**4 - 120*b**7*c**7*d**3)/(3*b**8) + x**2
*(a**8*d**10 - 10*a**7*b*c*d**9 + 45*a**6*b**2*c**2*d**8 - 120*a*
*5*b**3*c**3*d**7 + 210*a**4*b**4*c**4*d**6 - 252*a**3*b**5*c**5*
d**5 + 210*a**2*b**6*c**6*d**4 - 120*a*b**7*c**7*d**3 + 45*b**8*c
**8*d**2)/(2*b**9) - x*(a**9*d**10 - 10*a**8*b*c*d**9 + 45*a**7*b
**2*c**2*d**8 - 120*a**6*b**3*c**3*d**7 + 210*a**5*b**4*c**4*d**6
 - 252*a**4*b**5*c**5*d**5 + 210*a**3*b**6*c**6*d**4 - 120*a**2*b
**7*c**7*d**3 + 45*a*b**8*c**8*d**2 - 10*b**9*c**9*d)/b**10 + (a*
d - b*c)**10*log(a + b*x)/b**11
```

GIAC/XCAS [A] time = 0.21692, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a),x, algorithm="giac")

[Out] Done
```

3.1313 $\int \frac{(c+dx)^{10}}{(a+bx)^2}\,dx$

Optimal. Leaf size=258

$$\frac{5d^9(a+bx)^8(bc-ad)}{4b^{11}}+\frac{45d^8(a+bx)^7(bc-ad)^2}{7b^{11}}+\frac{20d^7(a+bx)^6(bc-ad)^3}{b^{11}}+\frac{42d^6(a+bx)^5(bc-ad)^4}{b^{11}}+\frac{63d^5(a+bx)^4(bc-ad)^5}{b^{11}}+\frac{70d^4(a+bx)^3(bc-ad)^6}{b^{11}}+\frac{60d^3(a+bx)^2(bc-ad)^7}{b^{11}}-\frac{(bc-ad)^{10}}{b^{11}(a+bx)}+\frac{10d(bc-ad)^9\log(a+bx)}{b^{11}}+\frac{d^{10}(a+bx)^9}{9b^{11}}+\frac{45d^2x(bc-ad)^8}{b^{10}}$$

```
[Out] (45*d^2*(b*c - a*d)^8*x)/b^10 - (b*c - a*d)^10/(b^11*(a + b*x)) +
 (60*d^3*(b*c - a*d)^7*(a + b*x)^2)/b^11 + (70*d^4*(b*c - a*d)^6*
(a + b*x)^3)/b^11 + (63*d^5*(b*c - a*d)^5*(a + b*x)^4)/b^11 + (42
*d^6*(b*c - a*d)^4*(a + b*x)^5)/b^11 + (20*d^7*(b*c - a*d)^3*(a +
 b*x)^6)/b^11 + (45*d^8*(b*c - a*d)^2*(a + b*x)^7)/(7*b^11) + (5*
d^9*(b*c - a*d)*(a + b*x)^8)/(4*b^11) + (d^10*(a + b*x)^9)/(9*b^1
1) + (10*d*(b*c - a*d)^9*Log[a + b*x])/b^11
```

Rubi [A] time = 0.953679, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{5d^9(a+bx)^8(bc-ad)}{4b^{11}}+\frac{45d^8(a+bx)^7(bc-ad)^2}{7b^{11}}+\frac{20d^7(a+bx)^6(bc-ad)^3}{b^{11}}+\frac{42d^6(a+bx)^5(bc-ad)^4}{b^{11}}+\frac{63d^5(a+bx)^4(bc-ad)^5}{b^{11}}+\frac{70d^4(a+bx)^3(bc-ad)^6}{b^{11}}+\frac{60d^3(a+bx)^2(bc-ad)^7}{b^{11}}-\frac{(bc-ad)^{10}}{b^{11}(a+bx)}+\frac{10d(bc-ad)^9\log(a+bx)}{b^{11}}+\frac{d^{10}(a+bx)^9}{9b^{11}}+\frac{45d^2x(bc-ad)^8}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^2,x]
```


```
[Out] (45*d^2*(b*c - a*d)^8*x)/b^10 - (b*c - a*d)^10/(b^11*(a + b*x)) +
 (60*d^3*(b*c - a*d)^7*(a + b*x)^2)/b^11 + (70*d^4*(b*c - a*d)^6*
(a + b*x)^3)/b^11 + (63*d^5*(b*c - a*d)^5*(a + b*x)^4)/b^11 + (42
*d^6*(b*c - a*d)^4*(a + b*x)^5)/b^11 + (20*d^7*(b*c - a*d)^3*(a +
 b*x)^6)/b^11 + (45*d^8*(b*c - a*d)^2*(a + b*x)^7)/(7*b^11) + (5*
d^9*(b*c - a*d)*(a + b*x)^8)/(4*b^11) + (d^10*(a + b*x)^9)/(9*b^1
1) + (10*d*(b*c - a*d)^9*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 159.39, size = 240, normalized size = 0.93

$$\frac{45d^2x\,(ad-bc)^8}{b^{10}}+\frac{d^{10}\,(a+bx)^9}{9b^{11}}-\frac{5d^9\,(a+bx)^8\,(ad-bc)}{4b^{11}}+\frac{45d^8\,(a+bx)^7\,(ad-bc)^2}{7b^{11}}-\frac{20d^7\,(a+bx)^6\,(ad-bc)^3}{b^{11}}+\frac{42d^6\,(a+bx)^5\,(ad-bc)^4}{b^{11}}-\frac{63d^5\,(a+bx)^4\,(ad-bc)^5}{b^{11}}+\frac{70d^4\,(a+bx)^3\,(ad-bc)^6}{b^{11}}-\frac{60d^3\,(a+bx)^2\,(ad-bc)^7}{b^{11}}-\frac{10d\,(ad-bc)^9\log{(a+bx)}}{b^{11}}-\frac{(ad-bc)^{10}}{b^{11}\,(a+bx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**2,x)
```

```
[Out] 45*d**2*x*(a*d - b*c)**8/b**10 + d**10*(a + b*x)**9/(9*b**11) - 5
*d**9*(a + b*x)**8*(a*d - b*c)/(4*b**11) + 45*d**8*(a + b*x)**7*(
a*d - b*c)**2/(7*b**11) - 20*d**7*(a + b*x)**6*(a*d - b*c)**3/b**
11 + 42*d**6*(a + b*x)**5*(a*d - b*c)**4/b**11 - 63*d**5*(a + b*x
)**4*(a*d - b*c)**5/b**11 + 70*d**4*(a + b*x)**3*(a*d - b*c)**6/b
**11 - 60*d**3*(a + b*x)**2*(a*d - b*c)**7/b**11 - 10*d*(a*d - b*
c)**9*log(a + b*x)/b**11 - (a*d - b*c)**10/(b**11*(a + b*x))
```

Mathematica [B] time = 0.460063, size = 708, normalized size = 2.74

$$\frac{-252a^{10}d^{10}+252a^9bd^9(10c+9dx)+1260a^8b^2d^8\left(-9c^2-16cdx+d^2x^2\right)-420a^7b^3d^7\left(-72c^3-189c^2dx+27cd^2x^2+d^3x^3\right)}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^2,x]
```

```
[Out] (-252*a^10*d^10 + 252*a^9*b*d^9*(10*c + 9*d*x) + 1260*a^8*b^2*d^8
*(-9*c^2 - 16*c*d*x + d^2*x^2) - 420*a^7*b^3*d^7*(-72*c^3 - 189*c
^2*d*x + 27*c*d^2*x^2 + d^3*x^3) + 210*a^6*b^4*d^6*(-252*c^4 - 86
4*c^3*d*x + 216*c^2*d^2*x^2 + 18*c*d^3*x^3 + d^4*x^4) - 126*a^5*b
^5*d^5*(-504*c^5 - 2100*c^4*d*x + 840*c^3*d^2*x^2 + 120*c^2*d^3*x
^3 + 15*c*d^4*x^4 + d^5*x^5) + 42*a^4*b^6*d^4*(-1260*c^6 - 6048*c
^5*d*x + 3780*c^4*d^2*x^2 + 840*c^3*d^3*x^3 + 180*c^2*d^4*x^4 + 2
7*c*d^5*x^5 + 2*d^6*x^6) - 12*a^3*b^7*d^3*(-2520*c^7 - 13230*c^6*
d*x + 13230*c^5*d^2*x^2 + 4410*c^4*d^3*x^3 + 1470*c^3*d^4*x^4 + 3
78*c^2*d^5*x^5 + 63*c*d^6*x^6 + 5*d^7*x^7) + 9*a^2*b^8*d^2*(-1260
*c^8 - 6720*c^7*d*x + 11760*c^6*d^2*x^2 + 5880*c^5*d^3*x^3 + 2940
*c^4*d^4*x^4 + 1176*c^3*d^5*x^5 + 336*c^2*d^6*x^6 + 60*c*d^7*x^7
+ 5*d^8*x^8) - a*b^9*d*(-2520*c^9 - 11340*c^8*d*x + 45360*c^7*d^2
*x^2 + 35280*c^6*d^3*x^3 + 26460*c^5*d^4*x^4 + 15876*c^4*d^5*x^5
+ 7056*c^3*d^6*x^6 + 2160*c^2*d^7*x^7 + 405*c*d^8*x^8 + 35*d^9*x^
9) + b^10*(-252*c^10 + 11340*c^8*d^2*x^2 + 15120*c^7*d^3*x^3 + 17
640*c^6*d^4*x^4 + 15876*c^5*d^5*x^5 + 10584*c^4*d^6*x^6 + 5040*c^
3*d^7*x^7 + 1620*c^2*d^8*x^8 + 315*c*d^9*x^9 + 28*d^10*x^10) - 25
20*d*(-(b*c) + a*d)^9*(a + b*x)*Log[a + b*x])/(252*b^11*(a + b*x)
```

)

Maple [B] time = 0.021, size = 1066, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^2,x)
```

```
[Out] 45/7*d^8/b^2*x^7*c^2-2/3*d^10/b^5*x^6*a^3+20*d^7/b^2*x^6*c^3+42*d
^6/b^2*x^5*c^4-3/2*d^10/b^7*x^4*a^5+63*d^5/b^2*x^4*c^5+7/3*d^10/b
^8*x^3*a^6+70*d^4/b^2*x^3*c^6-1/4*d^10/b^3*x^8*a+45*d^2/b^2*c^8*x
+9*d^10/b^10*a^8*x+d^10/b^6*x^5*a^4-10/b^11*d^10*ln(b*x+a)*a^9+10
/b^2*d*ln(b*x+a)*c^9-1/b^11/(b*x+a)*a^10*d^10-4*d^10/b^9*x^2*a^7+
60*d^3/b^2*x^2*c^7+5/4*d^9/b^2*x^8*c+3/7*d^10/b^4*x^7*a^2-210*d^4
/b^3*x^2*a*c^6-80*d^9/b^9*a^7*c*x-8*d^9/b^5*x^5*a^3*c+27*d^8/b^4*
x^5*a^2*c^2-48*d^7/b^3*x^5*a*c^3-20/7*d^9/b^3*x^7*a*c+5*d^9/b^4*x
^6*a^2*c-15*d^8/b^3*x^6*a*c^2+315*d^8/b^8*a^6*c^2*x-720*d^7/b^7*a
^5*c^3*x+1050*d^6/b^6*a^4*c^4*x-1008*d^5/b^5*a^3*c^5*x+630*d^4/b^
4*a^2*c^6*x-240*d^3/b^3*a*c^7*x-135*d^8/b^7*x^2*a^5*c^2+300*d^7/b
^6*x^2*a^4*c^3-420*d^6/b^5*x^2*a^3*c^4+378*d^5/b^4*x^2*a^2*c^5+75
*d^8/b^6*x^3*a^4*c^2-160*d^7/b^5*x^3*a^3*c^3+210*d^6/b^4*x^3*a^2*
c^4-168*d^5/b^3*x^3*a*c^5-1260/b^7*d^6*ln(b*x+a)*a^5*c^4+1260/b^6
*d^5*ln(b*x+a)*a^4*c^5-840/b^5*d^4*ln(b*x+a)*a^3*c^6+360/b^4*d^3*
ln(b*x+a)*a^2*c^7-90/b^3*d^2*ln(b*x+a)*a*c^8+10/b^10/(b*x+a)*a^9*
c*d^9-45/b^9/(b*x+a)*a^8*c^2*d^8+120/b^8/(b*x+a)*a^7*c^3*d^7-210/
b^7/(b*x+a)*a^6*c^4*d^6+252/b^6/(b*x+a)*a^5*c^5*d^5-210/b^5/(b*x+
a)*a^4*c^6*d^4+120/b^4/(b*x+a)*a^3*c^7*d^3-45/b^3/(b*x+a)*a^2*c^8
*d^2+10/b^2/(b*x+a)*a*c^9*d+35*d^9/b^8*x^2*a^6*c-20*d^9/b^7*x^3*a
^5*c-105*d^6/b^3*x^4*a*c^4-45*d^8/b^5*x^4*a^3*c^2+90*d^7/b^4*x^4*
a^2*c^3+25/2*d^9/b^6*x^4*a^4*c+840/b^8*d^7*ln(b*x+a)*a^6*c^3+90/b
^10*d^9*ln(b*x+a)*a^8*c-360/b^9*d^8*ln(b*x+a)*a^7*c^2+1/9*d^10/b^
2*x^9-1/b/(b*x+a)*c^10
```

Maxima [A] time = 1.41497, size = 1180, normalized size = 4.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] -(b^10*c^10 - 10*a*b^9*c^9*d + 45*a^2*b^8*c^8*d^2 - 120*a^3*b^7*c
^7*d^3 + 210*a^4*b^6*c^6*d^4 - 252*a^5*b^5*c^5*d^5 + 210*a^6*b^4*
c^4*d^6 - 120*a^7*b^3*c^3*d^7 + 45*a^8*b^2*c^2*d^8 - 10*a^9*b*c*d
^9 + a^10*d^10)/(b^12*x + a*b^11) + 1/252*(28*b^8*d^10*x^9 + 63*(
```

```
5*b^8*c*d^9 - a*b^7*d^10)*x^8 + 36*(45*b^8*c^2*d^8 - 20*a*b^7*c*d
^9 + 3*a^2*b^6*d^10)*x^7 + 84*(60*b^8*c^3*d^7 - 45*a*b^7*c^2*d^8
+ 15*a^2*b^6*c*d^9 - 2*a^3*b^5*d^10)*x^6 + 252*(42*b^8*c^4*d^6 -
48*a*b^7*c^3*d^7 + 27*a^2*b^6*c^2*d^8 - 8*a^3*b^5*c*d^9 + a^4*b^4
*d^10)*x^5 + 126*(126*b^8*c^5*d^5 - 210*a*b^7*c^4*d^6 + 180*a^2*b
^6*c^3*d^7 - 90*a^3*b^5*c^2*d^8 + 25*a^4*b^4*c*d^9 - 3*a^5*b^3*d^
10)*x^4 + 84*(210*b^8*c^6*d^4 - 504*a*b^7*c^5*d^5 + 630*a^2*b^6*c
^4*d^6 - 480*a^3*b^5*c^3*d^7 + 225*a^4*b^4*c^2*d^8 - 60*a^5*b^3*c
*d^9 + 7*a^6*b^2*d^10)*x^3 + 252*(60*b^8*c^7*d^3 - 210*a*b^7*c^6*
d^4 + 378*a^2*b^6*c^5*d^5 - 420*a^3*b^5*c^4*d^6 + 300*a^4*b^4*c^3
*d^7 - 135*a^5*b^3*c^2*d^8 + 35*a^6*b^2*c*d^9 - 4*a^7*b*d^10)*x^2
 + 252*(45*b^8*c^8*d^2 - 240*a*b^7*c^7*d^3 + 630*a^2*b^6*c^6*d^4
- 1008*a^3*b^5*c^5*d^5 + 1050*a^4*b^4*c^4*d^6 - 720*a^5*b^3*c^3*d
^7 + 315*a^6*b^2*c^2*d^8 - 80*a^7*b*c*d^9 + 9*a^8*d^10)*x)/b^10 +
 10*(b^9*c^9*d - 9*a*b^8*c^8*d^2 + 36*a^2*b^7*c^7*d^3 - 84*a^3*b^
6*c^6*d^4 + 126*a^4*b^5*c^5*d^5 - 126*a^5*b^4*c^4*d^6 + 84*a^6*b^
3*c^3*d^7 - 36*a^7*b^2*c^2*d^8 + 9*a^8*b*c*d^9 - a^9*d^10)*log(b*
x + a)/b^11
```

Fricas [A] time = 0.211093, size = 1517, normalized size = 5.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] 1/252*(28*b^10*d^10*x^10 - 252*b^10*c^10 + 2520*a*b^9*c^9*d - 113
40*a^2*b^8*c^8*d^2 + 30240*a^3*b^7*c^7*d^3 - 52920*a^4*b^6*c^6*d^
4 + 63504*a^5*b^5*c^5*d^5 - 52920*a^6*b^4*c^4*d^6 + 30240*a^7*b^3
*c^3*d^7 - 11340*a^8*b^2*c^2*d^8 + 2520*a^9*b*c*d^9 - 252*a^10*d^
10 + 35*(9*b^10*c*d^9 - a*b^9*d^10)*x^9 + 45*(36*b^10*c^2*d^8 - 9
*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 60*(84*b^10*c^3*d^7 - 36*a*b^9
*c^2*d^8 + 9*a^2*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 84*(126*b^10*c^4
*d^6 - 84*a*b^9*c^3*d^7 + 36*a^2*b^8*c^2*d^8 - 9*a^3*b^7*c*d^9 +
a^4*b^6*d^10)*x^6 + 126*(126*b^10*c^5*d^5 - 126*a*b^9*c^4*d^6 + 8
4*a^2*b^8*c^3*d^7 - 36*a^3*b^7*c^2*d^8 + 9*a^4*b^6*c*d^9 - a^5*b^
5*d^10)*x^5 + 210*(84*b^10*c^6*d^4 - 126*a*b^9*c^5*d^5 + 126*a^2*
b^8*c^4*d^6 - 84*a^3*b^7*c^3*d^7 + 36*a^4*b^6*c^2*d^8 - 9*a^5*b^5
*c*d^9 + a^6*b^4*d^10)*x^4 + 420*(36*b^10*c^7*d^3 - 84*a*b^9*c^6*
d^4 + 126*a^2*b^8*c^5*d^5 - 126*a^3*b^7*c^4*d^6 + 84*a^4*b^6*c^3*
d^7 - 36*a^5*b^5*c^2*d^8 + 9*a^6*b^4*c*d^9 - a^7*b^3*d^10)*x^3 +
1260*(9*b^10*c^8*d^2 - 36*a*b^9*c^7*d^3 + 84*a^2*b^8*c^6*d^4 - 12
6*a^3*b^7*c^5*d^5 + 126*a^4*b^6*c^4*d^6 - 84*a^5*b^5*c^3*d^7 + 36
*a^6*b^4*c^2*d^8 - 9*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 252*(45*
a*b^9*c^8*d^2 - 240*a^2*b^8*c^7*d^3 + 630*a^3*b^7*c^6*d^4 - 1008*
a^4*b^6*c^5*d^5 + 1050*a^5*b^5*c^4*d^6 - 720*a^6*b^4*c^3*d^7 + 31
5*a^7*b^3*c^2*d^8 - 80*a^8*b^2*c*d^9 + 9*a^9*b*d^10)*x + 2520*(a*
b^9*c^9*d - 9*a^2*b^8*c^8*d^2 + 36*a^3*b^7*c^7*d^3 - 84*a^4*b^6*c
^6*d^4 + 126*a^5*b^5*c^5*d^5 - 126*a^6*b^4*c^4*d^6 + 84*a^7*b^3*c
^3*d^7 - 36*a^8*b^2*c^2*d^8 + 9*a^9*b*c*d^9 - a^10*d^10 + (b^10*c
^9*d - 9*a*b^9*c^8*d^2 + 36*a^2*b^8*c^7*d^3 - 84*a^3*b^7*c^6*d^4
```

```
+ 126*a^4*b^6*c^5*d^5 - 126*a^5*b^5*c^4*d^6 + 84*a^6*b^4*c^3*d^7
- 36*a^7*b^3*c^2*d^8 + 9*a^8*b^2*c*d^9 - a^9*b*d^10)*x)*log(b*x +
 a))/(b^12*x + a*b^11)
```

Sympy [A] time = 10.623, size = 796, normalized size = 3.09

$$
\begin{aligned}
&-\frac{a^{10}d^{10}-10a^{9}bcd^{9}+45a^{8}b^{2}c^{2}d^{8}-120a^{7}b^{3}c^{3}d^{7}+210a^{6}b^{4}c^{4}d^{6}-252a^{5}b^{5}c^{5}d^{5}+210a^{4}b^{6}c^{6}d^{4}-120a^{3}b^{7}c^{7}d^{3}+45a^{2}b^{8}c^{8}d^{2}}{ab^{11}+b^{12}x}\\
&+\frac{d^{10}x^{9}}{9b^{2}}-\frac{x^{8}\left(ad^{10}-5bcd^{9}\right)}{4b^{3}}+\frac{x^{7}\left(3a^{2}d^{10}-20abcd^{9}+45b^{2}c^{2}d^{8}\right)}{7b^{4}}\\
&-\frac{x^{6}\left(2a^{3}d^{10}-15a^{2}bcd^{9}+45ab^{2}c^{2}d^{8}-60b^{3}c^{3}d^{7}\right)}{3b^{5}}\\
&+\frac{x^{5}\left(a^{4}d^{10}-8a^{3}bcd^{9}+27a^{2}b^{2}c^{2}d^{8}-48ab^{3}c^{3}d^{7}+42b^{4}c^{4}d^{6}\right)}{b^{6}}\\
&-\frac{x^{4}\left(3a^{5}d^{10}-25a^{4}bcd^{9}+90a^{3}b^{2}c^{2}d^{8}-180a^{2}b^{3}c^{3}d^{7}+210ab^{4}c^{4}d^{6}-126b^{5}c^{5}d^{5}\right)}{2b^{7}}\\
&+\frac{x^{3}\left(7a^{6}d^{10}-60a^{5}bcd^{9}+225a^{4}b^{2}c^{2}d^{8}-480a^{3}b^{3}c^{3}d^{7}+630a^{2}b^{4}c^{4}d^{6}-504ab^{5}c^{5}d^{5}+210b^{6}c^{6}d^{4}\right)}{3b^{8}}\\
&-\frac{x^{2}\left(4a^{7}d^{10}-35a^{6}bcd^{9}+135a^{5}b^{2}c^{2}d^{8}-300a^{4}b^{3}c^{3}d^{7}+420a^{3}b^{4}c^{4}d^{6}-378a^{2}b^{5}c^{5}d^{5}+210ab^{6}c^{6}d^{4}-60b^{7}c^{7}d^{3}\right)}{b^{9}}\\
&+\frac{x\left(9a^{8}d^{10}-80a^{7}bcd^{9}+315a^{6}b^{2}c^{2}d^{8}-720a^{5}b^{3}c^{3}d^{7}+1050a^{4}b^{4}c^{4}d^{6}-1008a^{3}b^{5}c^{5}d^{5}+630a^{2}b^{6}c^{6}d^{4}-240ab^{7}c^{7}d^{3}+45b^{8}c^{8}}{b^{10}}\\
&-\frac{10d\left(ad-bc\right)^{9}\log\left(a+bx\right)}{b^{11}}
\end{aligned}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**2,x)
```

```
[Out] -(a**10*d**10 - 10*a**9*b*c*d**9 + 45*a**8*b**2*c**2*d**8 - 120*a
**7*b**3*c**3*d**7 + 210*a**6*b**4*c**4*d**6 - 252*a**5*b**5*c**5
*d**5 + 210*a**4*b**6*c**6*d**4 - 120*a**3*b**7*c**7*d**3 + 45*a*
*2*b**8*c**8*d**2 - 10*a*b**9*c**9*d + b**10*c**10)/(a*b**11 + b*
*12*x) + d**10*x**9/(9*b**2) - x**8*(a*d**10 - 5*b*c*d**9)/(4*b**
3) + x**7*(3*a**2*d**10 - 20*a*b*c*d**9 + 45*b**2*c**2*d**8)/(7*b
**4) - x**6*(2*a**3*d**10 - 15*a**2*b*c*d**9 + 45*a*b**2*c**2*d**
8 - 60*b**3*c**3*d**7)/(3*b**5) + x**5*(a**4*d**10 - 8*a**3*b*c*d
**9 + 27*a**2*b**2*c**2*d**8 - 48*a*b**3*c**3*d**7 + 42*b**4*c**4
*d**6)/b**6 - x**4*(3*a**5*d**10 - 25*a**4*b*c*d**9 + 90*a**3*b**
2*c**2*d**8 - 180*a**2*b**3*c**3*d**7 + 210*a*b**4*c**4*d**6 - 12
6*b**5*c**5*d**5)/(2*b**7) + x**3*(7*a**6*d**10 - 60*a**5*b*c*d**
9 + 225*a**4*b**2*c**2*d**8 - 480*a**3*b**3*c**3*d**7 + 630*a**2*
b**4*c**4*d**6 - 504*a*b**5*c**5*d**5 + 210*b**6*c**6*d**4)/(3*b*
*8) - x**2*(4*a**7*d**10 - 35*a**6*b*c*d**9 + 135*a**5*b**2*c**2*
d**8 - 300*a**4*b**3*c**3*d**7 + 420*a**3*b**4*c**4*d**6 - 378*a*
*2*b**5*c**5*d**5 + 210*a*b**6*c**6*d**4 - 60*b**7*c**7*d**3)/b**
9 + x*(9*a**8*d**10 - 80*a**7*b*c*d**9 + 315*a**6*b**2*c**2*d**8
- 720*a**5*b**3*c**3*d**7 + 1050*a**4*b**4*c**4*d**6 - 1008*a**3*
b**5*c**5*d**5 + 630*a**2*b**6*c**6*d**4 - 240*a*b**7*c**7*d**3 +
```

```
 45*b**8*c**8*d**2)/b**10 - 10*d*(a*d - b*c)**9*log(a + b*x)/b**1
1
```

GIAC/XCAS [A] time = 0.219998, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] Done
```

3.1314 $\int \frac{(c+dx)^{10}}{(a+bx)^3} dx$

Optimal. Leaf size=262

$$\frac{10d^9(a+bx)^7(bc-ad)}{7b^{11}}+\frac{15d^8(a+bx)^6(bc-ad)^2}{2b^{11}}+\frac{24d^7(a+bx)^5(bc-ad)^3}{b^{11}}+\frac{105d^6(a+bx)^4(bc-ad)^4}{2b^{11}}+\frac{84d^5(a+bx)^3(bc-ad)^5}{b^{11}}+\frac{105d^4(a+bx)^2(bc-ad)^6}{b^{11}}+\frac{45d^2(bc-ad)^8\log(a+bx)}{b^{11}}-\frac{10d(bc-ad)^9}{b^{11}(a+bx)}-\frac{(bc-ad)^{10}}{2b^{11}(a+bx)^2}+\frac{d^{10}(a+bx)^8}{8b^{11}}+\frac{120d^3x(bc-ad)^7}{b^{10}}$$

```
[Out] (120*d^3*(b*c - a*d)^7*x)/b^10 - (b*c - a*d)^10/(2*b^11*(a + b*x)
^2) - (10*d*(b*c - a*d)^9)/(b^11*(a + b*x)) + (105*d^4*(b*c - a*d
)^6*(a + b*x)^2)/b^11 + (84*d^5*(b*c - a*d)^5*(a + b*x)^3)/b^11 +
 (105*d^6*(b*c - a*d)^4*(a + b*x)^4)/(2*b^11) + (24*d^7*(b*c - a*
d)^3*(a + b*x)^5)/b^11 + (15*d^8*(b*c - a*d)^2*(a + b*x)^6)/(2*b^
11) + (10*d^9*(b*c - a*d)*(a + b*x)^7)/(7*b^11) + (d^10*(a + b*x)
^8)/(8*b^11) + (45*d^2*(b*c - a*d)^8*Log[a + b*x])/b^11
```

Rubi [A] time = 0.955626, antiderivative size = 262, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{10d^9(a+bx)^7(bc-ad)}{7b^{11}}+\frac{15d^8(a+bx)^6(bc-ad)^2}{2b^{11}}+\frac{24d^7(a+bx)^5(bc-ad)^3}{b^{11}}+\frac{105d^6(a+bx)^4(bc-ad)^4}{2b^{11}}+\frac{84d^5(a+bx)^3(bc-ad)^5}{b^{11}}+\frac{105d^4(a+bx)^2(bc-ad)^6}{b^{11}}+\frac{45d^2(bc-ad)^8\log(a+bx)}{b^{11}}-\frac{10d(bc-ad)^9}{b^{11}(a+bx)}-\frac{(bc-ad)^{10}}{2b^{11}(a+bx)^2}+\frac{d^{10}(a+bx)^8}{8b^{11}}+\frac{120d^3x(bc-ad)^7}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^3,x]
```


```
[Out] (120*d^3*(b*c - a*d)^7*x)/b^10 - (b*c - a*d)^10/(2*b^11*(a + b*x)
^2) - (10*d*(b*c - a*d)^9)/(b^11*(a + b*x)) + (105*d^4*(b*c - a*d
)^6*(a + b*x)^2)/b^11 + (84*d^5*(b*c - a*d)^5*(a + b*x)^3)/b^11 +
 (105*d^6*(b*c - a*d)^4*(a + b*x)^4)/(2*b^11) + (24*d^7*(b*c - a*
d)^3*(a + b*x)^5)/b^11 + (15*d^8*(b*c - a*d)^2*(a + b*x)^6)/(2*b^
11) + (10*d^9*(b*c - a*d)*(a + b*x)^7)/(7*b^11) + (d^10*(a + b*x)
^8)/(8*b^11) + (45*d^2*(b*c - a*d)^8*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 151.481, size = 243, normalized size = 0.93

$$-\frac{120d^3x(ad-bc)^7}{b^{10}}+\frac{d^{10}(a+bx)^8}{8b^{11}}-\frac{10d^9(a+bx)^7(ad-bc)}{7b^{11}}+\frac{15d^8(a+bx)^6(ad-bc)^2}{2b^{11}}-\frac{24d^7(a+bx)^5(ad-bc)^3}{b^{11}}+\frac{105d^6(a+bx)^4(ad-bc)^4}{2b^{11}}-\frac{84d^5(a+bx)^3(ad-bc)^5}{b^{11}}+\frac{105d^4(a+bx)^2(ad-bc)^6}{b^{11}}+\frac{45d^2(ad-bc)^8\log(a+bx)}{b^{11}}+\frac{10d(ad-bc)^9}{b^{11}(a+bx)}-\frac{(ad-bc)^{10}}{2b^{11}(a+bx)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**3,x)
```

```
[Out] -120*d**3*x*(a*d - b*c)**7/b**10 + d**10*(a + b*x)**8/(8*b**11) -
 10*d**9*(a + b*x)**7*(a*d - b*c)/(7*b**11) + 15*d**8*(a + b*x)**
6*(a*d - b*c)**2/(2*b**11) - 24*d**7*(a + b*x)**5*(a*d - b*c)**3/
b**11 + 105*d**6*(a + b*x)**4*(a*d - b*c)**4/(2*b**11) - 84*d**5*
(a + b*x)**3*(a*d - b*c)**5/b**11 + 105*d**4*(a + b*x)**2*(a*d -
b*c)**6/b**11 + 45*d**2*(a*d - b*c)**8*log(a + b*x)/b**11 + 10*d*
(a*d - b*c)**9/(b**11*(a + b*x)) - (a*d - b*c)**10/(2*b**11*(a +
b*x)**2)
```

Mathematica [B] time = 0.440585, size = 708, normalized size = 2.7

$$\frac{532a^{10}d^{10}-56a^9bd^9(85c+26dx)+28a^8b^2d^8\left(675c^2+380cdx-116d^2x^2\right)-280a^7b^3d^7\left(156c^3+117c^2dx-91cd^2x^2+3d^3x\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^3,x]
```

```
[Out] (532*a^10*d^10 - 56*a^9*b*d^9*(85*c + 26*d*x) + 28*a^8*b^2*d^8*(6
75*c^2 + 380*c*d*x - 116*d^2*x^2) - 280*a^7*b^3*d^7*(156*c^3 + 11
7*c^2*d*x - 91*c*d^2*x^2 + 3*d^3*x^3) + 210*a^6*b^4*d^6*(308*c^4
+ 256*c^3*d*x - 414*c^2*d^2*x^2 + 32*c*d^3*x^3 + d^4*x^4) - 84*a^
5*b^5*d^5*(756*c^5 + 560*c^4*d*x - 2000*c^3*d^2*x^2 + 280*c^2*d^3
*x^3 + 20*c*d^4*x^4 + d^5*x^5) + 42*a^4*b^6*d^4*(980*c^6 + 336*c^
5*d*x - 4760*c^4*d^2*x^2 + 1120*c^3*d^3*x^3 + 140*c^2*d^4*x^4 + 1
6*c*d^5*x^5 + d^6*x^6) - 24*a^3*b^7*d^3*(700*c^7 - 490*c^6*d*x -
6174*c^5*d^2*x^2 + 2450*c^4*d^3*x^3 + 490*c^3*d^4*x^4 + 98*c^2*d^
5*x^5 + 14*c*d^6*x^6 + d^7*x^7) + 3*a^2*b^8*d^2*(1260*c^8 - 4480*
c^7*d*x - 21560*c^6*d^2*x^2 + 15680*c^5*d^3*x^3 + 4900*c^4*d^4*x^
4 + 1568*c^3*d^5*x^5 + 392*c^2*d^6*x^6 + 64*c*d^7*x^7 + 5*d^8*x^8
) - 2*a*b^9*d*(140*c^9 - 2520*c^8*d*x - 6720*c^7*d^2*x^2 + 11760*
c^6*d^3*x^3 + 5880*c^5*d^4*x^4 + 2940*c^4*d^5*x^5 + 1176*c^3*d^6*
x^6 + 336*c^2*d^7*x^7 + 60*c*d^8*x^8 + 5*d^9*x^9) + b^10*(-28*c^1
0 - 560*c^9*d*x + 6720*c^7*d^3*x^3 + 5880*c^6*d^4*x^4 + 4704*c^5*
d^5*x^5 + 2940*c^4*d^6*x^6 + 1344*c^3*d^7*x^7 + 420*c^2*d^8*x^8 +
```

```
 80*c*d^9*x^9 + 7*d^10*x^10) + 2520*d^2*(b*c - a*d)^8*(a + b*x)^2
*Log[a + b*x])/(56*b^11*(a + b*x)^2)
```

Maple [B] time = 0.025, size = 1105, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^3,x)
```

```
[Out] 14*d^10/b^9*x^2*a^6+105*d^4/b^3*x^2*c^6-3/7*d^10/b^4*x^7*a+10/7*d
^9/b^3*x^7*c+15/2*d^8/b^3*x^6*c^2-2*d^10/b^6*x^5*a^3+24*d^7/b^3*x
^5*c^3+15/4*d^10/b^7*x^4*a^4+120*d^3/b^3*c^7*x-36*d^10/b^10*a^7*x
+d^10/b^5*x^6*a^2+45/b^11*d^10*ln(b*x+a)*a^8+45/b^3*d^2*ln(b*x+a)
*c^8-1/2/b^11/(b*x+a)^2*a^10*d^10+10/b^11*d^10/(b*x+a)*a^9-10/b^2
*d/(b*x+a)*c^9+105/2*d^6/b^3*x^4*c^4-7*d^10/b^8*x^3*a^5+84*d^5/b^
3*x^3*c^5+280*d^9/b^9*a^6*c*x+1512*d^5/b^5*a^2*c^5*x-630*d^4/b^4*
a*c^6*x+630*d^6/b^5*x^2*a^2*c^4+50*d^9/b^7*x^3*a^4*c-150*d^8/b^6*
x^3*a^3*c^2+240*d^7/b^5*x^3*a^2*c^3-210*d^6/b^4*x^3*a*c^4-105*d^9
/b^8*x^2*a^5*c+675/2*d^8/b^7*x^2*a^4*c^2-600*d^7/b^6*x^2*a^3*c^3-
5*d^9/b^4*x^6*a*c+12*d^9/b^5*x^5*a^2*c-27*d^8/b^4*x^5*a*c^2-25*d^
9/b^6*x^4*a^3*c+135/2*d^8/b^5*x^4*a^2*c^2-90*d^7/b^4*x^4*a*c^3-94
5*d^8/b^8*a^5*c^2*x+1800*d^7/b^7*a^4*c^3*x-2520/b^8*d^7*ln(b*x+a)
*a^5*c^3+3150/b^7*d^6*ln(b*x+a)*a^4*c^4-2520/b^6*d^5*ln(b*x+a)*a^
3*c^5+1260/b^5*d^4*ln(b*x+a)*a^2*c^6-360/b^4*d^3*ln(b*x+a)*a*c^7+
5/b^10/(b*x+a)^2*a^9*c*d^9-45/2/b^9/(b*x+a)^2*a^8*c^2*d^8+60/b^8/
(b*x+a)^2*a^7*c^3*d^7-105/b^7/(b*x+a)^2*a^6*c^4*d^6+126/b^6/(b*x+
a)^2*a^5*c^5*d^5-105/b^5/(b*x+a)^2*a^4*c^6*d^4+60/b^4/(b*x+a)^2*a
^3*c^7*d^3-45/2/b^3/(b*x+a)^2*a^2*c^8*d^2+5/b^2/(b*x+a)^2*a*c^9*d
-90/b^10*d^9/(b*x+a)*a^8*c+360/b^9*d^8/(b*x+a)*a^7*c^2-840/b^8*d^
7/(b*x+a)*a^6*c^3+1260/b^7*d^6/(b*x+a)*a^5*c^4-1260/b^6*d^5/(b*x+
a)*a^4*c^5-378*d^5/b^4*x^2*a*c^5+840/b^5*d^4/(b*x+a)*a^3*c^6-360/
b^4*d^3/(b*x+a)*a^2*c^7+90/b^3*d^2/(b*x+a)*a*c^8-2100*d^6/b^6*a^3
*c^4*x-360/b^10*d^9*ln(b*x+a)*a^7*c+1260/b^9*d^8*ln(b*x+a)*a^6*c^
2+1/8*d^10/b^3*x^8-1/2/b/(b*x+a)^2*c^10
```

Maxima [A] time = 1.47127, size = 1189, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b^10*c^10 + 10*a*b^9*c^9*d - 135*a^2*b^8*c^8*d^2 + 600*a^3*
b^7*c^7*d^3 - 1470*a^4*b^6*c^6*d^4 + 2268*a^5*b^5*c^5*d^5 - 2310*
```

```
a^6*b^4*c^4*d^6 + 1560*a^7*b^3*c^3*d^7 - 675*a^8*b^2*c^2*d^8 + 17
0*a^9*b*c*d^9 - 19*a^10*d^10 + 20*(b^10*c^9*d - 9*a*b^9*c^8*d^2 +
 36*a^2*b^8*c^7*d^3 - 84*a^3*b^7*c^6*d^4 + 126*a^4*b^6*c^5*d^5 -
126*a^5*b^5*c^4*d^6 + 84*a^6*b^4*c^3*d^7 - 36*a^7*b^3*c^2*d^8 + 9
*a^8*b^2*c*d^9 - a^9*b*d^10)*x)/(b^13*x^2 + 2*a*b^12*x + a^2*b^11
) + 1/56*(7*b^7*d^10*x^8 + 8*(10*b^7*c*d^9 - 3*a*b^6*d^10)*x^7 +
28*(15*b^7*c^2*d^8 - 10*a*b^6*c*d^9 + 2*a^2*b^5*d^10)*x^6 + 56*(2
4*b^7*c^3*d^7 - 27*a*b^6*c^2*d^8 + 12*a^2*b^5*c*d^9 - 2*a^3*b^4*d
^10)*x^5 + 70*(42*b^7*c^4*d^6 - 72*a*b^6*c^3*d^7 + 54*a^2*b^5*c^2
*d^8 - 20*a^3*b^4*c*d^9 + 3*a^4*b^3*d^10)*x^4 + 56*(84*b^7*c^5*d^
5 - 210*a*b^6*c^4*d^6 + 240*a^2*b^5*c^3*d^7 - 150*a^3*b^4*c^2*d^8
 + 50*a^4*b^3*c*d^9 - 7*a^5*b^2*d^10)*x^3 + 28*(210*b^7*c^6*d^4 -
 756*a*b^6*c^5*d^5 + 1260*a^2*b^5*c^4*d^6 - 1200*a^3*b^4*c^3*d^7
+ 675*a^4*b^3*c^2*d^8 - 210*a^5*b^2*c*d^9 + 28*a^6*b*d^10)*x^2 +
56*(120*b^7*c^7*d^3 - 630*a*b^6*c^6*d^4 + 1512*a^2*b^5*c^5*d^5 -
2100*a^3*b^4*c^4*d^6 + 1800*a^4*b^3*c^3*d^7 - 945*a^5*b^2*c^2*d^8
 + 280*a^6*b*c*d^9 - 36*a^7*d^10)*x)/b^10 + 45*(b^8*c^8*d^2 - 8*a
*b^7*c^7*d^3 + 28*a^2*b^6*c^6*d^4 - 56*a^3*b^5*c^5*d^5 + 70*a^4*b
^4*c^4*d^6 - 56*a^5*b^3*c^3*d^7 + 28*a^6*b^2*c^2*d^8 - 8*a^7*b*c*
d^9 + a^8*d^10)*log(b*x + a)/b^11
```

Fricas [A] time = 0.21149, size = 1665, normalized size = 6.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] 1/56*(7*b^10*d^10*x^10 - 28*b^10*c^10 - 280*a*b^9*c^9*d + 3780*a^
2*b^8*c^8*d^2 - 16800*a^3*b^7*c^7*d^3 + 41160*a^4*b^6*c^6*d^4 - 6
3504*a^5*b^5*c^5*d^5 + 64680*a^6*b^4*c^4*d^6 - 43680*a^7*b^3*c^3*
d^7 + 18900*a^8*b^2*c^2*d^8 - 4760*a^9*b*c*d^9 + 532*a^10*d^10 +
10*(8*b^10*c*d^9 - a*b^9*d^10)*x^9 + 15*(28*b^10*c^2*d^8 - 8*a*b^
9*c*d^9 + a^2*b^8*d^10)*x^8 + 24*(56*b^10*c^3*d^7 - 28*a*b^9*c^2*
d^8 + 8*a^2*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 42*(70*b^10*c^4*d^6 -
 56*a*b^9*c^3*d^7 + 28*a^2*b^8*c^2*d^8 - 8*a^3*b^7*c*d^9 + a^4*b^
6*d^10)*x^6 + 84*(56*b^10*c^5*d^5 - 70*a*b^9*c^4*d^6 + 56*a^2*b^8
*c^3*d^7 - 28*a^3*b^7*c^2*d^8 + 8*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x
^5 + 210*(28*b^10*c^6*d^4 - 56*a*b^9*c^5*d^5 + 70*a^2*b^8*c^4*d^6
 - 56*a^3*b^7*c^3*d^7 + 28*a^4*b^6*c^2*d^8 - 8*a^5*b^5*c*d^9 + a^
6*b^4*d^10)*x^4 + 840*(8*b^10*c^7*d^3 - 28*a*b^9*c^6*d^4 + 56*a^2
*b^8*c^5*d^5 - 70*a^3*b^7*c^4*d^6 + 56*a^4*b^6*c^3*d^7 - 28*a^5*b
^5*c^2*d^8 + 8*a^6*b^4*c*d^9 - a^7*b^3*d^10)*x^3 + 28*(480*a*b^9*
c^7*d^3 - 2310*a^2*b^8*c^6*d^4 + 5292*a^3*b^7*c^5*d^5 - 7140*a^4*
b^6*c^4*d^6 + 6000*a^5*b^5*c^3*d^7 - 3105*a^6*b^4*c^2*d^8 + 910*a
^7*b^3*c*d^9 - 116*a^8*b^2*d^10)*x^2 - 56*(10*b^10*c^9*d - 90*a*b
^9*c^8*d^2 + 240*a^2*b^8*c^7*d^3 - 210*a^3*b^7*c^6*d^4 - 252*a^4*
b^6*c^5*d^5 + 840*a^5*b^5*c^4*d^6 - 960*a^6*b^4*c^3*d^7 + 585*a^7
*b^3*c^2*d^8 - 190*a^8*b^2*c*d^9 + 26*a^9*b*d^10)*x + 2520*(a^2*b
^8*c^8*d^2 - 8*a^3*b^7*c^7*d^3 + 28*a^4*b^6*c^6*d^4 - 56*a^5*b^5*
c^5*d^5 + 70*a^6*b^4*c^4*d^6 - 56*a^7*b^3*c^3*d^7 + 28*a^8*b^2*c^
```

```
2*d^8 - 8*a^9*b*c*d^9 + a^10*d^10 + (b^10*c^8*d^2 - 8*a*b^9*c^7*d
^3 + 28*a^2*b^8*c^6*d^4 - 56*a^3*b^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6
 - 56*a^5*b^5*c^3*d^7 + 28*a^6*b^4*c^2*d^8 - 8*a^7*b^3*c*d^9 + a^
8*b^2*d^10)*x^2 + 2*(a*b^9*c^8*d^2 - 8*a^2*b^8*c^7*d^3 + 28*a^3*b
^7*c^6*d^4 - 56*a^4*b^6*c^5*d^5 + 70*a^5*b^5*c^4*d^6 - 56*a^6*b^4
*c^3*d^7 + 28*a^7*b^3*c^2*d^8 - 8*a^8*b^2*c*d^9 + a^9*b*d^10)*x)*
log(b*x + a))/(b^13*x^2 + 2*a*b^12*x + a^2*b^11)
```

Sympy [A] time = 22.0074, size = 828, normalized size = 3.16

$$\frac{19a^{10}d^{10} - 170a^9bcd^9 + 675a^8b^2c^2d^8 - 1560a^7b^3c^3d^7 + 2310a^6b^4c^4d^6 - 2268a^5b^5c^5d^5 + 1470a^4b^6c^6d^4 - 600a^3b^7c^7d^3 + 135}{}$$

$$+ \frac{d^{10}x^8}{8b^3} - \frac{x^7\left(3ad^{10} - 10bcd^9\right)}{7b^4} + \frac{x^6\left(2a^2d^{10} - 10abcd^9 + 15b^2c^2d^8\right)}{2b^5}$$
$$- \frac{x^5\left(2a^3d^{10} - 12a^2bcd^9 + 27ab^2c^2d^8 - 24b^3c^3d^7\right)}{b^6}$$
$$+ \frac{x^4\left(15a^4d^{10} - 100a^3bcd^9 + 270a^2b^2c^2d^8 - 360ab^3c^3d^7 + 210b^4c^4d^6\right)}{4b^7}$$
$$- \frac{x^3\left(7a^5d^{10} - 50a^4bcd^9 + 150a^3b^2c^2d^8 - 240a^2b^3c^3d^7 + 210ab^4c^4d^6 - 84b^5c^5d^5\right)}{b^8}$$
$$+ \frac{x^2\left(28a^6d^{10} - 210a^5bcd^9 + 675a^4b^2c^2d^8 - 1200a^3b^3c^3d^7 + 1260a^2b^4c^4d^6 - 756ab^5c^5d^5 + 210b^6c^6d^4\right)}{2b^9}$$
$$- \frac{x\left(36a^7d^{10} - 280a^6bcd^9 + 945a^5b^2c^2d^8 - 1800a^4b^3c^3d^7 + 2100a^3b^4c^4d^6 - 1512a^2b^5c^5d^5 + 630ab^6c^6d^4 - 120b^7c^7d^3\right)}{b^{10}}$$
$$+ \frac{45d^2\left(ad - bc\right)^8 \log\left(a + bx\right)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**3,x)
```

```
[Out] (19*a**10*d**10 - 170*a**9*b*c*d**9 + 675*a**8*b**2*c**2*d**8 - 1
560*a**7*b**3*c**3*d**7 + 2310*a**6*b**4*c**4*d**6 - 2268*a**5*b*
*5*c**5*d**5 + 1470*a**4*b**6*c**6*d**4 - 600*a**3*b**7*c**7*d**3
 + 135*a**2*b**8*c**8*d**2 - 10*a*b**9*c**9*d - b**10*c**10 + x*(
20*a**9*b*d**10 - 180*a**8*b**2*c*d**9 + 720*a**7*b**3*c**2*d**8
- 1680*a**6*b**4*c**3*d**7 + 2520*a**5*b**5*c**4*d**6 - 2520*a**4
*b**6*c**5*d**5 + 1680*a**3*b**7*c**6*d**4 - 720*a**2*b**8*c**7*d
**3 + 180*a*b**9*c**8*d**2 - 20*b**10*c**9*d))/(2*a**2*b**11 + 4*
a*b**12*x + 2*b**13*x**2) + d**10*x**8/(8*b**3) - x**7*(3*a*d**10
 - 10*b*c*d**9)/(7*b**4) + x**6*(2*a**2*d**10 - 10*a*b*c*d**9 + 1
5*b**2*c**2*d**8)/(2*b**5) - x**5*(2*a**3*d**10 - 12*a**2*b*c*d**
9 + 27*a*b**2*c**2*d**8 - 24*b**3*c**3*d**7)/b**6 + x**4*(15*a**4
*d**10 - 100*a**3*b*c*d**9 + 270*a**2*b**2*c**2*d**8 - 360*a*b**3
*c**3*d**7 + 210*b**4*c**4*d**6)/(4*b**7) - x**3*(7*a**5*d**10 -
50*a**4*b*c*d**9 + 150*a**3*b**2*c**2*d**8 - 240*a**2*b**3*c**3*d
**7 + 210*a*b**4*c**4*d**6 - 84*b**5*c**5*d**5)/b**8 + x**2*(28*a
**6*d**10 - 210*a**5*b*c*d**9 + 675*a**4*b**2*c**2*d**8 - 1200*a*
*3*b**3*c**3*d**7 + 1260*a**2*b**4*c**4*d**6 - 756*a*b**5*c**5*d*
```

```
*5 + 210*b**6*c**6*d**4)/(2*b**9) - x*(36*a**7*d**10 - 280*a**6*b
*c*d**9 + 945*a**5*b**2*c**2*d**8 - 1800*a**4*b**3*c**3*d**7 + 21
00*a**3*b**4*c**4*d**6 - 1512*a**2*b**5*c**5*d**5 + 630*a*b**6*c*
*6*d**4 - 120*b**7*c**7*d**3)/b**10 + 45*d**2*(a*d - b*c)**8*log(
a + b*x)/b**11
```

GIAC/XCAS [A] time = 0.224746, size = 1247, normalized size = 4.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 45*(b^8*c^8*d^2 - 8*a*b^7*c^7*d^3 + 28*a^2*b^6*c^6*d^4 - 56*a^3*b
^5*c^5*d^5 + 70*a^4*b^4*c^4*d^6 - 56*a^5*b^3*c^3*d^7 + 28*a^6*b^2
*c^2*d^8 - 8*a^7*b*c*d^9 + a^8*d^10)*ln(abs(b*x + a))/b^11 - 1/2*
(b^10*c^10 + 10*a*b^9*c^9*d - 135*a^2*b^8*c^8*d^2 + 600*a^3*b^7*c
^7*d^3 - 1470*a^4*b^6*c^6*d^4 + 2268*a^5*b^5*c^5*d^5 - 2310*a^6*b
^4*c^4*d^6 + 1560*a^7*b^3*c^3*d^7 - 675*a^8*b^2*c^2*d^8 + 170*a^9
*b*c*d^9 - 19*a^10*d^10 + 20*(b^10*c^9*d - 9*a*b^9*c^8*d^2 + 36*a
^2*b^8*c^7*d^3 - 84*a^3*b^7*c^6*d^4 + 126*a^4*b^6*c^5*d^5 - 126*a
^5*b^5*c^4*d^6 + 84*a^6*b^4*c^3*d^7 - 36*a^7*b^3*c^2*d^8 + 9*a^8*
b^2*c*d^9 - a^9*b*d^10)*x)/((b*x + a)^2*b^11) + 1/56*(7*b^21*d^10
*x^8 + 80*b^21*c*d^9*x^7 - 24*a*b^20*d^10*x^7 + 420*b^21*c^2*d^8*
x^6 - 280*a*b^20*c*d^9*x^6 + 56*a^2*b^19*d^10*x^6 + 1344*b^21*c^3
*d^7*x^5 - 1512*a*b^20*c^2*d^8*x^5 + 672*a^2*b^19*c*d^9*x^5 - 112
*a^3*b^18*d^10*x^5 + 2940*b^21*c^4*d^6*x^4 - 5040*a*b^20*c^3*d^7*
x^4 + 3780*a^2*b^19*c^2*d^8*x^4 - 1400*a^3*b^18*c*d^9*x^4 + 210*a
^4*b^17*d^10*x^4 + 4704*b^21*c^5*d^5*x^3 - 11760*a*b^20*c^4*d^6*x
^3 + 13440*a^2*b^19*c^3*d^7*x^3 - 8400*a^3*b^18*c^2*d^8*x^3 + 280
0*a^4*b^17*c*d^9*x^3 - 392*a^5*b^16*d^10*x^3 + 5880*b^21*c^6*d^4*
x^2 - 21168*a*b^20*c^5*d^5*x^2 + 35280*a^2*b^19*c^4*d^6*x^2 - 336
00*a^3*b^18*c^3*d^7*x^2 + 18900*a^4*b^17*c^2*d^8*x^2 - 5880*a^5*b
^16*c*d^9*x^2 + 784*a^6*b^15*d^10*x^2 + 6720*b^21*c^7*d^3*x - 352
80*a*b^20*c^6*d^4*x + 84672*a^2*b^19*c^5*d^5*x - 117600*a^3*b^18*
c^4*d^6*x + 100800*a^4*b^17*c^3*d^7*x - 52920*a^5*b^16*c^2*d^8*x
+ 15680*a^6*b^15*c*d^9*x - 2016*a^7*b^14*d^10*x)/b^24
```

3.1315 $\int \frac{(c+dx)^{10}}{(a+bx)^4} dx$

Optimal. Leaf size=258

$$\frac{5d^9(a+bx)^6(bc-ad)}{3b^{11}}+\frac{9d^8(a+bx)^5(bc-ad)^2}{b^{11}}+\frac{30d^7(a+bx)^4(bc-ad)^3}{b^{11}}+\frac{70d^6(a+bx)^3(bc-ad)^4}{b^{11}}+\frac{126d^5(a+bx)^2(bc-ad)^5}{b^{11}}+\frac{120d^3(bc-ad)^7\log(a+bx)}{b^{11}}-\frac{45d^2(bc-ad)^8}{b^{11}(a+bx)}-\frac{5d(bc-ad)^9}{b^{11}(a+bx)^2}-\frac{(bc-ad)^{10}}{3b^{11}(a+bx)^3}+\frac{d^{10}(a+bx)^7}{7b^{11}}+\frac{210d^4x(bc-ad)^6}{b^{10}}$$

```
[Out] (210*d^4*(b*c - a*d)^6*x)/b^10 - (b*c - a*d)^10/(3*b^11*(a + b*x)
^3) - (5*d*(b*c - a*d)^9)/(b^11*(a + b*x)^2) - (45*d^2*(b*c - a*d
)^8)/(b^11*(a + b*x)) + (126*d^5*(b*c - a*d)^5*(a + b*x)^2)/b^11
+ (70*d^6*(b*c - a*d)^4*(a + b*x)^3)/b^11 + (30*d^7*(b*c - a*d)^3
*(a + b*x)^4)/b^11 + (9*d^8*(b*c - a*d)^2*(a + b*x)^5)/b^11 + (5*
d^9*(b*c - a*d)*(a + b*x)^6)/(3*b^11) + (d^10*(a + b*x)^7)/(7*b^1
1) + (120*d^3*(b*c - a*d)^7*Log[a + b*x])/b^11
```

Rubi [A] time = 0.959487, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{5d^9(a+bx)^6(bc-ad)}{3b^{11}}+\frac{9d^8(a+bx)^5(bc-ad)^2}{b^{11}}+\frac{30d^7(a+bx)^4(bc-ad)^3}{b^{11}}+\frac{70d^6(a+bx)^3(bc-ad)^4}{b^{11}}+\frac{126d^5(a+bx)^2(bc-ad)^5}{b^{11}}+\frac{120d^3(bc-ad)^7\log(a+bx)}{b^{11}}-\frac{45d^2(bc-ad)^8}{b^{11}(a+bx)}-\frac{5d(bc-ad)^9}{b^{11}(a+bx)^2}-\frac{(bc-ad)^{10}}{3b^{11}(a+bx)^3}+\frac{d^{10}(a+bx)^7}{7b^{11}}+\frac{210d^4x(bc-ad)^6}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^4,x]
```

```
[Out] (210*d^4*(b*c - a*d)^6*x)/b^10 - (b*c - a*d)^10/(3*b^11*(a + b*x)
^3) - (5*d*(b*c - a*d)^9)/(b^11*(a + b*x)^2) - (45*d^2*(b*c - a*d
)^8)/(b^11*(a + b*x)) + (126*d^5*(b*c - a*d)^5*(a + b*x)^2)/b^11
+ (70*d^6*(b*c - a*d)^4*(a + b*x)^3)/b^11 + (30*d^7*(b*c - a*d)^3
*(a + b*x)^4)/b^11 + (9*d^8*(b*c - a*d)^2*(a + b*x)^5)/b^11 + (5*
d^9*(b*c - a*d)*(a + b*x)^6)/(3*b^11) + (d^10*(a + b*x)^7)/(7*b^1
1) + (120*d^3*(b*c - a*d)^7*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 143.012, size = 240, normalized size = 0.93

$$\frac{210d^4x(ad-bc)^6}{b^{10}}+\frac{d^{10}(a+bx)^7}{7b^{11}}-\frac{5d^9(a+bx)^6(ad-bc)}{3b^{11}}+\frac{9d^8(a+bx)^5(ad-bc)^2}{b^{11}}-\frac{30d^7(a+bx)^4(ad-bc)^3}{b^{11}}+\frac{70d^6(a+bx)^3(ad-bc)^4}{b^{11}}-\frac{126d^5(a+bx)^2(ad-bc)^5}{b^{11}}-\frac{120d^3(ad-bc)^7\log(a+bx)}{b^{11}}-\frac{45d^2(ad-bc)^8}{b^{11}(a+bx)}+\frac{5d(ad-bc)^9}{b^{11}(a+bx)^2}-\frac{(ad-bc)^{10}}{3b^{11}(a+bx)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**4,x)
```

```
[Out] 210*d**4*x*(a*d - b*c)**6/b**10 + d**10*(a + b*x)**7/(7*b**11) -
5*d**9*(a + b*x)**6*(a*d - b*c)/(3*b**11) + 9*d**8*(a + b*x)**5*(
a*d - b*c)**2/b**11 - 30*d**7*(a + b*x)**4*(a*d - b*c)**3/b**11 +
 70*d**6*(a + b*x)**3*(a*d - b*c)**4/b**11 - 126*d**5*(a + b*x)**
2*(a*d - b*c)**5/b**11 - 120*d**3*(a*d - b*c)**7*log(a + b*x)/b**
11 - 45*d**2*(a*d - b*c)**8/(b**11*(a + b*x)) + 5*d*(a*d - b*c)**
9/(b**11*(a + b*x)**2) - (a*d - b*c)**10/(3*b**11*(a + b*x)**3)
```

Mathematica [A] time = 0.296313, size = 427, normalized size = 1.66

$$21b^5d^8x^5\left(2a^2d^2-8abcd+9b^2c^2\right)+105b^4d^7x^4\left(-a^3d^3+5a^2bcd^2-9ab^2c^2d+6b^3c^3\right)+35b^3d^6x^3\left(7a^4d^4-40a^3bcd^3+90a\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^4,x]
```

```
[Out] (21*b*d^4*(210*b^6*c^6 - 1008*a*b^5*c^5*d + 2100*a^2*b^4*c^4*d^2
- 2400*a^3*b^3*c^3*d^3 + 1575*a^4*b^2*c^2*d^4 - 560*a^5*b*c*d^5 +
 84*a^6*d^6)*x + 21*b^2*d^5*(126*b^5*c^5 - 420*a*b^4*c^4*d + 600*
a^2*b^3*c^3*d^2 - 450*a^3*b^2*c^2*d^3 + 175*a^4*b*c*d^4 - 28*a^5*
d^5)*x^2 + 35*b^3*d^6*(42*b^4*c^4 - 96*a*b^3*c^3*d + 90*a^2*b^2*c
^2*d^2 - 40*a^3*b*c*d^3 + 7*a^4*d^4)*x^3 + 105*b^4*d^7*(6*b^3*c^3
 - 9*a*b^2*c^2*d + 5*a^2*b*c*d^2 - a^3*d^3)*x^4 + 21*b^5*d^8*(9*b
^2*c^2 - 8*a*b*c*d + 2*a^2*d^2)*x^5 + 7*b^6*d^9*(5*b*c - 2*a*d)*x
^6 + 3*b^7*d^10*x^7 - (7*(b*c - a*d)^10)/(a + b*x)^3 + (105*d*(-(
b*c) + a*d)^9)/(a + b*x)^2 - (945*d^2*(b*c - a*d)^8)/(a + b*x) +
2520*d^3*(b*c - a*d)^7*Log[a + b*x])/(21*b^11)
```

Maple [B] time = 0.027, size = 1141, normalized size = 4.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^4,x)
```

```
[Out] -120/b^11*d^10*ln(b*x+a)*a^7+120/b^4*d^3*ln(b*x+a)*c^7-1/3/b^11/(
b*x+a)^3*a^10*d^10+5/b^11*d^10/(b*x+a)^2*a^9-5/b^2*d/(b*x+a)^2*c^
9-45/b^11*d^10/(b*x+a)*a^8-45/b^3*d^2/(b*x+a)*c^8-28*d^10/b^9*x^2
*a^5+126*d^5/b^4*x^2*c^5-2/3*d^10/b^5*x^6*a+5/3*d^9/b^4*x^6*c+2*d
^10/b^6*x^5*a^2+9*d^8/b^4*x^5*c^2-5*d^10/b^7*x^4*a^3+30*d^7/b^4*x
^4*c^3+35/3*d^10/b^8*x^3*a^4+70*d^6/b^4*x^3*c^4+210*d^4/b^4*c^6*x
+84*d^10/b^10*a^6*x-4200/b^7*d^6*ln(b*x+a)*a^3*c^4+2520/b^6*d^5*l
n(b*x+a)*a^2*c^5-840/b^5*d^4*ln(b*x+a)*a*c^6+10/3/b^10/(b*x+a)^3*
a^9*c*d^9-15/b^9/(b*x+a)^3*a^8*c^2*d^8+40/b^8/(b*x+a)^3*a^7*c^3*d
^7-70/b^7/(b*x+a)^3*a^6*c^4*d^6+84/b^6/(b*x+a)^3*a^5*c^5*d^5-70/b
^5/(b*x+a)^3*a^4*c^6*d^4-2400*d^7/b^7*a^3*c^3*x+2100*d^6/b^6*a^2*
c^4*x-8*d^9/b^5*x^5*a*c-1008*d^5/b^5*a*c^5*x-200/3*d^9/b^7*x^3*a^
3*c+150*d^8/b^6*x^3*a^2*c^2-560*d^9/b^9*a^5*c*x+1575*d^8/b^8*a^4*
c^2*x-450*d^8/b^7*x^2*a^3*c^2+600*d^7/b^6*x^2*a^2*c^3-420*d^6/b^5
*x^2*a*c^4-160*d^7/b^5*x^3*a*c^3+175*d^9/b^8*x^2*a^4*c-45*d^8/b^5
*x^4*a*c^2+25*d^9/b^6*x^4*a^2*c+10/3/b^2/(b*x+a)^3*a*c^9*d-45/b^1
0*d^9/(b*x+a)^2*a^8*c+180/b^9*d^8/(b*x+a)^2*a^7*c^2-420/b^8*d^7/(
b*x+a)^2*a^6*c^3+630/b^7*d^6/(b*x+a)^2*a^5*c^4-630/b^6*d^5/(b*x+a
)^2*a^4*c^5+420/b^5*d^4/(b*x+a)^2*a^3*c^6-180/b^4*d^3/(b*x+a)^2*a
^2*c^7+45/b^3*d^2/(b*x+a)^2*a*c^8+360/b^10*d^9/(b*x+a)*a^7*c-1260
/b^9*d^8/(b*x+a)*a^6*c^2+2520/b^8*d^7/(b*x+a)*a^5*c^3-3150/b^7*d^
6/(b*x+a)*a^4*c^4+2520/b^6*d^5/(b*x+a)*a^3*c^5-1260/b^5*d^4/(b*x+
a)*a^2*c^6+360/b^4*d^3/(b*x+a)*a*c^7+840/b^10*d^9*ln(b*x+a)*a^6*c
-2520/b^9*d^8*ln(b*x+a)*a^5*c^2+4200/b^8*d^7*ln(b*x+a)*a^4*c^3+40
/b^4/(b*x+a)^3*a^3*c^7*d^3-15/b^3/(b*x+a)^3*a^2*c^8*d^2+1/7*d^10/
b^4*x^7-1/3/b/(b*x+a)^3*c^10
```

Maxima [A] time = 1.41311, size = 1203, normalized size = 4.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] -1/3*(b^10*c^10 + 5*a*b^9*c^9*d + 45*a^2*b^8*c^8*d^2 - 660*a^3*b^
7*c^7*d^3 + 2730*a^4*b^6*c^6*d^4 - 5922*a^5*b^5*c^5*d^5 + 7770*a^
6*b^4*c^4*d^6 - 6420*a^7*b^3*c^3*d^7 + 3285*a^8*b^2*c^2*d^8 - 955
*a^9*b*c*d^9 + 121*a^10*d^10 + 135*(b^10*c^8*d^2 - 8*a*b^9*c^7*d^
3 + 28*a^2*b^8*c^6*d^4 - 56*a^3*b^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6
- 56*a^5*b^5*c^3*d^7 + 28*a^6*b^4*c^2*d^8 - 8*a^7*b^3*c*d^9 + a^8
*b^2*d^10)*x^2 + 15*(b^10*c^9*d + 9*a*b^9*c^8*d^2 - 108*a^2*b^8*c
^7*d^3 + 420*a^3*b^7*c^6*d^4 - 882*a^4*b^6*c^5*d^5 + 1134*a^5*b^5
*c^4*d^6 - 924*a^6*b^4*c^3*d^7 + 468*a^7*b^3*c^2*d^8 - 135*a^8*b^
2*c*d^9 + 17*a^9*b*d^10)*x)/(b^14*x^3 + 3*a*b^13*x^2 + 3*a^2*b^12
*x + a^3*b^11) + 1/21*(3*b^6*d^10*x^7 + 7*(5*b^6*c*d^9 - 2*a*b^5*
d^10)*x^6 + 21*(9*b^6*c^2*d^8 - 8*a*b^5*c*d^9 + 2*a^2*b^4*d^10)*x
```

```
^5 + 105*(6*b^6*c^3*d^7 - 9*a*b^5*c^2*d^8 + 5*a^2*b^4*c*d^9 - a^3
*b^3*d^10)*x^4 + 35*(42*b^6*c^4*d^6 - 96*a*b^5*c^3*d^7 + 90*a^2*b
^4*c^2*d^8 - 40*a^3*b^3*c*d^9 + 7*a^4*b^2*d^10)*x^3 + 21*(126*b^6
*c^5*d^5 - 420*a*b^5*c^4*d^6 + 600*a^2*b^4*c^3*d^7 - 450*a^3*b^3*
c^2*d^8 + 175*a^4*b^2*c*d^9 - 28*a^5*b*d^10)*x^2 + 21*(210*b^6*c^
6*d^4 - 1008*a*b^5*c^5*d^5 + 2100*a^2*b^4*c^4*d^6 - 2400*a^3*b^3*
c^3*d^7 + 1575*a^4*b^2*c^2*d^8 - 560*a^5*b*c*d^9 + 84*a^6*d^10)*x
)/b^10 + 120*(b^7*c^7*d^3 - 7*a*b^6*c^6*d^4 + 21*a^2*b^5*c^5*d^5
- 35*a^3*b^4*c^4*d^6 + 35*a^4*b^3*c^3*d^7 - 21*a^5*b^2*c^2*d^8 +
7*a^6*b*c*d^9 - a^7*d^10)*log(b*x + a)/b^11
```

Fricas [A] time = 0.208774, size = 1777, normalized size = 6.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] 1/21*(3*b^10*d^10*x^10 - 7*b^10*c^10 - 35*a*b^9*c^9*d - 315*a^2*b
^8*c^8*d^2 + 4620*a^3*b^7*c^7*d^3 - 19110*a^4*b^6*c^6*d^4 + 41454
*a^5*b^5*c^5*d^5 - 54390*a^6*b^4*c^4*d^6 + 44940*a^7*b^3*c^3*d^7
- 22995*a^8*b^2*c^2*d^8 + 6685*a^9*b*c*d^9 - 847*a^10*d^10 + 5*(7
*b^10*c*d^9 - a*b^9*d^10)*x^9 + 9*(21*b^10*c^2*d^8 - 7*a*b^9*c*d^
9 + a^2*b^8*d^10)*x^8 + 18*(35*b^10*c^3*d^7 - 21*a*b^9*c^2*d^8 +
7*a^2*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 42*(35*b^10*c^4*d^6 - 35*a*
b^9*c^3*d^7 + 21*a^2*b^8*c^2*d^8 - 7*a^3*b^7*c*d^9 + a^4*b^6*d^10
)*x^6 + 126*(21*b^10*c^5*d^5 - 35*a*b^9*c^4*d^6 + 35*a^2*b^8*c^3*
d^7 - 21*a^3*b^7*c^2*d^8 + 7*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x^5 +
630*(7*b^10*c^6*d^4 - 21*a*b^9*c^5*d^5 + 35*a^2*b^8*c^4*d^6 - 35*
a^3*b^7*c^3*d^7 + 21*a^4*b^6*c^2*d^8 - 7*a^5*b^5*c*d^9 + a^6*b^4*
d^10)*x^4 + 7*(1890*a*b^9*c^6*d^4 - 7938*a^2*b^8*c^5*d^5 + 15330*
a^3*b^7*c^4*d^6 - 16680*a^4*b^6*c^3*d^7 + 10575*a^5*b^5*c^2*d^8 -
 3665*a^6*b^4*c*d^9 + 539*a^7*b^3*d^10)*x^3 - 21*(45*b^10*c^8*d^2
 - 360*a*b^9*c^7*d^3 + 630*a^2*b^8*c^6*d^4 + 378*a^3*b^7*c^5*d^5
- 2730*a^4*b^6*c^4*d^6 + 4080*a^5*b^5*c^3*d^7 - 3015*a^6*b^4*c^2*
d^8 + 1145*a^7*b^3*c*d^9 - 179*a^8*b^2*d^10)*x^2 - 21*(5*b^10*c^9
*d + 45*a*b^9*c^8*d^2 - 540*a^2*b^8*c^7*d^3 + 1890*a^3*b^7*c^6*d^
4 - 3402*a^4*b^6*c^5*d^5 + 3570*a^5*b^5*c^4*d^6 - 2220*a^6*b^4*c^
3*d^7 + 765*a^7*b^3*c^2*d^8 - 115*a^8*b^2*c*d^9 + a^9*b*d^10)*x +
 2520*(a^3*b^7*c^7*d^3 - 7*a^4*b^6*c^6*d^4 + 21*a^5*b^5*c^5*d^5 -
 35*a^6*b^4*c^4*d^6 + 35*a^7*b^3*c^3*d^7 - 21*a^8*b^2*c^2*d^8 + 7
*a^9*b*c*d^9 - a^10*d^10 + (b^10*c^7*d^3 - 7*a*b^9*c^6*d^4 + 21*a
^2*b^8*c^5*d^5 - 35*a^3*b^7*c^4*d^6 + 35*a^4*b^6*c^3*d^7 - 21*a^5
*b^5*c^2*d^8 + 7*a^6*b^4*c*d^9 - a^7*b^3*d^10)*x^3 + 3*(a*b^9*c^7
*d^3 - 7*a^2*b^8*c^6*d^4 + 21*a^3*b^7*c^5*d^5 - 35*a^4*b^6*c^4*d^
6 + 35*a^5*b^5*c^3*d^7 - 21*a^6*b^4*c^2*d^8 + 7*a^7*b^3*c*d^9 - a
^8*b^2*d^10)*x^2 + 3*(a^2*b^8*c^7*d^3 - 7*a^3*b^7*c^6*d^4 + 21*a^
4*b^6*c^5*d^5 - 35*a^5*b^5*c^4*d^6 + 35*a^6*b^4*c^3*d^7 - 21*a^7*
b^3*c^2*d^8 + 7*a^8*b^2*c*d^9 - a^9*b*d^10)*x)*log(b*x + a))/(b^1
4*x^3 + 3*a*b^13*x^2 + 3*a^2*b^12*x + a^3*b^11)
```

Sympy [A] time = 89.0359, size = 853, normalized size = 3.31

$$-\frac{121a^{10}d^{10}-955a^{9}bcd^{9}+3285a^{8}b^{2}c^{2}d^{8}-6420a^{7}b^{3}c^{3}d^{7}+7770a^{6}b^{4}c^{4}d^{6}-5922a^{5}b^{5}c^{5}d^{5}+2730a^{4}b^{6}c^{6}d^{4}-660a^{3}b^{7}c^{7}d^{3}+\cdots}{\cdots}$$

$$+\frac{d^{10}x^{7}}{7b^{4}}-\frac{x^{6}\left(2ad^{10}-5bcd^{9}\right)}{3b^{5}}+\frac{x^{5}\left(2a^{2}d^{10}-8abcd^{9}+9b^{2}c^{2}d^{8}\right)}{b^{6}}$$
$$-\frac{x^{4}\left(5a^{3}d^{10}-25a^{2}bcd^{9}+45ab^{2}c^{2}d^{8}-30b^{3}c^{3}d^{7}\right)}{b^{7}}$$
$$+\frac{x^{3}\left(35a^{4}d^{10}-200a^{3}bcd^{9}+450a^{2}b^{2}c^{2}d^{8}-480ab^{3}c^{3}d^{7}+210b^{4}c^{4}d^{6}\right)}{3b^{8}}$$
$$-\frac{x^{2}\left(28a^{5}d^{10}-175a^{4}bcd^{9}+450a^{3}b^{2}c^{2}d^{8}-600a^{2}b^{3}c^{3}d^{7}+420ab^{4}c^{4}d^{6}-126b^{5}c^{5}d^{5}\right)}{b^{9}}$$
$$+\frac{x\left(84a^{6}d^{10}-560a^{5}bcd^{9}+1575a^{4}b^{2}c^{2}d^{8}-2400a^{3}b^{3}c^{3}d^{7}+2100a^{2}b^{4}c^{4}d^{6}-1008ab^{5}c^{5}d^{5}+210b^{6}c^{6}d^{4}\right)}{b^{10}}$$
$$-\frac{120d^{3}\left(ad-bc\right)^{7}\log\left(a+bx\right)}{b^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**4,x)
```

```
[Out] -(121*a**10*d**10 - 955*a**9*b*c*d**9 + 3285*a**8*b**2*c**2*d**8
- 6420*a**7*b**3*c**3*d**7 + 7770*a**6*b**4*c**4*d**6 - 5922*a**5
*b**5*c**5*d**5 + 2730*a**4*b**6*c**6*d**4 - 660*a**3*b**7*c**7*d
**3 + 45*a**2*b**8*c**8*d**2 + 5*a*b**9*c**9*d + b**10*c**10 + x*
*2*(135*a**8*b**2*d**10 - 1080*a**7*b**3*c*d**9 + 3780*a**6*b**4*
c**2*d**8 - 7560*a**5*b**5*c**3*d**7 + 9450*a**4*b**6*c**4*d**6 -
 7560*a**3*b**7*c**5*d**5 + 3780*a**2*b**8*c**6*d**4 - 1080*a*b**
9*c**7*d**3 + 135*b**10*c**8*d**2) + x*(255*a**9*b*d**10 - 2025*a
**8*b**2*c*d**9 + 7020*a**7*b**3*c**2*d**8 - 13860*a**6*b**4*c**3
*d**7 + 17010*a**5*b**5*c**4*d**6 - 13230*a**4*b**6*c**5*d**5 + 6
300*a**3*b**7*c**6*d**4 - 1620*a**2*b**8*c**7*d**3 + 135*a*b**9*c
**8*d**2 + 15*b**10*c**9*d))/(3*a**3*b**11 + 9*a**2*b**12*x + 9*a
*b**13*x**2 + 3*b**14*x**3) + d**10*x**7/(7*b**4) - x**6*(2*a*d**
10 - 5*b*c*d**9)/(3*b**5) + x**5*(2*a**2*d**10 - 8*a*b*c*d**9 + 9
*b**2*c**2*d**8)/b**6 - x**4*(5*a**3*d**10 - 25*a**2*b*c*d**9 + 4
5*a*b**2*c**2*d**8 - 30*b**3*c**3*d**7)/b**7 + x**3*(35*a**4*d**1
0 - 200*a**3*b*c*d**9 + 450*a**2*b**2*c**2*d**8 - 480*a*b**3*c**3
*d**7 + 210*b**4*c**4*d**6)/(3*b**8) - x**2*(28*a**5*d**10 - 175*
a**4*b*c*d**9 + 450*a**3*b**2*c**2*d**8 - 600*a**2*b**3*c**3*d**7
 + 420*a*b**4*c**4*d**6 - 126*b**5*c**5*d**5)/b**9 + x*(84*a**6*d
**10 - 560*a**5*b*c*d**9 + 1575*a**4*b**2*c**2*d**8 - 2400*a**3*b
**3*c**3*d**7 + 2100*a**2*b**4*c**4*d**6 - 1008*a*b**5*c**5*d**5
+ 210*b**6*c**6*d**4)/b**10 - 120*d**3*(a*d - b*c)**7*log(a + b*x
)/b**11
```

GIAC/XCAS [A] time = 0.225648, size = 1224, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] 120*(b^7*c^7*d^3 - 7*a*b^6*c^6*d^4 + 21*a^2*b^5*c^5*d^5 - 35*a^3*
b^4*c^4*d^6 + 35*a^4*b^3*c^3*d^7 - 21*a^5*b^2*c^2*d^8 + 7*a^6*b*c
*d^9 - a^7*d^10)*ln(abs(b*x + a))/b^11 - 1/3*(b^10*c^10 + 5*a*b^9
*c^9*d + 45*a^2*b^8*c^8*d^2 - 660*a^3*b^7*c^7*d^3 + 2730*a^4*b^6*
c^6*d^4 - 5922*a^5*b^5*c^5*d^5 + 7770*a^6*b^4*c^4*d^6 - 6420*a^7*
b^3*c^3*d^7 + 3285*a^8*b^2*c^2*d^8 - 955*a^9*b*c*d^9 + 121*a^10*d
^10 + 135*(b^10*c^8*d^2 - 8*a*b^9*c^7*d^3 + 28*a^2*b^8*c^6*d^4 -
56*a^3*b^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 - 56*a^5*b^5*c^3*d^7 + 28
*a^6*b^4*c^2*d^8 - 8*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 15*(b^10
*c^9*d + 9*a*b^9*c^8*d^2 - 108*a^2*b^8*c^7*d^3 + 420*a^3*b^7*c^6*
d^4 - 882*a^4*b^6*c^5*d^5 + 1134*a^5*b^5*c^4*d^6 - 924*a^6*b^4*c^
3*d^7 + 468*a^7*b^3*c^2*d^8 - 135*a^8*b^2*c*d^9 + 17*a^9*b*d^10)*
x)/((b*x + a)^3*b^11) + 1/21*(3*b^24*d^10*x^7 + 35*b^24*c*d^9*x^6
 - 14*a*b^23*d^10*x^6 + 189*b^24*c^2*d^8*x^5 - 168*a*b^23*c*d^9*x
^5 + 42*a^2*b^22*d^10*x^5 + 630*b^24*c^3*d^7*x^4 - 945*a*b^23*c^2
*d^8*x^4 + 525*a^2*b^22*c*d^9*x^4 - 105*a^3*b^21*d^10*x^4 + 1470*
b^24*c^4*d^6*x^3 - 3360*a*b^23*c^3*d^7*x^3 + 3150*a^2*b^22*c^2*d^
8*x^3 - 1400*a^3*b^21*c*d^9*x^3 + 245*a^4*b^20*d^10*x^3 + 2646*b^
24*c^5*d^5*x^2 - 8820*a*b^23*c^4*d^6*x^2 + 12600*a^2*b^22*c^3*d^7
*x^2 - 9450*a^3*b^21*c^2*d^8*x^2 + 3675*a^4*b^20*c*d^9*x^2 - 588*
a^5*b^19*d^10*x^2 + 4410*b^24*c^6*d^4*x - 21168*a*b^23*c^5*d^5*x
+ 44100*a^2*b^22*c^4*d^6*x - 50400*a^3*b^21*c^3*d^7*x + 33075*a^4
*b^20*c^2*d^8*x - 11760*a^5*b^19*c*d^9*x + 1764*a^6*b^18*d^10*x)/
b^28
```

3.1316 $\int \frac{(c+dx)^{10}}{(a+bx)^5}\,dx$

Optimal. Leaf size=262

$$\frac{2d^9(a+bx)^5(bc-ad)}{b^{11}}+\frac{45d^8(a+bx)^4(bc-ad)^2}{4b^{11}}+\frac{40d^7(a+bx)^3(bc-ad)^3}{b^{11}}+\frac{105d^6(a+bx)^2(bc-ad)^4}{b^{11}}+\frac{210d^4(bc-ad)^6\log(a+bx)}{b^{11}}-\frac{120d^3(bc-ad)^7}{b^{11}(a+bx)}-\frac{45d^2(bc-ad)^8}{2b^{11}(a+bx)^2}-\frac{10d(bc-ad)^9}{3b^{11}(a+bx)^3}-\frac{(bc-ad)^{10}}{4b^{11}(a+bx)^4}+\frac{d^{10}(a+bx)^6}{6b^{11}}+\frac{252d^5x(bc-ad)^5}{b^{10}}$$

```
[Out] (252*d^5*(b*c - a*d)^5*x)/b^10 - (b*c - a*d)^10/(4*b^11*(a + b*x)
^4) - (10*d*(b*c - a*d)^9)/(3*b^11*(a + b*x)^3) - (45*d^2*(b*c -
a*d)^8)/(2*b^11*(a + b*x)^2) - (120*d^3*(b*c - a*d)^7)/(b^11*(a +
 b*x)) + (105*d^6*(b*c - a*d)^4*(a + b*x)^2)/b^11 + (40*d^7*(b*c
- a*d)^3*(a + b*x)^3)/b^11 + (45*d^8*(b*c - a*d)^2*(a + b*x)^4)/(
4*b^11) + (2*d^9*(b*c - a*d)*(a + b*x)^5)/b^11 + (d^10*(a + b*x)^
6)/(6*b^11) + (210*d^4*(b*c - a*d)^6*Log[a + b*x])/b^11
```

Rubi [A] time = 0.950403, antiderivative size = 262, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2d^9(a+bx)^5(bc-ad)}{b^{11}}+\frac{45d^8(a+bx)^4(bc-ad)^2}{4b^{11}}+\frac{40d^7(a+bx)^3(bc-ad)^3}{b^{11}}+\frac{105d^6(a+bx)^2(bc-ad)^4}{b^{11}}+\frac{210d^4(bc-ad)^6\log(a+bx)}{b^{11}}-\frac{120d^3(bc-ad)^7}{b^{11}(a+bx)}-\frac{45d^2(bc-ad)^8}{2b^{11}(a+bx)^2}-\frac{10d(bc-ad)^9}{3b^{11}(a+bx)^3}-\frac{(bc-ad)^{10}}{4b^{11}(a+bx)^4}+\frac{d^{10}(a+bx)^6}{6b^{11}}+\frac{252d^5x(bc-ad)^5}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^5,x]
```


```
[Out] (252*d^5*(b*c - a*d)^5*x)/b^10 - (b*c - a*d)^10/(4*b^11*(a + b*x)
^4) - (10*d*(b*c - a*d)^9)/(3*b^11*(a + b*x)^3) - (45*d^2*(b*c -
a*d)^8)/(2*b^11*(a + b*x)^2) - (120*d^3*(b*c - a*d)^7)/(b^11*(a +
 b*x)) + (105*d^6*(b*c - a*d)^4*(a + b*x)^2)/b^11 + (40*d^7*(b*c
- a*d)^3*(a + b*x)^3)/b^11 + (45*d^8*(b*c - a*d)^2*(a + b*x)^4)/(
4*b^11) + (2*d^9*(b*c - a*d)*(a + b*x)^5)/b^11 + (d^10*(a + b*x)^
6)/(6*b^11) + (210*d^4*(b*c - a*d)^6*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 135.097, size = 243, normalized size = 0.93

$$-\frac{252d^5x\left(ad-bc\right)^5}{b^{10}}+\frac{d^{10}\left(a+bx\right)^6}{6b^{11}}-\frac{2d^9\left(a+bx\right)^5\left(ad-bc\right)}{b^{11}}+\frac{45d^8\left(a+bx\right)^4\left(ad-bc\right)^2}{4b^{11}}-\frac{40d^7\left(a+bx\right)^3\left(ad-bc\right)^3}{b^{11}}+\frac{105d^6\left(a+bx\right)^2\left(ad-bc\right)^4}{b^{11}}+\frac{210d^4\left(ad-bc\right)^6\log\left(a+bx\right)}{b^{11}}+\frac{120d^3\left(ad-bc\right)^7}{b^{11}\left(a+bx\right)}-\frac{45d^2\left(ad-bc\right)^8}{2b^{11}\left(a+bx\right)^2}+\frac{10d\left(ad-bc\right)^9}{3b^{11}\left(a+bx\right)^3}-\frac{\left(ad-bc\right)^{10}}{4b^{11}\left(a+bx\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**5,x)
```

```
[Out] -252*d**5*x*(a*d - b*c)**5/b**10 + d**10*(a + b*x)**6/(6*b**11) -
 2*d**9*(a + b*x)**5*(a*d - b*c)/b**11 + 45*d**8*(a + b*x)**4*(a*
d - b*c)**2/(4*b**11) - 40*d**7*(a + b*x)**3*(a*d - b*c)**3/b**11
 + 105*d**6*(a + b*x)**2*(a*d - b*c)**4/b**11 + 210*d**4*(a*d - b
*c)**6*log(a + b*x)/b**11 + 120*d**3*(a*d - b*c)**7/(b**11*(a + b
*x)) - 45*d**2*(a*d - b*c)**8/(2*b**11*(a + b*x)**2) + 10*d*(a*d
- b*c)**9/(3*b**11*(a + b*x)**3) - (a*d - b*c)**10/(4*b**11*(a +
b*x)**4)
```

Mathematica [A] time = 0.335869, size = 359, normalized size = 1.37

$$\frac{15b^4d^8x^4\left(3a^2d^2-10abcd+9b^2c^2\right)+20b^3d^7x^3\left(-7a^3d^3+30a^2bcd^2-45ab^2c^2d+24b^3c^3\right)+30b^2d^6x^2\left(14a^4d^4-70a^3bcd^3\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^5,x]
```

```
[Out] (12*b*d^5*(252*b^5*c^5 - 1050*a*b^4*c^4*d + 1800*a^2*b^3*c^3*d^2
- 1575*a^3*b^2*c^2*d^3 + 700*a^4*b*c*d^4 - 126*a^5*d^5)*x + 30*b^
2*d^6*(42*b^4*c^4 - 120*a*b^3*c^3*d + 135*a^2*b^2*c^2*d^2 - 70*a^
3*b*c*d^3 + 14*a^4*d^4)*x^2 + 20*b^3*d^7*(24*b^3*c^3 - 45*a*b^2*c
^2*d + 30*a^2*b*c*d^2 - 7*a^3*d^3)*x^3 + 15*b^4*d^8*(9*b^2*c^2 -
10*a*b*c*d + 3*a^2*d^2)*x^4 + 12*b^5*d^9*(2*b*c - a*d)*x^5 + 2*b^
6*d^10*x^6 - (3*(b*c - a*d)^10)/(a + b*x)^4 + (40*d*(-(b*c) + a*d
)^9)/(a + b*x)^3 - (270*d^2*(b*c - a*d)^8)/(a + b*x)^2 + (1440*d^
3*(-(b*c) + a*d)^7)/(a + b*x) + 2520*d^4*(b*c - a*d)^6*Log[a + b*
x])/(12*b^11)
```

Maple [B] time = 0.026, size = 1172, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^5,x)
```

```
[Out] -45/2/b^11*d^10/(b*x+a)^2*a^8-45/2/b^3*d^2/(b*x+a)^2*c^8+120/b^11
*d^10/(b*x+a)*a^7-120/b^4*d^3/(b*x+a)*c^7-1/4/b^11/(b*x+a)^4*a^10
*d^10+10/3/b^11*d^10/(b*x+a)^3*a^9-10/3/b^2*d/(b*x+a)^3*c^9+210/b
^5*d^4*ln(b*x+a)*c^6-d^10/b^6*x^5*a+2*d^9/b^5*x^5*c+15/4*d^10/b^7
*x^4*a^2+45/4*d^8/b^5*x^4*c^2-35/3*d^10/b^8*x^3*a^3+40*d^7/b^5*x^
3*c^3+35*d^10/b^9*x^2*a^4+105*d^6/b^5*x^2*c^4-126*d^10/b^10*a^5*x
+252*d^5/b^5*c^5*x+210/b^11*d^10*ln(b*x+a)*a^6-25/2*d^9/b^6*x^4*a
*c+50*d^9/b^7*x^3*a^2*c+30/b^4/(b*x+a)^4*a^3*c^7*d^3+1800*d^7/b^7
*a^2*c^3*x-1050*d^6/b^6*a*c^4*x-1260/b^10*d^9*ln(b*x+a)*a^5*c+315
0/b^9*d^8*ln(b*x+a)*a^4*c^2-4200/b^8*d^7*ln(b*x+a)*a^3*c^3+3150/b
^7*d^6*ln(b*x+a)*a^2*c^4-1260/b^6*d^5*ln(b*x+a)*a*c^5+5/2/b^10/(b
*x+a)^4*a^9*c*d^9-45/4/b^9/(b*x+a)^4*a^8*c^2*d^8+30/b^8/(b*x+a)^4
*a^7*c^3*d^7-105/2/b^7/(b*x+a)^4*a^6*c^4*d^6+63/b^6/(b*x+a)^4*a^5
*c^5*d^5-105/2/b^5/(b*x+a)^4*a^4*c^6*d^4-45/4/b^3/(b*x+a)^4*a^2*c
^8*d^2+5/2/b^2/(b*x+a)^4*a*c^9*d-1575/b^7*d^6/(b*x+a)^2*a^4*c^4+1
260/b^6*d^5/(b*x+a)^2*a^3*c^5-630/b^5*d^4/(b*x+a)^2*a^2*c^6+180/b
^4*d^3/(b*x+a)^2*a*c^7-840/b^10*d^9/(b*x+a)*a^6*c+2520/b^9*d^8/(b
*x+a)*a^5*c^2-4200/b^8*d^7/(b*x+a)*a^4*c^3+4200/b^7*d^6/(b*x+a)*a
^3*c^4-2520/b^6*d^5/(b*x+a)*a^2*c^5+840/b^5*d^4/(b*x+a)*a*c^6-30/
b^10*d^9/(b*x+a)^3*a^8*c+120/b^9*d^8/(b*x+a)^3*a^7*c^2-280/b^8*d^
7/(b*x+a)^3*a^6*c^3+420/b^7*d^6/(b*x+a)^3*a^5*c^4-420/b^6*d^5/(b*
x+a)^3*a^4*c^5+280/b^5*d^4/(b*x+a)^3*a^3*c^6-120/b^4*d^3/(b*x+a)^
3*a^2*c^7+30/b^3*d^2/(b*x+a)^3*a*c^8+180/b^10*d^9/(b*x+a)^2*a^7*c
-630/b^9*d^8/(b*x+a)^2*a^6*c^2+1260/b^8*d^7/(b*x+a)^2*a^5*c^3-75*
d^8/b^6*x^3*a*c^2-175*d^9/b^8*x^2*a^3*c+675/2*d^8/b^7*x^2*a^2*c^2
-300*d^7/b^6*x^2*a*c^3+700*d^9/b^9*a^4*c*x-1575*d^8/b^8*a^3*c^2*x
+1/6*d^10/b^5*x^6-1/4/b/(b*x+a)^4*c^10
```

Maxima [A] time = 1.45106, size = 1219, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(3*b^10*c^10 + 10*a*b^9*c^9*d + 45*a^2*b^8*c^8*d^2 + 360*a^
3*b^7*c^7*d^3 - 5250*a^4*b^6*c^6*d^4 + 19404*a^5*b^5*c^5*d^5 - 35
910*a^6*b^4*c^4*d^6 + 38280*a^7*b^3*c^3*d^7 - 23985*a^8*b^2*c^2*d
^8 + 8250*a^9*b*c*d^9 - 1207*a^10*d^10 + 1440*(b^10*c^7*d^3 - 7*a
*b^9*c^6*d^4 + 21*a^2*b^8*c^5*d^5 - 35*a^3*b^7*c^4*d^6 + 35*a^4*b
^6*c^3*d^7 - 21*a^5*b^5*c^2*d^8 + 7*a^6*b^4*c*d^9 - a^7*b^3*d^10)
*x^3 + 270*(b^10*c^8*d^2 + 8*a*b^9*c^7*d^3 - 84*a^2*b^8*c^6*d^4 +
 280*a^3*b^7*c^5*d^5 - 490*a^4*b^6*c^4*d^6 + 504*a^5*b^5*c^3*d^7
- 308*a^6*b^4*c^2*d^8 + 104*a^7*b^3*c*d^9 - 15*a^8*b^2*d^10)*x^2
+ 20*(2*b^10*c^9*d + 9*a*b^9*c^8*d^2 + 72*a^2*b^8*c^7*d^3 - 924*a
^3*b^7*c^6*d^4 + 3276*a^4*b^6*c^5*d^5 - 5922*a^5*b^5*c^4*d^6 + 62
```

```
16*a^6*b^4*c^3*d^7 - 3852*a^7*b^3*c^2*d^8 + 1314*a^8*b^2*c*d^9 -
191*a^9*b*d^10)*x)/(b^15*x^4 + 4*a*b^14*x^3 + 6*a^2*b^13*x^2 + 4*
a^3*b^12*x + a^4*b^11) + 1/12*(2*b^5*d^10*x^6 + 12*(2*b^5*c*d^9 -
 a*b^4*d^10)*x^5 + 15*(9*b^5*c^2*d^8 - 10*a*b^4*c*d^9 + 3*a^2*b^3
*d^10)*x^4 + 20*(24*b^5*c^3*d^7 - 45*a*b^4*c^2*d^8 + 30*a^2*b^3*c
*d^9 - 7*a^3*b^2*d^10)*x^3 + 30*(42*b^5*c^4*d^6 - 120*a*b^4*c^3*d
^7 + 135*a^2*b^3*c^2*d^8 - 70*a^3*b^2*c*d^9 + 14*a^4*b*d^10)*x^2
+ 12*(252*b^5*c^5*d^5 - 1050*a*b^4*c^4*d^6 + 1800*a^2*b^3*c^3*d^7
 - 1575*a^3*b^2*c^2*d^8 + 700*a^4*b*c*d^9 - 126*a^5*d^10)*x)/b^10
 + 210*(b^6*c^6*d^4 - 6*a*b^5*c^5*d^5 + 15*a^2*b^4*c^4*d^6 - 20*a
^3*b^3*c^3*d^7 + 15*a^4*b^2*c^2*d^8 - 6*a^5*b*c*d^9 + a^6*d^10)*l
og(b*x + a)/b^11
```

Fricas [A] time = 0.211774, size = 1843, normalized size = 7.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(2*b^10*d^10*x^10 - 3*b^10*c^10 - 10*a*b^9*c^9*d - 45*a^2*b^
8*c^8*d^2 - 360*a^3*b^7*c^7*d^3 + 5250*a^4*b^6*c^6*d^4 - 19404*a^
5*b^5*c^5*d^5 + 35910*a^6*b^4*c^4*d^6 - 38280*a^7*b^3*c^3*d^7 + 2
3985*a^8*b^2*c^2*d^8 - 8250*a^9*b*c*d^9 + 1207*a^10*d^10 + 4*(6*b
^10*c*d^9 - a*b^9*d^10)*x^9 + 9*(15*b^10*c^2*d^8 - 6*a*b^9*c*d^9
+ a^2*b^8*d^10)*x^8 + 24*(20*b^10*c^3*d^7 - 15*a*b^9*c^2*d^8 + 6*
a^2*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 84*(15*b^10*c^4*d^6 - 20*a*b^
9*c^3*d^7 + 15*a^2*b^8*c^2*d^8 - 6*a^3*b^7*c*d^9 + a^4*b^6*d^10)*
x^6 + 504*(6*b^10*c^5*d^5 - 15*a*b^9*c^4*d^6 + 20*a^2*b^8*c^3*d^7
 - 15*a^3*b^7*c^2*d^8 + 6*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x^5 + (12
096*a*b^9*c^5*d^5 - 42840*a^2*b^8*c^4*d^6 + 66720*a^3*b^7*c^3*d^7
 - 54765*a^4*b^6*c^2*d^8 + 23250*a^5*b^5*c*d^9 - 4043*a^6*b^4*d^1
0)*x^4 - 4*(360*b^10*c^7*d^3 - 2520*a*b^9*c^6*d^4 + 3024*a^2*b^8*
c^5*d^5 + 5040*a^3*b^7*c^4*d^6 - 16320*a^4*b^6*c^3*d^7 + 16965*a^
5*b^5*c^2*d^8 - 8130*a^6*b^4*c*d^9 + 1523*a^7*b^3*d^10)*x^3 - 6*(
45*b^10*c^8*d^2 + 360*a*b^9*c^7*d^3 - 3780*a^2*b^8*c^6*d^4 + 1058
4*a^3*b^7*c^5*d^5 - 13860*a^4*b^6*c^4*d^6 + 8880*a^5*b^5*c^3*d^7
- 1935*a^6*b^4*c^2*d^8 - 570*a^7*b^3*c*d^9 + 263*a^8*b^2*d^10)*x^
2 - 4*(10*b^10*c^9*d + 45*a*b^9*c^8*d^2 + 360*a^2*b^8*c^7*d^3 - 4
620*a^3*b^7*c^6*d^4 + 15624*a^4*b^6*c^5*d^5 - 26460*a^5*b^5*c^4*d
^6 + 25680*a^6*b^4*c^3*d^7 - 14535*a^7*b^3*c^2*d^8 + 4470*a^8*b^2
*c*d^9 - 577*a^9*b*d^10)*x + 2520*(a^4*b^6*c^6*d^4 - 6*a^5*b^5*c^
5*d^5 + 15*a^6*b^4*c^4*d^6 - 20*a^7*b^3*c^3*d^7 + 15*a^8*b^2*c^2*
d^8 - 6*a^9*b*c*d^9 + a^10*d^10 + (b^10*c^6*d^4 - 6*a*b^9*c^5*d^5
 + 15*a^2*b^8*c^4*d^6 - 20*a^3*b^7*c^3*d^7 + 15*a^4*b^6*c^2*d^8 -
 6*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 4*(a*b^9*c^6*d^4 - 6*a^2*b
^8*c^5*d^5 + 15*a^3*b^7*c^4*d^6 - 20*a^4*b^6*c^3*d^7 + 15*a^5*b^5
*c^2*d^8 - 6*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 6*(a^2*b^8*c^6*d
^4 - 6*a^3*b^7*c^5*d^5 + 15*a^4*b^6*c^4*d^6 - 20*a^5*b^5*c^3*d^7
+ 15*a^6*b^4*c^2*d^8 - 6*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 4*(a
^3*b^7*c^6*d^4 - 6*a^4*b^6*c^5*d^5 + 15*a^5*b^5*c^4*d^6 - 20*a^6*
```

```
b^4*c^3*d^7 + 15*a^7*b^3*c^2*d^8 - 6*a^8*b^2*c*d^9 + a^9*b*d^10)*
x)*log(b*x + a))/(b^15*x^4 + 4*a*b^14*x^3 + 6*a^2*b^13*x^2 + 4*a^
3*b^12*x + a^4*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.228917, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] Done
```

3.1317 $\int \frac{(c+dx)^{10}}{(a+bx)^6}\,dx$

Optimal. Leaf size=260

$$\frac{5d^9(a+bx)^4(bc-ad)}{2b^{11}}+\frac{15d^8(a+bx)^3(bc-ad)^2}{b^{11}}+\frac{60d^7(a+bx)^2(bc-ad)^3}{b^{11}}+\frac{252d^5(bc-ad)^5\log(a+bx)}{b^{11}}-\frac{210d^4(bc-ad)^6}{b^{11}(a+bx)}-\frac{60d^3(bc-ad)^7}{b^{11}(a+bx)^2}-\frac{15d^2(bc-ad)^8}{b^{11}(a+bx)^3}-\frac{5d(bc-ad)^9}{2b^{11}(a+bx)^4}-\frac{(bc-ad)^{10}}{5b^{11}(a+bx)^5}+\frac{d^{10}(a+bx)^5}{5b^{11}}+\frac{210d^6x(bc-ad)^4}{b^{10}}$$

```
[Out] (210*d^6*(b*c - a*d)^4*x)/b^10 - (b*c - a*d)^10/(5*b^11*(a + b*x)
^5) - (5*d*(b*c - a*d)^9)/(2*b^11*(a + b*x)^4) - (15*d^2*(b*c - a
*d)^8)/(b^11*(a + b*x)^3) - (60*d^3*(b*c - a*d)^7)/(b^11*(a + b*x
)^2) - (210*d^4*(b*c - a*d)^6)/(b^11*(a + b*x)) + (60*d^7*(b*c -
a*d)^3*(a + b*x)^2)/b^11 + (15*d^8*(b*c - a*d)^2*(a + b*x)^3)/b^1
1 + (5*d^9*(b*c - a*d)*(a + b*x)^4)/(2*b^11) + (d^10*(a + b*x)^5)
/(5*b^11) + (252*d^5*(b*c - a*d)^5*Log[a + b*x])/b^11
```

Rubi [A] time = 0.927609, antiderivative size = 260, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{5d^9(a+bx)^4(bc-ad)}{2b^{11}}+\frac{15d^8(a+bx)^3(bc-ad)^2}{b^{11}}+\frac{60d^7(a+bx)^2(bc-ad)^3}{b^{11}}+\frac{252d^5(bc-ad)^5\log(a+bx)}{b^{11}}-\frac{210d^4(bc-ad)^6}{b^{11}(a+bx)}-\frac{60d^3(bc-ad)^7}{b^{11}(a+bx)^2}-\frac{15d^2(bc-ad)^8}{b^{11}(a+bx)^3}-\frac{5d(bc-ad)^9}{2b^{11}(a+bx)^4}-\frac{(bc-ad)^{10}}{5b^{11}(a+bx)^5}+\frac{d^{10}(a+bx)^5}{5b^{11}}+\frac{210d^6x(bc-ad)^4}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^6,x]
```


```
[Out] (210*d^6*(b*c - a*d)^4*x)/b^10 - (b*c - a*d)^10/(5*b^11*(a + b*x)
^5) - (5*d*(b*c - a*d)^9)/(2*b^11*(a + b*x)^4) - (15*d^2*(b*c - a
*d)^8)/(b^11*(a + b*x)^3) - (60*d^3*(b*c - a*d)^7)/(b^11*(a + b*x
)^2) - (210*d^4*(b*c - a*d)^6)/(b^11*(a + b*x)) + (60*d^7*(b*c -
a*d)^3*(a + b*x)^2)/b^11 + (15*d^8*(b*c - a*d)^2*(a + b*x)^3)/b^1
1 + (5*d^9*(b*c - a*d)*(a + b*x)^4)/(2*b^11) + (d^10*(a + b*x)^5)
/(5*b^11) + (252*d^5*(b*c - a*d)^5*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 144.859, size = 241, normalized size = 0.93

$$\frac{210d^6x(ad-bc)^4}{b^{10}}+\frac{d^{10}(a+bx)^5}{5b^{11}}-\frac{5d^9(a+bx)^4(ad-bc)}{2b^{11}}+\frac{15d^8(a+bx)^3(ad-bc)^2}{b^{11}}-\frac{60d^7(a+bx)^2(ad-bc)^3}{b^{11}}-\frac{252d^5(ad-bc)^5\log(a+bx)}{b^{11}}-\frac{210d^4(ad-bc)^6}{b^{11}(a+bx)}+\frac{60d^3(ad-bc)^7}{b^{11}(a+bx)^2}-\frac{15d^2(ad-bc)^8}{b^{11}(a+bx)^3}+\frac{5d(ad-bc)^9}{2b^{11}(a+bx)^4}-\frac{(ad-bc)^{10}}{5b^{11}(a+bx)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**6,x)
```

```
[Out] 210*d**6*x*(a*d - b*c)**4/b**10 + d**10*(a + b*x)**5/(5*b**11) -
5*d**9*(a + b*x)**4*(a*d - b*c)/(2*b**11) + 15*d**8*(a + b*x)**3*
(a*d - b*c)**2/b**11 - 60*d**7*(a + b*x)**2*(a*d - b*c)**3/b**11
- 252*d**5*(a*d - b*c)**5*log(a + b*x)/b**11 - 210*d**4*(a*d - b*
c)**6/(b**11*(a + b*x)) + 60*d**3*(a*d - b*c)**7/(b**11*(a + b*x)
**2) - 15*d**2*(a*d - b*c)**8/(b**11*(a + b*x)**3) + 5*d*(a*d - b
*c)**9/(2*b**11*(a + b*x)**4) - (a*d - b*c)**10/(5*b**11*(a + b*x
)**5)
```

Mathematica [A] time = 0.360873, size = 305, normalized size = 1.17

$$\frac{10b^3d^8x^3\left(7a^2d^2-20abcd+15b^2c^2\right)+10b^2d^7x^2\left(-28a^3d^3+105a^2bcd^2-135ab^2c^2d+60b^3c^3\right)+10bd^6x\left(126a^4d^4-560a^3\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^6,x]
```

```
[Out] (10*b*d^6*(210*b^4*c^4 - 720*a*b^3*c^3*d + 945*a^2*b^2*c^2*d^2 -
560*a^3*b*c*d^3 + 126*a^4*d^4)*x + 10*b^2*d^7*(60*b^3*c^3 - 135*a
*b^2*c^2*d + 105*a^2*b*c*d^2 - 28*a^3*d^3)*x^2 + 10*b^3*d^8*(15*b
^2*c^2 - 20*a*b*c*d + 7*a^2*d^2)*x^3 + 5*b^4*d^9*(5*b*c - 3*a*d)*
x^4 + 2*b^5*d^10*x^5 - (2*(b*c - a*d)^10)/(a + b*x)^5 + (25*d*(-(
b*c) + a*d)^9)/(a + b*x)^4 - (150*d^2*(b*c - a*d)^8)/(a + b*x)^3
+ (600*d^3*(-(b*c) + a*d)^7)/(a + b*x)^2 - (2100*d^4*(b*c - a*d)^
6)/(a + b*x) + 2520*d^5*(b*c - a*d)^5*Log[a + b*x])/(10*b^11)
```

Maple [B] time = 0.029, size = 1199, normalized size = 4.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^6,x)
```

```
[Out] -28*d^10/b^9*x^2*a^3+60*d^7/b^6*x^2*c^3+126*d^10/b^10*a^4*x+210*d
^6/b^6*c^4*x+7*d^10/b^8*x^3*a^2+15*d^8/b^6*x^3*c^2-210/b^11*d^10/
(b*x+a)*a^6-210/b^5*d^4/(b*x+a)*c^6-15/b^11*d^10/(b*x+a)^3*a^8-15
/b^3*d^2/(b*x+a)^3*c^8+5/2/b^11*d^10/(b*x+a)^4*a^9-5/2/b^2*d/(b*x
+a)^4*c^9-252/b^11*d^10*ln(b*x+a)*a^5+252/b^6*d^5*ln(b*x+a)*c^5-1
/5/b^11/(b*x+a)^5*a^10*d^10-3/2*d^10/b^7*x^4*a+5/2*d^9/b^6*x^4*c+
60/b^11*d^10/(b*x+a)^2*a^7-60/b^4*d^3/(b*x+a)^2*c^7-20*d^9/b^7*x^
3*a*c+105*d^9/b^8*x^2*a^2*c-560*d^9/b^9*a^3*c*x+945*d^8/b^8*a^2*c
^2*x-720*d^7/b^7*a*c^3*x+2/b^10/(b*x+a)^5*a^9*c*d^9-9/b^9/(b*x+a)
^5*a^8*c^2*d^8+24/b^8/(b*x+a)^5*a^7*c^3*d^7-42/b^7/(b*x+a)^5*a^6*
c^4*d^6+252/5/b^6/(b*x+a)^5*a^5*c^5*d^5-42/b^5/(b*x+a)^5*a^4*c^6*
d^4+24/b^4/(b*x+a)^5*a^3*c^7*d^3-9/b^3/(b*x+a)^5*a^2*c^8*d^2+1260
/b^10*d^9/(b*x+a)*a^5*c-3150/b^9*d^8/(b*x+a)*a^4*c^2+4200/b^8*d^7
/(b*x+a)*a^3*c^3-3150/b^7*d^6/(b*x+a)*a^2*c^4+1260/b^6*d^5/(b*x+a
)*a*c^5-420/b^5*d^4/(b*x+a)^3*a^2*c^6+120/b^4*d^3/(b*x+a)^3*a*c^7
-420/b^10*d^9/(b*x+a)^2*a^6*c+1260/b^9*d^8/(b*x+a)^2*a^5*c^2-2100
/b^8*d^7/(b*x+a)^2*a^4*c^3+2100/b^7*d^6/(b*x+a)^2*a^3*c^4-1260/b^
6*d^5/(b*x+a)^2*a^2*c^5+420/b^5*d^4/(b*x+a)^2*a*c^6-1260/b^7*d^6*
ln(b*x+a)*a*c^4-45/2/b^10*d^9/(b*x+a)^4*a^8*c+90/b^9*d^8/(b*x+a)^
4*a^7*c^2-210/b^8*d^7/(b*x+a)^4*a^6*c^3+315/b^7*d^6/(b*x+a)^4*a^5
*c^4-315/b^6*d^5/(b*x+a)^4*a^4*c^5+210/b^5*d^4/(b*x+a)^4*a^3*c^6-
90/b^4*d^3/(b*x+a)^4*a^2*c^7+45/2/b^3*d^2/(b*x+a)^4*a*c^8+120/b^1
0*d^9/(b*x+a)^3*a^7*c-420/b^9*d^8/(b*x+a)^3*a^6*c^2+840/b^8*d^7/(
b*x+a)^3*a^5*c^3-1050/b^7*d^6/(b*x+a)^3*a^4*c^4+840/b^6*d^5/(b*x+
a)^3*a^3*c^5+1260/b^10*d^9*ln(b*x+a)*a^4*c-2520/b^9*d^8*ln(b*x+a)
*a^3*c^2+2520/b^8*d^7*ln(b*x+a)*a^2*c^3+2/b^2/(b*x+a)^5*a*c^9*d-1
35*d^8/b^7*x^2*a*c^2+1/5*d^10/b^6*x^5-1/5/b/(b*x+a)^5*c^10
```

Maxima [A] time = 1.45019, size = 1231, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] -1/10*(2*b^10*c^10 + 5*a*b^9*c^9*d + 15*a^2*b^8*c^8*d^2 + 60*a^3*
b^7*c^7*d^3 + 420*a^4*b^6*c^6*d^4 - 5754*a^5*b^5*c^5*d^5 + 18270*
a^6*b^4*c^4*d^6 - 27540*a^7*b^3*c^3*d^7 + 22290*a^8*b^2*c^2*d^8 -
 9395*a^9*b*c*d^9 + 1627*a^10*d^10 + 2100*(b^10*c^6*d^4 - 6*a*b^9
*c^5*d^5 + 15*a^2*b^8*c^4*d^6 - 20*a^3*b^7*c^3*d^7 + 15*a^4*b^6*c
^2*d^8 - 6*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 600*(b^10*c^7*d^3
+ 7*a*b^9*c^6*d^4 - 63*a^2*b^8*c^5*d^5 + 175*a^3*b^7*c^4*d^6 - 24
5*a^4*b^6*c^3*d^7 + 189*a^5*b^5*c^2*d^8 - 77*a^6*b^4*c*d^9 + 13*a
^7*b^3*d^10)*x^3 + 150*(b^10*c^8*d^2 + 4*a*b^9*c^7*d^3 + 28*a^2*b
^8*c^6*d^4 - 308*a^3*b^7*c^5*d^5 + 910*a^4*b^6*c^4*d^6 - 1316*a^5
*b^5*c^3*d^7 + 1036*a^6*b^4*c^2*d^8 - 428*a^7*b^3*c*d^9 + 73*a^8*
b^2*d^10)*x^2 + 25*(b^10*c^9*d + 3*a*b^9*c^8*d^2 + 12*a^2*b^8*c^7
*d^3 + 84*a^3*b^7*c^6*d^4 - 1050*a^4*b^6*c^5*d^5 + 3234*a^5*b^5*c
```

```
^4*d^6 - 4788*a^6*b^4*c^3*d^7 + 3828*a^7*b^3*c^2*d^8 - 1599*a^8*b
^2*c*d^9 + 275*a^9*b*d^10)*x)/(b^16*x^5 + 5*a*b^15*x^4 + 10*a^2*b
^14*x^3 + 10*a^3*b^13*x^2 + 5*a^4*b^12*x + a^5*b^11) + 1/10*(2*b^
4*d^10*x^5 + 5*(5*b^4*c*d^9 - 3*a*b^3*d^10)*x^4 + 10*(15*b^4*c^2*
d^8 - 20*a*b^3*c*d^9 + 7*a^2*b^2*d^10)*x^3 + 10*(60*b^4*c^3*d^7 -
 135*a*b^3*c^2*d^8 + 105*a^2*b^2*c*d^9 - 28*a^3*b*d^10)*x^2 + 10*
(210*b^4*c^4*d^6 - 720*a*b^3*c^3*d^7 + 945*a^2*b^2*c^2*d^8 - 560*
a^3*b*c*d^9 + 126*a^4*d^10)*x)/b^10 + 252*(b^5*c^5*d^5 - 5*a*b^4*
c^4*d^6 + 10*a^2*b^3*c^3*d^7 - 10*a^3*b^2*c^2*d^8 + 5*a^4*b*c*d^9
 - a^5*d^10)*log(b*x + a)/b^11
```

Fricas [A] time = 0.209504, size = 1883, normalized size = 7.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] 1/10*(2*b^10*d^10*x^10 - 2*b^10*c^10 - 5*a*b^9*c^9*d - 15*a^2*b^8
*c^8*d^2 - 60*a^3*b^7*c^7*d^3 - 420*a^4*b^6*c^6*d^4 + 5754*a^5*b^
5*c^5*d^5 - 18270*a^6*b^4*c^4*d^6 + 27540*a^7*b^3*c^3*d^7 - 22290
*a^8*b^2*c^2*d^8 + 9395*a^9*b*c*d^9 - 1627*a^10*d^10 + 5*(5*b^10*
c*d^9 - a*b^9*d^10)*x^9 + 15*(10*b^10*c^2*d^8 - 5*a*b^9*c*d^9 + a
^2*b^8*d^10)*x^8 + 60*(10*b^10*c^3*d^7 - 10*a*b^9*c^2*d^8 + 5*a^2
*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 420*(5*b^10*c^4*d^6 - 10*a*b^9*c
^3*d^7 + 10*a^2*b^8*c^2*d^8 - 5*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6
 + (10500*a*b^9*c^4*d^6 - 30000*a^2*b^8*c^3*d^7 + 35250*a^3*b^7*c
^2*d^8 - 19375*a^4*b^6*c*d^9 + 4127*a^5*b^5*d^10)*x^5 - 5*(420*b^
10*c^6*d^4 - 2520*a*b^9*c^5*d^5 + 2100*a^2*b^8*c^4*d^6 + 4800*a^3
*b^7*c^3*d^7 - 10050*a^4*b^6*c^2*d^8 + 6775*a^5*b^5*c*d^9 - 1607*
a^6*b^4*d^10)*x^4 - 10*(60*b^10*c^7*d^3 + 420*a*b^9*c^6*d^4 - 378
0*a^2*b^8*c^5*d^5 + 8400*a^3*b^7*c^4*d^6 - 7800*a^4*b^6*c^3*d^7 +
 2550*a^5*b^5*c^2*d^8 + 475*a^6*b^4*c*d^9 - 347*a^7*b^3*d^10)*x^3
 - 10*(15*b^10*c^8*d^2 + 60*a*b^9*c^7*d^3 + 420*a^2*b^8*c^6*d^4 -
 4620*a^3*b^7*c^5*d^5 + 12600*a^4*b^6*c^4*d^6 - 16200*a^5*b^5*c^3
*d^7 + 10950*a^6*b^4*c^2*d^8 - 3725*a^7*b^3*c*d^9 + 493*a^8*b^2*d
^10)*x^2 - 5*(5*b^10*c^9*d + 15*a*b^9*c^8*d^2 + 60*a^2*b^8*c^7*d^
3 + 420*a^3*b^7*c^6*d^4 - 5250*a^4*b^6*c^5*d^5 + 15750*a^5*b^5*c^
4*d^6 - 22500*a^6*b^4*c^3*d^7 + 17250*a^7*b^3*c^2*d^8 - 6875*a^8*
b^2*c*d^9 + 1123*a^9*b*d^10)*x + 2520*(a^5*b^5*c^5*d^5 - 5*a^6*b^
4*c^4*d^6 + 10*a^7*b^3*c^3*d^7 - 10*a^8*b^2*c^2*d^8 + 5*a^9*b*c*d
^9 - a^10*d^10 + (b^10*c^5*d^5 - 5*a*b^9*c^4*d^6 + 10*a^2*b^8*c^3
*d^7 - 10*a^3*b^7*c^2*d^8 + 5*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x^5 +
 5*(a*b^9*c^5*d^5 - 5*a^2*b^8*c^4*d^6 + 10*a^3*b^7*c^3*d^7 - 10*a
^4*b^6*c^2*d^8 + 5*a^5*b^5*c*d^9 - a^6*b^4*d^10)*x^4 + 10*(a^2*b^
8*c^5*d^5 - 5*a^3*b^7*c^4*d^6 + 10*a^4*b^6*c^3*d^7 - 10*a^5*b^5*c
^2*d^8 + 5*a^6*b^4*c*d^9 - a^7*b^3*d^10)*x^3 + 10*(a^3*b^7*c^5*d^
5 - 5*a^4*b^6*c^4*d^6 + 10*a^5*b^5*c^3*d^7 - 10*a^6*b^4*c^2*d^8 +
 5*a^7*b^3*c*d^9 - a^8*b^2*d^10)*x^2 + 5*(a^4*b^6*c^5*d^5 - 5*a^5
*b^5*c^4*d^6 + 10*a^6*b^4*c^3*d^7 - 10*a^7*b^3*c^2*d^8 + 5*a^8*b^
2*c*d^9 - a^9*b*d^10)*x)*log(b*x + a))/(b^16*x^5 + 5*a*b^15*x^4 +
```

```
10*a^2*b^14*x^3 + 10*a^3*b^13*x^2 + 5*a^4*b^12*x + a^5*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**6,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.22013, size = 1192, normalized size = 4.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^6,x, algorithm="giac")

[Out] 252*(b^5*c^5*d^5 - 5*a*b^4*c^4*d^6 + 10*a^2*b^3*c^3*d^7 - 10*a^3*
b^2*c^2*d^8 + 5*a^4*b*c*d^9 - a^5*d^10)*ln(abs(b*x + a))/b^11 - 1
/10*(2*b^10*c^10 + 5*a*b^9*c^9*d + 15*a^2*b^8*c^8*d^2 + 60*a^3*b^
7*c^7*d^3 + 420*a^4*b^6*c^6*d^4 - 5754*a^5*b^5*c^5*d^5 + 18270*a^
6*b^4*c^4*d^6 - 27540*a^7*b^3*c^3*d^7 + 22290*a^8*b^2*c^2*d^8 - 9
395*a^9*b*c*d^9 + 1627*a^10*d^10 + 2100*(b^10*c^6*d^4 - 6*a*b^9*c
^5*d^5 + 15*a^2*b^8*c^4*d^6 - 20*a^3*b^7*c^3*d^7 + 15*a^4*b^6*c^2
*d^8 - 6*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 600*(b^10*c^7*d^3 +
7*a*b^9*c^6*d^4 - 63*a^2*b^8*c^5*d^5 + 175*a^3*b^7*c^4*d^6 - 245*
a^4*b^6*c^3*d^7 + 189*a^5*b^5*c^2*d^8 - 77*a^6*b^4*c*d^9 + 13*a^7
*b^3*d^10)*x^3 + 150*(b^10*c^8*d^2 + 4*a*b^9*c^7*d^3 + 28*a^2*b^8
*c^6*d^4 - 308*a^3*b^7*c^5*d^5 + 910*a^4*b^6*c^4*d^6 - 1316*a^5*b
^5*c^3*d^7 + 1036*a^6*b^4*c^2*d^8 - 428*a^7*b^3*c*d^9 + 73*a^8*b^
2*d^10)*x^2 + 25*(b^10*c^9*d + 3*a*b^9*c^8*d^2 + 12*a^2*b^8*c^7*d
^3 + 84*a^3*b^7*c^6*d^4 - 1050*a^4*b^6*c^5*d^5 + 3234*a^5*b^5*c^4
*d^6 - 4788*a^6*b^4*c^3*d^7 + 3828*a^7*b^3*c^2*d^8 - 1599*a^8*b^2
*c*d^9 + 275*a^9*b*d^10)*x)/((b*x + a)^5*b^11) + 1/10*(2*b^24*d^1
0*x^5 + 25*b^24*c*d^9*x^4 - 15*a*b^23*d^10*x^4 + 150*b^24*c^2*d^8
*x^3 - 200*a*b^23*c*d^9*x^3 + 70*a^2*b^22*d^10*x^3 + 600*b^24*c^3
*d^7*x^2 - 1350*a*b^23*c^2*d^8*x^2 + 1050*a^2*b^22*c*d^9*x^2 - 28
0*a^3*b^21*d^10*x^2 + 2100*b^24*c^4*d^6*x - 7200*a*b^23*c^3*d^7*x
 + 9450*a^2*b^22*c^2*d^8*x - 5600*a^3*b^21*c*d^9*x + 1260*a^4*b^2
0*d^10*x)/b^30
```

3.1318 $\int \frac{(c+dx)^{10}}{(a+bx)^7}\,dx$

Optimal. Leaf size=262

$$\frac{10d^9(a+bx)^3(bc-ad)}{3b^{11}}+\frac{45d^8(a+bx)^2(bc-ad)^2}{2b^{11}}+\frac{210d^6(bc-ad)^4\log(a+bx)}{b^{11}}-\frac{252d^5(bc-ad)^5}{b^{11}(a+bx)}-\frac{105d^4(bc-ad)^6}{b^{11}(a+bx)^2}-\frac{40d^3(bc-ad)^7}{b^{11}(a+bx)^3}-\frac{45d^2(bc-ad)^8}{4b^{11}(a+bx)^4}-\frac{2d(bc-ad)^9}{b^{11}(a+bx)^5}-\frac{(bc-ad)^{10}}{6b^{11}(a+bx)^6}+\frac{d^{10}(a+bx)^4}{4b^{11}}+\frac{120d^7x(bc-ad)^3}{b^{10}}$$

```
[Out] (120*d^7*(b*c - a*d)^3*x)/b^10 - (b*c - a*d)^10/(6*b^11*(a + b*x)
^6) - (2*d*(b*c - a*d)^9)/(b^11*(a + b*x)^5) - (45*d^2*(b*c - a*d
)^8)/(4*b^11*(a + b*x)^4) - (40*d^3*(b*c - a*d)^7)/(b^11*(a + b*x
)^3) - (105*d^4*(b*c - a*d)^6)/(b^11*(a + b*x)^2) - (252*d^5*(b*c
 - a*d)^5)/(b^11*(a + b*x)) + (45*d^8*(b*c - a*d)^2*(a + b*x)^2)/
(2*b^11) + (10*d^9*(b*c - a*d)*(a + b*x)^3)/(3*b^11) + (d^10*(a +
 b*x)^4)/(4*b^11) + (210*d^6*(b*c - a*d)^4*Log[a + b*x])/b^11
```

Rubi [A] time = 0.896807, antiderivative size = 262, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{10d^9(a+bx)^3(bc-ad)}{3b^{11}}+\frac{45d^8(a+bx)^2(bc-ad)^2}{2b^{11}}+\frac{210d^6(bc-ad)^4\log(a+bx)}{b^{11}}-\frac{252d^5(bc-ad)^5}{b^{11}(a+bx)}-\frac{105d^4(bc-ad)^6}{b^{11}(a+bx)^2}-\frac{40d^3(bc-ad)^7}{b^{11}(a+bx)^3}-\frac{45d^2(bc-ad)^8}{4b^{11}(a+bx)^4}-\frac{2d(bc-ad)^9}{b^{11}(a+bx)^5}-\frac{(bc-ad)^{10}}{6b^{11}(a+bx)^6}+\frac{d^{10}(a+bx)^4}{4b^{11}}+\frac{120d^7x(bc-ad)^3}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^7,x]
```


```
[Out] (120*d^7*(b*c - a*d)^3*x)/b^10 - (b*c - a*d)^10/(6*b^11*(a + b*x)
^6) - (2*d*(b*c - a*d)^9)/(b^11*(a + b*x)^5) - (45*d^2*(b*c - a*d
)^8)/(4*b^11*(a + b*x)^4) - (40*d^3*(b*c - a*d)^7)/(b^11*(a + b*x
)^3) - (105*d^4*(b*c - a*d)^6)/(b^11*(a + b*x)^2) - (252*d^5*(b*c
 - a*d)^5)/(b^11*(a + b*x)) + (45*d^8*(b*c - a*d)^2*(a + b*x)^2)/
(2*b^11) + (10*d^9*(b*c - a*d)*(a + b*x)^3)/(3*b^11) + (d^10*(a +
 b*x)^4)/(4*b^11) + (210*d^6*(b*c - a*d)^4*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 134.581, size = 243, normalized size = 0.93

$$-\frac{120d^7x(ad-bc)^3}{b^{10}}+\frac{d^{10}(a+bx)^4}{4b^{11}}-\frac{10d^9(a+bx)^3(ad-bc)}{3b^{11}}+\frac{45d^8(a+bx)^2(ad-bc)^2}{2b^{11}}+\frac{210d^6(ad-bc)^4\log(a+bx)}{b^{11}}+\frac{252d^5(ad-bc)^5}{b^{11}(a+bx)}-\frac{105d^4(ad-bc)^6}{b^{11}(a+bx)^2}+\frac{40d^3(ad-bc)^7}{b^{11}(a+bx)^3}-\frac{45d^2(ad-bc)^8}{4b^{11}(a+bx)^4}+\frac{2d(ad-bc)^9}{b^{11}(a+bx)^5}-\frac{(ad-bc)^{10}}{6b^{11}(a+bx)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**7,x)
```

```
[Out] -120*d**7*x*(a*d - b*c)**3/b**10 + d**10*(a + b*x)**4/(4*b**11) -
 10*d**9*(a + b*x)**3*(a*d - b*c)/(3*b**11) + 45*d**8*(a + b*x)**
2*(a*d - b*c)**2/(2*b**11) + 210*d**6*(a*d - b*c)**4*log(a + b*x)
/b**11 + 252*d**5*(a*d - b*c)**5/(b**11*(a + b*x)) - 105*d**4*(a*
d - b*c)**6/(b**11*(a + b*x)**2) + 40*d**3*(a*d - b*c)**7/(b**11*
(a + b*x)**3) - 45*d**2*(a*d - b*c)**8/(4*b**11*(a + b*x)**4) + 2
*d*(a*d - b*c)**9/(b**11*(a + b*x)**5) - (a*d - b*c)**10/(6*b**11
*(a + b*x)**6)
```

Mathematica [A] time = 0.387859, size = 265, normalized size = 1.01

$$\frac{6b^2d^8x^2\left(28a^2d^2-70abcd+45b^2c^2\right)+12bd^7x\left(-84a^3d^3+280a^2bcd^2-315ab^2c^2d+120b^3c^3\right)+4b^3d^9x^3(10bc-7ad)+25\ldots}{12\ldots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^7,x]
```

```
[Out] (12*b*d^7*(120*b^3*c^3 - 315*a*b^2*c^2*d + 280*a^2*b*c*d^2 - 84*a
^3*d^3)*x + 6*b^2*d^8*(45*b^2*c^2 - 70*a*b*c*d + 28*a^2*d^2)*x^2
+ 4*b^3*d^9*(10*b*c - 7*a*d)*x^3 + 3*b^4*d^10*x^4 - (2*(b*c - a*d
)^10)/(a + b*x)^6 + (24*d*(-(b*c) + a*d)^9)/(a + b*x)^5 - (135*d^
2*(b*c - a*d)^8)/(a + b*x)^4 + (480*d^3*(-(b*c) + a*d)^7)/(a + b*
x)^3 - (1260*d^4*(b*c - a*d)^6)/(a + b*x)^2 + (3024*d^5*(-(b*c) +
 a*d)^5)/(a + b*x) + 2520*d^6*(b*c - a*d)^4*Log[a + b*x])/(12*b^1
1)
```

Maple [B] time = 0.028, size = 1222, normalized size = 4.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^7,x)
```

```
[Out] 2/b^11*d^10/(b*x+a)^5*a^9-2/b^2*d/(b*x+a)^5*c^9+210/b^11*d^10*ln(
b*x+a)*a^4+210/b^7*d^6*ln(b*x+a)*c^4+45/2*d^8/b^7*x^2*c^2-84*d^10
/b^10*a^3*x+120*d^7/b^7*c^3*x-7/3*d^10/b^8*x^3*a+10/3*d^9/b^7*x^3
*c+14*d^10/b^9*x^2*a^2-105/b^5*d^4/(b*x+a)^2*c^6+252/b^11*d^10/(b
*x+a)*a^5-252/b^6*d^5/(b*x+a)*c^5-105/b^11*d^10/(b*x+a)^2*a^6-1/6
/b^11/(b*x+a)^6*a^10*d^10-45/4/b^11*d^10/(b*x+a)^4*a^8-45/4/b^3*d
^2/(b*x+a)^4*c^8+40/b^11*d^10/(b*x+a)^3*a^7-40/b^4*d^3/(b*x+a)^3*
c^7-1260/b^10*d^9/(b*x+a)*a^4*c+2520/b^9*d^8/(b*x+a)*a^3*c^2-2520
/b^8*d^7/(b*x+a)*a^2*c^3+1260/b^7*d^6/(b*x+a)*a*c^4-840/b^10*d^9*
ln(b*x+a)*a^3*c+1260/b^9*d^8*ln(b*x+a)*a^2*c^2-840/b^8*d^7*ln(b*x
+a)*a*c^3+5/3/b^10/(b*x+a)^6*a^9*c*d^9-15/2/b^9/(b*x+a)^6*a^8*c^2
*d^8+20/b^8/(b*x+a)^6*a^7*c^3*d^7-35/b^7/(b*x+a)^6*a^6*c^4*d^6+42
/b^6/(b*x+a)^6*a^5*c^5*d^5-35/b^5/(b*x+a)^6*a^4*c^6*d^4+20/b^4/(b
*x+a)^6*a^3*c^7*d^3-15/2/b^3/(b*x+a)^6*a^2*c^8*d^2+5/3/b^2/(b*x+a
)^6*a*c^9*d+90/b^10*d^9/(b*x+a)^4*a^7*c-315/b^9*d^8/(b*x+a)^4*a^6
*c^2+630/b^8*d^7/(b*x+a)^4*a^5*c^3-1575/2/b^7*d^6/(b*x+a)^4*a^4*c
^4+630/b^6*d^5/(b*x+a)^4*a^3*c^5-315/b^5*d^4/(b*x+a)^4*a^2*c^6+90
/b^4*d^3/(b*x+a)^4*a*c^7+168/b^5*d^4/(b*x+a)^5*a^3*c^6-72/b^4*d^3
/(b*x+a)^5*a^2*c^7+18/b^3*d^2/(b*x+a)^5*a*c^8-18/b^10*d^9/(b*x+a)
^5*a^8*c+72/b^9*d^8/(b*x+a)^5*a^7*c^2-168/b^8*d^7/(b*x+a)^5*a^6*c
^3+252/b^7*d^6/(b*x+a)^5*a^5*c^4-252/b^6*d^5/(b*x+a)^5*a^4*c^5-35
*d^9/b^8*x^2*a*c+280*d^9/b^9*a^2*c*x-315*d^8/b^8*a*c^2*x-1400/b^8
*d^7/(b*x+a)^3*a^4*c^3+1400/b^7*d^6/(b*x+a)^3*a^3*c^4-840/b^6*d^5
/(b*x+a)^3*a^2*c^5+280/b^5*d^4/(b*x+a)^3*a*c^6+630/b^10*d^9/(b*x+
a)^2*a^5*c-1575/b^9*d^8/(b*x+a)^2*a^4*c^2+2100/b^8*d^7/(b*x+a)^2*
a^3*c^3-1575/b^7*d^6/(b*x+a)^2*a^2*c^4+630/b^6*d^5/(b*x+a)^2*a*c^
5-280/b^10*d^9/(b*x+a)^3*a^6*c+840/b^9*d^8/(b*x+a)^3*a^5*c^2+1/4*
d^10/b^7*x^4-1/6/b/(b*x+a)^6*c^10
```

<u>Maxima</u> [A] time = 1.48777, size = 1249, normalized size = 4.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^7,x, algorithm="maxima")
```

```
[Out] -1/12*(2*b^10*c^10 + 4*a*b^9*c^9*d + 9*a^2*b^8*c^8*d^2 + 24*a^3*b
^7*c^7*d^3 + 84*a^4*b^6*c^6*d^4 + 504*a^5*b^5*c^5*d^5 - 6174*a^6*
b^4*c^4*d^6 + 16056*a^7*b^3*c^3*d^7 - 18414*a^8*b^2*c^2*d^8 + 100
36*a^9*b*c*d^9 - 2131*a^10*d^10 + 3024*(b^10*c^5*d^5 - 5*a*b^9*c^
4*d^6 + 10*a^2*b^8*c^3*d^7 - 10*a^3*b^7*c^2*d^8 + 5*a^4*b^6*c*d^9
 - a^5*b^5*d^10)*x^5 + 1260*(b^10*c^6*d^4 + 6*a*b^9*c^5*d^5 - 45*
a^2*b^8*c^4*d^6 + 100*a^3*b^7*c^3*d^7 - 105*a^4*b^6*c^2*d^8 + 54*
a^5*b^5*c*d^9 - 11*a^6*b^4*d^10)*x^4 + 240*(2*b^10*c^7*d^3 + 7*a*
b^9*c^6*d^4 + 42*a^2*b^8*c^5*d^5 - 385*a^3*b^7*c^4*d^6 + 910*a^4*
b^6*c^3*d^7 - 987*a^5*b^5*c^2*d^8 + 518*a^6*b^4*c*d^9 - 107*a^7*b
^3*d^10)*x^3 + 45*(3*b^10*c^8*d^2 + 8*a*b^9*c^7*d^3 + 28*a^2*b^8*
c^6*d^4 + 168*a^3*b^7*c^5*d^5 - 1750*a^4*b^6*c^4*d^6 + 4312*a^5*b
```

```
^5*c^3*d^7 - 4788*a^6*b^4*c^2*d^8 + 2552*a^7*b^3*c*d^9 - 533*a^8*
b^2*d^10)*x^2 + 6*(4*b^10*c^9*d + 9*a*b^9*c^8*d^2 + 24*a^2*b^8*c^
7*d^3 + 84*a^3*b^7*c^6*d^4 + 504*a^4*b^6*c^5*d^5 - 5754*a^5*b^5*c
^4*d^6 + 14616*a^6*b^4*c^3*d^7 - 16524*a^7*b^3*c^2*d^8 + 8916*a^8
*b^2*c*d^9 - 1879*a^9*b*d^10)*x)/(b^17*x^6 + 6*a*b^16*x^5 + 15*a^
2*b^15*x^4 + 20*a^3*b^14*x^3 + 15*a^4*b^13*x^2 + 6*a^5*b^12*x + a
^6*b^11) + 1/12*(3*b^3*d^10*x^4 + 4*(10*b^3*c*d^9 - 7*a*b^2*d^10)
*x^3 + 6*(45*b^3*c^2*d^8 - 70*a*b^2*c*d^9 + 28*a^2*b*d^10)*x^2 +
12*(120*b^3*c^3*d^7 - 315*a*b^2*c^2*d^8 + 280*a^2*b*c*d^9 - 84*a^
3*d^10)*x)/b^10 + 210*(b^4*c^4*d^6 - 4*a*b^3*c^3*d^7 + 6*a^2*b^2*
c^2*d^8 - 4*a^3*b*c*d^9 + a^4*d^10)*log(b*x + a)/b^11
```

Fricas [A] time = 0.208362, size = 1871, normalized size = 7.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^7,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^10*d^10*x^10 - 2*b^10*c^10 - 4*a*b^9*c^9*d - 9*a^2*b^8*
c^8*d^2 - 24*a^3*b^7*c^7*d^3 - 84*a^4*b^6*c^6*d^4 - 504*a^5*b^5*c
^5*d^5 + 6174*a^6*b^4*c^4*d^6 - 16056*a^7*b^3*c^3*d^7 + 18414*a^8
*b^2*c^2*d^8 - 10036*a^9*b*c*d^9 + 2131*a^10*d^10 + 10*(4*b^10*c*
d^9 - a*b^9*d^10)*x^9 + 45*(6*b^10*c^2*d^8 - 4*a*b^9*c*d^9 + a^2*
b^8*d^10)*x^8 + 360*(4*b^10*c^3*d^7 - 6*a*b^9*c^2*d^8 + 4*a^2*b^8
*c*d^9 - a^3*b^7*d^10)*x^7 + (8640*a*b^9*c^3*d^7 - 18630*a^2*b^8*
c^2*d^8 + 14660*a^3*b^7*c*d^9 - 4043*a^4*b^6*d^10)*x^6 - 6*(504*b
^10*c^5*d^5 - 2520*a*b^9*c^4*d^6 + 1440*a^2*b^8*c^3*d^7 + 3510*a^
3*b^7*c^2*d^8 - 4580*a^4*b^6*c*d^9 + 1523*a^5*b^5*d^10)*x^5 - 15*
(84*b^10*c^6*d^4 + 504*a*b^9*c^5*d^5 - 3780*a^2*b^8*c^4*d^6 + 648
0*a^3*b^7*c^3*d^7 - 4050*a^4*b^6*c^2*d^8 + 460*a^5*b^5*c*d^9 + 26
3*a^6*b^4*d^10)*x^4 - 20*(24*b^10*c^7*d^3 + 84*a*b^9*c^6*d^4 + 50
4*a^2*b^8*c^5*d^5 - 4620*a^3*b^7*c^4*d^6 + 9840*a^4*b^6*c^3*d^7 -
 9090*a^5*b^5*c^2*d^8 + 3820*a^6*b^4*c*d^9 - 577*a^7*b^3*d^10)*x^
3 - 15*(9*b^10*c^8*d^2 + 24*a*b^9*c^7*d^3 + 84*a^2*b^8*c^6*d^4 +
504*a^3*b^7*c^5*d^5 - 5250*a^4*b^6*c^4*d^6 + 12360*a^5*b^5*c^3*d^
7 - 12870*a^6*b^4*c^2*d^8 + 6340*a^7*b^3*c*d^9 - 1207*a^8*b^2*d^1
0)*x^2 - 6*(4*b^10*c^9*d + 9*a*b^9*c^8*d^2 + 24*a^2*b^8*c^7*d^3 +
 84*a^3*b^7*c^6*d^4 + 504*a^4*b^6*c^5*d^5 - 5754*a^5*b^5*c^4*d^6
+ 14376*a^6*b^4*c^3*d^7 - 15894*a^7*b^3*c^2*d^8 + 8356*a^8*b^2*c*
d^9 - 1711*a^9*b*d^10)*x + 2520*(a^6*b^4*c^4*d^6 - 4*a^7*b^3*c^3*
d^7 + 6*a^8*b^2*c^2*d^8 - 4*a^9*b*c*d^9 + a^10*d^10 + (b^10*c^4*d
^6 - 4*a*b^9*c^3*d^7 + 6*a^2*b^8*c^2*d^8 - 4*a^3*b^7*c*d^9 + a^4*
b^6*d^10)*x^6 + 6*(a*b^9*c^4*d^6 - 4*a^2*b^8*c^3*d^7 + 6*a^3*b^7*
c^2*d^8 - 4*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 15*(a^2*b^8*c^4*d
^6 - 4*a^3*b^7*c^3*d^7 + 6*a^4*b^6*c^2*d^8 - 4*a^5*b^5*c*d^9 + a^
6*b^4*d^10)*x^4 + 20*(a^3*b^7*c^4*d^6 - 4*a^4*b^6*c^3*d^7 + 6*a^5
*b^5*c^2*d^8 - 4*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 15*(a^4*b^6*
c^4*d^6 - 4*a^5*b^5*c^3*d^7 + 6*a^6*b^4*c^2*d^8 - 4*a^7*b^3*c*d^9
 + a^8*b^2*d^10)*x^2 + 6*(a^5*b^5*c^4*d^6 - 4*a^6*b^4*c^3*d^7 + 6
*a^7*b^3*c^2*d^8 - 4*a^8*b^2*c*d^9 + a^9*b*d^10)*x)*log(b*x + a))
```

```
/(b^17*x^6 + 6*a*b^16*x^5 + 15*a^2*b^15*x^4 + 20*a^3*b^14*x^3 + 1
5*a^4*b^13*x^2 + 6*a^5*b^12*x + a^6*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**7,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226644, size = 1185, normalized size = 4.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^7,x, algorithm="giac")
```

```
[Out] 210*(b^4*c^4*d^6 - 4*a*b^3*c^3*d^7 + 6*a^2*b^2*c^2*d^8 - 4*a^3*b*
c*d^9 + a^4*d^10)*ln(abs(b*x + a))/b^11 - 1/12*(2*b^10*c^10 + 4*a
*b^9*c^9*d + 9*a^2*b^8*c^8*d^2 + 24*a^3*b^7*c^7*d^3 + 84*a^4*b^6*
c^6*d^4 + 504*a^5*b^5*c^5*d^5 - 6174*a^6*b^4*c^4*d^6 + 16056*a^7*
b^3*c^3*d^7 - 18414*a^8*b^2*c^2*d^8 + 10036*a^9*b*c*d^9 - 2131*a^
10*d^10 + 3024*(b^10*c^5*d^5 - 5*a*b^9*c^4*d^6 + 10*a^2*b^8*c^3*d
^7 - 10*a^3*b^7*c^2*d^8 + 5*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x^5 + 1
260*(b^10*c^6*d^4 + 6*a*b^9*c^5*d^5 - 45*a^2*b^8*c^4*d^6 + 100*a^
3*b^7*c^3*d^7 - 105*a^4*b^6*c^2*d^8 + 54*a^5*b^5*c*d^9 - 11*a^6*b
^4*d^10)*x^4 + 240*(2*b^10*c^7*d^3 + 7*a*b^9*c^6*d^4 + 42*a^2*b^8
*c^5*d^5 - 385*a^3*b^7*c^4*d^6 + 910*a^4*b^6*c^3*d^7 - 987*a^5*b^
5*c^2*d^8 + 518*a^6*b^4*c*d^9 - 107*a^7*b^3*d^10)*x^3 + 45*(3*b^1
0*c^8*d^2 + 8*a*b^9*c^7*d^3 + 28*a^2*b^8*c^6*d^4 + 168*a^3*b^7*c^
5*d^5 - 1750*a^4*b^6*c^4*d^6 + 4312*a^5*b^5*c^3*d^7 - 4788*a^6*b^
4*c^2*d^8 + 2552*a^7*b^3*c*d^9 - 533*a^8*b^2*d^10)*x^2 + 6*(4*b^1
0*c^9*d + 9*a*b^9*c^8*d^2 + 24*a^2*b^8*c^7*d^3 + 84*a^3*b^7*c^6*d
^4 + 504*a^4*b^6*c^5*d^5 - 5754*a^5*b^5*c^4*d^6 + 14616*a^6*b^4*c
^3*d^7 - 16524*a^7*b^3*c^2*d^8 + 8916*a^8*b^2*c*d^9 - 1879*a^9*b*
d^10)*x)/((b*x + a)^6*b^11) + 1/12*(3*b^21*d^10*x^4 + 40*b^21*c*d
^9*x^3 - 28*a*b^20*d^10*x^3 + 270*b^21*c^2*d^8*x^2 - 420*a*b^20*c
*d^9*x^2 + 168*a^2*b^19*d^10*x^2 + 1440*b^21*c^3*d^7*x - 3780*a*b
^20*c^2*d^8*x + 3360*a^2*b^19*c*d^9*x - 1008*a^3*b^18*d^10*x)/b^2
8
```

3.1319 $\int \frac{(c+dx)^{10}}{(a+bx)^8}\,dx$

Optimal. Leaf size=258

$$\frac{5d^9(a+bx)^2(bc-ad)}{b^{11}}+\frac{120d^7(bc-ad)^3\log(a+bx)}{b^{11}}-\frac{210d^6(bc-ad)^4}{b^{11}(a+bx)}-\frac{126d^5(bc-ad)^5}{b^{11}(a+bx)^2}-\frac{70d^4(bc-ad)^6}{b^{11}(a+bx)^3}-\frac{30d^3(bc-ad)^7}{b^{11}(a+bx)^4}-\frac{9d^2(bc-ad)^8}{b^{11}(a+bx)^5}-\frac{5d(bc-ad)^9}{3b^{11}(a+bx)^6}-\frac{(bc-ad)^{10}}{7b^{11}(a+bx)^7}+\frac{d^{10}(a+bx)^3}{3b^{11}}+\frac{45d^8x(bc-ad)^2}{b^{10}}$$

```
[Out] (45*d^8*(b*c - a*d)^2*x)/b^10 - (b*c - a*d)^10/(7*b^11*(a + b*x)^
7) - (5*d*(b*c - a*d)^9)/(3*b^11*(a + b*x)^6) - (9*d^2*(b*c - a*d
)^8)/(b^11*(a + b*x)^5) - (30*d^3*(b*c - a*d)^7)/(b^11*(a + b*x)^
4) - (70*d^4*(b*c - a*d)^6)/(b^11*(a + b*x)^3) - (126*d^5*(b*c -
a*d)^5)/(b^11*(a + b*x)^2) - (210*d^6*(b*c - a*d)^4)/(b^11*(a + b
*x)) + (5*d^9*(b*c - a*d)*(a + b*x)^2)/b^11 + (d^10*(a + b*x)^3)/
(3*b^11) + (120*d^7*(b*c - a*d)^3*Log[a + b*x])/b^11
```

Rubi [A] time = 0.8616, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{5d^9(a+bx)^2(bc-ad)}{b^{11}}+\frac{120d^7(bc-ad)^3\log(a+bx)}{b^{11}}-\frac{210d^6(bc-ad)^4}{b^{11}(a+bx)}-\frac{126d^5(bc-ad)^5}{b^{11}(a+bx)^2}-\frac{70d^4(bc-ad)^6}{b^{11}(a+bx)^3}-\frac{30d^3(bc-ad)^7}{b^{11}(a+bx)^4}-\frac{9d^2(bc-ad)^8}{b^{11}(a+bx)^5}-\frac{5d(bc-ad)^9}{3b^{11}(a+bx)^6}-\frac{(bc-ad)^{10}}{7b^{11}(a+bx)^7}+\frac{d^{10}(a+bx)^3}{3b^{11}}+\frac{45d^8x(bc-ad)^2}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^8,x]
```

```
[Out] (45*d^8*(b*c - a*d)^2*x)/b^10 - (b*c - a*d)^10/(7*b^11*(a + b*x)^
7) - (5*d*(b*c - a*d)^9)/(3*b^11*(a + b*x)^6) - (9*d^2*(b*c - a*d
)^8)/(b^11*(a + b*x)^5) - (30*d^3*(b*c - a*d)^7)/(b^11*(a + b*x)^
4) - (70*d^4*(b*c - a*d)^6)/(b^11*(a + b*x)^3) - (126*d^5*(b*c -
a*d)^5)/(b^11*(a + b*x)^2) - (210*d^6*(b*c - a*d)^4)/(b^11*(a + b
*x)) + (5*d^9*(b*c - a*d)*(a + b*x)^2)/b^11 + (d^10*(a + b*x)^3)/
(3*b^11) + (120*d^7*(b*c - a*d)^3*Log[a + b*x])/b^11
```

Rubi in Sympy [A] time = 122.667, size = 240, normalized size = 0.93

$$\frac{45d^8x(ad-bc)^2}{b^{10}}+\frac{d^{10}(a+bx)^3}{3b^{11}}-\frac{5d^9(a+bx)^2(ad-bc)}{b^{11}}-\frac{120d^7(ad-bc)^3\log(a+bx)}{b^{11}}-\frac{210d^6(ad-bc)^4}{b^{11}(a+bx)}+\frac{126d^5(ad-bc)^5}{b^{11}(a+bx)^2}-\frac{70d^4(ad-bc)^6}{b^{11}(a+bx)^3}+\frac{30d^3(ad-bc)^7}{b^{11}(a+bx)^4}-\frac{9d^2(ad-bc)^8}{b^{11}(a+bx)^5}+\frac{5d(ad-bc)^9}{3b^{11}(a+bx)^6}-\frac{(ad-bc)^{10}}{7b^{11}(a+bx)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**8,x)
```

```
[Out] 45*d**8*x*(a*d - b*c)**2/b**10 + d**10*(a + b*x)**3/(3*b**11) - 5
*d**9*(a + b*x)**2*(a*d - b*c)/b**11 - 120*d**7*(a*d - b*c)**3*lo
g(a + b*x)/b**11 - 210*d**6*(a*d - b*c)**4/(b**11*(a + b*x)) + 12
6*d**5*(a*d - b*c)**5/(b**11*(a + b*x)**2) - 70*d**4*(a*d - b*c)*
*6/(b**11*(a + b*x)**3) + 30*d**3*(a*d - b*c)**7/(b**11*(a + b*x)
**4) - 9*d**2*(a*d - b*c)**8/(b**11*(a + b*x)**5) + 5*d*(a*d - b*
c)**9/(3*b**11*(a + b*x)**6) - (a*d - b*c)**10/(7*b**11*(a + b*x)
**7)
```

Mathematica [A] time = 0.439378, size = 239, normalized size = 0.93

$$\frac{21bd^8x\left(36a^2d^2-80abcd+45b^2c^2\right)+21b^2d^9x^2(5bc-4ad)+2520d^7(bc-ad)^3\log(a+bx)-\frac{4410d^6(bc-ad)^4}{a+bx}+\frac{2646d^5(ad-bc)^5}{(a+bx)^2}}{21b^{11}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^8,x]
```

```
[Out] (21*b*d^8*(45*b^2*c^2 - 80*a*b*c*d + 36*a^2*d^2)*x + 21*b^2*d^9*(
5*b*c - 4*a*d)*x^2 + 7*b^3*d^10*x^3 - (3*(b*c - a*d)^10)/(a + b*x
)^7 + (35*d*(-(b*c) + a*d)^9)/(a + b*x)^6 - (189*d^2*(b*c - a*d)^
8)/(a + b*x)^5 + (630*d^3*(-(b*c) + a*d)^7)/(a + b*x)^4 - (1470*d
^4*(b*c - a*d)^6)/(a + b*x)^3 + (2646*d^5*(-(b*c) + a*d)^5)/(a +
b*x)^2 - (4410*d^6*(b*c - a*d)^4)/(a + b*x) + 2520*d^7*(b*c - a*d
)^3*Log[a + b*x])/(21*b^11)
```

Maple [B] time = 0.029, size = 1241, normalized size = 4.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^8,x)
```

```
[Out] -1/7/b^11/(b*x+a)^7*a^10*d^10+30/b^11*d^10/(b*x+a)^4*a^7-30/b^4*d
^3/(b*x+a)^4*c^7-70/b^11*d^10/(b*x+a)^3*a^6-70/b^5*d^4/(b*x+a)^3*
c^6+126/b^11*d^10/(b*x+a)^2*a^5-126/b^6*d^5/(b*x+a)^2*c^5-210/b^1
1*d^10/(b*x+a)*a^4-210/b^7*d^6/(b*x+a)*c^4-4*d^10/b^9*x^2*a+5*d^9
/b^8*x^2*c+36*d^10/b^10*a^2*x+45*d^8/b^8*c^2*x-9/b^11*d^10/(b*x+a
)^5*a^8-9/b^3*d^2/(b*x+a)^5*c^8-120/b^11*d^10*ln(b*x+a)*a^3+120/b
^8*d^7*ln(b*x+a)*c^3+5/3/b^11*d^10/(b*x+a)^6*a^9-5/3/b^2*d/(b*x+a
)^6*c^9+60/b^9*d^8/(b*x+a)^6*a^7*c^2-15/b^10*d^9/(b*x+a)^6*a^8*c-
252/b^5*d^4/(b*x+a)^5*a^2*c^6-80*d^9/b^9*a*c*x+72/b^10*d^9/(b*x+a
)^5*a^7*c-252/b^9*d^8/(b*x+a)^5*a^6*c^2+840/b^10*d^9/(b*x+a)*a^3*
c-1260/b^9*d^8/(b*x+a)*a^2*c^2+840/b^8*d^7/(b*x+a)*a*c^3+630/b^7*
d^6/(b*x+a)^2*a*c^4-630/b^10*d^9/(b*x+a)^2*a^4*c+1260/b^9*d^8/(b*
x+a)^2*a^3*c^2-1260/b^8*d^7/(b*x+a)^2*a^2*c^3+420/b^6*d^5/(b*x+a)
^3*a*c^5+120/7/b^4/(b*x+a)^7*a^3*c^7*d^3-45/7/b^3/(b*x+a)^7*a^2*c
^8*d^2+120/7/b^8/(b*x+a)^7*a^7*c^3*d^7-30/b^7/(b*x+a)^7*a^6*c^4*d
^6+36/b^6/(b*x+a)^7*a^5*c^5*d^5-30/b^5/(b*x+a)^7*a^4*c^6*d^4+360/
b^10*d^9*ln(b*x+a)*a^2*c-360/b^9*d^8*ln(b*x+a)*a*c^2+72/b^4*d^3/(
b*x+a)^5*a*c^7+504/b^8*d^7/(b*x+a)^5*a^5*c^3-630/b^7*d^6/(b*x+a)^
5*a^4*c^4+504/b^6*d^5/(b*x+a)^5*a^3*c^5-140/b^8*d^7/(b*x+a)^6*a^6
*c^3+210/b^7*d^6/(b*x+a)^6*a^5*c^4-210/b^6*d^5/(b*x+a)^6*a^4*c^5+
140/b^5*d^4/(b*x+a)^6*a^3*c^6-60/b^4*d^3/(b*x+a)^6*a^2*c^7+15/b^3
*d^2/(b*x+a)^6*a*c^8+10/7/b^10/(b*x+a)^7*a^9*c*d^9-45/7/b^9/(b*x+
a)^7*a^8*c^2*d^8+1/3*d^10/b^8*x^3-1/7/b/(b*x+a)^7*c^10+10/7/b^2/(
b*x+a)^7*a*c^9*d-210/b^10*d^9/(b*x+a)^4*a^6*c+630/b^9*d^8/(b*x+a)
^4*a^5*c^2-1050/b^8*d^7/(b*x+a)^4*a^4*c^3+1050/b^7*d^6/(b*x+a)^4*
a^3*c^4-630/b^6*d^5/(b*x+a)^4*a^2*c^5+210/b^5*d^4/(b*x+a)^4*a*c^6
+420/b^10*d^9/(b*x+a)^3*a^5*c-1050/b^9*d^8/(b*x+a)^3*a^4*c^2+1400
/b^8*d^7/(b*x+a)^3*a^3*c^3-1050/b^7*d^6/(b*x+a)^3*a^2*c^4
```

Maxima [A] time = 1.48837, size = 1261, normalized size = 4.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^8,x, algorithm="maxima")
```

```
[Out] -1/21*(3*b^10*c^10 + 5*a*b^9*c^9*d + 9*a^2*b^8*c^8*d^2 + 18*a^3*b
^7*c^7*d^3 + 42*a^4*b^6*c^6*d^4 + 126*a^5*b^5*c^5*d^5 + 630*a^6*b
^4*c^4*d^6 - 6534*a^7*b^3*c^3*d^7 + 12987*a^8*b^2*c^2*d^8 - 10047
*a^9*b*c*d^9 + 2761*a^10*d^10 + 4410*(b^10*c^4*d^6 - 4*a*b^9*c^3*
d^7 + 6*a^2*b^8*c^2*d^8 - 4*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 2
646*(b^10*c^5*d^5 + 5*a*b^9*c^4*d^6 - 30*a^2*b^8*c^3*d^7 + 50*a^3
*b^7*c^2*d^8 - 35*a^4*b^6*c*d^9 + 9*a^5*b^5*d^10)*x^5 + 1470*(b^1
0*c^6*d^4 + 3*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4*d^6 - 110*a^3*b^7*c^
3*d^7 + 195*a^4*b^6*c^2*d^8 - 141*a^5*b^5*c*d^9 + 37*a^6*b^4*d^10
)*x^4 + 210*(3*b^10*c^7*d^3 + 7*a*b^9*c^6*d^4 + 21*a^2*b^8*c^5*d^
5 + 105*a^3*b^7*c^4*d^6 - 875*a^4*b^6*c^3*d^7 + 1617*a^5*b^5*c^2*
d^8 - 1197*a^6*b^4*c*d^9 + 319*a^7*b^3*d^10)*x^3 + 63*(3*b^10*c^8
```

```
*d^2 + 6*a*b^9*c^7*d^3 + 14*a^2*b^8*c^6*d^4 + 42*a^3*b^7*c^5*d^5
+ 210*a^4*b^6*c^4*d^6 - 1918*a^5*b^5*c^3*d^7 + 3654*a^6*b^4*c^2*d
^8 - 2754*a^7*b^3*c*d^9 + 743*a^8*b^2*d^10)*x^2 + 7*(5*b^10*c^9*d
 + 9*a*b^9*c^8*d^2 + 18*a^2*b^8*c^7*d^3 + 42*a^3*b^7*c^6*d^4 + 12
6*a^4*b^6*c^5*d^5 + 630*a^5*b^5*c^4*d^6 - 6174*a^6*b^4*c^3*d^7 +
12042*a^7*b^3*c^2*d^8 - 9207*a^8*b^2*c*d^9 + 2509*a^9*b*d^10)*x)/
(b^18*x^7 + 7*a*b^17*x^6 + 21*a^2*b^16*x^5 + 35*a^3*b^15*x^4 + 35
*a^4*b^14*x^3 + 21*a^5*b^13*x^2 + 7*a^6*b^12*x + a^7*b^11) + 1/3*
(b^2*d^10*x^3 + 3*(5*b^2*c*d^9 - 4*a*b*d^10)*x^2 + 3*(45*b^2*c^2*
d^8 - 80*a*b*c*d^9 + 36*a^2*d^10)*x)/b^10 + 120*(b^3*c^3*d^7 - 3*
a*b^2*c^2*d^8 + 3*a^2*b*c*d^9 - a^3*d^10)*log(b*x + a)/b^11
```

Fricas [A] time = 0.224649, size = 1839, normalized size = 7.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^8,x, algorithm="fricas")
```

```
[Out] 1/21*(7*b^10*d^10*x^10 - 3*b^10*c^10 - 5*a*b^9*c^9*d - 9*a^2*b^8*
c^8*d^2 - 18*a^3*b^7*c^7*d^3 - 42*a^4*b^6*c^6*d^4 - 126*a^5*b^5*c
^5*d^5 - 630*a^6*b^4*c^4*d^6 + 6534*a^7*b^3*c^3*d^7 - 12987*a^8*b
^2*c^2*d^8 + 10047*a^9*b*c*d^9 - 2761*a^10*d^10 + 35*(3*b^10*c*d^
9 - a*b^9*d^10)*x^9 + 315*(3*b^10*c^2*d^8 - 3*a*b^9*c*d^9 + a^2*b
^8*d^10)*x^8 + 49*(135*a*b^9*c^2*d^8 - 195*a^2*b^8*c*d^9 + 77*a^3
*b^7*d^10)*x^7 - 49*(90*b^10*c^4*d^6 - 360*a*b^9*c^3*d^7 + 135*a^
2*b^8*c^2*d^8 + 285*a^3*b^7*c*d^9 - 179*a^4*b^6*d^10)*x^6 - 147*(
18*b^10*c^5*d^5 + 90*a*b^9*c^4*d^6 - 540*a^2*b^8*c^3*d^7 + 675*a^
3*b^7*c^2*d^8 - 255*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 - 245*(6*b^
10*c^6*d^4 + 18*a*b^9*c^5*d^5 + 90*a^2*b^8*c^4*d^6 - 660*a^3*b^7*
c^3*d^7 + 1035*a^4*b^6*c^2*d^8 - 615*a^5*b^5*c*d^9 + 121*a^6*b^4*
d^10)*x^4 - 35*(18*b^10*c^7*d^3 + 42*a*b^9*c^6*d^4 + 126*a^2*b^8*
c^5*d^5 + 630*a^3*b^7*c^4*d^6 - 5250*a^4*b^6*c^3*d^7 + 9135*a^5*b
^5*c^2*d^8 - 6195*a^6*b^4*c*d^9 + 1477*a^7*b^3*d^10)*x^3 - 21*(9*
b^10*c^8*d^2 + 18*a*b^9*c^7*d^3 + 42*a^2*b^8*c^6*d^4 + 126*a^3*b^
7*c^5*d^5 + 630*a^4*b^6*c^4*d^6 - 5754*a^5*b^5*c^3*d^7 + 10647*a^
6*b^4*c^2*d^8 - 7707*a^7*b^3*c*d^9 + 1981*a^8*b^2*d^10)*x^2 - 7*(
5*b^10*c^9*d + 9*a*b^9*c^8*d^2 + 18*a^2*b^8*c^7*d^3 + 42*a^3*b^7*
c^6*d^4 + 126*a^4*b^6*c^5*d^5 + 630*a^5*b^5*c^4*d^6 - 6174*a^6*b^
4*c^3*d^7 + 11907*a^7*b^3*c^2*d^8 - 8967*a^8*b^2*c*d^9 + 2401*a^9
*b*d^10)*x + 2520*(a^7*b^3*c^3*d^7 - 3*a^8*b^2*c^2*d^8 + 3*a^9*b*
c*d^9 - a^10*d^10 + (b^10*c^3*d^7 - 3*a*b^9*c^2*d^8 + 3*a^2*b^8*c
*d^9 - a^3*b^7*d^10)*x^7 + 7*(a*b^9*c^3*d^7 - 3*a^2*b^8*c^2*d^8 +
 3*a^3*b^7*c*d^9 - a^4*b^6*d^10)*x^6 + 21*(a^2*b^8*c^3*d^7 - 3*a^
3*b^7*c^2*d^8 + 3*a^4*b^6*c*d^9 - a^5*b^5*d^10)*x^5 + 35*(a^3*b^7
*c^3*d^7 - 3*a^4*b^6*c^2*d^8 + 3*a^5*b^5*c*d^9 - a^6*b^4*d^10)*x^
4 + 35*(a^4*b^6*c^3*d^7 - 3*a^5*b^5*c^2*d^8 + 3*a^6*b^4*c*d^9 - a
^7*b^3*d^10)*x^3 + 21*(a^5*b^5*c^3*d^7 - 3*a^6*b^4*c^2*d^8 + 3*a^
7*b^3*c*d^9 - a^8*b^2*d^10)*x^2 + 7*(a^6*b^4*c^3*d^7 - 3*a^7*b^3*
c^2*d^8 + 3*a^8*b^2*c*d^9 - a^9*b*d^10)*x)*log(b*x + a))/(b^18*x^
7 + 7*a*b^17*x^6 + 21*a^2*b^16*x^5 + 35*a^3*b^15*x^4 + 35*a^4*b^1
```

```
4*x^3 + 21*a^5*b^13*x^2 + 7*a^6*b^12*x + a^7*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**8,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.223096, size = 1177, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^8,x, algorithm="giac")

[Out] 120*(b^3*c^3*d^7 - 3*a*b^2*c^2*d^8 + 3*a^2*b*c*d^9 - a^3*d^10)*ln
(abs(b*x + a))/b^11 - 1/21*(3*b^10*c^10 + 5*a*b^9*c^9*d + 9*a^2*b
^8*c^8*d^2 + 18*a^3*b^7*c^7*d^3 + 42*a^4*b^6*c^6*d^4 + 126*a^5*b^
5*c^5*d^5 + 630*a^6*b^4*c^4*d^6 - 6534*a^7*b^3*c^3*d^7 + 12987*a^
8*b^2*c^2*d^8 - 10047*a^9*b*c*d^9 + 2761*a^10*d^10 + 4410*(b^10*c
^4*d^6 - 4*a*b^9*c^3*d^7 + 6*a^2*b^8*c^2*d^8 - 4*a^3*b^7*c*d^9 +
a^4*b^6*d^10)*x^6 + 2646*(b^10*c^5*d^5 + 5*a*b^9*c^4*d^6 - 30*a^2
*b^8*c^3*d^7 + 50*a^3*b^7*c^2*d^8 - 35*a^4*b^6*c*d^9 + 9*a^5*b^5*
d^10)*x^5 + 1470*(b^10*c^6*d^4 + 3*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4
*d^6 - 110*a^3*b^7*c^3*d^7 + 195*a^4*b^6*c^2*d^8 - 141*a^5*b^5*c*
d^9 + 37*a^6*b^4*d^10)*x^4 + 210*(3*b^10*c^7*d^3 + 7*a*b^9*c^6*d^
4 + 21*a^2*b^8*c^5*d^5 + 105*a^3*b^7*c^4*d^6 - 875*a^4*b^6*c^3*d^
7 + 1617*a^5*b^5*c^2*d^8 - 1197*a^6*b^4*c*d^9 + 319*a^7*b^3*d^10)
*x^3 + 63*(3*b^10*c^8*d^2 + 6*a*b^9*c^7*d^3 + 14*a^2*b^8*c^6*d^4
+ 42*a^3*b^7*c^5*d^5 + 210*a^4*b^6*c^4*d^6 - 1918*a^5*b^5*c^3*d^7
 + 3654*a^6*b^4*c^2*d^8 - 2754*a^7*b^3*c*d^9 + 743*a^8*b^2*d^10)*
x^2 + 7*(5*b^10*c^9*d + 9*a*b^9*c^8*d^2 + 18*a^2*b^8*c^7*d^3 + 42
*a^3*b^7*c^6*d^4 + 126*a^4*b^6*c^5*d^5 + 630*a^5*b^5*c^4*d^6 - 61
74*a^6*b^4*c^3*d^7 + 12042*a^7*b^3*c^2*d^8 - 9207*a^8*b^2*c*d^9 +
 2509*a^9*b*d^10)*x)/((b*x + a)^7*b^11) + 1/3*(b^16*d^10*x^3 + 15
*b^16*c*d^9*x^2 - 12*a*b^15*d^10*x^2 + 135*b^16*c^2*d^8*x - 240*a
*b^15*c*d^9*x + 108*a^2*b^14*d^10*x)/b^24
```

3.1320 $\int \frac{(c+dx)^{10}}{(a+bx)^9} dx$

Optimal. Leaf size=258

$$\frac{45d^8(bc-ad)^2\log(a+bx)}{b^{11}}-\frac{120d^7(bc-ad)^3}{b^{11}(a+bx)}-\frac{105d^6(bc-ad)^4}{b^{11}(a+bx)^2}-\frac{84d^5(bc-ad)^5}{b^{11}(a+bx)^3}-\frac{105d^4(bc-ad)^6}{2b^{11}(a+bx)^4}-\frac{24d^3(bc-ad)^7}{b^{11}(a+bx)^5}-\frac{15d^2(bc-ad)^8}{2b^{11}(a+bx)^6}-\frac{10d(bc-ad)^9}{7b^{11}(a+bx)^7}-\frac{(bc-ad)^{10}}{8b^{11}(a+bx)^8}+\frac{d^9x(10bc-9ad)}{b^{10}}+\frac{d^{10}x^2}{2b^9}$$

```
[Out] (d^9*(10*b*c - 9*a*d)*x)/b^10 + (d^10*x^2)/(2*b^9) - (b*c - a*d)^
10/(8*b^11*(a + b*x)^8) - (10*d*(b*c - a*d)^9)/(7*b^11*(a + b*x)^
7) - (15*d^2*(b*c - a*d)^8)/(2*b^11*(a + b*x)^6) - (24*d^3*(b*c -
 a*d)^7)/(b^11*(a + b*x)^5) - (105*d^4*(b*c - a*d)^6)/(2*b^11*(a
+ b*x)^4) - (84*d^5*(b*c - a*d)^5)/(b^11*(a + b*x)^3) - (105*d^6*
(b*c - a*d)^4)/(b^11*(a + b*x)^2) - (120*d^7*(b*c - a*d)^3)/(b^11
*(a + b*x)) + (45*d^8*(b*c - a*d)^2*Log[a + b*x])/b^11
```

Rubi [A] time = 0.857399, antiderivative size = 258, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{45d^8(bc-ad)^2\log(a+bx)}{b^{11}}-\frac{120d^7(bc-ad)^3}{b^{11}(a+bx)}-\frac{105d^6(bc-ad)^4}{b^{11}(a+bx)^2}-\frac{84d^5(bc-ad)^5}{b^{11}(a+bx)^3}-\frac{105d^4(bc-ad)^6}{2b^{11}(a+bx)^4}-\frac{24d^3(bc-ad)^7}{b^{11}(a+bx)^5}-\frac{15d^2(bc-ad)^8}{2b^{11}(a+bx)^6}-\frac{10d(bc-ad)^9}{7b^{11}(a+bx)^7}-\frac{(bc-ad)^{10}}{8b^{11}(a+bx)^8}+\frac{d^9x(10bc-9ad)}{b^{10}}+\frac{d^{10}x^2}{2b^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^9,x]
```

```
[Out] (d^9*(10*b*c - 9*a*d)*x)/b^10 + (d^10*x^2)/(2*b^9) - (b*c - a*d)^
10/(8*b^11*(a + b*x)^8) - (10*d*(b*c - a*d)^9)/(7*b^11*(a + b*x)^
7) - (15*d^2*(b*c - a*d)^8)/(2*b^11*(a + b*x)^6) - (24*d^3*(b*c -
 a*d)^7)/(b^11*(a + b*x)^5) - (105*d^4*(b*c - a*d)^6)/(2*b^11*(a
+ b*x)^4) - (84*d^5*(b*c - a*d)^5)/(b^11*(a + b*x)^3) - (105*d^6*
(b*c - a*d)^4)/(b^11*(a + b*x)^2) - (120*d^7*(b*c - a*d)^3)/(b^11
*(a + b*x)) + (45*d^8*(b*c - a*d)^2*Log[a + b*x])/b^11
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$-d^9(9ad-10bc)\int\frac{1}{b^{10}}\,dx+\frac{d^{10}\int x\,dx}{b^9}+\frac{45d^8(ad-bc)^2\log(a+bx)}{b^{11}}+\frac{120d^7(ad-bc)^3}{b^{11}(a+bx)}-\frac{105d^6(ad-bc)^4}{b^{11}(a+bx)^2}+\frac{84d^5(ad-bc)^5}{b^{11}(a+bx)^3}-\frac{105d^4(ad-bc)^6}{2b^{11}(a+bx)^4}+\frac{24d^3(ad-bc)^7}{b^{11}(a+bx)^5}-\frac{15d^2(ad-bc)^8}{2b^{11}(a+bx)^6}+\frac{10d(ad-bc)^9}{7b^{11}(a+bx)^7}-\frac{(ad-bc)^{10}}{8b^{11}(a+bx)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**9,x)
```

```
[Out] -d**9*(9*a*d - 10*b*c)*Integral(b**(-10), x) + d**10*Integral(x,
x)/b**9 + 45*d**8*(a*d - b*c)**2*log(a + b*x)/b**11 + 120*d**7*(a
*d - b*c)**3/(b**11*(a + b*x)) - 105*d**6*(a*d - b*c)**4/(b**11*(
a + b*x)**2) + 84*d**5*(a*d - b*c)**5/(b**11*(a + b*x)**3) - 105*
d**4*(a*d - b*c)**6/(2*b**11*(a + b*x)**4) + 24*d**3*(a*d - b*c)*
*7/(b**11*(a + b*x)**5) - 15*d**2*(a*d - b*c)**8/(2*b**11*(a + b*
x)**6) + 10*d*(a*d - b*c)**9/(7*b**11*(a + b*x)**7) - (a*d - b*c)
**10/(8*b**11*(a + b*x)**8)
```

Mathematica [B] time = 0.548969, size = 712, normalized size = 2.76

$$\frac{3601a^{10}d^{10} + 2a^9bd^9(13144dx - 4609c) + a^8b^2d^8\left(6849c^2 - 68704cdx + 81928d^2x^2\right) + 8a^7b^3d^7\left(-105c^3 + 6534c^2dx - 27538\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^9,x]
```

```
[Out] (3601*a^10*d^10 + 2*a^9*b*d^9*(-4609*c + 13144*d*x) + a^8*b^2*d^8
*(6849*c^2 - 68704*c*d*x + 81928*d^2*x^2) + 8*a^7*b^3*d^7*(-105*c
^3 + 6534*c^2*d*x - 27538*c*d^2*x^2 + 17542*d^3*x^3) + 14*a^6*b^4
*d^6*(-15*c^4 - 480*c^3*d*x + 12348*c^2*d^2*x^2 - 28112*c*d^3*x^3
 + 10010*d^4*x^4) - 28*a^5*b^5*d^5*(3*c^5 + 60*c^4*d*x + 840*c^3*
d^2*x^2 - 11508*c^2*d^3*x^3 + 15050*c*d^4*x^4 - 2744*d^5*x^5) - 1
4*a^4*b^6*d^4*(3*c^6 + 48*c^5*d*x + 420*c^4*d^2*x^2 + 3360*c^3*d^
3*x^3 - 26250*c^2*d^4*x^4 + 19040*c*d^5*x^5 - 1064*d^6*x^6) - 8*a
^3*b^7*d^3*(3*c^7 + 42*c^6*d*x + 294*c^5*d^2*x^2 + 1470*c^4*d^3*x
^3 + 7350*c^3*d^4*x^4 - 32340*c^2*d^5*x^5 + 10780*c*d^6*x^6 + 728
*d^7*x^7) - a^2*b^8*d^2*(15*c^8 + 192*c^7*d*x + 1176*c^6*d^2*x^2
+ 4704*c^5*d^3*x^3 + 14700*c^4*d^4*x^4 + 47040*c^3*d^5*x^5 - 1058
40*c^2*d^6*x^6 + 4480*c*d^7*x^7 + 3248*d^8*x^8) - 2*a*b^9*d*(5*c^
9 + 60*c^8*d*x + 336*c^7*d^2*x^2 + 1176*c^6*d^3*x^3 + 2940*c^5*d^
4*x^4 + 5880*c^4*d^5*x^5 + 11760*c^3*d^6*x^6 - 10080*c^2*d^7*x^7
- 2240*c*d^8*x^8 + 140*d^9*x^9) - b^10*(7*c^10 + 80*c^9*d*x + 420
*c^8*d^2*x^2 + 1344*c^7*d^3*x^3 + 2940*c^6*d^4*x^4 + 4704*c^5*d^5
*x^5 + 5880*c^4*d^6*x^6 + 6720*c^3*d^7*x^7 - 560*c*d^9*x^9 - 28*d
^10*x^10) + 2520*d^8*(b*c - a*d)^2*(a + b*x)^8*Log[a + b*x])/(56*
b^11*(a + b*x)^8)
```

Maple [B] time = 0.026, size = 1256, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^9,x)
```

```
[Out] 1/2*d^10*x^2/b^9+10/7/b^11*d^10/(b*x+a)^7*a^9-10/7/b^2*d/(b*x+a)^
7*c^9-105/2/b^11*d^10/(b*x+a)^4*a^6-105/2/b^5*d^4/(b*x+a)^4*c^6+8
4/b^11*d^10/(b*x+a)^3*a^5-84/b^6*d^5/(b*x+a)^3*c^5-105/b^11*d^10/
(b*x+a)^2*a^4-105/b^7*d^6/(b*x+a)^2*c^4-1/8/b^11/(b*x+a)^8*a^10*d
^10+120/b^11*d^10/(b*x+a)*a^3-120/b^8*d^7/(b*x+a)*c^3-15/2/b^11*d
^10/(b*x+a)^6*a^8-15/2/b^3*d^2/(b*x+a)^6*c^8+45/b^11*d^10*ln(b*x+
a)*a^2+45/b^9*d^8*ln(b*x+a)*c^2+10*d^9/b^9*x*c+24/b^11*d^10/(b*x+
a)^5*a^7-24/b^4*d^3/(b*x+a)^5*c^7-9*d^10/b^10*a*x-420/b^10*d^9/(b
*x+a)^3*a^4*c+840/b^9*d^8/(b*x+a)^3*a^3*c^2-210/b^5*d^4/(b*x+a)^6
*a^2*c^6+60/b^4*d^3/(b*x+a)^6*a*c^7-90/7/b^10*d^9/(b*x+a)^7*a^8*c
+360/7/b^9*d^8/(b*x+a)^7*a^7*c^2-120/b^8*d^7/(b*x+a)^7*a^6*c^3+18
0/b^7*d^6/(b*x+a)^7*a^5*c^4-180/b^6*d^5/(b*x+a)^7*a^4*c^5-525/b^7
*d^6/(b*x+a)^6*a^4*c^4+420/b^6*d^5/(b*x+a)^6*a^3*c^5+5/4/b^10/(b*
x+a)^8*a^9*c*d^9-45/8/b^9/(b*x+a)^8*a^8*c^2*d^8-360/b^10*d^9/(b*x
+a)*a^2*c+360/b^9*d^8/(b*x+a)*a*c^2+63/2/b^6/(b*x+a)^8*a^5*c^5*d^
5+420/b^10*d^9/(b*x+a)^2*a^3*c-630/b^9*d^8/(b*x+a)^2*a^2*c^2+420/
b^8*d^7/(b*x+a)^2*a*c^3+120/b^5*d^4/(b*x+a)^7*a^3*c^6-105/4/b^5/(
b*x+a)^8*a^4*c^6*d^4+15/b^4/(b*x+a)^8*a^3*c^7*d^3-45/8/b^3/(b*x+a
)^8*a^2*c^8*d^2+5/4/b^2/(b*x+a)^8*a*c^9*d+15/b^8/(b*x+a)^8*a^7*c^
3*d^7-105/4/b^7/(b*x+a)^8*a^6*c^4*d^6-1/8/b/(b*x+a)^8*c^10+60/b^1
0*d^9/(b*x+a)^6*a^7*c-210/b^9*d^8/(b*x+a)^6*a^6*c^2+420/b^8*d^7/(
b*x+a)^6*a^5*c^3-504/b^6*d^5/(b*x+a)^5*a^2*c^5+168/b^5*d^4/(b*x+a
)^5*a*c^6-90/b^10*d^9*ln(b*x+a)*a*c+1050/b^8*d^7/(b*x+a)^4*a^3*c^
3-1575/2/b^7*d^6/(b*x+a)^4*a^2*c^4+315/b^6*d^5/(b*x+a)^4*a*c^5-16
8/b^10*d^9/(b*x+a)^5*a^6*c+504/b^9*d^8/(b*x+a)^5*a^5*c^2-840/b^8*
d^7/(b*x+a)^5*a^4*c^3+840/b^7*d^6/(b*x+a)^5*a^3*c^4-840/b^8*d^7/(
b*x+a)^3*a^2*c^3+420/b^7*d^6/(b*x+a)^3*a*c^4-360/7/b^4*d^3/(b*x+a
)^7*a^2*c^7+90/7/b^3*d^2/(b*x+a)^7*a*c^8+315/b^10*d^9/(b*x+a)^4*a
^5*c-1575/2/b^9*d^8/(b*x+a)^4*a^4*c^2
```

Maxima [A] time = 1.50036, size = 1276, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^9,x, algorithm="maxima")
```

```
[Out] -1/56*(7*b^10*c^10 + 10*a*b^9*c^9*d + 15*a^2*b^8*c^8*d^2 + 24*a^3
*b^7*c^7*d^3 + 42*a^4*b^6*c^6*d^4 + 84*a^5*b^5*c^5*d^5 + 210*a^6*
b^4*c^4*d^6 + 840*a^7*b^3*c^3*d^7 - 6849*a^8*b^2*c^2*d^8 + 9218*a
^9*b*c*d^9 - 3601*a^10*d^10 + 6720*(b^10*c^3*d^7 - 3*a*b^9*c^2*d^
8 + 3*a^2*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 5880*(b^10*c^4*d^6 + 4*
a*b^9*c^3*d^7 - 18*a^2*b^8*c^2*d^8 + 20*a^3*b^7*c*d^9 - 7*a^4*b^6
*d^10)*x^6 + 2352*(2*b^10*c^5*d^5 + 5*a*b^9*c^4*d^6 + 20*a^2*b^8*
c^3*d^7 - 110*a^3*b^7*c^2*d^8 + 130*a^4*b^6*c*d^9 - 47*a^5*b^5*d^
10)*x^5 + 2940*(b^10*c^6*d^4 + 2*a*b^9*c^5*d^5 + 5*a^2*b^8*c^4*d^
6 + 20*a^3*b^7*c^3*d^7 - 125*a^4*b^6*c^2*d^8 + 154*a^5*b^5*c*d^9
- 57*a^6*b^4*d^10)*x^4 + 336*(4*b^10*c^7*d^3 + 7*a*b^9*c^6*d^4 +
```

```
14*a^2*b^8*c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 140*a^4*b^6*c^3*d^7 - 9
59*a^5*b^5*c^2*d^8 + 1218*a^6*b^4*c*d^9 - 459*a^7*b^3*d^10)*x^3 +
 84*(5*b^10*c^8*d^2 + 8*a*b^9*c^7*d^3 + 14*a^2*b^8*c^6*d^4 + 28*a
^3*b^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 + 280*a^5*b^5*c^3*d^7 - 2058*
a^6*b^4*c^2*d^8 + 2676*a^7*b^3*c*d^9 - 1023*a^8*b^2*d^10)*x^2 + 8
*(10*b^10*c^9*d + 15*a*b^9*c^8*d^2 + 24*a^2*b^8*c^7*d^3 + 42*a^3*
b^7*c^6*d^4 + 84*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^6 + 840*a^6*
b^4*c^3*d^7 - 6534*a^7*b^3*c^2*d^8 + 8658*a^8*b^2*c*d^9 - 3349*a^
9*b*d^10)*x)/(b^19*x^8 + 8*a*b^18*x^7 + 28*a^2*b^17*x^6 + 56*a^3*
b^16*x^5 + 70*a^4*b^15*x^4 + 56*a^5*b^14*x^3 + 28*a^6*b^13*x^2 +
8*a^7*b^12*x + a^8*b^11) + 1/2*(b*d^10*x^2 + 2*(10*b*c*d^9 - 9*a*
d^10)*x)/b^10 + 45*(b^2*c^2*d^8 - 2*a*b*c*d^9 + a^2*d^10)*log(b*x
 + a)/b^11
```

Fricas [A] time = 0.231095, size = 1750, normalized size = 6.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^9,x, algorithm="fricas")
```

```
[Out] 1/56*(28*b^10*d^10*x^10 - 7*b^10*c^10 - 10*a*b^9*c^9*d - 15*a^2*b
^8*c^8*d^2 - 24*a^3*b^7*c^7*d^3 - 42*a^4*b^6*c^6*d^4 - 84*a^5*b^5
*c^5*d^5 - 210*a^6*b^4*c^4*d^6 - 840*a^7*b^3*c^3*d^7 + 6849*a^8*b
^2*c^2*d^8 - 9218*a^9*b*c*d^9 + 3601*a^10*d^10 + 280*(2*b^10*c*d^
9 - a*b^9*d^10)*x^9 + 112*(40*a*b^9*c*d^9 - 29*a^2*b^8*d^10)*x^8
- 448*(15*b^10*c^3*d^7 - 45*a*b^9*c^2*d^8 + 10*a^2*b^8*c*d^9 + 13
*a^3*b^7*d^10)*x^7 - 392*(15*b^10*c^4*d^6 + 60*a*b^9*c^3*d^7 - 27
0*a^2*b^8*c^2*d^8 + 220*a^3*b^7*c*d^9 - 38*a^4*b^6*d^10)*x^6 - 78
4*(6*b^10*c^5*d^5 + 15*a*b^9*c^4*d^6 + 60*a^2*b^8*c^3*d^7 - 330*a
^3*b^7*c^2*d^8 + 340*a^4*b^6*c*d^9 - 98*a^5*b^5*d^10)*x^5 - 980*(
3*b^10*c^6*d^4 + 6*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4*d^6 + 60*a^3*b^
7*c^3*d^7 - 375*a^4*b^6*c^2*d^8 + 430*a^5*b^5*c*d^9 - 143*a^6*b^4
*d^10)*x^4 - 112*(12*b^10*c^7*d^3 + 21*a*b^9*c^6*d^4 + 42*a^2*b^8
*c^5*d^5 + 105*a^3*b^7*c^4*d^6 + 420*a^4*b^6*c^3*d^7 - 2877*a^5*b
^5*c^2*d^8 + 3514*a^6*b^4*c*d^9 - 1253*a^7*b^3*d^10)*x^3 - 28*(15
*b^10*c^8*d^2 + 24*a*b^9*c^7*d^3 + 42*a^2*b^8*c^6*d^4 + 84*a^3*b^
7*c^5*d^5 + 210*a^4*b^6*c^4*d^6 + 840*a^5*b^5*c^3*d^7 - 6174*a^6*
b^4*c^2*d^8 + 7868*a^7*b^3*c*d^9 - 2926*a^8*b^2*d^10)*x^2 - 8*(10
*b^10*c^9*d + 15*a*b^9*c^8*d^2 + 24*a^2*b^8*c^7*d^3 + 42*a^3*b^7*
c^6*d^4 + 84*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^6 + 840*a^6*b^4*
c^3*d^7 - 6534*a^7*b^3*c^2*d^8 + 8588*a^8*b^2*c*d^9 - 3286*a^9*b*
d^10)*x + 2520*(a^8*b^2*c^2*d^8 - 2*a^9*b*c*d^9 + a^10*d^10 + (b^
10*c^2*d^8 - 2*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 8*(a*b^9*c^2*d^8
 - 2*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 28*(a^2*b^8*c^2*d^8 - 2*
a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 56*(a^3*b^7*c^2*d^8 - 2*a^4*b
^6*c*d^9 + a^5*b^5*d^10)*x^5 + 70*(a^4*b^6*c^2*d^8 - 2*a^5*b^5*c*
d^9 + a^6*b^4*d^10)*x^4 + 56*(a^5*b^5*c^2*d^8 - 2*a^6*b^4*c*d^9 +
 a^7*b^3*d^10)*x^3 + 28*(a^6*b^4*c^2*d^8 - 2*a^7*b^3*c*d^9 + a^8*
b^2*d^10)*x^2 + 8*(a^7*b^3*c^2*d^8 - 2*a^8*b^2*c*d^9 + a^9*b*d^10
)*x)*log(b*x + a))/(b^19*x^8 + 8*a*b^18*x^7 + 28*a^2*b^17*x^6 + 5
```

```
6*a^3*b^16*x^5 + 70*a^4*b^15*x^4 + 56*a^5*b^14*x^3 + 28*a^6*b^13*
x^2 + 8*a^7*b^12*x + a^8*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**9,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.226643, size = 1176, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^9,x, algorithm="giac")
```

```
[Out] 45*(b^2*c^2*d^8 - 2*a*b*c*d^9 + a^2*d^10)*ln(abs(b*x + a))/b^11 +
 1/2*(b^9*d^10*x^2 + 20*b^9*c*d^9*x - 18*a*b^8*d^10*x)/b^18 - 1/5
6*(7*b^10*c^10 + 10*a*b^9*c^9*d + 15*a^2*b^8*c^8*d^2 + 24*a^3*b^7
*c^7*d^3 + 42*a^4*b^6*c^6*d^4 + 84*a^5*b^5*c^5*d^5 + 210*a^6*b^4*
c^4*d^6 + 840*a^7*b^3*c^3*d^7 - 6849*a^8*b^2*c^2*d^8 + 9218*a^9*b
*c*d^9 - 3601*a^10*d^10 + 6720*(b^10*c^3*d^7 - 3*a*b^9*c^2*d^8 +
3*a^2*b^8*c*d^9 - a^3*b^7*d^10)*x^7 + 5880*(b^10*c^4*d^6 + 4*a*b^
9*c^3*d^7 - 18*a^2*b^8*c^2*d^8 + 20*a^3*b^7*c*d^9 - 7*a^4*b^6*d^1
0)*x^6 + 2352*(2*b^10*c^5*d^5 + 5*a*b^9*c^4*d^6 + 20*a^2*b^8*c^3*
d^7 - 110*a^3*b^7*c^2*d^8 + 130*a^4*b^6*c*d^9 - 47*a^5*b^5*d^10)*
x^5 + 2940*(b^10*c^6*d^4 + 2*a*b^9*c^5*d^5 + 5*a^2*b^8*c^4*d^6 +
20*a^3*b^7*c^3*d^7 - 125*a^4*b^6*c^2*d^8 + 154*a^5*b^5*c*d^9 - 57
*a^6*b^4*d^10)*x^4 + 336*(4*b^10*c^7*d^3 + 7*a*b^9*c^6*d^4 + 14*a
^2*b^8*c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 140*a^4*b^6*c^3*d^7 - 959*a
^5*b^5*c^2*d^8 + 1218*a^6*b^4*c*d^9 - 459*a^7*b^3*d^10)*x^3 + 84*
(5*b^10*c^8*d^2 + 8*a*b^9*c^7*d^3 + 14*a^2*b^8*c^6*d^4 + 28*a^3*b
^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 + 280*a^5*b^5*c^3*d^7 - 2058*a^6*
b^4*c^2*d^8 + 2676*a^7*b^3*c*d^9 - 1023*a^8*b^2*d^10)*x^2 + 8*(10
*b^10*c^9*d + 15*a*b^9*c^8*d^2 + 24*a^2*b^8*c^7*d^3 + 42*a^3*b^7*
c^6*d^4 + 84*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^6 + 840*a^6*b^4*
c^3*d^7 - 6534*a^7*b^3*c^2*d^8 + 8658*a^8*b^2*c*d^9 - 3349*a^9*b*
d^10)*x)/((b*x + a)^8*b^11)
```

3.1321 $\int \frac{(c+dx)^{10}}{(a+bx)^{10}}\,dx$

Optimal. Leaf size=257

$$\frac{10d^9(bc-ad)\log(a+bx)}{b^{11}}-\frac{45d^8(bc-ad)^2}{b^{11}(a+bx)}-\frac{60d^7(bc-ad)^3}{b^{11}(a+bx)^2}-\frac{70d^6(bc-ad)^4}{b^{11}(a+bx)^3}-\frac{63d^5(bc-ad)^5}{b^{11}(a+bx)^4}-\frac{42d^4(bc-ad)^6}{b^{11}(a+bx)^5}-\frac{20d^3(bc-ad)^7}{b^{11}(a+bx)^6}-\frac{45d^2(bc-ad)^8}{7b^{11}(a+bx)^7}-\frac{5d(bc-ad)^9}{4b^{11}(a+bx)^8}-\frac{(bc-ad)^{10}}{9b^{11}(a+bx)^9}+\frac{d^{10}x}{b^{10}}$$

```
[Out] (d^10*x)/b^10 - (b*c - a*d)^10/(9*b^11*(a + b*x)^9) - (5*d*(b*c -
 a*d)^9)/(4*b^11*(a + b*x)^8) - (45*d^2*(b*c - a*d)^8)/(7*b^11*(a
 + b*x)^7) - (20*d^3*(b*c - a*d)^7)/(b^11*(a + b*x)^6) - (42*d^4*
(b*c - a*d)^6)/(b^11*(a + b*x)^5) - (63*d^5*(b*c - a*d)^5)/(b^11*
(a + b*x)^4) - (70*d^6*(b*c - a*d)^4)/(b^11*(a + b*x)^3) - (60*d^
7*(b*c - a*d)^3)/(b^11*(a + b*x)^2) - (45*d^8*(b*c - a*d)^2)/(b^1
1*(a + b*x)) + (10*d^9*(b*c - a*d)*Log[a + b*x])/b^11
```

Rubi [A] time = 0.814336, antiderivative size = 257, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{10d^9(bc-ad)\log(a+bx)}{b^{11}}-\frac{45d^8(bc-ad)^2}{b^{11}(a+bx)}-\frac{60d^7(bc-ad)^3}{b^{11}(a+bx)^2}-\frac{70d^6(bc-ad)^4}{b^{11}(a+bx)^3}-\frac{63d^5(bc-ad)^5}{b^{11}(a+bx)^4}-\frac{42d^4(bc-ad)^6}{b^{11}(a+bx)^5}-\frac{20d^3(bc-ad)^7}{b^{11}(a+bx)^6}-\frac{45d^2(bc-ad)^8}{7b^{11}(a+bx)^7}-\frac{5d(bc-ad)^9}{4b^{11}(a+bx)^8}-\frac{(bc-ad)^{10}}{9b^{11}(a+bx)^9}+\frac{d^{10}x}{b^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^10,x]
```

```
[Out] (d^10*x)/b^10 - (b*c - a*d)^10/(9*b^11*(a + b*x)^9) - (5*d*(b*c -
 a*d)^9)/(4*b^11*(a + b*x)^8) - (45*d^2*(b*c - a*d)^8)/(7*b^11*(a
 + b*x)^7) - (20*d^3*(b*c - a*d)^7)/(b^11*(a + b*x)^6) - (42*d^4*
(b*c - a*d)^6)/(b^11*(a + b*x)^5) - (63*d^5*(b*c - a*d)^5)/(b^11*
(a + b*x)^4) - (70*d^6*(b*c - a*d)^4)/(b^11*(a + b*x)^3) - (60*d^
7*(b*c - a*d)^3)/(b^11*(a + b*x)^2) - (45*d^8*(b*c - a*d)^2)/(b^1
1*(a + b*x)) + (10*d^9*(b*c - a*d)*Log[a + b*x])/b^11
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$d^{10}\int \frac{1}{b^{10}}\,dx-\frac{10d^9\left(ad-bc\right)\log\left(a+bx\right)}{b^{11}}-\frac{45d^8\left(ad-bc\right)^2}{b^{11}\left(a+bx\right)}+\frac{60d^7\left(ad-bc\right)^3}{b^{11}\left(a+bx\right)^2}-\frac{70d^6\left(ad-bc\right)^4}{b^{11}\left(a+bx\right)^3}+\frac{63d^5\left(ad-bc\right)^5}{b^{11}\left(a+bx\right)^4}-\frac{42d^4\left(ad-bc\right)^6}{b^{11}\left(a+bx\right)^5}+\frac{20d^3\left(ad-bc\right)^7}{b^{11}\left(a+bx\right)^6}-\frac{45d^2\left(ad-bc\right)^8}{7b^{11}\left(a+bx\right)^7}+\frac{5d\left(ad-bc\right)^9}{4b^{11}\left(a+bx\right)^8}-\frac{\left(ad-bc\right)^{10}}{9b^{11}\left(a+bx\right)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**10,x)
```

```
[Out] d**10*Integral(b**(-10), x) - 10*d**9*(a*d - b*c)*log(a + b*x)/b*
*11 - 45*d**8*(a*d - b*c)**2/(b**11*(a + b*x)) + 60*d**7*(a*d - b
*c)**3/(b**11*(a + b*x)**2) - 70*d**6*(a*d - b*c)**4/(b**11*(a +
b*x)**3) + 63*d**5*(a*d - b*c)**5/(b**11*(a + b*x)**4) - 42*d**4*
(a*d - b*c)**6/(b**11*(a + b*x)**5) + 20*d**3*(a*d - b*c)**7/(b**
11*(a + b*x)**6) - 45*d**2*(a*d - b*c)**8/(7*b**11*(a + b*x)**7)
+ 5*d*(a*d - b*c)**9/(4*b**11*(a + b*x)**8) - (a*d - b*c)**10/(9*
b**11*(a + b*x)**9)
```

Mathematica [B] time = 2.46671, size = 708, normalized size = 2.75

$$-\frac{4861a^{10}d^{10}+a^9bd^9(41229dx-7129c)+9a^8b^2d^8\left(140c^2-6849cdx+17064d^2x^2\right)+12a^7b^3d^7\left(35c^3+945c^2dx-19602cd^2\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^10,x]
```

```
[Out] -(4861*a^10*d^10 + a^9*b*d^9*(-7129*c + 41229*d*x) + 9*a^8*b^2*d^
8*(140*c^2 - 6849*c*d*x + 17064*d^2*x^2) + 12*a^7*b^3*d^7*(35*c^3
 + 945*c^2*d*x - 19602*c*d^2*x^2 + 27342*d^3*x^3) + 42*a^6*b^4*d^
6*(5*c^4 + 90*c^3*d*x + 1080*c^2*d^2*x^2 - 12348*c*d^3*x^3 + 1045
8*d^4*x^4) + 126*a^5*b^5*d^5*(c^5 + 15*c^4*d*x + 120*c^3*d^2*x^2
+ 840*c^2*d^3*x^3 - 5754*c*d^4*x^4 + 2982*d^5*x^5) + 42*a^4*b^6*d
^4*(2*c^6 + 27*c^5*d*x + 180*c^4*d^2*x^2 + 840*c^3*d^3*x^3 + 3780
*c^2*d^4*x^4 - 15750*c*d^5*x^5 + 4704*d^6*x^6) + 12*a^3*b^7*d^3*(
5*c^7 + 63*c^6*d*x + 378*c^5*d^2*x^2 + 1470*c^4*d^3*x^3 + 4410*c^
3*d^4*x^4 + 13230*c^2*d^5*x^5 - 32340*c*d^6*x^6 + 4536*d^7*x^7) +
 9*a^2*b^8*d^2*(5*c^8 + 60*c^7*d*x + 336*c^6*d^2*x^2 + 1176*c^5*d
^3*x^3 + 2940*c^4*d^4*x^4 + 5880*c^3*d^5*x^5 + 11760*c^2*d^6*x^6
- 15120*c*d^7*x^7 + 252*d^8*x^8) + a*b^9*d*(35*c^9 + 405*c^8*d*x
+ 2160*c^7*d^2*x^2 + 7056*c^6*d^3*x^3 + 15876*c^5*d^4*x^4 + 26460
*c^4*d^5*x^5 + 35280*c^3*d^6*x^6 + 45360*c^2*d^7*x^7 - 22680*c*d^
8*x^8 - 2268*d^9*x^9) + b^10*(28*c^10 + 315*c^9*d*x + 1620*c^8*d^
2*x^2 + 5040*c^7*d^3*x^3 + 10584*c^6*d^4*x^4 + 15876*c^5*d^5*x^5
+ 17640*c^4*d^6*x^6 + 15120*c^3*d^7*x^7 + 11340*c^2*d^8*x^8 - 252
*d^10*x^10) + 2520*d^9*(-(b*c) + a*d)*(a + b*x)^9*Log[a + b*x])/(
252*b^11*(a + b*x)^9)
```

Maple [B] time = 0.025, size = 1266, normalized size = 4.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^10,x)
```

```
[Out] -42/b^5*d^4/(b*x+a)^5*c^6-10/b^11*d^10*ln(b*x+a)*a+10/b^10*d^9*ln
(b*x+a)*c-45/b^11*d^10/(b*x+a)*a^2-45/b^9*d^8/(b*x+a)*c^2-60/b^8*
d^7/(b*x+a)^2*c^3+5/4/b^11*d^10/(b*x+a)^8*a^9-5/4/b^2*d/(b*x+a)^8
*c^9-1/9/b^11/(b*x+a)^9*a^10*d^10+20/b^11*d^10/(b*x+a)^6*a^7-20/b
^4*d^3/(b*x+a)^6*c^7-45/7/b^11*d^10/(b*x+a)^7*a^8-45/7/b^3*d^2/(b
*x+a)^7*c^8+63/b^11*d^10/(b*x+a)^4*a^5-63/b^6*d^5/(b*x+a)^4*c^5-7
0/b^11*d^10/(b*x+a)^3*a^4-70/b^7*d^6/(b*x+a)^3*c^4+60/b^11*d^10/(
b*x+a)^2*a^3-42/b^11*d^10/(b*x+a)^5*a^6+d^10*x/b^10+252/b^6*d^5/(
b*x+a)^5*a*c^5-140/b^10*d^9/(b*x+a)^6*a^6*c+420/b^9*d^8/(b*x+a)^6
*a^5*c^2-700/b^8*d^7/(b*x+a)^6*a^4*c^3+700/b^7*d^6/(b*x+a)^6*a^3*
c^4-420/b^6*d^5/(b*x+a)^6*a^2*c^5+140/b^5*d^4/(b*x+a)^6*a*c^6+360
/7/b^10*d^9/(b*x+a)^7*a^7*c-180/b^9*d^8/(b*x+a)^7*a^6*c^2+360/b^8
*d^7/(b*x+a)^7*a^5*c^3-450/b^7*d^6/(b*x+a)^7*a^4*c^4+360/b^6*d^5/
(b*x+a)^7*a^3*c^5+252/b^10*d^9/(b*x+a)^5*a^5*c-630/b^9*d^8/(b*x+a
)^5*a^4*c^2+840/b^8*d^7/(b*x+a)^5*a^3*c^3+315/2/b^7*d^6/(b*x+a)^8
*a^5*c^4+180/b^9*d^8/(b*x+a)^2*a*c^2-45/4/b^10*d^9/(b*x+a)^8*a^8*
c+45/b^9*d^8/(b*x+a)^8*a^7*c^2-105/b^8*d^7/(b*x+a)^8*a^6*c^3-180/
b^10*d^9/(b*x+a)^2*a^2*c-630/b^8*d^7/(b*x+a)^4*a^2*c^3+315/b^7*d^
6/(b*x+a)^4*a*c^4+280/b^10*d^9/(b*x+a)^3*a^3*c-420/b^9*d^8/(b*x+a
)^3*a^2*c^2+280/b^8*d^7/(b*x+a)^3*a*c^3-5/b^3/(b*x+a)^9*a^2*c^8*d
^2+10/9/b^2/(b*x+a)^9*a*c^9*d+90/b^10*d^9/(b*x+a)*a*c-180/b^5*d^4
/(b*x+a)^7*a^2*c^6+360/7/b^4*d^3/(b*x+a)^7*a*c^7-315/b^10*d^9/(b*
x+a)^4*a^4*c+630/b^9*d^8/(b*x+a)^4*a^3*c^2-70/3/b^5/(b*x+a)^9*a^4
*c^6*d^4+40/3/b^4/(b*x+a)^9*a^3*c^7*d^3+40/3/b^8/(b*x+a)^9*a^7*c^
3*d^7-70/3/b^7/(b*x+a)^9*a^6*c^4*d^6+28/b^6/(b*x+a)^9*a^5*c^5*d^5
-5/b^9/(b*x+a)^9*a^8*c^2*d^8+10/9/b^10/(b*x+a)^9*a^9*c*d^9-45/b^4
*d^3/(b*x+a)^8*a^2*c^7+105/b^5*d^4/(b*x+a)^8*a^3*c^6-315/2/b^6*d^
5/(b*x+a)^8*a^4*c^5-1/9/b/(b*x+a)^9*c^10-630/b^7*d^6/(b*x+a)^5*a^
2*c^4+45/4/b^3*d^2/(b*x+a)^8*a*c^8
```

Maxima [A] time = 1.46947, size = 1292, normalized size = 5.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^10,x, algorithm="maxima")
```

```
[Out] d^10*x/b^10 - 1/252*(28*b^10*c^10 + 35*a*b^9*c^9*d + 45*a^2*b^8*c
^8*d^2 + 60*a^3*b^7*c^7*d^3 + 84*a^4*b^6*c^6*d^4 + 126*a^5*b^5*c^
5*d^5 + 210*a^6*b^4*c^4*d^6 + 420*a^7*b^3*c^3*d^7 + 1260*a^8*b^2*
c^2*d^8 - 7129*a^9*b*c*d^9 + 4861*a^10*d^10 + 11340*(b^10*c^2*d^8
 - 2*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 15120*(b^10*c^3*d^7 + 3*a*
b^9*c^2*d^8 - 9*a^2*b^8*c*d^9 + 5*a^3*b^7*d^10)*x^7 + 17640*(b^10
*c^4*d^6 + 2*a*b^9*c^3*d^7 + 6*a^2*b^8*c^2*d^8 - 22*a^3*b^7*c*d^9
 + 13*a^4*b^6*d^10)*x^6 + 5292*(3*b^10*c^5*d^5 + 5*a*b^9*c^4*d^6
+ 10*a^2*b^8*c^3*d^7 + 30*a^3*b^7*c^2*d^8 - 125*a^4*b^6*c*d^9 + 7
7*a^5*b^5*d^10)*x^5 + 5292*(2*b^10*c^6*d^4 + 3*a*b^9*c^5*d^5 + 5*
a^2*b^8*c^4*d^6 + 10*a^3*b^7*c^3*d^7 + 30*a^4*b^6*c^2*d^8 - 137*a
```

```
^5*b^5*c*d^9 + 87*a^6*b^4*d^10)*x^4 + 504*(10*b^10*c^7*d^3 + 14*a
*b^9*c^6*d^4 + 21*a^2*b^8*c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 70*a^4*b
^6*c^3*d^7 + 210*a^5*b^5*c^2*d^8 - 1029*a^6*b^4*c*d^9 + 669*a^7*b
^3*d^10)*x^3 + 108*(15*b^10*c^8*d^2 + 20*a*b^9*c^7*d^3 + 28*a^2*b
^8*c^6*d^4 + 42*a^3*b^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 + 140*a^5*b^
5*c^3*d^7 + 420*a^6*b^4*c^2*d^8 - 2178*a^7*b^3*c*d^9 + 1443*a^8*b
^2*d^10)*x^2 + 9*(35*b^10*c^9*d + 45*a*b^9*c^8*d^2 + 60*a^2*b^8*c
^7*d^3 + 84*a^3*b^7*c^6*d^4 + 126*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c
^4*d^6 + 420*a^6*b^4*c^3*d^7 + 1260*a^7*b^3*c^2*d^8 - 6849*a^8*b^
2*c*d^9 + 4609*a^9*b*d^10)*x)/(b^20*x^9 + 9*a*b^19*x^8 + 36*a^2*b
^18*x^7 + 84*a^3*b^17*x^6 + 126*a^4*b^16*x^5 + 126*a^5*b^15*x^4 +
 84*a^6*b^14*x^3 + 36*a^7*b^13*x^2 + 9*a^8*b^12*x + a^9*b^11) + 1
0*(b*c*d^9 - a*d^10)*log(b*x + a)/b^11
```

Fricas [A] time = 0.232824, size = 1642, normalized size = 6.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^10,x, algorithm="fricas")
```

```
[Out] 1/252*(252*b^10*d^10*x^10 + 2268*a*b^9*d^10*x^9 - 28*b^10*c^10 -
35*a*b^9*c^9*d - 45*a^2*b^8*c^8*d^2 - 60*a^3*b^7*c^7*d^3 - 84*a^4
*b^6*c^6*d^4 - 126*a^5*b^5*c^5*d^5 - 210*a^6*b^4*c^4*d^6 - 420*a^
7*b^3*c^3*d^7 - 1260*a^8*b^2*c^2*d^8 + 7129*a^9*b*c*d^9 - 4861*a^
10*d^10 - 2268*(5*b^10*c^2*d^8 - 10*a*b^9*c*d^9 + a^2*b^8*d^10)*x
^8 - 3024*(5*b^10*c^3*d^7 + 15*a*b^9*c^2*d^8 - 45*a^2*b^8*c*d^9 +
 18*a^3*b^7*d^10)*x^7 - 3528*(5*b^10*c^4*d^6 + 10*a*b^9*c^3*d^7 +
 30*a^2*b^8*c^2*d^8 - 110*a^3*b^7*c*d^9 + 56*a^4*b^6*d^10)*x^6 -
5292*(3*b^10*c^5*d^5 + 5*a*b^9*c^4*d^6 + 10*a^2*b^8*c^3*d^7 + 30*
a^3*b^7*c^2*d^8 - 125*a^4*b^6*c*d^9 + 71*a^5*b^5*d^10)*x^5 - 5292
*(2*b^10*c^6*d^4 + 3*a*b^9*c^5*d^5 + 5*a^2*b^8*c^4*d^6 + 10*a^3*b
^7*c^3*d^7 + 30*a^4*b^6*c^2*d^8 - 137*a^5*b^5*c*d^9 + 83*a^6*b^4*
d^10)*x^4 - 504*(10*b^10*c^7*d^3 + 14*a*b^9*c^6*d^4 + 21*a^2*b^8*
c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 70*a^4*b^6*c^3*d^7 + 210*a^5*b^5*c
^2*d^8 - 1029*a^6*b^4*c*d^9 + 651*a^7*b^3*d^10)*x^3 - 108*(15*b^1
0*c^8*d^2 + 20*a*b^9*c^7*d^3 + 28*a^2*b^8*c^6*d^4 + 42*a^3*b^7*c^
5*d^5 + 70*a^4*b^6*c^4*d^6 + 140*a^5*b^5*c^3*d^7 + 420*a^6*b^4*c^
2*d^8 - 2178*a^7*b^3*c*d^9 + 1422*a^8*b^2*d^10)*x^2 - 9*(35*b^10*
c^9*d + 45*a*b^9*c^8*d^2 + 60*a^2*b^8*c^7*d^3 + 84*a^3*b^7*c^6*d^
4 + 126*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^6 + 420*a^6*b^4*c^3*d
^7 + 1260*a^7*b^3*c^2*d^8 - 6849*a^8*b^2*c*d^9 + 4581*a^9*b*d^10)
*x + 2520*(a^9*b*c*d^9 - a^10*d^10 + (b^10*c*d^9 - a*b^9*d^10)*x^
9 + 9*(a*b^9*c*d^9 - a^2*b^8*d^10)*x^8 + 36*(a^2*b^8*c*d^9 - a^3*
b^7*d^10)*x^7 + 84*(a^3*b^7*c*d^9 - a^4*b^6*d^10)*x^6 + 126*(a^4*
b^6*c*d^9 - a^5*b^5*d^10)*x^5 + 126*(a^5*b^5*c*d^9 - a^6*b^4*d^10
)*x^4 + 84*(a^6*b^4*c*d^9 - a^7*b^3*d^10)*x^3 + 36*(a^7*b^3*c*d^9
 - a^8*b^2*d^10)*x^2 + 9*(a^8*b^2*c*d^9 - a^9*b*d^10)*x)*log(b*x
+ a))/(b^20*x^9 + 9*a*b^19*x^8 + 36*a^2*b^18*x^7 + 84*a^3*b^17*x^
6 + 126*a^4*b^16*x^5 + 126*a^5*b^15*x^4 + 84*a^6*b^14*x^3 + 36*a^
7*b^13*x^2 + 9*a^8*b^12*x + a^9*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**10,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.218816, size = 1170, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^10,x, algorithm="giac")
```

```
[Out] d^10*x/b^10 + 10*(b*c*d^9 - a*d^10)*ln(abs(b*x + a))/b^11 - 1/252
*(28*b^10*c^10 + 35*a*b^9*c^9*d + 45*a^2*b^8*c^8*d^2 + 60*a^3*b^7
*c^7*d^3 + 84*a^4*b^6*c^6*d^4 + 126*a^5*b^5*c^5*d^5 + 210*a^6*b^4
*c^4*d^6 + 420*a^7*b^3*c^3*d^7 + 1260*a^8*b^2*c^2*d^8 - 7129*a^9*
b*c*d^9 + 4861*a^10*d^10 + 11340*(b^10*c^2*d^8 - 2*a*b^9*c*d^9 +
a^2*b^8*d^10)*x^8 + 15120*(b^10*c^3*d^7 + 3*a*b^9*c^2*d^8 - 9*a^2
*b^8*c*d^9 + 5*a^3*b^7*d^10)*x^7 + 17640*(b^10*c^4*d^6 + 2*a*b^9*
c^3*d^7 + 6*a^2*b^8*c^2*d^8 - 22*a^3*b^7*c*d^9 + 13*a^4*b^6*d^10)
*x^6 + 5292*(3*b^10*c^5*d^5 + 5*a*b^9*c^4*d^6 + 10*a^2*b^8*c^3*d^
7 + 30*a^3*b^7*c^2*d^8 - 125*a^4*b^6*c*d^9 + 77*a^5*b^5*d^10)*x^5
 + 5292*(2*b^10*c^6*d^4 + 3*a*b^9*c^5*d^5 + 5*a^2*b^8*c^4*d^6 + 1
0*a^3*b^7*c^3*d^7 + 30*a^4*b^6*c^2*d^8 - 137*a^5*b^5*c*d^9 + 87*a
^6*b^4*d^10)*x^4 + 504*(10*b^10*c^7*d^3 + 14*a*b^9*c^6*d^4 + 21*a
^2*b^8*c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 70*a^4*b^6*c^3*d^7 + 210*a^
5*b^5*c^2*d^8 - 1029*a^6*b^4*c*d^9 + 669*a^7*b^3*d^10)*x^3 + 108*
(15*b^10*c^8*d^2 + 20*a*b^9*c^7*d^3 + 28*a^2*b^8*c^6*d^4 + 42*a^3
*b^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 + 140*a^5*b^5*c^3*d^7 + 420*a^6
*b^4*c^2*d^8 - 2178*a^7*b^3*c*d^9 + 1443*a^8*b^2*d^10)*x^2 + 9*(3
5*b^10*c^9*d + 45*a*b^9*c^8*d^2 + 60*a^2*b^8*c^7*d^3 + 84*a^3*b^7
*c^6*d^4 + 126*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^6 + 420*a^6*b^
4*c^3*d^7 + 1260*a^7*b^3*c^2*d^8 - 6849*a^8*b^2*c*d^9 + 4609*a^9*
b*d^10)*x)/((b*x + a)^9*b^11)
```

3.1322 $\int \frac{(c+dx)^{10}}{(a+bx)^{11}}\,dx$

Optimal. Leaf size=271

$$-\frac{10d^9(bc-ad)}{b^{11}(a+bx)}-\frac{45d^8(bc-ad)^2}{2b^{11}(a+bx)^2}-\frac{40d^7(bc-ad)^3}{b^{11}(a+bx)^3}-\frac{105d^6(bc-ad)^4}{2b^{11}(a+bx)^4}-\frac{252d^5(bc-ad)^5}{5b^{11}(a+bx)^5}-\frac{35d^4(bc-ad)^6}{b^{11}(a+bx)^6}-\frac{120d^3(bc-ad)^7}{7b^{11}(a+bx)^7}-\frac{45d^2(bc-ad)^8}{8b^{11}(a+bx)^8}-\frac{10d(bc-ad)^9}{9b^{11}(a+bx)^9}-\frac{(bc-ad)^{10}}{10b^{11}(a+bx)^{10}}+\frac{d^{10}\log(a+bx)}{b^{11}}$$

```
[Out] -(b*c - a*d)^10/(10*b^11*(a + b*x)^10) - (10*d*(b*c - a*d)^9)/(9*
b^11*(a + b*x)^9) - (45*d^2*(b*c - a*d)^8)/(8*b^11*(a + b*x)^8) -
 (120*d^3*(b*c - a*d)^7)/(7*b^11*(a + b*x)^7) - (35*d^4*(b*c - a*
d)^6)/(b^11*(a + b*x)^6) - (252*d^5*(b*c - a*d)^5)/(5*b^11*(a + b
*x)^5) - (105*d^6*(b*c - a*d)^4)/(2*b^11*(a + b*x)^4) - (40*d^7*(
b*c - a*d)^3)/(b^11*(a + b*x)^3) - (45*d^8*(b*c - a*d)^2)/(2*b^11
*(a + b*x)^2) - (10*d^9*(b*c - a*d))/(b^11*(a + b*x)) + (d^10*Log
[a + b*x])/b^11
```

Rubi [A] time = 0.796309, antiderivative size = 271, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{10d^9(bc-ad)}{b^{11}(a+bx)}-\frac{45d^8(bc-ad)^2}{2b^{11}(a+bx)^2}-\frac{40d^7(bc-ad)^3}{b^{11}(a+bx)^3}-\frac{105d^6(bc-ad)^4}{2b^{11}(a+bx)^4}-\frac{252d^5(bc-ad)^5}{5b^{11}(a+bx)^5}-\frac{35d^4(bc-ad)^6}{b^{11}(a+bx)^6}-\frac{120d^3(bc-ad)^7}{7b^{11}(a+bx)^7}-\frac{45d^2(bc-ad)^8}{8b^{11}(a+bx)^8}-\frac{10d(bc-ad)^9}{9b^{11}(a+bx)^9}-\frac{(bc-ad)^{10}}{10b^{11}(a+bx)^{10}}+\frac{d^{10}\log(a+bx)}{b^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^11,x]
```

```
[Out] -(b*c - a*d)^10/(10*b^11*(a + b*x)^10) - (10*d*(b*c - a*d)^9)/(9*
b^11*(a + b*x)^9) - (45*d^2*(b*c - a*d)^8)/(8*b^11*(a + b*x)^8) -
 (120*d^3*(b*c - a*d)^7)/(7*b^11*(a + b*x)^7) - (35*d^4*(b*c - a*
d)^6)/(b^11*(a + b*x)^6) - (252*d^5*(b*c - a*d)^5)/(5*b^11*(a + b
*x)^5) - (105*d^6*(b*c - a*d)^4)/(2*b^11*(a + b*x)^4) - (40*d^7*(
b*c - a*d)^3)/(b^11*(a + b*x)^3) - (45*d^8*(b*c - a*d)^2)/(2*b^11
*(a + b*x)^2) - (10*d^9*(b*c - a*d))/(b^11*(a + b*x)) + (d^10*Log
[a + b*x])/b^11
```

Rubi in Sympy [A] time = 129.327, size = 252, normalized size = 0.93

$$\frac{d^{10}\log\left(a+bx\right)}{b^{11}}+\frac{10d^{9}\left(ad-bc\right)}{b^{11}\left(a+bx\right)}-\frac{45d^{8}\left(ad-bc\right)^{2}}{2b^{11}\left(a+bx\right)^{2}}+\frac{40d^{7}\left(ad-bc\right)^{3}}{b^{11}\left(a+bx\right)^{3}}-\frac{105d^{6}\left(ad-bc\right)^{4}}{2b^{11}\left(a+bx\right)^{4}}+\frac{252d^{5}\left(ad-bc\right)^{5}}{5b^{11}\left(a+bx\right)^{5}}-\frac{35d^{4}\left(ad-bc\right)^{6}}{b^{11}\left(a+bx\right)^{6}}+\frac{120d^{3}\left(ad-bc\right)^{7}}{7b^{11}\left(a+bx\right)^{7}}-\frac{45d^{2}\left(ad-bc\right)^{8}}{8b^{11}\left(a+bx\right)^{8}}+\frac{10d\left(ad-bc\right)^{9}}{9b^{11}\left(a+bx\right)^{9}}-\frac{\left(ad-bc\right)^{10}}{10b^{11}\left(a+bx\right)^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**11,x)
```

```
[Out] d**10*log(a + b*x)/b**11 + 10*d**9*(a*d - b*c)/(b**11*(a + b*x))
- 45*d**8*(a*d - b*c)**2/(2*b**11*(a + b*x)**2) + 40*d**7*(a*d -
b*c)**3/(b**11*(a + b*x)**3) - 105*d**6*(a*d - b*c)**4/(2*b**11*(
a + b*x)**4) + 252*d**5*(a*d - b*c)**5/(5*b**11*(a + b*x)**5) - 3
5*d**4*(a*d - b*c)**6/(b**11*(a + b*x)**6) + 120*d**3*(a*d - b*c)
**7/(7*b**11*(a + b*x)**7) - 45*d**2*(a*d - b*c)**8/(8*b**11*(a +
 b*x)**8) + 10*d*(a*d - b*c)**9/(9*b**11*(a + b*x)**9) - (a*d - b
*c)**10/(10*b**11*(a + b*x)**10)
```

Mathematica [B] time = 0.811004, size = 591, normalized size = 2.18

$$\frac{d^{10}\log(a+bx)}{b^{11}}-\frac{(bc-ad)\left(7381a^{9}d^{9}+a^{8}bd^{8}(4861c+71290dx)+a^{7}b^{2}d^{7}\left(3601c^{2}+46090cdx+308205d^{2}x^{2}\right)+a^{6}b^{3}d^{6}\left(2761c^{3}+33490c^{2}d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^11,x]
```

```
[Out] -((b*c - a*d)*(7381*a^9*d^9 + a^8*b*d^8*(4861*c + 71290*d*x) + a^
7*b^2*d^7*(3601*c^2 + 46090*c*d*x + 308205*d^2*x^2) + a^6*b^3*d^6
*(2761*c^3 + 33490*c^2*d*x + 194805*c*d^2*x^2 + 784080*d^3*x^3) +
 a^5*b^4*d^5*(2131*c^4 + 25090*c^3*d*x + 138105*c^2*d^2*x^2 + 481
680*c*d^3*x^3 + 1296540*d^4*x^4) + a^4*b^5*d^4*(1627*c^5 + 18790*
c^4*d*x + 100305*c^3*d^2*x^2 + 330480*c^2*d^3*x^3 + 767340*c*d^4*
x^4 + 1450008*d^5*x^5) + a^3*b^6*d^3*(1207*c^6 + 13750*c^5*d*x +
71955*c^4*d^2*x^2 + 229680*c^3*d^3*x^3 + 502740*c^2*d^4*x^4 + 814
968*c*d^5*x^5 + 1102500*d^6*x^6) + a^2*b^7*d^2*(847*c^7 + 9550*c^
6*d*x + 49275*c^5*d^2*x^2 + 154080*c^4*d^3*x^3 + 326340*c^3*d^4*x
^4 + 497448*c^2*d^5*x^5 + 573300*c*d^6*x^6 + 554400*d^7*x^7) + a*
b^8*d*(532*c^8 + 5950*c^7*d*x + 30375*c^6*d^2*x^2 + 93600*c^5*d^3
*x^3 + 194040*c^4*d^4*x^4 + 285768*c^3*d^5*x^5 + 308700*c^2*d^6*x
^6 + 252000*c*d^7*x^7 + 170100*d^8*x^8) + b^9*(252*c^9 + 2800*c^8
*d*x + 14175*c^7*d^2*x^2 + 43200*c^6*d^3*x^3 + 88200*c^5*d^4*x^4
```

```
+ 127008*c^4*d^5*x^5 + 132300*c^3*d^6*x^6 + 100800*c^2*d^7*x^7 +
56700*c*d^8*x^8 + 25200*d^9*x^9)))/(2520*b^11*(a + b*x)^10) + (d^
10*Log[a + b*x])/b^11
```

Maple [B] time = 0.018, size = 1271, normalized size = 4.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^11,x)
```

```
[Out] 10/9*d^10/b^11/(b*x+a)^9*a^9-10/9*d/b^2/(b*x+a)^9*c^9+10/b^11*d^1
0/(b*x+a)*a-10/b^10*d^9/(b*x+a)*c+40*d^10/b^11/(b*x+a)^3*a^3-40*d
^7/b^8/(b*x+a)^3*c^3-45/2*d^10/b^11/(b*x+a)^2*a^2-45/2*d^8/b^9/(b
*x+a)^2*c^2-45/8*d^10/b^11/(b*x+a)^8*a^8-45/8*d^2/b^3/(b*x+a)^8*c
^8-1/10/b^11/(b*x+a)^10*a^10*d^10-105/2*d^10/b^11/(b*x+a)^4*a^4-1
05/2*d^6/b^7/(b*x+a)^4*c^4+252/5*d^10/b^11/(b*x+a)^5*a^5-252/5*d^
5/b^6/(b*x+a)^5*c^5-35*d^10/b^11/(b*x+a)^6*a^6-35*d^4/b^5/(b*x+a)
^6*c^6+120/7*d^10/b^11/(b*x+a)^7*a^7-120/7*d^3/b^4/(b*x+a)^7*c^7-
9/2/b^3/(b*x+a)^10*c^8*d^2*a^2+1/b^2/(b*x+a)^10*c^9*d*a-252*d^9/b
^10/(b*x+a)^5*a^4*c+252*d^6/b^7/(b*x+a)^5*a*c^4+210*d^9/b^10/(b*x
+a)^6*a^5*c-525*d^8/b^9/(b*x+a)^6*a^4*c^2+700*d^7/b^8/(b*x+a)^6*a
^3*c^3-525*d^6/b^7/(b*x+a)^6*a^2*c^4+210*d^5/b^6/(b*x+a)^6*a*c^5-
120*d^9/b^10/(b*x+a)^7*a^6*c+360*d^8/b^9/(b*x+a)^7*a^5*c^2-600*d^
7/b^8/(b*x+a)^7*a^4*c^3-10*d^9/b^10/(b*x+a)^9*a^8*c+40*d^8/b^9/(b
*x+a)^9*a^7*c^2-1/10/b/(b*x+a)^10*c^10+600*d^6/b^7/(b*x+a)^7*a^3*
c^4-360*d^5/b^6/(b*x+a)^7*a^2*c^5+120*d^4/b^5/(b*x+a)^7*a*c^6+210
*d^9/b^10/(b*x+a)^4*a^3*c-315*d^8/b^9/(b*x+a)^4*a^2*c^2+210*d^7/b
^8/(b*x+a)^4*a*c^3-120*d^9/b^10/(b*x+a)^3*a^2*c+120*d^8/b^9/(b*x+
a)^3*a*c^2+45*d^9/b^10/(b*x+a)^2*a*c+45*d^9/b^10/(b*x+a)^8*a^7*c-
315/2*d^8/b^9/(b*x+a)^8*a^6*c^2+315*d^7/b^8/(b*x+a)^8*a^5*c^3-157
5/4*d^6/b^7/(b*x+a)^8*a^4*c^4+315*d^5/b^6/(b*x+a)^8*a^3*c^5-315/2
*d^4/b^5/(b*x+a)^8*a^2*c^6+45*d^3/b^4/(b*x+a)^8*a*c^7+1/b^10/(b*x
+a)^10*c*d^9*a^9-9/2/b^9/(b*x+a)^10*c^2*d^8*a^8+d^10*ln(b*x+a)/b^
11+12/b^8/(b*x+a)^10*c^3*d^7*a^7-21/b^7/(b*x+a)^10*c^4*d^6*a^6-28
0/3*d^7/b^8/(b*x+a)^9*a^6*c^3+140*d^6/b^7/(b*x+a)^9*a^5*c^4-140*d
^5/b^6/(b*x+a)^9*a^4*c^5+280/3*d^4/b^5/(b*x+a)^9*a^3*c^6-40*d^3/b
^4/(b*x+a)^9*a^2*c^7+10*d^2/b^3/(b*x+a)^9*a*c^8+504*d^8/b^9/(b*x+
a)^5*a^3*c^2-504*d^7/b^8/(b*x+a)^5*a^2*c^3+126/5/b^6/(b*x+a)^10*a
^5*c^5*d^5-21/b^5/(b*x+a)^10*a^4*c^6*d^4+12/b^4/(b*x+a)^10*c^7*d^
3*a^3
```

Maxima [A] time = 1.42912, size = 1316, normalized size = 4.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(252*b^10*c^10 + 280*a*b^9*c^9*d + 315*a^2*b^8*c^8*d^2 +
360*a^3*b^7*c^7*d^3 + 420*a^4*b^6*c^6*d^4 + 504*a^5*b^5*c^5*d^5 +
 630*a^6*b^4*c^4*d^6 + 840*a^7*b^3*c^3*d^7 + 1260*a^8*b^2*c^2*d^8
 + 2520*a^9*b*c*d^9 - 7381*a^10*d^10 + 25200*(b^10*c*d^9 - a*b^9*
d^10)*x^9 + 56700*(b^10*c^2*d^8 + 2*a*b^9*c*d^9 - 3*a^2*b^8*d^10)
*x^8 + 50400*(2*b^10*c^3*d^7 + 3*a*b^9*c^2*d^8 + 6*a^2*b^8*c*d^9
- 11*a^3*b^7*d^10)*x^7 + 44100*(3*b^10*c^4*d^6 + 4*a*b^9*c^3*d^7
+ 6*a^2*b^8*c^2*d^8 + 12*a^3*b^7*c*d^9 - 25*a^4*b^6*d^10)*x^6 + 1
0584*(12*b^10*c^5*d^5 + 15*a*b^9*c^4*d^6 + 20*a^2*b^8*c^3*d^7 + 3
0*a^3*b^7*c^2*d^8 + 60*a^4*b^6*c*d^9 - 137*a^5*b^5*d^10)*x^5 + 88
20*(10*b^10*c^6*d^4 + 12*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4*d^6 + 20*
a^3*b^7*c^3*d^7 + 30*a^4*b^6*c^2*d^8 + 60*a^5*b^5*c*d^9 - 147*a^6
*b^4*d^10)*x^4 + 720*(60*b^10*c^7*d^3 + 70*a*b^9*c^6*d^4 + 84*a^2
*b^8*c^5*d^5 + 105*a^3*b^7*c^4*d^6 + 140*a^4*b^6*c^3*d^7 + 210*a^
5*b^5*c^2*d^8 + 420*a^6*b^4*c*d^9 - 1089*a^7*b^3*d^10)*x^3 + 135*
(105*b^10*c^8*d^2 + 120*a*b^9*c^7*d^3 + 140*a^2*b^8*c^6*d^4 + 168
*a^3*b^7*c^5*d^5 + 210*a^4*b^6*c^4*d^6 + 280*a^5*b^5*c^3*d^7 + 42
0*a^6*b^4*c^2*d^8 + 840*a^7*b^3*c*d^9 - 2283*a^8*b^2*d^10)*x^2 +
10*(280*b^10*c^9*d + 315*a*b^9*c^8*d^2 + 360*a^2*b^8*c^7*d^3 + 42
0*a^3*b^7*c^6*d^4 + 504*a^4*b^6*c^5*d^5 + 630*a^5*b^5*c^4*d^6 + 8
40*a^6*b^4*c^3*d^7 + 1260*a^7*b^3*c^2*d^8 + 2520*a^8*b^2*c*d^9 -
7129*a^9*b*d^10)*x)/(b^21*x^10 + 10*a*b^20*x^9 + 45*a^2*b^19*x^8
+ 120*a^3*b^18*x^7 + 210*a^4*b^17*x^6 + 252*a^5*b^16*x^5 + 210*a^
6*b^15*x^4 + 120*a^7*b^14*x^3 + 45*a^8*b^13*x^2 + 10*a^9*b^12*x +
 a^10*b^11) + d^10*log(b*x + a)/b^11
```

Fricas [A] time = 0.232779, size = 1494, normalized size = 5.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(252*b^10*c^10 + 280*a*b^9*c^9*d + 315*a^2*b^8*c^8*d^2 +
360*a^3*b^7*c^7*d^3 + 420*a^4*b^6*c^6*d^4 + 504*a^5*b^5*c^5*d^5 +
 630*a^6*b^4*c^4*d^6 + 840*a^7*b^3*c^3*d^7 + 1260*a^8*b^2*c^2*d^8
 + 2520*a^9*b*c*d^9 - 7381*a^10*d^10 + 25200*(b^10*c*d^9 - a*b^9*
d^10)*x^9 + 56700*(b^10*c^2*d^8 + 2*a*b^9*c*d^9 - 3*a^2*b^8*d^10)
*x^8 + 50400*(2*b^10*c^3*d^7 + 3*a*b^9*c^2*d^8 + 6*a^2*b^8*c*d^9
- 11*a^3*b^7*d^10)*x^7 + 44100*(3*b^10*c^4*d^6 + 4*a*b^9*c^3*d^7
+ 6*a^2*b^8*c^2*d^8 + 12*a^3*b^7*c*d^9 - 25*a^4*b^6*d^10)*x^6 + 1
0584*(12*b^10*c^5*d^5 + 15*a*b^9*c^4*d^6 + 20*a^2*b^8*c^3*d^7 + 3
0*a^3*b^7*c^2*d^8 + 60*a^4*b^6*c*d^9 - 137*a^5*b^5*d^10)*x^5 + 88
20*(10*b^10*c^6*d^4 + 12*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4*d^6 + 20*
a^3*b^7*c^3*d^7 + 30*a^4*b^6*c^2*d^8 + 60*a^5*b^5*c*d^9 - 147*a^6
*b^4*d^10)*x^4 + 720*(60*b^10*c^7*d^3 + 70*a*b^9*c^6*d^4 + 84*a^2
*b^8*c^5*d^5 + 105*a^3*b^7*c^4*d^6 + 140*a^4*b^6*c^3*d^7 + 210*a^
5*b^5*c^2*d^8 + 420*a^6*b^4*c*d^9 - 1089*a^7*b^3*d^10)*x^3 + 135*
```

```
(105*b^10*c^8*d^2 + 120*a*b^9*c^7*d^3 + 140*a^2*b^8*c^6*d^4 + 168
*a^3*b^7*c^5*d^5 + 210*a^4*b^6*c^4*d^6 + 280*a^5*b^5*c^3*d^7 + 42
0*a^6*b^4*c^2*d^8 + 840*a^7*b^3*c*d^9 - 2283*a^8*b^2*d^10)*x^2 +
10*(280*b^10*c^9*d + 315*a*b^9*c^8*d^2 + 360*a^2*b^8*c^7*d^3 + 42
0*a^3*b^7*c^6*d^4 + 504*a^4*b^6*c^5*d^5 + 630*a^5*b^5*c^4*d^6 + 8
40*a^6*b^4*c^3*d^7 + 1260*a^7*b^3*c^2*d^8 + 2520*a^8*b^2*c*d^9 -
7129*a^9*b*d^10)*x - 2520*(b^10*d^10*x^10 + 10*a*b^9*d^10*x^9 + 4
5*a^2*b^8*d^10*x^8 + 120*a^3*b^7*d^10*x^7 + 210*a^4*b^6*d^10*x^6
+ 252*a^5*b^5*d^10*x^5 + 210*a^6*b^4*d^10*x^4 + 120*a^7*b^3*d^10*
x^3 + 45*a^8*b^2*d^10*x^2 + 10*a^9*b*d^10*x + a^10*d^10)*log(b*x
+ a))/(b^21*x^10 + 10*a*b^20*x^9 + 45*a^2*b^19*x^8 + 120*a^3*b^18
*x^7 + 210*a^4*b^17*x^6 + 252*a^5*b^16*x^5 + 210*a^6*b^15*x^4 + 1
20*a^7*b^14*x^3 + 45*a^8*b^13*x^2 + 10*a^9*b^12*x + a^10*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**11,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223707, size = 1180, normalized size = 4.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^11,x, algorithm="giac")
```

```
[Out] d^10*ln(abs(b*x + a))/b^11 - 1/2520*(25200*(b^9*c*d^9 - a*b^8*d^1
0)*x^9 + 56700*(b^9*c^2*d^8 + 2*a*b^8*c*d^9 - 3*a^2*b^7*d^10)*x^8
 + 50400*(2*b^9*c^3*d^7 + 3*a*b^8*c^2*d^8 + 6*a^2*b^7*c*d^9 - 11*
a^3*b^6*d^10)*x^7 + 44100*(3*b^9*c^4*d^6 + 4*a*b^8*c^3*d^7 + 6*a^
2*b^7*c^2*d^8 + 12*a^3*b^6*c*d^9 - 25*a^4*b^5*d^10)*x^6 + 10584*(
12*b^9*c^5*d^5 + 15*a*b^8*c^4*d^6 + 20*a^2*b^7*c^3*d^7 + 30*a^3*b
^6*c^2*d^8 + 60*a^4*b^5*c*d^9 - 137*a^5*b^4*d^10)*x^5 + 8820*(10*
b^9*c^6*d^4 + 12*a*b^8*c^5*d^5 + 15*a^2*b^7*c^4*d^6 + 20*a^3*b^6*
c^3*d^7 + 30*a^4*b^5*c^2*d^8 + 60*a^5*b^4*c*d^9 - 147*a^6*b^3*d^1
0)*x^4 + 720*(60*b^9*c^7*d^3 + 70*a*b^8*c^6*d^4 + 84*a^2*b^7*c^5*
d^5 + 105*a^3*b^6*c^4*d^6 + 140*a^4*b^5*c^3*d^7 + 210*a^5*b^4*c^2
*d^8 + 420*a^6*b^3*c*d^9 - 1089*a^7*b^2*d^10)*x^3 + 135*(105*b^9*
c^8*d^2 + 120*a*b^8*c^7*d^3 + 140*a^2*b^7*c^6*d^4 + 168*a^3*b^6*c
^5*d^5 + 210*a^4*b^5*c^4*d^6 + 280*a^5*b^4*c^3*d^7 + 420*a^6*b^3*
c^2*d^8 + 840*a^7*b^2*c*d^9 - 2283*a^8*b*d^10)*x^2 + 10*(280*b^9*
```

```
c^9*d + 315*a*b^8*c^8*d^2 + 360*a^2*b^7*c^7*d^3 + 420*a^3*b^6*c^6
*d^4 + 504*a^4*b^5*c^5*d^5 + 630*a^5*b^4*c^4*d^6 + 840*a^6*b^3*c^
3*d^7 + 1260*a^7*b^2*c^2*d^8 + 2520*a^8*b*c*d^9 - 7129*a^9*d^10)*
x + (252*b^10*c^10 + 280*a*b^9*c^9*d + 315*a^2*b^8*c^8*d^2 + 360*
a^3*b^7*c^7*d^3 + 420*a^4*b^6*c^6*d^4 + 504*a^5*b^5*c^5*d^5 + 630
*a^6*b^4*c^4*d^6 + 840*a^7*b^3*c^3*d^7 + 1260*a^8*b^2*c^2*d^8 + 2
520*a^9*b*c*d^9 - 7381*a^10*d^10)/b)/((b*x + a)^10*b^10)
```

3.1323 $\int \frac{(c+dx)^{10}}{(a+bx)^{12}}\,dx$

Optimal. Leaf size=28

$$-\frac{(c+dx)^{11}}{11(a+bx)^{11}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(11*(b*c - a*d)*(a + b*x)^11)
```

Rubi [A] time = 0.019527, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{(c+dx)^{11}}{11(a+bx)^{11}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^12,x]

[Out] -(c + d*x)^11/(11*(b*c - a*d)*(a + b*x)^11)
```

Rubi in Sympy [A] time = 4.07456, size = 20, normalized size = 0.71

$$\frac{(c+dx)^{11}}{11\,(a+bx)^{11}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**12,x)

[Out] (c + d*x)**11/(11*(a + b*x)**11*(a*d - b*c))
```

Mathematica [B] time = 0.681584, size = 665, normalized size = 23.75

$$-\frac{a^{10}d^{10}+a^9bd^9(c+11dx)+a^8b^2d^8\left(c^2+11cdx+55d^2x^2\right)+a^7b^3d^7\left(c^3+11c^2dx+55cd^2x^2+165d^3x^3\right)+a^6b^4d^6\left(c^4+11c\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^12,x]
```

```
[Out] -(a^10*d^10 + a^9*b*d^9*(c + 11*d*x) + a^8*b^2*d^8*(c^2 + 11*c*d*
x + 55*d^2*x^2) + a^7*b^3*d^7*(c^3 + 11*c^2*d*x + 55*c*d^2*x^2 +
165*d^3*x^3) + a^6*b^4*d^6*(c^4 + 11*c^3*d*x + 55*c^2*d^2*x^2 + 1
65*c*d^3*x^3 + 330*d^4*x^4) + a^5*b^5*d^5*(c^5 + 11*c^4*d*x + 55*
c^3*d^2*x^2 + 165*c^2*d^3*x^3 + 330*c*d^4*x^4 + 462*d^5*x^5) + a^
4*b^6*d^4*(c^6 + 11*c^5*d*x + 55*c^4*d^2*x^2 + 165*c^3*d^3*x^3 +
330*c^2*d^4*x^4 + 462*c*d^5*x^5 + 462*d^6*x^6) + a^3*b^7*d^3*(c^7
 + 11*c^6*d*x + 55*c^5*d^2*x^2 + 165*c^4*d^3*x^3 + 330*c^3*d^4*x^
4 + 462*c^2*d^5*x^5 + 462*c*d^6*x^6 + 330*d^7*x^7) + a^2*b^8*d^2*
(c^8 + 11*c^7*d*x + 55*c^6*d^2*x^2 + 165*c^5*d^3*x^3 + 330*c^4*d^
4*x^4 + 462*c^3*d^5*x^5 + 462*c^2*d^6*x^6 + 330*c*d^7*x^7 + 165*d
^8*x^8) + a*b^9*d*(c^9 + 11*c^8*d*x + 55*c^7*d^2*x^2 + 165*c^6*d^
3*x^3 + 330*c^5*d^4*x^4 + 462*c^4*d^5*x^5 + 462*c^3*d^6*x^6 + 330
*c^2*d^7*x^7 + 165*c*d^8*x^8 + 55*d^9*x^9) + b^10*(c^10 + 11*c^9*
d*x + 55*c^8*d^2*x^2 + 165*c^7*d^3*x^3 + 330*c^6*d^4*x^4 + 462*c^
5*d^5*x^5 + 462*c^4*d^6*x^6 + 330*c^3*d^7*x^7 + 165*c^2*d^8*x^8 +
 55*c*d^9*x^9 + 11*d^10*x^10))/(11*b^11*(a + b*x)^11)
```

Maple [B] time = 0.013, size = 866, normalized size = 30.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^12,x)
```

```
[Out] -42*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^
4*c^4)/b^11/(b*x+a)^5+42*d^5*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^
2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^11/(b*x+a)^6-30
*d^4*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3
+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^7+30*d^7*
(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)^4-15*d
^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^3+5*d^9*(a*d-b*c)/b^1
1/(b*x+a)^2+15*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^2*c^2*d^5-35*a
^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^2+7*a*b^6*c^6*
d-b^7*c^7)/b^11/(b*x+a)^8+d*(a^9*d^9-9*a^8*b*c*d^8+36*a^7*b^2*c^2
*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*c^5*d^4+8
4*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c^9)/b^11/
(b*x+a)^10-1/11*(a^10*d^10-10*a^9*b*c*d^9+45*a^8*b^2*c^2*d^8-120*
a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*b^5*c^5*d^5+210*a^4*b
^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8*d^2-10*a*b^9*c^9*d+
b^10*c^10)/b^11/(b*x+a)^11-5*d^2*(a^8*d^8-8*a^7*b*c*d^7+28*a^6*b^
2*c^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*b^5*c^5*d^
3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a)^9-d^10/b
^11/(b*x+a)
```

Maxima [A] time = 1.44881, size = 1242, normalized size = 44.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^12,x, algorithm="maxima")
```

```
[Out] -1/11*(11*b^10*d^10*x^10 + b^10*c^10 + a*b^9*c^9*d + a^2*b^8*c^8*
d^2 + a^3*b^7*c^7*d^3 + a^4*b^6*c^6*d^4 + a^5*b^5*c^5*d^5 + a^6*b
^4*c^4*d^6 + a^7*b^3*c^3*d^7 + a^8*b^2*c^2*d^8 + a^9*b*c*d^9 + a^
10*d^10 + 55*(b^10*c*d^9 + a*b^9*d^10)*x^9 + 165*(b^10*c^2*d^8 +
a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 330*(b^10*c^3*d^7 + a*b^9*c^2*d
^8 + a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 462*(b^10*c^4*d^6 + a*b^
9*c^3*d^7 + a^2*b^8*c^2*d^8 + a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 +
 462*(b^10*c^5*d^5 + a*b^9*c^4*d^6 + a^2*b^8*c^3*d^7 + a^3*b^7*c^
2*d^8 + a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 330*(b^10*c^6*d^4 + a
*b^9*c^5*d^5 + a^2*b^8*c^4*d^6 + a^3*b^7*c^3*d^7 + a^4*b^6*c^2*d^
8 + a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 165*(b^10*c^7*d^3 + a*b^9
*c^6*d^4 + a^2*b^8*c^5*d^5 + a^3*b^7*c^4*d^6 + a^4*b^6*c^3*d^7 +
a^5*b^5*c^2*d^8 + a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 55*(b^10*c^
8*d^2 + a*b^9*c^7*d^3 + a^2*b^8*c^6*d^4 + a^3*b^7*c^5*d^5 + a^4*b
^6*c^4*d^6 + a^5*b^5*c^3*d^7 + a^6*b^4*c^2*d^8 + a^7*b^3*c*d^9 +
a^8*b^2*d^10)*x^2 + 11*(b^10*c^9*d + a*b^9*c^8*d^2 + a^2*b^8*c^7*
d^3 + a^3*b^7*c^6*d^4 + a^4*b^6*c^5*d^5 + a^5*b^5*c^4*d^6 + a^6*b
^4*c^3*d^7 + a^7*b^3*c^2*d^8 + a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^
22*x^11 + 11*a*b^21*x^10 + 55*a^2*b^20*x^9 + 165*a^3*b^19*x^8 + 3
30*a^4*b^18*x^7 + 462*a^5*b^17*x^6 + 462*a^6*b^16*x^5 + 330*a^7*b
^15*x^4 + 165*a^8*b^14*x^3 + 55*a^9*b^13*x^2 + 11*a^10*b^12*x + a
^11*b^11)
```

Fricas [A] time = 0.226727, size = 1242, normalized size = 44.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^12,x, algorithm="fricas")
```

```
[Out] -1/11*(11*b^10*d^10*x^10 + b^10*c^10 + a*b^9*c^9*d + a^2*b^8*c^8*
d^2 + a^3*b^7*c^7*d^3 + a^4*b^6*c^6*d^4 + a^5*b^5*c^5*d^5 + a^6*b
^4*c^4*d^6 + a^7*b^3*c^3*d^7 + a^8*b^2*c^2*d^8 + a^9*b*c*d^9 + a^
10*d^10 + 55*(b^10*c*d^9 + a*b^9*d^10)*x^9 + 165*(b^10*c^2*d^8 +
a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 330*(b^10*c^3*d^7 + a*b^9*c^2*d
^8 + a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 462*(b^10*c^4*d^6 + a*b^
9*c^3*d^7 + a^2*b^8*c^2*d^8 + a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 +
 462*(b^10*c^5*d^5 + a*b^9*c^4*d^6 + a^2*b^8*c^3*d^7 + a^3*b^7*c^
2*d^8 + a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 330*(b^10*c^6*d^4 + a
*b^9*c^5*d^5 + a^2*b^8*c^4*d^6 + a^3*b^7*c^3*d^7 + a^4*b^6*c^2*d^
8 + a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 165*(b^10*c^7*d^3 + a*b^9
*c^6*d^4 + a^2*b^8*c^5*d^5 + a^3*b^7*c^4*d^6 + a^4*b^6*c^3*d^7 +
a^5*b^5*c^2*d^8 + a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 55*(b^10*c^
8*d^2 + a*b^9*c^7*d^3 + a^2*b^8*c^6*d^4 + a^3*b^7*c^5*d^5 + a^4*b
^6*c^4*d^6 + a^5*b^5*c^3*d^7 + a^6*b^4*c^2*d^8 + a^7*b^3*c*d^9 +
a^8*b^2*d^10)*x^2 + 11*(b^10*c^9*d + a*b^9*c^8*d^2 + a^2*b^8*c^7*
```

```
d^3 + a^3*b^7*c^6*d^4 + a^4*b^6*c^5*d^5 + a^5*b^5*c^4*d^6 + a^6*b
^4*c^3*d^7 + a^7*b^3*c^2*d^8 + a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^
22*x^11 + 11*a*b^21*x^10 + 55*a^2*b^20*x^9 + 165*a^3*b^19*x^8 + 3
30*a^4*b^18*x^7 + 462*a^5*b^17*x^6 + 462*a^6*b^16*x^5 + 330*a^7*b
^15*x^4 + 165*a^8*b^14*x^3 + 55*a^9*b^13*x^2 + 11*a^10*b^12*x + a
^11*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**12,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219911, size = 1, normalized size = 0.04

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^12,x, algorithm="giac")
```

```
[Out] Done
```

3.1324 $\int \frac{(c+dx)^{10}}{(a+bx)^{13}}\,dx$

Optimal. Leaf size=58

$$\frac{d(c+dx)^{11}}{132(a+bx)^{11}(bc-ad)^2}-\frac{(c+dx)^{11}}{12(a+bx)^{12}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(12*(b*c - a*d)*(a + b*x)^12) + (d*(c + d*x)^11)/(1
32*(b*c - a*d)^2*(a + b*x)^11)
```

Rubi [A] time = 0.0398136, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{d(c+dx)^{11}}{132(a+bx)^{11}(bc-ad)^2}-\frac{(c+dx)^{11}}{12(a+bx)^{12}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^13,x]
```

```
[Out] -(c + d*x)^11/(12*(b*c - a*d)*(a + b*x)^12) + (d*(c + d*x)^11)/(1
32*(b*c - a*d)^2*(a + b*x)^11)
```

Rubi in Sympy [A] time = 8.42935, size = 46, normalized size = 0.79

$$\frac{d\left(c+dx\right)^{11}}{132\left(a+bx\right)^{11}\left(ad-bc\right)^{2}}+\frac{\left(c+dx\right)^{11}}{12\left(a+bx\right)^{12}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**13,x)
```

```
[Out] d*(c + d*x)**11/(132*(a + b*x)**11*(a*d - b*c)**2) + (c + d*x)**1
1/(12*(a + b*x)**12*(a*d - b*c))
```

Mathematica [B] time = 0.598451, size = 684, normalized size = 11.79

$$-\frac{a^{10}d^{10}+2a^9bd^9(c+6dx)+3a^8b^2d^8\left(c^2+8cdx+22d^2x^2\right)+4a^7b^3d^7\left(c^3+9c^2dx+33cd^2x^2+55d^3x^3\right)+a^6b^4d^6\left(5c^4+48c^3\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^13,x]
```

```
[Out] -(a^10*d^10 + 2*a^9*b*d^9*(c + 6*d*x) + 3*a^8*b^2*d^8*(c^2 + 8*c*
d*x + 22*d^2*x^2) + 4*a^7*b^3*d^7*(c^3 + 9*c^2*d*x + 33*c*d^2*x^2
 + 55*d^3*x^3) + a^6*b^4*d^6*(5*c^4 + 48*c^3*d*x + 198*c^2*d^2*x^
2 + 440*c*d^3*x^3 + 495*d^4*x^4) + 6*a^5*b^5*d^5*(c^5 + 10*c^4*d*
x + 44*c^3*d^2*x^2 + 110*c^2*d^3*x^3 + 165*c*d^4*x^4 + 132*d^5*x^
5) + a^4*b^6*d^4*(7*c^6 + 72*c^5*d*x + 330*c^4*d^2*x^2 + 880*c^3*
d^3*x^3 + 1485*c^2*d^4*x^4 + 1584*c*d^5*x^5 + 924*d^6*x^6) + 4*a^
3*b^7*d^3*(2*c^7 + 21*c^6*d*x + 99*c^5*d^2*x^2 + 275*c^4*d^3*x^3
+ 495*c^3*d^4*x^4 + 594*c^2*d^5*x^5 + 462*c*d^6*x^6 + 198*d^7*x^7
) + 3*a^2*b^8*d^2*(3*c^8 + 32*c^7*d*x + 154*c^6*d^2*x^2 + 440*c^5
*d^3*x^3 + 825*c^4*d^4*x^4 + 1056*c^3*d^5*x^5 + 924*c^2*d^6*x^6 +
 528*c*d^7*x^7 + 165*d^8*x^8) + 2*a*b^9*d*(5*c^9 + 54*c^8*d*x + 2
64*c^7*d^2*x^2 + 770*c^6*d^3*x^3 + 1485*c^5*d^4*x^4 + 1980*c^4*d^
5*x^5 + 1848*c^3*d^6*x^6 + 1188*c^2*d^7*x^7 + 495*c*d^8*x^8 + 110
*d^9*x^9) + b^10*(11*c^10 + 120*c^9*d*x + 594*c^8*d^2*x^2 + 1760*
c^7*d^3*x^3 + 3465*c^6*d^4*x^4 + 4752*c^5*d^5*x^5 + 4620*c^4*d^6*
x^6 + 3168*c^3*d^7*x^7 + 1485*c^2*d^8*x^8 + 440*c*d^9*x^9 + 66*d^
10*x^10))/(132*b^11*(a + b*x)^12)
```

Maple [B] time = 0.013, size = 867, normalized size = 15.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^13,x)
```

```
[Out] 24*d^7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)
^5-35*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+
b^4*c^4)/b^11/(b*x+a)^6-1/12*(a^10*d^10-10*a^9*b*c*d^9+45*a^8*b^2
*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*b^5*c^5*
d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8*d^2-10
*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^12+36*d^5*(a^5*d^5-5*a^4*b*c
*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)
/b^11/(b*x+a)^7-45/4*d^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)
^4+10/3*d^9*(a*d-b*c)/b^11/(b*x+a)^3-1/2*d^10/b^11/(b*x+a)^2-105/
4*d^4*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^
3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^8-9/2*d^
2*(a^8*d^8-8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c^3*d^5+70
*a^4*b^4*c^4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^
7*d+b^8*c^8)/b^11/(b*x+a)^10+10/11*d*(a^9*d^9-9*a^8*b*c*d^8+36*a^
7*b^2*c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*
c^5*d^4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c
^9)/b^11/(b*x+a)^11+40/3*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^2*c^
2*d^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^2+7*
a*b^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.42747, size = 1331, normalized size = 22.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^13,x, algorithm="maxima")
```

```
[Out] -1/132*(66*b^10*d^10*x^10 + 11*b^10*c^10 + 10*a*b^9*c^9*d + 9*a^2
*b^8*c^8*d^2 + 8*a^3*b^7*c^7*d^3 + 7*a^4*b^6*c^6*d^4 + 6*a^5*b^5*
c^5*d^5 + 5*a^6*b^4*c^4*d^6 + 4*a^7*b^3*c^3*d^7 + 3*a^8*b^2*c^2*d
^8 + 2*a^9*b*c*d^9 + a^10*d^10 + 220*(2*b^10*c*d^9 + a*b^9*d^10)*
x^9 + 495*(3*b^10*c^2*d^8 + 2*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 7
92*(4*b^10*c^3*d^7 + 3*a*b^9*c^2*d^8 + 2*a^2*b^8*c*d^9 + a^3*b^7*
d^10)*x^7 + 924*(5*b^10*c^4*d^6 + 4*a*b^9*c^3*d^7 + 3*a^2*b^8*c^2
*d^8 + 2*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 792*(6*b^10*c^5*d^5
+ 5*a*b^9*c^4*d^6 + 4*a^2*b^8*c^3*d^7 + 3*a^3*b^7*c^2*d^8 + 2*a^4
*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 495*(7*b^10*c^6*d^4 + 6*a*b^9*c^
5*d^5 + 5*a^2*b^8*c^4*d^6 + 4*a^3*b^7*c^3*d^7 + 3*a^4*b^6*c^2*d^8
 + 2*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 220*(8*b^10*c^7*d^3 + 7*
a*b^9*c^6*d^4 + 6*a^2*b^8*c^5*d^5 + 5*a^3*b^7*c^4*d^6 + 4*a^4*b^6
*c^3*d^7 + 3*a^5*b^5*c^2*d^8 + 2*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^
3 + 66*(9*b^10*c^8*d^2 + 8*a*b^9*c^7*d^3 + 7*a^2*b^8*c^6*d^4 + 6*
a^3*b^7*c^5*d^5 + 5*a^4*b^6*c^4*d^6 + 4*a^5*b^5*c^3*d^7 + 3*a^6*b
^4*c^2*d^8 + 2*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 12*(10*b^10*c^
9*d + 9*a*b^9*c^8*d^2 + 8*a^2*b^8*c^7*d^3 + 7*a^3*b^7*c^6*d^4 + 6
*a^4*b^6*c^5*d^5 + 5*a^5*b^5*c^4*d^6 + 4*a^6*b^4*c^3*d^7 + 3*a^7*
b^3*c^2*d^8 + 2*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^23*x^12 + 12*a*
b^22*x^11 + 66*a^2*b^21*x^10 + 220*a^3*b^20*x^9 + 495*a^4*b^19*x^
8 + 792*a^5*b^18*x^7 + 924*a^6*b^17*x^6 + 792*a^7*b^16*x^5 + 495*
a^8*b^15*x^4 + 220*a^9*b^14*x^3 + 66*a^10*b^13*x^2 + 12*a^11*b^12
*x + a^12*b^11)
```

Fricas [A] time = 0.210142, size = 1331, normalized size = 22.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^13,x, algorithm="fricas")
```

```
[Out] -1/132*(66*b^10*d^10*x^10 + 11*b^10*c^10 + 10*a*b^9*c^9*d + 9*a^2
*b^8*c^8*d^2 + 8*a^3*b^7*c^7*d^3 + 7*a^4*b^6*c^6*d^4 + 6*a^5*b^5*
c^5*d^5 + 5*a^6*b^4*c^4*d^6 + 4*a^7*b^3*c^3*d^7 + 3*a^8*b^2*c^2*d
^8 + 2*a^9*b*c*d^9 + a^10*d^10 + 220*(2*b^10*c*d^9 + a*b^9*d^10)*
x^9 + 495*(3*b^10*c^2*d^8 + 2*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 7
92*(4*b^10*c^3*d^7 + 3*a*b^9*c^2*d^8 + 2*a^2*b^8*c*d^9 + a^3*b^7*
d^10)*x^7 + 924*(5*b^10*c^4*d^6 + 4*a*b^9*c^3*d^7 + 3*a^2*b^8*c^2
*d^8 + 2*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 792*(6*b^10*c^5*d^5
+ 5*a*b^9*c^4*d^6 + 4*a^2*b^8*c^3*d^7 + 3*a^3*b^7*c^2*d^8 + 2*a^4
```

```
*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 495*(7*b^10*c^6*d^4 + 6*a*b^9*c^
5*d^5 + 5*a^2*b^8*c^4*d^6 + 4*a^3*b^7*c^3*d^7 + 3*a^4*b^6*c^2*d^8
 + 2*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 220*(8*b^10*c^7*d^3 + 7*
a*b^9*c^6*d^4 + 6*a^2*b^8*c^5*d^5 + 5*a^3*b^7*c^4*d^6 + 4*a^4*b^6
*c^3*d^7 + 3*a^5*b^5*c^2*d^8 + 2*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^
3 + 66*(9*b^10*c^8*d^2 + 8*a*b^9*c^7*d^3 + 7*a^2*b^8*c^6*d^4 + 6*
a^3*b^7*c^5*d^5 + 5*a^4*b^6*c^4*d^6 + 4*a^5*b^5*c^3*d^7 + 3*a^6*b
^4*c^2*d^8 + 2*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 12*(10*b^10*c^
9*d + 9*a*b^9*c^8*d^2 + 8*a^2*b^8*c^7*d^3 + 7*a^3*b^7*c^6*d^4 + 6
*a^4*b^6*c^5*d^5 + 5*a^5*b^5*c^4*d^6 + 4*a^6*b^4*c^3*d^7 + 3*a^7*
b^3*c^2*d^8 + 2*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^23*x^12 + 12*a*
b^22*x^11 + 66*a^2*b^21*x^10 + 220*a^3*b^20*x^9 + 495*a^4*b^19*x^
8 + 792*a^5*b^18*x^7 + 924*a^6*b^17*x^6 + 792*a^7*b^16*x^5 + 495*
a^8*b^15*x^4 + 220*a^9*b^14*x^3 + 66*a^10*b^13*x^2 + 12*a^11*b^12
*x + a^12*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**13,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.225522, size = 1, normalized size = 0.02

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^13,x, algorithm="giac")
```

```
[Out] Done
```

3.1325 $\int \frac{(c+dx)^{10}}{(a+bx)^{14}}\,dx$

Optimal. Leaf size=89

$$-\frac{d^2(c+dx)^{11}}{858(a+bx)^{11}(bc-ad)^3}+\frac{d(c+dx)^{11}}{78(a+bx)^{12}(bc-ad)^2}-\frac{(c+dx)^{11}}{13(a+bx)^{13}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(13*(b*c - a*d)*(a + b*x)^13) + (d*(c + d*x)^11)/(7
8*(b*c - a*d)^2*(a + b*x)^12) - (d^2*(c + d*x)^11)/(858*(b*c - a*
d)^3*(a + b*x)^11)
```

Rubi [A] time = 0.0621759, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{d^2(c+dx)^{11}}{858(a+bx)^{11}(bc-ad)^3}+\frac{d(c+dx)^{11}}{78(a+bx)^{12}(bc-ad)^2}-\frac{(c+dx)^{11}}{13(a+bx)^{13}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^14,x]
```

```
[Out] -(c + d*x)^11/(13*(b*c - a*d)*(a + b*x)^13) + (d*(c + d*x)^11)/(7
8*(b*c - a*d)^2*(a + b*x)^12) - (d^2*(c + d*x)^11)/(858*(b*c - a*
d)^3*(a + b*x)^11)
```

Rubi in Sympy [A] time = 14.4839, size = 73, normalized size = 0.82

$$\frac{d^2\left(c+dx\right)^{11}}{858\left(a+bx\right)^{11}\left(ad-bc\right)^3}+\frac{d\left(c+dx\right)^{11}}{78\left(a+bx\right)^{12}\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^{11}}{13\left(a+bx\right)^{13}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**14,x)
```

```
[Out] d**2*(c + d*x)**11/(858*(a + b*x)**11*(a*d - b*c)**3) + d*(c + d*
x)**11/(78*(a + b*x)**12*(a*d - b*c)**2) + (c + d*x)**11/(13*(a +
 b*x)**13*(a*d - b*c))
```

Mathematica [B] time = 0.774554, size = 690, normalized size = 7.75

$$-\frac{a^{10}d^{10}+a^9bd^9(3c+13dx)+3a^8b^2d^8\left(2c^2+13cdx+26d^2x^2\right)+2a^7b^3d^7\left(5c^3+39c^2dx+117cd^2x^2+143d^3x^3\right)+a^6b^4d^6\left(1\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^14,x]
```

```
[Out] -(a^10*d^10 + a^9*b*d^9*(3*c + 13*d*x) + 3*a^8*b^2*d^8*(2*c^2 + 1
3*c*d*x + 26*d^2*x^2) + 2*a^7*b^3*d^7*(5*c^3 + 39*c^2*d*x + 117*c
*d^2*x^2 + 143*d^3*x^3) + a^6*b^4*d^6*(15*c^4 + 130*c^3*d*x + 468
*c^2*d^2*x^2 + 858*c*d^3*x^3 + 715*d^4*x^4) + 3*a^5*b^5*d^5*(7*c^
5 + 65*c^4*d*x + 260*c^3*d^2*x^2 + 572*c^2*d^3*x^3 + 715*c*d^4*x^
4 + 429*d^5*x^5) + a^4*b^6*d^4*(28*c^6 + 273*c^5*d*x + 1170*c^4*d
^2*x^2 + 2860*c^3*d^3*x^3 + 4290*c^2*d^4*x^4 + 3861*c*d^5*x^5 + 1
716*d^6*x^6) + 2*a^3*b^7*d^3*(18*c^7 + 182*c^6*d*x + 819*c^5*d^2*
x^2 + 2145*c^4*d^3*x^3 + 3575*c^3*d^4*x^4 + 3861*c^2*d^5*x^5 + 25
74*c*d^6*x^6 + 858*d^7*x^7) + 3*a^2*b^8*d^2*(15*c^8 + 156*c^7*d*x
 + 728*c^6*d^2*x^2 + 2002*c^5*d^3*x^3 + 3575*c^4*d^4*x^4 + 4290*c
^3*d^5*x^5 + 3432*c^2*d^6*x^6 + 1716*c*d^7*x^7 + 429*d^8*x^8) + a
*b^9*d*(55*c^9 + 585*c^8*d*x + 2808*c^7*d^2*x^2 + 8008*c^6*d^3*x^
3 + 15015*c^5*d^4*x^4 + 19305*c^4*d^5*x^5 + 17160*c^3*d^6*x^6 + 1
0296*c^2*d^7*x^7 + 3861*c*d^8*x^8 + 715*d^9*x^9) + b^10*(66*c^10
+ 715*c^9*d*x + 3510*c^8*d^2*x^2 + 10296*c^7*d^3*x^3 + 20020*c^6*
d^4*x^4 + 27027*c^5*d^5*x^5 + 25740*c^4*d^6*x^6 + 17160*c^3*d^7*x
^7 + 7722*c^2*d^8*x^8 + 2145*c*d^9*x^9 + 286*d^10*x^10))/(858*b^1
1*(a + b*x)^13)
```

Maple [B] time = 0.013, size = 867, normalized size = 9.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^14,x)
```

```
[Out] -9*d^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^5+20*d^7*(a^3*d^3
-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)^6+5/6*d*(a^9*d
^9-9*a^8*b*c*d^8+36*a^7*b^2*c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^
4*c^4*d^5-126*a^4*b^5*c^5*d^4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d
^2+9*a*b^8*c^8*d-b^9*c^9)/b^11/(b*x+a)^12-30*d^6*(a^4*d^4-4*a^3*b
*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^11/(b*x+a)^7+5/
2*d^9*(a*d-b*c)/b^11/(b*x+a)^4-1/3*d^10/b^11/(b*x+a)^3+63/2*d^5*(
a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b
^4*c^4*d-b^5*c^5)/b^11/(b*x+a)^8+12*d^3*(a^7*d^7-7*a^6*b*c*d^6+21
*a^5*b^2*c^2*d^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5
*c^5*d^2+7*a*b^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^10-45/11*d^2*(a^8*d^
8-8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*
c^4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c
^8)/b^11/(b*x+a)^11-1/13*(a^10*d^10-10*a^9*b*c*d^9+45*a^8*b^2*c^2
*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*b^5*c^5*d^5+
210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8*d^2-10*a*b
^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^13-70/3*d^4*(a^6*d^6-6*a^5*b*c*d
^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b
```

```
^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.46696, size = 1346, normalized size = 15.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^14,x, algorithm="maxima")
```

```
[Out] -1/858*(286*b^10*d^10*x^10 + 66*b^10*c^10 + 55*a*b^9*c^9*d + 45*a
^2*b^8*c^8*d^2 + 36*a^3*b^7*c^7*d^3 + 28*a^4*b^6*c^6*d^4 + 21*a^5
*b^5*c^5*d^5 + 15*a^6*b^4*c^4*d^6 + 10*a^7*b^3*c^3*d^7 + 6*a^8*b^
2*c^2*d^8 + 3*a^9*b*c*d^9 + a^10*d^10 + 715*(3*b^10*c*d^9 + a*b^9
*d^10)*x^9 + 1287*(6*b^10*c^2*d^8 + 3*a*b^9*c*d^9 + a^2*b^8*d^10)
*x^8 + 1716*(10*b^10*c^3*d^7 + 6*a*b^9*c^2*d^8 + 3*a^2*b^8*c*d^9
+ a^3*b^7*d^10)*x^7 + 1716*(15*b^10*c^4*d^6 + 10*a*b^9*c^3*d^7 +
6*a^2*b^8*c^2*d^8 + 3*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 1287*(2
1*b^10*c^5*d^5 + 15*a*b^9*c^4*d^6 + 10*a^2*b^8*c^3*d^7 + 6*a^3*b^
7*c^2*d^8 + 3*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 715*(28*b^10*c^
6*d^4 + 21*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4*d^6 + 10*a^3*b^7*c^3*d^
7 + 6*a^4*b^6*c^2*d^8 + 3*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 286
*(36*b^10*c^7*d^3 + 28*a*b^9*c^6*d^4 + 21*a^2*b^8*c^5*d^5 + 15*a^
3*b^7*c^4*d^6 + 10*a^4*b^6*c^3*d^7 + 6*a^5*b^5*c^2*d^8 + 3*a^6*b^
4*c*d^9 + a^7*b^3*d^10)*x^3 + 78*(45*b^10*c^8*d^2 + 36*a*b^9*c^7*
d^3 + 28*a^2*b^8*c^6*d^4 + 21*a^3*b^7*c^5*d^5 + 15*a^4*b^6*c^4*d^
6 + 10*a^5*b^5*c^3*d^7 + 6*a^6*b^4*c^2*d^8 + 3*a^7*b^3*c*d^9 + a^
8*b^2*d^10)*x^2 + 13*(55*b^10*c^9*d + 45*a*b^9*c^8*d^2 + 36*a^2*b
^8*c^7*d^3 + 28*a^3*b^7*c^6*d^4 + 21*a^4*b^6*c^5*d^5 + 15*a^5*b^5
*c^4*d^6 + 10*a^6*b^4*c^3*d^7 + 6*a^7*b^3*c^2*d^8 + 3*a^8*b^2*c*d
^9 + a^9*b*d^10)*x)/(b^24*x^13 + 13*a*b^23*x^12 + 78*a^2*b^22*x^1
1 + 286*a^3*b^21*x^10 + 715*a^4*b^20*x^9 + 1287*a^5*b^19*x^8 + 17
16*a^6*b^18*x^7 + 1716*a^7*b^17*x^6 + 1287*a^8*b^16*x^5 + 715*a^9
*b^15*x^4 + 286*a^10*b^14*x^3 + 78*a^11*b^13*x^2 + 13*a^12*b^12*x
 + a^13*b^11)
```

Fricas [A] time = 0.220577, size = 1346, normalized size = 15.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^14,x, algorithm="fricas")
```

```
[Out] -1/858*(286*b^10*d^10*x^10 + 66*b^10*c^10 + 55*a*b^9*c^9*d + 45*a
^2*b^8*c^8*d^2 + 36*a^3*b^7*c^7*d^3 + 28*a^4*b^6*c^6*d^4 + 21*a^5
*b^5*c^5*d^5 + 15*a^6*b^4*c^4*d^6 + 10*a^7*b^3*c^3*d^7 + 6*a^8*b^
```

```
2*c^2*d^8 + 3*a^9*b*c*d^9 + a^10*d^10 + 715*(3*b^10*c*d^9 + a*b^9
*d^10)*x^9 + 1287*(6*b^10*c^2*d^8 + 3*a*b^9*c*d^9 + a^2*b^8*d^10)
*x^8 + 1716*(10*b^10*c^3*d^7 + 6*a*b^9*c^2*d^8 + 3*a^2*b^8*c*d^9
+ a^3*b^7*d^10)*x^7 + 1716*(15*b^10*c^4*d^6 + 10*a*b^9*c^3*d^7 +
6*a^2*b^8*c^2*d^8 + 3*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 1287*(2
1*b^10*c^5*d^5 + 15*a*b^9*c^4*d^6 + 10*a^2*b^8*c^3*d^7 + 6*a^3*b^
7*c^2*d^8 + 3*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 715*(28*b^10*c^
6*d^4 + 21*a*b^9*c^5*d^5 + 15*a^2*b^8*c^4*d^6 + 10*a^3*b^7*c^3*d^
7 + 6*a^4*b^6*c^2*d^8 + 3*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 286
*(36*b^10*c^7*d^3 + 28*a*b^9*c^6*d^4 + 21*a^2*b^8*c^5*d^5 + 15*a^
3*b^7*c^4*d^6 + 10*a^4*b^6*c^3*d^7 + 6*a^5*b^5*c^2*d^8 + 3*a^6*b^
4*c*d^9 + a^7*b^3*d^10)*x^3 + 78*(45*b^10*c^8*d^2 + 36*a*b^9*c^7*
d^3 + 28*a^2*b^8*c^6*d^4 + 21*a^3*b^7*c^5*d^5 + 15*a^4*b^6*c^4*d^
6 + 10*a^5*b^5*c^3*d^7 + 6*a^6*b^4*c^2*d^8 + 3*a^7*b^3*c*d^9 + a^
8*b^2*d^10)*x^2 + 13*(55*b^10*c^9*d + 45*a*b^9*c^8*d^2 + 36*a^2*b
^8*c^7*d^3 + 28*a^3*b^7*c^6*d^4 + 21*a^4*b^6*c^5*d^5 + 15*a^5*b^5
*c^4*d^6 + 10*a^6*b^4*c^3*d^7 + 6*a^7*b^3*c^2*d^8 + 3*a^8*b^2*c*d
^9 + a^9*b*d^10)*x)/(b^24*x^13 + 13*a*b^23*x^12 + 78*a^2*b^22*x^1
1 + 286*a^3*b^21*x^10 + 715*a^4*b^20*x^9 + 1287*a^5*b^19*x^8 + 17
16*a^6*b^18*x^7 + 1716*a^7*b^17*x^6 + 1287*a^8*b^16*x^5 + 715*a^9
*b^15*x^4 + 286*a^10*b^14*x^3 + 78*a^11*b^13*x^2 + 13*a^12*b^12*x
 + a^13*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**14,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.216198, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^14,x, algorithm="giac")

[Out] Done
```

3.1326 $\int \frac{(c+dx)^{10}}{(a+bx)^{15}}\,dx$

Optimal. Leaf size=120

$$\frac{d^3(c+dx)^{11}}{4004(a+bx)^{11}(bc-ad)^4}-\frac{d^2(c+dx)^{11}}{364(a+bx)^{12}(bc-ad)^3}+\frac{3d(c+dx)^{11}}{182(a+bx)^{13}(bc-ad)^2}-\frac{(c+dx)^{11}}{14(a+bx)^{14}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(14*(b*c - a*d)*(a + b*x)^14) + (3*d*(c + d*x)^11)/
(182*(b*c - a*d)^2*(a + b*x)^13) - (d^2*(c + d*x)^11)/(364*(b*c -
 a*d)^3*(a + b*x)^12) + (d^3*(c + d*x)^11)/(4004*(b*c - a*d)^4*(a
 + b*x)^11)
```

Rubi [A] time = 0.0921148, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{d^3(c+dx)^{11}}{4004(a+bx)^{11}(bc-ad)^4}-\frac{d^2(c+dx)^{11}}{364(a+bx)^{12}(bc-ad)^3}+\frac{3d(c+dx)^{11}}{182(a+bx)^{13}(bc-ad)^2}-\frac{(c+dx)^{11}}{14(a+bx)^{14}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^15,x]
```

```
[Out] -(c + d*x)^11/(14*(b*c - a*d)*(a + b*x)^14) + (3*d*(c + d*x)^11)/
(182*(b*c - a*d)^2*(a + b*x)^13) - (d^2*(c + d*x)^11)/(364*(b*c -
 a*d)^3*(a + b*x)^12) + (d^3*(c + d*x)^11)/(4004*(b*c - a*d)^4*(a
 + b*x)^11)
```

Rubi in Sympy [A] time = 22.6875, size = 102, normalized size = 0.85

$$\frac{d^3\left(c+dx\right)^{11}}{4004\left(a+bx\right)^{11}\left(ad-bc\right)^4}+\frac{d^2\left(c+dx\right)^{11}}{364\left(a+bx\right)^{12}\left(ad-bc\right)^3}+\frac{3d\left(c+dx\right)^{11}}{182\left(a+bx\right)^{13}\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^{11}}{14\left(a+bx\right)^{14}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**15,x)
```

```
[Out] d**3*(c + d*x)**11/(4004*(a + b*x)**11*(a*d - b*c)**4) + d**2*(c
+ d*x)**11/(364*(a + b*x)**12*(a*d - b*c)**3) + 3*d*(c + d*x)**11
/(182*(a + b*x)**13*(a*d - b*c)**2) + (c + d*x)**11/(14*(a + b*x)
**14*(a*d - b*c))
```

Mathematica [B] time = 0.751314, size = 692, normalized size = 5.77

$$-\frac{a^{10}d^{10} + 2a^9bd^9(2c + 7dx) + a^8b^2d^8\left(10c^2 + 56cdx + 91d^2x^2\right) + 4a^7b^3d^7\left(5c^3 + 35c^2dx + 91cd^2x^2 + 91d^3x^3\right) + 7a^6b^4d^6\left(5c\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^15,x]
```

```
[Out] -(a^10*d^10 + 2*a^9*b*d^9*(2*c + 7*d*x) + a^8*b^2*d^8*(10*c^2 + 5
6*c*d*x + 91*d^2*x^2) + 4*a^7*b^3*d^7*(5*c^3 + 35*c^2*d*x + 91*c*
d^2*x^2 + 91*d^3*x^3) + 7*a^6*b^4*d^6*(5*c^4 + 40*c^3*d*x + 130*c
^2*d^2*x^2 + 208*c*d^3*x^3 + 143*d^4*x^4) + 14*a^5*b^5*d^5*(4*c^5
 + 35*c^4*d*x + 130*c^3*d^2*x^2 + 260*c^2*d^3*x^3 + 286*c*d^4*x^4
 + 143*d^5*x^5) + 7*a^4*b^6*d^4*(12*c^6 + 112*c^5*d*x + 455*c^4*d
^2*x^2 + 1040*c^3*d^3*x^3 + 1430*c^2*d^4*x^4 + 1144*c*d^5*x^5 + 4
29*d^6*x^6) + 4*a^3*b^7*d^3*(30*c^7 + 294*c^6*d*x + 1274*c^5*d^2*
x^2 + 3185*c^4*d^3*x^3 + 5005*c^3*d^4*x^4 + 5005*c^2*d^5*x^5 + 30
03*c*d^6*x^6 + 858*d^7*x^7) + a^2*b^8*d^2*(165*c^8 + 1680*c^7*d*x
 + 7644*c^6*d^2*x^2 + 20384*c^5*d^3*x^3 + 35035*c^4*d^4*x^4 + 400
40*c^3*d^5*x^5 + 30030*c^2*d^6*x^6 + 13728*c*d^7*x^7 + 3003*d^8*x
^8) + 2*a*b^9*d*(110*c^9 + 1155*c^8*d*x + 5460*c^7*d^2*x^2 + 1528
8*c^6*d^3*x^3 + 28028*c^5*d^4*x^4 + 35035*c^4*d^5*x^5 + 30030*c^3
*d^6*x^6 + 17160*c^2*d^7*x^7 + 6006*c*d^8*x^8 + 1001*d^9*x^9) + b
^10*(286*c^10 + 3080*c^9*d*x + 15015*c^8*d^2*x^2 + 43680*c^7*d^3*
x^3 + 84084*c^6*d^4*x^4 + 112112*c^5*d^5*x^5 + 105105*c^4*d^6*x^6
 + 68640*c^3*d^7*x^7 + 30030*c^2*d^8*x^8 + 8008*c*d^9*x^9 + 1001*
d^10*x^10))/(4004*b^11*(a + b*x)^14)
```

Maple [B] time = 0.013, size = 867, normalized size = 7.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^15,x)
```

```
[Out] 2*d^9*(a*d-b*c)/b^11/(b*x+a)^5-1/14*(a^10*d^10-10*a^9*b*c*d^9+45*
a^8*b^2*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*b
^5*c^5*d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8
*d^2-10*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^14-15/2*d^8*(a^2*d^2-
2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^6-15/4*d^2*(a^8*d^8-8*a^7*b*c*d^7
+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*
b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a
)^12+120/7*d^7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11
/(b*x+a)^7-1/4*d^10/b^11/(b*x+a)^4-105/4*d^6*(a^4*d^4-4*a^3*b*c*d
^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^11/(b*x+a)^8-21*d^4
*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*
a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^10+120/11*d^3
```

```
*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^2*c^2*d^5-35*a^4*b^3*c^3*d^4+35*
a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^2+7*a*b^6*c^6*d-b^7*c^7)/b^11/(b
*x+a)^11+10/13*d*(a^9*d^9-9*a^8*b*c*d^8+36*a^7*b^2*c^2*d^7-84*a^6
*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*c^5*d^4+84*a^3*b^6*c
^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c^9)/b^11/(b*x+a)^13+
28*d^5*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d
^2+5*a*b^4*c^4*d-b^5*c^5)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.45072, size = 1361, normalized size = 11.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^15,x, algorithm="maxima")
```

```
[Out] -1/4004*(1001*b^10*d^10*x^10 + 286*b^10*c^10 + 220*a*b^9*c^9*d +
165*a^2*b^8*c^8*d^2 + 120*a^3*b^7*c^7*d^3 + 84*a^4*b^6*c^6*d^4 +
56*a^5*b^5*c^5*d^5 + 35*a^6*b^4*c^4*d^6 + 20*a^7*b^3*c^3*d^7 + 10
*a^8*b^2*c^2*d^8 + 4*a^9*b*c*d^9 + a^10*d^10 + 2002*(4*b^10*c*d^9
 + a*b^9*d^10)*x^9 + 3003*(10*b^10*c^2*d^8 + 4*a*b^9*c*d^9 + a^2*
b^8*d^10)*x^8 + 3432*(20*b^10*c^3*d^7 + 10*a*b^9*c^2*d^8 + 4*a^2*
b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 3003*(35*b^10*c^4*d^6 + 20*a*b^9*
c^3*d^7 + 10*a^2*b^8*c^2*d^8 + 4*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^
6 + 2002*(56*b^10*c^5*d^5 + 35*a*b^9*c^4*d^6 + 20*a^2*b^8*c^3*d^7
 + 10*a^3*b^7*c^2*d^8 + 4*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 100
1*(84*b^10*c^6*d^4 + 56*a*b^9*c^5*d^5 + 35*a^2*b^8*c^4*d^6 + 20*a
^3*b^7*c^3*d^7 + 10*a^4*b^6*c^2*d^8 + 4*a^5*b^5*c*d^9 + a^6*b^4*d
^10)*x^4 + 364*(120*b^10*c^7*d^3 + 84*a*b^9*c^6*d^4 + 56*a^2*b^8*
c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 20*a^4*b^6*c^3*d^7 + 10*a^5*b^5*c^
2*d^8 + 4*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 91*(165*b^10*c^8*d^
2 + 120*a*b^9*c^7*d^3 + 84*a^2*b^8*c^6*d^4 + 56*a^3*b^7*c^5*d^5 +
 35*a^4*b^6*c^4*d^6 + 20*a^5*b^5*c^3*d^7 + 10*a^6*b^4*c^2*d^8 + 4
*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 14*(220*b^10*c^9*d + 165*a*b
^9*c^8*d^2 + 120*a^2*b^8*c^7*d^3 + 84*a^3*b^7*c^6*d^4 + 56*a^4*b^
6*c^5*d^5 + 35*a^5*b^5*c^4*d^6 + 20*a^6*b^4*c^3*d^7 + 10*a^7*b^3*
c^2*d^8 + 4*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^25*x^14 + 14*a*b^24
*x^13 + 91*a^2*b^23*x^12 + 364*a^3*b^22*x^11 + 1001*a^4*b^21*x^10
 + 2002*a^5*b^20*x^9 + 3003*a^6*b^19*x^8 + 3432*a^7*b^18*x^7 + 30
03*a^8*b^17*x^6 + 2002*a^9*b^16*x^5 + 1001*a^10*b^15*x^4 + 364*a^
11*b^14*x^3 + 91*a^12*b^13*x^2 + 14*a^13*b^12*x + a^14*b^11)
```

Fricas [A] time = 0.220981, size = 1361, normalized size = 11.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^15,x, algorithm="fricas")
```

```
[Out] -1/4004*(1001*b^10*d^10*x^10 + 286*b^10*c^10 + 220*a*b^9*c^9*d +
165*a^2*b^8*c^8*d^2 + 120*a^3*b^7*c^7*d^3 + 84*a^4*b^6*c^6*d^4 +
56*a^5*b^5*c^5*d^5 + 35*a^6*b^4*c^4*d^6 + 20*a^7*b^3*c^3*d^7 + 10
*a^8*b^2*c^2*d^8 + 4*a^9*b*c*d^9 + a^10*d^10 + 2002*(4*b^10*c*d^9
 + a*b^9*d^10)*x^9 + 3003*(10*b^10*c^2*d^8 + 4*a*b^9*c*d^9 + a^2*
b^8*d^10)*x^8 + 3432*(20*b^10*c^3*d^7 + 10*a*b^9*c^2*d^8 + 4*a^2*
b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 3003*(35*b^10*c^4*d^6 + 20*a*b^9*
c^3*d^7 + 10*a^2*b^8*c^2*d^8 + 4*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^
6 + 2002*(56*b^10*c^5*d^5 + 35*a*b^9*c^4*d^6 + 20*a^2*b^8*c^3*d^7
 + 10*a^3*b^7*c^2*d^8 + 4*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 100
1*(84*b^10*c^6*d^4 + 56*a*b^9*c^5*d^5 + 35*a^2*b^8*c^4*d^6 + 20*a
^3*b^7*c^3*d^7 + 10*a^4*b^6*c^2*d^8 + 4*a^5*b^5*c*d^9 + a^6*b^4*d
^10)*x^4 + 364*(120*b^10*c^7*d^3 + 84*a*b^9*c^6*d^4 + 56*a^2*b^8*
c^5*d^5 + 35*a^3*b^7*c^4*d^6 + 20*a^4*b^6*c^3*d^7 + 10*a^5*b^5*c^
2*d^8 + 4*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 91*(165*b^10*c^8*d^
2 + 120*a*b^9*c^7*d^3 + 84*a^2*b^8*c^6*d^4 + 56*a^3*b^7*c^5*d^5 +
 35*a^4*b^6*c^4*d^6 + 20*a^5*b^5*c^3*d^7 + 10*a^6*b^4*c^2*d^8 + 4
*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 14*(220*b^10*c^9*d + 165*a*b
^9*c^8*d^2 + 120*a^2*b^8*c^7*d^3 + 84*a^3*b^7*c^6*d^4 + 56*a^4*b^
6*c^5*d^5 + 35*a^5*b^5*c^4*d^6 + 20*a^6*b^4*c^3*d^7 + 10*a^7*b^3*
c^2*d^8 + 4*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^25*x^14 + 14*a*b^24
*x^13 + 91*a^2*b^23*x^12 + 364*a^3*b^22*x^11 + 1001*a^4*b^21*x^10
 + 2002*a^5*b^20*x^9 + 3003*a^6*b^19*x^8 + 3432*a^7*b^18*x^7 + 30
03*a^8*b^17*x^6 + 2002*a^9*b^16*x^5 + 1001*a^10*b^15*x^4 + 364*a^
11*b^14*x^3 + 91*a^12*b^13*x^2 + 14*a^13*b^12*x + a^14*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**15,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219462, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^15,x, algorithm="giac")
```

```
[Out] Done
```

3.1327 $\int \frac{(c+dx)^{10}}{(a+bx)^{16}} dx$

Optimal. Leaf size=151

$$-\frac{d^4(c+dx)^{11}}{15015(a+bx)^{11}(bc-ad)^5}+\frac{d^3(c+dx)^{11}}{1365(a+bx)^{12}(bc-ad)^4}-\frac{2d^2(c+dx)^{11}}{455(a+bx)^{13}(bc-ad)^3}+\frac{2d(c+dx)^{11}}{105(a+bx)^{14}(bc-ad)^2}-\frac{(c+dx)^{11}}{15(a+bx)^{15}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(15*(b*c - a*d)*(a + b*x)^15) + (2*d*(c + d*x)^11)/
(105*(b*c - a*d)^2*(a + b*x)^14) - (2*d^2*(c + d*x)^11)/(455*(b*c
 - a*d)^3*(a + b*x)^13) + (d^3*(c + d*x)^11)/(1365*(b*c - a*d)^4*
(a + b*x)^12) - (d^4*(c + d*x)^11)/(15015*(b*c - a*d)^5*(a + b*x)
^11)
```

Rubi [A] time = 0.124241, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{d^4(c+dx)^{11}}{15015(a+bx)^{11}(bc-ad)^5}+\frac{d^3(c+dx)^{11}}{1365(a+bx)^{12}(bc-ad)^4}-\frac{2d^2(c+dx)^{11}}{455(a+bx)^{13}(bc-ad)^3}+\frac{2d(c+dx)^{11}}{105(a+bx)^{14}(bc-ad)^2}-\frac{(c+dx)^{11}}{15(a+bx)^{15}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^16,x]
```

```
[Out] -(c + d*x)^11/(15*(b*c - a*d)*(a + b*x)^15) + (2*d*(c + d*x)^11)/
(105*(b*c - a*d)^2*(a + b*x)^14) - (2*d^2*(c + d*x)^11)/(455*(b*c
 - a*d)^3*(a + b*x)^13) + (d^3*(c + d*x)^11)/(1365*(b*c - a*d)^4*
(a + b*x)^12) - (d^4*(c + d*x)^11)/(15015*(b*c - a*d)^5*(a + b*x)
^11)
```

Rubi in Sympy [A] time = 32.6443, size = 131, normalized size = 0.87

$$\frac{d^4\left(c+dx\right)^{11}}{15015\left(a+bx\right)^{11}\left(ad-bc\right)^5}+\frac{d^3\left(c+dx\right)^{11}}{1365\left(a+bx\right)^{12}\left(ad-bc\right)^4}+\frac{2d^2\left(c+dx\right)^{11}}{455\left(a+bx\right)^{13}\left(ad-bc\right)^3}+\frac{2d\left(c+dx\right)^{11}}{105\left(a+bx\right)^{14}\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^{11}}{15\left(a+bx\right)^{15}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**16,x)
```

```
[Out] d**4*(c + d*x)**11/(15015*(a + b*x)**11*(a*d - b*c)**5) + d**3*(c
 + d*x)**11/(1365*(a + b*x)**12*(a*d - b*c)**4) + 2*d**2*(c + d*x
)**11/(455*(a + b*x)**13*(a*d - b*c)**3) + 2*d*(c + d*x)**11/(105
*(a + b*x)**14*(a*d - b*c)**2) + (c + d*x)**11/(15*(a + b*x)**15*
(a*d - b*c))
```

Mathematica [B] time = 0.613432, size = 690, normalized size = 4.57

$$-\frac{a^{10}d^{10}+5a^9bd^9(c+3dx)+15a^8b^2d^8\left(c^2+5cdx+7d^2x^2\right)+5a^7b^3d^7\left(7c^3+45c^2dx+105cd^2x^2+91d^3x^3\right)+35a^6b^4d^6\left(2c^4\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^16,x]
```

```
[Out] -(a^10*d^10 + 5*a^9*b*d^9*(c + 3*d*x) + 15*a^8*b^2*d^8*(c^2 + 5*c
*d*x + 7*d^2*x^2) + 5*a^7*b^3*d^7*(7*c^3 + 45*c^2*d*x + 105*c*d^2
*x^2 + 91*d^3*x^3) + 35*a^6*b^4*d^6*(2*c^4 + 15*c^3*d*x + 45*c^2*
d^2*x^2 + 65*c*d^3*x^3 + 39*d^4*x^4) + 21*a^5*b^5*d^5*(6*c^5 + 50
*c^4*d*x + 175*c^3*d^2*x^2 + 325*c^2*d^3*x^3 + 325*c*d^4*x^4 + 14
3*d^5*x^5) + 35*a^4*b^6*d^4*(6*c^6 + 54*c^5*d*x + 210*c^4*d^2*x^2
 + 455*c^3*d^3*x^3 + 585*c^2*d^4*x^4 + 429*c*d^5*x^5 + 143*d^6*x^
6) + 5*a^3*b^7*d^3*(66*c^7 + 630*c^6*d*x + 2646*c^5*d^2*x^2 + 637
0*c^4*d^3*x^3 + 9555*c^3*d^4*x^4 + 9009*c^2*d^5*x^5 + 5005*c*d^6*
x^6 + 1287*d^7*x^7) + 15*a^2*b^8*d^2*(33*c^8 + 330*c^7*d*x + 1470
*c^6*d^2*x^2 + 3822*c^5*d^3*x^3 + 6370*c^4*d^4*x^4 + 7007*c^3*d^5
*x^5 + 5005*c^2*d^6*x^6 + 2145*c*d^7*x^7 + 429*d^8*x^8) + 5*a*b^9
*d*(143*c^9 + 1485*c^8*d*x + 6930*c^7*d^2*x^2 + 19110*c^6*d^3*x^3
 + 34398*c^5*d^4*x^4 + 42042*c^4*d^5*x^5 + 35035*c^3*d^6*x^6 + 19
305*c^2*d^7*x^7 + 6435*c*d^8*x^8 + 1001*d^9*x^9) + b^10*(1001*c^1
0 + 10725*c^9*d*x + 51975*c^8*d^2*x^2 + 150150*c^7*d^3*x^3 + 2866
50*c^6*d^4*x^4 + 378378*c^5*d^5*x^5 + 350350*c^4*d^6*x^6 + 225225
*c^3*d^7*x^7 + 96525*c^2*d^8*x^8 + 25025*c*d^9*x^9 + 3003*d^10*x^
10))/(15015*b^11*(a + b*x)^15)
```

Maple [B] time = 0.014, size = 867, normalized size = 5.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^16,x)
```

```
[Out] -1/5*d^10/b^11/(b*x+a)^5+5/7*d*(a^9*d^9-9*a^8*b*c*d^8+36*a^7*b^2*
c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*c^5*d^
4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c^9)/b^
11/(b*x+a)^14+5/3*d^9*(a*d-b*c)/b^11/(b*x+a)^6+10*d^3*(a^7*d^7-7*
```

```
a^6*b*c*d^6+21*a^5*b^2*c^2*d^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*
d^3-21*a^2*b^5*c^5*d^2+7*a*b^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^12-45/
7*d^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^7-1/15*(a^10*d^10-
10*a^9*b*c*d^9+45*a^8*b^2*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4
*c^4*d^6-252*a^5*b^5*c^5*d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*
d^3+45*a^2*b^8*c^8*d^2-10*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^15+
15*d^7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)
^8+126/5*d^5*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3
*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^11/(b*x+a)^10-210/11*d^4*(a^6*d
^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4
*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^11-45/13*d^2*(a^8*d^
8-8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*
c^4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c
^8)/b^11/(b*x+a)^13-70/3*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2
*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.59941, size = 1376, normalized size = 9.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^16,x, algorithm="maxima")
```

```
[Out] -1/15015*(3003*b^10*d^10*x^10 + 1001*b^10*c^10 + 715*a*b^9*c^9*d
+ 495*a^2*b^8*c^8*d^2 + 330*a^3*b^7*c^7*d^3 + 210*a^4*b^6*c^6*d^4
 + 126*a^5*b^5*c^5*d^5 + 70*a^6*b^4*c^4*d^6 + 35*a^7*b^3*c^3*d^7
+ 15*a^8*b^2*c^2*d^8 + 5*a^9*b*c*d^9 + a^10*d^10 + 5005*(5*b^10*c
*d^9 + a*b^9*d^10)*x^9 + 6435*(15*b^10*c^2*d^8 + 5*a*b^9*c*d^9 +
a^2*b^8*d^10)*x^8 + 6435*(35*b^10*c^3*d^7 + 15*a*b^9*c^2*d^8 + 5*
a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 5005*(70*b^10*c^4*d^6 + 35*a*
b^9*c^3*d^7 + 15*a^2*b^8*c^2*d^8 + 5*a^3*b^7*c*d^9 + a^4*b^6*d^10
)*x^6 + 3003*(126*b^10*c^5*d^5 + 70*a*b^9*c^4*d^6 + 35*a^2*b^8*c^
3*d^7 + 15*a^3*b^7*c^2*d^8 + 5*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5
+ 1365*(210*b^10*c^6*d^4 + 126*a*b^9*c^5*d^5 + 70*a^2*b^8*c^4*d^6
 + 35*a^3*b^7*c^3*d^7 + 15*a^4*b^6*c^2*d^8 + 5*a^5*b^5*c*d^9 + a^
6*b^4*d^10)*x^4 + 455*(330*b^10*c^7*d^3 + 210*a*b^9*c^6*d^4 + 126
*a^2*b^8*c^5*d^5 + 70*a^3*b^7*c^4*d^6 + 35*a^4*b^6*c^3*d^7 + 15*a
^5*b^5*c^2*d^8 + 5*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 105*(495*b
^10*c^8*d^2 + 330*a*b^9*c^7*d^3 + 210*a^2*b^8*c^6*d^4 + 126*a^3*b
^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 + 35*a^5*b^5*c^3*d^7 + 15*a^6*b^4
*c^2*d^8 + 5*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 15*(715*b^10*c^9
*d + 495*a*b^9*c^8*d^2 + 330*a^2*b^8*c^7*d^3 + 210*a^3*b^7*c^6*d^
4 + 126*a^4*b^6*c^5*d^5 + 70*a^5*b^5*c^4*d^6 + 35*a^6*b^4*c^3*d^7
 + 15*a^7*b^3*c^2*d^8 + 5*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^26*x^
15 + 15*a*b^25*x^14 + 105*a^2*b^24*x^13 + 455*a^3*b^23*x^12 + 136
5*a^4*b^22*x^11 + 3003*a^5*b^21*x^10 + 5005*a^6*b^20*x^9 + 6435*a
^7*b^19*x^8 + 6435*a^8*b^18*x^7 + 5005*a^9*b^17*x^6 + 3003*a^10*b
^16*x^5 + 1365*a^11*b^15*x^4 + 455*a^12*b^14*x^3 + 105*a^13*b^13*
x^2 + 15*a^14*b^12*x + a^15*b^11)
```

Fricas [A] time = 0.208941, size = 1376, normalized size = 9.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^16,x, algorithm="fricas")
```

```
[Out] -1/15015*(3003*b^10*d^10*x^10 + 1001*b^10*c^10 + 715*a*b^9*c^9*d
+ 495*a^2*b^8*c^8*d^2 + 330*a^3*b^7*c^7*d^3 + 210*a^4*b^6*c^6*d^4
 + 126*a^5*b^5*c^5*d^5 + 70*a^6*b^4*c^4*d^6 + 35*a^7*b^3*c^3*d^7
+ 15*a^8*b^2*c^2*d^8 + 5*a^9*b*c*d^9 + a^10*d^10 + 5005*(5*b^10*c
*d^9 + a*b^9*d^10)*x^9 + 6435*(15*b^10*c^2*d^8 + 5*a*b^9*c*d^9 +
a^2*b^8*d^10)*x^8 + 6435*(35*b^10*c^3*d^7 + 15*a*b^9*c^2*d^8 + 5*
a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 5005*(70*b^10*c^4*d^6 + 35*a*
b^9*c^3*d^7 + 15*a^2*b^8*c^2*d^8 + 5*a^3*b^7*c*d^9 + a^4*b^6*d^10
)*x^6 + 3003*(126*b^10*c^5*d^5 + 70*a*b^9*c^4*d^6 + 35*a^2*b^8*c^
3*d^7 + 15*a^3*b^7*c^2*d^8 + 5*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5
+ 1365*(210*b^10*c^6*d^4 + 126*a*b^9*c^5*d^5 + 70*a^2*b^8*c^4*d^6
 + 35*a^3*b^7*c^3*d^7 + 15*a^4*b^6*c^2*d^8 + 5*a^5*b^5*c*d^9 + a^
6*b^4*d^10)*x^4 + 455*(330*b^10*c^7*d^3 + 210*a*b^9*c^6*d^4 + 126
*a^2*b^8*c^5*d^5 + 70*a^3*b^7*c^4*d^6 + 35*a^4*b^6*c^3*d^7 + 15*a
^5*b^5*c^2*d^8 + 5*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 105*(495*b
^10*c^8*d^2 + 330*a*b^9*c^7*d^3 + 210*a^2*b^8*c^6*d^4 + 126*a^3*b
^7*c^5*d^5 + 70*a^4*b^6*c^4*d^6 + 35*a^5*b^5*c^3*d^7 + 15*a^6*b^4
*c^2*d^8 + 5*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 15*(715*b^10*c^9
*d + 495*a*b^9*c^8*d^2 + 330*a^2*b^8*c^7*d^3 + 210*a^3*b^7*c^6*d^
4 + 126*a^4*b^6*c^5*d^5 + 70*a^5*b^5*c^4*d^6 + 35*a^6*b^4*c^3*d^7
 + 15*a^7*b^3*c^2*d^8 + 5*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^26*x^
15 + 15*a*b^25*x^14 + 105*a^2*b^24*x^13 + 455*a^3*b^23*x^12 + 136
5*a^4*b^22*x^11 + 3003*a^5*b^21*x^10 + 5005*a^6*b^20*x^9 + 6435*a
^7*b^19*x^8 + 6435*a^8*b^18*x^7 + 5005*a^9*b^17*x^6 + 3003*a^10*b
^16*x^5 + 1365*a^11*b^15*x^4 + 455*a^12*b^14*x^3 + 105*a^13*b^13*
x^2 + 15*a^14*b^12*x + a^15*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**16,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.215968, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^16,x, algorithm="giac")
```

```
[Out] Done
```

3.1328 $\int \frac{(c+dx)^{10}}{(a+bx)^{17}}\,dx$

Optimal. Leaf size=182

$$\frac{d^5(c+dx)^{11}}{48048(a+bx)^{11}(bc-ad)^6}-\frac{d^4(c+dx)^{11}}{4368(a+bx)^{12}(bc-ad)^5}+\frac{d^3(c+dx)^{11}}{728(a+bx)^{13}(bc-ad)^4}-\frac{d^2(c+dx)^{11}}{168(a+bx)^{14}(bc-ad)^3}+\frac{d(c+dx)^{11}}{48(a+bx)^{15}(bc-ad)^2}-\frac{(c+dx)^{11}}{16(a+bx)^{16}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(16*(b*c - a*d)*(a + b*x)^16) + (d*(c + d*x)^11)/(4
8*(b*c - a*d)^2*(a + b*x)^15) - (d^2*(c + d*x)^11)/(168*(b*c - a*
d)^3*(a + b*x)^14) + (d^3*(c + d*x)^11)/(728*(b*c - a*d)^4*(a + b
*x)^13) - (d^4*(c + d*x)^11)/(4368*(b*c - a*d)^5*(a + b*x)^12) +
(d^5*(c + d*x)^11)/(48048*(b*c - a*d)^6*(a + b*x)^11)
```

Rubi [A] time = 0.166074, antiderivative size = 182, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{d^5(c+dx)^{11}}{48048(a+bx)^{11}(bc-ad)^6}-\frac{d^4(c+dx)^{11}}{4368(a+bx)^{12}(bc-ad)^5}+\frac{d^3(c+dx)^{11}}{728(a+bx)^{13}(bc-ad)^4}-\frac{d^2(c+dx)^{11}}{168(a+bx)^{14}(bc-ad)^3}+\frac{d(c+dx)^{11}}{48(a+bx)^{15}(bc-ad)^2}-\frac{(c+dx)^{11}}{16(a+bx)^{16}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^17,x]
```

```
[Out] -(c + d*x)^11/(16*(b*c - a*d)*(a + b*x)^16) + (d*(c + d*x)^11)/(4
8*(b*c - a*d)^2*(a + b*x)^15) - (d^2*(c + d*x)^11)/(168*(b*c - a*
d)^3*(a + b*x)^14) + (d^3*(c + d*x)^11)/(728*(b*c - a*d)^4*(a + b
*x)^13) - (d^4*(c + d*x)^11)/(4368*(b*c - a*d)^5*(a + b*x)^12) +
(d^5*(c + d*x)^11)/(48048*(b*c - a*d)^6*(a + b*x)^11)
```

Rubi in Sympy [A] time = 44.793, size = 155, normalized size = 0.85

$$\frac{d^5\left(c+dx\right)^{11}}{48048\left(a+bx\right)^{11}\left(ad-bc\right)^6}+\frac{d^4\left(c+dx\right)^{11}}{4368\left(a+bx\right)^{12}\left(ad-bc\right)^5}+\frac{d^3\left(c+dx\right)^{11}}{728\left(a+bx\right)^{13}\left(ad-bc\right)^4}+\frac{d^2\left(c+dx\right)^{11}}{168\left(a+bx\right)^{14}\left(ad-bc\right)^3}+\frac{d\left(c+dx\right)^{11}}{48\left(a+bx\right)^{15}\left(ad-bc\right)^2}+\frac{\left(c+dx\right)^{11}}{16\left(a+bx\right)^{16}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**17,x)
```

```
[Out] d**5*(c + d*x)**11/(48048*(a + b*x)**11*(a*d - b*c)**6) + d**4*(c
 + d*x)**11/(4368*(a + b*x)**12*(a*d - b*c)**5) + d**3*(c + d*x)*
*11/(728*(a + b*x)**13*(a*d - b*c)**4) + d**2*(c + d*x)**11/(168*
(a + b*x)**14*(a*d - b*c)**3) + d*(c + d*x)**11/(48*(a + b*x)**15
*(a*d - b*c)**2) + (c + d*x)**11/(16*(a + b*x)**16*(a*d - b*c))
```

Mathematica [B] time = 0.778752, size = 694, normalized size = 3.81

$$-\frac{a^{10}d^{10} + 2a^9bd^9(3c + 8dx) + 3a^8b^2d^8\left(7c^2 + 32cdx + 40d^2x^2\right) + 8a^7b^3d^7\left(7c^3 + 42c^2dx + 90cd^2x^2 + 70d^3x^3\right) + 14a^6b^4d^6\left(9\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^17,x]
```

```
[Out] -(a^10*d^10 + 2*a^9*b*d^9*(3*c + 8*d*x) + 3*a^8*b^2*d^8*(7*c^2 +
32*c*d*x + 40*d^2*x^2) + 8*a^7*b^3*d^7*(7*c^3 + 42*c^2*d*x + 90*c
*d^2*x^2 + 70*d^3*x^3) + 14*a^6*b^4*d^6*(9*c^4 + 64*c^3*d*x + 180
*c^2*d^2*x^2 + 240*c*d^3*x^3 + 130*d^4*x^4) + 84*a^5*b^5*d^5*(3*c
^5 + 24*c^4*d*x + 80*c^3*d^2*x^2 + 140*c^2*d^3*x^3 + 130*c*d^4*x^
4 + 52*d^5*x^5) + 14*a^4*b^6*d^4*(33*c^6 + 288*c^5*d*x + 1080*c^4
*d^2*x^2 + 2240*c^3*d^3*x^3 + 2730*c^2*d^4*x^4 + 1872*c*d^5*x^5 +
 572*d^6*x^6) + 8*a^3*b^7*d^3*(99*c^7 + 924*c^6*d*x + 3780*c^5*d^
2*x^2 + 8820*c^4*d^3*x^3 + 12740*c^3*d^4*x^4 + 11466*c^2*d^5*x^5
+ 6006*c*d^6*x^6 + 1430*d^7*x^7) + 3*a^2*b^8*d^2*(429*c^8 + 4224*
c^7*d*x + 18480*c^6*d^2*x^2 + 47040*c^5*d^3*x^3 + 76440*c^4*d^4*x
^4 + 81536*c^3*d^5*x^5 + 56056*c^2*d^6*x^6 + 22880*c*d^7*x^7 + 42
90*d^8*x^8) + 2*a*b^9*d*(1001*c^9 + 10296*c^8*d*x + 47520*c^7*d^2
*x^2 + 129360*c^6*d^3*x^3 + 229320*c^5*d^4*x^4 + 275184*c^4*d^5*x
^5 + 224224*c^3*d^6*x^6 + 120120*c^2*d^7*x^7 + 38610*c*d^8*x^8 +
5720*d^9*x^9) + b^10*(3003*c^10 + 32032*c^9*d*x + 154440*c^8*d^2*
x^2 + 443520*c^7*d^3*x^3 + 840840*c^6*d^4*x^4 + 1100736*c^5*d^5*x
^5 + 1009008*c^4*d^6*x^6 + 640640*c^3*d^7*x^7 + 270270*c^2*d^8*x^
8 + 68640*c*d^9*x^9 + 8008*d^10*x^10))/(48048*b^11*(a + b*x)^16)
```

Maple [B] time = 0.015, size = 867, normalized size = 4.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^17,x)
```

```
[Out] -45/14*d^2*(a^8*d^8-8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c
^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8
*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a)^14-1/6*d^10/b^11/(b*x+a)^6-35/
2*d^4*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^
```

```
3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^12+10/7*
d^9*(a*d-b*c)/b^11/(b*x+a)^7-1/16*(a^10*d^10-10*a^9*b*c*d^9+45*a^
8*b^2*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*b^5
*c^5*d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8*d
^2-10*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^16+2/3*d*(a^9*d^9-9*a^8
*b*c*d^8+36*a^7*b^2*c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^
5-126*a^4*b^5*c^5*d^4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b
^8*c^8*d-b^9*c^9)/b^11/(b*x+a)^15-45/8*d^8*(a^2*d^2-2*a*b*c*d+b^2
*c^2)/b^11/(b*x+a)^8-21*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*
d^2-4*a*b^3*c^3*d+b^4*c^4)/b^11/(b*x+a)^10+252/11*d^5*(a^5*d^5-5*
a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b
^5*c^5)/b^11/(b*x+a)^11+120/13*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*
b^2*c^2*d^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*
d^2+7*a*b^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^13+40/3*d^7*(a^3*d^3-3*a^
2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.4652, size = 1391, normalized size = 7.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^17,x, algorithm="maxima")
```

```
[Out] -1/48048*(8008*b^10*d^10*x^10 + 3003*b^10*c^10 + 2002*a*b^9*c^9*d
 + 1287*a^2*b^8*c^8*d^2 + 792*a^3*b^7*c^7*d^3 + 462*a^4*b^6*c^6*d
^4 + 252*a^5*b^5*c^5*d^5 + 126*a^6*b^4*c^4*d^6 + 56*a^7*b^3*c^3*d
^7 + 21*a^8*b^2*c^2*d^8 + 6*a^9*b*c*d^9 + a^10*d^10 + 11440*(6*b^
10*c*d^9 + a*b^9*d^10)*x^9 + 12870*(21*b^10*c^2*d^8 + 6*a*b^9*c*d
^9 + a^2*b^8*d^10)*x^8 + 11440*(56*b^10*c^3*d^7 + 21*a*b^9*c^2*d^
8 + 6*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 8008*(126*b^10*c^4*d^6
+ 56*a*b^9*c^3*d^7 + 21*a^2*b^8*c^2*d^8 + 6*a^3*b^7*c*d^9 + a^4*b
^6*d^10)*x^6 + 4368*(252*b^10*c^5*d^5 + 126*a*b^9*c^4*d^6 + 56*a^
2*b^8*c^3*d^7 + 21*a^3*b^7*c^2*d^8 + 6*a^4*b^6*c*d^9 + a^5*b^5*d^
10)*x^5 + 1820*(462*b^10*c^6*d^4 + 252*a*b^9*c^5*d^5 + 126*a^2*b^
8*c^4*d^6 + 56*a^3*b^7*c^3*d^7 + 21*a^4*b^6*c^2*d^8 + 6*a^5*b^5*c
*d^9 + a^6*b^4*d^10)*x^4 + 560*(792*b^10*c^7*d^3 + 462*a*b^9*c^6*
d^4 + 252*a^2*b^8*c^5*d^5 + 126*a^3*b^7*c^4*d^6 + 56*a^4*b^6*c^3*
d^7 + 21*a^5*b^5*c^2*d^8 + 6*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 +
120*(1287*b^10*c^8*d^2 + 792*a*b^9*c^7*d^3 + 462*a^2*b^8*c^6*d^4
+ 252*a^3*b^7*c^5*d^5 + 126*a^4*b^6*c^4*d^6 + 56*a^5*b^5*c^3*d^7
+ 21*a^6*b^4*c^2*d^8 + 6*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 16*(
2002*b^10*c^9*d + 1287*a*b^9*c^8*d^2 + 792*a^2*b^8*c^7*d^3 + 462*
a^3*b^7*c^6*d^4 + 252*a^4*b^6*c^5*d^5 + 126*a^5*b^5*c^4*d^6 + 56*
a^6*b^4*c^3*d^7 + 21*a^7*b^3*c^2*d^8 + 6*a^8*b^2*c*d^9 + a^9*b*d^
10)*x)/(b^27*x^16 + 16*a*b^26*x^15 + 120*a^2*b^25*x^14 + 560*a^3*
b^24*x^13 + 1820*a^4*b^23*x^12 + 4368*a^5*b^22*x^11 + 8008*a^6*b^
21*x^10 + 11440*a^7*b^20*x^9 + 12870*a^8*b^19*x^8 + 11440*a^9*b^1
8*x^7 + 8008*a^10*b^17*x^6 + 4368*a^11*b^16*x^5 + 1820*a^12*b^15*
x^4 + 560*a^13*b^14*x^3 + 120*a^14*b^13*x^2 + 16*a^15*b^12*x + a^
16*b^11)
```

Fricas [A] time = 0.214917, size = 1391, normalized size = 7.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^17,x, algorithm="fricas")
```

```
[Out] -1/48048*(8008*b^10*d^10*x^10 + 3003*b^10*c^10 + 2002*a*b^9*c^9*d
 + 1287*a^2*b^8*c^8*d^2 + 792*a^3*b^7*c^7*d^3 + 462*a^4*b^6*c^6*d
^4 + 252*a^5*b^5*c^5*d^5 + 126*a^6*b^4*c^4*d^6 + 56*a^7*b^3*c^3*d
^7 + 21*a^8*b^2*c^2*d^8 + 6*a^9*b*c*d^9 + a^10*d^10 + 11440*(6*b^
10*c*d^9 + a*b^9*d^10)*x^9 + 12870*(21*b^10*c^2*d^8 + 6*a*b^9*c*d
^9 + a^2*b^8*d^10)*x^8 + 11440*(56*b^10*c^3*d^7 + 21*a*b^9*c^2*d^
8 + 6*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 8008*(126*b^10*c^4*d^6
+ 56*a*b^9*c^3*d^7 + 21*a^2*b^8*c^2*d^8 + 6*a^3*b^7*c*d^9 + a^4*b
^6*d^10)*x^6 + 4368*(252*b^10*c^5*d^5 + 126*a*b^9*c^4*d^6 + 56*a^
2*b^8*c^3*d^7 + 21*a^3*b^7*c^2*d^8 + 6*a^4*b^6*c*d^9 + a^5*b^5*d^
10)*x^5 + 1820*(462*b^10*c^6*d^4 + 252*a*b^9*c^5*d^5 + 126*a^2*b^
8*c^4*d^6 + 56*a^3*b^7*c^3*d^7 + 21*a^4*b^6*c^2*d^8 + 6*a^5*b^5*c
*d^9 + a^6*b^4*d^10)*x^4 + 560*(792*b^10*c^7*d^3 + 462*a*b^9*c^6*
d^4 + 252*a^2*b^8*c^5*d^5 + 126*a^3*b^7*c^4*d^6 + 56*a^4*b^6*c^3*
d^7 + 21*a^5*b^5*c^2*d^8 + 6*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 +
120*(1287*b^10*c^8*d^2 + 792*a*b^9*c^7*d^3 + 462*a^2*b^8*c^6*d^4
+ 252*a^3*b^7*c^5*d^5 + 126*a^4*b^6*c^4*d^6 + 56*a^5*b^5*c^3*d^7
+ 21*a^6*b^4*c^2*d^8 + 6*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 16*(
2002*b^10*c^9*d + 1287*a*b^9*c^8*d^2 + 792*a^2*b^8*c^7*d^3 + 462*
a^3*b^7*c^6*d^4 + 252*a^4*b^6*c^5*d^5 + 126*a^5*b^5*c^4*d^6 + 56*
a^6*b^4*c^3*d^7 + 21*a^7*b^3*c^2*d^8 + 6*a^8*b^2*c*d^9 + a^9*b*d^
10)*x)/(b^27*x^16 + 16*a*b^26*x^15 + 120*a^2*b^25*x^14 + 560*a^3*
b^24*x^13 + 1820*a^4*b^23*x^12 + 4368*a^5*b^22*x^11 + 8008*a^6*b^
21*x^10 + 11440*a^7*b^20*x^9 + 12870*a^8*b^19*x^8 + 11440*a^9*b^1
8*x^7 + 8008*a^10*b^17*x^6 + 4368*a^11*b^16*x^5 + 1820*a^12*b^15*
x^4 + 560*a^13*b^14*x^3 + 120*a^14*b^13*x^2 + 16*a^15*b^12*x + a^
16*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**17,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224133, size = 1, normalized size = 0.01

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^17,x, algorithm="giac")
```

```
[Out] Done
```

3.1329 $\int \frac{(c+dx)^{10}}{(a+bx)^{18}}\,dx$

Optimal. Leaf size=213

$$-\frac{d^6(c+dx)^{11}}{136136(a+bx)^{11}(bc-ad)^7}+\frac{d^5(c+dx)^{11}}{12376(a+bx)^{12}(bc-ad)^6}-\frac{3d^4(c+dx)^{11}}{6188(a+bx)^{13}(bc-ad)^5}+\frac{d^3(c+dx)^{11}}{476(a+bx)^{14}(bc-ad)^4}-\frac{d^2(c+dx)^{11}}{136(a+bx)^{15}(bc-ad)^3}+\frac{3d(c+dx)^{11}}{136(a+bx)^{16}(bc-ad)^2}-\frac{(c+dx)^{11}}{17(a+bx)^{17}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(17*(b*c - a*d)*(a + b*x)^17) + (3*d*(c + d*x)^11)/
(136*(b*c - a*d)^2*(a + b*x)^16) - (d^2*(c + d*x)^11)/(136*(b*c -
 a*d)^3*(a + b*x)^15) + (d^3*(c + d*x)^11)/(476*(b*c - a*d)^4*(a
+ b*x)^14) - (3*d^4*(c + d*x)^11)/(6188*(b*c - a*d)^5*(a + b*x)^1
3) + (d^5*(c + d*x)^11)/(12376*(b*c - a*d)^6*(a + b*x)^12) - (d^6
*(c + d*x)^11)/(136136*(b*c - a*d)^7*(a + b*x)^11)
```

Rubi [A] time = 0.201426, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$-\frac{d^6(c+dx)^{11}}{136136(a+bx)^{11}(bc-ad)^7}+\frac{d^5(c+dx)^{11}}{12376(a+bx)^{12}(bc-ad)^6}-\frac{3d^4(c+dx)^{11}}{6188(a+bx)^{13}(bc-ad)^5}+\frac{d^3(c+dx)^{11}}{476(a+bx)^{14}(bc-ad)^4}-\frac{d^2(c+dx)^{11}}{136(a+bx)^{15}(bc-ad)^3}+\frac{3d(c+dx)^{11}}{136(a+bx)^{16}(bc-ad)^2}-\frac{(c+dx)^{11}}{17(a+bx)^{17}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^18,x]
```

```
[Out] -(c + d*x)^11/(17*(b*c - a*d)*(a + b*x)^17) + (3*d*(c + d*x)^11)/
(136*(b*c - a*d)^2*(a + b*x)^16) - (d^2*(c + d*x)^11)/(136*(b*c -
 a*d)^3*(a + b*x)^15) + (d^3*(c + d*x)^11)/(476*(b*c - a*d)^4*(a
+ b*x)^14) - (3*d^4*(c + d*x)^11)/(6188*(b*c - a*d)^5*(a + b*x)^1
3) + (d^5*(c + d*x)^11)/(12376*(b*c - a*d)^6*(a + b*x)^12) - (d^6
*(c + d*x)^11)/(136136*(b*c - a*d)^7*(a + b*x)^11)
```

Rubi in Sympy [A] time = 59.2758, size = 185, normalized size = 0.87

$$\frac{d^6\,(c+dx)^{11}}{136136\,(a+bx)^{11}\,(ad-bc)^7}+\frac{d^5\,(c+dx)^{11}}{12376\,(a+bx)^{12}\,(ad-bc)^6}+\frac{3d^4\,(c+dx)^{11}}{6188\,(a+bx)^{13}\,(ad-bc)^5}+\frac{d^3\,(c+dx)^{11}}{476\,(a+bx)^{14}\,(ad-bc)^4}+\frac{d^2\,(c+dx)^{11}}{136\,(a+bx)^{15}\,(ad-bc)^3}+\frac{3d\,(c+dx)^{11}}{136\,(a+bx)^{16}\,(ad-bc)^2}+\frac{(c+dx)^{11}}{17\,(a+bx)^{17}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**18,x)
```

```
[Out] d**6*(c + d*x)**11/(136136*(a + b*x)**11*(a*d - b*c)**7) + d**5*(
c + d*x)**11/(12376*(a + b*x)**12*(a*d - b*c)**6) + 3*d**4*(c + d
*x)**11/(6188*(a + b*x)**13*(a*d - b*c)**5) + d**3*(c + d*x)**11/
(476*(a + b*x)**14*(a*d - b*c)**4) + d**2*(c + d*x)**11/(136*(a +
 b*x)**15*(a*d - b*c)**3) + 3*d*(c + d*x)**11/(136*(a + b*x)**16*
(a*d - b*c)**2) + (c + d*x)**11/(17*(a + b*x)**17*(a*d - b*c))
```

Mathematica [B] time = 0.780338, size = 690, normalized size = 3.24

$$-\frac{a^{10}d^{10}+a^9bd^9(7c+17dx)+a^8b^2d^8\left(28c^2+119cdx+136d^2x^2\right)+4a^7b^3d^7\left(21c^3+119c^2dx+238cd^2x^2+170d^3x^3\right)+14a^6}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^18,x]
```

```
[Out] -(a^10*d^10 + a^9*b*d^9*(7*c + 17*d*x) + a^8*b^2*d^8*(28*c^2 + 11
9*c*d*x + 136*d^2*x^2) + 4*a^7*b^3*d^7*(21*c^3 + 119*c^2*d*x + 23
8*c*d^2*x^2 + 170*d^3*x^3) + 14*a^6*b^4*d^6*(15*c^4 + 102*c^3*d*x
 + 272*c^2*d^2*x^2 + 340*c*d^3*x^3 + 170*d^4*x^4) + 14*a^5*b^5*d^
5*(33*c^5 + 255*c^4*d*x + 816*c^3*d^2*x^2 + 1360*c^2*d^3*x^3 + 11
90*c*d^4*x^4 + 442*d^5*x^5) + 14*a^4*b^6*d^4*(66*c^6 + 561*c^5*d*
x + 2040*c^4*d^2*x^2 + 4080*c^3*d^3*x^3 + 4760*c^2*d^4*x^4 + 3094
*c*d^5*x^5 + 884*d^6*x^6) + 4*a^3*b^7*d^3*(429*c^7 + 3927*c^6*d*x
 + 15708*c^5*d^2*x^2 + 35700*c^4*d^3*x^3 + 49980*c^3*d^4*x^4 + 43
316*c^2*d^5*x^5 + 21658*c*d^6*x^6 + 4862*d^7*x^7) + a^2*b^8*d^2*(
3003*c^8 + 29172*c^7*d*x + 125664*c^6*d^2*x^2 + 314160*c^5*d^3*x^
3 + 499800*c^4*d^4*x^4 + 519792*c^3*d^5*x^5 + 346528*c^2*d^6*x^6
+ 136136*c*d^7*x^7 + 24310*d^8*x^8) + a*b^9*d*(5005*c^9 + 51051*c
^8*d*x + 233376*c^7*d^2*x^2 + 628320*c^6*d^3*x^3 + 1099560*c^5*d^
4*x^4 + 1299480*c^4*d^5*x^5 + 1039584*c^3*d^6*x^6 + 544544*c^2*d^
7*x^7 + 170170*c*d^8*x^8 + 24310*d^9*x^9) + b^10*(8008*c^10 + 850
85*c^9*d*x + 408408*c^8*d^2*x^2 + 1166880*c^7*d^3*x^3 + 2199120*c
^6*d^4*x^4 + 2858856*c^5*d^5*x^5 + 2598960*c^4*d^6*x^6 + 1633632*
c^3*d^7*x^7 + 680680*c^2*d^8*x^8 + 170170*c*d^9*x^9 + 19448*d^10*
x^10))/(136136*b^11*(a + b*x)^17)
```

Maple [B] time = 0.014, size = 867, normalized size = 4.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^18,x)
```

```
[Out] -1/17*(a^10*d^10-10*a^9*b*c*d^9+45*a^8*b^2*c^2*d^8-120*a^7*b^3*c^
3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*b^5*c^5*d^5+210*a^4*b^6*c^6*d^4
-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8*d^2-10*a*b^9*c^9*d+b^10*c^10)
/b^11/(b*x+a)^17+60/7*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^2*c^2*d
^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^2+7*a*b
^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^14+21*d^5*(a^5*d^5-5*a^4*b*c*d^4+1
0*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^11/
(b*x+a)^12-1/7*d^10/b^11/(b*x+a)^7+5/8*d*(a^9*d^9-9*a^8*b*c*d^8+3
6*a^7*b^2*c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*
b^5*c^5*d^4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b
^9*c^9)/b^11/(b*x+a)^16-3*d^2*(a^8*d^8-8*a^7*b*c*d^7+28*a^6*b^2*c
^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*b^5*c^5*d^3+2
8*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a)^15+5/4*d^9*
(a*d-b*c)/b^11/(b*x+a)^8+12*d^7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^
2*d-b^3*c^3)/b^11/(b*x+a)^10-210/11*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*
a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/b^11/(b*x+a)^11-210/13*d^4
*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*
a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^13-5*d^8*(a^2
*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.48019, size = 1405, normalized size = 6.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^18,x, algorithm="maxima")
```

```
[Out] -1/136136*(19448*b^10*d^10*x^10 + 8008*b^10*c^10 + 5005*a*b^9*c^9
*d + 3003*a^2*b^8*c^8*d^2 + 1716*a^3*b^7*c^7*d^3 + 924*a^4*b^6*c^
6*d^4 + 462*a^5*b^5*c^5*d^5 + 210*a^6*b^4*c^4*d^6 + 84*a^7*b^3*c^
3*d^7 + 28*a^8*b^2*c^2*d^8 + 7*a^9*b*c*d^9 + a^10*d^10 + 24310*(7
*b^10*c*d^9 + a*b^9*d^10)*x^9 + 24310*(28*b^10*c^2*d^8 + 7*a*b^9*
c*d^9 + a^2*b^8*d^10)*x^8 + 19448*(84*b^10*c^3*d^7 + 28*a*b^9*c^2
*d^8 + 7*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 12376*(210*b^10*c^4*
d^6 + 84*a*b^9*c^3*d^7 + 28*a^2*b^8*c^2*d^8 + 7*a^3*b^7*c*d^9 + a
^4*b^6*d^10)*x^6 + 6188*(462*b^10*c^5*d^5 + 210*a*b^9*c^4*d^6 + 8
4*a^2*b^8*c^3*d^7 + 28*a^3*b^7*c^2*d^8 + 7*a^4*b^6*c*d^9 + a^5*b^
5*d^10)*x^5 + 2380*(924*b^10*c^6*d^4 + 462*a*b^9*c^5*d^5 + 210*a^
2*b^8*c^4*d^6 + 84*a^3*b^7*c^3*d^7 + 28*a^4*b^6*c^2*d^8 + 7*a^5*b
^5*c*d^9 + a^6*b^4*d^10)*x^4 + 680*(1716*b^10*c^7*d^3 + 924*a*b^9
*c^6*d^4 + 462*a^2*b^8*c^5*d^5 + 210*a^3*b^7*c^4*d^6 + 84*a^4*b^6
*c^3*d^7 + 28*a^5*b^5*c^2*d^8 + 7*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x
^3 + 136*(3003*b^10*c^8*d^2 + 1716*a*b^9*c^7*d^3 + 924*a^2*b^8*c^
6*d^4 + 462*a^3*b^7*c^5*d^5 + 210*a^4*b^6*c^4*d^6 + 84*a^5*b^5*c^
3*d^7 + 28*a^6*b^4*c^2*d^8 + 7*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2
+ 17*(5005*b^10*c^9*d + 3003*a*b^9*c^8*d^2 + 1716*a^2*b^8*c^7*d^3
 + 924*a^3*b^7*c^6*d^4 + 462*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^
6 + 84*a^6*b^4*c^3*d^7 + 28*a^7*b^3*c^2*d^8 + 7*a^8*b^2*c*d^9 + a
```

```
^9*b*d^10)*x)/(b^28*x^17 + 17*a*b^27*x^16 + 136*a^2*b^26*x^15 + 6
80*a^3*b^25*x^14 + 2380*a^4*b^24*x^13 + 6188*a^5*b^23*x^12 + 1237
6*a^6*b^22*x^11 + 19448*a^7*b^21*x^10 + 24310*a^8*b^20*x^9 + 2431
0*a^9*b^19*x^8 + 19448*a^10*b^18*x^7 + 12376*a^11*b^17*x^6 + 6188
*a^12*b^16*x^5 + 2380*a^13*b^15*x^4 + 680*a^14*b^14*x^3 + 136*a^1
5*b^13*x^2 + 17*a^16*b^12*x + a^17*b^11)
```

Fricas [A] time = 0.22119, size = 1405, normalized size = 6.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^18,x, algorithm="fricas")
```

```
[Out] -1/136136*(19448*b^10*d^10*x^10 + 8008*b^10*c^10 + 5005*a*b^9*c^9
*d + 3003*a^2*b^8*c^8*d^2 + 1716*a^3*b^7*c^7*d^3 + 924*a^4*b^6*c^
6*d^4 + 462*a^5*b^5*c^5*d^5 + 210*a^6*b^4*c^4*d^6 + 84*a^7*b^3*c^
3*d^7 + 28*a^8*b^2*c^2*d^8 + 7*a^9*b*c*d^9 + a^10*d^10 + 24310*(7
*b^10*c*d^9 + a*b^9*d^10)*x^9 + 24310*(28*b^10*c^2*d^8 + 7*a*b^9*
c*d^9 + a^2*b^8*d^10)*x^8 + 19448*(84*b^10*c^3*d^7 + 28*a*b^9*c^2
*d^8 + 7*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 12376*(210*b^10*c^4*
d^6 + 84*a*b^9*c^3*d^7 + 28*a^2*b^8*c^2*d^8 + 7*a^3*b^7*c*d^9 + a
^4*b^6*d^10)*x^6 + 6188*(462*b^10*c^5*d^5 + 210*a*b^9*c^4*d^6 + 8
4*a^2*b^8*c^3*d^7 + 28*a^3*b^7*c^2*d^8 + 7*a^4*b^6*c*d^9 + a^5*b^
5*d^10)*x^5 + 2380*(924*b^10*c^6*d^4 + 462*a*b^9*c^5*d^5 + 210*a^
2*b^8*c^4*d^6 + 84*a^3*b^7*c^3*d^7 + 28*a^4*b^6*c^2*d^8 + 7*a^5*b
^5*c*d^9 + a^6*b^4*d^10)*x^4 + 680*(1716*b^10*c^7*d^3 + 924*a*b^9
*c^6*d^4 + 462*a^2*b^8*c^5*d^5 + 210*a^3*b^7*c^4*d^6 + 84*a^4*b^6
*c^3*d^7 + 28*a^5*b^5*c^2*d^8 + 7*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x
^3 + 136*(3003*b^10*c^8*d^2 + 1716*a*b^9*c^7*d^3 + 924*a^2*b^8*c^
6*d^4 + 462*a^3*b^7*c^5*d^5 + 210*a^4*b^6*c^4*d^6 + 84*a^5*b^5*c^
3*d^7 + 28*a^6*b^4*c^2*d^8 + 7*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2
+ 17*(5005*b^10*c^9*d + 3003*a*b^9*c^8*d^2 + 1716*a^2*b^8*c^7*d^3
 + 924*a^3*b^7*c^6*d^4 + 462*a^4*b^6*c^5*d^5 + 210*a^5*b^5*c^4*d^
6 + 84*a^6*b^4*c^3*d^7 + 28*a^7*b^3*c^2*d^8 + 7*a^8*b^2*c*d^9 + a
^9*b*d^10)*x)/(b^28*x^17 + 17*a*b^27*x^16 + 136*a^2*b^26*x^15 + 6
80*a^3*b^25*x^14 + 2380*a^4*b^24*x^13 + 6188*a^5*b^23*x^12 + 1237
6*a^6*b^22*x^11 + 19448*a^7*b^21*x^10 + 24310*a^8*b^20*x^9 + 2431
0*a^9*b^19*x^8 + 19448*a^10*b^18*x^7 + 12376*a^11*b^17*x^6 + 6188
*a^12*b^16*x^5 + 2380*a^13*b^15*x^4 + 680*a^14*b^14*x^3 + 136*a^1
5*b^13*x^2 + 17*a^16*b^12*x + a^17*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**18,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.221024, size = 1, normalized size = 0.

$$\mathit{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^18,x, algorithm="giac")
```

```
[Out] Done
```

3.1330 $\int \frac{(c+dx)^{10}}{(a+bx)^{19}}\,dx$

Optimal. Leaf size=244

$$\frac{d^7(c+dx)^{11}}{350064(a+bx)^{11}(bc-ad)^8}-\frac{d^6(c+dx)^{11}}{31824(a+bx)^{12}(bc-ad)^7}+\frac{d^5(c+dx)^{11}}{5304(a+bx)^{13}(bc-ad)^6}-\frac{d^4(c+dx)^{11}}{1224(a+bx)^{14}(bc-ad)^5}+\frac{7d^3(c+dx)^{11}}{2448(a+bx)^{15}(bc-ad)^4}-\frac{7d^2(c+dx)^{11}}{816(a+bx)^{16}(bc-ad)^3}+\frac{7d(c+dx)^{11}}{306(a+bx)^{17}(bc-ad)^2}-\frac{(c+dx)^{11}}{18(a+bx)^{18}(bc-ad)}$$

```
[Out] -(c + d*x)^11/(18*(b*c - a*d)*(a + b*x)^18) + (7*d*(c + d*x)^11)/
(306*(b*c - a*d)^2*(a + b*x)^17) - (7*d^2*(c + d*x)^11)/(816*(b*c
 - a*d)^3*(a + b*x)^16) + (7*d^3*(c + d*x)^11)/(2448*(b*c - a*d)^
4*(a + b*x)^15) - (d^4*(c + d*x)^11)/(1224*(b*c - a*d)^5*(a + b*x
)^14) + (d^5*(c + d*x)^11)/(5304*(b*c - a*d)^6*(a + b*x)^13) - (d
^6*(c + d*x)^11)/(31824*(b*c - a*d)^7*(a + b*x)^12) + (d^7*(c + d
*x)^11)/(350064*(b*c - a*d)^8*(a + b*x)^11)
```

Rubi [A] time = 0.249296, antiderivative size = 244, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{d^7(c+dx)^{11}}{350064(a+bx)^{11}(bc-ad)^8}-\frac{d^6(c+dx)^{11}}{31824(a+bx)^{12}(bc-ad)^7}+\frac{d^5(c+dx)^{11}}{5304(a+bx)^{13}(bc-ad)^6}-\frac{d^4(c+dx)^{11}}{1224(a+bx)^{14}(bc-ad)^5}+\frac{7d^3(c+dx)^{11}}{2448(a+bx)^{15}(bc-ad)^4}-\frac{7d^2(c+dx)^{11}}{816(a+bx)^{16}(bc-ad)^3}+\frac{7d(c+dx)^{11}}{306(a+bx)^{17}(bc-ad)^2}-\frac{(c+dx)^{11}}{18(a+bx)^{18}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^19,x]
```


```
[Out] -(c + d*x)^11/(18*(b*c - a*d)*(a + b*x)^18) + (7*d*(c + d*x)^11)/
(306*(b*c - a*d)^2*(a + b*x)^17) - (7*d^2*(c + d*x)^11)/(816*(b*c
 - a*d)^3*(a + b*x)^16) + (7*d^3*(c + d*x)^11)/(2448*(b*c - a*d)^
4*(a + b*x)^15) - (d^4*(c + d*x)^11)/(1224*(b*c - a*d)^5*(a + b*x
)^14) + (d^5*(c + d*x)^11)/(5304*(b*c - a*d)^6*(a + b*x)^13) - (d
^6*(c + d*x)^11)/(31824*(b*c - a*d)^7*(a + b*x)^12) + (d^7*(c + d
*x)^11)/(350064*(b*c - a*d)^8*(a + b*x)^11)
```

Rubi in Sympy [A] time = 75.4587, size = 214, normalized size = 0.88

$$\frac{d^7(c+dx)^{11}}{350064(a+bx)^{11}(ad-bc)^8}+\frac{d^6(c+dx)^{11}}{31824(a+bx)^{12}(ad-bc)^7}+\frac{d^5(c+dx)^{11}}{5304(a+bx)^{13}(ad-bc)^6}+\frac{d^4(c+dx)^{11}}{1224(a+bx)^{14}(ad-bc)^5}+\frac{7d^3(c+dx)^{11}}{2448(a+bx)^{15}(ad-bc)^4}+\frac{7d^2(c+dx)^{11}}{816(a+bx)^{16}(ad-bc)^3}+\frac{7d(c+dx)^{11}}{306(a+bx)^{17}(ad-bc)^2}+\frac{(c+dx)^{11}}{18(a+bx)^{18}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**19,x)
```

```
[Out] d**7*(c + d*x)**11/(350064*(a + b*x)**11*(a*d - b*c)**8) + d**6*(
c + d*x)**11/(31824*(a + b*x)**12*(a*d - b*c)**7) + d**5*(c + d*x
)**11/(5304*(a + b*x)**13*(a*d - b*c)**6) + d**4*(c + d*x)**11/(1
224*(a + b*x)**14*(a*d - b*c)**5) + 7*d**3*(c + d*x)**11/(2448*(a
 + b*x)**15*(a*d - b*c)**4) + 7*d**2*(c + d*x)**11/(816*(a + b*x)
**16*(a*d - b*c)**3) + 7*d*(c + d*x)**11/(306*(a + b*x)**17*(a*d
- b*c)**2) + (c + d*x)**11/(18*(a + b*x)**18*(a*d - b*c))
```

Mathematica [B] time = 0.76353, size = 694, normalized size = 2.84

$$-\frac{a^{10}d^{10}+2a^9bd^9(4c+9dx)+9a^8b^2d^8\left(4c^2+16cdx+17d^2x^2\right)+24a^7b^3d^7\left(5c^3+27c^2dx+51cd^2x^2+34d^3x^3\right)+6a^6b^4d^6\left(5\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^19,x]
```

```
[Out] -(a^10*d^10 + 2*a^9*b*d^9*(4*c + 9*d*x) + 9*a^8*b^2*d^8*(4*c^2 +
16*c*d*x + 17*d^2*x^2) + 24*a^7*b^3*d^7*(5*c^3 + 27*c^2*d*x + 51*
c*d^2*x^2 + 34*d^3*x^3) + 6*a^6*b^4*d^6*(55*c^4 + 360*c^3*d*x + 9
18*c^2*d^2*x^2 + 1088*c*d^3*x^3 + 510*d^4*x^4) + 36*a^5*b^5*d^5*(
22*c^5 + 165*c^4*d*x + 510*c^3*d^2*x^2 + 816*c^2*d^3*x^3 + 680*c*
d^4*x^4 + 238*d^5*x^5) + 6*a^4*b^6*d^4*(286*c^6 + 2376*c^5*d*x +
8415*c^4*d^2*x^2 + 16320*c^3*d^3*x^3 + 18360*c^2*d^4*x^4 + 11424*
c*d^5*x^5 + 3094*d^6*x^6) + 24*a^3*b^7*d^3*(143*c^7 + 1287*c^6*d*
x + 5049*c^5*d^2*x^2 + 11220*c^4*d^3*x^3 + 15300*c^3*d^4*x^4 + 12
852*c^2*d^5*x^5 + 6188*c*d^6*x^6 + 1326*d^7*x^7) + 9*a^2*b^8*d^2*
(715*c^8 + 6864*c^7*d*x + 29172*c^6*d^2*x^2 + 71808*c^5*d^3*x^3 +
 112200*c^4*d^4*x^4 + 114240*c^3*d^5*x^5 + 74256*c^2*d^6*x^6 + 28
288*c*d^7*x^7 + 4862*d^8*x^8) + 2*a*b^9*d*(5720*c^9 + 57915*c^8*d
*x + 262548*c^7*d^2*x^2 + 700128*c^6*d^3*x^3 + 1211760*c^5*d^4*x^
4 + 1413720*c^4*d^5*x^5 + 1113840*c^3*d^6*x^6 + 572832*c^2*d^7*x^
7 + 175032*c*d^8*x^8 + 24310*d^9*x^9) + b^10*(19448*c^10 + 205920
*c^9*d*x + 984555*c^8*d^2*x^2 + 2800512*c^7*d^3*x^3 + 5250960*c^6
*d^4*x^4 + 6785856*c^5*d^5*x^5 + 6126120*c^4*d^6*x^6 + 3818880*c^
```

```
3*d^7*x^7 + 1575288*c^2*d^8*x^8 + 388960*c*d^9*x^9 + 43758*d^10*x
^10))/(350064*b^11*(a + b*x)^18)
```

Maple [B] time = 0.014, size = 867, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^19,x)
```

```
[Out] 10/17*d*(a^9*d^9-9*a^8*b*c*d^8+36*a^7*b^2*c^2*d^7-84*a^6*b^3*c^3*
d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*c^5*d^4+84*a^3*b^6*c^6*d^3-36
*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c^9)/b^11/(b*x+a)^17-15*d^4*(a
^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2
*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^14-1/18*(a^10*d^
10-10*a^9*b*c*d^9+45*a^8*b^2*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*
b^4*c^4*d^6-252*a^5*b^5*c^5*d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c
^7*d^3+45*a^2*b^8*c^8*d^2-10*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^
18-35/2*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*
d+b^4*c^4)/b^11/(b*x+a)^12-45/16*d^2*(a^8*d^8-8*a^7*b*c*d^7+28*a^
6*b^2*c^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*b^5*c^
5*d^3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a)^16+8
*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^2*c^2*d^5-35*a^4*b^3*c^3*d^4
+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^2+7*a*b^6*c^6*d-b^7*c^7)/b^1
1/(b*x+a)^15-1/8*d^10/b^11/(b*x+a)^8-9/2*d^8*(a^2*d^2-2*a*b*c*d+b
^2*c^2)/b^11/(b*x+a)^10+120/11*d^7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2
*c^2*d-b^3*c^3)/b^11/(b*x+a)^11+252/13*d^5*(a^5*d^5-5*a^4*b*c*d^4
+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^1
1/(b*x+a)^13+10/9*d^9*(a*d-b*c)/b^11/(b*x+a)^9
```

Maxima [A] time = 1.47497, size = 1420, normalized size = 5.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^19,x, algorithm="maxima")
```

```
[Out] -1/350064*(43758*b^10*d^10*x^10 + 19448*b^10*c^10 + 11440*a*b^9*c
^9*d + 6435*a^2*b^8*c^8*d^2 + 3432*a^3*b^7*c^7*d^3 + 1716*a^4*b^6
*c^6*d^4 + 792*a^5*b^5*c^5*d^5 + 330*a^6*b^4*c^4*d^6 + 120*a^7*b^
3*c^3*d^7 + 36*a^8*b^2*c^2*d^8 + 8*a^9*b*c*d^9 + a^10*d^10 + 4862
0*(8*b^10*c*d^9 + a*b^9*d^10)*x^9 + 43758*(36*b^10*c^2*d^8 + 8*a*
b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 31824*(120*b^10*c^3*d^7 + 36*a*b^
9*c^2*d^8 + 8*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 18564*(330*b^10
*c^4*d^6 + 120*a*b^9*c^3*d^7 + 36*a^2*b^8*c^2*d^8 + 8*a^3*b^7*c*d
```

```
^9 + a^4*b^6*d^10)*x^6 + 8568*(792*b^10*c^5*d^5 + 330*a*b^9*c^4*d
^6 + 120*a^2*b^8*c^3*d^7 + 36*a^3*b^7*c^2*d^8 + 8*a^4*b^6*c*d^9 +
 a^5*b^5*d^10)*x^5 + 3060*(1716*b^10*c^6*d^4 + 792*a*b^9*c^5*d^5
+ 330*a^2*b^8*c^4*d^6 + 120*a^3*b^7*c^3*d^7 + 36*a^4*b^6*c^2*d^8
+ 8*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 816*(3432*b^10*c^7*d^3 +
1716*a*b^9*c^6*d^4 + 792*a^2*b^8*c^5*d^5 + 330*a^3*b^7*c^4*d^6 +
120*a^4*b^6*c^3*d^7 + 36*a^5*b^5*c^2*d^8 + 8*a^6*b^4*c*d^9 + a^7*
b^3*d^10)*x^3 + 153*(6435*b^10*c^8*d^2 + 3432*a*b^9*c^7*d^3 + 171
6*a^2*b^8*c^6*d^4 + 792*a^3*b^7*c^5*d^5 + 330*a^4*b^6*c^4*d^6 + 1
20*a^5*b^5*c^3*d^7 + 36*a^6*b^4*c^2*d^8 + 8*a^7*b^3*c*d^9 + a^8*b
^2*d^10)*x^2 + 18*(11440*b^10*c^9*d + 6435*a*b^9*c^8*d^2 + 3432*a
^2*b^8*c^7*d^3 + 1716*a^3*b^7*c^6*d^4 + 792*a^4*b^6*c^5*d^5 + 330
*a^5*b^5*c^4*d^6 + 120*a^6*b^4*c^3*d^7 + 36*a^7*b^3*c^2*d^8 + 8*a
^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^29*x^18 + 18*a*b^28*x^17 + 153*a
^2*b^27*x^16 + 816*a^3*b^26*x^15 + 3060*a^4*b^25*x^14 + 8568*a^5*
b^24*x^13 + 18564*a^6*b^23*x^12 + 31824*a^7*b^22*x^11 + 43758*a^8
*b^21*x^10 + 48620*a^9*b^20*x^9 + 43758*a^10*b^19*x^8 + 31824*a^1
1*b^18*x^7 + 18564*a^12*b^17*x^6 + 8568*a^13*b^16*x^5 + 3060*a^14
*b^15*x^4 + 816*a^15*b^14*x^3 + 153*a^16*b^13*x^2 + 18*a^17*b^12*
x + a^18*b^11)
```

Fricas [A] time = 0.213337, size = 1420, normalized size = 5.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^19,x, algorithm="fricas")
```

```
[Out] -1/350064*(43758*b^10*d^10*x^10 + 19448*b^10*c^10 + 11440*a*b^9*c
^9*d + 6435*a^2*b^8*c^8*d^2 + 3432*a^3*b^7*c^7*d^3 + 1716*a^4*b^6
*c^6*d^4 + 792*a^5*b^5*c^5*d^5 + 330*a^6*b^4*c^4*d^6 + 120*a^7*b^
3*c^3*d^7 + 36*a^8*b^2*c^2*d^8 + 8*a^9*b*c*d^9 + a^10*d^10 + 4862
0*(8*b^10*c*d^9 + a*b^9*d^10)*x^9 + 43758*(36*b^10*c^2*d^8 + 8*a*
b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 31824*(120*b^10*c^3*d^7 + 36*a*b^
9*c^2*d^8 + 8*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 18564*(330*b^10
*c^4*d^6 + 120*a*b^9*c^3*d^7 + 36*a^2*b^8*c^2*d^8 + 8*a^3*b^7*c*d
^9 + a^4*b^6*d^10)*x^6 + 8568*(792*b^10*c^5*d^5 + 330*a*b^9*c^4*d
^6 + 120*a^2*b^8*c^3*d^7 + 36*a^3*b^7*c^2*d^8 + 8*a^4*b^6*c*d^9 +
 a^5*b^5*d^10)*x^5 + 3060*(1716*b^10*c^6*d^4 + 792*a*b^9*c^5*d^5
+ 330*a^2*b^8*c^4*d^6 + 120*a^3*b^7*c^3*d^7 + 36*a^4*b^6*c^2*d^8
+ 8*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 816*(3432*b^10*c^7*d^3 +
1716*a*b^9*c^6*d^4 + 792*a^2*b^8*c^5*d^5 + 330*a^3*b^7*c^4*d^6 +
120*a^4*b^6*c^3*d^7 + 36*a^5*b^5*c^2*d^8 + 8*a^6*b^4*c*d^9 + a^7*
b^3*d^10)*x^3 + 153*(6435*b^10*c^8*d^2 + 3432*a*b^9*c^7*d^3 + 171
6*a^2*b^8*c^6*d^4 + 792*a^3*b^7*c^5*d^5 + 330*a^4*b^6*c^4*d^6 + 1
20*a^5*b^5*c^3*d^7 + 36*a^6*b^4*c^2*d^8 + 8*a^7*b^3*c*d^9 + a^8*b
^2*d^10)*x^2 + 18*(11440*b^10*c^9*d + 6435*a*b^9*c^8*d^2 + 3432*a
^2*b^8*c^7*d^3 + 1716*a^3*b^7*c^6*d^4 + 792*a^4*b^6*c^5*d^5 + 330
*a^5*b^5*c^4*d^6 + 120*a^6*b^4*c^3*d^7 + 36*a^7*b^3*c^2*d^8 + 8*a
^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^29*x^18 + 18*a*b^28*x^17 + 153*a
^2*b^27*x^16 + 816*a^3*b^26*x^15 + 3060*a^4*b^25*x^14 + 8568*a^5*
```

```
b^24*x^13 + 18564*a^6*b^23*x^12 + 31824*a^7*b^22*x^11 + 43758*a^8
*b^21*x^10 + 48620*a^9*b^20*x^9 + 43758*a^10*b^19*x^8 + 31824*a^1
1*b^18*x^7 + 18564*a^12*b^17*x^6 + 8568*a^13*b^16*x^5 + 3060*a^14
*b^15*x^4 + 816*a^15*b^14*x^3 + 153*a^16*b^13*x^2 + 18*a^17*b^12*
x + a^18*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**19,x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.220945, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^19,x, algorithm="giac")

[Out] Done
```

3.1331 $\int \frac{(c+dx)^{10}}{(a+bx)^{20}}\,dx$

Optimal. Leaf size=273

$$-\frac{d^9(bc-ad)}{b^{11}(a+bx)^{10}}-\frac{45d^8(bc-ad)^2}{11b^{11}(a+bx)^{11}}-\frac{10d^7(bc-ad)^3}{b^{11}(a+bx)^{12}}-\frac{210d^6(bc-ad)^4}{13b^{11}(a+bx)^{13}}-\frac{18d^5(bc-ad)^5}{b^{11}(a+bx)^{14}}-\frac{14d^4(bc-ad)^6}{b^{11}(a+bx)^{15}}-\frac{15d^3(bc-ad)^7}{2b^{11}(a+bx)^{16}}-\frac{45d^2(bc-ad)^8}{17b^{11}(a+bx)^{17}}-\frac{5d(bc-ad)^9}{9b^{11}(a+bx)^{18}}-\frac{(bc-ad)^{10}}{19b^{11}(a+bx)^{19}}-\frac{d^{10}}{9b^{11}(a+bx)^9}$$

```
[Out] -(b*c - a*d)^10/(19*b^11*(a + b*x)^19) - (5*d*(b*c - a*d)^9)/(9*b
^11*(a + b*x)^18) - (45*d^2*(b*c - a*d)^8)/(17*b^11*(a + b*x)^17)
 - (15*d^3*(b*c - a*d)^7)/(2*b^11*(a + b*x)^16) - (14*d^4*(b*c -
a*d)^6)/(b^11*(a + b*x)^15) - (18*d^5*(b*c - a*d)^5)/(b^11*(a + b
*x)^14) - (210*d^6*(b*c - a*d)^4)/(13*b^11*(a + b*x)^13) - (10*d^
7*(b*c - a*d)^3)/(b^11*(a + b*x)^12) - (45*d^8*(b*c - a*d)^2)/(11
*b^11*(a + b*x)^11) - (d^9*(b*c - a*d))/(b^11*(a + b*x)^10) - d^1
0/(9*b^11*(a + b*x)^9)
```

Rubi [A] time = 0.817451, antiderivative size = 273, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{d^9(bc-ad)}{b^{11}(a+bx)^{10}}-\frac{45d^8(bc-ad)^2}{11b^{11}(a+bx)^{11}}-\frac{10d^7(bc-ad)^3}{b^{11}(a+bx)^{12}}-\frac{210d^6(bc-ad)^4}{13b^{11}(a+bx)^{13}}-\frac{18d^5(bc-ad)^5}{b^{11}(a+bx)^{14}}-\frac{14d^4(bc-ad)^6}{b^{11}(a+bx)^{15}}-\frac{15d^3(bc-ad)^7}{2b^{11}(a+bx)^{16}}-\frac{45d^2(bc-ad)^8}{17b^{11}(a+bx)^{17}}-\frac{5d(bc-ad)^9}{9b^{11}(a+bx)^{18}}-\frac{(bc-ad)^{10}}{19b^{11}(a+bx)^{19}}-\frac{d^{10}}{9b^{11}(a+bx)^9}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^20,x]
```

```
[Out] -(b*c - a*d)^10/(19*b^11*(a + b*x)^19) - (5*d*(b*c - a*d)^9)/(9*b
^11*(a + b*x)^18) - (45*d^2*(b*c - a*d)^8)/(17*b^11*(a + b*x)^17)
 - (15*d^3*(b*c - a*d)^7)/(2*b^11*(a + b*x)^16) - (14*d^4*(b*c -
a*d)^6)/(b^11*(a + b*x)^15) - (18*d^5*(b*c - a*d)^5)/(b^11*(a + b
*x)^14) - (210*d^6*(b*c - a*d)^4)/(13*b^11*(a + b*x)^13) - (10*d^
7*(b*c - a*d)^3)/(b^11*(a + b*x)^12) - (45*d^8*(b*c - a*d)^2)/(11
*b^11*(a + b*x)^11) - (d^9*(b*c - a*d))/(b^11*(a + b*x)^10) - d^1
0/(9*b^11*(a + b*x)^9)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**20,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.770142, size = 692, normalized size = 2.53

$$-\frac{a^{10}d^{10}+a^9bd^9(9c+19dx)+9a^8b^2d^8\left(5c^2+19cdx+19d^2x^2\right)+3a^7b^3d^7\left(55c^3+285c^2dx+513cd^2x^2+323d^3x^3\right)+3a^6b^4d}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^20,x]
```

```
[Out] -(a^10*d^10 + a^9*b*d^9*(9*c + 19*d*x) + 9*a^8*b^2*d^8*(5*c^2 + 1
9*c*d*x + 19*d^2*x^2) + 3*a^7*b^3*d^7*(55*c^3 + 285*c^2*d*x + 513
*c*d^2*x^2 + 323*d^3*x^3) + 3*a^6*b^4*d^6*(165*c^4 + 1045*c^3*d*x
 + 2565*c^2*d^2*x^2 + 2907*c*d^3*x^3 + 1292*d^4*x^4) + 9*a^5*b^5*
d^5*(143*c^5 + 1045*c^4*d*x + 3135*c^3*d^2*x^2 + 4845*c^2*d^3*x^3
 + 3876*c*d^4*x^4 + 1292*d^5*x^5) + 3*a^4*b^6*d^4*(1001*c^6 + 815
1*c^5*d*x + 28215*c^4*d^2*x^2 + 53295*c^3*d^3*x^3 + 58140*c^2*d^4
*x^4 + 34884*c*d^5*x^5 + 9044*d^6*x^6) + 3*a^3*b^7*d^3*(2145*c^7
+ 19019*c^6*d*x + 73359*c^5*d^2*x^2 + 159885*c^4*d^3*x^3 + 213180
*c^3*d^4*x^4 + 174420*c^2*d^5*x^5 + 81396*c*d^6*x^6 + 16796*d^7*x
^7) + 9*a^2*b^8*d^2*(1430*c^8 + 13585*c^7*d*x + 57057*c^6*d^2*x^2
 + 138567*c^5*d^3*x^3 + 213180*c^4*d^4*x^4 + 213180*c^3*d^5*x^5 +
 135660*c^2*d^6*x^6 + 50388*c*d^7*x^7 + 8398*d^8*x^8) + a*b^9*d*(
24310*c^9 + 244530*c^8*d*x + 1100385*c^7*d^2*x^2 + 2909907*c^6*d^
3*x^3 + 4988412*c^5*d^4*x^4 + 5755860*c^4*d^5*x^5 + 4476780*c^3*d
^6*x^6 + 2267460*c^2*d^7*x^7 + 680238*c*d^8*x^8 + 92378*d^9*x^9)
+ b^10*(43758*c^10 + 461890*c^9*d*x + 2200770*c^8*d^2*x^2 + 62355
15*c^7*d^3*x^3 + 11639628*c^6*d^4*x^4 + 14965236*c^5*d^5*x^5 + 13
430340*c^4*d^6*x^6 + 8314020*c^3*d^7*x^7 + 3401190*c^2*d^8*x^8 +
831402*c*d^9*x^9 + 92378*d^10*x^10))/(831402*b^11*(a + b*x)^19)
```

Maple [B] time = 0.014, size = 866, normalized size = 3.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^20,x)
```

```
[Out] -45/17*d^2*(a^8*d^8-8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c
^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8
```

```
*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a)^17-1/19*(a^10*d^10-10*a^9*b*c*
d^9+45*a^8*b^2*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-25
2*a^5*b^5*c^5*d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*
b^8*c^8*d^2-10*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^19+18*d^5*(a^5
*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*
c^4*d-b^5*c^5)/b^11/(b*x+a)^14+5/9*d*(a^9*d^9-9*a^8*b*c*d^8+36*a^
7*b^2*c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*
c^5*d^4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c
^9)/b^11/(b*x+a)^18+10*d^7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b
^3*c^3)/b^11/(b*x+a)^12+15/2*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^
2*c^2*d^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^
2+7*a*b^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^16-14*d^4*(a^6*d^6-6*a^5*b*
c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*
a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^15+d^9*(a*d-b*c)/b^11/(b*x+a)^1
0-45/11*d^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^11-210/13*d^
6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
/b^11/(b*x+a)^13-1/9*d^10/b^11/(b*x+a)^9
```

Maxima [A] time = 1.47916, size = 1435, normalized size = 5.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^20,x, algorithm="maxima")
```

```
[Out] -1/831402*(92378*b^10*d^10*x^10 + 43758*b^10*c^10 + 24310*a*b^9*c
^9*d + 12870*a^2*b^8*c^8*d^2 + 6435*a^3*b^7*c^7*d^3 + 3003*a^4*b^
6*c^6*d^4 + 1287*a^5*b^5*c^5*d^5 + 495*a^6*b^4*c^4*d^6 + 165*a^7*
b^3*c^3*d^7 + 45*a^8*b^2*c^2*d^8 + 9*a^9*b*c*d^9 + a^10*d^10 + 92
378*(9*b^10*c*d^9 + a*b^9*d^10)*x^9 + 75582*(45*b^10*c^2*d^8 + 9*
a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 50388*(165*b^10*c^3*d^7 + 45*a*
b^9*c^2*d^8 + 9*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 27132*(495*b^
10*c^4*d^6 + 165*a*b^9*c^3*d^7 + 45*a^2*b^8*c^2*d^8 + 9*a^3*b^7*c
*d^9 + a^4*b^6*d^10)*x^6 + 11628*(1287*b^10*c^5*d^5 + 495*a*b^9*c
^4*d^6 + 165*a^2*b^8*c^3*d^7 + 45*a^3*b^7*c^2*d^8 + 9*a^4*b^6*c*d
^9 + a^5*b^5*d^10)*x^5 + 3876*(3003*b^10*c^6*d^4 + 1287*a*b^9*c^5
*d^5 + 495*a^2*b^8*c^4*d^6 + 165*a^3*b^7*c^3*d^7 + 45*a^4*b^6*c^2
*d^8 + 9*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 969*(6435*b^10*c^7*d
^3 + 3003*a*b^9*c^6*d^4 + 1287*a^2*b^8*c^5*d^5 + 495*a^3*b^7*c^4*
d^6 + 165*a^4*b^6*c^3*d^7 + 45*a^5*b^5*c^2*d^8 + 9*a^6*b^4*c*d^9
+ a^7*b^3*d^10)*x^3 + 171*(12870*b^10*c^8*d^2 + 6435*a*b^9*c^7*d^
3 + 3003*a^2*b^8*c^6*d^4 + 1287*a^3*b^7*c^5*d^5 + 495*a^4*b^6*c^4
*d^6 + 165*a^5*b^5*c^3*d^7 + 45*a^6*b^4*c^2*d^8 + 9*a^7*b^3*c*d^9
 + a^8*b^2*d^10)*x^2 + 19*(24310*b^10*c^9*d + 12870*a*b^9*c^8*d^2
 + 6435*a^2*b^8*c^7*d^3 + 3003*a^3*b^7*c^6*d^4 + 1287*a^4*b^6*c^5
*d^5 + 495*a^5*b^5*c^4*d^6 + 165*a^6*b^4*c^3*d^7 + 45*a^7*b^3*c^2
*d^8 + 9*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^30*x^19 + 19*a*b^29*x^
18 + 171*a^2*b^28*x^17 + 969*a^3*b^27*x^16 + 3876*a^4*b^26*x^15 +
 11628*a^5*b^25*x^14 + 27132*a^6*b^24*x^13 + 50388*a^7*b^23*x^12
+ 75582*a^8*b^22*x^11 + 92378*a^9*b^21*x^10 + 92378*a^10*b^20*x^9
 + 75582*a^11*b^19*x^8 + 50388*a^12*b^18*x^7 + 27132*a^13*b^17*x^
```

```
6 + 11628*a^14*b^16*x^5 + 3876*a^15*b^15*x^4 + 969*a^16*b^14*x^3
+ 171*a^17*b^13*x^2 + 19*a^18*b^12*x + a^19*b^11)
```

Fricas [A] time = 0.212521, size = 1435, normalized size = 5.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^20,x, algorithm="fricas")
```

```
[Out] -1/831402*(92378*b^10*d^10*x^10 + 43758*b^10*c^10 + 24310*a*b^9*c
^9*d + 12870*a^2*b^8*c^8*d^2 + 6435*a^3*b^7*c^7*d^3 + 3003*a^4*b^
6*c^6*d^4 + 1287*a^5*b^5*c^5*d^5 + 495*a^6*b^4*c^4*d^6 + 165*a^7*
b^3*c^3*d^7 + 45*a^8*b^2*c^2*d^8 + 9*a^9*b*c*d^9 + a^10*d^10 + 92
378*(9*b^10*c*d^9 + a*b^9*d^10)*x^9 + 75582*(45*b^10*c^2*d^8 + 9*
a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 50388*(165*b^10*c^3*d^7 + 45*a*
b^9*c^2*d^8 + 9*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 27132*(495*b^
10*c^4*d^6 + 165*a*b^9*c^3*d^7 + 45*a^2*b^8*c^2*d^8 + 9*a^3*b^7*c
*d^9 + a^4*b^6*d^10)*x^6 + 11628*(1287*b^10*c^5*d^5 + 495*a*b^9*c
^4*d^6 + 165*a^2*b^8*c^3*d^7 + 45*a^3*b^7*c^2*d^8 + 9*a^4*b^6*c*d
^9 + a^5*b^5*d^10)*x^5 + 3876*(3003*b^10*c^6*d^4 + 1287*a*b^9*c^5
*d^5 + 495*a^2*b^8*c^4*d^6 + 165*a^3*b^7*c^3*d^7 + 45*a^4*b^6*c^2
*d^8 + 9*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 969*(6435*b^10*c^7*d
^3 + 3003*a*b^9*c^6*d^4 + 1287*a^2*b^8*c^5*d^5 + 495*a^3*b^7*c^4*
d^6 + 165*a^4*b^6*c^3*d^7 + 45*a^5*b^5*c^2*d^8 + 9*a^6*b^4*c*d^9
+ a^7*b^3*d^10)*x^3 + 171*(12870*b^10*c^8*d^2 + 6435*a*b^9*c^7*d^
3 + 3003*a^2*b^8*c^6*d^4 + 1287*a^3*b^7*c^5*d^5 + 495*a^4*b^6*c^4
*d^6 + 165*a^5*b^5*c^3*d^7 + 45*a^6*b^4*c^2*d^8 + 9*a^7*b^3*c*d^9
 + a^8*b^2*d^10)*x^2 + 19*(24310*b^10*c^9*d + 12870*a*b^9*c^8*d^2
 + 6435*a^2*b^8*c^7*d^3 + 3003*a^3*b^7*c^6*d^4 + 1287*a^4*b^6*c^5
*d^5 + 495*a^5*b^5*c^4*d^6 + 165*a^6*b^4*c^3*d^7 + 45*a^7*b^3*c^2
*d^8 + 9*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^30*x^19 + 19*a*b^29*x^
18 + 171*a^2*b^28*x^17 + 969*a^3*b^27*x^16 + 3876*a^4*b^26*x^15 +
 11628*a^5*b^25*x^14 + 27132*a^6*b^24*x^13 + 50388*a^7*b^23*x^12
+ 75582*a^8*b^22*x^11 + 92378*a^9*b^21*x^10 + 92378*a^10*b^20*x^9
 + 75582*a^11*b^19*x^8 + 50388*a^12*b^18*x^7 + 27132*a^13*b^17*x^
6 + 11628*a^14*b^16*x^5 + 3876*a^15*b^15*x^4 + 969*a^16*b^14*x^3
+ 171*a^17*b^13*x^2 + 19*a^18*b^12*x + a^19*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**20,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.218505, size = 1, normalized size = 0.

$$\text{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^20,x, algorithm="giac")
```

```
[Out] Done
```

3.1332 $\int \frac{(c+dx)^{10}}{(a+bx)^{21}}\,dx$

Optimal. Leaf size=279

$$-\frac{10d^9(bc-ad)}{11b^{11}(a+bx)^{11}}-\frac{15d^8(bc-ad)^2}{4b^{11}(a+bx)^{12}}-\frac{120d^7(bc-ad)^3}{13b^{11}(a+bx)^{13}}-\frac{15d^6(bc-ad)^4}{b^{11}(a+bx)^{14}}-\frac{84d^5(bc-ad)^5}{5b^{11}(a+bx)^{15}}-\frac{105d^4(bc-ad)^6}{8b^{11}(a+bx)^{16}}-\frac{120d^3(bc-ad)^7}{17b^{11}(a+bx)^{17}}-\frac{5d^2(bc-ad)^8}{2b^{11}(a+bx)^{18}}-\frac{10d(bc-ad)^9}{19b^{11}(a+bx)^{19}}-\frac{(bc-ad)^{10}}{20b^{11}(a+bx)^{20}}-\frac{d^{10}}{10b^{11}(a+bx)^{10}}$$

```
[Out] -(b*c - a*d)^10/(20*b^11*(a + b*x)^20) - (10*d*(b*c - a*d)^9)/(19
*b^11*(a + b*x)^19) - (5*d^2*(b*c - a*d)^8)/(2*b^11*(a + b*x)^18)
 - (120*d^3*(b*c - a*d)^7)/(17*b^11*(a + b*x)^17) - (105*d^4*(b*c
 - a*d)^6)/(8*b^11*(a + b*x)^16) - (84*d^5*(b*c - a*d)^5)/(5*b^11
*(a + b*x)^15) - (15*d^6*(b*c - a*d)^4)/(b^11*(a + b*x)^14) - (12
0*d^7*(b*c - a*d)^3)/(13*b^11*(a + b*x)^13) - (15*d^8*(b*c - a*d)
^2)/(4*b^11*(a + b*x)^12) - (10*d^9*(b*c - a*d))/(11*b^11*(a + b*
x)^11) - d^10/(10*b^11*(a + b*x)^10)
```

Rubi [A] time = 0.815827, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{10d^9(bc-ad)}{11b^{11}(a+bx)^{11}}-\frac{15d^8(bc-ad)^2}{4b^{11}(a+bx)^{12}}-\frac{120d^7(bc-ad)^3}{13b^{11}(a+bx)^{13}}-\frac{15d^6(bc-ad)^4}{b^{11}(a+bx)^{14}}-\frac{84d^5(bc-ad)^5}{5b^{11}(a+bx)^{15}}-\frac{105d^4(bc-ad)^6}{8b^{11}(a+bx)^{16}}-\frac{120d^3(bc-ad)^7}{17b^{11}(a+bx)^{17}}-\frac{5d^2(bc-ad)^8}{2b^{11}(a+bx)^{18}}-\frac{10d(bc-ad)^9}{19b^{11}(a+bx)^{19}}-\frac{(bc-ad)^{10}}{20b^{11}(a+bx)^{20}}-\frac{d^{10}}{10b^{11}(a+bx)^{10}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^21,x]
```

```
[Out] -(b*c - a*d)^10/(20*b^11*(a + b*x)^20) - (10*d*(b*c - a*d)^9)/(19
*b^11*(a + b*x)^19) - (5*d^2*(b*c - a*d)^8)/(2*b^11*(a + b*x)^18)
 - (120*d^3*(b*c - a*d)^7)/(17*b^11*(a + b*x)^17) - (105*d^4*(b*c
 - a*d)^6)/(8*b^11*(a + b*x)^16) - (84*d^5*(b*c - a*d)^5)/(5*b^11
*(a + b*x)^15) - (15*d^6*(b*c - a*d)^4)/(b^11*(a + b*x)^14) - (12
0*d^7*(b*c - a*d)^3)/(13*b^11*(a + b*x)^13) - (15*d^8*(b*c - a*d)
^2)/(4*b^11*(a + b*x)^12) - (10*d^9*(b*c - a*d))/(11*b^11*(a + b*
x)^11) - d^10/(10*b^11*(a + b*x)^10)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**21,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.932526, size = 692, normalized size = 2.48

$$-\frac{a^{10}d^{10} + 10a^9bd^9(c + 2dx) + 5a^8b^2d^8\left(11c^2 + 40cdx + 38d^2x^2\right) + 20a^7b^3d^7\left(11c^3 + 55c^2dx + 95cd^2x^2 + 57d^3x^3\right) + 5a^6b^4d^6}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^21,x]
```

```
[Out] -(a^10*d^10 + 10*a^9*b*d^9*(c + 2*d*x) + 5*a^8*b^2*d^8*(11*c^2 +
40*c*d*x + 38*d^2*x^2) + 20*a^7*b^3*d^7*(11*c^3 + 55*c^2*d*x + 95
*c*d^2*x^2 + 57*d^3*x^3) + 5*a^6*b^4*d^6*(143*c^4 + 880*c^3*d*x +
 2090*c^2*d^2*x^2 + 2280*c*d^3*x^3 + 969*d^4*x^4) + 2*a^5*b^5*d^5
*(1001*c^5 + 7150*c^4*d*x + 20900*c^3*d^2*x^2 + 31350*c^2*d^3*x^3
 + 24225*c*d^4*x^4 + 7752*d^5*x^5) + 5*a^4*b^6*d^4*(1001*c^6 + 80
08*c^5*d*x + 27170*c^4*d^2*x^2 + 50160*c^3*d^3*x^3 + 53295*c^2*d^
4*x^4 + 31008*c*d^5*x^5 + 7752*d^6*x^6) + 20*a^3*b^7*d^3*(572*c^7
 + 5005*c^6*d*x + 19019*c^5*d^2*x^2 + 40755*c^4*d^3*x^3 + 53295*c
^3*d^4*x^4 + 42636*c^2*d^5*x^5 + 19380*c*d^6*x^6 + 3876*d^7*x^7)
+ 5*a^2*b^8*d^2*(4862*c^8 + 45760*c^7*d*x + 190190*c^6*d^2*x^2 +
456456*c^5*d^3*x^3 + 692835*c^4*d^4*x^4 + 682176*c^3*d^5*x^5 + 42
6360*c^2*d^6*x^6 + 155040*c*d^7*x^7 + 25194*d^8*x^8) + 10*a*b^9*d
*(4862*c^9 + 48620*c^8*d*x + 217360*c^7*d^2*x^2 + 570570*c^6*d^3*
x^3 + 969969*c^5*d^4*x^4 + 1108536*c^4*d^5*x^5 + 852720*c^3*d^6*x
^6 + 426360*c^2*d^7*x^7 + 125970*c*d^8*x^8 + 16796*d^9*x^9) + b^1
0*(92378*c^10 + 972400*c^9*d*x + 4618900*c^8*d^2*x^2 + 13041600*c
^7*d^3*x^3 + 24249225*c^6*d^4*x^4 + 31039008*c^5*d^5*x^5 + 277134
00*c^4*d^6*x^6 + 17054400*c^3*d^7*x^7 + 6928350*c^2*d^8*x^8 + 167
9600*c*d^9*x^9 + 184756*d^10*x^10))/(1847560*b^11*(a + b*x)^20)
```

Maple [B] time = 0.014, size = 867, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^21,x)
```

```
[Out] 120/17*d^3*(a^7*d^7-7*a^6*b*c*d^6+21*a^5*b^2*c^2*d^5-35*a^4*b^3*c
^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b^5*c^5*d^2+7*a*b^6*c^6*d-b^7*c^
```

```
7)/b^11/(b*x+a)^17+10/19*d*(a^9*d^9-9*a^8*b*c*d^8+36*a^7*b^2*c^2*
d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5-126*a^4*b^5*c^5*d^4+84
*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^8*c^8*d-b^9*c^9)/b^11/(
b*x+a)^19-15*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3
*c^3*d+b^4*c^4)/b^11/(b*x+a)^14-1/20*(a^10*d^10-10*a^9*b*c*d^9+45
*a^8*b^2*c^2*d^8-120*a^7*b^3*c^3*d^7+210*a^6*b^4*c^4*d^6-252*a^5*
b^5*c^5*d^5+210*a^4*b^6*c^6*d^4-120*a^3*b^7*c^7*d^3+45*a^2*b^8*c^
8*d^2-10*a*b^9*c^9*d+b^10*c^10)/b^11/(b*x+a)^20-5/2*d^2*(a^8*d^8-
8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c^3*d^5+70*a^4*b^4*c^
4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8*a*b^7*c^7*d+b^8*c^8
)/b^11/(b*x+a)^18-15/4*d^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+
a)^12-105/8*d^4*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*
b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a
)^16+84/5*d^5*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^
3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^11/(b*x+a)^15-1/10*d^10/b^11/(
b*x+a)^10+10/11*d^9*(a*d-b*c)/b^11/(b*x+a)^11+120/13*d^7*(a^3*d^3
-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)^13
```

Maxima [A] time = 1.49415, size = 1450, normalized size = 5.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^21,x, algorithm="maxima")
```

```
[Out] -1/1847560*(184756*b^10*d^10*x^10 + 92378*b^10*c^10 + 48620*a*b^9
*c^9*d + 24310*a^2*b^8*c^8*d^2 + 11440*a^3*b^7*c^7*d^3 + 5005*a^4
*b^6*c^6*d^4 + 2002*a^5*b^5*c^5*d^5 + 715*a^6*b^4*c^4*d^6 + 220*a
^7*b^3*c^3*d^7 + 55*a^8*b^2*c^2*d^8 + 10*a^9*b*c*d^9 + a^10*d^10
+ 167960*(10*b^10*c*d^9 + a*b^9*d^10)*x^9 + 125970*(55*b^10*c^2*d
^8 + 10*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 77520*(220*b^10*c^3*d^7
 + 55*a*b^9*c^2*d^8 + 10*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 3876
0*(715*b^10*c^4*d^6 + 220*a*b^9*c^3*d^7 + 55*a^2*b^8*c^2*d^8 + 10
*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 15504*(2002*b^10*c^5*d^5 + 7
15*a*b^9*c^4*d^6 + 220*a^2*b^8*c^3*d^7 + 55*a^3*b^7*c^2*d^8 + 10*
a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 4845*(5005*b^10*c^6*d^4 + 200
2*a*b^9*c^5*d^5 + 715*a^2*b^8*c^4*d^6 + 220*a^3*b^7*c^3*d^7 + 55*
a^4*b^6*c^2*d^8 + 10*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 1140*(11
440*b^10*c^7*d^3 + 5005*a*b^9*c^6*d^4 + 2002*a^2*b^8*c^5*d^5 + 71
5*a^3*b^7*c^4*d^6 + 220*a^4*b^6*c^3*d^7 + 55*a^5*b^5*c^2*d^8 + 10
*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 190*(24310*b^10*c^8*d^2 + 11
440*a*b^9*c^7*d^3 + 5005*a^2*b^8*c^6*d^4 + 2002*a^3*b^7*c^5*d^5 +
 715*a^4*b^6*c^4*d^6 + 220*a^5*b^5*c^3*d^7 + 55*a^6*b^4*c^2*d^8 +
 10*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 20*(48620*b^10*c^9*d + 24
310*a*b^9*c^8*d^2 + 11440*a^2*b^8*c^7*d^3 + 5005*a^3*b^7*c^6*d^4
+ 2002*a^4*b^6*c^5*d^5 + 715*a^5*b^5*c^4*d^6 + 220*a^6*b^4*c^3*d^
7 + 55*a^7*b^3*c^2*d^8 + 10*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^31*
x^20 + 20*a*b^30*x^19 + 190*a^2*b^29*x^18 + 1140*a^3*b^28*x^17 +
4845*a^4*b^27*x^16 + 15504*a^5*b^26*x^15 + 38760*a^6*b^25*x^14 +
77520*a^7*b^24*x^13 + 125970*a^8*b^23*x^12 + 167960*a^9*b^22*x^11
 + 184756*a^10*b^21*x^10 + 167960*a^11*b^20*x^9 + 125970*a^12*b^1
```

```
9*x^8 + 77520*a^13*b^18*x^7 + 38760*a^14*b^17*x^6 + 15504*a^15*b^
16*x^5 + 4845*a^16*b^15*x^4 + 1140*a^17*b^14*x^3 + 190*a^18*b^13*
x^2 + 20*a^19*b^12*x + a^20*b^11)
```

Fricas [A] time = 0.211397, size = 1450, normalized size = 5.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^21,x, algorithm="fricas")
```

```
[Out] -1/1847560*(184756*b^10*d^10*x^10 + 92378*b^10*c^10 + 48620*a*b^9
*c^9*d + 24310*a^2*b^8*c^8*d^2 + 11440*a^3*b^7*c^7*d^3 + 5005*a^4
*b^6*c^6*d^4 + 2002*a^5*b^5*c^5*d^5 + 715*a^6*b^4*c^4*d^6 + 220*a
^7*b^3*c^3*d^7 + 55*a^8*b^2*c^2*d^8 + 10*a^9*b*c*d^9 + a^10*d^10
+ 167960*(10*b^10*c*d^9 + a*b^9*d^10)*x^9 + 125970*(55*b^10*c^2*d
^8 + 10*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 77520*(220*b^10*c^3*d^7
 + 55*a*b^9*c^2*d^8 + 10*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 3876
0*(715*b^10*c^4*d^6 + 220*a*b^9*c^3*d^7 + 55*a^2*b^8*c^2*d^8 + 10
*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 15504*(2002*b^10*c^5*d^5 + 7
15*a*b^9*c^4*d^6 + 220*a^2*b^8*c^3*d^7 + 55*a^3*b^7*c^2*d^8 + 10*
a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 4845*(5005*b^10*c^6*d^4 + 200
2*a*b^9*c^5*d^5 + 715*a^2*b^8*c^4*d^6 + 220*a^3*b^7*c^3*d^7 + 55*
a^4*b^6*c^2*d^8 + 10*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 1140*(11
440*b^10*c^7*d^3 + 5005*a*b^9*c^6*d^4 + 2002*a^2*b^8*c^5*d^5 + 71
5*a^3*b^7*c^4*d^6 + 220*a^4*b^6*c^3*d^7 + 55*a^5*b^5*c^2*d^8 + 10
*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 190*(24310*b^10*c^8*d^2 + 11
440*a*b^9*c^7*d^3 + 5005*a^2*b^8*c^6*d^4 + 2002*a^3*b^7*c^5*d^5 +
 715*a^4*b^6*c^4*d^6 + 220*a^5*b^5*c^3*d^7 + 55*a^6*b^4*c^2*d^8 +
 10*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 20*(48620*b^10*c^9*d + 24
310*a*b^9*c^8*d^2 + 11440*a^2*b^8*c^7*d^3 + 5005*a^3*b^7*c^6*d^4
+ 2002*a^4*b^6*c^5*d^5 + 715*a^5*b^5*c^4*d^6 + 220*a^6*b^4*c^3*d^
7 + 55*a^7*b^3*c^2*d^8 + 10*a^8*b^2*c*d^9 + a^9*b*d^10)*x)/(b^31*
x^20 + 20*a*b^30*x^19 + 190*a^2*b^29*x^18 + 1140*a^3*b^28*x^17 +
4845*a^4*b^27*x^16 + 15504*a^5*b^26*x^15 + 38760*a^6*b^25*x^14 +
77520*a^7*b^24*x^13 + 125970*a^8*b^23*x^12 + 167960*a^9*b^22*x^11
 + 184756*a^10*b^21*x^10 + 167960*a^11*b^20*x^9 + 125970*a^12*b^1
9*x^8 + 77520*a^13*b^18*x^7 + 38760*a^14*b^17*x^6 + 15504*a^15*b^
16*x^5 + 4845*a^16*b^15*x^4 + 1140*a^17*b^14*x^3 + 190*a^18*b^13*
x^2 + 20*a^19*b^12*x + a^20*b^11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**21,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.22102, size = 1, normalized size = 0.

$$\text{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^21,x, algorithm="giac")
```

```
[Out] Done
```

3.1333 $\int \frac{(c+dx)^{10}}{(a+bx)^{22}}\,dx$

Optimal. Leaf size=279

$$-\frac{5d^9(bc-ad)}{6b^{11}(a+bx)^{12}}-\frac{45d^8(bc-ad)^2}{13b^{11}(a+bx)^{13}}-\frac{60d^7(bc-ad)^3}{7b^{11}(a+bx)^{14}}-\frac{14d^6(bc-ad)^4}{b^{11}(a+bx)^{15}}-\frac{63d^5(bc-ad)^5}{4b^{11}(a+bx)^{16}}-\frac{210d^4(bc-ad)^6}{17b^{11}(a+bx)^{17}}-\frac{20d^3(bc-ad)^7}{3b^{11}(a+bx)^{18}}-\frac{45d^2(bc-ad)^8}{19b^{11}(a+bx)^{19}}-\frac{d(bc-ad)^9}{2b^{11}(a+bx)^{20}}-\frac{(bc-ad)^{10}}{21b^{11}(a+bx)^{21}}-\frac{d^{10}}{11b^{11}(a+bx)^{11}}$$

```
[Out] -(b*c - a*d)^10/(21*b^11*(a + b*x)^21) - (d*(b*c - a*d)^9)/(2*b^1
1*(a + b*x)^20) - (45*d^2*(b*c - a*d)^8)/(19*b^11*(a + b*x)^19) -
 (20*d^3*(b*c - a*d)^7)/(3*b^11*(a + b*x)^18) - (210*d^4*(b*c - a
*d)^6)/(17*b^11*(a + b*x)^17) - (63*d^5*(b*c - a*d)^5)/(4*b^11*(a
 + b*x)^16) - (14*d^6*(b*c - a*d)^4)/(b^11*(a + b*x)^15) - (60*d^
7*(b*c - a*d)^3)/(7*b^11*(a + b*x)^14) - (45*d^8*(b*c - a*d)^2)/(
13*b^11*(a + b*x)^13) - (5*d^9*(b*c - a*d))/(6*b^11*(a + b*x)^12)
 - d^10/(11*b^11*(a + b*x)^11)
```

Rubi [A] time = 0.814453, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{5d^9(bc-ad)}{6b^{11}(a+bx)^{12}}-\frac{45d^8(bc-ad)^2}{13b^{11}(a+bx)^{13}}-\frac{60d^7(bc-ad)^3}{7b^{11}(a+bx)^{14}}-\frac{14d^6(bc-ad)^4}{b^{11}(a+bx)^{15}}-\frac{63d^5(bc-ad)^5}{4b^{11}(a+bx)^{16}}-\frac{210d^4(bc-ad)^6}{17b^{11}(a+bx)^{17}}-\frac{20d^3(bc-ad)^7}{3b^{11}(a+bx)^{18}}-\frac{45d^2(bc-ad)^8}{19b^{11}(a+bx)^{19}}-\frac{d(bc-ad)^9}{2b^{11}(a+bx)^{20}}-\frac{(bc-ad)^{10}}{21b^{11}(a+bx)^{21}}-\frac{d^{10}}{11b^{11}(a+bx)^{11}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^10/(a + b*x)^22,x]
```


```
[Out] -(b*c - a*d)^10/(21*b^11*(a + b*x)^21) - (d*(b*c - a*d)^9)/(2*b^1
1*(a + b*x)^20) - (45*d^2*(b*c - a*d)^8)/(19*b^11*(a + b*x)^19) -
 (20*d^3*(b*c - a*d)^7)/(3*b^11*(a + b*x)^18) - (210*d^4*(b*c - a
*d)^6)/(17*b^11*(a + b*x)^17) - (63*d^5*(b*c - a*d)^5)/(4*b^11*(a
 + b*x)^16) - (14*d^6*(b*c - a*d)^4)/(b^11*(a + b*x)^15) - (60*d^
7*(b*c - a*d)^3)/(7*b^11*(a + b*x)^14) - (45*d^8*(b*c - a*d)^2)/(
13*b^11*(a + b*x)^13) - (5*d^9*(b*c - a*d))/(6*b^11*(a + b*x)^12)
 - d^10/(11*b^11*(a + b*x)^11)
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**10/(b*x+a)**22,x)
```

```
[Out] Timed out
```

Mathematica [B] time = 0.792893, size = 692, normalized size = 2.48

$$-\frac{a^{10}d^{10} + a^9bd^9(11c + 21dx) + 3a^8b^2d^8\left(22c^2 + 77cdx + 70d^2x^2\right) + 2a^7b^3d^7\left(143c^3 + 693c^2dx + 1155cd^2x^2 + 665d^3x^3\right) + 7a}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^10/(a + b*x)^22,x]
```

```
[Out] -(a^10*d^10 + a^9*b*d^9*(11*c + 21*d*x) + 3*a^8*b^2*d^8*(22*c^2 +
 77*c*d*x + 70*d^2*x^2) + 2*a^7*b^3*d^7*(143*c^3 + 693*c^2*d*x +
1155*c*d^2*x^2 + 665*d^3*x^3) + 7*a^6*b^4*d^6*(143*c^4 + 858*c^3*
d*x + 1980*c^2*d^2*x^2 + 2090*c*d^3*x^3 + 855*d^4*x^4) + 21*a^5*b
^5*d^5*(143*c^5 + 1001*c^4*d*x + 2860*c^3*d^2*x^2 + 4180*c^2*d^3*
x^3 + 3135*c*d^4*x^4 + 969*d^5*x^5) + 7*a^4*b^6*d^4*(1144*c^6 + 9
009*c^5*d*x + 30030*c^4*d^2*x^2 + 54340*c^3*d^3*x^3 + 56430*c^2*d
^4*x^4 + 31977*c*d^5*x^5 + 7752*d^6*x^6) + 2*a^3*b^7*d^3*(9724*c^
7 + 84084*c^6*d*x + 315315*c^5*d^2*x^2 + 665665*c^4*d^3*x^3 + 855
855*c^3*d^4*x^4 + 671517*c^2*d^5*x^5 + 298452*c*d^6*x^6 + 58140*d
^7*x^7) + 3*a^2*b^8*d^2*(14586*c^8 + 136136*c^7*d*x + 560560*c^6*
d^2*x^2 + 1331330*c^5*d^3*x^3 + 1996995*c^4*d^4*x^4 + 1939938*c^3
*d^5*x^5 + 1193808*c^2*d^6*x^6 + 426360*c*d^7*x^7 + 67830*d^8*x^8
) + a*b^9*d*(92378*c^9 + 918918*c^8*d*x + 4084080*c^7*d^2*x^2 + 1
0650640*c^6*d^3*x^3 + 17972955*c^5*d^4*x^4 + 20369349*c^4*d^5*x^5
 + 15519504*c^3*d^6*x^6 + 7674480*c^2*d^7*x^7 + 2238390*c*d^8*x^8
 + 293930*d^9*x^9) + b^10*(184756*c^10 + 1939938*c^9*d*x + 918918
0*c^8*d^2*x^2 + 25865840*c^7*d^3*x^3 + 47927880*c^6*d^4*x^4 + 611
08047*c^5*d^5*x^5 + 54318264*c^4*d^6*x^6 + 33256080*c^3*d^7*x^7 +
 13430340*c^2*d^8*x^8 + 3233230*c*d^9*x^9 + 352716*d^10*x^10))/(3
879876*b^11*(a + b*x)^21)
```

Maple [B] time = 0.014, size = 867, normalized size = 3.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^10/(b*x+a)^22,x)
```

```
[Out] -210/17*d^4*(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4-20*a^3*b^3*
c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)/b^11/(b*x+a)^17
```

```
-45/19*d^2*(a^8*d^8-8*a^7*b*c*d^7+28*a^6*b^2*c^2*d^6-56*a^5*b^3*c
^3*d^5+70*a^4*b^4*c^4*d^4-56*a^3*b^5*c^5*d^3+28*a^2*b^6*c^6*d^2-8
*a*b^7*c^7*d+b^8*c^8)/b^11/(b*x+a)^19+60/7*d^7*(a^3*d^3-3*a^2*b*c
*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^11/(b*x+a)^14+1/2*d*(a^9*d^9-9*a^8*
b*c*d^8+36*a^7*b^2*c^2*d^7-84*a^6*b^3*c^3*d^6+126*a^5*b^4*c^4*d^5
-126*a^4*b^5*c^5*d^4+84*a^3*b^6*c^6*d^3-36*a^2*b^7*c^7*d^2+9*a*b^
8*c^8*d-b^9*c^9)/b^11/(b*x+a)^20+20/3*d^3*(a^7*d^7-7*a^6*b*c*d^6+
21*a^5*b^2*c^2*d^5-35*a^4*b^3*c^3*d^4+35*a^3*b^4*c^4*d^3-21*a^2*b
^5*c^5*d^2+7*a*b^6*c^6*d-b^7*c^7)/b^11/(b*x+a)^18+5/6*d^9*(a*d-b*
c)/b^11/(b*x+a)^12+63/4*d^5*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2
*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)/b^11/(b*x+a)^16-1/
21*(a^10*d^10-10*a^9*b*c*d^9+45*a^8*b^2*c^2*d^8-120*a^7*b^3*c^3*d
^7+210*a^6*b^4*c^4*d^6-252*a^5*b^5*c^5*d^5+210*a^4*b^6*c^6*d^4-12
0*a^3*b^7*c^7*d^3+45*a^2*b^8*c^8*d^2-10*a*b^9*c^9*d+b^10*c^10)/b^
11/(b*x+a)^21-14*d^6*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a
*b^3*c^3*d+b^4*c^4)/b^11/(b*x+a)^15-1/11*d^10/b^11/(b*x+a)^11-45/
13*d^8*(a^2*d^2-2*a*b*c*d+b^2*c^2)/b^11/(b*x+a)^13
```

Maxima [A] time = 1.53213, size = 1465, normalized size = 5.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^22,x, algorithm="maxima")
```

```
[Out] -1/3879876*(352716*b^10*d^10*x^10 + 184756*b^10*c^10 + 92378*a*b^
9*c^9*d + 43758*a^2*b^8*c^8*d^2 + 19448*a^3*b^7*c^7*d^3 + 8008*a^
4*b^6*c^6*d^4 + 3003*a^5*b^5*c^5*d^5 + 1001*a^6*b^4*c^4*d^6 + 286
*a^7*b^3*c^3*d^7 + 66*a^8*b^2*c^2*d^8 + 11*a^9*b*c*d^9 + a^10*d^1
0 + 293930*(11*b^10*c*d^9 + a*b^9*d^10)*x^9 + 203490*(66*b^10*c^2
*d^8 + 11*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 116280*(286*b^10*c^3*
d^7 + 66*a*b^9*c^2*d^8 + 11*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 5
4264*(1001*b^10*c^4*d^6 + 286*a*b^9*c^3*d^7 + 66*a^2*b^8*c^2*d^8
+ 11*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 20349*(3003*b^10*c^5*d^5
 + 1001*a*b^9*c^4*d^6 + 286*a^2*b^8*c^3*d^7 + 66*a^3*b^7*c^2*d^8
+ 11*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 5985*(8008*b^10*c^6*d^4
+ 3003*a*b^9*c^5*d^5 + 1001*a^2*b^8*c^4*d^6 + 286*a^3*b^7*c^3*d^7
 + 66*a^4*b^6*c^2*d^8 + 11*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 13
30*(19448*b^10*c^7*d^3 + 8008*a*b^9*c^6*d^4 + 3003*a^2*b^8*c^5*d^
5 + 1001*a^3*b^7*c^4*d^6 + 286*a^4*b^6*c^3*d^7 + 66*a^5*b^5*c^2*d
^8 + 11*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 210*(43758*b^10*c^8*d
^2 + 19448*a*b^9*c^7*d^3 + 8008*a^2*b^8*c^6*d^4 + 3003*a^3*b^7*c^
5*d^5 + 1001*a^4*b^6*c^4*d^6 + 286*a^5*b^5*c^3*d^7 + 66*a^6*b^4*c
^2*d^8 + 11*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 21*(92378*b^10*c^
9*d + 43758*a*b^9*c^8*d^2 + 19448*a^2*b^8*c^7*d^3 + 8008*a^3*b^7*
c^6*d^4 + 3003*a^4*b^6*c^5*d^5 + 1001*a^5*b^5*c^4*d^6 + 286*a^6*b
^4*c^3*d^7 + 66*a^7*b^3*c^2*d^8 + 11*a^8*b^2*c*d^9 + a^9*b*d^10)*
x)/(b^32*x^21 + 21*a*b^31*x^20 + 210*a^2*b^30*x^19 + 1330*a^3*b^2
9*x^18 + 5985*a^4*b^28*x^17 + 20349*a^5*b^27*x^16 + 54264*a^6*b^2
6*x^15 + 116280*a^7*b^25*x^14 + 203490*a^8*b^24*x^13 + 293930*a^9
*b^23*x^12 + 352716*a^10*b^22*x^11 + 352716*a^11*b^21*x^10 + 2939
```

```
30*a^12*b^20*x^9 + 203490*a^13*b^19*x^8 + 116280*a^14*b^18*x^7 +
54264*a^15*b^17*x^6 + 20349*a^16*b^16*x^5 + 5985*a^17*b^15*x^4 +
1330*a^18*b^14*x^3 + 210*a^19*b^13*x^2 + 21*a^20*b^12*x + a^21*b^
11)
```

Fricas [A] time = 0.203545, size = 1465, normalized size = 5.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^22,x, algorithm="fricas")
```

```
[Out] -1/3879876*(352716*b^10*d^10*x^10 + 184756*b^10*c^10 + 92378*a*b^
9*c^9*d + 43758*a^2*b^8*c^8*d^2 + 19448*a^3*b^7*c^7*d^3 + 8008*a^
4*b^6*c^6*d^4 + 3003*a^5*b^5*c^5*d^5 + 1001*a^6*b^4*c^4*d^6 + 286
*a^7*b^3*c^3*d^7 + 66*a^8*b^2*c^2*d^8 + 11*a^9*b*c*d^9 + a^10*d^1
0 + 293930*(11*b^10*c*d^9 + a*b^9*d^10)*x^9 + 203490*(66*b^10*c^2
*d^8 + 11*a*b^9*c*d^9 + a^2*b^8*d^10)*x^8 + 116280*(286*b^10*c^3*
d^7 + 66*a*b^9*c^2*d^8 + 11*a^2*b^8*c*d^9 + a^3*b^7*d^10)*x^7 + 5
4264*(1001*b^10*c^4*d^6 + 286*a*b^9*c^3*d^7 + 66*a^2*b^8*c^2*d^8
+ 11*a^3*b^7*c*d^9 + a^4*b^6*d^10)*x^6 + 20349*(3003*b^10*c^5*d^5
 + 1001*a*b^9*c^4*d^6 + 286*a^2*b^8*c^3*d^7 + 66*a^3*b^7*c^2*d^8
+ 11*a^4*b^6*c*d^9 + a^5*b^5*d^10)*x^5 + 5985*(8008*b^10*c^6*d^4
+ 3003*a*b^9*c^5*d^5 + 1001*a^2*b^8*c^4*d^6 + 286*a^3*b^7*c^3*d^7
 + 66*a^4*b^6*c^2*d^8 + 11*a^5*b^5*c*d^9 + a^6*b^4*d^10)*x^4 + 13
30*(19448*b^10*c^7*d^3 + 8008*a*b^9*c^6*d^4 + 3003*a^2*b^8*c^5*d^
5 + 1001*a^3*b^7*c^4*d^6 + 286*a^4*b^6*c^3*d^7 + 66*a^5*b^5*c^2*d
^8 + 11*a^6*b^4*c*d^9 + a^7*b^3*d^10)*x^3 + 210*(43758*b^10*c^8*d
^2 + 19448*a*b^9*c^7*d^3 + 8008*a^2*b^8*c^6*d^4 + 3003*a^3*b^7*c^
5*d^5 + 1001*a^4*b^6*c^4*d^6 + 286*a^5*b^5*c^3*d^7 + 66*a^6*b^4*c
^2*d^8 + 11*a^7*b^3*c*d^9 + a^8*b^2*d^10)*x^2 + 21*(92378*b^10*c^
9*d + 43758*a*b^9*c^8*d^2 + 19448*a^2*b^8*c^7*d^3 + 8008*a^3*b^7*
c^6*d^4 + 3003*a^4*b^6*c^5*d^5 + 1001*a^5*b^5*c^4*d^6 + 286*a^6*b
^4*c^3*d^7 + 66*a^7*b^3*c^2*d^8 + 11*a^8*b^2*c*d^9 + a^9*b*d^10)*
x)/(b^32*x^21 + 21*a*b^31*x^20 + 210*a^2*b^30*x^19 + 1330*a^3*b^2
9*x^18 + 5985*a^4*b^28*x^17 + 20349*a^5*b^27*x^16 + 54264*a^6*b^2
6*x^15 + 116280*a^7*b^25*x^14 + 203490*a^8*b^24*x^13 + 293930*a^9
*b^23*x^12 + 352716*a^10*b^22*x^11 + 352716*a^11*b^21*x^10 + 2939
30*a^12*b^20*x^9 + 203490*a^13*b^19*x^8 + 116280*a^14*b^18*x^7 +
54264*a^15*b^17*x^6 + 20349*a^16*b^16*x^5 + 5985*a^17*b^15*x^4 +
1330*a^18*b^14*x^3 + 210*a^19*b^13*x^2 + 21*a^20*b^12*x + a^21*b^
11)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**10/(b*x+a)**22,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.219034, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^10/(b*x + a)^22,x, algorithm="giac")
```

```
[Out] Done
```

3.1334 $\int \frac{(a+bx)^5}{c+dx} dx$

Optimal. Leaf size=122

$$-\frac{(bc-ad)^5\log(c+dx)}{d^6}+\frac{bx(bc-ad)^4}{d^5}-\frac{(a+bx)^2(bc-ad)^3}{2d^4}+\frac{(a+bx)^3(bc-ad)^2}{3d^3}-\frac{(a+bx)^4(bc-ad)}{4d^2}+\frac{(a+bx)^5}{5d}$$

```
[Out] (b*(b*c - a*d)^4*x)/d^5 - ((b*c - a*d)^3*(a + b*x)^2)/(2*d^4) + (
(b*c - a*d)^2*(a + b*x)^3)/(3*d^3) - ((b*c - a*d)*(a + b*x)^4)/(4
*d^2) + (a + b*x)^5/(5*d) - ((b*c - a*d)^5*Log[c + d*x])/d^6
```

Rubi [A] time = 0.117833, antiderivative size = 122, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(bc-ad)^5\log(c+dx)}{d^6}+\frac{bx(bc-ad)^4}{d^5}-\frac{(a+bx)^2(bc-ad)^3}{2d^4}+\frac{(a+bx)^3(bc-ad)^2}{3d^3}-\frac{(a+bx)^4(bc-ad)}{4d^2}+\frac{(a+bx)^5}{5d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(c + d*x),x]
```

```
[Out] (b*(b*c - a*d)^4*x)/d^5 - ((b*c - a*d)^3*(a + b*x)^2)/(2*d^4) + (
(b*c - a*d)^2*(a + b*x)^3)/(3*d^3) - ((b*c - a*d)*(a + b*x)^4)/(4
*d^2) + (a + b*x)^5/(5*d) - ((b*c - a*d)^5*Log[c + d*x])/d^6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(a+bx)^5}{5d}+\frac{(a+bx)^4(ad-bc)}{4d^2}+\frac{(a+bx)^3(ad-bc)^2}{3d^3}+\frac{(a+bx)^2(ad-bc)^3}{2d^4}+\frac{(ad-bc)^4\int b\,dx}{d^5}+\frac{(ad-bc)^5\log(c+dx)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c),x)
```

```
[Out] (a + b*x)**5/(5*d) + (a + b*x)**4*(a*d - b*c)/(4*d**2) + (a + b*x
)**3*(a*d - b*c)**2/(3*d**3) + (a + b*x)**2*(a*d - b*c)**3/(2*d**
4) + (a*d - b*c)**4*Integral(b, x)/d**5 + (a*d - b*c)**5*log(c +
```

```
d*x)/d**6
```

Mathematica [A] time = 0.115419, size = 167, normalized size = 1.37

$$\frac{bdx\left(300a^4d^4+300a^3bd^3(dx-2c)+100a^2b^2d^2\left(6c^2-3cdx+2d^2x^2\right)+25ab^3d\left(-12c^3+6c^2dx-4cd^2x^2+3d^3x^3\right)+b^4\left(60\right.\right.}{60d^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(c + d*x),x]
```

```
[Out] (b*d*x*(300*a^4*d^4 + 300*a^3*b*d^3*(-2*c + d*x) + 100*a^2*b^2*d^
2*(6*c^2 - 3*c*d*x + 2*d^2*x^2) + 25*a*b^3*d*(-12*c^3 + 6*c^2*d*x
 - 4*c*d^2*x^2 + 3*d^3*x^3) + b^4*(60*c^4 - 30*c^3*d*x + 20*c^2*d
^2*x^2 - 15*c*d^3*x^3 + 12*d^4*x^4)) - 60*(b*c - a*d)^5*Log[c + d
*x])/(60*d^6)
```

Maple [B] time = 0.006, size = 302, normalized size = 2.5

$$\frac{b^5x^5}{5\,d}+\frac{5\,ab^4x^4}{4\,d}-\frac{b^5x^4c}{4\,d^2}+\frac{10\,a^2b^3x^3}{3\,d}-\frac{5\,ab^4x^3c}{3\,d^2}+\frac{b^5x^3c^2}{3\,d^3}+5\,\frac{a^3b^2x^2}{d}-5\,\frac{a^2b^3x^2c}{d^2}+\frac{5\,ab^4x^2c^2}{2\,d^3}-\frac{b^5x^2c^3}{2\,d^4}+5\,\frac{a^4bx}{d}-10\,\frac{a^3b^2cx}{d^2}+10\,\frac{a^2b^3c^2x}{d^3}-5\,\frac{ab^4c^3x}{d^4}+\frac{b^5c^4x}{d^5}+\frac{\ln\left(dx+c\right)a^5}{d}-5\,\frac{\ln\left(dx+c\right)a^4bc}{d^2}+10\,\frac{\ln\left(dx+c\right)a^3b^2c^2}{d^3}-10\,\frac{\ln\left(dx+c\right)a^2b^3c^3}{d^4}+5\,\frac{\ln\left(dx+c\right)ab^4c^4}{d^5}-\frac{\ln\left(dx+c\right)b^5c^5}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c),x)
```

```
[Out] 1/5*b^5/d*x^5+5/4*b^4/d*x^4*a-1/4*b^5/d^2*x^4*c+10/3*b^3/d*x^3*a^
2-5/3*b^4/d^2*x^3*a*c+1/3*b^5/d^3*x^3*c^2+5*b^2/d*x^2*a^3-5*b^3/d
^2*x^2*a^2*c+5/2*b^4/d^3*x^2*a*c^2-1/2*b^5/d^4*x^2*c^3+5*b/d*a^4*
x-10*b^2/d^2*a^3*c*x+10*b^3/d^3*a^2*c^2*x-5*b^4/d^4*a*c^3*x+b^5/d
^5*c^4*x+1/d*ln(d*x+c)*a^5-5/d^2*ln(d*x+c)*a^4*b*c+10/d^3*ln(d*x+
c)*a^3*b^2*c^2-10/d^4*ln(d*x+c)*a^2*b^3*c^3+5/d^5*ln(d*x+c)*a*b^4
*c^4-1/d^6*ln(d*x+c)*b^5*c^5
```

Maxima [A] time = 1.35435, size = 348, normalized size = 2.85

$$\frac{12\,b^5d^4x^5-15\left(b^5cd^3-5\,ab^4d^4\right)x^4+20\left(b^5c^2d^2-5\,ab^4cd^3+10\,a^2b^3d^4\right)x^3-30\left(b^5c^3d-5\,ab^4c^2d^2+10\,a^2b^3cd^3-10\,a^3b^2\right.}{60\,d^5}-\frac{\left(b^5c^5-5\,ab^4c^4d+10\,a^2b^3c^3d^2-10\,a^3b^2c^2d^3+5\,a^4bcd^4-a^5d^5\right)\log\left(dx+c\right)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/60*(12*b^5*d^4*x^5 - 15*(b^5*c*d^3 - 5*a*b^4*d^4)*x^4 + 20*(b^5
*c^2*d^2 - 5*a*b^4*c*d^3 + 10*a^2*b^3*d^4)*x^3 - 30*(b^5*c^3*d -
5*a*b^4*c^2*d^2 + 10*a^2*b^3*c*d^3 - 10*a^3*b^2*d^4)*x^2 + 60*(b^
5*c^4 - 5*a*b^4*c^3*d + 10*a^2*b^3*c^2*d^2 - 10*a^3*b^2*c*d^3 + 5
*a^4*b*d^4)*x)/d^5 - (b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^
2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*log(d*x + c)/d^
6
```

Fricas [A] time = 0.203055, size = 350, normalized size = 2.87

$$\frac{12\,b^5d^5x^5 - 15\left(b^5cd^4 - 5\,ab^4d^5\right)x^4 + 20\left(b^5c^2d^3 - 5\,ab^4cd^4 + 10\,a^2b^3d^5\right)x^3 - 30\left(b^5c^3d^2 - 5\,ab^4c^2d^3 + 10\,a^2b^3cd^4 - 10\,a^3b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/60*(12*b^5*d^5*x^5 - 15*(b^5*c*d^4 - 5*a*b^4*d^5)*x^4 + 20*(b^5
*c^2*d^3 - 5*a*b^4*c*d^4 + 10*a^2*b^3*d^5)*x^3 - 30*(b^5*c^3*d^2
- 5*a*b^4*c^2*d^3 + 10*a^2*b^3*c*d^4 - 10*a^3*b^2*d^5)*x^2 + 60*(
b^5*c^4*d - 5*a*b^4*c^3*d^2 + 10*a^2*b^3*c^2*d^3 - 10*a^3*b^2*c*d
^4 + 5*a^4*b*d^5)*x - 60*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^
3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*log(d*x + c
))/d^6
```

Sympy [A] time = 1.21211, size = 202, normalized size = 1.66

$$\frac{b^5x^5}{5d} + \frac{x^4\left(5ab^4d - b^5c\right)}{4d^2} + \frac{x^3\left(10a^2b^3d^2 - 5ab^4cd + b^5c^2\right)}{3d^3} + \frac{x^2\left(10a^3b^2d^3 - 10a^2b^3cd^2 + 5ab^4c^2d - b^5c^3\right)}{2d^4} + \frac{x\left(5a^4bd^4 - 10a^3b^2cd^3 + 10a^2b^3c^2d^2 - 5ab^4c^3d + b^5c^4\right)}{d^5} + \frac{(ad-bc)^5\log(c+dx)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c),x)
```

```
[Out] b**5*x**5/(5*d) + x**4*(5*a*b**4*d - b**5*c)/(4*d**2) + x**3*(10*
a**2*b**3*d**2 - 5*a*b**4*c*d + b**5*c**2)/(3*d**3) + x**2*(10*a*
*3*b**2*d**3 - 10*a**2*b**3*c*d**2 + 5*a*b**4*c**2*d - b**5*c**3)
```

```
/(2*d**4) + x*(5*a**4*b*d**4 - 10*a**3*b**2*c*d**3 + 10*a**2*b**3
*c**2*d**2 - 5*a*b**4*c**3*d + b**5*c**4)/d**5 + (a*d - b*c)**5*l
og(c + d*x)/d**6
```

GIAC/XCAS [A] time = 0.221767, size = 369, normalized size = 3.02

$$\frac{12\,b^5d^4x^5 - 15\,b^5cd^3x^4 + 75\,ab^4d^4x^4 + 20\,b^5c^2d^2x^3 - 100\,ab^4cd^3x^3 + 200\,a^2b^3d^4x^3 - 30\,b^5c^3dx^2 + 150\,ab^4c^2d^2x^2 - 300\,a^2b}{60\,d^5}$$

$$-\frac{\left(b^5c^5 - 5\,ab^4c^4d + 10\,a^2b^3c^3d^2 - 10\,a^3b^2c^2d^3 + 5\,a^4bcd^4 - a^5d^5\right)\ln\left(|dx + c|\right)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c),x, algorithm="giac")
```

```
[Out] 1/60*(12*b^5*d^4*x^5 - 15*b^5*c*d^3*x^4 + 75*a*b^4*d^4*x^4 + 20*b
^5*c^2*d^2*x^3 - 100*a*b^4*c*d^3*x^3 + 200*a^2*b^3*d^4*x^3 - 30*b
^5*c^3*d*x^2 + 150*a*b^4*c^2*d^2*x^2 - 300*a^2*b^3*c*d^3*x^2 + 30
0*a^3*b^2*d^4*x^2 + 60*b^5*c^4*x - 300*a*b^4*c^3*d*x + 600*a^2*b^
3*c^2*d^2*x - 600*a^3*b^2*c*d^3*x + 300*a^4*b*d^4*x)/d^5 - (b^5*c
^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*
a^4*b*c*d^4 - a^5*d^5)*ln(abs(d*x + c))/d^6
```

3.1335 $\int \frac{(a+bx)^4}{c+dx} \, dx$

Optimal. Leaf size=98

$$\frac{(bc-ad)^4 \log(c+dx)}{d^5} - \frac{bx(bc-ad)^3}{d^4} + \frac{(a+bx)^2(bc-ad)^2}{2d^3} - \frac{(a+bx)^3(bc-ad)}{3d^2} + \frac{(a+bx)^4}{4d}$$

```
[Out] -((b*(b*c - a*d)^3*x)/d^4) + ((b*c - a*d)^2*(a + b*x)^2)/(2*d^3)
- ((b*c - a*d)*(a + b*x)^3)/(3*d^2) + (a + b*x)^4/(4*d) + ((b*c -
 a*d)^4*Log[c + d*x])/d^5
```

Rubi [A] time = 0.0911753, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{(bc-ad)^4 \log(c+dx)}{d^5} - \frac{bx(bc-ad)^3}{d^4} + \frac{(a+bx)^2(bc-ad)^2}{2d^3} - \frac{(a+bx)^3(bc-ad)}{3d^2} + \frac{(a+bx)^4}{4d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/(c + d*x),x]
```

```
[Out] -((b*(b*c - a*d)^3*x)/d^4) + ((b*c - a*d)^2*(a + b*x)^2)/(2*d^3)
- ((b*c - a*d)*(a + b*x)^3)/(3*d^2) + (a + b*x)^4/(4*d) + ((b*c -
 a*d)^4*Log[c + d*x])/d^5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(a+bx)^4}{4d} + \frac{(a+bx)^3 (ad-bc)}{3d^2} + \frac{(a+bx)^2 (ad-bc)^2}{2d^3} + \frac{(ad-bc)^3 \int b \, dx}{d^4} + \frac{(ad-bc)^4 \log (c+dx)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c),x)
```

```
[Out] (a + b*x)**4/(4*d) + (a + b*x)**3*(a*d - b*c)/(3*d**2) + (a + b*x
)**2*(a*d - b*c)**2/(2*d**3) + (a*d - b*c)**3*Integral(b, x)/d**4
 + (a*d - b*c)**4*log(c + d*x)/d**5
```

Mathematica [A] time = 0.0736127, size = 115, normalized size = 1.17

$$\frac{bdx\left(48a^3d^3 + 36a^2bd^2(dx-2c) + 8ab^2d\left(6c^2-3cdx+2d^2x^2\right) + b^3\left(-12c^3+6c^2dx-4cd^2x^2+3d^3x^3\right)\right) + 12(bc-ad)^4 \log}{12d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/(c + d*x),x]
```

```
[Out] (b*d*x*(48*a^3*d^3 + 36*a^2*b*d^2*(-2*c + d*x) + 8*a*b^2*d*(6*c^2
 - 3*c*d*x + 2*d^2*x^2) + b^3*(-12*c^3 + 6*c^2*d*x - 4*c*d^2*x^2
+ 3*d^3*x^3)) + 12*(b*c - a*d)^4*Log[c + d*x])/(12*d^5)
```

Maple [B] time = 0.006, size = 209, normalized size = 2.1

$$\frac{x^4b^4}{4d}+\frac{4x^3ab^3}{3d}-\frac{b^4x^3c}{3d^2}+3\frac{x^2a^2b^2}{d}-2\frac{b^3x^2ac}{d^2}+\frac{b^4x^2c^2}{2d^3}+4\frac{xa^3b}{d}-6\frac{b^2a^2cx}{d^2}+4\frac{b^3ac^2x}{d^3}-\frac{b^4c^3x}{d^4}+\frac{\ln(dx+c)a^4}{d}-4\frac{\ln(dx+c)a^3bc}{d^2}+6\frac{\ln(dx+c)a^2b^2c^2}{d^3}-4\frac{\ln(dx+c)ab^3c^3}{d^4}+\frac{\ln(dx+c)b^4c^4}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c),x)
```

```
[Out] 1/4*b^4/d*x^4+4/3*b^3/d*x^3*a-1/3*b^4/d^2*x^3*c+3*b^2/d*x^2*a^2-2
*b^3/d^2*x^2*a*c+1/2*b^4/d^3*x^2*c^2+4*b/d*a^3*x-6*b^2/d^2*a^2*c*
x+4*b^3/d^3*a*c^2*x-b^4/d^4*c^3*x+1/d*ln(d*x+c)*a^4-4/d^2*ln(d*x+
c)*a^3*b*c+6/d^3*ln(d*x+c)*a^2*b^2*c^2-4/d^4*ln(d*x+c)*a*b^3*c^3+
1/d^5*ln(d*x+c)*b^4*c^4
```

Maxima [A] time = 1.38097, size = 239, normalized size = 2.44

$$\frac{3\,b^4d^3x^4-4\left(b^4cd^2-4\,ab^3d^3\right)x^3+6\left(b^4c^2d-4\,ab^3cd^2+6\,a^2b^2d^3\right)x^2-12\left(b^4c^3-4\,ab^3c^2d+6\,a^2b^2cd^2-4\,a^3bd^3\right)x}{12\,d^4}+\frac{\left(b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4\right)\log(dx+c)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/12*(3*b^4*d^3*x^4 - 4*(b^4*c*d^2 - 4*a*b^3*d^3)*x^3 + 6*(b^4*c^
2*d - 4*a*b^3*c*d^2 + 6*a^2*b^2*d^3)*x^2 - 12*(b^4*c^3 - 4*a*b^3*
c^2*d + 6*a^2*b^2*c*d^2 - 4*a^3*b*d^3)*x)/d^4 + (b^4*c^4 - 4*a*b^
3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*log(d*x +
c)/d^5
```

Fricas [A] time = 0.203923, size = 242, normalized size = 2.47

$$\frac{3\,b^4d^4x^4-4\,(b^4cd^3-4\,ab^3d^4)\,x^3+6\,(b^4c^2d^2-4\,ab^3cd^3+6\,a^2b^2d^4)\,x^2-12\,(b^4c^3d-4\,ab^3c^2d^2+6\,a^2b^2cd^3-4\,a^3bd^4)\,x+1}{12\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*d^4*x^4 - 4*(b^4*c*d^3 - 4*a*b^3*d^4)*x^3 + 6*(b^4*c^
2*d^2 - 4*a*b^3*c*d^3 + 6*a^2*b^2*d^4)*x^2 - 12*(b^4*c^3*d - 4*a*
b^3*c^2*d^2 + 6*a^2*b^2*c*d^3 - 4*a^3*b*d^4)*x + 12*(b^4*c^4 - 4*
a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*log(d*
x + c))/d^5
```

Sympy [A] time = 1.00072, size = 134, normalized size = 1.37

$$\frac{b^4x^4}{4d}+\frac{x^3\left(4ab^3d-b^4c\right)}{3d^2}+\frac{x^2\left(6a^2b^2d^2-4ab^3cd+b^4c^2\right)}{2d^3}+\frac{x\left(4a^3bd^3-6a^2b^2cd^2+4ab^3c^2d-b^4c^3\right)}{d^4}+\frac{(ad-bc)^4\log\left(c+dx\right)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c),x)
```

```
[Out] b**4*x**4/(4*d) + x**3*(4*a*b**3*d - b**4*c)/(3*d**2) + x**2*(6*a
**2*b**2*d**2 - 4*a*b**3*c*d + b**4*c**2)/(2*d**3) + x*(4*a**3*b*
d**3 - 6*a**2*b**2*c*d**2 + 4*a*b**3*c**2*d - b**4*c**3)/d**4 + (
a*d - b*c)**4*log(c + d*x)/d**5
```

GIAC/XCAS [A] time = 0.220798, size = 248, normalized size = 2.53

$$\frac{3\,b^4d^3x^4-4\,b^4cd^2x^3+16\,ab^3d^3x^3+6\,b^4c^2dx^2-24\,ab^3cd^2x^2+36\,a^2b^2d^3x^2-12\,b^4c^3x+48\,ab^3c^2dx-72\,a^2b^2cd^2x+48\,a^3}{12\,d^4}+\frac{\left(b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4\right)\ln\left(|dx+c|\right)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c),x, algorithm="giac")
```

```
[Out] 1/12*(3*b^4*d^3*x^4 - 4*b^4*c*d^2*x^3 + 16*a*b^3*d^3*x^3 + 6*b^4*
c^2*d*x^2 - 24*a*b^3*c*d^2*x^2 + 36*a^2*b^2*d^3*x^2 - 12*b^4*c^3*
```

```
x + 48*a*b^3*c^2*d*x - 72*a^2*b^2*c*d^2*x + 48*a^3*b*d^3*x)/d^4 +
 (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a
^4*d^4)*ln(abs(d*x + c))/d^5
```

3.1336 $\int \frac{(a+bx)^3}{c+dx}\,dx$

Optimal. Leaf size=74

$$-\frac{(bc-ad)^3\log(c+dx)}{d^4}+\frac{bx(bc-ad)^2}{d^3}-\frac{(a+bx)^2(bc-ad)}{2d^2}+\frac{(a+bx)^3}{3d}$$

```
[Out] (b*(b*c - a*d)^2*x)/d^3 - ((b*c - a*d)*(a + b*x)^2)/(2*d^2) + (a
+ b*x)^3/(3*d) - ((b*c - a*d)^3*Log[c + d*x])/d^4
```

Rubi [A] time = 0.0685586, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(bc-ad)^3\log(c+dx)}{d^4}+\frac{bx(bc-ad)^2}{d^3}-\frac{(a+bx)^2(bc-ad)}{2d^2}+\frac{(a+bx)^3}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/(c + d*x),x]
```

```
[Out] (b*(b*c - a*d)^2*x)/d^3 - ((b*c - a*d)*(a + b*x)^2)/(2*d^2) + (a
+ b*x)^3/(3*d) - ((b*c - a*d)^3*Log[c + d*x])/d^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(a+bx)^3}{3d}+\frac{(a+bx)^2(ad-bc)}{2d^2}+\frac{(ad-bc)^2\int b\,dx}{d^3}+\frac{(ad-bc)^3\log(c+dx)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c),x)
```

```
[Out] (a + b*x)**3/(3*d) + (a + b*x)**2*(a*d - b*c)/(2*d**2) + (a*d - b
*c)**2*Integral(b, x)/d**3 + (a*d - b*c)**3*log(c + d*x)/d**4
```

Mathematica [A] time = 0.0452318, size = 74, normalized size = 1.

$$\frac{bdx\left(18a^2d^2+9abd(dx-2c)+b^2\left(6c^2-3cdx+2d^2x^2\right)\right)-6(bc-ad)^3\log(c+dx)}{6d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/(c + d*x),x]
```

```
[Out] (b*d*x*(18*a^2*d^2 + 9*a*b*d*(-2*c + d*x) + b^2*(6*c^2 - 3*c*d*x
+ 2*d^2*x^2)) - 6*(b*c - a*d)^3*Log[c + d*x])/(6*d^4)
```

Maple [A] time = 0.004, size = 133, normalized size = 1.8

$$\frac{b^3x^3}{3\,d}+\frac{3\,ab^2x^2}{2\,d}-\frac{b^3x^2c}{2\,d^2}+3\,\frac{a^2bx}{d}-3\,\frac{ab^2cx}{d^2}+\frac{b^3c^2x}{d^3}+\frac{\ln(dx+c)\,a^3}{d}-3\,\frac{\ln(dx+c)\,a^2bc}{d^2}+3\,\frac{\ln(dx+c)\,ab^2c^2}{d^3}-\frac{\ln(dx+c)\,b^3c^3}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c),x)
```

```
[Out] 1/3*b^3/d*x^3+3/2*b^2/d*x^2*a-1/2*b^3/d^2*x^2*c+3*b/d*a^2*x-3*b^2
/d^2*a*c*x+b^3/d^3*c^2*x+1/d*ln(d*x+c)*a^3-3/d^2*ln(d*x+c)*a^2*b*
c+3/d^3*ln(d*x+c)*a*b^2*c^2-1/d^4*ln(d*x+c)*b^3*c^3
```

Maxima [A] time = 1.34776, size = 154, normalized size = 2.08

$$\frac{2\,b^3d^2x^3-3\left(b^3cd-3\,ab^2d^2\right)x^2+6\left(b^3c^2-3\,ab^2cd+3\,a^2bd^2\right)x}{6\,d^3}-\frac{\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)\log(dx+c)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/6*(2*b^3*d^2*x^3 - 3*(b^3*c*d - 3*a*b^2*d^2)*x^2 + 6*(b^3*c^2 -
 3*a*b^2*c*d + 3*a^2*b*d^2)*x)/d^3 - (b^3*c^3 - 3*a*b^2*c^2*d + 3
*a^2*b*c*d^2 - a^3*d^3)*log(d*x + c)/d^4
```

Fricas [A] time = 0.204178, size = 155, normalized size = 2.09

$$\frac{2\,b^3d^3x^3-3\left(b^3cd^2-3\,ab^2d^3\right)x^2+6\left(b^3c^2d-3\,ab^2cd^2+3\,a^2bd^3\right)x-6\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)\log(dx+c)}{6\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*d^3*x^3 - 3*(b^3*c*d^2 - 3*a*b^2*d^3)*x^2 + 6*(b^3*c^2
*d - 3*a*b^2*c*d^2 + 3*a^2*b*d^3)*x - 6*(b^3*c^3 - 3*a*b^2*c^2*d
+ 3*a^2*b*c*d^2 - a^3*d^3)*log(d*x + c))/d^4
```

Sympy [A] time = 0.841348, size = 82, normalized size = 1.11

$$\frac{b^3x^3}{3d} + \frac{x^2\left(3ab^2d - b^3c\right)}{2d^2} + \frac{x\left(3a^2bd^2 - 3ab^2cd + b^3c^2\right)}{d^3} + \frac{(ad - bc)^3\log\left(c + dx\right)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c),x)
```

```
[Out] b**3*x**3/(3*d) + x**2*(3*a*b**2*d - b**3*c)/(2*d**2) + x*(3*a**2
*b*d**2 - 3*a*b**2*c*d + b**3*c**2)/d**3 + (a*d - b*c)**3*log(c +
 d*x)/d**4
```

GIAC/XCAS [A] time = 0.21734, size = 157, normalized size = 2.12

$$\frac{2\,b^3d^2x^3 - 3\,b^3cdx^2 + 9\,ab^2d^2x^2 + 6\,b^3c^2x - 18\,ab^2cdx + 18\,a^2bd^2x}{6\,d^3} - \frac{\left(b^3c^3 - 3\,ab^2c^2d + 3\,a^2bcd^2 - a^3d^3\right)\ln\left(|dx + c|\right)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c),x, algorithm="giac")
```

```
[Out] 1/6*(2*b^3*d^2*x^3 - 3*b^3*c*d*x^2 + 9*a*b^2*d^2*x^2 + 6*b^3*c^2*
x - 18*a*b^2*c*d*x + 18*a^2*b*d^2*x)/d^3 - (b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*ln(abs(d*x + c))/d^4
```

3.1337 $\int \frac{(a+bx)^2}{c+dx} \, dx$

Optimal. Leaf size=50

$$\frac{(bc-ad)^2\log(c+dx)}{d^3}-\frac{bx(bc-ad)}{d^2}+\frac{(a+bx)^2}{2d}$$

```
[Out] -((b*(b*c - a*d)*x)/d^2) + (a + b*x)^2/(2*d) + ((b*c - a*d)^2*Log
[c + d*x])/d^3
```

Rubi [A] time = 0.0507067, antiderivative size = 50, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^2\log(c+dx)}{d^3}-\frac{bx(bc-ad)}{d^2}+\frac{(a+bx)^2}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c + d*x),x]
```

```
[Out] -((b*(b*c - a*d)*x)/d^2) + (a + b*x)^2/(2*d) + ((b*c - a*d)^2*Log
[c + d*x])/d^3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{(a+bx)^2}{2d}+\frac{(ad-bc)\int b\,dx}{d^2}+\frac{(ad-bc)^2\log(c+dx)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c),x)
```

```
[Out] (a + b*x)**2/(2*d) + (a*d - b*c)*Integral(b, x)/d**2 + (a*d - b*c
)**2*log(c + d*x)/d**3
```

Mathematica [A] time = 0.0268914, size = 43, normalized size = 0.86

$$\frac{bdx(4ad-2bc+bdx)+2(bc-ad)^2\log(c+dx)}{2d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c + d*x),x]
```

```
[Out] (b*d*x*(-2*b*c + 4*a*d + b*d*x) + 2*(b*c - a*d)^2*Log[c + d*x])/(
2*d^3)
```

Maple [A] time = 0.003, size = 74, normalized size = 1.5

$$\frac{b^2x^2}{2\,d}+2\,\frac{abx}{d}-\frac{b^2xc}{d^2}+\frac{\ln(dx+c)\,a^2}{d}-2\,\frac{\ln(dx+c)\,abc}{d^2}+\frac{\ln(dx+c)\,b^2c^2}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c),x)
```

```
[Out] 1/2*b^2/d*x^2+2*b/d*a*x-b^2/d^2*x*c+1/d*ln(d*x+c)*a^2-2/d^2*ln(d*
x+c)*a*b*c+1/d^3*ln(d*x+c)*b^2*c^2
```

Maxima [A] time = 1.33422, size = 81, normalized size = 1.62

$$\frac{b^2dx^2-2\left(b^2c-2\,abd\right)x}{2\,d^2}+\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\log(dx+c)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c),x, algorithm="maxima")
```

```
[Out] 1/2*(b^2*d*x^2 - 2*(b^2*c - 2*a*b*d)*x)/d^2 + (b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*log(d*x + c)/d^3
```

Fricas [A] time = 0.207573, size = 84, normalized size = 1.68

$$\frac{b^2d^2x^2-2\left(b^2cd-2\,abd^2\right)x+2\left(b^2c^2-2\,abcd+a^2d^2\right)\log(dx+c)}{2\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*d^2*x^2 - 2*(b^2*c*d - 2*a*b*d^2)*x + 2*(b^2*c^2 - 2*a*b
*c*d + a^2*d^2)*log(d*x + c))/d^3
```

Sympy [A] time = 0.687509, size = 44, normalized size = 0.88

$$\frac{b^2x^2}{2d} + \frac{x\left(2abd - b^2c\right)}{d^2} + \frac{(ad - bc)^2\log\left(c + dx\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c),x)
```

```
[Out] b**2*x**2/(2*d) + x*(2*a*b*d - b**2*c)/d**2 + (a*d - b*c)**2*log(
c + d*x)/d**3
```

GIAC/XCAS [A] time = 0.222066, size = 81, normalized size = 1.62

$$\frac{b^2dx^2 - 2\,b^2cx + 4\,abdx}{2\,d^2} + \frac{\left(b^2c^2 - 2\,abcd + a^2d^2\right)\ln\left(|dx + c|\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c),x, algorithm="giac")
```

```
[Out] 1/2*(b^2*d*x^2 - 2*b^2*c*x + 4*a*b*d*x)/d^2 + (b^2*c^2 - 2*a*b*c*
d + a^2*d^2)*ln(abs(d*x + c))/d^3
```

3.1338 $\int \frac{a+bx}{c+dx}\,dx$

Optimal. Leaf size=26

$$\frac{bx}{d}-\frac{(bc-ad)\log(c+dx)}{d^2}$$

```
[Out] (b*x)/d - ((b*c - a*d)*Log[c + d*x])/d^2
```

Rubi [A] time = 0.0417936, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{bx}{d}-\frac{(bc-ad)\log(c+dx)}{d^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(c + d*x),x]
```

```
[Out] (b*x)/d - ((b*c - a*d)*Log[c + d*x])/d^2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\int b\,dx}{d}+\frac{(ad-bc)\log(c+dx)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)/(d*x+c),x)
```

```
[Out] Integral(b, x)/d + (a*d - b*c)*log(c + d*x)/d**2
```

Mathematica [A] time = 0.0125401, size = 25, normalized size = 0.96

$$\frac{(ad-bc)\log(c+dx)}{d^2}+\frac{bx}{d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(c + d*x),x]
```

```
[Out] (b*x)/d + ((-(b*c) + a*d)*Log[c + d*x])/d^2
```

Maple [A] time = 0.004, size = 32, normalized size = 1.2

$$\frac{bx}{d}+\frac{\ln\left(dx+c\right)a}{d}-\frac{\ln\left(dx+c\right)bc}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c),x)
```

```
[Out] b*x/d+1/d*ln(d*x+c)*a-1/d^2*ln(d*x+c)*b*c
```

Maxima [A] time = 1.34697, size = 35, normalized size = 1.35

$$\frac{bx}{d}-\frac{(bc-ad)\log\left(dx+c\right)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c),x, algorithm="maxima")
```

```
[Out] b*x/d - (b*c - a*d)*log(d*x + c)/d^2
```

Fricas [A] time = 0.203358, size = 34, normalized size = 1.31

$$\frac{bdx-(bc-ad)\log\left(dx+c\right)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c),x, algorithm="fricas")
```

```
[Out] (b*d*x - (b*c - a*d)*log(d*x + c))/d^2
```

Sympy [A] time = 0.565716, size = 20, normalized size = 0.77

$$\frac{bx}{d}+\frac{(ad-bc)\log\left(c+dx\right)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c),x)
```

```
[Out] b*x/d + (a*d - b*c)*log(c + d*x)/d**2
```

GIAC/XCAS [A] time = 0.224513, size = 36, normalized size = 1.38

$$\frac{bx}{d} - \frac{(bc - ad)\ln(|dx + c|)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c),x, algorithm="giac")
```

```
[Out] b*x/d - (b*c - a*d)*ln(abs(d*x + c))/d^2
```

3.1339 $\int \frac{1}{c+dx} dx$

Optimal. Leaf size=10

$$\frac{\log(c+dx)}{d}$$

```
[Out] Log[c + d*x]/d
```

Rubi [A] time = 0.00668956, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{\log(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(-1),x]

[Out] Log[c + d*x]/d
```

Rubi in Sympy [A] time = 1.29214, size = 7, normalized size = 0.7

$$\frac{\log(c+dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(d*x+c),x)

[Out] log(c + d*x)/d
```

Mathematica [A] time = 0.000957069, size = 10, normalized size = 1.

$$\frac{\log(c+dx)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(-1),x]
```

```
[Out] Log[c + d*x]/d
```

Maple [A] time = 0.001, size = 11, normalized size = 1.1

$$\frac{\ln(dx+c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(d*x+c),x)
```

```
[Out] ln(d*x+c)/d
```

Maxima [A] time = 1.34396, size = 14, normalized size = 1.4

$$\frac{\log(dx+c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x + c),x, algorithm="maxima")
```

```
[Out] log(d*x + c)/d
```

Fricas [A] time = 0.209956, size = 14, normalized size = 1.4

$$\frac{\log(dx+c)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x + c),x, algorithm="fricas")
```

```
[Out] log(d*x + c)/d
```

Sympy [A] time = 0.035757, size = 7, normalized size = 0.7

$$\frac{\log(c+dx)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c),x)
```

```
[Out] log(c + d*x)/d
```

GIAC/XCAS [A] time = 0.221388, size = 15, normalized size = 1.5

$$\frac{\ln\left(|dx+c|\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x + c),x, algorithm="giac")
```

```
[Out] ln(abs(d*x + c))/d
```

3.1340 $\int \frac{1}{(a+bx)(c+dx)} dx$

Optimal. Leaf size=36

$$\frac{\log(a+bx)}{bc-ad} - \frac{\log(c+dx)}{bc-ad}$$

```
[Out] Log[a + b*x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)
```

Rubi [A] time = 0.0259394, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{\log(a+bx)}{bc-ad} - \frac{\log(c+dx)}{bc-ad}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)),x]

[Out] Log[a + b*x]/(b*c - a*d) - Log[c + d*x]/(b*c - a*d)
```

Rubi in Sympy [A] time = 5.66021, size = 26, normalized size = 0.72

$$-\frac{\log(a+bx)}{ad-bc} + \frac{\log(c+dx)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c),x)

[Out] -log(a + b*x)/(a*d - b*c) + log(c + d*x)/(a*d - b*c)
```

Mathematica [A] time = 0.0178339, size = 26, normalized size = 0.72

$$\frac{\log(a+bx) - \log(c+dx)}{bc-ad}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)),x]
```

```
[Out] (Log[a + b*x] - Log[c + d*x])/(b*c - a*d)
```

Maple [A] time = 0.008, size = 37, normalized size = 1.

$$\frac{\ln(dx+c)}{ad-bc}-\frac{\ln(bx+a)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)/(d*x+c),x)
```

```
[Out] 1/(a*d-b*c)*ln(d*x+c)-1/(a*d-b*c)*ln(b*x+a)
```

Maxima [A] time = 1.34593, size = 49, normalized size = 1.36

$$\frac{\log(bx+a)}{bc-ad}-\frac{\log(dx+c)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)),x, algorithm="maxima")
```

```
[Out] log(b*x + a)/(b*c - a*d) - log(d*x + c)/(b*c - a*d)
```

Fricas [A] time = 0.207315, size = 35, normalized size = 0.97

$$\frac{\log(bx+a)-\log(dx+c)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)*(d*x + c)),x, algorithm="fricas")
```

```
[Out] (log(b*x + a) - log(d*x + c))/(b*c - a*d)
```

Sympy [A] time = 0.46207, size = 128, normalized size = 3.56

$$\frac{\log\left(x+\frac{-\frac{a^2d^2}{ad-bc}+\frac{2abcd}{ad-bc}+ad-\frac{b^2c^2}{ad-bc}+bc}{2bd}\right)}{ad-bc}-\frac{\log\left(x+\frac{\frac{a^2d^2}{ad-bc}-\frac{2abcd}{ad-bc}+ad+\frac{b^2c^2}{ad-bc}+bc}{2bd}\right)}{ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c),x)
```

```
[Out] log(x + (-a**2*d**2/(a*d - b*c) + 2*a*b*c*d/(a*d - b*c) + a*d - b
**2*c**2/(a*d - b*c) + b*c)/(2*b*d))/(a*d - b*c) - log(x + (a**2*
d**2/(a*d - b*c) - 2*a*b*c*d/(a*d - b*c) + a*d + b**2*c**2/(a*d -
 b*c) + b*c)/(2*b*d))/(a*d - b*c)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1341 $\int \frac{1}{(a+bx)^2(c+dx)}\,dx$

Optimal. Leaf size=57

$$-\frac{1}{(a+bx)(bc-ad)}-\frac{d\log(a+bx)}{(bc-ad)^2}+\frac{d\log(c+dx)}{(bc-ad)^2}$$

```
[Out] -(1/((b*c - a*d)*(a + b*x))) - (d*Log[a + b*x])/(b*c - a*d)^2 + (
d*Log[c + d*x])/(b*c - a*d)^2
```

Rubi [A] time = 0.0707431, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{1}{(a+bx)(bc-ad)}-\frac{d\log(a+bx)}{(bc-ad)^2}+\frac{d\log(c+dx)}{(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(c + d*x)),x]
```

```
[Out] -(1/((b*c - a*d)*(a + b*x))) - (d*Log[a + b*x])/(b*c - a*d)^2 + (
d*Log[c + d*x])/(b*c - a*d)^2
```

Rubi in Sympy [A] time = 13.9673, size = 46, normalized size = 0.81

$$-\frac{d\log{(a+bx)}}{(ad-bc)^2}+\frac{d\log{(c+dx)}}{(ad-bc)^2}+\frac{1}{(a+bx)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c),x)
```

```
[Out] -d*log(a + b*x)/(a*d - b*c)**2 + d*log(c + d*x)/(a*d - b*c)**2 +
1/((a + b*x)*(a*d - b*c))
```

Mathematica [A] time = 0.0397796, size = 53, normalized size = 0.93

$$\frac{d(a+bx)\log(c+dx)-d(a+bx)\log(a+bx)+ad-bc}{(a+bx)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(c + d*x)),x]
```

```
[Out] (-(b*c) + a*d - d*(a + b*x)*Log[a + b*x] + d*(a + b*x)*Log[c + d*
x])/((b*c - a*d)^2*(a + b*x))
```

Maple [A]   time = 0.023, size = 57, normalized size = 1.

$$\frac{d\ln(dx+c)}{(ad-bc)^2}+\frac{1}{(ad-bc)(bx+a)}-\frac{d\ln(bx+a)}{(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c),x)
```

```
[Out] d/(a*d-b*c)^2*ln(d*x+c)+1/(a*d-b*c)/(b*x+a)-d/(a*d-b*c)^2*ln(b*x+
a)
```

Maxima [A]   time = 1.34757, size = 124, normalized size = 2.18

$$-\frac{d\log(bx+a)}{b^2c^2-2\,abcd+a^2d^2}+\frac{d\log(dx+c)}{b^2c^2-2\,abcd+a^2d^2}-\frac{1}{abc-a^2d+(b^2c-abd)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)),x, algorithm="maxima")
```

```
[Out] -d*log(b*x + a)/(b^2*c^2 - 2*a*b*c*d + a^2*d^2) + d*log(d*x + c)/
(b^2*c^2 - 2*a*b*c*d + a^2*d^2) - 1/(a*b*c - a^2*d + (b^2*c - a*b
*d)*x)
```

Fricas [A]   time = 0.211464, size = 126, normalized size = 2.21

$$-\frac{bc-ad+(bdx+ad)\log(bx+a)-(bdx+ad)\log(dx+c)}{ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)),x, algorithm="fricas")
```

```
[Out] -(b*c - a*d + (b*d*x + a*d)*log(b*x + a) - (b*d*x + a*d)*log(d*x
+ c))/(a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*b^2*c*d
```

```
+ a^2*b*d^2)*x)
```

Sympy [A] time = 1.41683, size = 233, normalized size = 4.09

$$\frac{d\log\left(x+\frac{-\frac{a^3d^4}{(ad-bc)^2}+\frac{3a^2bcd^3}{(ad-bc)^2}-\frac{3ab^2c^2d^2}{(ad-bc)^2}+ad^2+\frac{b^3c^3d}{(ad-bc)^2}+bcd}{2bd^2}\right)}{(ad-bc)^2}-\frac{d\log\left(x+\frac{\frac{a^3d^4}{(ad-bc)^2}-\frac{3a^2bcd^3}{(ad-bc)^2}+\frac{3ab^2c^2d^2}{(ad-bc)^2}+ad^2-\frac{b^3c^3d}{(ad-bc)^2}+bcd}{2bd^2}\right)}{(ad-bc)^2}+\frac{1}{a^2d-abc+x\,(abd-b^2c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c),x)
```

```
[Out] d*log(x + (-a**3*d**4/(a*d - b*c)**2 + 3*a**2*b*c*d**3/(a*d - b*c
)**2 - 3*a*b**2*c**2*d**2/(a*d - b*c)**2 + a*d**2 + b**3*c**3*d/(
a*d - b*c)**2 + b*c*d)/(2*b*d**2))/(a*d - b*c)**2 - d*log(x + (a*
*3*d**4/(a*d - b*c)**2 - 3*a**2*b*c*d**3/(a*d - b*c)**2 + 3*a*b**
2*c**2*d**2/(a*d - b*c)**2 + a*d**2 - b**3*c**3*d/(a*d - b*c)**2
+ b*c*d)/(2*b*d**2))/(a*d - b*c)**2 + 1/(a**2*d - a*b*c + x*(a*b*
d - b**2*c))
```

GIAC/XCAS [A] time = 0.218914, size = 105, normalized size = 1.84

$$\frac{bd\ln\left(\left|\frac{bc}{bx+a}-\frac{ad}{bx+a}+d\right|\right)}{b^3c^2-2\,ab^2cd+a^2bd^2}-\frac{b}{(b^2c-abd)(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)),x, algorithm="giac")
```

```
[Out] b*d*ln(abs(b*c/(b*x + a) - a*d/(b*x + a) + d))/(b^3*c^2 - 2*a*b^2
*c*d + a^2*b*d^2) - b/((b^2*c - a*b*d)*(b*x + a))
```

3.1342 $\int \frac{1}{(a+bx)^3(c+dx)}\,dx$

Optimal. Leaf size=82

$$\frac{d^2\log(a+bx)}{(bc-ad)^3}-\frac{d^2\log(c+dx)}{(bc-ad)^3}+\frac{d}{(a+bx)(bc-ad)^2}-\frac{1}{2(a+bx)^2(bc-ad)}$$

```
[Out] -1/(2*(b*c - a*d)*(a + b*x)^2) + d/((b*c - a*d)^2*(a + b*x)) + (d
^2*Log[a + b*x])/(b*c - a*d)^3 - (d^2*Log[c + d*x])/(b*c - a*d)^3
```

Rubi [A] time = 0.0976502, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{d^2\log(a+bx)}{(bc-ad)^3}-\frac{d^2\log(c+dx)}{(bc-ad)^3}+\frac{d}{(a+bx)(bc-ad)^2}-\frac{1}{2(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*(c + d*x)),x]
```

```
[Out] -1/(2*(b*c - a*d)*(a + b*x)^2) + d/((b*c - a*d)^2*(a + b*x)) + (d
^2*Log[a + b*x])/(b*c - a*d)^3 - (d^2*Log[c + d*x])/(b*c - a*d)^3
```

Rubi in Sympy [A] time = 20.632, size = 68, normalized size = 0.83

$$-\frac{d^2\log(a+bx)}{(ad-bc)^3}+\frac{d^2\log(c+dx)}{(ad-bc)^3}+\frac{d}{(a+bx)(ad-bc)^2}+\frac{1}{2(a+bx)^2(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c),x)
```

```
[Out] -d**2*log(a + b*x)/(a*d - b*c)**3 + d**2*log(c + d*x)/(a*d - b*c)
**3 + d/((a + b*x)*(a*d - b*c)**2) + 1/(2*(a + b*x)**2*(a*d - b*c
))
```

Mathematica [A] time = 0.108915, size = 67, normalized size = 0.82

$$\frac{\frac{(bc-ad)(3ad-bc+2bdx)}{(a+bx)^2}+2d^2\log(a+bx)-2d^2\log(c+dx)}{2(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*(c + d*x)),x]
```

```
[Out] (((b*c - a*d)*(-(b*c) + 3*a*d + 2*b*d*x))/(a + b*x)^2 + 2*d^2*Log
[a + b*x] - 2*d^2*Log[c + d*x])/(2*(b*c - a*d)^3)
```

Maple [A] time = 0.016, size = 81, normalized size = 1.

$$\frac{d^{2}\ln\left(dx+c\right)}{\left(ad-bc\right)^{3}}+\frac{1}{\left(2\,ad-2\,bc\right)\left(bx+a\right)^{2}}+\frac{d}{\left(ad-bc\right)^{2}\left(bx+a\right)}-\frac{d^{2}\ln\left(bx+a\right)}{\left(ad-bc\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c),x)
```

```
[Out] d^2/(a*d-b*c)^3*ln(d*x+c)+1/2/(a*d-b*c)/(b*x+a)^2+d/(a*d-b*c)^2/(
b*x+a)-d^2/(a*d-b*c)^3*ln(b*x+a)
```

Maxima [A] time = 1.35404, size = 273, normalized size = 3.33

$$\frac{d^{2}\log\left(bx+a\right)}{b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3}}-\frac{d^{2}\log\left(dx+c\right)}{b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3}}+\frac{2\,bdx-bc+3\,ad}{2\,(a^{2}b^{2}c^{2}-2\,a^{3}bcd+a^{4}d^{2}+(b^{4}c^{2}-2\,ab^{3}cd+a^{2}b^{2}d^{2})x^{2}+2\,(ab^{3}c^{2}-2\,a^{2}b^{2}cd+a^{3}bd^{2})x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)),x, algorithm="maxima")
```

```
[Out] d^2*log(b*x + a)/(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d
^3) - d^2*log(d*x + c)/(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 -
 a^3*d^3) + 1/2*(2*b*d*x - b*c + 3*a*d)/(a^2*b^2*c^2 - 2*a^3*b*c*
d + a^4*d^2 + (b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*x^2 + 2*(a*b^
3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*x)
```

Fricas [A] time = 0.209509, size = 327, normalized size = 3.99

$$-\frac{b^{2}c^{2}-4\,abcd+3\,a^{2}d^{2}-2\left(b^{2}cd-abd^{2}\right)x-2\left(b^{2}d^{2}x^{2}+2\,abd^{2}x+a^{2}d^{2}\right)\log\left(bx+a\right)+2\left(b^{2}d^{2}x^{2}+2\,abd^{2}x+a^{2}d^{2}\right)\log(}{2\,(a^{2}b^{3}c^{3}-3\,a^{3}b^{2}c^{2}d+3\,a^{4}bcd^{2}-a^{5}d^{3}+(b^{5}c^{3}-3\,ab^{4}c^{2}d+3\,a^{2}b^{3}cd^{2}-a^{3}b^{2}d^{3})x^{2}+2\,(ab^{4}c^{3}-3\,a^{2}b^{3}c^{2}d+3\,a^{3}b^{2}cd^{2}-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)),x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*c^2 - 4*a*b*c*d + 3*a^2*d^2 - 2*(b^2*c*d - a*b*d^2)*x -
 2*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(b*x + a) + 2*(b^2*d^
2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log(d*x + c))/(a^2*b^3*c^3 - 3*a^3
*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3 + (b^5*c^3 - 3*a*b^4*c^2*d +
 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^
2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*x)
```

Sympy [A] time = 2.19482, size = 381, normalized size = 4.65

$$\frac{d^2\log\left(x+\frac{-\frac{a^4d^6}{(ad-bc)^3}+\frac{4a^3bcd^5}{(ad-bc)^3}-\frac{6a^2b^2c^2d^4}{(ad-bc)^3}+\frac{4ab^3c^3d^3}{(ad-bc)^3}+ad^3-\frac{b^4c^4d^2}{(ad-bc)^3}+bcd^2}{2bd^3}\right)}{(ad-bc)^3} - \frac{d^2\log\left(x+\frac{\frac{a^4d^6}{(ad-bc)^3}-\frac{4a^3bcd^5}{(ad-bc)^3}+\frac{6a^2b^2c^2d^4}{(ad-bc)^3}-\frac{4ab^3c^3d^3}{(ad-bc)^3}+ad^3+\frac{b^4c^4d^2}{(ad-bc)^3}+bcd^2}{2bd^3}\right)}{(ad-bc)^3} + \frac{3ad-bc+2bdx}{2a^4d^2-4a^3bcd+2a^2b^2c^2+x^2\left(2a^2b^2d^2-4ab^3cd+2b^4c^2\right)+x\left(4a^3bd^2-8a^2b^2cd+4ab^3c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c),x)
```

```
[Out] d**2*log(x + (-a**4*d**6/(a*d - b*c)**3 + 4*a**3*b*c*d**5/(a*d -
b*c)**3 - 6*a**2*b**2*c**2*d**4/(a*d - b*c)**3 + 4*a*b**3*c**3*d*
*3/(a*d - b*c)**3 + a*d**3 - b**4*c**4*d**2/(a*d - b*c)**3 + b*c*
d**2)/(2*b*d**3))/(a*d - b*c)**3 - d**2*log(x + (a**4*d**6/(a*d -
 b*c)**3 - 4*a**3*b*c*d**5/(a*d - b*c)**3 + 6*a**2*b**2*c**2*d**4
/(a*d - b*c)**3 - 4*a*b**3*c**3*d**3/(a*d - b*c)**3 + a*d**3 + b*
*4*c**4*d**2/(a*d - b*c)**3 + b*c*d**2)/(2*b*d**3))/(a*d - b*c)**
3 + (3*a*d - b*c + 2*b*d*x)/(2*a**4*d**2 - 4*a**3*b*c*d + 2*a**2*
b**2*c**2 + x**2*(2*a**2*b**2*d**2 - 4*a*b**3*c*d + 2*b**4*c**2)
+ x*(4*a**3*b*d**2 - 8*a**2*b**2*c*d + 4*a*b**3*c**2))
```

GIAC/XCAS [A] time = 0.218836, size = 223, normalized size = 2.72

$$\frac{bd^2\ln\left(|bx+a|\right)}{b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3} - \frac{d^3\ln\left(|dx+c|\right)}{b^3c^3d-3\,ab^2c^2d^2+3\,a^2bcd^3-a^3d^4} - \frac{b^2c^2-4\,abcd+3\,a^2d^2-2\left(b^2cd-abd^2\right)x}{2\,(bc-ad)^3(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)),x, algorithm="giac")

[Out] b*d^2*ln(abs(b*x + a))/(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2
 - a^3*b*d^3) - d^3*ln(abs(d*x + c))/(b^3*c^3*d - 3*a*b^2*c^2*d^2
 + 3*a^2*b*c*d^3 - a^3*d^4) - 1/2*(b^2*c^2 - 4*a*b*c*d + 3*a^2*d^
2 - 2*(b^2*c*d - a*b*d^2)*x)/((b*c - a*d)^3*(b*x + a)^2)
```

3.1343 $\int \frac{(a+bx)^5}{(c+dx)^2} \, dx$

Optimal. Leaf size=130

$$-\frac{5b^4(c+dx)^3(bc-ad)}{3d^6}+\frac{5b^3(c+dx)^2(bc-ad)^2}{d^6}-\frac{10b^2x(bc-ad)^3}{d^5}+\frac{(bc-ad)^5}{d^6(c+dx)}+\frac{5b(bc-ad)^4\log(c+dx)}{d^6}+\frac{b^5(c+dx)^4}{4d^6}$$

```
[Out] (-10*b^2*(b*c - a*d)^3*x)/d^5 + (b*c - a*d)^5/(d^6*(c + d*x)) + (
5*b^3*(b*c - a*d)^2*(c + d*x)^2)/d^6 - (5*b^4*(b*c - a*d)*(c + d*
x)^3)/(3*d^6) + (b^5*(c + d*x)^4)/(4*d^6) + (5*b*(b*c - a*d)^4*Lo
g[c + d*x])/d^6
```

Rubi [A] time = 0.277637, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{5b^4(c+dx)^3(bc-ad)}{3d^6}+\frac{5b^3(c+dx)^2(bc-ad)^2}{d^6}-\frac{10b^2x(bc-ad)^3}{d^5}+\frac{(bc-ad)^5}{d^6(c+dx)}+\frac{5b(bc-ad)^4\log(c+dx)}{d^6}+\frac{b^5(c+dx)^4}{4d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(c + d*x)^2,x]
```

```
[Out] (-10*b^2*(b*c - a*d)^3*x)/d^5 + (b*c - a*d)^5/(d^6*(c + d*x)) + (
5*b^3*(b*c - a*d)^2*(c + d*x)^2)/d^6 - (5*b^4*(b*c - a*d)*(c + d*
x)^3)/(3*d^6) + (b^5*(c + d*x)^4)/(4*d^6) + (5*b*(b*c - a*d)^4*Lo
g[c + d*x])/d^6
```

Rubi in Sympy [A] time = 44.6842, size = 119, normalized size = 0.92

$$\frac{b^5\left(c+dx\right)^4}{4d^6}+\frac{5b^4\left(c+dx\right)^3\left(ad-bc\right)}{3d^6}+\frac{5b^3\left(c+dx\right)^2\left(ad-bc\right)^2}{d^6}+\frac{10b^2x\left(ad-bc\right)^3}{d^5}+\frac{5b\left(ad-bc\right)^4\log\left(c+dx\right)}{d^6}-\frac{\left(ad-bc\right)^5}{d^6\left(c+dx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c)**2,x)
```

```
[Out] b**5*(c + d*x)**4/(4*d**6) + 5*b**4*(c + d*x)**3*(a*d - b*c)/(3*d
**6) + 5*b**3*(c + d*x)**2*(a*d - b*c)**2/d**6 + 10*b**2*x*(a*d -
```

```
 b*c)**3/d**5 + 5*b*(a*d - b*c)**4*log(c + d*x)/d**6 - (a*d - b*c
)**5/(d**6*(c + d*x))
```

Mathematica [A] time = 0.124519, size = 228, normalized size = 1.75

$$\frac{-12a^5d^5 + 60a^4bcd^4 + 120a^3b^2d^3\left(-c^2 + cdx + d^2x^2\right) + 60a^2b^3d^2\left(2c^3 - 4c^2dx - 3cd^2x^2 + d^3x^3\right) + 20ab^4d\left(-3c^4 + 9c^3dx + \cdots}{12d^6(\cdots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(c + d*x)^2,x]
```

```
[Out] (60*a^4*b*c*d^4 - 12*a^5*d^5 + 120*a^3*b^2*d^3*(-c^2 + c*d*x + d^
2*x^2) + 60*a^2*b^3*d^2*(2*c^3 - 4*c^2*d*x - 3*c*d^2*x^2 + d^3*x^
3) + 20*a*b^4*d*(-3*c^4 + 9*c^3*d*x + 6*c^2*d^2*x^2 - 2*c*d^3*x^3
 + d^4*x^4) + b^5*(12*c^5 - 48*c^4*d*x - 30*c^3*d^2*x^2 + 10*c^2*
d^3*x^3 - 5*c*d^4*x^4 + 3*d^5*x^5) + 60*b*(b*c - a*d)^4*(c + d*x)
*Log[c + d*x])/(12*d^6*(c + d*x))
```

Maple [B] time = 0.013, size = 326, normalized size = 2.5

$$\frac{b^5x^4}{4\,d^2} + \frac{5\,ab^4x^3}{3\,d^2} - \frac{2\,b^5x^3c}{3\,d^3} + 5\,\frac{a^2b^3x^2}{d^2} - 5\,\frac{ab^4x^2c}{d^3} + \frac{3\,b^5x^2c^2}{2\,d^4} + 10\,\frac{a^3b^2x}{d^2} - 20\,\frac{a^2b^3cx}{d^3} + 15\,\frac{ab^4c^2x}{d^4} - 4\,\frac{b^5c^3x}{d^5} + 5\,\frac{b\ln(dx+c)\,a^4}{d^2} - 20\,\frac{b^2\ln(dx+c)\,a^3c}{d^3} + 30\,\frac{b^3\ln(dx+c)\,a^2c^2}{d^4} - 20\,\frac{b^4\ln(dx+c)\,ac^3}{d^5} + 5\,\frac{b^5\ln(dx+c)\,c^4}{d^6} - \frac{a^5}{d\,(dx+c)} + 5\,\frac{a^4bc}{d^2\,(dx+c)} - 10\,\frac{a^3b^2c^2}{d^3\,(dx+c)} + 10\,\frac{a^2b^3c^3}{d^4\,(dx+c)} - 5\,\frac{ab^4c^4}{d^5\,(dx+c)} + \frac{b^5c^5}{d^6\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c)^2,x)
```

```
[Out] 1/4*b^5/d^2*x^4+5/3*b^4/d^2*x^3*a-2/3*b^5/d^3*x^3*c+5*b^3/d^2*x^2
*a^2-5*b^4/d^3*x^2*a*c+3/2*b^5/d^4*x^2*c^2+10*b^2/d^2*a^3*x-20*b^
3/d^3*a^2*c*x+15*b^4/d^4*a*c^2*x-4*b^5/d^5*c^3*x+5*b/d^2*ln(d*x+c
)*a^4-20*b^2/d^3*ln(d*x+c)*a^3*c+30*b^3/d^4*ln(d*x+c)*a^2*c^2-20*
b^4/d^5*ln(d*x+c)*a*c^3+5*b^5/d^6*ln(d*x+c)*c^4-1/d/(d*x+c)*a^5+5
/d^2/(d*x+c)*a^4*b*c-10/d^3/(d*x+c)*a^3*b^2*c^2+10/d^4/(d*x+c)*a^
2*b^3*c^3-5/d^5/(d*x+c)*a*b^4*c^4+1/d^6/(d*x+c)*b^5*c^5
```

Maxima [A] time = 1.3351, size = 356, normalized size = 2.74

$$\frac{b^5c^5 - 5\,ab^4c^4d + 10\,a^2b^3c^3d^2 - 10\,a^3b^2c^2d^3 + 5\,a^4bcd^4 - a^5d^5}{d^7x + cd^6} + \frac{3\,b^5d^3x^4 - 4\left(2\,b^5cd^2 - 5\,ab^4d^3\right)x^3 + 6\left(3\,b^5c^2d - 10\,ab^4cd^2 + 10\,a^2b^3d^3\right)x^2 - 12\left(4\,b^5c^3 - 15\,ab^4c^2d + 20\,a^2b^3cd^2 - 10\,a^3b}{12\,d^5} + \frac{5\left(b^5c^4 - 4\,ab^4c^3d + 6\,a^2b^3c^2d^2 - 4\,a^3b^2cd^3 + a^4bd^4\right)\log\left(dx + c\right)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] (b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^
3 + 5*a^4*b*c*d^4 - a^5*d^5)/(d^7*x + c*d^6) + 1/12*(3*b^5*d^3*x^
4 - 4*(2*b^5*c*d^2 - 5*a*b^4*d^3)*x^3 + 6*(3*b^5*c^2*d - 10*a*b^4
*c*d^2 + 10*a^2*b^3*d^3)*x^2 - 12*(4*b^5*c^3 - 15*a*b^4*c^2*d + 2
0*a^2*b^3*c*d^2 - 10*a^3*b^2*d^3)*x)/d^5 + 5*(b^5*c^4 - 4*a*b^4*c
^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*log(d*x +
 c)/d^6
```

Fricas [A] time = 0.199912, size = 504, normalized size = 3.88

$$\frac{3\,b^5d^5x^5 + 12\,b^5c^5 - 60\,ab^4c^4d + 120\,a^2b^3c^3d^2 - 120\,a^3b^2c^2d^3 + 60\,a^4bcd^4 - 12\,a^5d^5 - 5\left(b^5cd^4 - 4\,ab^4d^5\right)x^4 + 10\left(b^5c^2d^3 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^5*d^5*x^5 + 12*b^5*c^5 - 60*a*b^4*c^4*d + 120*a^2*b^3*c
^3*d^2 - 120*a^3*b^2*c^2*d^3 + 60*a^4*b*c*d^4 - 12*a^5*d^5 - 5*(b
^5*c*d^4 - 4*a*b^4*d^5)*x^4 + 10*(b^5*c^2*d^3 - 4*a*b^4*c*d^4 + 6
*a^2*b^3*d^5)*x^3 - 30*(b^5*c^3*d^2 - 4*a*b^4*c^2*d^3 + 6*a^2*b^3
*c*d^4 - 4*a^3*b^2*d^5)*x^2 - 12*(4*b^5*c^4*d - 15*a*b^4*c^3*d^2
+ 20*a^2*b^3*c^2*d^3 - 10*a^3*b^2*c*d^4)*x + 60*(b^5*c^5 - 4*a*b^
4*c^4*d + 6*a^2*b^3*c^3*d^2 - 4*a^3*b^2*c^2*d^3 + a^4*b*c*d^4 + (
b^5*c^4*d - 4*a*b^4*c^3*d^2 + 6*a^2*b^3*c^2*d^3 - 4*a^3*b^2*c*d^4
 + a^4*b*d^5)*x)*log(d*x + c))/(d^7*x + c*d^6)
```

Sympy [A] time = 2.13237, size = 224, normalized size = 1.72

$$\frac{b^5x^4}{4d^2}+\frac{5b\,(ad-bc)^4\log{(c+dx)}}{d^6}-\frac{a^5d^5-5a^4bcd^4+10a^3b^2c^2d^3-10a^2b^3c^3d^2+5ab^4c^4d-b^5c^5}{cd^6+d^7x}+\frac{x^3\left(5ab^4d-2b^5c\right)}{3d^3}+\frac{x^2\left(10a^2b^3d^2-10ab^4cd+3b^5c^2\right)}{2d^4}+\frac{x\left(10a^3b^2d^3-20a^2b^3cd^2+15ab^4c^2d-4b^5c^3\right)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c)**2,x)
```

```
[Out] b**5*x**4/(4*d**2) + 5*b*(a*d - b*c)**4*log(c + d*x)/d**6 - (a**5
*d**5 - 5*a**4*b*c*d**4 + 10*a**3*b**2*c**2*d**3 - 10*a**2*b**3*c
**3*d**2 + 5*a*b**4*c**4*d - b**5*c**5)/(c*d**6 + d**7*x) + x**3*
(5*a*b**4*d - 2*b**5*c)/(3*d**3) + x**2*(10*a**2*b**3*d**2 - 10*a
*b**4*c*d + 3*b**5*c**2)/(2*d**4) + x*(10*a**3*b**2*d**3 - 20*a**
2*b**3*c*d**2 + 15*a*b**4*c**2*d - 4*b**5*c**3)/d**5
```

GIAC/XCAS [A] time = 0.219628, size = 458, normalized size = 3.52

$$\frac{\left(3\,b^5-\frac{20\,\left(b^5cd-ab^4d^2\right)}{(dx+c)d}+\frac{60\,\left(b^5c^2d^2-2\,ab^4cd^3+a^2b^3d^4\right)}{(dx+c)^2d^2}-\frac{120\,\left(b^5c^3d^3-3\,ab^4c^2d^4+3\,a^2b^3cd^5-a^3b^2d^6\right)}{(dx+c)^3d^3}\right)(dx+c)^4}{12\,d^6}-\frac{5\,\left(b^5c^4-4\,ab^4c^3d+6\,a^2b^3c^2d^2-4\,a^3b^2cd^3+a^4bd^4\right)\ln\left(\frac{|dx+c|}{(dx+c)^2|d|}\right)}{d^6}+\frac{\frac{b^5c^5d^4}{dx+c}-\frac{5\,ab^4c^4d^5}{dx+c}+\frac{10\,a^2b^3c^3d^6}{dx+c}-\frac{10\,a^3b^2c^2d^7}{dx+c}+\frac{5\,a^4bcd^8}{dx+c}-\frac{a^5d^9}{dx+c}}{d^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*b^5 - 20*(b^5*c*d - a*b^4*d^2)/((d*x + c)*d) + 60*(b^5*c^
2*d^2 - 2*a*b^4*c*d^3 + a^2*b^3*d^4)/((d*x + c)^2*d^2) - 120*(b^5
*c^3*d^3 - 3*a*b^4*c^2*d^4 + 3*a^2*b^3*c*d^5 - a^3*b^2*d^6)/((d*x
 + c)^3*d^3))*(d*x + c)^4/d^6 - 5*(b^5*c^4 - 4*a*b^4*c^3*d + 6*a^
2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*ln(abs(d*x + c)/((d*
x + c)^2*abs(d)))/d^6 + (b^5*c^5*d^4/(d*x + c) - 5*a*b^4*c^4*d^5/
(d*x + c) + 10*a^2*b^3*c^3*d^6/(d*x + c) - 10*a^3*b^2*c^2*d^7/(d*
x + c) + 5*a^4*b*c*d^8/(d*x + c) - a^5*d^9/(d*x + c))/d^10
```

3.1344 $\int \frac{(a+bx)^4}{(c+dx)^2} dx$

Optimal. Leaf size=104

$$-\frac{2b^3(c+dx)^2(bc-ad)}{d^5}+\frac{6b^2x(bc-ad)^2}{d^4}-\frac{(bc-ad)^4}{d^5(c+dx)}-\frac{4b(bc-ad)^3\log(c+dx)}{d^5}+\frac{b^4(c+dx)^3}{3d^5}$$

```
[Out] (6*b^2*(b*c - a*d)^2*x)/d^4 - (b*c - a*d)^4/(d^5*(c + d*x)) - (2*
b^3*(b*c - a*d)*(c + d*x)^2)/d^5 + (b^4*(c + d*x)^3)/(3*d^5) - (4
*b*(b*c - a*d)^3*Log[c + d*x])/d^5
```

Rubi [A] time = 0.205145, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{2b^3(c+dx)^2(bc-ad)}{d^5}+\frac{6b^2x(bc-ad)^2}{d^4}-\frac{(bc-ad)^4}{d^5(c+dx)}-\frac{4b(bc-ad)^3\log(c+dx)}{d^5}+\frac{b^4(c+dx)^3}{3d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/(c + d*x)^2,x]
```

```
[Out] (6*b^2*(b*c - a*d)^2*x)/d^4 - (b*c - a*d)^4/(d^5*(c + d*x)) - (2*
b^3*(b*c - a*d)*(c + d*x)^2)/d^5 + (b^4*(c + d*x)^3)/(3*d^5) - (4
*b*(b*c - a*d)^3*Log[c + d*x])/d^5
```

Rubi in Sympy [A] time = 29.3106, size = 94, normalized size = 0.9

$$\frac{b^4\left(c+dx\right)^3}{3d^5}+\frac{2b^3\left(c+dx\right)^2\left(ad-bc\right)}{d^5}+\frac{6b^2x\left(ad-bc\right)^2}{d^4}+\frac{4b\left(ad-bc\right)^3\log\left(c+dx\right)}{d^5}-\frac{\left(ad-bc\right)^4}{d^5\left(c+dx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c)**2,x)
```

```
[Out] b**4*(c + d*x)**3/(3*d**5) + 2*b**3*(c + d*x)**2*(a*d - b*c)/d**5
 + 6*b**2*x*(a*d - b*c)**2/d**4 + 4*b*(a*d - b*c)**3*log(c + d*x)
/d**5 - (a*d - b*c)**4/(d**5*(c + d*x))
```

Mathematica [A] time = 0.0964509, size = 165, normalized size = 1.59

$$\frac{-3a^4d^4+12a^3bcd^3+18a^2b^2d^2\left(-c^2+cdx+d^2x^2\right)+6ab^3d\left(2c^3-4c^2dx-3cd^2x^2+d^3x^3\right)-12b(c+dx)(bc-ad)^3\log(c+}{3d^5(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/(c + d*x)^2,x]
```

```
[Out] (12*a^3*b*c*d^3 - 3*a^4*d^4 + 18*a^2*b^2*d^2*(-c^2 + c*d*x + d^2*
x^2) + 6*a*b^3*d*(2*c^3 - 4*c^2*d*x - 3*c*d^2*x^2 + d^3*x^3) + b^
4*(-3*c^4 + 9*c^3*d*x + 6*c^2*d^2*x^2 - 2*c*d^3*x^3 + d^4*x^4) -
12*b*(b*c - a*d)^3*(c + d*x)*Log[c + d*x])/(3*d^5*(c + d*x))
```

Maple [B] time = 0.011, size = 230, normalized size = 2.2

$$\frac{b^4x^3}{3\,d^2}+2\,\frac{b^3x^2a}{d^2}-\frac{b^4x^2c}{d^3}+6\,\frac{a^2b^2x}{d^2}-8\,\frac{ab^3cx}{d^3}+3\,\frac{b^4c^2x}{d^4}+4\,\frac{b\ln(dx+c)\,a^3}{d^2}-12\,\frac{b^2\ln(dx+c)\,a^2c}{d^3}+12\,\frac{b^3\ln(dx+c)\,ac^2}{d^4}-4\,\frac{b^4\ln(dx+c)\,c^3}{d^5}-\frac{a^4}{d\,(dx+c)}+4\,\frac{a^3bc}{d^2\,(dx+c)}-6\,\frac{a^2b^2c^2}{d^3\,(dx+c)}+4\,\frac{ab^3c^3}{d^4\,(dx+c)}-\frac{b^4c^4}{d^5\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c)^2,x)
```

```
[Out] 1/3*b^4/d^2*x^3+2*b^3/d^2*x^2*a-b^4/d^3*x^2*c+6*b^2/d^2*a^2*x-8*b
^3/d^3*a*c*x+3*b^4/d^4*c^2*x+4*b/d^2*ln(d*x+c)*a^3-12*b^2/d^3*ln(
d*x+c)*a^2*c+12*b^3/d^4*ln(d*x+c)*a*c^2-4*b^4/d^5*ln(d*x+c)*c^3-1
/d/(d*x+c)*a^4+4/d^2/(d*x+c)*a^3*b*c-6/d^3/(d*x+c)*a^2*b^2*c^2+4/
d^4/(d*x+c)*a*b^3*c^3-1/d^5/(d*x+c)*b^4*c^4
```

Maxima [A] time = 1.34752, size = 247, normalized size = 2.38

$$-\frac{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}{d^6x+cd^5}+\frac{b^4d^2x^3-3\left(b^4cd-2\,ab^3d^2\right)x^2+3\left(3\,b^4c^2-8\,ab^3cd+6\,a^2b^2d^2\right)x}{3\,d^4}-\frac{4\left(b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3\right)\log(dx+c)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] -(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a
^4*d^4)/(d^6*x + c*d^5) + 1/3*(b^4*d^2*x^3 - 3*(b^4*c*d - 2*a*b^3
*d^2)*x^2 + 3*(3*b^4*c^2 - 8*a*b^3*c*d + 6*a^2*b^2*d^2)*x)/d^4 -
4*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*log(d*x
```

```
+ c)/d^5
```

Fricas [A] time = 0.196975, size = 360, normalized size = 3.46

$$b^4d^4x^4 - 3\,b^4c^4 + 12\,ab^3c^3d - 18\,a^2b^2c^2d^2 + 12\,a^3bcd^3 - 3\,a^4d^4 - 2\left(b^4cd^3 - 3\,ab^3d^4\right)x^3 + 6\left(b^4c^2d^2 - 3\,ab^3cd^3 + 3\,a^2b^2d^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/3*(b^4*d^4*x^4 - 3*b^4*c^4 + 12*a*b^3*c^3*d - 18*a^2*b^2*c^2*d^
2 + 12*a^3*b*c*d^3 - 3*a^4*d^4 - 2*(b^4*c*d^3 - 3*a*b^3*d^4)*x^3
+ 6*(b^4*c^2*d^2 - 3*a*b^3*c*d^3 + 3*a^2*b^2*d^4)*x^2 + 3*(3*b^4*
c^3*d - 8*a*b^3*c^2*d^2 + 6*a^2*b^2*c*d^3)*x - 12*(b^4*c^4 - 3*a*
b^3*c^3*d + 3*a^2*b^2*c^2*d^2 - a^3*b*c*d^3 + (b^4*c^3*d - 3*a*b^
3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*x)*log(d*x + c))/(d^6*x
+ c*d^5)
```

Sympy [A] time = 1.7128, size = 151, normalized size = 1.45

$$\frac{b^4x^3}{3d^2} + \frac{4b\left(ad - bc\right)^3\log\left(c + dx\right)}{d^5} - \frac{a^4d^4 - 4a^3bcd^3 + 6a^2b^2c^2d^2 - 4ab^3c^3d + b^4c^4}{cd^5 + d^6x} + \frac{x^2\left(2ab^3d - b^4c\right)}{d^3} + \frac{x\left(6a^2b^2d^2 - 8ab^3cd + 3b^4c^2\right)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c)**2,x)
```

```
[Out] b**4*x**3/(3*d**2) + 4*b*(a*d - b*c)**3*log(c + d*x)/d**5 - (a**4
*d**4 - 4*a**3*b*c*d**3 + 6*a**2*b**2*c**2*d**2 - 4*a*b**3*c**3*d
 + b**4*c**4)/(c*d**5 + d**6*x) + x**2*(2*a*b**3*d - b**4*c)/d**3
 + x*(6*a**2*b**2*d**2 - 8*a*b**3*c*d + 3*b**4*c**2)/d**4
```

GIAC/XCAS [A] time = 0.219366, size = 331, normalized size = 3.18

$$\frac{\left(b^4 - \frac{6\left(b^4cd - ab^3d^2\right)}{(dx+c)d} + \frac{18\left(b^4c^2d^2 - 2\,ab^3cd^3 + a^2b^2d^4\right)}{(dx+c)^2d^2}\right)(dx+c)^3}{3\,d^5} + \frac{4\left(b^4c^3 - 3\,ab^3c^2d + 3\,a^2b^2cd^2 - a^3bd^3\right)\ln\left(\frac{|dx+c|}{(dx+c)^2|d|}\right)}{d^5} - \frac{\frac{b^4c^4d^3}{dx+c} - \frac{4\,ab^3c^3d^4}{dx+c} + \frac{6\,a^2b^2c^2d^5}{dx+c} - \frac{4\,a^3bcd^6}{dx+c} + \frac{a^4d^7}{dx+c}}{d^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/3*(b^4 - 6*(b^4*c*d - a*b^3*d^2)/((d*x + c)*d) + 18*(b^4*c^2*d^
2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)/((d*x + c)^2*d^2))*(d*x + c)^3/d
^5 + 4*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*ln
(abs(d*x + c)/((d*x + c)^2*abs(d)))/d^5 - (b^4*c^4*d^3/(d*x + c)
- 4*a*b^3*c^3*d^4/(d*x + c) + 6*a^2*b^2*c^2*d^5/(d*x + c) - 4*a^3
*b*c*d^6/(d*x + c) + a^4*d^7/(d*x + c))/d^8
```

3.1345 $\int \frac{(a+bx)^3}{(c+dx)^2} dx$

Optimal. Leaf size=75

$$-\frac{b^2x(2bc-3ad)}{d^3}+\frac{(bc-ad)^3}{d^4(c+dx)}+\frac{3b(bc-ad)^2\log(c+dx)}{d^4}+\frac{b^3x^2}{2d^2}$$

```
[Out] -((b^2*(2*b*c - 3*a*d)*x)/d^3) + (b^3*x^2)/(2*d^2) + (b*c - a*d)^
3/(d^4*(c + d*x)) + (3*b*(b*c - a*d)^2*Log[c + d*x])/d^4
```

Rubi [A] time = 0.13265, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{b^2x(2bc-3ad)}{d^3}+\frac{(bc-ad)^3}{d^4(c+dx)}+\frac{3b(bc-ad)^2\log(c+dx)}{d^4}+\frac{b^3x^2}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/(c + d*x)^2,x]
```

```
[Out] -((b^2*(2*b*c - 3*a*d)*x)/d^3) + (b^3*x^2)/(2*d^2) + (b*c - a*d)^
3/(d^4*(c + d*x)) + (3*b*(b*c - a*d)^2*Log[c + d*x])/d^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b^3\int x\,dx}{d^2}+\frac{3b\left(ad-bc\right)^2\log\left(c+dx\right)}{d^4}+\frac{\left(3ad-2bc\right)\int b^2\,dx}{d^3}-\frac{\left(ad-bc\right)^3}{d^4\left(c+dx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] b**3*Integral(x, x)/d**2 + 3*b*(a*d - b*c)**2*log(c + d*x)/d**4 +
 (3*a*d - 2*b*c)*Integral(b**2, x)/d**3 - (a*d - b*c)**3/(d**4*(c
 + d*x))
```

Mathematica [A] time = 0.074438, size = 114, normalized size = 1.52

$$\frac{3\left(a^2bd^2-2ab^2cd+b^3c^2\right)\log(c+dx)}{d^4}+\frac{-a^3d^3+3a^2bcd^2-3ab^2c^2d+b^3c^3}{d^4(c+dx)}-\frac{b^2x(2bc-3ad)}{d^3}+\frac{b^3x^2}{2d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/(c + d*x)^2,x]
```

```
[Out] -((b^2*(2*b*c - 3*a*d)*x)/d^3) + (b^3*x^2)/(2*d^2) + (b^3*c^3 - 3
*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)/(d^4*(c + d*x)) + (3*(b^3
*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*Log[c + d*x])/d^4
```

Maple [B] time = 0.01, size = 149, normalized size = 2.

$$\frac{b^3x^2}{2\,d^2}+3\,\frac{ab^2x}{d^2}-2\,\frac{b^3xc}{d^3}+3\,\frac{b\ln(dx+c)\,a^2}{d^2}-6\,\frac{b^2\ln(dx+c)\,ac}{d^3}+3\,\frac{b^3\ln(dx+c)\,c^2}{d^4}-\frac{a^3}{d\,(dx+c)}+3\,\frac{a^2bc}{d^2\,(dx+c)}-3\,\frac{ab^2c^2}{d^3\,(dx+c)}+\frac{b^3c^3}{d^4\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c)^2,x)
```

```
[Out] 1/2*b^3*x^2/d^2+3*b^2/d^2*a*x-2*b^3/d^3*x*c+3*b/d^2*ln(d*x+c)*a^2
-6*b^2/d^3*ln(d*x+c)*a*c+3*b^3/d^4*ln(d*x+c)*c^2-1/d/(d*x+c)*a^3+
3/d^2/(d*x+c)*a^2*b*c-3/d^3/(d*x+c)*a*b^2*c^2+1/d^4/(d*x+c)*b^3*c
^3
```

Maxima [A] time = 1.36981, size = 158, normalized size = 2.11

$$\frac{b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3}{d^5x+cd^4}+\frac{b^3dx^2-2\left(2\,b^3c-3\,ab^2d\right)x}{2\,d^3}+\frac{3\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)\log(dx+c)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] (b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)/(d^5*x + c*d^
4) + 1/2*(b^3*d*x^2 - 2*(2*b^3*c - 3*a*b^2*d)*x)/d^3 + 3*(b^3*c^2
 - 2*a*b^2*c*d + a^2*b*d^2)*log(d*x + c)/d^4
```

Fricas [A] time = 0.196995, size = 232, normalized size = 3.09

$$\frac{b^3d^3x^3+2\,b^3c^3-6\,ab^2c^2d+6\,a^2bcd^2-2\,a^3d^3-3\left(b^3cd^2-2\,ab^2d^3\right)x^2-2\left(2\,b^3c^2d-3\,ab^2cd^2\right)x+6\left(b^3c^3-2\,ab^2c^2d+a^2\right.}{2\left(d^5x+cd^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*d^3*x^3 + 2*b^3*c^3 - 6*a*b^2*c^2*d + 6*a^2*b*c*d^2 - 2*
a^3*d^3 - 3*(b^3*c*d^2 - 2*a*b^2*d^3)*x^2 - 2*(2*b^3*c^2*d - 3*a*
b^2*c*d^2)*x + 6*(b^3*c^3 - 2*a*b^2*c^2*d + a^2*b*c*d^2 + (b^3*c^
2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(d*x + c))/(d^5*x + c*d^4)
```

Sympy [A] time = 1.29762, size = 100, normalized size = 1.33

$$\frac{b^3x^2}{2d^2} + \frac{3b\left(ad-bc\right)^2\log\left(c+dx\right)}{d^4} - \frac{a^3d^3-3a^2bcd^2+3ab^2c^2d-b^3c^3}{cd^4+d^5x} + \frac{x\left(3ab^2d-2b^3c\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] b**3*x**2/(2*d**2) + 3*b*(a*d - b*c)**2*log(c + d*x)/d**4 - (a**3
*d**3 - 3*a**2*b*c*d**2 + 3*a*b**2*c**2*d - b**3*c**3)/(c*d**4 +
d**5*x) + x*(3*a*b**2*d - 2*b**3*c)/d**3
```

GIAC/XCAS [A] time = 0.217943, size = 224, normalized size = 2.99

$$\frac{\left(b^3 - \frac{6\left(b^3cd-ab^2d^2\right)}{(dx+c)d}\right)(dx+c)^2}{2\,d^4} - \frac{3\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)\ln\left(\frac{|dx+c|}{(dx+c)^2|d|}\right)}{d^4} + \frac{\frac{b^3c^3d^2}{dx+c} - \frac{3\,ab^2c^2d^3}{dx+c} + \frac{3\,a^2bcd^4}{dx+c} - \frac{a^3d^5}{dx+c}}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] 1/2*(b^3 - 6*(b^3*c*d - a*b^2*d^2)/((d*x + c)*d))*(d*x + c)^2/d^4
 - 3*(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*ln(abs(d*x + c)/((d*x +
c)^2*abs(d)))/d^4 + (b^3*c^3*d^2/(d*x + c) - 3*a*b^2*c^2*d^3/(d*x
 + c) + 3*a^2*b*c*d^4/(d*x + c) - a^3*d^5/(d*x + c))/d^6
```

3.1346 $\int \frac{(a+bx)^2}{(c+dx)^2}\, dx$

Optimal. Leaf size=51

$$-\frac{(bc-ad)^2}{d^3(c+dx)}-\frac{2b(bc-ad)\log(c+dx)}{d^3}+\frac{b^2x}{d^2}$$

```
[Out] (b^2*x)/d^2 - (b*c - a*d)^2/(d^3*(c + d*x)) - (2*b*(b*c - a*d)*Lo
g[c + d*x])/d^3
```

Rubi [A] time = 0.0849753, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(bc-ad)^2}{d^3(c+dx)}-\frac{2b(bc-ad)\log(c+dx)}{d^3}+\frac{b^2x}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c + d*x)^2,x]
```

```
[Out] (b^2*x)/d^2 - (b*c - a*d)^2/(d^3*(c + d*x)) - (2*b*(b*c - a*d)*Lo
g[c + d*x])/d^3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2b\,(ad-bc)\log{(c+dx)}}{d^3}+\frac{\int b^2\,dx}{d^2}-\frac{(ad-bc)^2}{d^3\,(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c)**2,x)
```

```
[Out] 2*b*(a*d - b*c)*log(c + d*x)/d**3 + Integral(b**2, x)/d**2 - (a*d
 - b*c)**2/(d**3*(c + d*x))
```

Mathematica [A] time = 0.0628187, size = 47, normalized size = 0.92

$$\frac{-\frac{(bc-ad)^2}{c+dx}+2b(ad-bc)\log(c+dx)+b^2dx}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c + d*x)^2,x]
```

```
[Out] (b^2*d*x - (b*c - a*d)^2/(c + d*x) + 2*b*(-(b*c) + a*d)*Log[c + d
*x])/d^3
```

Maple [A] time = 0.01, size = 86, normalized size = 1.7

$$\frac{b^2x}{d^2} + 2\,\frac{b\ln(dx+c)\,a}{d^2} - 2\,\frac{b^2\ln(dx+c)\,c}{d^3} - \frac{a^2}{d\,(dx+c)} + 2\,\frac{abc}{d^2\,(dx+c)} - \frac{b^2c^2}{d^3\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c)^2,x)
```

```
[Out] b^2*x/d^2+2*b/d^2*ln(d*x+c)*a-2*b^2/d^3*ln(d*x+c)*c-1/d/(d*x+c)*a
^2+2/d^2/(d*x+c)*a*b*c-1/d^3/(d*x+c)*b^2*c^2
```

Maxima [A] time = 1.34676, size = 90, normalized size = 1.76

$$\frac{b^2x}{d^2} - \frac{b^2c^2 - 2\,abcd + a^2d^2}{d^4x + cd^3} - \frac{2\left(b^2c - abd\right)\log(dx+c)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] b^2*x/d^2 - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(d^4*x + c*d^3) - 2*(
b^2*c - a*b*d)*log(d*x + c)/d^3
```

Fricas [A] time = 0.204406, size = 124, normalized size = 2.43

$$\frac{b^2d^2x^2 + b^2cdx - b^2c^2 + 2\,abcd - a^2d^2 - 2\left(b^2c^2 - abcd + \left(b^2cd - abd^2\right)x\right)\log(dx+c)}{d^4x + cd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] (b^2*d^2*x^2 + b^2*c*d*x - b^2*c^2 + 2*a*b*c*d - a^2*d^2 - 2*(b^2
*c^2 - a*b*c*d + (b^2*c*d - a*b*d^2)*x)*log(d*x + c))/(d^4*x + c*
d^3)
```

Sympy [A] time = 0.963175, size = 60, normalized size = 1.18

$$\frac{b^2x}{d^2}+\frac{2b\,(ad-bc)\log{(c+dx)}}{d^3}-\frac{a^2d^2-2abcd+b^2c^2}{cd^3+d^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c)**2,x)
```

```
[Out] b**2*x/d**2 + 2*b*(a*d - b*c)*log(c + d*x)/d**3 - (a**2*d**2 - 2*
a*b*c*d + b**2*c**2)/(c*d**3 + d**4*x)
```

GIAC/XCAS [A] time = 0.219853, size = 132, normalized size = 2.59

$$\frac{(dx+c)b^2}{d^3}+\frac{2\left(b^2c-abd\right)\ln\left(\frac{|dx+c|}{(dx+c)^2|d|}\right)}{d^3}-\frac{\frac{b^2c^2d}{dx+c}-\frac{2\,abcd^2}{dx+c}+\frac{a^2d^3}{dx+c}}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] (d*x + c)*b^2/d^3 + 2*(b^2*c - a*b*d)*ln(abs(d*x + c)/((d*x + c)^
2*abs(d)))/d^3 - (b^2*c^2*d/(d*x + c) - 2*a*b*c*d^2/(d*x + c) + a
^2*d^3/(d*x + c))/d^4
```

3.1347 $\int \frac{a+bx}{(c+dx)^2} dx$

Optimal. Leaf size=31

$$\frac{bc-ad}{d^2(c+dx)}+\frac{b\log(c+dx)}{d^2}$$

```
[Out] (b*c - a*d)/(d^2*(c + d*x)) + (b*Log[c + d*x])/d^2
```

Rubi [A] time = 0.0496636, antiderivative size = 31, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{bc-ad}{d^2(c+dx)}+\frac{b\log(c+dx)}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c + d*x)^2,x]
```

```
[Out] (b*c - a*d)/(d^2*(c + d*x)) + (b*Log[c + d*x])/d^2
```

Rubi in Sympy [A] time = 8.04086, size = 26, normalized size = 0.84

$$\frac{b\log\left(c+dx\right)}{d^2}-\frac{ad-bc}{d^2\left(c+dx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)**2,x)
```

```
[Out] b*log(c + d*x)/d**2 - (a*d - b*c)/(d**2*(c + d*x))
```

Mathematica [A] time = 0.017017, size = 31, normalized size = 1.

$$\frac{bc-ad}{d^2(c+dx)}+\frac{b\log(c+dx)}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c + d*x)^2,x]
```

```
[Out] (b*c - a*d)/(d^2*(c + d*x)) + (b*Log[c + d*x])/d^2
```

Maple [A] time = 0.01, size = 39, normalized size = 1.3

$$\frac{b \ln (dx + c)}{d^2} - \frac{a}{d (dx + c)} + \frac{bc}{d^2 (dx + c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c)^2,x)
```

```
[Out] b*ln(d*x+c)/d^2-1/d/(d*x+c)*a+1/d^2/(d*x+c)*b*c
```

Maxima [A] time = 1.34677, size = 46, normalized size = 1.48

$$\frac{bc - ad}{d^3 x + cd^2} + \frac{b \log (dx + c)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] (b*c - a*d)/(d^3*x + c*d^2) + b*log(d*x + c)/d^2
```

Fricas [A] time = 0.224569, size = 50, normalized size = 1.61

$$\frac{bc - ad + (bdx + bc) \log (dx + c)}{d^3 x + cd^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] (b*c - a*d + (b*d*x + b*c)*log(d*x + c))/(d^3*x + c*d^2)
```

Sympy [A] time = 0.648158, size = 27, normalized size = 0.87

$$\frac{b \log (c + dx)}{d^2} - \frac{ad - bc}{cd^2 + d^3 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**2,x)
```

```
[Out] b*log(c + d*x)/d**2 - (a*d - b*c)/(c*d**2 + d**3*x)
```

GIAC/XCAS [A] time = 0.226467, size = 77, normalized size = 2.48

$$-\frac{b\left(\frac{\ln\left(\frac{|dx+c|}{(dx+c)^2|d|}\right)}{d}-\frac{c}{(dx+c)d}\right)}{d}-\frac{a}{(dx+c)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] -b*(ln(abs(d*x + c)/((d*x + c)^2*abs(d)))/d - c/((d*x + c)*d))/d
- a/((d*x + c)*d)
```

3.1348 $\int \frac{1}{(c+dx)^2} dx$

Optimal. Leaf size=12

$$-\frac{1}{d(c+dx)}$$

```
[Out] -(1/(d*(c + d*x)))
```

Rubi [A] time = 0.0071737, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$-\frac{1}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(-2),x]

[Out] -(1/(d*(c + d*x)))
```

Rubi in Sympy [A] time = 1.28702, size = 8, normalized size = 0.67

$$-\frac{1}{d\,(c+dx)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(d*x+c)**2,x)

[Out] -1/(d*(c + d*x))
```

Mathematica [A] time = 0.0037102, size = 12, normalized size = 1.

$$-\frac{1}{d(c+dx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(-2),x]
```

```
[Out] -(1/(d*(c + d*x)))
```

Maple [A] time = 0.001, size = 13, normalized size = 1.1

$$-\frac{1}{d\left(dx+c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^2,x)
```

```
[Out] -1/d/(d*x+c)
```

Maxima [A] time = 1.3734, size = 16, normalized size = 1.33

$$-\frac{1}{(dx+c)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-2),x, algorithm="maxima")
```

```
[Out] -1/((d*x + c)*d)
```

Fricas [A] time = 0.197629, size = 18, normalized size = 1.5

$$-\frac{1}{d^2x+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(-2),x, algorithm="fricas")
```

```
[Out] -1/(d^2*x + c*d)
```

Sympy [A] time = 0.516234, size = 10, normalized size = 0.83

$$-\frac{1}{cd+d^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c)**2,x)
```

```
[Out] -1/(c*d + d**2*x)
```

GIAC/XCAS [A] time = 0.225863, size = 16, normalized size = 1.33

$$-\frac{1}{(dx+c)d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-2),x, algorithm="giac")
```

```
[Out] -1/((d*x + c)*d)
```

3.1349 $\int \frac{1}{(a+bx)(c+dx)^2}\,dx$

Optimal. Leaf size=56

$$\frac{1}{(c+dx)(bc-ad)}+\frac{b\log(a+bx)}{(bc-ad)^2}-\frac{b\log(c+dx)}{(bc-ad)^2}$$

```
[Out] 1/((b*c - a*d)*(c + d*x)) + (b*Log[a + b*x])/(b*c - a*d)^2 - (b*L
og[c + d*x])/(b*c - a*d)^2
```

Rubi [A] time = 0.069125, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{1}{(c+dx)(bc-ad)}+\frac{b\log(a+bx)}{(bc-ad)^2}-\frac{b\log(c+dx)}{(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^2),x]
```

```
[Out] 1/((b*c - a*d)*(c + d*x)) + (b*Log[a + b*x])/(b*c - a*d)^2 - (b*L
og[c + d*x])/(b*c - a*d)^2
```

Rubi in Sympy [A] time = 13.9707, size = 46, normalized size = 0.82

$$\frac{b\log{(a+bx)}}{(ad-bc)^2}-\frac{b\log{(c+dx)}}{(ad-bc)^2}-\frac{1}{(c+dx)(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**2,x)
```

```
[Out] b*log(a + b*x)/(a*d - b*c)**2 - b*log(c + d*x)/(a*d - b*c)**2 - 1
/((c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.037629, size = 53, normalized size = 0.95

$$\frac{b(c+dx)\log(a+bx)-ad-b(c+dx)\log(c+dx)+bc}{(c+dx)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^2),x]
```

```
[Out] (b*c - a*d + b*(c + d*x)*Log[a + b*x] - b*(c + d*x)*Log[c + d*x])
/((b*c - a*d)^2*(c + d*x))
```

Maple [A] time = 0.019, size = 58, normalized size = 1.

$$-\frac{1}{(ad-bc)(dx+c)}-\frac{b\ln(dx+c)}{(ad-bc)^2}+\frac{b\ln(bx+a)}{(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^2,x)
```

```
[Out] -1/(a*d-b*c)/(d*x+c)-b/(a*d-b*c)^2*ln(d*x+c)+b/(a*d-b*c)^2*ln(b*x
+a)
```

Maxima [A] time = 1.34582, size = 122, normalized size = 2.18

$$\frac{b\log(bx+a)}{b^2c^2-2\,abcd+a^2d^2}-\frac{b\log(dx+c)}{b^2c^2-2\,abcd+a^2d^2}+\frac{1}{bc^2-acd+(bcd-ad^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] b*log(b*x + a)/(b^2*c^2 - 2*a*b*c*d + a^2*d^2) - b*log(d*x + c)/(
b^2*c^2 - 2*a*b*c*d + a^2*d^2) + 1/(b*c^2 - a*c*d + (b*c*d - a*d^
2)*x)
```

Fricas [A] time = 0.215787, size = 124, normalized size = 2.21

$$\frac{bc-ad+(bdx+bc)\log(bx+a)-(bdx+bc)\log(dx+c)}{b^2c^3-2\,abc^2d+a^2cd^2+(b^2c^2d-2\,abcd^2+a^2d^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] (b*c - a*d + (b*d*x + b*c)*log(b*x + a) - (b*d*x + b*c)*log(d*x +
 c))/(b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2 + (b^2*c^2*d - 2*a*b*c*d^
```

```
2 + a^2*d^3)*x)
```

Sympy [A] time = 1.42826, size = 233, normalized size = 4.16

$$-\frac{b\log\left(x+\frac{-\frac{a^3bd^3}{(ad-bc)^2}+\frac{3a^2b^2cd^2}{(ad-bc)^2}-\frac{3ab^3c^2d}{(ad-bc)^2}+abd+\frac{b^4c^3}{(ad-bc)^2}+b^2c}{2b^2d}\right)}{(ad-bc)^2}+\frac{b\log\left(x+\frac{\frac{a^3bd^3}{(ad-bc)^2}-\frac{3a^2b^2cd^2}{(ad-bc)^2}+\frac{3ab^3c^2d}{(ad-bc)^2}+abd-\frac{b^4c^3}{(ad-bc)^2}+b^2c}{2b^2d}\right)}{(ad-bc)^2}-\frac{1}{acd-bc^2+x\left(ad^2-bcd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**2,x)
```

```
[Out] -b*log(x + (-a**3*b*d**3/(a*d - b*c)**2 + 3*a**2*b**2*c*d**2/(a*d
 - b*c)**2 - 3*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d + b**4*c**3/(
a*d - b*c)**2 + b**2*c)/(2*b**2*d))/(a*d - b*c)**2 + b*log(x + (a
**3*b*d**3/(a*d - b*c)**2 - 3*a**2*b**2*c*d**2/(a*d - b*c)**2 + 3
*a*b**3*c**2*d/(a*d - b*c)**2 + a*b*d - b**4*c**3/(a*d - b*c)**2
+ b**2*c)/(2*b**2*d))/(a*d - b*c)**2 - 1/(a*c*d - b*c**2 + x*(a*d
**2 - b*c*d))
```

GIAC/XCAS [A] time = 0.219549, size = 104, normalized size = 1.86

$$\frac{bd\ln\left(\left|b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right|\right)}{b^2c^2d-2\,abcd^2+a^2d^3}+\frac{d}{(bcd-ad^2)(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^2),x, algorithm="giac")
```

```
[Out] b*d*ln(abs(b - b*c/(d*x + c) + a*d/(d*x + c)))/(b^2*c^2*d - 2*a*b
*c*d^2 + a^2*d^3) + d/((b*c*d - a*d^2)*(d*x + c))
```

3.1350 $\int \frac{1}{(a+bx)^2(c+dx)^2}\,dx$

Optimal. Leaf size=81

$$-\frac{b}{(a+bx)(bc-ad)^2}-\frac{d}{(c+dx)(bc-ad)^2}-\frac{2bd\log(a+bx)}{(bc-ad)^3}+\frac{2bd\log(c+dx)}{(bc-ad)^3}$$

```
[Out] -(b/((b*c - a*d)^2*(a + b*x))) - d/((b*c - a*d)^2*(c + d*x)) - (2
*b*d*Log[a + b*x])/(b*c - a*d)^3 + (2*b*d*Log[c + d*x])/(b*c - a*
d)^3
```

Rubi [A] time = 0.106053, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{b}{(a+bx)(bc-ad)^2}-\frac{d}{(c+dx)(bc-ad)^2}-\frac{2bd\log(a+bx)}{(bc-ad)^3}+\frac{2bd\log(c+dx)}{(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(c + d*x)^2),x]
```

```
[Out] -(b/((b*c - a*d)^2*(a + b*x))) - d/((b*c - a*d)^2*(c + d*x)) - (2
*b*d*Log[a + b*x])/(b*c - a*d)^3 + (2*b*d*Log[c + d*x])/(b*c - a*
d)^3
```

Rubi in Sympy [A] time = 20.4022, size = 70, normalized size = 0.86

$$\frac{2bd\log{(a+bx)}}{(ad-bc)^3}-\frac{2bd\log{(c+dx)}}{(ad-bc)^3}-\frac{b}{(a+bx)(ad-bc)^2}-\frac{d}{(c+dx)(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c)**2,x)
```

```
[Out] 2*b*d*log(a + b*x)/(a*d - b*c)**3 - 2*b*d*log(c + d*x)/(a*d - b*c
)**3 - b/((a + b*x)*(a*d - b*c)**2) - d/((c + d*x)*(a*d - b*c)**2
)
```

Mathematica [A] time = 0.103596, size = 66, normalized size = 0.81

$$\frac{\frac{b(ad-bc)}{a+bx}+\frac{d(ad-bc)}{c+dx}-2bd\log(a+bx)+2bd\log(c+dx)}{(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(c + d*x)^2),x]
```

```
[Out] ((b*(-(b*c) + a*d))/(a + b*x) + (d*(-(b*c) + a*d))/(c + d*x) - 2*
b*d*Log[a + b*x] + 2*b*d*Log[c + d*x])/(b*c - a*d)^3
```

Maple [A] time = 0.017, size = 82, normalized size = 1.

$$-\frac{d}{(ad-bc)^2(dx+c)}-2\frac{db\ln(dx+c)}{(ad-bc)^3}-\frac{b}{(ad-bc)^2(bx+a)}+2\frac{db\ln(bx+a)}{(ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c)^2,x)
```

```
[Out] -d/(a*d-b*c)^2/(d*x+c)-2*d/(a*d-b*c)^3*b*ln(d*x+c)-b/(a*d-b*c)^2/
(b*x+a)+2*d/(a*d-b*c)^3*b*ln(b*x+a)
```

Maxima [A] time = 1.36732, size = 281, normalized size = 3.47

$$-\frac{2\,bd\log(bx+a)}{b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3}+\frac{2\,bd\log(dx+c)}{b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3}-\frac{2\,bdx+bc+ad}{ab^2c^3-2\,a^2bc^2d+a^3cd^2+(b^3c^2d-2\,ab^2cd^2+a^2bd^3)x^2+(b^3c^3-ab^2c^2d-a^2bcd^2+a^3d^3)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] -2*b*d*log(b*x + a)/(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^
3*d^3) + 2*b*d*log(d*x + c)/(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*
d^2 - a^3*d^3) - (2*b*d*x + b*c + a*d)/(a*b^2*c^3 - 2*a^2*b*c^2*d
 + a^3*c*d^2 + (b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*x^2 + (b^3
*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*x)
```

Fricas [A] time = 0.211902, size = 325, normalized size = 4.01

$$-\frac{b^2c^2-a^2d^2+2\left(b^2cd-abd^2\right)x+2\left(b^2d^2x^2+abcd+\left(b^2cd+abd^2\right)x\right)\log(bx+a)-2\left(b^2d^2x^2+abcd+\left(b^2cd+abd^2\right)x\right)}{ab^3c^4-3\,a^2b^2c^3d+3\,a^3bc^2d^2-a^4cd^3+(b^4c^3d-3\,ab^3c^2d^2+3\,a^2b^2cd^3-a^3bd^4)x^2+(b^4c^4-2\,ab^3c^3d+2\,a^3bcd^3-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -(b^2*c^2 - a^2*d^2 + 2*(b^2*c*d - a*b*d^2)*x + 2*(b^2*d^2*x^2 +
a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(b*x + a) - 2*(b^2*d^2*x^2 +
a*b*c*d + (b^2*c*d + a*b*d^2)*x)*log(d*x + c))/(a*b^3*c^4 - 3*a^2
*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3 + (b^4*c^3*d - 3*a*b^3*c
^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*x^2 + (b^4*c^4 - 2*a*b^3*c^
3*d + 2*a^3*b*c*d^3 - a^4*d^4)*x)
```

Sympy [A] time = 2.27631, size = 405, normalized size = 5.

$$-\frac{2bd\log\left(x+\frac{-\frac{2a^4bd^5}{(ad-bc)^3}+\frac{8a^3b^2cd^4}{(ad-bc)^3}-\frac{12a^2b^3c^2d^3}{(ad-bc)^3}+\frac{8ab^4c^3d^2}{(ad-bc)^3}+2abd^2-\frac{2b^5c^4d}{(ad-bc)^3}+2b^2cd}{4b^2d^2}\right)}{(ad-bc)^3}+\frac{2bd\log\left(x+\frac{\frac{2a^4bd^5}{(ad-bc)^3}-\frac{8a^3b^2cd^4}{(ad-bc)^3}+\frac{12a^2b^3c^2d^3}{(ad-bc)^3}-\frac{8ab^4c^3d^2}{(ad-bc)^3}+2abd^2+\frac{2b^5c^4d}{(ad-bc)^3}+2b^2cd}{4b^2d^2}\right)}{(ad-bc)^3}-\frac{ad+bc+2bdx}{a^3cd^2-2a^2bc^2d+ab^2c^3+x^2\left(a^2bd^3-2ab^2cd^2+b^3c^2d\right)+x\left(a^3d^3-a^2bcd^2-ab^2c^2d+b^3c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c)**2,x)
```

```
[Out] -2*b*d*log(x + (-2*a**4*b*d**5/(a*d - b*c)**3 + 8*a**3*b**2*c*d**
4/(a*d - b*c)**3 - 12*a**2*b**3*c**2*d**3/(a*d - b*c)**3 + 8*a*b*
*4*c**3*d**2/(a*d - b*c)**3 + 2*a*b*d**2 - 2*b**5*c**4*d/(a*d - b
*c)**3 + 2*b**2*c*d)/(4*b**2*d**2))/(a*d - b*c)**3 + 2*b*d*log(x
+ (2*a**4*b*d**5/(a*d - b*c)**3 - 8*a**3*b**2*c*d**4/(a*d - b*c)*
*3 + 12*a**2*b**3*c**2*d**3/(a*d - b*c)**3 - 8*a*b**4*c**3*d**2/(
a*d - b*c)**3 + 2*a*b*d**2 + 2*b**5*c**4*d/(a*d - b*c)**3 + 2*b**
2*c*d)/(4*b**2*d**2))/(a*d - b*c)**3 - (a*d + b*c + 2*b*d*x)/(a**
3*c*d**2 - 2*a**2*b*c**2*d + a*b**2*c**3 + x**2*(a**2*b*d**3 - 2*
a*b**2*c*d**2 + b**3*c**2*d) + x*(a**3*d**3 - a**2*b*c*d**2 - a*b
**2*c**2*d + b**3*c**3))
```

GIAC/XCAS [A] time = 0.228461, size = 207, normalized size = 2.56

$$\frac{2\,b^2d\ln\left(\left|\frac{bc}{bx+a}-\frac{ad}{bx+a}+d\right|\right)}{b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3}-\frac{b^3}{(b^4c^2-2\,ab^3cd+a^2b^2d^2)(bx+a)}+\frac{bd^2}{(bc-ad)^3\left(\frac{bc}{bx+a}-\frac{ad}{bx+a}+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^2),x, algorithm="giac")
```

```
[Out] 2*b^2*d*ln(abs(b*c/(b*x + a) - a*d/(b*x + a) + d))/(b^4*c^3 - 3*a
*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3) - b^3/((b^4*c^2 - 2*a*b
^3*c*d + a^2*b^2*d^2)*(b*x + a)) + b*d^2/((b*c - a*d)^3*(b*c/(b*x
 + a) - a*d/(b*x + a) + d))
```

3.1351 $\int \frac{1}{(a+bx)^3(c+dx)^2}\,dx$

Optimal. Leaf size=109

$$\frac{d^2}{(c+dx)(bc-ad)^3}+\frac{3bd^2\log(a+bx)}{(bc-ad)^4}-\frac{3bd^2\log(c+dx)}{(bc-ad)^4}+\frac{2bd}{(a+bx)(bc-ad)^3}-\frac{b}{2(a+bx)^2(bc-ad)^2}$$

```
[Out] -b/(2*(b*c - a*d)^2*(a + b*x)^2) + (2*b*d)/((b*c - a*d)^3*(a + b*
x)) + d^2/((b*c - a*d)^3*(c + d*x)) + (3*b*d^2*Log[a + b*x])/(b*c
 - a*d)^4 - (3*b*d^2*Log[c + d*x])/(b*c - a*d)^4
```

Rubi [A] time = 0.160015, antiderivative size = 109, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{d^2}{(c+dx)(bc-ad)^3}+\frac{3bd^2\log(a+bx)}{(bc-ad)^4}-\frac{3bd^2\log(c+dx)}{(bc-ad)^4}+\frac{2bd}{(a+bx)(bc-ad)^3}-\frac{b}{2(a+bx)^2(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*(c + d*x)^2),x]
```

```
[Out] -b/(2*(b*c - a*d)^2*(a + b*x)^2) + (2*b*d)/((b*c - a*d)^3*(a + b*
x)) + d^2/((b*c - a*d)^3*(c + d*x)) + (3*b*d^2*Log[a + b*x])/(b*c
 - a*d)^4 - (3*b*d^2*Log[c + d*x])/(b*c - a*d)^4
```

Rubi in Sympy [A] time = 33.0384, size = 97, normalized size = 0.89

$$\frac{3bd^2\log(a+bx)}{(ad-bc)^4}-\frac{3bd^2\log(c+dx)}{(ad-bc)^4}-\frac{2bd}{(a+bx)(ad-bc)^3}-\frac{b}{2(a+bx)^2(ad-bc)^2}-\frac{d^2}{(c+dx)(ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] 3*b*d**2*log(a + b*x)/(a*d - b*c)**4 - 3*b*d**2*log(c + d*x)/(a*d
 - b*c)**4 - 2*b*d/((a + b*x)*(a*d - b*c)**3) - b/(2*(a + b*x)**2
*(a*d - b*c)**2) - d**2/((c + d*x)*(a*d - b*c)**3)
```

Mathematica [A] time = 0.123338, size = 98, normalized size = 0.9

$$\frac{\frac{2d^2(bc-ad)}{c+dx}+\frac{4bd(bc-ad)}{a+bx}-\frac{b(bc-ad)^2}{(a+bx)^2}+6bd^2\log(a+bx)-6bd^2\log(c+dx)}{2(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*(c + d*x)^2),x]
```

```
[Out] (-((b*(b*c - a*d)^2)/(a + b*x)^2) + (4*b*d*(b*c - a*d))/(a + b*x)
 + (2*d^2*(b*c - a*d))/(c + d*x) + 6*b*d^2*Log[a + b*x] - 6*b*d^2
*Log[c + d*x])/(2*(b*c - a*d)^4)
```

Maple [A] time = 0.02, size = 109, normalized size = 1.

$$-\frac{d^2}{(ad-bc)^3(dx+c)}-3\frac{d^2b\ln(dx+c)}{(ad-bc)^4}-\frac{b}{2(ad-bc)^2(bx+a)^2}+3\frac{d^2b\ln(bx+a)}{(ad-bc)^4}-2\frac{bd}{(ad-bc)^3(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c)^2,x)
```

```
[Out] -d^2/(a*d-b*c)^3/(d*x+c)-3*d^2/(a*d-b*c)^4*b*ln(d*x+c)-1/2*b/(a*d
-b*c)^2/(b*x+a)^2+3*d^2/(a*d-b*c)^4*b*ln(b*x+a)-2*b/(a*d-b*c)^3*d
/(b*x+a)
```

Maxima [A] time = 1.41229, size = 521, normalized size = 4.78

$$\frac{3\,bd^2\log(bx+a)}{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}-\frac{3\,bd^2\log(dx+c)}{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}+\frac{6\,b^2d^2x^2-b^2c^2+5\,abcd+2\,a^2d^2+3\left(b^2cd+3\,ab\cdots\right.}{2\left(a^2b^3c^4-3\,a^3b^2c^3d+3\,a^4bc^2d^2-a^5cd^3+(b^5c^3d-3\,ab^4c^2d^2+3\,a^2b^3cd^3-a^3b^2d^4)x^3+(b^5c^4-ab^4c^3d-3\,a^2b^3c^2d^2+5\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^2),x, algorithm="maxima")
```

```
[Out] 3*b*d^2*log(b*x + a)/(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2
 - 4*a^3*b*c*d^3 + a^4*d^4) - 3*b*d^2*log(d*x + c)/(b^4*c^4 - 4*a
*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4) + 1/2*(
6*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 2*a^2*d^2 + 3*(b^2*c*d + 3*
a*b*d^2)*x)/(a^2*b^3*c^4 - 3*a^3*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^
5*c*d^3 + (b^5*c^3*d - 3*a*b^4*c^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^
2*d^4)*x^3 + (b^5*c^4 - a*b^4*c^3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b
^2*c*d^3 - 2*a^4*b*d^4)*x^2 + (2*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*
a^3*b^2*c^2*d^2 + a^4*b*c*d^3 - a^5*d^4)*x)
```

Fricas [A] time = 0.241753, size = 667, normalized size = 6.12

$$-\frac{b^3c^3 - 6\,ab^2c^2d + 3\,a^2bcd^2 + 2\,a^3d^3 - 6\left(b^3cd^2 - ab^2d^3\right)x^2 - 3\left(b^3c^2d + 2\,ab^2cd^2 - 3\,a^2bd^3\right)x - 6\left(b^3d^3x^3 + a^2bcd^2 + \left(b^3c\right.\right.}{2\left(a^2b^4c^5 - 4\,a^3b^3c^4d + 6\,a^4b^2c^3d^2 - 4\,a^5bc^2d^3 + a^6cd^4 + \left(b^6c^4d - 4\,ab^5c^3d^2 + 6\,a^2b^4c^2d^3 - 4\,a^3b^3cd^4 + a^4b^2d^5\right)x^3 + \left(b^6c^5\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^2),x, algorithm="fricas")
```

```
[Out] -1/2*(b^3*c^3 - 6*a*b^2*c^2*d + 3*a^2*b*c*d^2 + 2*a^3*d^3 - 6*(b^
3*c*d^2 - a*b^2*d^3)*x^2 - 3*(b^3*c^2*d + 2*a*b^2*c*d^2 - 3*a^2*b
*d^3)*x - 6*(b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3
)*x^2 + (2*a*b^2*c*d^2 + a^2*b*d^3)*x)*log(b*x + a) + 6*(b^3*d^3*
x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^2*c*d^
2 + a^2*b*d^3)*x)*log(d*x + c))/(a^2*b^4*c^5 - 4*a^3*b^3*c^4*d +
6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2*d^3 + a^6*c*d^4 + (b^6*c^4*d - 4*
a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5
)*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*
c^2*d^3 - 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*x^2 + (2*a*b^5*c^5 - 7*a
^2*b^4*c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*
d^4 + a^6*d^5)*x)
```

Sympy [A] time = 3.56506, size = 632, normalized size = 5.8

$$-\frac{3bd^2\log\left(x+\frac{-\frac{3a^5bd^7}{(ad-bc)^4}+\frac{15a^4b^2cd^6}{(ad-bc)^4}-\frac{30a^3b^3c^2d^5}{(ad-bc)^4}+\frac{30a^2b^4c^3d^4}{(ad-bc)^4}-\frac{15ab^5c^4d^3}{(ad-bc)^4}+3abd^3+\frac{3b^6c^5d^2}{(ad-bc)^4}+3b^2cd^2}{6b^2d^3}\right)}{(ad-bc)^4}$$
$$+\frac{3bd^2\log\left(x+\frac{\frac{3a^5bd^7}{(ad-bc)^4}-\frac{15a^4b^2cd^6}{(ad-bc)^4}+\frac{30a^3b^3c^2d^5}{(ad-bc)^4}-\frac{30a^2b^4c^3d^4}{(ad-bc)^4}+\frac{15ab^5c^4d^3}{(ad-bc)^4}+3abd^3-\frac{3b^6c^5d^2}{(ad-bc)^4}+3b^2cd^2}{6b^2d^3}\right)}{(ad-bc)^4}$$
$$-\frac{2a^2d^2+5abcd-b^2c^2+6b^2d^2x^2+x\left(9abd^2+\right.}{2a^5cd^3-6a^4bc^2d^2+6a^3b^2c^3d-2a^2b^3c^4+x^3\left(2a^3b^2d^4-6a^2b^3cd^3+6ab^4c^2d^2-2b^5c^3d\right)+x^2\left(4a^4bd^4-10a^3b^2cd^3+6a^2b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c)**2,x)
```

```
[Out] -3*b*d**2*log(x + (-3*a**5*b*d**7/(a*d - b*c)**4 + 15*a**4*b**2*c
*d**6/(a*d - b*c)**4 - 30*a**3*b**3*c**2*d**5/(a*d - b*c)**4 + 30
*a**2*b**4*c**3*d**4/(a*d - b*c)**4 - 15*a*b**5*c**4*d**3/(a*d -
b*c)**4 + 3*a*b*d**3 + 3*b**6*c**5*d**2/(a*d - b*c)**4 + 3*b**2*c
*d**2)/(6*b**2*d**3))/(a*d - b*c)**4 + 3*b*d**2*log(x + (3*a**5*b
*d**7/(a*d - b*c)**4 - 15*a**4*b**2*c*d**6/(a*d - b*c)**4 + 30*a*
*3*b**3*c**2*d**5/(a*d - b*c)**4 - 30*a**2*b**4*c**3*d**4/(a*d -
b*c)**4 + 15*a*b**5*c**4*d**3/(a*d - b*c)**4 + 3*a*b*d**3 - 3*b**
6*c**5*d**2/(a*d - b*c)**4 + 3*b**2*c*d**2)/(6*b**2*d**3))/(a*d -
```

```
 b*c)**4 - (2*a**2*d**2 + 5*a*b*c*d - b**2*c**2 + 6*b**2*d**2*x**
2 + x*(9*a*b*d**2 + 3*b**2*c*d))/(2*a**5*c*d**3 - 6*a**4*b*c**2*d
**2 + 6*a**3*b**2*c**3*d - 2*a**2*b**3*c**4 + x**3*(2*a**3*b**2*d
**4 - 6*a**2*b**3*c*d**3 + 6*a*b**4*c**2*d**2 - 2*b**5*c**3*d) +
x**2*(4*a**4*b*d**4 - 10*a**3*b**2*c*d**3 + 6*a**2*b**3*c**2*d**2
 + 2*a*b**4*c**3*d - 2*b**5*c**4) + x*(2*a**5*d**4 - 2*a**4*b*c*d
**3 - 6*a**3*b**2*c**2*d**2 + 10*a**2*b**3*c**3*d - 4*a*b**4*c**4
))
```

GIAC/XCAS [A] time = 0.220593, size = 292, normalized size = 2.68

$$\frac{3\,bd^3\ln\left(\left|b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right|\right)}{b^4c^4d-4\,ab^3c^3d^2+6\,a^2b^2c^2d^3-4\,a^3bcd^4+a^4d^5}+\frac{d^5}{(b^3c^3d^3-3\,ab^2c^2d^4+3\,a^2bcd^5-a^3d^6)(dx+c)}+\frac{5\,b^3d^2-\frac{6\,(b^3cd^3-ab^2d^4)}{(dx+c)d}}{2\,(bc-ad)^4\left(b-\frac{bc}{dx+c}+\frac{ad}{dx+c}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^2),x, algorithm="giac")
```

```
[Out] 3*b*d^3*ln(abs(b - b*c/(d*x + c) + a*d/(d*x + c)))/(b^4*c^4*d - 4
*a*b^3*c^3*d^2 + 6*a^2*b^2*c^2*d^3 - 4*a^3*b*c*d^4 + a^4*d^5) + d
^5/((b^3*c^3*d^3 - 3*a*b^2*c^2*d^4 + 3*a^2*b*c*d^5 - a^3*d^6)*(d*
x + c)) + 1/2*(5*b^3*d^2 - 6*(b^3*c*d^3 - a*b^2*d^4)/((d*x + c)*d
))/((b*c - a*d)^4*(b - b*c/(d*x + c) + a*d/(d*x + c))^2)
```

3.1352 $\int \frac{(a+bx)^6}{(c+dx)^3}\,dx$

Optimal. Leaf size=158

$$-\frac{2b^5(c+dx)^3(bc-ad)}{d^7}+\frac{15b^4(c+dx)^2(bc-ad)^2}{2d^7}-\frac{20b^3x(bc-ad)^3}{d^6}+\frac{15b^2(bc-ad)^4\log(c+dx)}{d^7}+\frac{6b(bc-ad)^5}{d^7(c+dx)}-\frac{(bc-ad)^6}{2d^7(c+dx)^2}+\frac{b^6(c+dx)^4}{4d^7}$$

```
[Out] (-20*b^3*(b*c - a*d)^3*x)/d^6 - (b*c - a*d)^6/(2*d^7*(c + d*x)^2)
 + (6*b*(b*c - a*d)^5)/(d^7*(c + d*x)) + (15*b^4*(b*c - a*d)^2*(c
 + d*x)^2)/(2*d^7) - (2*b^5*(b*c - a*d)*(c + d*x)^3)/d^7 + (b^6*(
c + d*x)^4)/(4*d^7) + (15*b^2*(b*c - a*d)^4*Log[c + d*x])/d^7
```

Rubi [A] time = 0.38961, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{2b^5(c+dx)^3(bc-ad)}{d^7}+\frac{15b^4(c+dx)^2(bc-ad)^2}{2d^7}-\frac{20b^3x(bc-ad)^3}{d^6}+\frac{15b^2(bc-ad)^4\log(c+dx)}{d^7}+\frac{6b(bc-ad)^5}{d^7(c+dx)}-\frac{(bc-ad)^6}{2d^7(c+dx)^2}+\frac{b^6(c+dx)^4}{4d^7}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^6/(c + d*x)^3,x]
```

```
[Out] (-20*b^3*(b*c - a*d)^3*x)/d^6 - (b*c - a*d)^6/(2*d^7*(c + d*x)^2)
 + (6*b*(b*c - a*d)^5)/(d^7*(c + d*x)) + (15*b^4*(b*c - a*d)^2*(c
 + d*x)^2)/(2*d^7) - (2*b^5*(b*c - a*d)*(c + d*x)^3)/d^7 + (b^6*(
c + d*x)^4)/(4*d^7) + (15*b^2*(b*c - a*d)^4*Log[c + d*x])/d^7
```

Rubi in Sympy [A] time = 56.8351, size = 144, normalized size = 0.91

$$\frac{b^6\left(c+dx\right)^4}{4d^7}+\frac{2b^5\left(c+dx\right)^3\left(ad-bc\right)}{d^7}+\frac{15b^4\left(c+dx\right)^2\left(ad-bc\right)^2}{2d^7}+\frac{20b^3x\left(ad-bc\right)^3}{d^6}+\frac{15b^2\left(ad-bc\right)^4\log\left(c+dx\right)}{d^7}-\frac{6b\left(ad-bc\right)^5}{d^7\left(c+dx\right)}-\frac{\left(ad-bc\right)^6}{2d^7\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**6/(d*x+c)**3,x)
```

```
[Out] b**6*(c + d*x)**4/(4*d**7) + 2*b**5*(c + d*x)**3*(a*d - b*c)/d**7
 + 15*b**4*(c + d*x)**2*(a*d - b*c)**2/(2*d**7) + 20*b**3*x*(a*d
```

```
- b*c)**3/d**6 + 15*b**2*(a*d - b*c)**4*log(c + d*x)/d**7 - 6*b*(
a*d - b*c)**5/(d**7*(c + d*x)) - (a*d - b*c)**6/(2*d**7*(c + d*x)
**2)
```

Mathematica [A] time = 0.187322, size = 303, normalized size = 1.92

$$\frac{-2a^6d^6 - 12a^5bd^5(c+2dx) + 30a^4b^2cd^4(3c+4dx) + 40a^3b^3d^3\left(-5c^3-4c^2dx+4cd^2x^2+2d^3x^3\right) + 30a^2b^4d^2\left(7c^4+2c^3dx - \cdots\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^6/(c + d*x)^3,x]
```

```
[Out] (-2*a^6*d^6 - 12*a^5*b*d^5*(c + 2*d*x) + 30*a^4*b^2*c*d^4*(3*c +
4*d*x) + 40*a^3*b^3*d^3*(-5*c^3 - 4*c^2*d*x + 4*c*d^2*x^2 + 2*d^3
*x^3) + 30*a^2*b^4*d^2*(7*c^4 + 2*c^3*d*x - 11*c^2*d^2*x^2 - 4*c*
d^3*x^3 + d^4*x^4) + 4*a*b^5*d*(-27*c^5 + 6*c^4*d*x + 63*c^3*d^2*
x^2 + 20*c^2*d^3*x^3 - 5*c*d^4*x^4 + 2*d^5*x^5) + b^6*(22*c^6 - 1
6*c^5*d*x - 68*c^4*d^2*x^2 - 20*c^3*d^3*x^3 + 5*c^2*d^4*x^4 - 2*c
*d^5*x^5 + d^6*x^6) + 60*b^2*(b*c - a*d)^4*(c + d*x)^2*Log[c + d*
x])/(4*d^7*(c + d*x)^2)
```

Maple [B] time = 0.014, size = 464, normalized size = 2.9

$$2\,{\frac{{b}^{5}{x}^{3}a}{{d}^{3}}}-{\frac{{b}^{6}{x}^{3}c}{{d}^{4}}}+{\frac{15\,{b}^{4}{x}^{2}{a}^{2}}{2\,{d}^{3}}}+3\,{\frac{{b}^{6}{x}^{2}{c}^{2}}{{d}^{5}}}+20\,{\frac{{a}^{3}{b}^{3}x}{{d}^{3}}}-10\,{\frac{{b}^{6}{c}^{3}x}{{d}^{6}}}+15\,{\frac{{b}^{2}\ln \left(dx+c \right) {a}^{4}}{{d}^{3}}}$$
$$+15\,{\frac{{b}^{6}\ln \left(dx+c \right) {c}^{4}}{{d}^{7}}}-{\frac{{b}^{6}{c}^{6}}{2\,{d}^{7} \left(dx+c \right) ^{2}}}-6\,{\frac{{a}^{5}b}{{d}^{2} \left(dx+c \right) }}+6\,{\frac{{b}^{6}{c}^{5}}{{d}^{7} \left(dx+c \right) }}+90\,{\frac{{b}^{4}\ln \left(dx+c \right) {a}^{2}{c}^{2}}{{d}^{5}}}$$
$$-60\,{\frac{{b}^{5}\ln \left(dx+c \right) a{c}^{3}}{{d}^{6}}}+3\,{\frac{{a}^{5}bc}{{d}^{2} \left(dx+c \right) ^{2}}}+36\,{\frac{a{b}^{5}{c}^{2}x}{{d}^{5}}}-9\,{\frac{{b}^{5}{x}^{2}ac}{{d}^{4}}}-45\,{\frac{{a}^{2}{b}^{4}cx}{{d}^{4}}}-{\frac{15\,{a}^{4}{b}^{2}{c}^{2}}{2\,{d}^{3} \left(dx+c \right) ^{2}}}$$
$$+10\,{\frac{{a}^{3}{b}^{3}{c}^{3}}{{d}^{4} \left(dx+c \right) ^{2}}}-{\frac{15\,{a}^{2}{b}^{4}{c}^{4}}{2\,{d}^{5} \left(dx+c \right) ^{2}}}+3\,{\frac{a{b}^{5}{c}^{5}}{{d}^{6} \left(dx+c \right) ^{2}}}+60\,{\frac{{a}^{2}{b}^{4}{c}^{3}}{{d}^{5} \left(dx+c \right) }}-30\,{\frac{a{b}^{5}{c}^{4}}{{d}^{6} \left(dx+c \right) }}$$
$$-60\,{\frac{{b}^{3}\ln \left(dx+c \right) {a}^{3}c}{{d}^{4}}}-{\frac{{a}^{6}}{2\,d \left(dx+c \right) ^{2}}}+{\frac{{b}^{6}{x}^{4}}{4\,{d}^{3}}}+30\,{\frac{{a}^{4}{b}^{2}c}{{d}^{3} \left(dx+c \right) }}-60\,{\frac{{a}^{3}{b}^{3}{c}^{2}}{{d}^{4} \left(dx+c \right) }}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^6/(d*x+c)^3,x)
```

```
[Out] 2*b^5/d^3*x^3*a-b^6/d^4*x^3*c+15/2*b^4/d^3*x^2*a^2+3*b^6/d^5*x^2*
c^2+20*b^3/d^3*a^3*x-10*b^6/d^6*c^3*x+15*b^2/d^3*ln(d*x+c)*a^4+15
*b^6/d^7*ln(d*x+c)*c^4-1/2/d^7/(d*x+c)^2*b^6*c^6-6*b/d^2/(d*x+c)*
a^5+6*b^6/d^7/(d*x+c)*c^5+90*b^4/d^5*ln(d*x+c)*a^2*c^2-60*b^5/d^6
*ln(d*x+c)*a*c^3+3/d^2/(d*x+c)^2*a^5*b*c+36*b^5/d^5*a*c^2*x-9*b^5
/d^4*x^2*a*c-45*b^4/d^4*a^2*c*x-15/2/d^3/(d*x+c)^2*a^4*b^2*c^2+10
```

```
/d^4/(d*x+c)^2*a^3*b^3*c^3-15/2/d^5/(d*x+c)^2*a^2*b^4*c^4+3/d^6/(
d*x+c)^2*a*b^5*c^5+60*b^4/d^5/(d*x+c)*a^2*c^3-30*b^5/d^6/(d*x+c)*
a*c^4-60*b^3/d^4*ln(d*x+c)*a^3*c-1/2/d/(d*x+c)^2*a^6+1/4*b^6/d^3*
x^4+30*b^2/d^3/(d*x+c)*a^4*c-60*b^3/d^4/(d*x+c)*a^3*c^2
```

Maxima [A] time = 1.36438, size = 491, normalized size = 3.11

$$\frac{11\,b^6c^6 - 54\,ab^5c^5d + 105\,a^2b^4c^4d^2 - 100\,a^3b^3c^3d^3 + 45\,a^4b^2c^2d^4 - 6\,a^5bcd^5 - a^6d^6 + 12\left(b^6c^5d - 5\,ab^5c^4d^2 + 10\,a^2b^4c^3d^3 - \right.}{2\left(d^9x^2 + 2\,cd^8x + c^2d^7\right)} + \frac{b^6d^3x^4 - 4\left(b^6cd^2 - 2\,ab^5d^3\right)x^3 + 6\left(2\,b^6c^2d - 6\,ab^5cd^2 + 5\,a^2b^4d^3\right)x^2 - 4\left(10\,b^6c^3 - 36\,ab^5c^2d + 45\,a^2b^4cd^2 - 20\,a^3b^3d^3\right)}{4\,d^6} + \frac{15\left(b^6c^4 - 4\,ab^5c^3d + 6\,a^2b^4c^2d^2 - 4\,a^3b^3cd^3 + a^4b^2d^4\right)\log\left(dx + c\right)}{d^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(11*b^6*c^6 - 54*a*b^5*c^5*d + 105*a^2*b^4*c^4*d^2 - 100*a^3*
b^3*c^3*d^3 + 45*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 - a^6*d^6 + 12*(
b^6*c^5*d - 5*a*b^5*c^4*d^2 + 10*a^2*b^4*c^3*d^3 - 10*a^3*b^3*c^2
*d^4 + 5*a^4*b^2*c*d^5 - a^5*b*d^6)*x)/(d^9*x^2 + 2*c*d^8*x + c^2
*d^7) + 1/4*(b^6*d^3*x^4 - 4*(b^6*c*d^2 - 2*a*b^5*d^3)*x^3 + 6*(2
*b^6*c^2*d - 6*a*b^5*c*d^2 + 5*a^2*b^4*d^3)*x^2 - 4*(10*b^6*c^3 -
 36*a*b^5*c^2*d + 45*a^2*b^4*c*d^2 - 20*a^3*b^3*d^3)*x)/d^6 + 15*
(b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 +
a^4*b^2*d^4)*log(d*x + c)/d^7
```

Fricas [A] time = 0.203701, size = 740, normalized size = 4.68

$$\frac{b^6d^6x^6 + 22\,b^6c^6 - 108\,ab^5c^5d + 210\,a^2b^4c^4d^2 - 200\,a^3b^3c^3d^3 + 90\,a^4b^2c^2d^4 - 12\,a^5bcd^5 - 2\,a^6d^6 - 2\left(b^6cd^5 - 4\,ab^5d^6\right)x^5 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(b^6*d^6*x^6 + 22*b^6*c^6 - 108*a*b^5*c^5*d + 210*a^2*b^4*c^4
*d^2 - 200*a^3*b^3*c^3*d^3 + 90*a^4*b^2*c^2*d^4 - 12*a^5*b*c*d^5
- 2*a^6*d^6 - 2*(b^6*c*d^5 - 4*a*b^5*d^6)*x^5 + 5*(b^6*c^2*d^4 -
4*a*b^5*c*d^5 + 6*a^2*b^4*d^6)*x^4 - 20*(b^6*c^3*d^3 - 4*a*b^5*c^
2*d^4 + 6*a^2*b^4*c*d^5 - 4*a^3*b^3*d^6)*x^3 - 2*(34*b^6*c^4*d^2
- 126*a*b^5*c^3*d^3 + 165*a^2*b^4*c^2*d^4 - 80*a^3*b^3*c*d^5)*x^2
 - 4*(4*b^6*c^5*d - 6*a*b^5*c^4*d^2 - 15*a^2*b^4*c^3*d^3 + 40*a^3
*b^3*c^2*d^4 - 30*a^4*b^2*c*d^5 + 6*a^5*b*d^6)*x + 60*(b^6*c^6 -
4*a*b^5*c^5*d + 6*a^2*b^4*c^4*d^2 - 4*a^3*b^3*c^3*d^3 + a^4*b^2*c
```

```
^2*d^4 + (b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a
^3*b^3*c*d^5 + a^4*b^2*d^6)*x^2 + 2*(b^6*c^5*d - 4*a*b^5*c^4*d^2
+ 6*a^2*b^4*c^3*d^3 - 4*a^3*b^3*c^2*d^4 + a^4*b^2*c*d^5)*x)*log(d
*x + c))/(d^9*x^2 + 2*c*d^8*x + c^2*d^7)
```

Sympy [A] time = 4.62533, size = 335, normalized size = 2.12

$$\frac{b^6x^4}{4d^3} + \frac{15b^2(ad-bc)^4\log(c+dx)}{d^7}$$
$$-\frac{a^6d^6 + 6a^5bcd^5 - 45a^4b^2c^2d^4 + 100a^3b^3c^3d^3 - 105a^2b^4c^4d^2 + 54ab^5c^5d - 11b^6c^6 + x\left(12a^5bd^6 - 60a^4b^2cd^5 + 120a^3b^3c^2d^4\right.}{2c^2d^7 + 4cd^8x + 2d^9x^2}$$
$$+\frac{x^3\left(2ab^5d - b^6c\right)}{d^4} + \frac{x^2\left(15a^2b^4d^2 - 18ab^5cd + 6b^6c^2\right)}{2d^5} + \frac{x\left(20a^3b^3d^3 - 45a^2b^4cd^2 + 36ab^5c^2d - 10b^6c^3\right)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**6/(d*x+c)**3,x)
```

```
[Out] b**6*x**4/(4*d**3) + 15*b**2*(a*d - b*c)**4*log(c + d*x)/d**7 - (
a**6*d**6 + 6*a**5*b*c*d**5 - 45*a**4*b**2*c**2*d**4 + 100*a**3*b
**3*c**3*d**3 - 105*a**2*b**4*c**4*d**2 + 54*a*b**5*c**5*d - 11*b
**6*c**6 + x*(12*a**5*b*d**6 - 60*a**4*b**2*c*d**5 + 120*a**3*b**
3*c**2*d**4 - 120*a**2*b**4*c**3*d**3 + 60*a*b**5*c**4*d**2 - 12*
b**6*c**5*d))/(2*c**2*d**7 + 4*c*d**8*x + 2*d**9*x**2) + x**3*(2*
a*b**5*d - b**6*c)/d**4 + x**2*(15*a**2*b**4*d**2 - 18*a*b**5*c*d
 + 6*b**6*c**2)/(2*d**5) + x*(20*a**3*b**3*d**3 - 45*a**2*b**4*c*
d**2 + 36*a*b**5*c**2*d - 10*b**6*c**3)/d**6
```

GIAC/XCAS [A] time = 0.218269, size = 489, normalized size = 3.09

$$\frac{15\left(b^6c^4 - 4\,ab^5c^3d + 6\,a^2b^4c^2d^2 - 4\,a^3b^3cd^3 + a^4b^2d^4\right)\ln\left(|dx+c|\right)}{d^7}$$
$$+\frac{11\,b^6c^6 - 54\,ab^5c^5d + 105\,a^2b^4c^4d^2 - 100\,a^3b^3c^3d^3 + 45\,a^4b^2c^2d^4 - 6\,a^5bcd^5 - a^6d^6 + 12\left(b^6c^5d - 5\,ab^5c^4d^2 + 10\,a^2b^4c^3d^3\right.}{2\,(dx+c)^2d^7}$$
$$+\frac{b^6d^9x^4 - 4\,b^6cd^8x^3 + 8\,ab^5d^9x^3 + 12\,b^6c^2d^7x^2 - 36\,ab^5cd^8x^2 + 30\,a^2b^4d^9x^2 - 40\,b^6c^3d^6x + 144\,ab^5c^2d^7x - 180\,a^2b^4cd^8x +}{4\,d^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 15*(b^6*c^4 - 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3
 + a^4*b^2*d^4)*ln(abs(d*x + c))/d^7 + 1/2*(11*b^6*c^6 - 54*a*b^5
*c^5*d + 105*a^2*b^4*c^4*d^2 - 100*a^3*b^3*c^3*d^3 + 45*a^4*b^2*c
^2*d^4 - 6*a^5*b*c*d^5 - a^6*d^6 + 12*(b^6*c^5*d - 5*a*b^5*c^4*d^
```

```
2 + 10*a^2*b^4*c^3*d^3 - 10*a^3*b^3*c^2*d^4 + 5*a^4*b^2*c*d^5 - a
^5*b*d^6)*x)/((d*x + c)^2*d^7) + 1/4*(b^6*d^9*x^4 - 4*b^6*c*d^8*x
^3 + 8*a*b^5*d^9*x^3 + 12*b^6*c^2*d^7*x^2 - 36*a*b^5*c*d^8*x^2 +
30*a^2*b^4*d^9*x^2 - 40*b^6*c^3*d^6*x + 144*a*b^5*c^2*d^7*x - 180
*a^2*b^4*c*d^8*x + 80*a^3*b^3*d^9*x)/d^12
```

3.1353 $\int \frac{(a+bx)^5}{(c+dx)^3} dx$

Optimal. Leaf size=133

$$-\frac{5b^4(c+dx)^2(bc-ad)}{2d^6}+\frac{10b^3x(bc-ad)^2}{d^5}-\frac{10b^2(bc-ad)^3\log(c+dx)}{d^6}-\frac{5b(bc-ad)^4}{d^6(c+dx)}+\frac{(bc-ad)^5}{2d^6(c+dx)^2}+\frac{b^5(c+dx)^3}{3d^6}$$

```
[Out] (10*b^3*(b*c - a*d)^2*x)/d^5 + (b*c - a*d)^5/(2*d^6*(c + d*x)^2)
- (5*b*(b*c - a*d)^4)/(d^6*(c + d*x)) - (5*b^4*(b*c - a*d)*(c + d
*x)^2)/(2*d^6) + (b^5*(c + d*x)^3)/(3*d^6) - (10*b^2*(b*c - a*d)^
3*Log[c + d*x])/d^6
```

Rubi [A] time = 0.263985, antiderivative size = 133, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{5b^4(c+dx)^2(bc-ad)}{2d^6}+\frac{10b^3x(bc-ad)^2}{d^5}-\frac{10b^2(bc-ad)^3\log(c+dx)}{d^6}-\frac{5b(bc-ad)^4}{d^6(c+dx)}+\frac{(bc-ad)^5}{2d^6(c+dx)^2}+\frac{b^5(c+dx)^3}{3d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(c + d*x)^3,x]
```

```
[Out] (10*b^3*(b*c - a*d)^2*x)/d^5 + (b*c - a*d)^5/(2*d^6*(c + d*x)^2)
- (5*b*(b*c - a*d)^4)/(d^6*(c + d*x)) - (5*b^4*(b*c - a*d)*(c + d
*x)^2)/(2*d^6) + (b^5*(c + d*x)^3)/(3*d^6) - (10*b^2*(b*c - a*d)^
3*Log[c + d*x])/d^6
```

Rubi in Sympy [A] time = 40.5298, size = 121, normalized size = 0.91

$$\frac{b^5\left(c+dx\right)^3}{3d^6}+\frac{5b^4\left(c+dx\right)^2\left(ad-bc\right)}{2d^6}+\frac{10b^3x\left(ad-bc\right)^2}{d^5}+\frac{10b^2\left(ad-bc\right)^3\log\left(c+dx\right)}{d^6}-\frac{5b\left(ad-bc\right)^4}{d^6\left(c+dx\right)}-\frac{\left(ad-bc\right)^5}{2d^6\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c)**3,x)
```

```
[Out] b**5*(c + d*x)**3/(3*d**6) + 5*b**4*(c + d*x)**2*(a*d - b*c)/(2*d
**6) + 10*b**3*x*(a*d - b*c)**2/d**5 + 10*b**2*(a*d - b*c)**3*log
```

```
(c + d*x)/d**6 - 5*b*(a*d - b*c)**4/(d**6*(c + d*x)) - (a*d - b*c
)**5/(2*d**6*(c + d*x)**2)
```

Mathematica [A] time = 0.136562, size = 230, normalized size = 1.73

$$\frac{-3a^5d^5 - 15a^4bd^4(c+2dx) + 30a^3b^2cd^3(3c+4dx) + 30a^2b^3d^2\left(-5c^3 - 4c^2dx + 4cd^2x^2 + 2d^3x^3\right) + 15ab^4d\left(7c^4 + 2c^3dx - 1\right.}{6d^6(}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(c + d*x)^3,x]
```

```
[Out] (-3*a^5*d^5 - 15*a^4*b*d^4*(c + 2*d*x) + 30*a^3*b^2*c*d^3*(3*c +
4*d*x) + 30*a^2*b^3*d^2*(-5*c^3 - 4*c^2*d*x + 4*c*d^2*x^2 + 2*d^3
*x^3) + 15*a*b^4*d*(7*c^4 + 2*c^3*d*x - 11*c^2*d^2*x^2 - 4*c*d^3*
x^3 + d^4*x^4) + b^5*(-27*c^5 + 6*c^4*d*x + 63*c^3*d^2*x^2 + 20*c
^2*d^3*x^3 - 5*c*d^4*x^4 + 2*d^5*x^5) - 60*b^2*(b*c - a*d)^3*(c +
 d*x)^2*Log[c + d*x])/(6*d^6*(c + d*x)^2)
```

Maple [B] time = 0.013, size = 346, normalized size = 2.6

$$\frac{b^5x^3}{3d^3} + \frac{5ab^4x^2}{2d^3} - \frac{3b^5x^2c}{2d^4} + 10\frac{a^2b^3x}{d^3} - 15\frac{ab^4cx}{d^4} + 6\frac{b^5c^2x}{d^5} + 10\frac{b^2\ln(dx+c)a^3}{d^3} - 30\frac{b^3\ln(dx+c)a^2c}{d^4} + 30\frac{b^4\ln(dx+c)ac^2}{d^5} - 10\frac{b^5\ln(dx+c)c^3}{d^6} - \frac{a^5}{2d(dx+c)^2} + \frac{5a^4bc}{2d^2(dx+c)^2} - 5\frac{a^3b^2c^2}{d^3(dx+c)^2} + 5\frac{a^2b^3c^3}{d^4(dx+c)^2} - \frac{5ab^4c^4}{2d^5(dx+c)^2} + \frac{b^5c^5}{2d^6(dx+c)^2} - 5\frac{a^4b}{d^2(dx+c)} + 20\frac{a^3b^2c}{d^3(dx+c)} - 30\frac{a^2b^3c^2}{d^4(dx+c)} + 20\frac{ab^4c^3}{d^5(dx+c)} - 5\frac{b^5c^4}{d^6(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c)^3,x)
```

```
[Out] 1/3*b^5/d^3*x^3+5/2*b^4/d^3*x^2*a-3/2*b^5/d^4*x^2*c+10*b^3/d^3*a^
2*x-15*b^4/d^4*a*c*x+6*b^5/d^5*c^2*x+10*b^2/d^3*ln(d*x+c)*a^3-30*
b^3/d^4*ln(d*x+c)*a^2*c+30*b^4/d^5*ln(d*x+c)*a*c^2-10*b^5/d^6*ln(
d*x+c)*c^3-1/2/d/(d*x+c)^2*a^5+5/2/d^2/(d*x+c)^2*a^4*b*c-5/d^3/(d
*x+c)^2*a^3*b^2*c^2+5/d^4/(d*x+c)^2*a^2*b^3*c^3-5/2/d^5/(d*x+c)^2
*a*b^4*c^4+1/2/d^6/(d*x+c)^2*b^5*c^5-5*b/d^2/(d*x+c)*a^4+20*b^2/d
^3/(d*x+c)*a^3*c-30*b^3/d^4/(d*x+c)*a^2*c^2+20*b^4/d^5/(d*x+c)*a*
c^3-5*b^5/d^6/(d*x+c)*c^4
```

Maxima [A] time = 1.38576, size = 366, normalized size = 2.75

$$-\frac{9\,b^5c^5 - 35\,ab^4c^4d + 50\,a^2b^3c^3d^2 - 30\,a^3b^2c^2d^3 + 5\,a^4bcd^4 + a^5d^5 + 10\,\left(b^5c^4d - 4\,ab^4c^3d^2 + 6\,a^2b^3c^2d^3 - 4\,a^3b^2cd^4 + a^4bd}{2\,(d^8x^2 + 2\,cd^7x + c^2d^6)}$$
$$+\frac{2\,b^5d^2x^3 - 3\,\left(3\,b^5cd - 5\,ab^4d^2\right)x^2 + 6\,\left(6\,b^5c^2 - 15\,ab^4cd + 10\,a^2b^3d^2\right)x}{6\,d^5}$$
$$-\frac{10\,\left(b^5c^3 - 3\,ab^4c^2d + 3\,a^2b^3cd^2 - a^3b^2d^3\right)\log\left(dx + c\right)}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*b^5*c^5 - 35*a*b^4*c^4*d + 50*a^2*b^3*c^3*d^2 - 30*a^3*b^
2*c^2*d^3 + 5*a^4*b*c*d^4 + a^5*d^5 + 10*(b^5*c^4*d - 4*a*b^4*c^3
*d^2 + 6*a^2*b^3*c^2*d^3 - 4*a^3*b^2*c*d^4 + a^4*b*d^5)*x)/(d^8*x
^2 + 2*c*d^7*x + c^2*d^6) + 1/6*(2*b^5*d^2*x^3 - 3*(3*b^5*c*d - 5
*a*b^4*d^2)*x^2 + 6*(6*b^5*c^2 - 15*a*b^4*c*d + 10*a^2*b^3*d^2)*x
)/d^5 - 10*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d
^3)*log(d*x + c)/d^6
```

Fricas [A] time = 0.209958, size = 562, normalized size = 4.23

$$\frac{2\,b^5d^5x^5 - 27\,b^5c^5 + 105\,ab^4c^4d - 150\,a^2b^3c^3d^2 + 90\,a^3b^2c^2d^3 - 15\,a^4bcd^4 - 3\,a^5d^5 - 5\,\left(b^5cd^4 - 3\,ab^4d^5\right)x^4 + 20\,\left(b^5c^2d^3 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^5*d^5*x^5 - 27*b^5*c^5 + 105*a*b^4*c^4*d - 150*a^2*b^3*c
^3*d^2 + 90*a^3*b^2*c^2*d^3 - 15*a^4*b*c*d^4 - 3*a^5*d^5 - 5*(b^5
*c*d^4 - 3*a*b^4*d^5)*x^4 + 20*(b^5*c^2*d^3 - 3*a*b^4*c*d^4 + 3*a
^2*b^3*d^5)*x^3 + 3*(21*b^5*c^3*d^2 - 55*a*b^4*c^2*d^3 + 40*a^2*b
^3*c*d^4)*x^2 + 6*(b^5*c^4*d + 5*a*b^4*c^3*d^2 - 20*a^2*b^3*c^2*d
^3 + 20*a^3*b^2*c*d^4 - 5*a^4*b*d^5)*x - 60*(b^5*c^5 - 3*a*b^4*c^
4*d + 3*a^2*b^3*c^3*d^2 - a^3*b^2*c^2*d^3 + (b^5*c^3*d^2 - 3*a*b^
4*c^2*d^3 + 3*a^2*b^3*c*d^4 - a^3*b^2*d^5)*x^2 + 2*(b^5*c^4*d - 3
*a*b^4*c^3*d^2 + 3*a^2*b^3*c^2*d^3 - a^3*b^2*c*d^4)*x)*log(d*x +
c))/(d^8*x^2 + 2*c*d^7*x + c^2*d^6)
```

Sympy [A] time = 3.63093, size = 253, normalized size = 1.9

$$\frac{b^5x^3}{3d^3} + \frac{10b^2(ad-bc)^3\log(c+dx)}{d^6} - \frac{a^5d^5 + 5a^4bcd^4 - 30a^3b^2c^2d^3 + 50a^2b^3c^3d^2 - 35ab^4c^4d + 9b^5c^5 + x\left(10a^4bd^5 - 40a^3b^2cd^4 + 60a^2b^3c^2d^3 - 40ab^4c^3d^2 + 10\ldots\right.}{2c^2d^6 + 4cd^7x + 2d^8x^2} + \frac{x^2\left(5ab^4d - 3b^5c\right)}{2d^4} + \frac{x\left(10a^2b^3d^2 - 15ab^4cd + 6b^5c^2\right)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c)**3,x)
```

```
[Out] b**5*x**3/(3*d**3) + 10*b**2*(a*d - b*c)**3*log(c + d*x)/d**6 - (
a**5*d**5 + 5*a**4*b*c*d**4 - 30*a**3*b**2*c**2*d**3 + 50*a**2*b*
*3*c**3*d**2 - 35*a*b**4*c**4*d + 9*b**5*c**5 + x*(10*a**4*b*d**5
 - 40*a**3*b**2*c*d**4 + 60*a**2*b**3*c**2*d**3 - 40*a*b**4*c**3*
d**2 + 10*b**5*c**4*d))/(2*c**2*d**6 + 4*c*d**7*x + 2*d**8*x**2)
+ x**2*(5*a*b**4*d - 3*b**5*c)/(2*d**4) + x*(10*a**2*b**3*d**2 -
15*a*b**4*c*d + 6*b**5*c**2)/d**5
```

GIAC/XCAS [A] time = 0.224181, size = 356, normalized size = 2.68

$$-\frac{10\left(b^5c^3 - 3\,ab^4c^2d + 3\,a^2b^3cd^2 - a^3b^2d^3\right)\ln\left(|dx+c|\right)}{d^6} - \frac{9\,b^5c^5 - 35\,ab^4c^4d + 50\,a^2b^3c^3d^2 - 30\,a^3b^2c^2d^3 + 5\,a^4bcd^4 + a^5d^5 + 10\left(b^5c^4d - 4\,ab^4c^3d^2 + 6\,a^2b^3c^2d^3 - 4\,a^3b^2cd^4 + a^4b\ldots\right.}{2\,(dx+c)^2d^6} + \frac{2\,b^5d^6x^3 - 9\,b^5cd^5x^2 + 15\,ab^4d^6x^2 + 36\,b^5c^2d^4x - 90\,ab^4cd^5x + 60\,a^2b^3d^6x}{6\,d^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] -10*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*ln(
abs(d*x + c))/d^6 - 1/2*(9*b^5*c^5 - 35*a*b^4*c^4*d + 50*a^2*b^3*
c^3*d^2 - 30*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 + a^5*d^5 + 10*(b^5*
c^4*d - 4*a*b^4*c^3*d^2 + 6*a^2*b^3*c^2*d^3 - 4*a^3*b^2*c*d^4 + a
^4*b*d^5)*x)/((d*x + c)^2*d^6) + 1/6*(2*b^5*d^6*x^3 - 9*b^5*c*d^5
*x^2 + 15*a*b^4*d^6*x^2 + 36*b^5*c^2*d^4*x - 90*a*b^4*c*d^5*x + 6
0*a^2*b^3*d^6*x)/d^9
```

3.1354 $\int \frac{(a+bx)^4}{(c+dx)^3}\,dx$

Optimal. Leaf size=103

$$-\frac{b^3x(3bc-4ad)}{d^4}+\frac{6b^2(bc-ad)^2\log(c+dx)}{d^5}+\frac{4b(bc-ad)^3}{d^5(c+dx)}-\frac{(bc-ad)^4}{2d^5(c+dx)^2}+\frac{b^4x^2}{2d^3}$$

```
[Out] -((b^3*(3*b*c - 4*a*d)*x)/d^4) + (b^4*x^2)/(2*d^3) - (b*c - a*d)^
4/(2*d^5*(c + d*x)^2) + (4*b*(b*c - a*d)^3)/(d^5*(c + d*x)) + (6*
b^2*(b*c - a*d)^2*Log[c + d*x])/d^5
```

Rubi [A] time = 0.194196, antiderivative size = 103, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{b^3x(3bc-4ad)}{d^4}+\frac{6b^2(bc-ad)^2\log(c+dx)}{d^5}+\frac{4b(bc-ad)^3}{d^5(c+dx)}-\frac{(bc-ad)^4}{2d^5(c+dx)^2}+\frac{b^4x^2}{2d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/(c + d*x)^3,x]
```

```
[Out] -((b^3*(3*b*c - 4*a*d)*x)/d^4) + (b^4*x^2)/(2*d^3) - (b*c - a*d)^
4/(2*d^5*(c + d*x)^2) + (4*b*(b*c - a*d)^3)/(d^5*(c + d*x)) + (6*
b^2*(b*c - a*d)^2*Log[c + d*x])/d^5
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b^4\int x\,dx}{d^3}+\frac{6b^2(ad-bc)^2\log(c+dx)}{d^5}-\frac{4b(ad-bc)^3}{d^5(c+dx)}+\frac{(4ad-3bc)\int b^3\,dx}{d^4}-\frac{(ad-bc)^4}{2d^5(c+dx)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c)**3,x)
```

```
[Out] b**4*Integral(x, x)/d**3 + 6*b**2*(a*d - b*c)**2*log(c + d*x)/d**
5 - 4*b*(a*d - b*c)**3/(d**5*(c + d*x)) + (4*a*d - 3*b*c)*Integra
l(b**3, x)/d**4 - (a*d - b*c)**4/(2*d**5*(c + d*x)**2)
```

Mathematica [A] time = 0.0970992, size = 167, normalized size = 1.62

$$\frac{-a^4d^4-4a^3bd^3(c+2dx)+6a^2b^2cd^2(3c+4dx)+4ab^3d\left(-5c^3-4c^2dx+4cd^2x^2+2d^3x^3\right)+12b^2(c+dx)^2(bc-ad)^2\log(c+}{2d^5(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/(c + d*x)^3,x]
```

```
[Out] (-(a^4*d^4) - 4*a^3*b*d^3*(c + 2*d*x) + 6*a^2*b^2*c*d^2*(3*c + 4*
d*x) + 4*a*b^3*d*(-5*c^3 - 4*c^2*d*x + 4*c*d^2*x^2 + 2*d^3*x^3) +
 b^4*(7*c^4 + 2*c^3*d*x - 11*c^2*d^2*x^2 - 4*c*d^3*x^3 + d^4*x^4)
 + 12*b^2*(b*c - a*d)^2*(c + d*x)^2*Log[c + d*x])/(2*d^5*(c + d*x
)^2)
```

Maple [B] time = 0.013, size = 245, normalized size = 2.4

$$\frac{b^4x^2}{2\,d^3}+4\,\frac{ab^3x}{d^3}-3\,\frac{b^4cx}{d^4}+6\,\frac{b^2\ln(dx+c)\,a^2}{d^3}-12\,\frac{b^3\ln(dx+c)\,ac}{d^4}+6\,\frac{b^4\ln(dx+c)\,c^2}{d^5}-\frac{a^4}{2\,d\,(dx+c)^2}+2\,\frac{a^3bc}{d^2\,(dx+c)^2}-3\,\frac{a^2b^2c^2}{d^3\,(dx+c)^2}+2\,\frac{ab^3c^3}{d^4\,(dx+c)^2}-\frac{b^4c^4}{2\,d^5\,(dx+c)^2}-4\,\frac{a^3b}{d^2\,(dx+c)}+12\,\frac{a^2b^2c}{d^3\,(dx+c)}-12\,\frac{ab^3c^2}{d^4\,(dx+c)}+4\,\frac{b^4c^3}{d^5\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c)^3,x)
```

```
[Out] 1/2*b^4*x^2/d^3+4*a*b^3*x/d^3-3*b^4*c*x/d^4+6*b^2/d^3*ln(d*x+c)*a
^2-12*b^3/d^4*ln(d*x+c)*a*c+6*b^4/d^5*ln(d*x+c)*c^2-1/2/d/(d*x+c)
^2*a^4+2/d^2/(d*x+c)^2*a^3*b*c-3/d^3/(d*x+c)^2*a^2*b^2*c^2+2/d^4/
(d*x+c)^2*a*b^3*c^3-1/2/d^5/(d*x+c)^2*b^4*c^4-4*b/d^2/(d*x+c)*a^3
+12*b^2/d^3/(d*x+c)*a^2*c-12*b^3/d^4/(d*x+c)*a*c^2+4*b^4/d^5/(d*x
+c)*c^3
```

Maxima [A] time = 1.34046, size = 258, normalized size = 2.5

$$\frac{7\,b^4c^4-20\,ab^3c^3d+18\,a^2b^2c^2d^2-4\,a^3bcd^3-a^4d^4+8\left(b^4c^3d-3\,ab^3c^2d^2+3\,a^2b^2cd^3-a^3bd^4\right)x}{2\left(d^7x^2+2\,cd^6x+c^2d^5\right)}+\frac{b^4dx^2-2\left(3\,b^4c-4\,ab^3d\right)x}{2\,d^4}+\frac{6\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)\log\left(dx+c\right)}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(7*b^4*c^4 - 20*a*b^3*c^3*d + 18*a^2*b^2*c^2*d^2 - 4*a^3*b*c*
d^3 - a^4*d^4 + 8*(b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3
- a^3*b*d^4)*x)/(d^7*x^2 + 2*c*d^6*x + c^2*d^5) + 1/2*(b^4*d*x^2
```

```
- 2*(3*b^4*c - 4*a*b^3*d)*x)/d^4 + 6*(b^4*c^2 - 2*a*b^3*c*d + a^2
*b^2*d^2)*log(d*x + c)/d^5
```

Fricas [A] time = 0.203863, size = 393, normalized size = 3.82

$$\underline{b^4d^4x^4 + 7\,b^4c^4 - 20\,ab^3c^3d + 18\,a^2b^2c^2d^2 - 4\,a^3bcd^3 - a^4d^4 - 4\left(b^4cd^3 - 2\,ab^3d^4\right)x^3 - \left(11\,b^4c^2d^2 - 16\,ab^3cd^3\right)x^2 + 2\left(b^4c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*d^4*x^4 + 7*b^4*c^4 - 20*a*b^3*c^3*d + 18*a^2*b^2*c^2*d^
2 - 4*a^3*b*c*d^3 - a^4*d^4 - 4*(b^4*c*d^3 - 2*a*b^3*d^4)*x^3 - (
11*b^4*c^2*d^2 - 16*a*b^3*c*d^3)*x^2 + 2*(b^4*c^3*d - 8*a*b^3*c^2
*d^2 + 12*a^2*b^2*c*d^3 - 4*a^3*b*d^4)*x + 12*(b^4*c^4 - 2*a*b^3*
c^3*d + a^2*b^2*c^2*d^2 + (b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*
d^4)*x^2 + 2*(b^4*c^3*d - 2*a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*log
(d*x + c))/(d^7*x^2 + 2*c*d^6*x + c^2*d^5)
```

Sympy [A] time = 2.71003, size = 184, normalized size = 1.79

$$\frac{b^4x^2}{2d^3} + \frac{6b^2\left(ad-bc\right)^2\log\left(c+dx\right)}{d^5} - \frac{a^4d^4 + 4a^3bcd^3 - 18a^2b^2c^2d^2 + 20ab^3c^3d - 7b^4c^4 + x\left(8a^3bd^4 - 24a^2b^2cd^3 + 24ab^3c^2d^2 - 8b^4c^3d\right)}{2c^2d^5 + 4cd^6x + 2d^7x^2} + \frac{x\left(4ab^3d - 3b^4c\right)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c)**3,x)
```

```
[Out] b**4*x**2/(2*d**3) + 6*b**2*(a*d - b*c)**2*log(c + d*x)/d**5 - (a
**4*d**4 + 4*a**3*b*c*d**3 - 18*a**2*b**2*c**2*d**2 + 20*a*b**3*c
**3*d - 7*b**4*c**4 + x*(8*a**3*b*d**4 - 24*a**2*b**2*c*d**3 + 24
*a*b**3*c**2*d**2 - 8*b**4*c**3*d))/(2*c**2*d**5 + 4*c*d**6*x + 2
*d**7*x**2) + x*(4*a*b**3*d - 3*b**4*c)/d**4
```

GIAC/XCAS [A] time = 0.220312, size = 247, normalized size = 2.4

$$\frac{6\left(b^4c^2 - 2\,ab^3cd + a^2b^2d^2\right)\ln\left(|dx + c|\right)}{d^5} + \frac{b^4d^3x^2 - 6\,b^4cd^2x + 8\,ab^3d^3x}{2\,d^6} + \frac{7\,b^4c^4 - 20\,ab^3c^3d + 18\,a^2b^2c^2d^2 - 4\,a^3bcd^3 - a^4d^4 + 8\left(b^4c^3d - 3\,ab^3c^2d^2 + 3\,a^2b^2cd^3 - a^3bd^4\right)x}{2\,(dx + c)^2d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] 6*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*ln(abs(d*x + c))/d^5 + 1/
2*(b^4*d^3*x^2 - 6*b^4*c*d^2*x + 8*a*b^3*d^3*x)/d^6 + 1/2*(7*b^4*
c^4 - 20*a*b^3*c^3*d + 18*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 - a^4*d
^4 + 8*(b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4
)*x)/((d*x + c)^2*d^5)
```

3.1355 $\int \frac{(a+bx)^3}{(c+dx)^3}\,dx$

Optimal. Leaf size=78

$$-\frac{3b^2(bc-ad)\log(c+dx)}{d^4}-\frac{3b(bc-ad)^2}{d^4(c+dx)}+\frac{(bc-ad)^3}{2d^4(c+dx)^2}+\frac{b^3x}{d^3}$$

```
[Out] (b^3*x)/d^3 + (b*c - a*d)^3/(2*d^4*(c + d*x)^2) - (3*b*(b*c - a*d
)^2)/(d^4*(c + d*x)) - (3*b^2*(b*c - a*d)*Log[c + d*x])/d^4
```

Rubi [A] time = 0.132393, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3b^2(bc-ad)\log(c+dx)}{d^4}-\frac{3b(bc-ad)^2}{d^4(c+dx)}+\frac{(bc-ad)^3}{2d^4(c+dx)^2}+\frac{b^3x}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/(c + d*x)^3,x]
```

```
[Out] (b^3*x)/d^3 + (b*c - a*d)^3/(2*d^4*(c + d*x)^2) - (3*b*(b*c - a*d
)^2)/(d^4*(c + d*x)) - (3*b^2*(b*c - a*d)*Log[c + d*x])/d^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{3b^2\left(ad-bc\right)\log\left(c+dx\right)}{d^4}-\frac{3b\left(ad-bc\right)^2}{d^4\left(c+dx\right)}+\frac{\int b^3\,dx}{d^3}-\frac{\left(ad-bc\right)^3}{2d^4\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c)**3,x)
```

```
[Out] 3*b**2*(a*d - b*c)*log(c + d*x)/d**4 - 3*b*(a*d - b*c)**2/(d**4*(
c + d*x)) + Integral(b**3, x)/d**3 - (a*d - b*c)**3/(2*d**4*(c +
d*x)**2)
```

Mathematica [A] time = 0.0676342, size = 114, normalized size = 1.46

$$\frac{-a^3d^3-3a^2bd^2(c+2dx)+3ab^2cd(3c+4dx)-6b^2(c+dx)^2(bc-ad)\log(c+dx)+b^3\left(-5c^3-4c^2dx+4cd^2x^2+2d^3x^3\right)}{2d^4(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/(c + d*x)^3,x]
```

```
[Out] (-(a^3*d^3) - 3*a^2*b*d^2*(c + 2*d*x) + 3*a*b^2*c*d*(3*c + 4*d*x)
 + b^3*(-5*c^3 - 4*c^2*d*x + 4*c*d^2*x^2 + 2*d^3*x^3) - 6*b^2*(b*
c - a*d)*(c + d*x)^2*Log[c + d*x])/(2*d^4*(c + d*x)^2)
```

Maple [B] time = 0.01, size = 160, normalized size = 2.1

$$\frac{b^3x}{d^3} + 3\,\frac{b^2\ln(dx+c)\,a}{d^3} - 3\,\frac{b^3\ln(dx+c)\,c}{d^4} - \frac{a^3}{2\,d\,(dx+c)^2} + \frac{3\,a^2bc}{2\,d^2\,(dx+c)^2} - \frac{3\,ab^2c^2}{2\,d^3\,(dx+c)^2} + \frac{b^3c^3}{2\,d^4\,(dx+c)^2} - 3\,\frac{a^2b}{d^2\,(dx+c)} + 6\,\frac{ab^2c}{d^3\,(dx+c)} - 3\,\frac{b^3c^2}{d^4\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c)^3,x)
```

```
[Out] b^3*x/d^3+3*b^2/d^3*ln(d*x+c)*a-3*b^3/d^4*ln(d*x+c)*c-1/2/d/(d*x+
c)^2*a^3+3/2/d^2/(d*x+c)^2*a^2*b*c-3/2/d^3/(d*x+c)^2*a*b^2*c^2+1/
2/d^4/(d*x+c)^2*b^3*c^3-3*b/d^2/(d*x+c)*a^2+6*b^2/d^3/(d*x+c)*a*c
-3*b^3/d^4/(d*x+c)*c^2
```

Maxima [A] time = 1.33727, size = 169, normalized size = 2.17

$$\frac{b^3x}{d^3} - \frac{5\,b^3c^3 - 9\,ab^2c^2d + 3\,a^2bcd^2 + a^3d^3 + 6\left(b^3c^2d - 2\,ab^2cd^2 + a^2bd^3\right)x}{2\left(d^6x^2 + 2\,cd^5x + c^2d^4\right)} - \frac{3\left(b^3c - ab^2d\right)\log\left(dx+c\right)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] b^3*x/d^3 - 1/2*(5*b^3*c^3 - 9*a*b^2*c^2*d + 3*a^2*b*c*d^2 + a^3*
d^3 + 6*(b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d^3)*x)/(d^6*x^2 + 2*c
*d^5*x + c^2*d^4) - 3*(b^3*c - a*b^2*d)*log(d*x + c)/d^4
```

Fricas [A] time = 0.210112, size = 254, normalized size = 3.26

$$\frac{2\,b^3d^3x^3 + 4\,b^3cd^2x^2 - 5\,b^3c^3 + 9\,ab^2c^2d - 3\,a^2bcd^2 - a^3d^3 - 2\left(2\,b^3c^2d - 6\,ab^2cd^2 + 3\,a^2bd^3\right)x - 6\,\left(b^3c^3 - ab^2c^2d + \left(b^3cd^2\right.\right.}{2\left(d^6x^2 + 2\,cd^5x + c^2d^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*d^3*x^3 + 4*b^3*c*d^2*x^2 - 5*b^3*c^3 + 9*a*b^2*c^2*d
- 3*a^2*b*c*d^2 - a^3*d^3 - 2*(2*b^3*c^2*d - 6*a*b^2*c*d^2 + 3*a^
2*b*d^3)*x - 6*(b^3*c^3 - a*b^2*c^2*d + (b^3*c*d^2 - a*b^2*d^3)*x
^2 + 2*(b^3*c^2*d - a*b^2*c*d^2)*x)*log(d*x + c))/(d^6*x^2 + 2*c*
d^5*x + c^2*d^4)
```

Sympy [A] time = 1.95493, size = 128, normalized size = 1.64

$$\frac{b^3x}{d^3}+\frac{3b^2\left(ad-bc\right)\log\left(c+dx\right)}{d^4}-\frac{a^3d^3+3a^2bcd^2-9ab^2c^2d+5b^3c^3+x\left(6a^2bd^3-12ab^2cd^2+6b^3c^2d\right)}{2c^2d^4+4cd^5x+2d^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c)**3,x)
```

```
[Out] b**3*x/d**3 + 3*b**2*(a*d - b*c)*log(c + d*x)/d**4 - (a**3*d**3 +
 3*a**2*b*c*d**2 - 9*a*b**2*c**2*d + 5*b**3*c**3 + x*(6*a**2*b*d*
*3 - 12*a*b**2*c*d**2 + 6*b**3*c**2*d))/(2*c**2*d**4 + 4*c*d**5*x
 + 2*d**6*x**2)
```

GIAC/XCAS [A] time = 0.226194, size = 151, normalized size = 1.94

$$\frac{b^3x}{d^3}-\frac{3\left(b^3c-ab^2d\right)\ln\left(|dx+c|\right)}{d^4}-\frac{5\,b^3c^3-9\,ab^2c^2d+3\,a^2bcd^2+a^3d^3+6\left(b^3c^2d-2\,ab^2cd^2+a^2bd^3\right)x}{2\left(dx+c\right)^2d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] b^3*x/d^3 - 3*(b^3*c - a*b^2*d)*ln(abs(d*x + c))/d^4 - 1/2*(5*b^3
*c^3 - 9*a*b^2*c^2*d + 3*a^2*b*c*d^2 + a^3*d^3 + 6*(b^3*c^2*d - 2
*a*b^2*c*d^2 + a^2*b*d^3)*x)/((d*x + c)^2*d^4)
```

3.1356 $\int \frac{(a+bx)^2}{(c+dx)^3}\,dx$

Optimal. Leaf size=59

$$\frac{2b(bc-ad)}{d^3(c+dx)}-\frac{(bc-ad)^2}{2d^3(c+dx)^2}+\frac{b^2\log(c+dx)}{d^3}$$

```
[Out] -(b*c - a*d)^2/(2*d^3*(c + d*x)^2) + (2*b*(b*c - a*d))/(d^3*(c +
d*x)) + (b^2*Log[c + d*x])/d^3
```

Rubi [A] time = 0.0890298, antiderivative size = 59, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2b(bc-ad)}{d^3(c+dx)}-\frac{(bc-ad)^2}{2d^3(c+dx)^2}+\frac{b^2\log(c+dx)}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c + d*x)^3,x]
```

```
[Out] -(b*c - a*d)^2/(2*d^3*(c + d*x)^2) + (2*b*(b*c - a*d))/(d^3*(c +
d*x)) + (b^2*Log[c + d*x])/d^3
```

Rubi in Sympy [A] time = 16.9082, size = 51, normalized size = 0.86

$$\frac{b^2\log\left(c+dx\right)}{d^3}-\frac{2b\left(ad-bc\right)}{d^3\left(c+dx\right)}-\frac{\left(ad-bc\right)^2}{2d^3\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c)**3,x)
```

```
[Out] b**2*log(c + d*x)/d**3 - 2*b*(a*d - b*c)/(d**3*(c + d*x)) - (a*d
- b*c)**2/(2*d**3*(c + d*x)**2)
```

Mathematica [A] time = 0.0382204, size = 48, normalized size = 0.81

$$\frac{\frac{(bc-ad)(ad+3bc+4bdx)}{(c+dx)^2}+2b^2\log(c+dx)}{2d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c + d*x)^3,x]
```

```
[Out] (((b*c - a*d)*(3*b*c + a*d + 4*b*d*x))/(c + d*x)^2 + 2*b^2*Log[c
+ d*x])/(2*d^3)
```

Maple [A] time = 0.008, size = 92, normalized size = 1.6

$$\frac{b^2\ln(dx+c)}{d^3}-\frac{a^2}{2d(dx+c)^2}+\frac{abc}{d^2(dx+c)^2}-\frac{b^2c^2}{2d^3(dx+c)^2}-2\frac{ab}{d^2(dx+c)}+2\frac{b^2c}{d^3(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c)^3,x)
```

```
[Out] b^2*ln(d*x+c)/d^3-1/2/d/(d*x+c)^2*a^2+1/d^2/(d*x+c)^2*a*b*c-1/2/d
^3/(d*x+c)^2*b^2*c^2-2*b/d^2/(d*x+c)*a+2*b^2/d^3/(d*x+c)*c
```

Maxima [A] time = 1.3433, size = 108, normalized size = 1.83

$$\frac{3b^2c^2-2abcd-a^2d^2+4\left(b^2cd-abd^2\right)x}{2\left(d^5x^2+2cd^4x+c^2d^3\right)}+\frac{b^2\log(dx+c)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(3*b^2*c^2 - 2*a*b*c*d - a^2*d^2 + 4*(b^2*c*d - a*b*d^2)*x)/(
d^5*x^2 + 2*c*d^4*x + c^2*d^3) + b^2*log(d*x + c)/d^3
```

Fricas [A] time = 0.204508, size = 135, normalized size = 2.29

$$\frac{3b^2c^2-2abcd-a^2d^2+4\left(b^2cd-abd^2\right)x+2\left(b^2d^2x^2+2b^2cdx+b^2c^2\right)\log(dx+c)}{2\left(d^5x^2+2cd^4x+c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(3*b^2*c^2 - 2*a*b*c*d - a^2*d^2 + 4*(b^2*c*d - a*b*d^2)*x +
2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c))/(d^5*x^2 +
```

```
2*c*d^4*x + c^2*d^3)
```

Sympy [A] time = 1.18147, size = 80, normalized size = 1.36

$$\frac{b^2\log(c+dx)}{d^3}-\frac{a^2d^2+2abcd-3b^2c^2+x\left(4abd^2-4b^2cd\right)}{2c^2d^3+4cd^4x+2d^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c)**3,x)
```

```
[Out] b**2*log(c + d*x)/d**3 - (a**2*d**2 + 2*a*b*c*d - 3*b**2*c**2 + x
*(4*a*b*d**2 - 4*b**2*c*d))/(2*c**2*d**3 + 4*c*d**4*x + 2*d**5*x*
*2)
```

GIAC/XCAS [A] time = 0.222368, size = 93, normalized size = 1.58

$$\frac{b^2\ln(|dx+c|)}{d^3}+\frac{4\left(b^2c-abd\right)x+\frac{3b^2c^2-2abcd-a^2d^2}{d}}{2(dx+c)^2d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] b^2*ln(abs(d*x + c))/d^3 + 1/2*(4*(b^2*c - a*b*d)*x + (3*b^2*c^2
- 2*a*b*c*d - a^2*d^2)/d)/((d*x + c)^2*d^2)
```

3.1357 $\int \frac{a+bx}{(c+dx)^3}\,dx$

Optimal. Leaf size=28

$$\frac{(a+bx)^2}{2(c+dx)^2(bc-ad)}$$

```
[Out] (a + b*x)^2/(2*(b*c - a*d)*(c + d*x)^2)
```

Rubi [A] time = 0.0141186, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{(a+bx)^2}{2(c+dx)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c + d*x)^3,x]

[Out] (a + b*x)^2/(2*(b*c - a*d)*(c + d*x)^2)
```

Rubi in Sympy [A] time = 3.46883, size = 22, normalized size = 0.79

$$-\frac{(a+bx)^2}{2\,(c+dx)^2\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)**3,x)

[Out] -(a + b*x)**2/(2*(c + d*x)**2*(a*d - b*c))
```

Mathematica [A] time = 0.0143042, size = 26, normalized size = 0.93

$$-\frac{ad+b(c+2dx)}{2d^2(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c + d*x)^3,x]
```

```
[Out] -(a*d + b*(c + 2*d*x))/(2*d^2*(c + d*x)^2)
```

Maple [A] time = 0.007, size = 35, normalized size = 1.3

$$-\frac{ad-bc}{2\,d^2\,(dx+c)^2}-\frac{b}{d^2\,(dx+c)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(d*x+c)^3,x)
```

```
[Out] -1/2*(a*d-b*c)/d^2/(d*x+c)^2-b/d^2/(d*x+c)
```

Maxima [A] time = 1.3475, size = 51, normalized size = 1.82

$$-\frac{2\,bdx+bc+ad}{2\,(d^4x^2+2\,cd^3x+c^2d^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*d*x + b*c + a*d)/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)
```

Fricas [A] time = 0.194941, size = 51, normalized size = 1.82

$$-\frac{2\,bdx+bc+ad}{2\,(d^4x^2+2\,cd^3x+c^2d^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*d*x + b*c + a*d)/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)
```

Sympy [A] time = 0.782, size = 39, normalized size = 1.39

$$-\frac{ad+bc+2bdx}{2c^2d^2+4cd^3x+2d^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**3,x)
```

```
[Out] -(a*d + b*c + 2*b*d*x)/(2*c**2*d**2 + 4*c*d**3*x + 2*d**4*x**2)
```

GIAC/XCAS [A] time = 0.215785, size = 32, normalized size = 1.14

$$-\frac{2\,bdx + bc + ad}{2\,(dx + c)^2 d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*d*x + b*c + a*d)/((d*x + c)^2*d^2)
```

3.1358 $\int \frac{1}{(c+dx)^3} dx$

Optimal. Leaf size=14

$$-\frac{1}{2d(c+dx)^2}$$

```
[Out] -1/(2*d*(c + d*x)^2)
```

Rubi [A] time = 0.00710074, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$-\frac{1}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(-3),x]
```

```
[Out] -1/(2*d*(c + d*x)^2)
```

Rubi in Sympy [A] time = 1.30814, size = 12, normalized size = 0.86

$$-\frac{1}{2d\left(c+dx\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(d*x+c)**3,x)
```

```
[Out] -1/(2*d*(c + d*x)**2)
```

Mathematica [A] time = 0.00355373, size = 14, normalized size = 1.

$$-\frac{1}{2d(c+dx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(-3),x]
```

```
[Out] -1/(2*d*(c + d*x)^2)
```

Maple [A] time = 0., size = 13, normalized size = 0.9

$$-\frac{1}{2\,d\,(dx+c)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(d*x+c)^3,x)
```

```
[Out] -1/2/d/(d*x+c)^2
```

Maxima [A] time = 1.37111, size = 16, normalized size = 1.14

$$-\frac{1}{2\,(dx+c)^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3),x, algorithm="maxima")
```

```
[Out] -1/2/((d*x + c)^2*d)
```

Fricas [A] time = 0.193672, size = 32, normalized size = 2.29

$$-\frac{1}{2\,(d^{3}x^{2}+2\,cd^{2}x+c^{2}d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3),x, algorithm="fricas")
```

```
[Out] -1/2/(d^3*x^2 + 2*c*d^2*x + c^2*d)
```

Sympy [A] time = 0.595476, size = 26, normalized size = 1.86

$$-\frac{1}{2c^{2}d+4cd^{2}x+2d^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c)**3,x)
```

```
[Out] -1/(2*c**2*d + 4*c*d**2*x + 2*d**3*x**2)
```

GIAC/XCAS [A] time = 0.220064, size = 16, normalized size = 1.14

$$-\frac{1}{2\,(dx+c)^2 d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3),x, algorithm="giac")
```

```
[Out] -1/2/((d*x + c)^2*d)
```

3.1359 $\int \frac{1}{(a+bx)(c+dx)^3}\,dx$

Optimal. Leaf size=82

$$\frac{b^2\log(a+bx)}{(bc-ad)^3}-\frac{b^2\log(c+dx)}{(bc-ad)^3}+\frac{b}{(c+dx)(bc-ad)^2}+\frac{1}{2(c+dx)^2(bc-ad)}$$

```
[Out] 1/(2*(b*c - a*d)*(c + d*x)^2) + b/((b*c - a*d)^2*(c + d*x)) + (b^
2*Log[a + b*x])/(b*c - a*d)^3 - (b^2*Log[c + d*x])/(b*c - a*d)^3
```

Rubi [A] time = 0.103742, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{b^2\log(a+bx)}{(bc-ad)^3}-\frac{b^2\log(c+dx)}{(bc-ad)^3}+\frac{b}{(c+dx)(bc-ad)^2}+\frac{1}{2(c+dx)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^3),x]
```

```
[Out] 1/(2*(b*c - a*d)*(c + d*x)^2) + b/((b*c - a*d)^2*(c + d*x)) + (b^
2*Log[a + b*x])/(b*c - a*d)^3 - (b^2*Log[c + d*x])/(b*c - a*d)^3
```

Rubi in Sympy [A] time = 20.7651, size = 68, normalized size = 0.83

$$-\frac{b^2\log(a+bx)}{(ad-bc)^3}+\frac{b^2\log(c+dx)}{(ad-bc)^3}+\frac{b}{(c+dx)(ad-bc)^2}-\frac{1}{2(c+dx)^2(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**3,x)
```

```
[Out] -b**2*log(a + b*x)/(a*d - b*c)**3 + b**2*log(c + d*x)/(a*d - b*c)
**3 + b/((c + d*x)*(a*d - b*c)**2) - 1/(2*(c + d*x)**2*(a*d - b*c
))
```

Mathematica [A] time = 0.0775581, size = 67, normalized size = 0.82

$$\frac{2b^2\log(a+bx)+\frac{(bc-ad)(-ad+3bc+2bdx)}{(c+dx)^2}-2b^2\log(c+dx)}{2(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^3),x]
```

```
[Out] (((b*c - a*d)*(3*b*c - a*d + 2*b*d*x))/(c + d*x)^2 + 2*b^2*Log[a
+ b*x] - 2*b^2*Log[c + d*x])/(2*(b*c - a*d)^3)
```

Maple [A]   time = 0.014, size = 81, normalized size = 1.

$$-\frac{1}{(2\,ad-2\,bc)\,(dx+c)^{2}}+\frac{b^{2}\ln(dx+c)}{(ad-bc)^{3}}+\frac{b}{(ad-bc)^{2}\,(dx+c)}-\frac{b^{2}\ln(bx+a)}{(ad-bc)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^3,x)
```

```
[Out] -1/2/(a*d-b*c)/(d*x+c)^2+b^2/(a*d-b*c)^3*ln(d*x+c)+b/(a*d-b*c)^2/
(d*x+c)-b^2/(a*d-b*c)^3*ln(b*x+a)
```

Maxima [A]   time = 1.36618, size = 273, normalized size = 3.33

$$\frac{b^{2}\log(bx+a)}{b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3}}-\frac{b^{2}\log(dx+c)}{b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3}}+\frac{2\,bdx+3\,bc-ad}{2\,(b^{2}c^{4}-2\,abc^{3}d+a^{2}c^{2}d^{2}+(b^{2}c^{2}d^{2}-2\,abcd^{3}+a^{2}d^{4})x^{2}+2\,(b^{2}c^{3}d-2\,abc^{2}d^{2}+a^{2}cd^{3})x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] b^2*log(b*x + a)/(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d
^3) - b^2*log(d*x + c)/(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 -
 a^3*d^3) + 1/2*(2*b*d*x + 3*b*c - a*d)/(b^2*c^4 - 2*a*b*c^3*d +
a^2*c^2*d^2 + (b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*x^2 + 2*(b^2*
c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*x)
```

Fricas [A]   time = 0.221158, size = 327, normalized size = 3.99

$$\frac{3\,b^{2}c^{2}-4\,abcd+a^{2}d^{2}+2\left(b^{2}cd-abd^{2}\right)x+2\left(b^{2}d^{2}x^{2}+2\,b^{2}cdx+b^{2}c^{2}\right)\log(bx+a)-2\left(b^{2}d^{2}x^{2}+2\,b^{2}cdx+b^{2}c^{2}\right)\log(dx}{2\,(b^{3}c^{5}-3\,ab^{2}c^{4}d+3\,a^{2}bc^{3}d^{2}-a^{3}c^{2}d^{3}+(b^{3}c^{3}d^{2}-3\,ab^{2}c^{2}d^{3}+3\,a^{2}bcd^{4}-a^{3}d^{5})x^{2}+2\,(b^{3}c^{4}d-3\,ab^{2}c^{3}d^{2}+3\,a^{2}bc^{2}d^{3}-a^{3}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] 1/2*(3*b^2*c^2 - 4*a*b*c*d + a^2*d^2 + 2*(b^2*c*d - a*b*d^2)*x +
2*(b^2*d^2*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(b*x + a) - 2*(b^2*d^2
*x^2 + 2*b^2*c*d*x + b^2*c^2)*log(d*x + c))/(b^3*c^5 - 3*a*b^2*c^
4*d + 3*a^2*b*c^3*d^2 - a^3*c^2*d^3 + (b^3*c^3*d^2 - 3*a*b^2*c^2*
d^3 + 3*a^2*b*c*d^4 - a^3*d^5)*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d
^2 + 3*a^2*b*c^2*d^3 - a^3*c*d^4)*x)
```

Sympy [A] time = 2.20709, size = 381, normalized size = 4.65

$$\frac{b^2\log\left(x+\frac{-\frac{a^4b^2d^4}{(ad-bc)^3}+\frac{4a^3b^3cd^3}{(ad-bc)^3}-\frac{6a^2b^4c^2d^2}{(ad-bc)^3}+\frac{4ab^5c^3d}{(ad-bc)^3}+ab^2d-\frac{b^6c^4}{(ad-bc)^3}+b^3c}{2b^3d}\right)}{(ad-bc)^3}-\frac{b^2\log\left(x+\frac{\frac{a^4b^2d^4}{(ad-bc)^3}-\frac{4a^3b^3cd^3}{(ad-bc)^3}+\frac{6a^2b^4c^2d^2}{(ad-bc)^3}-\frac{4ab^5c^3d}{(ad-bc)^3}+ab^2d+\frac{b^6c^4}{(ad-bc)^3}+b^3c}{2b^3d}\right)}{(ad-bc)^3}+\frac{-ad+3bc+2bdx}{2a^2c^2d^2-4abc^3d+2b^2c^4+x^2\left(2a^2d^4-4abcd^3+2b^2c^2d^2\right)+x\left(4a^2cd^3-8abc^2d^2+4b^2c^3d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**3,x)
```

```
[Out] b**2*log(x + (-a**4*b**2*d**4/(a*d - b*c)**3 + 4*a**3*b**3*c*d**3
/(a*d - b*c)**3 - 6*a**2*b**4*c**2*d**2/(a*d - b*c)**3 + 4*a*b**5
*c**3*d/(a*d - b*c)**3 + a*b**2*d - b**6*c**4/(a*d - b*c)**3 + b*
*3*c)/(2*b**3*d))/(a*d - b*c)**3 - b**2*log(x + (a**4*b**2*d**4/(
a*d - b*c)**3 - 4*a**3*b**3*c*d**3/(a*d - b*c)**3 + 6*a**2*b**4*c
**2*d**2/(a*d - b*c)**3 - 4*a*b**5*c**3*d/(a*d - b*c)**3 + a*b**2
*d + b**6*c**4/(a*d - b*c)**3 + b**3*c)/(2*b**3*d))/(a*d - b*c)**
3 + (-a*d + 3*b*c + 2*b*d*x)/(2*a**2*c**2*d**2 - 4*a*b*c**3*d + 2
*b**2*c**4 + x**2*(2*a**2*d**4 - 4*a*b*c*d**3 + 2*b**2*c**2*d**2)
 + x*(4*a**2*c*d**3 - 8*a*b*c**2*d**2 + 4*b**2*c**3*d))
```

GIAC/XCAS [A] time = 0.220728, size = 223, normalized size = 2.72

$$\frac{b^3\ln\left(|bx+a|\right)}{b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3}-\frac{b^2d\ln\left(|dx+c|\right)}{b^3c^3d-3\,ab^2c^2d^2+3\,a^2bcd^3-a^3d^4}+\frac{3\,b^2c^2-4\,abcd+a^2d^2+2\,\left(b^2cd-abd^2\right)x}{2\,(bc-ad)^3(dx+c)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^3),x, algorithm="giac")
```

```
[Out] b^3*ln(abs(b*x + a))/(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 -
 a^3*b*d^3) - b^2*d*ln(abs(d*x + c))/(b^3*c^3*d - 3*a*b^2*c^2*d^2
 + 3*a^2*b*c*d^3 - a^3*d^4) + 1/2*(3*b^2*c^2 - 4*a*b*c*d + a^2*d^
2 + 2*(b^2*c*d - a*b*d^2)*x)/((b*c - a*d)^3*(d*x + c)^2)
```

3.1360 $\int \frac{1}{(a+bx)^2(c+dx)^3}\,dx$

Optimal. Leaf size=110

$$-\frac{b^2}{(a+bx)(bc-ad)^3}-\frac{3b^2d\log(a+bx)}{(bc-ad)^4}+\frac{3b^2d\log(c+dx)}{(bc-ad)^4}-\frac{2bd}{(c+dx)(bc-ad)^3}-\frac{d}{2(c+dx)^2(bc-ad)^2}$$

```
[Out] -(b^2/((b*c - a*d)^3*(a + b*x))) - d/(2*(b*c - a*d)^2*(c + d*x)^2
) - (2*b*d)/((b*c - a*d)^3*(c + d*x)) - (3*b^2*d*Log[a + b*x])/(b
*c - a*d)^4 + (3*b^2*d*Log[c + d*x])/(b*c - a*d)^4
```

Rubi [A] time = 0.160197, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{b^2}{(a+bx)(bc-ad)^3}-\frac{3b^2d\log(a+bx)}{(bc-ad)^4}+\frac{3b^2d\log(c+dx)}{(bc-ad)^4}-\frac{2bd}{(c+dx)(bc-ad)^3}-\frac{d}{2(c+dx)^2(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(c + d*x)^3),x]
```

```
[Out] -(b^2/((b*c - a*d)^3*(a + b*x))) - d/(2*(b*c - a*d)^2*(c + d*x)^2
) - (2*b*d)/((b*c - a*d)^3*(c + d*x)) - (3*b^2*d*Log[a + b*x])/(b
*c - a*d)^4 + (3*b^2*d*Log[c + d*x])/(b*c - a*d)^4
```

Rubi in Sympy [A] time = 33.6654, size = 97, normalized size = 0.88

$$-\frac{3b^2d\log(a+bx)}{(ad-bc)^4}+\frac{3b^2d\log(c+dx)}{(ad-bc)^4}+\frac{b^2}{(a+bx)(ad-bc)^3}+\frac{2bd}{(c+dx)(ad-bc)^3}-\frac{d}{2(c+dx)^2(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c)**3,x)
```

```
[Out] -3*b**2*d*log(a + b*x)/(a*d - b*c)**4 + 3*b**2*d*log(c + d*x)/(a*
d - b*c)**4 + b**2/((a + b*x)*(a*d - b*c)**3) + 2*b*d/((c + d*x)*
(a*d - b*c)**3) - d/(2*(c + d*x)**2*(a*d - b*c)**2)
```

Mathematica [A] time = 0.170225, size = 97, normalized size = 0.88

$$-\frac{\frac{2b^2(bc-ad)}{a+bx}+6b^2d\log(a+bx)+\frac{4bd(bc-ad)}{c+dx}+\frac{d(bc-ad)^2}{(c+dx)^2}-6b^2d\log(c+dx)}{2(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(c + d*x)^3),x]
```

```
[Out] -((2*b^2*(b*c - a*d))/(a + b*x) + (d*(b*c - a*d)^2)/(c + d*x)^2 +
 (4*b*d*(b*c - a*d))/(c + d*x) + 6*b^2*d*Log[a + b*x] - 6*b^2*d*L
og[c + d*x])/(2*(b*c - a*d)^4)
```

Maple [A] time = 0.017, size = 108, normalized size = 1.

$$-\frac{d}{2\,(ad-bc)^{2}\,(dx+c)^{2}}+3\,\frac{b^{2}d\ln(dx+c)}{(ad-bc)^{4}}+2\,\frac{db}{(ad-bc)^{3}\,(dx+c)}+\frac{b^{2}}{(ad-bc)^{3}\,(bx+a)}-3\,\frac{b^{2}d\ln(bx+a)}{(ad-bc)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c)^3,x)
```

```
[Out] -1/2*d/(a*d-b*c)^2/(d*x+c)^2+3*d/(a*d-b*c)^4*b^2*ln(d*x+c)+2*d/(a
*d-b*c)^3*b/(d*x+c)+b^2/(a*d-b*c)^3/(b*x+a)-3*d/(a*d-b*c)^4*b^2*l
n(b*x+a)
```

Maxima [A] time = 1.38188, size = 521, normalized size = 4.74

$$-\frac{3\,b^{2}d\log(bx+a)}{b^{4}c^{4}-4\,ab^{3}c^{3}d+6\,a^{2}b^{2}c^{2}d^{2}-4\,a^{3}bcd^{3}+a^{4}d^{4}}+\frac{3\,b^{2}d\log(dx+c)}{b^{4}c^{4}-4\,ab^{3}c^{3}d+6\,a^{2}b^{2}c^{2}d^{2}-4\,a^{3}bcd^{3}+a^{4}d^{4}}-\frac{6\,b^{2}d^{2}x^{2}+2\,b^{2}c^{2}+5\,abcd-a^{2}d^{2}+3\,(3\,b^{2}cd+ab}{2\,(ab^{3}c^{5}-3\,a^{2}b^{2}c^{4}d+3\,a^{3}bc^{3}d^{2}-a^{4}c^{2}d^{3}+(b^{4}c^{3}d^{2}-3\,ab^{3}c^{2}d^{3}+3\,a^{2}b^{2}cd^{4}-a^{3}bd^{5})x^{3}+(2\,b^{4}c^{4}d-5\,ab^{3}c^{3}d^{2}+3\,a^{2}b^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] -3*b^2*d*log(b*x + a)/(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^
2 - 4*a^3*b*c*d^3 + a^4*d^4) + 3*b^2*d*log(d*x + c)/(b^4*c^4 - 4*
a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4) - 1/2*
(6*b^2*d^2*x^2 + 2*b^2*c^2 + 5*a*b*c*d - a^2*d^2 + 3*(3*b^2*c*d +
 a*b*d^2)*x)/(a*b^3*c^5 - 3*a^2*b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4
*c^2*d^3 + (b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3
*b*d^5)*x^3 + (2*b^4*c^4*d - 5*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3
+ a^3*b*c*d^4 - a^4*d^5)*x^2 + (b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2
*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a^4*c*d^4)*x)
```

Fricas [A] time = 0.216305, size = 668, normalized size = 6.07

$$-\frac{2\,b^3c^3+3\,ab^2c^2d-6\,a^2bcd^2+a^3d^3+6\left(b^3cd^2-ab^2d^3\right)x^2+3\left(3\,b^3c^2d-2\,ab^2cd^2-a^2bd^3\right)x+6\left(b^3d^3x^3+ab^2c^2d+\left(2\,b^3\right.\right.}{2\left(ab^4c^6-4\,a^2b^3c^5d+6\,a^3b^2c^4d^2-4\,a^4bc^3d^3+a^5c^2d^4+(b^5c^4d^2-4\,ab^4c^3d^3+6\,a^2b^3c^2d^4-4\,a^3b^2cd^5+a^4bd^6)x^3+(2\,b^5c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/2*(2*b^3*c^3 + 3*a*b^2*c^2*d - 6*a^2*b*c*d^2 + a^3*d^3 + 6*(b^
3*c*d^2 - a*b^2*d^3)*x^2 + 3*(3*b^3*c^2*d - 2*a*b^2*c*d^2 - a^2*b
*d^3)*x + 6*(b^3*d^3*x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3
)*x^2 + (b^3*c^2*d + 2*a*b^2*c*d^2)*x)*log(b*x + a) - 6*(b^3*d^3*
x^3 + a*b^2*c^2*d + (2*b^3*c*d^2 + a*b^2*d^3)*x^2 + (b^3*c^2*d +
2*a*b^2*c*d^2)*x)*log(d*x + c))/(a*b^4*c^6 - 4*a^2*b^3*c^5*d + 6*
a^3*b^2*c^4*d^2 - 4*a^4*b*c^3*d^3 + a^5*c^2*d^4 + (b^5*c^4*d^2 -
4*a*b^4*c^3*d^3 + 6*a^2*b^3*c^2*d^4 - 4*a^3*b^2*c*d^5 + a^4*b*d^6
)*x^3 + (2*b^5*c^5*d - 7*a*b^4*c^4*d^2 + 8*a^2*b^3*c^3*d^3 - 2*a^
3*b^2*c^2*d^4 - 2*a^4*b*c*d^5 + a^5*d^6)*x^2 + (b^5*c^6 - 2*a*b^4
*c^5*d - 2*a^2*b^3*c^4*d^2 + 8*a^3*b^2*c^3*d^3 - 7*a^4*b*c^2*d^4
+ 2*a^5*c*d^5)*x)
```

Sympy [A] time = 3.49379, size = 632, normalized size = 5.75

$$\frac{3b^2d\log\left(x+\frac{-\frac{3a^5b^2d^6}{(ad-bc)^4}+\frac{15a^4b^3cd^5}{(ad-bc)^4}-\frac{30a^3b^4c^2d^4}{(ad-bc)^4}+\frac{30a^2b^5c^3d^3}{(ad-bc)^4}-\frac{15ab^6c^4d^2}{(ad-bc)^4}+3ab^2d^2+\frac{3b^7c^5d}{(ad-bc)^4}+3b^3cd}{6b^3d^2}\right)}{(ad-bc)^4}$$
$$-\frac{3b^2d\log\left(x+\frac{\frac{3a^5b^2d^6}{(ad-bc)^4}-\frac{15a^4b^3cd^5}{(ad-bc)^4}+\frac{30a^3b^4c^2d^4}{(ad-bc)^4}-\frac{30a^2b^5c^3d^3}{(ad-bc)^4}+\frac{15ab^6c^4d^2}{(ad-bc)^4}+3ab^2d^2-\frac{3b^7c^5d}{(ad-bc)^4}+3b^3cd}{6b^3d^2}\right)}{(ad-bc)^4}$$
$$+\frac{-a^2d^2+5abcd+2b^2c^2+6b^2d^2x^2+x\left(3abd^2+\right.}{2a^4c^2d^3-6a^3bc^3d^2+6a^2b^2c^4d-2ab^3c^5+x^3\left(2a^3bd^5-6a^2b^2cd^4+6ab^3c^2d^3-2b^4c^3d^2\right)+x^2\left(2a^4d^5-2a^3bcd^4-6a^2b^2c^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c)**3,x)
```

```
[Out] 3*b**2*d*log(x + (-3*a**5*b**2*d**6/(a*d - b*c)**4 + 15*a**4*b**3
*c*d**5/(a*d - b*c)**4 - 30*a**3*b**4*c**2*d**4/(a*d - b*c)**4 +
30*a**2*b**5*c**3*d**3/(a*d - b*c)**4 - 15*a*b**6*c**4*d**2/(a*d
- b*c)**4 + 3*a*b**2*d**2 + 3*b**7*c**5*d/(a*d - b*c)**4 + 3*b**3
*c*d)/(6*b**3*d**2))/(a*d - b*c)**4 - 3*b**2*d*log(x + (3*a**5*b*
*2*d**6/(a*d - b*c)**4 - 15*a**4*b**3*c*d**5/(a*d - b*c)**4 + 30*
a**3*b**4*c**2*d**4/(a*d - b*c)**4 - 30*a**2*b**5*c**3*d**3/(a*d
- b*c)**4 + 15*a*b**6*c**4*d**2/(a*d - b*c)**4 + 3*a*b**2*d**2 -
3*b**7*c**5*d/(a*d - b*c)**4 + 3*b**3*c*d)/(6*b**3*d**2))/(a*d -
```

```
b*c)**4 + (-a**2*d**2 + 5*a*b*c*d + 2*b**2*c**2 + 6*b**2*d**2*x**
2 + x*(3*a*b*d**2 + 9*b**2*c*d))/(2*a**4*c**2*d**3 - 6*a**3*b*c**
3*d**2 + 6*a**2*b**2*c**4*d - 2*a*b**3*c**5 + x**3*(2*a**3*b*d**5
 - 6*a**2*b**2*c*d**4 + 6*a*b**3*c**2*d**3 - 2*b**4*c**3*d**2) +
x**2*(2*a**4*d**5 - 2*a**3*b*c*d**4 - 6*a**2*b**2*c**2*d**3 + 10*
a*b**3*c**3*d**2 - 4*b**4*c**4*d) + x*(4*a**4*c*d**4 - 10*a**3*b*
c**2*d**3 + 6*a**2*b**2*c**3*d**2 + 2*a*b**3*c**4*d - 2*b**4*c**5
))
```

GIAC/XCAS [A] time = 0.223942, size = 293, normalized size = 2.66

$$\frac{3\,b^3 d\ln\left(\left|\frac{bc}{bx+a} - \frac{ad}{bx+a} + d\right|\right)}{b^5c^4 - 4\,ab^4c^3d + 6\,a^2b^3c^2d^2 - 4\,a^3b^2cd^3 + a^4bd^4} - \frac{b^5}{(b^6c^3 - 3\,ab^5c^2d + 3\,a^2b^4cd^2 - a^3b^3d^3)(bx+a)} + \frac{5\,b^2d^3 + \frac{6\,(b^4cd^2 - ab^3d^3)}{(bx+a)b}}{2\,(bc-ad)^4\left(\frac{bc}{bx+a} - \frac{ad}{bx+a} + d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^3),x, algorithm="giac")
```

```
[Out] 3*b^3*d*ln(abs(b*c/(b*x + a) - a*d/(b*x + a) + d))/(b^5*c^4 - 4*a
*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4) - b
^5/((b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*(b*
x + a)) + 1/2*(5*b^2*d^3 + 6*(b^4*c*d^2 - a*b^3*d^3)/((b*x + a)*b
))/((b*c - a*d)^4*(b*c/(b*x + a) - a*d/(b*x + a) + d)^2)
```

3.1361 $\int \frac{1}{(a+bx)^3(c+dx)^3}\,dx$

Optimal. Leaf size=143

$$\frac{6b^2d^2\log(a+bx)}{(bc-ad)^5}-\frac{6b^2d^2\log(c+dx)}{(bc-ad)^5}+\frac{3b^2d}{(a+bx)(bc-ad)^4}-\frac{b^2}{2(a+bx)^2(bc-ad)^3}+\frac{3bd^2}{(c+dx)(bc-ad)^4}+\frac{d^2}{2(c+dx)^2(bc-ad)^3}$$

```
[Out] -b^2/(2*(b*c - a*d)^3*(a + b*x)^2) + (3*b^2*d)/((b*c - a*d)^4*(a
+ b*x)) + d^2/(2*(b*c - a*d)^3*(c + d*x)^2) + (3*b*d^2)/((b*c - a
*d)^4*(c + d*x)) + (6*b^2*d^2*Log[a + b*x])/(b*c - a*d)^5 - (6*b^
2*d^2*Log[c + d*x])/(b*c - a*d)^5
```

Rubi [A] time = 0.21945, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{6b^2d^2\log(a+bx)}{(bc-ad)^5}-\frac{6b^2d^2\log(c+dx)}{(bc-ad)^5}+\frac{3b^2d}{(a+bx)(bc-ad)^4}-\frac{b^2}{2(a+bx)^2(bc-ad)^3}+\frac{3bd^2}{(c+dx)(bc-ad)^4}+\frac{d^2}{2(c+dx)^2(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*(c + d*x)^3),x]
```

```
[Out] -b^2/(2*(b*c - a*d)^3*(a + b*x)^2) + (3*b^2*d)/((b*c - a*d)^4*(a
+ b*x)) + d^2/(2*(b*c - a*d)^3*(c + d*x)^2) + (3*b*d^2)/((b*c - a
*d)^4*(c + d*x)) + (6*b^2*d^2*Log[a + b*x])/(b*c - a*d)^5 - (6*b^
2*d^2*Log[c + d*x])/(b*c - a*d)^5
```

Rubi in Sympy [A] time = 72.7984, size = 128, normalized size = 0.9

$$-\frac{6b^2d^2\log\left(a+bx\right)}{\left(ad-bc\right)^5}+\frac{6b^2d^2\log\left(c+dx\right)}{\left(ad-bc\right)^5}+\frac{3b^2d}{\left(a+bx\right)\left(ad-bc\right)^4}+\frac{b^2}{2\left(a+bx\right)^2\left(ad-bc\right)^3}+\frac{3bd^2}{\left(c+dx\right)\left(ad-bc\right)^4}-\frac{d^2}{2\left(c+dx\right)^2\left(ad-bc\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c)**3,x)
```

```
[Out] -6*b**2*d**2*log(a + b*x)/(a*d - b*c)**5 + 6*b**2*d**2*log(c + d*
x)/(a*d - b*c)**5 + 3*b**2*d/((a + b*x)*(a*d - b*c)**4) + b**2/(2
*(a + b*x)**2*(a*d - b*c)**3) + 3*b*d**2/((c + d*x)*(a*d - b*c)**
4) - d**2/(2*(c + d*x)**2*(a*d - b*c)**3)
```

Mathematica [A] time = 0.181506, size = 128, normalized size = 0.9

$$\frac{\frac{6b^2d(bc-ad)}{a+bx} - \frac{b^2(bc-ad)^2}{(a+bx)^2} + 12b^2d^2\log(a+bx) + \frac{6bd^2(bc-ad)}{c+dx} + \frac{d^2(bc-ad)^2}{(c+dx)^2} - 12b^2d^2\log(c+dx)}{2(bc-ad)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*(c + d*x)^3),x]
```

```
[Out] (-((b^2*(b*c - a*d)^2)/(a + b*x)^2) + (6*b^2*d*(b*c - a*d))/(a +
b*x) + (d^2*(b*c - a*d)^2)/(c + d*x)^2 + (6*b*d^2*(b*c - a*d))/(c
 + d*x) + 12*b^2*d^2*Log[a + b*x] - 12*b^2*d^2*Log[c + d*x])/(2*(
b*c - a*d)^5)
```

Maple [A] time = 0.02, size = 140, normalized size = 1.

$$-\frac{d^2}{2\,(ad-bc)^3\,(dx+c)^2} + 6\,\frac{d^2b^2\ln(dx+c)}{(ad-bc)^5} + 3\,\frac{d^2b}{(ad-bc)^4\,(dx+c)} + \frac{b^2}{2\,(ad-bc)^3\,(bx+a)^2} - 6\,\frac{d^2b^2\ln(bx+a)}{(ad-bc)^5} + 3\,\frac{b^2d}{(ad-bc)^4\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c)^3,x)
```

```
[Out] -1/2*d^2/(a*d-b*c)^3/(d*x+c)^2+6*d^2/(a*d-b*c)^5*b^2*ln(d*x+c)+3*
d^2/(a*d-b*c)^4*b/(d*x+c)+1/2*b^2/(a*d-b*c)^3/(b*x+a)^2-6*d^2/(a*
d-b*c)^5*b^2*ln(b*x+a)+3*b^2/(a*d-b*c)^4*d/(b*x+a)
```

Maxima [A] time = 1.36497, size = 802, normalized size = 5.61

$$\frac{6\,b^2d^2\log(bx+a)}{b^5c^5 - 5\,ab^4c^4d + 10\,a^2b^3c^3d^2 - 10\,a^3b^2c^2d^3 + 5\,a^4bcd^4 - a^5d^5} - \frac{6\,b^2d^2\log(dx+c)}{b^5c^5 - 5\,ab^4c^4d + 10\,a^2b^3c^3d^2 - 10\,a^3b^2c^2d^3 + 5\,a^4bcd^4 - a^5d^5} + \frac{12\,b^3d^3x^3 - b^3 \cdots}{2\,(a^2b^4c^6 - 4\,a^3b^3c^5d + 6\,a^4b^2c^4d^2 - 4\,a^5bc^3d^3 + a^6c^2d^4 + (b^6c^4d^2 - 4\,ab^5c^3d^3 + 6\,a^2b^4c^2d^4 - 4\,a^3b^3cd^5 + a^4b^2d^6)x^4 + 2\,(b^6 \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^3),x, algorithm="maxima")
```

```
[Out] 6*b^2*d^2*log(b*x + a)/(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*
d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5) - 6*b^2*d^2*l
og(d*x + c)/(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^
3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5) + 1/2*(12*b^3*d^3*x^3 -
b^3*c^3 + 7*a*b^2*c^2*d + 7*a^2*b*c*d^2 - a^3*d^3 + 18*(b^3*c*d^2
 + a*b^2*d^3)*x^2 + 4*(b^3*c^2*d + 7*a*b^2*c*d^2 + a^2*b*d^3)*x)/
(a^2*b^4*c^6 - 4*a^3*b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*
d^3 + a^6*c^2*d^4 + (b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^
2*d^4 - 4*a^3*b^3*c*d^5 + a^4*b^2*d^6)*x^4 + 2*(b^6*c^5*d - 3*a*b
^5*c^4*d^2 + 2*a^2*b^4*c^3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*
d^5 + a^5*b*d^6)*x^3 + (b^6*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*
c^3*d^3 - 9*a^4*b^2*c^2*d^4 + a^6*d^6)*x^2 + 2*(a*b^5*c^6 - 3*a^2
*b^4*c^5*d + 2*a^3*b^3*c^4*d^2 + 2*a^4*b^2*c^3*d^3 - 3*a^5*b*c^2*
d^4 + a^6*c*d^5)*x)
```

<u>Fricas</u> [A] time = 0.241429, size = 1026, normalized size = 7.17

$$-\frac{b^4c^4 - 8\,ab^3c^3d + 8\,a^3bcd^3 - a^4d^4 - 12\,\left(b^4cd^3 - ab^3d^4\right)x^3 - 18\,\left(b^4c^2d^2 - a^2b^2d^4\right)x^2 - 4\,\left(b^4c^3d + 6\,ab^3c^2d^2 - 6\,a^2b^2}{2\,(a^2b^5c^7 - 5\,a^3b^4c^6d + 10\,a^4b^3c^5d^2 - 10\,a^5b^2c^4d^3 + 5\,a^6bc^3d^4 - a^7c^2d^5 + (b^7c^5d^2 - 5\,ab^6c^4d^3 + 10\,a^2b^5c^3d^4 - 10\,a^3b^4c^2d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^3),x, algorithm="fricas")
```

```
[Out] -1/2*(b^4*c^4 - 8*a*b^3*c^3*d + 8*a^3*b*c*d^3 - a^4*d^4 - 12*(b^4
*c*d^3 - a*b^3*d^4)*x^3 - 18*(b^4*c^2*d^2 - a^2*b^2*d^4)*x^2 - 4*
(b^4*c^3*d + 6*a*b^3*c^2*d^2 - 6*a^2*b^2*c*d^3 - a^3*b*d^4)*x - 1
2*(b^4*d^4*x^4 + a^2*b^2*c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3
+ (b^4*c^2*d^2 + 4*a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*
d^2 + a^2*b^2*c*d^3)*x)*log(b*x + a) + 12*(b^4*d^4*x^4 + a^2*b^2*
c^2*d^2 + 2*(b^4*c*d^3 + a*b^3*d^4)*x^3 + (b^4*c^2*d^2 + 4*a*b^3*
c*d^3 + a^2*b^2*d^4)*x^2 + 2*(a*b^3*c^2*d^2 + a^2*b^2*c*d^3)*x)*l
og(d*x + c))/(a^2*b^5*c^7 - 5*a^3*b^4*c^6*d + 10*a^4*b^3*c^5*d^2
- 10*a^5*b^2*c^4*d^3 + 5*a^6*b*c^3*d^4 - a^7*c^2*d^5 + (b^7*c^5*d
^2 - 5*a*b^6*c^4*d^3 + 10*a^2*b^5*c^3*d^4 - 10*a^3*b^4*c^2*d^5 +
5*a^4*b^3*c*d^6 - a^5*b^2*d^7)*x^4 + 2*(b^7*c^6*d - 4*a*b^6*c^5*d
^2 + 5*a^2*b^5*c^4*d^3 - 5*a^4*b^3*c^2*d^5 + 4*a^5*b^2*c*d^6 - a^
6*b*d^7)*x^3 + (b^7*c^7 - a*b^6*c^6*d - 9*a^2*b^5*c^5*d^2 + 25*a^
3*b^4*c^4*d^3 - 25*a^4*b^3*c^3*d^4 + 9*a^5*b^2*c^2*d^5 + a^6*b*c*
d^6 - a^7*d^7)*x^2 + 2*(a*b^6*c^7 - 4*a^2*b^5*c^6*d + 5*a^3*b^4*c
^5*d^2 - 5*a^5*b^2*c^3*d^4 + 4*a^6*b*c^2*d^5 - a^7*c*d^6)*x)
```

Sympy [A] time = 4.95574, size = 881, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c)**3,x)
```

```
[Out] 6*b**2*d**2*log(x + (-6*a**6*b**2*d**8/(a*d - b*c)**5 + 36*a**5*b
**3*c*d**7/(a*d - b*c)**5 - 90*a**4*b**4*c**2*d**6/(a*d - b*c)**5
 + 120*a**3*b**5*c**3*d**5/(a*d - b*c)**5 - 90*a**2*b**6*c**4*d**
4/(a*d - b*c)**5 + 36*a*b**7*c**5*d**3/(a*d - b*c)**5 + 6*a*b**2*
d**3 - 6*b**8*c**6*d**2/(a*d - b*c)**5 + 6*b**3*c*d**2)/(12*b**3*
d**3))/(a*d - b*c)**5 - 6*b**2*d**2*log(x + (6*a**6*b**2*d**8/(a*
d - b*c)**5 - 36*a**5*b**3*c*d**7/(a*d - b*c)**5 + 90*a**4*b**4*c
**2*d**6/(a*d - b*c)**5 - 120*a**3*b**5*c**3*d**5/(a*d - b*c)**5
+ 90*a**2*b**6*c**4*d**4/(a*d - b*c)**5 - 36*a*b**7*c**5*d**3/(a*
d - b*c)**5 + 6*a*b**2*d**3 + 6*b**8*c**6*d**2/(a*d - b*c)**5 + 6
*b**3*c*d**2)/(12*b**3*d**3))/(a*d - b*c)**5 + (-a**3*d**3 + 7*a*
*2*b*c*d**2 + 7*a*b**2*c**2*d - b**3*c**3 + 12*b**3*d**3*x**3 + x
**2*(18*a*b**2*d**3 + 18*b**3*c*d**2) + x*(4*a**2*b*d**3 + 28*a*b
**2*c*d**2 + 4*b**3*c**2*d))/(2*a**6*c**2*d**4 - 8*a**5*b*c**3*d*
*3 + 12*a**4*b**2*c**4*d**2 - 8*a**3*b**3*c**5*d + 2*a**2*b**4*c*
*6 + x**4*(2*a**4*b**2*d**6 - 8*a**3*b**3*c*d**5 + 12*a**2*b**4*c
**2*d**4 - 8*a*b**5*c**3*d**3 + 2*b**6*c**4*d**2) + x**3*(4*a**5*
b*d**6 - 12*a**4*b**2*c*d**5 + 8*a**3*b**3*c**2*d**4 + 8*a**2*b**
4*c**3*d**3 - 12*a*b**5*c**4*d**2 + 4*b**6*c**5*d) + x**2*(2*a**6
*d**6 - 18*a**4*b**2*c**2*d**4 + 32*a**3*b**3*c**3*d**3 - 18*a**2
*b**4*c**4*d**2 + 2*b**6*c**6) + x*(4*a**6*c*d**5 - 12*a**5*b*c**
2*d**4 + 8*a**4*b**2*c**3*d**3 + 8*a**3*b**3*c**4*d**2 - 12*a**2*
b**4*c**5*d + 4*a*b**5*c**6))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^3),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1362 $\int \frac{(a+bx)^9}{(c+dx)^8}\,dx$

Optimal. Leaf size=232

$$-\frac{b^8x(8bc-9ad)}{d^9}+\frac{36b^7(bc-ad)^2\log(c+dx)}{d^{10}}+\frac{84b^6(bc-ad)^3}{d^{10}(c+dx)}-\frac{63b^5(bc-ad)^4}{d^{10}(c+dx)^2}+\frac{42b^4(bc-ad)^5}{d^{10}(c+dx)^3}-\frac{21b^3(bc-ad)^6}{d^{10}(c+dx)^4}+\frac{36b^2(bc-ad)^7}{5d^{10}(c+dx)^5}-\frac{3b(bc-ad)^8}{2d^{10}(c+dx)^6}+\frac{(bc-ad)^9}{7d^{10}(c+dx)^7}+\frac{b^9x^2}{2d^8}$$

```
[Out] -((b^8*(8*b*c - 9*a*d)*x)/d^9) + (b^9*x^2)/(2*d^8) + (b*c - a*d)^
9/(7*d^10*(c + d*x)^7) - (3*b*(b*c - a*d)^8)/(2*d^10*(c + d*x)^6)
 + (36*b^2*(b*c - a*d)^7)/(5*d^10*(c + d*x)^5) - (21*b^3*(b*c - a
*d)^6)/(d^10*(c + d*x)^4) + (42*b^4*(b*c - a*d)^5)/(d^10*(c + d*x
)^3) - (63*b^5*(b*c - a*d)^4)/(d^10*(c + d*x)^2) + (84*b^6*(b*c -
 a*d)^3)/(d^10*(c + d*x)) + (36*b^7*(b*c - a*d)^2*Log[c + d*x])/d
^10
```

Rubi [A] time = 0.669882, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{b^8x(8bc-9ad)}{d^9}+\frac{36b^7(bc-ad)^2\log(c+dx)}{d^{10}}+\frac{84b^6(bc-ad)^3}{d^{10}(c+dx)}-\frac{63b^5(bc-ad)^4}{d^{10}(c+dx)^2}+\frac{42b^4(bc-ad)^5}{d^{10}(c+dx)^3}-\frac{21b^3(bc-ad)^6}{d^{10}(c+dx)^4}+\frac{36b^2(bc-ad)^7}{5d^{10}(c+dx)^5}-\frac{3b(bc-ad)^8}{2d^{10}(c+dx)^6}+\frac{(bc-ad)^9}{7d^{10}(c+dx)^7}+\frac{b^9x^2}{2d^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^9/(c + d*x)^8,x]
```

```
[Out] -((b^8*(8*b*c - 9*a*d)*x)/d^9) + (b^9*x^2)/(2*d^8) + (b*c - a*d)^
9/(7*d^10*(c + d*x)^7) - (3*b*(b*c - a*d)^8)/(2*d^10*(c + d*x)^6)
 + (36*b^2*(b*c - a*d)^7)/(5*d^10*(c + d*x)^5) - (21*b^3*(b*c - a
*d)^6)/(d^10*(c + d*x)^4) + (42*b^4*(b*c - a*d)^5)/(d^10*(c + d*x
)^3) - (63*b^5*(b*c - a*d)^4)/(d^10*(c + d*x)^2) + (84*b^6*(b*c -
 a*d)^3)/(d^10*(c + d*x)) + (36*b^7*(b*c - a*d)^2*Log[c + d*x])/d
^10
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{b^9\int x\,dx}{d^8}+\frac{36b^7\left(ad-bc\right)^2\log\left(c+dx\right)}{d^{10}}-\frac{84b^6\left(ad-bc\right)^3}{d^{10}\left(c+dx\right)}-\frac{63b^5\left(ad-bc\right)^4}{d^{10}\left(c+dx\right)^2}-\frac{42b^4\left(ad-bc\right)^5}{d^{10}\left(c+dx\right)^3}-\frac{21b^3\left(ad-bc\right)^6}{d^{10}\left(c+dx\right)^4}-\frac{36b^2\left(ad-bc\right)^7}{5d^{10}\left(c+dx\right)^5}-\frac{3b\left(ad-bc\right)^8}{2d^{10}\left(c+dx\right)^6}+\frac{\left(9ad-8bc\right)\int b^8\,dx}{d^9}-\frac{\left(ad-bc\right)^9}{7d^{10}\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**9/(d*x+c)**8,x)
```

```
[Out] b**9*Integral(x, x)/d**8 + 36*b**7*(a*d - b*c)**2*log(c + d*x)/d*
*10 - 84*b**6*(a*d - b*c)**3/(d**10*(c + d*x)) - 63*b**5*(a*d - b
*c)**4/(d**10*(c + d*x)**2) - 42*b**4*(a*d - b*c)**5/(d**10*(c +
d*x)**3) - 21*b**3*(a*d - b*c)**6/(d**10*(c + d*x)**4) - 36*b**2*
(a*d - b*c)**7/(5*d**10*(c + d*x)**5) - 3*b*(a*d - b*c)**8/(2*d**
10*(c + d*x)**6) + (9*a*d - 8*b*c)*Integral(b**8, x)/d**9 - (a*d
- b*c)**9/(7*d**10*(c + d*x)**7)
```

Mathematica [B] time = 0.464107, size = 584, normalized size = 2.52

$$-\frac{10a^9d^9 + 15a^8bd^8(c+7dx) + 24a^7b^2d^7\left(c^2+7cdx+21d^2x^2\right) + 42a^6b^3d^6\left(c^3+7c^2dx+21cd^2x^2+35d^3x^3\right) + 84a^5b^4d^5\left(c^4 \cdots\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^9/(c + d*x)^8,x]
```

```
[Out] -(10*a^9*d^9 + 15*a^8*b*d^8*(c + 7*d*x) + 24*a^7*b^2*d^7*(c^2 + 7
*c*d*x + 21*d^2*x^2) + 42*a^6*b^3*d^6*(c^3 + 7*c^2*d*x + 21*c*d^2
*x^2 + 35*d^3*x^3) + 84*a^5*b^4*d^5*(c^4 + 7*c^3*d*x + 21*c^2*d^2
*x^2 + 35*c*d^3*x^3 + 35*d^4*x^4) + 210*a^4*b^5*d^4*(c^5 + 7*c^4*
d*x + 21*c^3*d^2*x^2 + 35*c^2*d^3*x^3 + 35*c*d^4*x^4 + 21*d^5*x^5
) + 840*a^3*b^6*d^3*(c^6 + 7*c^5*d*x + 21*c^4*d^2*x^2 + 35*c^3*d^
3*x^3 + 35*c^2*d^4*x^4 + 21*c*d^5*x^5 + 7*d^6*x^6) - 6*a^2*b^7*c*
d^2*(1089*c^6 + 7203*c^5*d*x + 20139*c^4*d^2*x^2 + 30625*c^3*d^3*
x^3 + 26950*c^2*d^4*x^4 + 13230*c*d^5*x^5 + 2940*d^6*x^6) + 6*a*b
^8*d*(1443*c^8 + 9261*c^7*d*x + 24843*c^6*d^2*x^2 + 35525*c^5*d^3
*x^3 + 28175*c^4*d^4*x^4 + 11025*c^3*d^5*x^5 + 735*c^2*d^6*x^6 -
735*c*d^7*x^7 - 105*d^8*x^8) - b^9*(3349*c^9 + 20923*c^8*d*x + 53
949*c^7*d^2*x^2 + 72275*c^6*d^3*x^3 + 50225*c^5*d^4*x^4 + 12495*c
^4*d^5*x^5 - 4655*c^3*d^6*x^6 - 3185*c^2*d^7*x^7 - 315*c*d^8*x^8
+ 35*d^9*x^9) - 2520*b^7*(b*c - a*d)^2*(c + d*x)^7*Log[c + d*x])/
(70*d^10*(c + d*x)^7)
```

Maple [B] time = 0.029, size = 1035, normalized size = 4.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^9/(d*x+c)^8,x)
```

```
[Out] 1/2*b^9*x^2/d^8-3/2*b^9/d^10/(d*x+c)^6*c^8-36/5*b^2/d^3/(d*x+c)^5
*a^7+36/5*b^9/d^10/(d*x+c)^5*c^7+9*b^8/d^8*a*x-8*b^9/d^9*x*c-42*b
^4/d^5/(d*x+c)^3*a^5+42*b^9/d^10/(d*x+c)^3*c^5-21*b^3/d^4/(d*x+c)
^4*a^6-21*b^9/d^10/(d*x+c)^4*c^6+36*b^7/d^8*ln(d*x+c)*a^2+36*b^9/
d^10*ln(d*x+c)*c^2+1/7/d^10/(d*x+c)^7*b^9*c^9-63*b^5/d^6/(d*x+c)^
2*a^4-63*b^9/d^10/(d*x+c)^2*c^4-84*b^6/d^7/(d*x+c)*a^3+84*b^9/d^1
0/(d*x+c)*c^3-3/2*b/d^2/(d*x+c)^6*a^8+126*b^4/d^5/(d*x+c)^4*a^5*c
-315*b^5/d^6/(d*x+c)^4*a^4*c^2-1/7/d/(d*x+c)^7*a^9-42*b^3/d^4/(d*
x+c)^6*a^6*c^2+84*b^4/d^5/(d*x+c)^6*a^5*c^3-105*b^5/d^6/(d*x+c)^6
*a^4*c^4+84*b^6/d^7/(d*x+c)^6*a^3*c^5-42*b^7/d^8/(d*x+c)^6*a^2*c^
6+12*b^8/d^9/(d*x+c)^6*a*c^7+252/5*b^3/d^4/(d*x+c)^5*a^6*c-756/5*
b^4/d^5/(d*x+c)^5*a^5*c^2+252*b^5/d^6/(d*x+c)^5*a^4*c^3-252*b^6/d
^7/(d*x+c)^5*a^3*c^4+756/5*b^7/d^8/(d*x+c)^5*a^2*c^5-252/5*b^8/d^
9/(d*x+c)^5*a*c^6-72*b^8/d^9*ln(d*x+c)*a*c+9/7/d^2/(d*x+c)^7*a^8*
b*c-36/7/d^3/(d*x+c)^7*a^7*b^2*c^2+12/d^4/(d*x+c)^7*a^6*b^3*c^3-1
8/d^5/(d*x+c)^7*a^5*b^4*c^4+18/d^6/(d*x+c)^7*a^4*b^5*c^5-12/d^7/(
d*x+c)^7*a^3*b^6*c^6+36/7/d^8/(d*x+c)^7*a^2*b^7*c^7-9/7/d^9/(d*x+
c)^7*a*b^8*c^8+252*b^6/d^7/(d*x+c)^2*a^3*c-378*b^7/d^8/(d*x+c)^2*
a^2*c^2+252*b^8/d^9/(d*x+c)^2*a*c^3+420*b^6/d^7/(d*x+c)^4*a^3*c^3
-315*b^7/d^8/(d*x+c)^4*a^2*c^4+126*b^8/d^9/(d*x+c)^4*a*c^5+420*b^
7/d^8/(d*x+c)^3*a^2*c^3-210*b^8/d^9/(d*x+c)^3*a*c^4+210*b^5/d^6/(
d*x+c)^3*a^4*c-420*b^6/d^7/(d*x+c)^3*a^3*c^2+252*b^7/d^8/(d*x+c)*
a^2*c-252*b^8/d^9/(d*x+c)*a*c^2+12*b^2/d^3/(d*x+c)^6*a^7*c
```

Maxima [A] time = 1.45483, size = 1061, normalized size = 4.57

$$\frac{3349\,b^9c^9 - 8658\,ab^8c^8d + 6534\,a^2b^7c^7d^2 - 840\,a^3b^6c^6d^3 - 210\,a^4b^5c^5d^4 - 84\,a^5b^4c^4d^5 - 42\,a^6b^3c^3d^6 - 24\,a^7b^2c^2d^7 - 15\,a^8}{}$$

$$+\frac{b^9dx^2 - 2\left(8\,b^9c - 9\,ab^8d\right)x}{2\,d^9} + \frac{36\left(b^9c^2 - 2\,ab^8cd + a^2b^7d^2\right)\log\left(dx + c\right)}{d^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] 1/70*(3349*b^9*c^9 - 8658*a*b^8*c^8*d + 6534*a^2*b^7*c^7*d^2 - 84
0*a^3*b^6*c^6*d^3 - 210*a^4*b^5*c^5*d^4 - 84*a^5*b^4*c^4*d^5 - 42
*a^6*b^3*c^3*d^6 - 24*a^7*b^2*c^2*d^7 - 15*a^8*b*c*d^8 - 10*a^9*d
^9 + 5880*(b^9*c^3*d^6 - 3*a*b^8*c^2*d^7 + 3*a^2*b^7*c*d^8 - a^3*
b^6*d^9)*x^6 + 4410*(7*b^9*c^4*d^5 - 20*a*b^8*c^3*d^6 + 18*a^2*b^
7*c^2*d^7 - 4*a^3*b^6*c*d^8 - a^4*b^5*d^9)*x^5 + 1470*(47*b^9*c^5
*d^4 - 130*a*b^8*c^4*d^5 + 110*a^2*b^7*c^3*d^6 - 20*a^3*b^6*c^2*d
^7 - 5*a^4*b^5*c*d^8 - 2*a^5*b^4*d^9)*x^4 + 1470*(57*b^9*c^6*d^3
- 154*a*b^8*c^5*d^4 + 125*a^2*b^7*c^4*d^5 - 20*a^3*b^6*c^3*d^6 -
5*a^4*b^5*c^2*d^7 - 2*a^5*b^4*c*d^8 - a^6*b^3*d^9)*x^3 + 126*(459
*b^9*c^7*d^2 - 1218*a*b^8*c^6*d^3 + 959*a^2*b^7*c^5*d^4 - 140*a^3
*b^6*c^4*d^5 - 35*a^4*b^5*c^3*d^6 - 14*a^5*b^4*c^2*d^7 - 7*a^6*b^
3*c*d^8 - 4*a^7*b^2*d^9)*x^2 + 21*(1023*b^9*c^8*d - 2676*a*b^8*c^
7*d^2 + 2058*a^2*b^7*c^6*d^3 - 280*a^3*b^6*c^5*d^4 - 70*a^4*b^5*c
^4*d^5 - 28*a^5*b^4*c^3*d^6 - 14*a^6*b^3*c^2*d^7 - 8*a^7*b^2*c*d^
8 - 5*a^8*b*d^9)*x)/(d^17*x^7 + 7*c*d^16*x^6 + 21*c^2*d^15*x^5 +
```

```
35*c^3*d^14*x^4 + 35*c^4*d^13*x^3 + 21*c^5*d^12*x^2 + 7*c^6*d^11*
x + c^7*d^10) + 1/2*(b^9*d*x^2 - 2*(8*b^9*c - 9*a*b^8*d)*x)/d^9 +
 36*(b^9*c^2 - 2*a*b^8*c*d + a^2*b^7*d^2)*log(d*x + c)/d^10
```

Fricas [A] time = 0.228348, size = 1476, normalized size = 6.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] 1/70*(35*b^9*d^9*x^9 + 3349*b^9*c^9 - 8658*a*b^8*c^8*d + 6534*a^2
*b^7*c^7*d^2 - 840*a^3*b^6*c^6*d^3 - 210*a^4*b^5*c^5*d^4 - 84*a^5
*b^4*c^4*d^5 - 42*a^6*b^3*c^3*d^6 - 24*a^7*b^2*c^2*d^7 - 15*a^8*b
*c*d^8 - 10*a^9*d^9 - 315*(b^9*c*d^8 - 2*a*b^8*d^9)*x^8 - 245*(13
*b^9*c^2*d^7 - 18*a*b^8*c*d^8)*x^7 - 245*(19*b^9*c^3*d^6 + 18*a*b
^8*c^2*d^7 - 72*a^2*b^7*c*d^8 + 24*a^3*b^6*d^9)*x^6 + 735*(17*b^9
*c^4*d^5 - 90*a*b^8*c^3*d^6 + 108*a^2*b^7*c^2*d^7 - 24*a^3*b^6*c*
d^8 - 6*a^4*b^5*d^9)*x^5 + 245*(205*b^9*c^5*d^4 - 690*a*b^8*c^4*d
^5 + 660*a^2*b^7*c^3*d^6 - 120*a^3*b^6*c^2*d^7 - 30*a^4*b^5*c*d^8
 - 12*a^5*b^4*d^9)*x^4 + 245*(295*b^9*c^6*d^3 - 870*a*b^8*c^5*d^4
 + 750*a^2*b^7*c^4*d^5 - 120*a^3*b^6*c^3*d^6 - 30*a^4*b^5*c^2*d^7
 - 12*a^5*b^4*c*d^8 - 6*a^6*b^3*d^9)*x^3 + 21*(2569*b^9*c^7*d^2 -
 7098*a*b^8*c^6*d^3 + 5754*a^2*b^7*c^5*d^4 - 840*a^3*b^6*c^4*d^5
- 210*a^4*b^5*c^3*d^6 - 84*a^5*b^4*c^2*d^7 - 42*a^6*b^3*c*d^8 - 2
4*a^7*b^2*d^9)*x^2 + 7*(2989*b^9*c^8*d - 7938*a*b^8*c^7*d^2 + 617
4*a^2*b^7*c^6*d^3 - 840*a^3*b^6*c^5*d^4 - 210*a^4*b^5*c^4*d^5 - 8
4*a^5*b^4*c^3*d^6 - 42*a^6*b^3*c^2*d^7 - 24*a^7*b^2*c*d^8 - 15*a^
8*b*d^9)*x + 2520*(b^9*c^9 - 2*a*b^8*c^8*d + a^2*b^7*c^7*d^2 + (b
^9*c^2*d^7 - 2*a*b^8*c*d^8 + a^2*b^7*d^9)*x^7 + 7*(b^9*c^3*d^6 -
2*a*b^8*c^2*d^7 + a^2*b^7*c*d^8)*x^6 + 21*(b^9*c^4*d^5 - 2*a*b^8*
c^3*d^6 + a^2*b^7*c^2*d^7)*x^5 + 35*(b^9*c^5*d^4 - 2*a*b^8*c^4*d^
5 + a^2*b^7*c^3*d^6)*x^4 + 35*(b^9*c^6*d^3 - 2*a*b^8*c^5*d^4 + a^
2*b^7*c^4*d^5)*x^3 + 21*(b^9*c^7*d^2 - 2*a*b^8*c^6*d^3 + a^2*b^7*
c^5*d^4)*x^2 + 7*(b^9*c^8*d - 2*a*b^8*c^7*d^2 + a^2*b^7*c^6*d^3)*
x)*log(d*x + c))/(d^17*x^7 + 7*c*d^16*x^6 + 21*c^2*d^15*x^5 + 35*
c^3*d^14*x^4 + 35*c^4*d^13*x^3 + 21*c^5*d^12*x^2 + 7*c^6*d^11*x +
 c^7*d^10)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**9/(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223645, size = 976, normalized size = 4.21

$$\frac{36\left(b^{9}c^{2}-2\,ab^{8}cd+a^{2}b^{7}d^{2}\right)\ln\left(|dx+c|\right)}{d^{10}}+\frac{b^{9}d^{8}x^{2}-16\,b^{9}cd^{7}x+18\,ab^{8}d^{8}x}{2\,d^{16}}+\frac{3349\,b^{9}c^{9}-8658\,ab^{8}c^{8}d+6534\,a^{2}b^{7}c^{7}d^{2}-840\,a^{3}b^{6}c^{6}d^{3}-210\,a^{4}b^{5}c^{5}d^{4}-84\,a^{5}b^{4}c^{4}d^{5}-42\,a^{6}b^{3}c^{3}d^{6}-24\,a^{7}b^{2}c^{2}d^{7}-15\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^9/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] 36*(b^9*c^2 - 2*a*b^8*c*d + a^2*b^7*d^2)*ln(abs(d*x + c))/d^10 +
1/2*(b^9*d^8*x^2 - 16*b^9*c*d^7*x + 18*a*b^8*d^8*x)/d^16 + 1/70*(
3349*b^9*c^9 - 8658*a*b^8*c^8*d + 6534*a^2*b^7*c^7*d^2 - 840*a^3*
b^6*c^6*d^3 - 210*a^4*b^5*c^5*d^4 - 84*a^5*b^4*c^4*d^5 - 42*a^6*b
^3*c^3*d^6 - 24*a^7*b^2*c^2*d^7 - 15*a^8*b*c*d^8 - 10*a^9*d^9 + 5
880*(b^9*c^3*d^6 - 3*a*b^8*c^2*d^7 + 3*a^2*b^7*c*d^8 - a^3*b^6*d^
9)*x^6 + 4410*(7*b^9*c^4*d^5 - 20*a*b^8*c^3*d^6 + 18*a^2*b^7*c^2*
d^7 - 4*a^3*b^6*c*d^8 - a^4*b^5*d^9)*x^5 + 1470*(47*b^9*c^5*d^4 -
 130*a*b^8*c^4*d^5 + 110*a^2*b^7*c^3*d^6 - 20*a^3*b^6*c^2*d^7 - 5
*a^4*b^5*c*d^8 - 2*a^5*b^4*d^9)*x^4 + 1470*(57*b^9*c^6*d^3 - 154*
a*b^8*c^5*d^4 + 125*a^2*b^7*c^4*d^5 - 20*a^3*b^6*c^3*d^6 - 5*a^4*
b^5*c^2*d^7 - 2*a^5*b^4*c*d^8 - a^6*b^3*d^9)*x^3 + 126*(459*b^9*c
^7*d^2 - 1218*a*b^8*c^6*d^3 + 959*a^2*b^7*c^5*d^4 - 140*a^3*b^6*c
^4*d^5 - 35*a^4*b^5*c^3*d^6 - 14*a^5*b^4*c^2*d^7 - 7*a^6*b^3*c*d^
8 - 4*a^7*b^2*d^9)*x^2 + 21*(1023*b^9*c^8*d - 2676*a*b^8*c^7*d^2
+ 2058*a^2*b^7*c^6*d^3 - 280*a^3*b^6*c^5*d^4 - 70*a^4*b^5*c^4*d^5
 - 28*a^5*b^4*c^3*d^6 - 14*a^6*b^3*c^2*d^7 - 8*a^7*b^2*c*d^8 - 5*
a^8*b*d^9)*x)/((d*x + c)^7*d^10)
```

3.1363 $\int \frac{(a+bx)^8}{(c+dx)^8}\,dx$

Optimal. Leaf size=209

$$-\frac{8b^7(bc-ad)\log(c+dx)}{d^9}-\frac{28b^6(bc-ad)^2}{d^9(c+dx)}+\frac{28b^5(bc-ad)^3}{d^9(c+dx)^2}-\frac{70b^4(bc-ad)^4}{3d^9(c+dx)^3}+\frac{14b^3(bc-ad)^5}{d^9(c+dx)^4}-\frac{28b^2(bc-ad)^6}{5d^9(c+dx)^5}+\frac{4b(bc-ad)^7}{3d^9(c+dx)^6}-\frac{(bc-ad)^8}{7d^9(c+dx)^7}+\frac{b^8x}{d^8}$$

```
[Out] (b^8*x)/d^8 - (b*c - a*d)^8/(7*d^9*(c + d*x)^7) + (4*b*(b*c - a*d
)^7)/(3*d^9*(c + d*x)^6) - (28*b^2*(b*c - a*d)^6)/(5*d^9*(c + d*x
)^5) + (14*b^3*(b*c - a*d)^5)/(d^9*(c + d*x)^4) - (70*b^4*(b*c -
a*d)^4)/(3*d^9*(c + d*x)^3) + (28*b^5*(b*c - a*d)^3)/(d^9*(c + d*
x)^2) - (28*b^6*(b*c - a*d)^2)/(d^9*(c + d*x)) - (8*b^7*(b*c - a*
d)*Log[c + d*x])/d^9
```

Rubi [A] time = 0.540143, antiderivative size = 209, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{8b^7(bc-ad)\log(c+dx)}{d^9}-\frac{28b^6(bc-ad)^2}{d^9(c+dx)}+\frac{28b^5(bc-ad)^3}{d^9(c+dx)^2}-\frac{70b^4(bc-ad)^4}{3d^9(c+dx)^3}+\frac{14b^3(bc-ad)^5}{d^9(c+dx)^4}-\frac{28b^2(bc-ad)^6}{5d^9(c+dx)^5}+\frac{4b(bc-ad)^7}{3d^9(c+dx)^6}-\frac{(bc-ad)^8}{7d^9(c+dx)^7}+\frac{b^8x}{d^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^8/(c + d*x)^8,x]
```


```
[Out] (b^8*x)/d^8 - (b*c - a*d)^8/(7*d^9*(c + d*x)^7) + (4*b*(b*c - a*d
)^7)/(3*d^9*(c + d*x)^6) - (28*b^2*(b*c - a*d)^6)/(5*d^9*(c + d*x
)^5) + (14*b^3*(b*c - a*d)^5)/(d^9*(c + d*x)^4) - (70*b^4*(b*c -
a*d)^4)/(3*d^9*(c + d*x)^3) + (28*b^5*(b*c - a*d)^3)/(d^9*(c + d*
x)^2) - (28*b^6*(b*c - a*d)^2)/(d^9*(c + d*x)) - (8*b^7*(b*c - a*
d)*Log[c + d*x])/d^9
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{8b^7\left(ad-bc\right)\log\left(c+dx\right)}{d^9}-\frac{28b^6\left(ad-bc\right)^2}{d^9\left(c+dx\right)}-\frac{28b^5\left(ad-bc\right)^3}{d^9\left(c+dx\right)^2}-\frac{70b^4\left(ad-bc\right)^4}{3d^9\left(c+dx\right)^3}-\frac{14b^3\left(ad-bc\right)^5}{d^9\left(c+dx\right)^4}-\frac{28b^2\left(ad-bc\right)^6}{5d^9\left(c+dx\right)^5}-\frac{4b\left(ad-bc\right)^7}{3d^9\left(c+dx\right)^6}+\frac{\int b^8\,dx}{d^8}-\frac{\left(ad-bc\right)^8}{7d^9\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**8/(d*x+c)**8,x)
```

```
[Out] 8*b**7*(a*d - b*c)*log(c + d*x)/d**9 - 28*b**6*(a*d - b*c)**2/(d*
*9*(c + d*x)) - 28*b**5*(a*d - b*c)**3/(d**9*(c + d*x)**2) - 70*b
**4*(a*d - b*c)**4/(3*d**9*(c + d*x)**3) - 14*b**3*(a*d - b*c)**5
/(d**9*(c + d*x)**4) - 28*b**2*(a*d - b*c)**6/(5*d**9*(c + d*x)**
5) - 4*b*(a*d - b*c)**7/(3*d**9*(c + d*x)**6) + Integral(b**8, x)
/d**8 - (a*d - b*c)**8/(7*d**9*(c + d*x)**7)
```

Mathematica [B] time = 0.358386, size = 474, normalized size = 2.27

$$-\frac{15a^8d^8 + 20a^7bd^7(c + 7dx) + 28a^6b^2d^6\left(c^2 + 7cdx + 21d^2x^2\right) + 42a^5b^3d^5\left(c^3 + 7c^2dx + 21cd^2x^2 + 35d^3x^3\right) + 70a^4b^4d^4\left(c^4 \right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^8/(c + d*x)^8,x]
```

```
[Out] -(15*a^8*d^8 + 20*a^7*b*d^7*(c + 7*d*x) + 28*a^6*b^2*d^6*(c^2 + 7
*c*d*x + 21*d^2*x^2) + 42*a^5*b^3*d^5*(c^3 + 7*c^2*d*x + 21*c*d^2
*x^2 + 35*d^3*x^3) + 70*a^4*b^4*d^4*(c^4 + 7*c^3*d*x + 21*c^2*d^2
*x^2 + 35*c*d^3*x^3 + 35*d^4*x^4) + 140*a^3*b^5*d^3*(c^5 + 7*c^4*
d*x + 21*c^3*d^2*x^2 + 35*c^2*d^3*x^3 + 35*c*d^4*x^4 + 21*d^5*x^5
) + 420*a^2*b^6*d^2*(c^6 + 7*c^5*d*x + 21*c^4*d^2*x^2 + 35*c^3*d^
3*x^3 + 35*c^2*d^4*x^4 + 21*c*d^5*x^5 + 7*d^6*x^6) - 2*a*b^7*c*d*
(1089*c^6 + 7203*c^5*d*x + 20139*c^4*d^2*x^2 + 30625*c^3*d^3*x^3
+ 26950*c^2*d^4*x^4 + 13230*c*d^5*x^5 + 2940*d^6*x^6) + b^8*(1443
*c^8 + 9261*c^7*d*x + 24843*c^6*d^2*x^2 + 35525*c^5*d^3*x^3 + 281
75*c^4*d^4*x^4 + 11025*c^3*d^5*x^5 + 735*c^2*d^6*x^6 - 735*c*d^7*
x^7 - 105*d^8*x^8) + 840*b^7*(b*c - a*d)*(c + d*x)^7*Log[c + d*x]
)/(105*d^9*(c + d*x)^7)
```

Maple [B] time = 0.019, size = 845, normalized size = 4.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^8/(d*x+c)^8,x)
```

```
[Out] -28*b^6/d^7/(d*x+c)*a^2-28*b^8/d^9/(d*x+c)*c^2-4/3*b/d^2/(d*x+c)^
6*a^7+4/3*b^8/d^9/(d*x+c)^6*c^7-70/3*b^4/d^5/(d*x+c)^3*a^4-70/3*b
^8/d^9/(d*x+c)^3*c^4-28/5*b^2/d^3/(d*x+c)^5*a^6-28/5*b^8/d^9/(d*x
+c)^5*c^6+8*b^7/d^8*ln(d*x+c)*a-8*b^8/d^9*ln(d*x+c)*c-1/7/d^9/(d*
x+c)^7*b^8*c^8-14*b^3/d^4/(d*x+c)^4*a^5+14*b^8/d^9/(d*x+c)^4*c^5-
28*b^5/d^6/(d*x+c)^2*a^3+28*b^8/d^9/(d*x+c)^2*c^3+b^8*x/d^8-1/7/d
```

```
/(d*x+c)^7*a^8+140*b^6/d^7/(d*x+c)^4*a^2*c^3-70*b^7/d^8/(d*x+c)^4
*a*c^4+168/5*b^7/d^8/(d*x+c)^5*a*c^5+8/7/d^2/(d*x+c)^7*a^7*b*c-4/
d^3/(d*x+c)^7*a^6*b^2*c^2+8/d^4/(d*x+c)^7*a^5*b^3*c^3-10/d^5/(d*x
+c)^7*a^4*b^4*c^4+8/d^6/(d*x+c)^7*c^5*a^3*b^5-4/d^7/(d*x+c)^7*c^6
*a^2*b^6+8/7/d^8/(d*x+c)^7*a*b^7*c^7+70*b^4/d^5/(d*x+c)^4*a^4*c-1
40*b^5/d^6/(d*x+c)^4*a^3*c^2-28/3*b^7/d^8/(d*x+c)^6*a*c^6+280/3*b
^5/d^6/(d*x+c)^3*a^3*c-140*b^6/d^7/(d*x+c)^3*a^2*c^2+280/3*b^7/d^
8/(d*x+c)^3*a*c^3+168/5*b^3/d^4/(d*x+c)^5*a^5*c-84*b^4/d^5/(d*x+c
)^5*a^4*c^2+112*b^5/d^6/(d*x+c)^5*a^3*c^3-84*b^6/d^7/(d*x+c)^5*a^
2*c^4+56*b^7/d^8/(d*x+c)*a*c+28/3*b^2/d^3/(d*x+c)^6*a^6*c-28*b^3/
d^4/(d*x+c)^6*a^5*c^2+140/3*b^4/d^5/(d*x+c)^6*a^4*c^3-140/3*b^5/d
^6/(d*x+c)^6*a^3*c^4+28*b^6/d^7/(d*x+c)^6*a^2*c^5+84*b^6/d^7/(d*x
+c)^2*a^2*c-84*b^7/d^8/(d*x+c)^2*a*c^2
```

Maxima [A] time = 1.42783, size = 876, normalized size = 4.19

$$\frac{b^8x}{d^8} - \frac{1443\,b^8c^8 - 2178\,ab^7c^7d + 420\,a^2b^6c^6d^2 + 140\,a^3b^5c^5d^3 + 70\,a^4b^4c^4d^4 + 42\,a^5b^3c^3d^5 + 28\,a^6b^2c^2d^6 + 20\,a^7bcd^7 + 15\,a^8d^8 + \cdots}{\cdots} - \frac{8\left(b^8c - ab^7d\right)\log\left(dx + c\right)}{d^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] b^8*x/d^8 - 1/105*(1443*b^8*c^8 - 2178*a*b^7*c^7*d + 420*a^2*b^6*
c^6*d^2 + 140*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 + 42*a^5*b^3*c
^3*d^5 + 28*a^6*b^2*c^2*d^6 + 20*a^7*b*c*d^7 + 15*a^8*d^8 + 2940*
(b^8*c^2*d^6 - 2*a*b^7*c*d^7 + a^2*b^6*d^8)*x^6 + 2940*(5*b^8*c^3
*d^5 - 9*a*b^7*c^2*d^6 + 3*a^2*b^6*c*d^7 + a^3*b^5*d^8)*x^5 + 245
0*(13*b^8*c^4*d^4 - 22*a*b^7*c^3*d^5 + 6*a^2*b^6*c^2*d^6 + 2*a^3*
b^5*c*d^7 + a^4*b^4*d^8)*x^4 + 490*(77*b^8*c^5*d^3 - 125*a*b^7*c^
4*d^4 + 30*a^2*b^6*c^3*d^5 + 10*a^3*b^5*c^2*d^6 + 5*a^4*b^4*c*d^7
 + 3*a^5*b^3*d^8)*x^3 + 294*(87*b^8*c^6*d^2 - 137*a*b^7*c^5*d^3 +
 30*a^2*b^6*c^4*d^4 + 10*a^3*b^5*c^3*d^5 + 5*a^4*b^4*c^2*d^6 + 3*
a^5*b^3*c*d^7 + 2*a^6*b^2*d^8)*x^2 + 14*(669*b^8*c^7*d - 1029*a*b
^7*c^6*d^2 + 210*a^2*b^6*c^5*d^3 + 70*a^3*b^5*c^4*d^4 + 35*a^4*b^
4*c^3*d^5 + 21*a^5*b^3*c^2*d^6 + 14*a^6*b^2*c*d^7 + 10*a^7*b*d^8)
*x)/(d^16*x^7 + 7*c*d^15*x^6 + 21*c^2*d^14*x^5 + 35*c^3*d^13*x^4
+ 35*c^4*d^12*x^3 + 21*c^5*d^11*x^2 + 7*c^6*d^10*x + c^7*d^9) - 8
*(b^8*c - a*b^7*d)*log(d*x + c)/d^9
```

Fricas [A] time = 0.229281, size = 1150, normalized size = 5.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] 1/105*(105*b^8*d^8*x^8 + 735*b^8*c*d^7*x^7 - 1443*b^8*c^8 + 2178*
a*b^7*c^7*d - 420*a^2*b^6*c^6*d^2 - 140*a^3*b^5*c^5*d^3 - 70*a^4*
b^4*c^4*d^4 - 42*a^5*b^3*c^3*d^5 - 28*a^6*b^2*c^2*d^6 - 20*a^7*b*
c*d^7 - 15*a^8*d^8 - 735*(b^8*c^2*d^6 - 8*a*b^7*c*d^7 + 4*a^2*b^6
*d^8)*x^6 - 735*(15*b^8*c^3*d^5 - 36*a*b^7*c^2*d^6 + 12*a^2*b^6*c
*d^7 + 4*a^3*b^5*d^8)*x^5 - 1225*(23*b^8*c^4*d^4 - 44*a*b^7*c^3*d
^5 + 12*a^2*b^6*c^2*d^6 + 4*a^3*b^5*c*d^7 + 2*a^4*b^4*d^8)*x^4 -
245*(145*b^8*c^5*d^3 - 250*a*b^7*c^4*d^4 + 60*a^2*b^6*c^3*d^5 + 2
0*a^3*b^5*c^2*d^6 + 10*a^4*b^4*c*d^7 + 6*a^5*b^3*d^8)*x^3 - 147*(
169*b^8*c^6*d^2 - 274*a*b^7*c^5*d^3 + 60*a^2*b^6*c^4*d^4 + 20*a^3
*b^5*c^3*d^5 + 10*a^4*b^4*c^2*d^6 + 6*a^5*b^3*c*d^7 + 4*a^6*b^2*d
^8)*x^2 - 7*(1323*b^8*c^7*d - 2058*a*b^7*c^6*d^2 + 420*a^2*b^6*c^
5*d^3 + 140*a^3*b^5*c^4*d^4 + 70*a^4*b^4*c^3*d^5 + 42*a^5*b^3*c^2
*d^6 + 28*a^6*b^2*c*d^7 + 20*a^7*b*d^8)*x - 840*(b^8*c^8 - a*b^7*
c^7*d + (b^8*c*d^7 - a*b^7*d^8)*x^7 + 7*(b^8*c^2*d^6 - a*b^7*c*d^
7)*x^6 + 21*(b^8*c^3*d^5 - a*b^7*c^2*d^6)*x^5 + 35*(b^8*c^4*d^4 -
 a*b^7*c^3*d^5)*x^4 + 35*(b^8*c^5*d^3 - a*b^7*c^4*d^4)*x^3 + 21*(
b^8*c^6*d^2 - a*b^7*c^5*d^3)*x^2 + 7*(b^8*c^7*d - a*b^7*c^6*d^2)*
x)*log(d*x + c))/(d^16*x^7 + 7*c*d^15*x^6 + 21*c^2*d^14*x^5 + 35*
c^3*d^13*x^4 + 35*c^4*d^12*x^3 + 21*c^5*d^11*x^2 + 7*c^6*d^10*x +
 c^7*d^9)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**8/(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220244, size = 784, normalized size = 3.75

$$\frac{b^8x}{d^8} - \frac{8\left(b^8c - ab^7d\right)\ln\left(|dx+c|\right)}{d^9} - \frac{1443\,b^8c^8 - 2178\,ab^7c^7d + 420\,a^2b^6c^6d^2 + 140\,a^3b^5c^5d^3 + 70\,a^4b^4c^4d^4 + 42\,a^5b^3c^3d^5 + 28\,a^6b^2c^2d^6 + 20\,a^7bcd^7 + 15\,a^8d^8 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^8/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] b^8*x/d^8 - 8*(b^8*c - a*b^7*d)*ln(abs(d*x + c))/d^9 - 1/105*(144
3*b^8*c^8 - 2178*a*b^7*c^7*d + 420*a^2*b^6*c^6*d^2 + 140*a^3*b^5*
```

```
c^5*d^3 + 70*a^4*b^4*c^4*d^4 + 42*a^5*b^3*c^3*d^5 + 28*a^6*b^2*c^
2*d^6 + 20*a^7*b*c*d^7 + 15*a^8*d^8 + 2940*(b^8*c^2*d^6 - 2*a*b^7
*c*d^7 + a^2*b^6*d^8)*x^6 + 2940*(5*b^8*c^3*d^5 - 9*a*b^7*c^2*d^6
 + 3*a^2*b^6*c*d^7 + a^3*b^5*d^8)*x^5 + 2450*(13*b^8*c^4*d^4 - 22
*a*b^7*c^3*d^5 + 6*a^2*b^6*c^2*d^6 + 2*a^3*b^5*c*d^7 + a^4*b^4*d^
8)*x^4 + 490*(77*b^8*c^5*d^3 - 125*a*b^7*c^4*d^4 + 30*a^2*b^6*c^3
*d^5 + 10*a^3*b^5*c^2*d^6 + 5*a^4*b^4*c*d^7 + 3*a^5*b^3*d^8)*x^3
+ 294*(87*b^8*c^6*d^2 - 137*a*b^7*c^5*d^3 + 30*a^2*b^6*c^4*d^4 +
10*a^3*b^5*c^3*d^5 + 5*a^4*b^4*c^2*d^6 + 3*a^5*b^3*c*d^7 + 2*a^6*
b^2*d^8)*x^2 + 14*(669*b^8*c^7*d - 1029*a*b^7*c^6*d^2 + 210*a^2*b
^6*c^5*d^3 + 70*a^3*b^5*c^4*d^4 + 35*a^4*b^4*c^3*d^5 + 21*a^5*b^3
*c^2*d^6 + 14*a^6*b^2*c*d^7 + 10*a^7*b*d^8)*x)/((d*x + c)^7*d^9)
```

3.1364 $\int \frac{(a+bx)^7}{(c+dx)^8}\,dx$

Optimal. Leaf size=194

$$\frac{7b^6(bc-ad)}{d^8(c+dx)}-\frac{21b^5(bc-ad)^2}{2d^8(c+dx)^2}+\frac{35b^4(bc-ad)^3}{3d^8(c+dx)^3}-\frac{35b^3(bc-ad)^4}{4d^8(c+dx)^4}+\frac{21b^2(bc-ad)^5}{5d^8(c+dx)^5}-\frac{7b(bc-ad)^6}{6d^8(c+dx)^6}+\frac{(bc-ad)^7}{7d^8(c+dx)^7}+\frac{b^7\log(c+dx)}{d^8}$$

```
[Out] (b*c - a*d)^7/(7*d^8*(c + d*x)^7) - (7*b*(b*c - a*d)^6)/(6*d^8*(c
 + d*x)^6) + (21*b^2*(b*c - a*d)^5)/(5*d^8*(c + d*x)^5) - (35*b^3
*(b*c - a*d)^4)/(4*d^8*(c + d*x)^4) + (35*b^4*(b*c - a*d)^3)/(3*d
^8*(c + d*x)^3) - (21*b^5*(b*c - a*d)^2)/(2*d^8*(c + d*x)^2) + (7
*b^6*(b*c - a*d))/(d^8*(c + d*x)) + (b^7*Log[c + d*x])/d^8
```

Rubi [A] time = 0.423603, antiderivative size = 194, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{7b^6(bc-ad)}{d^8(c+dx)}-\frac{21b^5(bc-ad)^2}{2d^8(c+dx)^2}+\frac{35b^4(bc-ad)^3}{3d^8(c+dx)^3}-\frac{35b^3(bc-ad)^4}{4d^8(c+dx)^4}+\frac{21b^2(bc-ad)^5}{5d^8(c+dx)^5}-\frac{7b(bc-ad)^6}{6d^8(c+dx)^6}+\frac{(bc-ad)^7}{7d^8(c+dx)^7}+\frac{b^7\log(c+dx)}{d^8}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^7/(c + d*x)^8,x]
```

```
[Out] (b*c - a*d)^7/(7*d^8*(c + d*x)^7) - (7*b*(b*c - a*d)^6)/(6*d^8*(c
 + d*x)^6) + (21*b^2*(b*c - a*d)^5)/(5*d^8*(c + d*x)^5) - (35*b^3
*(b*c - a*d)^4)/(4*d^8*(c + d*x)^4) + (35*b^4*(b*c - a*d)^3)/(3*d
^8*(c + d*x)^3) - (21*b^5*(b*c - a*d)^2)/(2*d^8*(c + d*x)^2) + (7
*b^6*(b*c - a*d))/(d^8*(c + d*x)) + (b^7*Log[c + d*x])/d^8
```

Rubi in Sympy [A] time = 70.6253, size = 178, normalized size = 0.92

$$\frac{b^7\log\left(c+dx\right)}{d^8}-\frac{7b^6\left(ad-bc\right)}{d^8\left(c+dx\right)}-\frac{21b^5\left(ad-bc\right)^2}{2d^8\left(c+dx\right)^2}-\frac{35b^4\left(ad-bc\right)^3}{3d^8\left(c+dx\right)^3}-\frac{35b^3\left(ad-bc\right)^4}{4d^8\left(c+dx\right)^4}-\frac{21b^2\left(ad-bc\right)^5}{5d^8\left(c+dx\right)^5}-\frac{7b\left(ad-bc\right)^6}{6d^8\left(c+dx\right)^6}-\frac{\left(ad-bc\right)^7}{7d^8\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**7/(d*x+c)**8,x)
```

```
[Out] b**7*log(c + d*x)/d**8 - 7*b**6*(a*d - b*c)/(d**8*(c + d*x)) - 21
*b**5*(a*d - b*c)**2/(2*d**8*(c + d*x)**2) - 35*b**4*(a*d - b*c)*
*3/(3*d**8*(c + d*x)**3) - 35*b**3*(a*d - b*c)**4/(4*d**8*(c + d*
x)**4) - 21*b**2*(a*d - b*c)**5/(5*d**8*(c + d*x)**5) - 7*b*(a*d
- b*c)**6/(6*d**8*(c + d*x)**6) - (a*d - b*c)**7/(7*d**8*(c + d*x
)**7)
```

Mathematica [A] time = 0.520615, size = 308, normalized size = 1.59

$$(bc-ad)\left(60a^6d^6+10a^5bd^5(13c+49dx)+2a^4b^2d^4\left(107c^2+539cdx+882d^2x^2\right)+a^3b^3d^3\left(319c^3+1813c^2dx+3969cd^2x^2+\right.\right.$$

$$+\frac{b^7\log(c+dx)}{d^8}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^7/(c + d*x)^8,x]
```

```
[Out] ((b*c - a*d)*(60*a^6*d^6 + 10*a^5*b*d^5*(13*c + 49*d*x) + 2*a^4*b
^2*d^4*(107*c^2 + 539*c*d*x + 882*d^2*x^2) + a^3*b^3*d^3*(319*c^3
 + 1813*c^2*d*x + 3969*c*d^2*x^2 + 3675*d^3*x^3) + a^2*b^4*d^2*(4
59*c^4 + 2793*c^3*d*x + 6909*c^2*d^2*x^2 + 8575*c*d^3*x^3 + 4900*
d^4*x^4) + a*b^5*d*(669*c^5 + 4263*c^4*d*x + 11319*c^3*d^2*x^2 +
15925*c^2*d^3*x^3 + 12250*c*d^4*x^4 + 4410*d^5*x^5) + b^6*(1089*c
^6 + 7203*c^5*d*x + 20139*c^4*d^2*x^2 + 30625*c^3*d^3*x^3 + 26950
*c^2*d^4*x^4 + 13230*c*d^5*x^5 + 2940*d^6*x^6)))/(420*d^8*(c + d*
x)^7) + (b^7*Log[c + d*x])/d^8
```

Maple [B] time = 0.015, size = 672, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^7/(d*x+c)^8,x)
```

```
[Out] 1/7/d^8/(d*x+c)^7*b^7*c^7-21/2*b^5/d^6/(d*x+c)^2*a^2-21/2*b^7/d^8
/(d*x+c)^2*c^2-7*b^6/d^7/(d*x+c)*a+7*b^7/d^8/(d*x+c)*c-35/4*b^3/d
^4/(d*x+c)^4*a^4-35/4*b^7/d^8/(d*x+c)^4*c^4-21/5*b^2/d^3/(d*x+c)^
5*a^5+21/5*b^7/d^8/(d*x+c)^5*c^5-7/6*b/d^2/(d*x+c)^6*a^6-7/6*b^7/
d^8/(d*x+c)^6*c^6-35/3*b^4/d^5/(d*x+c)^3*a^3+35/3*b^7/d^8/(d*x+c)
^3*c^3+3/d^6/(d*x+c)^7*a^2*b^5*c^5-1/d^7/(d*x+c)^7*a*b^6*c^6-1/7/
d/(d*x+c)^7*a^7+b^7*ln(d*x+c)/d^8+21*b^6/d^7/(d*x+c)^2*a*c-5/d^5/
(d*x+c)^7*a^3*b^4*c^4-35/2*b^3/d^4/(d*x+c)^6*a^4*c^2+70/3*b^4/d^5
/(d*x+c)^6*a^3*c^3-35/2*b^5/d^6/(d*x+c)^6*a^2*c^4+7*b^6/d^7/(d*x+
c)^6*a*c^5+35*b^5/d^6/(d*x+c)^3*a^2*c-35*b^6/d^7/(d*x+c)^3*a*c^2+
1/d^2/(d*x+c)^7*a^6*b*c-3/d^3/(d*x+c)^7*a^5*b^2*c^2+5/d^4/(d*x+c)
```

```
^7*a^4*b^3*c^3+7*b^2/d^3/(d*x+c)^6*a^5*c+35*b^4/d^5/(d*x+c)^4*a^3
*c-105/2*b^5/d^6/(d*x+c)^4*a^2*c^2+35*b^6/d^7/(d*x+c)^4*a*c^3+21*
b^3/d^4/(d*x+c)^5*a^4*c-42*b^4/d^5/(d*x+c)^5*a^3*c^2+42*b^5/d^6/(
d*x+c)^5*a^2*c^3-21*b^6/d^7/(d*x+c)^5*a*c^4
```

Maxima [A] time = 1.38734, size = 722, normalized size = 3.72

$$\frac{1089\,b^7c^7 - 420\,ab^6c^6d - 210\,a^2b^5c^5d^2 - 140\,a^3b^4c^4d^3 - 105\,a^4b^3c^3d^4 - 84\,a^5b^2c^2d^5 - 70\,a^6bcd^6 - 60\,a^7d^7 + 2940\,\big(b^7cd^6 -}{}$$

$$+\frac{b^7\log(dx+c)}{d^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] 1/420*(1089*b^7*c^7 - 420*a*b^6*c^6*d - 210*a^2*b^5*c^5*d^2 - 140
*a^3*b^4*c^4*d^3 - 105*a^4*b^3*c^3*d^4 - 84*a^5*b^2*c^2*d^5 - 70*
a^6*b*c*d^6 - 60*a^7*d^7 + 2940*(b^7*c*d^6 - a*b^6*d^7)*x^6 + 441
0*(3*b^7*c^2*d^5 - 2*a*b^6*c*d^6 - a^2*b^5*d^7)*x^5 + 2450*(11*b^
7*c^3*d^4 - 6*a*b^6*c^2*d^5 - 3*a^2*b^5*c*d^6 - 2*a^3*b^4*d^7)*x^
4 + 1225*(25*b^7*c^4*d^3 - 12*a*b^6*c^3*d^4 - 6*a^2*b^5*c^2*d^5 -
 4*a^3*b^4*c*d^6 - 3*a^4*b^3*d^7)*x^3 + 147*(137*b^7*c^5*d^2 - 60
*a*b^6*c^4*d^3 - 30*a^2*b^5*c^3*d^4 - 20*a^3*b^4*c^2*d^5 - 15*a^4
*b^3*c*d^6 - 12*a^5*b^2*d^7)*x^2 + 49*(147*b^7*c^6*d - 60*a*b^6*c
^5*d^2 - 30*a^2*b^5*c^4*d^3 - 20*a^3*b^4*c^3*d^4 - 15*a^4*b^3*c^2
*d^5 - 12*a^5*b^2*c*d^6 - 10*a^6*b*d^7)*x)/(d^15*x^7 + 7*c*d^14*x
^6 + 21*c^2*d^13*x^5 + 35*c^3*d^12*x^4 + 35*c^4*d^11*x^3 + 21*c^5
*d^10*x^2 + 7*c^6*d^9*x + c^7*d^8) + b^7*log(d*x + c)/d^8
```

Fricas [A] time = 0.216041, size = 844, normalized size = 4.35

$$\frac{1089\,b^7c^7 - 420\,ab^6c^6d - 210\,a^2b^5c^5d^2 - 140\,a^3b^4c^4d^3 - 105\,a^4b^3c^3d^4 - 84\,a^5b^2c^2d^5 - 70\,a^6bcd^6 - 60\,a^7d^7 + 2940\,\big(b^7cd^6 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] 1/420*(1089*b^7*c^7 - 420*a*b^6*c^6*d - 210*a^2*b^5*c^5*d^2 - 140
*a^3*b^4*c^4*d^3 - 105*a^4*b^3*c^3*d^4 - 84*a^5*b^2*c^2*d^5 - 70*
a^6*b*c*d^6 - 60*a^7*d^7 + 2940*(b^7*c*d^6 - a*b^6*d^7)*x^6 + 441
0*(3*b^7*c^2*d^5 - 2*a*b^6*c*d^6 - a^2*b^5*d^7)*x^5 + 2450*(11*b^
7*c^3*d^4 - 6*a*b^6*c^2*d^5 - 3*a^2*b^5*c*d^6 - 2*a^3*b^4*d^7)*x^
4 + 1225*(25*b^7*c^4*d^3 - 12*a*b^6*c^3*d^4 - 6*a^2*b^5*c^2*d^5 -
 4*a^3*b^4*c*d^6 - 3*a^4*b^3*d^7)*x^3 + 147*(137*b^7*c^5*d^2 - 60
*a*b^6*c^4*d^3 - 30*a^2*b^5*c^3*d^4 - 20*a^3*b^4*c^2*d^5 - 15*a^4
```

```
*b^3*c*d^6 - 12*a^5*b^2*d^7)*x^2 + 49*(147*b^7*c^6*d - 60*a*b^6*c
^5*d^2 - 30*a^2*b^5*c^4*d^3 - 20*a^3*b^4*c^3*d^4 - 15*a^4*b^3*c^2
*d^5 - 12*a^5*b^2*c*d^6 - 10*a^6*b*d^7)*x + 420*(b^7*d^7*x^7 + 7*
b^7*c*d^6*x^6 + 21*b^7*c^2*d^5*x^5 + 35*b^7*c^3*d^4*x^4 + 35*b^7*
c^4*d^3*x^3 + 21*b^7*c^5*d^2*x^2 + 7*b^7*c^6*d*x + b^7*c^7)*log(d
*x + c))/(d^15*x^7 + 7*c*d^14*x^6 + 21*c^2*d^13*x^5 + 35*c^3*d^12
*x^4 + 35*c^4*d^11*x^3 + 21*c^5*d^10*x^2 + 7*c^6*d^9*x + c^7*d^8)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**7/(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220386, size = 630, normalized size = 3.25

$$\frac{b^7\ln\left(|dx+c|\right)}{d^8} + \frac{2940\left(b^7cd^5 - ab^6d^6\right)x^6 + 4410\left(3\,b^7c^2d^4 - 2\,ab^6cd^5 - a^2b^5d^6\right)x^5 + 2450\left(11\,b^7c^3d^3 - 6\,ab^6c^2d^4 - 3\,a^2b^5cd^5 - 2\,a^3b^4d^6\right)x^4 \cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^7/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] b^7*ln(abs(d*x + c))/d^8 + 1/420*(2940*(b^7*c*d^5 - a*b^6*d^6)*x^
6 + 4410*(3*b^7*c^2*d^4 - 2*a*b^6*c*d^5 - a^2*b^5*d^6)*x^5 + 2450
*(11*b^7*c^3*d^3 - 6*a*b^6*c^2*d^4 - 3*a^2*b^5*c*d^5 - 2*a^3*b^4*
d^6)*x^4 + 1225*(25*b^7*c^4*d^2 - 12*a*b^6*c^3*d^3 - 6*a^2*b^5*c^
2*d^4 - 4*a^3*b^4*c*d^5 - 3*a^4*b^3*d^6)*x^3 + 147*(137*b^7*c^5*d
 - 60*a*b^6*c^4*d^2 - 30*a^2*b^5*c^3*d^3 - 20*a^3*b^4*c^2*d^4 - 1
5*a^4*b^3*c*d^5 - 12*a^5*b^2*d^6)*x^2 + 49*(147*b^7*c^6 - 60*a*b^
6*c^5*d - 30*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 - 15*a^4*b^3*c^
2*d^4 - 12*a^5*b^2*c*d^5 - 10*a^6*b*d^6)*x + (1089*b^7*c^7 - 420*
a*b^6*c^6*d - 210*a^2*b^5*c^5*d^2 - 140*a^3*b^4*c^4*d^3 - 105*a^4
*b^3*c^3*d^4 - 84*a^5*b^2*c^2*d^5 - 70*a^6*b*c*d^6 - 60*a^7*d^7)/
d)/((d*x + c)^7*d^7)
```

3.1365 $\int \frac{(a+bx)^6}{(c+dx)^8}\,dx$

Optimal. Leaf size=28

$$\frac{(a+bx)^7}{7(c+dx)^7(bc-ad)}$$

```
[Out] (a + b*x)^7/(7*(b*c - a*d)*(c + d*x)^7)
```

Rubi [A] time = 0.0177008, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(a+bx)^7}{7(c+dx)^7(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^6/(c + d*x)^8,x]

[Out] (a + b*x)^7/(7*(b*c - a*d)*(c + d*x)^7)
```

Rubi in Sympy [A] time = 4.15254, size = 22, normalized size = 0.79

$$-\frac{(a+bx)^7}{7\left(c+dx\right)^7\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**6/(d*x+c)**8,x)

[Out] -(a + b*x)**7/(7*(c + d*x)**7*(a*d - b*c))
```

Mathematica [B] time = 0.172697, size = 271, normalized size = 9.68

$$-\frac{a^6d^6+a^5bd^5(c+7dx)+a^4b^2d^4\left(c^2+7cdx+21d^2x^2\right)+a^3b^3d^3\left(c^3+7c^2dx+21cd^2x^2+35d^3x^3\right)+a^2b^4d^2\left(c^4+7c^3dx+21\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^6/(c + d*x)^8,x]
```

```
[Out] -(a^6*d^6 + a^5*b*d^5*(c + 7*d*x) + a^4*b^2*d^4*(c^2 + 7*c*d*x +
21*d^2*x^2) + a^3*b^3*d^3*(c^3 + 7*c^2*d*x + 21*c*d^2*x^2 + 35*d^
3*x^3) + a^2*b^4*d^2*(c^4 + 7*c^3*d*x + 21*c^2*d^2*x^2 + 35*c*d^3
*x^3 + 35*d^4*x^4) + a*b^5*d*(c^5 + 7*c^4*d*x + 21*c^3*d^2*x^2 +
35*c^2*d^3*x^3 + 35*c*d^4*x^4 + 21*d^5*x^5) + b^6*(c^6 + 7*c^5*d*
x + 21*c^4*d^2*x^2 + 35*c^3*d^3*x^3 + 35*c^2*d^4*x^4 + 21*c*d^5*x
^5 + 7*d^6*x^6))/(7*d^7*(c + d*x)^7)
```

Maple [B] time = 0.011, size = 357, normalized size = 12.8

$$-\frac{b\left(a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5\right)}{d^7\left(dx+c\right)^6}-\frac{a^6d^6-6\,a^5bcd^5+15\,a^4b^2c^2d^4-20\,a^3b^3c^3d^3+15\,a^2b^4c^4d^2-6\,ab^5c^5d+b^6c^6}{7\,d^7\left(dx+c\right)^7}-3\,\frac{b^5\left(ad-bc\right)}{d^7\left(dx+c\right)^2}-5\,\frac{b^3\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{d^7\left(dx+c\right)^4}-3\,\frac{b^2\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{d^7\left(dx+c\right)^5}-\frac{b^6}{d^7\left(dx+c\right)}-5\,\frac{b^4\left(a^2d^2-2\,abcd+b^2c^2\right)}{d^7\left(dx+c\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^6/(d*x+c)^8,x)
```

```
[Out] -b*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5
*a*b^4*c^4*d-b^5*c^5)/d^7/(d*x+c)^6-1/7*(a^6*d^6-6*a^5*b*c*d^5+15
*a^4*b^2*c^2*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^
5*d+b^6*c^6)/d^7/(d*x+c)^7-3*b^5*(a*d-b*c)/d^7/(d*x+c)^2-5*b^3*(a
^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/d^7/(d*x+c)^4-3*b^2*(
a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/d^
7/(d*x+c)^5-b^6/d^7/(d*x+c)-5*b^4*(a^2*d^2-2*a*b*c*d+b^2*c^2)/d^7
/(d*x+c)^3
```

Maxima [A] time = 1.36492, size = 537, normalized size = 19.18

$$-\frac{7\,b^6d^6x^6+b^6c^6+ab^5c^5d+a^2b^4c^4d^2+a^3b^3c^3d^3+a^4b^2c^2d^4+a^5bcd^5+a^6d^6+21\left(b^6cd^5+ab^5d^6\right)x^5+35\left(b^6c^2d^4+ab^5cd^5 \ldots\right.}{7\left(d^{14}x^7+7\,c \ldots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] -1/7*(7*b^6*d^6*x^6 + b^6*c^6 + a*b^5*c^5*d + a^2*b^4*c^4*d^2 + a
^3*b^3*c^3*d^3 + a^4*b^2*c^2*d^4 + a^5*b*c*d^5 + a^6*d^6 + 21*(b^
```

```
6*c*d^5 + a*b^5*d^6)*x^5 + 35*(b^6*c^2*d^4 + a*b^5*c*d^5 + a^2*b^
4*d^6)*x^4 + 35*(b^6*c^3*d^3 + a*b^5*c^2*d^4 + a^2*b^4*c*d^5 + a^
3*b^3*d^6)*x^3 + 21*(b^6*c^4*d^2 + a*b^5*c^3*d^3 + a^2*b^4*c^2*d^
4 + a^3*b^3*c*d^5 + a^4*b^2*d^6)*x^2 + 7*(b^6*c^5*d + a*b^5*c^4*d
^2 + a^2*b^4*c^3*d^3 + a^3*b^3*c^2*d^4 + a^4*b^2*c*d^5 + a^5*b*d^
6)*x)/(d^14*x^7 + 7*c*d^13*x^6 + 21*c^2*d^12*x^5 + 35*c^3*d^11*x^
4 + 35*c^4*d^10*x^3 + 21*c^5*d^9*x^2 + 7*c^6*d^8*x + c^7*d^7)
```

Fricas [A] time = 0.203525, size = 537, normalized size = 19.18

$$-\frac{7\,b^6d^6x^6 + b^6c^6 + ab^5c^5d + a^2b^4c^4d^2 + a^3b^3c^3d^3 + a^4b^2c^2d^4 + a^5bcd^5 + a^6d^6 + 21\left(b^6cd^5 + ab^5d^6\right)x^5 + 35\left(b^6c^2d^4 + ab^5cd^5\right.}{7\,(d^{14}x^7 + 7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] -1/7*(7*b^6*d^6*x^6 + b^6*c^6 + a*b^5*c^5*d + a^2*b^4*c^4*d^2 + a
^3*b^3*c^3*d^3 + a^4*b^2*c^2*d^4 + a^5*b*c*d^5 + a^6*d^6 + 21*(b^
6*c*d^5 + a*b^5*d^6)*x^5 + 35*(b^6*c^2*d^4 + a*b^5*c*d^5 + a^2*b^
4*d^6)*x^4 + 35*(b^6*c^3*d^3 + a*b^5*c^2*d^4 + a^2*b^4*c*d^5 + a^
3*b^3*d^6)*x^3 + 21*(b^6*c^4*d^2 + a*b^5*c^3*d^3 + a^2*b^4*c^2*d^
4 + a^3*b^3*c*d^5 + a^4*b^2*d^6)*x^2 + 7*(b^6*c^5*d + a*b^5*c^4*d
^2 + a^2*b^4*c^3*d^3 + a^3*b^3*c^2*d^4 + a^4*b^2*c*d^5 + a^5*b*d^
6)*x)/(d^14*x^7 + 7*c*d^13*x^6 + 21*c^2*d^12*x^5 + 35*c^3*d^11*x^
4 + 35*c^4*d^10*x^3 + 21*c^5*d^9*x^2 + 7*c^6*d^8*x + c^7*d^7)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**6/(d*x+c)**8,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.218323, size = 498, normalized size = 17.79

$$-\frac{7\,b^6d^6x^6 + 21\,b^6cd^5x^5 + 21\,ab^5d^6x^5 + 35\,b^6c^2d^4x^4 + 35\,ab^5cd^5x^4 + 35\,a^2b^4d^6x^4 + 35\,b^6c^3d^3x^3 + 35\,ab^5c^2d^4x^3 + 35\,a^2b^4cd^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^6/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] -1/7*(7*b^6*d^6*x^6 + 21*b^6*c*d^5*x^5 + 21*a*b^5*d^6*x^5 + 35*b^
6*c^2*d^4*x^4 + 35*a*b^5*c*d^5*x^4 + 35*a^2*b^4*d^6*x^4 + 35*b^6*
c^3*d^3*x^3 + 35*a*b^5*c^2*d^4*x^3 + 35*a^2*b^4*c*d^5*x^3 + 35*a^
3*b^3*d^6*x^3 + 21*b^6*c^4*d^2*x^2 + 21*a*b^5*c^3*d^3*x^2 + 21*a^
2*b^4*c^2*d^4*x^2 + 21*a^3*b^3*c*d^5*x^2 + 21*a^4*b^2*d^6*x^2 + 7
*b^6*c^5*d*x + 7*a*b^5*c^4*d^2*x + 7*a^2*b^4*c^3*d^3*x + 7*a^3*b^
3*c^2*d^4*x + 7*a^4*b^2*c*d^5*x + 7*a^5*b*d^6*x + b^6*c^6 + a*b^5
*c^5*d + a^2*b^4*c^4*d^2 + a^3*b^3*c^3*d^3 + a^4*b^2*c^2*d^4 + a^
5*b*c*d^5 + a^6*d^6)/((d*x + c)^7*d^7)
```

3.1366 $\int \frac{(a+bx)^5}{(c+dx)^8}\,dx$

Optimal. Leaf size=58

$$\frac{b(a+bx)^6}{42(c+dx)^6(bc-ad)^2}+\frac{(a+bx)^6}{7(c+dx)^7(bc-ad)}$$

```
[Out] (a + b*x)^6/(7*(b*c - a*d)*(c + d*x)^7) + (b*(a + b*x)^6)/(42*(b*
c - a*d)^2*(c + d*x)^6)
```

Rubi [A] time = 0.0397531, antiderivative size = 58, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{b(a+bx)^6}{42(c+dx)^6(bc-ad)^2}+\frac{(a+bx)^6}{7(c+dx)^7(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(c + d*x)^8,x]
```

```
[Out] (a + b*x)^6/(7*(b*c - a*d)*(c + d*x)^7) + (b*(a + b*x)^6)/(42*(b*
c - a*d)^2*(c + d*x)^6)
```

Rubi in Sympy [A] time = 8.30625, size = 46, normalized size = 0.79

$$\frac{b\left(a+bx\right)^{6}}{42\left(c+dx\right)^{6}\left(ad-bc\right)^{2}}-\frac{\left(a+bx\right)^{6}}{7\left(c+dx\right)^{7}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c)**8,x)
```

```
[Out] b*(a + b*x)**6/(42*(c + d*x)**6*(a*d - b*c)**2) - (a + b*x)**6/(7
*(c + d*x)**7*(a*d - b*c))
```

Mathematica [B] time = 0.0990027, size = 205, normalized size = 3.53

$$-\frac{6a^5d^5+5a^4bd^4(c+7dx)+4a^3b^2d^3\left(c^2+7cdx+21d^2x^2\right)+3a^2b^3d^2\left(c^3+7c^2dx+21cd^2x^2+35d^3x^3\right)+2ab^4d\left(c^4+7c^3dx\right.}{42d^6(c+dx)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(c + d*x)^8,x]
```

```
[Out] -(6*a^5*d^5 + 5*a^4*b*d^4*(c + 7*d*x) + 4*a^3*b^2*d^3*(c^2 + 7*c*
d*x + 21*d^2*x^2) + 3*a^2*b^3*d^2*(c^3 + 7*c^2*d*x + 21*c*d^2*x^2
 + 35*d^3*x^3) + 2*a*b^4*d*(c^4 + 7*c^3*d*x + 21*c^2*d^2*x^2 + 35
*c*d^3*x^3 + 35*d^4*x^4) + b^5*(c^5 + 7*c^4*d*x + 21*c^3*d^2*x^2
+ 35*c^2*d^3*x^3 + 35*c*d^4*x^4 + 21*d^5*x^5))/(42*d^6*(c + d*x)^
7)
```

Maple [B] time = 0.011, size = 265, normalized size = 4.6

$$-\frac{a^5d^5-5\,a^4bcd^4+10\,a^3b^2c^2d^3-10\,a^2b^3c^3d^2+5\,ab^4c^4d-b^5c^5}{7\,d^6\,(dx+c)^7}-\frac{5\,b\,\left(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4\right)}{6\,d^6\,(dx+c)^6}-2\,\frac{b^2\,\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{d^6\,(dx+c)^5}-\frac{b^5}{2\,d^6\,(dx+c)^2}-\frac{5\,b^3\,\left(a^2d^2-2\,abcd+b^2c^2\right)}{2\,d^6\,(dx+c)^4}-\frac{5\,b^4\,(ad-bc)}{3\,d^6\,(dx+c)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c)^8,x)
```

```
[Out] -1/7*(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2
+5*a*b^4*c^4*d-b^5*c^5)/d^6/(d*x+c)^7-5/6*b*(a^4*d^4-4*a^3*b*c*d^
3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/d^6/(d*x+c)^6-2*b^2*(a
^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/d^6/(d*x+c)^5-1/2*b^5
/d^6/(d*x+c)^2-5/2*b^3*(a^2*d^2-2*a*b*c*d+b^2*c^2)/d^6/(d*x+c)^4-
5/3*b^4*(a*d-b*c)/d^6/(d*x+c)^3
```

Maxima [A] time = 1.36239, size = 440, normalized size = 7.59

$$-\frac{21\,b^5d^5x^5+b^5c^5+2\,ab^4c^4d+3\,a^2b^3c^3d^2+4\,a^3b^2c^2d^3+5\,a^4bcd^4+6\,a^5d^5+35\,\left(b^5cd^4+2\,ab^4d^5\right)x^4+35\,\left(b^5c^2d^3+2\,ab^4cd\right.}{42\,(d^{13}x^7+7\,cd^{12}x^6+21\,c^2d^{11}x^5+35\,c^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] -1/42*(21*b^5*d^5*x^5 + b^5*c^5 + 2*a*b^4*c^4*d + 3*a^2*b^3*c^3*d
^2 + 4*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 + 6*a^5*d^5 + 35*(b^5*c*d^
4 + 2*a*b^4*d^5)*x^4 + 35*(b^5*c^2*d^3 + 2*a*b^4*c*d^4 + 3*a^2*b^
3*d^5)*x^3 + 21*(b^5*c^3*d^2 + 2*a*b^4*c^2*d^3 + 3*a^2*b^3*c*d^4
+ 4*a^3*b^2*d^5)*x^2 + 7*(b^5*c^4*d + 2*a*b^4*c^3*d^2 + 3*a^2*b^3
*c^2*d^3 + 4*a^3*b^2*c*d^4 + 5*a^4*b*d^5)*x)/(d^13*x^7 + 7*c*d^12
*x^6 + 21*c^2*d^11*x^5 + 35*c^3*d^10*x^4 + 35*c^4*d^9*x^3 + 21*c^
```

```
5*d^8*x^2 + 7*c^6*d^7*x + c^7*d^6)
```

Fricas [A] time = 0.204956, size = 440, normalized size = 7.59

$$-\frac{21\,b^5d^5x^5 + b^5c^5 + 2\,ab^4c^4d + 3\,a^2b^3c^3d^2 + 4\,a^3b^2c^2d^3 + 5\,a^4bcd^4 + 6\,a^5d^5 + 35\,\left(b^5cd^4 + 2\,ab^4d^5\right)x^4 + 35\,\left(b^5c^2d^3 + 2\,ab^4cd\right.}{42\,(d^{13}x^7 + 7\,cd^{12}x^6 + 21\,c^2d^{11}x^5 + 35\,c^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] -1/42*(21*b^5*d^5*x^5 + b^5*c^5 + 2*a*b^4*c^4*d + 3*a^2*b^3*c^3*d
^2 + 4*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 + 6*a^5*d^5 + 35*(b^5*c*d^
4 + 2*a*b^4*d^5)*x^4 + 35*(b^5*c^2*d^3 + 2*a*b^4*c*d^4 + 3*a^2*b^
3*d^5)*x^3 + 21*(b^5*c^3*d^2 + 2*a*b^4*c^2*d^3 + 3*a^2*b^3*c*d^4
+ 4*a^3*b^2*d^5)*x^2 + 7*(b^5*c^4*d + 2*a*b^4*c^3*d^2 + 3*a^2*b^3
*c^2*d^3 + 4*a^3*b^2*c*d^4 + 5*a^4*b*d^5)*x)/(d^13*x^7 + 7*c*d^12
*x^6 + 21*c^2*d^11*x^5 + 35*c^3*d^10*x^4 + 35*c^4*d^9*x^3 + 21*c^
5*d^8*x^2 + 7*c^6*d^7*x + c^7*d^6)
```

Sympy [A] time = 65.8291, size = 348, normalized size = 6.

$$-\frac{6a^5d^5 + 5a^4bcd^4 + 4a^3b^2c^2d^3 + 3a^2b^3c^3d^2 + 2ab^4c^4d + b^5c^5 + 21b^5d^5x^5 + x^4\left(70ab^4d^5 + 35b^5cd^4\right) + x^3\left(105a^2b^3d^5 + 70ab\right.}{42c^7d^6 + 294c^6d^7x + 882c^5d^8x^2 + 1470c^4d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c)**8,x)
```

```
[Out] -(6*a**5*d**5 + 5*a**4*b*c*d**4 + 4*a**3*b**2*c**2*d**3 + 3*a**2*
b**3*c**3*d**2 + 2*a*b**4*c**4*d + b**5*c**5 + 21*b**5*d**5*x**5
+ x**4*(70*a*b**4*d**5 + 35*b**5*c*d**4) + x**3*(105*a**2*b**3*d*
*5 + 70*a*b**4*c*d**4 + 35*b**5*c**2*d**3) + x**2*(84*a**3*b**2*d
**5 + 63*a**2*b**3*c*d**4 + 42*a*b**4*c**2*d**3 + 21*b**5*c**3*d*
*2) + x*(35*a**4*b*d**5 + 28*a**3*b**2*c*d**4 + 21*a**2*b**3*c**2
*d**3 + 14*a*b**4*c**3*d**2 + 7*b**5*c**4*d))/(42*c**7*d**6 + 294
*c**6*d**7*x + 882*c**5*d**8*x**2 + 1470*c**4*d**9*x**3 + 1470*c*
*3*d**10*x**4 + 882*c**2*d**11*x**5 + 294*c*d**12*x**6 + 42*d**13
*x**7)
```

GIAC/XCAS [A] time = 0.221539, size = 366, normalized size = 6.31

$$-\frac{21\,b^5d^5x^5 + 35\,b^5cd^4x^4 + 70\,ab^4d^5x^4 + 35\,b^5c^2d^3x^3 + 70\,ab^4cd^4x^3 + 105\,a^2b^3d^5x^3 + 21\,b^5c^3d^2x^2 + 42\,ab^4c^2d^3x^2 + 63\,a^2b^3c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] -1/42*(21*b^5*d^5*x^5 + 35*b^5*c*d^4*x^4 + 70*a*b^4*d^5*x^4 + 35*
b^5*c^2*d^3*x^3 + 70*a*b^4*c*d^4*x^3 + 105*a^2*b^3*d^5*x^3 + 21*b
^5*c^3*d^2*x^2 + 42*a*b^4*c^2*d^3*x^2 + 63*a^2*b^3*c*d^4*x^2 + 84
*a^3*b^2*d^5*x^2 + 7*b^5*c^4*d*x + 14*a*b^4*c^3*d^2*x + 21*a^2*b^
3*c^2*d^3*x + 28*a^3*b^2*c*d^4*x + 35*a^4*b*d^5*x + b^5*c^5 + 2*a
*b^4*c^4*d + 3*a^2*b^3*c^3*d^2 + 4*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^
4 + 6*a^5*d^5)/((d*x + c)^7*d^6)
```

3.1367 $\int \frac{(a+bx)^4}{(c+dx)^8} dx$

Optimal. Leaf size=89

$$\frac{b^2(a+bx)^5}{105(c+dx)^5(bc-ad)^3}+\frac{b(a+bx)^5}{21(c+dx)^6(bc-ad)^2}+\frac{(a+bx)^5}{7(c+dx)^7(bc-ad)}$$

```
[Out] (a + b*x)^5/(7*(b*c - a*d)*(c + d*x)^7) + (b*(a + b*x)^5)/(21*(b*
c - a*d)^2*(c + d*x)^6) + (b^2*(a + b*x)^5)/(105*(b*c - a*d)^3*(c
 + d*x)^5)
```

Rubi [A] time = 0.0661446, antiderivative size = 89, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\frac{b^2(a+bx)^5}{105(c+dx)^5(bc-ad)^3}+\frac{b(a+bx)^5}{21(c+dx)^6(bc-ad)^2}+\frac{(a+bx)^5}{7(c+dx)^7(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/(c + d*x)^8,x]
```

```
[Out] (a + b*x)^5/(7*(b*c - a*d)*(c + d*x)^7) + (b*(a + b*x)^5)/(21*(b*
c - a*d)^2*(c + d*x)^6) + (b^2*(a + b*x)^5)/(105*(b*c - a*d)^3*(c
 + d*x)^5)
```

Rubi in Sympy [A] time = 15.1444, size = 73, normalized size = 0.82

$$-\frac{b^2\left(a+bx\right)^5}{105\left(c+dx\right)^5\left(ad-bc\right)^3}+\frac{b\left(a+bx\right)^5}{21\left(c+dx\right)^6\left(ad-bc\right)^2}-\frac{\left(a+bx\right)^5}{7\left(c+dx\right)^7\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c)**8,x)
```

```
[Out] -b**2*(a + b*x)**5/(105*(c + d*x)**5*(a*d - b*c)**3) + b*(a + b*x
)**5/(21*(c + d*x)**6*(a*d - b*c)**2) - (a + b*x)**5/(7*(c + d*x)
**7*(a*d - b*c))
```

Mathematica [A] time = 0.083393, size = 144, normalized size = 1.62

$$-\frac{15a^4d^4+10a^3bd^3(c+7dx)+6a^2b^2d^2\left(c^2+7cdx+21d^2x^2\right)+3ab^3d\left(c^3+7c^2dx+21cd^2x^2+35d^3x^3\right)+b^4\left(c^4+7c^3dx+2\right.}{105d^5(c+dx)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/(c + d*x)^8,x]
```

```
[Out] -(15*a^4*d^4 + 10*a^3*b*d^3*(c + 7*d*x) + 6*a^2*b^2*d^2*(c^2 + 7*
c*d*x + 21*d^2*x^2) + 3*a*b^3*d*(c^3 + 7*c^2*d*x + 21*c*d^2*x^2 +
 35*d^3*x^3) + b^4*(c^4 + 7*c^3*d*x + 21*c^2*d^2*x^2 + 35*c*d^3*x
^3 + 35*d^4*x^4))/(105*d^5*(c + d*x)^7)
```

Maple [B] time = 0.01, size = 186, normalized size = 2.1

$$-\frac{a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,c^3ab^3d+c^4b^4}{7\,d^5\,(dx+c)^7}-\frac{b^4}{3\,d^5\,(dx+c)^3}-\frac{6\,b^2\left(a^2d^2-2\,abcd+b^2c^2\right)}{5\,d^5\,(dx+c)^5}-\frac{2\,b\left(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3\right)}{3\,d^5\,(dx+c)^6}-\frac{b^3\,(ad-bc)}{d^5\,(dx+c)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c)^8,x)
```

```
[Out] -1/7*(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c
^4)/d^5/(d*x+c)^7-1/3*b^4/d^5/(d*x+c)^3-6/5*b^2*(a^2*d^2-2*a*b*c*
d+b^2*c^2)/d^5/(d*x+c)^5-2/3*b*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2
*d-b^3*c^3)/d^5/(d*x+c)^6-b^3*(a*d-b*c)/d^5/(d*x+c)^4
```

Maxima [A] time = 1.3816, size = 333, normalized size = 3.74

$$-\frac{35\,b^4d^4x^4+b^4c^4+3\,ab^3c^3d+6\,a^2b^2c^2d^2+10\,a^3bcd^3+15\,a^4d^4+35\left(b^4cd^3+3\,ab^3d^4\right)x^3+21\left(b^4c^2d^2+3\,ab^3cd^3+6\,a^2b^2c\right.}{105\left(d^{12}x^7+7\,cd^{11}x^6+21\,c^2d^{10}x^5+35\,c^3d^9x^4+35\,c^4d^8x^3+21\,c^5d^7x^2+7\,c^6d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] -1/105*(35*b^4*d^4*x^4 + b^4*c^4 + 3*a*b^3*c^3*d + 6*a^2*b^2*c^2*
d^2 + 10*a^3*b*c*d^3 + 15*a^4*d^4 + 35*(b^4*c*d^3 + 3*a*b^3*d^4)*
x^3 + 21*(b^4*c^2*d^2 + 3*a*b^3*c*d^3 + 6*a^2*b^2*d^4)*x^2 + 7*(b
^4*c^3*d + 3*a*b^3*c^2*d^2 + 6*a^2*b^2*c*d^3 + 10*a^3*b*d^4)*x)/(
d^12*x^7 + 7*c*d^11*x^6 + 21*c^2*d^10*x^5 + 35*c^3*d^9*x^4 + 35*c
^4*d^8*x^3 + 21*c^5*d^7*x^2 + 7*c^6*d^6*x + c^7*d^5)
```

Fricas [A] time = 0.19991, size = 333, normalized size = 3.74

$$-\frac{35\,b^4d^4x^4+b^4c^4+3\,ab^3c^3d+6\,a^2b^2c^2d^2+10\,a^3bcd^3+15\,a^4d^4+35\,\left(b^4cd^3+3\,ab^3d^4\right)x^3+21\,\left(b^4c^2d^2+3\,ab^3cd^3+6\,a^2b^2c}{105\,(d^{12}x^7+7\,cd^{11}x^6+21\,c^2d^{10}x^5+35\,c^3d^9x^4+35\,c^4d^8x^3+21\,c^5d^7x^2+7\,c^6d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] -1/105*(35*b^4*d^4*x^4 + b^4*c^4 + 3*a*b^3*c^3*d + 6*a^2*b^2*c^2*
d^2 + 10*a^3*b*c*d^3 + 15*a^4*d^4 + 35*(b^4*c*d^3 + 3*a*b^3*d^4)*
x^3 + 21*(b^4*c^2*d^2 + 3*a*b^3*c*d^3 + 6*a^2*b^2*d^4)*x^2 + 7*(b
^4*c^3*d + 3*a*b^3*c^2*d^2 + 6*a^2*b^2*c*d^3 + 10*a^3*b*d^4)*x)/(
d^12*x^7 + 7*c*d^11*x^6 + 21*c^2*d^10*x^5 + 35*c^3*d^9*x^4 + 35*c
^4*d^8*x^3 + 21*c^5*d^7*x^2 + 7*c^6*d^6*x + c^7*d^5)
```

Sympy [A] time = 16.4727, size = 264, normalized size = 2.97

$$-\frac{15a^4d^4+10a^3bcd^3+6a^2b^2c^2d^2+3ab^3c^3d+b^4c^4+35b^4d^4x^4+x^3\left(105ab^3d^4+35b^4cd^3\right)+x^2\left(126a^2b^2d^4+63ab^3cd^3+21\right.}{105c^7d^5+735c^6d^6x+2205c^5d^7x^2+3675c^4d^8x^3+3675c^3d^9x^4+2205c^2d^{10}x^5+735}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c)**8,x)
```

```
[Out] -(15*a**4*d**4 + 10*a**3*b*c*d**3 + 6*a**2*b**2*c**2*d**2 + 3*a*b
**3*c**3*d + b**4*c**4 + 35*b**4*d**4*x**4 + x**3*(105*a*b**3*d**
4 + 35*b**4*c*d**3) + x**2*(126*a**2*b**2*d**4 + 63*a*b**3*c*d**3
 + 21*b**4*c**2*d**2) + x*(70*a**3*b*d**4 + 42*a**2*b**2*c*d**3 +
 21*a*b**3*c**2*d**2 + 7*b**4*c**3*d))/(105*c**7*d**5 + 735*c**6*
d**6*x + 2205*c**5*d**7*x**2 + 3675*c**4*d**8*x**3 + 3675*c**3*d*
*9*x**4 + 2205*c**2*d**10*x**5 + 735*c*d**11*x**6 + 105*d**12*x**
7)
```

GIAC/XCAS [A] time = 0.222343, size = 248, normalized size = 2.79

$$-\frac{35\,b^4d^4x^4+35\,b^4cd^3x^3+105\,ab^3d^4x^3+21\,b^4c^2d^2x^2+63\,ab^3cd^3x^2+126\,a^2b^2d^4x^2+7\,b^4c^3dx+21\,ab^3c^2d^2x+42\,a^2b^2cd^3}{105\,(dx+c)^7d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] -1/105*(35*b^4*d^4*x^4 + 35*b^4*c*d^3*x^3 + 105*a*b^3*d^4*x^3 + 2
1*b^4*c^2*d^2*x^2 + 63*a*b^3*c*d^3*x^2 + 126*a^2*b^2*d^4*x^2 + 7*
```

```
b^4*c^3*d*x + 21*a*b^3*c^2*d^2*x + 42*a^2*b^2*c*d^3*x + 70*a^3*b*
d^4*x + b^4*c^4 + 3*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 + 10*a^3*b*c*
d^3 + 15*a^4*d^4)/((d*x + c)^7*d^5)
```

3.1368 $\int \frac{(a+bx)^3}{(c+dx)^8} dx$

Optimal. Leaf size=92

$$\frac{3b^2(bc-ad)}{5d^4(c+dx)^5}-\frac{b(bc-ad)^2}{2d^4(c+dx)^6}+\frac{(bc-ad)^3}{7d^4(c+dx)^7}-\frac{b^3}{4d^4(c+dx)^4}$$

```
[Out] (b*c - a*d)^3/(7*d^4*(c + d*x)^7) - (b*(b*c - a*d)^2)/(2*d^4*(c +
 d*x)^6) + (3*b^2*(b*c - a*d))/(5*d^4*(c + d*x)^5) - b^3/(4*d^4*(
c + d*x)^4)
```

Rubi [A] time = 0.139578, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{3b^2(bc-ad)}{5d^4(c+dx)^5}-\frac{b(bc-ad)^2}{2d^4(c+dx)^6}+\frac{(bc-ad)^3}{7d^4(c+dx)^7}-\frac{b^3}{4d^4(c+dx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/(c + d*x)^8,x]
```

```
[Out] (b*c - a*d)^3/(7*d^4*(c + d*x)^7) - (b*(b*c - a*d)^2)/(2*d^4*(c +
 d*x)^6) + (3*b^2*(b*c - a*d))/(5*d^4*(c + d*x)^5) - b^3/(4*d^4*(
c + d*x)^4)
```

Rubi in Sympy [A] time = 27.5598, size = 82, normalized size = 0.89

$$-\frac{b^3}{4d^4(c+dx)^4}-\frac{3b^2(ad-bc)}{5d^4(c+dx)^5}-\frac{b(ad-bc)^2}{2d^4(c+dx)^6}-\frac{(ad-bc)^3}{7d^4(c+dx)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c)**8,x)
```

```
[Out] -b**3/(4*d**4*(c + d*x)**4) - 3*b**2*(a*d - b*c)/(5*d**4*(c + d*x
)**5) - b*(a*d - b*c)**2/(2*d**4*(c + d*x)**6) - (a*d - b*c)**3/(
7*d**4*(c + d*x)**7)
```

Mathematica [A] time = 0.0519185, size = 94, normalized size = 1.02

$$-\frac{20a^3d^3+10a^2bd^2(c+7dx)+4ab^2d\left(c^2+7cdx+21d^2x^2\right)+b^3\left(c^3+7c^2dx+21cd^2x^2+35d^3x^3\right)}{140d^4(c+dx)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/(c + d*x)^8,x]
```

```
[Out] -(20*a^3*d^3 + 10*a^2*b*d^2*(c + 7*d*x) + 4*a*b^2*d*(c^2 + 7*c*d*
x + 21*d^2*x^2) + b^3*(c^3 + 7*c^2*d*x + 21*c*d^2*x^2 + 35*d^3*x^
3))/(140*d^4*(c + d*x)^7)
```

Maple [A] time = 0.009, size = 122, normalized size = 1.3

$$-\frac{b^3}{4\,d^4\,(dx+c)^4}-\frac{a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3}{7\,d^4\,(dx+c)^7}-\frac{b\left(a^2d^2-2\,abcd+b^2c^2\right)}{2\,d^4\,(dx+c)^6}-\frac{3\,b^2\,(ad-bc)}{5\,d^4\,(dx+c)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c)^8,x)
```

```
[Out] -1/4*b^3/d^4/(d*x+c)^4-1/7*(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b
^3*c^3)/d^4/(d*x+c)^7-1/2*b*(a^2*d^2-2*a*b*c*d+b^2*c^2)/d^4/(d*x+
c)^6-3/5*b^2*(a*d-b*c)/d^4/(d*x+c)^5
```

Maxima [A] time = 1.35947, size = 246, normalized size = 2.67

$$-\frac{35\,b^3d^3x^3+b^3c^3+4\,ab^2c^2d+10\,a^2bcd^2+20\,a^3d^3+21\left(b^3cd^2+4\,ab^2d^3\right)x^2+7\left(b^3c^2d+4\,ab^2cd^2+10\,a^2bd^3\right)x}{140\left(d^{11}x^7+7\,cd^{10}x^6+21\,c^2d^9x^5+35\,c^3d^8x^4+35\,c^4d^7x^3+21\,c^5d^6x^2+7\,c^6d^5x+c^7d^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] -1/140*(35*b^3*d^3*x^3 + b^3*c^3 + 4*a*b^2*c^2*d + 10*a^2*b*c*d^2
 + 20*a^3*d^3 + 21*(b^3*c*d^2 + 4*a*b^2*d^3)*x^2 + 7*(b^3*c^2*d +
 4*a*b^2*c*d^2 + 10*a^2*b*d^3)*x)/(d^11*x^7 + 7*c*d^10*x^6 + 21*c
^2*d^9*x^5 + 35*c^3*d^8*x^4 + 35*c^4*d^7*x^3 + 21*c^5*d^6*x^2 + 7
*c^6*d^5*x + c^7*d^4)
```

Fricas [A] time = 0.20106, size = 246, normalized size = 2.67

$$-\frac{35\,b^3d^3x^3+b^3c^3+4\,ab^2c^2d+10\,a^2bcd^2+20\,a^3d^3+21\left(b^3cd^2+4\,ab^2d^3\right)x^2+7\left(b^3c^2d+4\,ab^2cd^2+10\,a^2bd^3\right)x}{140\left(d^{11}x^7+7\,cd^{10}x^6+21\,c^2d^9x^5+35\,c^3d^8x^4+35\,c^4d^7x^3+21\,c^5d^6x^2+7\,c^6d^5x+c^7d^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] -1/140*(35*b^3*d^3*x^3 + b^3*c^3 + 4*a*b^2*c^2*d + 10*a^2*b*c*d^2
 + 20*a^3*d^3 + 21*(b^3*c*d^2 + 4*a*b^2*d^3)*x^2 + 7*(b^3*c^2*d +
 4*a*b^2*c*d^2 + 10*a^2*b*d^3)*x)/(d^11*x^7 + 7*c*d^10*x^6 + 21*c
^2*d^9*x^5 + 35*c^3*d^8*x^4 + 35*c^4*d^7*x^3 + 21*c^5*d^6*x^2 + 7
*c^6*d^5*x + c^7*d^4)
```

Sympy [A] time = 6.08197, size = 194, normalized size = 2.11

$$-\frac{20a^3d^3 + 10a^2bcd^2 + 4ab^2c^2d + b^3c^3 + 35b^3d^3x^3 + x^2\left(84ab^2d^3 + 21b^3cd^2\right) + x\left(70a^2bd^3 + 28ab^2cd^2 + 7b^3c^2d\right)}{140c^7d^4 + 980c^6d^5x + 2940c^5d^6x^2 + 4900c^4d^7x^3 + 4900c^3d^8x^4 + 2940c^2d^9x^5 + 980cd^{10}x^6 + 140d^{11}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c)**8,x)
```

```
[Out] -(20*a**3*d**3 + 10*a**2*b*c*d**2 + 4*a*b**2*c**2*d + b**3*c**3 +
 35*b**3*d**3*x**3 + x**2*(84*a*b**2*d**3 + 21*b**3*c*d**2) + x*(
70*a**2*b*d**3 + 28*a*b**2*c*d**2 + 7*b**3*c**2*d))/(140*c**7*d**
4 + 980*c**6*d**5*x + 2940*c**5*d**6*x**2 + 4900*c**4*d**7*x**3 +
 4900*c**3*d**8*x**4 + 2940*c**2*d**9*x**5 + 980*c*d**10*x**6 + 1
40*d**11*x**7)
```

GIAC/XCAS [A] time = 0.218683, size = 154, normalized size = 1.67

$$-\frac{35\,b^3d^3x^3 + 21\,b^3cd^2x^2 + 84\,ab^2d^3x^2 + 7\,b^3c^2dx + 28\,ab^2cd^2x + 70\,a^2bd^3x + b^3c^3 + 4\,ab^2c^2d + 10\,a^2bcd^2 + 20\,a^3d^3}{140\,(dx + c)^7d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] -1/140*(35*b^3*d^3*x^3 + 21*b^3*c*d^2*x^2 + 84*a*b^2*d^3*x^2 + 7*
b^3*c^2*d*x + 28*a*b^2*c*d^2*x + 70*a^2*b*d^3*x + b^3*c^3 + 4*a*b
^2*c^2*d + 10*a^2*b*c*d^2 + 20*a^3*d^3)/((d*x + c)^7*d^4)
```

3.1369 $\int \frac{(a+bx)^2}{(c+dx)^8}\,dx$

Optimal. Leaf size=65

$$\frac{b(bc-ad)}{3d^3(c+dx)^6}-\frac{(bc-ad)^2}{7d^3(c+dx)^7}-\frac{b^2}{5d^3(c+dx)^5}$$

```
[Out] -(b*c - a*d)^2/(7*d^3*(c + d*x)^7) + (b*(b*c - a*d))/(3*d^3*(c +
d*x)^6) - b^2/(5*d^3*(c + d*x)^5)
```

Rubi [A] time = 0.0951281, antiderivative size = 65, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{b(bc-ad)}{3d^3(c+dx)^6}-\frac{(bc-ad)^2}{7d^3(c+dx)^7}-\frac{b^2}{5d^3(c+dx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c + d*x)^8,x]
```

```
[Out] -(b*c - a*d)^2/(7*d^3*(c + d*x)^7) + (b*(b*c - a*d))/(3*d^3*(c +
d*x)^6) - b^2/(5*d^3*(c + d*x)^5)
```

Rubi in Sympy [A] time = 18.787, size = 56, normalized size = 0.86

$$-\frac{b^2}{5d^3\left(c+dx\right)^5}-\frac{b\left(ad-bc\right)}{3d^3\left(c+dx\right)^6}-\frac{\left(ad-bc\right)^2}{7d^3\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c)**8,x)
```

```
[Out] -b**2/(5*d**3*(c + d*x)**5) - b*(a*d - b*c)/(3*d**3*(c + d*x)**6)
 - (a*d - b*c)**2/(7*d**3*(c + d*x)**7)
```

Mathematica [A] time = 0.0399563, size = 55, normalized size = 0.85

$$-\frac{15a^2d^2+5abd(c+7dx)+b^2\left(c^2+7cdx+21d^2x^2\right)}{105d^3(c+dx)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c + d*x)^8,x]
```

```
[Out] -(15*a^2*d^2 + 5*a*b*d*(c + 7*d*x) + b^2*(c^2 + 7*c*d*x + 21*d^2*
x^2))/(105*d^3*(c + d*x)^7)
```

Maple [A] time = 0.007, size = 71, normalized size = 1.1

$$-\frac{b^2}{5\,d^3\,(dx+c)^5}-\frac{a^2d^2-2\,abcd+b^2c^2}{7\,d^3\,(dx+c)^7}-\frac{b\,(ad-bc)}{3\,d^3\,(dx+c)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c)^8,x)
```

```
[Out] -1/5*b^2/d^3/(d*x+c)^5-1/7*(a^2*d^2-2*a*b*c*d+b^2*c^2)/d^3/(d*x+c
)^7-1/3*b*(a*d-b*c)/d^3/(d*x+c)^6
```

Maxima [A] time = 1.35257, size = 177, normalized size = 2.72

$$-\frac{21\,b^2d^2x^2+b^2c^2+5\,abcd+15\,a^2d^2+7\,\left(b^2cd+5\,abd^2\right)x}{105\,(d^{10}x^7+7\,cd^9x^6+21\,c^2d^8x^5+35\,c^3d^7x^4+35\,c^4d^6x^3+21\,c^5d^5x^2+7\,c^6d^4x+c^7d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] -1/105*(21*b^2*d^2*x^2 + b^2*c^2 + 5*a*b*c*d + 15*a^2*d^2 + 7*(b^
2*c*d + 5*a*b*d^2)*x)/(d^10*x^7 + 7*c*d^9*x^6 + 21*c^2*d^8*x^5 +
35*c^3*d^7*x^4 + 35*c^4*d^6*x^3 + 21*c^5*d^5*x^2 + 7*c^6*d^4*x +
c^7*d^3)
```

Fricas [A] time = 0.205564, size = 177, normalized size = 2.72

$$-\frac{21\,b^2d^2x^2+b^2c^2+5\,abcd+15\,a^2d^2+7\,\left(b^2cd+5\,abd^2\right)x}{105\,(d^{10}x^7+7\,cd^9x^6+21\,c^2d^8x^5+35\,c^3d^7x^4+35\,c^4d^6x^3+21\,c^5d^5x^2+7\,c^6d^4x+c^7d^3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] -1/105*(21*b^2*d^2*x^2 + b^2*c^2 + 5*a*b*c*d + 15*a^2*d^2 + 7*(b^
2*c*d + 5*a*b*d^2)*x)/(d^10*x^7 + 7*c*d^9*x^6 + 21*c^2*d^8*x^5 +
```

```
35*c^3*d^7*x^4 + 35*c^4*d^6*x^3 + 21*c^5*d^5*x^2 + 7*c^6*d^4*x +
c^7*d^3)
```

Sympy [A] time = 2.84875, size = 139, normalized size = 2.14

$$-\frac{15a^2d^2 + 5abcd + b^2c^2 + 21b^2d^2x^2 + x\left(35abd^2 + 7b^2cd\right)}{105c^7d^3 + 735c^6d^4x + 2205c^5d^5x^2 + 3675c^4d^6x^3 + 3675c^3d^7x^4 + 2205c^2d^8x^5 + 735cd^9x^6 + 105d^{10}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c)**8,x)
```

```
[Out] -(15*a**2*d**2 + 5*a*b*c*d + b**2*c**2 + 21*b**2*d**2*x**2 + x*(3
5*a*b*d**2 + 7*b**2*c*d))/(105*c**7*d**3 + 735*c**6*d**4*x + 2205
*c**5*d**5*x**2 + 3675*c**4*d**6*x**3 + 3675*c**3*d**7*x**4 + 220
5*c**2*d**8*x**5 + 735*c*d**9*x**6 + 105*d**10*x**7)
```

GIAC/XCAS [A] time = 0.22137, size = 82, normalized size = 1.26

$$-\frac{21\,b^2d^2x^2 + 7\,b^2cdx + 35\,abd^2x + b^2c^2 + 5\,abcd + 15\,a^2d^2}{105\,(dx + c)^7d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] -1/105*(21*b^2*d^2*x^2 + 7*b^2*c*d*x + 35*a*b*d^2*x + b^2*c^2 + 5
*a*b*c*d + 15*a^2*d^2)/((d*x + c)^7*d^3)
```

3.1370 $\int \frac{a+bx}{(c+dx)^8} \, dx$

Optimal. Leaf size=38

$$\frac{bc-ad}{7d^2(c+dx)^7}-\frac{b}{6d^2(c+dx)^6}$$

```
[Out] (b*c - a*d)/(7*d^2*(c + d*x)^7) - b/(6*d^2*(c + d*x)^6)
```

Rubi [A] time = 0.0518894, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{bc-ad}{7d^2(c+dx)^7}-\frac{b}{6d^2(c+dx)^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c + d*x)^8,x]

[Out] (b*c - a*d)/(7*d^2*(c + d*x)^7) - b/(6*d^2*(c + d*x)^6)
```

Rubi in Sympy [A] time = 9.8356, size = 32, normalized size = 0.84

$$-\frac{b}{6d^2\left(c+dx\right)^6}-\frac{ad-bc}{7d^2\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)**8,x)

[Out] -b/(6*d**2*(c + d*x)**6) - (a*d - b*c)/(7*d**2*(c + d*x)**7)
```

Mathematica [A] time = 0.0144264, size = 27, normalized size = 0.71

$$-\frac{6ad+b(c+7dx)}{42d^2(c+dx)^7}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c + d*x)^8,x]
```

```
[Out] -(6*a*d + b*(c + 7*d*x))/(42*d^2*(c + d*x)^7)
```

Maple [A] time = 0.009, size = 35, normalized size = 0.9

$$-\frac{b}{6\,d^{2}\left(dx+c\right)^{6}}-\frac{ad-bc}{7\,d^{2}\left(dx+c\right)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c)^8,x)
```

```
[Out] -1/6*b/d^2/(d*x+c)^6-1/7*(a*d-b*c)/d^2/(d*x+c)^7
```

Maxima [A] time = 1.33712, size = 127, normalized size = 3.34

$$-\frac{7\,bdx+bc+6\,ad}{42\,\left(d^{9}x^{7}+7\,cd^{8}x^{6}+21\,c^{2}d^{7}x^{5}+35\,c^{3}d^{6}x^{4}+35\,c^{4}d^{5}x^{3}+21\,c^{5}d^{4}x^{2}+7\,c^{6}d^{3}x+c^{7}d^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^8,x, algorithm="maxima")
```

```
[Out] -1/42*(7*b*d*x + b*c + 6*a*d)/(d^9*x^7 + 7*c*d^8*x^6 + 21*c^2*d^7
*x^5 + 35*c^3*d^6*x^4 + 35*c^4*d^5*x^3 + 21*c^5*d^4*x^2 + 7*c^6*d
^3*x + c^7*d^2)
```

Fricas [A] time = 0.199788, size = 127, normalized size = 3.34

$$-\frac{7\,bdx+bc+6\,ad}{42\,\left(d^{9}x^{7}+7\,cd^{8}x^{6}+21\,c^{2}d^{7}x^{5}+35\,c^{3}d^{6}x^{4}+35\,c^{4}d^{5}x^{3}+21\,c^{5}d^{4}x^{2}+7\,c^{6}d^{3}x+c^{7}d^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^8,x, algorithm="fricas")
```

```
[Out] -1/42*(7*b*d*x + b*c + 6*a*d)/(d^9*x^7 + 7*c*d^8*x^6 + 21*c^2*d^7
*x^5 + 35*c^3*d^6*x^4 + 35*c^4*d^5*x^3 + 21*c^5*d^4*x^2 + 7*c^6*d
^3*x + c^7*d^2)
```

Sympy [A] time = 1.64463, size = 100, normalized size = 2.63

$$-\frac{6ad + bc + 7bdx}{42c^7d^2 + 294c^6d^3x + 882c^5d^4x^2 + 1470c^4d^5x^3 + 1470c^3d^6x^4 + 882c^2d^7x^5 + 294cd^8x^6 + 42d^9x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**8,x)
```

```
[Out] -(6*a*d + b*c + 7*b*d*x)/(42*c**7*d**2 + 294*c**6*d**3*x + 882*c*
*5*d**4*x**2 + 1470*c**4*d**5*x**3 + 1470*c**3*d**6*x**4 + 882*c*
*2*d**7*x**5 + 294*c*d**8*x**6 + 42*d**9*x**7)
```

GIAC/XCAS [A] time = 0.21714, size = 34, normalized size = 0.89

$$-\frac{7\,bdx + bc + 6\,ad}{42\,(dx + c)^7d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^8,x, algorithm="giac")
```

```
[Out] -1/42*(7*b*d*x + b*c + 6*a*d)/((d*x + c)^7*d^2)
```

3.1371 $\int \frac{1}{(c+dx)^8} \, dx$

Optimal. Leaf size=14

$$-\frac{1}{7d(c+dx)^7}$$

[Out] -1/(7*d*(c + d*x)^7)

Rubi [A] time = 0.00701691, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$-\frac{1}{7d(c+dx)^7}$$

Antiderivative was successfully verified.

[In] Int[(c + d*x)^(-8),x]

[Out] -1/(7*d*(c + d*x)^7)

Rubi in Sympy [A] time = 1.4395, size = 12, normalized size = 0.86

$$-\frac{1}{7d\left(c+dx\right)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

[In] rubi_integrate(1/(d*x+c)**8,x)

[Out] -1/(7*d*(c + d*x)**7)

Mathematica [A] time = 0.00436649, size = 14, normalized size = 1.

$$-\frac{1}{7d(c+dx)^7}$$

Antiderivative was successfully verified.

[In] Integrate[(c + d*x)^(-8),x]

```
[Out] -1/(7*d*(c + d*x)^7)
```

Maple [A] time = 0.002, size = 13, normalized size = 0.9

$$-\frac{1}{7\,d\,(dx+c)^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(d*x+c)^8,x)
```

```
[Out] -1/7/d/(d*x+c)^7
```

Maxima [A] time = 1.40858, size = 16, normalized size = 1.14

$$-\frac{1}{7\,(dx+c)^{7}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-8),x, algorithm="maxima")
```

```
[Out] -1/7/((d*x + c)^7*d)
```

Fricas [A] time = 0.219808, size = 107, normalized size = 7.64

$$-\frac{1}{7\,(d^{8}x^{7}+7\,cd^{7}x^{6}+21\,c^{2}d^{6}x^{5}+35\,c^{3}d^{5}x^{4}+35\,c^{4}d^{4}x^{3}+21\,c^{5}d^{3}x^{2}+7\,c^{6}d^{2}x+c^{7}d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-8),x, algorithm="fricas")
```

```
[Out] -1/7/(d^8*x^7 + 7*c*d^7*x^6 + 21*c^2*d^6*x^5 + 35*c^3*d^5*x^4 + 3
5*c^4*d^4*x^3 + 21*c^5*d^3*x^2 + 7*c^6*d^2*x + c^7*d)
```

Sympy [A] time = 1.11586, size = 85, normalized size = 6.07

$$-\frac{1}{7c^{7}d+49c^{6}d^{2}x+147c^{5}d^{3}x^{2}+245c^{4}d^{4}x^{3}+245c^{3}d^{5}x^{4}+147c^{2}d^{6}x^{5}+49cd^{7}x^{6}+7d^{8}x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c)**8,x)
```

```
[Out] -1/(7*c**7*d + 49*c**6*d**2*x + 147*c**5*d**3*x**2 + 245*c**4*d**
4*x**3 + 245*c**3*d**5*x**4 + 147*c**2*d**6*x**5 + 49*c*d**7*x**6
 + 7*d**8*x**7)
```

GIAC/XCAS [A] time = 0.220764, size = 16, normalized size = 1.14

$$-\frac{1}{7\,(dx+c)^7d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-8),x, algorithm="giac")
```

```
[Out] -1/7/((d*x + c)^7*d)
```

3.1372 $\int \frac{1}{(a+bx)(c+dx)^8}\,dx$

Optimal. Leaf size=202

$$\frac{b^7\log(a+bx)}{(bc-ad)^8}-\frac{b^7\log(c+dx)}{(bc-ad)^8}+\frac{b^6}{(c+dx)(bc-ad)^7}+\frac{b^5}{2(c+dx)^2(bc-ad)^6}+\frac{b^4}{3(c+dx)^3(bc-ad)^5}+\frac{b^3}{4(c+dx)^4(bc-ad)^4}+\frac{b^2}{5(c+dx)^5(bc-ad)^3}+\frac{b}{6(c+dx)^6(bc-ad)^2}+\frac{1}{7(c+dx)^7(bc-ad)}$$

```
[Out] 1/(7*(b*c - a*d)*(c + d*x)^7) + b/(6*(b*c - a*d)^2*(c + d*x)^6) +
 b^2/(5*(b*c - a*d)^3*(c + d*x)^5) + b^3/(4*(b*c - a*d)^4*(c + d*
x)^4) + b^4/(3*(b*c - a*d)^5*(c + d*x)^3) + b^5/(2*(b*c - a*d)^6*
(c + d*x)^2) + b^6/((b*c - a*d)^7*(c + d*x)) + (b^7*Log[a + b*x])
/(b*c - a*d)^8 - (b^7*Log[c + d*x])/(b*c - a*d)^8
```

Rubi [A] time = 0.343686, antiderivative size = 202, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{b^7\log(a+bx)}{(bc-ad)^8}-\frac{b^7\log(c+dx)}{(bc-ad)^8}+\frac{b^6}{(c+dx)(bc-ad)^7}+\frac{b^5}{2(c+dx)^2(bc-ad)^6}+\frac{b^4}{3(c+dx)^3(bc-ad)^5}+\frac{b^3}{4(c+dx)^4(bc-ad)^4}+\frac{b^2}{5(c+dx)^5(bc-ad)^3}+\frac{b}{6(c+dx)^6(bc-ad)^2}+\frac{1}{7(c+dx)^7(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^8),x]
```

```
[Out] 1/(7*(b*c - a*d)*(c + d*x)^7) + b/(6*(b*c - a*d)^2*(c + d*x)^6) +
 b^2/(5*(b*c - a*d)^3*(c + d*x)^5) + b^3/(4*(b*c - a*d)^4*(c + d*
x)^4) + b^4/(3*(b*c - a*d)^5*(c + d*x)^3) + b^5/(2*(b*c - a*d)^6*
(c + d*x)^2) + b^6/((b*c - a*d)^7*(c + d*x)) + (b^7*Log[a + b*x])
/(b*c - a*d)^8 - (b^7*Log[c + d*x])/(b*c - a*d)^8
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**8,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.144475, size = 196, normalized size = 0.97

$$\frac{420b^7(c+dx)^7\log(a+bx)+420b^6(c+dx)^6(bc-ad)+210b^5(c+dx)^5(bc-ad)^2+140b^4(c+dx)^4(bc-ad)^3+105b^3(c+dx)}{420(c+dx)^7(bc-ad}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^8),x]
```

```
[Out] (60*(b*c - a*d)^7 + 70*b*(b*c - a*d)^6*(c + d*x) + 84*b^2*(b*c -
a*d)^5*(c + d*x)^2 + 105*b^3*(b*c - a*d)^4*(c + d*x)^3 + 140*b^4*
(b*c - a*d)^3*(c + d*x)^4 + 210*b^5*(b*c - a*d)^2*(c + d*x)^5 + 4
20*b^6*(b*c - a*d)*(c + d*x)^6 + 420*b^7*(c + d*x)^7*Log[a + b*x]
 - 420*b^7*(c + d*x)^7*Log[c + d*x])/(420*(b*c - a*d)^8*(c + d*x)
^7)
```

Maple [A] time = 0.025, size = 192, normalized size = 1.

$$-\frac{1}{(7\,ad-7\,bc)\,(dx+c)^7}-\frac{b^2}{5\,(ad-bc)^3\,(dx+c)^5}-\frac{b^4}{3\,(ad-bc)^5\,(dx+c)^3}-\frac{b^6}{(ad-bc)^7\,(dx+c)}+\frac{b}{6\,(ad-bc)^2\,(dx+c)^6}+\frac{b^3}{4\,(ad-bc)^4\,(dx+c)^4}+\frac{b^5}{2\,(ad-bc)^6\,(dx+c)^2}-\frac{b^7\ln(dx+c)}{(ad-bc)^8}+\frac{b^7\ln(bx+a)}{(ad-bc)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^8,x)
```

```
[Out] -1/7/(a*d-b*c)/(d*x+c)^7-1/5*b^2/(a*d-b*c)^3/(d*x+c)^5-1/3*b^4/(a
*d-b*c)^5/(d*x+c)^3-b^6/(a*d-b*c)^7/(d*x+c)+1/6*b/(a*d-b*c)^2/(d*
x+c)^6+1/4*b^3/(a*d-b*c)^4/(d*x+c)^4+1/2*b^5/(a*d-b*c)^6/(d*x+c)^
2-b^7/(a*d-b*c)^8*ln(d*x+c)+b^7/(a*d-b*c)^8*ln(b*x+a)
```

Maxima [A] time = 1.54782, size = 1914, normalized size = 9.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^8),x, algorithm="maxima")
```

```
[Out] b^7*log(b*x + a)/(b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 -
56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28
*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8) - b^7*log(d*x + c)/(b
^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56*a^3*b^5*c^5*d^3
+ 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a^6*b^2*c^2*d^6 -
8*a^7*b*c*d^7 + a^8*d^8) + 1/420*(420*b^6*d^6*x^6 + 1089*b^6*c^6
- 1851*a*b^5*c^5*d + 2559*a^2*b^4*c^4*d^2 - 2341*a^3*b^3*c^3*d^3
+ 1334*a^4*b^2*c^2*d^4 - 430*a^5*b*c*d^5 + 60*a^6*d^6 + 210*(13*b
^6*c*d^5 - a*b^5*d^6)*x^5 + 70*(107*b^6*c^2*d^4 - 19*a*b^5*c*d^5
+ 2*a^2*b^4*d^6)*x^4 + 35*(319*b^6*c^3*d^3 - 101*a*b^5*c^2*d^4 +
25*a^2*b^4*c*d^5 - 3*a^3*b^3*d^6)*x^3 + 21*(459*b^6*c^4*d^2 - 241
*a*b^5*c^3*d^3 + 109*a^2*b^4*c^2*d^4 - 31*a^3*b^3*c*d^5 + 4*a^4*b
^2*d^6)*x^2 + 7*(669*b^6*c^5*d - 591*a*b^5*c^4*d^2 + 459*a^2*b^4*
c^3*d^3 - 241*a^3*b^3*c^2*d^4 + 74*a^4*b^2*c*d^5 - 10*a^5*b*d^6)*
x)/(b^7*c^14 - 7*a*b^6*c^13*d + 21*a^2*b^5*c^12*d^2 - 35*a^3*b^4*
c^11*d^3 + 35*a^4*b^3*c^10*d^4 - 21*a^5*b^2*c^9*d^5 + 7*a^6*b*c^8
*d^6 - a^7*c^7*d^7 + (b^7*c^7*d^7 - 7*a*b^6*c^6*d^8 + 21*a^2*b^5*
c^5*d^9 - 35*a^3*b^4*c^4*d^10 + 35*a^4*b^3*c^3*d^11 - 21*a^5*b^2*
c^2*d^12 + 7*a^6*b*c*d^13 - a^7*d^14)*x^7 + 7*(b^7*c^8*d^6 - 7*a*
b^6*c^7*d^7 + 21*a^2*b^5*c^6*d^8 - 35*a^3*b^4*c^5*d^9 + 35*a^4*b^
3*c^4*d^10 - 21*a^5*b^2*c^3*d^11 + 7*a^6*b*c^2*d^12 - a^7*c*d^13)
*x^6 + 21*(b^7*c^9*d^5 - 7*a*b^6*c^8*d^6 + 21*a^2*b^5*c^7*d^7 - 3
5*a^3*b^4*c^6*d^8 + 35*a^4*b^3*c^5*d^9 - 21*a^5*b^2*c^4*d^10 + 7*
a^6*b*c^3*d^11 - a^7*c^2*d^12)*x^5 + 35*(b^7*c^10*d^4 - 7*a*b^6*c
^9*d^5 + 21*a^2*b^5*c^8*d^6 - 35*a^3*b^4*c^7*d^7 + 35*a^4*b^3*c^6
*d^8 - 21*a^5*b^2*c^5*d^9 + 7*a^6*b*c^4*d^10 - a^7*c^3*d^11)*x^4
+ 35*(b^7*c^11*d^3 - 7*a*b^6*c^10*d^4 + 21*a^2*b^5*c^9*d^5 - 35*a
^3*b^4*c^8*d^6 + 35*a^4*b^3*c^7*d^7 - 21*a^5*b^2*c^6*d^8 + 7*a^6*
b*c^5*d^9 - a^7*c^4*d^10)*x^3 + 21*(b^7*c^12*d^2 - 7*a*b^6*c^11*d
^3 + 21*a^2*b^5*c^10*d^4 - 35*a^3*b^4*c^9*d^5 + 35*a^4*b^3*c^8*d^
6 - 21*a^5*b^2*c^7*d^7 + 7*a^6*b*c^6*d^8 - a^7*c^5*d^9)*x^2 + 7*(
b^7*c^13*d - 7*a*b^6*c^12*d^2 + 21*a^2*b^5*c^11*d^3 - 35*a^3*b^4*
c^10*d^4 + 35*a^4*b^3*c^9*d^5 - 21*a^5*b^2*c^8*d^6 + 7*a^6*b*c^7*
d^7 - a^7*c^6*d^8)*x)
```

Fricas [A] time = 0.247166, size = 2145, normalized size = 10.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^8),x, algorithm="fricas")
```

```
[Out] 1/420*(1089*b^7*c^7 - 2940*a*b^6*c^6*d + 4410*a^2*b^5*c^5*d^2 - 4
900*a^3*b^4*c^4*d^3 + 3675*a^4*b^3*c^3*d^4 - 1764*a^5*b^2*c^2*d^5
 + 490*a^6*b*c*d^6 - 60*a^7*d^7 + 420*(b^7*c*d^6 - a*b^6*d^7)*x^6
 + 210*(13*b^7*c^2*d^5 - 14*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 70*(
107*b^7*c^3*d^4 - 126*a*b^6*c^2*d^5 + 21*a^2*b^5*c*d^6 - 2*a^3*b^
4*d^7)*x^4 + 35*(319*b^7*c^4*d^3 - 420*a*b^6*c^3*d^4 + 126*a^2*b^
5*c^2*d^5 - 28*a^3*b^4*c*d^6 + 3*a^4*b^3*d^7)*x^3 + 21*(459*b^7*c
^5*d^2 - 700*a*b^6*c^4*d^3 + 350*a^2*b^5*c^3*d^4 - 140*a^3*b^4*c^
2*d^5 + 35*a^4*b^3*c*d^6 - 4*a^5*b^2*d^7)*x^2 + 7*(669*b^7*c^6*d
```

```
- 1260*a*b^6*c^5*d^2 + 1050*a^2*b^5*c^4*d^3 - 700*a^3*b^4*c^3*d^4
 + 315*a^4*b^3*c^2*d^5 - 84*a^5*b^2*c*d^6 + 10*a^6*b*d^7)*x + 420
*(b^7*d^7*x^7 + 7*b^7*c*d^6*x^6 + 21*b^7*c^2*d^5*x^5 + 35*b^7*c^3
*d^4*x^4 + 35*b^7*c^4*d^3*x^3 + 21*b^7*c^5*d^2*x^2 + 7*b^7*c^6*d*
x + b^7*c^7)*log(b*x + a) - 420*(b^7*d^7*x^7 + 7*b^7*c*d^6*x^6 +
21*b^7*c^2*d^5*x^5 + 35*b^7*c^3*d^4*x^4 + 35*b^7*c^4*d^3*x^3 + 21
*b^7*c^5*d^2*x^2 + 7*b^7*c^6*d*x + b^7*c^7)*log(d*x + c))/(b^8*c^
15 - 8*a*b^7*c^14*d + 28*a^2*b^6*c^13*d^2 - 56*a^3*b^5*c^12*d^3 +
 70*a^4*b^4*c^11*d^4 - 56*a^5*b^3*c^10*d^5 + 28*a^6*b^2*c^9*d^6 -
 8*a^7*b*c^8*d^7 + a^8*c^7*d^8 + (b^8*c^8*d^7 - 8*a*b^7*c^7*d^8 +
 28*a^2*b^6*c^6*d^9 - 56*a^3*b^5*c^5*d^10 + 70*a^4*b^4*c^4*d^11 -
 56*a^5*b^3*c^3*d^12 + 28*a^6*b^2*c^2*d^13 - 8*a^7*b*c*d^14 + a^8
*d^15)*x^7 + 7*(b^8*c^9*d^6 - 8*a*b^7*c^8*d^7 + 28*a^2*b^6*c^7*d^
8 - 56*a^3*b^5*c^6*d^9 + 70*a^4*b^4*c^5*d^10 - 56*a^5*b^3*c^4*d^1
1 + 28*a^6*b^2*c^3*d^12 - 8*a^7*b*c^2*d^13 + a^8*c*d^14)*x^6 + 21
*(b^8*c^10*d^5 - 8*a*b^7*c^9*d^6 + 28*a^2*b^6*c^8*d^7 - 56*a^3*b^
5*c^7*d^8 + 70*a^4*b^4*c^6*d^9 - 56*a^5*b^3*c^5*d^10 + 28*a^6*b^2
*c^4*d^11 - 8*a^7*b*c^3*d^12 + a^8*c^2*d^13)*x^5 + 35*(b^8*c^11*d
^4 - 8*a*b^7*c^10*d^5 + 28*a^2*b^6*c^9*d^6 - 56*a^3*b^5*c^8*d^7 +
 70*a^4*b^4*c^7*d^8 - 56*a^5*b^3*c^6*d^9 + 28*a^6*b^2*c^5*d^10 -
8*a^7*b*c^4*d^11 + a^8*c^3*d^12)*x^4 + 35*(b^8*c^12*d^3 - 8*a*b^7
*c^11*d^4 + 28*a^2*b^6*c^10*d^5 - 56*a^3*b^5*c^9*d^6 + 70*a^4*b^4
*c^8*d^7 - 56*a^5*b^3*c^7*d^8 + 28*a^6*b^2*c^6*d^9 - 8*a^7*b*c^5*
d^10 + a^8*c^4*d^11)*x^3 + 21*(b^8*c^13*d^2 - 8*a*b^7*c^12*d^3 +
28*a^2*b^6*c^11*d^4 - 56*a^3*b^5*c^10*d^5 + 70*a^4*b^4*c^9*d^6 -
56*a^5*b^3*c^8*d^7 + 28*a^6*b^2*c^7*d^8 - 8*a^7*b*c^6*d^9 + a^8*c
^5*d^10)*x^2 + 7*(b^8*c^14*d - 8*a*b^7*c^13*d^2 + 28*a^2*b^6*c^12
*d^3 - 56*a^3*b^5*c^11*d^4 + 70*a^4*b^4*c^10*d^5 - 56*a^5*b^3*c^9
*d^6 + 28*a^6*b^2*c^8*d^7 - 8*a^7*b*c^7*d^8 + a^8*c^6*d^9)*x)
```

Sympy [A] time = 19.67, size = 1776, normalized size = 8.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**8,x)
```

```
[Out] -b**7*log(x + (-a**9*b**7*d**9/(a*d - b*c)**8 + 9*a**8*b**8*c*d**
8/(a*d - b*c)**8 - 36*a**7*b**9*c**2*d**7/(a*d - b*c)**8 + 84*a**
6*b**10*c**3*d**6/(a*d - b*c)**8 - 126*a**5*b**11*c**4*d**5/(a*d
- b*c)**8 + 126*a**4*b**12*c**5*d**4/(a*d - b*c)**8 - 84*a**3*b**
13*c**6*d**3/(a*d - b*c)**8 + 36*a**2*b**14*c**7*d**2/(a*d - b*c)
**8 - 9*a*b**15*c**8*d/(a*d - b*c)**8 + a*b**7*d + b**16*c**9/(a*
d - b*c)**8 + b**8*c)/(2*b**8*d))/(a*d - b*c)**8 + b**7*log(x + (
a**9*b**7*d**9/(a*d - b*c)**8 - 9*a**8*b**8*c*d**8/(a*d - b*c)**8
 + 36*a**7*b**9*c**2*d**7/(a*d - b*c)**8 - 84*a**6*b**10*c**3*d**
6/(a*d - b*c)**8 + 126*a**5*b**11*c**4*d**5/(a*d - b*c)**8 - 126*
a**4*b**12*c**5*d**4/(a*d - b*c)**8 + 84*a**3*b**13*c**6*d**3/(a*
d - b*c)**8 - 36*a**2*b**14*c**7*d**2/(a*d - b*c)**8 + 9*a*b**15*
c**8*d/(a*d - b*c)**8 + a*b**7*d - b**16*c**9/(a*d - b*c)**8 + b*
*8*c)/(2*b**8*d))/(a*d - b*c)**8 - (60*a**6*d**6 - 430*a**5*b*c*d
```

```
**5 + 1334*a**4*b**2*c**2*d**4 - 2341*a**3*b**3*c**3*d**3 + 2559*
a**2*b**4*c**4*d**2 - 1851*a*b**5*c**5*d + 1089*b**6*c**6 + 420*b
**6*d**6*x**6 + x**5*(-210*a*b**5*d**6 + 2730*b**6*c*d**5) + x**4
*(140*a**2*b**4*d**6 - 1330*a*b**5*c*d**5 + 7490*b**6*c**2*d**4)
+ x**3*(-105*a**3*b**3*d**6 + 875*a**2*b**4*c*d**5 - 3535*a*b**5*
c**2*d**4 + 11165*b**6*c**3*d**3) + x**2*(84*a**4*b**2*d**6 - 651
*a**3*b**3*c*d**5 + 2289*a**2*b**4*c**2*d**4 - 5061*a*b**5*c**3*d
**3 + 9639*b**6*c**4*d**2) + x*(-70*a**5*b*d**6 + 518*a**4*b**2*c
*d**5 - 1687*a**3*b**3*c**2*d**4 + 3213*a**2*b**4*c**3*d**3 - 413
7*a*b**5*c**4*d**2 + 4683*b**6*c**5*d))/(420*a**7*c**7*d**7 - 294
0*a**6*b*c**8*d**6 + 8820*a**5*b**2*c**9*d**5 - 14700*a**4*b**3*c
**10*d**4 + 14700*a**3*b**4*c**11*d**3 - 8820*a**2*b**5*c**12*d**
2 + 2940*a*b**6*c**13*d - 420*b**7*c**14 + x**7*(420*a**7*d**14 -
 2940*a**6*b*c*d**13 + 8820*a**5*b**2*c**2*d**12 - 14700*a**4*b**
3*c**3*d**11 + 14700*a**3*b**4*c**4*d**10 - 8820*a**2*b**5*c**5*d
**9 + 2940*a*b**6*c**6*d**8 - 420*b**7*c**7*d**7) + x**6*(2940*a*
*7*c*d**13 - 20580*a**6*b*c**2*d**12 + 61740*a**5*b**2*c**3*d**11
 - 102900*a**4*b**3*c**4*d**10 + 102900*a**3*b**4*c**5*d**9 - 617
40*a**2*b**5*c**6*d**8 + 20580*a*b**6*c**7*d**7 - 2940*b**7*c**8*
d**6) + x**5*(8820*a**7*c**2*d**12 - 61740*a**6*b*c**3*d**11 + 18
5220*a**5*b**2*c**4*d**10 - 308700*a**4*b**3*c**5*d**9 + 308700*a
**3*b**4*c**6*d**8 - 185220*a**2*b**5*c**7*d**7 + 61740*a*b**6*c*
*8*d**6 - 8820*b**7*c**9*d**5) + x**4*(14700*a**7*c**3*d**11 - 10
2900*a**6*b*c**4*d**10 + 308700*a**5*b**2*c**5*d**9 - 514500*a**4
*b**3*c**6*d**8 + 514500*a**3*b**4*c**7*d**7 - 308700*a**2*b**5*c
**8*d**6 + 102900*a*b**6*c**9*d**5 - 14700*b**7*c**10*d**4) + x**
3*(14700*a**7*c**4*d**10 - 102900*a**6*b*c**5*d**9 + 308700*a**5*
b**2*c**6*d**8 - 514500*a**4*b**3*c**7*d**7 + 514500*a**3*b**4*c*
*8*d**6 - 308700*a**2*b**5*c**9*d**5 + 102900*a*b**6*c**10*d**4 -
 14700*b**7*c**11*d**3) + x**2*(8820*a**7*c**5*d**9 - 61740*a**6*
b*c**6*d**8 + 185220*a**5*b**2*c**7*d**7 - 308700*a**4*b**3*c**8*
d**6 + 308700*a**3*b**4*c**9*d**5 - 185220*a**2*b**5*c**10*d**4 +
 61740*a*b**6*c**11*d**3 - 8820*b**7*c**12*d**2) + x*(2940*a**7*c
**6*d**8 - 20580*a**6*b*c**7*d**7 + 61740*a**5*b**2*c**8*d**6 - 1
02900*a**4*b**3*c**9*d**5 + 102900*a**3*b**4*c**10*d**4 - 61740*a
**2*b**5*c**11*d**3 + 20580*a*b**6*c**12*d**2 - 2940*b**7*c**13*d
))
```

GIAC/XCAS [A] time = 0.22798, size = 949, normalized size = 4.7

$$\frac{b^8\ln\left(|bx+a|\right)}{b^9c^8-8\,ab^8c^7d+28\,a^2b^7c^6d^2-56\,a^3b^6c^5d^3+70\,a^4b^5c^4d^4-56\,a^5b^4c^3d^5+28\,a^6b^3c^2d^6-8\,a^7b^2cd^7+a^8bd^8}-\frac{b^7d\ln\left(|dx+c|\right)}{b^8c^8d-8\,ab^7c^7d^2+28\,a^2b^6c^6d^3-56\,a^3b^5c^5d^4+70\,a^4b^4c^4d^5-56\,a^5b^3c^3d^6+28\,a^6b^2c^2d^7-8\,a^7bcd^8+a^8d^9}+\frac{1089\,b^7c^7-2940\,ab^6c^6d+4410\,a^2b^5c^5d^2-4900\,a^3b^4c^4d^3+3675\,a^4b^3c^3d^4-1764\,a^5b^2c^2d^5+490\,a^6bcd^6-60\,a^7d^7+420\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^8),x, algorithm="giac")
```

```
[Out] b^8*ln(abs(b*x + a))/(b^9*c^8 - 8*a*b^8*c^7*d + 28*a^2*b^7*c^6*d^
2 - 56*a^3*b^6*c^5*d^3 + 70*a^4*b^5*c^4*d^4 - 56*a^5*b^4*c^3*d^5
+ 28*a^6*b^3*c^2*d^6 - 8*a^7*b^2*c*d^7 + a^8*b*d^8) - b^7*d*ln(ab
s(d*x + c))/(b^8*c^8*d - 8*a*b^7*c^7*d^2 + 28*a^2*b^6*c^6*d^3 - 5
6*a^3*b^5*c^5*d^4 + 70*a^4*b^4*c^4*d^5 - 56*a^5*b^3*c^3*d^6 + 28*
a^6*b^2*c^2*d^7 - 8*a^7*b*c*d^8 + a^8*d^9) + 1/420*(1089*b^7*c^7
- 2940*a*b^6*c^6*d + 4410*a^2*b^5*c^5*d^2 - 4900*a^3*b^4*c^4*d^3
+ 3675*a^4*b^3*c^3*d^4 - 1764*a^5*b^2*c^2*d^5 + 490*a^6*b*c*d^6 -
 60*a^7*d^7 + 420*(b^7*c*d^6 - a*b^6*d^7)*x^6 + 210*(13*b^7*c^2*d
^5 - 14*a*b^6*c*d^6 + a^2*b^5*d^7)*x^5 + 70*(107*b^7*c^3*d^4 - 12
6*a*b^6*c^2*d^5 + 21*a^2*b^5*c*d^6 - 2*a^3*b^4*d^7)*x^4 + 35*(319
*b^7*c^4*d^3 - 420*a*b^6*c^3*d^4 + 126*a^2*b^5*c^2*d^5 - 28*a^3*b
^4*c*d^6 + 3*a^4*b^3*d^7)*x^3 + 21*(459*b^7*c^5*d^2 - 700*a*b^6*c
^4*d^3 + 350*a^2*b^5*c^3*d^4 - 140*a^3*b^4*c^2*d^5 + 35*a^4*b^3*c
*d^6 - 4*a^5*b^2*d^7)*x^2 + 7*(669*b^7*c^6*d - 1260*a*b^6*c^5*d^2
 + 1050*a^2*b^5*c^4*d^3 - 700*a^3*b^4*c^3*d^4 + 315*a^4*b^3*c^2*d
^5 - 84*a^5*b^2*c*d^6 + 10*a^6*b*d^7)*x)/((b*c - a*d)^8*(d*x + c)
^7)
```

3.1373 $\int \frac{1}{(a+bx)^2(c+dx)^8} \, dx$

Optimal. Leaf size=231

$$-\frac{b^7}{(a+bx)(bc-ad)^8}-\frac{8b^7d\log(a+bx)}{(bc-ad)^9}+\frac{8b^7d\log(c+dx)}{(bc-ad)^9}-\frac{7b^6d}{(c+dx)(bc-ad)^8}-\frac{3b^5d}{(c+dx)^2(bc-ad)^7}-\frac{5b^4d}{3(c+dx)^3(bc-ad)^6}-\frac{b^3d}{(c+dx)^4(bc-ad)^5}-\frac{3b^2d}{5(c+dx)^5(bc-ad)^4}-\frac{bd}{3(c+dx)^6(bc-ad)^3}-\frac{d}{7(c+dx)^7(bc-ad)^2}$$

```
[Out] -(b^7/((b*c - a*d)^8*(a + b*x))) - d/(7*(b*c - a*d)^2*(c + d*x)^7
) - (b*d)/(3*(b*c - a*d)^3*(c + d*x)^6) - (3*b^2*d)/(5*(b*c - a*d
)^4*(c + d*x)^5) - (b^3*d)/((b*c - a*d)^5*(c + d*x)^4) - (5*b^4*d
)/(3*(b*c - a*d)^6*(c + d*x)^3) - (3*b^5*d)/((b*c - a*d)^7*(c + d
*x)^2) - (7*b^6*d)/((b*c - a*d)^8*(c + d*x)) - (8*b^7*d*Log[a + b
*x])/(b*c - a*d)^9 + (8*b^7*d*Log[c + d*x])/(b*c - a*d)^9
```

Rubi [A] time = 0.563044, antiderivative size = 231, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{b^7}{(a+bx)(bc-ad)^8}-\frac{8b^7d\log(a+bx)}{(bc-ad)^9}+\frac{8b^7d\log(c+dx)}{(bc-ad)^9}-\frac{7b^6d}{(c+dx)(bc-ad)^8}-\frac{3b^5d}{(c+dx)^2(bc-ad)^7}-\frac{5b^4d}{3(c+dx)^3(bc-ad)^6}-\frac{b^3d}{(c+dx)^4(bc-ad)^5}-\frac{3b^2d}{5(c+dx)^5(bc-ad)^4}-\frac{bd}{3(c+dx)^6(bc-ad)^3}-\frac{d}{7(c+dx)^7(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(c + d*x)^8),x]
```

```
[Out] -(b^7/((b*c - a*d)^8*(a + b*x))) - d/(7*(b*c - a*d)^2*(c + d*x)^7
) - (b*d)/(3*(b*c - a*d)^3*(c + d*x)^6) - (3*b^2*d)/(5*(b*c - a*d
)^4*(c + d*x)^5) - (b^3*d)/((b*c - a*d)^5*(c + d*x)^4) - (5*b^4*d
)/(3*(b*c - a*d)^6*(c + d*x)^3) - (3*b^5*d)/((b*c - a*d)^7*(c + d
*x)^2) - (7*b^6*d)/((b*c - a*d)^8*(c + d*x)) - (8*b^7*d*Log[a + b
*x])/(b*c - a*d)^9 + (8*b^7*d*Log[c + d*x])/(b*c - a*d)^9
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c)**8,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.379356, size = 213, normalized size = 0.92

$$-\frac{\frac{105b^7(bc-ad)}{a+bx}+840b^7d\log(a+bx)+\frac{735b^6d(bc-ad)}{c+dx}+\frac{315b^5d(bc-ad)^2}{(c+dx)^2}+\frac{175b^4d(bc-ad)^3}{(c+dx)^3}+\frac{105b^3d(bc-ad)^4}{(c+dx)^4}+\frac{63b^2d(bc-ad)^5}{(c+dx)^5}+\frac{35bd(bc-}{(c+dx}}{105(bc-ad)^9}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(c + d*x)^8),x]
```

```
[Out] -((105*b^7*(b*c - a*d))/(a + b*x) - (15*d*(-(b*c) + a*d)^7)/(c +
d*x)^7 + (35*b*d*(b*c - a*d)^6)/(c + d*x)^6 + (63*b^2*d*(b*c - a*
d)^5)/(c + d*x)^5 + (105*b^3*d*(b*c - a*d)^4)/(c + d*x)^4 + (175*
b^4*d*(b*c - a*d)^3)/(c + d*x)^3 + (315*b^5*d*(b*c - a*d)^2)/(c +
 d*x)^2 + (735*b^6*d*(b*c - a*d))/(c + d*x) + 840*b^7*d*Log[a + b
*x] - 840*b^7*d*Log[c + d*x])/(105*(b*c - a*d)^9)
```

Maple [A] time = 0.031, size = 223, normalized size = 1.

$$-\frac{d}{7\,(ad-bc)^2\,(dx+c)^7}-8\,\frac{db^7\ln(dx+c)}{(ad-bc)^9}-7\,\frac{db^6}{(ad-bc)^8\,(dx+c)}+3\,\frac{db^5}{(ad-bc)^7\,(dx+c)^2}-\frac{5\,db^4}{3\,(ad-bc)^6\,(dx+c)^3}+\frac{db^3}{(ad-bc)^5\,(dx+c)^4}-\frac{3\,b^2d}{5\,(ad-bc)^4\,(dx+c)^5}+\frac{db}{3\,(ad-bc)^3\,(dx+c)^6}-\frac{b^7}{(ad-bc)^8\,(bx+a)}+8\,\frac{db^7\ln(bx+a)}{(ad-bc)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c)^8,x)
```

```
[Out] -1/7*d/(a*d-b*c)^2/(d*x+c)^7-8*d/(a*d-b*c)^9*b^7*ln(d*x+c)-7*d/(a
*d-b*c)^8*b^6/(d*x+c)+3*d/(a*d-b*c)^7*b^5/(d*x+c)^2-5/3*d/(a*d-b*
c)^6*b^4/(d*x+c)^3+d/(a*d-b*c)^5*b^3/(d*x+c)^4-3/5*d/(a*d-b*c)^4*
b^2/(d*x+c)^5+1/3*d/(a*d-b*c)^3*b/(d*x+c)^6-b^7/(a*d-b*c)^8/(b*x+
a)+8*d/(a*d-b*c)^9*b^7*ln(b*x+a)
```

Maxima [A] time = 1.64767, size = 2539, normalized size = 10.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^8),x, algorithm="maxima")
```

```
[Out] -8*b^7*d*log(b*x + a)/(b^9*c^9 - 9*a*b^8*c^8*d + 36*a^2*b^7*c^7*d
^2 - 84*a^3*b^6*c^6*d^3 + 126*a^4*b^5*c^5*d^4 - 126*a^5*b^4*c^4*d
^5 + 84*a^6*b^3*c^3*d^6 - 36*a^7*b^2*c^2*d^7 + 9*a^8*b*c*d^8 - a^
9*d^9) + 8*b^7*d*log(d*x + c)/(b^9*c^9 - 9*a*b^8*c^8*d + 36*a^2*b
^7*c^7*d^2 - 84*a^3*b^6*c^6*d^3 + 126*a^4*b^5*c^5*d^4 - 126*a^5*b
^4*c^4*d^5 + 84*a^6*b^3*c^3*d^6 - 36*a^7*b^2*c^2*d^7 + 9*a^8*b*c*
d^8 - a^9*d^9) - 1/105*(840*b^7*d^7*x^7 + 105*b^7*c^7 + 1443*a*b^
6*c^6*d - 1497*a^2*b^5*c^5*d^2 + 1443*a^3*b^4*c^4*d^3 - 1007*a^4*
b^3*c^3*d^4 + 463*a^5*b^2*c^2*d^5 - 125*a^6*b*c*d^6 + 15*a^7*d^7
+ 420*(13*b^7*c*d^6 + a*b^6*d^7)*x^6 + 140*(107*b^7*c^2*d^5 + 20*
a*b^6*c*d^6 - a^2*b^5*d^7)*x^5 + 70*(319*b^7*c^3*d^4 + 113*a*b^6*
c^2*d^5 - 13*a^2*b^5*c*d^6 + a^3*b^4*d^7)*x^4 + 14*(1377*b^7*c^4*
d^3 + 872*a*b^6*c^3*d^4 - 178*a^2*b^5*c^2*d^5 + 32*a^3*b^4*c*d^6
- 3*a^4*b^3*d^7)*x^3 + 14*(669*b^7*c^5*d^2 + 786*a*b^6*c^4*d^3 -
264*a^2*b^5*c^3*d^4 + 86*a^3*b^4*c^2*d^5 - 19*a^4*b^3*c*d^6 + 2*a
^5*b^2*d^7)*x^2 + 2*(1089*b^7*c^6*d + 2832*a*b^6*c^5*d^2 - 1578*a
^2*b^5*c^4*d^3 + 872*a^3*b^4*c^3*d^4 - 353*a^4*b^3*c^2*d^5 + 88*a
^5*b^2*c*d^6 - 10*a^6*b*d^7)*x)/(a*b^8*c^15 - 8*a^2*b^7*c^14*d +
28*a^3*b^6*c^13*d^2 - 56*a^4*b^5*c^12*d^3 + 70*a^5*b^4*c^11*d^4 -
 56*a^6*b^3*c^10*d^5 + 28*a^7*b^2*c^9*d^6 - 8*a^8*b*c^8*d^7 + a^9
*c^7*d^8 + (b^9*c^8*d^7 - 8*a*b^8*c^7*d^8 + 28*a^2*b^7*c^6*d^9 -
56*a^3*b^6*c^5*d^10 + 70*a^4*b^5*c^4*d^11 - 56*a^5*b^4*c^3*d^12 +
 28*a^6*b^3*c^2*d^13 - 8*a^7*b^2*c*d^14 + a^8*b*d^15)*x^8 + (7*b^
9*c^9*d^6 - 55*a*b^8*c^8*d^7 + 188*a^2*b^7*c^7*d^8 - 364*a^3*b^6*
c^6*d^9 + 434*a^4*b^5*c^5*d^10 - 322*a^5*b^4*c^4*d^11 + 140*a^6*b
^3*c^3*d^12 - 28*a^7*b^2*c^2*d^13 - a^8*b*c*d^14 + a^9*d^15)*x^7
+ 7*(3*b^9*c^10*d^5 - 23*a*b^8*c^9*d^6 + 76*a^2*b^7*c^8*d^7 - 140
*a^3*b^6*c^7*d^8 + 154*a^4*b^5*c^6*d^9 - 98*a^5*b^4*c^5*d^10 + 28
*a^6*b^3*c^4*d^11 + 4*a^7*b^2*c^3*d^12 - 5*a^8*b*c^2*d^13 + a^9*c
*d^14)*x^6 + 7*(5*b^9*c^11*d^4 - 37*a*b^8*c^10*d^5 + 116*a^2*b^7*
c^9*d^6 - 196*a^3*b^6*c^8*d^7 + 182*a^4*b^5*c^7*d^8 - 70*a^5*b^4*
c^6*d^9 - 28*a^6*b^3*c^5*d^10 + 44*a^7*b^2*c^4*d^11 - 19*a^8*b*c^
3*d^12 + 3*a^9*c^2*d^13)*x^5 + 35*(b^9*c^12*d^3 - 7*a*b^8*c^11*d^
4 + 20*a^2*b^7*c^10*d^5 - 28*a^3*b^6*c^9*d^6 + 14*a^4*b^5*c^8*d^7
 + 14*a^5*b^4*c^7*d^8 - 28*a^6*b^3*c^6*d^9 + 20*a^7*b^2*c^5*d^10
- 7*a^8*b*c^4*d^11 + a^9*c^3*d^12)*x^4 + 7*(3*b^9*c^13*d^2 - 19*a
*b^8*c^12*d^3 + 44*a^2*b^7*c^11*d^4 - 28*a^3*b^6*c^10*d^5 - 70*a^
4*b^5*c^9*d^6 + 182*a^5*b^4*c^8*d^7 - 196*a^6*b^3*c^7*d^8 + 116*a
^7*b^2*c^6*d^9 - 37*a^8*b*c^5*d^10 + 5*a^9*c^4*d^11)*x^3 + 7*(b^9
*c^14*d - 5*a*b^8*c^13*d^2 + 4*a^2*b^7*c^12*d^3 + 28*a^3*b^6*c^11
*d^4 - 98*a^4*b^5*c^10*d^5 + 154*a^5*b^4*c^9*d^6 - 140*a^6*b^3*c^
8*d^7 + 76*a^7*b^2*c^7*d^8 - 23*a^8*b*c^6*d^9 + 3*a^9*c^5*d^10)*x
^2 + (b^9*c^15 - a*b^8*c^14*d - 28*a^2*b^7*c^13*d^2 + 140*a^3*b^6
*c^12*d^3 - 322*a^4*b^5*c^11*d^4 + 434*a^5*b^4*c^10*d^5 - 364*a^6
*b^3*c^9*d^6 + 188*a^7*b^2*c^8*d^7 - 55*a^8*b*c^7*d^8 + 7*a^9*c^6
*d^9)*x)
```

Fricas [A] time = 0.284394, size = 3056, normalized size = 13.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^8),x, algorithm="fricas")
```

```
[Out] -1/105*(105*b^8*c^8 + 1338*a*b^7*c^7*d - 2940*a^2*b^6*c^6*d^2 + 2
940*a^3*b^5*c^5*d^3 - 2450*a^4*b^4*c^4*d^4 + 1470*a^5*b^3*c^3*d^5
 - 588*a^6*b^2*c^2*d^6 + 140*a^7*b*c*d^7 - 15*a^8*d^8 + 840*(b^8*
c*d^7 - a*b^7*d^8)*x^7 + 420*(13*b^8*c^2*d^6 - 12*a*b^7*c*d^7 - a
^2*b^6*d^8)*x^6 + 140*(107*b^8*c^3*d^5 - 87*a*b^7*c^2*d^6 - 21*a^
2*b^6*c*d^7 + a^3*b^5*d^8)*x^5 + 70*(319*b^8*c^4*d^4 - 206*a*b^7*
c^3*d^5 - 126*a^2*b^6*c^2*d^6 + 14*a^3*b^5*c*d^7 - a^4*b^4*d^8)*x
^4 + 14*(1377*b^8*c^5*d^3 - 505*a*b^7*c^4*d^4 - 1050*a^2*b^6*c^3*
d^5 + 210*a^3*b^5*c^2*d^6 - 35*a^4*b^4*c*d^7 + 3*a^5*b^3*d^8)*x^3
 + 14*(669*b^8*c^6*d^2 + 117*a*b^7*c^5*d^3 - 1050*a^2*b^6*c^4*d^4
 + 350*a^3*b^5*c^3*d^5 - 105*a^4*b^4*c^2*d^6 + 21*a^5*b^3*c*d^7 -
 2*a^6*b^2*d^8)*x^2 + 2*(1089*b^8*c^7*d + 1743*a*b^7*c^6*d^2 - 44
10*a^2*b^6*c^5*d^3 + 2450*a^3*b^5*c^4*d^4 - 1225*a^4*b^4*c^3*d^5
+ 441*a^5*b^3*c^2*d^6 - 98*a^6*b^2*c*d^7 + 10*a^7*b*d^8)*x + 840*
(b^8*d^8*x^8 + a*b^7*c^7*d + (7*b^8*c*d^7 + a*b^7*d^8)*x^7 + 7*(3
*b^8*c^2*d^6 + a*b^7*c*d^7)*x^6 + 7*(5*b^8*c^3*d^5 + 3*a*b^7*c^2*
d^6)*x^5 + 35*(b^8*c^4*d^4 + a*b^7*c^3*d^5)*x^4 + 7*(3*b^8*c^5*d^
3 + 5*a*b^7*c^4*d^4)*x^3 + 7*(b^8*c^6*d^2 + 3*a*b^7*c^5*d^3)*x^2
+ (b^8*c^7*d + 7*a*b^7*c^6*d^2)*x)*log(b*x + a) - 840*(b^8*d^8*x^
8 + a*b^7*c^7*d + (7*b^8*c*d^7 + a*b^7*d^8)*x^7 + 7*(3*b^8*c^2*d^
6 + a*b^7*c*d^7)*x^6 + 7*(5*b^8*c^3*d^5 + 3*a*b^7*c^2*d^6)*x^5 +
35*(b^8*c^4*d^4 + a*b^7*c^3*d^5)*x^4 + 7*(3*b^8*c^5*d^3 + 5*a*b^7
*c^4*d^4)*x^3 + 7*(b^8*c^6*d^2 + 3*a*b^7*c^5*d^3)*x^2 + (b^8*c^7*
d + 7*a*b^7*c^6*d^2)*x)*log(d*x + c))/(a*b^9*c^16 - 9*a^2*b^8*c^1
5*d + 36*a^3*b^7*c^14*d^2 - 84*a^4*b^6*c^13*d^3 + 126*a^5*b^5*c^1
2*d^4 - 126*a^6*b^4*c^11*d^5 + 84*a^7*b^3*c^10*d^6 - 36*a^8*b^2*c
^9*d^7 + 9*a^9*b*c^8*d^8 - a^10*c^7*d^9 + (b^10*c^9*d^7 - 9*a*b^9
*c^8*d^8 + 36*a^2*b^8*c^7*d^9 - 84*a^3*b^7*c^6*d^10 + 126*a^4*b^6
*c^5*d^11 - 126*a^5*b^5*c^4*d^12 + 84*a^6*b^4*c^3*d^13 - 36*a^7*b
^3*c^2*d^14 + 9*a^8*b^2*c*d^15 - a^9*b*d^16)*x^8 + (7*b^10*c^10*d
^6 - 62*a*b^9*c^9*d^7 + 243*a^2*b^8*c^8*d^8 - 552*a^3*b^7*c^7*d^9
 + 798*a^4*b^6*c^6*d^10 - 756*a^5*b^5*c^5*d^11 + 462*a^6*b^4*c^4*
d^12 - 168*a^7*b^3*c^3*d^13 + 27*a^8*b^2*c^2*d^14 + 2*a^9*b*c*d^1
5 - a^10*d^16)*x^7 + 7*(3*b^10*c^11*d^5 - 26*a*b^9*c^10*d^6 + 99*
a^2*b^8*c^9*d^7 - 216*a^3*b^7*c^8*d^8 + 294*a^4*b^6*c^7*d^9 - 252
*a^5*b^5*c^6*d^10 + 126*a^6*b^4*c^5*d^11 - 24*a^7*b^3*c^4*d^12 -
9*a^8*b^2*c^3*d^13 + 6*a^9*b*c^2*d^14 - a^10*c*d^15)*x^6 + 7*(5*b
^10*c^12*d^4 - 42*a*b^9*c^11*d^5 + 153*a^2*b^8*c^10*d^6 - 312*a^3
*b^7*c^9*d^7 + 378*a^4*b^6*c^8*d^8 - 252*a^5*b^5*c^7*d^9 + 42*a^6
*b^4*c^6*d^10 + 72*a^7*b^3*c^5*d^11 - 63*a^8*b^2*c^4*d^12 + 22*a^
9*b*c^3*d^13 - 3*a^10*c^2*d^14)*x^5 + 35*(b^10*c^13*d^3 - 8*a*b^9
*c^12*d^4 + 27*a^2*b^8*c^11*d^5 - 48*a^3*b^7*c^10*d^6 + 42*a^4*b^
6*c^9*d^7 - 42*a^6*b^4*c^7*d^9 + 48*a^7*b^3*c^6*d^10 - 27*a^8*b^2
*c^5*d^11 + 8*a^9*b*c^4*d^12 - a^10*c^3*d^13)*x^4 + 7*(3*b^10*c^1
4*d^2 - 22*a*b^9*c^13*d^3 + 63*a^2*b^8*c^12*d^4 - 72*a^3*b^7*c^11
*d^5 - 42*a^4*b^6*c^10*d^6 + 252*a^5*b^5*c^9*d^7 - 378*a^6*b^4*c^
8*d^8 + 312*a^7*b^3*c^7*d^9 - 153*a^8*b^2*c^6*d^10 + 42*a^9*b*c^5
```

```
*d^11 - 5*a^10*c^4*d^12)*x^3 + 7*(b^10*c^15*d - 6*a*b^9*c^14*d^2
+ 9*a^2*b^8*c^13*d^3 + 24*a^3*b^7*c^12*d^4 - 126*a^4*b^6*c^11*d^5
 + 252*a^5*b^5*c^10*d^6 - 294*a^6*b^4*c^9*d^7 + 216*a^7*b^3*c^8*d
^8 - 99*a^8*b^2*c^7*d^9 + 26*a^9*b*c^6*d^10 - 3*a^10*c^5*d^11)*x^
2 + (b^10*c^16 - 2*a*b^9*c^15*d - 27*a^2*b^8*c^14*d^2 + 168*a^3*b
^7*c^13*d^3 - 462*a^4*b^6*c^12*d^4 + 756*a^5*b^5*c^11*d^5 - 798*a
^6*b^4*c^10*d^6 + 552*a^7*b^3*c^9*d^7 - 243*a^8*b^2*c^8*d^8 + 62*
a^9*b*c^7*d^9 - 7*a^10*c^6*d^10)*x)
```

Sympy [A] time = 42.6466, size = 2334, normalized size = 10.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c)**8,x)
```

```
[Out] -8*b**7*d*log(x + (-8*a**10*b**7*d**11/(a*d - b*c)**9 + 80*a**9*b
**8*c*d**10/(a*d - b*c)**9 - 360*a**8*b**9*c**2*d**9/(a*d - b*c)*
*9 + 960*a**7*b**10*c**3*d**8/(a*d - b*c)**9 - 1680*a**6*b**11*c*
*4*d**7/(a*d - b*c)**9 + 2016*a**5*b**12*c**5*d**6/(a*d - b*c)**9
 - 1680*a**4*b**13*c**6*d**5/(a*d - b*c)**9 + 960*a**3*b**14*c**7
*d**4/(a*d - b*c)**9 - 360*a**2*b**15*c**8*d**3/(a*d - b*c)**9 +
80*a*b**16*c**9*d**2/(a*d - b*c)**9 + 8*a*b**7*d**2 - 8*b**17*c**
10*d/(a*d - b*c)**9 + 8*b**8*c*d)/(16*b**8*d**2))/(a*d - b*c)**9
+ 8*b**7*d*log(x + (8*a**10*b**7*d**11/(a*d - b*c)**9 - 80*a**9*b
**8*c*d**10/(a*d - b*c)**9 + 360*a**8*b**9*c**2*d**9/(a*d - b*c)*
*9 - 960*a**7*b**10*c**3*d**8/(a*d - b*c)**9 + 1680*a**6*b**11*c*
*4*d**7/(a*d - b*c)**9 - 2016*a**5*b**12*c**5*d**6/(a*d - b*c)**9
 + 1680*a**4*b**13*c**6*d**5/(a*d - b*c)**9 - 960*a**3*b**14*c**7
*d**4/(a*d - b*c)**9 + 360*a**2*b**15*c**8*d**3/(a*d - b*c)**9 -
80*a*b**16*c**9*d**2/(a*d - b*c)**9 + 8*a*b**7*d**2 + 8*b**17*c**
10*d/(a*d - b*c)**9 + 8*b**8*c*d)/(16*b**8*d**2))/(a*d - b*c)**9
- (15*a**7*d**7 - 125*a**6*b*c*d**6 + 463*a**5*b**2*c**2*d**5 - 1
007*a**4*b**3*c**3*d**4 + 1443*a**3*b**4*c**4*d**3 - 1497*a**2*b*
*5*c**5*d**2 + 1443*a*b**6*c**6*d + 105*b**7*c**7 + 840*b**7*d**7
*x**7 + x**6*(420*a*b**6*d**7 + 5460*b**7*c*d**6) + x**5*(-140*a*
*2*b**5*d**7 + 2800*a*b**6*c*d**6 + 14980*b**7*c**2*d**5) + x**4*
(70*a**3*b**4*d**7 - 910*a**2*b**5*c*d**6 + 7910*a*b**6*c**2*d**5
 + 22330*b**7*c**3*d**4) + x**3*(-42*a**4*b**3*d**7 + 448*a**3*b*
*4*c*d**6 - 2492*a**2*b**5*c**2*d**5 + 12208*a*b**6*c**3*d**4 + 1
9278*b**7*c**4*d**3) + x**2*(28*a**5*b**2*d**7 - 266*a**4*b**3*c*
d**6 + 1204*a**3*b**4*c**2*d**5 - 3696*a**2*b**5*c**3*d**4 + 1100
4*a*b**6*c**4*d**3 + 9366*b**7*c**5*d**2) + x*(-20*a**6*b*d**7 +
176*a**5*b**2*c*d**6 - 706*a**4*b**3*c**2*d**5 + 1744*a**3*b**4*c
**3*d**4 - 3156*a**2*b**5*c**4*d**3 + 5664*a*b**6*c**5*d**2 + 217
8*b**7*c**6*d))/(105*a**9*c**7*d**8 - 840*a**8*b*c**8*d**7 + 2940
*a**7*b**2*c**9*d**6 - 5880*a**6*b**3*c**10*d**5 + 7350*a**5*b**4
*c**11*d**4 - 5880*a**4*b**5*c**12*d**3 + 2940*a**3*b**6*c**13*d*
*2 - 840*a**2*b**7*c**14*d + 105*a*b**8*c**15 + x**8*(105*a**8*b*
d**15 - 840*a**7*b**2*c*d**14 + 2940*a**6*b**3*c**2*d**13 - 5880*
a**5*b**4*c**3*d**12 + 7350*a**4*b**5*c**4*d**11 - 5880*a**3*b**6
```

```
*c**5*d**10 + 2940*a**2*b**7*c**6*d**9 - 840*a*b**8*c**7*d**8 + 1
05*b**9*c**8*d**7) + x**7*(105*a**9*d**15 - 105*a**8*b*c*d**14 -
2940*a**7*b**2*c**2*d**13 + 14700*a**6*b**3*c**3*d**12 - 33810*a*
*5*b**4*c**4*d**11 + 45570*a**4*b**5*c**5*d**10 - 38220*a**3*b**6
*c**6*d**9 + 19740*a**2*b**7*c**7*d**8 - 5775*a*b**8*c**8*d**7 +
735*b**9*c**9*d**6) + x**6*(735*a**9*c*d**14 - 3675*a**8*b*c**2*d
**13 + 2940*a**7*b**2*c**3*d**12 + 20580*a**6*b**3*c**4*d**11 - 7
2030*a**5*b**4*c**5*d**10 + 113190*a**4*b**5*c**6*d**9 - 102900*a
**3*b**6*c**7*d**8 + 55860*a**2*b**7*c**8*d**7 - 16905*a*b**8*c**
9*d**6 + 2205*b**9*c**10*d**5) + x**5*(2205*a**9*c**2*d**13 - 139
65*a**8*b*c**3*d**12 + 32340*a**7*b**2*c**4*d**11 - 20580*a**6*b*
*3*c**5*d**10 - 51450*a**5*b**4*c**6*d**9 + 133770*a**4*b**5*c**7
*d**8 - 144060*a**3*b**6*c**8*d**7 + 85260*a**2*b**7*c**9*d**6 -
27195*a*b**8*c**10*d**5 + 3675*b**9*c**11*d**4) + x**4*(3675*a**9
*c**3*d**12 - 25725*a**8*b*c**4*d**11 + 73500*a**7*b**2*c**5*d**1
0 - 102900*a**6*b**3*c**6*d**9 + 51450*a**5*b**4*c**7*d**8 + 5145
0*a**4*b**5*c**8*d**7 - 102900*a**3*b**6*c**9*d**6 + 73500*a**2*b
**7*c**10*d**5 - 25725*a*b**8*c**11*d**4 + 3675*b**9*c**12*d**3)
+ x**3*(3675*a**9*c**4*d**11 - 27195*a**8*b*c**5*d**10 + 85260*a*
*7*b**2*c**6*d**9 - 144060*a**6*b**3*c**7*d**8 + 133770*a**5*b**4
*c**8*d**7 - 51450*a**4*b**5*c**9*d**6 - 20580*a**3*b**6*c**10*d*
*5 + 32340*a**2*b**7*c**11*d**4 - 13965*a*b**8*c**12*d**3 + 2205*
b**9*c**13*d**2) + x**2*(2205*a**9*c**5*d**10 - 16905*a**8*b*c**6
*d**9 + 55860*a**7*b**2*c**7*d**8 - 102900*a**6*b**3*c**8*d**7 +
113190*a**5*b**4*c**9*d**6 - 72030*a**4*b**5*c**10*d**5 + 20580*a
**3*b**6*c**11*d**4 + 2940*a**2*b**7*c**12*d**3 - 3675*a*b**8*c**
13*d**2 + 735*b**9*c**14*d) + x*(735*a**9*c**6*d**9 - 5775*a**8*b
*c**7*d**8 + 19740*a**7*b**2*c**8*d**7 - 38220*a**6*b**3*c**9*d**
6 + 45570*a**5*b**4*c**10*d**5 - 33810*a**4*b**5*c**11*d**4 + 147
00*a**3*b**6*c**12*d**3 - 2940*a**2*b**7*c**13*d**2 - 105*a*b**8*
c**14*d + 105*b**9*c**15))
```

GIAC/XCAS [A] time = 0.237921, size = 964, normalized size = 4.17

$$-\frac{b^{15}}{(b^{16}c^{8}-8\,ab^{15}c^{7}d+28\,a^{2}b^{14}c^{6}d^{2}-56\,a^{3}b^{13}c^{5}d^{3}+70\,a^{4}b^{12}c^{4}d^{4}-56\,a^{5}b^{11}c^{3}d^{5}+28\,a^{6}b^{10}c^{2}d^{6}-8\,a^{7}b^{9}cd^{7}+a^{8}b^{8}d^{8})(bx+}+\frac{8\,b^{8}d\ln\left(\left|\frac{bc}{bx+a}-\frac{ad}{bx+a}+d\right|\right)}{b^{10}c^{9}-9\,ab^{9}c^{8}d+36\,a^{2}b^{8}c^{7}d^{2}-84\,a^{3}b^{7}c^{6}d^{3}+126\,a^{4}b^{6}c^{5}d^{4}-126\,a^{5}b^{5}c^{4}d^{5}+84\,a^{6}b^{4}c^{3}d^{6}-36\,a^{7}b^{3}c^{2}d^{7}+9\,a^{8}b^{2}cd^{8}-a^{9}b}+\frac{1443\,b^{7}d^{8}+\frac{9366\,(b^{9}cd^{7}-ab^{8}d^{8})}{(bx+a)b}+\frac{25578\,(b^{11}c^{2}d^{6}-2\,ab^{10}cd^{7}+a^{2}b^{9}d^{8})}{(bx+a)^{2}b^{2}}+\frac{37730\,(b^{13}c^{3}d^{5}-3\,ab^{12}c^{2}d^{6}+3\,a^{2}b^{11}cd^{7}-a^{3}b^{10}d^{8})}{(bx+a)^{3}b^{3}}+\frac{31850\,(b^{15}c^{4}d^{4}-4\,ab}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^8),x, algorithm="giac")
```

```
[Out] -b^15/((b^16*c^8 - 8*a*b^15*c^7*d + 28*a^2*b^14*c^6*d^2 - 56*a^3*
b^13*c^5*d^3 + 70*a^4*b^12*c^4*d^4 - 56*a^5*b^11*c^3*d^5 + 28*a^6
*b^10*c^2*d^6 - 8*a^7*b^9*c*d^7 + a^8*b^8*d^8)*(b*x + a)) + 8*b^8
*d*ln(abs(b*c/(b*x + a) - a*d/(b*x + a) + d))/(b^10*c^9 - 9*a*b^9
```

```
*c^8*d + 36*a^2*b^8*c^7*d^2 - 84*a^3*b^7*c^6*d^3 + 126*a^4*b^6*c^
5*d^4 - 126*a^5*b^5*c^4*d^5 + 84*a^6*b^4*c^3*d^6 - 36*a^7*b^3*c^2
*d^7 + 9*a^8*b^2*c*d^8 - a^9*b*d^9) + 1/105*(1443*b^7*d^8 + 9366*
(b^9*c*d^7 - a*b^8*d^8)/((b*x + a)*b) + 25578*(b^11*c^2*d^6 - 2*a
*b^10*c*d^7 + a^2*b^9*d^8)/((b*x + a)^2*b^2) + 37730*(b^13*c^3*d^
5 - 3*a*b^12*c^2*d^6 + 3*a^2*b^11*c*d^7 - a^3*b^10*d^8)/((b*x + a
)^3*b^3) + 31850*(b^15*c^4*d^4 - 4*a*b^14*c^3*d^5 + 6*a^2*b^13*c^
2*d^6 - 4*a^3*b^12*c*d^7 + a^4*b^11*d^8)/((b*x + a)^4*b^4) + 1470
0*(b^17*c^5*d^3 - 5*a*b^16*c^4*d^4 + 10*a^2*b^15*c^3*d^5 - 10*a^3
*b^14*c^2*d^6 + 5*a^4*b^13*c*d^7 - a^5*b^12*d^8)/((b*x + a)^5*b^5
) + 2940*(b^19*c^6*d^2 - 6*a*b^18*c^5*d^3 + 15*a^2*b^17*c^4*d^4 -
 20*a^3*b^16*c^3*d^5 + 15*a^4*b^15*c^2*d^6 - 6*a^5*b^14*c*d^7 + a
^6*b^13*d^8)/((b*x + a)^6*b^6))/((b*c - a*d)^9*(b*c/(b*x + a) - a
*d/(b*x + a) + d)^7)
```

3.1374 $\int \frac{1}{(a+bx)^3(c+dx)^8}\,dx$

Optimal. Leaf size=276

$$\frac{36b^7d^2\log(a+bx)}{(bc-ad)^{10}}-\frac{36b^7d^2\log(c+dx)}{(bc-ad)^{10}}+\frac{8b^7d}{(a+bx)(bc-ad)^9}-\frac{b^7}{2(a+bx)^2(bc-ad)^8}+\frac{28b^6d^2}{(c+dx)(bc-ad)^9}+\frac{21b^5d^2}{2(c+dx)^2(bc-ad)^8}+\frac{5b^4d^2}{(c+dx)^3(bc-ad)^7}+\frac{5b^3d^2}{2(c+dx)^4(bc-ad)^6}+\frac{6b^2d^2}{5(c+dx)^5(bc-ad)^5}+\frac{bd^2}{2(c+dx)^6(bc-ad)^4}+\frac{d^2}{7(c+dx)^7(bc-ad)^3}$$

```
[Out] -b^7/(2*(b*c - a*d)^8*(a + b*x)^2) + (8*b^7*d)/((b*c - a*d)^9*(a
+ b*x)) + d^2/(7*(b*c - a*d)^3*(c + d*x)^7) + (b*d^2)/(2*(b*c - a
*d)^4*(c + d*x)^6) + (6*b^2*d^2)/(5*(b*c - a*d)^5*(c + d*x)^5) +
(5*b^3*d^2)/(2*(b*c - a*d)^6*(c + d*x)^4) + (5*b^4*d^2)/((b*c - a
*d)^7*(c + d*x)^3) + (21*b^5*d^2)/(2*(b*c - a*d)^8*(c + d*x)^2) +
 (28*b^6*d^2)/((b*c - a*d)^9*(c + d*x)) + (36*b^7*d^2*Log[a + b*x
])/(b*c - a*d)^10 - (36*b^7*d^2*Log[c + d*x])/(b*c - a*d)^10
```

Rubi [A] time = 0.722988, antiderivative size = 276, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{36b^7d^2\log(a+bx)}{(bc-ad)^{10}}-\frac{36b^7d^2\log(c+dx)}{(bc-ad)^{10}}+\frac{8b^7d}{(a+bx)(bc-ad)^9}-\frac{b^7}{2(a+bx)^2(bc-ad)^8}+\frac{28b^6d^2}{(c+dx)(bc-ad)^9}+\frac{21b^5d^2}{2(c+dx)^2(bc-ad)^8}+\frac{5b^4d^2}{(c+dx)^3(bc-ad)^7}+\frac{5b^3d^2}{2(c+dx)^4(bc-ad)^6}+\frac{6b^2d^2}{5(c+dx)^5(bc-ad)^5}+\frac{bd^2}{2(c+dx)^6(bc-ad)^4}+\frac{d^2}{7(c+dx)^7(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*(c + d*x)^8),x]
```


```
[Out] -b^7/(2*(b*c - a*d)^8*(a + b*x)^2) + (8*b^7*d)/((b*c - a*d)^9*(a
+ b*x)) + d^2/(7*(b*c - a*d)^3*(c + d*x)^7) + (b*d^2)/(2*(b*c - a
*d)^4*(c + d*x)^6) + (6*b^2*d^2)/(5*(b*c - a*d)^5*(c + d*x)^5) +
(5*b^3*d^2)/(2*(b*c - a*d)^6*(c + d*x)^4) + (5*b^4*d^2)/((b*c - a
*d)^7*(c + d*x)^3) + (21*b^5*d^2)/(2*(b*c - a*d)^8*(c + d*x)^2) +
 (28*b^6*d^2)/((b*c - a*d)^9*(c + d*x)) + (36*b^7*d^2*Log[a + b*x
])/(b*c - a*d)^10 - (36*b^7*d^2*Log[c + d*x])/(b*c - a*d)^10
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c)**8,x)
```

```
[Out] Timed out
```

Mathematica [A] time = 0.31609, size = 254, normalized size = 0.92

$$\frac{\frac{560b^7d(bc-ad)}{a+bx}-\frac{35b^7(bc-ad)^2}{(a+bx)^2}+2520b^7d^2\log(a+bx)+\frac{1960b^6d^2(bc-ad)}{c+dx}+\frac{735b^5d^2(bc-ad)^2}{(c+dx)^2}+\frac{350b^4d^2(bc-ad)^3}{(c+dx)^3}+\frac{175b^3d^2(bc-ad)^4}{(c+dx)^4}+84\ldots}{70(bc-ad)^{10}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*(c + d*x)^8),x]
```

```
[Out] ((-35*b^7*(b*c - a*d)^2)/(a + b*x)^2 + (560*b^7*d*(b*c - a*d))/(a
 + b*x) + (10*d^2*(b*c - a*d)^7)/(c + d*x)^7 + (35*b*d^2*(b*c - a
*d)^6)/(c + d*x)^6 + (84*b^2*d^2*(b*c - a*d)^5)/(c + d*x)^5 + (17
5*b^3*d^2*(b*c - a*d)^4)/(c + d*x)^4 + (350*b^4*d^2*(b*c - a*d)^3
)/(c + d*x)^3 + (735*b^5*d^2*(b*c - a*d)^2)/(c + d*x)^2 + (1960*b
^6*d^2*(b*c - a*d))/(c + d*x) + 2520*b^7*d^2*Log[a + b*x] - 2520*
b^7*d^2*Log[c + d*x])/(70*(b*c - a*d)^10)
```

Maple [A] time = 0.031, size = 265, normalized size = 1.

$$-\frac{d^2}{7\,(ad-bc)^3\,(dx+c)^7}-36\,\frac{d^2b^7\ln(dx+c)}{(ad-bc)^{10}}-28\,\frac{d^2b^6}{(ad-bc)^9\,(dx+c)}+\frac{21\,d^2b^5}{2\,(ad-bc)^8\,(dx+c)^2}-5\,\frac{d^2b^4}{(ad-bc)^7\,(dx+c)^3}+\frac{5\,d^2b^3}{2\,(ad-bc)^6\,(dx+c)^4}-\frac{6\,d^2b^2}{5\,(ad-bc)^5\,(dx+c)^5}+\frac{d^2b}{2\,(ad-bc)^4\,(dx+c)^6}-\frac{b^7}{2\,(ad-bc)^8\,(bx+a)^2}+36\,\frac{d^2b^7\ln(bx+a)}{(ad-bc)^{10}}-8\,\frac{b^7d}{(ad-bc)^9\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c)^8,x)
```

```
[Out] -1/7*d^2/(a*d-b*c)^3/(d*x+c)^7-36*d^2/(a*d-b*c)^10*b^7*ln(d*x+c)-
28*d^2/(a*d-b*c)^9*b^6/(d*x+c)+21/2*d^2/(a*d-b*c)^8*b^5/(d*x+c)^2
-5*d^2/(a*d-b*c)^7*b^4/(d*x+c)^3+5/2*d^2/(a*d-b*c)^6*b^3/(d*x+c)^
4-6/5*d^2/(a*d-b*c)^5*b^2/(d*x+c)^5+1/2*d^2/(a*d-b*c)^4*b/(d*x+c)
^6-1/2*b^7/(a*d-b*c)^8/(b*x+a)^2+36*d^2/(a*d-b*c)^10*b^7*ln(b*x+a
)-8*b^7/(a*d-b*c)^9*d/(b*x+a)
```

Maxima [A] time = 1.79989, size = 3239, normalized size = 11.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^8),x, algorithm="maxima")
```

```
[Out] 36*b^7*d^2*log(b*x + a)/(b^10*c^10 - 10*a*b^9*c^9*d + 45*a^2*b^8*
c^8*d^2 - 120*a^3*b^7*c^7*d^3 + 210*a^4*b^6*c^6*d^4 - 252*a^5*b^5
*c^5*d^5 + 210*a^6*b^4*c^4*d^6 - 120*a^7*b^3*c^3*d^7 + 45*a^8*b^2
*c^2*d^8 - 10*a^9*b*c*d^9 + a^10*d^10) - 36*b^7*d^2*log(d*x + c)/
(b^10*c^10 - 10*a*b^9*c^9*d + 45*a^2*b^8*c^8*d^2 - 120*a^3*b^7*c^
7*d^3 + 210*a^4*b^6*c^6*d^4 - 252*a^5*b^5*c^5*d^5 + 210*a^6*b^4*c
^4*d^6 - 120*a^7*b^3*c^3*d^7 + 45*a^8*b^2*c^2*d^8 - 10*a^9*b*c*d^
9 + a^10*d^10) + 1/70*(2520*b^8*d^8*x^8 - 35*b^8*c^8 + 595*a*b^7*
c^7*d + 3349*a^2*b^6*c^6*d^2 - 2531*a^3*b^5*c^5*d^3 + 1879*a^4*b^
4*c^4*d^4 - 1061*a^5*b^3*c^3*d^5 + 409*a^6*b^2*c^2*d^6 - 95*a^7*b
*c*d^7 + 10*a^8*d^8 + 1260*(13*b^8*c*d^7 + 3*a*b^7*d^8)*x^7 + 420
*(107*b^8*c^2*d^6 + 59*a*b^7*c*d^7 + 2*a^2*b^6*d^8)*x^6 + 210*(31
9*b^8*c^3*d^5 + 327*a*b^7*c^2*d^6 + 27*a^2*b^6*c*d^7 - a^3*b^5*d^
8)*x^5 + 42*(1377*b^8*c^4*d^4 + 2467*a*b^7*c^3*d^5 + 387*a^2*b^6*
c^2*d^6 - 33*a^3*b^5*c*d^7 + 2*a^4*b^4*d^8)*x^4 + 42*(669*b^8*c^5
*d^3 + 2163*a*b^7*c^4*d^4 + 608*a^2*b^6*c^3*d^5 - 92*a^3*b^5*c^2*
d^6 + 13*a^4*b^4*c*d^7 - a^5*b^3*d^8)*x^3 + 6*(1089*b^8*c^6*d^2 +
 7515*a*b^7*c^5*d^3 + 3924*a^2*b^6*c^4*d^4 - 976*a^3*b^5*c^3*d^5
+ 249*a^4*b^4*c^2*d^6 - 45*a^5*b^3*c*d^7 + 4*a^6*b^2*d^8)*x^2 + 3
*(105*b^8*c^7*d + 3621*a*b^7*c^6*d^2 + 4167*a^2*b^6*c^5*d^3 - 171
3*a^3*b^5*c^4*d^4 + 737*a^4*b^4*c^3*d^5 - 243*a^5*b^3*c^2*d^6 + 5
1*a^6*b^2*c*d^7 - 5*a^7*b*d^8)*x)/(a^2*b^9*c^16 - 9*a^3*b^8*c^15*
d + 36*a^4*b^7*c^14*d^2 - 84*a^5*b^6*c^13*d^3 + 126*a^6*b^5*c^12*
d^4 - 126*a^7*b^4*c^11*d^5 + 84*a^8*b^3*c^10*d^6 - 36*a^9*b^2*c^9
*d^7 + 9*a^10*b*c^8*d^8 - a^11*c^7*d^9 + (b^11*c^9*d^7 - 9*a*b^10
*c^8*d^8 + 36*a^2*b^9*c^7*d^9 - 84*a^3*b^8*c^6*d^10 + 126*a^4*b^7
*c^5*d^11 - 126*a^5*b^6*c^4*d^12 + 84*a^6*b^5*c^3*d^13 - 36*a^7*b
^4*c^2*d^14 + 9*a^8*b^3*c*d^15 - a^9*b^2*d^16)*x^9 + (7*b^11*c^10
*d^6 - 61*a*b^10*c^9*d^7 + 234*a^2*b^9*c^8*d^8 - 516*a^3*b^8*c^7*
d^9 + 714*a^4*b^7*c^6*d^10 - 630*a^5*b^6*c^5*d^11 + 336*a^6*b^5*c
^4*d^12 - 84*a^7*b^4*c^3*d^13 - 9*a^8*b^3*c^2*d^14 + 11*a^9*b^2*c
*d^15 - 2*a^10*b*d^16)*x^8 + (21*b^11*c^11*d^5 - 175*a*b^10*c^10*
d^6 + 631*a^2*b^9*c^9*d^7 - 1269*a^3*b^8*c^8*d^8 + 1506*a^4*b^7*c
^7*d^9 - 966*a^5*b^6*c^6*d^10 + 126*a^6*b^5*c^5*d^11 + 294*a^7*b^
4*c^4*d^12 - 231*a^8*b^3*c^3*d^13 + 69*a^9*b^2*c^2*d^14 - 5*a^10*
b*c*d^15 - a^11*d^16)*x^7 + 7*(5*b^11*c^12*d^4 - 39*a*b^10*c^11*d
^5 + 127*a^2*b^9*c^10*d^6 - 213*a^3*b^8*c^9*d^7 + 162*a^4*b^7*c^8
*d^8 + 42*a^5*b^6*c^7*d^9 - 210*a^6*b^5*c^6*d^10 + 198*a^7*b^4*c^
5*d^11 - 87*a^8*b^3*c^4*d^12 + 13*a^9*b^2*c^3*d^13 + 3*a^10*b*c^2
*d^14 - a^11*c*d^15)*x^6 + 7*(5*b^11*c^13*d^3 - 35*a*b^10*c^12*d^
4 + 93*a^2*b^9*c^11*d^5 - 87*a^3*b^8*c^10*d^6 - 102*a^4*b^7*c^9*d
^7 + 378*a^5*b^6*c^8*d^8 - 462*a^6*b^5*c^7*d^9 + 282*a^7*b^4*c^6*
d^10 - 63*a^8*b^3*c^5*d^11 - 23*a^9*b^2*c^4*d^12 + 17*a^10*b*c^3*
d^13 - 3*a^11*c^2*d^14)*x^5 + 7*(3*b^11*c^14*d^2 - 17*a*b^10*c^13
*d^3 + 23*a^2*b^9*c^12*d^4 + 63*a^3*b^8*c^11*d^5 - 282*a^4*b^7*c^
10*d^6 + 462*a^5*b^6*c^9*d^7 - 378*a^6*b^5*c^8*d^8 + 102*a^7*b^4*
c^7*d^9 + 87*a^8*b^3*c^6*d^10 - 93*a^9*b^2*c^5*d^11 + 35*a^10*b*c
```

```
^4*d^12 - 5*a^11*c^3*d^13)*x^4 + 7*(b^11*c^15*d - 3*a*b^10*c^14*d
^2 - 13*a^2*b^9*c^13*d^3 + 87*a^3*b^8*c^12*d^4 - 198*a^4*b^7*c^11
*d^5 + 210*a^5*b^6*c^10*d^6 - 42*a^6*b^5*c^9*d^7 - 162*a^7*b^4*c^
8*d^8 + 213*a^8*b^3*c^7*d^9 - 127*a^9*b^2*c^6*d^10 + 39*a^10*b*c^
5*d^11 - 5*a^11*c^4*d^12)*x^3 + (b^11*c^16 + 5*a*b^10*c^15*d - 69
*a^2*b^9*c^14*d^2 + 231*a^3*b^8*c^13*d^3 - 294*a^4*b^7*c^12*d^4 -
 126*a^5*b^6*c^11*d^5 + 966*a^6*b^5*c^10*d^6 - 1506*a^7*b^4*c^9*d
^7 + 1269*a^8*b^3*c^8*d^8 - 631*a^9*b^2*c^7*d^9 + 175*a^10*b*c^6*
d^10 - 21*a^11*c^5*d^11)*x^2 + (2*a*b^10*c^16 - 11*a^2*b^9*c^15*d
 + 9*a^3*b^8*c^14*d^2 + 84*a^4*b^7*c^13*d^3 - 336*a^5*b^6*c^12*d^
4 + 630*a^6*b^5*c^11*d^5 - 714*a^7*b^4*c^10*d^6 + 516*a^8*b^3*c^9
*d^7 - 234*a^9*b^2*c^8*d^8 + 61*a^10*b*c^7*d^9 - 7*a^11*c^6*d^10)
*x)
```

Fricas [A] time = 0.346073, size = 4072, normalized size = 14.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^8),x, algorithm="fricas")
```

```
[Out] -1/70*(35*b^9*c^9 - 630*a*b^8*c^8*d - 2754*a^2*b^7*c^7*d^2 + 5880
*a^3*b^6*c^6*d^3 - 4410*a^4*b^5*c^5*d^4 + 2940*a^5*b^4*c^4*d^5 -
1470*a^6*b^3*c^3*d^6 + 504*a^7*b^2*c^2*d^7 - 105*a^8*b*c*d^8 + 10
*a^9*d^9 - 2520*(b^9*c*d^8 - a*b^8*d^9)*x^8 - 1260*(13*b^9*c^2*d^
7 - 10*a*b^8*c*d^8 - 3*a^2*b^7*d^9)*x^7 - 420*(107*b^9*c^3*d^6 -
48*a*b^8*c^2*d^7 - 57*a^2*b^7*c*d^8 - 2*a^3*b^6*d^9)*x^6 - 210*(3
19*b^9*c^4*d^5 + 8*a*b^8*c^3*d^6 - 300*a^2*b^7*c^2*d^7 - 28*a^3*b
^6*c*d^8 + a^4*b^5*d^9)*x^5 - 42*(1377*b^9*c^5*d^4 + 1090*a*b^8*c
^4*d^5 - 2080*a^2*b^7*c^3*d^6 - 420*a^3*b^6*c^2*d^7 + 35*a^4*b^5*
c*d^8 - 2*a^5*b^4*d^9)*x^4 - 42*(669*b^9*c^6*d^3 + 1494*a*b^8*c^5
*d^4 - 1555*a^2*b^7*c^4*d^5 - 700*a^3*b^6*c^3*d^6 + 105*a^4*b^5*c
^2*d^7 - 14*a^5*b^4*c*d^8 + a^6*b^3*d^9)*x^3 - 6*(1089*b^9*c^7*d^
2 + 6426*a*b^8*c^6*d^3 - 3591*a^2*b^7*c^5*d^4 - 4900*a^3*b^6*c^4*
d^5 + 1225*a^4*b^5*c^3*d^6 - 294*a^5*b^4*c^2*d^7 + 49*a^6*b^3*c*d
^8 - 4*a^7*b^2*d^9)*x^2 - 3*(105*b^9*c^8*d + 3516*a*b^8*c^7*d^2 +
 546*a^2*b^7*c^6*d^3 - 5880*a^3*b^6*c^5*d^4 + 2450*a^4*b^5*c^4*d^
5 - 980*a^5*b^4*c^3*d^6 + 294*a^6*b^3*c^2*d^7 - 56*a^7*b^2*c*d^8
+ 5*a^8*b*d^9)*x - 2520*(b^9*d^9*x^9 + a^2*b^7*c^7*d^2 + (7*b^9*c
*d^8 + 2*a*b^8*d^9)*x^8 + (21*b^9*c^2*d^7 + 14*a*b^8*c*d^8 + a^2*
b^7*d^9)*x^7 + 7*(5*b^9*c^3*d^6 + 6*a*b^8*c^2*d^7 + a^2*b^7*c*d^8
)*x^6 + 7*(5*b^9*c^4*d^5 + 10*a*b^8*c^3*d^6 + 3*a^2*b^7*c^2*d^7)*
x^5 + 7*(3*b^9*c^5*d^4 + 10*a*b^8*c^4*d^5 + 5*a^2*b^7*c^3*d^6)*x^
4 + 7*(b^9*c^6*d^3 + 6*a*b^8*c^5*d^4 + 5*a^2*b^7*c^4*d^5)*x^3 + (
b^9*c^7*d^2 + 14*a*b^8*c^6*d^3 + 21*a^2*b^7*c^5*d^4)*x^2 + (2*a*b
^8*c^7*d^2 + 7*a^2*b^7*c^6*d^3)*x)*log(b*x + a) + 2520*(b^9*d^9*x
^9 + a^2*b^7*c^7*d^2 + (7*b^9*c*d^8 + 2*a*b^8*d^9)*x^8 + (21*b^9*
c^2*d^7 + 14*a*b^8*c*d^8 + a^2*b^7*d^9)*x^7 + 7*(5*b^9*c^3*d^6 +
6*a*b^8*c^2*d^7 + a^2*b^7*c*d^8)*x^6 + 7*(5*b^9*c^4*d^5 + 10*a*b^
8*c^3*d^6 + 3*a^2*b^7*c^2*d^7)*x^5 + 7*(3*b^9*c^5*d^4 + 10*a*b^8*
c^4*d^5 + 5*a^2*b^7*c^3*d^6)*x^4 + 7*(b^9*c^6*d^3 + 6*a*b^8*c^5*d
```

```
^4 + 5*a^2*b^7*c^4*d^5)*x^3 + (b^9*c^7*d^2 + 14*a*b^8*c^6*d^3 + 2
1*a^2*b^7*c^5*d^4)*x^2 + (2*a*b^8*c^7*d^2 + 7*a^2*b^7*c^6*d^3)*x)
*log(d*x + c))/(a^2*b^10*c^17 - 10*a^3*b^9*c^16*d + 45*a^4*b^8*c^
15*d^2 - 120*a^5*b^7*c^14*d^3 + 210*a^6*b^6*c^13*d^4 - 252*a^7*b^
5*c^12*d^5 + 210*a^8*b^4*c^11*d^6 - 120*a^9*b^3*c^10*d^7 + 45*a^1
0*b^2*c^9*d^8 - 10*a^11*b*c^8*d^9 + a^12*c^7*d^10 + (b^12*c^10*d^
7 - 10*a*b^11*c^9*d^8 + 45*a^2*b^10*c^8*d^9 - 120*a^3*b^9*c^7*d^1
0 + 210*a^4*b^8*c^6*d^11 - 252*a^5*b^7*c^5*d^12 + 210*a^6*b^6*c^4
*d^13 - 120*a^7*b^5*c^3*d^14 + 45*a^8*b^4*c^2*d^15 - 10*a^9*b^3*c
*d^16 + a^10*b^2*d^17)*x^9 + (7*b^12*c^11*d^6 - 68*a*b^11*c^10*d^
7 + 295*a^2*b^10*c^9*d^8 - 750*a^3*b^9*c^8*d^9 + 1230*a^4*b^8*c^7
*d^10 - 1344*a^5*b^7*c^6*d^11 + 966*a^6*b^6*c^5*d^12 - 420*a^7*b^
5*c^4*d^13 + 75*a^8*b^4*c^3*d^14 + 20*a^9*b^3*c^2*d^15 - 13*a^10*
b^2*c*d^16 + 2*a^11*b*d^17)*x^8 + (21*b^12*c^12*d^5 - 196*a*b^11*
c^11*d^6 + 806*a^2*b^10*c^10*d^7 - 1900*a^3*b^9*c^9*d^8 + 2775*a^
4*b^8*c^8*d^9 - 2472*a^5*b^7*c^7*d^10 + 1092*a^6*b^6*c^6*d^11 + 1
68*a^7*b^5*c^5*d^12 - 525*a^8*b^4*c^4*d^13 + 300*a^9*b^3*c^3*d^14
 - 74*a^10*b^2*c^2*d^15 + 4*a^11*b*c*d^16 + a^12*d^17)*x^7 + 7*(5
*b^12*c^13*d^4 - 44*a*b^11*c^12*d^5 + 166*a^2*b^10*c^11*d^6 - 340
*a^3*b^9*c^10*d^7 + 375*a^4*b^8*c^9*d^8 - 120*a^5*b^7*c^8*d^9 - 2
52*a^6*b^6*c^7*d^10 + 408*a^7*b^5*c^6*d^11 - 285*a^8*b^4*c^5*d^12
 + 100*a^9*b^3*c^4*d^13 - 10*a^10*b^2*c^3*d^14 - 4*a^11*b*c^2*d^1
5 + a^12*c*d^16)*x^6 + 7*(5*b^12*c^14*d^3 - 40*a*b^11*c^13*d^4 +
128*a^2*b^10*c^12*d^5 - 180*a^3*b^9*c^11*d^6 - 15*a^4*b^8*c^10*d^
7 + 480*a^5*b^7*c^9*d^8 - 840*a^6*b^6*c^8*d^9 + 744*a^7*b^5*c^7*d
^10 - 345*a^8*b^4*c^6*d^11 + 40*a^9*b^3*c^5*d^12 + 40*a^10*b^2*c^
4*d^13 - 20*a^11*b*c^3*d^14 + 3*a^12*c^2*d^15)*x^5 + 7*(3*b^12*c^
15*d^2 - 20*a*b^11*c^14*d^3 + 40*a^2*b^10*c^13*d^4 + 40*a^3*b^9*c
^12*d^5 - 345*a^4*b^8*c^11*d^6 + 744*a^5*b^7*c^10*d^7 - 840*a^6*b
^6*c^9*d^8 + 480*a^7*b^5*c^8*d^9 - 15*a^8*b^4*c^7*d^10 - 180*a^9*
b^3*c^6*d^11 + 128*a^10*b^2*c^5*d^12 - 40*a^11*b*c^4*d^13 + 5*a^1
2*c^3*d^14)*x^4 + 7*(b^12*c^16*d - 4*a*b^11*c^15*d^2 - 10*a^2*b^1
0*c^14*d^3 + 100*a^3*b^9*c^13*d^4 - 285*a^4*b^8*c^12*d^5 + 408*a^
5*b^7*c^11*d^6 - 252*a^6*b^6*c^10*d^7 - 120*a^7*b^5*c^9*d^8 + 375
*a^8*b^4*c^8*d^9 - 340*a^9*b^3*c^7*d^10 + 166*a^10*b^2*c^6*d^11 -
 44*a^11*b*c^5*d^12 + 5*a^12*c^4*d^13)*x^3 + (b^12*c^17 + 4*a*b^1
1*c^16*d - 74*a^2*b^10*c^15*d^2 + 300*a^3*b^9*c^14*d^3 - 525*a^4*
b^8*c^13*d^4 + 168*a^5*b^7*c^12*d^5 + 1092*a^6*b^6*c^11*d^6 - 247
2*a^7*b^5*c^10*d^7 + 2775*a^8*b^4*c^9*d^8 - 1900*a^9*b^3*c^8*d^9
+ 806*a^10*b^2*c^7*d^10 - 196*a^11*b*c^6*d^11 + 21*a^12*c^5*d^12)
*x^2 + (2*a*b^11*c^17 - 13*a^2*b^10*c^16*d + 20*a^3*b^9*c^15*d^2
+ 75*a^4*b^8*c^14*d^3 - 420*a^5*b^7*c^13*d^4 + 966*a^6*b^6*c^12*d
^5 - 1344*a^7*b^5*c^11*d^6 + 1230*a^8*b^4*c^10*d^7 - 750*a^9*b^3*
c^9*d^8 + 295*a^10*b^2*c^8*d^9 - 68*a^11*b*c^7*d^10 + 7*a^12*c^6*
d^11)*x)
```

Sympy [A] time = 82.5573, size = 2914, normalized size = 10.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c)**8,x)
```

```
[Out] -36*b**7*d**2*log(x + (-36*a**11*b**7*d**13/(a*d - b*c)**10 + 396
*a**10*b**8*c*d**12/(a*d - b*c)**10 - 1980*a**9*b**9*c**2*d**11/(
a*d - b*c)**10 + 5940*a**8*b**10*c**3*d**10/(a*d - b*c)**10 - 118
80*a**7*b**11*c**4*d**9/(a*d - b*c)**10 + 16632*a**6*b**12*c**5*d
**8/(a*d - b*c)**10 - 16632*a**5*b**13*c**6*d**7/(a*d - b*c)**10
+ 11880*a**4*b**14*c**7*d**6/(a*d - b*c)**10 - 5940*a**3*b**15*c*
*8*d**5/(a*d - b*c)**10 + 1980*a**2*b**16*c**9*d**4/(a*d - b*c)**
10 - 396*a*b**17*c**10*d**3/(a*d - b*c)**10 + 36*a*b**7*d**3 + 36
*b**18*c**11*d**2/(a*d - b*c)**10 + 36*b**8*c*d**2)/(72*b**8*d**3
))/(a*d - b*c)**10 + 36*b**7*d**2*log(x + (36*a**11*b**7*d**13/(a
*d - b*c)**10 - 396*a**10*b**8*c*d**12/(a*d - b*c)**10 + 1980*a**
9*b**9*c**2*d**11/(a*d - b*c)**10 - 5940*a**8*b**10*c**3*d**10/(a
*d - b*c)**10 + 11880*a**7*b**11*c**4*d**9/(a*d - b*c)**10 - 1663
2*a**6*b**12*c**5*d**8/(a*d - b*c)**10 + 16632*a**5*b**13*c**6*d*
*7/(a*d - b*c)**10 - 11880*a**4*b**14*c**7*d**6/(a*d - b*c)**10 +
 5940*a**3*b**15*c**8*d**5/(a*d - b*c)**10 - 1980*a**2*b**16*c**9
*d**4/(a*d - b*c)**10 + 396*a*b**17*c**10*d**3/(a*d - b*c)**10 +
36*a*b**7*d**3 - 36*b**18*c**11*d**2/(a*d - b*c)**10 + 36*b**8*c*
d**2)/(72*b**8*d**3))/(a*d - b*c)**10 - (10*a**8*d**8 - 95*a**7*b
*c*d**7 + 409*a**6*b**2*c**2*d**6 - 1061*a**5*b**3*c**3*d**5 + 18
79*a**4*b**4*c**4*d**4 - 2531*a**3*b**5*c**5*d**3 + 3349*a**2*b**
6*c**6*d**2 + 595*a*b**7*c**7*d - 35*b**8*c**8 + 2520*b**8*d**8*x
**8 + x**7*(3780*a*b**7*d**8 + 16380*b**8*c*d**7) + x**6*(840*a**
2*b**6*d**8 + 24780*a*b**7*c*d**7 + 44940*b**8*c**2*d**6) + x**5*
(-210*a**3*b**5*d**8 + 5670*a**2*b**6*c*d**7 + 68670*a*b**7*c**2*
d**6 + 66990*b**8*c**3*d**5) + x**4*(84*a**4*b**4*d**8 - 1386*a**
3*b**5*c*d**7 + 16254*a**2*b**6*c**2*d**6 + 103614*a*b**7*c**3*d*
*5 + 57834*b**8*c**4*d**4) + x**3*(-42*a**5*b**3*d**8 + 546*a**4*
b**4*c*d**7 - 3864*a**3*b**5*c**2*d**6 + 25536*a**2*b**6*c**3*d**
5 + 90846*a*b**7*c**4*d**4 + 28098*b**8*c**5*d**3) + x**2*(24*a**
6*b**2*d**8 - 270*a**5*b**3*c*d**7 + 1494*a**4*b**4*c**2*d**6 - 5
856*a**3*b**5*c**3*d**5 + 23544*a**2*b**6*c**4*d**4 + 45090*a*b**
7*c**5*d**3 + 6534*b**8*c**6*d**2) + x*(-15*a**7*b*d**8 + 153*a**
6*b**2*c*d**7 - 729*a**5*b**3*c**2*d**6 + 2211*a**4*b**4*c**3*d**
5 - 5139*a**3*b**5*c**4*d**4 + 12501*a**2*b**6*c**5*d**3 + 10863*
a*b**7*c**6*d**2 + 315*b**8*c**7*d))/(70*a**11*c**7*d**9 - 630*a*
*10*b*c**8*d**8 + 2520*a**9*b**2*c**9*d**7 - 5880*a**8*b**3*c**10
*d**6 + 8820*a**7*b**4*c**11*d**5 - 8820*a**6*b**5*c**12*d**4 + 5
880*a**5*b**6*c**13*d**3 - 2520*a**4*b**7*c**14*d**2 + 630*a**3*b
**8*c**15*d - 70*a**2*b**9*c**16 + x**9*(70*a**9*b**2*d**16 - 630
*a**8*b**3*c*d**15 + 2520*a**7*b**4*c**2*d**14 - 5880*a**6*b**5*c
**3*d**13 + 8820*a**5*b**6*c**4*d**12 - 8820*a**4*b**7*c**5*d**11
 + 5880*a**3*b**8*c**6*d**10 - 2520*a**2*b**9*c**7*d**9 + 630*a*b
**10*c**8*d**8 - 70*b**11*c**9*d**7) + x**8*(140*a**10*b*d**16 -
770*a**9*b**2*c*d**15 + 630*a**8*b**3*c**2*d**14 + 5880*a**7*b**4
*c**3*d**13 - 23520*a**6*b**5*c**4*d**12 + 44100*a**5*b**6*c**5*d
**11 - 49980*a**4*b**7*c**6*d**10 + 36120*a**3*b**8*c**7*d**9 - 1
6380*a**2*b**9*c**8*d**8 + 4270*a*b**10*c**9*d**7 - 490*b**11*c**
10*d**6) + x**7*(70*a**11*d**16 + 350*a**10*b*c*d**15 - 4830*a**9
*b**2*c**2*d**14 + 16170*a**8*b**3*c**3*d**13 - 20580*a**7*b**4*c
**4*d**12 - 8820*a**6*b**5*c**5*d**11 + 67620*a**5*b**6*c**6*d**1
0 - 105420*a**4*b**7*c**7*d**9 + 88830*a**3*b**8*c**8*d**8 - 4417
0*a**2*b**9*c**9*d**7 + 12250*a*b**10*c**10*d**6 - 1470*b**11*c**
11*d**5) + x**6*(490*a**11*c*d**15 - 1470*a**10*b*c**2*d**14 - 63
70*a**9*b**2*c**3*d**13 + 42630*a**8*b**3*c**4*d**12 - 97020*a**7
```

```
*b**4*c**5*d**11 + 102900*a**6*b**5*c**6*d**10 - 20580*a**5*b**6*
c**7*d**9 - 79380*a**4*b**7*c**8*d**8 + 104370*a**3*b**8*c**9*d**
7 - 62230*a**2*b**9*c**10*d**6 + 19110*a*b**10*c**11*d**5 - 2450*
b**11*c**12*d**4) + x**5*(1470*a**11*c**2*d**14 - 8330*a**10*b*c*
*3*d**13 + 11270*a**9*b**2*c**4*d**12 + 30870*a**8*b**3*c**5*d**1
1 - 138180*a**7*b**4*c**6*d**10 + 226380*a**6*b**5*c**7*d**9 - 18
5220*a**5*b**6*c**8*d**8 + 49980*a**4*b**7*c**9*d**7 + 42630*a**3
*b**8*c**10*d**6 - 45570*a**2*b**9*c**11*d**5 + 17150*a*b**10*c**
12*d**4 - 2450*b**11*c**13*d**3) + x**4*(2450*a**11*c**3*d**13 -
17150*a**10*b*c**4*d**12 + 45570*a**9*b**2*c**5*d**11 - 42630*a**
8*b**3*c**6*d**10 - 49980*a**7*b**4*c**7*d**9 + 185220*a**6*b**5*
c**8*d**8 - 226380*a**5*b**6*c**9*d**7 + 138180*a**4*b**7*c**10*d
**6 - 30870*a**3*b**8*c**11*d**5 - 11270*a**2*b**9*c**12*d**4 + 8
330*a*b**10*c**13*d**3 - 1470*b**11*c**14*d**2) + x**3*(2450*a**1
1*c**4*d**12 - 19110*a**10*b*c**5*d**11 + 62230*a**9*b**2*c**6*d*
*10 - 104370*a**8*b**3*c**7*d**9 + 79380*a**7*b**4*c**8*d**8 + 20
580*a**6*b**5*c**9*d**7 - 102900*a**5*b**6*c**10*d**6 + 97020*a**
4*b**7*c**11*d**5 - 42630*a**3*b**8*c**12*d**4 + 6370*a**2*b**9*c
**13*d**3 + 1470*a*b**10*c**14*d**2 - 490*b**11*c**15*d) + x**2*(
1470*a**11*c**5*d**11 - 12250*a**10*b*c**6*d**10 + 44170*a**9*b**
2*c**7*d**9 - 88830*a**8*b**3*c**8*d**8 + 105420*a**7*b**4*c**9*d
**7 - 67620*a**6*b**5*c**10*d**6 + 8820*a**5*b**6*c**11*d**5 + 20
580*a**4*b**7*c**12*d**4 - 16170*a**3*b**8*c**13*d**3 + 4830*a**2
*b**9*c**14*d**2 - 350*a*b**10*c**15*d - 70*b**11*c**16) + x*(490
*a**11*c**6*d**10 - 4270*a**10*b*c**7*d**9 + 16380*a**9*b**2*c**8
*d**8 - 36120*a**8*b**3*c**9*d**7 + 49980*a**7*b**4*c**10*d**6 -
44100*a**6*b**5*c**11*d**5 + 23520*a**5*b**6*c**12*d**4 - 5880*a*
*4*b**7*c**13*d**3 - 630*a**3*b**8*c**14*d**2 + 770*a**2*b**9*c**
15*d - 140*a*b**10*c**16))
```

GIAC/XCAS [A] time = 0.223542, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^8),x, algorithm="giac")
```

```
[Out] Done
```

3.1375 $\int (a+bx)^5 \sqrt{c+dx}\, dx$

Optimal. Leaf size=156

$$-\frac{10b^4(c+dx)^{11/2}(bc-ad)}{11d^6}+\frac{20b^3(c+dx)^{9/2}(bc-ad)^2}{9d^6}-\frac{20b^2(c+dx)^{7/2}(bc-ad)^3}{7d^6}+\frac{2b(c+dx)^{5/2}(bc-ad)^4}{d^6}-\frac{2(c+dx)^{3/2}(bc-ad)^5}{3d^6}+\frac{2b^5(c+dx)^{13/2}}{13d^6}$$

```
[Out] (-2*(b*c - a*d)^5*(c + d*x)^(3/2))/(3*d^6) + (2*b*(b*c - a*d)^4*(
c + d*x)^(5/2))/d^6 - (20*b^2*(b*c - a*d)^3*(c + d*x)^(7/2))/(7*d
^6) + (20*b^3*(b*c - a*d)^2*(c + d*x)^(9/2))/(9*d^6) - (10*b^4*(b
*c - a*d)*(c + d*x)^(11/2))/(11*d^6) + (2*b^5*(c + d*x)^(13/2))/(
13*d^6)
```

Rubi [A] time = 0.161505, antiderivative size = 156, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{10b^4(c+dx)^{11/2}(bc-ad)}{11d^6}+\frac{20b^3(c+dx)^{9/2}(bc-ad)^2}{9d^6}-\frac{20b^2(c+dx)^{7/2}(bc-ad)^3}{7d^6}+\frac{2b(c+dx)^{5/2}(bc-ad)^4}{d^6}-\frac{2(c+dx)^{3/2}(bc-ad)^5}{3d^6}+\frac{2b^5(c+dx)^{13/2}}{13d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*Sqrt[c + d*x],x]
```

```
[Out] (-2*(b*c - a*d)^5*(c + d*x)^(3/2))/(3*d^6) + (2*b*(b*c - a*d)^4*(
c + d*x)^(5/2))/d^6 - (20*b^2*(b*c - a*d)^3*(c + d*x)^(7/2))/(7*d
^6) + (20*b^3*(b*c - a*d)^2*(c + d*x)^(9/2))/(9*d^6) - (10*b^4*(b
*c - a*d)*(c + d*x)^(11/2))/(11*d^6) + (2*b^5*(c + d*x)^(13/2))/(
13*d^6)
```

Rubi in Sympy [A] time = 39.2165, size = 144, normalized size = 0.92

$$\frac{2b^5\left(c+dx\right)^{\frac{13}{2}}}{13d^6}+\frac{10b^4\left(c+dx\right)^{\frac{11}{2}}\left(ad-bc\right)}{11d^6}+\frac{20b^3\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)^2}{9d^6}+\frac{20b^2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^3}{7d^6}+\frac{2b\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^4}{d^6}+\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^5}{3d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(d*x+c)**(1/2),x)
```

```
[Out] 2*b**5*(c + d*x)**(13/2)/(13*d**6) + 10*b**4*(c + d*x)**(11/2)*(a
*d - b*c)/(11*d**6) + 20*b**3*(c + d*x)**(9/2)*(a*d - b*c)**2/(9*
d**6) + 20*b**2*(c + d*x)**(7/2)*(a*d - b*c)**3/(7*d**6) + 2*b*(c
 + d*x)**(5/2)*(a*d - b*c)**4/d**6 + 2*(c + d*x)**(3/2)*(a*d - b*
c)**5/(3*d**6)
```

Mathematica [A] time = 0.211794, size = 217, normalized size = 1.39

$$\frac{2(c+dx)^{3/2}\left(3003a^5d^5+3003a^4bd^4(3dx-2c)+858a^3b^2d^3\left(8c^2-12cdx+15d^2x^2\right)+286a^2b^3d^2\left(-16c^3+24c^2dx-30cd^2x\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*Sqrt[c + d*x],x]
```

```
[Out] (2*(c + d*x)^(3/2)*(3003*a^5*d^5 + 3003*a^4*b*d^4*(-2*c + 3*d*x)
+ 858*a^3*b^2*d^3*(8*c^2 - 12*c*d*x + 15*d^2*x^2) + 286*a^2*b^3*d
^2*(-16*c^3 + 24*c^2*d*x - 30*c*d^2*x^2 + 35*d^3*x^3) + 13*a*b^4*
d*(128*c^4 - 192*c^3*d*x + 240*c^2*d^2*x^2 - 280*c*d^3*x^3 + 315*
d^4*x^4) + b^5*(-256*c^5 + 384*c^4*d*x - 480*c^3*d^2*x^2 + 560*c^
2*d^3*x^3 - 630*c*d^4*x^4 + 693*d^5*x^5)))/(9009*d^6)
```

Maple [B] time = 0.011, size = 273, normalized size = 1.8

$$\frac{1386\,b^5x^5d^5+8190\,ab^4d^5x^4-1260\,b^5cd^4x^4+20020\,a^2b^3d^5x^3-7280\,ab^4cd^4x^3+1120\,b^5c^2d^3x^3+25740\,a^3b^2d^5x^2-17160}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(d*x+c)^(1/2),x)
```

```
[Out] 2/9009*(d*x+c)^(3/2)*(693*b^5*d^5*x^5+4095*a*b^4*d^5*x^4-630*b^5*
c*d^4*x^4+10010*a^2*b^3*d^5*x^3-3640*a*b^4*c*d^4*x^3+560*b^5*c^2*
d^3*x^3+12870*a^3*b^2*d^5*x^2-8580*a^2*b^3*c*d^4*x^2+3120*a*b^4*c
^2*d^3*x^2-480*b^5*c^3*d^2*x^2+9009*a^4*b*d^5*x-10296*a^3*b^2*c*d
^4*x+6864*a^2*b^3*c^2*d^3*x-2496*a*b^4*c^3*d^2*x+384*b^5*c^4*d*x+
3003*a^5*d^5-6006*a^4*b*c*d^4+6864*a^3*b^2*c^2*d^3-4576*a^2*b^3*c
^3*d^2+1664*a*b^4*c^4*d-256*b^5*c^5)/d^6
```

Maxima [A] time = 1.35833, size = 350, normalized size = 2.24

$$\frac{2\left(693\,(dx+c)^{\frac{13}{2}}b^5-4095\,\left(b^5c-ab^4d\right)(dx+c)^{\frac{11}{2}}+10010\,\left(b^5c^2-2\,ab^4cd+a^2b^3d^2\right)(dx+c)^{\frac{9}{2}}-12870\,\left(b^5c^3-3\,ab^4c^2d+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/9009*(693*(d*x + c)^(13/2)*b^5 - 4095*(b^5*c - a*b^4*d)*(d*x +
c)^(11/2) + 10010*(b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(d*x + c)
^(9/2) - 12870*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b
^2*d^3)*(d*x + c)^(7/2) + 9009*(b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b
^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*(d*x + c)^(5/2) - 3003*
(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^
3 + 5*a^4*b*c*d^4 - a^5*d^5)*(d*x + c)^(3/2))/d^6
```

Fricas [A] time = 0.210719, size = 456, normalized size = 2.92

$$\frac{2\left(693\,b^5d^6x^6 - 256\,b^5c^6 + 1664\,ab^4c^5d - 4576\,a^2b^3c^4d^2 + 6864\,a^3b^2c^3d^3 - 6006\,a^4bc^2d^4 + 3003\,a^5cd^5 + 63\left(b^5cd^5 + 65\,ab^4d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*b^5*d^6*x^6 - 256*b^5*c^6 + 1664*a*b^4*c^5*d - 4576*a
^2*b^3*c^4*d^2 + 6864*a^3*b^2*c^3*d^3 - 6006*a^4*b*c^2*d^4 + 3003
*a^5*c*d^5 + 63*(b^5*c*d^5 + 65*a*b^4*d^6)*x^5 - 35*(2*b^5*c^2*d^
4 - 13*a*b^4*c*d^5 - 286*a^2*b^3*d^6)*x^4 + 10*(8*b^5*c^3*d^3 - 5
2*a*b^4*c^2*d^4 + 143*a^2*b^3*c*d^5 + 1287*a^3*b^2*d^6)*x^3 - 3*(
32*b^5*c^4*d^2 - 208*a*b^4*c^3*d^3 + 572*a^2*b^3*c^2*d^4 - 858*a^
3*b^2*c*d^5 - 3003*a^4*b*d^6)*x^2 + (128*b^5*c^5*d - 832*a*b^4*c^
4*d^2 + 2288*a^2*b^3*c^3*d^3 - 3432*a^3*b^2*c^2*d^4 + 3003*a^4*b*
c*d^5 + 3003*a^5*d^6)*x)*sqrt(d*x + c)/d^6
```

Sympy [A] time = 1.47614, size = 314, normalized size = 2.01

$$\frac{2\left(\frac{b^5(c+dx)^{\frac{13}{2}}}{13d^5} + \frac{(c+dx)^{\frac{11}{2}}\left(5ab^4d-5b^5c\right)}{11d^5} + \frac{(c+dx)^{\frac{9}{2}}\left(10a^2b^3d^2-20ab^4cd+10b^5c^2\right)}{9d^5} + \frac{(c+dx)^{\frac{7}{2}}\left(10a^3b^2d^3-30a^2b^3cd^2+30ab^4c^2d-10b^5c^3\right)}{7d^5} + \frac{(c+dx)^{\frac{5}{2}}\left(5\right.}{}\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(d*x+c)**(1/2),x)
```

```
[Out] 2*(b**5*(c + d*x)**(13/2)/(13*d**5) + (c + d*x)**(11/2)*(5*a*b**4
*d - 5*b**5*c)/(11*d**5) + (c + d*x)**(9/2)*(10*a**2*b**3*d**2 -
20*a*b**4*c*d + 10*b**5*c**2)/(9*d**5) + (c + d*x)**(7/2)*(10*a**
3*b**2*d**3 - 30*a**2*b**3*c*d**2 + 30*a*b**4*c**2*d - 10*b**5*c*
*3)/(7*d**5) + (c + d*x)**(5/2)*(5*a**4*b*d**4 - 20*a**3*b**2*c*d
```

```
**3 + 30*a**2*b**3*c**2*d**2 - 20*a*b**4*c**3*d + 5*b**5*c**4)/(5
*d**5) + (c + d*x)**(3/2)*(a**5*d**5 - 5*a**4*b*c*d**4 + 10*a**3*
b**2*c**2*d**3 - 10*a**2*b**3*c**3*d**2 + 5*a*b**4*c**4*d - b**5*
c**5)/(3*d**5))/d
```

GIAC/XCAS [A] time = 0.222824, size = 458, normalized size = 2.94

$$2\left(3003\,(dx+c)^{\frac{3}{2}}a^5 + \frac{3003\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)a^4b}{d} + \frac{858\left(15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx+c)^{\frac{3}{2}}c^2d^{12}\right)a^3b^2}{d^{14}} + \frac{286\left(35\,(dx+c)^{\frac{9}{2}}d^{24}-135\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/9009*(3003*(d*x + c)^(3/2)*a^5 + 3003*(3*(d*x + c)^(5/2) - 5*(d
*x + c)^(3/2)*c)*a^4*b/d + 858*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x
 + c)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a^3*b^2/d^14 +
286*(35*(d*x + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 189*(
d*x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*a^2*b^3/d
^27 + 13*(315*(d*x + c)^(11/2)*d^40 - 1540*(d*x + c)^(9/2)*c*d^40
 + 2970*(d*x + c)^(7/2)*c^2*d^40 - 2772*(d*x + c)^(5/2)*c^3*d^40
+ 1155*(d*x + c)^(3/2)*c^4*d^40)*a*b^4/d^44 + (693*(d*x + c)^(13/
2)*d^60 - 4095*(d*x + c)^(11/2)*c*d^60 + 10010*(d*x + c)^(9/2)*c^
2*d^60 - 12870*(d*x + c)^(7/2)*c^3*d^60 + 9009*(d*x + c)^(5/2)*c^
4*d^60 - 3003*(d*x + c)^(3/2)*c^5*d^60)*b^5/d^65)/d
```

3.1376 $\int (a+bx)^4 \sqrt{c+dx}\,dx$

Optimal. Leaf size=129

$$-\frac{8b^3(c+dx)^{9/2}(bc-ad)}{9d^5}+\frac{12b^2(c+dx)^{7/2}(bc-ad)^2}{7d^5}-\frac{8b(c+dx)^{5/2}(bc-ad)^3}{5d^5}+\frac{2(c+dx)^{3/2}(bc-ad)^4}{3d^5}+\frac{2b^4(c+dx)^{11/2}}{11d^5}$$

```
[Out] (2*(b*c - a*d)^4*(c + d*x)^(3/2))/(3*d^5) - (8*b*(b*c - a*d)^3*(c
 + d*x)^(5/2))/(5*d^5) + (12*b^2*(b*c - a*d)^2*(c + d*x)^(7/2))/(
7*d^5) - (8*b^3*(b*c - a*d)*(c + d*x)^(9/2))/(9*d^5) + (2*b^4*(c
+ d*x)^(11/2))/(11*d^5)
```

Rubi [A] time = 0.12738, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{8b^3(c+dx)^{9/2}(bc-ad)}{9d^5}+\frac{12b^2(c+dx)^{7/2}(bc-ad)^2}{7d^5}-\frac{8b(c+dx)^{5/2}(bc-ad)^3}{5d^5}+\frac{2(c+dx)^{3/2}(bc-ad)^4}{3d^5}+\frac{2b^4(c+dx)^{11/2}}{11d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*Sqrt[c + d*x],x]
```

```
[Out] (2*(b*c - a*d)^4*(c + d*x)^(3/2))/(3*d^5) - (8*b*(b*c - a*d)^3*(c
 + d*x)^(5/2))/(5*d^5) + (12*b^2*(b*c - a*d)^2*(c + d*x)^(7/2))/(
7*d^5) - (8*b^3*(b*c - a*d)*(c + d*x)^(9/2))/(9*d^5) + (2*b^4*(c
+ d*x)^(11/2))/(11*d^5)
```

Rubi in Sympy [A] time = 29.8449, size = 119, normalized size = 0.92

$$\frac{2b^4\left(c+dx\right)^{\frac{11}{2}}}{11d^5}+\frac{8b^3\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)}{9d^5}+\frac{12b^2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^2}{7d^5}+\frac{8b\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^3}{5d^5}+\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^4}{3d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**(1/2),x)
```

```
[Out] 2*b**4*(c + d*x)**(11/2)/(11*d**5) + 8*b**3*(c + d*x)**(9/2)*(a*d
 - b*c)/(9*d**5) + 12*b**2*(c + d*x)**(7/2)*(a*d - b*c)**2/(7*d**
```

```
5) + 8*b*(c + d*x)**(5/2)*(a*d - b*c)**3/(5*d**5) + 2*(c + d*x)**
(3/2)*(a*d - b*c)**4/(3*d**5)
```

Mathematica [A] time = 0.112228, size = 154, normalized size = 1.19

$$\frac{2(c+dx)^{3/2}\left(1155a^4d^4+924a^3bd^3(3dx-2c)+198a^2b^2d^2\left(8c^2-12cdx+15d^2x^2\right)+44ab^3d\left(-16c^3+24c^2dx-30cd^2x^2+3\right.}{3465d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*Sqrt[c + d*x],x]
```

```
[Out] (2*(c + d*x)^(3/2)*(1155*a^4*d^4 + 924*a^3*b*d^3*(-2*c + 3*d*x) +
 198*a^2*b^2*d^2*(8*c^2 - 12*c*d*x + 15*d^2*x^2) + 44*a*b^3*d*(-1
6*c^3 + 24*c^2*d*x - 30*c*d^2*x^2 + 35*d^3*x^3) + b^4*(128*c^4 -
192*c^3*d*x + 240*c^2*d^2*x^2 - 280*c*d^3*x^3 + 315*d^4*x^4)))/(3
465*d^5)
```

Maple [A] time = 0.01, size = 186, normalized size = 1.4

$$\frac{630\,x^4b^4d^4+3080\,ab^3d^4x^3-560\,b^4cd^3x^3+5940\,a^2b^2d^4x^2-2640\,ab^3cd^3x^2+480\,b^4c^2d^2x^2+5544\,a^3bd^4x-4752\,a^2b^2cd^3x}{3465\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c)^(1/2),x)
```

```
[Out] 2/3465*(d*x+c)^(3/2)*(315*b^4*d^4*x^4+1540*a*b^3*d^4*x^3-280*b^4*
c*d^3*x^3+2970*a^2*b^2*d^4*x^2-1320*a*b^3*c*d^3*x^2+240*b^4*c^2*d
^2*x^2+2772*a^3*b*d^4*x-2376*a^2*b^2*c*d^3*x+1056*a*b^3*c^2*d^2*x
-192*b^4*c^3*d*x+1155*a^4*d^4-1848*a^3*b*c*d^3+1584*a^2*b^2*c^2*d
^2-704*a*b^3*c^3*d+128*b^4*c^4)/d^5
```

Maxima [A] time = 1.35428, size = 244, normalized size = 1.89

$$\frac{2\left(315\,(dx+c)^{\frac{11}{2}}b^4-1540\,\left(b^4c-ab^3d\right)(dx+c)^{\frac{9}{2}}+2970\,\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)(dx+c)^{\frac{7}{2}}-2772\,\left(b^4c^3-3\,ab^3c^2d+3\,a^2\right.\right.}{3465\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(d*x + c)^(11/2)*b^4 - 1540*(b^4*c - a*b^3*d)*(d*x +
c)^(9/2) + 2970*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*(d*x + c)^(
7/2) - 2772*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^
3)*(d*x + c)^(5/2) + 1155*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^
2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(d*x + c)^(3/2))/d^5
```

Fricas [A] time = 0.202672, size = 331, normalized size = 2.57

$$\frac{2\left(315\,b^4d^5x^5+128\,b^4c^5-704\,ab^3c^4d+1584\,a^2b^2c^3d^2-1848\,a^3bc^2d^3+1155\,a^4cd^4+35\left(b^4cd^4+44\,ab^3d^5\right)x^4-10\left(4\,b^4c^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*b^4*d^5*x^5 + 128*b^4*c^5 - 704*a*b^3*c^4*d + 1584*a^
2*b^2*c^3*d^2 - 1848*a^3*b*c^2*d^3 + 1155*a^4*c*d^4 + 35*(b^4*c*d
^4 + 44*a*b^3*d^5)*x^4 - 10*(4*b^4*c^2*d^3 - 22*a*b^3*c*d^4 - 297
*a^2*b^2*d^5)*x^3 + 6*(8*b^4*c^3*d^2 - 44*a*b^3*c^2*d^3 + 99*a^2*
b^2*c*d^4 + 462*a^3*b*d^5)*x^2 - (64*b^4*c^4*d - 352*a*b^3*c^3*d^
2 + 792*a^2*b^2*c^2*d^3 - 924*a^3*b*c*d^4 - 1155*a^4*d^5)*x)*sqrt
(d*x + c)/d^5
```

Sympy [A] time = 1.29972, size = 223, normalized size = 1.73

$$\frac{2\left(\frac{b^4(c+dx)^{\frac{11}{2}}}{11d^4}+\frac{(c+dx)^{\frac{9}{2}}\left(4ab^3d-4b^4c\right)}{9d^4}+\frac{(c+dx)^{\frac{7}{2}}\left(6a^2b^2d^2-12ab^3cd+6b^4c^2\right)}{7d^4}+\frac{(c+dx)^{\frac{5}{2}}\left(4a^3bd^3-12a^2b^2cd^2+12ab^3c^2d-4b^4c^3\right)}{5d^4}+\frac{(c+dx)^{\frac{3}{2}}\left(a^4d^4-4\right.}{}\right.}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**(1/2),x)
```

```
[Out] 2*(b**4*(c + d*x)**(11/2)/(11*d**4) + (c + d*x)**(9/2)*(4*a*b**3*
d - 4*b**4*c)/(9*d**4) + (c + d*x)**(7/2)*(6*a**2*b**2*d**2 - 12*
a*b**3*c*d + 6*b**4*c**2)/(7*d**4) + (c + d*x)**(5/2)*(4*a**3*b*d
**3 - 12*a**2*b**2*c*d**2 + 12*a*b**3*c**2*d - 4*b**4*c**3)/(5*d*
*4) + (c + d*x)**(3/2)*(a**4*d**4 - 4*a**3*b*c*d**3 + 6*a**2*b**2
*c**2*d**2 - 4*a*b**3*c**3*d + b**4*c**4)/(3*d**4))/d
```

GIAC/XCAS [A] time = 0.22732, size = 327, normalized size = 2.53

$$2\left(1155\,(dx+c)^{\frac{3}{2}}a^4+\frac{924\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)a^3b}{d}+\frac{198\left(15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx+c)^{\frac{3}{2}}c^2d^{12}\right)a^2b^2}{d^{14}}+\frac{44\left(35\,(dx+c)^{\frac{9}{2}}d^{24}-135\,(dx\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*(d*x + c)^(3/2)*a^4 + 924*(3*(d*x + c)^(5/2) - 5*(d*
x + c)^(3/2)*c)*a^3*b/d + 198*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x
+ c)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a^2*b^2/d^14 + 4
4*(35*(d*x + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 189*(d*
x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*a*b^3/d^27
+ (315*(d*x + c)^(11/2)*d^40 - 1540*(d*x + c)^(9/2)*c*d^40 + 2970
*(d*x + c)^(7/2)*c^2*d^40 - 2772*(d*x + c)^(5/2)*c^3*d^40 + 1155*
(d*x + c)^(3/2)*c^4*d^40)*b^4/d^44)/d
```

3.1377 $\int (a+bx)^3\sqrt{c+dx}\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(c+dx)^{7/2}(bc-ad)}{7d^4}+\frac{6b(c+dx)^{5/2}(bc-ad)^2}{5d^4}-\frac{2(c+dx)^{3/2}(bc-ad)^3}{3d^4}+\frac{2b^3(c+dx)^{9/2}}{9d^4}$$

```
[Out] (-2*(b*c - a*d)^3*(c + d*x)^(3/2))/(3*d^4) + (6*b*(b*c - a*d)^2*(
c + d*x)^(5/2))/(5*d^4) - (6*b^2*(b*c - a*d)*(c + d*x)^(7/2))/(7*
d^4) + (2*b^3*(c + d*x)^(9/2))/(9*d^4)
```

Rubi [A] time = 0.100507, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{6b^2(c+dx)^{7/2}(bc-ad)}{7d^4}+\frac{6b(c+dx)^{5/2}(bc-ad)^2}{5d^4}-\frac{2(c+dx)^{3/2}(bc-ad)^3}{3d^4}+\frac{2b^3(c+dx)^{9/2}}{9d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*Sqrt[c + d*x],x]
```

```
[Out] (-2*(b*c - a*d)^3*(c + d*x)^(3/2))/(3*d^4) + (6*b*(b*c - a*d)^2*(
c + d*x)^(5/2))/(5*d^4) - (6*b^2*(b*c - a*d)*(c + d*x)^(7/2))/(7*
d^4) + (2*b^3*(c + d*x)^(9/2))/(9*d^4)
```

Rubi in Sympy [A] time = 22.1938, size = 92, normalized size = 0.92

$$\frac{2b^3\left(c+dx\right)^{\frac{9}{2}}}{9d^4}+\frac{6b^2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)}{7d^4}+\frac{6b\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^2}{5d^4}+\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^3}{3d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**(1/2),x)
```

```
[Out] 2*b**3*(c + d*x)**(9/2)/(9*d**4) + 6*b**2*(c + d*x)**(7/2)*(a*d -
 b*c)/(7*d**4) + 6*b*(c + d*x)**(5/2)*(a*d - b*c)**2/(5*d**4) + 2
*(c + d*x)**(3/2)*(a*d - b*c)**3/(3*d**4)
```

Mathematica [A] time = 0.100407, size = 102, normalized size = 1.02

$$\frac{2(c+dx)^{3/2}\left(105a^3d^3+63a^2bd^2(3dx-2c)+9ab^2d\left(8c^2-12cdx+15d^2x^2\right)+b^3\left(-16c^3+24c^2dx-30cd^2x^2+35d^3x^3\right)\right)}{315d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*Sqrt[c + d*x],x]
```

```
[Out] (2*(c + d*x)^(3/2)*(105*a^3*d^3 + 63*a^2*b*d^2*(-2*c + 3*d*x) + 9
*a*b^2*d*(8*c^2 - 12*c*d*x + 15*d^2*x^2) + b^3*(-16*c^3 + 24*c^2*
d*x - 30*c*d^2*x^2 + 35*d^3*x^3)))/(315*d^4)
```

Maple [A] time = 0.008, size = 116, normalized size = 1.2

$$\frac{70\,b^3x^3d^3+270\,ab^2d^3x^2-60\,b^3cd^2x^2+378\,a^2bd^3x-216\,ab^2cd^2x+48\,b^3c^2dx+210\,a^3d^3-252\,a^2bcd^2+144\,ab^2c^2d-32\,b}{315\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^(1/2),x)
```

```
[Out] 2/315*(d*x+c)^(3/2)*(35*b^3*d^3*x^3+135*a*b^2*d^3*x^2-30*b^3*c*d^
2*x^2+189*a^2*b*d^3*x-108*a*b^2*c*d^2*x+24*b^3*c^2*d*x+105*a^3*d^
3-126*a^2*b*c*d^2+72*a*b^2*c^2*d-16*b^3*c^3)/d^4
```

Maxima [A] time = 1.34958, size = 159, normalized size = 1.59

$$\frac{2\left(35\,(dx+c)^{\frac{9}{2}}b^3-135\,\left(b^3c-ab^2d\right)(dx+c)^{\frac{7}{2}}+189\,\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)(dx+c)^{\frac{5}{2}}-105\,\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-\right.}{315\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/315*(35*(d*x + c)^(9/2)*b^3 - 135*(b^3*c - a*b^2*d)*(d*x + c)^(
7/2) + 189*(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*(d*x + c)^(5/2) -
105*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*(d*x + c)
^(3/2))/d^4
```

Fricas [A] time = 0.206465, size = 221, normalized size = 2.21

$$\frac{2\left(35\,b^3d^4x^4-16\,b^3c^4+72\,ab^2c^3d-126\,a^2bc^2d^2+105\,a^3cd^3+5\,\left(b^3cd^3+27\,ab^2d^4\right)x^3-3\,\left(2\,b^3c^2d^2-9\,ab^2cd^3-63\,a^2bd^4\right.\right.}{315\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^3*d^4*x^4 - 16*b^3*c^4 + 72*a*b^2*c^3*d - 126*a^2*b*c
^2*d^2 + 105*a^3*c*d^3 + 5*(b^3*c*d^3 + 27*a*b^2*d^4)*x^3 - 3*(2*
b^3*c^2*d^2 - 9*a*b^2*c*d^3 - 63*a^2*b*d^4)*x^2 + (8*b^3*c^3*d -
36*a*b^2*c^2*d^2 + 63*a^2*b*c*d^3 + 105*a^3*d^4)*x)*sqrt(d*x + c)
/d^4
```

Sympy [A] time = 1.18587, size = 146, normalized size = 1.46

$$\frac{2\left(\frac{b^3(c+dx)^{\frac{9}{2}}}{9d^3}+\frac{(c+dx)^{\frac{7}{2}}(3ab^2d-3b^3c)}{7d^3}+\frac{(c+dx)^{\frac{5}{2}}(3a^2bd^2-6ab^2cd+3b^3c^2)}{5d^3}+\frac{(c+dx)^{\frac{3}{2}}(a^3d^3-3a^2bcd^2+3ab^2c^2d-b^3c^3)}{3d^3}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**(1/2),x)
```

```
[Out] 2*(b**3*(c + d*x)**(9/2)/(9*d**3) + (c + d*x)**(7/2)*(3*a*b**2*d
- 3*b**3*c)/(7*d**3) + (c + d*x)**(5/2)*(3*a**2*b*d**2 - 6*a*b**2
*c*d + 3*b**3*c**2)/(5*d**3) + (c + d*x)**(3/2)*(a**3*d**3 - 3*a*
*2*b*c*d**2 + 3*a*b**2*c**2*d - b**3*c**3)/(3*d**3))/d
```

GIAC/XCAS [A] time = 0.219858, size = 216, normalized size = 2.16

$$\frac{2\left(105\,(dx+c)^{\frac{3}{2}}a^3+\frac{63\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)a^2b}{d}+\frac{9\left(15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx+c)^{\frac{3}{2}}c^2d^{12}\right)ab^2}{d^{14}}+\frac{\left(35\,(dx+c)^{\frac{9}{2}}d^{24}-135\,(dx+c)^{\frac{7}{2}}cd^{2}\right.}{}}{315\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/315*(105*(d*x + c)^(3/2)*a^3 + 63*(3*(d*x + c)^(5/2) - 5*(d*x +
 c)^(3/2)*c)*a^2*b/d + 9*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^
(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a*b^2/d^14 + (35*(d*x
 + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 189*(d*x + c)^(5/
2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*b^3/d^27)/d
```

3.1378 $\int (a+bx)^2\sqrt{c+dx}\,dx$

Optimal. Leaf size=71

$$-\frac{4b(c+dx)^{5/2}(bc-ad)}{5d^3}+\frac{2(c+dx)^{3/2}(bc-ad)^2}{3d^3}+\frac{2b^2(c+dx)^{7/2}}{7d^3}$$

```
[Out] (2*(b*c - a*d)^2*(c + d*x)^(3/2))/(3*d^3) - (4*b*(b*c - a*d)*(c +
 d*x)^(5/2))/(5*d^3) + (2*b^2*(c + d*x)^(7/2))/(7*d^3)
```

Rubi [A] time = 0.0700616, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{4b(c+dx)^{5/2}(bc-ad)}{5d^3}+\frac{2(c+dx)^{3/2}(bc-ad)^2}{3d^3}+\frac{2b^2(c+dx)^{7/2}}{7d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*Sqrt[c + d*x],x]
```

```
[Out] (2*(b*c - a*d)^2*(c + d*x)^(3/2))/(3*d^3) - (4*b*(b*c - a*d)*(c +
 d*x)^(5/2))/(5*d^3) + (2*b^2*(c + d*x)^(7/2))/(7*d^3)
```

Rubi in Sympy [A] time = 15.008, size = 65, normalized size = 0.92

$$\frac{2b^2\left(c+dx\right)^{\frac{7}{2}}}{7d^3}+\frac{4b\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)}{5d^3}+\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^2}{3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**(1/2),x)
```

```
[Out] 2*b**2*(c + d*x)**(7/2)/(7*d**3) + 4*b*(c + d*x)**(5/2)*(a*d - b*
c)/(5*d**3) + 2*(c + d*x)**(3/2)*(a*d - b*c)**2/(3*d**3)
```

Mathematica [A] time = 0.0555273, size = 61, normalized size = 0.86

$$\frac{2(c+dx)^{3/2}\left(35a^2d^2+14abd(3dx-2c)+b^2\left(8c^2-12cdx+15d^2x^2\right)\right)}{105d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*Sqrt[c + d*x],x]

[Out] (2*(c + d*x)^(3/2)*(35*a^2*d^2 + 14*a*b*d*(-2*c + 3*d*x) + b^2*(8
*c^2 - 12*c*d*x + 15*d^2*x^2)))/(105*d^3)
```

Maple [A] time = 0.009, size = 63, normalized size = 0.9

$$\frac{30\,b^2x^2d^2+84\,abd^2x-24\,b^2cdx+70\,a^2d^2-56\,abcd+16\,b^2c^2}{105\,d^3}\,(dx+c)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^(1/2),x)

[Out] 2/105*(d*x+c)^(3/2)*(15*b^2*d^2*x^2+42*a*b*d^2*x-12*b^2*c*d*x+35*
a^2*d^2-28*a*b*c*d+8*b^2*c^2)/d^3
```

Maxima [A] time = 1.34353, size = 92, normalized size = 1.3

$$\frac{2\left(15\,(dx+c)^{\frac{7}{2}}b^2-42\left(b^2c-abd\right)(dx+c)^{\frac{5}{2}}+35\left(b^2c^2-2\,abcd+a^2d^2\right)(dx+c)^{\frac{3}{2}}\right)}{105\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(d*x + c),x, algorithm="maxima")

[Out] 2/105*(15*(d*x + c)^(7/2)*b^2 - 42*(b^2*c - a*b*d)*(d*x + c)^(5/2
) + 35*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(d*x + c)^(3/2))/d^3
```

Fricas [A] time = 0.208979, size = 134, normalized size = 1.89

$$\frac{2\left(15\,b^2d^3x^3+8\,b^2c^3-28\,abc^2d+35\,a^2cd^2+3\left(b^2cd^2+14\,abd^3\right)x^2-\left(4\,b^2c^2d-14\,abcd^2-35\,a^2d^3\right)x\right)\sqrt{dx+c}}{105\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(d*x + c),x, algorithm="fricas")

[Out] 2/105*(15*b^2*d^3*x^3 + 8*b^2*c^3 - 28*a*b*c^2*d + 35*a^2*c*d^2 +
 3*(b^2*c*d^2 + 14*a*b*d^3)*x^2 - (4*b^2*c^2*d - 14*a*b*c*d^2 - 3
```

```
5*a^2*d^3)*x)*sqrt(d*x + c)/d^3
```

Sympy [A] time = 1.08666, size = 85, normalized size = 1.2

$$\frac{2\left(\frac{b^2(c+dx)^{\frac{7}{2}}}{7d^2}+\frac{(c+dx)^{\frac{5}{2}}\left(2abd-2b^2c\right)}{5d^2}+\frac{(c+dx)^{\frac{3}{2}}\left(a^2d^2-2abcd+b^2c^2\right)}{3d^2}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**(1/2),x)
```

```
[Out] 2*(b**2*(c + d*x)**(7/2)/(7*d**2) + (c + d*x)**(5/2)*(2*a*b*d - 2
*b**2*c)/(5*d**2) + (c + d*x)**(3/2)*(a**2*d**2 - 2*a*b*c*d + b**
2*c**2)/(3*d**2))/d
```

GIAC/XCAS [A] time = 0.214828, size = 126, normalized size = 1.77

$$\frac{2\left(35\,(dx+c)^{\frac{3}{2}}a^2+\frac{14\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)ab}{d}+\frac{\left(15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx+c)^{\frac{3}{2}}c^2d^{12}\right)b^2}{d^{14}}\right)}{105\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/105*(35*(d*x + c)^(3/2)*a^2 + 14*(3*(d*x + c)^(5/2) - 5*(d*x +
c)^(3/2)*c)*a*b/d + (15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)
*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*b^2/d^14)/d
```

3.1379 $\int (a+bx)\sqrt{c+dx}\,dx$

Optimal. Leaf size=42

$$\frac{2b(c+dx)^{5/2}}{5d^2}-\frac{2(c+dx)^{3/2}(bc-ad)}{3d^2}$$

```
[Out] (-2*(b*c - a*d)*(c + d*x)^(3/2))/(3*d^2) + (2*b*(c + d*x)^(5/2))/
(5*d^2)
```

Rubi [A] time = 0.0439826, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2b(c+dx)^{5/2}}{5d^2}-\frac{2(c+dx)^{3/2}(bc-ad)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*Sqrt[c + d*x],x]
```

```
[Out] (-2*(b*c - a*d)*(c + d*x)^(3/2))/(3*d^2) + (2*b*(c + d*x)^(5/2))/
(5*d^2)
```

Rubi in Sympy [A] time = 7.76607, size = 37, normalized size = 0.88

$$\frac{2b\left(c+dx\right)^{\frac{5}{2}}}{5d^2}+\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}{3d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**(1/2),x)
```

```
[Out] 2*b*(c + d*x)**(5/2)/(5*d**2) + 2*(c + d*x)**(3/2)*(a*d - b*c)/(3
*d**2)
```

Mathematica [A] time = 0.0307513, size = 30, normalized size = 0.71

$$\frac{2(c+dx)^{3/2}(5ad-2bc+3bdx)}{15d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*Sqrt[c + d*x],x]
```

```
[Out] (2*(c + d*x)^(3/2)*(-2*b*c + 5*a*d + 3*b*d*x))/(15*d^2)
```

Maple [A] time = 0.004, size = 27, normalized size = 0.6

$$\frac{6\,bdx+10\,ad-4\,bc}{15\,d^2}(dx+c)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^(1/2),x)
```

```
[Out] 2/15*(d*x+c)^(3/2)*(3*b*d*x+5*a*d-2*b*c)/d^2
```

Maxima [A] time = 1.3487, size = 45, normalized size = 1.07

$$\frac{2\left(3\,(dx+c)^{\frac{5}{2}}b-5\,(bc-ad)(dx+c)^{\frac{3}{2}}\right)}{15\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/15*(3*(d*x + c)^(5/2)*b - 5*(b*c - a*d)*(d*x + c)^(3/2))/d^2
```

Fricas [A] time = 0.208575, size = 62, normalized size = 1.48

$$\frac{2\left(3\,bd^2x^2-2\,bc^2+5\,acd+\left(bcd+5\,ad^2\right)x\right)\sqrt{dx+c}}{15\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b*d^2*x^2 - 2*b*c^2 + 5*a*c*d + (b*c*d + 5*a*d^2)*x)*sqrt
(d*x + c)/d^2
```

Sympy [A] time = 1.0942, size = 36, normalized size = 0.86

$$\frac{2\left(\frac{b(c+dx)^{\frac{5}{2}}}{5d}+\frac{(c+dx)^{\frac{3}{2}}(ad-bc)}{3d}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**(1/2),x)
```

```
[Out] 2*(b*(c + d*x)**(5/2)/(5*d) + (c + d*x)**(3/2)*(a*d - b*c)/(3*d))
/d
```

GIAC/XCAS [A] time = 0.214511, size = 55, normalized size = 1.31

$$\frac{2\left(5\,(dx+c)^{\frac{3}{2}}a+\frac{\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)b}{d}\right)}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/15*(5*(d*x + c)^(3/2)*a + (3*(d*x + c)^(5/2) - 5*(d*x + c)^(3/2
)*c)*b/d)/d
```

3.1380 $\int \sqrt{c+dx}\,dx$

Optimal. Leaf size=16

$$\frac{2(c+dx)^{3/2}}{3d}$$

```
[Out] (2*(c + d*x)^(3/2))/(3*d)
```

Rubi [A] time = 0.00717338, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2(c+dx)^{3/2}}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x],x]

[Out] (2*(c + d*x)^(3/2))/(3*d)
```

Rubi in Sympy [A] time = 1.37057, size = 12, normalized size = 0.75

$$\frac{2\,(c+dx)^{\frac{3}{2}}}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2),x)

[Out] 2*(c + d*x)**(3/2)/(3*d)
```

Mathematica [A] time = 0.00524516, size = 16, normalized size = 1.

$$\frac{2(c+dx)^{3/2}}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x],x]
```

```
[Out] (2*(c + d*x)^(3/2))/(3*d)
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$\frac{2}{3\,d}\,(dx+c)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(1/2),x)

[Out] 2/3*(d*x+c)^(3/2)/d
```

Maxima [A] time = 1.33734, size = 16, normalized size = 1.

$$\frac{2\,(dx+c)^{\frac{3}{2}}}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c),x, algorithm="maxima")

[Out] 2/3*(d*x + c)^(3/2)/d
```

Fricas [A] time = 0.208801, size = 16, normalized size = 1.

$$\frac{2\,(dx+c)^{\frac{3}{2}}}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(d*x + c),x, algorithm="fricas")

[Out] 2/3*(d*x + c)^(3/2)/d
```

Sympy [A] time = 0.033368, size = 12, normalized size = 0.75

$$\frac{2\,(c+dx)^{\frac{3}{2}}}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2),x)
```

```
[Out] 2*(c + d*x)**(3/2)/(3*d)
```

GIAC/XCAS [A] time = 0.214285, size = 16, normalized size = 1.

$$\frac{2\,(dx+c)^{\frac{3}{2}}}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/3*(d*x + c)^(3/2)/d
```

3.1381 $\int \frac{\sqrt{c+dx}}{a+bx}\,dx$

Optimal. Leaf size=62

$$\frac{2\sqrt{c+dx}}{b}-\frac{2\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}}$$

```
[Out] (2*Sqrt[c + d*x])/b - (2*Sqrt[b*c - a*d]*ArcTanh[(Sqrt[b]*Sqrt[c
+ d*x])/Sqrt[b*c - a*d]])/b^(3/2)
```

Rubi [A] time = 0.115765, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{2\sqrt{c+dx}}{b}-\frac{2\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x),x]
```

```
[Out] (2*Sqrt[c + d*x])/b - (2*Sqrt[b*c - a*d]*ArcTanh[(Sqrt[b]*Sqrt[c
+ d*x])/Sqrt[b*c - a*d]])/b^(3/2)
```

Rubi in Sympy [A] time = 12.7231, size = 53, normalized size = 0.85

$$\frac{2\sqrt{c+dx}}{b}-\frac{2\sqrt{ad-bc}\,\text{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a),x)
```

```
[Out] 2*sqrt(c + d*x)/b - 2*sqrt(a*d - b*c)*atan(sqrt(b)*sqrt(c + d*x)/
sqrt(a*d - b*c))/b**(3/2)
```

Mathematica [A] time = 0.0584219, size = 62, normalized size = 1.

$$\frac{2\sqrt{c+dx}}{b}-\frac{2\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x),x]
```

```
[Out] (2*Sqrt[c + d*x])/b - (2*Sqrt[b*c - a*d]*ArcTanh[(Sqrt[b]*Sqrt[c
+ d*x])/Sqrt[b*c - a*d]])/b^(3/2)
```

Maple [A] time = 0.017, size = 92, normalized size = 1.5

$$2\,\frac{\sqrt{dx+c}}{b}-2\,\frac{ad}{b\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}\,b}{\sqrt{(ad-bc)\,b}}\right)+2\,\frac{c}{\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}\,b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a),x)
```

```
[Out] 2*(d*x+c)^(1/2)/b-2/b/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/
((a*d-b*c)*b)^(1/2))*a*d+2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/
2)*b/((a*d-b*c)*b)^(1/2))*c
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221315, size = 1, normalized size = 0.02

$$\left[\frac{\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2\,bc-ad-2\,\sqrt{dx+c}\,b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right)+2\,\sqrt{dx+c}}{b},\,-\frac{2\left(\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right)-\sqrt{dx+c}\right)}{b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a),x, algorithm="fricas")
```

```
[Out] [(sqrt((b*c - a*d)/b)*log((b*d*x + 2*b*c - a*d - 2*sqrt(d*x + c)*
b*sqrt((b*c - a*d)/b))/(b*x + a)) + 2*sqrt(d*x + c))/b, -2*(sqrt(
-(b*c - a*d)/b)*arctan(sqrt(d*x + c)/sqrt(-(b*c - a*d)/b)) - sqrt
(d*x + c))/b]
```

Sympy [A] time = 3.72679, size = 178, normalized size = 2.87

$$\frac{2\left(\frac{d\sqrt{c+dx}}{b}-\frac{d(ad-bc)\left(\begin{cases}\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{ad-bc}{b}}}\right)}{b\sqrt{\frac{ad-bc}{b}}} & \text{for } \frac{ad-bc}{b}>0\\ -\frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for } c+dx>\frac{-ad+bc}{b}\wedge\frac{ad-bc}{b}<0\\ -\frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for } \frac{ad-bc}{b}<0\wedge c+dx<\frac{-ad+bc}{b}\end{cases}\right)}{b}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a),x)
```

```
[Out] 2*(d*sqrt(c + d*x)/b - d*(a*d - b*c)*Piecewise((atan(sqrt(c + d*x
)/sqrt((a*d - b*c)/b))/(b*sqrt((a*d - b*c)/b)), (a*d - b*c)/b > 0
), (-acoth(sqrt(c + d*x)/sqrt((-a*d + b*c)/b))/(b*sqrt((-a*d + b*
c)/b)), ((a*d - b*c)/b < 0) & (c + d*x > (-a*d + b*c)/b)), (-atan
h(sqrt(c + d*x)/sqrt((-a*d + b*c)/b))/(b*sqrt((-a*d + b*c)/b)), (
(a*d - b*c)/b < 0) & (c + d*x < (-a*d + b*c)/b)))/b)/d
```

GIAC/XCAS [A] time = 0.219063, size = 84, normalized size = 1.35

$$\frac{2\,(bc-ad)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}b}+\frac{2\,\sqrt{dx+c}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a),x, algorithm="giac")
```

```
[Out] 2*(b*c - a*d)*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(
-b^2*c + a*b*d)*b) + 2*sqrt(d*x + c)/b
```

3.1382 $\int \frac{\sqrt{c+dx}}{(a+bx)^2}\,dx$

Optimal. Leaf size=70

$$-\frac{d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}\sqrt{bc-ad}}-\frac{\sqrt{c+dx}}{b(a+bx)}$$

```
[Out] -(Sqrt[c + d*x]/(b*(a + b*x))) - (d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x
])/Sqrt[b*c - a*d]])/(b^(3/2)*Sqrt[b*c - a*d])
```

Rubi [A] time = 0.0785933, antiderivative size = 70, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$-\frac{d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}\sqrt{bc-ad}}-\frac{\sqrt{c+dx}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^2,x]
```

```
[Out] -(Sqrt[c + d*x]/(b*(a + b*x))) - (d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x
])/Sqrt[b*c - a*d]])/(b^(3/2)*Sqrt[b*c - a*d])
```

Rubi in Sympy [A] time = 13.055, size = 56, normalized size = 0.8

$$-\frac{\sqrt{c+dx}}{b\,(a+bx)}+\frac{d\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{b^{\frac{3}{2}}\sqrt{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**2,x)
```

```
[Out] -sqrt(c + d*x)/(b*(a + b*x)) + d*atan(sqrt(b)*sqrt(c + d*x)/sqrt(
a*d - b*c))/(b**(3/2)*sqrt(a*d - b*c))
```

Mathematica [A] time = 0.0737007, size = 70, normalized size = 1.

$$-\frac{d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{3/2}\sqrt{bc-ad}}-\frac{\sqrt{c+dx}}{b(a+bx)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^2,x]
```

```
[Out] -(Sqrt[c + d*x]/(b*(a + b*x))) - (d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x
])/Sqrt[b*c - a*d]])/(b^(3/2)*Sqrt[b*c - a*d])
```

Maple [A] time = 0.016, size = 64, normalized size = 0.9

$$-\frac{d}{b(bdx+ad)}\sqrt{dx+c}+\frac{d}{b}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)b}}\right)\frac{1}{\sqrt{(ad-bc)b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^2,x)
```

```
[Out] -d/b*(d*x+c)^(1/2)/(b*d*x+a*d)+d/b/((a*d-b*c)*b)^(1/2)*arctan((d*
x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217504, size = 1, normalized size = 0.01

$$\left[\frac{(bdx+ad)\log\left(\frac{\sqrt{b^2c-abd}(bdx+2\,bc-ad)-2\,(b^2c-abd)\,\sqrt{dx+c}}{bx+a}\right)-2\,\sqrt{b^2c-abd}\sqrt{dx+c}}{2\,\sqrt{b^2c-abd}(b^2x+ab)},\right.$$
$$\left.-\frac{(bdx+ad)\arctan\left(-\frac{bc-ad}{\sqrt{-b^2c+abd}\sqrt{dx+c}}\right)+\sqrt{-b^2c+abd}\sqrt{dx+c}}{\sqrt{-b^2c+abd}(b^2x+ab)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((b*d*x + a*d)*log((sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d
) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)) - 2*sqrt(b^2*c -
a*b*d)*sqrt(d*x + c))/(sqrt(b^2*c - a*b*d)*(b^2*x + a*b)), -((b*d
*x + a*d)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c)
)) + sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))/(sqrt(-b^2*c + a*b*d)*(b
^2*x + a*b))]
```

Sympy [A] time = 30.5892, size = 675, normalized size = 9.64

$$-\frac{2ad^2\sqrt{c+dx}}{2a^2bd^2-2ab^2cd+2ab^2d^2x-2b^3cdx}+\frac{ad^2\sqrt{-\frac{1}{b(ad-bc)^3}}\log\left(-a^2d^2\sqrt{-\frac{1}{b(ad-bc)^3}}+2abcd\sqrt{-\frac{1}{b(ad-bc)^3}}-b^2c^2\sqrt{-\frac{1}{b(ad-bc)^3}}+\sqrt{c+dx}\right)}{2b}-\frac{ad^2\sqrt{-\frac{1}{b(ad-bc)^3}}\log\left(a^2d^2\sqrt{-\frac{1}{b(ad-bc)^3}}-2abcd\sqrt{-\frac{1}{b(ad-bc)^3}}+b^2c^2\sqrt{-\frac{1}{b(ad-bc)^3}}+\sqrt{c+dx}\right)}{2b}-\frac{cd\sqrt{-\frac{1}{b(ad-bc)^3}}\log\left(-a^2d^2\sqrt{-\frac{1}{b(ad-bc)^3}}+2abcd\sqrt{-\frac{1}{b(ad-bc)^3}}-b^2c^2\sqrt{-\frac{1}{b(ad-bc)^3}}+\sqrt{c+dx}\right)}{2}+\frac{cd\sqrt{-\frac{1}{b(ad-bc)^3}}\log\left(a^2d^2\sqrt{-\frac{1}{b(ad-bc)^3}}-2abcd\sqrt{-\frac{1}{b(ad-bc)^3}}+b^2c^2\sqrt{-\frac{1}{b(ad-bc)^3}}+\sqrt{c+dx}\right)}{2}+\frac{2cd\sqrt{c+dx}}{2a^2d^2-2abcd+2abd^2x-2b^2cdx}+\frac{2d\left(\begin{cases}\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{ad}{b}-c}}\right)}{b\sqrt{\frac{ad}{b}-c}} & \text{for}\ \frac{ad}{b}-c>0\\ -\frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{-\frac{ad}{b}+c}}\right)}{b\sqrt{-\frac{ad}{b}+c}} & \text{for}\ c+dx>-\frac{ad}{b}+c\wedge\frac{ad}{b}-c<0\\ -\frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{-\frac{ad}{b}+c}}\right)}{b\sqrt{-\frac{ad}{b}+c}} & \text{for}\ c+dx<-\frac{ad}{b}+c\wedge\frac{ad}{b}-c<0\end{cases}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**2,x)
```

```
[Out] -2*a*d**2*sqrt(c + d*x)/(2*a**2*b*d**2 - 2*a*b**2*c*d + 2*a*b**2*
d**2*x - 2*b**3*c*d*x) + a*d**2*sqrt(-1/(b*(a*d - b*c)**3))*log(-
a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d
 - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d
*x))/(2*b) - a*d**2*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqr
t(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3))
+ b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b) -
c*d*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d -
b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*sqr
```

```
t(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/2 + c*d*sqrt(-1/(b*(a*d
 - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*
d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)*
*3)) + sqrt(c + d*x))/2 + 2*c*d*sqrt(c + d*x)/(2*a**2*d**2 - 2*a*
b*c*d + 2*a*b*d**2*x - 2*b**2*c*d*x) + 2*d*Piecewise((atan(sqrt(c
 + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)), a*d/b - c > 0), (-a
coth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b
 - c < 0) & (c + d*x > -a*d/b + c)), (-atanh(sqrt(c + d*x)/sqrt(-
a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) & (c + d*x < -a
*d/b + c)))/b
```

GIAC/XCAS [A] time = 0.221191, size = 97, normalized size = 1.39

$$\frac{d \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}b} - \frac{\sqrt{dx+c}d}{((dx+c)b-bc+ad)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] d*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*b
*d)*b) - sqrt(d*x + c)*d/(((d*x + c)*b - b*c + a*d)*b)
```

3.1383 $\int \frac{\sqrt{c+dx}}{(a+bx)^3} \, dx$

Optimal. Leaf size=110

$$\frac{d^2 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{3/2}(bc-ad)^{3/2}} - \frac{d\sqrt{c+dx}}{4b(a+bx)(bc-ad)} - \frac{\sqrt{c+dx}}{2b(a+bx)^2}$$

```
[Out] -Sqrt[c + d*x]/(2*b*(a + b*x)^2) - (d*Sqrt[c + d*x])/(4*b*(b*c -
a*d)*(a + b*x)) + (d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c -
 a*d]])/(4*b^(3/2)*(b*c - a*d)^(3/2))
```

Rubi [A] time = 0.193255, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{d^2 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{3/2}(bc-ad)^{3/2}} - \frac{d\sqrt{c+dx}}{4b(a+bx)(bc-ad)} - \frac{\sqrt{c+dx}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^3,x]
```

```
[Out] -Sqrt[c + d*x]/(2*b*(a + b*x)^2) - (d*Sqrt[c + d*x])/(4*b*(b*c -
a*d)*(a + b*x)) + (d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c -
 a*d]])/(4*b^(3/2)*(b*c - a*d)^(3/2))
```

Rubi in Sympy [A] time = 21.2598, size = 88, normalized size = 0.8

$$\frac{d\sqrt{c+dx}}{4b\,(a+bx)\,(ad-bc)} - \frac{\sqrt{c+dx}}{2b\,(a+bx)^2} + \frac{d^2 \operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4b^{\frac{3}{2}}\,(ad-bc)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**3,x)
```

```
[Out] d*sqrt(c + d*x)/(4*b*(a + b*x)*(a*d - b*c)) - sqrt(c + d*x)/(2*b*
(a + b*x)**2) + d**2*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/
(4*b**(3/2)*(a*d - b*c)**(3/2))
```

Mathematica [A] time = 0.137211, size = 99, normalized size = 0.9

$$\frac{d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{3/2}(bc-ad)^{3/2}}-\frac{\sqrt{c+dx}(-ad+2bc+bdx)}{4b(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^3,x]
```

```
[Out] -(Sqrt[c + d*x]*(2*b*c - a*d + b*d*x))/(4*b*(b*c - a*d)*(a + b*x)
^2) + (d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*b
^(3/2)*(b*c - a*d)^(3/2))
```

Maple [A] time = 0.019, size = 111, normalized size = 1.

$$\frac{d^2}{4\,(bdx+ad)^2\,(ad-bc)}(dx+c)^{\frac{3}{2}}-\frac{d^2}{4\,(bdx+ad)^2\,b}\sqrt{dx+c}+\frac{d^2}{(4\,ad-4\,bc)\,b}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^3,x)
```

```
[Out] 1/4*d^2/(b*d*x+a*d)^2/(a*d-b*c)*(d*x+c)^(3/2)-1/4*d^2/(b*d*x+a*d)
^2/b*(d*x+c)^(1/2)+1/4*d^2/(a*d-b*c)/b/((a*d-b*c)*b)^(1/2)*arctan
((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230425, size = 1, normalized size = 0.01

$$\left[-\frac{2\sqrt{b^2c-abd}(bdx+2\,bc-ad)\sqrt{dx+c}+\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\log\left(\frac{\sqrt{b^2c-abd}(bdx+2\,bc-ad)-2\,(b^2c-abd)\sqrt{dx+c}}{bx+a}\right)}{8\,(a^2b^2c-a^3bd+(b^4c-ab^3d)x^2+2\,(ab^3c-a^2b^2d)x)\sqrt{b^2c-abd}},\right.$$
$$\left.-\frac{\sqrt{-b^2c+abd}(bdx+2\,bc-ad)\sqrt{dx+c}-\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\arctan\left(-\frac{bc-ad}{\sqrt{-b^2c+abd}\sqrt{dx+c}}\right)}{4\,(a^2b^2c-a^3bd+(b^4c-ab^3d)x^2+2\,(ab^3c-a^2b^2d)x)\sqrt{-b^2c+abd}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(2*sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d)*sqrt(d*x + c)
+ (b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log((sqrt(b^2*c - a*b*d)*
(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a
)))/((a^2*b^2*c - a^3*b*d + (b^4*c - a*b^3*d)*x^2 + 2*(a*b^3*c -
a^2*b^2*d)*x)*sqrt(b^2*c - a*b*d)), -1/4*(sqrt(-b^2*c + a*b*d)*(b
*d*x + 2*b*c - a*d)*sqrt(d*x + c) - (b^2*d^2*x^2 + 2*a*b*d^2*x +
a^2*d^2)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))
))/((a^2*b^2*c - a^3*b*d + (b^4*c - a*b^3*d)*x^2 + 2*(a*b^3*c - a
^2*b^2*d)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [A] time = 90.453, size = 1658, normalized size = 15.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**3,x)
```

```
[Out] -10*a**2*d**4*sqrt(c + d*x)/(8*a**4*b*d**4 - 16*a**3*b**2*c*d**3
+ 16*a**3*b**2*d**4*x - 48*a**2*b**3*c*d**3*x + 8*a**2*b**3*d**2*
(c + d*x)**2 + 16*a*b**4*c**3*d + 48*a*b**4*c**2*d**2*x - 16*a*b*
*4*c*d*(c + d*x)**2 - 8*b**5*c**4 - 16*b**5*c**3*d*x + 8*b**5*c**
2*(c + d*x)**2) + 20*a*c*d**3*sqrt(c + d*x)/(8*a**4*d**4 - 16*a**
3*b*c*d**3 + 16*a**3*b*d**4*x - 48*a**2*b**2*c*d**3*x + 8*a**2*b*
*2*d**2*(c + d*x)**2 + 16*a*b**3*c**3*d + 48*a*b**3*c**2*d**2*x -
 16*a*b**3*c*d*(c + d*x)**2 - 8*b**4*c**4 - 16*b**4*c**3*d*x + 8*
b**4*c**2*(c + d*x)**2) - 6*a*d**3*(c + d*x)**(3/2)/(8*a**4*d**4
- 16*a**3*b*c*d**3 + 16*a**3*b*d**4*x - 48*a**2*b**2*c*d**3*x + 8
*a**2*b**2*d**2*(c + d*x)**2 + 16*a*b**3*c**3*d + 48*a*b**3*c**2*
d**2*x - 16*a*b**3*c*d*(c + d*x)**2 - 8*b**4*c**4 - 16*b**4*c**3*
d*x + 8*b**4*c**2*(c + d*x)**2) + 3*a*d**3*sqrt(-1/(b*(a*d - b*c)
**5))*log(-a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5)) + 3*a**2*b*c*d**
2*sqrt(-1/(b*(a*d - b*c)**5)) - 3*a*b**2*c**2*d*sqrt(-1/(b*(a*d -
```

```
 b*c)**5)) + b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)) + sqrt(c + d*x
))/(8*b) - 3*a*d**3*sqrt(-1/(b*(a*d - b*c)**5))*log(a**3*d**3*sqr
t(-1/(b*(a*d - b*c)**5)) - 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)
**5)) + 3*a*b**2*c**2*d*sqrt(-1/(b*(a*d - b*c)**5)) - b**3*c**3*s
qrt(-1/(b*(a*d - b*c)**5)) + sqrt(c + d*x))/(8*b) - 10*b*c**2*d**
2*sqrt(c + d*x)/(8*a**4*d**4 - 16*a**3*b*c*d**3 + 16*a**3*b*d**4*
x - 48*a**2*b**2*c*d**3*x + 8*a**2*b**2*d**2*(c + d*x)**2 + 16*a*
b**3*c**3*d + 48*a*b**3*c**2*d**2*x - 16*a*b**3*c*d*(c + d*x)**2
- 8*b**4*c**4 - 16*b**4*c**3*d*x + 8*b**4*c**2*(c + d*x)**2) + 6*
b*c*d**2*(c + d*x)**(3/2)/(8*a**4*d**4 - 16*a**3*b*c*d**3 + 16*a*
*3*b*d**4*x - 48*a**2*b**2*c*d**3*x + 8*a**2*b**2*d**2*(c + d*x)*
*2 + 16*a*b**3*c**3*d + 48*a*b**3*c**2*d**2*x - 16*a*b**3*c*d*(c
+ d*x)**2 - 8*b**4*c**4 - 16*b**4*c**3*d*x + 8*b**4*c**2*(c + d*x
)**2) - 3*c*d**2*sqrt(-1/(b*(a*d - b*c)**5))*log(-a**3*d**3*sqrt(
-1/(b*(a*d - b*c)**5)) + 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**
5)) - 3*a*b**2*c**2*d*sqrt(-1/(b*(a*d - b*c)**5)) + b**3*c**3*sqr
t(-1/(b*(a*d - b*c)**5)) + sqrt(c + d*x))/8 + 3*c*d**2*sqrt(-1/(b
*(a*d - b*c)**5))*log(a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5)) - 3*a
**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) + 3*a*b**2*c**2*d*sqrt(-
1/(b*(a*d - b*c)**5)) - b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)) + s
qrt(c + d*x))/8 + 2*d**2*sqrt(c + d*x)/(2*a**2*b*d**2 - 2*a*b**2*
c*d + 2*a*b**2*d**2*x - 2*b**3*c*d*x) - d**2*sqrt(-1/(b*(a*d - b*
c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sq
rt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3))
 + sqrt(c + d*x))/(2*b) + d**2*sqrt(-1/(b*(a*d - b*c)**3))*log(a*
*2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d -
 b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x
))/(2*b)
```

GIAC/XCAS [A] time = 0.223365, size = 170, normalized size = 1.55

$$-\frac{d^2 \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{4\left(b^2c-abd\right)\sqrt{-b^2c+abd}}-\frac{(dx+c)^{\frac{3}{2}}bd^2+\sqrt{dx+c}bcd^2-\sqrt{dx+c}ad^3}{4\left(b^2c-abd\right)\left((dx+c)b-bc+ad\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] -1/4*d^2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^2*c - a
*b*d)*sqrt(-b^2*c + a*b*d)) - 1/4*((d*x + c)^(3/2)*b*d^2 + sqrt(d
*x + c)*b*c*d^2 - sqrt(d*x + c)*a*d^3)/((b^2*c - a*b*d)*((d*x + c
)*b - b*c + a*d)^2)
```

3.1384 $\int \frac{\sqrt{c+dx}}{(a+bx)^4} dx$

Optimal. Leaf size=146

$$-\frac{d^3 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{3/2}(bc-ad)^{5/2}}+\frac{d^2\sqrt{c+dx}}{8b(a+bx)(bc-ad)^2}-\frac{d\sqrt{c+dx}}{12b(a+bx)^2(bc-ad)}-\frac{\sqrt{c+dx}}{3b(a+bx)^3}$$

```
[Out] -Sqrt[c + d*x]/(3*b*(a + b*x)^3) - (d*Sqrt[c + d*x])/(12*b*(b*c -
 a*d)*(a + b*x)^2) + (d^2*Sqrt[c + d*x])/(8*b*(b*c - a*d)^2*(a +
b*x)) - (d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8
*b^(3/2)*(b*c - a*d)^(5/2))
```

Rubi [A] time = 0.256523, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{d^3 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{3/2}(bc-ad)^{5/2}}+\frac{d^2\sqrt{c+dx}}{8b(a+bx)(bc-ad)^2}-\frac{d\sqrt{c+dx}}{12b(a+bx)^2(bc-ad)}-\frac{\sqrt{c+dx}}{3b(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^4,x]
```

```
[Out] -Sqrt[c + d*x]/(3*b*(a + b*x)^3) - (d*Sqrt[c + d*x])/(12*b*(b*c -
 a*d)*(a + b*x)^2) + (d^2*Sqrt[c + d*x])/(8*b*(b*c - a*d)^2*(a +
b*x)) - (d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8
*b^(3/2)*(b*c - a*d)^(5/2))
```

Rubi in Sympy [A] time = 31.2702, size = 119, normalized size = 0.82

$$\frac{d^2\sqrt{c+dx}}{8b\,(a+bx)\,(ad-bc)^2}+\frac{d\sqrt{c+dx}}{12b\,(a+bx)^2\,(ad-bc)}-\frac{\sqrt{c+dx}}{3b\,(a+bx)^3}+\frac{d^3\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{8b^{\frac{3}{2}}\,(ad-bc)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**4,x)
```

```
[Out] d**2*sqrt(c + d*x)/(8*b*(a + b*x)*(a*d - b*c)**2) + d*sqrt(c + d*
x)/(12*b*(a + b*x)**2*(a*d - b*c)) - sqrt(c + d*x)/(3*b*(a + b*x)
**3) + d**3*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(8*b**(3/
2)*(a*d - b*c)**(5/2))
```

Mathematica [A] time = 0.177177, size = 130, normalized size = 0.89

$$\sqrt{c+dx}\left(\frac{d^2}{8b(a+bx)(bc-ad)^2}-\frac{d}{12b(a+bx)^2(bc-ad)}-\frac{1}{3b(a+bx)^3}\right)-\frac{d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{3/2}(bc-ad)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^4,x]
```

```
[Out] Sqrt[c + d*x]*(-1/(3*b*(a + b*x)^3) - d/(12*b*(b*c - a*d)*(a + b*
x)^2) + d^2/(8*b*(b*c - a*d)^2*(a + b*x))) - (d^3*ArcTanh[(Sqrt[b
]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(3/2)*(b*c - a*d)^(5/2))
```

Maple [A] time = 0.018, size = 170, normalized size = 1.2

$$\frac{d^3b}{8\,(bdx+ad)^3\,(a^2d^2-2\,abcd+b^2c^2)}(dx+c)^{\frac{5}{2}}+\frac{d^3}{3\,(bdx+ad)^3\,(ad-bc)}(dx+c)^{\frac{3}{2}}-\frac{d^3}{8\,(bdx+ad)^3\,b}\sqrt{dx+c}+\frac{d^3}{8\,b\,(a^2d^2-2\,abcd+b^2c^2)}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^4,x)
```

```
[Out] 1/8*d^3/(b*d*x+a*d)^3*b/(a^2*d^2-2*a*b*c*d+b^2*c^2)*(d*x+c)^(5/2)
+1/3*d^3/(b*d*x+a*d)^3/(a*d-b*c)*(d*x+c)^(3/2)-1/8*d^3/(b*d*x+a*d
)^3/b*(d*x+c)^(1/2)+1/8*d^3/b/(a^2*d^2-2*a*b*c*d+b^2*c^2)/((a*d-b
*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228869, size = 1, normalized size = 0.01

$$\left[\frac{2\left(3\,b^{2}d^{2}x^{2}-8\,b^{2}c^{2}+14\,abcd-3\,a^{2}d^{2}-2\left(b^{2}cd-4\,abd^{2}\right)x\right)\sqrt{b^{2}c-abd}\sqrt{dx+c}+3\left(b^{3}d^{3}x^{3}+3\,ab^{2}d^{3}x^{2}+3\,a^{2}bd^{3}x+a^{3}\right.}{48\left(a^{3}b^{3}c^{2}-2\,a^{4}b^{2}cd+a^{5}bd^{2}+(b^{6}c^{2}-2\,ab^{5}cd+a^{2}b^{4}d^{2})x^{3}+3\left(ab^{5}c^{2}-2\,a^{2}b^{4}cd+a^{3}b^{3}d^{2}\right)x^{2}+3\left(a^{2}b^{4}c^{2}-\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] [1/48*(2*(3*b^2*d^2*x^2 - 8*b^2*c^2 + 14*a*b*c*d - 3*a^2*d^2 - 2*
(b^2*c*d - 4*a*b*d^2)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c) + 3*(b
^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log((sqrt
(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*
x + c))/(b*x + a)))/((a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2 + (
b^6*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*x^3 + 3*(a*b^5*c^2 - 2*a^2*b
^4*c*d + a^3*b^3*d^2)*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*
b^2*d^2)*x)*sqrt(b^2*c - a*b*d)), 1/24*((3*b^2*d^2*x^2 - 8*b^2*c^
2 + 14*a*b*c*d - 3*a^2*d^2 - 2*(b^2*c*d - 4*a*b*d^2)*x)*sqrt(-b^2
*c + a*b*d)*sqrt(d*x + c) - 3*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*
a^2*b*d^3*x + a^3*d^3)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*
sqrt(d*x + c))))/((a^3*b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2 + (b^6
*c^2 - 2*a*b^5*c*d + a^2*b^4*d^2)*x^3 + 3*(a*b^5*c^2 - 2*a^2*b^4*
c*d + a^3*b^3*d^2)*x^2 + 3*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2
*d^2)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.224561, size = 279, normalized size = 1.91

$$\frac{d^{3}\arctan\left(\frac{\sqrt{dx+c}\,b}{\sqrt{-b^{2}c+abd}}\right)}{8\left(b^{3}c^{2}-2\,ab^{2}cd+a^{2}bd^{2}\right)\sqrt{-b^{2}c+abd}}+\frac{3\,(dx+c)^{\frac{5}{2}}b^{2}d^{3}-8\,(dx+c)^{\frac{3}{2}}b^{2}cd^{3}-3\,\sqrt{dx+c}b^{2}c^{2}d^{3}+8\,(dx+c)^{\frac{3}{2}}abd^{4}+6\,\sqrt{dx+c}abcd^{4}-3\,\sqrt{dx+c}a^{2}d^{5}}{24\left(b^{3}c^{2}-2\,ab^{2}cd+a^{2}bd^{2}\right)\left((dx+c)b-bc+ad\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] 1/8*d^3*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^3*c^2 -
2*a*b^2*c*d + a^2*b*d^2)*sqrt(-b^2*c + a*b*d)) + 1/24*(3*(d*x + c
)^(5/2)*b^2*d^3 - 8*(d*x + c)^(3/2)*b^2*c*d^3 - 3*sqrt(d*x + c)*b
^2*c^2*d^3 + 8*(d*x + c)^(3/2)*a*b*d^4 + 6*sqrt(d*x + c)*a*b*c*d^
4 - 3*sqrt(d*x + c)*a^2*d^5)/((b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)
*((d*x + c)*b - b*c + a*d)^3)
```

3.1385 $\int \frac{\sqrt{c+dx}}{(a+bx)^5} \, dx$

Optimal. Leaf size=182

$$\frac{5d^4 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{3/2}(bc-ad)^{7/2}} - \frac{5d^3\sqrt{c+dx}}{64b(a+bx)(bc-ad)^3} + \frac{5d^2\sqrt{c+dx}}{96b(a+bx)^2(bc-ad)^2} - \frac{d\sqrt{c+dx}}{24b(a+bx)^3(bc-ad)} - \frac{\sqrt{c+dx}}{4b(a+bx)^4}$$

```
[Out] -Sqrt[c + d*x]/(4*b*(a + b*x)^4) - (d*Sqrt[c + d*x])/(24*b*(b*c -
 a*d)*(a + b*x)^3) + (5*d^2*Sqrt[c + d*x])/(96*b*(b*c - a*d)^2*(a
 + b*x)^2) - (5*d^3*Sqrt[c + d*x])/(64*b*(b*c - a*d)^3*(a + b*x))
 + (5*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(64*b
^(3/2)*(b*c - a*d)^(7/2))
```

Rubi [A] time = 0.317586, antiderivative size = 182, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{5d^4 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{3/2}(bc-ad)^{7/2}} - \frac{5d^3\sqrt{c+dx}}{64b(a+bx)(bc-ad)^3} + \frac{5d^2\sqrt{c+dx}}{96b(a+bx)^2(bc-ad)^2} - \frac{d\sqrt{c+dx}}{24b(a+bx)^3(bc-ad)} - \frac{\sqrt{c+dx}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^5,x]
```

```
[Out] -Sqrt[c + d*x]/(4*b*(a + b*x)^4) - (d*Sqrt[c + d*x])/(24*b*(b*c -
 a*d)*(a + b*x)^3) + (5*d^2*Sqrt[c + d*x])/(96*b*(b*c - a*d)^2*(a
 + b*x)^2) - (5*d^3*Sqrt[c + d*x])/(64*b*(b*c - a*d)^3*(a + b*x))
 + (5*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(64*b
^(3/2)*(b*c - a*d)^(7/2))
```

Rubi in Sympy [A] time = 43.2389, size = 155, normalized size = 0.85

$$\frac{5d^3\sqrt{c+dx}}{64b\,(a+bx)\,(ad-bc)^3} + \frac{5d^2\sqrt{c+dx}}{96b\,(a+bx)^2\,(ad-bc)^2} + \frac{d\sqrt{c+dx}}{24b\,(a+bx)^3\,(ad-bc)} - \frac{\sqrt{c+dx}}{4b\,(a+bx)^4} + \frac{5d^4 \operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{64b^{\frac{3}{2}}\,(ad-bc)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**5,x)
```

```
[Out] 5*d**3*sqrt(c + d*x)/(64*b*(a + b*x)*(a*d - b*c)**3) + 5*d**2*sqr
t(c + d*x)/(96*b*(a + b*x)**2*(a*d - b*c)**2) + d*sqrt(c + d*x)/(
24*b*(a + b*x)**3*(a*d - b*c)) - sqrt(c + d*x)/(4*b*(a + b*x)**4)
 + 5*d**4*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(64*b**(3/2
)*(a*d - b*c)**(7/2))
```

Mathematica [A] time = 0.309561, size = 149, normalized size = 0.82

$$\frac{5d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{3/2}(bc-ad)^{7/2}}-\frac{\sqrt{c+dx}\left(10d^2(a+bx)^2(ad-bc)+8d(a+bx)(bc-ad)^2+48(bc-ad)^3+15d^3(a+bx)^3\right)}{192b(a+bx)^4(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^5,x]
```

```
[Out] -(Sqrt[c + d*x]*(48*(b*c - a*d)^3 + 8*d*(b*c - a*d)^2*(a + b*x) +
 10*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 15*d^3*(a + b*x)^3))/(192*b*
(b*c - a*d)^3*(a + b*x)^4) + (5*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x
])/Sqrt[b*c - a*d]])/(64*b^(3/2)*(b*c - a*d)^(7/2))
```

Maple [A] time = 0.02, size = 248, normalized size = 1.4

$$\frac{5\,d^4b^2}{64\,(bdx+ad)^4\,(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3)}(dx+c)^{\frac{7}{2}}+\frac{55\,d^4b}{192\,(bdx+ad)^4\,(a^2d^2-2\,abcd+b^2c^2)}(dx+c)^{\frac{5}{2}}+\frac{73\,d^4}{192\,(bdx+ad)^4\,(ad-bc)}(dx+c)^{\frac{3}{2}}-\frac{5\,d^4}{64\,(bdx+ad)^4\,b}\sqrt{dx+c}+\frac{5\,d^4}{64\,b\,(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3)}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^5,x)
```

```
[Out] 5/64*d^4/(b*d*x+a*d)^4*b^2/(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b
^3*c^3)*(d*x+c)^(7/2)+55/192*d^4/(b*d*x+a*d)^4*b/(a^2*d^2-2*a*b*c
*d+b^2*c^2)*(d*x+c)^(5/2)+73/192*d^4/(b*d*x+a*d)^4/(a*d-b*c)*(d*x
```

```
+c)^(3/2)-5/64*d^4/(b*d*x+a*d)^4/b*(d*x+c)^(1/2)+5/64*d^4/b/(a^3*
d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/((a*d-b*c)*b)^(1/2)*arct
an((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.232987, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] [-1/384*(2*(15*b^3*d^3*x^3 + 48*b^3*c^3 - 136*a*b^2*c^2*d + 118*a
^2*b*c*d^2 - 15*a^3*d^3 - 5*(2*b^3*c*d^2 - 11*a*b^2*d^3)*x^2 + (8
*b^3*c^2*d - 36*a*b^2*c*d^2 + 73*a^2*b*d^3)*x)*sqrt(b^2*c - a*b*d
)*sqrt(d*x + c) + 15*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d
^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log((sqrt(b^2*c - a*b*d)*(b*d*x
 + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)))/((
a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3 + (b^
8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*x^4 + 4*(a
*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*x^3 +
 6*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3
)*x^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*
b^2*d^3)*x)*sqrt(b^2*c - a*b*d)), -1/192*((15*b^3*d^3*x^3 + 48*b^
3*c^3 - 136*a*b^2*c^2*d + 118*a^2*b*c*d^2 - 15*a^3*d^3 - 5*(2*b^3
*c*d^2 - 11*a*b^2*d^3)*x^2 + (8*b^3*c^2*d - 36*a*b^2*c*d^2 + 73*a
^2*b*d^3)*x)*sqrt(-b^2*c + a*b*d)*sqrt(d*x + c) - 15*(b^4*d^4*x^4
 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)
*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))))/((a^4
*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3 + (b^8*c
^3 - 3*a*b^7*c^2*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*x^4 + 4*(a*b^
7*c^3 - 3*a^2*b^6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*x^3 + 6*
(a^2*b^6*c^3 - 3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*x
^2 + 4*(a^3*b^5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2
*d^3)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.231156, size = 420, normalized size = 2.31

$$-\frac{5\, d^4 \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{64\,(b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3)\sqrt{-b^2c+abd}} - \frac{15\,(dx+c)^{\frac{7}{2}}b^3d^4-55\,(dx+c)^{\frac{5}{2}}b^3cd^4+73\,(dx+c)^{\frac{3}{2}}b^3c^2d^4+15\,\sqrt{dx+c}b^3c^3d^4+55\,(dx+c)^{\frac{5}{2}}ab^2d^5-146\,(dx+c)^{\frac{3}{2}}ab^2cd^5}{192\,(b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3)((dx+c)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] -5/64*d^4*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^4*c^3
- 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*sqrt(-b^2*c + a*b*
d)) - 1/192*(15*(d*x + c)^(7/2)*b^3*d^4 - 55*(d*x + c)^(5/2)*b^3*
c*d^4 + 73*(d*x + c)^(3/2)*b^3*c^2*d^4 + 15*sqrt(d*x + c)*b^3*c^3
*d^4 + 55*(d*x + c)^(5/2)*a*b^2*d^5 - 146*(d*x + c)^(3/2)*a*b^2*c
*d^5 - 45*sqrt(d*x + c)*a*b^2*c^2*d^5 + 73*(d*x + c)^(3/2)*a^2*b*
d^6 + 45*sqrt(d*x + c)*a^2*b*c*d^6 - 15*sqrt(d*x + c)*a^3*d^7)/((
b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*((d*x + c)
*b - b*c + a*d)^4)
```

3.1386 $\int \frac{\sqrt{c+dx}}{(a+bx)^6}\,dx$

Optimal. Leaf size=218

$$-\frac{7d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{3/2}(bc-ad)^{9/2}}+\frac{7d^4\sqrt{c+dx}}{128b(a+bx)(bc-ad)^4}-\frac{7d^3\sqrt{c+dx}}{192b(a+bx)^2(bc-ad)^3}+\frac{7d^2\sqrt{c+dx}}{240b(a+bx)^3(bc-ad)^2}-\frac{d\sqrt{c+dx}}{40b(a+bx)^4(bc-ad)}-\frac{\sqrt{c+dx}}{5b(a+bx)^5}$$

```
[Out] -Sqrt[c + d*x]/(5*b*(a + b*x)^5) - (d*Sqrt[c + d*x])/(40*b*(b*c -
 a*d)*(a + b*x)^4) + (7*d^2*Sqrt[c + d*x])/(240*b*(b*c - a*d)^2*(
a + b*x)^3) - (7*d^3*Sqrt[c + d*x])/(192*b*(b*c - a*d)^3*(a + b*x
)^2) + (7*d^4*Sqrt[c + d*x])/(128*b*(b*c - a*d)^4*(a + b*x)) - (7
*d^5*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(3/
2)*(b*c - a*d)^(9/2))
```

Rubi [A] time = 0.390767, antiderivative size = 218, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{7d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{3/2}(bc-ad)^{9/2}}+\frac{7d^4\sqrt{c+dx}}{128b(a+bx)(bc-ad)^4}-\frac{7d^3\sqrt{c+dx}}{192b(a+bx)^2(bc-ad)^3}+\frac{7d^2\sqrt{c+dx}}{240b(a+bx)^3(bc-ad)^2}-\frac{d\sqrt{c+dx}}{40b(a+bx)^4(bc-ad)}-\frac{\sqrt{c+dx}}{5b(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^6,x]
```

```
[Out] -Sqrt[c + d*x]/(5*b*(a + b*x)^5) - (d*Sqrt[c + d*x])/(40*b*(b*c -
 a*d)*(a + b*x)^4) + (7*d^2*Sqrt[c + d*x])/(240*b*(b*c - a*d)^2*(
a + b*x)^3) - (7*d^3*Sqrt[c + d*x])/(192*b*(b*c - a*d)^3*(a + b*x
)^2) + (7*d^4*Sqrt[c + d*x])/(128*b*(b*c - a*d)^4*(a + b*x)) - (7
*d^5*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(3/
2)*(b*c - a*d)^(9/2))
```

Rubi in Sympy [A] time = 58.6843, size = 187, normalized size = 0.86

$$\frac{7d^4\sqrt{c+dx}}{128b\,(a+bx)\,(ad-bc)^4}+\frac{7d^3\sqrt{c+dx}}{192b\,(a+bx)^2\,(ad-bc)^3}+\frac{7d^2\sqrt{c+dx}}{240b\,(a+bx)^3\,(ad-bc)^2}+\frac{d\sqrt{c+dx}}{40b\,(a+bx)^4\,(ad-bc)}-\frac{\sqrt{c+dx}}{5b\,(a+bx)^5}+\frac{7d^5\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{128b^{\frac{3}{2}}\,(ad-bc)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**6,x)
```

```
[Out] 7*d**4*sqrt(c + d*x)/(128*b*(a + b*x)*(a*d - b*c)**4) + 7*d**3*sq
rt(c + d*x)/(192*b*(a + b*x)**2*(a*d - b*c)**3) + 7*d**2*sqrt(c +
 d*x)/(240*b*(a + b*x)**3*(a*d - b*c)**2) + d*sqrt(c + d*x)/(40*b
*(a + b*x)**4*(a*d - b*c)) - sqrt(c + d*x)/(5*b*(a + b*x)**5) + 7
*d**5*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(128*b**(3/2)*(
a*d - b*c)**(9/2))
```

Mathematica [A] time = 0.347278, size = 171, normalized size = 0.78

$$-\frac{7d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{3/2}(bc-ad)^{9/2}}-\frac{\sqrt{c+dx}\left(70d^3(a+bx)^3(bc-ad)-56d^2(a+bx)^2(bc-ad)^2+48d(a+bx)(bc-ad)^3+384(bc-ad)^4-105d^4(a+bx)^4\right)}{1920b(a+bx)^5(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^6,x]
```

```
[Out] -(Sqrt[c + d*x]*(384*(b*c - a*d)^4 + 48*d*(b*c - a*d)^3*(a + b*x)
 - 56*d^2*(b*c - a*d)^2*(a + b*x)^2 + 70*d^3*(b*c - a*d)*(a + b*x
)^3 - 105*d^4*(a + b*x)^4))/(1920*b*(b*c - a*d)^4*(a + b*x)^5) -
(7*d^5*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(
3/2)*(b*c - a*d)^(9/2))
```

Maple [A] time = 0.026, size = 337, normalized size = 1.6

$$\frac{7\,d^5b^3}{128\,(bdx+ad)^5\,(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4)}(dx+c)^{\frac{9}{2}}+\frac{49\,d^5b^2}{192\,(bdx+ad)^5\,(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3)}(dx+c)^{\frac{7}{2}}+\frac{7\,d^5b}{15\,(bdx+ad)^5\,(a^2d^2-2\,abcd+b^2c^2)}(dx+c)^{\frac{5}{2}}+\frac{79\,d^5}{192\,(bdx+ad)^5\,(ad-bc)}(dx+c)^{\frac{3}{2}}-\frac{7\,d^5}{128\,(bdx+ad)^5\,b}\sqrt{dx+c}+\frac{7\,d^5}{128\,b\,(a^4d^4-4\,a^3bcd^3+6\,a^2b^2c^2d^2-4\,ab^3c^3d+b^4c^4)}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^6,x)
```

```
[Out] 7/128*d^5/(b*d*x+a*d)^5*b^3/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*
d^2-4*a*b^3*c^3*d+b^4*c^4)*(d*x+c)^(9/2)+49/192*d^5/(b*d*x+a*d)^5
*b^2/(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)*(d*x+c)^(7/2)+
7/15*d^5/(b*d*x+a*d)^5*b/(a^2*d^2-2*a*b*c*d+b^2*c^2)*(d*x+c)^(5/2
)+79/192*d^5/(b*d*x+a*d)^5/(a*d-b*c)*(d*x+c)^(3/2)-7/128*d^5/(b*d
*x+a*d)^5/b*(d*x+c)^(1/2)+7/128*d^5/b/(a^4*d^4-4*a^3*b*c*d^3+6*a^
2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)/((a*d-b*c)*b)^(1/2)*arctan((
d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.237692, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] [1/3840*(2*(105*b^4*d^4*x^4 - 384*b^4*c^4 + 1488*a*b^3*c^3*d - 21
04*a^2*b^2*c^2*d^2 + 1210*a^3*b*c*d^3 - 105*a^4*d^4 - 70*(b^4*c*d
^3 - 7*a*b^3*d^4)*x^3 + 14*(4*b^4*c^2*d^2 - 23*a*b^3*c*d^3 + 64*a
^2*b^2*d^4)*x^2 - 2*(24*b^4*c^3*d - 128*a*b^3*c^2*d^2 + 289*a^2*b
^2*c*d^3 - 395*a^3*b*d^4)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c) +
105*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*
b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log((sqrt(b^2*c - a*b*d)*(
b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)
))/((a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^
2*c*d^3 + a^9*b*d^4 + (b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d
^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*x^5 + 5*(a*b^9*c^4 - 4*a^2*b^
8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*x^4
+ 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b
^5*c*d^3 + a^6*b^4*d^4)*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d +
 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*x^2 + 5*(a^4*
b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 +
 a^8*b^2*d^4)*x)*sqrt(b^2*c - a*b*d)), 1/1920*((105*b^4*d^4*x^4 -
```

```
 384*b^4*c^4 + 1488*a*b^3*c^3*d - 2104*a^2*b^2*c^2*d^2 + 1210*a^3
*b*c*d^3 - 105*a^4*d^4 - 70*(b^4*c*d^3 - 7*a*b^3*d^4)*x^3 + 14*(4
*b^4*c^2*d^2 - 23*a*b^3*c*d^3 + 64*a^2*b^2*d^4)*x^2 - 2*(24*b^4*c
^3*d - 128*a*b^3*c^2*d^2 + 289*a^2*b^2*c*d^3 - 395*a^3*b*d^4)*x)*
sqrt(-b^2*c + a*b*d)*sqrt(d*x + c) - 105*(b^5*d^5*x^5 + 5*a*b^4*d
^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x
+ a^5*d^5)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c
))))/((a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*
b^2*c*d^3 + a^9*b*d^4 + (b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2
*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)*x^5 + 5*(a*b^9*c^4 - 4*a^2*
b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*x^
4 + 10*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5
*b^5*c*d^3 + a^6*b^4*d^4)*x^3 + 10*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d
 + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*x^2 + 5*(a^
4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3
 + a^8*b^2*d^4)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.228928, size = 583, normalized size = 2.67

$$\frac{7\,d^5\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{128\,(b^5c^4-4\,ab^4c^3d+6\,a^2b^3c^2d^2-4\,a^3b^2cd^3+a^4bd^4)\sqrt{-b^2c+abd}}+\frac{105\,(dx+c)^{\frac{9}{2}}b^4d^5-490\,(dx+c)^{\frac{7}{2}}b^4cd^5+896\,(dx+c)^{\frac{5}{2}}b^4c^2d^5-790\,(dx+c)^{\frac{3}{2}}b^4c^3d^5-105\,\sqrt{dx+c}b^4c^4d^5+490\,(dx+c)^{\frac{7}{2}}c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^6,x, algorithm="giac")
```

```
[Out] 7/128*d^5*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^5*c^4
- 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4
)*sqrt(-b^2*c + a*b*d)) + 1/1920*(105*(d*x + c)^(9/2)*b^4*d^5 - 4
90*(d*x + c)^(7/2)*b^4*c*d^5 + 896*(d*x + c)^(5/2)*b^4*c^2*d^5 -
790*(d*x + c)^(3/2)*b^4*c^3*d^5 - 105*sqrt(d*x + c)*b^4*c^4*d^5 +
 490*(d*x + c)^(7/2)*a*b^3*d^6 - 1792*(d*x + c)^(5/2)*a*b^3*c*d^6
 + 2370*(d*x + c)^(3/2)*a*b^3*c^2*d^6 + 420*sqrt(d*x + c)*a*b^3*c
```

```
^3*d^6 + 896*(d*x + c)^(5/2)*a^2*b^2*d^7 - 2370*(d*x + c)^(3/2)*a
^2*b^2*c*d^7 - 630*sqrt(d*x + c)*a^2*b^2*c^2*d^7 + 790*(d*x + c)^
(3/2)*a^3*b*d^8 + 420*sqrt(d*x + c)*a^3*b*c*d^8 - 105*sqrt(d*x +
c)*a^4*d^9)/((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3
*b^2*c*d^3 + a^4*b*d^4)*((d*x + c)*b - b*c + a*d)^5)
```

3.1387 $\int (a+bx)^5(c+dx)^{3/2}\,dx$

Optimal. Leaf size=158

$$-\frac{10b^4(c+dx)^{13/2}(bc-ad)}{13d^6}+\frac{20b^3(c+dx)^{11/2}(bc-ad)^2}{11d^6}-\frac{20b^2(c+dx)^{9/2}(bc-ad)^3}{9d^6}+\frac{10b(c+dx)^{7/2}(bc-ad)^4}{7d^6}-\frac{2(c+dx)^{5/2}(bc-ad)^5}{5d^6}+\frac{2b^5(c+dx)^{15/2}}{15d^6}$$

```
[Out] (-2*(b*c - a*d)^5*(c + d*x)^(5/2))/(5*d^6) + (10*b*(b*c - a*d)^4*
(c + d*x)^(7/2))/(7*d^6) - (20*b^2*(b*c - a*d)^3*(c + d*x)^(9/2))
/(9*d^6) + (20*b^3*(b*c - a*d)^2*(c + d*x)^(11/2))/(11*d^6) - (10
*b^4*(b*c - a*d)*(c + d*x)^(13/2))/(13*d^6) + (2*b^5*(c + d*x)^(1
5/2))/(15*d^6)
```

Rubi [A] time = 0.15737, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{10b^4(c+dx)^{13/2}(bc-ad)}{13d^6}+\frac{20b^3(c+dx)^{11/2}(bc-ad)^2}{11d^6}-\frac{20b^2(c+dx)^{9/2}(bc-ad)^3}{9d^6}+\frac{10b(c+dx)^{7/2}(bc-ad)^4}{7d^6}-\frac{2(c+dx)^{5/2}(bc-ad)^5}{5d^6}+\frac{2b^5(c+dx)^{15/2}}{15d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(c + d*x)^(3/2),x]
```

```
[Out] (-2*(b*c - a*d)^5*(c + d*x)^(5/2))/(5*d^6) + (10*b*(b*c - a*d)^4*
(c + d*x)^(7/2))/(7*d^6) - (20*b^2*(b*c - a*d)^3*(c + d*x)^(9/2))
/(9*d^6) + (20*b^3*(b*c - a*d)^2*(c + d*x)^(11/2))/(11*d^6) - (10
*b^4*(b*c - a*d)*(c + d*x)^(13/2))/(13*d^6) + (2*b^5*(c + d*x)^(1
5/2))/(15*d^6)
```

Rubi in Sympy [A] time = 42.4734, size = 146, normalized size = 0.92

$$\frac{2b^5\left(c+dx\right)^{\frac{15}{2}}}{15d^6}+\frac{10b^4\left(c+dx\right)^{\frac{13}{2}}\left(ad-bc\right)}{13d^6}+\frac{20b^3\left(c+dx\right)^{\frac{11}{2}}\left(ad-bc\right)^2}{11d^6}+\frac{20b^2\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)^3}{9d^6}+\frac{10b\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^4}{7d^6}+\frac{2\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^5}{5d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(d*x+c)**(3/2),x)
```

```
[Out] 2*b**5*(c + d*x)**(15/2)/(15*d**6) + 10*b**4*(c + d*x)**(13/2)*(a
*d - b*c)/(13*d**6) + 20*b**3*(c + d*x)**(11/2)*(a*d - b*c)**2/(1
1*d**6) + 20*b**2*(c + d*x)**(9/2)*(a*d - b*c)**3/(9*d**6) + 10*b
*(c + d*x)**(7/2)*(a*d - b*c)**4/(7*d**6) + 2*(c + d*x)**(5/2)*(a
*d - b*c)**5/(5*d**6)
```

Mathematica [A] time = 0.251692, size = 217, normalized size = 1.37

$$\frac{2(c+dx)^{5/2}\left(9009a^5d^5+6435a^4bd^4(5dx-2c)+1430a^3b^2d^3\left(8c^2-20cdx+35d^2x^2\right)+390a^2b^3d^2\left(-16c^3+40c^2dx-70cd^2\cdots\right.\right.}{\cdots}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(c + d*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(9009*a^5*d^5 + 6435*a^4*b*d^4*(-2*c + 5*d*x)
+ 1430*a^3*b^2*d^3*(8*c^2 - 20*c*d*x + 35*d^2*x^2) + 390*a^2*b^3*
d^2*(-16*c^3 + 40*c^2*d*x - 70*c*d^2*x^2 + 105*d^3*x^3) + 15*a*b^
4*d*(128*c^4 - 320*c^3*d*x + 560*c^2*d^2*x^2 - 840*c*d^3*x^3 + 11
55*d^4*x^4) + b^5*(-256*c^5 + 640*c^4*d*x - 1120*c^3*d^2*x^2 + 16
80*c^2*d^3*x^3 - 2310*c*d^4*x^4 + 3003*d^5*x^5)))/(45045*d^6)
```

Maple [B] time = 0.01, size = 273, normalized size = 1.7

$$\frac{6006\,b^5x^5d^5+34650\,ab^4d^5x^4-4620\,b^5cd^4x^4+81900\,a^2b^3d^5x^3-25200\,ab^4cd^4x^3+3360\,b^5c^2d^3x^3+100100\,a^3b^2d^5x^2-54\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(d*x+c)^(3/2),x)
```

```
[Out] 2/45045*(d*x+c)^(5/2)*(3003*b^5*d^5*x^5+17325*a*b^4*d^5*x^4-2310*
b^5*c*d^4*x^4+40950*a^2*b^3*d^5*x^3-12600*a*b^4*c*d^4*x^3+1680*b^
5*c^2*d^3*x^3+50050*a^3*b^2*d^5*x^2-27300*a^2*b^3*c*d^4*x^2+8400*
a*b^4*c^2*d^3*x^2-1120*b^5*c^3*d^2*x^2+32175*a^4*b*d^5*x-28600*a^
3*b^2*c*d^4*x+15600*a^2*b^3*c^2*d^3*x-4800*a*b^4*c^3*d^2*x+640*b^
5*c^4*d*x+9009*a^5*d^5-12870*a^4*b*c*d^4+11440*a^3*b^2*c^2*d^3-62
40*a^2*b^3*c^3*d^2+1920*a*b^4*c^4*d-256*b^5*c^5)/d^6
```

Maxima [A] time = 1.39371, size = 350, normalized size = 2.22

$$\frac{2\left(3003\,(dx+c)^{\frac{15}{2}}b^5-17325\,\left(b^5c-ab^4d\right)(dx+c)^{\frac{13}{2}}+40950\,\left(b^5c^2-2\,ab^4cd+a^2b^3d^2\right)(dx+c)^{\frac{11}{2}}-50050\,\left(b^5c^3-3\,ab^4c^2d\cdots\right.\right.}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(3003*(d*x + c)^(15/2)*b^5 - 17325*(b^5*c - a*b^4*d)*(d*x
 + c)^(13/2) + 40950*(b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(d*x +
 c)^(11/2) - 50050*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a
^3*b^2*d^3)*(d*x + c)^(9/2) + 32175*(b^5*c^4 - 4*a*b^4*c^3*d + 6*
a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*(d*x + c)^(7/2) -
9009*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c
^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*(d*x + c)^(5/2))/d^6
```

Fricas [A] time = 0.213101, size = 564, normalized size = 3.57

$$\frac{2\left(3003\,b^5d^7x^7 - 256\,b^5c^7 + 1920\,ab^4c^6d - 6240\,a^2b^3c^5d^2 + 11440\,a^3b^2c^4d^3 - 12870\,a^4bc^3d^4 + 9009\,a^5c^2d^5 + 231\left(16\,b^5cd^6\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*b^5*d^7*x^7 - 256*b^5*c^7 + 1920*a*b^4*c^6*d - 6240
*a^2*b^3*c^5*d^2 + 11440*a^3*b^2*c^4*d^3 - 12870*a^4*b*c^3*d^4 +
9009*a^5*c^2*d^5 + 231*(16*b^5*c*d^6 + 75*a*b^4*d^7)*x^6 + 63*(b^
5*c^2*d^5 + 350*a*b^4*c*d^6 + 650*a^2*b^3*d^7)*x^5 - 35*(2*b^5*c^
3*d^4 - 15*a*b^4*c^2*d^5 - 1560*a^2*b^3*c*d^6 - 1430*a^3*b^2*d^7)
*x^4 + 5*(16*b^5*c^4*d^3 - 120*a*b^4*c^3*d^4 + 390*a^2*b^3*c^2*d^
5 + 14300*a^3*b^2*c*d^6 + 6435*a^4*b*d^7)*x^3 - 3*(32*b^5*c^5*d^2
 - 240*a*b^4*c^4*d^3 + 780*a^2*b^3*c^3*d^4 - 1430*a^3*b^2*c^2*d^5
 - 17160*a^4*b*c*d^6 - 3003*a^5*d^7)*x^2 + (128*b^5*c^6*d - 960*a
*b^4*c^5*d^2 + 3120*a^2*b^3*c^4*d^3 - 5720*a^3*b^2*c^3*d^4 + 6435
*a^4*b*c^2*d^5 + 18018*a^5*c*d^6)*x)*sqrt(d*x + c)/d^6
```

Sympy [A] time = 4.77879, size = 763, normalized size = 4.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(d*x+c)**(3/2),x)
```

```
[Out] a**5*c*Piecewise((sqrt(c)*x, Eq(d, 0)), (2*(c + d*x)**(3/2)/(3*d)
, True)) + 2*a**5*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d
+ 10*a**4*b*c*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d**2 +
 10*a**4*b*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 + (c
 + d*x)**(7/2)/7)/d**2 + 20*a**3*b**2*c*(c**2*(c + d*x)**(3/2)/3
```

```
- 2*c*(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)/d**3 + 20*a**3*b**
2*(-c**3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c
+ d*x)**(7/2)/7 + (c + d*x)**(9/2)/9)/d**3 + 20*a**2*b**3*c*(-c**
3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)*
*(7/2)/7 + (c + d*x)**(9/2)/9)/d**4 + 20*a**2*b**3*(c**4*(c + d*x
)**(3/2)/3 - 4*c**3*(c + d*x)**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/
7 - 4*c*(c + d*x)**(9/2)/9 + (c + d*x)**(11/2)/11)/d**4 + 10*a*b*
*4*c*(c**4*(c + d*x)**(3/2)/3 - 4*c**3*(c + d*x)**(5/2)/5 + 6*c**
2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**(9/2)/9 + (c + d*x)**(11/2)
/11)/d**5 + 10*a*b**4*(-c**5*(c + d*x)**(3/2)/3 + c**4*(c + d*x)*
*(5/2) - 10*c**3*(c + d*x)**(7/2)/7 + 10*c**2*(c + d*x)**(9/2)/9
- 5*c*(c + d*x)**(11/2)/11 + (c + d*x)**(13/2)/13)/d**5 + 2*b**5*
c*(-c**5*(c + d*x)**(3/2)/3 + c**4*(c + d*x)**(5/2) - 10*c**3*(c
+ d*x)**(7/2)/7 + 10*c**2*(c + d*x)**(9/2)/9 - 5*c*(c + d*x)**(11
/2)/11 + (c + d*x)**(13/2)/13)/d**6 + 2*b**5*(c**6*(c + d*x)**(3/
2)/3 - 6*c**5*(c + d*x)**(5/2)/5 + 15*c**4*(c + d*x)**(7/2)/7 - 2
0*c**3*(c + d*x)**(9/2)/9 + 15*c**2*(c + d*x)**(11/2)/11 - 6*c*(c
 + d*x)**(13/2)/13 + (c + d*x)**(15/2)/15)/d**6
```

GIAC/XCAS [A] time = 0.233464, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1388 $\int (a+bx)^4(c+dx)^{3/2}\,dx$

Optimal. Leaf size=129

$$-\frac{8b^3(c+dx)^{11/2}(bc-ad)}{11d^5}+\frac{4b^2(c+dx)^{9/2}(bc-ad)^2}{3d^5}-\frac{8b(c+dx)^{7/2}(bc-ad)^3}{7d^5}+\frac{2(c+dx)^{5/2}(bc-ad)^4}{5d^5}+\frac{2b^4(c+dx)^{13/2}}{13d^5}$$

```
[Out] (2*(b*c - a*d)^4*(c + d*x)^(5/2))/(5*d^5) - (8*b*(b*c - a*d)^3*(c
 + d*x)^(7/2))/(7*d^5) + (4*b^2*(b*c - a*d)^2*(c + d*x)^(9/2))/(3
*d^5) - (8*b^3*(b*c - a*d)*(c + d*x)^(11/2))/(11*d^5) + (2*b^4*(c
 + d*x)^(13/2))/(13*d^5)
```

Rubi [A] time = 0.118342, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{8b^3(c+dx)^{11/2}(bc-ad)}{11d^5}+\frac{4b^2(c+dx)^{9/2}(bc-ad)^2}{3d^5}-\frac{8b(c+dx)^{7/2}(bc-ad)^3}{7d^5}+\frac{2(c+dx)^{5/2}(bc-ad)^4}{5d^5}+\frac{2b^4(c+dx)^{13/2}}{13d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x)^(3/2),x]
```

```
[Out] (2*(b*c - a*d)^4*(c + d*x)^(5/2))/(5*d^5) - (8*b*(b*c - a*d)^3*(c
 + d*x)^(7/2))/(7*d^5) + (4*b^2*(b*c - a*d)^2*(c + d*x)^(9/2))/(3
*d^5) - (8*b^3*(b*c - a*d)*(c + d*x)^(11/2))/(11*d^5) + (2*b^4*(c
 + d*x)^(13/2))/(13*d^5)
```

Rubi in Sympy [A] time = 31.3134, size = 119, normalized size = 0.92

$$\frac{2b^4\left(c+dx\right)^{\frac{13}{2}}}{13d^5}+\frac{8b^3\left(c+dx\right)^{\frac{11}{2}}\left(ad-bc\right)}{11d^5}+\frac{4b^2\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)^2}{3d^5}+\frac{8b\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^3}{7d^5}+\frac{2\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^4}{5d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**(3/2),x)
```

```
[Out] 2*b**4*(c + d*x)**(13/2)/(13*d**5) + 8*b**3*(c + d*x)**(11/2)*(a*
d - b*c)/(11*d**5) + 4*b**2*(c + d*x)**(9/2)*(a*d - b*c)**2/(3*d*
```

```
*5) + 8*b*(c + d*x)**(7/2)*(a*d - b*c)**3/(7*d**5) + 2*(c + d*x)*
*(5/2)*(a*d - b*c)**4/(5*d**5)
```

Mathematica [A] time = 0.145301, size = 154, normalized size = 1.19

$$\frac{2(c+dx)^{5/2}\left(3003a^4d^4+1716a^3bd^3(5dx-2c)+286a^2b^2d^2\left(8c^2-20cdx+35d^2x^2\right)+52ab^3d\left(-16c^3+40c^2dx-70cd^2x^2+\right.\right.}{15015d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(3003*a^4*d^4 + 1716*a^3*b*d^3*(-2*c + 5*d*x)
+ 286*a^2*b^2*d^2*(8*c^2 - 20*c*d*x + 35*d^2*x^2) + 52*a*b^3*d*(-
16*c^3 + 40*c^2*d*x - 70*c*d^2*x^2 + 105*d^3*x^3) + b^4*(128*c^4
- 320*c^3*d*x + 560*c^2*d^2*x^2 - 840*c*d^3*x^3 + 1155*d^4*x^4)))
/(15015*d^5)
```

Maple [A] time = 0.01, size = 186, normalized size = 1.4

$$\frac{2310\,x^4b^4d^4+10920\,ab^3d^4x^3-1680\,b^4cd^3x^3+20020\,a^2b^2d^4x^2-7280\,ab^3cd^3x^2+1120\,b^4c^2d^2x^2+17160\,a^3bd^4x-11440\,a}{15015\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c)^(3/2),x)
```

```
[Out] 2/15015*(d*x+c)^(5/2)*(1155*b^4*d^4*x^4+5460*a*b^3*d^4*x^3-840*b^
4*c*d^3*x^3+10010*a^2*b^2*d^4*x^2-3640*a*b^3*c*d^3*x^2+560*b^4*c^
2*d^2*x^2+8580*a^3*b*d^4*x-5720*a^2*b^2*c*d^3*x+2080*a*b^3*c^2*d^
2*x-320*b^4*c^3*d*x+3003*a^4*d^4-3432*a^3*b*c*d^3+2288*a^2*b^2*c^
2*d^2-832*a*b^3*c^3*d+128*b^4*c^4)/d^5
```

Maxima [A] time = 1.34686, size = 244, normalized size = 1.89

$$\frac{2\left(1155\,(dx+c)^{\frac{13}{2}}b^4-5460\left(b^4c-ab^3d\right)(dx+c)^{\frac{11}{2}}+10010\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)(dx+c)^{\frac{9}{2}}-8580\left(b^4c^3-3\,ab^3c^2d+3\right.\right.}{15015\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15015*(1155*(d*x + c)^(13/2)*b^4 - 5460*(b^4*c - a*b^3*d)*(d*x
+ c)^(11/2) + 10010*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*(d*x +
c)^(9/2) - 8580*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*
b*d^3)*(d*x + c)^(7/2) + 3003*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^
2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(d*x + c)^(5/2))/d^5
```

Fricas [A] time = 0.206677, size = 420, normalized size = 3.26

$$\frac{2 \left(1155 \, b^{4} d^{6} x^{6} + 128 \, b^{4} c^{6} - 832 \, a b^{3} c^{5} d + 2288 \, a^{2} b^{2} c^{4} d^{2} - 3432 \, a^{3} b c^{3} d^{3} + 3003 \, a^{4} c^{2} d^{4} + 210 \, \left(7 \, b^{4} c d^{5} + 26 \, a b^{3} d^{6}\right) x^{5} + 35 \, (b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*b^4*d^6*x^6 + 128*b^4*c^6 - 832*a*b^3*c^5*d + 2288*
a^2*b^2*c^4*d^2 - 3432*a^3*b*c^3*d^3 + 3003*a^4*c^2*d^4 + 210*(7*
b^4*c*d^5 + 26*a*b^3*d^6)*x^5 + 35*(b^4*c^2*d^4 + 208*a*b^3*c*d^5
 + 286*a^2*b^2*d^6)*x^4 - 20*(2*b^4*c^3*d^3 - 13*a*b^3*c^2*d^4 -
715*a^2*b^2*c*d^5 - 429*a^3*b*d^6)*x^3 + 3*(16*b^4*c^4*d^2 - 104*
a*b^3*c^3*d^3 + 286*a^2*b^2*c^2*d^4 + 4576*a^3*b*c*d^5 + 1001*a^4
*d^6)*x^2 - 2*(32*b^4*c^5*d - 208*a*b^3*c^4*d^2 + 572*a^2*b^2*c^3
*d^3 - 858*a^3*b*c^2*d^4 - 3003*a^4*c*d^5)*x)*sqrt(d*x + c)/d^5
```

Sympy [A] time = 3.97796, size = 559, normalized size = 4.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**(3/2),x)
```

```
[Out] a**4*c*Piecewise((sqrt(c)*x, Eq(d, 0)), (2*(c + d*x)**(3/2)/(3*d)
, True)) + 2*a**4*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d
+ 8*a**3*b*c*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d**2 +
8*a**3*b*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 + (c +
 d*x)**(7/2)/7)/d**2 + 12*a**2*b**2*c*(c**2*(c + d*x)**(3/2)/3 -
2*c*(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)/d**3 + 12*a**2*b**2*
(-c**3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c +
d*x)**(7/2)/7 + (c + d*x)**(9/2)/9)/d**3 + 8*a*b**3*c*(-c**3*(c +
 d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)**(7/2)
/7 + (c + d*x)**(9/2)/9)/d**4 + 8*a*b**3*(c**4*(c + d*x)**(3/2)/3
 - 4*c**3*(c + d*x)**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c
 + d*x)**(9/2)/9 + (c + d*x)**(11/2)/11)/d**4 + 2*b**4*c*(c**4*(c
 + d*x)**(3/2)/3 - 4*c**3*(c + d*x)**(5/2)/5 + 6*c**2*(c + d*x)**
(7/2)/7 - 4*c*(c + d*x)**(9/2)/9 + (c + d*x)**(11/2)/11)/d**5 + 2
*b**4*(-c**5*(c + d*x)**(3/2)/3 + c**4*(c + d*x)**(5/2) - 10*c**3
```

```
*(c + d*x)**(7/2)/7 + 10*c**2*(c + d*x)**(9/2)/9 - 5*c*(c + d*x)*
*(11/2)/11 + (c + d*x)**(13/2)/13)/d**5
```

GIAC/XCAS [A] time = 0.227806, size = 761, normalized size = 5.9

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*(d*x + c)^(3/2)*a^4*c + 3003*(3*(d*x + c)^(5/2) -
5*(d*x + c)^(3/2)*c)*a^4 + 12012*(3*(d*x + c)^(5/2) - 5*(d*x + c)
^(3/2)*c)*a^3*b*c/d + 2574*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c
)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a^2*b^2*c/d^14 + 17
16*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d^12 + 35*(d*x
 + c)^(3/2)*c^2*d^12)*a^3*b/d^13 + 572*(35*(d*x + c)^(9/2)*d^24 -
 135*(d*x + c)^(7/2)*c*d^24 + 189*(d*x + c)^(5/2)*c^2*d^24 - 105*
(d*x + c)^(3/2)*c^3*d^24)*a*b^3*c/d^27 + 858*(35*(d*x + c)^(9/2)*
d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 189*(d*x + c)^(5/2)*c^2*d^24
- 105*(d*x + c)^(3/2)*c^3*d^24)*a^2*b^2/d^26 + 13*(315*(d*x + c)^
(11/2)*d^40 - 1540*(d*x + c)^(9/2)*c*d^40 + 2970*(d*x + c)^(7/2)*
c^2*d^40 - 2772*(d*x + c)^(5/2)*c^3*d^40 + 1155*(d*x + c)^(3/2)*c
^4*d^40)*b^4*c/d^44 + 52*(315*(d*x + c)^(11/2)*d^40 - 1540*(d*x +
 c)^(9/2)*c*d^40 + 2970*(d*x + c)^(7/2)*c^2*d^40 - 2772*(d*x + c)
^(5/2)*c^3*d^40 + 1155*(d*x + c)^(3/2)*c^4*d^40)*a*b^3/d^43 + 5*(
693*(d*x + c)^(13/2)*d^60 - 4095*(d*x + c)^(11/2)*c*d^60 + 10010*
(d*x + c)^(9/2)*c^2*d^60 - 12870*(d*x + c)^(7/2)*c^3*d^60 + 9009*
(d*x + c)^(5/2)*c^4*d^60 - 3003*(d*x + c)^(3/2)*c^5*d^60)*b^4/d^6
4)/d
```

3.1389 $\int (a+bx)^3(c+dx)^{3/2}\,dx$

Optimal. Leaf size=100

$$-\frac{2b^2(c+dx)^{9/2}(bc-ad)}{3d^4}+\frac{6b(c+dx)^{7/2}(bc-ad)^2}{7d^4}-\frac{2(c+dx)^{5/2}(bc-ad)^3}{5d^4}+\frac{2b^3(c+dx)^{11/2}}{11d^4}$$

```
[Out] (-2*(b*c - a*d)^3*(c + d*x)^(5/2))/(5*d^4) + (6*b*(b*c - a*d)^2*(
c + d*x)^(7/2))/(7*d^4) - (2*b^2*(b*c - a*d)*(c + d*x)^(9/2))/(3*
d^4) + (2*b^3*(c + d*x)^(11/2))/(11*d^4)
```

Rubi [A] time = 0.0957658, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{2b^2(c+dx)^{9/2}(bc-ad)}{3d^4}+\frac{6b(c+dx)^{7/2}(bc-ad)^2}{7d^4}-\frac{2(c+dx)^{5/2}(bc-ad)^3}{5d^4}+\frac{2b^3(c+dx)^{11/2}}{11d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^(3/2),x]
```

```
[Out] (-2*(b*c - a*d)^3*(c + d*x)^(5/2))/(5*d^4) + (6*b*(b*c - a*d)^2*(
c + d*x)^(7/2))/(7*d^4) - (2*b^2*(b*c - a*d)*(c + d*x)^(9/2))/(3*
d^4) + (2*b^3*(c + d*x)^(11/2))/(11*d^4)
```

Rubi in Sympy [A] time = 22.0214, size = 92, normalized size = 0.92

$$\frac{2b^3\left(c+dx\right)^{\frac{11}{2}}}{11d^4}+\frac{2b^2\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)}{3d^4}+\frac{6b\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^2}{7d^4}+\frac{2\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^3}{5d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**(3/2),x)
```

```
[Out] 2*b**3*(c + d*x)**(11/2)/(11*d**4) + 2*b**2*(c + d*x)**(9/2)*(a*d
 - b*c)/(3*d**4) + 6*b*(c + d*x)**(7/2)*(a*d - b*c)**2/(7*d**4) +
 2*(c + d*x)**(5/2)*(a*d - b*c)**3/(5*d**4)
```

Mathematica [A] time = 0.127866, size = 102, normalized size = 1.02

$$\frac{2(c+dx)^{5/2}\left(231a^3d^3+99a^2bd^2(5dx-2c)+11ab^2d\left(8c^2-20cdx+35d^2x^2\right)+b^3\left(-16c^3+40c^2dx-70cd^2x^2+105d^3x^3\right)\right)}{1155d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(231*a^3*d^3 + 99*a^2*b*d^2*(-2*c + 5*d*x) + 1
1*a*b^2*d*(8*c^2 - 20*c*d*x + 35*d^2*x^2) + b^3*(-16*c^3 + 40*c^2
*d*x - 70*c*d^2*x^2 + 105*d^3*x^3)))/(1155*d^4)
```

Maple [A] time = 0.009, size = 116, normalized size = 1.2

$$\frac{210\,b^3x^3d^3+770\,ab^2d^3x^2-140\,b^3cd^2x^2+990\,a^2bd^3x-440\,ab^2cd^2x+80\,b^3c^2dx+462\,a^3d^3-396\,a^2bcd^2+176\,ab^2c^2d-3}{1155\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^(3/2),x)
```

```
[Out] 2/1155*(d*x+c)^(5/2)*(105*b^3*d^3*x^3+385*a*b^2*d^3*x^2-70*b^3*c*
d^2*x^2+495*a^2*b*d^3*x-220*a*b^2*c*d^2*x+40*b^3*c^2*d*x+231*a^3*
d^3-198*a^2*b*c*d^2+88*a*b^2*c^2*d-16*b^3*c^3)/d^4
```

Maxima [A] time = 1.33774, size = 159, normalized size = 1.59

$$\frac{2\left(105\,(dx+c)^{\frac{11}{2}}b^3-385\,\left(b^3c-ab^2d\right)(dx+c)^{\frac{9}{2}}+495\,\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)(dx+c)^{\frac{7}{2}}-231\,\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2\right.}{1155\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/1155*(105*(d*x + c)^(11/2)*b^3 - 385*(b^3*c - a*b^2*d)*(d*x + c
)^(9/2) + 495*(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*(d*x + c)^(7/2)
 - 231*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*(d*x +
 c)^(5/2))/d^4
```

Fricas [A] time = 0.205688, size = 292, normalized size = 2.92

$$\frac{2\left(105\,b^3d^5x^5-16\,b^3c^5+88\,ab^2c^4d-198\,a^2bc^3d^2+231\,a^3c^2d^3+35\,\left(4\,b^3cd^4+11\,ab^2d^5\right)x^4+5\,\left(b^3c^2d^3+110\,ab^2cd^4+99\,a\right.\right.}{115}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/1155*(105*b^3*d^5*x^5 - 16*b^3*c^5 + 88*a*b^2*c^4*d - 198*a^2*b
*c^3*d^2 + 231*a^3*c^2*d^3 + 35*(4*b^3*c*d^4 + 11*a*b^2*d^5)*x^4
+ 5*(b^3*c^2*d^3 + 110*a*b^2*c*d^4 + 99*a^2*b*d^5)*x^3 - 3*(2*b^3
*c^3*d^2 - 11*a*b^2*c^2*d^3 - 264*a^2*b*c*d^4 - 77*a^3*d^5)*x^2 +
 (8*b^3*c^4*d - 44*a*b^2*c^3*d^2 + 99*a^2*b*c^2*d^3 + 462*a^3*c*d
^4)*x)*sqrt(d*x + c)/d^4
```

Sympy [A] time = 3.23418, size = 386, normalized size = 3.86

$$a^3c\left(\begin{cases}\sqrt{c}x & \text{for } d = 0\\ \frac{2(c+dx)^{\frac{3}{2}}}{3d} & \text{otherwise}\end{cases}\right) + \frac{2a^3\left(-\frac{c(c+dx)^{\frac{3}{2}}}{3} + \frac{(c+dx)^{\frac{5}{2}}}{5}\right)}{d} + \frac{6a^2bc\left(-\frac{c(c+dx)^{\frac{3}{2}}}{3} + \frac{(c+dx)^{\frac{5}{2}}}{5}\right)}{d^2} + \frac{6a^2b\left(\frac{c^2(c+dx)^{\frac{3}{2}}}{3} - \frac{2c(c+dx)^{\frac{5}{2}}}{5} + \frac{(c+dx)^{\frac{7}{2}}}{7}\right)}{d^2} + \frac{6ab^2c\left(\frac{c^2(c+dx)^{\frac{3}{2}}}{3} - \frac{2c(c+dx)^{\frac{5}{2}}}{5} + \frac{(c+dx)^{\frac{7}{2}}}{7}\right)}{d^3} + \frac{6ab^2\left(-\frac{c^3(c+dx)^{\frac{3}{2}}}{3} + \frac{3c^2(c+dx)^{\frac{5}{2}}}{5} - \frac{3c(c+dx)^{\frac{7}{2}}}{7} + \frac{(c+dx)^{\frac{9}{2}}}{9}\right)}{d^3} + \frac{2b^3c\left(-\frac{c^3(c+dx)^{\frac{3}{2}}}{3} + \frac{3c^2(c+dx)^{\frac{5}{2}}}{5} - \frac{3c(c+dx)^{\frac{7}{2}}}{7} + \frac{(c+dx)^{\frac{9}{2}}}{9}\right)}{d^4} + \frac{2b^3\left(\frac{c^4(c+dx)^{\frac{3}{2}}}{3} - \frac{4c^3(c+dx)^{\frac{5}{2}}}{5} + \frac{6c^2(c+dx)^{\frac{7}{2}}}{7} - \frac{4c(c+dx)^{\frac{9}{2}}}{9} + \frac{(c+dx)^{\frac{11}{2}}}{11}\right)}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**(3/2),x)
```

```
[Out] a**3*c*Piecewise((sqrt(c)*x, Eq(d, 0)), (2*(c + d*x)**(3/2)/(3*d)
, True)) + 2*a**3*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d
+ 6*a**2*b*c*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d**2 +
6*a**2*b*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 + (c +
 d*x)**(7/2)/7)/d**2 + 6*a*b**2*c*(c**2*(c + d*x)**(3/2)/3 - 2*c*
(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)/d**3 + 6*a*b**2*(-c**3*(
c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)**(7
/2)/7 + (c + d*x)**(9/2)/9)/d**3 + 2*b**3*c*(-c**3*(c + d*x)**(3/
2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)**(7/2)/7 + (c +
d*x)**(9/2)/9)/d**4 + 2*b**3*(c**4*(c + d*x)**(3/2)/3 - 4*c**3*(c
 + d*x)**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**(9/
2)/9 + (c + d*x)**(11/2)/11)/d**4
```

GIAC/XCAS [A] time = 0.224667, size = 517, normalized size = 5.17

$$2\left(1155\,(dx+c)^{\frac{3}{2}}a^3c+231\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)a^3+\frac{693\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)a^2bc}{d}+\frac{99\left(15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx\right.}{d^{14}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*(d*x + c)^(3/2)*a^3*c + 231*(3*(d*x + c)^(5/2) - 5*(
d*x + c)^(3/2)*c)*a^3 + 693*(3*(d*x + c)^(5/2) - 5*(d*x + c)^(3/2
)*c)*a^2*b*c/d + 99*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)
*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a*b^2*c/d^14 + 99*(15*(d*x
 + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)
*c^2*d^12)*a^2*b/d^13 + 11*(35*(d*x + c)^(9/2)*d^24 - 135*(d*x +
c)^(7/2)*c*d^24 + 189*(d*x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3
/2)*c^3*d^24)*b^3*c/d^27 + 33*(35*(d*x + c)^(9/2)*d^24 - 135*(d*x
 + c)^(7/2)*c*d^24 + 189*(d*x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)
^(3/2)*c^3*d^24)*a*b^2/d^26 + (315*(d*x + c)^(11/2)*d^40 - 1540*(
d*x + c)^(9/2)*c*d^40 + 2970*(d*x + c)^(7/2)*c^2*d^40 - 2772*(d*x
 + c)^(5/2)*c^3*d^40 + 1155*(d*x + c)^(3/2)*c^4*d^40)*b^3/d^43)/d
```

3.1390 $\int (a+bx)^2(c+dx)^{3/2}\,dx$

Optimal. Leaf size=71

$$-\frac{4b(c+dx)^{7/2}(bc-ad)}{7d^3}+\frac{2(c+dx)^{5/2}(bc-ad)^2}{5d^3}+\frac{2b^2(c+dx)^{9/2}}{9d^3}$$

```
[Out] (2*(b*c - a*d)^2*(c + d*x)^(5/2))/(5*d^3) - (4*b*(b*c - a*d)*(c +
 d*x)^(7/2))/(7*d^3) + (2*b^2*(c + d*x)^(9/2))/(9*d^3)
```

Rubi [A] time = 0.0689029, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{4b(c+dx)^{7/2}(bc-ad)}{7d^3}+\frac{2(c+dx)^{5/2}(bc-ad)^2}{5d^3}+\frac{2b^2(c+dx)^{9/2}}{9d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^(3/2),x]
```

```
[Out] (2*(b*c - a*d)^2*(c + d*x)^(5/2))/(5*d^3) - (4*b*(b*c - a*d)*(c +
 d*x)^(7/2))/(7*d^3) + (2*b^2*(c + d*x)^(9/2))/(9*d^3)
```

Rubi in Sympy [A] time = 14.6257, size = 65, normalized size = 0.92

$$\frac{2b^2\left(c+dx\right)^{\frac{9}{2}}}{9d^3}+\frac{4b\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)}{7d^3}+\frac{2\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^2}{5d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**(3/2),x)
```

```
[Out] 2*b**2*(c + d*x)**(9/2)/(9*d**3) + 4*b*(c + d*x)**(7/2)*(a*d - b*
c)/(7*d**3) + 2*(c + d*x)**(5/2)*(a*d - b*c)**2/(5*d**3)
```

Mathematica [A] time = 0.0699432, size = 61, normalized size = 0.86

$$\frac{2(c+dx)^{5/2}\left(63a^2d^2+18abd(5dx-2c)+b^2\left(8c^2-20cdx+35d^2x^2\right)\right)}{315d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(63*a^2*d^2 + 18*a*b*d*(-2*c + 5*d*x) + b^2*(8
*c^2 - 20*c*d*x + 35*d^2*x^2)))/(315*d^3)
```

Maple [A] time = 0.009, size = 63, normalized size = 0.9

$$\frac{70\,b^2x^2d^2+180\,abd^2x-40\,b^2cdx+126\,a^2d^2-72\,abcd+16\,b^2c^2}{315\,d^3}(dx+c)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^(3/2),x)
```

```
[Out] 2/315*(d*x+c)^(5/2)*(35*b^2*d^2*x^2+90*a*b*d^2*x-20*b^2*c*d*x+63*
a^2*d^2-36*a*b*c*d+8*b^2*c^2)/d^3
```

Maxima [A] time = 1.34771, size = 92, normalized size = 1.3

$$\frac{2\left(35\,(dx+c)^{\frac{9}{2}}b^2-90\,\left(b^2c-abd\right)(dx+c)^{\frac{7}{2}}+63\,\left(b^2c^2-2\,abcd+a^2d^2\right)(dx+c)^{\frac{5}{2}}\right)}{315\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*(35*(d*x + c)^(9/2)*b^2 - 90*(b^2*c - a*b*d)*(d*x + c)^(7/2
) + 63*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(d*x + c)^(5/2))/d^3
```

Fricas [A] time = 0.201468, size = 185, normalized size = 2.61

$$\frac{2\left(35\,b^2d^4x^4+8\,b^2c^4-36\,abc^3d+63\,a^2c^2d^2+10\left(5\,b^2cd^3+9\,abd^4\right)x^3+3\left(b^2c^2d^2+48\,abcd^3+21\,a^2d^4\right)x^2-2\left(2\,b^2c^3d-9\right.\right.}{315\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^2*d^4*x^4 + 8*b^2*c^4 - 36*a*b*c^3*d + 63*a^2*c^2*d^2
 + 10*(5*b^2*c*d^3 + 9*a*b*d^4)*x^3 + 3*(b^2*c^2*d^2 + 48*a*b*c*d
^3 + 21*a^2*d^4)*x^2 - 2*(2*b^2*c^3*d - 9*a*b*c^2*d^2 - 63*a^2*c*
```

```
d^3)*x)*sqrt(d*x + c)/d^3
```

Sympy [A] time = 2.63188, size = 240, normalized size = 3.38

$$a^2c\left(\begin{cases}\sqrt{c}x & \text{for } d=0\\ \frac{2(c+dx)^{\frac{3}{2}}}{3d} & \text{otherwise}\end{cases}\right)+\frac{2a^2\left(-\frac{c(c+dx)^{\frac{3}{2}}}{3}+\frac{(c+dx)^{\frac{5}{2}}}{5}\right)}{d}+\frac{4abc\left(-\frac{c(c+dx)^{\frac{3}{2}}}{3}+\frac{(c+dx)^{\frac{5}{2}}}{5}\right)}{d^2}+\frac{4ab\left(\frac{c^2(c+dx)^{\frac{3}{2}}}{3}-\frac{2c(c+dx)^{\frac{5}{2}}}{5}+\frac{(c+dx)^{\frac{7}{2}}}{7}\right)}{d^2}+\frac{2b^2c\left(\frac{c^2(c+dx)^{\frac{3}{2}}}{3}-\frac{2c(c+dx)^{\frac{5}{2}}}{5}+\frac{(c+dx)^{\frac{7}{2}}}{7}\right)}{d^3}+\frac{2b^2\left(-\frac{c^3(c+dx)^{\frac{3}{2}}}{3}+\frac{3c^2(c+dx)^{\frac{5}{2}}}{5}-\frac{3c(c+dx)^{\frac{7}{2}}}{7}+\frac{(c+dx)^{\frac{9}{2}}}{9}\right)}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**(3/2),x)
```

```
[Out] a**2*c*Piecewise((sqrt(c)*x, Eq(d, 0)), (2*(c + d*x)**(3/2)/(3*d)
, True)) + 2*a**2*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d
+ 4*a*b*c*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/5)/d**2 + 4*a
*b*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 + (c + d*x)*
*(7/2)/7)/d**2 + 2*b**2*c*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x
)**(5/2)/5 + (c + d*x)**(7/2)/7)/d**3 + 2*b**2*(-c**3*(c + d*x)**
(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)**(7/2)/7 + (c
 + d*x)**(9/2)/9)/d**3
```

GIAC/XCAS [A] time = 0.223868, size = 315, normalized size = 4.44

$$\frac{2\left(105\,(dx+c)^{\frac{3}{2}}a^2c+21\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)a^2+\frac{42\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)abc}{d}+\frac{3\left(15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx+c)^{\frac{3}{2}}\cdots\right.}{d^{14}}\cdots\right.}{315\,\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*(d*x + c)^(3/2)*a^2*c + 21*(3*(d*x + c)^(5/2) - 5*(d*x
 + c)^(3/2)*c)*a^2 + 42*(3*(d*x + c)^(5/2) - 5*(d*x + c)^(3/2)*c)
*a*b*c/d + 3*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d^12
 + 35*(d*x + c)^(3/2)*c^2*d^12)*b^2*c/d^14 + 6*(15*(d*x + c)^(7/2
)*d^12 - 42*(d*x + c)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)
*a*b/d^13 + (35*(d*x + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24
 + 189*(d*x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*b
^2/d^26)/d
```

3.1391 $\int (a+bx)(c+dx)^{3/2}\,dx$

Optimal. Leaf size=42

$$\frac{2b(c+dx)^{7/2}}{7d^2}-\frac{2(c+dx)^{5/2}(bc-ad)}{5d^2}$$

```
[Out] (-2*(b*c - a*d)*(c + d*x)^(5/2))/(5*d^2) + (2*b*(c + d*x)^(7/2))/
(7*d^2)
```

Rubi [A] time = 0.042935, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2b(c+dx)^{7/2}}{7d^2}-\frac{2(c+dx)^{5/2}(bc-ad)}{5d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^(3/2),x]
```

```
[Out] (-2*(b*c - a*d)*(c + d*x)^(5/2))/(5*d^2) + (2*b*(c + d*x)^(7/2))/
(7*d^2)
```

Rubi in Sympy [A] time = 7.49445, size = 37, normalized size = 0.88

$$\frac{2b\,(c+dx)^{\frac{7}{2}}}{7d^2}+\frac{2\,(c+dx)^{\frac{5}{2}}\,(ad-bc)}{5d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**(3/2),x)
```

```
[Out] 2*b*(c + d*x)**(7/2)/(7*d**2) + 2*(c + d*x)**(5/2)*(a*d - b*c)/(5
*d**2)
```

Mathematica [A] time = 0.0373612, size = 30, normalized size = 0.71

$$\frac{2(c+dx)^{5/2}(7ad-2bc+5bdx)}{35d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^(3/2),x]

[Out] (2*(c + d*x)^(5/2)*(-2*b*c + 7*a*d + 5*b*d*x))/(35*d^2)
```

Maple [A] time = 0.004, size = 27, normalized size = 0.6

$$\frac{10\,bdx+14\,ad-4\,bc}{35\,d^{2}}\left(dx+c\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^(3/2),x)

[Out] 2/35*(d*x+c)^(5/2)*(5*b*d*x+7*a*d-2*b*c)/d^2
```

Maxima [A] time = 1.39211, size = 45, normalized size = 1.07

$$\frac{2\left(5\left(dx+c\right)^{\frac{7}{2}}b-7\left(bc-ad\right)\left(dx+c\right)^{\frac{5}{2}}\right)}{35\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^(3/2),x, algorithm="maxima")

[Out] 2/35*(5*(d*x + c)^(7/2)*b - 7*(b*c - a*d)*(d*x + c)^(5/2))/d^2
```

Fricas [A] time = 0.203142, size = 93, normalized size = 2.21

$$\frac{2\left(5\,bd^{3}x^{3}-2\,bc^{3}+7\,ac^{2}d+\left(8\,bcd^{2}+7\,ad^{3}\right)x^{2}+\left(bc^{2}d+14\,acd^{2}\right)x\right)\sqrt{dx+c}}{35\,d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^(3/2),x, algorithm="fricas")

[Out] 2/35*(5*b*d^3*x^3 - 2*b*c^3 + 7*a*c^2*d + (8*b*c*d^2 + 7*a*d^3)*x
^2 + (b*c^2*d + 14*a*c*d^2)*x)*sqrt(d*x + c)/d^2
```

Sympy [A] time = 0.867061, size = 146, normalized size = 3.48

$$\begin{cases} \frac{2ac^2\sqrt{c+dx}}{5d} + \frac{4acx\sqrt{c+dx}}{5} + \frac{2adx^2\sqrt{c+dx}}{5} - \frac{4bc^3\sqrt{c+dx}}{35d^2} + \frac{2bc^2x\sqrt{c+dx}}{35d} + \frac{16bcx^2\sqrt{c+dx}}{35} + \frac{2bdx^3\sqrt{c+dx}}{7} & \text{for } d \neq 0 \\ c^{\frac{3}{2}}\left(ax + \frac{bx^2}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**(3/2),x)
```

```
[Out] Piecewise((2*a*c**2*sqrt(c + d*x)/(5*d) + 4*a*c*x*sqrt(c + d*x)/5
 + 2*a*d*x**2*sqrt(c + d*x)/5 - 4*b*c**3*sqrt(c + d*x)/(35*d**2)
+ 2*b*c**2*x*sqrt(c + d*x)/(35*d) + 16*b*c*x**2*sqrt(c + d*x)/35
+ 2*b*d*x**3*sqrt(c + d*x)/7, Ne(d, 0)), (c**(3/2)*(a*x + b*x**2/
2), True))
```

GIAC/XCAS [A] time = 0.221841, size = 153, normalized size = 3.64

$$\frac{2\left(35\,(dx+c)^{\frac{3}{2}}ac + 7\left(3\,(dx+c)^{\frac{5}{2}} - 5\,(dx+c)^{\frac{3}{2}}c\right)a + \frac{7\left(3\,(dx+c)^{\frac{5}{2}} - 5\,(dx+c)^{\frac{3}{2}}c\right)bc}{d} + \frac{\left(15\,(dx+c)^{\frac{7}{2}}d^{12} - 42\,(dx+c)^{\frac{5}{2}}cd^{12} + 35\,(dx+c)^{\frac{3}{2}}c^2d^{12}\right)b}{d^{13}}\right)}{105\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*(d*x + c)^(3/2)*a*c + 7*(3*(d*x + c)^(5/2) - 5*(d*x + c
)^(3/2)*c)*a + 7*(3*(d*x + c)^(5/2) - 5*(d*x + c)^(3/2)*c)*b*c/d
+ (15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d^12 + 35*(d*x
+ c)^(3/2)*c^2*d^12)*b/d^13)/d
```

3.1392 $\int (c + dx)^{3/2} \, dx$

Optimal. Leaf size=16

$$\frac{2(c + dx)^{5/2}}{5d}$$

```
[Out] (2*(c + d*x)^(5/2))/(5*d)
```

Rubi [A] time = 0.00709082, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2(c + dx)^{5/2}}{5d}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2),x]

[Out] (2*(c + d*x)^(5/2))/(5*d)
```

Rubi in Sympy [A] time = 1.33383, size = 12, normalized size = 0.75

$$\frac{2\,(c + dx)^{\frac{5}{2}}}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2),x)

[Out] 2*(c + d*x)**(5/2)/(5*d)
```

Mathematica [A] time = 0.00743417, size = 16, normalized size = 1.

$$\frac{2(c + dx)^{5/2}}{5d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(5/2))/(5*d)
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$\frac{2}{5\,d}\,(dx+c)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2),x)
```

```
[Out] 2/5*(d*x+c)^(5/2)/d
```

Maxima [A] time = 1.36479, size = 16, normalized size = 1.

$$\frac{2\,(dx+c)^{\frac{5}{2}}}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(d*x + c)^(5/2)/d
```

Fricas [A] time = 0.198105, size = 38, normalized size = 2.38

$$\frac{2\left(d^{2}x^{2}+2\,cdx+c^{2}\right)\sqrt{dx+c}}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(d^2*x^2 + 2*c*d*x + c^2)*sqrt(d*x + c)/d
```

Sympy [A] time = 0.03347, size = 12, normalized size = 0.75

$$\frac{2\,(c+dx)^{\frac{5}{2}}}{5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2),x)

[Out] 2*(c + d*x)**(5/2)/(5*d)
```

GIAC/XCAS [A] time = 0.218687, size = 16, normalized size = 1.

$$\frac{2\,(dx+c)^{\frac{5}{2}}}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2),x, algorithm="giac")

[Out] 2/5*(d*x + c)^(5/2)/d
```

3.1393 $\int \frac{(c+dx)^{3/2}}{a+bx}\,dx$

Optimal. Leaf size=86

$$-\frac{2(bc-ad)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{5/2}}+\frac{2\sqrt{c+dx}(bc-ad)}{b^2}+\frac{2(c+dx)^{3/2}}{3b}$$

```
[Out] (2*(b*c - a*d)*Sqrt[c + d*x])/b^2 + (2*(c + d*x)^(3/2))/(3*b) - (
2*(b*c - a*d)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*
d]])/b^(5/2)
```

Rubi [A] time = 0.130724, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{2(bc-ad)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{5/2}}+\frac{2\sqrt{c+dx}(bc-ad)}{b^2}+\frac{2(c+dx)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x),x]
```

```
[Out] (2*(b*c - a*d)*Sqrt[c + d*x])/b^2 + (2*(c + d*x)^(3/2))/(3*b) - (
2*(b*c - a*d)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*
d]])/b^(5/2)
```

Rubi in Sympy [A] time = 17.6618, size = 75, normalized size = 0.87

$$\frac{2\,(c+dx)^{\frac{3}{2}}}{3b}-\frac{2\sqrt{c+dx}\,(ad-bc)}{b^2}+\frac{2\,(ad-bc)^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a),x)
```

```
[Out] 2*(c + d*x)**(3/2)/(3*b) - 2*sqrt(c + d*x)*(a*d - b*c)/b**2 + 2*(
a*d - b*c)**(3/2)*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/b**
(5/2)
```

Mathematica [A] time = 0.136617, size = 77, normalized size = 0.9

$$\frac{2\sqrt{c+dx}(-3ad+4bc+bdx)}{3b^2}-\frac{2(bc-ad)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x),x]
```

```
[Out] (2*Sqrt[c + d*x]*(4*b*c - 3*a*d + b*d*x))/(3*b^2) - (2*(b*c - a*d
)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(5/2)
```

Maple [B] time = 0.01, size = 167, normalized size = 1.9

$$\frac{2}{3\,b}\,(dx+c)^{\frac{3}{2}}-2\,\frac{ad\sqrt{dx+c}}{b^2}+2\,\frac{\sqrt{dx+c}c}{b}+2\,\frac{a^2d^2}{b^2\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)-4\,\frac{acd}{b\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)+2\,\frac{c^2}{\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a),x)
```

```
[Out] 2/3*(d*x+c)^(3/2)/b-2/b^2*a*d*(d*x+c)^(1/2)+2/b*(d*x+c)^(1/2)*c+2
/b^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/
2))*a^2*d^2-4/b/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-
b*c)*b)^(1/2))*a*c*d+2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b
/((a*d-b*c)*b)^(1/2))*c^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.214365, size = 1, normalized size = 0.01

$$\left[-\frac{3\,(bc-ad)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2\,bc-ad+2\,\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right)-2\,(bdx+4\,bc-3\,ad)\sqrt{dx+c}}{3\,b^2},\; -\frac{2\left(3\,(bc-ad)\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right)-(bdx+4\,bc-3\,ad)\sqrt{dx+c}\right)}{3\,b^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(b*c - a*d)*sqrt((b*c - a*d)/b)*log((b*d*x + 2*b*c - a*d
 + 2*sqrt(d*x + c)*b*sqrt((b*c - a*d)/b))/(b*x + a)) - 2*(b*d*x +
 4*b*c - 3*a*d)*sqrt(d*x + c))/b^2, -2/3*(3*(b*c - a*d)*sqrt(-(b*
c - a*d)/b)*arctan(sqrt(d*x + c)/sqrt(-(b*c - a*d)/b)) - (b*d*x +
 4*b*c - 3*a*d)*sqrt(d*x + c))/b^2]
```

Sympy [A] time = 7.30611, size = 201, normalized size = 2.34

$$\frac{2\,(c+dx)^{\frac{3}{2}}}{3b}+\frac{\sqrt{c+dx}\,(-2ad+2bc)}{b^2}+\frac{2\,(ad-bc)^2\left(\begin{cases}\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{ad-bc}{b}}}\right)}{b\sqrt{\frac{ad-bc}{b}}} & \text{for } \frac{ad-bc}{b}>0\\ -\frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for } c+dx>\frac{-ad+bc}{b}\wedge\frac{ad-bc}{b}<0\\ -\frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for } \frac{ad-bc}{b}<0\wedge c+dx<\frac{-ad+bc}{b}\end{cases}\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a),x)
```

```
[Out] 2*(c + d*x)**(3/2)/(3*b) + sqrt(c + d*x)*(-2*a*d + 2*b*c)/b**2 +
2*(a*d - b*c)**2*Piecewise((atan(sqrt(c + d*x)/sqrt((a*d - b*c)/b
))/(b*sqrt((a*d - b*c)/b)), (a*d - b*c)/b > 0), (-acoth(sqrt(c +
d*x)/sqrt((-a*d + b*c)/b))/(b*sqrt((-a*d + b*c)/b)), ((a*d - b*c)
/b < 0) & (c + d*x > (-a*d + b*c)/b)), (-atanh(sqrt(c + d*x)/sqrt
((-a*d + b*c)/b))/(b*sqrt((-a*d + b*c)/b)), ((a*d - b*c)/b < 0) &
```

```
(c + d*x < (-a*d + b*c)/b)))/b**2
```

GIAC/XCAS [A] time = 0.222898, size = 142, normalized size = 1.65

$$\frac{2\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^{2}c+abd}}\right)}{\sqrt{-b^{2}c+abd}b^{2}}+\frac{2\left((dx+c)^{\frac{3}{2}}b^{2}+3\,\sqrt{dx+c}b^{2}c-3\,\sqrt{dx+c}abd\right)}{3\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a),x, algorithm="giac")
```

```
[Out] 2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*arctan(sqrt(d*x + c)*b/sqrt(-b^
2*c + a*b*d))/(sqrt(-b^2*c + a*b*d)*b^2) + 2/3*((d*x + c)^(3/2)*b
^2 + 3*sqrt(d*x + c)*b^2*c - 3*sqrt(d*x + c)*a*b*d)/b^3
```

3.1394 $\int \frac{(c+dx)^{3/2}}{(a+bx)^2} dx$

Optimal. Leaf size=85

$$-\frac{3d\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{5/2}}-\frac{(c+dx)^{3/2}}{b(a+bx)}+\frac{3d\sqrt{c+dx}}{b^2}$$

```
[Out] (3*d*Sqrt[c + d*x])/b^2 - (c + d*x)^(3/2)/(b*(a + b*x)) - (3*d*Sq
rt[b*c - a*d]*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b
^(5/2)
```

Rubi [A] time = 0.101582, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{3d\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{5/2}}-\frac{(c+dx)^{3/2}}{b(a+bx)}+\frac{3d\sqrt{c+dx}}{b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^2,x]
```

```
[Out] (3*d*Sqrt[c + d*x])/b^2 - (c + d*x)^(3/2)/(b*(a + b*x)) - (3*d*Sq
rt[b*c - a*d]*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b
^(5/2)
```

Rubi in Sympy [A] time = 18.0712, size = 73, normalized size = 0.86

$$-\frac{(c+dx)^{\frac{3}{2}}}{b\,(a+bx)}+\frac{3d\sqrt{c+dx}}{b^2}-\frac{3d\sqrt{ad-bc}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**2,x)
```

```
[Out] -(c + d*x)**(3/2)/(b*(a + b*x)) + 3*d*sqrt(c + d*x)/b**2 - 3*d*sq
rt(a*d - b*c)*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/b**(5/2
)
```

Mathematica [A] time = 0.144958, size = 85, normalized size = 1.

$$\sqrt{c+dx}\left(\frac{ad-bc}{b^2(a+bx)}+\frac{2d}{b^2}\right)-\frac{3d\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^2,x]
```

```
[Out] Sqrt[c + d*x]*((2*d)/b^2 + (-(b*c) + a*d)/(b^2*(a + b*x))) - (3*d
*Sqrt[b*c - a*d]*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]]
)/b^(5/2)
```

Maple [B] time = 0.019, size = 148, normalized size = 1.7

$$2\,\frac{d\sqrt{dx+c}}{b^2}+\frac{ad^2}{b^2\,(bdx+ad)}\sqrt{dx+c}-\frac{dc}{b\,(bdx+ad)}\sqrt{dx+c}$$
$$-3\,\frac{ad^2}{b^2\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)+3\,\frac{dc}{b\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^2,x)
```

```
[Out] 2*d*(d*x+c)^(1/2)/b^2+1/b^2*(d*x+c)^(1/2)/(b*d*x+a*d)*a*d^2-d/b*(
d*x+c)^(1/2)/(b*d*x+a*d)*c-3/b^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+
c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*a*d^2+3*d/b/((a*d-b*c)*b)^(1/2)*a
rctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*c
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224094, size = 1, normalized size = 0.01

$$\left[\frac{3\,(bdx+ad)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2\,bc-ad-2\,\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right)+2\,(2\,bdx-bc+3\,ad)\sqrt{dx+c}}{2\,(b^3x+ab^2)},\right.$$
$$\left.-\frac{3\,(bdx+ad)\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right)-(2\,bdx-bc+3\,ad)\sqrt{dx+c}}{b^3x+ab^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(3*(b*d*x + a*d)*sqrt((b*c - a*d)/b)*log((b*d*x + 2*b*c - a*
d - 2*sqrt(d*x + c)*b*sqrt((b*c - a*d)/b))/(b*x + a)) + 2*(2*b*d*
x - b*c + 3*a*d)*sqrt(d*x + c))/(b^3*x + a*b^2), -(3*(b*d*x + a*d
)*sqrt(-(b*c - a*d)/b)*arctan(sqrt(d*x + c)/sqrt(-(b*c - a*d)/b))
 - (2*b*d*x - b*c + 3*a*d)*sqrt(d*x + c))/(b^3*x + a*b^2)]
```

Sympy [A] time = 29.854, size = 1129, normalized size = 13.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**2,x)
```

```
[Out] 2*a**2*d**3*sqrt(c + d*x)/(2*a**2*b**2*d**2 - 2*a*b**3*c*d + 2*a*
b**3*d**2*x - 2*b**4*c*d*x) - a**2*d**3*sqrt(-1/(b*(a*d - b*c)**3
))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1
/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sq
rt(c + d*x))/(2*b**2) + a**2*d**3*sqrt(-1/(b*(a*d - b*c)**3))*log
(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*
d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c +
d*x))/(2*b**2) - 4*a*c*d**2*sqrt(c + d*x)/(2*a**2*b*d**2 - 2*a*b*
*2*c*d + 2*a*b**2*d**2*x - 2*b**3*c*d*x) + a*c*d**2*sqrt(-1/(b*(a
*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b
*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*
c)**3)) + sqrt(c + d*x))/b - a*c*d**2*sqrt(-1/(b*(a*d - b*c)**3))
*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b
*(a*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(
c + d*x))/b - 4*a*d**2*Piecewise((atan(sqrt(c + d*x)/sqrt(a*d/b -
 c))/(b*sqrt(a*d/b - c)), a*d/b - c > 0), (-acoth(sqrt(c + d*x)/s
qrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) & (c + d*x
```

```
 > -a*d/b + c)), (-atanh(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(
-a*d/b + c)), (a*d/b - c < 0) & (c + d*x < -a*d/b + c)))/b**2 - c
**2*d*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d
- b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*s
qrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/2 + c**2*d*sqrt(-1/(b
*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a
*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d -
b*c)**3)) + sqrt(c + d*x))/2 + 2*c**2*d*sqrt(c + d*x)/(2*a**2*d**
2 - 2*a*b*c*d + 2*a*b*d**2*x - 2*b**2*c*d*x) + 4*c*d*Piecewise((a
tan(sqrt(c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)), a*d/b - c
 > 0), (-acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c
)), (a*d/b - c < 0) & (c + d*x > -a*d/b + c)), (-atanh(sqrt(c + d
*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) & (c
+ d*x < -a*d/b + c)))/b + 2*d*sqrt(c + d*x)/b**2
```

GIAC/XCAS [A] time = 0.223665, size = 153, normalized size = 1.8

$$\frac{2\sqrt{dx+c}d}{b^2}+\frac{3\left(bcd-ad^2\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}b^2}-\frac{\sqrt{dx+c}bcd-\sqrt{dx+c}ad^2}{((dx+c)b-bc+ad)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 2*sqrt(d*x + c)*d/b^2 + 3*(b*c*d - a*d^2)*arctan(sqrt(d*x + c)*b/
sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*b*d)*b^2) - (sqrt(d*x + c)
*b*c*d - sqrt(d*x + c)*a*d^2)/(((d*x + c)*b - b*c + a*d)*b^2)
```

3.1395 $\int \frac{(c+dx)^{3/2}}{(a+bx)^3}\,dx$

Optimal. Leaf size=100

$$-\frac{3d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{5/2}\sqrt{bc-ad}}-\frac{3d\sqrt{c+dx}}{4b^2(a+bx)}-\frac{(c+dx)^{3/2}}{2b(a+bx)^2}$$

```
[Out] (-3*d*Sqrt[c + d*x])/(4*b^2*(a + b*x)) - (c + d*x)^(3/2)/(2*b*(a
+ b*x)^2) - (3*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d
]])/(4*b^(5/2)*Sqrt[b*c - a*d])
```

Rubi [A] time = 0.120321, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{3d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{5/2}\sqrt{bc-ad}}-\frac{3d\sqrt{c+dx}}{4b^2(a+bx)}-\frac{(c+dx)^{3/2}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^3,x]
```

```
[Out] (-3*d*Sqrt[c + d*x])/(4*b^2*(a + b*x)) - (c + d*x)^(3/2)/(2*b*(a
+ b*x)^2) - (3*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d
]])/(4*b^(5/2)*Sqrt[b*c - a*d])
```

Rubi in Sympy [A] time = 19.0541, size = 87, normalized size = 0.87

$$-\frac{(c+dx)^{\frac{3}{2}}}{2b\,(a+bx)^2}-\frac{3d\sqrt{c+dx}}{4b^2\,(a+bx)}+\frac{3d^2\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4b^{\frac{5}{2}}\sqrt{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**3,x)
```

```
[Out] -(c + d*x)**(3/2)/(2*b*(a + b*x)**2) - 3*d*sqrt(c + d*x)/(4*b**2*
(a + b*x)) + 3*d**2*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(
4*b**(5/2)*sqrt(a*d - b*c))
```

Mathematica [A] time = 0.110736, size = 90, normalized size = 0.9

$$-\frac{3d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{5/2}\sqrt{bc-ad}}-\frac{\sqrt{c+dx}(3ad+2bc+5bdx)}{4b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^3,x]
```

```
[Out] -(Sqrt[c + d*x]*(2*b*c + 3*a*d + 5*b*d*x))/(4*b^2*(a + b*x)^2) -
(3*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*b^(5/
2)*Sqrt[b*c - a*d])
```

Maple [A] time = 0.017, size = 121, normalized size = 1.2

$$-\frac{5\,d^2}{4\,(bdx+ad)^2\,b}(dx+c)^{\frac{3}{2}}-\frac{3\,d^3a}{4\,(bdx+ad)^2\,b^2}\sqrt{dx+c}+\frac{3\,d^2c}{4\,(bdx+ad)^2\,b}\sqrt{dx+c}+\frac{3\,d^2}{4\,b^2}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^3,x)
```

```
[Out] -5/4*d^2/(b*d*x+a*d)^2/b*(d*x+c)^(3/2)-3/4*d^3/(b*d*x+a*d)^2/b^2*
(d*x+c)^(1/2)*a+3/4*d^2/(b*d*x+a*d)^2/b*(d*x+c)^(1/2)*c+3/4*d^2/b
^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2)
)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.234609, size = 1, normalized size = 0.01

$$\left[-\frac{2\sqrt{b^2c-abd}(5\,bdx+2\,bc+3\,ad)\sqrt{dx+c}-3\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\log\left(\frac{\sqrt{b^2c-abd}(bdx+2\,bc-ad)-2\left(b^2c-abd\right)\sqrt{dx+c}}{bx+a}\right)}{8\left(b^4x^2+2\,ab^3x+a^2b^2\right)\sqrt{b^2c-abd}},\right.$$
$$\left.-\frac{\sqrt{-b^2c+abd}(5\,bdx+2\,bc+3\,ad)\sqrt{dx+c}+3\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\arctan\left(-\frac{bc-ad}{\sqrt{-b^2c+abd}\sqrt{dx+c}}\right)}{4\left(b^4x^2+2\,ab^3x+a^2b^2\right)\sqrt{-b^2c+abd}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(2*sqrt(b^2*c - a*b*d)*(5*b*d*x + 2*b*c + 3*a*d)*sqrt(d*x +
 c) - 3*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log((sqrt(b^2*c - a
*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b
*x + a)))/((b^4*x^2 + 2*a*b^3*x + a^2*b^2)*sqrt(b^2*c - a*b*d)),
-1/4*(sqrt(-b^2*c + a*b*d)*(5*b*d*x + 2*b*c + 3*a*d)*sqrt(d*x + c
) + 3*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*arctan(-(b*c - a*d)/(
sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))))/((b^4*x^2 + 2*a*b^3*x + a^2
*b^2)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.233498, size = 146, normalized size = 1.46

$$\frac{3\,d^2\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{4\sqrt{-b^2c+abd}b^2}-\frac{5\,(dx+c)^{\frac{3}{2}}bd^2-3\sqrt{dx+c}bcd^2+3\sqrt{dx+c}ad^3}{4\left((dx+c)b-bc+ad\right)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 3/4*d^2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c
 + a*b*d)*b^2) - 1/4*(5*(d*x + c)^(3/2)*b*d^2 - 3*sqrt(d*x + c)*b
*c*d^2 + 3*sqrt(d*x + c)*a*d^3)/(((d*x + c)*b - b*c + a*d)^2*b^2)
```

3.1396 $\int \frac{(c+dx)^{3/2}}{(a+bx)^4}\,dx$

Optimal. Leaf size=136

$$\frac{d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{5/2}(bc-ad)^{3/2}}-\frac{d^2\sqrt{c+dx}}{8b^2(a+bx)(bc-ad)}-\frac{d\sqrt{c+dx}}{4b^2(a+bx)^2}-\frac{(c+dx)^{3/2}}{3b(a+bx)^3}$$

```
[Out] -(d*Sqrt[c + d*x])/(4*b^2*(a + b*x)^2) - (d^2*Sqrt[c + d*x])/(8*b
^2*(b*c - a*d)*(a + b*x)) - (c + d*x)^(3/2)/(3*b*(a + b*x)^3) + (
d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(5/2)*
(b*c - a*d)^(3/2))
```

Rubi [A] time = 0.167535, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{5/2}(bc-ad)^{3/2}}-\frac{d^2\sqrt{c+dx}}{8b^2(a+bx)(bc-ad)}-\frac{d\sqrt{c+dx}}{4b^2(a+bx)^2}-\frac{(c+dx)^{3/2}}{3b(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^4,x]
```

```
[Out] -(d*Sqrt[c + d*x])/(4*b^2*(a + b*x)^2) - (d^2*Sqrt[c + d*x])/(8*b
^2*(b*c - a*d)*(a + b*x)) - (c + d*x)^(3/2)/(3*b*(a + b*x)^3) + (
d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(5/2)*
(b*c - a*d)^(3/2))
```

Rubi in Sympy [A] time = 27.9521, size = 114, normalized size = 0.84

$$-\frac{(c+dx)^{\frac{3}{2}}}{3b\,(a+bx)^3}+\frac{d^2\sqrt{c+dx}}{8b^2\,(a+bx)\,(ad-bc)}-\frac{d\sqrt{c+dx}}{4b^2\,(a+bx)^2}+\frac{d^3\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{8b^{\frac{5}{2}}\,(ad-bc)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**4,x)
```

```
[Out] -(c + d*x)**(3/2)/(3*b*(a + b*x)**3) + d**2*sqrt(c + d*x)/(8*b**2
*(a + b*x)*(a*d - b*c)) - d*sqrt(c + d*x)/(4*b**2*(a + b*x)**2) +
 d**3*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(8*b**(5/2)*(a*
d - b*c)**(3/2))
```

Mathematica [A] time = 0.178702, size = 128, normalized size = 0.94

$$\frac{d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{5/2}(bc-ad)^{3/2}}+\sqrt{c+dx}\left(-\frac{d^2}{8b^2(a+bx)(bc-ad)}+\frac{ad-bc}{3b^2(a+bx)^3}-\frac{7d}{12b^2(a+bx)^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^4,x]
```

```
[Out] Sqrt[c + d*x]*((-(b*c) + a*d)/(3*b^2*(a + b*x)^3) - (7*d)/(12*b^2
*(a + b*x)^2) - d^2/(8*b^2*(b*c - a*d)*(a + b*x))) + (d^3*ArcTanh
[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(5/2)*(b*c - a*d)
^(3/2))
```

Maple [A] time = 0.02, size = 163, normalized size = 1.2

$$\frac{d^3}{8\,(bdx+ad)^3\,(ad-bc)}(dx+c)^{\frac{5}{2}}-\frac{d^3}{3\,(bdx+ad)^3\,b}(dx+c)^{\frac{3}{2}}-\frac{d^4a}{8\,(bdx+ad)^3\,b^2}\sqrt{dx+c}+\frac{d^3c}{8\,(bdx+ad)^3\,b}\sqrt{dx+c}+\frac{d^3}{(8\,ad-8\,bc)\,b^2}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^4,x)
```

```
[Out] 1/8*d^3/(b*d*x+a*d)^3/(a*d-b*c)*(d*x+c)^(5/2)-1/3*d^3/(b*d*x+a*d)
^3/b*(d*x+c)^(3/2)-1/8*d^4/(b*d*x+a*d)^3/b^2*(d*x+c)^(1/2)*a+1/8*
d^3/(b*d*x+a*d)^3/b*(d*x+c)^(1/2)*c+1/8*d^3/(a*d-b*c)/b^2/((a*d-b
*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.235603, size = 1, normalized size = 0.01

$$\left[-\frac{2\left(3\,b^{2}d^{2}x^{2}+8\,b^{2}c^{2}-2\,abcd-3\,a^{2}d^{2}+2\left(7\,b^{2}cd-4\,abd^{2}\right)x\right)\sqrt{b^{2}c-abd}\sqrt{dx+c}+3\left(b^{3}d^{3}x^{3}+3\,ab^{2}d^{3}x^{2}+3\,a^{2}bd^{3}x+\right.}{48\left(a^{3}b^{3}c-a^{4}b^{2}d+(b^{6}c-ab^{5}d)x^{3}+3\,(ab^{5}c-a^{2}b^{4}d)x^{2}+3\,(a^{2}b^{4}c-a^{3}b^{3}d)x\right)\sqrt{}}\right.$$

$$-\frac{\left(3\,b^{2}d^{2}x^{2}+8\,b^{2}c^{2}-2\,abcd-3\,a^{2}d^{2}+2\left(7\,b^{2}cd-4\,abd^{2}\right)x\right)\sqrt{-b^{2}c+abd}\sqrt{dx+c}-3\left(b^{3}d^{3}x^{3}+3\,ab^{2}d^{3}x^{2}+3\,a^{2}bd^{3}x+a\right.}{24\left(a^{3}b^{3}c-a^{4}b^{2}d+(b^{6}c-ab^{5}d)x^{3}+3\,(ab^{5}c-a^{2}b^{4}d)x^{2}+3\,(a^{2}b^{4}c-a^{3}b^{3}d)x\right)\sqrt{-b^{2}c+abd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] [-1/48*(2*(3*b^2*d^2*x^2 + 8*b^2*c^2 - 2*a*b*c*d - 3*a^2*d^2 + 2*
(7*b^2*c*d - 4*a*b*d^2)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c) + 3*
(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log((sq
rt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(
d*x + c))/(b*x + a)))/((a^3*b^3*c - a^4*b^2*d + (b^6*c - a*b^5*d)
*x^3 + 3*(a*b^5*c - a^2*b^4*d)*x^2 + 3*(a^2*b^4*c - a^3*b^3*d)*x)
*sqrt(b^2*c - a*b*d)), -1/24*((3*b^2*d^2*x^2 + 8*b^2*c^2 - 2*a*b*
c*d - 3*a^2*d^2 + 2*(7*b^2*c*d - 4*a*b*d^2)*x)*sqrt(-b^2*c + a*b*
d)*sqrt(d*x + c) - 3*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3
*x + a^3*d^3)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x
+ c))))/((a^3*b^3*c - a^4*b^2*d + (b^6*c - a*b^5*d)*x^3 + 3*(a*b^
5*c - a^2*b^4*d)*x^2 + 3*(a^2*b^4*c - a^3*b^3*d)*x)*sqrt(-b^2*c +
 a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.230435, size = 250, normalized size = 1.84

$$-\frac{d^{3}\arctan\left(\frac{\sqrt{dx+c}\,b}{\sqrt{-b^{2}c+abd}}\right)}{8\,(b^{3}c-ab^{2}d)\sqrt{-b^{2}c+abd}}-\frac{3\,(dx+c)^{\frac{5}{2}}b^{2}d^{3}+8\,(dx+c)^{\frac{3}{2}}b^{2}cd^{3}-3\,\sqrt{dx+c}b^{2}c^{2}d^{3}-8\,(dx+c)^{\frac{3}{2}}abd^{4}+6\,\sqrt{dx+c}abcd^{4}-3\,\sqrt{dx+c}a^{2}d^{5}}{24\,(b^{3}c-ab^{2}d)((dx+c)b-bc+ad)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] -1/8*d^3*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^3*c - a
*b^2*d)*sqrt(-b^2*c + a*b*d)) - 1/24*(3*(d*x + c)^(5/2)*b^2*d^3 +
 8*(d*x + c)^(3/2)*b^2*c*d^3 - 3*sqrt(d*x + c)*b^2*c^2*d^3 - 8*(d
*x + c)^(3/2)*a*b*d^4 + 6*sqrt(d*x + c)*a*b*c*d^4 - 3*sqrt(d*x +
c)*a^2*d^5)/((b^3*c - a*b^2*d)*((d*x + c)*b - b*c + a*d)^3)
```

3.1397 $\int \frac{(c+dx)^{3/2}}{(a+bx)^5}\,dx$

Optimal. Leaf size=172

$$-\frac{3d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{5/2}(bc-ad)^{5/2}}+\frac{3d^3\sqrt{c+dx}}{64b^2(a+bx)(bc-ad)^2}-\frac{d^2\sqrt{c+dx}}{32b^2(a+bx)^2(bc-ad)}-\frac{d\sqrt{c+dx}}{8b^2(a+bx)^3}-\frac{(c+dx)^{3/2}}{4b(a+bx)^4}$$

```
[Out] -(d*Sqrt[c + d*x])/(8*b^2*(a + b*x)^3) - (d^2*Sqrt[c + d*x])/(32*
b^2*(b*c - a*d)*(a + b*x)^2) + (3*d^3*Sqrt[c + d*x])/(64*b^2*(b*c
 - a*d)^2*(a + b*x)) - (c + d*x)^(3/2)/(4*b*(a + b*x)^4) - (3*d^4
*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(64*b^(5/2)*(b
*c - a*d)^(5/2))
```

Rubi [A] time = 0.212483, antiderivative size = 172, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{3d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{5/2}(bc-ad)^{5/2}}+\frac{3d^3\sqrt{c+dx}}{64b^2(a+bx)(bc-ad)^2}-\frac{d^2\sqrt{c+dx}}{32b^2(a+bx)^2(bc-ad)}-\frac{d\sqrt{c+dx}}{8b^2(a+bx)^3}-\frac{(c+dx)^{3/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^5,x]
```

```
[Out] -(d*Sqrt[c + d*x])/(8*b^2*(a + b*x)^3) - (d^2*Sqrt[c + d*x])/(32*
b^2*(b*c - a*d)*(a + b*x)^2) + (3*d^3*Sqrt[c + d*x])/(64*b^2*(b*c
 - a*d)^2*(a + b*x)) - (c + d*x)^(3/2)/(4*b*(a + b*x)^4) - (3*d^4
*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(64*b^(5/2)*(b
*c - a*d)^(5/2))
```

Rubi in Sympy [A] time = 40.1706, size = 150, normalized size = 0.87

$$-\frac{(c+dx)^{\frac{3}{2}}}{4b\,(a+bx)^4}+\frac{3d^3\sqrt{c+dx}}{64b^2\,(a+bx)\,(ad-bc)^2}+\frac{d^2\sqrt{c+dx}}{32b^2\,(a+bx)^2\,(ad-bc)}-\frac{d\sqrt{c+dx}}{8b^2\,(a+bx)^3}+\frac{3d^4\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{64b^{\frac{5}{2}}\,(ad-bc)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**5,x)
```

```
[Out] -(c + d*x)**(3/2)/(4*b*(a + b*x)**4) + 3*d**3*sqrt(c + d*x)/(64*b
**2*(a + b*x)*(a*d - b*c)**2) + d**2*sqrt(c + d*x)/(32*b**2*(a +
b*x)**2*(a*d - b*c)) - d*sqrt(c + d*x)/(8*b**2*(a + b*x)**3) + 3*
```

```
d**4*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(64*b**(5/2)*(a*
d - b*c)**(5/2))
```

Mathematica [A] time = 0.243253, size = 149, normalized size = 0.87

$$-\frac{3d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{5/2}(bc-ad)^{5/2}}-\frac{\sqrt{c+dx}\left(2d^2(a+bx)^2(bc-ad)+24d(a+bx)(bc-ad)^2+16(bc-ad)^3-3d^3(a+bx)^3\right)}{64b^2(a+bx)^4(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^5,x]
```

```
[Out] -(Sqrt[c + d*x]*(16*(b*c - a*d)^3 + 24*d*(b*c - a*d)^2*(a + b*x)
+ 2*d^2*(b*c - a*d)*(a + b*x)^2 - 3*d^3*(a + b*x)^3))/(64*b^2*(b*
c - a*d)^2*(a + b*x)^4) - (3*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/
Sqrt[b*c - a*d]])/(64*b^(5/2)*(b*c - a*d)^(5/2))
```

Maple [A] time = 0.023, size = 222, normalized size = 1.3

$$\frac{3\,d^4b}{64\,(bdx+ad)^4\,(a^2d^2-2\,abcd+b^2c^2)}(dx+c)^{\frac{7}{2}}+\frac{11\,d^4}{64\,(bdx+ad)^4\,(ad-bc)}(dx+c)^{\frac{5}{2}}-\frac{11\,d^4}{64\,(bdx+ad)^4\,b}(dx+c)^{\frac{3}{2}}-\frac{3\,d^5a}{64\,(bdx+ad)^4\,b^2}\sqrt{dx+c}+\frac{3\,d^4c}{64\,(bdx+ad)^4\,b}\sqrt{dx+c}+\frac{3\,d^4}{(64\,a^2d^2-128\,abcd+64\,b^2c^2)\,b^2}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^5,x)
```

```
[Out] 3/64*d^4/(b*d*x+a*d)^4*b/(a^2*d^2-2*a*b*c*d+b^2*c^2)*(d*x+c)^(7/2
)+11/64*d^4/(b*d*x+a*d)^4/(a*d-b*c)*(d*x+c)^(5/2)-11/64*d^4/(b*d*
x+a*d)^4/b*(d*x+c)^(3/2)-3/64*d^5/(b*d*x+a*d)^4/b^2*(d*x+c)^(1/2)
*a+3/64*d^4/(b*d*x+a*d)^4/b*(d*x+c)^(1/2)*c+3/64*d^4/(a^2*d^2-2*a
*b*c*d+b^2*c^2)/b^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((
a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240447, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] [1/128*(2*(3*b^3*d^3*x^3 - 16*b^3*c^3 + 24*a*b^2*c^2*d - 2*a^2*b*
c*d^2 - 3*a^3*d^3 - (2*b^3*c*d^2 - 11*a*b^2*d^3)*x^2 - (24*b^3*c^
2*d - 44*a*b^2*c*d^2 + 11*a^2*b*d^3)*x)*sqrt(b^2*c - a*b*d)*sqrt(
d*x + c) + 3*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 +
 4*a^3*b*d^4*x + a^4*d^4)*log((sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c
 - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)))/((a^4*b^4*
c^2 - 2*a^5*b^3*c*d + a^6*b^2*d^2 + (b^8*c^2 - 2*a*b^7*c*d + a^2*
b^6*d^2)*x^4 + 4*(a*b^7*c^2 - 2*a^2*b^6*c*d + a^3*b^5*d^2)*x^3 +
6*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)*x^2 + 4*(a^3*b^5*c^
2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*x)*sqrt(b^2*c - a*b*d)), 1/64*((
3*b^3*d^3*x^3 - 16*b^3*c^3 + 24*a*b^2*c^2*d - 2*a^2*b*c*d^2 - 3*a
^3*d^3 - (2*b^3*c*d^2 - 11*a*b^2*d^3)*x^2 - (24*b^3*c^2*d - 44*a*
b^2*c*d^2 + 11*a^2*b*d^3)*x)*sqrt(-b^2*c + a*b*d)*sqrt(d*x + c) -
 3*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d
^4*x + a^4*d^4)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*
x + c))))/((a^4*b^4*c^2 - 2*a^5*b^3*c*d + a^6*b^2*d^2 + (b^8*c^2
- 2*a*b^7*c*d + a^2*b^6*d^2)*x^4 + 4*(a*b^7*c^2 - 2*a^2*b^6*c*d +
 a^3*b^5*d^2)*x^3 + 6*(a^2*b^6*c^2 - 2*a^3*b^5*c*d + a^4*b^4*d^2)
*x^2 + 4*(a^3*b^5*c^2 - 2*a^4*b^4*c*d + a^5*b^3*d^2)*x)*sqrt(-b^2
*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.233422, size = 385, normalized size = 2.24

$$\frac{3\,d^4\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{64\,(b^4c^2-2\,ab^3cd+a^2b^2d^2)\sqrt{-b^2c+abd}}+\frac{3\,(dx+c)^{\frac{7}{2}}b^3d^4-11\,(dx+c)^{\frac{5}{2}}b^3cd^4-11\,(dx+c)^{\frac{3}{2}}b^3c^2d^4+3\,\sqrt{dx+c}b^3c^3d^4+11\,(dx+c)^{\frac{5}{2}}ab^2d^5+22\,(dx+c)^{\frac{3}{2}}ab^2cd^5-9}{64\,(b^4c^2-2\,ab^3cd+a^2b^2d^2)((dx+c)b-bc+ad)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] 3/64*d^4*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^4*c^2 -
 2*a*b^3*c*d + a^2*b^2*d^2)*sqrt(-b^2*c + a*b*d)) + 1/64*(3*(d*x
+ c)^(7/2)*b^3*d^4 - 11*(d*x + c)^(5/2)*b^3*c*d^4 - 11*(d*x + c)^
(3/2)*b^3*c^2*d^4 + 3*sqrt(d*x + c)*b^3*c^3*d^4 + 11*(d*x + c)^(5
/2)*a*b^2*d^5 + 22*(d*x + c)^(3/2)*a*b^2*c*d^5 - 9*sqrt(d*x + c)*
a*b^2*c^2*d^5 - 11*(d*x + c)^(3/2)*a^2*b*d^6 + 9*sqrt(d*x + c)*a^
2*b*c*d^6 - 3*sqrt(d*x + c)*a^3*d^7)/((b^4*c^2 - 2*a*b^3*c*d + a^
2*b^2*d^2)*((d*x + c)*b - b*c + a*d)^4)
```

3.1398 $\int \frac{(c+dx)^{3/2}}{(a+bx)^6}\,dx$

Optimal. Leaf size=208

$$\frac{3d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{5/2}(bc-ad)^{7/2}}-\frac{3d^4\sqrt{c+dx}}{128b^2(a+bx)(bc-ad)^3}+\frac{d^3\sqrt{c+dx}}{64b^2(a+bx)^2(bc-ad)^2}-\frac{d^2\sqrt{c+dx}}{80b^2(a+bx)^3(bc-ad)}-\frac{3d\sqrt{c+dx}}{40b^2(a+bx)^4}-\frac{(c+dx)^{3/2}}{5b(a+bx)^5}$$

```
[Out] (-3*d*Sqrt[c + d*x])/(40*b^2*(a + b*x)^4) - (d^2*Sqrt[c + d*x])/(
80*b^2*(b*c - a*d)*(a + b*x)^3) + (d^3*Sqrt[c + d*x])/(64*b^2*(b*
c - a*d)^2*(a + b*x)^2) - (3*d^4*Sqrt[c + d*x])/(128*b^2*(b*c - a
*d)^3*(a + b*x)) - (c + d*x)^(3/2)/(5*b*(a + b*x)^5) + (3*d^5*Arc
Tanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(5/2)*(b*c
- a*d)^(7/2))
```

Rubi [A] time = 0.272974, antiderivative size = 208, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$\frac{3d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{5/2}(bc-ad)^{7/2}}-\frac{3d^4\sqrt{c+dx}}{128b^2(a+bx)(bc-ad)^3}+\frac{d^3\sqrt{c+dx}}{64b^2(a+bx)^2(bc-ad)^2}-\frac{d^2\sqrt{c+dx}}{80b^2(a+bx)^3(bc-ad)}-\frac{3d\sqrt{c+dx}}{40b^2(a+bx)^4}-\frac{(c+dx)^{3/2}}{5b(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^6,x]
```

```
[Out] (-3*d*Sqrt[c + d*x])/(40*b^2*(a + b*x)^4) - (d^2*Sqrt[c + d*x])/(
80*b^2*(b*c - a*d)*(a + b*x)^3) + (d^3*Sqrt[c + d*x])/(64*b^2*(b*
c - a*d)^2*(a + b*x)^2) - (3*d^4*Sqrt[c + d*x])/(128*b^2*(b*c - a
*d)^3*(a + b*x)) - (c + d*x)^(3/2)/(5*b*(a + b*x)^5) + (3*d^5*Arc
Tanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(5/2)*(b*c
- a*d)^(7/2))
```

Rubi in Sympy [A] time = 53.8691, size = 184, normalized size = 0.88

$$-\frac{(c+dx)^{\frac{3}{2}}}{5b\,(a+bx)^5}+\frac{3d^4\sqrt{c+dx}}{128b^2\,(a+bx)\,(ad-bc)^3}+\frac{d^3\sqrt{c+dx}}{64b^2\,(a+bx)^2\,(ad-bc)^2}+\frac{d^2\sqrt{c+dx}}{80b^2\,(a+bx)^3\,(ad-bc)}-\frac{3d\sqrt{c+dx}}{40b^2\,(a+bx)^4}+\frac{3d^5\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{128b^{\frac{5}{2}}\,(ad-bc)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**6,x)
```

```
[Out] -(c + d*x)**(3/2)/(5*b*(a + b*x)**5) + 3*d**4*sqrt(c + d*x)/(128*
b**2*(a + b*x)*(a*d - b*c)**3) + d**3*sqrt(c + d*x)/(64*b**2*(a +
 b*x)**2*(a*d - b*c)**2) + d**2*sqrt(c + d*x)/(80*b**2*(a + b*x)*
*3*(a*d - b*c)) - 3*d*sqrt(c + d*x)/(40*b**2*(a + b*x)**4) + 3*d*
*5*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(128*b**(5/2)*(a*d
 - b*c)**(7/2))
```

Mathematica [A] time = 0.50343, size = 171, normalized size = 0.82

$$\frac{3d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{5/2}(bc-ad)^{7/2}}-\frac{\sqrt{c+dx}\left(10d^3(a+bx)^3(ad-bc)+8d^2(a+bx)^2(bc-ad)^2+176d(a+bx)(bc-ad)^3+128(bc-ad)^4+15d^4(a+bx)^4\right)}{640b^2(a+bx)^5(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^6,x]
```

```
[Out] -(Sqrt[c + d*x]*(128*(b*c - a*d)^4 + 176*d*(b*c - a*d)^3*(a + b*x
) + 8*d^2*(b*c - a*d)^2*(a + b*x)^2 + 10*d^3*(-(b*c) + a*d)*(a +
b*x)^3 + 15*d^4*(a + b*x)^4))/(640*b^2*(b*c - a*d)^3*(a + b*x)^5)
 + (3*d^5*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*
b^(5/2)*(b*c - a*d)^(7/2))
```

Maple [A] time = 0.024, size = 300, normalized size = 1.4

$$\frac{3\,d^5b^2}{128\,(bdx+ad)^5\,(a^3d^3-3\,a^2bcd^2+3\,ab^2c^2d-b^3c^3)}(dx+c)^{\frac{9}{2}}+\frac{7\,d^5b}{64\,(bdx+ad)^5\,(a^2d^2-2\,abcd+b^2c^2)}(dx+c)^{\frac{7}{2}}+\frac{d^5}{5\,(bdx+ad)^5\,(ad-bc)}(dx+c)^{\frac{5}{2}}-\frac{7\,d^5}{64\,(bdx+ad)^5\,b}(dx+c)^{\frac{3}{2}}-\frac{3\,d^6a}{128\,(bdx+ad)^5\,b^2}\sqrt{dx+c}+\frac{3\,d^5c}{128\,(bdx+ad)^5\,b}\sqrt{dx+c}+\frac{3\,d^5}{(128\,a^3d^3-384\,a^2bcd^2+384\,ab^2c^2d-128\,b^3c^3)\,b^2}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^6,x)
```

```
[Out] 3/128*d^5/(b*d*x+a*d)^5*b^2/(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-
b^3*c^3)*(d*x+c)^(9/2)+7/64*d^5/(b*d*x+a*d)^5*b/(a^2*d^2-2*a*b*c*
d+b^2*c^2)*(d*x+c)^(7/2)+1/5*d^5/(b*d*x+a*d)^5/(a*d-b*c)*(d*x+c)^
(5/2)-7/64*d^5/(b*d*x+a*d)^5/b*(d*x+c)^(3/2)-3/128*d^6/(b*d*x+a*d
)^5/b^2*(d*x+c)^(1/2)*a+3/128*d^5/(b*d*x+a*d)^5/b*(d*x+c)^(1/2)*c
+3/128*d^5/(a^3*d^3-3*a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)/b^2/((a*
d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.243816, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] [-1/1280*(2*(15*b^4*d^4*x^4 + 128*b^4*c^4 - 336*a*b^3*c^3*d + 248
*a^2*b^2*c^2*d^2 - 10*a^3*b*c*d^3 - 15*a^4*d^4 - 10*(b^4*c*d^3 -
7*a*b^3*d^4)*x^3 + 2*(4*b^4*c^2*d^2 - 23*a*b^3*c*d^3 + 64*a^2*b^2
*d^4)*x^2 + 2*(88*b^4*c^3*d - 256*a*b^3*c^2*d^2 + 233*a^2*b^2*c*d
^3 - 35*a^3*b*d^4)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c) + 15*(b^5
*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*
x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log((sqrt(b^2*c - a*b*d)*(b*d*x +
2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)))/((a^5
*b^5*c^3 - 3*a^6*b^4*c^2*d + 3*a^7*b^3*c*d^2 - a^8*b^2*d^3 + (b^1
0*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*x^5 + 5*(a
*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*x^4 +
 10*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b^5*d^
3)*x^3 + 10*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2 - a^
6*b^4*d^3)*x^2 + 5*(a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^4*c*d
^2 - a^7*b^3*d^3)*x)*sqrt(b^2*c - a*b*d)), -1/640*((15*b^4*d^4*x^
4 + 128*b^4*c^4 - 336*a*b^3*c^3*d + 248*a^2*b^2*c^2*d^2 - 10*a^3*
b*c*d^3 - 15*a^4*d^4 - 10*(b^4*c*d^3 - 7*a*b^3*d^4)*x^3 + 2*(4*b^
4*c^2*d^2 - 23*a*b^3*c*d^3 + 64*a^2*b^2*d^4)*x^2 + 2*(88*b^4*c^3*
d - 256*a*b^3*c^2*d^2 + 233*a^2*b^2*c*d^3 - 35*a^3*b*d^4)*x)*sqrt
(-b^2*c + a*b*d)*sqrt(d*x + c) - 15*(b^5*d^5*x^5 + 5*a*b^4*d^5*x^
4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d^5*x + a^5
```

```
*d^5)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))))/
((a^5*b^5*c^3 - 3*a^6*b^4*c^2*d + 3*a^7*b^3*c*d^2 - a^8*b^2*d^3 +
 (b^10*c^3 - 3*a*b^9*c^2*d + 3*a^2*b^8*c*d^2 - a^3*b^7*d^3)*x^5 +
 5*(a*b^9*c^3 - 3*a^2*b^8*c^2*d + 3*a^3*b^7*c*d^2 - a^4*b^6*d^3)*
x^4 + 10*(a^2*b^8*c^3 - 3*a^3*b^7*c^2*d + 3*a^4*b^6*c*d^2 - a^5*b
^5*d^3)*x^3 + 10*(a^3*b^7*c^3 - 3*a^4*b^6*c^2*d + 3*a^5*b^5*c*d^2
 - a^6*b^4*d^3)*x^2 + 5*(a^4*b^6*c^3 - 3*a^5*b^5*c^2*d + 3*a^6*b^
4*c*d^2 - a^7*b^3*d^3)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.233644, size = 554, normalized size = 2.66

$$-\frac{3\, d^5 \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{128\,(b^5c^3 - 3\,ab^4c^2d + 3\,a^2b^3cd^2 - a^3b^2d^3)\sqrt{-b^2c+abd}} - \frac{15\,(dx+c)^{\frac{9}{2}}b^4d^5 - 70\,(dx+c)^{\frac{7}{2}}b^4cd^5 + 128\,(dx+c)^{\frac{5}{2}}b^4c^2d^5 + 70\,(dx+c)^{\frac{3}{2}}b^4c^3d^5 - 15\,\sqrt{dx+c}b^4c^4d^5 + 70\,(dx+c)^{\frac{7}{2}}ab^3d^6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^6,x, algorithm="giac")
```

```
[Out] -3/128*d^5*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^5*c^3
 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*sqrt(-b^2*c + a
*b*d)) - 1/640*(15*(d*x + c)^(9/2)*b^4*d^5 - 70*(d*x + c)^(7/2)*b
^4*c*d^5 + 128*(d*x + c)^(5/2)*b^4*c^2*d^5 + 70*(d*x + c)^(3/2)*b
^4*c^3*d^5 - 15*sqrt(d*x + c)*b^4*c^4*d^5 + 70*(d*x + c)^(7/2)*a*
b^3*d^6 - 256*(d*x + c)^(5/2)*a*b^3*c*d^6 - 210*(d*x + c)^(3/2)*a
*b^3*c^2*d^6 + 60*sqrt(d*x + c)*a*b^3*c^3*d^6 + 128*(d*x + c)^(5/
2)*a^2*b^2*d^7 + 210*(d*x + c)^(3/2)*a^2*b^2*c*d^7 - 90*sqrt(d*x
+ c)*a^2*b^2*c^2*d^7 - 70*(d*x + c)^(3/2)*a^3*b*d^8 + 60*sqrt(d*x
 + c)*a^3*b*c*d^8 - 15*sqrt(d*x + c)*a^4*d^9)/((b^5*c^3 - 3*a*b^4
*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*((d*x + c)*b - b*c + a*d)
^5)
```

3.1399 $\int (a+bx)^5(c+dx)^{5/2}\,dx$

Optimal. Leaf size=158

$$-\frac{2b^4(c+dx)^{15/2}(bc-ad)}{3d^6}+\frac{20b^3(c+dx)^{13/2}(bc-ad)^2}{13d^6}-\frac{20b^2(c+dx)^{11/2}(bc-ad)^3}{11d^6}+\frac{10b(c+dx)^{9/2}(bc-ad)^4}{9d^6}-\frac{2(c+dx)^{7/2}(bc-ad)^5}{7d^6}+\frac{2b^5(c+dx)^{17/2}}{17d^6}$$

```
[Out] (-2*(b*c - a*d)^5*(c + d*x)^(7/2))/(7*d^6) + (10*b*(b*c - a*d)^4*
(c + d*x)^(9/2))/(9*d^6) - (20*b^2*(b*c - a*d)^3*(c + d*x)^(11/2)
)/(11*d^6) + (20*b^3*(b*c - a*d)^2*(c + d*x)^(13/2))/(13*d^6) - (
2*b^4*(b*c - a*d)*(c + d*x)^(15/2))/(3*d^6) + (2*b^5*(c + d*x)^(1
7/2))/(17*d^6)
```

Rubi [A] time = 0.154099, antiderivative size = 158, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{2b^4(c+dx)^{15/2}(bc-ad)}{3d^6}+\frac{20b^3(c+dx)^{13/2}(bc-ad)^2}{13d^6}-\frac{20b^2(c+dx)^{11/2}(bc-ad)^3}{11d^6}+\frac{10b(c+dx)^{9/2}(bc-ad)^4}{9d^6}-\frac{2(c+dx)^{7/2}(bc-ad)^5}{7d^6}+\frac{2b^5(c+dx)^{17/2}}{17d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(c + d*x)^(5/2),x]
```

```
[Out] (-2*(b*c - a*d)^5*(c + d*x)^(7/2))/(7*d^6) + (10*b*(b*c - a*d)^4*
(c + d*x)^(9/2))/(9*d^6) - (20*b^2*(b*c - a*d)^3*(c + d*x)^(11/2)
)/(11*d^6) + (20*b^3*(b*c - a*d)^2*(c + d*x)^(13/2))/(13*d^6) - (
2*b^4*(b*c - a*d)*(c + d*x)^(15/2))/(3*d^6) + (2*b^5*(c + d*x)^(1
7/2))/(17*d^6)
```

Rubi in Sympy [A] time = 39.0692, size = 146, normalized size = 0.92

$$\frac{2b^5\left(c+dx\right)^{\frac{17}{2}}}{17d^6}+\frac{2b^4\left(c+dx\right)^{\frac{15}{2}}\left(ad-bc\right)}{3d^6}+\frac{20b^3\left(c+dx\right)^{\frac{13}{2}}\left(ad-bc\right)^2}{13d^6}+\frac{20b^2\left(c+dx\right)^{\frac{11}{2}}\left(ad-bc\right)^3}{11d^6}+\frac{10b\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)^4}{9d^6}+\frac{2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^5}{7d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(d*x+c)**(5/2),x)
```

```
[Out] 2*b**5*(c + d*x)**(17/2)/(17*d**6) + 2*b**4*(c + d*x)**(15/2)*(a*
d - b*c)/(3*d**6) + 20*b**3*(c + d*x)**(13/2)*(a*d - b*c)**2/(13*
d**6) + 20*b**2*(c + d*x)**(11/2)*(a*d - b*c)**3/(11*d**6) + 10*b
*(c + d*x)**(9/2)*(a*d - b*c)**4/(9*d**6) + 2*(c + d*x)**(7/2)*(a
*d - b*c)**5/(7*d**6)
```

Mathematica [A] time = 0.292918, size = 217, normalized size = 1.37

$$\frac{2(c+dx)^{7/2}\left(21879a^5d^5+12155a^4bd^4(7dx-2c)+2210a^3b^2d^3\left(8c^2-28cdx+63d^2x^2\right)+510a^2b^3d^2\left(-16c^3+56c^2dx-126\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(c + d*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(21879*a^5*d^5 + 12155*a^4*b*d^4*(-2*c + 7*d*x
) + 2210*a^3*b^2*d^3*(8*c^2 - 28*c*d*x + 63*d^2*x^2) + 510*a^2*b^
3*d^2*(-16*c^3 + 56*c^2*d*x - 126*c*d^2*x^2 + 231*d^3*x^3) + 17*a
*b^4*d*(128*c^4 - 448*c^3*d*x + 1008*c^2*d^2*x^2 - 1848*c*d^3*x^3
 + 3003*d^4*x^4) + b^5*(-256*c^5 + 896*c^4*d*x - 2016*c^3*d^2*x^2
 + 3696*c^2*d^3*x^3 - 6006*c*d^4*x^4 + 9009*d^5*x^5)))/(153153*d^
6)
```

Maple [B] time = 0.01, size = 273, normalized size = 1.7

$$\frac{18018\,b^5x^5d^5+102102\,ab^4d^5x^4-12012\,b^5cd^4x^4+235620\,a^2b^3d^5x^3-62832\,ab^4cd^4x^3+7392\,b^5c^2d^3x^3+278460\,a^3b^2d^5x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5*(d*x+c)^(5/2),x)
```

```
[Out] 2/153153*(d*x+c)^(7/2)*(9009*b^5*d^5*x^5+51051*a*b^4*d^5*x^4-6006
*b^5*c*d^4*x^4+117810*a^2*b^3*d^5*x^3-31416*a*b^4*c*d^4*x^3+3696*
b^5*c^2*d^3*x^3+139230*a^3*b^2*d^5*x^2-64260*a^2*b^3*c*d^4*x^2+17
136*a*b^4*c^2*d^3*x^2-2016*b^5*c^3*d^2*x^2+85085*a^4*b*d^5*x-6188
0*a^3*b^2*c*d^4*x+28560*a^2*b^3*c^2*d^3*x-7616*a*b^4*c^3*d^2*x+89
6*b^5*c^4*d*x+21879*a^5*d^5-24310*a^4*b*c*d^4+17680*a^3*b^2*c^2*d
^3-8160*a^2*b^3*c^3*d^2+2176*a*b^4*c^4*d-256*b^5*c^5)/d^6
```

Maxima [A] time = 1.3791, size = 350, normalized size = 2.22

$$\frac{2\left(9009\,(dx+c)^{\frac{17}{2}}b^5-51051\,\left(b^5c-ab^4d\right)(dx+c)^{\frac{15}{2}}+117810\,\left(b^5c^2-2\,ab^4cd+a^2b^3d^2\right)(dx+c)^{\frac{13}{2}}-139230\,\left(b^5c^3-3\,ab^4c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/153153*(9009*(d*x + c)^(17/2)*b^5 - 51051*(b^5*c - a*b^4*d)*(d*
x + c)^(15/2) + 117810*(b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(d*x
 + c)^(13/2) - 139230*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2
- a^3*b^2*d^3)*(d*x + c)^(11/2) + 85085*(b^5*c^4 - 4*a*b^4*c^3*d
+ 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*(d*x + c)^(9/2
) - 21879*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*
b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*(d*x + c)^(7/2))/d^6
```

Fricas [A] time = 0.224659, size = 671, normalized size = 4.25

$$\frac{2\left(9009\,b^5d^8x^8 - 256\,b^5c^8 + 2176\,ab^4c^7d - 8160\,a^2b^3c^6d^2 + 17680\,a^3b^2c^5d^3 - 24310\,a^4bc^4d^4 + 21879\,a^5c^3d^5 + 3003\left(7\,b^5cd^7\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/153153*(9009*b^5*d^8*x^8 - 256*b^5*c^8 + 2176*a*b^4*c^7*d - 816
0*a^2*b^3*c^6*d^2 + 17680*a^3*b^2*c^5*d^3 - 24310*a^4*b*c^4*d^4 +
 21879*a^5*c^3*d^5 + 3003*(7*b^5*c*d^7 + 17*a*b^4*d^8)*x^7 + 231*
(55*b^5*c^2*d^6 + 527*a*b^4*c*d^7 + 510*a^2*b^3*d^8)*x^6 + 63*(b^
5*c^3*d^5 + 1207*a*b^4*c^2*d^6 + 4590*a^2*b^3*c*d^7 + 2210*a^3*b^
2*d^8)*x^5 - 35*(2*b^5*c^4*d^4 - 17*a*b^4*c^3*d^5 - 5406*a^2*b^3*
c^2*d^6 - 10166*a^3*b^2*c*d^7 - 2431*a^4*b*d^8)*x^4 + (80*b^5*c^5
*d^3 - 680*a*b^4*c^4*d^4 + 2550*a^2*b^3*c^3*d^5 + 249730*a^3*b^2*
c^2*d^6 + 230945*a^4*b*c*d^7 + 21879*a^5*d^8)*x^3 - 3*(32*b^5*c^6
*d^2 - 272*a*b^4*c^5*d^3 + 1020*a^2*b^3*c^4*d^4 - 2210*a^3*b^2*c^
3*d^5 - 60775*a^4*b*c^2*d^6 - 21879*a^5*c*d^7)*x^2 + (128*b^5*c^7
*d - 1088*a*b^4*c^6*d^2 + 4080*a^2*b^3*c^5*d^3 - 8840*a^3*b^2*c^4
*d^4 + 12155*a^4*b*c^3*d^5 + 65637*a^5*c^2*d^6)*x)*sqrt(d*x + c)/
d^6
```

Sympy [A] time = 7.4485, size = 1292, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(d*x+c)**(5/2),x)
```

```
[Out] a**5*c**2*Piecewise((sqrt(c)*x, Eq(d, 0)), (2*(c + d*x)**(3/2)/(3
*d), True)) + 4*a**5*c*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/
```

```
5)/d + 2*a**5*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 +
 (c + d*x)**(7/2)/7)/d + 10*a**4*b*c**2*(-c*(c + d*x)**(3/2)/3 +
(c + d*x)**(5/2)/5)/d**2 + 20*a**4*b*c*(c**2*(c + d*x)**(3/2)/3 -
 2*c*(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)/d**2 + 10*a**4*b*(-
c**3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*
x)**(7/2)/7 + (c + d*x)**(9/2)/9)/d**2 + 20*a**3*b**2*c**2*(c**2*
(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)
/d**3 + 40*a**3*b**2*c*(-c**3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*
x)**(5/2)/5 - 3*c*(c + d*x)**(7/2)/7 + (c + d*x)**(9/2)/9)/d**3 +
 20*a**3*b**2*(c**4*(c + d*x)**(3/2)/3 - 4*c**3*(c + d*x)**(5/2)/
5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**(9/2)/9 + (c + d*x
)**(11/2)/11)/d**3 + 20*a**2*b**3*c**2*(-c**3*(c + d*x)**(3/2)/3
+ 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)**(7/2)/7 + (c + d*x)*
*(9/2)/9)/d**4 + 40*a**2*b**3*c*(c**4*(c + d*x)**(3/2)/3 - 4*c**3
*(c + d*x)**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**
(9/2)/9 + (c + d*x)**(11/2)/11)/d**4 + 20*a**2*b**3*(-c**5*(c + d
*x)**(3/2)/3 + c**4*(c + d*x)**(5/2) - 10*c**3*(c + d*x)**(7/2)/7
 + 10*c**2*(c + d*x)**(9/2)/9 - 5*c*(c + d*x)**(11/2)/11 + (c + d
*x)**(13/2)/13)/d**4 + 10*a*b**4*c**2*(c**4*(c + d*x)**(3/2)/3 -
4*c**3*(c + d*x)**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c +
d*x)**(9/2)/9 + (c + d*x)**(11/2)/11)/d**5 + 20*a*b**4*c*(-c**5*(
c + d*x)**(3/2)/3 + c**4*(c + d*x)**(5/2) - 10*c**3*(c + d*x)**(7
/2)/7 + 10*c**2*(c + d*x)**(9/2)/9 - 5*c*(c + d*x)**(11/2)/11 + (
c + d*x)**(13/2)/13)/d**5 + 10*a*b**4*(c**6*(c + d*x)**(3/2)/3 -
6*c**5*(c + d*x)**(5/2)/5 + 15*c**4*(c + d*x)**(7/2)/7 - 20*c**3*
(c + d*x)**(9/2)/9 + 15*c**2*(c + d*x)**(11/2)/11 - 6*c*(c + d*x)
**(13/2)/13 + (c + d*x)**(15/2)/15)/d**5 + 2*b**5*c**2*(-c**5*(c
+ d*x)**(3/2)/3 + c**4*(c + d*x)**(5/2) - 10*c**3*(c + d*x)**(7/2
)/7 + 10*c**2*(c + d*x)**(9/2)/9 - 5*c*(c + d*x)**(11/2)/11 + (c
+ d*x)**(13/2)/13)/d**6 + 4*b**5*c*(c**6*(c + d*x)**(3/2)/3 - 6*c
**5*(c + d*x)**(5/2)/5 + 15*c**4*(c + d*x)**(7/2)/7 - 20*c**3*(c
+ d*x)**(9/2)/9 + 15*c**2*(c + d*x)**(11/2)/11 - 6*c*(c + d*x)**(
13/2)/13 + (c + d*x)**(15/2)/15)/d**6 + 2*b**5*(-c**7*(c + d*x)**
(3/2)/3 + 7*c**6*(c + d*x)**(5/2)/5 - 3*c**5*(c + d*x)**(7/2) + 3
5*c**4*(c + d*x)**(9/2)/9 - 35*c**3*(c + d*x)**(11/2)/11 + 21*c**
2*(c + d*x)**(13/2)/13 - 7*c*(c + d*x)**(15/2)/15 + (c + d*x)**(1
7/2)/17)/d**6
```

GIAC/XCAS [A] time = 0.242158, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5*(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1400 $\int (a+bx)^4(c+dx)^{5/2}\,dx$

Optimal. Leaf size=129

$$-\frac{8b^3(c+dx)^{13/2}(bc-ad)}{13d^5}+\frac{12b^2(c+dx)^{11/2}(bc-ad)^2}{11d^5}-\frac{8b(c+dx)^{9/2}(bc-ad)^3}{9d^5}+\frac{2(c+dx)^{7/2}(bc-ad)^4}{7d^5}+\frac{2b^4(c+dx)^{15/2}}{15d^5}$$

```
[Out] (2*(b*c - a*d)^4*(c + d*x)^(7/2))/(7*d^5) - (8*b*(b*c - a*d)^3*(c
 + d*x)^(9/2))/(9*d^5) + (12*b^2*(b*c - a*d)^2*(c + d*x)^(11/2))/
(11*d^5) - (8*b^3*(b*c - a*d)*(c + d*x)^(13/2))/(13*d^5) + (2*b^4
*(c + d*x)^(15/2))/(15*d^5)
```

Rubi [A] time = 0.117842, antiderivative size = 129, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{8b^3(c+dx)^{13/2}(bc-ad)}{13d^5}+\frac{12b^2(c+dx)^{11/2}(bc-ad)^2}{11d^5}-\frac{8b(c+dx)^{9/2}(bc-ad)^3}{9d^5}+\frac{2(c+dx)^{7/2}(bc-ad)^4}{7d^5}+\frac{2b^4(c+dx)^{15/2}}{15d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4*(c + d*x)^(5/2),x]
```

```
[Out] (2*(b*c - a*d)^4*(c + d*x)^(7/2))/(7*d^5) - (8*b*(b*c - a*d)^3*(c
 + d*x)^(9/2))/(9*d^5) + (12*b^2*(b*c - a*d)^2*(c + d*x)^(11/2))/
(11*d^5) - (8*b^3*(b*c - a*d)*(c + d*x)^(13/2))/(13*d^5) + (2*b^4
*(c + d*x)^(15/2))/(15*d^5)
```

Rubi in Sympy [A] time = 29.4065, size = 119, normalized size = 0.92

$$\frac{2b^4\left(c+dx\right)^{\frac{15}{2}}}{15d^5}+\frac{8b^3\left(c+dx\right)^{\frac{13}{2}}\left(ad-bc\right)}{13d^5}+\frac{12b^2\left(c+dx\right)^{\frac{11}{2}}\left(ad-bc\right)^2}{11d^5}+\frac{8b\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)^3}{9d^5}+\frac{2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^4}{7d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4*(d*x+c)**(5/2),x)
```

```
[Out] 2*b**4*(c + d*x)**(15/2)/(15*d**5) + 8*b**3*(c + d*x)**(13/2)*(a*
d - b*c)/(13*d**5) + 12*b**2*(c + d*x)**(11/2)*(a*d - b*c)**2/(11
```

```
*d**5) + 8*b*(c + d*x)**(9/2)*(a*d - b*c)**3/(9*d**5) + 2*(c + d*
x)**(7/2)*(a*d - b*c)**4/(7*d**5)
```

Mathematica [A] time = 0.172093, size = 154, normalized size = 1.19

$$\frac{2(c+dx)^{7/2}\left(6435a^4d^4+2860a^3bd^3(7dx-2c)+390a^2b^2d^2\left(8c^2-28cdx+63d^2x^2\right)+60ab^3d\left(-16c^3+56c^2dx-126cd^2x^2\right.}{45045d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4*(c + d*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(6435*a^4*d^4 + 2860*a^3*b*d^3*(-2*c + 7*d*x)
+ 390*a^2*b^2*d^2*(8*c^2 - 28*c*d*x + 63*d^2*x^2) + 60*a*b^3*d*(-
16*c^3 + 56*c^2*d*x - 126*c*d^2*x^2 + 231*d^3*x^3) + b^4*(128*c^4
 - 448*c^3*d*x + 1008*c^2*d^2*x^2 - 1848*c*d^3*x^3 + 3003*d^4*x^4
)))/(45045*d^5)
```

Maple [A] time = 0.01, size = 186, normalized size = 1.4

$$\frac{6006\,x^4b^4d^4+27720\,ab^3d^4x^3-3696\,b^4cd^3x^3+49140\,a^2b^2d^4x^2-15120\,ab^3cd^3x^2+2016\,b^4c^2d^2x^2+40040\,a^3bd^4x-21840}{45045\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4*(d*x+c)^(5/2),x)
```

```
[Out] 2/45045*(d*x+c)^(7/2)*(3003*b^4*d^4*x^4+13860*a*b^3*d^4*x^3-1848*
b^4*c*d^3*x^3+24570*a^2*b^2*d^4*x^2-7560*a*b^3*c*d^3*x^2+1008*b^4
*c^2*d^2*x^2+20020*a^3*b*d^4*x-10920*a^2*b^2*c*d^3*x+3360*a*b^3*c
^2*d^2*x-448*b^4*c^3*d*x+6435*a^4*d^4-5720*a^3*b*c*d^3+3120*a^2*b
^2*c^2*d^2-960*a*b^3*c^3*d+128*b^4*c^4)/d^5
```

Maxima [A] time = 1.37173, size = 244, normalized size = 1.89

$$\frac{2\left(3003\,(dx+c)^{\frac{15}{2}}b^4-13860\left(b^4c-ab^3d\right)(dx+c)^{\frac{13}{2}}+24570\left(b^4c^2-2\,ab^3cd+a^2b^2d^2\right)(dx+c)^{\frac{11}{2}}-20020\left(b^4c^3-3\,ab^3c^2d\right.\right.}{45045\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(3003*(d*x + c)^(15/2)*b^4 - 13860*(b^4*c - a*b^3*d)*(d*x
 + c)^(13/2) + 24570*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*(d*x +
 c)^(11/2) - 20020*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a
^3*b*d^3)*(d*x + c)^(9/2) + 6435*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2
*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(d*x + c)^(7/2))/d^5
```

Fricas [A] time = 0.219374, size = 509, normalized size = 3.95

$$\frac{2\left(3003\,b^4d^7x^7+128\,b^4c^7-960\,ab^3c^6d+3120\,a^2b^2c^5d^2-5720\,a^3bc^4d^3+6435\,a^4c^3d^4+231\left(31\,b^4cd^6+60\,ab^3d^7\right)x^6+63\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*b^4*d^7*x^7 + 128*b^4*c^7 - 960*a*b^3*c^6*d + 3120*
a^2*b^2*c^5*d^2 - 5720*a^3*b*c^4*d^3 + 6435*a^4*c^3*d^4 + 231*(31
*b^4*c*d^6 + 60*a*b^3*d^7)*x^6 + 63*(71*b^4*c^2*d^5 + 540*a*b^3*c
*d^6 + 390*a^2*b^2*d^7)*x^5 + 35*(b^4*c^3*d^4 + 636*a*b^3*c^2*d^5
 + 1794*a^2*b^2*c*d^6 + 572*a^3*b*d^7)*x^4 - 5*(8*b^4*c^4*d^3 - 6
0*a*b^3*c^3*d^4 - 8814*a^2*b^2*c^2*d^5 - 10868*a^3*b*c*d^6 - 1287
*a^4*d^7)*x^3 + 3*(16*b^4*c^5*d^2 - 120*a*b^3*c^4*d^3 + 390*a^2*b
^2*c^3*d^4 + 14300*a^3*b*c^2*d^5 + 6435*a^4*c*d^6)*x^2 - (64*b^4*
c^6*d - 480*a*b^3*c^5*d^2 + 1560*a^2*b^2*c^4*d^3 - 2860*a^3*b*c^3
*d^4 - 19305*a^4*c^2*d^5)*x)*sqrt(d*x + c)/d^5
```

Sympy [A] time = 6.27257, size = 960, normalized size = 7.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4*(d*x+c)**(5/2),x)
```

```
[Out] a**4*c**2*Piecewise((sqrt(c)*x, Eq(d, 0)), (2*(c + d*x)**(3/2)/(3
*d), True)) + 4*a**4*c*(-c*(c + d*x)**(3/2)/3 + (c + d*x)**(5/2)/
5)/d + 2*a**4*(c**2*(c + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 +
 (c + d*x)**(7/2)/7)/d + 8*a**3*b*c**2*(-c*(c + d*x)**(3/2)/3 + (
c + d*x)**(5/2)/5)/d**2 + 16*a**3*b*c*(c**2*(c + d*x)**(3/2)/3 -
2*c*(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)/d**2 + 8*a**3*b*(-c*
*3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)
**(7/2)/7 + (c + d*x)**(9/2)/9)/d**2 + 12*a**2*b**2*c**2*(c**2*(c
 + d*x)**(3/2)/3 - 2*c*(c + d*x)**(5/2)/5 + (c + d*x)**(7/2)/7)/d
**3 + 24*a**2*b**2*c*(-c**3*(c + d*x)**(3/2)/3 + 3*c**2*(c + d*x)
**(5/2)/5 - 3*c*(c + d*x)**(7/2)/7 + (c + d*x)**(9/2)/9)/d**3 + 1
2*a**2*b**2*(c**4*(c + d*x)**(3/2)/3 - 4*c**3*(c + d*x)**(5/2)/5
+ 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**(9/2)/9 + (c + d*x)*
```

```
*(11/2)/11)/d**3 + 8*a*b**3*c**2*(-c**3*(c + d*x)**(3/2)/3 + 3*c*
*2*(c + d*x)**(5/2)/5 - 3*c*(c + d*x)**(7/2)/7 + (c + d*x)**(9/2)
/9)/d**4 + 16*a*b**3*c*(c**4*(c + d*x)**(3/2)/3 - 4*c**3*(c + d*x
)**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**(9/2)/9 +
 (c + d*x)**(11/2)/11)/d**4 + 8*a*b**3*(-c**5*(c + d*x)**(3/2)/3
+ c**4*(c + d*x)**(5/2) - 10*c**3*(c + d*x)**(7/2)/7 + 10*c**2*(c
 + d*x)**(9/2)/9 - 5*c*(c + d*x)**(11/2)/11 + (c + d*x)**(13/2)/1
3)/d**4 + 2*b**4*c**2*(c**4*(c + d*x)**(3/2)/3 - 4*c**3*(c + d*x)
**(5/2)/5 + 6*c**2*(c + d*x)**(7/2)/7 - 4*c*(c + d*x)**(9/2)/9 +
(c + d*x)**(11/2)/11)/d**5 + 4*b**4*c*(-c**5*(c + d*x)**(3/2)/3 +
 c**4*(c + d*x)**(5/2) - 10*c**3*(c + d*x)**(7/2)/7 + 10*c**2*(c
+ d*x)**(9/2)/9 - 5*c*(c + d*x)**(11/2)/11 + (c + d*x)**(13/2)/13
)/d**5 + 2*b**4*(c**6*(c + d*x)**(3/2)/3 - 6*c**5*(c + d*x)**(5/2
)/5 + 15*c**4*(c + d*x)**(7/2)/7 - 20*c**3*(c + d*x)**(9/2)/9 + 1
5*c**2*(c + d*x)**(11/2)/11 - 6*c*(c + d*x)**(13/2)/13 + (c + d*x
)**(15/2)/15)/d**5
```

GIAC/XCAS [A] time = 0.234996, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4*(d*x + c)^(5/2),x, algorithm="giac")

[Out] Done
```

3.1401 $\int (a+bx)^3(c+dx)^{5/2}\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(c+dx)^{11/2}(bc-ad)}{11d^4}+\frac{2b(c+dx)^{9/2}(bc-ad)^2}{3d^4}-\frac{2(c+dx)^{7/2}(bc-ad)^3}{7d^4}+\frac{2b^3(c+dx)^{13/2}}{13d^4}$$

```
[Out] (-2*(b*c - a*d)^3*(c + d*x)^(7/2))/(7*d^4) + (2*b*(b*c - a*d)^2*(
c + d*x)^(9/2))/(3*d^4) - (6*b^2*(b*c - a*d)*(c + d*x)^(11/2))/(1
1*d^4) + (2*b^3*(c + d*x)^(13/2))/(13*d^4)
```

Rubi [A] time = 0.0956714, antiderivative size = 100, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{6b^2(c+dx)^{11/2}(bc-ad)}{11d^4}+\frac{2b(c+dx)^{9/2}(bc-ad)^2}{3d^4}-\frac{2(c+dx)^{7/2}(bc-ad)^3}{7d^4}+\frac{2b^3(c+dx)^{13/2}}{13d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^(5/2),x]
```

```
[Out] (-2*(b*c - a*d)^3*(c + d*x)^(7/2))/(7*d^4) + (2*b*(b*c - a*d)^2*(
c + d*x)^(9/2))/(3*d^4) - (6*b^2*(b*c - a*d)*(c + d*x)^(11/2))/(1
1*d^4) + (2*b^3*(c + d*x)^(13/2))/(13*d^4)
```

Rubi in Sympy [A] time = 22.3663, size = 92, normalized size = 0.92

$$\frac{2b^3\left(c+dx\right)^{\frac{13}{2}}}{13d^4}+\frac{6b^2\left(c+dx\right)^{\frac{11}{2}}\left(ad-bc\right)}{11d^4}+\frac{2b\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)^2}{3d^4}+\frac{2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^3}{7d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**(5/2),x)
```

```
[Out] 2*b**3*(c + d*x)**(13/2)/(13*d**4) + 6*b**2*(c + d*x)**(11/2)*(a*
d - b*c)/(11*d**4) + 2*b*(c + d*x)**(9/2)*(a*d - b*c)**2/(3*d**4)
 + 2*(c + d*x)**(7/2)*(a*d - b*c)**3/(7*d**4)
```

Mathematica [A] time = 0.142828, size = 102, normalized size = 1.02

$$\frac{2(c+dx)^{7/2}\left(429a^3d^3+143a^2bd^2(7dx-2c)+13ab^2d\left(8c^2-28cdx+63d^2x^2\right)+b^3\left(-16c^3+56c^2dx-126cd^2x^2+231d^3x^3\right)\right)}{3003d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(429*a^3*d^3 + 143*a^2*b*d^2*(-2*c + 7*d*x) +
13*a*b^2*d*(8*c^2 - 28*c*d*x + 63*d^2*x^2) + b^3*(-16*c^3 + 56*c^
2*d*x - 126*c*d^2*x^2 + 231*d^3*x^3)))/(3003*d^4)
```

Maple [A]   time = 0.009, size = 116, normalized size = 1.2

$$\frac{462\,b^3x^3d^3+1638\,ab^2d^3x^2-252\,b^3cd^2x^2+2002\,a^2bd^3x-728\,ab^2cd^2x+112\,b^3c^2dx+858\,a^3d^3-572\,a^2bcd^2+208\,ab^2c^2d}{3003\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^(5/2),x)
```

```
[Out] 2/3003*(d*x+c)^(7/2)*(231*b^3*d^3*x^3+819*a*b^2*d^3*x^2-126*b^3*c
*d^2*x^2+1001*a^2*b*d^3*x-364*a*b^2*c*d^2*x+56*b^3*c^2*d*x+429*a^
3*d^3-286*a^2*b*c*d^2+104*a*b^2*c^2*d-16*b^3*c^3)/d^4
```

Maxima [A]   time = 1.37286, size = 159, normalized size = 1.59

$$\frac{2\left(231\,(dx+c)^{\frac{13}{2}}b^3-819\,\left(b^3c-ab^2d\right)(dx+c)^{\frac{11}{2}}+1001\,\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)(dx+c)^{\frac{9}{2}}-429\,\left(b^3c^3-3\,ab^2c^2d+3\,a^2bc\right.}{3003\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3003*(231*(d*x + c)^(13/2)*b^3 - 819*(b^3*c - a*b^2*d)*(d*x + c
)^(11/2) + 1001*(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*(d*x + c)^(9/
2) - 429*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*(d*x
 + c)^(7/2))/d^4
```

Fricas [A]   time = 0.220064, size = 362, normalized size = 3.62

$$2\left(231\,b^3d^6x^6-16\,b^3c^6+104\,ab^2c^5d-286\,a^2bc^4d^2+429\,a^3c^3d^3+63\left(9\,b^3cd^5+13\,ab^2d^6\right)x^5+7\left(53\,b^3c^2d^4+299\,ab^2cd^5+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3003*(231*b^3*d^6*x^6 - 16*b^3*c^6 + 104*a*b^2*c^5*d - 286*a^2*
b*c^4*d^2 + 429*a^3*c^3*d^3 + 63*(9*b^3*c*d^5 + 13*a*b^2*d^6)*x^5
 + 7*(53*b^3*c^2*d^4 + 299*a*b^2*c*d^5 + 143*a^2*b*d^6)*x^4 + (5*
b^3*c^3*d^3 + 1469*a*b^2*c^2*d^4 + 2717*a^2*b*c*d^5 + 429*a^3*d^6
)*x^3 - 3*(2*b^3*c^4*d^2 - 13*a*b^2*c^3*d^3 - 715*a^2*b*c^2*d^4 -
 429*a^3*c*d^5)*x^2 + (8*b^3*c^5*d - 52*a*b^2*c^4*d^2 + 143*a^2*b
*c^3*d^3 + 1287*a^3*c^2*d^4)*x)*sqrt(d*x + c)/d^4
```

Sympy [A] time = 6.27544, size = 549, normalized size = 5.49

$$\begin{cases} \frac{2a^3c^3\sqrt{c+dx}}{7d} + \frac{6a^3c^2x\sqrt{c+dx}}{7} + \frac{6a^3cdx^2\sqrt{c+dx}}{7} + \frac{2a^3d^2x^3\sqrt{c+dx}}{7} - \frac{4a^2bc^4\sqrt{c+dx}}{21d^2} + \frac{2a^2bc^3x\sqrt{c+dx}}{21d} + \frac{10a^2bc^2x^2\sqrt{c+dx}}{7} + \frac{38a^2bcdx^3\sqrt{c+dx}}{21} + \\ c^{\frac{5}{2}}\left(a^3x + \frac{3a^2bx^2}{2} + ab^2x^3 + \frac{b^3x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**(5/2),x)
```

```
[Out] Piecewise((2*a**3*c**3*sqrt(c + d*x)/(7*d) + 6*a**3*c**2*x*sqrt(c
 + d*x)/7 + 6*a**3*c*d*x**2*sqrt(c + d*x)/7 + 2*a**3*d**2*x**3*sq
rt(c + d*x)/7 - 4*a**2*b*c**4*sqrt(c + d*x)/(21*d**2) + 2*a**2*b*
c**3*x*sqrt(c + d*x)/(21*d) + 10*a**2*b*c**2*x**2*sqrt(c + d*x)/7
 + 38*a**2*b*c*d*x**3*sqrt(c + d*x)/21 + 2*a**2*b*d**2*x**4*sqrt(
c + d*x)/3 + 16*a*b**2*c**5*sqrt(c + d*x)/(231*d**3) - 8*a*b**2*c
**4*x*sqrt(c + d*x)/(231*d**2) + 2*a*b**2*c**3*x**2*sqrt(c + d*x)
/(77*d) + 226*a*b**2*c**2*x**3*sqrt(c + d*x)/231 + 46*a*b**2*c*d*
x**4*sqrt(c + d*x)/33 + 6*a*b**2*d**2*x**5*sqrt(c + d*x)/11 - 32*
b**3*c**6*sqrt(c + d*x)/(3003*d**4) + 16*b**3*c**5*x*sqrt(c + d*x
)/(3003*d**3) - 4*b**3*c**4*x**2*sqrt(c + d*x)/(1001*d**2) + 10*b
**3*c**3*x**3*sqrt(c + d*x)/(3003*d) + 106*b**3*c**2*x**4*sqrt(c
+ d*x)/429 + 54*b**3*c*d*x**5*sqrt(c + d*x)/143 + 2*b**3*d**2*x**
6*sqrt(c + d*x)/13, Ne(d, 0)), (c**(5/2)*(a**3*x + 3*a**2*b*x**2/
2 + a*b**2*x**3 + b**3*x**4/4), True))
```

GIAC/XCAS [A] time = 0.231972, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1402 $\int (a+bx)^2(c+dx)^{5/2}\,dx$

Optimal. Leaf size=71

$$-\frac{4b(c+dx)^{9/2}(bc-ad)}{9d^3}+\frac{2(c+dx)^{7/2}(bc-ad)^2}{7d^3}+\frac{2b^2(c+dx)^{11/2}}{11d^3}$$

```
[Out] (2*(b*c - a*d)^2*(c + d*x)^(7/2))/(7*d^3) - (4*b*(b*c - a*d)*(c +
 d*x)^(9/2))/(9*d^3) + (2*b^2*(c + d*x)^(11/2))/(11*d^3)
```

Rubi [A] time = 0.0675884, antiderivative size = 71, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{4b(c+dx)^{9/2}(bc-ad)}{9d^3}+\frac{2(c+dx)^{7/2}(bc-ad)^2}{7d^3}+\frac{2b^2(c+dx)^{11/2}}{11d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^(5/2),x]
```

```
[Out] (2*(b*c - a*d)^2*(c + d*x)^(7/2))/(7*d^3) - (4*b*(b*c - a*d)*(c +
 d*x)^(9/2))/(9*d^3) + (2*b^2*(c + d*x)^(11/2))/(11*d^3)
```

Rubi in Sympy [A] time = 15.7428, size = 65, normalized size = 0.92

$$\frac{2b^2\left(c+dx\right)^{\frac{11}{2}}}{11d^3}+\frac{4b\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)}{9d^3}+\frac{2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^2}{7d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**(5/2),x)
```

```
[Out] 2*b**2*(c + d*x)**(11/2)/(11*d**3) + 4*b*(c + d*x)**(9/2)*(a*d -
b*c)/(9*d**3) + 2*(c + d*x)**(7/2)*(a*d - b*c)**2/(7*d**3)
```

Mathematica [A] time = 0.0816965, size = 61, normalized size = 0.86

$$\frac{2(c+dx)^{7/2}\left(99a^2d^2+22abd(7dx-2c)+b^2\left(8c^2-28cdx+63d^2x^2\right)\right)}{693d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(99*a^2*d^2 + 22*a*b*d*(-2*c + 7*d*x) + b^2*(8
*c^2 - 28*c*d*x + 63*d^2*x^2)))/(693*d^3)
```

Maple [A] time = 0.009, size = 63, normalized size = 0.9

$$\frac{126\,b^2x^2d^2+308\,abd^2x-56\,b^2cdx+198\,a^2d^2-88\,abcd+16\,b^2c^2}{693\,d^3}\left(dx+c\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^(5/2),x)
```

```
[Out] 2/693*(d*x+c)^(7/2)*(63*b^2*d^2*x^2+154*a*b*d^2*x-28*b^2*c*d*x+99
*a^2*d^2-44*a*b*c*d+8*b^2*c^2)/d^3
```

Maxima [A] time = 1.3537, size = 92, normalized size = 1.3

$$\frac{2\left(63\left(dx+c\right)^{\frac{11}{2}}b^2-154\left(b^2c-abd\right)\left(dx+c\right)^{\frac{9}{2}}+99\left(b^2c^2-2\,abcd+a^2d^2\right)\left(dx+c\right)^{\frac{7}{2}}\right)}{693\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/693*(63*(d*x + c)^(11/2)*b^2 - 154*(b^2*c - a*b*d)*(d*x + c)^(9
/2) + 99*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(d*x + c)^(7/2))/d^3
```

Fricas [A] time = 0.219416, size = 235, normalized size = 3.31

$$\frac{2\left(63\,b^2d^5x^5+8\,b^2c^5-44\,abc^4d+99\,a^2c^3d^2+7\left(23\,b^2cd^4+22\,abd^5\right)x^4+\left(113\,b^2c^2d^3+418\,abcd^4+99\,a^2d^5\right)x^3+3\left(b^2c^3d^2\right.\right.}{693\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*b^2*d^5*x^5 + 8*b^2*c^5 - 44*a*b*c^4*d + 99*a^2*c^3*d^2
 + 7*(23*b^2*c*d^4 + 22*a*b*d^5)*x^4 + (113*b^2*c^2*d^3 + 418*a*b
*c*d^4 + 99*a^2*d^5)*x^3 + 3*(b^2*c^3*d^2 + 110*a*b*c^2*d^3 + 99*
```

```
a^2*c*d^4)*x^2 - (4*b^2*c^4*d - 22*a*b*c^3*d^2 - 297*a^2*c^2*d^3)
*x)*sqrt(d*x + c)/d^3
```

Sympy [A] time = 4.74886, size = 355, normalized size = 5.

$$\begin{cases} \frac{2a^2c^3\sqrt{c+dx}}{7d} + \frac{6a^2c^2x\sqrt{c+dx}}{7} + \frac{6a^2cdx^2\sqrt{c+dx}}{7} + \frac{2a^2d^2x^3\sqrt{c+dx}}{7} - \frac{8abc^4\sqrt{c+dx}}{63d^2} + \frac{4abc^3x\sqrt{c+dx}}{63d} + \frac{20abc^2x^2\sqrt{c+dx}}{21} + \frac{76abcdx^3\sqrt{c+dx}}{63} + 4a \\ c^{\frac{5}{2}}\left(a^2x + abx^2 + \frac{b^2x^3}{3}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**(5/2),x)
```

```
[Out] Piecewise((2*a**2*c**3*sqrt(c + d*x)/(7*d) + 6*a**2*c**2*x*sqrt(c
 + d*x)/7 + 6*a**2*c*d*x**2*sqrt(c + d*x)/7 + 2*a**2*d**2*x**3*sq
rt(c + d*x)/7 - 8*a*b*c**4*sqrt(c + d*x)/(63*d**2) + 4*a*b*c**3*x
*sqrt(c + d*x)/(63*d) + 20*a*b*c**2*x**2*sqrt(c + d*x)/21 + 76*a*
b*c*d*x**3*sqrt(c + d*x)/63 + 4*a*b*d**2*x**4*sqrt(c + d*x)/9 + 1
6*b**2*c**5*sqrt(c + d*x)/(693*d**3) - 8*b**2*c**4*x*sqrt(c + d*x
)/(693*d**2) + 2*b**2*c**3*x**2*sqrt(c + d*x)/(231*d) + 226*b**2*
c**2*x**3*sqrt(c + d*x)/693 + 46*b**2*c*d*x**4*sqrt(c + d*x)/99 +
 2*b**2*d**2*x**5*sqrt(c + d*x)/11, Ne(d, 0)), (c**(5/2)*(a**2*x
+ a*b*x**2 + b**2*x**3/3), True))
```

GIAC/XCAS [A] time = 0.22351, size = 585, normalized size = 8.24

$$\frac{2\left(1155\,(dx+c)^{\frac{3}{2}}a^2c^2 + 462\left(3\,(dx+c)^{\frac{5}{2}} - 5\,(dx+c)^{\frac{3}{2}}c\right)a^2c + \frac{462\left(3\,(dx+c)^{\frac{5}{2}} - 5\,(dx+c)^{\frac{3}{2}}c\right)abc^2}{d} + \frac{33\left(15\,(dx+c)^{\frac{7}{2}}d^{12} - 42\,(dx+c)^{\frac{5}{2}}cd^{12} + 35\right.}{d^{14}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*(d*x + c)^(3/2)*a^2*c^2 + 462*(3*(d*x + c)^(5/2) - 5
*(d*x + c)^(3/2)*c)*a^2*c + 462*(3*(d*x + c)^(5/2) - 5*(d*x + c)^
(3/2)*c)*a*b*c^2/d + 33*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(
5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*b^2*c^2/d^14 + 132*(15
*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d^12 + 35*(d*x + c)^
(3/2)*c^2*d^12)*a*b*c/d^13 + 33*(15*(d*x + c)^(7/2)*d^12 - 42*(d*
x + c)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a^2/d^12 + 22*
(35*(d*x + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 189*(d*x
+ c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*b^2*c/d^26 +
22*(35*(d*x + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 189*(d
*x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*a*b/d^25 +
 (315*(d*x + c)^(11/2)*d^40 - 1540*(d*x + c)^(9/2)*c*d^40 + 2970*
```

```
(d*x + c)^(7/2)*c^2*d^40 - 2772*(d*x + c)^(5/2)*c^3*d^40 + 1155*(
d*x + c)^(3/2)*c^4*d^40)*b^2/d^42)/d
```

3.1403 $\int (a+bx)(c+dx)^{5/2}\,dx$

Optimal. Leaf size=42

$$\frac{2b(c+dx)^{9/2}}{9d^2}-\frac{2(c+dx)^{7/2}(bc-ad)}{7d^2}$$

```
[Out] (-2*(b*c - a*d)*(c + d*x)^(7/2))/(7*d^2) + (2*b*(c + d*x)^(9/2))/
(9*d^2)
```

Rubi [A] time = 0.0445957, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2b(c+dx)^{9/2}}{9d^2}-\frac{2(c+dx)^{7/2}(bc-ad)}{7d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^(5/2),x]
```

```
[Out] (-2*(b*c - a*d)*(c + d*x)^(7/2))/(7*d^2) + (2*b*(c + d*x)^(9/2))/
(9*d^2)
```

Rubi in Sympy [A] time = 8.20782, size = 37, normalized size = 0.88

$$\frac{2b\left(c+dx\right)^{\frac{9}{2}}}{9d^2}+\frac{2\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)}{7d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**(5/2),x)
```

```
[Out] 2*b*(c + d*x)**(9/2)/(9*d**2) + 2*(c + d*x)**(7/2)*(a*d - b*c)/(7
*d**2)
```

Mathematica [A] time = 0.0465786, size = 30, normalized size = 0.71

$$\frac{2(c+dx)^{7/2}(9ad-2bc+7bdx)}{63d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(-2*b*c + 9*a*d + 7*b*d*x))/(63*d^2)
```

Maple [A] time = 0.005, size = 27, normalized size = 0.6

$$\frac{14\,bdx + 18\,ad - 4\,bc}{63\,d^2}\,(dx + c)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^(5/2),x)
```

```
[Out] 2/63*(d*x+c)^(7/2)*(7*b*d*x+9*a*d-2*b*c)/d^2
```

Maxima [A] time = 1.3308, size = 45, normalized size = 1.07

$$\frac{2\left(7\,(dx + c)^{\frac{9}{2}}b - 9\,(bc - ad)(dx + c)^{\frac{7}{2}}\right)}{63\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*(d*x + c)^(9/2)*b - 9*(b*c - a*d)*(d*x + c)^(7/2))/d^2
```

Fricas [A] time = 0.226792, size = 126, normalized size = 3.

$$\frac{2\left(7\,bd^4x^4 - 2\,bc^4 + 9\,ac^3d + \left(19\,bcd^3 + 9\,ad^4\right)x^3 + 3\left(5\,bc^2d^2 + 9\,acd^3\right)x^2 + \left(bc^3d + 27\,ac^2d^2\right)x\right)\sqrt{dx + c}}{63\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/63*(7*b*d^4*x^4 - 2*b*c^4 + 9*a*c^3*d + (19*b*c*d^3 + 9*a*d^4)*
x^3 + 3*(5*b*c^2*d^2 + 9*a*c*d^3)*x^2 + (b*c^3*d + 27*a*c^2*d^2)*
x)*sqrt(d*x + c)/d^2
```

Sympy [A] time = 3.06738, size = 194, normalized size = 4.62

$$\begin{cases} \frac{2ac^3\sqrt{c+dx}}{7d} + \frac{6ac^2x\sqrt{c+dx}}{7} + \frac{6acdx^2\sqrt{c+dx}}{7} + \frac{2ad^2x^3\sqrt{c+dx}}{7} - \frac{4bc^4\sqrt{c+dx}}{63d^2} + \frac{2bc^3x\sqrt{c+dx}}{63d} + \frac{10bc^2x^2\sqrt{c+dx}}{21} + \frac{38bcdx^3\sqrt{c+dx}}{63} + \frac{2bd^2x^4\sqrt{c+}}{9} \\ c^{\frac{5}{2}}\left(ax + \frac{bx^2}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**(5/2),x)
```

```
[Out] Piecewise((2*a*c**3*sqrt(c + d*x)/(7*d) + 6*a*c**2*x*sqrt(c + d*x
)/7 + 6*a*c*d*x**2*sqrt(c + d*x)/7 + 2*a*d**2*x**3*sqrt(c + d*x)/
7 - 4*b*c**4*sqrt(c + d*x)/(63*d**2) + 2*b*c**3*x*sqrt(c + d*x)/(
63*d) + 10*b*c**2*x**2*sqrt(c + d*x)/21 + 38*b*c*d*x**3*sqrt(c +
d*x)/63 + 2*b*d**2*x**4*sqrt(c + d*x)/9, Ne(d, 0)), (c**(5/2)*(a*
x + b*x**2/2), True))
```

GIAC/XCAS [A] time = 0.22607, size = 308, normalized size = 7.33

$$\frac{2\left(105\,(dx+c)^{\frac{3}{2}}ac^2 + 42\left(3\,(dx+c)^{\frac{5}{2}} - 5\,(dx+c)^{\frac{3}{2}}c\right)ac + \frac{21\left(3\,(dx+c)^{\frac{5}{2}} - 5\,(dx+c)^{\frac{3}{2}}c\right)bc^2}{d} + \frac{6\left(15\,(dx+c)^{\frac{7}{2}}d^{12} - 42\,(dx+c)^{\frac{5}{2}}cd^{12} + 35\,(dx+c)^{\frac{3}{2}}c\right.}{d^{13}}}{315\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*(d*x + c)^(3/2)*a*c^2 + 42*(3*(d*x + c)^(5/2) - 5*(d*x
 + c)^(3/2)*c)*a*c + 21*(3*(d*x + c)^(5/2) - 5*(d*x + c)^(3/2)*c)
*b*c^2/d + 6*(15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d^12
 + 35*(d*x + c)^(3/2)*c^2*d^12)*b*c/d^13 + 3*(15*(d*x + c)^(7/2)*
d^12 - 42*(d*x + c)^(5/2)*c*d^12 + 35*(d*x + c)^(3/2)*c^2*d^12)*a
/d^12 + (35*(d*x + c)^(9/2)*d^24 - 135*(d*x + c)^(7/2)*c*d^24 + 1
89*(d*x + c)^(5/2)*c^2*d^24 - 105*(d*x + c)^(3/2)*c^3*d^24)*b/d^2
5)/d
```

3.1404 $\int (c+dx)^{5/2}\,dx$

Optimal. Leaf size=16

$$\frac{2(c+dx)^{7/2}}{7d}$$

```
[Out] (2*(c + d*x)^(7/2))/(7*d)
```

Rubi [A] time = 0.00720378, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$\frac{2(c+dx)^{7/2}}{7d}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2),x]

[Out] (2*(c + d*x)^(7/2))/(7*d)
```

Rubi in Sympy [A] time = 1.39628, size = 12, normalized size = 0.75

$$\frac{2\,(c+dx)^{\frac{7}{2}}}{7d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2),x)

[Out] 2*(c + d*x)**(7/2)/(7*d)
```

Mathematica [A] time = 0.00754488, size = 16, normalized size = 1.

$$\frac{2(c+dx)^{7/2}}{7d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(7/2))/(7*d)
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$\frac{2}{7d}(dx+c)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(5/2),x)
```

```
[Out] 2/7*(d*x+c)^(7/2)/d
```

Maxima [A] time = 1.34753, size = 16, normalized size = 1.

$$\frac{2(dx+c)^{\frac{7}{2}}}{7d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(d*x + c)^(7/2)/d
```

Fricas [A] time = 0.199671, size = 53, normalized size = 3.31

$$\frac{2\left(d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3\right)\sqrt{dx+c}}{7d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*sqrt(d*x + c)/d
```

Sympy [A] time = 0.041956, size = 12, normalized size = 0.75

$$\frac{2(c+dx)^{\frac{7}{2}}}{7d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2),x)
```

```
[Out] 2*(c + d*x)**(7/2)/(7*d)
```

GIAC/XCAS [A] time = 0.217361, size = 116, normalized size = 7.25

$$\frac{2\left(35\,(dx+c)^{\frac{3}{2}}c^{2}+14\left(3\,(dx+c)^{\frac{5}{2}}-5\,(dx+c)^{\frac{3}{2}}c\right)c+\frac{15\,(dx+c)^{\frac{7}{2}}d^{12}-42\,(dx+c)^{\frac{5}{2}}cd^{12}+35\,(dx+c)^{\frac{3}{2}}c^{2}d^{12}}{d^{12}}\right)}{105\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*(d*x + c)^(3/2)*c^2 + 14*(3*(d*x + c)^(5/2) - 5*(d*x +
c)^(3/2)*c)*c + (15*(d*x + c)^(7/2)*d^12 - 42*(d*x + c)^(5/2)*c*d
^12 + 35*(d*x + c)^(3/2)*c^2*d^12)/d^12)/d
```

3.1405 $\int \frac{(c+dx)^{5/2}}{a+bx}\,dx$

Optimal. Leaf size=112

$$-\frac{2(bc-ad)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{7/2}}+\frac{2\sqrt{c+dx}(bc-ad)^2}{b^3}+\frac{2(c+dx)^{3/2}(bc-ad)}{3b^2}+\frac{2(c+dx)^{5/2}}{5b}$$

```
[Out] (2*(b*c - a*d)^2*Sqrt[c + d*x])/b^3 + (2*(b*c - a*d)*(c + d*x)^(3
/2))/(3*b^2) + (2*(c + d*x)^(5/2))/(5*b) - (2*(b*c - a*d)^(5/2)*A
rcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(7/2)
```

Rubi [A] time = 0.170972, antiderivative size = 112, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{2(bc-ad)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{7/2}}+\frac{2\sqrt{c+dx}(bc-ad)^2}{b^3}+\frac{2(c+dx)^{3/2}(bc-ad)}{3b^2}+\frac{2(c+dx)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x),x]
```

```
[Out] (2*(b*c - a*d)^2*Sqrt[c + d*x])/b^3 + (2*(b*c - a*d)*(c + d*x)^(3
/2))/(3*b^2) + (2*(c + d*x)^(5/2))/(5*b) - (2*(b*c - a*d)^(5/2)*A
rcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(7/2)
```

Rubi in Sympy [A] time = 26.2025, size = 99, normalized size = 0.88

$$\frac{2\left(c+dx\right)^{\frac{5}{2}}}{5b}-\frac{2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}{3b^2}+\frac{2\sqrt{c+dx}\left(ad-bc\right)^2}{b^3}-\frac{2\left(ad-bc\right)^{\frac{5}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a),x)
```

```
[Out] 2*(c + d*x)**(5/2)/(5*b) - 2*(c + d*x)**(3/2)*(a*d - b*c)/(3*b**2
) + 2*sqrt(c + d*x)*(a*d - b*c)**2/b**3 - 2*(a*d - b*c)**(5/2)*at
an(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/b**(7/2)
```

Mathematica [A] time = 0.122975, size = 108, normalized size = 0.96

$$\frac{2\sqrt{c+dx}\left(15a^2d^2-5abd(7c+dx)+b^2\left(23c^2+11cdx+3d^2x^2\right)\right)}{15b^3}-\frac{2(bc-ad)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x),x]
```

```
[Out] (2*Sqrt[c + d*x]*(15*a^2*d^2 - 5*a*b*d*(7*c + d*x) + b^2*(23*c^2
+ 11*c*d*x + 3*d^2*x^2)))/(15*b^3) - (2*(b*c - a*d)^(5/2)*ArcTanh
[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(7/2)
```

Maple [B] time = 0.012, size = 263, normalized size = 2.4

$$\frac{2}{5\,b}(dx+c)^{\frac{5}{2}}-\frac{2\,ad}{3\,b^2}(dx+c)^{\frac{3}{2}}+\frac{2\,c}{3\,b}(dx+c)^{\frac{3}{2}}+2\,\frac{a^2d^2\sqrt{dx+c}}{b^3}-4\,\frac{acd\sqrt{dx+c}}{b^2}+2\,\frac{c^2\sqrt{dx+c}}{b}-2\,\frac{a^3d^3}{b^3\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)+6\,\frac{a^2cd^2}{b^2\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)-6\,\frac{ac^2d}{b\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)+2\,\frac{c^3}{\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a),x)
```

```
[Out] 2/5*(d*x+c)^(5/2)/b-2/3/b^2*(d*x+c)^(3/2)*a*d+2/3/b*(d*x+c)^(3/2)
*c+2/b^3*a^2*d^2*(d*x+c)^(1/2)-4/b^2*a*c*d*(d*x+c)^(1/2)+2/b*c^2*
(d*x+c)^(1/2)-2/b^3/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((
a*d-b*c)*b)^(1/2))*a^3*d^3+6/b^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+
c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*a^2*c*d^2-6/b/((a*d-b*c)*b)^(1/2)
*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*a*c^2*d+2/((a*d-b*c)
*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*c^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.214992, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^2c^2 - 2\,abcd + a^2d^2\right)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2\,bc-ad-2\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right) + 2\left(3\,b^2d^2x^2 + 23\,b^2c^2 - 35\,abcd + 15\,a^2d^2 + \left(11\,b^2c\right.\right.}{15\,b^3}\right.$$

$$-\frac{2\left(15\left(b^2c^2 - 2\,abcd + a^2d^2\right)\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right) - \left(3\,b^2d^2x^2 + 23\,b^2c^2 - 35\,abcd + 15\,a^2d^2 + \left(11\,b^2cd - 5\,abd^2\right)x\right.\right.}{15\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/15*(15*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*sqrt((b*c - a*d)/b)*log
((b*d*x + 2*b*c - a*d - 2*sqrt(d*x + c)*b*sqrt((b*c - a*d)/b))/(b
*x + a)) + 2*(3*b^2*d^2*x^2 + 23*b^2*c^2 - 35*a*b*c*d + 15*a^2*d^
2 + (11*b^2*c*d - 5*a*b*d^2)*x)*sqrt(d*x + c))/b^3, -2/15*(15*(b^
2*c^2 - 2*a*b*c*d + a^2*d^2)*sqrt(-(b*c - a*d)/b)*arctan(sqrt(d*x
 + c)/sqrt(-(b*c - a*d)/b)) - (3*b^2*d^2*x^2 + 23*b^2*c^2 - 35*a*
b*c*d + 15*a^2*d^2 + (11*b^2*c*d - 5*a*b*d^2)*x)*sqrt(d*x + c))/b
^3]
```

Sympy [A] time = 12.735, size = 240, normalized size = 2.14

$$\frac{2\left(c+dx\right)^{\frac{5}{2}}}{5b} + \frac{\left(c+dx\right)^{\frac{3}{2}}\left(-2ad+2bc\right)}{3b^2} + \frac{\sqrt{c+dx}\left(2a^2d^2 - 4abcd + 2b^2c^2\right)}{b^3} - \frac{2\left(ad-bc\right)^3\left(\begin{cases}\frac{\operatorname{atan}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{ad-bc}{b}}}\right)}{b\sqrt{\frac{ad-bc}{b}}} & \text{for}\ \frac{ad-bc}{b} > 0\\ -\frac{\operatorname{acoth}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for}\ c+dx > \frac{-ad+bc}{b} \wedge \frac{ad-bc}{b} < 0\\ -\frac{\operatorname{atanh}\left(\frac{\sqrt{c+dx}}{\sqrt{\frac{-ad+bc}{b}}}\right)}{b\sqrt{\frac{-ad+bc}{b}}} & \text{for}\ \frac{ad-bc}{b} < 0 \wedge c+dx < \frac{-ad+bc}{b}\end{cases}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a),x)
```

```
[Out] 2*(c + d*x)**(5/2)/(5*b) + (c + d*x)**(3/2)*(-2*a*d + 2*b*c)/(3*b
**2) + sqrt(c + d*x)*(2*a**2*d**2 - 4*a*b*c*d + 2*b**2*c**2)/b**3
 - 2*(a*d - b*c)**3*Piecewise((atan(sqrt(c + d*x)/sqrt((a*d - b*c
)/b))/(b*sqrt((a*d - b*c)/b)), (a*d - b*c)/b > 0), (-acoth(sqrt(c
 + d*x)/sqrt((-a*d + b*c)/b))/(b*sqrt((-a*d + b*c)/b)), ((a*d - b
*c)/b < 0) & (c + d*x > (-a*d + b*c)/b)), (-atanh(sqrt(c + d*x)/s
qrt((-a*d + b*c)/b))/(b*sqrt((-a*d + b*c)/b)), ((a*d - b*c)/b < 0
) & (c + d*x < (-a*d + b*c)/b)))/b**3
```

GIAC/XCAS [A] time = 0.221744, size = 231, normalized size = 2.06

$$\frac{2\left(b^3c^3 - 3\,ab^2c^2d + 3\,a^2bcd^2 - a^3d^3\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}b^3} + \frac{2\left(3\,(dx+c)^{\frac{5}{2}}b^4 + 5\,(dx+c)^{\frac{3}{2}}b^4c + 15\,\sqrt{dx+c}b^4c^2 - 5\,(dx+c)^{\frac{3}{2}}ab^3d - 30\,\sqrt{dx+c}ab^3cd + 15\,\sqrt{dx+c}a^2b^2d^2\right)}{15\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a),x, algorithm="giac")
```

```
[Out] 2*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*arctan(sqrt
(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*b*d)*b^3) + 2/
15*(3*(d*x + c)^(5/2)*b^4 + 5*(d*x + c)^(3/2)*b^4*c + 15*sqrt(d*x
 + c)*b^4*c^2 - 5*(d*x + c)^(3/2)*a*b^3*d - 30*sqrt(d*x + c)*a*b^
3*c*d + 15*sqrt(d*x + c)*a^2*b^2*d^2)/b^5
```

3.1406 $\int \frac{(c+dx)^{5/2}}{(a+bx)^2}\,dx$

Optimal. Leaf size=110

$$-\frac{5d(bc-ad)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{7/2}}+\frac{5d\sqrt{c+dx}(bc-ad)}{b^3}-\frac{(c+dx)^{5/2}}{b(a+bx)}+\frac{5d(c+dx)^{3/2}}{3b^2}$$

```
[Out] (5*d*(b*c - a*d)*Sqrt[c + d*x])/b^3 + (5*d*(c + d*x)^(3/2))/(3*b^
2) - (c + d*x)^(5/2)/(b*(a + b*x)) - (5*d*(b*c - a*d)^(3/2)*ArcTa
nh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(7/2)
```

Rubi [A] time = 0.144858, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{5d(bc-ad)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{7/2}}+\frac{5d\sqrt{c+dx}(bc-ad)}{b^3}-\frac{(c+dx)^{5/2}}{b(a+bx)}+\frac{5d(c+dx)^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^2,x]
```

```
[Out] (5*d*(b*c - a*d)*Sqrt[c + d*x])/b^3 + (5*d*(c + d*x)^(3/2))/(3*b^
2) - (c + d*x)^(5/2)/(b*(a + b*x)) - (5*d*(b*c - a*d)^(3/2)*ArcTa
nh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(7/2)
```

Rubi in Sympy [A] time = 26.2008, size = 97, normalized size = 0.88

$$-\frac{(c+dx)^{\frac{5}{2}}}{b\,(a+bx)}+\frac{5d\,(c+dx)^{\frac{3}{2}}}{3b^2}-\frac{5d\sqrt{c+dx}\,(ad-bc)}{b^3}+\frac{5d\,(ad-bc)^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**2,x)
```

```
[Out] -(c + d*x)**(5/2)/(b*(a + b*x)) + 5*d*(c + d*x)**(3/2)/(3*b**2) -
 5*d*sqrt(c + d*x)*(a*d - b*c)/b**3 + 5*d*(a*d - b*c)**(3/2)*atan
(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/b**(7/2)
```

Mathematica [A] time = 0.187289, size = 104, normalized size = 0.95

$$\frac{\sqrt{c+dx}\left(-\frac{3(bc-ad)^2}{a+bx}+2d(7bc-6ad)+2bd^2x\right)}{3b^3}-\frac{5d(bc-ad)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^2,x]
```

```
[Out] (Sqrt[c + d*x]*(2*d*(7*b*c - 6*a*d) + 2*b*d^2*x - (3*(b*c - a*d)^
2)/(a + b*x)))/(3*b^3) - (5*d*(b*c - a*d)^(3/2)*ArcTanh[(Sqrt[b]*
Sqrt[c + d*x])/Sqrt[b*c - a*d]])/b^(7/2)
```

Maple [B] time = 0.02, size = 258, normalized size = 2.4

$$\frac{2\,d}{3\,b^2}(dx+c)^{\frac{3}{2}}-4\,\frac{ad^2\sqrt{dx+c}}{b^3}+4\,\frac{d\sqrt{dx+c}c}{b^2}-\frac{a^2d^3}{b^3\,(bdx+ad)}\sqrt{dx+c}+2\,\frac{\sqrt{dx+c}acd^2}{b^2\,(bdx+ad)}-\frac{dc^2}{b\,(bdx+ad)}\sqrt{dx+c}+5\,\frac{a^2d^3}{b^3\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)-10\,\frac{acd^2}{b^2\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)+5\,\frac{dc^2}{b\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^2,x)
```

```
[Out] 2/3*d*(d*x+c)^(3/2)/b^2-4/b^3*a*d^2*(d*x+c)^(1/2)+4*d/b^2*(d*x+c)
^(1/2)*c-1/b^3*(d*x+c)^(1/2)/(b*d*x+a*d)*a^2*d^3+2/b^2*(d*x+c)^(1
/2)/(b*d*x+a*d)*a*c*d^2-d/b*(d*x+c)^(1/2)/(b*d*x+a*d)*c^2+5/b^3/(
(a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*a^
2*d^3-10/b^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c
)*b)^(1/2))*a*c*d^2+5*d/b/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2
)*b/((a*d-b*c)*b)^(1/2))*c^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221978, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(abcd - a^2d^2 + \left(b^2cd - abd^2\right)x\right)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2\,bc-ad+2\,\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right) - 2\left(2\,b^2d^2x^2 - 3\,b^2c^2 + 20\,abcd - 15\,a^2d^2 \cdots\right.}{6\left(b^4x + ab^3\right)}\right.$$

$$-\frac{15\left(abcd - a^2d^2 + \left(b^2cd - abd^2\right)x\right)\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right) - \left(2\,b^2d^2x^2 - 3\,b^2c^2 + 20\,abcd - 15\,a^2d^2 + 2\left(7\,b^2cd - 5 \cdots\right.\right.}{3\left(b^4x + ab^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] [-1/6*(15*(a*b*c*d - a^2*d^2 + (b^2*c*d - a*b*d^2)*x)*sqrt((b*c -
 a*d)/b)*log((b*d*x + 2*b*c - a*d + 2*sqrt(d*x + c)*b*sqrt((b*c -
 a*d)/b))/(b*x + a)) - 2*(2*b^2*d^2*x^2 - 3*b^2*c^2 + 20*a*b*c*d
- 15*a^2*d^2 + 2*(7*b^2*c*d - 5*a*b*d^2)*x)*sqrt(d*x + c))/(b^4*x
 + a*b^3), -1/3*(15*(a*b*c*d - a^2*d^2 + (b^2*c*d - a*b*d^2)*x)*s
qrt(-(b*c - a*d)/b)*arctan(sqrt(d*x + c)/sqrt(-(b*c - a*d)/b)) -
(2*b^2*d^2*x^2 - 3*b^2*c^2 + 20*a*b*c*d - 15*a^2*d^2 + 2*(7*b^2*c
*d - 5*a*b*d^2)*x)*sqrt(d*x + c))/(b^4*x + a*b^3)]
```

Sympy [A] time = 50.0783, size = 1622, normalized size = 14.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**2,x)
```

```
[Out] -2*a**3*d**4*sqrt(c + d*x)/(2*a**2*b**3*d**2 - 2*a*b**4*c*d + 2*a
*b**4*d**2*x - 2*b**5*c*d*x) + a**3*d**4*sqrt(-1/(b*(a*d - b*c)**
3))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-
1/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + s
qrt(c + d*x))/(2*b**3) - a**3*d**4*sqrt(-1/(b*(a*d - b*c)**3))*lo
g(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a
*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c +
 d*x))/(2*b**3) + 6*a**2*c*d**3*sqrt(c + d*x)/(2*a**2*b**2*d**2 -
 2*a*b**3*c*d + 2*a*b**3*d**2*x - 2*b**4*c*d*x) - 3*a**2*c*d**3*s
```

```
qrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)*
*3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/
(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b**2) + 3*a**2*c*d**3*sqr
t(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)
) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*
(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b**2) + 6*a**2*d**3*Piecewis
e((atan(sqrt(c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)), a*d/b
 - c > 0), (-acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b
 + c)), (a*d/b - c < 0) & (c + d*x > -a*d/b + c)), (-atanh(sqrt(c
 + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) &
 (c + d*x < -a*d/b + c)))/b**3 - 6*a*c**2*d**2*sqrt(c + d*x)/(2*a
**2*b*d**2 - 2*a*b**2*c*d + 2*a*b**2*d**2*x - 2*b**3*c*d*x) + 3*a
*c**2*d**2*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*
(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c
**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b) - 3*a*c**2
*d**2*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d -
 b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sq
rt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b) - 12*a*c*d**2*Pi
ecewise((atan(sqrt(c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)),
 a*d/b - c > 0), (-acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(
-a*d/b + c)), (a*d/b - c < 0) & (c + d*x > -a*d/b + c)), (-atanh(
sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c
< 0) & (c + d*x < -a*d/b + c)))/b**2 - 4*a*d**2*sqrt(c + d*x)/b**
3 - c**3*d*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*
(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c
**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/2 + c**3*d*sqrt(
-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3))
- 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a
*d - b*c)**3)) + sqrt(c + d*x))/2 + 2*c**3*d*sqrt(c + d*x)/(2*a**
2*d**2 - 2*a*b*c*d + 2*a*b*d**2*x - 2*b**2*c*d*x) + 6*c**2*d*Piec
ewise((atan(sqrt(c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)), a
*d/b - c > 0), (-acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a
*d/b + c)), (a*d/b - c < 0) & (c + d*x > -a*d/b + c)), (-atanh(sq
rt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c <
0) & (c + d*x < -a*d/b + c)))/b + 4*c*d*sqrt(c + d*x)/b**2 + 2*d*
(c + d*x)**(3/2)/(3*b**2)
```

GIAC/XCAS [A] time = 0.2309, size = 244, normalized size = 2.22

$$\frac{5\left(b^{2}c^{2}d-2\,abcd^{2}+a^{2}d^{3}\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^{2}c+abd}}\right)}{\sqrt{-b^{2}c+abd}b^{3}}-\frac{\sqrt{dx+c}b^{2}c^{2}d-2\sqrt{dx+c}abcd^{2}+\sqrt{dx+c}a^{2}d^{3}}{((dx+c)b-bc+ad)b^{3}}+\frac{2\left((dx+c)^{\frac{3}{2}}b^{4}d+6\sqrt{dx+c}b^{4}cd-6\sqrt{dx+c}ab^{3}d^{2}\right)}{3\,b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] 5*(b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*arctan(sqrt(d*x + c)*b/sqrt
(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*b*d)*b^3) - (sqrt(d*x + c)*b^2
```

```
*c^2*d - 2*sqrt(d*x + c)*a*b*c*d^2 + sqrt(d*x + c)*a^2*d^3)/(((d*
x + c)*b - b*c + a*d)*b^3) + 2/3*((d*x + c)^(3/2)*b^4*d + 6*sqrt(
d*x + c)*b^4*c*d - 6*sqrt(d*x + c)*a*b^3*d^2)/b^6
```

3.1407 $\int \frac{(c+dx)^{5/2}}{(a+bx)^3}\,dx$

Optimal. Leaf size=119

$$-\frac{15d^2\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{7/2}}-\frac{5d(c+dx)^{3/2}}{4b^2(a+bx)}-\frac{(c+dx)^{5/2}}{2b(a+bx)^2}+\frac{15d^2\sqrt{c+dx}}{4b^3}$$

```
[Out] (15*d^2*Sqrt[c + d*x])/(4*b^3) - (5*d*(c + d*x)^(3/2))/(4*b^2*(a
+ b*x)) - (c + d*x)^(5/2)/(2*b*(a + b*x)^2) - (15*d^2*Sqrt[b*c -
a*d]*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*b^(7/2)
)
```

Rubi [A] time = 0.133166, antiderivative size = 119, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$-\frac{15d^2\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{7/2}}-\frac{5d(c+dx)^{3/2}}{4b^2(a+bx)}-\frac{(c+dx)^{5/2}}{2b(a+bx)^2}+\frac{15d^2\sqrt{c+dx}}{4b^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^3,x]
```

```
[Out] (15*d^2*Sqrt[c + d*x])/(4*b^3) - (5*d*(c + d*x)^(3/2))/(4*b^2*(a
+ b*x)) - (c + d*x)^(5/2)/(2*b*(a + b*x)^2) - (15*d^2*Sqrt[b*c -
a*d]*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*b^(7/2)
)
```

Rubi in Sympy [A] time = 25.4154, size = 105, normalized size = 0.88

$$-\frac{(c+dx)^{\frac{5}{2}}}{2b\,(a+bx)^2}-\frac{5d\,(c+dx)^{\frac{3}{2}}}{4b^2\,(a+bx)}+\frac{15d^2\sqrt{c+dx}}{4b^3}-\frac{15d^2\sqrt{ad-bc}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**3,x)
```

```
[Out] -(c + d*x)**(5/2)/(2*b*(a + b*x)**2) - 5*d*(c + d*x)**(3/2)/(4*b*
*2*(a + b*x)) + 15*d**2*sqrt(c + d*x)/(4*b**3) - 15*d**2*sqrt(a*d
 - b*c)*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(4*b**(7/2))
```

Mathematica [A] time = 0.21668, size = 119, normalized size = 1.

$$\sqrt{c+dx}\left(-\frac{9d(bc-ad)}{4b^3(a+bx)}-\frac{(bc-ad)^2}{2b^3(a+bx)^2}+\frac{2d^2}{b^3}\right)-\frac{15d^2\sqrt{bc-ad}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^3,x]
```

```
[Out] Sqrt[c + d*x]*((2*d^2)/b^3 - (b*c - a*d)^2/(2*b^3*(a + b*x)^2) -
(9*d*(b*c - a*d))/(4*b^3*(a + b*x))) - (15*d^2*Sqrt[b*c - a*d]*Ar
cTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*b^(7/2))
```

Maple [B] time = 0.022, size = 238, normalized size = 2.

$$2\frac{d^2\sqrt{dx+c}}{b^3}+\frac{9\,d^3a}{4\,b^2\,(bdx+ad)^2}(dx+c)^{\frac{3}{2}}-\frac{9\,d^2c}{4\,b\,(bdx+ad)^2}(dx+c)^{\frac{3}{2}}+\frac{7\,d^4a^2}{4\,b^3\,(bdx+ad)^2}\sqrt{dx+c}-\frac{7\,d^3ac}{2\,b^2\,(bdx+ad)^2}\sqrt{dx+c}+\frac{7\,d^2c^2}{4\,b\,(bdx+ad)^2}\sqrt{dx+c}-\frac{15\,d^3a}{4\,b^3}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}+\frac{15\,d^2c}{4\,b^2}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^3,x)
```

```
[Out] 2*d^2*(d*x+c)^(1/2)/b^3+9/4*d^3/b^2/(b*d*x+a*d)^2*(d*x+c)^(3/2)*a
-9/4*d^2/b/(b*d*x+a*d)^2*(d*x+c)^(3/2)*c+7/4*d^4/b^3/(b*d*x+a*d)^
2*(d*x+c)^(1/2)*a^2-7/2*d^3/b^2/(b*d*x+a*d)^2*(d*x+c)^(1/2)*a*c+7
/4*d^2/b/(b*d*x+a*d)^2*(d*x+c)^(1/2)*c^2-15/4*d^3/b^3/((a*d-b*c)*
b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))*a+15/4*d^2/b
^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2)
)*c
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228196, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\sqrt{\frac{bc-ad}{b}}\log\left(\frac{bdx+2\,bc-ad-2\,\sqrt{dx+c}b\sqrt{\frac{bc-ad}{b}}}{bx+a}\right)+2\left(8\,b^2d^2x^2-2\,b^2c^2-5\,abcd+15\,a^2d^2-\left(9\,b^2c\right.\right.}{8\left(b^5x^2+2\,ab^4x+a^2b^3\right)}\right.$$

$$-\frac{15\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\sqrt{-\frac{bc-ad}{b}}\arctan\left(\frac{\sqrt{dx+c}}{\sqrt{-\frac{bc-ad}{b}}}\right)-\left(8\,b^2d^2x^2-2\,b^2c^2-5\,abcd+15\,a^2d^2-\left(9\,b^2cd-25\,abd^2\right)x\right.}{4\left(b^5x^2+2\,ab^4x+a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(15*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*sqrt((b*c - a*d)/b
)*log((b*d*x + 2*b*c - a*d - 2*sqrt(d*x + c)*b*sqrt((b*c - a*d)/b
))/(b*x + a)) + 2*(8*b^2*d^2*x^2 - 2*b^2*c^2 - 5*a*b*c*d + 15*a^2
*d^2 - (9*b^2*c*d - 25*a*b*d^2)*x)*sqrt(d*x + c))/(b^5*x^2 + 2*a*
b^4*x + a^2*b^3), -1/4*(15*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*
sqrt(-(b*c - a*d)/b)*arctan(sqrt(d*x + c)/sqrt(-(b*c - a*d)/b)) -
 (8*b^2*d^2*x^2 - 2*b^2*c^2 - 5*a*b*c*d + 15*a^2*d^2 - (9*b^2*c*d
 - 25*a*b*d^2)*x)*sqrt(d*x + c))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3)]
```

Sympy [A] time = 121.672, size = 3842, normalized size = 32.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**3,x)
```

```
[Out] -10*a**4*d**6*sqrt(c + d*x)/(8*a**4*b**3*d**4 - 16*a**3*b**4*c*d*
*3 + 16*a**3*b**4*d**4*x - 48*a**2*b**5*c*d**3*x + 8*a**2*b**5*d*
*2*(c + d*x)**2 + 16*a*b**6*c**3*d + 48*a*b**6*c**2*d**2*x - 16*a
*b**6*c*d*(c + d*x)**2 - 8*b**7*c**4 - 16*b**7*c**3*d*x + 8*b**7*
c**2*(c + d*x)**2) + 40*a**3*c*d**5*sqrt(c + d*x)/(8*a**4*b**2*d*
*4 - 16*a**3*b**3*c*d**3 + 16*a**3*b**3*d**4*x - 48*a**2*b**4*c*d
**3*x + 8*a**2*b**4*d**2*(c + d*x)**2 + 16*a*b**5*c**3*d + 48*a*b
```

```
**5*c**2*d**2*x - 16*a*b**5*c*d*(c + d*x)**2 - 8*b**6*c**4 - 16*b
**6*c**3*d*x + 8*b**6*c**2*(c + d*x)**2) - 6*a**3*d**5*(c + d*x)*
*(3/2)/(8*a**4*b**2*d**4 - 16*a**3*b**3*c*d**3 + 16*a**3*b**3*d**
4*x - 48*a**2*b**4*c*d**3*x + 8*a**2*b**4*d**2*(c + d*x)**2 + 16*
a*b**5*c**3*d + 48*a*b**5*c**2*d**2*x - 16*a*b**5*c*d*(c + d*x)**
2 - 8*b**6*c**4 - 16*b**6*c**3*d*x + 8*b**6*c**2*(c + d*x)**2) +
3*a**3*d**5*sqrt(-1/(b*(a*d - b*c)**5))*log(-a**3*d**3*sqrt(-1/(b
*(a*d - b*c)**5)) + 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) -
 3*a*b**2*c**2*d*sqrt(-1/(b*(a*d - b*c)**5)) + b**3*c**3*sqrt(-1/
(b*(a*d - b*c)**5)) + sqrt(c + d*x))/(8*b**3) - 3*a**3*d**5*sqrt(
-1/(b*(a*d - b*c)**5))*log(a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5))
 - 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) + 3*a*b**2*c**2*d*s
qrt(-1/(b*(a*d - b*c)**5)) - b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)
) + sqrt(c + d*x))/(8*b**3) - 60*a**2*c**2*d**4*sqrt(c + d*x)/(8*
a**4*b*d**4 - 16*a**3*b**2*c*d**3 + 16*a**3*b**2*d**4*x - 48*a**2
*b**3*c*d**3*x + 8*a**2*b**3*d**2*(c + d*x)**2 + 16*a*b**4*c**3*d
 + 48*a*b**4*c**2*d**2*x - 16*a*b**4*c*d*(c + d*x)**2 - 8*b**5*c*
*4 - 16*b**5*c**3*d*x + 8*b**5*c**2*(c + d*x)**2) + 18*a**2*c*d**
4*(c + d*x)**(3/2)/(8*a**4*b*d**4 - 16*a**3*b**2*c*d**3 + 16*a**3
*b**2*d**4*x - 48*a**2*b**3*c*d**3*x + 8*a**2*b**3*d**2*(c + d*x)
**2 + 16*a*b**4*c**3*d + 48*a*b**4*c**2*d**2*x - 16*a*b**4*c*d*(c
 + d*x)**2 - 8*b**5*c**4 - 16*b**5*c**3*d*x + 8*b**5*c**2*(c + d*
x)**2) + 6*a**2*d**4*sqrt(c + d*x)/(2*a**2*b**3*d**2 - 2*a*b**4*c
*d + 2*a*b**4*d**2*x - 2*b**5*c*d*x) - 9*a**2*c*d**4*sqrt(-1/(b*(
a*d - b*c)**5))*log(-a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5)) + 3*a*
*2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) - 3*a*b**2*c**2*d*sqrt(-1
/(b*(a*d - b*c)**5)) + b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)) + sq
rt(c + d*x))/(8*b**2) + 9*a**2*c*d**4*sqrt(-1/(b*(a*d - b*c)**5))
*log(a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5)) - 3*a**2*b*c*d**2*sqrt
(-1/(b*(a*d - b*c)**5)) + 3*a*b**2*c**2*d*sqrt(-1/(b*(a*d - b*c)*
*5)) - b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)) + sqrt(c + d*x))/(8*
b**2) - 3*a**2*d**4*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sq
rt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3))
 - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b**3
) + 3*a**2*d**4*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1
/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b*
*2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b**3) + 4
0*a*c**3*d**3*sqrt(c + d*x)/(8*a**4*d**4 - 16*a**3*b*c*d**3 + 16*
a**3*b*d**4*x - 48*a**2*b**2*c*d**3*x + 8*a**2*b**2*d**2*(c + d*x
)**2 + 16*a*b**3*c**3*d + 48*a*b**3*c**2*d**2*x - 16*a*b**3*c*d*(
c + d*x)**2 - 8*b**4*c**4 - 16*b**4*c**3*d*x + 8*b**4*c**2*(c + d
*x)**2) - 18*a*c**2*d**3*(c + d*x)**(3/2)/(8*a**4*d**4 - 16*a**3*
b*c*d**3 + 16*a**3*b*d**4*x - 48*a**2*b**2*c*d**3*x + 8*a**2*b**2
*d**2*(c + d*x)**2 + 16*a*b**3*c**3*d + 48*a*b**3*c**2*d**2*x - 1
6*a*b**3*c*d*(c + d*x)**2 - 8*b**4*c**4 - 16*b**4*c**3*d*x + 8*b*
*4*c**2*(c + d*x)**2) - 12*a*c*d**3*sqrt(c + d*x)/(2*a**2*b**2*d*
*2 - 2*a*b**3*c*d + 2*a*b**3*d**2*x - 2*b**4*c*d*x) + 9*a*c**2*d*
*3*sqrt(-1/(b*(a*d - b*c)**5))*log(-a**3*d**3*sqrt(-1/(b*(a*d - b
*c)**5)) + 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) - 3*a*b**2
*c**2*d*sqrt(-1/(b*(a*d - b*c)**5)) + b**3*c**3*sqrt(-1/(b*(a*d -
 b*c)**5)) + sqrt(c + d*x))/(8*b) - 9*a*c**2*d**3*sqrt(-1/(b*(a*d
 - b*c)**5))*log(a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5)) - 3*a**2*b
*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) + 3*a*b**2*c**2*d*sqrt(-1/(b*
(a*d - b*c)**5)) - b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)) + sqrt(c
 + d*x))/(8*b) + 3*a*c*d**3*sqrt(-1/(b*(a*d - b*c)**3))*log(-a**2
*d**2*sqrt(-1/(b*(a*d - b*c)**3)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b
```

```
*c)**3)) - b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))
/b**2 - 3*a*c*d**3*sqrt(-1/(b*(a*d - b*c)**3))*log(a**2*d**2*sqrt
(-1/(b*(a*d - b*c)**3)) - 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) +
 b**2*c**2*sqrt(-1/(b*(a*d - b*c)**3)) + sqrt(c + d*x))/b**2 - 6*
a*d**3*Piecewise((atan(sqrt(c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d
/b - c)), a*d/b - c > 0), (-acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))
/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) & (c + d*x > -a*d/b + c)),
 (-atanh(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a
*d/b - c < 0) & (c + d*x < -a*d/b + c)))/b**3 - 10*b*c**4*d**2*sq
rt(c + d*x)/(8*a**4*d**4 - 16*a**3*b*c*d**3 + 16*a**3*b*d**4*x -
48*a**2*b**2*c*d**3*x + 8*a**2*b**2*d**2*(c + d*x)**2 + 16*a*b**3
*c**3*d + 48*a*b**3*c**2*d**2*x - 16*a*b**3*c*d*(c + d*x)**2 - 8*
b**4*c**4 - 16*b**4*c**3*d*x + 8*b**4*c**2*(c + d*x)**2) + 6*b*c*
*3*d**2*(c + d*x)**(3/2)/(8*a**4*d**4 - 16*a**3*b*c*d**3 + 16*a**
3*b*d**4*x - 48*a**2*b**2*c*d**3*x + 8*a**2*b**2*d**2*(c + d*x)**
2 + 16*a*b**3*c**3*d + 48*a*b**3*c**2*d**2*x - 16*a*b**3*c*d*(c +
 d*x)**2 - 8*b**4*c**4 - 16*b**4*c**3*d*x + 8*b**4*c**2*(c + d*x)
**2) - 3*c**3*d**2*sqrt(-1/(b*(a*d - b*c)**5))*log(-a**3*d**3*sqr
t(-1/(b*(a*d - b*c)**5)) + 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)
**5)) - 3*a*b**2*c**2*d*sqrt(-1/(b*(a*d - b*c)**5)) + b**3*c**3*s
qrt(-1/(b*(a*d - b*c)**5)) + sqrt(c + d*x))/8 + 3*c**3*d**2*sqrt(
-1/(b*(a*d - b*c)**5))*log(a**3*d**3*sqrt(-1/(b*(a*d - b*c)**5))
- 3*a**2*b*c*d**2*sqrt(-1/(b*(a*d - b*c)**5)) + 3*a*b**2*c**2*d*s
qrt(-1/(b*(a*d - b*c)**5)) - b**3*c**3*sqrt(-1/(b*(a*d - b*c)**5)
) + sqrt(c + d*x))/8 + 6*c**2*d**2*sqrt(c + d*x)/(2*a**2*b*d**2 -
 2*a*b**2*c*d + 2*a*b**2*d**2*x - 2*b**3*c*d*x) - 3*c**2*d**2*sqr
t(-1/(b*(a*d - b*c)**3))*log(-a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3
)) + 2*a*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) - b**2*c**2*sqrt(-1/(b
*(a*d - b*c)**3)) + sqrt(c + d*x))/(2*b) + 3*c**2*d**2*sqrt(-1/(b
*(a*d - b*c)**3))*log(a**2*d**2*sqrt(-1/(b*(a*d - b*c)**3)) - 2*a
*b*c*d*sqrt(-1/(b*(a*d - b*c)**3)) + b**2*c**2*sqrt(-1/(b*(a*d -
b*c)**3)) + sqrt(c + d*x))/(2*b) + 6*c*d**2*Piecewise((atan(sqrt(
c + d*x)/sqrt(a*d/b - c))/(b*sqrt(a*d/b - c)), a*d/b - c > 0), (-
acoth(sqrt(c + d*x)/sqrt(-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/
b - c < 0) & (c + d*x > -a*d/b + c)), (-atanh(sqrt(c + d*x)/sqrt(
-a*d/b + c))/(b*sqrt(-a*d/b + c)), (a*d/b - c < 0) & (c + d*x < -
a*d/b + c)))/b**2 + 2*d**2*sqrt(c + d*x)/b**3
```

GIAC/XCAS [A] time = 0.233061, size = 231, normalized size = 1.94

$$\frac{2\sqrt{dx+c}d^2}{b^3}+\frac{15\left(bcd^2-ad^3\right)\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{4\sqrt{-b^2c+abd}b^3}-\frac{9(dx+c)^{\frac{3}{2}}b^2cd^2-7\sqrt{dx+c}b^2c^2d^2-9(dx+c)^{\frac{3}{2}}abd^3+14\sqrt{dx+c}abcd^3-7\sqrt{dx+c}a^2d^4}{4((dx+c)b-bc+ad)^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^3,x, algorithm="giac")
```

```
[Out] 2*sqrt(d*x + c)*d^2/b^3 + 15/4*(b*c*d^2 - a*d^3)*arctan(sqrt(d*x
+ c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*b*d)*b^3) - 1/4*(9*
```

```
(d*x + c)^(3/2)*b^2*c*d^2 - 7*sqrt(d*x + c)*b^2*c^2*d^2 - 9*(d*x
+ c)^(3/2)*a*b*d^3 + 14*sqrt(d*x + c)*a*b*c*d^3 - 7*sqrt(d*x + c)
*a^2*d^4)/(((d*x + c)*b - b*c + a*d)^2*b^3)
```

3.1408 $\int \frac{(c+dx)^{5/2}}{(a+bx)^4} dx$

Optimal. Leaf size=126

$$-\frac{5d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{7/2}\sqrt{bc-ad}}-\frac{5d^2\sqrt{c+dx}}{8b^3(a+bx)}-\frac{5d(c+dx)^{3/2}}{12b^2(a+bx)^2}-\frac{(c+dx)^{5/2}}{3b(a+bx)^3}$$

```
[Out] (-5*d^2*Sqrt[c + d*x])/(8*b^3*(a + b*x)) - (5*d*(c + d*x)^(3/2))/
(12*b^2*(a + b*x)^2) - (c + d*x)^(5/2)/(3*b*(a + b*x)^3) - (5*d^3
*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(7/2)*Sqr
t[b*c - a*d])
```

Rubi [A] time = 0.143222, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{5d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{7/2}\sqrt{bc-ad}}-\frac{5d^2\sqrt{c+dx}}{8b^3(a+bx)}-\frac{5d(c+dx)^{3/2}}{12b^2(a+bx)^2}-\frac{(c+dx)^{5/2}}{3b(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^4,x]
```

```
[Out] (-5*d^2*Sqrt[c + d*x])/(8*b^3*(a + b*x)) - (5*d*(c + d*x)^(3/2))/
(12*b^2*(a + b*x)^2) - (c + d*x)^(5/2)/(3*b*(a + b*x)^3) - (5*d^3
*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(7/2)*Sqr
t[b*c - a*d])
```

Rubi in Sympy [A] time = 27.0669, size = 112, normalized size = 0.89

$$-\frac{(c+dx)^{\frac{5}{2}}}{3b\,(a+bx)^3}-\frac{5d\,(c+dx)^{\frac{3}{2}}}{12b^2\,(a+bx)^2}-\frac{5d^2\sqrt{c+dx}}{8b^3\,(a+bx)}+\frac{5d^3\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{8b^{\frac{7}{2}}\sqrt{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**4,x)
```

```
[Out] -(c + d*x)**(5/2)/(3*b*(a + b*x)**3) - 5*d*(c + d*x)**(3/2)/(12*b
**2*(a + b*x)**2) - 5*d**2*sqrt(c + d*x)/(8*b**3*(a + b*x)) + 5*d
**3*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(8*b**(7/2)*sqrt(
a*d - b*c))
```

Mathematica [A] time = 0.184338, size = 119, normalized size = 0.94

$$-\frac{\sqrt{c+dx}\left(15a^2d^2+10abd(c+4dx)+b^2\left(8c^2+26cdx+33d^2x^2\right)\right)}{24b^3(a+bx)^3}-\frac{5d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8b^{7/2}\sqrt{bc-ad}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^4,x]
```

```
[Out] -(Sqrt[c + d*x]*(15*a^2*d^2 + 10*a*b*d*(c + 4*d*x) + b^2*(8*c^2 +
 26*c*d*x + 33*d^2*x^2)))/(24*b^3*(a + b*x)^3) - (5*d^3*ArcTanh[(
Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*b^(7/2)*Sqrt[b*c - a*
d])
```

Maple [A] time = 0.02, size = 204, normalized size = 1.6

$$-\frac{11\,d^3}{8\,(bdx+ad)^3\,b}(dx+c)^{\frac{5}{2}}-\frac{5\,d^4a}{3\,(bdx+ad)^3\,b^2}(dx+c)^{\frac{3}{2}}+\frac{5\,d^3c}{3\,(bdx+ad)^3\,b}(dx+c)^{\frac{3}{2}}-\frac{5\,d^5a^2}{8\,(bdx+ad)^3\,b^3}\sqrt{dx+c}+\frac{5\,d^4ac}{4\,(bdx+ad)^3\,b^2}\sqrt{dx+c}-\frac{5\,d^3c^2}{8\,(bdx+ad)^3\,b}\sqrt{dx+c}+\frac{5\,d^3}{8\,b^3}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^4,x)
```

```
[Out] -11/8*d^3/(b*d*x+a*d)^3/b*(d*x+c)^(5/2)-5/3*d^4/(b*d*x+a*d)^3/b^2
*(d*x+c)^(3/2)*a+5/3*d^3/(b*d*x+a*d)^3/b*(d*x+c)^(3/2)*c-5/8*d^5/
(b*d*x+a*d)^3/b^3*(d*x+c)^(1/2)*a^2+5/4*d^4/(b*d*x+a*d)^3/b^2*(d*
x+c)^(1/2)*a*c-5/8*d^3/(b*d*x+a*d)^3/b*(d*x+c)^(1/2)*c^2+5/8*d^3/
b^3/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2
))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233261, size = 1, normalized size = 0.01

$$\left[-\frac{2\left(33\,b^2d^2x^2+8\,b^2c^2+10\,abcd+15\,a^2d^2+2\left(13\,b^2cd+20\,abd^2\right)x\right)\sqrt{b^2c-abd}\sqrt{dx+c}-15\left(b^3d^3x^3+3\,ab^2d^3x^2+3\,a^2b\right.}{48\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)\sqrt{b^2c-abd}}\right.$$

$$-\frac{\left(33\,b^2d^2x^2+8\,b^2c^2+10\,abcd+15\,a^2d^2+2\left(13\,b^2cd+20\,abd^2\right)x\right)\sqrt{-b^2c+abd}\sqrt{dx+c}+15\left(b^3d^3x^3+3\,ab^2d^3x^2+3\,a^2bd\right.}{24\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)\sqrt{-b^2c+abd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^4,x, algorithm="fricas")
```

```
[Out] [-1/48*(2*(33*b^2*d^2*x^2 + 8*b^2*c^2 + 10*a*b*c*d + 15*a^2*d^2 +
 2*(13*b^2*c*d + 20*a*b*d^2)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c)
 - 15*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*l
og((sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)
*sqrt(d*x + c))/(b*x + a)))/((b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x
 + a^3*b^3)*sqrt(b^2*c - a*b*d)), -1/24*((33*b^2*d^2*x^2 + 8*b^2*
c^2 + 10*a*b*c*d + 15*a^2*d^2 + 2*(13*b^2*c*d + 20*a*b*d^2)*x)*sq
rt(-b^2*c + a*b*d)*sqrt(d*x + c) + 15*(b^3*d^3*x^3 + 3*a*b^2*d^3*
x^2 + 3*a^2*b*d^3*x + a^3*d^3)*arctan(-(b*c - a*d)/(sqrt(-b^2*c +
 a*b*d)*sqrt(d*x + c))))/((b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x +
a^3*b^3)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**4,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.228803, size = 217, normalized size = 1.72

$$\frac{5\,d^3\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{8\,\sqrt{-b^2c+abd}b^3} - \frac{33\,(dx+c)^{\frac{5}{2}}b^2d^3 - 40\,(dx+c)^{\frac{3}{2}}b^2cd^3 + 15\,\sqrt{dx+c}b^2c^2d^3 + 40\,(dx+c)^{\frac{3}{2}}abd^4 - 30\,\sqrt{dx+c}abcd^4 + 15\,\sqrt{dx+c}a^2d^5}{24\,((dx+c)b - bc + ad)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^4,x, algorithm="giac")
```

```
[Out] 5/8*d^3*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c
 + a*b*d)*b^3) - 1/24*(33*(d*x + c)^(5/2)*b^2*d^3 - 40*(d*x + c)^
(3/2)*b^2*c*d^3 + 15*sqrt(d*x + c)*b^2*c^2*d^3 + 40*(d*x + c)^(3/
2)*a*b*d^4 - 30*sqrt(d*x + c)*a*b*c*d^4 + 15*sqrt(d*x + c)*a^2*d^
5)/(((d*x + c)*b - b*c + a*d)^3*b^3)
```

3.1409 $\int \frac{(c+dx)^{5/2}}{(a+bx)^5} dx$

Optimal. Leaf size=162

$$\frac{5d^4 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{7/2}(bc-ad)^{3/2}} - \frac{5d^3\sqrt{c+dx}}{64b^3(a+bx)(bc-ad)} - \frac{5d^2\sqrt{c+dx}}{32b^3(a+bx)^2} - \frac{5d(c+dx)^{3/2}}{24b^2(a+bx)^3} - \frac{(c+dx)^{5/2}}{4b(a+bx)^4}$$

```
[Out] (-5*d^2*Sqrt[c + d*x])/(32*b^3*(a + b*x)^2) - (5*d^3*Sqrt[c + d*x
])/(64*b^3*(b*c - a*d)*(a + b*x)) - (5*d*(c + d*x)^(3/2))/(24*b^2
*(a + b*x)^3) - (c + d*x)^(5/2)/(4*b*(a + b*x)^4) + (5*d^4*ArcTan
h[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(64*b^(7/2)*(b*c - a*
d)^(3/2))
```

Rubi [A] time = 0.208954, antiderivative size = 162, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{5d^4 \tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{7/2}(bc-ad)^{3/2}} - \frac{5d^3\sqrt{c+dx}}{64b^3(a+bx)(bc-ad)} - \frac{5d^2\sqrt{c+dx}}{32b^3(a+bx)^2} - \frac{5d(c+dx)^{3/2}}{24b^2(a+bx)^3} - \frac{(c+dx)^{5/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^5,x]
```

```
[Out] (-5*d^2*Sqrt[c + d*x])/(32*b^3*(a + b*x)^2) - (5*d^3*Sqrt[c + d*x
])/(64*b^3*(b*c - a*d)*(a + b*x)) - (5*d*(c + d*x)^(3/2))/(24*b^2
*(a + b*x)^3) - (c + d*x)^(5/2)/(4*b*(a + b*x)^4) + (5*d^4*ArcTan
h[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(64*b^(7/2)*(b*c - a*
d)^(3/2))
```

Rubi in Sympy [A] time = 39.2165, size = 144, normalized size = 0.89

$$-\frac{(c+dx)^{\frac{5}{2}}}{4b(a+bx)^4} - \frac{5d(c+dx)^{\frac{3}{2}}}{24b^2(a+bx)^3} + \frac{5d^3\sqrt{c+dx}}{64b^3(a+bx)(ad-bc)} - \frac{5d^2\sqrt{c+dx}}{32b^3(a+bx)^2} + \frac{5d^4 \operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{64b^{\frac{7}{2}}(ad-bc)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**5,x)
```

```
[Out] -(c + d*x)**(5/2)/(4*b*(a + b*x)**4) - 5*d*(c + d*x)**(3/2)/(24*b
**2*(a + b*x)**3) + 5*d**3*sqrt(c + d*x)/(64*b**3*(a + b*x)*(a*d
- b*c)) - 5*d**2*sqrt(c + d*x)/(32*b**3*(a + b*x)**2) + 5*d**4*at
```

```
an(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(64*b**(7/2)*(a*d - b*c
)**(3/2))
```

Mathematica [A] time = 0.248643, size = 149, normalized size = 0.92

$$\frac{5d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64b^{7/2}(bc-ad)^{3/2}} - \frac{\sqrt{c+dx}\left(118d^2(a+bx)^2(bc-ad)+136d(a+bx)(bc-ad)^2+48(bc-ad)^3+15d^3(a+bx)^3\right)}{192b^3(a+bx)^4(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^5,x]
```

```
[Out] -(Sqrt[c + d*x]*(48*(b*c - a*d)^3 + 136*d*(b*c - a*d)^2*(a + b*x)
 + 118*d^2*(b*c - a*d)*(a + b*x)^2 + 15*d^3*(a + b*x)^3))/(192*b^
3*(b*c - a*d)*(a + b*x)^4) + (5*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x
])/Sqrt[b*c - a*d]])/(64*b^(7/2)*(b*c - a*d)^(3/2))
```

Maple [A] time = 0.021, size = 246, normalized size = 1.5

$$\frac{5\,d^4}{64\,(bdx+ad)^4\,(ad-bc)}(dx+c)^{\frac{7}{2}} - \frac{73\,d^4}{192\,(bdx+ad)^4\,b}(dx+c)^{\frac{5}{2}} - \frac{55\,d^5a}{192\,(bdx+ad)^4\,b^2}(dx+c)^{\frac{3}{2}} + \frac{55\,d^4c}{192\,(bdx+ad)^4\,b}(dx+c)^{\frac{3}{2}} - \frac{5\,d^6a^2}{64\,(bdx+ad)^4\,b^3}\sqrt{dx+c} + \frac{5\,d^5ac}{32\,(bdx+ad)^4\,b^2}\sqrt{dx+c} - \frac{5\,d^4c^2}{64\,(bdx+ad)^4\,b}\sqrt{dx+c} + \frac{5\,d^4}{(64\,ad-64\,bc)\,b^3}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^5,x)
```

```
[Out] 5/64*d^4/(b*d*x+a*d)^4/(a*d-b*c)*(d*x+c)^(7/2)-73/192*d^4/(b*d*x+
a*d)^4/b*(d*x+c)^(5/2)-55/192*d^5/(b*d*x+a*d)^4/b^2*(d*x+c)^(3/2)
*a+55/192*d^4/(b*d*x+a*d)^4/b*(d*x+c)^(3/2)*c-5/64*d^6/(b*d*x+a*d
)^4/b^3*(d*x+c)^(1/2)*a^2+5/32*d^5/(b*d*x+a*d)^4/b^2*(d*x+c)^(1/2
)*a*c-5/64*d^4/(b*d*x+a*d)^4/b*(d*x+c)^(1/2)*c^2+5/64*d^4/(a*d-b*
c)/b^3/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(
1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.235507, size = 1, normalized size = 0.01

$$\left[-\frac{2\left(15\,b^3d^3x^3+48\,b^3c^3-8\,ab^2c^2d-10\,a^2bcd^2-15\,a^3d^3+\left(118\,b^3cd^2-73\,ab^2d^3\right)x^2+\left(136\,b^3c^2d-36\,ab^2cd^2-55\,a^2bd^3\right.\right.}{384\,(a^4b^4c-a^5b^3d+(b^8c-ab^7d)x^4+4\,(ab^7c-a^2b^6\right.}$$

$$-\frac{\left(15\,b^3d^3x^3+48\,b^3c^3-8\,ab^2c^2d-10\,a^2bcd^2-15\,a^3d^3+\left(118\,b^3cd^2-73\,ab^2d^3\right)x^2+\left(136\,b^3c^2d-36\,ab^2cd^2-55\,a^2bd^3\right)x\right.}{192\,(a^4b^4c-a^5b^3d+(b^8c-ab^7d)x^4+4\,(ab^7c-a^2b^6d)x^3+6\,(a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] [-1/384*(2*(15*b^3*d^3*x^3 + 48*b^3*c^3 - 8*a*b^2*c^2*d - 10*a^2*
b*c*d^2 - 15*a^3*d^3 + (118*b^3*c*d^2 - 73*a*b^2*d^3)*x^2 + (136*
b^3*c^2*d - 36*a*b^2*c*d^2 - 55*a^2*b*d^3)*x)*sqrt(b^2*c - a*b*d)
*sqrt(d*x + c) + 15*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*b^2*d^
4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log((sqrt(b^2*c - a*b*d)*(b*d*x
+ 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)))/((a
^4*b^4*c - a^5*b^3*d + (b^8*c - a*b^7*d)*x^4 + 4*(a*b^7*c - a^2*b
^6*d)*x^3 + 6*(a^2*b^6*c - a^3*b^5*d)*x^2 + 4*(a^3*b^5*c - a^4*b^
4*d)*x)*sqrt(b^2*c - a*b*d)), -1/192*((15*b^3*d^3*x^3 + 48*b^3*c^
3 - 8*a*b^2*c^2*d - 10*a^2*b*c*d^2 - 15*a^3*d^3 + (118*b^3*c*d^2
- 73*a*b^2*d^3)*x^2 + (136*b^3*c^2*d - 36*a*b^2*c*d^2 - 55*a^2*b*
d^3)*x)*sqrt(-b^2*c + a*b*d)*sqrt(d*x + c) - 15*(b^4*d^4*x^4 + 4*
a*b^3*d^4*x^3 + 6*a^2*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*arct
an(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))))/((a^4*b^4*
c - a^5*b^3*d + (b^8*c - a*b^7*d)*x^4 + 4*(a*b^7*c - a^2*b^6*d)*x
^3 + 6*(a^2*b^6*c - a^3*b^5*d)*x^2 + 4*(a^3*b^5*c - a^4*b^4*d)*x)
*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**5,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.238295, size = 350, normalized size = 2.16

$$-\frac{5\,d^4\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{64\,(b^4c-ab^3d)\sqrt{-b^2c+abd}}-\frac{15\,(dx+c)^{\frac{7}{2}}b^3d^4+73\,(dx+c)^{\frac{5}{2}}b^3cd^4-55\,(dx+c)^{\frac{3}{2}}b^3c^2d^4+15\,\sqrt{dx+c}b^3c^3d^4-73\,(dx+c)^{\frac{5}{2}}ab^2d^5+110\,(dx+c)^{\frac{3}{2}}ab^2cd^5}{192\,(b^4c-ab^3d)((dx+c)b-bc+ad)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^5,x, algorithm="giac")
```

```
[Out] -5/64*d^4*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^4*c -
a*b^3*d)*sqrt(-b^2*c + a*b*d)) - 1/192*(15*(d*x + c)^(7/2)*b^3*d^
4 + 73*(d*x + c)^(5/2)*b^3*c*d^4 - 55*(d*x + c)^(3/2)*b^3*c^2*d^4
 + 15*sqrt(d*x + c)*b^3*c^3*d^4 - 73*(d*x + c)^(5/2)*a*b^2*d^5 +
110*(d*x + c)^(3/2)*a*b^2*c*d^5 - 45*sqrt(d*x + c)*a*b^2*c^2*d^5
- 55*(d*x + c)^(3/2)*a^2*b*d^6 + 45*sqrt(d*x + c)*a^2*b*c*d^6 - 1
5*sqrt(d*x + c)*a^3*d^7)/((b^4*c - a*b^3*d)*((d*x + c)*b - b*c +
a*d)^4)
```

3.1410 $\int \frac{(c+dx)^{5/2}}{(a+bx)^6} dx$

Optimal. Leaf size=198

$$-\frac{3d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{7/2}(bc-ad)^{5/2}}+\frac{3d^4\sqrt{c+dx}}{128b^3(a+bx)(bc-ad)^2}-\frac{d^3\sqrt{c+dx}}{64b^3(a+bx)^2(bc-ad)}-\frac{d^2\sqrt{c+dx}}{16b^3(a+bx)^3}-\frac{d(c+dx)^{3/2}}{8b^2(a+bx)^4}-\frac{(c+dx)^{5/2}}{5b(a+bx)^5}$$

```
[Out] -(d^2*Sqrt[c + d*x])/(16*b^3*(a + b*x)^3) - (d^3*Sqrt[c + d*x])/(
64*b^3*(b*c - a*d)*(a + b*x)^2) + (3*d^4*Sqrt[c + d*x])/(128*b^3*
(b*c - a*d)^2*(a + b*x)) - (d*(c + d*x)^(3/2))/(8*b^2*(a + b*x)^4
) - (c + d*x)^(5/2)/(5*b*(a + b*x)^5) - (3*d^5*ArcTanh[(Sqrt[b]*S
qrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(7/2)*(b*c - a*d)^(5/2))
```

Rubi [A] time = 0.264509, antiderivative size = 198, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{3d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{7/2}(bc-ad)^{5/2}}+\frac{3d^4\sqrt{c+dx}}{128b^3(a+bx)(bc-ad)^2}-\frac{d^3\sqrt{c+dx}}{64b^3(a+bx)^2(bc-ad)}-\frac{d^2\sqrt{c+dx}}{16b^3(a+bx)^3}-\frac{d(c+dx)^{3/2}}{8b^2(a+bx)^4}-\frac{(c+dx)^{5/2}}{5b(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^6,x]
```

```
[Out] -(d^2*Sqrt[c + d*x])/(16*b^3*(a + b*x)^3) - (d^3*Sqrt[c + d*x])/(
64*b^3*(b*c - a*d)*(a + b*x)^2) + (3*d^4*Sqrt[c + d*x])/(128*b^3*
(b*c - a*d)^2*(a + b*x)) - (d*(c + d*x)^(3/2))/(8*b^2*(a + b*x)^4
) - (c + d*x)^(5/2)/(5*b*(a + b*x)^5) - (3*d^5*ArcTanh[(Sqrt[b]*S
qrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b^(7/2)*(b*c - a*d)^(5/2))
```

Rubi in Sympy [A] time = 53.9616, size = 173, normalized size = 0.87

$$-\frac{(c+dx)^{\frac{5}{2}}}{5b(a+bx)^5}-\frac{d(c+dx)^{\frac{3}{2}}}{8b^2(a+bx)^4}+\frac{3d^4\sqrt{c+dx}}{128b^3(a+bx)(ad-bc)^2}+\frac{d^3\sqrt{c+dx}}{64b^3(a+bx)^2(ad-bc)}-\frac{d^2\sqrt{c+dx}}{16b^3(a+bx)^3}+\frac{3d^5\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{128b^{\frac{7}{2}}(ad-bc)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**6,x)
```

```
[Out] -(c + d*x)**(5/2)/(5*b*(a + b*x)**5) - d*(c + d*x)**(3/2)/(8*b**2
*(a + b*x)**4) + 3*d**4*sqrt(c + d*x)/(128*b**3*(a + b*x)*(a*d -
b*c)**2) + d**3*sqrt(c + d*x)/(64*b**3*(a + b*x)**2*(a*d - b*c))
- d**2*sqrt(c + d*x)/(16*b**3*(a + b*x)**3) + 3*d**5*atan(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c))/(128*b**(7/2)*(a*d - b*c)**(5/2))
```

Mathematica [A] time = 0.336709, size = 171, normalized size = 0.86

$$-\frac{3d^5\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{128b^{7/2}(bc-ad)^{5/2}}-\frac{\sqrt{c+dx}\left(10d^3(a+bx)^3(bc-ad)+248d^2(a+bx)^2(bc-ad)^2+336d(a+bx)(bc-ad)^3+128(bc-ad)^4-15d^4(a+bx)^4\right)}{640b^3(a+bx)^5(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^6,x]
```

```
[Out] -(Sqrt[c + d*x]*(128*(b*c - a*d)^4 + 336*d*(b*c - a*d)^3*(a + b*x
) + 248*d^2*(b*c - a*d)^2*(a + b*x)^2 + 10*d^3*(b*c - a*d)*(a + b
*x)^3 - 15*d^4*(a + b*x)^4))/(640*b^3*(b*c - a*d)^2*(a + b*x)^5)
- (3*d^5*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(128*b
^(7/2)*(b*c - a*d)^(5/2))
```

Maple [A] time = 0.026, size = 305, normalized size = 1.5

$$\frac{3\,d^5b}{128\,(bdx+ad)^5\,(a^2d^2-2\,abcd+b^2c^2)}(dx+c)^{\frac{9}{2}}+\frac{7\,d^5}{64\,(bdx+ad)^5\,(ad-bc)}(dx+c)^{\frac{7}{2}}-\frac{d^5}{5\,(bdx+ad)^5\,b}(dx+c)^{\frac{5}{2}}-\frac{7\,d^6a}{64\,(bdx+ad)^5\,b^2}(dx+c)^{\frac{3}{2}}+\frac{7\,d^5c}{64\,(bdx+ad)^5\,b}(dx+c)^{\frac{3}{2}}-\frac{3\,d^7a^2}{128\,(bdx+ad)^5\,b^3}\sqrt{dx+c}+\frac{3\,d^6ac}{64\,(bdx+ad)^5\,b^2}\sqrt{dx+c}-\frac{3\,d^5c^2}{128\,(bdx+ad)^5\,b}\sqrt{dx+c}+\frac{3\,d^5}{128\,b^3\,(a^2d^2-2\,abcd+b^2c^2)}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^6,x)
```

```
[Out] 3/128*d^5/(b*d*x+a*d)^5*b/(a^2*d^2-2*a*b*c*d+b^2*c^2)*(d*x+c)^(9/
2)+7/64*d^5/(b*d*x+a*d)^5/(a*d-b*c)*(d*x+c)^(7/2)-1/5*d^5/(b*d*x+
```

```
a*d)^5/b*(d*x+c)^(5/2)-7/64*d^6/(b*d*x+a*d)^5/b^2*(d*x+c)^(3/2)*a
+7/64*d^5/(b*d*x+a*d)^5/b*(d*x+c)^(3/2)*c-3/128*d^7/(b*d*x+a*d)^5
/b^3*(d*x+c)^(1/2)*a^2+3/64*d^6/(b*d*x+a*d)^5/b^2*(d*x+c)^(1/2)*a
*c-3/128*d^5/(b*d*x+a*d)^5/b*(d*x+c)^(1/2)*c^2+3/128*d^5/b^3/(a^2
*d^2-2*a*b*c*d+b^2*c^2)/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*
b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227272, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^6,x, algorithm="fricas")
```

```
[Out] [1/1280*(2*(15*b^4*d^4*x^4 - 128*b^4*c^4 + 176*a*b^3*c^3*d - 8*a^
2*b^2*c^2*d^2 - 10*a^3*b*c*d^3 - 15*a^4*d^4 - 10*(b^4*c*d^3 - 7*a
*b^3*d^4)*x^3 - 2*(124*b^4*c^2*d^2 - 233*a*b^3*c*d^3 + 64*a^2*b^2
*d^4)*x^2 - 2*(168*b^4*c^3*d - 256*a*b^3*c^2*d^2 + 23*a^2*b^2*c*d
^3 + 35*a^3*b*d^4)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c) + 15*(b^5
*d^5*x^5 + 5*a*b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*
x^2 + 5*a^4*b*d^5*x + a^5*d^5)*log((sqrt(b^2*c - a*b*d)*(b*d*x +
2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)))/((a^5
*b^5*c^2 - 2*a^6*b^4*c*d + a^7*b^3*d^2 + (b^10*c^2 - 2*a*b^9*c*d
+ a^2*b^8*d^2)*x^5 + 5*(a*b^9*c^2 - 2*a^2*b^8*c*d + a^3*b^7*d^2)*
x^4 + 10*(a^2*b^8*c^2 - 2*a^3*b^7*c*d + a^4*b^6*d^2)*x^3 + 10*(a^
3*b^7*c^2 - 2*a^4*b^6*c*d + a^5*b^5*d^2)*x^2 + 5*(a^4*b^6*c^2 - 2
*a^5*b^5*c*d + a^6*b^4*d^2)*x)*sqrt(b^2*c - a*b*d)), 1/640*((15*b
^4*d^4*x^4 - 128*b^4*c^4 + 176*a*b^3*c^3*d - 8*a^2*b^2*c^2*d^2 -
10*a^3*b*c*d^3 - 15*a^4*d^4 - 10*(b^4*c*d^3 - 7*a*b^3*d^4)*x^3 -
2*(124*b^4*c^2*d^2 - 233*a*b^3*c*d^3 + 64*a^2*b^2*d^4)*x^2 - 2*(1
68*b^4*c^3*d - 256*a*b^3*c^2*d^2 + 23*a^2*b^2*c*d^3 + 35*a^3*b*d^
4)*x)*sqrt(-b^2*c + a*b*d)*sqrt(d*x + c) - 15*(b^5*d^5*x^5 + 5*a*
b^4*d^5*x^4 + 10*a^2*b^3*d^5*x^3 + 10*a^3*b^2*d^5*x^2 + 5*a^4*b*d
^5*x + a^5*d^5)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*
x + c))))/((a^5*b^5*c^2 - 2*a^6*b^4*c*d + a^7*b^3*d^2 + (b^10*c^2
 - 2*a*b^9*c*d + a^2*b^8*d^2)*x^5 + 5*(a*b^9*c^2 - 2*a^2*b^8*c*d
```

```
+ a^3*b^7*d^2)*x^4 + 10*(a^2*b^8*c^2 - 2*a^3*b^7*c*d + a^4*b^6*d^
2)*x^3 + 10*(a^3*b^7*c^2 - 2*a^4*b^6*c*d + a^5*b^5*d^2)*x^2 + 5*(
a^4*b^6*c^2 - 2*a^5*b^5*c*d + a^6*b^4*d^2)*x)*sqrt(-b^2*c + a*b*d
))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**6,x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.241769, size = 513, normalized size = 2.59

$$\frac{3\,d^5\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{128\,(b^5c^2-2\,ab^4cd+a^2b^3d^2)\sqrt{-b^2c+abd}}+\frac{15\,(dx+c)^{\frac{9}{2}}b^4d^5-70\,(dx+c)^{\frac{7}{2}}b^4cd^5-128\,(dx+c)^{\frac{5}{2}}b^4c^2d^5+70\,(dx+c)^{\frac{3}{2}}b^4c^3d^5-15\,\sqrt{dx+c}b^4c^4d^5+70\,(dx+c)^{\frac{7}{2}}ab^3d^6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^6,x, algorithm="giac")
```

```
[Out] 3/128*d^5*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^5*c^2
- 2*a*b^4*c*d + a^2*b^3*d^2)*sqrt(-b^2*c + a*b*d)) + 1/640*(15*(d
*x + c)^(9/2)*b^4*d^5 - 70*(d*x + c)^(7/2)*b^4*c*d^5 - 128*(d*x +
 c)^(5/2)*b^4*c^2*d^5 + 70*(d*x + c)^(3/2)*b^4*c^3*d^5 - 15*sqrt(
d*x + c)*b^4*c^4*d^5 + 70*(d*x + c)^(7/2)*a*b^3*d^6 + 256*(d*x +
c)^(5/2)*a*b^3*c*d^6 - 210*(d*x + c)^(3/2)*a*b^3*c^2*d^6 + 60*sqr
t(d*x + c)*a*b^3*c^3*d^6 - 128*(d*x + c)^(5/2)*a^2*b^2*d^7 + 210*
(d*x + c)^(3/2)*a^2*b^2*c*d^7 - 90*sqrt(d*x + c)*a^2*b^2*c^2*d^7
- 70*(d*x + c)^(3/2)*a^3*b*d^8 + 60*sqrt(d*x + c)*a^3*b*c*d^8 - 1
5*sqrt(d*x + c)*a^4*d^9)/((b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(
(d*x + c)*b - b*c + a*d)^5)
```

3.1411 $\int \frac{\sqrt{-1+x}}{(1+x)^2}\,dx$

Optimal. Leaf size=35

$$\frac{\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{2}}\right)}{\sqrt{2}}-\frac{\sqrt{x-1}}{x+1}$$

```
[Out] -(Sqrt[-1 + x]/(1 + x)) + ArcTan[Sqrt[-1 + x]/Sqrt[2]]/Sqrt[2]
```

Rubi [A] time = 0.0291853, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231

$$\frac{\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{2}}\right)}{\sqrt{2}}-\frac{\sqrt{x-1}}{x+1}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[-1 + x]/(1 + x)^2,x]
```

```
[Out] -(Sqrt[-1 + x]/(1 + x)) + ArcTan[Sqrt[-1 + x]/Sqrt[2]]/Sqrt[2]
```

Rubi in Sympy [A] time = 4.09405, size = 31, normalized size = 0.89

$$-\frac{\sqrt{x-1}}{x+1}+\frac{\sqrt{2}\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt{x-1}}{2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-1+x)**(1/2)/(1+x)**2,x)
```

```
[Out] -sqrt(x - 1)/(x + 1) + sqrt(2)*atan(sqrt(2)*sqrt(x - 1)/2)/2
```

Mathematica [A] time = 0.0256959, size = 35, normalized size = 1.

$$\frac{\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{2}}\right)}{\sqrt{2}}-\frac{\sqrt{x-1}}{x+1}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[-1 + x]/(1 + x)^2,x]

[Out] -(Sqrt[-1 + x]/(1 + x)) + ArcTan[Sqrt[-1 + x]/Sqrt[2]]/Sqrt[2]
```

Maple [A] time = 0.013, size = 30, normalized size = 0.9

$$\frac{\sqrt{2}}{2}\arctan\left(\frac{\sqrt{2}}{2}\sqrt{-1+x}\right)-\frac{1}{1+x}\sqrt{-1+x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-1+x)^(1/2)/(1+x)^2,x)

[Out] 1/2*arctan(1/2*(-1+x)^(1/2)*2^(1/2))*2^(1/2)-(-1+x)^(1/2)/(1+x)
```

Maxima [A] time = 1.56683, size = 39, normalized size = 1.11

$$\frac{1}{2}\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\sqrt{x-1}\right)-\frac{\sqrt{x-1}}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 1)/(x + 1)^2,x, algorithm="maxima")

[Out] 1/2*sqrt(2)*arctan(1/2*sqrt(2)*sqrt(x - 1)) - sqrt(x - 1)/(x + 1)
```

Fricas [A] time = 0.209387, size = 49, normalized size = 1.4

$$\frac{\sqrt{2}\left((x+1)\arctan\left(\frac{1}{2}\sqrt{2}\sqrt{x-1}\right)-\sqrt{2}\sqrt{x-1}\right)}{2(x+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 1)/(x + 1)^2,x, algorithm="fricas")

[Out] 1/2*sqrt(2)*((x + 1)*arctan(1/2*sqrt(2)*sqrt(x - 1)) - sqrt(2)*sq
rt(x - 1))/(x + 1)
```

Sympy [A] time = 2.37917, size = 105, normalized size = 3.

$$\begin{cases} \frac{\sqrt{2}i\operatorname{acosh}\left(\frac{\sqrt{2}}{\sqrt{x+1}}\right)}{2} + \frac{i}{\sqrt{-1+\frac{2}{x+1}}\sqrt{x+1}} - \frac{2i}{\sqrt{-1+\frac{2}{x+1}}(x+1)^{\frac{3}{2}}} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{\sqrt{1-\frac{2}{x+1}}}{\sqrt{x+1}} - \frac{\sqrt{2}\operatorname{asin}\left(\frac{\sqrt{2}}{\sqrt{x+1}}\right)}{2} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-1+x)**(1/2)/(1+x)**2,x)
```

```
[Out] Piecewise((sqrt(2)*I*acosh(sqrt(2)/sqrt(x + 1))/2 + I/(sqrt(-1 +
2/(x + 1))*sqrt(x + 1)) - 2*I/(sqrt(-1 + 2/(x + 1))*(x + 1)**(3/2
)), 2*Abs(1/(x + 1)) > 1), (-sqrt(1 - 2/(x + 1))/sqrt(x + 1) - sq
rt(2)*asin(sqrt(2)/sqrt(x + 1))/2, True))
```

GIAC/XCAS [A] time = 0.218981, size = 39, normalized size = 1.11

$$\frac{1}{2}\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\sqrt{x-1}\right) - \frac{\sqrt{x-1}}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 1)/(x + 1)^2,x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*arctan(1/2*sqrt(2)*sqrt(x - 1)) - sqrt(x - 1)/(x + 1)
```

3.1412 $\int \frac{\sqrt{-1+x}}{(1+x)^3} \, dx$

Optimal. Leaf size=56

$$\frac{\sqrt{x-1}}{8(x+1)} - \frac{\sqrt{x-1}}{2(x+1)^2} + \frac{\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{2}}\right)}{8\sqrt{2}}$$

```
[Out] -Sqrt[-1 + x]/(2*(1 + x)^2) + Sqrt[-1 + x]/(8*(1 + x)) + ArcTan[S
qrt[-1 + x]/Sqrt[2]]/(8*Sqrt[2])
```

Rubi [A] time = 0.0400785, antiderivative size = 56, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.308$

$$\frac{\sqrt{x-1}}{8(x+1)} - \frac{\sqrt{x-1}}{2(x+1)^2} + \frac{\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{2}}\right)}{8\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[-1 + x]/(1 + x)^3,x]
```

```
[Out] -Sqrt[-1 + x]/(2*(1 + x)^2) + Sqrt[-1 + x]/(8*(1 + x)) + ArcTan[S
qrt[-1 + x]/Sqrt[2]]/(8*Sqrt[2])
```

Rubi in Sympy [A] time = 5.44703, size = 46, normalized size = 0.82

$$\frac{\sqrt{x-1}}{8(x+1)} - \frac{\sqrt{x-1}}{2(x+1)^2} + \frac{\sqrt{2}\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt{x-1}}{2}\right)}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-1+x)**(1/2)/(1+x)**3,x)
```

```
[Out] sqrt(x - 1)/(8*(x + 1)) - sqrt(x - 1)/(2*(x + 1)**2) + sqrt(2)*at
an(sqrt(2)*sqrt(x - 1)/2)/16
```

Mathematica [A] time = 0.0373926, size = 42, normalized size = 0.75

$$\frac{1}{16}\left(\frac{2\sqrt{x-1}(x-3)}{(x+1)^2} + \sqrt{2}\tan^{-1}\left(\frac{\sqrt{x-1}}{\sqrt{2}}\right)\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[-1 + x]/(1 + x)^3,x]
```

```
[Out] ((2*(-3 + x)*Sqrt[-1 + x])/(1 + x)^2 + Sqrt[2]*ArcTan[Sqrt[-1 + x
]/Sqrt[2]])/16
```

Maple [A] time = 0.011, size = 40, normalized size = 0.7

$$2\,\frac{1/16\,(-1+x)^{3/2}-1/8\,\sqrt{-1+x}}{(1+x)^2}+\frac{\sqrt{2}}{16}\arctan\left(\frac{\sqrt{2}}{2}\sqrt{-1+x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-1+x)^(1/2)/(1+x)^3,x)
```

```
[Out] 2*(1/16*(-1+x)^(3/2)-1/8*(-1+x)^(1/2))/(1+x)^2+1/16*arctan(1/2*(-
1+x)^(1/2)*2^(1/2))*2^(1/2)
```

Maxima [A] time = 1.52248, size = 58, normalized size = 1.04

$$\frac{1}{16}\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\sqrt{x-1}\right)+\frac{(x-1)^{\frac{3}{2}}-2\sqrt{x-1}}{8\left((x-1)^2+4\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 1)/(x + 1)^3,x, algorithm="maxima")
```

```
[Out] 1/16*sqrt(2)*arctan(1/2*sqrt(2)*sqrt(x - 1)) + 1/8*((x - 1)^(3/2)
 - 2*sqrt(x - 1))/((x - 1)^2 + 4*x)
```

Fricas [A] time = 0.216842, size = 65, normalized size = 1.16

$$\frac{\sqrt{2}\left(\sqrt{2}\sqrt{x-1}(x-3)+\left(x^2+2\,x+1\right)\arctan\left(\frac{1}{2}\sqrt{2}\sqrt{x-1}\right)\right)}{16\,(x^2+2\,x+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 1)/(x + 1)^3,x, algorithm="fricas")
```

```
[Out] 1/16*sqrt(2)*(sqrt(2)*sqrt(x - 1)*(x - 3) + (x^2 + 2*x + 1)*arcta
n(1/2*sqrt(2)*sqrt(x - 1)))/(x^2 + 2*x + 1)
```

Sympy [A] time = 4.04309, size = 168, normalized size = 3.

$$\begin{cases} \frac{\sqrt{2}i \operatorname{acosh}\left(\frac{\sqrt{2}}{\sqrt{x+1}}\right)}{16} - \frac{i}{8\sqrt{-1+\frac{2}{x+1}}\sqrt{x+1}} + \frac{3i}{4\sqrt{-1+\frac{2}{x+1}}(x+1)^{\frac{3}{2}}} - \frac{i}{\sqrt{-1+\frac{2}{x+1}}(x+1)^{\frac{5}{2}}} & \text{for } 2\left|\frac{1}{x+1}\right| > 1 \\ -\frac{\sqrt{2}\operatorname{asin}\left(\frac{\sqrt{2}}{\sqrt{x+1}}\right)}{16} + \frac{1}{8\sqrt{1-\frac{2}{x+1}}\sqrt{x+1}} - \frac{3}{4\sqrt{1-\frac{2}{x+1}}(x+1)^{\frac{3}{2}}} + \frac{1}{\sqrt{1-\frac{2}{x+1}}(x+1)^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-1+x)**(1/2)/(1+x)**3,x)
```

```
[Out] Piecewise((sqrt(2)*I*acosh(sqrt(2)/sqrt(x + 1))/16 - I/(8*sqrt(-1
 + 2/(x + 1))*sqrt(x + 1)) + 3*I/(4*sqrt(-1 + 2/(x + 1))*(x + 1)*
*(3/2)) - I/(sqrt(-1 + 2/(x + 1))*(x + 1)**(5/2)), 2*Abs(1/(x + 1
)) > 1), (-sqrt(2)*asin(sqrt(2)/sqrt(x + 1))/16 + 1/(8*sqrt(1 - 2
/(x + 1))*sqrt(x + 1)) - 3/(4*sqrt(1 - 2/(x + 1))*(x + 1)**(3/2))
 + 1/(sqrt(1 - 2/(x + 1))*(x + 1)**(5/2)), True))
```

GIAC/XCAS [A] time = 0.216032, size = 50, normalized size = 0.89

$$\frac{1}{16}\sqrt{2}\arctan\left(\frac{1}{2}\sqrt{2}\sqrt{x-1}\right) + \frac{(x-1)^{\frac{3}{2}} - 2\sqrt{x-1}}{8(x+1)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(x - 1)/(x + 1)^3,x, algorithm="giac")
```

```
[Out] 1/16*sqrt(2)*arctan(1/2*sqrt(2)*sqrt(x - 1)) + 1/8*((x - 1)^(3/2)
 - 2*sqrt(x - 1))/(x + 1)^2
```

3.1413 $\int \frac{(a+bx)^5}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=154

$$-\frac{10b^4(c+dx)^{9/2}(bc-ad)}{9d^6}+\frac{20b^3(c+dx)^{7/2}(bc-ad)^2}{7d^6}-\frac{4b^2(c+dx)^{5/2}(bc-ad)^3}{d^6}+\frac{10b(c+dx)^{3/2}(bc-ad)^4}{3d^6}-\frac{2\sqrt{c+dx}(bc-ad)^5}{d^6}+\frac{2b^5(c+dx)^{11/2}}{11d^6}$$

```
[Out] (-2*(b*c - a*d)^5*Sqrt[c + d*x])/d^6 + (10*b*(b*c - a*d)^4*(c + d
*x)^(3/2))/(3*d^6) - (4*b^2*(b*c - a*d)^3*(c + d*x)^(5/2))/d^6 +
(20*b^3*(b*c - a*d)^2*(c + d*x)^(7/2))/(7*d^6) - (10*b^4*(b*c - a
*d)*(c + d*x)^(9/2))/(9*d^6) + (2*b^5*(c + d*x)^(11/2))/(11*d^6)
```

Rubi [A] time = 0.149034, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{10b^4(c+dx)^{9/2}(bc-ad)}{9d^6}+\frac{20b^3(c+dx)^{7/2}(bc-ad)^2}{7d^6}-\frac{4b^2(c+dx)^{5/2}(bc-ad)^3}{d^6}+\frac{10b(c+dx)^{3/2}(bc-ad)^4}{3d^6}-\frac{2\sqrt{c+dx}(bc-ad)^5}{d^6}+\frac{2b^5(c+dx)^{11/2}}{11d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/Sqrt[c + d*x],x]
```

```
[Out] (-2*(b*c - a*d)^5*Sqrt[c + d*x])/d^6 + (10*b*(b*c - a*d)^4*(c + d
*x)^(3/2))/(3*d^6) - (4*b^2*(b*c - a*d)^3*(c + d*x)^(5/2))/d^6 +
(20*b^3*(b*c - a*d)^2*(c + d*x)^(7/2))/(7*d^6) - (10*b^4*(b*c - a
*d)*(c + d*x)^(9/2))/(9*d^6) + (2*b^5*(c + d*x)^(11/2))/(11*d^6)
```

Rubi in Sympy [A] time = 39.513, size = 143, normalized size = 0.93

$$\frac{2b^5\left(c+dx\right)^{\frac{11}{2}}}{11d^6}+\frac{10b^4\left(c+dx\right)^{\frac{9}{2}}\left(ad-bc\right)}{9d^6}+\frac{20b^3\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)^2}{7d^6}+\frac{4b^2\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^3}{d^6}+\frac{10b\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^4}{3d^6}+\frac{2\sqrt{c+dx}\left(ad-bc\right)^5}{d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c)**(1/2),x)
```

```
[Out] 2*b**5*(c + d*x)**(11/2)/(11*d**6) + 10*b**4*(c + d*x)**(9/2)*(a*
d - b*c)/(9*d**6) + 20*b**3*(c + d*x)**(7/2)*(a*d - b*c)**2/(7*d*
```

```
*6) + 4*b**2*(c + d*x)**(5/2)*(a*d - b*c)**3/d**6 + 10*b*(c + d*x
)**(3/2)*(a*d - b*c)**4/(3*d**6) + 2*sqrt(c + d*x)*(a*d - b*c)**5
/d**6
```

Mathematica [A] time = 0.215411, size = 216, normalized size = 1.4

$$2\sqrt{c+dx}\left(693a^5d^5+1155a^4bd^4(dx-2c)+462a^3b^2d^3\left(8c^2-4cdx+3d^2x^2\right)+198a^2b^3d^2\left(-16c^3+8c^2dx-6cd^2x^2+5d^3x^3\right.\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x]*(693*a^5*d^5 + 1155*a^4*b*d^4*(-2*c + d*x) + 462
*a^3*b^2*d^3*(8*c^2 - 4*c*d*x + 3*d^2*x^2) + 198*a^2*b^3*d^2*(-16
*c^3 + 8*c^2*d*x - 6*c*d^2*x^2 + 5*d^3*x^3) + 11*a*b^4*d*(128*c^4
 - 64*c^3*d*x + 48*c^2*d^2*x^2 - 40*c*d^3*x^3 + 35*d^4*x^4) + b^5
*(-256*c^5 + 128*c^4*d*x - 96*c^3*d^2*x^2 + 80*c^2*d^3*x^3 - 70*c
*d^4*x^4 + 63*d^5*x^5)))/(693*d^6)
```

Maple [B] time = 0.01, size = 273, normalized size = 1.8

$$126\,b^5x^5d^5+770\,ab^4d^5x^4-140\,b^5cd^4x^4+1980\,a^2b^3d^5x^3-880\,ab^4cd^4x^3+160\,b^5c^2d^3x^3+2772\,a^3b^2d^5x^2-2376\,a^2b^3cd^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c)^(1/2),x)
```

```
[Out] 2/693*(d*x+c)^(1/2)*(63*b^5*d^5*x^5+385*a*b^4*d^5*x^4-70*b^5*c*d^
4*x^4+990*a^2*b^3*d^5*x^3-440*a*b^4*c*d^4*x^3+80*b^5*c^2*d^3*x^3+
1386*a^3*b^2*d^5*x^2-1188*a^2*b^3*c*d^4*x^2+528*a*b^4*c^2*d^3*x^2
-96*b^5*c^3*d^2*x^2+1155*a^4*b*d^5*x-1848*a^3*b^2*c*d^4*x+1584*a^
2*b^3*c^2*d^3*x-704*a*b^4*c^3*d^2*x+128*b^5*c^4*d*x+693*a^5*d^5-2
310*a^4*b*c*d^4+3696*a^3*b^2*c^2*d^3-3168*a^2*b^3*c^3*d^2+1408*a*
b^4*c^4*d-256*b^5*c^5)/d^6
```

Maxima [A] time = 1.35361, size = 382, normalized size = 2.48

$$2\left(693\sqrt{dx+c}a^5+\frac{1155\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)a^4b}{d}+\frac{462\left(3(dx+c)^{\frac{5}{2}}-10(dx+c)^{\frac{3}{2}}c+15\sqrt{dx+c}c^2\right)a^3b^2}{d^2}+\frac{198\left(5(dx+c)^{\frac{7}{2}}-21(dx+c)^{\frac{5}{2}}c+35(dx+c)^{\frac{3}{2}}c^2\right.}{d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/693*(693*sqrt(d*x + c)*a^5 + 1155*((d*x + c)^(3/2) - 3*sqrt(d*x
 + c)*c)*a^4*b/d + 462*(3*(d*x + c)^(5/2) - 10*(d*x + c)^(3/2)*c
+ 15*sqrt(d*x + c)*c^2)*a^3*b^2/d^2 + 198*(5*(d*x + c)^(7/2) - 21
*(d*x + c)^(5/2)*c + 35*(d*x + c)^(3/2)*c^2 - 35*sqrt(d*x + c)*c^
3)*a^2*b^3/d^3 + 11*(35*(d*x + c)^(9/2) - 180*(d*x + c)^(7/2)*c +
 378*(d*x + c)^(5/2)*c^2 - 420*(d*x + c)^(3/2)*c^3 + 315*sqrt(d*x
 + c)*c^4)*a*b^4/d^4 + (63*(d*x + c)^(11/2) - 385*(d*x + c)^(9/2)
*c + 990*(d*x + c)^(7/2)*c^2 - 1386*(d*x + c)^(5/2)*c^3 + 1155*(d
*x + c)^(3/2)*c^4 - 693*sqrt(d*x + c)*c^5)*b^5/d^5)/d
```

Fricas [A] time = 0.212671, size = 352, normalized size = 2.29

$$\frac{2\left(63\,b^5d^5x^5 - 256\,b^5c^5 + 1408\,ab^4c^4d - 3168\,a^2b^3c^3d^2 + 3696\,a^3b^2c^2d^3 - 2310\,a^4bcd^4 + 693\,a^5d^5 - 35\left(2\,b^5cd^4 - 11\,ab^4d^5\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/693*(63*b^5*d^5*x^5 - 256*b^5*c^5 + 1408*a*b^4*c^4*d - 3168*a^2
*b^3*c^3*d^2 + 3696*a^3*b^2*c^2*d^3 - 2310*a^4*b*c*d^4 + 693*a^5*
d^5 - 35*(2*b^5*c*d^4 - 11*a*b^4*d^5)*x^4 + 10*(8*b^5*c^2*d^3 - 4
4*a*b^4*c*d^4 + 99*a^2*b^3*d^5)*x^3 - 6*(16*b^5*c^3*d^2 - 88*a*b^
4*c^2*d^3 + 198*a^2*b^3*c*d^4 - 231*a^3*b^2*d^5)*x^2 + (128*b^5*c
^4*d - 704*a*b^4*c^3*d^2 + 1584*a^2*b^3*c^2*d^3 - 1848*a^3*b^2*c*
d^4 + 1155*a^4*b*d^5)*x)*sqrt(d*x + c)/d^6
```

Sympy [A] time = 25.1217, size = 728, normalized size = 4.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c)**(1/2),x)
```

```
[Out] Piecewise((-(2*a**5*c/sqrt(c + d*x) + 2*a**5*(-c/sqrt(c + d*x) -
sqrt(c + d*x)) + 10*a**4*b*c*(-c/sqrt(c + d*x) - sqrt(c + d*x))/d
 + 10*a**4*b*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x) - (c + d*x)*
*(3/2)/3)/d + 20*a**3*b**2*c*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d
*x) - (c + d*x)**(3/2)/3)/d**2 + 20*a**3*b**2*(-c**3/sqrt(c + d*x
) - 3*c**2*sqrt(c + d*x) + c*(c + d*x)**(3/2) - (c + d*x)**(5/2)/
5)/d**2 + 20*a**2*b**3*c*(-c**3/sqrt(c + d*x) - 3*c**2*sqrt(c + d
*x) + c*(c + d*x)**(3/2) - (c + d*x)**(5/2)/5)/d**3 + 20*a**2*b**
3*(c**4/sqrt(c + d*x) + 4*c**3*sqrt(c + d*x) - 2*c**2*(c + d*x)**
```

```
(3/2) + 4*c*(c + d*x)**(5/2)/5 - (c + d*x)**(7/2)/7)/d**3 + 10*a*
b**4*c*(c**4/sqrt(c + d*x) + 4*c**3*sqrt(c + d*x) - 2*c**2*(c + d
*x)**(3/2) + 4*c*(c + d*x)**(5/2)/5 - (c + d*x)**(7/2)/7)/d**4 +
10*a*b**4*(-c**5/sqrt(c + d*x) - 5*c**4*sqrt(c + d*x) + 10*c**3*(
c + d*x)**(3/2)/3 - 2*c**2*(c + d*x)**(5/2) + 5*c*(c + d*x)**(7/2
)/7 - (c + d*x)**(9/2)/9)/d**4 + 2*b**5*c*(-c**5/sqrt(c + d*x) -
5*c**4*sqrt(c + d*x) + 10*c**3*(c + d*x)**(3/2)/3 - 2*c**2*(c + d
*x)**(5/2) + 5*c*(c + d*x)**(7/2)/7 - (c + d*x)**(9/2)/9)/d**5 +
2*b**5*(c**6/sqrt(c + d*x) + 6*c**5*sqrt(c + d*x) - 5*c**4*(c + d
*x)**(3/2) + 4*c**3*(c + d*x)**(5/2) - 15*c**2*(c + d*x)**(7/2)/7
 + 2*c*(c + d*x)**(9/2)/3 - (c + d*x)**(11/2)/11)/d**5)/d, Ne(d,
0)), (Piecewise((a**5*x, Eq(b, 0)), ((a + b*x)**6/(6*b), True))/s
qrt(c), True))
```

GIAC/XCAS [A] time = 0.222046, size = 455, normalized size = 2.95

$$2\left(693\sqrt{dx+c}a^5 + \frac{1155\left((dx+c)^{\frac{3}{2}} - 3\sqrt{dx+c}c\right)a^4b}{d} + \frac{462\left(3(dx+c)^{\frac{5}{2}}d^8 - 10(dx+c)^{\frac{3}{2}}cd^8 + 15\sqrt{dx+c}c^2d^8\right)a^3b^2}{d^{10}} + \frac{198\left(5(dx+c)^{\frac{7}{2}}d^{18} - 21(dx+c)^{\frac{5}{2}}cd^{18} + \cdots\right.}{\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/693*(693*sqrt(d*x + c)*a^5 + 1155*((d*x + c)^(3/2) - 3*sqrt(d*x
 + c)*c)*a^4*b/d + 462*(3*(d*x + c)^(5/2)*d^8 - 10*(d*x + c)^(3/2
)*c*d^8 + 15*sqrt(d*x + c)*c^2*d^8)*a^3*b^2/d^10 + 198*(5*(d*x +
c)^(7/2)*d^18 - 21*(d*x + c)^(5/2)*c*d^18 + 35*(d*x + c)^(3/2)*c^
2*d^18 - 35*sqrt(d*x + c)*c^3*d^18)*a^2*b^3/d^21 + 11*(35*(d*x +
c)^(9/2)*d^32 - 180*(d*x + c)^(7/2)*c*d^32 + 378*(d*x + c)^(5/2)*
c^2*d^32 - 420*(d*x + c)^(3/2)*c^3*d^32 + 315*sqrt(d*x + c)*c^4*d
^32)*a*b^4/d^36 + (63*(d*x + c)^(11/2)*d^50 - 385*(d*x + c)^(9/2)
*c*d^50 + 990*(d*x + c)^(7/2)*c^2*d^50 - 1386*(d*x + c)^(5/2)*c^3
*d^50 + 1155*(d*x + c)^(3/2)*c^4*d^50 - 693*sqrt(d*x + c)*c^5*d^5
0)*b^5/d^55)/d
```

3.1414 $\int \frac{(a+bx)^4}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=127

$$-\frac{8b^3(c+dx)^{7/2}(bc-ad)}{7d^5}+\frac{12b^2(c+dx)^{5/2}(bc-ad)^2}{5d^5}-\frac{8b(c+dx)^{3/2}(bc-ad)^3}{3d^5}+\frac{2\sqrt{c+dx}(bc-ad)^4}{d^5}+\frac{2b^4(c+dx)^{9/2}}{9d^5}$$

```
[Out] (2*(b*c - a*d)^4*Sqrt[c + d*x])/d^5 - (8*b*(b*c - a*d)^3*(c + d*x
)^(3/2))/(3*d^5) + (12*b^2*(b*c - a*d)^2*(c + d*x)^(5/2))/(5*d^5)
 - (8*b^3*(b*c - a*d)*(c + d*x)^(7/2))/(7*d^5) + (2*b^4*(c + d*x)
^(9/2))/(9*d^5)
```

Rubi [A] time = 0.120994, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{8b^3(c+dx)^{7/2}(bc-ad)}{7d^5}+\frac{12b^2(c+dx)^{5/2}(bc-ad)^2}{5d^5}-\frac{8b(c+dx)^{3/2}(bc-ad)^3}{3d^5}+\frac{2\sqrt{c+dx}(bc-ad)^4}{d^5}+\frac{2b^4(c+dx)^{9/2}}{9d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/Sqrt[c + d*x],x]
```

```
[Out] (2*(b*c - a*d)^4*Sqrt[c + d*x])/d^5 - (8*b*(b*c - a*d)^3*(c + d*x
)^(3/2))/(3*d^5) + (12*b^2*(b*c - a*d)^2*(c + d*x)^(5/2))/(5*d^5)
 - (8*b^3*(b*c - a*d)*(c + d*x)^(7/2))/(7*d^5) + (2*b^4*(c + d*x)
^(9/2))/(9*d^5)
```

Rubi in Sympy [A] time = 29.6334, size = 117, normalized size = 0.92

$$\frac{2b^4(c+dx)^{\frac{9}{2}}}{9d^5}+\frac{8b^3(c+dx)^{\frac{7}{2}}(ad-bc)}{7d^5}+\frac{12b^2(c+dx)^{\frac{5}{2}}(ad-bc)^2}{5d^5}+\frac{8b(c+dx)^{\frac{3}{2}}(ad-bc)^3}{3d^5}+\frac{2\sqrt{c+dx}(ad-bc)^4}{d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c)**(1/2),x)
```

```
[Out] 2*b**4*(c + d*x)**(9/2)/(9*d**5) + 8*b**3*(c + d*x)**(7/2)*(a*d -
 b*c)/(7*d**5) + 12*b**2*(c + d*x)**(5/2)*(a*d - b*c)**2/(5*d**5)
```

```
 + 8*b*(c + d*x)**(3/2)*(a*d - b*c)**3/(3*d**5) + 2*sqrt(c + d*x)
*(a*d - b*c)**4/d**5
```

Mathematica [A] time = 0.108225, size = 153, normalized size = 1.2

$$\frac{2\sqrt{c+dx}\left(315a^4d^4+420a^3bd^3(dx-2c)+126a^2b^2d^2\left(8c^2-4cdx+3d^2x^2\right)+36ab^3d\left(-16c^3+8c^2dx-6cd^2x^2+5d^3x^3\right)+b\right.}{315d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x]*(315*a^4*d^4 + 420*a^3*b*d^3*(-2*c + d*x) + 126*
a^2*b^2*d^2*(8*c^2 - 4*c*d*x + 3*d^2*x^2) + 36*a*b^3*d*(-16*c^3 +
 8*c^2*d*x - 6*c*d^2*x^2 + 5*d^3*x^3) + b^4*(128*c^4 - 64*c^3*d*x
 + 48*c^2*d^2*x^2 - 40*c*d^3*x^3 + 35*d^4*x^4)))/(315*d^5)
```

Maple [A] time = 0.009, size = 186, normalized size = 1.5

$$\frac{70\,x^4b^4d^4+360\,ab^3d^4x^3-80\,b^4cd^3x^3+756\,a^2b^2d^4x^2-432\,ab^3cd^3x^2+96\,b^4c^2d^2x^2+840\,a^3bd^4x-1008\,a^2b^2cd^3x+576\,ab}{315\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c)^(1/2),x)
```

```
[Out] 2/315*(d*x+c)^(1/2)*(35*b^4*d^4*x^4+180*a*b^3*d^4*x^3-40*b^4*c*d^
3*x^3+378*a^2*b^2*d^4*x^2-216*a*b^3*c*d^3*x^2+48*b^4*c^2*d^2*x^2+
420*a^3*b*d^4*x-504*a^2*b^2*c*d^3*x+288*a*b^3*c^2*d^2*x-64*b^4*c^
3*d*x+315*a^4*d^4-840*a^3*b*c*d^3+1008*a^2*b^2*c^2*d^2-576*a*b^3*
c^3*d+128*b^4*c^4)/d^5
```

Maxima [A] time = 1.39694, size = 275, normalized size = 2.17

$$\frac{2\left(315\sqrt{dx+c}a^4+\frac{420\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)a^3b}{d}+\frac{126\left(3(dx+c)^{\frac{5}{2}}-10(dx+c)^{\frac{3}{2}}c+15\sqrt{dx+c}c^2\right)a^2b^2}{d^2}+\frac{36\left(5(dx+c)^{\frac{7}{2}}-21(dx+c)^{\frac{5}{2}}c+35(dx+c)^{\frac{3}{2}}c^2-3\right.}{d^3}\right.}{315\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/315*(315*sqrt(d*x + c)*a^4 + 420*((d*x + c)^(3/2) - 3*sqrt(d*x
+ c)*c)*a^3*b/d + 126*(3*(d*x + c)^(5/2) - 10*(d*x + c)^(3/2)*c +
 15*sqrt(d*x + c)*c^2)*a^2*b^2/d^2 + 36*(5*(d*x + c)^(7/2) - 21*(
d*x + c)^(5/2)*c + 35*(d*x + c)^(3/2)*c^2 - 35*sqrt(d*x + c)*c^3)
*a*b^3/d^3 + (35*(d*x + c)^(9/2) - 180*(d*x + c)^(7/2)*c + 378*(d
*x + c)^(5/2)*c^2 - 420*(d*x + c)^(3/2)*c^3 + 315*sqrt(d*x + c)*c
^4)*b^4/d^4)/d
```

Fricas [A] time = 0.212753, size = 246, normalized size = 1.94

$$\frac{2\left(35\,b^4d^4x^4 + 128\,b^4c^4 - 576\,ab^3c^3d + 1008\,a^2b^2c^2d^2 - 840\,a^3bcd^3 + 315\,a^4d^4 - 20\left(2\,b^4cd^3 - 9\,ab^3d^4\right)x^3 + 6\left(8\,b^4c^2d^2 - 3\right.}{315\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^4*d^4*x^4 + 128*b^4*c^4 - 576*a*b^3*c^3*d + 1008*a^2*
b^2*c^2*d^2 - 840*a^3*b*c*d^3 + 315*a^4*d^4 - 20*(2*b^4*c*d^3 - 9
*a*b^3*d^4)*x^3 + 6*(8*b^4*c^2*d^2 - 36*a*b^3*c*d^3 + 63*a^2*b^2*
d^4)*x^2 - 4*(16*b^4*c^3*d - 72*a*b^3*c^2*d^2 + 126*a^2*b^2*c*d^3
 - 105*a^3*b*d^4)*x)*sqrt(d*x + c)/d^5
```

Sympy [A] time = 17.0034, size = 532, normalized size = 4.19

$$\begin{cases} -\frac{\frac{2a^4c}{\sqrt{c+dx}} + 2a^4\left(-\frac{c}{\sqrt{c+dx}} - \sqrt{c+dx}\right) + \frac{8a^3bc\left(-\frac{c}{\sqrt{c+dx}} - \sqrt{c+dx}\right)}{d} + \frac{8a^3b\left(\frac{c^2}{\sqrt{c+dx}} + 2c\sqrt{c+dx} - \frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d} + \frac{12a^2b^2c\left(\frac{c^2}{\sqrt{c+dx}} + 2c\sqrt{c+dx} - \frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d^2} + \frac{12a^2b^2\left(-\frac{c^3}{\sqrt{c+dx}} - 3c^2\sqrt{c+dx} + c\right.}{d^2}}{} \\ \frac{\begin{cases} a^4x & \text{for } b = 0 \\ \frac{(a+bx)^5}{5b} & \text{otherwise} \end{cases}}{\sqrt{c}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c)**(1/2),x)
```

```
[Out] Piecewise((-(2*a**4*c/sqrt(c + d*x) + 2*a**4*(-c/sqrt(c + d*x) -
sqrt(c + d*x)) + 8*a**3*b*c*(-c/sqrt(c + d*x) - sqrt(c + d*x))/d
+ 8*a**3*b*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x) - (c + d*x)**(
3/2)/3)/d + 12*a**2*b**2*c*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x
) - (c + d*x)**(3/2)/3)/d**2 + 12*a**2*b**2*(-c**3/sqrt(c + d*x)
- 3*c**2*sqrt(c + d*x) + c*(c + d*x)**(3/2) - (c + d*x)**(5/2)/5)
/d**2 + 8*a*b**3*c*(-c**3/sqrt(c + d*x) - 3*c**2*sqrt(c + d*x) +
c*(c + d*x)**(3/2) - (c + d*x)**(5/2)/5)/d**3 + 8*a*b**3*(c**4/sq
rt(c + d*x) + 4*c**3*sqrt(c + d*x) - 2*c**2*(c + d*x)**(3/2) + 4*
c*(c + d*x)**(5/2)/5 - (c + d*x)**(7/2)/7)/d**3 + 2*b**4*c*(c**4/
```

```
sqrt(c + d*x) + 4*c**3*sqrt(c + d*x) - 2*c**2*(c + d*x)**(3/2) +
4*c*(c + d*x)**(5/2)/5 - (c + d*x)**(7/2)/7)/d**4 + 2*b**4*(-c**5
/sqrt(c + d*x) - 5*c**4*sqrt(c + d*x) + 10*c**3*(c + d*x)**(3/2)/
3 - 2*c**2*(c + d*x)**(5/2) + 5*c*(c + d*x)**(7/2)/7 - (c + d*x)*
*(9/2)/9)/d**4)/d, Ne(d, 0)), (Piecewise((a**4*x, Eq(b, 0)), ((a
+ b*x)**5/(5*b), True))/sqrt(c), True))
```

GIAC/XCAS [A] time = 0.219427, size = 324, normalized size = 2.55

$$\frac{2\left(315\sqrt{dx+c}a^4+\frac{420\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)a^3b}{d}+\frac{126\left(3(dx+c)^{\frac{5}{2}}d^8-10(dx+c)^{\frac{3}{2}}cd^8+15\sqrt{dx+c}c^2d^8\right)a^2b^2}{d^{10}}+\frac{36\left(5(dx+c)^{\frac{7}{2}}d^{18}-21(dx+c)^{\frac{5}{2}}cd^{18}+35\right.}{d^2}\right.}{315d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/315*(315*sqrt(d*x + c)*a^4 + 420*((d*x + c)^(3/2) - 3*sqrt(d*x
+ c)*c)*a^3*b/d + 126*(3*(d*x + c)^(5/2)*d^8 - 10*(d*x + c)^(3/2)
*c*d^8 + 15*sqrt(d*x + c)*c^2*d^8)*a^2*b^2/d^10 + 36*(5*(d*x + c)
^(7/2)*d^18 - 21*(d*x + c)^(5/2)*c*d^18 + 35*(d*x + c)^(3/2)*c^2*
d^18 - 35*sqrt(d*x + c)*c^3*d^18)*a*b^3/d^21 + (35*(d*x + c)^(9/2
)*d^32 - 180*(d*x + c)^(7/2)*c*d^32 + 378*(d*x + c)^(5/2)*c^2*d^3
2 - 420*(d*x + c)^(3/2)*c^3*d^32 + 315*sqrt(d*x + c)*c^4*d^32)*b^
4/d^36)/d
```

3.1415 $\int \frac{(a+bx)^3}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=96

$$-\frac{6b^2(c+dx)^{5/2}(bc-ad)}{5d^4}+\frac{2b(c+dx)^{3/2}(bc-ad)^2}{d^4}-\frac{2\sqrt{c+dx}(bc-ad)^3}{d^4}+\frac{2b^3(c+dx)^{7/2}}{7d^4}$$

```
[Out] (-2*(b*c - a*d)^3*Sqrt[c + d*x])/d^4 + (2*b*(b*c - a*d)^2*(c + d*
x)^(3/2))/d^4 - (6*b^2*(b*c - a*d)*(c + d*x)^(5/2))/(5*d^4) + (2*
b^3*(c + d*x)^(7/2))/(7*d^4)
```

Rubi [A] time = 0.0970848, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{6b^2(c+dx)^{5/2}(bc-ad)}{5d^4}+\frac{2b(c+dx)^{3/2}(bc-ad)^2}{d^4}-\frac{2\sqrt{c+dx}(bc-ad)^3}{d^4}+\frac{2b^3(c+dx)^{7/2}}{7d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/Sqrt[c + d*x],x]
```

```
[Out] (-2*(b*c - a*d)^3*Sqrt[c + d*x])/d^4 + (2*b*(b*c - a*d)^2*(c + d*
x)^(3/2))/d^4 - (6*b^2*(b*c - a*d)*(c + d*x)^(5/2))/(5*d^4) + (2*
b^3*(c + d*x)^(7/2))/(7*d^4)
```

Rubi in Sympy [A] time = 21.4203, size = 88, normalized size = 0.92

$$\frac{2b^3\left(c+dx\right)^{\frac{7}{2}}}{7d^4}+\frac{6b^2\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)}{5d^4}+\frac{2b\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^2}{d^4}+\frac{2\sqrt{c+dx}\left(ad-bc\right)^3}{d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c)**(1/2),x)
```

```
[Out] 2*b**3*(c + d*x)**(7/2)/(7*d**4) + 6*b**2*(c + d*x)**(5/2)*(a*d -
 b*c)/(5*d**4) + 2*b*(c + d*x)**(3/2)*(a*d - b*c)**2/d**4 + 2*sqr
t(c + d*x)*(a*d - b*c)**3/d**4
```

Mathematica [A] time = 0.0757848, size = 101, normalized size = 1.05

$$\frac{2\sqrt{c+dx}\left(35a^3d^3+35a^2bd^2(dx-2c)+7ab^2d\left(8c^2-4cdx+3d^2x^2\right)+b^3\left(-16c^3+8c^2dx-6cd^2x^2+5d^3x^3\right)\right)}{35d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x]*(35*a^3*d^3 + 35*a^2*b*d^2*(-2*c + d*x) + 7*a*b^
2*d*(8*c^2 - 4*c*d*x + 3*d^2*x^2) + b^3*(-16*c^3 + 8*c^2*d*x - 6*
c*d^2*x^2 + 5*d^3*x^3)))/(35*d^4)
```

Maple [A] time = 0.009, size = 116, normalized size = 1.2

$$\frac{10\,b^3x^3d^3+42\,ab^2d^3x^2-12\,b^3cd^2x^2+70\,a^2bd^3x-56\,ab^2cd^2x+16\,b^3c^2dx+70\,a^3d^3-140\,a^2bcd^2+112\,ab^2c^2d-32\,b^3c^3}{35\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c)^(1/2),x)
```

```
[Out] 2/35*(d*x+c)^(1/2)*(5*b^3*d^3*x^3+21*a*b^2*d^3*x^2-6*b^3*c*d^2*x^
2+35*a^2*b*d^3*x-28*a*b^2*c*d^2*x+8*b^3*c^2*d*x+35*a^3*d^3-70*a^2
*b*c*d^2+56*a*b^2*c^2*d-16*b^3*c^3)/d^4
```

Maple [A] time = 1.42198, size = 185, normalized size = 1.93

$$\frac{2\left(35\sqrt{dx+c}a^3+\frac{35\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)a^2b}{d}+\frac{7\left(3\,(dx+c)^{\frac{5}{2}}-10\,(dx+c)^{\frac{3}{2}}c+15\sqrt{dx+c}c^2\right)ab^2}{d^2}+\frac{\left(5\,(dx+c)^{\frac{7}{2}}-21\,(dx+c)^{\frac{5}{2}}c+35\,(dx+c)^{\frac{3}{2}}c^2-35\sqrt{dx+c}\right.}{d^3}\right.}{35\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/35*(35*sqrt(d*x + c)*a^3 + 35*((d*x + c)^(3/2) - 3*sqrt(d*x + c
)*c)*a^2*b/d + 7*(3*(d*x + c)^(5/2) - 10*(d*x + c)^(3/2)*c + 15*s
qrt(d*x + c)*c^2)*a*b^2/d^2 + (5*(d*x + c)^(7/2) - 21*(d*x + c)^(
5/2)*c + 35*(d*x + c)^(3/2)*c^2 - 35*sqrt(d*x + c)*c^3)*b^3/d^3)/
d
```

Fricas [A] time = 0.202467, size = 155, normalized size = 1.61

$$\frac{2\left(5\,b^3d^3x^3-16\,b^3c^3+56\,ab^2c^2d-70\,a^2bcd^2+35\,a^3d^3-3\left(2\,b^3cd^2-7\,ab^2d^3\right)x^2+\left(8\,b^3c^2d-28\,ab^2cd^2+35\,a^2bd^3\right)x\right)\sqrt{d}}{35\,d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/35*(5*b^3*d^3*x^3 - 16*b^3*c^3 + 56*a*b^2*c^2*d - 70*a^2*b*c*d^
2 + 35*a^3*d^3 - 3*(2*b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + (8*b^3*c^2*d
 - 28*a*b^2*c*d^2 + 35*a^2*b*d^3)*x)*sqrt(d*x + c)/d^4
```

Sympy [A] time = 10.3689, size = 366, normalized size = 3.81

$$\begin{cases} -\frac{\frac{2a^3c}{\sqrt{c+dx}}+2a^3\left(-\frac{c}{\sqrt{c+dx}}-\sqrt{c+dx}\right)+\frac{6a^2bc\left(-\frac{c}{\sqrt{c+dx}}-\sqrt{c+dx}\right)}{d}+\frac{6a^2b\left(\frac{c^2}{\sqrt{c+dx}}+2c\sqrt{c+dx}-\frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d}+\frac{6ab^2c\left(\frac{c^2}{\sqrt{c+dx}}+2c\sqrt{c+dx}-\frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d^2}+\frac{6ab^2\left(-\frac{c^3}{\sqrt{c+dx}}-3c^2\sqrt{c+dx}+c(c+d\right.}{d^2}}{d} \\ \frac{\begin{cases} a^3x & \text{for } b = 0 \\ \frac{(a+bx)^4}{4b} & \text{otherwise} \end{cases}}{\sqrt{c}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c)**(1/2),x)
```

```
[Out] Piecewise((-(2*a**3*c/sqrt(c + d*x) + 2*a**3*(-c/sqrt(c + d*x) -
sqrt(c + d*x)) + 6*a**2*b*c*(-c/sqrt(c + d*x) - sqrt(c + d*x))/d
+ 6*a**2*b*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x) - (c + d*x)**(
3/2)/3)/d + 6*a*b**2*c*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x) -
(c + d*x)**(3/2)/3)/d**2 + 6*a*b**2*(-c**3/sqrt(c + d*x) - 3*c**2
*sqrt(c + d*x) + c*(c + d*x)**(3/2) - (c + d*x)**(5/2)/5)/d**2 +
2*b**3*c*(-c**3/sqrt(c + d*x) - 3*c**2*sqrt(c + d*x) + c*(c + d*x
)**(3/2) - (c + d*x)**(5/2)/5)/d**3 + 2*b**3*(c**4/sqrt(c + d*x)
+ 4*c**3*sqrt(c + d*x) - 2*c**2*(c + d*x)**(3/2) + 4*c*(c + d*x)*
*(5/2)/5 - (c + d*x)**(7/2)/7)/d**3)/d, Ne(d, 0)), (Piecewise((a*
*3*x, Eq(b, 0)), ((a + b*x)**4/(4*b), True))/sqrt(c), True))
```

GIAC/XCAS [A] time = 0.220866, size = 213, normalized size = 2.22

$$\frac{2\left(35\sqrt{dx+c}a^3+\frac{35\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)a^2b}{d}+\frac{7\left(3(dx+c)^{\frac{5}{2}}d^8-10(dx+c)^{\frac{3}{2}}cd^8+15\sqrt{dx+c}c^2d^8\right)ab^2}{d^{10}}+\frac{\left(5(dx+c)^{\frac{7}{2}}d^{18}-21(dx+c)^{\frac{5}{2}}cd^{18}+35(dx+c)^{\frac{3}{2}}\right.}{d^{21}}}{35d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/35*(35*sqrt(d*x + c)*a^3 + 35*((d*x + c)^(3/2) - 3*sqrt(d*x + c
)*c)*a^2*b/d + 7*(3*(d*x + c)^(5/2)*d^8 - 10*(d*x + c)^(3/2)*c*d^
8 + 15*sqrt(d*x + c)*c^2*d^8)*a*b^2/d^10 + (5*(d*x + c)^(7/2)*d^1
8 - 21*(d*x + c)^(5/2)*c*d^18 + 35*(d*x + c)^(3/2)*c^2*d^18 - 35*
```

```
sqrt(d*x + c)*c^3*d^18)*b^3/d^21)/d
```

3.1416 $\int \frac{(a+bx)^2}{\sqrt{c+dx}} \, dx$

Optimal. Leaf size=69

$$-\frac{4b(c+dx)^{3/2}(bc-ad)}{3d^3}+\frac{2\sqrt{c+dx}(bc-ad)^2}{d^3}+\frac{2b^2(c+dx)^{5/2}}{5d^3}$$

```
[Out] (2*(b*c - a*d)^2*Sqrt[c + d*x])/d^3 - (4*b*(b*c - a*d)*(c + d*x)^
(3/2))/(3*d^3) + (2*b^2*(c + d*x)^(5/2))/(5*d^3)
```

Rubi [A] time = 0.0656746, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{4b(c+dx)^{3/2}(bc-ad)}{3d^3}+\frac{2\sqrt{c+dx}(bc-ad)^2}{d^3}+\frac{2b^2(c+dx)^{5/2}}{5d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/Sqrt[c + d*x],x]
```

```
[Out] (2*(b*c - a*d)^2*Sqrt[c + d*x])/d^3 - (4*b*(b*c - a*d)*(c + d*x)^
(3/2))/(3*d^3) + (2*b^2*(c + d*x)^(5/2))/(5*d^3)
```

Rubi in Sympy [A] time = 14.8864, size = 63, normalized size = 0.91

$$\frac{2b^2\left(c+dx\right)^{\frac{5}{2}}}{5d^3}+\frac{4b\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}{3d^3}+\frac{2\sqrt{c+dx}\left(ad-bc\right)^2}{d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c)**(1/2),x)
```

```
[Out] 2*b**2*(c + d*x)**(5/2)/(5*d**3) + 4*b*(c + d*x)**(3/2)*(a*d - b*
c)/(3*d**3) + 2*sqrt(c + d*x)*(a*d - b*c)**2/d**3
```

Mathematica [A] time = 0.0475578, size = 60, normalized size = 0.87

$$\frac{2\sqrt{c+dx}\left(15a^2d^2+10abd(dx-2c)+b^2\left(8c^2-4cdx+3d^2x^2\right)\right)}{15d^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x]*(15*a^2*d^2 + 10*a*b*d*(-2*c + d*x) + b^2*(8*c^2
 - 4*c*d*x + 3*d^2*x^2)))/(15*d^3)
```

Maple [A] time = 0.008, size = 63, normalized size = 0.9

$$\frac{6\,b^{2}x^{2}d^{2}+20\,ab\,d^{2}x-8\,b^{2}cdx+30\,a^{2}d^{2}-40\,abcd+16\,b^{2}c^{2}}{15\,d^{3}}\sqrt{dx+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c)^(1/2),x)
```

```
[Out] 2/15*(d*x+c)^(1/2)*(3*b^2*d^2*x^2+10*a*b*d^2*x-4*b^2*c*d*x+15*a^2
*d^2-20*a*b*c*d+8*b^2*c^2)/d^3
```

Maxima [A] time = 1.34548, size = 111, normalized size = 1.61

$$\frac{2\left(15\,\sqrt{dx+c}a^{2}+\frac{10\left((dx+c)^{\frac{3}{2}}-3\,\sqrt{dx+c}c\right)ab}{d}+\frac{\left(3\,(dx+c)^{\frac{5}{2}}-10\,(dx+c)^{\frac{3}{2}}c+15\,\sqrt{dx+c}c^{2}\right)b^{2}}{d^{2}}\right)}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/15*(15*sqrt(d*x + c)*a^2 + 10*((d*x + c)^(3/2) - 3*sqrt(d*x + c
)*c)*a*b/d + (3*(d*x + c)^(5/2) - 10*(d*x + c)^(3/2)*c + 15*sqrt(
d*x + c)*c^2)*b^2/d^2)/d
```

Fricas [A] time = 0.20652, size = 86, normalized size = 1.25

$$\frac{2\left(3\,b^{2}d^{2}x^{2}+8\,b^{2}c^{2}-20\,abcd+15\,a^{2}d^{2}-2\left(2\,b^{2}cd-5\,ab\,d^{2}\right)x\right)\sqrt{dx+c}}{15\,d^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^2*d^2*x^2 + 8*b^2*c^2 - 20*a*b*c*d + 15*a^2*d^2 - 2*(2*
b^2*c*d - 5*a*b*d^2)*x)*sqrt(d*x + c)/d^3
```

Sympy [A] time = 5.91055, size = 231, normalized size = 3.35

$$\begin{cases} -\frac{\frac{2a^2c}{\sqrt{c+dx}}+2a^2\left(-\frac{c}{\sqrt{c+dx}}-\sqrt{c+dx}\right)+\frac{4abc\left(-\frac{c}{\sqrt{c+dx}}-\sqrt{c+dx}\right)}{d}+\frac{4ab\left(\frac{c^2}{\sqrt{c+dx}}+2c\sqrt{c+dx}-\frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d}+\frac{2b^2c\left(\frac{c^2}{\sqrt{c+dx}}+2c\sqrt{c+dx}-\frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d^2}+\frac{2b^2\left(-\frac{c^3}{\sqrt{c+dx}}-3c^2\sqrt{c+dx}+c(c+dx)^{\frac{3}{2}}-\cdots\right.}{d^2}}{d} \\ \frac{\begin{cases} a^2x & \text{for } b=0 \\ \frac{(a+bx)^3}{3b} & \text{otherwise} \end{cases}}{\sqrt{c}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c)**(1/2),x)
```

```
[Out] Piecewise((-(2*a**2*c/sqrt(c + d*x) + 2*a**2*(-c/sqrt(c + d*x) -
sqrt(c + d*x)) + 4*a*b*c*(-c/sqrt(c + d*x) - sqrt(c + d*x))/d + 4
*a*b*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x) - (c + d*x)**(3/2)/3
)/d + 2*b**2*c*(c**2/sqrt(c + d*x) + 2*c*sqrt(c + d*x) - (c + d*x
)**(3/2)/3)/d**2 + 2*b**2*(-c**3/sqrt(c + d*x) - 3*c**2*sqrt(c +
d*x) + c*(c + d*x)**(3/2) - (c + d*x)**(5/2)/5)/d**2)/d, Ne(d, 0)
), (Piecewise((a**2*x, Eq(b, 0)), ((a + b*x)**3/(3*b), True))/sqr
t(c), True))
```

GIAC/XCAS [A] time = 0.216803, size = 123, normalized size = 1.78

$$\frac{2\left(15\sqrt{dx+c}a^2+\frac{10\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)ab}{d}+\frac{\left(3(dx+c)^{\frac{5}{2}}d^8-10(dx+c)^{\frac{3}{2}}cd^8+15\sqrt{dx+c}c^2d^8\right)b^2}{d^{10}}\right)}{15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/15*(15*sqrt(d*x + c)*a^2 + 10*((d*x + c)^(3/2) - 3*sqrt(d*x + c
)*c)*a*b/d + (3*(d*x + c)^(5/2)*d^8 - 10*(d*x + c)^(3/2)*c*d^8 +
15*sqrt(d*x + c)*c^2*d^8)*b^2/d^10)/d
```

3.1417 $\int \frac{a+bx}{\sqrt{c+dx}} dx$

Optimal. Leaf size=40

$$\frac{2b(c+dx)^{3/2}}{3d^2} - \frac{2\sqrt{c+dx}(bc-ad)}{d^2}$$

```
[Out] (-2*(b*c - a*d)*Sqrt[c + d*x])/d^2 + (2*b*(c + d*x)^(3/2))/(3*d^2
)
```

Rubi [A] time = 0.0442325, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2b(c+dx)^{3/2}}{3d^2} - \frac{2\sqrt{c+dx}(bc-ad)}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/Sqrt[c + d*x],x]
```

```
[Out] (-2*(b*c - a*d)*Sqrt[c + d*x])/d^2 + (2*b*(c + d*x)^(3/2))/(3*d^2
)
```

Rubi in Sympy [A] time = 7.89419, size = 36, normalized size = 0.9

$$\frac{2b\left(c+dx\right)^{\frac{3}{2}}}{3d^2} + \frac{2\sqrt{c+dx}\left(ad-bc\right)}{d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)**(1/2),x)
```

```
[Out] 2*b*(c + d*x)**(3/2)/(3*d**2) + 2*sqrt(c + d*x)*(a*d - b*c)/d**2
```

Mathematica [A] time = 0.0215717, size = 29, normalized size = 0.72

$$\frac{2\sqrt{c+dx}(3ad-2bc+bdx)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x]*(-2*b*c + 3*a*d + b*d*x))/(3*d^2)
```

Maple [A] time = 0.005, size = 26, normalized size = 0.7

$$\frac{2\,bdx+6\,ad-4\,bc}{3\,d^2}\sqrt{dx+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c)^(1/2),x)
```

```
[Out] 2/3*(d*x+c)^(1/2)*(b*d*x+3*a*d-2*b*c)/d^2
```

Maxima [A] time = 1.35306, size = 53, normalized size = 1.32

$$\frac{2\left(3\,\sqrt{dx+c}a+\frac{\left((dx+c)^{\frac{3}{2}}-3\,\sqrt{dx+c}c\right)b}{d}\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2/3*(3*sqrt(d*x + c)*a + ((d*x + c)^(3/2) - 3*sqrt(d*x + c)*c)*b/
d)/d
```

Fricas [A] time = 0.222045, size = 34, normalized size = 0.85

$$\frac{2\,(bdx-2\,bc+3\,ad)\sqrt{dx+c}}{3\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2/3*(b*d*x - 2*b*c + 3*a*d)*sqrt(d*x + c)/d^2
```

Sympy [A] time = 2.06103, size = 121, normalized size = 3.02

$$\begin{cases} -\frac{\frac{2ac}{\sqrt{c+dx}}+2a\left(-\frac{c}{\sqrt{c+dx}}-\sqrt{c+dx}\right)+\frac{2bc\left(-\frac{c}{\sqrt{c+dx}}-\sqrt{c+dx}\right)}{d}+\frac{2b\left(\frac{c^2}{\sqrt{c+dx}}+2c\sqrt{c+dx}-\frac{(c+dx)^{\frac{3}{2}}}{3}\right)}{d}}{d} & \text{for } d\neq 0 \\ \frac{ax+\frac{bx^2}{2}}{\sqrt{c}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**(1/2),x)
```

```
[Out] Piecewise((-(2*a*c/sqrt(c + d*x) + 2*a*(-c/sqrt(c + d*x) - sqrt(c
 + d*x)) + 2*b*c*(-c/sqrt(c + d*x) - sqrt(c + d*x))/d + 2*b*(c**2
/sqrt(c + d*x) + 2*c*sqrt(c + d*x) - (c + d*x)**(3/2)/3)/d)/d, Ne
(d, 0)), ((a*x + b*x**2/2)/sqrt(c), True))
```

GIAC/XCAS [A] time = 0.216979, size = 53, normalized size = 1.32

$$\frac{2\left(3\sqrt{dx+c}a+\frac{\left((dx+c)^{\frac{3}{2}}-3\sqrt{dx+c}c\right)b}{d}\right)}{3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2/3*(3*sqrt(d*x + c)*a + ((d*x + c)^(3/2) - 3*sqrt(d*x + c)*c)*b/
d)/d
```

3.1418 $\int \frac{1}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=14

$$\frac{2\sqrt{c+dx}}{d}$$

```
[Out] (2*Sqrt[c + d*x])/d
```

Rubi [A] time = 0.00709146, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$\frac{2\sqrt{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[1/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x])/d
```

Rubi in Sympy [A] time = 1.36657, size = 10, normalized size = 0.71

$$\frac{2\sqrt{c+dx}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(d*x+c)**(1/2),x)
```

```
[Out] 2*sqrt(c + d*x)/d
```

Mathematica [A] time = 0.00289841, size = 14, normalized size = 1.

$$\frac{2\sqrt{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/Sqrt[c + d*x],x]
```

```
[Out] (2*Sqrt[c + d*x])/d
```

Maple [A] time = 0.003, size = 13, normalized size = 0.9

$$2\,\frac{\sqrt{dx+c}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(d*x+c)^(1/2),x)
```

```
[Out] 2*(d*x+c)^(1/2)/d
```

Maxima [A] time = 1.38129, size = 16, normalized size = 1.14

$$\frac{2\,\sqrt{dx+c}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] 2*sqrt(d*x + c)/d
```

Fricas [A] time = 0.217544, size = 16, normalized size = 1.14

$$\frac{2\,\sqrt{dx+c}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] 2*sqrt(d*x + c)/d
```

Sympy [A] time = 0.033776, size = 10, normalized size = 0.71

$$\frac{2\sqrt{c+dx}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c)**(1/2),x)
```

```
[Out] 2*sqrt(c + d*x)/d
```

GIAC/XCAS [A] time = 0.219224, size = 16, normalized size = 1.14

$$\frac{2\sqrt{dx+c}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 2*sqrt(d*x + c)/d
```

3.1419 $\int \frac{1}{(a+bx)\sqrt{c+dx}}\,dx$

Optimal. Leaf size=47

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}\sqrt{bc-ad}}$$

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(Sqrt[b]*Sq
rt[b*c - a*d])
```

Rubi [A] time = 0.060896, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}\sqrt{bc-ad}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(Sqrt[b]*Sq
rt[b*c - a*d])
```

Rubi in Sympy [A] time = 8.75618, size = 41, normalized size = 0.87

$$\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{\sqrt{b}\sqrt{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(1/2),x)
```

```
[Out] 2*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(sqrt(b)*sqrt(a*d -
 b*c))
```

Mathematica [A] time = 0.0352816, size = 47, normalized size = 1.

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}\sqrt{bc-ad}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(Sqrt[b]*Sq
rt[b*c - a*d])
```

Maple [A] time = 0.009, size = 37, normalized size = 0.8

$$2\frac{1}{\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/2),x)
```

```
[Out] 2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228043, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(\frac{\sqrt{b^2c-abd}(bdx+2\,bc-ad)-2\left(b^2c-abd\right)\sqrt{dx+c}}{bx+a}\right)}{\sqrt{b^2c-abd}}, -\frac{2\,\arctan\left(-\frac{bc-ad}{\sqrt{-b^2c+abd}\sqrt{dx+c}}\right)}{\sqrt{-b^2c+abd}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [log((sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*
d)*sqrt(d*x + c))/(b*x + a))/sqrt(b^2*c - a*b*d), -2*arctan(-(b*c
```

```
 - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c)))/sqrt(-b^2*c + a*b*d
)]
```

Sympy [A] time = 3.18598, size = 189, normalized size = 4.02

$$-2\left(\begin{cases}\frac{\operatorname{atan}\left(\frac{1}{\sqrt{\frac{b}{ad-bc}}\sqrt{c+dx}}\right)}{\sqrt{\frac{b}{ad-bc}}(ad-bc)} & \text{for}\ \frac{b}{ad-bc}>0\\ -\frac{\operatorname{acoth}\left(\frac{1}{\sqrt{-\frac{b}{ad-bc}}\sqrt{c+dx}}\right)}{\sqrt{-\frac{b}{ad-bc}}(ad-bc)} & \text{for}\ \frac{1}{c+dx}>-\frac{b}{ad-bc}\wedge\frac{b}{ad-bc}<0\\ -\frac{\operatorname{atanh}\left(\frac{1}{\sqrt{-\frac{b}{ad-bc}}\sqrt{c+dx}}\right)}{\sqrt{-\frac{b}{ad-bc}}(ad-bc)} & \text{for}\ \frac{b}{ad-bc}<0\wedge\frac{1}{c+dx}<-\frac{b}{ad-bc}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**(1/2),x)
```

```
[Out] -2*Piecewise((atan(1/(sqrt(b/(a*d - b*c))*sqrt(c + d*x)))/(sqrt(b
/(a*d - b*c))*(a*d - b*c)), b/(a*d - b*c) > 0), (-acoth(1/(sqrt(-
b/(a*d - b*c))*sqrt(c + d*x)))/(sqrt(-b/(a*d - b*c))*(a*d - b*c))
, (b/(a*d - b*c) < 0) & (1/(c + d*x) > -b/(a*d - b*c))), (-atanh(
1/(sqrt(-b/(a*d - b*c))*sqrt(c + d*x)))/(sqrt(-b/(a*d - b*c))*(a*
d - b*c)), (b/(a*d - b*c) < 0) & (1/(c + d*x) < -b/(a*d - b*c))))
```

GIAC/XCAS [A] time = 0.217547, size = 51, normalized size = 1.09

$$\frac{2\ \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/sqrt(-b^2*c + a*b*
d)
```

3.1420 $\int \frac{1}{(a+bx)^2\sqrt{c+dx}}\,dx$

Optimal. Leaf size=76

$$\frac{d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}(bc-ad)^{3/2}}-\frac{\sqrt{c+dx}}{(a+bx)(bc-ad)}$$

```
[Out] -(Sqrt[c + d*x]/((b*c - a*d)*(a + b*x))) + (d*ArcTanh[(Sqrt[b]*Sq
rt[c + d*x])/Sqrt[b*c - a*d]])/(Sqrt[b]*(b*c - a*d)^(3/2))
```

Rubi [A] time = 0.0851603, antiderivative size = 76, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}(bc-ad)^{3/2}}-\frac{\sqrt{c+dx}}{(a+bx)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*Sqrt[c + d*x]),x]
```

```
[Out] -(Sqrt[c + d*x]/((b*c - a*d)*(a + b*x))) + (d*ArcTanh[(Sqrt[b]*Sq
rt[c + d*x])/Sqrt[b*c - a*d]])/(Sqrt[b]*(b*c - a*d)^(3/2))
```

Rubi in Sympy [A] time = 13.5234, size = 61, normalized size = 0.8

$$\frac{\sqrt{c+dx}}{(a+bx)\,(ad-bc)}+\frac{d\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{\sqrt{b}\,(ad-bc)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c)**(1/2),x)
```

```
[Out] sqrt(c + d*x)/((a + b*x)*(a*d - b*c)) + d*atan(sqrt(b)*sqrt(c + d
*x)/sqrt(a*d - b*c))/(sqrt(b)*(a*d - b*c)**(3/2))
```

Mathematica [A] time = 0.126425, size = 77, normalized size = 1.01

$$\frac{\frac{\sqrt{c+dx}}{a+bx}-\frac{d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}\sqrt{bc-ad}}}{ad-bc}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*Sqrt[c + d*x]),x]
```

```
[Out] (Sqrt[c + d*x]/(a + b*x) - (d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqr
t[b*c - a*d]])/(Sqrt[b]*Sqrt[b*c - a*d]))/(-(b*c) + a*d)
```

Maple [A] time = 0.012, size = 77, normalized size = 1.

$$\frac{d}{(ad-bc)(bdx+ad)}\sqrt{dx+c}+\frac{d}{ad-bc}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c)^(1/2),x)
```

```
[Out] d*(d*x+c)^(1/2)/(a*d-b*c)/(b*d*x+a*d)+d/(a*d-b*c)/((a*d-b*c)*b)^(
1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.233318, size = 1, normalized size = 0.01

$$\left[-\frac{(bdx+ad)\log\left(\frac{\sqrt{b^2c-abd}(bdx+2\,bc-ad)-2\,(b^2c-abd)\sqrt{dx+c}}{bx+a}\right)+2\,\sqrt{b^2c-abd}\sqrt{dx+c}}{2\,(abc-a^2d+(b^2c-abd)x)\sqrt{b^2c-abd}},\ \frac{(bdx+ad)\arctan\left(-\frac{bc-ad}{\sqrt{-b^2c+abd}\sqrt{dx+c}}\right)\cdots}{(abc-a^2d+(b^2c-abd)x)\sqrt{\cdots}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [-1/2*((b*d*x + a*d)*log((sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*
d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)) + 2*sqrt(b^2*c -
 a*b*d)*sqrt(d*x + c))/((a*b*c - a^2*d + (b^2*c - a*b*d)*x)*sqrt(
b^2*c - a*b*d)), ((b*d*x + a*d)*arctan(-(b*c - a*d)/(sqrt(-b^2*c
+ a*b*d)*sqrt(d*x + c))) - sqrt(-b^2*c + a*b*d)*sqrt(d*x + c))/((
a*b*c - a^2*d + (b^2*c - a*b*d)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c)**(1/2),x)
```

```
[Out] Exception raised: ValueError
```

GIAC/XCAS [A] time = 0.225117, size = 117, normalized size = 1.54

$$-\frac{d\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}(bc-ad)}-\frac{\sqrt{dx+c}d}{((dx+c)b-bc+ad)(bc-ad)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -d*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a*
b*d)*(b*c - a*d)) - sqrt(d*x + c)*d/(((d*x + c)*b - b*c + a*d)*(b
*c - a*d))
```

3.1421 $\int \frac{1}{(a+bx)^3\sqrt{c+dx}}\,dx$

Optimal. Leaf size=114

$$-\frac{3d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4\sqrt{b}(bc-ad)^{5/2}}+\frac{3d\sqrt{c+dx}}{4(a+bx)(bc-ad)^2}-\frac{\sqrt{c+dx}}{2(a+bx)^2(bc-ad)}$$

```
[Out] -Sqrt[c + d*x]/(2*(b*c - a*d)*(a + b*x)^2) + (3*d*Sqrt[c + d*x])/
(4*(b*c - a*d)^2*(a + b*x)) - (3*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*
x])/Sqrt[b*c - a*d]])/(4*Sqrt[b]*(b*c - a*d)^(5/2))
```

Rubi [A] time = 0.114921, antiderivative size = 114, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{3d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4\sqrt{b}(bc-ad)^{5/2}}+\frac{3d\sqrt{c+dx}}{4(a+bx)(bc-ad)^2}-\frac{\sqrt{c+dx}}{2(a+bx)^2(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*Sqrt[c + d*x]),x]
```

```
[Out] -Sqrt[c + d*x]/(2*(b*c - a*d)*(a + b*x)^2) + (3*d*Sqrt[c + d*x])/
(4*(b*c - a*d)^2*(a + b*x)) - (3*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*
x])/Sqrt[b*c - a*d]])/(4*Sqrt[b]*(b*c - a*d)^(5/2))
```

Rubi in Sympy [A] time = 21.0628, size = 97, normalized size = 0.85

$$\frac{3d\sqrt{c+dx}}{4\left(a+bx\right)\left(ad-bc\right)^2}+\frac{\sqrt{c+dx}}{2\left(a+bx\right)^2\left(ad-bc\right)}+\frac{3d^2\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4\sqrt{b}\left(ad-bc\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c)**(1/2),x)
```

```
[Out] 3*d*sqrt(c + d*x)/(4*(a + b*x)*(a*d - b*c)**2) + sqrt(c + d*x)/(2
*(a + b*x)**2*(a*d - b*c)) + 3*d**2*atan(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c))/(4*sqrt(b)*(a*d - b*c)**(5/2))
```

Mathematica [A] time = 0.207317, size = 96, normalized size = 0.84

$$\frac{1}{4}\left(\frac{\sqrt{c+dx}(5ad-2bc+3bdx)}{(a+bx)^2(bc-ad)^2}-\frac{3d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}(bc-ad)^{5/2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*Sqrt[c + d*x]),x]
```

```
[Out] ((Sqrt[c + d*x]*(-2*b*c + 5*a*d + 3*b*d*x))/((b*c - a*d)^2*(a + b
*x)^2) - (3*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])
/(Sqrt[b]*(b*c - a*d)^(5/2)))/4
```

Maple [A] time = 0.011, size = 115, normalized size = 1.

$$\frac{d^2}{(2\,ad-2\,bc)\,(bdx+ad)^2}\sqrt{dx+c}+\frac{3\,d^2}{4\,(ad-bc)^2\,(bdx+ad)}\sqrt{dx+c}+\frac{3\,d^2}{4\,(ad-bc)^2}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c)^(1/2),x)
```

```
[Out] 1/2*d^2*(d*x+c)^(1/2)/(a*d-b*c)/(b*d*x+a*d)^2+3/4*d^2/(a*d-b*c)^2
*(d*x+c)^(1/2)/(b*d*x+a*d)+3/4*d^2/(a*d-b*c)^2/((a*d-b*c)*b)^(1/2
)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219553, size = 1, normalized size = 0.01

$$\left[\frac{2\sqrt{b^2c-abd}(3\,bdx-2\,bc+5\,ad)\sqrt{dx+c}+3\left(b^2d^2x^2+2\,abd^2x+a^2d^2\right)\log\left(\frac{\sqrt{b^2c-abd}(bdx+2\,bc-ad)-2\left(b^2c-abd\right)\sqrt{dx+c}}{bx+a}\right)}{8\left(a^2b^2c^2-2\,a^3bcd+a^4d^2+(b^4c^2-2\,ab^3cd+a^2b^2d^2)x^2+2\,(ab^3c^2-2\,a^2b^2cd+a^3bd^2)x\right)\sqrt{b^2c-abd}},\ \frac{\sqrt{}}{4(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/8*(2*sqrt(b^2*c - a*b*d)*(3*b*d*x - 2*b*c + 5*a*d)*sqrt(d*x +
c) + 3*(b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*log((sqrt(b^2*c - a*
b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*
x + a)))/((a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2 + (b^4*c^2 - 2*a*b
^3*c*d + a^2*b^2*d^2)*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*
d^2)*x)*sqrt(b^2*c - a*b*d)), 1/4*(sqrt(-b^2*c + a*b*d)*(3*b*d*x
- 2*b*c + 5*a*d)*sqrt(d*x + c) - 3*(b^2*d^2*x^2 + 2*a*b*d^2*x + a
^2*d^2)*arctan(-(b*c - a*d)/(sqrt(-b^2*c + a*b*d)*sqrt(d*x + c)))
)/((a^2*b^2*c^2 - 2*a^3*b*c*d + a^4*d^2 + (b^4*c^2 - 2*a*b^3*c*d
+ a^2*b^2*d^2)*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*x)
*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c)**(1/2),x)
```

```
[Out] Exception raised: ValueError
```

GIAC/XCAS [A] time = 0.219683, size = 200, normalized size = 1.75

$$\frac{3\,d^2\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{4\left(b^2c^2-2\,abcd+a^2d^2\right)\sqrt{-b^2c+abd}}+\frac{3\,(dx+c)^{\frac{3}{2}}bd^2-5\,\sqrt{dx+c}bcd^2+5\,\sqrt{dx+c}ad^3}{4\left(b^2c^2-2\,abcd+a^2d^2\right)\left((dx+c)b-bc+ad\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] 3/4*d^2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^2*c^2 -
2*a*b*c*d + a^2*d^2)*sqrt(-b^2*c + a*b*d)) + 1/4*(3*(d*x + c)^(3/
```

```
2)*b*d^2 - 5*sqrt(d*x + c)*b*c*d^2 + 5*sqrt(d*x + c)*a*d^3)/((b^2
*c^2 - 2*a*b*c*d + a^2*d^2)*((d*x + c)*b - b*c + a*d)^2)
```

3.1422 $\int \frac{1}{(a+bx)^4\sqrt{c+dx}}\,dx$

Optimal. Leaf size=147

$$\frac{5d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8\sqrt{b}(bc-ad)^{7/2}}-\frac{5d^2\sqrt{c+dx}}{8(a+bx)(bc-ad)^3}+\frac{5d\sqrt{c+dx}}{12(a+bx)^2(bc-ad)^2}-\frac{\sqrt{c+dx}}{3(a+bx)^3(bc-ad)}$$

```
[Out] -Sqrt[c + d*x]/(3*(b*c - a*d)*(a + b*x)^3) + (5*d*Sqrt[c + d*x])/
(12*(b*c - a*d)^2*(a + b*x)^2) - (5*d^2*Sqrt[c + d*x])/(8*(b*c -
a*d)^3*(a + b*x)) + (5*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b
*c - a*d]])/(8*Sqrt[b]*(b*c - a*d)^(7/2))
```

Rubi [A] time = 0.158621, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{5d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8\sqrt{b}(bc-ad)^{7/2}}-\frac{5d^2\sqrt{c+dx}}{8(a+bx)(bc-ad)^3}+\frac{5d\sqrt{c+dx}}{12(a+bx)^2(bc-ad)^2}-\frac{\sqrt{c+dx}}{3(a+bx)^3(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^4*Sqrt[c + d*x]),x]
```

```
[Out] -Sqrt[c + d*x]/(3*(b*c - a*d)*(a + b*x)^3) + (5*d*Sqrt[c + d*x])/
(12*(b*c - a*d)^2*(a + b*x)^2) - (5*d^2*Sqrt[c + d*x])/(8*(b*c -
a*d)^3*(a + b*x)) + (5*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b
*c - a*d]])/(8*Sqrt[b]*(b*c - a*d)^(7/2))
```

Rubi in Sympy [A] time = 31.4412, size = 128, normalized size = 0.87

$$\frac{5d^2\sqrt{c+dx}}{8\left(a+bx\right)\left(ad-bc\right)^3}+\frac{5d\sqrt{c+dx}}{12\left(a+bx\right)^2\left(ad-bc\right)^2}+\frac{\sqrt{c+dx}}{3\left(a+bx\right)^3\left(ad-bc\right)}+\frac{5d^3\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{8\sqrt{b}\left(ad-bc\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**4/(d*x+c)**(1/2),x)
```

```
[Out] 5*d**2*sqrt(c + d*x)/(8*(a + b*x)*(a*d - b*c)**3) + 5*d*sqrt(c +
d*x)/(12*(a + b*x)**2*(a*d - b*c)**2) + sqrt(c + d*x)/(3*(a + b*x
)**3*(a*d - b*c)) + 5*d**3*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d -
b*c))/(8*sqrt(b)*(a*d - b*c)**(7/2))
```

Mathematica [A] time = 0.199741, size = 128, normalized size = 0.87

$$\frac{5d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8\sqrt{b}(bc-ad)^{7/2}}-\frac{\sqrt{c+dx}\left(33a^2d^2+2abd(20dx-13c)+b^2\left(8c^2-10cdx+15d^2x^2\right)\right)}{24(a+bx)^3(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^4*Sqrt[c + d*x]),x]
```

```
[Out] -(Sqrt[c + d*x]*(33*a^2*d^2 + 2*a*b*d*(-13*c + 20*d*x) + b^2*(8*c
^2 - 10*c*d*x + 15*d^2*x^2)))/(24*(b*c - a*d)^3*(a + b*x)^3) + (5
*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*Sqrt[b]
*(b*c - a*d)^(7/2))
```

Maple [A] time = 0.011, size = 147, normalized size = 1.

$$\frac{d^3}{(3\,ad-3\,bc)\,(bdx+ad)^3}\sqrt{dx+c}+\frac{5\,d^3}{12\,(ad-bc)^2\,(bdx+ad)^2}\sqrt{dx+c}+\frac{5\,d^3}{8\,(ad-bc)^3\,(bdx+ad)}\sqrt{dx+c}+\frac{5\,d^3}{8\,(ad-bc)^3}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^4/(d*x+c)^(1/2),x)
```

```
[Out] 1/3*d^3*(d*x+c)^(1/2)/(a*d-b*c)/(b*d*x+a*d)^3+5/12*d^3/(a*d-b*c)^
2*(d*x+c)^(1/2)/(b*d*x+a*d)^2+5/8*d^3/(a*d-b*c)^3*(d*x+c)^(1/2)/(
b*d*x+a*d)+5/8*d^3/(a*d-b*c)^3/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)
^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222177, size = 1, normalized size = 0.01

$$\left[-\frac{2\left(15\,b^{2}d^{2}x^{2}+8\,b^{2}c^{2}-26\,abcd+33\,a^{2}d^{2}-10\left(b^{2}cd-4\,abd^{2}\right)x\right)\sqrt{b^{2}c-abd}\sqrt{dx+c}+15\left(b^{3}d^{3}x^{3}+3\,ab^{2}d^{3}x^{2}+\cdots\right.}{48\left(a^{3}b^{3}c^{3}-3\,a^{4}b^{2}c^{2}d+3\,a^{5}bcd^{2}-a^{6}d^{3}+(b^{6}c^{3}-3\,ab^{5}c^{2}d+3\,a^{2}b^{4}cd^{2}-a^{3}b^{3}d^{3})x^{3}+3\,(ab^{5}c^{3}-3\,a^{2}b^{4}c^{2}d+3\,a^{3}b^{3}cd^{2}-\cdots\right.}\right.$$

$$-\frac{\left(15\,b^{2}d^{2}x^{2}+8\,b^{2}c^{2}-26\,abcd+33\,a^{2}d^{2}-10\left(b^{2}cd-4\,abd^{2}\right)x\right)\sqrt{-b^{2}c+abd}\sqrt{dx+c}-15\left(b^{3}d^{3}x^{3}+3\,a\cdots\right.}{24\left(a^{3}b^{3}c^{3}-3\,a^{4}b^{2}c^{2}d+3\,a^{5}bcd^{2}-a^{6}d^{3}+(b^{6}c^{3}-3\,ab^{5}c^{2}d+3\,a^{2}b^{4}cd^{2}-a^{3}b^{3}d^{3})x^{3}+3\,(ab^{5}c^{3}-3\,a^{2}b^{4}c^{2}d+3\,a^{3}b^{3}cd^{2}-\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [-1/48*(2*(15*b^2*d^2*x^2 + 8*b^2*c^2 - 26*a*b*c*d + 33*a^2*d^2 -
 10*(b^2*c*d - 4*a*b*d^2)*x)*sqrt(b^2*c - a*b*d)*sqrt(d*x + c) +
15*(b^3*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*log(
(sqrt(b^2*c - a*b*d)*(b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sq
rt(d*x + c))/(b*x + a)))/((a^3*b^3*c^3 - 3*a^4*b^2*c^2*d + 3*a^5*
b*c*d^2 - a^6*d^3 + (b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 -
a^3*b^3*d^3)*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*a^3*b^3*c*d
^2 - a^4*b^2*d^3)*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2*d + 3*a^4*
b^2*c*d^2 - a^5*b*d^3)*x)*sqrt(b^2*c - a*b*d)), -1/24*((15*b^2*d^
2*x^2 + 8*b^2*c^2 - 26*a*b*c*d + 33*a^2*d^2 - 10*(b^2*c*d - 4*a*b
*d^2)*x)*sqrt(-b^2*c + a*b*d)*sqrt(d*x + c) - 15*(b^3*d^3*x^3 + 3
*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*arctan(-(b*c - a*d)/(sq
rt(-b^2*c + a*b*d)*sqrt(d*x + c))))/((a^3*b^3*c^3 - 3*a^4*b^2*c^2
*d + 3*a^5*b*c*d^2 - a^6*d^3 + (b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b
^4*c*d^2 - a^3*b^3*d^3)*x^3 + 3*(a*b^5*c^3 - 3*a^2*b^4*c^2*d + 3*
a^3*b^3*c*d^2 - a^4*b^2*d^3)*x^2 + 3*(a^2*b^4*c^3 - 3*a^3*b^3*c^2
*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**4/(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.222052, size = 312, normalized size = 2.12

$$-\frac{5\,d^{3}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^{2}c+abd}}\right)}{8\,(b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3})\sqrt{-b^{2}c+abd}}-\frac{15\,(dx+c)^{\frac{5}{2}}b^{2}d^{3}-40\,(dx+c)^{\frac{3}{2}}b^{2}cd^{3}+33\,\sqrt{dx+c}b^{2}c^{2}d^{3}+40\,(dx+c)^{\frac{3}{2}}abd^{4}-66\,\sqrt{dx+c}abcd^{4}+33\,\sqrt{dx+c}a^{2}d^{5}}{24\,(b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3})((dx+c)b-bc+ad)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -5/8*d^3*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*sqrt(-b^2*c + a*b*d)) -
 1/24*(15*(d*x + c)^(5/2)*b^2*d^3 - 40*(d*x + c)^(3/2)*b^2*c*d^3
+ 33*sqrt(d*x + c)*b^2*c^2*d^3 + 40*(d*x + c)^(3/2)*a*b*d^4 - 66*
sqrt(d*x + c)*a*b*c*d^4 + 33*sqrt(d*x + c)*a^2*d^5)/((b^3*c^3 - 3
*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*((d*x + c)*b - b*c + a*d)
^3)
```

3.1423 $\int \frac{1}{(a+bx)^5\sqrt{c+dx}}\,dx$

Optimal. Leaf size=180

$$-\frac{35d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64\sqrt{b}(bc-ad)^{9/2}}+\frac{35d^3\sqrt{c+dx}}{64(a+bx)(bc-ad)^4}-\frac{35d^2\sqrt{c+dx}}{96(a+bx)^2(bc-ad)^3}+\frac{7d\sqrt{c+dx}}{24(a+bx)^3(bc-ad)^2}-\frac{\sqrt{c+dx}}{4(a+bx)^4(bc-ad)}$$

```
[Out] -Sqrt[c + d*x]/(4*(b*c - a*d)*(a + b*x)^4) + (7*d*Sqrt[c + d*x])/
(24*(b*c - a*d)^2*(a + b*x)^3) - (35*d^2*Sqrt[c + d*x])/(96*(b*c
- a*d)^3*(a + b*x)^2) + (35*d^3*Sqrt[c + d*x])/(64*(b*c - a*d)^4*
(a + b*x)) - (35*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a
*d]])/(64*Sqrt[b]*(b*c - a*d)^(9/2))
```

Rubi [A] time = 0.199234, antiderivative size = 180, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$

$$-\frac{35d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{64\sqrt{b}(bc-ad)^{9/2}}+\frac{35d^3\sqrt{c+dx}}{64(a+bx)(bc-ad)^4}-\frac{35d^2\sqrt{c+dx}}{96(a+bx)^2(bc-ad)^3}+\frac{7d\sqrt{c+dx}}{24(a+bx)^3(bc-ad)^2}-\frac{\sqrt{c+dx}}{4(a+bx)^4(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^5*Sqrt[c + d*x]),x]
```

```
[Out] -Sqrt[c + d*x]/(4*(b*c - a*d)*(a + b*x)^4) + (7*d*Sqrt[c + d*x])/
(24*(b*c - a*d)^2*(a + b*x)^3) - (35*d^2*Sqrt[c + d*x])/(96*(b*c
- a*d)^3*(a + b*x)^2) + (35*d^3*Sqrt[c + d*x])/(64*(b*c - a*d)^4*
(a + b*x)) - (35*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a
*d]])/(64*Sqrt[b]*(b*c - a*d)^(9/2))
```

Rubi in Sympy [A] time = 44.4349, size = 158, normalized size = 0.88

$$\frac{35d^3\sqrt{c+dx}}{64\left(a+bx\right)\left(ad-bc\right)^4}+\frac{35d^2\sqrt{c+dx}}{96\left(a+bx\right)^2\left(ad-bc\right)^3}+\frac{7d\sqrt{c+dx}}{24\left(a+bx\right)^3\left(ad-bc\right)^2}+\frac{\sqrt{c+dx}}{4\left(a+bx\right)^4\left(ad-bc\right)}+\frac{35d^4\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{64\sqrt{b}\left(ad-bc\right)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**5/(d*x+c)**(1/2),x)
```

```
[Out] 35*d**3*sqrt(c + d*x)/(64*(a + b*x)*(a*d - b*c)**4) + 35*d**2*sqr
t(c + d*x)/(96*(a + b*x)**2*(a*d - b*c)**3) + 7*d*sqrt(c + d*x)/(
24*(a + b*x)**3*(a*d - b*c)**2) + sqrt(c + d*x)/(4*(a + b*x)**4*(
a*d - b*c)) + 35*d**4*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))
/(64*sqrt(b)*(a*d - b*c)**(9/2))
```

Mathematica [A] time = 0.460604, size = 145, normalized size = 0.81

$$\frac{1}{192}\left(\frac{\sqrt{c+dx}\left(70d^2(a+bx)^2(ad-bc)+56d(a+bx)(bc-ad)^2-48(bc-ad)^3+105d^3(a+bx)^3\right)}{(a+bx)^4(bc-ad)^4}-\frac{105d^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{\sqrt{b}(bc-ad)^{9/2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^5*Sqrt[c + d*x]),x]
```

```
[Out] ((Sqrt[c + d*x]*(-48*(b*c - a*d)^3 + 56*d*(b*c - a*d)^2*(a + b*x)
 + 70*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 105*d^3*(a + b*x)^3))/((b*
c - a*d)^4*(a + b*x)^4) - (105*d^4*ArcTanh[(Sqrt[b]*Sqrt[c + d*x]
)/Sqrt[b*c - a*d]])/(Sqrt[b]*(b*c - a*d)^(9/2)))/192
```

Maple [A] time = 0.011, size = 179, normalized size = 1.

$$\frac{d^4}{(4\,ad-4\,bc)\,(bdx+ad)^4}\sqrt{dx+c}+\frac{7\,d^4}{24\,(ad-bc)^2\,(bdx+ad)^3}\sqrt{dx+c}+\frac{35\,d^4}{96\,(ad-bc)^3\,(bdx+ad)^2}\sqrt{dx+c}+\frac{35\,d^4}{64\,(ad-bc)^4\,(bdx+ad)}\sqrt{dx+c}+\frac{35\,d^4}{64\,(ad-bc)^4}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^5/(d*x+c)^(1/2),x)
```

```
[Out] 1/4*d^4*(d*x+c)^(1/2)/(a*d-b*c)/(b*d*x+a*d)^4+7/24*d^4/(a*d-b*c)^
2*(d*x+c)^(1/2)/(b*d*x+a*d)^3+35/96*d^4/(a*d-b*c)^3*(d*x+c)^(1/2)
/(b*d*x+a*d)^2+35/64*d^4/(a*d-b*c)^4*(d*x+c)^(1/2)/(b*d*x+a*d)+35
/64*d^4/(a*d-b*c)^4/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((
```

```
a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^5*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226233, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^5*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/384*(2*(105*b^3*d^3*x^3 - 48*b^3*c^3 + 200*a*b^2*c^2*d - 326*a
^2*b*c*d^2 + 279*a^3*d^3 - 35*(2*b^3*c*d^2 - 11*a*b^2*d^3)*x^2 +
7*(8*b^3*c^2*d - 36*a*b^2*c*d^2 + 73*a^2*b*d^3)*x)*sqrt(b^2*c - a
*b*d)*sqrt(d*x + c) + 105*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2*
b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*log((sqrt(b^2*c - a*b*d)*(
b*d*x + 2*b*c - a*d) - 2*(b^2*c - a*b*d)*sqrt(d*x + c))/(b*x + a)
))/((a^4*b^4*c^4 - 4*a^5*b^3*c^3*d + 6*a^6*b^2*c^2*d^2 - 4*a^7*b*
c*d^3 + a^8*d^4 + (b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 -
4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*x^4 + 4*(a*b^7*c^4 - 4*a^2*b^6*c^3
*d + 6*a^3*b^5*c^2*d^2 - 4*a^4*b^4*c*d^3 + a^5*b^3*d^4)*x^3 + 6*(
a^2*b^6*c^4 - 4*a^3*b^5*c^3*d + 6*a^4*b^4*c^2*d^2 - 4*a^5*b^3*c*d
^3 + a^6*b^2*d^4)*x^2 + 4*(a^3*b^5*c^4 - 4*a^4*b^4*c^3*d + 6*a^5*
b^3*c^2*d^2 - 4*a^6*b^2*c*d^3 + a^7*b*d^4)*x)*sqrt(b^2*c - a*b*d)
), 1/192*((105*b^3*d^3*x^3 - 48*b^3*c^3 + 200*a*b^2*c^2*d - 326*a
^2*b*c*d^2 + 279*a^3*d^3 - 35*(2*b^3*c*d^2 - 11*a*b^2*d^3)*x^2 +
7*(8*b^3*c^2*d - 36*a*b^2*c*d^2 + 73*a^2*b*d^3)*x)*sqrt(-b^2*c +
a*b*d)*sqrt(d*x + c) - 105*(b^4*d^4*x^4 + 4*a*b^3*d^4*x^3 + 6*a^2
*b^2*d^4*x^2 + 4*a^3*b*d^4*x + a^4*d^4)*arctan(-(b*c - a*d)/(sqrt
(-b^2*c + a*b*d)*sqrt(d*x + c))))/((a^4*b^4*c^4 - 4*a^5*b^3*c^3*d
 + 6*a^6*b^2*c^2*d^2 - 4*a^7*b*c*d^3 + a^8*d^4 + (b^8*c^4 - 4*a*b
^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*x^4
 + 4*(a*b^7*c^4 - 4*a^2*b^6*c^3*d + 6*a^3*b^5*c^2*d^2 - 4*a^4*b^4
*c*d^3 + a^5*b^3*d^4)*x^3 + 6*(a^2*b^6*c^4 - 4*a^3*b^5*c^3*d + 6*
a^4*b^4*c^2*d^2 - 4*a^5*b^3*c*d^3 + a^6*b^2*d^4)*x^2 + 4*(a^3*b^5
*c^4 - 4*a^4*b^4*c^3*d + 6*a^5*b^3*c^2*d^2 - 4*a^6*b^2*c*d^3 + a^
7*b*d^4)*x)*sqrt(-b^2*c + a*b*d))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**5/(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.220294, size = 447, normalized size = 2.48

$$\frac{35\, d^4 \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{64\,(b^4c^4 - 4\,ab^3c^3d + 6\,a^2b^2c^2d^2 - 4\,a^3bcd^3 + a^4d^4)\sqrt{-b^2c+abd}} + \frac{105\,(dx+c)^{\frac{7}{2}}b^3d^4 - 385\,(dx+c)^{\frac{5}{2}}b^3cd^4 + 511\,(dx+c)^{\frac{3}{2}}b^3c^2d^4 - 279\,\sqrt{dx+c}b^3c^3d^4 + 385\,(dx+c)^{\frac{5}{2}}ab^2d^5 - 1022\,(dx+c)^{\frac{3}{2}} \cdots}{192\,(b^4c^4 - 4\,ab^3c^3d + 6\,a^2b^2c^2d^2 - 4\,a^3bcd^3 + a^4d^4) \cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^5*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] 35/64*d^4*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^4*c^4
- 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*sq
rt(-b^2*c + a*b*d)) + 1/192*(105*(d*x + c)^(7/2)*b^3*d^4 - 385*(d
*x + c)^(5/2)*b^3*c*d^4 + 511*(d*x + c)^(3/2)*b^3*c^2*d^4 - 279*s
qrt(d*x + c)*b^3*c^3*d^4 + 385*(d*x + c)^(5/2)*a*b^2*d^5 - 1022*(
d*x + c)^(3/2)*a*b^2*c*d^5 + 837*sqrt(d*x + c)*a*b^2*c^2*d^5 + 51
1*(d*x + c)^(3/2)*a^2*b*d^6 - 837*sqrt(d*x + c)*a^2*b*c*d^6 + 279
*sqrt(d*x + c)*a^3*d^7)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2
*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*((d*x + c)*b - b*c + a*d)^4)
```

3.1424 $\int \frac{(a+bx)^5}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{10b^4(c+dx)^{7/2}(bc-ad)}{7d^6}+\frac{4b^3(c+dx)^{5/2}(bc-ad)^2}{d^6}-\frac{20b^2(c+dx)^{3/2}(bc-ad)^3}{3d^6}+\frac{10b\sqrt{c+dx}(bc-ad)^4}{d^6}+\frac{2(bc-ad)^5}{d^6\sqrt{c+dx}}+\frac{2b^5(c+dx)^{9/2}}{9d^6}$$

```
[Out] (2*(b*c - a*d)^5)/(d^6*Sqrt[c + d*x]) + (10*b*(b*c - a*d)^4*Sqrt[
c + d*x])/d^6 - (20*b^2*(b*c - a*d)^3*(c + d*x)^(3/2))/(3*d^6) +
(4*b^3*(b*c - a*d)^2*(c + d*x)^(5/2))/d^6 - (10*b^4*(b*c - a*d)*(
c + d*x)^(7/2))/(7*d^6) + (2*b^5*(c + d*x)^(9/2))/(9*d^6)
```

Rubi [A] time = 0.154765, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{10b^4(c+dx)^{7/2}(bc-ad)}{7d^6}+\frac{4b^3(c+dx)^{5/2}(bc-ad)^2}{d^6}-\frac{20b^2(c+dx)^{3/2}(bc-ad)^3}{3d^6}+\frac{10b\sqrt{c+dx}(bc-ad)^4}{d^6}+\frac{2(bc-ad)^5}{d^6\sqrt{c+dx}}+\frac{2b^5(c+dx)^{9/2}}{9d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(c + d*x)^(3/2),x]
```

```
[Out] (2*(b*c - a*d)^5)/(d^6*Sqrt[c + d*x]) + (10*b*(b*c - a*d)^4*Sqrt[
c + d*x])/d^6 - (20*b^2*(b*c - a*d)^3*(c + d*x)^(3/2))/(3*d^6) +
(4*b^3*(b*c - a*d)^2*(c + d*x)^(5/2))/d^6 - (10*b^4*(b*c - a*d)*(
c + d*x)^(7/2))/(7*d^6) + (2*b^5*(c + d*x)^(9/2))/(9*d^6)
```

Rubi in Sympy [A] time = 39.3066, size = 141, normalized size = 0.93

$$\frac{2b^5\left(c+dx\right)^{\frac{9}{2}}}{9d^6}+\frac{10b^4\left(c+dx\right)^{\frac{7}{2}}\left(ad-bc\right)}{7d^6}+\frac{4b^3\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)^2}{d^6}+\frac{20b^2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^3}{3d^6}+\frac{10b\sqrt{c+dx}\left(ad-bc\right)^4}{d^6}-\frac{2\left(ad-bc\right)^5}{d^6\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c)**(3/2),x)
```

```
[Out] 2*b**5*(c + d*x)**(9/2)/(9*d**6) + 10*b**4*(c + d*x)**(7/2)*(a*d
- b*c)/(7*d**6) + 4*b**3*(c + d*x)**(5/2)*(a*d - b*c)**2/d**6 + 2
0*b**2*(c + d*x)**(3/2)*(a*d - b*c)**3/(3*d**6) + 10*b*sqrt(c + d
*x)*(a*d - b*c)**4/d**6 - 2*(a*d - b*c)**5/(d**6*sqrt(c + d*x))
```

Mathematica [A] time = 0.178772, size = 214, normalized size = 1.41

$$\frac{2\left(-63a^5d^5+315a^4bd^4(2c+dx)+210a^3b^2d^3\left(-8c^2-4cdx+d^2x^2\right)+126a^2b^3d^2\left(16c^3+8c^2dx-2cd^2x^2+d^3x^3\right)+9ab^4d\left(\cdots\right.}{63d^6\sqrt{c+\cdots}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(c + d*x)^(3/2),x]
```

```
[Out] (2*(-63*a^5*d^5 + 315*a^4*b*d^4*(2*c + d*x) + 210*a^3*b^2*d^3*(-8
*c^2 - 4*c*d*x + d^2*x^2) + 126*a^2*b^3*d^2*(16*c^3 + 8*c^2*d*x -
 2*c*d^2*x^2 + d^3*x^3) + 9*a*b^4*d*(-128*c^4 - 64*c^3*d*x + 16*c
^2*d^2*x^2 - 8*c*d^3*x^3 + 5*d^4*x^4) + b^5*(256*c^5 + 128*c^4*d*
x - 32*c^3*d^2*x^2 + 16*c^2*d^3*x^3 - 10*c*d^4*x^4 + 7*d^5*x^5)))
/(63*d^6*Sqrt[c + d*x])
```

Maple [B] time = 0.01, size = 273, normalized size = 1.8

$$-\frac{-14\,b^5x^5d^5-90\,ab^4d^5x^4+20\,b^5cd^4x^4-252\,a^2b^3d^5x^3+144\,ab^4cd^4x^3-32\,b^5c^2d^3x^3-420\,a^3b^2d^5x^2+504\,a^2b^3cd^4x^2-28\cdots}{\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c)^(3/2),x)
```

```
[Out] -2/63/(d*x+c)^(1/2)*(-7*b^5*d^5*x^5-45*a*b^4*d^5*x^4+10*b^5*c*d^4
*x^4-126*a^2*b^3*d^5*x^3+72*a*b^4*c*d^4*x^3-16*b^5*c^2*d^3*x^3-21
0*a^3*b^2*d^5*x^2+252*a^2*b^3*c*d^4*x^2-144*a*b^4*c^2*d^3*x^2+32*
b^5*c^3*d^2*x^2-315*a^4*b*d^5*x+840*a^3*b^2*c*d^4*x-1008*a^2*b^3*
c^2*d^3*x+576*a*b^4*c^3*d^2*x-128*b^5*c^4*d*x+63*a^5*d^5-630*a^4*
b*c*d^4+1680*a^3*b^2*c^2*d^3-2016*a^2*b^3*c^3*d^2+1152*a*b^4*c^4*
d-256*b^5*c^5)/d^6
```

Maxima [A] time = 1.36385, size = 360, normalized size = 2.37

$$\frac{2\left(\frac{7\,(dx+c)^{\frac{9}{2}}b^5-45\,\left(b^5c-ab^4d\right)(dx+c)^{\frac{7}{2}}+126\,\left(b^5c^2-2\,ab^4cd+a^2b^3d^2\right)(dx+c)^{\frac{5}{2}}-210\,\left(b^5c^3-3\,ab^4c^2d+3\,a^2b^3cd^2-a^3b^2d^3\right)(dx+c)^{\frac{3}{2}}+315\,\left(b^5c^4-4\,ab^4c^3d+6\,a^2\cdots\right.}{d^5}\cdots\right.}{63\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/63*((7*(d*x + c)^(9/2)*b^5 - 45*(b^5*c - a*b^4*d)*(d*x + c)^(7/
2) + 126*(b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(d*x + c)^(5/2) -
210*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*(d*
x + c)^(3/2) + 315*(b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 -
 4*a^3*b^2*c*d^3 + a^4*b*d^4)*sqrt(d*x + c))/d^5 + 63*(b^5*c^5 -
5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b
*c*d^4 - a^5*d^5)/(sqrt(d*x + c)*d^5))/d
```

Fricas [A] time = 0.201348, size = 352, normalized size = 2.32

$$2\left(7\,b^5d^5x^5 + 256\,b^5c^5 - 1152\,ab^4c^4d + 2016\,a^2b^3c^3d^2 - 1680\,a^3b^2c^2d^3 + 630\,a^4bcd^4 - 63\,a^5d^5 - 5\left(2\,b^5cd^4 - 9\,ab^4d^5\right)x^4 + 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/63*(7*b^5*d^5*x^5 + 256*b^5*c^5 - 1152*a*b^4*c^4*d + 2016*a^2*b
^3*c^3*d^2 - 1680*a^3*b^2*c^2*d^3 + 630*a^4*b*c*d^4 - 63*a^5*d^5
- 5*(2*b^5*c*d^4 - 9*a*b^4*d^5)*x^4 + 2*(8*b^5*c^2*d^3 - 36*a*b^4
*c*d^4 + 63*a^2*b^3*d^5)*x^3 - 2*(16*b^5*c^3*d^2 - 72*a*b^4*c^2*d
^3 + 126*a^2*b^3*c*d^4 - 105*a^3*b^2*d^5)*x^2 + (128*b^5*c^4*d -
576*a*b^4*c^3*d^2 + 1008*a^2*b^3*c^2*d^3 - 840*a^3*b^2*c*d^4 + 31
5*a^4*b*d^5)*x)/(sqrt(d*x + c)*d^6)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + bx)^5}{(c + dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**5/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.226884, size = 473, normalized size = 3.11

$$\frac{2\left(b^{5}c^{5} - 5\,ab^{4}c^{4}d + 10\,a^{2}b^{3}c^{3}d^{2} - 10\,a^{3}b^{2}c^{2}d^{3} + 5\,a^{4}bcd^{4} - a^{5}d^{5}\right)}{\sqrt{dx+c}d^{6}} + \frac{2\left(7\,(dx+c)^{\frac{9}{2}}b^{5}d^{48} - 45\,(dx+c)^{\frac{7}{2}}b^{5}cd^{48} + 126\,(dx+c)^{\frac{5}{2}}b^{5}c^{2}d^{48} - 210\,(dx+c)^{\frac{3}{2}}b^{5}c^{3}d^{48} + 315\,\sqrt{dx+c}b^{5}c^{4}d^{48} + 45\,(dx+c)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*
d^3 + 5*a^4*b*c*d^4 - a^5*d^5)/(sqrt(d*x + c)*d^6) + 2/63*(7*(d*x
 + c)^(9/2)*b^5*d^48 - 45*(d*x + c)^(7/2)*b^5*c*d^48 + 126*(d*x +
 c)^(5/2)*b^5*c^2*d^48 - 210*(d*x + c)^(3/2)*b^5*c^3*d^48 + 315*s
qrt(d*x + c)*b^5*c^4*d^48 + 45*(d*x + c)^(7/2)*a*b^4*d^49 - 252*(
d*x + c)^(5/2)*a*b^4*c*d^49 + 630*(d*x + c)^(3/2)*a*b^4*c^2*d^49
- 1260*sqrt(d*x + c)*a*b^4*c^3*d^49 + 126*(d*x + c)^(5/2)*a^2*b^3
*d^50 - 630*(d*x + c)^(3/2)*a^2*b^3*c*d^50 + 1890*sqrt(d*x + c)*a
^2*b^3*c^2*d^50 + 210*(d*x + c)^(3/2)*a^3*b^2*d^51 - 1260*sqrt(d*
x + c)*a^3*b^2*c*d^51 + 315*sqrt(d*x + c)*a^4*b*d^52)/d^54
```

3.1425 $\int \frac{(a+bx)^4}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=123

$$-\frac{8b^3(c+dx)^{5/2}(bc-ad)}{5d^5}+\frac{4b^2(c+dx)^{3/2}(bc-ad)^2}{d^5}-\frac{8b\sqrt{c+dx}(bc-ad)^3}{d^5}-\frac{2(bc-ad)^4}{d^5\sqrt{c+dx}}+\frac{2b^4(c+dx)^{7/2}}{7d^5}$$

```
[Out] (-2*(b*c - a*d)^4)/(d^5*Sqrt[c + d*x]) - (8*b*(b*c - a*d)^3*Sqrt[
c + d*x])/d^5 + (4*b^2*(b*c - a*d)^2*(c + d*x)^(3/2))/d^5 - (8*b^
3*(b*c - a*d)*(c + d*x)^(5/2))/(5*d^5) + (2*b^4*(c + d*x)^(7/2))/
(7*d^5)
```

Rubi [A] time = 0.115553, antiderivative size = 123, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{8b^3(c+dx)^{5/2}(bc-ad)}{5d^5}+\frac{4b^2(c+dx)^{3/2}(bc-ad)^2}{d^5}-\frac{8b\sqrt{c+dx}(bc-ad)^3}{d^5}-\frac{2(bc-ad)^4}{d^5\sqrt{c+dx}}+\frac{2b^4(c+dx)^{7/2}}{7d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/(c + d*x)^(3/2),x]
```

```
[Out] (-2*(b*c - a*d)^4)/(d^5*Sqrt[c + d*x]) - (8*b*(b*c - a*d)^3*Sqrt[
c + d*x])/d^5 + (4*b^2*(b*c - a*d)^2*(c + d*x)^(3/2))/d^5 - (8*b^
3*(b*c - a*d)*(c + d*x)^(5/2))/(5*d^5) + (2*b^4*(c + d*x)^(7/2))/
(7*d^5)
```

Rubi in Sympy [A] time = 29.7345, size = 114, normalized size = 0.93

$$\frac{2b^4\left(c+dx\right)^{\frac{7}{2}}}{7d^5}+\frac{8b^3\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)}{5d^5}+\frac{4b^2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^2}{d^5}+\frac{8b\sqrt{c+dx}\left(ad-bc\right)^3}{d^5}-\frac{2\left(ad-bc\right)^4}{d^5\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c)**(3/2),x)
```

```
[Out] 2*b**4*(c + d*x)**(7/2)/(7*d**5) + 8*b**3*(c + d*x)**(5/2)*(a*d -
 b*c)/(5*d**5) + 4*b**2*(c + d*x)**(3/2)*(a*d - b*c)**2/d**5 + 8*
b*sqrt(c + d*x)*(a*d - b*c)**3/d**5 - 2*(a*d - b*c)**4/(d**5*sqrt
(c + d*x))
```

Mathematica [A] time = 0.152395, size = 151, normalized size = 1.23

$$\frac{2\left(-35a^4d^4+140a^3bd^3(2c+dx)+70a^2b^2d^2\left(-8c^2-4cdx+d^2x^2\right)+28ab^3d\left(16c^3+8c^2dx-2cd^2x^2+d^3x^3\right)+b^4\left(-128c^4\right.\right.}{35d^5\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/(c + d*x)^(3/2),x]
```

```
[Out] (2*(-35*a^4*d^4 + 140*a^3*b*d^3*(2*c + d*x) + 70*a^2*b^2*d^2*(-8*
c^2 - 4*c*d*x + d^2*x^2) + 28*a*b^3*d*(16*c^3 + 8*c^2*d*x - 2*c*d
^2*x^2 + d^3*x^3) + b^4*(-128*c^4 - 64*c^3*d*x + 16*c^2*d^2*x^2 -
 8*c*d^3*x^3 + 5*d^4*x^4)))/(35*d^5*Sqrt[c + d*x])
```

Maple [A] time = 0.009, size = 186, normalized size = 1.5

$$-\frac{-10\,x^4b^4d^4-56\,ab^3d^4x^3+16\,b^4cd^3x^3-140\,a^2b^2d^4x^2+112\,ab^3cd^3x^2-32\,b^4c^2d^2x^2-280\,a^3bd^4x+560\,a^2b^2cd^3x-448\,a}{35\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c)^(3/2),x)
```

```
[Out] -2/35/(d*x+c)^(1/2)*(-5*b^4*d^4*x^4-28*a*b^3*d^4*x^3+8*b^4*c*d^3*
x^3-70*a^2*b^2*d^4*x^2+56*a*b^3*c*d^3*x^2-16*b^4*c^2*d^2*x^2-140*
a^3*b*d^4*x+280*a^2*b^2*c*d^3*x-224*a*b^3*c^2*d^2*x+64*b^4*c^3*d*
x+35*a^4*d^4-280*a^3*b*c*d^3+560*a^2*b^2*c^2*d^2-448*a*b^3*c^3*d+
128*b^4*c^4)/d^5
```

Maxima [A] time = 1.35092, size = 255, normalized size = 2.07

$$\frac{2\left(\frac{5\,(dx+c)^{\frac{7}{2}}b^4-28\,(b^4c-ab^3d)(dx+c)^{\frac{5}{2}}+70\,(b^4c^2-2\,ab^3cd+a^2b^2d^2)(dx+c)^{\frac{3}{2}}-140\,(b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3)\sqrt{dx+c}}{d^4}-\frac{35\,(b^4c^4-4\,ab^3c^3d+6\,a^2b}{\sqrt{dx+}}\right.}{35\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/35*((5*(d*x + c)^(7/2)*b^4 - 28*(b^4*c - a*b^3*d)*(d*x + c)^(5/
2) + 70*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*(d*x + c)^(3/2) - 1
40*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)*sqrt(d
*x + c))/d^4 - 35*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 -
4*a^3*b*c*d^3 + a^4*d^4)/(sqrt(d*x + c)*d^4))/d
```

Fricas [A] time = 0.204057, size = 246, normalized size = 2.

$$\frac{2\left(5\,b^4d^4x^4 - 128\,b^4c^4 + 448\,ab^3c^3d - 560\,a^2b^2c^2d^2 + 280\,a^3bcd^3 - 35\,a^4d^4 - 4\left(2\,b^4cd^3 - 7\,ab^3d^4\right)x^3 + 2\left(8\,b^4c^2d^2 - 28\,ab^3\right.\right.}{35\,\sqrt{dx+c}d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*b^4*d^4*x^4 - 128*b^4*c^4 + 448*a*b^3*c^3*d - 560*a^2*b^2
*c^2*d^2 + 280*a^3*b*c*d^3 - 35*a^4*d^4 - 4*(2*b^4*c*d^3 - 7*a*b^
3*d^4)*x^3 + 2*(8*b^4*c^2*d^2 - 28*a*b^3*c*d^3 + 35*a^2*b^2*d^4)*
x^2 - 4*(16*b^4*c^3*d - 56*a*b^3*c^2*d^2 + 70*a^2*b^2*c*d^3 - 35*
a^3*b*d^4)*x)/(sqrt(d*x + c)*d^5)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^4}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**4/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.222331, size = 324, normalized size = 2.63

$$-\frac{2\left(b^4c^4 - 4\,ab^3c^3d + 6\,a^2b^2c^2d^2 - 4\,a^3bcd^3 + a^4d^4\right)}{\sqrt{dx+c}d^5} + \frac{2\left(5\,(dx+c)^{\frac{7}{2}}b^4d^{30} - 28\,(dx+c)^{\frac{5}{2}}b^4cd^{30} + 70\,(dx+c)^{\frac{3}{2}}b^4c^2d^{30} - 140\,\sqrt{dx+c}b^4c^3d^{30} + 28\,(dx+c)^{\frac{5}{2}}ab^3d^{31} - 140\,(dx+c)^{\frac{3}{2}}\right.}{35\,d^{35}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 +
 a^4*d^4)/(sqrt(d*x + c)*d^5) + 2/35*(5*(d*x + c)^(7/2)*b^4*d^30
- 28*(d*x + c)^(5/2)*b^4*c*d^30 + 70*(d*x + c)^(3/2)*b^4*c^2*d^30
 - 140*sqrt(d*x + c)*b^4*c^3*d^30 + 28*(d*x + c)^(5/2)*a*b^3*d^31
```

```
 - 140*(d*x + c)^(3/2)*a*b^3*c*d^31 + 420*sqrt(d*x + c)*a*b^3*c^2
*d^31 + 70*(d*x + c)^(3/2)*a^2*b^2*d^32 - 420*sqrt(d*x + c)*a^2*b
^2*c*d^32 + 140*sqrt(d*x + c)*a^3*b*d^33)/d^35
```

3.1426 $\int \frac{(a+bx)^3}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{2b^2(c+dx)^{3/2}(bc-ad)}{d^4}+\frac{6b\sqrt{c+dx}(bc-ad)^2}{d^4}+\frac{2(bc-ad)^3}{d^4\sqrt{c+dx}}+\frac{2b^3(c+dx)^{5/2}}{5d^4}$$

```
[Out] (2*(b*c - a*d)^3)/(d^4*Sqrt[c + d*x]) + (6*b*(b*c - a*d)^2*Sqrt[c
 + d*x])/d^4 - (2*b^2*(b*c - a*d)*(c + d*x)^(3/2))/d^4 + (2*b^3*(
c + d*x)^(5/2))/(5*d^4)
```

Rubi [A] time = 0.0955831, antiderivative size = 94, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{2b^2(c+dx)^{3/2}(bc-ad)}{d^4}+\frac{6b\sqrt{c+dx}(bc-ad)^2}{d^4}+\frac{2(bc-ad)^3}{d^4\sqrt{c+dx}}+\frac{2b^3(c+dx)^{5/2}}{5d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/(c + d*x)^(3/2),x]
```

```
[Out] (2*(b*c - a*d)^3)/(d^4*Sqrt[c + d*x]) + (6*b*(b*c - a*d)^2*Sqrt[c
 + d*x])/d^4 - (2*b^2*(b*c - a*d)*(c + d*x)^(3/2))/d^4 + (2*b^3*(
c + d*x)^(5/2))/(5*d^4)
```

Rubi in Sympy [A] time = 21.9889, size = 87, normalized size = 0.93

$$\frac{2b^3\left(c+dx\right)^{\frac{5}{2}}}{5d^4}+\frac{2b^2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}{d^4}+\frac{6b\sqrt{c+dx}\left(ad-bc\right)^2}{d^4}-\frac{2\left(ad-bc\right)^3}{d^4\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c)**(3/2),x)
```

```
[Out] 2*b**3*(c + d*x)**(5/2)/(5*d**4) + 2*b**2*(c + d*x)**(3/2)*(a*d -
 b*c)/d**4 + 6*b*sqrt(c + d*x)*(a*d - b*c)**2/d**4 - 2*(a*d - b*c
)**3/(d**4*sqrt(c + d*x))
```

Mathematica [A] time = 0.0852668, size = 99, normalized size = 1.05

$$\frac{2\left(-5a^3d^3+15a^2bd^2(2c+dx)+5ab^2d\left(-8c^2-4cdx+d^2x^2\right)+b^3\left(16c^3+8c^2dx-2cd^2x^2+d^3x^3\right)\right)}{5d^4\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/(c + d*x)^(3/2),x]
```

```
[Out] (2*(-5*a^3*d^3 + 15*a^2*b*d^2*(2*c + d*x) + 5*a*b^2*d*(-8*c^2 - 4
*c*d*x + d^2*x^2) + b^3*(16*c^3 + 8*c^2*d*x - 2*c*d^2*x^2 + d^3*x
^3)))/(5*d^4*Sqrt[c + d*x])
```

Maple [A] time = 0.009, size = 116, normalized size = 1.2

$$-\frac{-2\,b^{3}x^{3}d^{3}-10\,ab^{2}d^{3}x^{2}+4\,b^{3}cd^{2}x^{2}-30\,a^{2}bd^{3}x+40\,ab^{2}cd^{2}x-16\,b^{3}c^{2}dx+10\,a^{3}d^{3}-60\,a^{2}bcd^{2}+80\,ab^{2}c^{2}d-32\,b^{3}c^{3}}{5\,d^{4}}\frac{}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c)^(3/2),x)
```

```
[Out] -2/5/(d*x+c)^(1/2)*(-b^3*d^3*x^3-5*a*b^2*d^3*x^2+2*b^3*c*d^2*x^2-
15*a^2*b*d^3*x+20*a*b^2*c*d^2*x-8*b^3*c^2*d*x+5*a^3*d^3-30*a^2*b*
c*d^2+40*a*b^2*c^2*d-16*b^3*c^3)/d^4
```

Maxima [A] time = 1.34382, size = 169, normalized size = 1.8

$$\frac{2\left(\frac{(dx+c)^{\frac{5}{2}}b^{3}-5\left(b^{3}c-ab^{2}d\right)(dx+c)^{\frac{3}{2}}+15\left(b^{3}c^{2}-2\,ab^{2}cd+a^{2}bd^{2}\right)\sqrt{dx+c}}{d^{3}}+\frac{5\left(b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3}\right)}{\sqrt{dx+c}d^{3}}\right)}{5\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(((d*x + c)^(5/2)*b^3 - 5*(b^3*c - a*b^2*d)*(d*x + c)^(3/2) +
 15*(b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*sqrt(d*x + c))/d^3 + 5*(b
^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)/(sqrt(d*x + c)*
d^3))/d
```

Fricas [A] time = 0.208917, size = 154, normalized size = 1.64

$$\frac{2\left(b^{3}d^{3}x^{3}+16\,b^{3}c^{3}-40\,ab^{2}c^{2}d+30\,a^{2}bcd^{2}-5\,a^{3}d^{3}-\left(2\,b^{3}cd^{2}-5\,ab^{2}d^{3}\right)x^{2}+\left(8\,b^{3}c^{2}d-20\,ab^{2}cd^{2}+15\,a^{2}bd^{3}\right)x\right)}{5\,\sqrt{dx+c}d^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(b^3*d^3*x^3 + 16*b^3*c^3 - 40*a*b^2*c^2*d + 30*a^2*b*c*d^2 -
 5*a^3*d^3 - (2*b^3*c*d^2 - 5*a*b^2*d^3)*x^2 + (8*b^3*c^2*d - 20*
a*b^2*c*d^2 + 15*a^2*b*d^3)*x)/(sqrt(d*x + c)*d^4)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^3}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**3/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.217979, size = 205, normalized size = 2.18

$$\frac{2\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)}{\sqrt{dx+c}d^4}+\frac{2\left((dx+c)^{\frac{5}{2}}b^3d^{16}-5\,(dx+c)^{\frac{3}{2}}b^3cd^{16}+15\,\sqrt{dx+c}b^3c^2d^{16}+5\,(dx+c)^{\frac{3}{2}}ab^2d^{17}-30\,\sqrt{dx+c}ab^2cd^{17}+15\,\sqrt{dx+c}a^2bd^{18}\right)}{5\,d^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)/(sqrt(d*x +
 c)*d^4) + 2/5*((d*x + c)^(5/2)*b^3*d^16 - 5*(d*x + c)^(3/2)*b^3*
c*d^16 + 15*sqrt(d*x + c)*b^3*c^2*d^16 + 5*(d*x + c)^(3/2)*a*b^2*
d^17 - 30*sqrt(d*x + c)*a*b^2*c*d^17 + 15*sqrt(d*x + c)*a^2*b*d^1
8)/d^20
```

3.1427 $\int \frac{(a+bx)^2}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{4b\sqrt{c+dx}(bc-ad)}{d^3}-\frac{2(bc-ad)^2}{d^3\sqrt{c+dx}}+\frac{2b^2(c+dx)^{3/2}}{3d^3}$$

```
[Out] (-2*(b*c - a*d)^2)/(d^3*Sqrt[c + d*x]) - (4*b*(b*c - a*d)*Sqrt[c
+ d*x])/d^3 + (2*b^2*(c + d*x)^(3/2))/(3*d^3)
```

Rubi [A] time = 0.0674793, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$-\frac{4b\sqrt{c+dx}(bc-ad)}{d^3}-\frac{2(bc-ad)^2}{d^3\sqrt{c+dx}}+\frac{2b^2(c+dx)^{3/2}}{3d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c + d*x)^(3/2),x]
```

```
[Out] (-2*(b*c - a*d)^2)/(d^3*Sqrt[c + d*x]) - (4*b*(b*c - a*d)*Sqrt[c
+ d*x])/d^3 + (2*b^2*(c + d*x)^(3/2))/(3*d^3)
```

Rubi in Sympy [A] time = 15.0048, size = 61, normalized size = 0.91

$$\frac{2b^2(c+dx)^{\frac{3}{2}}}{3d^3}+\frac{4b\sqrt{c+dx}\,(ad-bc)}{d^3}-\frac{2\,(ad-bc)^2}{d^3\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c)**(3/2),x)
```

```
[Out] 2*b**2*(c + d*x)**(3/2)/(3*d**3) + 4*b*sqrt(c + d*x)*(a*d - b*c)/
d**3 - 2*(a*d - b*c)**2/(d**3*sqrt(c + d*x))
```

Mathematica [A] time = 0.0538839, size = 59, normalized size = 0.88

$$\frac{2\left(-3a^2d^2+6abd(2c+dx)+b^2\left(-8c^2-4cdx+d^2x^2\right)\right)}{3d^3\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c + d*x)^(3/2),x]
```

```
[Out] (2*(-3*a^2*d^2 + 6*a*b*d*(2*c + d*x) + b^2*(-8*c^2 - 4*c*d*x + d^
2*x^2)))/(3*d^3*Sqrt[c + d*x])
```

Maple [A] time = 0.007, size = 63, normalized size = 0.9

$$-\frac{-2\,b^2x^2d^2-12\,abd^2x+8\,b^2cdx+6\,a^2d^2-24\,abcd+16\,b^2c^2}{3\,d^3}\frac{1}{\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c)^(3/2),x)
```

```
[Out] -2/3/(d*x+c)^(1/2)*(-b^2*d^2*x^2-6*a*b*d^2*x+4*b^2*c*d*x+3*a^2*d^
2-12*a*b*c*d+8*b^2*c^2)/d^3
```

Maxima [A] time = 1.37182, size = 101, normalized size = 1.51

$$\frac{2\left(\frac{(dx+c)^{\frac{3}{2}}b^2-6\,(b^2c-abd)\sqrt{dx+c}}{d^2}-\frac{3\,(b^2c^2-2\,abcd+a^2d^2)}{\sqrt{dx+c}d^2}\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3*(((d*x + c)^(3/2)*b^2 - 6*(b^2*c - a*b*d)*sqrt(d*x + c))/d^2
- 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(sqrt(d*x + c)*d^2))/d
```

Fricas [A] time = 0.203967, size = 85, normalized size = 1.27

$$\frac{2\left(b^2d^2x^2-8\,b^2c^2+12\,abcd-3\,a^2d^2-2\left(2\,b^2cd-3\,abd^2\right)x\right)}{3\,\sqrt{dx+c}d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b^2*d^2*x^2 - 8*b^2*c^2 + 12*a*b*c*d - 3*a^2*d^2 - 2*(2*b^2*
c*d - 3*a*b*d^2)*x)/(sqrt(d*x + c)*d^3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^2}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**2/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.219103, size = 113, normalized size = 1.69

$$-\frac{2\left(b^2c^2-2\,abcd+a^2d^2\right)}{\sqrt{dx+c}d^3}+\frac{2\left((dx+c)^{\frac{3}{2}}b^2d^6-6\sqrt{dx+c}b^2cd^6+6\sqrt{dx+c}abd^7\right)}{3\,d^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)/(sqrt(d*x + c)*d^3) + 2/3*((d*
x + c)^(3/2)*b^2*d^6 - 6*sqrt(d*x + c)*b^2*c*d^6 + 6*sqrt(d*x + c
)*a*b*d^7)/d^9
```

3.1428 $\int \frac{a+bx}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=38

$$\frac{2(bc-ad)}{d^2\sqrt{c+dx}}+\frac{2b\sqrt{c+dx}}{d^2}$$

```
[Out] (2*(b*c - a*d))/(d^2*Sqrt[c + d*x]) + (2*b*Sqrt[c + d*x])/d^2
```

Rubi [A] time = 0.0431119, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2(bc-ad)}{d^2\sqrt{c+dx}}+\frac{2b\sqrt{c+dx}}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c + d*x)^(3/2),x]

[Out] (2*(b*c - a*d))/(d^2*Sqrt[c + d*x]) + (2*b*Sqrt[c + d*x])/d^2
```

Rubi in Sympy [A] time = 7.96988, size = 36, normalized size = 0.95

$$\frac{2b\sqrt{c+dx}}{d^2}-\frac{2\,(ad-bc)}{d^2\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)**(3/2),x)

[Out] 2*b*sqrt(c + d*x)/d**2 - 2*(a*d - b*c)/(d**2*sqrt(c + d*x))
```

Mathematica [A] time = 0.0252015, size = 27, normalized size = 0.71

$$\frac{2(-ad+2bc+bdx)}{d^2\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c + d*x)^(3/2),x]
```

```
[Out] (2*(2*b*c - a*d + b*d*x))/(d^2*Sqrt[c + d*x])
```

Maple [A] time = 0.006, size = 26, normalized size = 0.7

$$-2\,\frac{-bdx+ad-2\,bc}{\sqrt{dx+c}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(d*x+c)^(3/2),x)
```

```
[Out] -2/(d*x+c)^(1/2)*(-b*d*x+a*d-2*b*c)/d^2
```

Maxima [A] time = 1.33906, size = 50, normalized size = 1.32

$$\frac{2\left(\frac{\sqrt{dx+c}b}{d}+\frac{bc-ad}{\sqrt{dx+c}d}\right)}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*(sqrt(d*x + c)*b/d + (b*c - a*d)/(sqrt(d*x + c)*d))/d
```

Fricas [A] time = 0.202807, size = 34, normalized size = 0.89

$$\frac{2\,(bdx+2\,bc-ad)}{\sqrt{dx+c}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*(b*d*x + 2*b*c - a*d)/(sqrt(d*x + c)*d^2)
```

Sympy [A] time = 0.983132, size = 60, normalized size = 1.58

$$\begin{cases} -\frac{2a}{d\sqrt{c+dx}}+\frac{4bc}{d^2\sqrt{c+dx}}+\frac{2bx}{d\sqrt{c+dx}} & \text{for } d\neq 0\\ \frac{ax+\frac{bx^2}{2}}{c^{\frac{3}{2}}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**(3/2),x)
```

```
[Out] Piecewise((-2*a/(d*sqrt(c + d*x)) + 4*b*c/(d**2*sqrt(c + d*x)) +
2*b*x/(d*sqrt(c + d*x)), Ne(d, 0)), ((a*x + b*x**2/2)/c**(3/2), T
rue))
```

GIAC/XCAS [A] time = 0.217007, size = 46, normalized size = 1.21

$$\frac{2\sqrt{dx+c}b}{d^2}+\frac{2(bc-ad)}{\sqrt{dx+c}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(d*x + c)*b/d^2 + 2*(b*c - a*d)/(sqrt(d*x + c)*d^2)
```

3.1429 $\int \frac{1}{(c+dx)^{3/2}} dx$

Optimal. Leaf size=14

$$-\frac{2}{d\sqrt{c+dx}}$$

```
[Out] -2/(d*Sqrt[c + d*x])
```

Rubi [A] time = 0.00708826, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$

$$-\frac{2}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^(-3/2),x]

[Out] -2/(d*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 1.35269, size = 12, normalized size = 0.86

$$-\frac{2}{d\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(d*x+c)**(3/2),x)

[Out] -2/(d*sqrt(c + d*x))
```

Mathematica [A] time = 0.00438601, size = 14, normalized size = 1.

$$-\frac{2}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^(-3/2),x]
```

```
[Out] -2/(d*Sqrt[c + d*x])
```

Maple [A] time = 0.003, size = 13, normalized size = 0.9

$$-2\,\frac{1}{d\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(d*x+c)^(3/2),x)
```

```
[Out] -2/d/(d*x+c)^(1/2)
```

Maxima [A] time = 1.34711, size = 16, normalized size = 1.14

$$-\frac{2}{\sqrt{dx+c}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3/2),x, algorithm="maxima")
```

```
[Out] -2/(sqrt(d*x + c)*d)
```

Fricas [A] time = 0.206818, size = 16, normalized size = 1.14

$$-\frac{2}{\sqrt{dx+c}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3/2),x, algorithm="fricas")
```

```
[Out] -2/(sqrt(d*x + c)*d)
```

Sympy [A] time = 0.039206, size = 12, normalized size = 0.86

$$-\frac{2}{d\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c)**(3/2),x)
```

```
[Out] -2/(d*sqrt(c + d*x))
```

GIAC/XCAS [A] time = 0.21695, size = 16, normalized size = 1.14

$$-\frac{2}{\sqrt{dx+c}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-3/2),x, algorithm="giac")
```

```
[Out] -2/(sqrt(d*x + c)*d)
```

3.1430 $\int \frac{1}{(a+bx)(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=69

$$\frac{2}{\sqrt{c+dx}(bc-ad)}-\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{3/2}}$$

```
[Out] 2/((b*c - a*d)*Sqrt[c + d*x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[
c + d*x])/Sqrt[b*c - a*d]])/(b*c - a*d)^(3/2)
```

Rubi [A] time = 0.092165, antiderivative size = 69, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$\frac{2}{\sqrt{c+dx}(bc-ad)}-\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^(3/2)),x]
```

```
[Out] 2/((b*c - a*d)*Sqrt[c + d*x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[
c + d*x])/Sqrt[b*c - a*d]])/(b*c - a*d)^(3/2)
```

Rubi in Sympy [A] time = 13.47, size = 60, normalized size = 0.87

$$-\frac{2\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{(ad-bc)^{\frac{3}{2}}}-\frac{2}{\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(3/2),x)
```

```
[Out] -2*sqrt(b)*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(a*d - b*c
)**(3/2) - 2/(sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.0966291, size = 69, normalized size = 1.

$$\frac{2}{\sqrt{c+dx}(bc-ad)}-\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^(3/2)),x]
```

```
[Out] 2/((b*c - a*d)*Sqrt[c + d*x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[
c + d*x])/Sqrt[b*c - a*d]])/(b*c - a*d)^(3/2)
```

Maple [A] time = 0.013, size = 68, normalized size = 1.

$$-2\,\frac{1}{(ad-bc)\sqrt{dx+c}}-2\,\frac{b}{(ad-bc)\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(3/2),x)
```

```
[Out] -2/(a*d-b*c)/(d*x+c)^(1/2)-2*b/(a*d-b*c)/((a*d-b*c)*b)^(1/2)*arct
an((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.230698, size = 1, normalized size = 0.01

$$\left[-\frac{\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}\log\left(\frac{bdx+2\,bc-ad+2\,(bc-ad)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}}{bx+a}\right)-2}{(bc-ad)\sqrt{dx+c}},\right.$$
$$\left.-\frac{2\left(\sqrt{dx+c}\sqrt{-\frac{b}{bc-ad}}\arctan\left(-\frac{(bc-ad)\sqrt{-\frac{b}{bc-ad}}}{\sqrt{dx+cb}}\right)-1\right)}{(bc-ad)\sqrt{dx+c}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] [-(sqrt(d*x + c)*sqrt(b/(b*c - a*d))*log((b*d*x + 2*b*c - a*d + 2
*(b*c - a*d)*sqrt(d*x + c)*sqrt(b/(b*c - a*d)))/(b*x + a)) - 2)/(
(b*c - a*d)*sqrt(d*x + c)), -2*(sqrt(d*x + c)*sqrt(-b/(b*c - a*d)
)*arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(sqrt(d*x + c)*b)) - 1
)/((b*c - a*d)*sqrt(d*x + c))]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)\,(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(1/((a + b*x)*(c + d*x)**(3/2)), x)
```

GIAC/XCAS [A] time = 0.219868, size = 93, normalized size = 1.35

$$\frac{2\,b\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{\sqrt{-b^2c+abd}(bc-ad)}+\frac{2}{(bc-ad)\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] 2*b*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/(sqrt(-b^2*c + a
*b*d)*(b*c - a*d)) + 2/((b*c - a*d)*sqrt(d*x + c))
```

3.1431 $\int \frac{1}{(a+bx)^2(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=99

$$-\frac{3d}{\sqrt{c+dx}(bc-ad)^2}-\frac{1}{(a+bx)\sqrt{c+dx}(bc-ad)}+\frac{3\sqrt{b}d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{5/2}}$$

```
[Out] (-3*d)/((b*c - a*d)^2*Sqrt[c + d*x]) - 1/((b*c - a*d)*(a + b*x)*S
qrt[c + d*x]) + (3*Sqrt[b]*d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt
[b*c - a*d]])/(b*c - a*d)^(5/2)
```

Rubi [A] time = 0.113242, antiderivative size = 99, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{3d}{\sqrt{c+dx}(bc-ad)^2}-\frac{1}{(a+bx)\sqrt{c+dx}(bc-ad)}+\frac{3\sqrt{b}d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(c + d*x)^(3/2)),x]
```

```
[Out] (-3*d)/((b*c - a*d)^2*Sqrt[c + d*x]) - 1/((b*c - a*d)*(a + b*x)*S
qrt[c + d*x]) + (3*Sqrt[b]*d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt
[b*c - a*d]])/(b*c - a*d)^(5/2)
```

Rubi in Sympy [A] time = 20.2882, size = 85, normalized size = 0.86

$$-\frac{3\sqrt{b}d\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{(ad-bc)^{\frac{5}{2}}}-\frac{3d}{\sqrt{c+dx}\,(ad-bc)^2}+\frac{1}{(a+bx)\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c)**(3/2),x)
```

```
[Out] -3*sqrt(b)*d*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(a*d - b
*c)**(5/2) - 3*d/(sqrt(c + d*x)*(a*d - b*c)**2) + 1/((a + b*x)*sq
rt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.216866, size = 90, normalized size = 0.91

$$\frac{3\sqrt{b}d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{5/2}}-\frac{2ad+b(c+3dx)}{(a+bx)\sqrt{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(c + d*x)^(3/2)),x]
```

```
[Out] -((2*a*d + b*(c + 3*d*x))/((b*c - a*d)^2*(a + b*x)*Sqrt[c + d*x])
) + (3*Sqrt[b]*d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]]
)/(b*c - a*d)^(5/2)
```

Maple [A] time = 0.023, size = 101, normalized size = 1.

$$-2\,\frac{d}{(ad-bc)^{2}\sqrt{dx+c}}-\frac{bd}{(ad-bc)^{2}(bdx+ad)}\sqrt{dx+c}-3\,\frac{bd}{(ad-bc)^{2}\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c)^(3/2),x)
```

```
[Out] -2*d/(a*d-b*c)^2/(d*x+c)^(1/2)-d*b/(a*d-b*c)^2*(d*x+c)^(1/2)/(b*d
*x+a*d)-3*d*b/(a*d-b*c)^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2
)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225025, size = 1, normalized size = 0.01

$$\left[-\frac{6\,bdx-3\,(bdx+ad)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}\log\left(\frac{bdx+2\,bc-ad+2\,(bc-ad)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}}{bx+a}\right)+2\,bc+4\,ad}{2\,(ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x)\sqrt{dx+c}},\right.$$
$$\left.-\frac{3\,bdx-3\,(bdx+ad)\sqrt{dx+c}\sqrt{-\frac{b}{bc-ad}}\arctan\left(-\frac{(bc-ad)\sqrt{-\frac{b}{bc-ad}}}{\sqrt{dx+c}b}\right)+bc+2\,ad}{(ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x)\sqrt{dx+c}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] [-1/2*(6*b*d*x - 3*(b*d*x + a*d)*sqrt(d*x + c)*sqrt(b/(b*c - a*d)
)*log((b*d*x + 2*b*c - a*d + 2*(b*c - a*d)*sqrt(d*x + c)*sqrt(b/(
b*c - a*d)))/(b*x + a)) + 2*b*c + 4*a*d)/((a*b^2*c^2 - 2*a^2*b*c*
d + a^3*d^2 + (b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)*x)*sqrt(d*x + c
)), -(3*b*d*x - 3*(b*d*x + a*d)*sqrt(d*x + c)*sqrt(-b/(b*c - a*d)
)*arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(sqrt(d*x + c)*b)) + b
*c + 2*a*d)/((a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*
b^2*c*d + a^2*b*d^2)*x)*sqrt(d*x + c))]
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c)**(3/2),x)
```

```
[Out] Exception raised: ValueError
```

GIAC/XCAS [A] time = 0.224547, size = 193, normalized size = 1.95

$$-\frac{3\,bd\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{(b^2c^2-2\,abcd+a^2d^2)\sqrt{-b^2c+abd}}-\frac{3\,(dx+c)bd-2\,bcd+2\,ad^2}{(b^2c^2-2\,abcd+a^2d^2)\left((dx+c)^{\frac{3}{2}}b-\sqrt{dx+c}bc+\sqrt{dx+c}ad\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^(3/2)),x, algorithm="giac")

[Out] -3*b*d*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^2*c^2 - 2
*a*b*c*d + a^2*d^2)*sqrt(-b^2*c + a*b*d)) - (3*(d*x + c)*b*d - 2*
b*c*d + 2*a*d^2)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*((d*x + c)^(3/2
)*b - sqrt(d*x + c)*b*c + sqrt(d*x + c)*a*d))
```

3.1432 $\int \frac{1}{(a+bx)^3(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=140

$$\frac{15d^2}{4\sqrt{c+dx}(bc-ad)^3}-\frac{15\sqrt{b}d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4(bc-ad)^{7/2}}+\frac{5d}{4(a+bx)\sqrt{c+dx}(bc-ad)^2}-\frac{1}{2(a+bx)^2\sqrt{c+dx}(bc-ad)}$$

```
[Out] (15*d^2)/(4*(b*c - a*d)^3*Sqrt[c + d*x]) - 1/(2*(b*c - a*d)*(a +
b*x)^2*Sqrt[c + d*x]) + (5*d)/(4*(b*c - a*d)^2*(a + b*x)*Sqrt[c +
 d*x]) - (15*Sqrt[b]*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c
 - a*d]])/(4*(b*c - a*d)^(7/2))
```

Rubi [A] time = 0.148287, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{15d^2}{4\sqrt{c+dx}(bc-ad)^3}-\frac{15\sqrt{b}d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4(bc-ad)^{7/2}}+\frac{5d}{4(a+bx)\sqrt{c+dx}(bc-ad)^2}-\frac{1}{2(a+bx)^2\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*(c + d*x)^(3/2)),x]
```

```
[Out] (15*d^2)/(4*(b*c - a*d)^3*Sqrt[c + d*x]) - 1/(2*(b*c - a*d)*(a +
b*x)^2*Sqrt[c + d*x]) + (5*d)/(4*(b*c - a*d)^2*(a + b*x)*Sqrt[c +
 d*x]) - (15*Sqrt[b]*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c
 - a*d]])/(4*(b*c - a*d)^(7/2))
```

Rubi in Sympy [A] time = 30.1572, size = 122, normalized size = 0.87

$$-\frac{15\sqrt{b}d^2\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4\,(ad-bc)^{\frac{7}{2}}}-\frac{15d^2}{4\sqrt{c+dx}\,(ad-bc)^3}+\frac{5d}{4\,(a+bx)\sqrt{c+dx}\,(ad-bc)^2}+\frac{1}{2\,(a+bx)^2\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c)**(3/2),x)
```

```
[Out] -15*sqrt(b)*d**2*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(4*(
a*d - b*c)**(7/2)) - 15*d**2/(4*sqrt(c + d*x)*(a*d - b*c)**3) + 5
*d/(4*(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**2) + 1/(2*(a + b*x)**2
```

```
*sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.323125, size = 126, normalized size = 0.9

$$\frac{1}{4}\left(\frac{8a^2d^2+abd(9c+25dx)+b^2\left(-2c^2+5cdx+15d^2x^2\right)}{(a+bx)^2\sqrt{c+dx}(bc-ad)^3}-\frac{15\sqrt{b}d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{7/2}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*(c + d*x)^(3/2)),x]
```

```
[Out] ((8*a^2*d^2 + a*b*d*(9*c + 25*d*x) + b^2*(-2*c^2 + 5*c*d*x + 15*d
^2*x^2))/((b*c - a*d)^3*(a + b*x)^2*Sqrt[c + d*x]) - (15*Sqrt[b]*
d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(b*c - a*d)
^(7/2))/4
```

Maple [A] time = 0.025, size = 179, normalized size = 1.3

$$-2\,\frac{d^2}{(ad-bc)^3\sqrt{dx+c}}-\frac{7\,d^2b^2}{4\,(ad-bc)^3\,(bdx+ad)^2}(dx+c)^{\frac{3}{2}}-\frac{9\,d^3ba}{4\,(ad-bc)^3\,(bdx+ad)^2}\sqrt{dx+c}+\frac{9\,d^2b^2c}{4\,(ad-bc)^3\,(bdx+ad)^2}\sqrt{dx+c}-\frac{15\,d^2b}{4\,(ad-bc)^3}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c)^(3/2),x)
```

```
[Out] -2*d^2/(a*d-b*c)^3/(d*x+c)^(1/2)-7/4*d^2/(a*d-b*c)^3*b^2/(b*d*x+a
*d)^2*(d*x+c)^(3/2)-9/4*d^3/(a*d-b*c)^3*b/(b*d*x+a*d)^2*(d*x+c)^(
1/2)*a+9/4*d^2/(a*d-b*c)^3*b^2/(b*d*x+a*d)^2*(d*x+c)^(1/2)*c-15/4
*d^2/(a*d-b*c)^3*b/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a
*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22767, size = 1, normalized size = 0.01

$$\left[\frac{30\,b^2d^2x^2 - 4\,b^2c^2 + 18\,abcd + 16\,a^2d^2 - 15\left(b^2d^2x^2 + 2\,abd^2x + a^2d^2\right)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}\log\left(\frac{bdx+2\,bc-ad+2\,(bc-ad)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}}{bx+a}\right)}{8\,(a^2b^3c^3 - 3\,a^3b^2c^2d + 3\,a^4bcd^2 - a^5d^3 + (b^5c^3 - 3\,ab^4c^2d + 3\,a^2b^3cd^2 - a^3b^2d^3)x^2 + 2\,(ab^4c^3 - 3\,a^2b^3c^2d + 3\,a^3b^2cd\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] [1/8*(30*b^2*d^2*x^2 - 4*b^2*c^2 + 18*a*b*c*d + 16*a^2*d^2 - 15*(
b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*sqrt(d*x + c)*sqrt(b/(b*c -
a*d))*log((b*d*x + 2*b*c - a*d + 2*(b*c - a*d)*sqrt(d*x + c)*sqrt
(b/(b*c - a*d)))/(b*x + a)) + 10*(b^2*c*d + 5*a*b*d^2)*x)/((a^2*b
^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^3 + (b^5*c^3 - 3
*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*x^2 + 2*(a*b^4*c^3
- 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*x)*sqrt(d*x + c)
), 1/4*(15*b^2*d^2*x^2 - 2*b^2*c^2 + 9*a*b*c*d + 8*a^2*d^2 - 15*(
b^2*d^2*x^2 + 2*a*b*d^2*x + a^2*d^2)*sqrt(d*x + c)*sqrt(-b/(b*c -
 a*d))*arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(sqrt(d*x + c)*b)
) + 5*(b^2*c*d + 5*a*b*d^2)*x)/((a^2*b^3*c^3 - 3*a^3*b^2*c^2*d +
3*a^4*b*c*d^2 - a^5*d^3 + (b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*
d^2 - a^3*b^2*d^3)*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b
^2*c*d^2 - a^4*b*d^3)*x)*sqrt(d*x + c))]
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c)**(3/2),x)
```

```
[Out] Exception raised: ValueError
```

<u>GIAC/XCAS</u> [A] time = 0.220921, size = 316, normalized size = 2.26

$$\frac{15\,bd^2\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{4\,(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3)\sqrt{-b^2c+abd}}+\frac{2\,d^2}{(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3)\sqrt{dx+c}}+\frac{7\,(dx+c)^{\frac{3}{2}}b^2d^2-9\,\sqrt{dx+c}b^2cd^2+9\,\sqrt{dx+c}abd^3}{4\,(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3)((dx+c)b-bc+ad)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] 15/4*b*d^2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^3*c^3
 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*sqrt(-b^2*c + a*b*d))
 + 2*d^2/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*sqr
t(d*x + c)) + 1/4*(7*(d*x + c)^(3/2)*b^2*d^2 - 9*sqrt(d*x + c)*b^
2*c*d^2 + 9*sqrt(d*x + c)*a*b*d^3)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*
a^2*b*c*d^2 - a^3*d^3)*((d*x + c)*b - b*c + a*d)^2)
```

3.1433 $\int \frac{1}{(a+bx)^4(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=173

$$-\frac{35d^3}{8\sqrt{c+dx}(bc-ad)^4}+\frac{35\sqrt{b}d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8(bc-ad)^{9/2}}-\frac{35d^2}{24(a+bx)\sqrt{c+dx}(bc-ad)^3}+\frac{7d}{12(a+bx)^2\sqrt{c+dx}(bc-ad)^2}-\frac{1}{3(a+bx)^3\sqrt{c+dx}(bc-ad)}$$

```
[Out] (-35*d^3)/(8*(b*c - a*d)^4*Sqrt[c + d*x]) - 1/(3*(b*c - a*d)*(a +
 b*x)^3*Sqrt[c + d*x]) + (7*d)/(12*(b*c - a*d)^2*(a + b*x)^2*Sqrt
[c + d*x]) - (35*d^2)/(24*(b*c - a*d)^3*(a + b*x)*Sqrt[c + d*x])
+ (35*Sqrt[b]*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]
])/(8*(b*c - a*d)^(9/2))
```

Rubi [A] time = 0.189536, antiderivative size = 173, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{35d^3}{8\sqrt{c+dx}(bc-ad)^4}+\frac{35\sqrt{b}d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8(bc-ad)^{9/2}}-\frac{35d^2}{24(a+bx)\sqrt{c+dx}(bc-ad)^3}+\frac{7d}{12(a+bx)^2\sqrt{c+dx}(bc-ad)^2}-\frac{1}{3(a+bx)^3\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^4*(c + d*x)^(3/2)),x]
```

```
[Out] (-35*d^3)/(8*(b*c - a*d)^4*Sqrt[c + d*x]) - 1/(3*(b*c - a*d)*(a +
 b*x)^3*Sqrt[c + d*x]) + (7*d)/(12*(b*c - a*d)^2*(a + b*x)^2*Sqrt
[c + d*x]) - (35*d^2)/(24*(b*c - a*d)^3*(a + b*x)*Sqrt[c + d*x])
+ (35*Sqrt[b]*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]
])/(8*(b*c - a*d)^(9/2))
```

Rubi in Sympy [A] time = 42.1063, size = 153, normalized size = 0.88

$$-\frac{35\sqrt{b}d^3\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{8\left(ad-bc\right)^{\frac{9}{2}}}-\frac{35d^3}{8\sqrt{c+dx}\left(ad-bc\right)^4}+\frac{35d^2}{24\left(a+bx\right)\sqrt{c+dx}\left(ad-bc\right)^3}+\frac{7d}{12\left(a+bx\right)^2\sqrt{c+dx}\left(ad-bc\right)^2}+\frac{1}{3\left(a+bx\right)^3\sqrt{c+dx}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**4/(d*x+c)**(3/2),x)
```

```
[Out] -35*sqrt(b)*d**3*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(8*(
a*d - b*c)**(9/2)) - 35*d**3/(8*sqrt(c + d*x)*(a*d - b*c)**4) + 3
5*d**2/(24*(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**3) + 7*d/(12*(a +
 b*x)**2*sqrt(c + d*x)*(a*d - b*c)**2) + 1/(3*(a + b*x)**3*sqrt(c
 + d*x)*(a*d - b*c))
```

Mathematica [A]   time = 0.488105, size = 141, normalized size = 0.82

$$\frac{35\sqrt{b}d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8(bc-ad)^{9/2}}-\frac{\sqrt{c+dx}\left(-\frac{22bd(bc-ad)}{(a+bx)^2}+\frac{8b(bc-ad)^2}{(a+bx)^3}+\frac{57bd^2}{a+bx}+\frac{48d^3}{c+dx}\right)}{24(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^4*(c + d*x)^(3/2)),x]
```

```
[Out] -(Sqrt[c + d*x]*((8*b*(b*c - a*d)^2)/(a + b*x)^3 - (22*b*d*(b*c -
 a*d))/(a + b*x)^2 + (57*b*d^2)/(a + b*x) + (48*d^3)/(c + d*x)))/
(24*(b*c - a*d)^4) + (35*Sqrt[b]*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*
x])/Sqrt[b*c - a*d]])/(8*(b*c - a*d)^(9/2))
```

Maple [B]   time = 0.029, size = 292, normalized size = 1.7

$$-2\,{\frac{{d}^{3}}{ \left(ad-bc \right) ^{4}\sqrt{dx+c}}}-{\frac{19\,{d}^{3}{b}^{3}}{8\, \left(ad-bc \right) ^{4} \left(bdx+ad \right) ^{3}} \left(dx+c \right) ^{{\frac{5}{2}}}}-{\frac{17\,{d}^{4}{b}^{2}a}{3\, \left(ad-bc \right) ^{4} \left(bdx+ad \right) ^{3}} \left(dx+c \right) ^{{\frac{3}{2}}}}+{\frac{17\,{d}^{3}{b}^{3}c}{3\, \left(ad-bc \right) ^{4} \left(bdx+ad \right) ^{3}} \left(dx+c \right) ^{{\frac{3}{2}}}}-{\frac{29\,{d}^{5}b{a}^{2}}{8\, \left(ad-bc \right) ^{4} \left(bdx+ad \right) ^{3}}\sqrt{dx+c}}+{\frac{29\,{d}^{4}{b}^{2}ac}{4\, \left(ad-bc \right) ^{4} \left(bdx+ad \right) ^{3}}\sqrt{dx+c}}-{\frac{29\,{d}^{3}{b}^{3}{c}^{2}}{8\, \left(ad-bc \right) ^{4} \left(bdx+ad \right) ^{3}}\sqrt{dx+c}}-{\frac{35\,{d}^{3}b}{8\, \left(ad-bc \right) ^{4}}\arctan \left(b\sqrt{dx+c}{\frac{1}{\sqrt{ \left(ad-bc \right) b}}} \right) {\frac{1}{\sqrt{ \left(ad-bc \right) b}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^4/(d*x+c)^(3/2),x)
```

```
[Out] -2*d^3/(a*d-b*c)^4/(d*x+c)^(1/2)-19/8*d^3/(a*d-b*c)^4*b^3/(b*d*x+
a*d)^3*(d*x+c)^(5/2)-17/3*d^4/(a*d-b*c)^4*b^2/(b*d*x+a*d)^3*(d*x+
c)^(3/2)*a+17/3*d^3/(a*d-b*c)^4*b^3/(b*d*x+a*d)^3*(d*x+c)^(3/2)*c
-29/8*d^5/(a*d-b*c)^4*b/(b*d*x+a*d)^3*(d*x+c)^(1/2)*a^2+29/4*d^4/
(a*d-b*c)^4*b^2/(b*d*x+a*d)^3*(d*x+c)^(1/2)*a*c-29/8*d^3/(a*d-b*c
)^4*b^3/(b*d*x+a*d)^3*(d*x+c)^(1/2)*c^2-35/8*d^3/(a*d-b*c)^4*b/((
```

```
a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.238393, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] [-1/48*(210*b^3*d^3*x^3 + 16*b^3*c^3 - 76*a*b^2*c^2*d + 174*a^2*b
*c*d^2 + 96*a^3*d^3 + 70*(b^3*c*d^2 + 8*a*b^2*d^3)*x^2 - 105*(b^3
*d^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*sqrt(d*x +
c)*sqrt(b/(b*c - a*d))*log((b*d*x + 2*b*c - a*d + 2*(b*c - a*d)*s
qrt(d*x + c)*sqrt(b/(b*c - a*d)))/(b*x + a)) - 14*(2*b^3*c^2*d -
14*a*b^2*c*d^2 - 33*a^2*b*d^3)*x)/((a^3*b^4*c^4 - 4*a^4*b^3*c^3*d
 + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^4 + (b^7*c^4 - 4*a*b
^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*x^3
 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3
*c*d^3 + a^5*b^2*d^4)*x^2 + 3*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*
a^4*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*d^4)*x)*sqrt(d*x + c)),
 -1/24*(105*b^3*d^3*x^3 + 8*b^3*c^3 - 38*a*b^2*c^2*d + 87*a^2*b*c
*d^2 + 48*a^3*d^3 + 35*(b^3*c*d^2 + 8*a*b^2*d^3)*x^2 - 105*(b^3*d
^3*x^3 + 3*a*b^2*d^3*x^2 + 3*a^2*b*d^3*x + a^3*d^3)*sqrt(d*x + c)
*sqrt(-b/(b*c - a*d))*arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(s
qrt(d*x + c)*b)) - 7*(2*b^3*c^2*d - 14*a*b^2*c*d^2 - 33*a^2*b*d^3
)*x)/((a^3*b^4*c^4 - 4*a^4*b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*
b*c*d^3 + a^7*d^4 + (b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2
- 4*a^3*b^4*c*d^3 + a^4*b^3*d^4)*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c
^3*d + 6*a^3*b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b^2*d^4)*x^2 + 3
*(a^2*b^5*c^4 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 - 4*a^5*b^2*c
*d^3 + a^6*b*d^4)*x)*sqrt(d*x + c))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**4/(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.223197, size = 440, normalized size = 2.54

$$-\frac{35\, bd^{3} \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^{2}c+abd}}\right)}{8\,(b^{4}c^{4}-4\,ab^{3}c^{3}d+6\,a^{2}b^{2}c^{2}d^{2}-4\,a^{3}bcd^{3}+a^{4}d^{4})\sqrt{-b^{2}c+abd}} - \frac{2\,d^{3}}{(b^{4}c^{4}-4\,ab^{3}c^{3}d+6\,a^{2}b^{2}c^{2}d^{2}-4\,a^{3}bcd^{3}+a^{4}d^{4})\sqrt{dx+c}} - \frac{57\,(dx+c)^{\frac{5}{2}}b^{3}d^{3}-136\,(dx+c)^{\frac{3}{2}}b^{3}cd^{3}+87\,\sqrt{dx+c}b^{3}c^{2}d^{3}+136\,(dx+c)^{\frac{3}{2}}ab^{2}d^{4}-174\,\sqrt{dx+c}ab^{2}cd^{4}+87\,\sqrt{dx+c}a^{2}bd^{5}}{24\,(b^{4}c^{4}-4\,ab^{3}c^{3}d+6\,a^{2}b^{2}c^{2}d^{2}-4\,a^{3}bcd^{3}+a^{4}d^{4})((dx+c)b-bc+ad)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] -35/8*b*d^3*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^4*c^
4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*
sqrt(-b^2*c + a*b*d)) - 2*d^3/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b
^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*sqrt(d*x + c)) - 1/24*(57*(
d*x + c)^(5/2)*b^3*d^3 - 136*(d*x + c)^(3/2)*b^3*c*d^3 + 87*sqrt(
d*x + c)*b^3*c^2*d^3 + 136*(d*x + c)^(3/2)*a*b^2*d^4 - 174*sqrt(d
*x + c)*a*b^2*c*d^4 + 87*sqrt(d*x + c)*a^2*b*d^5)/((b^4*c^4 - 4*a
*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*((d*x +
 c)*b - b*c + a*d)^3)
```

3.1434 $\int \frac{(a+bx)^5}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{2b^4(c+dx)^{5/2}(bc-ad)}{d^6}+\frac{20b^3(c+dx)^{3/2}(bc-ad)^2}{3d^6}-\frac{20b^2\sqrt{c+dx}(bc-ad)^3}{d^6}-\frac{10b(bc-ad)^4}{d^6\sqrt{c+dx}}+\frac{2(bc-ad)^5}{3d^6(c+dx)^{3/2}}+\frac{2b^5(c+dx)^{7/2}}{7d^6}$$

```
[Out] (2*(b*c - a*d)^5)/(3*d^6*(c + d*x)^(3/2)) - (10*b*(b*c - a*d)^4)/
(d^6*Sqrt[c + d*x]) - (20*b^2*(b*c - a*d)^3*Sqrt[c + d*x])/d^6 +
(20*b^3*(b*c - a*d)^2*(c + d*x)^(3/2))/(3*d^6) - (2*b^4*(b*c - a*
d)*(c + d*x)^(5/2))/d^6 + (2*b^5*(c + d*x)^(7/2))/(7*d^6)
```

Rubi [A] time = 0.148486, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{2b^4(c+dx)^{5/2}(bc-ad)}{d^6}+\frac{20b^3(c+dx)^{3/2}(bc-ad)^2}{3d^6}-\frac{20b^2\sqrt{c+dx}(bc-ad)^3}{d^6}-\frac{10b(bc-ad)^4}{d^6\sqrt{c+dx}}+\frac{2(bc-ad)^5}{3d^6(c+dx)^{3/2}}+\frac{2b^5(c+dx)^{7/2}}{7d^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(c + d*x)^(5/2),x]
```

```
[Out] (2*(b*c - a*d)^5)/(3*d^6*(c + d*x)^(3/2)) - (10*b*(b*c - a*d)^4)/
(d^6*Sqrt[c + d*x]) - (20*b^2*(b*c - a*d)^3*Sqrt[c + d*x])/d^6 +
(20*b^3*(b*c - a*d)^2*(c + d*x)^(3/2))/(3*d^6) - (2*b^4*(b*c - a*
d)*(c + d*x)^(5/2))/d^6 + (2*b^5*(c + d*x)^(7/2))/(7*d^6)
```

Rubi in Sympy [A] time = 38.031, size = 141, normalized size = 0.93

$$\frac{2b^5\left(c+dx\right)^{\frac{7}{2}}}{7d^6}+\frac{2b^4\left(c+dx\right)^{\frac{5}{2}}\left(ad-bc\right)}{d^6}+\frac{20b^3\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^2}{3d^6}+\frac{20b^2\sqrt{c+dx}\left(ad-bc\right)^3}{d^6}-\frac{10b\left(ad-bc\right)^4}{d^6\sqrt{c+dx}}-\frac{2\left(ad-bc\right)^5}{3d^6\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(d*x+c)**(5/2),x)
```

```
[Out] 2*b**5*(c + d*x)**(7/2)/(7*d**6) + 2*b**4*(c + d*x)**(5/2)*(a*d -
 b*c)/d**6 + 20*b**3*(c + d*x)**(3/2)*(a*d - b*c)**2/(3*d**6) + 2
0*b**2*sqrt(c + d*x)*(a*d - b*c)**3/d**6 - 10*b*(a*d - b*c)**4/(d
**6*sqrt(c + d*x)) - 2*(a*d - b*c)**5/(3*d**6*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.284035, size = 157, normalized size = 1.03

$$\frac{2\sqrt{c+dx}\left(b^3dx\left(70a^2d^2-98abcd+37b^2c^2\right)+b^2\left(210a^3d^3-560a^2bcd^2+511ab^2c^2d-158b^3c^3\right)-3b^4d^2x^2(4bc-7ad)-\right.}{21d^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(c + d*x)^(5/2),x]
```

```
[Out] (2*Sqrt[c + d*x]*(b^2*(-158*b^3*c^3 + 511*a*b^2*c^2*d - 560*a^2*b
*c*d^2 + 210*a^3*d^3) + b^3*d*(37*b^2*c^2 - 98*a*b*c*d + 70*a^2*d
^2)*x - 3*b^4*d^2*(4*b*c - 7*a*d)*x^2 + 3*b^5*d^3*x^3 + (7*(b*c -
 a*d)^5)/(c + d*x)^2 - (105*b*(b*c - a*d)^4)/(c + d*x)))/(21*d^6)
```

Maple [B] time = 0.009, size = 273, normalized size = 1.8

$$-\frac{-6\,b^5x^5d^5-42\,ab^4d^5x^4+12\,b^5cd^4x^4-140\,a^2b^3d^5x^3+112\,ab^4cd^4x^3-32\,b^5c^2d^3x^3-420\,a^3b^2d^5x^2+840\,a^2b^3cd^4x^2-672}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(d*x+c)^(5/2),x)
```

```
[Out] -2/21/(d*x+c)^(3/2)*(-3*b^5*d^5*x^5-21*a*b^4*d^5*x^4+6*b^5*c*d^4*
x^4-70*a^2*b^3*d^5*x^3+56*a*b^4*c*d^4*x^3-16*b^5*c^2*d^3*x^3-210*
a^3*b^2*d^5*x^2+420*a^2*b^3*c*d^4*x^2-336*a*b^4*c^2*d^3*x^2+96*b^
5*c^3*d^2*x^2+105*a^4*b*d^5*x-840*a^3*b^2*c*d^4*x+1680*a^2*b^3*c^
2*d^3*x-1344*a*b^4*c^3*d^2*x+384*b^5*c^4*d*x+7*a^5*d^5+70*a^4*b*c
*d^4-560*a^3*b^2*c^2*d^3+1120*a^2*b^3*c^3*d^2-896*a*b^4*c^4*d+256
*b^5*c^5)/d^6
```

Maxima [A] time = 1.35839, size = 358, normalized size = 2.36

$$\frac{2\left(\frac{3\,(dx+c)^{\frac{7}{2}}b^5-21\left(b^5c-ab^4d\right)(dx+c)^{\frac{5}{2}}+70\left(b^5c^2-2\,ab^4cd+a^2b^3d^2\right)(dx+c)^{\frac{3}{2}}-210\left(b^5c^3-3\,ab^4c^2d+3\,a^2b^3cd^2-a^3b^2d^3\right)\sqrt{dx+c}}{d^5}+\frac{7\left(b^5c^5-5\,ab^4c^4d+10\,a^2\right.}{}\right.}{21\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/21*((3*(d*x + c)^(7/2)*b^5 - 21*(b^5*c - a*b^4*d)*(d*x + c)^(5/
2) + 70*(b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(d*x + c)^(3/2) - 2
10*(b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*sqrt
(d*x + c))/d^5 + 7*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2
- 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5 - 15*(b^5*c^4 - 4*
a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)*(d
*x + c))/((d*x + c)^(3/2)*d^5))/d
```

Fricas [A] time = 0.206617, size = 367, normalized size = 2.41

$$2\left(3\,b^5d^5x^5 - 256\,b^5c^5 + 896\,ab^4c^4d - 1120\,a^2b^3c^3d^2 + 560\,a^3b^2c^2d^3 - 70\,a^4bcd^4 - 7\,a^5d^5 - 3\left(2\,b^5cd^4 - 7\,ab^4d^5\right)x^4 + 2\,(8\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/21*(3*b^5*d^5*x^5 - 256*b^5*c^5 + 896*a*b^4*c^4*d - 1120*a^2*b^
3*c^3*d^2 + 560*a^3*b^2*c^2*d^3 - 70*a^4*b*c*d^4 - 7*a^5*d^5 - 3*
(2*b^5*c*d^4 - 7*a*b^4*d^5)*x^4 + 2*(8*b^5*c^2*d^3 - 28*a*b^4*c*d
^4 + 35*a^2*b^3*d^5)*x^3 - 6*(16*b^5*c^3*d^2 - 56*a*b^4*c^2*d^3 +
 70*a^2*b^3*c*d^4 - 35*a^3*b^2*d^5)*x^2 - 3*(128*b^5*c^4*d - 448*
a*b^4*c^3*d^2 + 560*a^2*b^3*c^2*d^3 - 280*a^3*b^2*c*d^4 + 35*a^4*
b*d^5)*x)/((d^7*x + c*d^6)*sqrt(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + bx)^5}{(c + dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(d*x+c)**(5/2),x)
```

```
[Out] Integral((a + b*x)**5/(c + d*x)**(5/2), x)
```

GIAC/XCAS [A] time = 0.230209, size = 452, normalized size = 2.97

$$-\frac{2\left(15\,(dx+c)b^5c^4 - b^5c^5 - 60\,(dx+c)ab^4c^3d + 5\,ab^4c^4d + 90\,(dx+c)a^2b^3c^2d^2 - 10\,a^2b^3c^3d^2 - 60\,(dx+c)a^3b^2cd^3 + 10\,a^3b\right.}{3\,(dx+c)^{\frac{3}{2}}d^6}$$
$$+\frac{2\left(3\,(dx+c)^{\frac{7}{2}}b^5d^{36} - 21\,(dx+c)^{\frac{5}{2}}b^5cd^{36} + 70\,(dx+c)^{\frac{3}{2}}b^5c^2d^{36} - 210\,\sqrt{dx+c}b^5c^3d^{36} + 21\,(dx+c)^{\frac{5}{2}}ab^4d^{37} - 140\,(dx+c)^{\frac{3}{2}}a\right.}{21\,d^{42}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(15*(d*x + c)*b^5*c^4 - b^5*c^5 - 60*(d*x + c)*a*b^4*c^3*d +
 5*a*b^4*c^4*d + 90*(d*x + c)*a^2*b^3*c^2*d^2 - 10*a^2*b^3*c^3*d^
2 - 60*(d*x + c)*a^3*b^2*c*d^3 + 10*a^3*b^2*c^2*d^3 + 15*(d*x + c
)*a^4*b*d^4 - 5*a^4*b*c*d^4 + a^5*d^5)/((d*x + c)^(3/2)*d^6) + 2/
21*(3*(d*x + c)^(7/2)*b^5*d^36 - 21*(d*x + c)^(5/2)*b^5*c*d^36 +
70*(d*x + c)^(3/2)*b^5*c^2*d^36 - 210*sqrt(d*x + c)*b^5*c^3*d^36
+ 21*(d*x + c)^(5/2)*a*b^4*d^37 - 140*(d*x + c)^(3/2)*a*b^4*c*d^3
7 + 630*sqrt(d*x + c)*a*b^4*c^2*d^37 + 70*(d*x + c)^(3/2)*a^2*b^3
*d^38 - 630*sqrt(d*x + c)*a^2*b^3*c*d^38 + 210*sqrt(d*x + c)*a^3*
b^2*d^39)/d^42
```

3.1435 $\int \frac{(a+bx)^4}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=125

$$-\frac{8b^3(c+dx)^{3/2}(bc-ad)}{3d^5}+\frac{12b^2\sqrt{c+dx}(bc-ad)^2}{d^5}+\frac{8b(bc-ad)^3}{d^5\sqrt{c+dx}}-\frac{2(bc-ad)^4}{3d^5(c+dx)^{3/2}}+\frac{2b^4(c+dx)^{5/2}}{5d^5}$$

```
[Out] (-2*(b*c - a*d)^4)/(3*d^5*(c + d*x)^(3/2)) + (8*b*(b*c - a*d)^3)/
(d^5*Sqrt[c + d*x]) + (12*b^2*(b*c - a*d)^2*Sqrt[c + d*x])/d^5 -
(8*b^3*(b*c - a*d)*(c + d*x)^(3/2))/(3*d^5) + (2*b^4*(c + d*x)^(5
/2))/(5*d^5)
```

Rubi [A] time = 0.1159, antiderivative size = 125, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{8b^3(c+dx)^{3/2}(bc-ad)}{3d^5}+\frac{12b^2\sqrt{c+dx}(bc-ad)^2}{d^5}+\frac{8b(bc-ad)^3}{d^5\sqrt{c+dx}}-\frac{2(bc-ad)^4}{3d^5(c+dx)^{3/2}}+\frac{2b^4(c+dx)^{5/2}}{5d^5}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^4/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(b*c - a*d)^4)/(3*d^5*(c + d*x)^(3/2)) + (8*b*(b*c - a*d)^3)/
(d^5*Sqrt[c + d*x]) + (12*b^2*(b*c - a*d)^2*Sqrt[c + d*x])/d^5 -
(8*b^3*(b*c - a*d)*(c + d*x)^(3/2))/(3*d^5) + (2*b^4*(c + d*x)^(5
/2))/(5*d^5)
```

Rubi in Sympy [A] time = 28.9605, size = 116, normalized size = 0.93

$$\frac{2b^4\left(c+dx\right)^{\frac{5}{2}}}{5d^5}+\frac{8b^3\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}{3d^5}+\frac{12b^2\sqrt{c+dx}\left(ad-bc\right)^2}{d^5}-\frac{8b\left(ad-bc\right)^3}{d^5\sqrt{c+dx}}-\frac{2\left(ad-bc\right)^4}{3d^5\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**4/(d*x+c)**(5/2),x)
```

```
[Out] 2*b**4*(c + d*x)**(5/2)/(5*d**5) + 8*b**3*(c + d*x)**(3/2)*(a*d -
 b*c)/(3*d**5) + 12*b**2*sqrt(c + d*x)*(a*d - b*c)**2/d**5 - 8*b*
(a*d - b*c)**3/(d**5*sqrt(c + d*x)) - 2*(a*d - b*c)**4/(3*d**5*(c
 + d*x)**(3/2))
```

Mathematica [A] time = 0.219605, size = 110, normalized size = 0.88

$$\frac{2\sqrt{c+dx}\left(b^2\left(90a^2d^2-160abcd+73b^2c^2\right)-2b^3dx(7bc-10ad)+\frac{60b(bc-ad)^3}{c+dx}-\frac{5(bc-ad)^4}{(c+dx)^2}+3b^4d^2x^2\right)}{15d^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^4/(c + d*x)^(5/2),x]
```

```
[Out] (2*Sqrt[c + d*x]*(b^2*(73*b^2*c^2 - 160*a*b*c*d + 90*a^2*d^2) - 2
*b^3*d*(7*b*c - 10*a*d)*x + 3*b^4*d^2*x^2 - (5*(b*c - a*d)^4)/(c
+ d*x)^2 + (60*b*(b*c - a*d)^3)/(c + d*x)))/(15*d^5)
```

Maple [A] time = 0.01, size = 186, normalized size = 1.5

$$-\frac{-6x^4b^4d^4-40ab^3d^4x^3+16b^4cd^3x^3-180a^2b^2d^4x^2+240ab^3cd^3x^2-96b^4c^2d^2x^2+120a^3bd^4x-720a^2b^2cd^3x+960ab}{15d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^4/(d*x+c)^(5/2),x)
```

```
[Out] -2/15/(d*x+c)^(3/2)*(-3*b^4*d^4*x^4-20*a*b^3*d^4*x^3+8*b^4*c*d^3*
x^3-90*a^2*b^2*d^4*x^2+120*a*b^3*c*d^3*x^2-48*b^4*c^2*d^2*x^2+60*
a^3*b*d^4*x-360*a^2*b^2*c*d^3*x+480*a*b^3*c^2*d^2*x-192*b^4*c^3*d
*x+5*a^4*d^4+40*a^3*b*c*d^3-240*a^2*b^2*c^2*d^2+320*a*b^3*c^3*d-1
28*b^4*c^4)/d^5
```

Maxima [A] time = 1.3683, size = 252, normalized size = 2.02

$$\frac{2\left(\frac{3(dx+c)^{\frac{5}{2}}b^4-20(b^4c-ab^3d)(dx+c)^{\frac{3}{2}}+90(b^4c^2-2ab^3cd+a^2b^2d^2)\sqrt{dx+c}}{d^4}-\frac{5(b^4c^4-4ab^3c^3d+6a^2b^2c^2d^2-4a^3bcd^3+a^4d^4-12(b^4c^3-3ab^3c^2d+3a^2b^2c}{(dx+c)^{\frac{3}{2}}d^4}\right.}{15d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(d*x + c)^(5/2)*b^4 - 20*(b^4*c - a*b^3*d)*(d*x + c)^(3/
2) + 90*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2)*sqrt(d*x + c))/d^4
- 5*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3
+ a^4*d^4 - 12*(b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b
*d^3)*(d*x + c))/((d*x + c)^(3/2)*d^4))/d
```

Fricas [A] time = 0.202022, size = 259, normalized size = 2.07

$$\frac{2\left(3\,b^4d^4x^4 + 128\,b^4c^4 - 320\,ab^3c^3d + 240\,a^2b^2c^2d^2 - 40\,a^3bcd^3 - 5\,a^4d^4 - 4\left(2\,b^4cd^3 - 5\,ab^3d^4\right)x^3 + 6\left(8\,b^4c^2d^2 - 20\,ab^3cd\right.\right.}{15\,(d^6x + cd^5)\sqrt{dx + c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^4*d^4*x^4 + 128*b^4*c^4 - 320*a*b^3*c^3*d + 240*a^2*b^2
*c^2*d^2 - 40*a^3*b*c*d^3 - 5*a^4*d^4 - 4*(2*b^4*c*d^3 - 5*a*b^3*
d^4)*x^3 + 6*(8*b^4*c^2*d^2 - 20*a*b^3*c*d^3 + 15*a^2*b^2*d^4)*x^
2 + 12*(16*b^4*c^3*d - 40*a*b^3*c^2*d^2 + 30*a^2*b^2*c*d^3 - 5*a^
3*b*d^4)*x)/((d^6*x + c*d^5)*sqrt(d*x + c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + bx)^4}{(c + dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**4/(d*x+c)**(5/2),x)
```

```
[Out] Integral((a + b*x)**4/(c + d*x)**(5/2), x)
```

GIAC/XCAS [A] time = 0.220619, size = 309, normalized size = 2.47

$$\frac{2\left(12\,(dx + c)b^4c^3 - b^4c^4 - 36\,(dx + c)ab^3c^2d + 4\,ab^3c^3d + 36\,(dx + c)a^2b^2cd^2 - 6\,a^2b^2c^2d^2 - 12\,(dx + c)a^3bd^3 + 4\,a^3bcd^3 - \right.}{3\,(dx + c)^{\frac{3}{2}}d^5} + \frac{2\left(3\,(dx + c)^{\frac{5}{2}}b^4d^{20} - 20\,(dx + c)^{\frac{3}{2}}b^4cd^{20} + 90\,\sqrt{dx + c}b^4c^2d^{20} + 20\,(dx + c)^{\frac{3}{2}}ab^3d^{21} - 180\,\sqrt{dx + c}ab^3cd^{21} + 90\,\sqrt{dx + c}a^2b\right.}{15\,d^{25}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^4/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(12*(d*x + c)*b^4*c^3 - b^4*c^4 - 36*(d*x + c)*a*b^3*c^2*d +
4*a*b^3*c^3*d + 36*(d*x + c)*a^2*b^2*c*d^2 - 6*a^2*b^2*c^2*d^2 -
12*(d*x + c)*a^3*b*d^3 + 4*a^3*b*c*d^3 - a^4*d^4)/((d*x + c)^(3/2
)*d^5) + 2/15*(3*(d*x + c)^(5/2)*b^4*d^20 - 20*(d*x + c)^(3/2)*b^
```

```
4*c*d^20 + 90*sqrt(d*x + c)*b^4*c^2*d^20 + 20*(d*x + c)^(3/2)*a*b
^3*d^21 - 180*sqrt(d*x + c)*a*b^3*c*d^21 + 90*sqrt(d*x + c)*a^2*b
^2*d^22)/d^25
```

3.1436 $\int \frac{(a+bx)^3}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=96

$$-\frac{6b^2\sqrt{c+dx}(bc-ad)}{d^4}-\frac{6b(bc-ad)^2}{d^4\sqrt{c+dx}}+\frac{2(bc-ad)^3}{3d^4(c+dx)^{3/2}}+\frac{2b^3(c+dx)^{3/2}}{3d^4}$$

```
[Out] (2*(b*c - a*d)^3)/(3*d^4*(c + d*x)^(3/2)) - (6*b*(b*c - a*d)^2)/(
d^4*Sqrt[c + d*x]) - (6*b^2*(b*c - a*d)*Sqrt[c + d*x])/d^4 + (2*b
^3*(c + d*x)^(3/2))/(3*d^4)
```

Rubi [A] time = 0.0916707, antiderivative size = 96, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059

$$-\frac{6b^2\sqrt{c+dx}(bc-ad)}{d^4}-\frac{6b(bc-ad)^2}{d^4\sqrt{c+dx}}+\frac{2(bc-ad)^3}{3d^4(c+dx)^{3/2}}+\frac{2b^3(c+dx)^{3/2}}{3d^4}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3/(c + d*x)^(5/2),x]
```

```
[Out] (2*(b*c - a*d)^3)/(3*d^4*(c + d*x)^(3/2)) - (6*b*(b*c - a*d)^2)/(
d^4*Sqrt[c + d*x]) - (6*b^2*(b*c - a*d)*Sqrt[c + d*x])/d^4 + (2*b
^3*(c + d*x)^(3/2))/(3*d^4)
```

Rubi in Sympy [A] time = 20.6128, size = 88, normalized size = 0.92

$$\frac{2b^3\left(c+dx\right)^{\frac{3}{2}}}{3d^4}+\frac{6b^2\sqrt{c+dx}\left(ad-bc\right)}{d^4}-\frac{6b\left(ad-bc\right)^2}{d^4\sqrt{c+dx}}-\frac{2\left(ad-bc\right)^3}{3d^4\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3/(d*x+c)**(5/2),x)
```

```
[Out] 2*b**3*(c + d*x)**(3/2)/(3*d**4) + 6*b**2*sqrt(c + d*x)*(a*d - b*
c)/d**4 - 6*b*(a*d - b*c)**2/(d**4*sqrt(c + d*x)) - 2*(a*d - b*c)
**3/(3*d**4*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.130574, size = 74, normalized size = 0.77

$$\frac{2\sqrt{c+dx}\left(b^2(9ad-8bc)-\frac{9b(bc-ad)^2}{c+dx}+\frac{(bc-ad)^3}{(c+dx)^2}+b^3dx\right)}{3d^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3/(c + d*x)^(5/2),x]
```

```
[Out] (2*Sqrt[c + d*x]*(b^2*(-8*b*c + 9*a*d) + b^3*d*x + (b*c - a*d)^3/
(c + d*x)^2 - (9*b*(b*c - a*d)^2)/(c + d*x)))/(3*d^4)
```

Maple [A] time = 0.007, size = 115, normalized size = 1.2

$$-\frac{-2\,b^3x^3d^3-18\,ab^2d^3x^2+12\,b^3cd^2x^2+18\,a^2bd^3x-72\,ab^2cd^2x+48\,b^3c^2dx+2\,a^3d^3+12\,a^2bcd^2-48\,ab^2c^2d+32\,b^3c^3}{3\,d^4}\,(d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3/(d*x+c)^(5/2),x)
```

```
[Out] -2/3/(d*x+c)^(3/2)*(-b^3*d^3*x^3-9*a*b^2*d^3*x^2+6*b^3*c*d^2*x^2+
9*a^2*b*d^3*x-36*a*b^2*c*d^2*x+24*b^3*c^2*d*x+a^3*d^3+6*a^2*b*c*d
^2-24*a*b^2*c^2*d+16*b^3*c^3)/d^4
```

Maxima [A] time = 1.3422, size = 165, normalized size = 1.72

$$\frac{2\left(\frac{(dx+c)^{\frac{3}{2}}b^3-9\left(b^3c-ab^2d\right)\sqrt{dx+c}}{d^3}+\frac{b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3-9\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)(dx+c)}{(dx+c)^{\frac{3}{2}}d^3}\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(((d*x + c)^(3/2)*b^3 - 9*(b^3*c - a*b^2*d)*sqrt(d*x + c))/d^
3 + (b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3 - 9*(b^3*c
^2 - 2*a*b^2*c*d + a^2*b*d^2)*(d*x + c))/((d*x + c)^(3/2)*d^3))/d
```

Fricas [A] time = 0.206703, size = 169, normalized size = 1.76

$$\frac{2\left(b^3d^3x^3-16\,b^3c^3+24\,ab^2c^2d-6\,a^2bcd^2-a^3d^3-3\left(2\,b^3cd^2-3\,ab^2d^3\right)x^2-3\left(8\,b^3c^2d-12\,ab^2cd^2+3\,a^2bd^3\right)x\right)}{3\left(d^5x+cd^4\right)\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b^3*d^3*x^3 - 16*b^3*c^3 + 24*a*b^2*c^2*d - 6*a^2*b*c*d^2 -
a^3*d^3 - 3*(2*b^3*c*d^2 - 3*a*b^2*d^3)*x^2 - 3*(8*b^3*c^2*d - 12
*a*b^2*c*d^2 + 3*a^2*b*d^3)*x)/((d^5*x + c*d^4)*sqrt(d*x + c))
```

Sympy [A] time = 2.11953, size = 461, normalized size = 4.8

$$\begin{cases} -\frac{2a^3d^3}{3cd^4\sqrt{c+dx}+3d^5x\sqrt{c+dx}} - \frac{12a^2bcd^2}{3cd^4\sqrt{c+dx}+3d^5x\sqrt{c+dx}} - \frac{18a^2bd^3x}{3cd^4\sqrt{c+dx}+3d^5x\sqrt{c+dx}} + \frac{48ab^2c^2d}{3cd^4\sqrt{c+dx}+3d^5x\sqrt{c+dx}} + \frac{72ab^2cd^2x}{3cd^4\sqrt{c+dx}+3d^5x\sqrt{c+dx}} + \ldots \\ \frac{a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}}{c^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3/(d*x+c)**(5/2),x)
```

```
[Out] Piecewise((-2*a**3*d**3/(3*c*d**4*sqrt(c + d*x) + 3*d**5*x*sqrt(c
 + d*x)) - 12*a**2*b*c*d**2/(3*c*d**4*sqrt(c + d*x) + 3*d**5*x*sq
rt(c + d*x)) - 18*a**2*b*d**3*x/(3*c*d**4*sqrt(c + d*x) + 3*d**5*
x*sqrt(c + d*x)) + 48*a*b**2*c**2*d/(3*c*d**4*sqrt(c + d*x) + 3*d
**5*x*sqrt(c + d*x)) + 72*a*b**2*c*d**2*x/(3*c*d**4*sqrt(c + d*x)
 + 3*d**5*x*sqrt(c + d*x)) + 18*a*b**2*d**3*x**2/(3*c*d**4*sqrt(c
 + d*x) + 3*d**5*x*sqrt(c + d*x)) - 32*b**3*c**3/(3*c*d**4*sqrt(c
 + d*x) + 3*d**5*x*sqrt(c + d*x)) - 48*b**3*c**2*d*x/(3*c*d**4*sq
rt(c + d*x) + 3*d**5*x*sqrt(c + d*x)) - 12*b**3*c*d**2*x**2/(3*c*
d**4*sqrt(c + d*x) + 3*d**5*x*sqrt(c + d*x)) + 2*b**3*d**3*x**3/(
3*c*d**4*sqrt(c + d*x) + 3*d**5*x*sqrt(c + d*x)), Ne(d, 0)), ((a*
*3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4)/c**(5/2), Tru
e))
```

GIAC/XCAS [A] time = 0.222827, size = 190, normalized size = 1.98

$$-\frac{2\left(9\,(dx+c)b^3c^2 - b^3c^3 - 18\,(dx+c)ab^2cd + 3\,ab^2c^2d + 9\,(dx+c)a^2bd^2 - 3\,a^2bcd^2 + a^3d^3\right)}{3\,(dx+c)^{\frac{3}{2}}d^4} + \frac{2\left((dx+c)^{\frac{3}{2}}b^3d^8 - 9\,\sqrt{dx+c}b^3cd^8 + 9\,\sqrt{dx+c}ab^2d^9\right)}{3\,d^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(9*(d*x + c)*b^3*c^2 - b^3*c^3 - 18*(d*x + c)*a*b^2*c*d + 3*
a*b^2*c^2*d + 9*(d*x + c)*a^2*b*d^2 - 3*a^2*b*c*d^2 + a^3*d^3)/((
d*x + c)^(3/2)*d^4) + 2/3*((d*x + c)^(3/2)*b^3*d^8 - 9*sqrt(d*x +
 c)*b^3*c*d^8 + 9*sqrt(d*x + c)*a*b^2*d^9)/d^12
```

3.1437 $\int \frac{(a+bx)^2}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=67

$$\frac{4b(bc-ad)}{d^3\sqrt{c+dx}}-\frac{2(bc-ad)^2}{3d^3(c+dx)^{3/2}}+\frac{2b^2\sqrt{c+dx}}{d^3}$$

```
[Out] (-2*(b*c - a*d)^2)/(3*d^3*(c + d*x)^(3/2)) + (4*b*(b*c - a*d))/(d
^3*Sqrt[c + d*x]) + (2*b^2*Sqrt[c + d*x])/d^3
```

Rubi [A] time = 0.0668144, antiderivative size = 67, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{4b(bc-ad)}{d^3\sqrt{c+dx}}-\frac{2(bc-ad)^2}{3d^3(c+dx)^{3/2}}+\frac{2b^2\sqrt{c+dx}}{d^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(b*c - a*d)^2)/(3*d^3*(c + d*x)^(3/2)) + (4*b*(b*c - a*d))/(d
^3*Sqrt[c + d*x]) + (2*b^2*Sqrt[c + d*x])/d^3
```

Rubi in Sympy [A] time = 14.1267, size = 61, normalized size = 0.91

$$\frac{2b^2\sqrt{c+dx}}{d^3}-\frac{4b\,(ad-bc)}{d^3\sqrt{c+dx}}-\frac{2\,(ad-bc)^2}{3d^3\,(c+dx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2/(d*x+c)**(5/2),x)
```

```
[Out] 2*b**2*sqrt(c + d*x)/d**3 - 4*b*(a*d - b*c)/(d**3*sqrt(c + d*x))
- 2*(a*d - b*c)**2/(3*d**3*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.0594631, size = 64, normalized size = 0.96

$$\sqrt{c+dx}\left(\frac{4b(bc-ad)}{d^3(c+dx)}-\frac{2(ad-bc)^2}{3d^3(c+dx)^2}+\frac{2b^2}{d^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2/(c + d*x)^(5/2),x]
```

```
[Out] Sqrt[c + d*x]*((2*b^2)/d^3 - (2*(-(b*c) + a*d)^2)/(3*d^3*(c + d*x
)^2) + (4*b*(b*c - a*d))/(d^3*(c + d*x)))
```

Maple [A] time = 0.007, size = 62, normalized size = 0.9

$$-\frac{-6\,b^2x^2d^2+12\,abd^2x-24\,b^2cdx+2\,a^2d^2+8\,abcd-16\,b^2c^2}{3\,d^3}(dx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2/(d*x+c)^(5/2),x)
```

```
[Out] -2/3/(d*x+c)^(3/2)*(-3*b^2*d^2*x^2+6*a*b*d^2*x-12*b^2*c*d*x+a^2*d
^2+4*a*b*c*d-8*b^2*c^2)/d^3
```

Maxima [A] time = 1.33749, size = 97, normalized size = 1.45

$$\frac{2\left(\frac{3\sqrt{dx+c}b^2}{d^2}-\frac{b^2c^2-2\,abcd+a^2d^2-6\,(b^2c-abd)(dx+c)}{(dx+c)^{\frac{3}{2}}d^2}\right)}{3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(3*sqrt(d*x + c)*b^2/d^2 - (b^2*c^2 - 2*a*b*c*d + a^2*d^2 - 6
*(b^2*c - a*b*d)*(d*x + c))/((d*x + c)^(3/2)*d^2))/d
```

Fricas [A] time = 0.205433, size = 100, normalized size = 1.49

$$\frac{2\left(3\,b^2d^2x^2+8\,b^2c^2-4\,abcd-a^2d^2+6\left(2\,b^2cd-abd^2\right)x\right)}{3\,(d^4x+cd^3)\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*b^2*d^2*x^2 + 8*b^2*c^2 - 4*a*b*c*d - a^2*d^2 + 6*(2*b^2*c
*d - a*b*d^2)*x)/((d^4*x + c*d^3)*sqrt(d*x + c))
```

Sympy [A] time = 1.90835, size = 265, normalized size = 3.96

$$\begin{cases} -\frac{2a^2d^2}{3cd^3\sqrt{c+dx}+3d^4x\sqrt{c+dx}} - \frac{8abcd}{3cd^3\sqrt{c+dx}+3d^4x\sqrt{c+dx}} - \frac{12abd^2x}{3cd^3\sqrt{c+dx}+3d^4x\sqrt{c+dx}} + \frac{16b^2c^2}{3cd^3\sqrt{c+dx}+3d^4x\sqrt{c+dx}} + \frac{24b^2cdx}{3cd^3\sqrt{c+dx}+3d^4x\sqrt{c+dx}} + \frac{}{3cd^3} \\ \frac{a^2x+abx^2+\frac{b^2x^3}{3}}{c^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2/(d*x+c)**(5/2),x)
```

```
[Out] Piecewise((-2*a**2*d**2/(3*c*d**3*sqrt(c + d*x) + 3*d**4*x*sqrt(c
 + d*x)) - 8*a*b*c*d/(3*c*d**3*sqrt(c + d*x) + 3*d**4*x*sqrt(c +
d*x)) - 12*a*b*d**2*x/(3*c*d**3*sqrt(c + d*x) + 3*d**4*x*sqrt(c +
 d*x)) + 16*b**2*c**2/(3*c*d**3*sqrt(c + d*x) + 3*d**4*x*sqrt(c +
 d*x)) + 24*b**2*c*d*x/(3*c*d**3*sqrt(c + d*x) + 3*d**4*x*sqrt(c
+ d*x)) + 6*b**2*d**2*x**2/(3*c*d**3*sqrt(c + d*x) + 3*d**4*x*sqr
t(c + d*x)), Ne(d, 0)), ((a**2*x + a*b*x**2 + b**2*x**3/3)/c**(5/
2), True))
```

GIAC/XCAS [A] time = 0.220985, size = 97, normalized size = 1.45

$$\frac{2\sqrt{dx+c}b^2}{d^3} + \frac{2\left(6(dx+c)b^2c - b^2c^2 - 6(dx+c)abd + 2abcd - a^2d^2\right)}{3(dx+c)^{\frac{3}{2}}d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(d*x + c)*b^2/d^3 + 2/3*(6*(d*x + c)*b^2*c - b^2*c^2 - 6*(d
*x + c)*a*b*d + 2*a*b*c*d - a^2*d^2)/((d*x + c)^(3/2)*d^3)
```

3.1438 $\int \frac{a+bx}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=40

$$\frac{2(bc-ad)}{3d^2(c+dx)^{3/2}}-\frac{2b}{d^2\sqrt{c+dx}}$$

```
[Out] (2*(b*c - a*d))/(3*d^2*(c + d*x)^(3/2)) - (2*b)/(d^2*Sqrt[c + d*x
])
```

Rubi [A] time = 0.0425821, antiderivative size = 40, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{2(bc-ad)}{3d^2(c+dx)^{3/2}}-\frac{2b}{d^2\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)/(c + d*x)^(5/2),x]
```

```
[Out] (2*(b*c - a*d))/(3*d^2*(c + d*x)^(3/2)) - (2*b)/(d^2*Sqrt[c + d*x
])
```

Rubi in Sympy [A] time = 7.3264, size = 39, normalized size = 0.98

$$-\frac{2b}{d^2\sqrt{c+dx}}-\frac{2\left(ad-bc\right)}{3d^2\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)/(d*x+c)**(5/2),x)
```

```
[Out] -2*b/(d**2*sqrt(c + d*x)) - 2*(a*d - b*c)/(3*d**2*(c + d*x)**(3/2
))
```

Mathematica [A] time = 0.0280417, size = 29, normalized size = 0.72

$$-\frac{2(ad+2bc+3bdx)}{3d^2(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)/(c + d*x)^(5/2),x]

[Out] (-2*(2*b*c + a*d + 3*b*d*x))/(3*d^2*(c + d*x)^(3/2))
```

Maple [A] time = 0.004, size = 26, normalized size = 0.7

$$-\frac{6\,bdx+2\,ad+4\,bc}{3\,d^{2}}\,(dx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)/(d*x+c)^(5/2),x)

[Out] -2/3/(d*x+c)^(3/2)*(3*b*d*x+a*d+2*b*c)/d^2
```

Maxima [A] time = 1.34768, size = 38, normalized size = 0.95

$$-\frac{2\,(3\,(dx+c)b-bc+ad)}{3\,(dx+c)^{\frac{3}{2}}d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^(5/2),x, algorithm="maxima")

[Out] -2/3*(3*(d*x + c)*b - b*c + a*d)/((d*x + c)^(3/2)*d^2)
```

Fricas [A] time = 0.20335, size = 47, normalized size = 1.18

$$-\frac{2\,(3\,bdx+2\,bc+ad)}{3\,(d^{3}x+cd^{2})\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^(5/2),x, algorithm="fricas")

[Out] -2/3*(3*b*d*x + 2*b*c + a*d)/((d^3*x + c*d^2)*sqrt(d*x + c))
```

Sympy [A] time = 1.71928, size = 124, normalized size = 3.1

$$\begin{cases} -\frac{2ad}{3cd^2\sqrt{c+dx}+3d^3x\sqrt{c+dx}} - \frac{4bc}{3cd^2\sqrt{c+dx}+3d^3x\sqrt{c+dx}} - \frac{6bdx}{3cd^2\sqrt{c+dx}+3d^3x\sqrt{c+dx}} & \text{for } d \neq 0 \\ \frac{ax+\frac{bx^2}{2}}{c^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)/(d*x+c)**(5/2),x)
```

```
[Out] Piecewise((-2*a*d/(3*c*d**2*sqrt(c + d*x) + 3*d**3*x*sqrt(c + d*x
)) - 4*b*c/(3*c*d**2*sqrt(c + d*x) + 3*d**3*x*sqrt(c + d*x)) - 6*
b*d*x/(3*c*d**2*sqrt(c + d*x) + 3*d**3*x*sqrt(c + d*x)), Ne(d, 0)
), ((a*x + b*x**2/2)/c**(5/2), True))
```

GIAC/XCAS [A] time = 0.215827, size = 38, normalized size = 0.95

$$-\frac{2\left(3\left(dx+c\right)b-bc+ad\right)}{3\left(dx+c\right)^{\frac{3}{2}}d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(3*(d*x + c)*b - b*c + a*d)/((d*x + c)^(3/2)*d^2)
```

3.1439 $\int \frac{1}{(c+dx)^{5/2}} dx$

Optimal. Leaf size=16

$$-\frac{2}{3d(c+dx)^{3/2}}$$

```
[Out] -2/(3*d*(c + d*x)^(3/2))
```

Rubi [A] time = 0.0072233, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111

$$-\frac{2}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(-5/2),x]

[Out] -2/(3*d*(c + d*x)^(3/2))
```

Rubi in Sympy [A] time = 1.29436, size = 14, normalized size = 0.88

$$-\frac{2}{3d\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(d*x+c)**(5/2),x)

[Out] -2/(3*d*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.00546563, size = 16, normalized size = 1.

$$-\frac{2}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(-5/2),x]
```

```
[Out] -2/(3*d*(c + d*x)^(3/2))
```

Maple [A] time = 0.003, size = 13, normalized size = 0.8

$$-\frac{2}{3\,d}\,(dx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(d*x+c)^(5/2),x)
```

```
[Out] -2/3/d/(d*x+c)^(3/2)
```

Maxima [A] time = 1.34382, size = 16, normalized size = 1.

$$-\frac{2}{3\,(dx+c)^{\frac{3}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-5/2),x, algorithm="maxima")
```

```
[Out] -2/3/((d*x + c)^(3/2)*d)
```

Fricas [A] time = 0.20619, size = 27, normalized size = 1.69

$$-\frac{2}{3\,(d^2x+cd)\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-5/2),x, algorithm="fricas")
```

```
[Out] -2/3/((d^2*x + c*d)*sqrt(d*x + c))
```

Sympy [A] time = 0.046771, size = 14, normalized size = 0.88

$$-\frac{2}{3d\,(c+dx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(d*x+c)**(5/2),x)
```

```
[Out] -2/(3*d*(c + d*x)**(3/2))
```

GIAC/XCAS [A] time = 0.220043, size = 16, normalized size = 1.

$$-\frac{2}{3\,(dx+c)^{\frac{3}{2}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(-5/2),x, algorithm="giac")
```

```
[Out] -2/3/((d*x + c)^(3/2)*d)
```

3.1440 $\int \frac{1}{(a+bx)(c+dx)^{5/2}} dx$

Optimal. Leaf size=93

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{5/2}}+\frac{2b}{\sqrt{c+dx}(bc-ad)^2}+\frac{2}{3(c+dx)^{3/2}(bc-ad)}$$

```
[Out] 2/(3*(b*c - a*d)*(c + d*x)^(3/2)) + (2*b)/((b*c - a*d)^2*Sqrt[c +
 d*x]) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*
d]])/(b*c - a*d)^(5/2)
```

Rubi [A] time = 0.114274, antiderivative size = 93, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{5/2}}+\frac{2b}{\sqrt{c+dx}(bc-ad)^2}+\frac{2}{3(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^(5/2)),x]
```

```
[Out] 2/(3*(b*c - a*d)*(c + d*x)^(3/2)) + (2*b)/((b*c - a*d)^2*Sqrt[c +
 d*x]) - (2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*
d]])/(b*c - a*d)^(5/2)
```

Rubi in Sympy [A] time = 18.9103, size = 80, normalized size = 0.86

$$\frac{2b^{\frac{3}{2}}\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{(ad-bc)^{\frac{5}{2}}}+\frac{2b}{\sqrt{c+dx}\,(ad-bc)^2}-\frac{2}{3\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(5/2),x)
```

```
[Out] 2*b**(3/2)*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(a*d - b*c
)**(5/2) + 2*b/(sqrt(c + d*x)*(a*d - b*c)**2) - 2/(3*(c + d*x)**(
3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.309396, size = 85, normalized size = 0.91

$$\frac{2(-ad+4bc+3bdx)}{3(c+dx)^{3/2}(bc-ad)^2}-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^(5/2)),x]
```

```
[Out] (2*(4*b*c - a*d + 3*b*d*x))/(3*(b*c - a*d)^2*(c + d*x)^(3/2)) - (
2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(b*c
- a*d)^(5/2)
```

Maple [A] time = 0.023, size = 90, normalized size = 1.

$$-\frac{2}{3\,ad-3\,bc}(dx+c)^{-\frac{3}{2}}+2\,\frac{b}{(ad-bc)^2\sqrt{dx+c}}+2\,\frac{b^2}{(ad-bc)^2\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(5/2),x)
```

```
[Out] -2/3/(a*d-b*c)/(d*x+c)^(3/2)+2*b/(a*d-b*c)^2/(d*x+c)^(1/2)+2*b^2/
(a*d-b*c)^2/((a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)
*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21973, size = 1, normalized size = 0.01

$$\left[\frac{6\,bdx + 3\,(bdx + bc)\sqrt{dx + c}\sqrt{\frac{b}{bc-ad}}\log\left(\frac{bdx+2\,bc-ad-2\,(bc-ad)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}}{bx+a}\right) + 8\,bc - 2\,ad}{3\,(b^2c^3 - 2\,abc^2d + a^2cd^2 + (b^2c^2d - 2\,abcd^2 + a^2d^3)x)\sqrt{dx + c}}, \frac{2\left(3\,bdx - 3\,(bdx + bc)\sqrt{dx + c}\right.}{3\,(b^2c^3 - 2\,abc^2d + a^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/3*(6*b*d*x + 3*(b*d*x + b*c)*sqrt(d*x + c)*sqrt(b/(b*c - a*d))
*log((b*d*x + 2*b*c - a*d - 2*(b*c - a*d)*sqrt(d*x + c)*sqrt(b/(b
*c - a*d)))/(b*x + a)) + 8*b*c - 2*a*d)/((b^2*c^3 - 2*a*b*c^2*d +
 a^2*c*d^2 + (b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*x)*sqrt(d*x + c)
), 2/3*(3*b*d*x - 3*(b*d*x + b*c)*sqrt(d*x + c)*sqrt(-b/(b*c - a*
d))*arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(sqrt(d*x + c)*b)) +
 4*b*c - a*d)/((b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2 + (b^2*c^2*d -
2*a*b*c*d^2 + a^2*d^3)*x)*sqrt(d*x + c))]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a + bx)\,(c + dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(1/((a + b*x)*(c + d*x)**(5/2)), x)
```

GIAC/XCAS [A] time = 0.221123, size = 153, normalized size = 1.65

$$\frac{2\,b^2\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{(b^2c^2 - 2\,abcd + a^2d^2)\sqrt{-b^2c + abd}} + \frac{2\,(3\,(dx + c)b + bc - ad)}{3\,(b^2c^2 - 2\,abcd + a^2d^2)(dx + c)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] 2*b^2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^2*c^2 - 2*
a*b*c*d + a^2*d^2)*sqrt(-b^2*c + a*b*d)) + 2/3*(3*(d*x + c)*b + b
*c - a*d)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(d*x + c)^(3/2))
```

3.1441 $\int \frac{1}{(a+bx)^2(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=124

$$\frac{5b^{3/2}d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{7/2}}-\frac{5bd}{\sqrt{c+dx}(bc-ad)^3}-\frac{1}{(a+bx)(c+dx)^{3/2}(bc-ad)}-\frac{5d}{3(c+dx)^{3/2}(bc-ad)^2}$$

```
[Out] (-5*d)/(3*(b*c - a*d)^2*(c + d*x)^(3/2)) - 1/((b*c - a*d)*(a + b*
x)*(c + d*x)^(3/2)) - (5*b*d)/((b*c - a*d)^3*Sqrt[c + d*x]) + (5*
b^(3/2)*d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(b*c
- a*d)^(7/2)
```

Rubi [A] time = 0.149603, antiderivative size = 124, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{5b^{3/2}d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{7/2}}-\frac{5bd}{\sqrt{c+dx}(bc-ad)^3}-\frac{1}{(a+bx)(c+dx)^{3/2}(bc-ad)}-\frac{5d}{3(c+dx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^2*(c + d*x)^(5/2)),x]
```

```
[Out] (-5*d)/(3*(b*c - a*d)^2*(c + d*x)^(3/2)) - 1/((b*c - a*d)*(a + b*
x)*(c + d*x)^(3/2)) - (5*b*d)/((b*c - a*d)^3*Sqrt[c + d*x]) + (5*
b^(3/2)*d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(b*c
- a*d)^(7/2)
```

Rubi in Sympy [A] time = 27.5669, size = 109, normalized size = 0.88

$$\frac{5b^{\frac{3}{2}}d\,\mathrm{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{(ad-bc)^{\frac{7}{2}}}+\frac{5bd}{\sqrt{c+dx}\,(ad-bc)^3}-\frac{5d}{3\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^2}+\frac{1}{(a+bx)\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c)**(5/2),x)
```

```
[Out] 5*b**(3/2)*d*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(a*d - b
*c)**(7/2) + 5*b*d/(sqrt(c + d*x)*(a*d - b*c)**3) - 5*d/(3*(c + d
*x)**(3/2)*(a*d - b*c)**2) + 1/((a + b*x)*(c + d*x)**(3/2)*(a*d -
 b*c))
```

Mathematica [A] time = 0.24182, size = 125, normalized size = 1.01

$$\frac{5b^{3/2}d\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{7/2}}+\sqrt{c+dx}\left(-\frac{b^2}{(a+bx)(bc-ad)^3}-\frac{4bd}{(c+dx)(bc-ad)^3}-\frac{2d}{3(c+dx)^2(bc-ad)^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^2*(c + d*x)^(5/2)),x]
```

```
[Out] Sqrt[c + d*x]*(-(b^2/((b*c - a*d)^3*(a + b*x))) - (2*d)/(3*(b*c -
 a*d)^2*(c + d*x)^2) - (4*b*d)/((b*c - a*d)^3*(c + d*x))) + (5*b^
(3/2)*d*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(b*c -
a*d)^(7/2)
```

Maple [A] time = 0.027, size = 125, normalized size = 1.

$$-\frac{2\,d}{3\,(ad-bc)^2}(dx+c)^{-\frac{3}{2}}+4\,\frac{bd}{(ad-bc)^3\sqrt{dx+c}}+\frac{b^2d}{(ad-bc)^3\,(bdx+ad)}\sqrt{dx+c}+5\,\frac{b^2d}{(ad-bc)^3\sqrt{(ad-bc)\,b}}\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{(ad-bc)\,b}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*d/(a*d-b*c)^2/(d*x+c)^(3/2)+4*d/(a*d-b*c)^3*b/(d*x+c)^(1/2)+
d*b^2/(a*d-b*c)^3*(d*x+c)^(1/2)/(b*d*x+a*d)+5*d*b^2/(a*d-b*c)^3/(
(a*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227061, size = 1, normalized size = 0.01

$$\left[-\frac{30\,b^2d^2x^2+6\,b^2c^2+28\,abcd-4\,a^2d^2+15\,\left(b^2d^2x^2+abcd+\left(b^2cd+abd^2\right)x\right)\sqrt{dx+c}\sqrt{\frac{b}{bc-ad}}\log\left(\frac{bdx+2\,bc-ad-2\,(bc-ad)\sqrt{}}{bx+a}\right.}{6\,(ab^3c^4-3\,a^2b^2c^3d+3\,a^3bc^2d^2-a^4cd^3+(b^4c^3d-3\,ab^3c^2d^2+3\,a^2b^2cd^3-a^3bd^4)x^2+(b^4c^4-2\,ab^3c^3d+2\,a}\right.$$

$$-\frac{15\,b^2d^2x^2+3\,b^2c^2+14\,abcd-2\,a^2d^2-15\,\left(b^2d^2x^2+abcd+\left(b^2cd+abd^2\right)x\right)\sqrt{dx+c}\sqrt{-\frac{b}{bc-ad}}\arctan\left(-\frac{(bc-ad)\sqrt{-\frac{b}{bc-ad}}}{\sqrt{dx+c}b}\right)}{3\,(ab^3c^4-3\,a^2b^2c^3d+3\,a^3bc^2d^2-a^4cd^3+(b^4c^3d-3\,ab^3c^2d^2+3\,a^2b^2cd^3-a^3bd^4)x^2+(b^4c^4-2\,ab^3c^3d+2\,a^3bcd^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] [-1/6*(30*b^2*d^2*x^2 + 6*b^2*c^2 + 28*a*b*c*d - 4*a^2*d^2 + 15*(
b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*sqrt(d*x + c)*sqrt
(b/(b*c - a*d))*log((b*d*x + 2*b*c - a*d - 2*(b*c - a*d)*sqrt(d*x
 + c)*sqrt(b/(b*c - a*d)))/(b*x + a)) + 20*(2*b^2*c*d + a*b*d^2)*
x)/((a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3 +
(b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*x^2 +
 (b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*x)*sqrt(d*x
+ c)), -1/3*(15*b^2*d^2*x^2 + 3*b^2*c^2 + 14*a*b*c*d - 2*a^2*d^2
- 15*(b^2*d^2*x^2 + a*b*c*d + (b^2*c*d + a*b*d^2)*x)*sqrt(d*x + c
)*sqrt(-b/(b*c - a*d))*arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(
sqrt(d*x + c)*b)) + 10*(2*b^2*c*d + a*b*d^2)*x)/((a*b^3*c^4 - 3*a
^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3 + (b^4*c^3*d - 3*a*b^3
*c^2*d^2 + 3*a^2*b^2*c*d^3 - a^3*b*d^4)*x^2 + (b^4*c^4 - 2*a*b^3*
c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*x)*sqrt(d*x + c))]
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c)**(5/2),x)
```

```
[Out] Exception raised: ValueError
```

GIAC/XCAS [A] time = 0.220147, size = 292, normalized size = 2.35

$$-\frac{5\,b^{2}d\arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^{2}c+abd}}\right)}{(b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3})\sqrt{-b^{2}c+abd}}-\frac{\sqrt{dx+c}b^{2}d}{(b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3})((dx+c)b-bc+ad)}-\frac{2\left(6\,(dx+c)bd+bcd-ad^{2}\right)}{3\,(b^{3}c^{3}-3\,ab^{2}c^{2}d+3\,a^{2}bcd^{2}-a^{3}d^{3})(dx+c)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] -5*b^2*d*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*sqrt(-b^2*c + a*b*d)) -
 sqrt(d*x + c)*b^2*d/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 -
a^3*d^3)*((d*x + c)*b - b*c + a*d)) - 2/3*(6*(d*x + c)*b*d + b*c*
d - a*d^2)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*(
d*x + c)^(3/2))
```

3.1442 $\int \frac{1}{(a+bx)^3(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=167

$$-\frac{35b^{3/2}d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4(bc-ad)^{9/2}}+\frac{35bd^2}{4\sqrt{c+dx}(bc-ad)^4}+\frac{35d^2}{12(c+dx)^{3/2}(bc-ad)^3}+\frac{7d}{4(a+bx)(c+dx)^{3/2}(bc-ad)^2}-\frac{1}{2(a+bx)^2(c+dx)^{3/2}(bc-ad)}$$

```
[Out] (35*d^2)/(12*(b*c - a*d)^3*(c + d*x)^(3/2)) - 1/(2*(b*c - a*d)*(a
 + b*x)^2*(c + d*x)^(3/2)) + (7*d)/(4*(b*c - a*d)^2*(a + b*x)*(c
+ d*x)^(3/2)) + (35*b*d^2)/(4*(b*c - a*d)^4*Sqrt[c + d*x]) - (35*
b^(3/2)*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*
(b*c - a*d)^(9/2))
```

Rubi [A] time = 0.194914, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{35b^{3/2}d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4(bc-ad)^{9/2}}+\frac{35bd^2}{4\sqrt{c+dx}(bc-ad)^4}+\frac{35d^2}{12(c+dx)^{3/2}(bc-ad)^3}+\frac{7d}{4(a+bx)(c+dx)^{3/2}(bc-ad)^2}-\frac{1}{2(a+bx)^2(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^3*(c + d*x)^(5/2)),x]
```

```
[Out] (35*d^2)/(12*(b*c - a*d)^3*(c + d*x)^(3/2)) - 1/(2*(b*c - a*d)*(a
 + b*x)^2*(c + d*x)^(3/2)) + (7*d)/(4*(b*c - a*d)^2*(a + b*x)*(c
+ d*x)^(3/2)) + (35*b*d^2)/(4*(b*c - a*d)^4*Sqrt[c + d*x]) - (35*
b^(3/2)*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(4*
(b*c - a*d)^(9/2))
```

Rubi in Sympy [A] time = 39.5389, size = 148, normalized size = 0.89

$$\frac{35b^{\frac{3}{2}}d^2\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{4\left(ad-bc\right)^{\frac{9}{2}}}+\frac{35bd^2}{4\sqrt{c+dx}\left(ad-bc\right)^4}-\frac{35d^2}{12\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^3}+\frac{7d}{4\left(a+bx\right)\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^2}+\frac{1}{2\left(a+bx\right)^2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**3/(d*x+c)**(5/2),x)
```

```
[Out] 35*b**(3/2)*d**2*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(4*(
a*d - b*c)**(9/2)) + 35*b*d**2/(4*sqrt(c + d*x)*(a*d - b*c)**4) -
 35*d**2/(12*(c + d*x)**(3/2)*(a*d - b*c)**3) + 7*d/(4*(a + b*x)*
(c + d*x)**(3/2)*(a*d - b*c)**2) + 1/(2*(a + b*x)**2*(c + d*x)**(
3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.474677, size = 143, normalized size = 0.86

$$\frac{\sqrt{c+dx}\left(-\frac{6b^2(bc-ad)}{(a+bx)^2}+\frac{33b^2d}{a+bx}+\frac{8d^2(bc-ad)}{(c+dx)^2}+\frac{72bd^2}{c+dx}\right)}{12(bc-ad)^4}-\frac{35b^{3/2}d^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{4(bc-ad)^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^3*(c + d*x)^(5/2)),x]
```

```
[Out] (Sqrt[c + d*x]*((-6*b^2*(b*c - a*d))/(a + b*x)^2 + (33*b^2*d)/(a
+ b*x) + (8*d^2*(b*c - a*d))/(c + d*x)^2 + (72*b*d^2)/(c + d*x)))
/(12*(b*c - a*d)^4) - (35*b^(3/2)*d^2*ArcTanh[(Sqrt[b]*Sqrt[c + d
*x])/Sqrt[b*c - a*d]])/(4*(b*c - a*d)^(9/2))
```

Maple [A] time = 0.027, size = 206, normalized size = 1.2

$$-\frac{2\,d^2}{3\,(ad-bc)^3}(dx+c)^{-\frac{3}{2}}+6\,\frac{d^2b}{(ad-bc)^4\sqrt{dx+c}}+\frac{11\,d^2b^3}{4\,(ad-bc)^4\,(bdx+ad)^2}(dx+c)^{\frac{3}{2}}+\frac{13\,d^3b^2a}{4\,(ad-bc)^4\,(bdx+ad)^2}\sqrt{dx+c}-\frac{13\,d^2b^3c}{4\,(ad-bc)^4\,(bdx+ad)^2}\sqrt{dx+c}+\frac{35\,d^2b^2}{4\,(ad-bc)^4}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^3/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*d^2/(a*d-b*c)^3/(d*x+c)^(3/2)+6*d^2/(a*d-b*c)^4*b/(d*x+c)^(1
/2)+11/4*d^2/(a*d-b*c)^4*b^3/(b*d*x+a*d)^2*(d*x+c)^(3/2)+13/4*d^3
/(a*d-b*c)^4*b^2/(b*d*x+a*d)^2*(d*x+c)^(1/2)*a-13/4*d^2/(a*d-b*c)
^4*b^3/(b*d*x+a*d)^2*(d*x+c)^(1/2)*c+35/4*d^2/(a*d-b*c)^4*b^2/((a
*d-b*c)*b)^(1/2)*arctan((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.236781, size = 1, normalized size = 0.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] [1/24*(210*b^3*d^3*x^3 - 12*b^3*c^3 + 78*a*b^2*c^2*d + 160*a^2*b*
c*d^2 - 16*a^3*d^3 + 70*(4*b^3*c*d^2 + 5*a*b^2*d^3)*x^2 + 105*(b^
3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*b^
2*c*d^2 + a^2*b*d^3)*x)*sqrt(d*x + c)*sqrt(b/(b*c - a*d))*log((b*
d*x + 2*b*c - a*d - 2*(b*c - a*d)*sqrt(d*x + c)*sqrt(b/(b*c - a*d
)))/(b*x + a)) + 14*(3*b^3*c^2*d + 34*a*b^2*c*d^2 + 8*a^2*b*d^3)*
x)/((a^2*b^4*c^5 - 4*a^3*b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*
c^2*d^3 + a^6*c*d^4 + (b^6*c^4*d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^
2*d^3 - 4*a^3*b^3*c*d^4 + a^4*b^2*d^5)*x^3 + (b^6*c^5 - 2*a*b^5*c
^4*d - 2*a^2*b^4*c^3*d^2 + 8*a^3*b^3*c^2*d^3 - 7*a^4*b^2*c*d^4 +
2*a^5*b*d^5)*x^2 + (2*a*b^5*c^5 - 7*a^2*b^4*c^4*d + 8*a^3*b^3*c^3
*d^2 - 2*a^4*b^2*c^2*d^3 - 2*a^5*b*c*d^4 + a^6*d^5)*x)*sqrt(d*x +
 c)), 1/12*(105*b^3*d^3*x^3 - 6*b^3*c^3 + 39*a*b^2*c^2*d + 80*a^2
*b*c*d^2 - 8*a^3*d^3 + 35*(4*b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 105*(
b^3*d^3*x^3 + a^2*b*c*d^2 + (b^3*c*d^2 + 2*a*b^2*d^3)*x^2 + (2*a*
b^2*c*d^2 + a^2*b*d^3)*x)*sqrt(d*x + c)*sqrt(-b/(b*c - a*d))*arct
an(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(sqrt(d*x + c)*b)) + 7*(3*b^
3*c^2*d + 34*a*b^2*c*d^2 + 8*a^2*b*d^3)*x)/((a^2*b^4*c^5 - 4*a^3*
b^3*c^4*d + 6*a^4*b^2*c^3*d^2 - 4*a^5*b*c^2*d^3 + a^6*c*d^4 + (b^
6*c^4*d - 4*a*b^5*c^3*d^2 + 6*a^2*b^4*c^2*d^3 - 4*a^3*b^3*c*d^4 +
 a^4*b^2*d^5)*x^3 + (b^6*c^5 - 2*a*b^5*c^4*d - 2*a^2*b^4*c^3*d^2
+ 8*a^3*b^3*c^2*d^3 - 7*a^4*b^2*c*d^4 + 2*a^5*b*d^5)*x^2 + (2*a*b
^5*c^5 - 7*a^2*b^4*c^4*d + 8*a^3*b^3*c^3*d^2 - 2*a^4*b^2*c^2*d^3
- 2*a^5*b*c*d^4 + a^6*d^5)*x)*sqrt(d*x + c))]
```

Sympy [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**3/(d*x+c)**(5/2),x)
```

```
[Out] Exception raised: ValueError
```

GIAC/XCAS [A] time = 0.223968, size = 402, normalized size = 2.41

$$\frac{35\, b^2 d^2 \arctan\left(\frac{\sqrt{dx+c}b}{\sqrt{-b^2c+abd}}\right)}{4\,(b^4c^4 - 4\,ab^3c^3d + 6\,a^2b^2c^2d^2 - 4\,a^3bcd^3 + a^4d^4)\sqrt{-b^2c + abd}} + \frac{2\left(9\,(dx+c)bd^2 + bcd^2 - ad^3\right)}{3\,(b^4c^4 - 4\,ab^3c^3d + 6\,a^2b^2c^2d^2 - 4\,a^3bcd^3 + a^4d^4)(dx+c)^{\frac{3}{2}}} + \frac{11\,(dx+c)^{\frac{3}{2}}b^3d^2 - 13\,\sqrt{dx+c}b^3cd^2 + 13\,\sqrt{dx+c}ab^2d^3}{4\,(b^4c^4 - 4\,ab^3c^3d + 6\,a^2b^2c^2d^2 - 4\,a^3bcd^3 + a^4d^4)((dx+c)b - bc + ad)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^3*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] 35/4*b^2*d^2*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^4*c
^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)
*sqrt(-b^2*c + a*b*d)) + 2/3*(9*(d*x + c)*b*d^2 + b*c*d^2 - a*d^3
)/((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 +
 a^4*d^4)*(d*x + c)^(3/2)) + 1/4*(11*(d*x + c)^(3/2)*b^3*d^2 - 13
*sqrt(d*x + c)*b^3*c*d^2 + 13*sqrt(d*x + c)*a*b^2*d^3)/((b^4*c^4
- 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*((
d*x + c)*b - b*c + a*d)^2)
```

3.1443 $\int \frac{1}{(a+bx)^4(c+dx)^{5/2}} \, dx$

Optimal. Leaf size=200

$$\frac{105b^{3/2}d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8(bc-ad)^{11/2}}-\frac{105bd^3}{8\sqrt{c+dx}(bc-ad)^5}-\frac{35d^3}{8(c+dx)^{3/2}(bc-ad)^4}-\frac{21d^2}{8(a+bx)(c+dx)^{3/2}(bc-ad)^3}+\frac{3d}{4(a+bx)^2(c+dx)^{3/2}(bc-ad)^2}-\frac{1}{3(a+bx)^3(c+dx)^{3/2}(bc-ad)}$$

```
[Out] (-35*d^3)/(8*(b*c - a*d)^4*(c + d*x)^(3/2)) - 1/(3*(b*c - a*d)*(a
 + b*x)^3*(c + d*x)^(3/2)) + (3*d)/(4*(b*c - a*d)^2*(a + b*x)^2*(
c + d*x)^(3/2)) - (21*d^2)/(8*(b*c - a*d)^3*(a + b*x)*(c + d*x)^(
3/2)) - (105*b*d^3)/(8*(b*c - a*d)^5*Sqrt[c + d*x]) + (105*b^(3/2
)*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*(b*c -
 a*d)^(11/2))
```

Rubi [A] time = 0.376661, antiderivative size = 200, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$\frac{105b^{3/2}d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{8(bc-ad)^{11/2}}-\frac{105bd^3}{8\sqrt{c+dx}(bc-ad)^5}-\frac{35d^3}{8(c+dx)^{3/2}(bc-ad)^4}-\frac{21d^2}{8(a+bx)(c+dx)^{3/2}(bc-ad)^3}+\frac{3d}{4(a+bx)^2(c+dx)^{3/2}(bc-ad)^2}-\frac{1}{3(a+bx)^3(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^4*(c + d*x)^(5/2)),x]
```

```
[Out] (-35*d^3)/(8*(b*c - a*d)^4*(c + d*x)^(3/2)) - 1/(3*(b*c - a*d)*(a
 + b*x)^3*(c + d*x)^(3/2)) + (3*d)/(4*(b*c - a*d)^2*(a + b*x)^2*(
c + d*x)^(3/2)) - (21*d^2)/(8*(b*c - a*d)^3*(a + b*x)*(c + d*x)^(
3/2)) - (105*b*d^3)/(8*(b*c - a*d)^5*Sqrt[c + d*x]) + (105*b^(3/2
)*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]])/(8*(b*c -
 a*d)^(11/2))
```

Rubi in Sympy [A] time = 51.9346, size = 178, normalized size = 0.89

$$\frac{105b^{\frac{3}{2}}d^3\operatorname{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}\right)}{8\left(ad-bc\right)^{\frac{11}{2}}}+\frac{105bd^3}{8\sqrt{c+dx}\left(ad-bc\right)^5}-\frac{35d^3}{8\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^4}+\frac{21d^2}{8\left(a+bx\right)\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^3}+\frac{3d}{4\left(a+bx\right)^2\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)^2}+\frac{1}{3\left(a+bx\right)^3\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**4/(d*x+c)**(5/2),x)
```

```
[Out] 105*b**(3/2)*d**3*atan(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c))/(8*
(a*d - b*c)**(11/2)) + 105*b*d**3/(8*sqrt(c + d*x)*(a*d - b*c)**5
) - 35*d**3/(8*(c + d*x)**(3/2)*(a*d - b*c)**4) + 21*d**2/(8*(a +
 b*x)*(c + d*x)**(3/2)*(a*d - b*c)**3) + 3*d/(4*(a + b*x)**2*(c +
 d*x)**(3/2)*(a*d - b*c)**2) + 1/(3*(a + b*x)**3*(c + d*x)**(3/2)
*(a*d - b*c))
```

Mathematica [A] time = 0.821077, size = 167, normalized size = 0.84

$$\frac{1}{24}\left(\frac{315b^{3/2}d^3\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{bc-ad}}\right)}{(bc-ad)^{11/2}}+\frac{\sqrt{c+dx}\left(\frac{34b^2d(bc-ad)}{(a+bx)^2}-\frac{8b^2(bc-ad)^2}{(a+bx)^3}-\frac{123b^2d^2}{a+bx}+\frac{16d^3(ad-bc)}{(c+dx)^2}-\frac{192bd^3}{c+dx}\right)}{(bc-ad)^5}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^4*(c + d*x)^(5/2)),x]
```

```
[Out] ((Sqrt[c + d*x]*((-8*b^2*(b*c - a*d)^2)/(a + b*x)^3 + (34*b^2*d*(
b*c - a*d))/(a + b*x)^2 - (123*b^2*d^2)/(a + b*x) + (16*d^3*(-(b*
c) + a*d))/(c + d*x)^2 - (192*b*d^3)/(c + d*x)))/(b*c - a*d)^5 +
(315*b^(3/2)*d^3*ArcTanh[(Sqrt[b]*Sqrt[c + d*x])/Sqrt[b*c - a*d]]
)/(b*c - a*d)^(11/2))/24
```

Maple [A] time = 0.032, size = 319, normalized size = 1.6

$$-\frac{2\,d^3}{3\,(ad-bc)^4}(dx+c)^{-\frac{3}{2}}+8\,\frac{d^3b}{(ad-bc)^5\sqrt{dx+c}}+\frac{41\,d^3b^4}{8\,(ad-bc)^5\,(bdx+ad)^3}(dx+c)^{\frac{5}{2}}+\frac{35\,d^4b^3a}{3\,(ad-bc)^5\,(bdx+ad)^3}(dx+c)^{\frac{3}{2}}-\frac{35\,d^3b^4c}{3\,(ad-bc)^5\,(bdx+ad)^3}(dx+c)^{\frac{3}{2}}+\frac{55\,d^5b^2a^2}{8\,(ad-bc)^5\,(bdx+ad)^3}\sqrt{dx+c}-\frac{55\,d^4b^3ac}{4\,(ad-bc)^5\,(bdx+ad)^3}\sqrt{dx+c}+\frac{55\,d^3b^4c^2}{8\,(ad-bc)^5\,(bdx+ad)^3}\sqrt{dx+c}+\frac{105\,d^3b^2}{8\,(ad-bc)^5}\arctan\left(b\sqrt{dx+c}\frac{1}{\sqrt{(ad-bc)\,b}}\right)\frac{1}{\sqrt{(ad-bc)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^4/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*d^3/(a*d-b*c)^4/(d*x+c)^(3/2)+8*d^3/(a*d-b*c)^5*b/(d*x+c)^(1
/2)+41/8*d^3/(a*d-b*c)^5*b^4/(b*d*x+a*d)^3*(d*x+c)^(5/2)+35/3*d^4
```

```
/(a*d-b*c)^5*b^3/(b*d*x+a*d)^3*(d*x+c)^(3/2)*a-35/3*d^3/(a*d-b*c)
^5*b^4/(b*d*x+a*d)^3*(d*x+c)^(3/2)*c+55/8*d^5/(a*d-b*c)^5*b^2/(b*
d*x+a*d)^3*(d*x+c)^(1/2)*a^2-55/4*d^4/(a*d-b*c)^5*b^3/(b*d*x+a*d)
^3*(d*x+c)^(1/2)*a*c+55/8*d^3/(a*d-b*c)^5*b^4/(b*d*x+a*d)^3*(d*x+
c)^(1/2)*c^2+105/8*d^3/(a*d-b*c)^5*b^2/((a*d-b*c)*b)^(1/2)*arctan
((d*x+c)^(1/2)*b/((a*d-b*c)*b)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.246455, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] [-1/48*(630*b^4*d^4*x^4 + 16*b^4*c^4 - 100*a*b^3*c^3*d + 330*a^2*
b^2*c^2*d^2 + 416*a^3*b*c*d^3 - 32*a^4*d^4 + 840*(b^4*c*d^3 + 2*a
*b^3*d^4)*x^3 + 126*(b^4*c^2*d^2 + 18*a*b^3*c*d^3 + 11*a^2*b^2*d^
4)*x^2 + 315*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c*d^3 + 3*a*b^3*d^
4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*a^2*b^2*c*d^3 + a
^3*b*d^4)*x)*sqrt(d*x + c)*sqrt(b/(b*c - a*d))*log((b*d*x + 2*b*c
 - a*d - 2*(b*c - a*d)*sqrt(d*x + c)*sqrt(b/(b*c - a*d)))/(b*x +
a)) - 36*(b^4*c^3*d - 10*a*b^3*c^2*d^2 - 53*a^2*b^2*c*d^3 - 8*a^3
*b*d^4)*x)/((a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 -
 10*a^6*b^2*c^3*d^3 + 5*a^7*b*c^2*d^4 - a^8*c*d^5 + (b^8*c^5*d -
5*a*b^7*c^4*d^2 + 10*a^2*b^6*c^3*d^3 - 10*a^3*b^5*c^2*d^4 + 5*a^4
*b^4*c*d^5 - a^5*b^3*d^6)*x^4 + (b^8*c^6 - 2*a*b^7*c^5*d - 5*a^2*
b^6*c^4*d^2 + 20*a^3*b^5*c^3*d^3 - 25*a^4*b^4*c^2*d^4 + 14*a^5*b^
3*c*d^5 - 3*a^6*b^2*d^6)*x^3 + 3*(a*b^7*c^6 - 4*a^2*b^6*c^5*d + 5
*a^3*b^5*c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c*d^5 - a^7*b*d^
6)*x^2 + (3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*b^4*c^4*d^2 -
 20*a^5*b^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*d^6
)*x)*sqrt(d*x + c)), -1/24*(315*b^4*d^4*x^4 + 8*b^4*c^4 - 50*a*b^
3*c^3*d + 165*a^2*b^2*c^2*d^2 + 208*a^3*b*c*d^3 - 16*a^4*d^4 + 42
0*(b^4*c*d^3 + 2*a*b^3*d^4)*x^3 + 63*(b^4*c^2*d^2 + 18*a*b^3*c*d^
3 + 11*a^2*b^2*d^4)*x^2 - 315*(b^4*d^4*x^4 + a^3*b*c*d^3 + (b^4*c
*d^3 + 3*a*b^3*d^4)*x^3 + 3*(a*b^3*c*d^3 + a^2*b^2*d^4)*x^2 + (3*
```

```
a^2*b^2*c*d^3 + a^3*b*d^4)*x)*sqrt(d*x + c)*sqrt(-b/(b*c - a*d))*
arctan(-(b*c - a*d)*sqrt(-b/(b*c - a*d))/(sqrt(d*x + c)*b)) - 18*
(b^4*c^3*d - 10*a*b^3*c^2*d^2 - 53*a^2*b^2*c*d^3 - 8*a^3*b*d^4)*x
)/((a^3*b^5*c^6 - 5*a^4*b^4*c^5*d + 10*a^5*b^3*c^4*d^2 - 10*a^6*b
^2*c^3*d^3 + 5*a^7*b*c^2*d^4 - a^8*c*d^5 + (b^8*c^5*d - 5*a*b^7*c
^4*d^2 + 10*a^2*b^6*c^3*d^3 - 10*a^3*b^5*c^2*d^4 + 5*a^4*b^4*c*d^
5 - a^5*b^3*d^6)*x^4 + (b^8*c^6 - 2*a*b^7*c^5*d - 5*a^2*b^6*c^4*d
^2 + 20*a^3*b^5*c^3*d^3 - 25*a^4*b^4*c^2*d^4 + 14*a^5*b^3*c*d^5 -
 3*a^6*b^2*d^6)*x^3 + 3*(a*b^7*c^6 - 4*a^2*b^6*c^5*d + 5*a^3*b^5*
c^4*d^2 - 5*a^5*b^3*c^2*d^4 + 4*a^6*b^2*c*d^5 - a^7*b*d^6)*x^2 +
(3*a^2*b^6*c^6 - 14*a^3*b^5*c^5*d + 25*a^4*b^4*c^4*d^2 - 20*a^5*b
^3*c^3*d^3 + 5*a^6*b^2*c^2*d^4 + 2*a^7*b*c*d^5 - a^8*d^6)*x)*sqrt
(d*x + c))]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**4/(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.227401, size = 583, normalized size = 2.92

$$-\frac{105\, b^2 d^3 \arctan\left(\frac{\sqrt{dx+c}\,b}{\sqrt{-b^2c+abd}}\right)}{8\,(b^5c^5 - 5\,ab^4c^4d + 10\,a^2b^3c^3d^2 - 10\,a^3b^2c^2d^3 + 5\,a^4bcd^4 - a^5d^5)\sqrt{-b^2c+abd}} - \frac{315\,(dx+c)^4b^4d^3 - 840\,(dx+c)^3b^4cd^3 + 693\,(dx+c)^2b^4c^2d^3 - 144\,(dx+c)b^4c^3d^3 - 16\,b^4c^4d^3 + 840\,(dx+c)^3ab^3d^4 - 138}{24\,(b^5c^5 - 5\,ab^4c^4d + 10\,a^2b^3c^3d^2 - 1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^4*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] -105/8*b^2*d^3*arctan(sqrt(d*x + c)*b/sqrt(-b^2*c + a*b*d))/((b^5
*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 +
5*a^4*b*c*d^4 - a^5*d^5)*sqrt(-b^2*c + a*b*d)) - 1/24*(315*(d*x +
 c)^4*b^4*d^3 - 840*(d*x + c)^3*b^4*c*d^3 + 693*(d*x + c)^2*b^4*c
^2*d^3 - 144*(d*x + c)*b^4*c^3*d^3 - 16*b^4*c^4*d^3 + 840*(d*x +
c)^3*a*b^3*d^4 - 1386*(d*x + c)^2*a*b^3*c*d^4 + 432*(d*x + c)*a*b
^3*c^2*d^4 + 64*a*b^3*c^3*d^4 + 693*(d*x + c)^2*a^2*b^2*d^5 - 432
*(d*x + c)*a^2*b^2*c*d^5 - 96*a^2*b^2*c^2*d^5 + 144*(d*x + c)*a^3
*b*d^6 + 64*a^3*b*c*d^6 - 16*a^4*d^7)/((b^5*c^5 - 5*a*b^4*c^4*d +
 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^
```

```
5)*((d*x + c)^(3/2)*b - sqrt(d*x + c)*b*c + sqrt(d*x + c)*a*d)^3)
```

3.1444 $\int (a+bx)^5 (ac+bcx)^{3/2}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{15/2}}{15bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(15/2))/(15*b*c^6)
```

Rubi [A] time = 0.0145839, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2(ac+bcx)^{15/2}}{15bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*(a*c + b*c*x)^(3/2),x]
```

```
[Out] (2*(a*c + b*c*x)^(15/2))/(15*b*c^6)
```

Rubi in Sympy [A] time = 4.26134, size = 19, normalized size = 0.86

$$\frac{2\left(ac+bcx\right)^{\frac{15}{2}}}{15bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(b*c*x+a*c)**(3/2),x)
```

```
[Out] 2*(a*c + b*c*x)**(15/2)/(15*b*c**6)
```

Mathematica [A] time = 0.0312204, size = 25, normalized size = 1.14

$$\frac{2(a+bx)^6(c(a+bx))^{3/2}}{15b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*(a*c + b*c*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^6*(c*(a + b*x))^(3/2))/(15*b)
```

Maple [A] time = 0.003, size = 23, normalized size = 1.1

$$\frac{2\,\left(bx+a\right)^{6}}{15\,b}\left(bcx+ac\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5*(b*c*x+a*c)^(3/2),x)
```

```
[Out] 2/15*(b*x+a)^6*(b*c*x+a*c)^(3/2)/b
```

Maxima [A] time = 1.35065, size = 24, normalized size = 1.09

$$\frac{2\,(bcx+ac)^{\frac{15}{2}}}{15\,bc^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x + a*c)^(3/2)*(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] 2/15*(b*c*x + a*c)^(15/2)/(b*c^6)
```

Fricas [A] time = 0.2041, size = 128, normalized size = 5.82

$$\frac{2\left(b^{7}cx^{7}+7\,ab^{6}cx^{6}+21\,a^{2}b^{5}cx^{5}+35\,a^{3}b^{4}cx^{4}+35\,a^{4}b^{3}cx^{3}+21\,a^{5}b^{2}cx^{2}+7\,a^{6}bcx+a^{7}c\right)\sqrt{bcx+ac}}{15\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x + a*c)^(3/2)*(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 2/15*(b^7*c*x^7 + 7*a*b^6*c*x^6 + 21*a^2*b^5*c*x^5 + 35*a^3*b^4*c
*x^4 + 35*a^4*b^3*c*x^3 + 21*a^5*b^2*c*x^2 + 7*a^6*b*c*x + a^7*c)
*sqrt(b*c*x + a*c)/b
```

Sympy [A] time = 2.04953, size = 66, normalized size = 3.

$$\begin{cases} \frac{2b^{\frac{13}{2}}c^{\frac{3}{2}}\left(\frac{a}{b}+x\right)^{\frac{15}{2}}}{15} & \text{for } \left|\frac{a}{b}+x\right| < 1 \\ b^{\frac{13}{2}}c^{\frac{3}{2}}G_{2,2}^{1,1}\left(\begin{matrix} 1 & \frac{17}{2} \\ \frac{15}{2} & 0 \end{matrix} \middle| \frac{a}{b}+x\right) + b^{\frac{13}{2}}c^{\frac{3}{2}}G_{2,2}^{0,2}\left(\begin{matrix} \frac{17}{2}, 1 & \\ & \frac{15}{2}, 0 \end{matrix} \middle| \frac{a}{b}+x\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(b*c*x+a*c)**(3/2),x)
```

```
[Out] Piecewise((2*b**(13/2)*c**(3/2)*(a/b + x)**(15/2)/15, Abs(a/b + x
) < 1), (b**(13/2)*c**(3/2)*meijerg(((1,), (17/2,)), ((15/2,), (0
,)), a/b + x) + b**(13/2)*c**(3/2)*meijerg(((17/2, 1), ()), ((),
(15/2, 0)), a/b + x), True))
```

GIAC/XCAS [A] time = 0.231747, size = 1, normalized size = 0.05

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*x + a*c)^(3/2)*(b*x + a)^5,x, algorithm="giac")
```

```
[Out] Done
```

3.1445 $\int (a+bx)^5\sqrt{ac+bcx}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{13/2}}{13bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(13/2))/(13*b*c^6)
```

Rubi [A] time = 0.0136806, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2(ac+bcx)^{13/2}}{13bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5*Sqrt[a*c + b*c*x],x]
```

```
[Out] (2*(a*c + b*c*x)^(13/2))/(13*b*c^6)
```

Rubi in Sympy [A] time = 4.38896, size = 19, normalized size = 0.86

$$\frac{2\left(ac+bcx\right)^{\frac{13}{2}}}{13bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5*(b*c*x+a*c)**(1/2),x)
```

```
[Out] 2*(a*c + b*c*x)**(13/2)/(13*b*c**6)
```

Mathematica [A] time = 0.0174487, size = 25, normalized size = 1.14

$$\frac{2(a+bx)^6\sqrt{c(a+bx)}}{13b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5*Sqrt[a*c + b*c*x],x]
```

```
[Out] (2*(a + b*x)^6*Sqrt[c*(a + b*x)])/(13*b)
```

Maple [A] time = 0.003, size = 23, normalized size = 1.1

$$\frac{2\,(bx+a)^6}{13\,b}\sqrt{bcx+ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5*(b*c*x+a*c)^(1/2),x)
```

```
[Out] 2/13*(b*x+a)^6*(b*c*x+a*c)^(1/2)/b
```

Maxima [A] time = 1.32059, size = 24, normalized size = 1.09

$$\frac{2\,(bcx+ac)^{\frac{13}{2}}}{13\,bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*c*x + a*c)*(b*x + a)^5,x, algorithm="maxima")
```

```
[Out] 2/13*(b*c*x + a*c)^(13/2)/(b*c^6)
```

Fricas [A] time = 0.210378, size = 101, normalized size = 4.59

$$\frac{2\,\left(b^6x^6+6\,ab^5x^5+15\,a^2b^4x^4+20\,a^3b^3x^3+15\,a^4b^2x^2+6\,a^5bx+a^6\right)\sqrt{bcx+ac}}{13\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(sqrt(b*c*x + a*c)*(b*x + a)^5,x, algorithm="fricas")
```

```
[Out] 2/13*(b^6*x^6 + 6*a*b^5*x^5 + 15*a^2*b^4*x^4 + 20*a^3*b^3*x^3 + 1
5*a^4*b^2*x^2 + 6*a^5*b*x + a^6)*sqrt(b*c*x + a*c)/b
```

Sympy [A] time = 1.53358, size = 66, normalized size = 3.

$$\begin{cases} \frac{2b^{\frac{11}{2}}\sqrt{c}\left(\frac{a}{b}+x\right)^{\frac{13}{2}}}{13} & \text{for } \left|\frac{a}{b}+x\right| < 1 \\ b^{\frac{11}{2}}\sqrt{c}G_{2,2}^{1,1}\left(\begin{matrix} 1 & \frac{15}{2} \\ \frac{13}{2} & 0 \end{matrix} \middle| \frac{a}{b}+x\right) + b^{\frac{11}{2}}\sqrt{c}G_{2,2}^{0,2}\left(\begin{matrix} \frac{15}{2}, 1 & \\ & \frac{13}{2}, 0 \end{matrix} \middle| \frac{a}{b}+x\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5*(b*c*x+a*c)**(1/2),x)
```

```
[Out] Piecewise((2*b**(11/2)*sqrt(c)*(a/b + x)**(13/2)/13, Abs(a/b + x)
 < 1), (b**(11/2)*sqrt(c)*meijerg(((1,), (15/2,)), ((13/2,), (0,)
), a/b + x) + b**(11/2)*sqrt(c)*meijerg(((15/2, 1), ()), ((), (13
/2, 0)), a/b + x), True))
```

GIAC/XCAS [A] time = 0.22327, size = 621, normalized size = 28.23

$$2\left(3003\,(bcx+ac)^{\frac{3}{2}}a^5 - \frac{3003\left(5\,(bcx+ac)^{\frac{3}{2}}ac - 3\,(bcx+ac)^{\frac{5}{2}}\right)a^4}{c} + \frac{858\left(35\,(bcx+ac)^{\frac{3}{2}}a^2b^{12}c^{14} - 42\,(bcx+ac)^{\frac{5}{2}}ab^{12}c^{13} + 15\,(bcx+ac)^{\frac{7}{2}}b^{12}c^{12}\right)a^3}{b^{12}c^{14}} - 286\cdots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*c*x + a*c)*(b*x + a)^5,x, algorithm="giac")
```

```
[Out] 2/9009*(3003*(b*c*x + a*c)^(3/2)*a^5 - 3003*(5*(b*c*x + a*c)^(3/2
)*a*c - 3*(b*c*x + a*c)^(5/2))*a^4/c + 858*(35*(b*c*x + a*c)^(3/2
)*a^2*b^12*c^14 - 42*(b*c*x + a*c)^(5/2)*a*b^12*c^13 + 15*(b*c*x
+ a*c)^(7/2)*b^12*c^12)*a^3/(b^12*c^14) - 286*(105*(b*c*x + a*c)^
(3/2)*a^3*b^24*c^27 - 189*(b*c*x + a*c)^(5/2)*a^2*b^24*c^26 + 135
*(b*c*x + a*c)^(7/2)*a*b^24*c^25 - 35*(b*c*x + a*c)^(9/2)*b^24*c^
24)*a^2/(b^24*c^27) + 13*(1155*(b*c*x + a*c)^(3/2)*a^4*b^40*c^44
- 2772*(b*c*x + a*c)^(5/2)*a^3*b^40*c^43 + 2970*(b*c*x + a*c)^(7/
2)*a^2*b^40*c^42 - 1540*(b*c*x + a*c)^(9/2)*a*b^40*c^41 + 315*(b*
c*x + a*c)^(11/2)*b^40*c^40)*a/(b^40*c^44) - (3003*(b*c*x + a*c)^
(3/2)*a^5*b^60*c^65 - 9009*(b*c*x + a*c)^(5/2)*a^4*b^60*c^64 + 12
870*(b*c*x + a*c)^(7/2)*a^3*b^60*c^63 - 10010*(b*c*x + a*c)^(9/2)
*a^2*b^60*c^62 + 4095*(b*c*x + a*c)^(11/2)*a*b^60*c^61 - 693*(b*c
*x + a*c)^(13/2)*b^60*c^60)/(b^60*c^65))/(b*c)
```

3.1446 $\int \frac{(a+bx)^5}{\sqrt{ac+bcx}}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{11/2}}{11bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(11/2))/(11*b*c^6)
```

Rubi [A] time = 0.0135094, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2(ac+bcx)^{11/2}}{11bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/Sqrt[a*c + b*c*x],x]
```

```
[Out] (2*(a*c + b*c*x)^(11/2))/(11*b*c^6)
```

Rubi in Sympy [A] time = 4.40205, size = 19, normalized size = 0.86

$$\frac{2\left(ac+bcx\right)^{\frac{11}{2}}}{11bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(1/2),x)
```

```
[Out] 2*(a*c + b*c*x)**(11/2)/(11*b*c**6)
```

Mathematica [A] time = 0.0199615, size = 25, normalized size = 1.14

$$\frac{2(a+bx)^6}{11b\sqrt{c(a+bx)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/Sqrt[a*c + b*c*x],x]
```

```
[Out] (2*(a + b*x)^6)/(11*b*Sqrt[c*(a + b*x)])
```

Maple [A] time = 0.003, size = 23, normalized size = 1.1

$$\frac{2\,(bx+a)^6}{11\,b}\frac{1}{\sqrt{bcx+ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^(1/2),x)
```

```
[Out] 2/11*(b*x+a)^6/b/(b*c*x+a*c)^(1/2)
```

Maxima [A] time = 1.35638, size = 505, normalized size = 22.95

$$2\left(693\,\sqrt{bcx+ac}a^5-\frac{1155\left(3\,\sqrt{bcx+ac}ac-(bcx+ac)^{\frac{3}{2}}\right)a^4}{c}+\frac{462\left(15\,\sqrt{bcx+ac}a^2c^2-10\,(bcx+ac)^{\frac{3}{2}}\,ac+3\,(bcx+ac)^{\frac{5}{2}}\right)a^3}{c^2}-\frac{198\left(35\,\sqrt{bcx+ac}a^3c^3-35\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/sqrt(b*c*x + a*c),x, algorithm="maxima")
```

```
[Out] 2/693*(693*sqrt(b*c*x + a*c)*a^5 - 1155*(3*sqrt(b*c*x + a*c)*a*c
- (b*c*x + a*c)^(3/2))*a^4/c + 462*(15*sqrt(b*c*x + a*c)*a^2*c^2
- 10*(b*c*x + a*c)^(3/2)*a*c + 3*(b*c*x + a*c)^(5/2))*a^3/c^2 - 1
98*(35*sqrt(b*c*x + a*c)*a^3*c^3 - 35*(b*c*x + a*c)^(3/2)*a^2*c^2
 + 21*(b*c*x + a*c)^(5/2)*a*c - 5*(b*c*x + a*c)^(7/2))*a^2/c^3 +
11*(315*sqrt(b*c*x + a*c)*a^4*c^4 - 420*(b*c*x + a*c)^(3/2)*a^3*c
^3 + 378*(b*c*x + a*c)^(5/2)*a^2*c^2 - 180*(b*c*x + a*c)^(7/2)*a*
c + 35*(b*c*x + a*c)^(9/2))*a/c^4 - (693*sqrt(b*c*x + a*c)*a^5*c^
5 - 1155*(b*c*x + a*c)^(3/2)*a^4*c^4 + 1386*(b*c*x + a*c)^(5/2)*a
^3*c^3 - 990*(b*c*x + a*c)^(7/2)*a^2*c^2 + 385*(b*c*x + a*c)^(9/2
)*a*c - 63*(b*c*x + a*c)^(11/2))/c^5)/(b*c)
```

Fricas [A] time = 0.215835, size = 90, normalized size = 4.09

$$\frac{2\left(b^5x^5+5\,ab^4x^4+10\,a^2b^3x^3+10\,a^3b^2x^2+5\,a^4bx+a^5\right)\sqrt{bcx+ac}}{11\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/sqrt(b*c*x + a*c),x, algorithm="fricas")
```

```
[Out] 2/11*(b^5*x^5 + 5*a*b^4*x^4 + 10*a^2*b^3*x^3 + 10*a^3*b^2*x^2 + 5
*a^4*b*x + a^5)*sqrt(b*c*x + a*c)/(b*c)
```

Sympy [A] time = 2.04256, size = 83, normalized size = 3.77

$$\begin{cases} \frac{2b^{\frac{9}{2}}\left(\frac{a}{b}+x\right)^{\frac{11}{2}}}{11\sqrt{c}} & \text{for } \left(\frac{a}{b}+x>-1 \wedge \frac{a}{b}+x<1\right) \vee \frac{a}{b}+x>1 \vee \frac{a}{b}+x<-1 \\ \frac{b^{\frac{9}{2}}G_{2,2}^{1,1}\left(\begin{matrix} 1 & \frac{13}{2} \\ \frac{11}{2} & 0 \end{matrix}\middle|\frac{a}{b}+x\right)}{\sqrt{c}} + \frac{b^{\frac{9}{2}}G_{2,2}^{0,2}\left(\begin{matrix} \frac{13}{2}, 1 & \\ & \frac{11}{2}, 0 \end{matrix}\middle|\frac{a}{b}+x\right)}{\sqrt{c}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(1/2),x)
```

```
[Out] Piecewise((2*b**(9/2)*(a/b + x)**(11/2)/(11*sqrt(c)), (a/b + x >
1) | (a/b + x < -1) | ((a/b + x > -1) & (a/b + x < 1))), (b**(9/2
)*meijerg(((1,), (13/2,)), ((11/2,), (0,)), a/b + x)/sqrt(c) + b*
*(9/2)*meijerg(((13/2, 1), ()), ((), (11/2, 0)), a/b + x)/sqrt(c)
, True))
```

GIAC/XCAS [A] time = 0.227483, size = 621, normalized size = 28.23

$$2\left(693\sqrt{bcx+ac}a^5 - \frac{1155\left(3\sqrt{bcx+ac}ac-(bcx+ac)^{\frac{3}{2}}\right)a^4}{c} + \frac{462\left(15\sqrt{bcx+ac}a^2b^8c^{10}-10(bcx+ac)^{\frac{3}{2}}ab^8c^9+3(bcx+ac)^{\frac{5}{2}}b^8c^8\right)a^3}{b^8c^{10}} - \frac{198\left(35\sqrt{bcx+a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/sqrt(b*c*x + a*c),x, algorithm="giac")
```

```
[Out] 2/693*(693*sqrt(b*c*x + a*c)*a^5 - 1155*(3*sqrt(b*c*x + a*c)*a*c
- (b*c*x + a*c)^(3/2))*a^4/c + 462*(15*sqrt(b*c*x + a*c)*a^2*b^8*
c^10 - 10*(b*c*x + a*c)^(3/2)*a*b^8*c^9 + 3*(b*c*x + a*c)^(5/2)*b
^8*c^8)*a^3/(b^8*c^10) - 198*(35*sqrt(b*c*x + a*c)*a^3*b^18*c^21
- 35*(b*c*x + a*c)^(3/2)*a^2*b^18*c^20 + 21*(b*c*x + a*c)^(5/2)*a
*b^18*c^19 - 5*(b*c*x + a*c)^(7/2)*b^18*c^18)*a^2/(b^18*c^21) + 1
1*(315*sqrt(b*c*x + a*c)*a^4*b^32*c^36 - 420*(b*c*x + a*c)^(3/2)*
a^3*b^32*c^35 + 378*(b*c*x + a*c)^(5/2)*a^2*b^32*c^34 - 180*(b*c*
x + a*c)^(7/2)*a*b^32*c^33 + 35*(b*c*x + a*c)^(9/2)*b^32*c^32)*a/
(b^32*c^36) - (693*sqrt(b*c*x + a*c)*a^5*b^50*c^55 - 1155*(b*c*x
+ a*c)^(3/2)*a^4*b^50*c^54 + 1386*(b*c*x + a*c)^(5/2)*a^3*b^50*c^
```

```
53 - 990*(b*c*x + a*c)^(7/2)*a^2*b^50*c^52 + 385*(b*c*x + a*c)^(9
/2)*a*b^50*c^51 - 63*(b*c*x + a*c)^(11/2)*b^50*c^50)/(b^50*c^55))
/(b*c)
```

3.1447 $\int \frac{(a+bx)^5}{(ac+bcx)^{3/2}}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{9/2}}{9bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(9/2))/(9*b*c^6)
```

Rubi [A] time = 0.0137135, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2(ac+bcx)^{9/2}}{9bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^(3/2),x]

[Out] (2*(a*c + b*c*x)^(9/2))/(9*b*c^6)
```

Rubi in Sympy [A] time = 4.3532, size = 19, normalized size = 0.86

$$\frac{2\,(ac+bcx)^{\frac{9}{2}}}{9bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(3/2),x)

[Out] 2*(a*c + b*c*x)**(9/2)/(9*b*c**6)
```

Mathematica [A] time = 0.0217454, size = 25, normalized size = 1.14

$$\frac{2(a+bx)^6}{9b(c(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^(3/2),x]
```

```
[Out] (2*(a + b*x)^6)/(9*b*(c*(a + b*x))^(3/2))
```

Maple [A] time = 0.003, size = 23, normalized size = 1.1

$$\frac{2\left(bx+a\right)^{6}}{9b}\left(bcx+ac\right)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^(3/2),x)
```

```
[Out] 2/9*(b*x+a)^6/b/(b*c*x+a*c)^(3/2)
```

Maxima [A] time = 1.32729, size = 24, normalized size = 1.09

$$\frac{2\left(bcx+ac\right)^{\frac{9}{2}}}{9\,bc^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*(b*c*x + a*c)^(9/2)/(b*c^6)
```

Fricas [A] time = 0.220685, size = 76, normalized size = 3.45

$$\frac{2\left(b^{4}x^{4}+4\,ab^{3}x^{3}+6\,a^{2}b^{2}x^{2}+4\,a^{3}bx+a^{4}\right)\sqrt{bcx+ac}}{9\,bc^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/9*(b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4)*sqr
t(b*c*x + a*c)/(b*c^2)
```

Sympy [A] time = 2.05422, size = 83, normalized size = 3.77

$$\begin{cases} \frac{2b^{\frac{7}{2}}\left(\frac{a}{b}+x\right)^{\frac{9}{2}}}{9c^{\frac{3}{2}}} & \text{for } \left(\frac{a}{b}+x>-1 \wedge \frac{a}{b}+x<1\right) \vee \frac{a}{b}+x>1 \vee \frac{a}{b}+x<-1 \\ \frac{b^{\frac{7}{2}} G_{2,2}^{1,1}\left(\begin{matrix} 1 & \frac{11}{2} \\ \frac{9}{2} & 0 \end{matrix} \middle| \frac{a}{b}+x\right)}{c^{\frac{3}{2}}} + \frac{b^{\frac{7}{2}} G_{2,2}^{0,2}\left(\begin{matrix} \frac{11}{2}, 1 & \\ & \frac{9}{2}, 0 \end{matrix} \middle| \frac{a}{b}+x\right)}{c^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(3/2),x)
```

```
[Out] Piecewise((2*b**(7/2)*(a/b + x)**(9/2)/(9*c**(3/2)), (a/b + x > 1
) | (a/b + x < -1) | ((a/b + x > -1) & (a/b + x < 1))), (b**(7/2)
*meijerg(((1,), (11/2,)), ((9/2,), (0,)), a/b + x)/c**(3/2) + b**
(7/2)*meijerg(((11/2, 1), ()), ((), (9/2, 0)), a/b + x)/c**(3/2),
 True))
```

GIAC/XCAS [A] time = 0.219783, size = 440, normalized size = 20.

$$2\left(315\sqrt{bcx+ac}a^4 - \frac{420\left(3\sqrt{bcx+ac}ac-(bcx+ac)^{\frac{3}{2}}\right)a^3}{c} + \frac{126\left(15\sqrt{bcx+ac}a^2b^8c^{10}-10(bcx+ac)^{\frac{3}{2}}ab^8c^9+3(bcx+ac)^{\frac{5}{2}}b^8c^8\right)a^2}{b^8c^{10}} - \frac{36\left(35\sqrt{bcx+ac}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(315*sqrt(b*c*x + a*c)*a^4 - 420*(3*sqrt(b*c*x + a*c)*a*c -
 (b*c*x + a*c)^(3/2))*a^3/c + 126*(15*sqrt(b*c*x + a*c)*a^2*b^8*c
^10 - 10*(b*c*x + a*c)^(3/2)*a*b^8*c^9 + 3*(b*c*x + a*c)^(5/2)*b^
8*c^8)*a^2/(b^8*c^10) - 36*(35*sqrt(b*c*x + a*c)*a^3*b^18*c^21 -
35*(b*c*x + a*c)^(3/2)*a^2*b^18*c^20 + 21*(b*c*x + a*c)^(5/2)*a*b
^18*c^19 - 5*(b*c*x + a*c)^(7/2)*b^18*c^18)*a/(b^18*c^21) + (315*
sqrt(b*c*x + a*c)*a^4*b^32*c^36 - 420*(b*c*x + a*c)^(3/2)*a^3*b^3
2*c^35 + 378*(b*c*x + a*c)^(5/2)*a^2*b^32*c^34 - 180*(b*c*x + a*c
)^(7/2)*a*b^32*c^33 + 35*(b*c*x + a*c)^(9/2)*b^32*c^32)/(b^32*c^3
6))/(b*c^2)
```

3.1448 $\int \frac{(a+bx)^5}{(ac+bcx)^{5/2}}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{7/2}}{7bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(7/2))/(7*b*c^6)
```

Rubi [A] time = 0.0134137, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2(ac+bcx)^{7/2}}{7bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^(5/2),x]

[Out] (2*(a*c + b*c*x)^(7/2))/(7*b*c^6)
```

Rubi in Sympy [A] time = 4.3332, size = 19, normalized size = 0.86

$$\frac{2\,(ac+bcx)^{\frac{7}{2}}}{7bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(5/2),x)

[Out] 2*(a*c + b*c*x)**(7/2)/(7*b*c**6)
```

Mathematica [A] time = 0.0209602, size = 25, normalized size = 1.14

$$\frac{2(a+bx)^6}{7b(c(a+bx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^6)/(7*b*(c*(a + b*x))^(5/2))
```

Maple [A] time = 0.004, size = 23, normalized size = 1.1

$$\frac{2\ (bx+a)^{6}}{7\ b}\,(bcx+ac)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(b*c*x+a*c)^(5/2),x)
```

```
[Out] 2/7*(b*x+a)^6/b/(b*c*x+a*c)^(5/2)
```

Maxima [A] time = 1.33302, size = 24, normalized size = 1.09

$$\frac{2\,(bcx+ac)^{\frac{7}{2}}}{7\ bc^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(b*c*x + a*c)^(7/2)/(b*c^6)
```

Fricas [A] time = 0.224948, size = 61, normalized size = 2.77

$$\frac{2\left(b^{3}x^{3}+3\,ab^{2}x^{2}+3\,a^{2}bx+a^{3}\right)\sqrt{bcx+ac}}{7\ bc^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*sqrt(b*c*x + a*c)/(
b*c^3)
```

Sympy [A] time = 2.16342, size = 83, normalized size = 3.77

$$\begin{cases} \frac{2b^{\frac{5}{2}}\left(\frac{a}{b}+x\right)^{\frac{7}{2}}}{7c^{\frac{5}{2}}} & \text{for } \left(\frac{a}{b}+x>-1 \wedge \frac{a}{b}+x<1\right) \vee \frac{a}{b}+x>1 \vee \frac{a}{b}+x<-1 \\ \frac{b^{\frac{5}{2}}G_{2,2}^{1,1}\left(\begin{matrix} 1 & \frac{9}{2} \\ \frac{7}{2} & 0 \end{matrix} \middle| \frac{a}{b}+x\right)}{c^{\frac{5}{2}}} + \frac{b^{\frac{5}{2}}G_{2,2}^{0,2}\left(\begin{matrix} \frac{9}{2}, 1 & \\ & \frac{7}{2}, 0 \end{matrix} \middle| \frac{a}{b}+x\right)}{c^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(5/2),x)
```

```
[Out] Piecewise((2*b**(5/2)*(a/b + x)**(7/2)/(7*c**(5/2)), (a/b + x > 1
) | (a/b + x < -1) | ((a/b + x > -1) & (a/b + x < 1))), (b**(5/2)
*meijerg(((1,), (9/2,)), ((7/2,), (0,)), a/b + x)/c**(5/2) + b**(
5/2)*meijerg(((9/2, 1), ()), ((), (7/2, 0)), a/b + x)/c**(5/2), T
rue))
```

GIAC/XCAS [A] time = 0.226008, size = 290, normalized size = 13.18

$$\frac{2\left(35\sqrt{bcx+ac}a^3 - \frac{35\left(3\sqrt{bcx+ac}ac-(bcx+ac)^{\frac{3}{2}}\right)a^2}{c} + \frac{7\left(15\sqrt{bcx+ac}a^2b^8c^{10}-10\,(bcx+ac)^{\frac{3}{2}}ab^8c^9+3\,(bcx+ac)^{\frac{5}{2}}b^8c^8\right)a}{b^8c^{10}} - \frac{35\sqrt{bcx+ac}a^3b^{18}c^{21}-}{}\right.}{35\,bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(5/2),x, algorithm="giac")
```

```
[Out] 2/35*(35*sqrt(b*c*x + a*c)*a^3 - 35*(3*sqrt(b*c*x + a*c)*a*c - (b
*c*x + a*c)^(3/2))*a^2/c + 7*(15*sqrt(b*c*x + a*c)*a^2*b^8*c^10 -
 10*(b*c*x + a*c)^(3/2)*a*b^8*c^9 + 3*(b*c*x + a*c)^(5/2)*b^8*c^8
)*a/(b^8*c^10) - (35*sqrt(b*c*x + a*c)*a^3*b^18*c^21 - 35*(b*c*x
+ a*c)^(3/2)*a^2*b^18*c^20 + 21*(b*c*x + a*c)^(5/2)*a*b^18*c^19 -
 5*(b*c*x + a*c)^(7/2)*b^18*c^18)/(b^18*c^21))/(b*c^3)
```

3.1449 $\int \frac{(a+bx)^5}{(ac+bcx)^{7/2}}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{5/2}}{5bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(5/2))/(5*b*c^6)
```

Rubi [A] time = 0.0133471, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{2(ac+bcx)^{5/2}}{5bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^(7/2),x]

[Out] (2*(a*c + b*c*x)^(5/2))/(5*b*c^6)
```

Rubi in Sympy [A] time = 4.37663, size = 19, normalized size = 0.86

$$\frac{2\left(ac+bcx\right)^{\frac{5}{2}}}{5bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(7/2),x)

[Out] 2*(a*c + b*c*x)**(5/2)/(5*b*c**6)
```

Mathematica [A] time = 0.0194937, size = 25, normalized size = 1.14

$$\frac{2(a+bx)^6}{5b(c(a+bx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^(7/2),x]
```

```
[Out] (2*(a + b*x)^6)/(5*b*(c*(a + b*x))^(7/2))
```

Maple [A] time = 0.003, size = 23, normalized size = 1.1

$$\frac{2\,(bx+a)^6}{5\,b}(bcx+ac)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^(7/2),x)
```

```
[Out] 2/5*(b*x+a)^6/b/(b*c*x+a*c)^(7/2)
```

Maxima [A] time = 1.32904, size = 24, normalized size = 1.09

$$\frac{2\,(bcx+ac)^{\frac{5}{2}}}{5\,bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*(b*c*x + a*c)^(5/2)/(b*c^6)
```

Fricas [A] time = 0.210368, size = 46, normalized size = 2.09

$$\frac{2\,\left(b^2x^2+2\,abx+a^2\right)\sqrt{bcx+ac}}{5\,bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/5*(b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*c*x + a*c)/(b*c^4)
```

Sympy [A] time = 5.38577, size = 80, normalized size = 3.64

$$\begin{cases} \frac{2a^2\sqrt{ac+bcx}}{5bc^4}+\frac{4ax\sqrt{ac+bcx}}{5c^4}+\frac{2bx^2\sqrt{ac+bcx}}{5c^4} & \text{for}\ b\neq 0\\ \frac{a^5x}{(ac)^{\frac{7}{2}}} & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(7/2),x)
```

```
[Out] Piecewise((2*a**2*sqrt(a*c + b*c*x)/(5*b*c**4) + 4*a*x*sqrt(a*c +
 b*c*x)/(5*c**4) + 2*b*x**2*sqrt(a*c + b*c*x)/(5*c**4), Ne(b, 0))
, (a**5*x/(a*c)**(7/2), True))
```

GIAC/XCAS [A] time = 0.215109, size = 166, normalized size = 7.55

$$\frac{2\left(15\sqrt{bcx+ac}a^{2}-\frac{10\left(3\sqrt{bcx+ac}ac-(bcx+ac)^{\frac{3}{2}}\right)a}{c}+\frac{15\sqrt{bcx+ac}a^{2}b^{8}c^{10}-10(bcx+ac)^{\frac{3}{2}}ab^{8}c^{9}+3(bcx+ac)^{\frac{5}{2}}b^{8}c^{8}}{b^{8}c^{10}}\right)}{15\,bc^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(15*sqrt(b*c*x + a*c)*a^2 - 10*(3*sqrt(b*c*x + a*c)*a*c - (b
*c*x + a*c)^(3/2))*a/c + (15*sqrt(b*c*x + a*c)*a^2*b^8*c^10 - 10*
(b*c*x + a*c)^(3/2)*a*b^8*c^9 + 3*(b*c*x + a*c)^(5/2)*b^8*c^8)/(b
^8*c^10))/(b*c^4)
```

3.1450 $\int \frac{(a+bx)^5}{(ac+bcx)^{9/2}}\,dx$

Optimal. Leaf size=22

$$\frac{2(ac+bcx)^{3/2}}{3bc^6}$$

```
[Out] (2*(a*c + b*c*x)^(3/2))/(3*b*c^6)
```

Rubi [A] time = 0.0133833, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{2(ac+bcx)^{3/2}}{3bc^6}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^(9/2),x]
```

```
[Out] (2*(a*c + b*c*x)^(3/2))/(3*b*c^6)
```

Rubi in Sympy [A] time = 4.36494, size = 19, normalized size = 0.86

$$\frac{2\left(ac+bcx\right)^{\frac{3}{2}}}{3bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(9/2),x)
```

```
[Out] 2*(a*c + b*c*x)**(3/2)/(3*b*c**6)
```

Mathematica [A] time = 0.0205586, size = 26, normalized size = 1.18

$$\frac{2(a+bx)\sqrt{c(a+bx)}}{3bc^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^(9/2),x]
```

```
[Out] (2*(a + b*x)*Sqrt[c*(a + b*x)])/(3*b*c^5)
```

Maple [A] time = 0.004, size = 23, normalized size = 1.1

$$\frac{2\,(bx+a)^{6}}{3\,b}\,(bcx+ac)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^(9/2),x)
```

```
[Out] 2/3*(b*x+a)^6/b/(b*c*x+a*c)^(9/2)
```

Maxima [A] time = 1.32261, size = 24, normalized size = 1.09

$$\frac{2\,(bcx+ac)^{\frac{3}{2}}}{3\,bc^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*c*x + a*c)^(3/2)/(b*c^6)
```

Fricas [A] time = 0.202029, size = 31, normalized size = 1.41

$$\frac{2\,\sqrt{bcx+ac}(bx+a)}{3\,bc^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(b*c*x + a*c)*(b*x + a)/(b*c^5)
```

Sympy [A] time = 11.6554, size = 53, normalized size = 2.41

$$\begin{cases} \frac{2a\sqrt{ac+bcx}}{3bc^{5}} + \frac{2x\sqrt{ac+bcx}}{3c^{5}} & \text{for}\ b \neq 0 \\ \frac{a^{5}x}{(ac)^{\frac{9}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(9/2),x)
```

```
[Out] Piecewise((2*a*sqrt(a*c + b*c*x)/(3*b*c**5) + 2*x*sqrt(a*c + b*c*
x)/(3*c**5), Ne(b, 0)), (a**5*x/(a*c)**(9/2), True))
```

GIAC/XCAS [A] time = 0.22483, size = 73, normalized size = 3.32

$$\frac{2\left(3\sqrt{bcx+ac}\,a-\frac{3\sqrt{bcx+ac}\,ac-(bcx+ac)^{\frac{3}{2}}}{c}\right)}{3\,bc^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*(3*sqrt(b*c*x + a*c)*a - (3*sqrt(b*c*x + a*c)*a*c - (b*c*x +
a*c)^(3/2))/c)/(b*c^5)
```

3.1451 $\int \frac{(a+bx)^5}{(ac+bcx)^{11/2}}\,dx$

Optimal. Leaf size=20

$$\frac{2\sqrt{ac+bcx}}{bc^6}$$

```
[Out] (2*Sqrt[a*c + b*c*x])/(b*c^6)
```

Rubi [A] time = 0.0132467, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$\frac{2\sqrt{ac+bcx}}{bc^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^5/(a*c + b*c*x)^(11/2),x]

[Out] (2*Sqrt[a*c + b*c*x])/(b*c^6)
```

Rubi in Sympy [A] time = 4.29449, size = 17, normalized size = 0.85

$$\frac{2\sqrt{ac+bcx}}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(11/2),x)

[Out] 2*sqrt(a*c + b*c*x)/(b*c**6)
```

Mathematica [A] time = 0.0120304, size = 24, normalized size = 1.2

$$\frac{2(a+bx)}{bc^5\sqrt{c(a+bx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^5/(a*c + b*c*x)^(11/2),x]
```

```
[Out] (2*(a + b*x))/(b*c^5*Sqrt[c*(a + b*x)])
```

Maple [A] time = 0.005, size = 23, normalized size = 1.2

$$2\,\frac{(bx+a)^6}{b\,(bcx+ac)^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^5/(b*c*x+a*c)^(11/2),x)
```

```
[Out] 2*(b*x+a)^6/b/(b*c*x+a*c)^(11/2)
```

Maxima [A] time = 1.33905, size = 24, normalized size = 1.2

$$\frac{2\,\sqrt{bcx+ac}}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(11/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(b*c*x + a*c)/(b*c^6)
```

Fricas [A] time = 0.205514, size = 24, normalized size = 1.2

$$\frac{2\,\sqrt{bcx+ac}}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(11/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(b*c*x + a*c)/(b*c^6)
```

Sympy [A] time = 22.1551, size = 29, normalized size = 1.45

$$\begin{cases} \frac{2\sqrt{ac+bcx}}{bc^6} & \text{for}\ b\neq 0 \\ \frac{a^5x}{(ac)^{\frac{11}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(11/2),x)
```

```
[Out] Piecewise((2*sqrt(a*c + b*c*x)/(b*c**6), Ne(b, 0)), (a**5*x/(a*c)
**(11/2), True))
```

GIAC/XCAS [A] time = 0.226985, size = 24, normalized size = 1.2

$$\frac{2\sqrt{bcx+ac}}{bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(11/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(b*c*x + a*c)/(b*c^6)
```

3.1452 $\int \frac{(a+bx)^5}{(ac+bcx)^{13/2}}\,dx$

Optimal. Leaf size=20

$$-\frac{2}{bc^6\sqrt{ac+bcx}}$$

```
[Out] -2/(b*c^6*Sqrt[a*c + b*c*x])
```

Rubi [A] time = 0.013231, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{2}{bc^6\sqrt{ac+bcx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^5/(a*c + b*c*x)^(13/2),x]

[Out] -2/(b*c^6*Sqrt[a*c + b*c*x])
```

Rubi in Sympy [A] time = 4.2691, size = 19, normalized size = 0.95

$$-\frac{2}{bc^6\sqrt{ac+bcx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**5/(b*c*x+a*c)**(13/2),x)

[Out] -2/(b*c**6*sqrt(a*c + b*c*x))
```

Mathematica [A] time = 0.0171712, size = 24, normalized size = 1.2

$$-\frac{2(a+bx)}{bc^5(c(a+bx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^5/(a*c + b*c*x)^(13/2),x]
```

```
[Out] (-2*(a + b*x))/(b*c^5*(c*(a + b*x))^(3/2))
```

Maple [A] time = 0.004, size = 23, normalized size = 1.2

$$-2\,\frac{(bx+a)^6}{b\,(bcx+ac)^{13/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^5/(b*c*x+a*c)^(13/2),x)
```

```
[Out] -2*(b*x+a)^6/b/(b*c*x+a*c)^(13/2)
```

Maxima [A] time = 1.33366, size = 24, normalized size = 1.2

$$-\frac{2}{\sqrt{bcx+ac}\,bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^(13/2),x, algorithm="maxima")
```

```
[Out] -2/(sqrt(b*c*x + a*c)*b*c^6)
```

Fricas [A] time = 0.205122, size = 24, normalized size = 1.2

$$-\frac{2}{\sqrt{bcx+ac}\,bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^5/(b*c*x + a*c)^(13/2),x, algorithm="fricas")
```

```
[Out] -2/(sqrt(b*c*x + a*c)*b*c^6)
```

Sympy [A] time = 59.9955, size = 48, normalized size = 2.4

$$\begin{cases} -\frac{2\sqrt{ac+bcx}}{abc^7+b^2c^7x} & \text{for } a \neq 0 \\ -\frac{2}{b^{\frac{3}{2}}c^{\frac{13}{2}}\sqrt{x}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**5/(b*c*x+a*c)**(13/2),x)
```

```
[Out] Piecewise((-2*sqrt(a*c + b*c*x)/(a*b*c**7 + b**2*c**7*x), Ne(a, 0
)), (-2/(b**(3/2)*c**(13/2)*sqrt(x)), True))
```

GIAC/XCAS [A] time = 0.218992, size = 24, normalized size = 1.2

$$-\frac{2}{\sqrt{bcx+ac}bc^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^5/(b*c*x + a*c)^(13/2),x, algorithm="giac")
```

```
[Out] -2/(sqrt(b*c*x + a*c)*b*c^6)
```

3.1453 $\int \frac{1}{(-2+x)\sqrt{2+x}}\,dx$

Optimal. Leaf size=14

$$-\tanh^{-1}\left(\frac{\sqrt{x+2}}{2}\right)$$

```
[Out] -ArcTanh[Sqrt[2 + x]/2]
```

Rubi [A] time = 0.0141759, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154

$$-\tanh^{-1}\left(\frac{\sqrt{x+2}}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[1/((-2 + x)*Sqrt[2 + x]),x]

[Out] -ArcTanh[Sqrt[2 + x]/2]
```

Rubi in Sympy [A] time = 2.40351, size = 10, normalized size = 0.71

$$-\operatorname{atanh}\left(\frac{\sqrt{x+2}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-2+x)/(2+x)**(1/2),x)

[Out] -atanh(sqrt(x + 2)/2)
```

Mathematica [B] time = 0.00629183, size = 31, normalized size = 2.21

$$\frac{1}{2}\log\left(2-\sqrt{x+2}\right)-\frac{1}{2}\log\left(\sqrt{x+2}+2\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((-2 + x)*Sqrt[2 + x]),x]
```

```
[Out] Log[2 - Sqrt[2 + x]]/2 - Log[2 + Sqrt[2 + x]]/2
```

Maple [B] time = 0.011, size = 22, normalized size = 1.6

$$-\frac{1}{2}\ln\left(2+\sqrt{2+x}\right)+\frac{1}{2}\ln\left(-2+\sqrt{2+x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-2+x)/(2+x)^(1/2),x)
```

```
[Out] -1/2*ln(2+(2+x)^(1/2))+1/2*ln(-2+(2+x)^(1/2))
```

Maxima [A] time = 1.32925, size = 28, normalized size = 2.

$$-\frac{1}{2}\log\left(\sqrt{x+2}+2\right)+\frac{1}{2}\log\left(\sqrt{x+2}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 2)*(x - 2)),x, algorithm="maxima")
```

```
[Out] -1/2*log(sqrt(x + 2) + 2) + 1/2*log(sqrt(x + 2) - 2)
```

Fricas [A] time = 0.207266, size = 28, normalized size = 2.

$$-\frac{1}{2}\log\left(\sqrt{x+2}+2\right)+\frac{1}{2}\log\left(\sqrt{x+2}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 2)*(x - 2)),x, algorithm="fricas")
```

```
[Out] -1/2*log(sqrt(x + 2) + 2) + 1/2*log(sqrt(x + 2) - 2)
```

Sympy [A] time = 0.74843, size = 27, normalized size = 1.93

$$\begin{cases} -\operatorname{acoth}\left(\frac{\sqrt{x+2}}{2}\right) & \text{for}\ \frac{|x+2|}{4} > 1 \\ -\operatorname{atanh}\left(\frac{\sqrt{x+2}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-2+x)/(2+x)**(1/2),x)
```

```
[Out] Piecewise((-acoth(sqrt(x + 2)/2), Abs(x + 2)/4 > 1), (-atanh(sqrt
(x + 2)/2), True))
```

GIAC/XCAS [A] time = 0.219974, size = 30, normalized size = 2.14

$$-\frac{1}{2}\ln\left(\sqrt{x+2}+2\right)+\frac{1}{2}\ln\left(\left|\sqrt{x+2}-2\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x + 2)*(x - 2)),x, algorithm="giac")
```

```
[Out] -1/2*ln(sqrt(x + 2) + 2) + 1/2*ln(abs(sqrt(x + 2) - 2))
```

3.1454 $\int \frac{1}{(2+3x)\sqrt{1+5x}}\,dx$

Optimal. Leaf size=25

$$\frac{2\tan^{-1}\left(\sqrt{\frac{3}{7}}\sqrt{5x+1}\right)}{\sqrt{21}}$$

```
[Out] (2*ArcTan[Sqrt[3/7]*Sqrt[1 + 5*x]])/Sqrt[21]
```

Rubi [A] time = 0.0247372, antiderivative size = 25, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2\tan^{-1}\left(\sqrt{\frac{3}{7}}\sqrt{5x+1}\right)}{\sqrt{21}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((2 + 3*x)*Sqrt[1 + 5*x]),x]

[Out] (2*ArcTan[Sqrt[3/7]*Sqrt[1 + 5*x]])/Sqrt[21]
```

Rubi in Sympy [A] time = 3.00296, size = 24, normalized size = 0.96

$$\frac{2\sqrt{21}\,\mathrm{atan}\left(\frac{\sqrt{21}\sqrt{5x+1}}{7}\right)}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(2+3*x)/(1+5*x)**(1/2),x)

[Out] 2*sqrt(21)*atan(sqrt(21)*sqrt(5*x + 1)/7)/21
```

Mathematica [A] time = 0.0201065, size = 25, normalized size = 1.

$$\frac{2\tan^{-1}\left(\sqrt{\frac{3}{7}}\sqrt{5x+1}\right)}{\sqrt{21}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((2 + 3*x)*Sqrt[1 + 5*x]),x]

[Out] (2*ArcTan[Sqrt[3/7]*Sqrt[1 + 5*x]])/Sqrt[21]
```

Maple [A] time = 0.009, size = 19, normalized size = 0.8

$$\frac{2\sqrt{21}}{21}\arctan\left(\frac{\sqrt{21}}{7}\sqrt{1+5x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(2+3*x)/(1+5*x)^(1/2),x)

[Out] 2/21*arctan(1/7*21^(1/2)*(1+5*x)^(1/2))*21^(1/2)
```

Maxima [A] time = 1.48735, size = 24, normalized size = 0.96

$$\frac{2}{21}\sqrt{21}\arctan\left(\frac{1}{7}\sqrt{21}\sqrt{5x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 1)*(3*x + 2)),x, algorithm="maxima")

[Out] 2/21*sqrt(21)*arctan(1/7*sqrt(21)*sqrt(5*x + 1))
```

Fricas [A] time = 0.221387, size = 24, normalized size = 0.96

$$\frac{2}{21}\sqrt{21}\arctan\left(\frac{1}{7}\sqrt{21}\sqrt{5x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 1)*(3*x + 2)),x, algorithm="fricas")

[Out] 2/21*sqrt(21)*arctan(1/7*sqrt(21)*sqrt(5*x + 1))
```

Sympy [A] time = 1.64547, size = 63, normalized size = 2.52

$$\begin{cases} \frac{2\sqrt{21}i\operatorname{acosh}\left(\frac{\sqrt{105}}{15\sqrt{x+\frac{2}{3}}}\right)}{21} & \text{for } \frac{7\left|\frac{1}{x+\frac{2}{3}}\right|}{15} > 1 \\ -\frac{2\sqrt{21}\operatorname{asin}\left(\frac{\sqrt{105}}{15\sqrt{x+\frac{2}{3}}}\right)}{21} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(2+3*x)/(1+5*x)**(1/2),x)
```

```
[Out] Piecewise((2*sqrt(21)*I*acosh(sqrt(105)/(15*sqrt(x + 2/3)))/21, 7
*Abs(1/(x + 2/3))/15 > 1), (-2*sqrt(21)*asin(sqrt(105)/(15*sqrt(x
 + 2/3)))/21, True))
```

GIAC/XCAS [A] time = 0.212859, size = 24, normalized size = 0.96

$$\frac{2}{21}\sqrt{21}\arctan\left(\frac{1}{7}\sqrt{21}\sqrt{5x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 1)*(3*x + 2)),x, algorithm="giac")
```

```
[Out] 2/21*sqrt(21)*arctan(1/7*sqrt(21)*sqrt(5*x + 1))
```

3.1455 $\int \frac{\sqrt[3]{1-x}}{1+x}\,dx$

Optimal. Leaf size=84

$$3\sqrt[3]{1-x}+\frac{3\log\left(\sqrt[3]{2}-\sqrt[3]{1-x}\right)}{2^{2/3}}-\frac{\log(x+1)}{2^{2/3}}-\sqrt[3]{2}\sqrt{3}\tan^{-1}\left(\frac{2^{2/3}\sqrt[3]{1-x}+1}{\sqrt{3}}\right)$$

```
[Out] 3*(1 - x)^(1/3) - 2^(1/3)*Sqrt[3]*ArcTan[(1 + 2^(2/3)*(1 - x)^(1/
3))/Sqrt[3]] + (3*Log[2^(1/3) - (1 - x)^(1/3)])/2^(2/3) - Log[1 +
 x]/2^(2/3)
```

Rubi [A] time = 0.0908086, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.333

$$3\sqrt[3]{1-x}+\frac{3\log\left(\sqrt[3]{2}-\sqrt[3]{1-x}\right)}{2^{2/3}}-\frac{\log(x+1)}{2^{2/3}}-\sqrt[3]{2}\sqrt{3}\tan^{-1}\left(\frac{2^{2/3}\sqrt[3]{1-x}+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(1/3)/(1 + x),x]
```

```
[Out] 3*(1 - x)^(1/3) - 2^(1/3)*Sqrt[3]*ArcTan[(1 + 2^(2/3)*(1 - x)^(1/
3))/Sqrt[3]] + (3*Log[2^(1/3) - (1 - x)^(1/3)])/2^(2/3) - Log[1 +
 x]/2^(2/3)
```

Rubi in Sympy [A] time = 5.43206, size = 75, normalized size = 0.89

$$3\sqrt[3]{-x+1}-\frac{\sqrt[3]{2}\log(x+1)}{2}+\frac{3\sqrt[3]{2}\log\left(-\sqrt[3]{-x+1}+\sqrt[3]{2}\right)}{2}-\sqrt[3]{2}\sqrt{3}\,\text{atan}\left(\sqrt{3}\left(\frac{2^{\frac{2}{3}}\sqrt[3]{-x+1}}{3}+\frac{1}{3}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/3)/(1+x),x)
```

```
[Out] 3*(-x + 1)**(1/3) - 2**(1/3)*log(x + 1)/2 + 3*2**(1/3)*log(-(-x +
 1)**(1/3) + 2**(1/3))/2 - 2**(1/3)*sqrt(3)*atan(sqrt(3)*(2**(2/3
)*(-x + 1)**(1/3)/3 + 1/3))
```

Mathematica [A] time = 0.0590676, size = 113, normalized size = 1.35

$$3\sqrt[3]{1-x}+\sqrt[3]{2}\log\left(2-2^{2/3}\sqrt[3]{1-x}\right)-\frac{\log\left(\sqrt[3]{2}(1-x)^{2/3}+2^{2/3}\sqrt[3]{1-x}+2\right)}{2^{2/3}}-\sqrt[3]{2}\sqrt{3}\tan^{-1}\left(\frac{2^{2/3}\sqrt[3]{1-x}+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(1/3)/(1 + x),x]
```

```
[Out] 3*(1 - x)^(1/3) - 2^(1/3)*Sqrt[3]*ArcTan[(1 + 2^(2/3)*(1 - x)^(1/
3))/Sqrt[3]] + 2^(1/3)*Log[2 - 2^(2/3)*(1 - x)^(1/3)] - Log[2 + 2
^(2/3)*(1 - x)^(1/3) + 2^(1/3)*(1 - x)^(2/3)]/2^(2/3)
```

Maple [A] time = 0.01, size = 84, normalized size = 1.

$$3\sqrt[3]{1-x}+\sqrt[3]{2}\ln\left(\sqrt[3]{1-x}-\sqrt[3]{2}\right)-\frac{\sqrt[3]{2}}{2}\ln\left((1-x)^{\frac{2}{3}}+\sqrt[3]{1-x}\sqrt[3]{2}+2^{\frac{2}{3}}\right)-\sqrt[3]{2}\arctan\left(\frac{\sqrt{3}}{3}\left(1+2^{\frac{2}{3}}\sqrt[3]{1-x}\right)\right)\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(1/3)/(1+x),x)
```

```
[Out] 3*(1-x)^(1/3)+2^(1/3)*ln((1-x)^(1/3)-2^(1/3))-1/2*2^(1/3)*ln((1-x
)^(2/3)+(1-x)^(1/3)*2^(1/3)+2^(2/3))-2^(1/3)*arctan(1/3*(1+2^(2/3
)*(1-x)^(1/3))*3^(1/2))*3^(1/2)
```

Maxima [A] time = 1.5109, size = 116, normalized size = 1.38

$$-\sqrt{3}2^{\frac{1}{3}}\arctan\left(\frac{1}{6}\sqrt{3}2^{\frac{2}{3}}\left(2^{\frac{1}{3}}+2(-x+1)^{\frac{1}{3}}\right)\right)-\frac{1}{2}\cdot 2^{\frac{1}{3}}\log\left(2^{\frac{2}{3}}+2^{\frac{1}{3}}(-x+1)^{\frac{1}{3}}+(-x+1)^{\frac{2}{3}}\right)+2^{\frac{1}{3}}\log\left(-2^{\frac{1}{3}}+(-x+1)^{\frac{1}{3}}\right)+3(-x+1)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(1/3)/(x + 1),x, algorithm="maxima")
```

```
[Out] -sqrt(3)*2^(1/3)*arctan(1/6*sqrt(3)*2^(2/3)*(2^(1/3) + 2*(-x + 1)
^(1/3))) - 1/2*2^(1/3)*log(2^(2/3) + 2^(1/3)*(-x + 1)^(1/3) + (-x
 + 1)^(2/3)) + 2^(1/3)*log(-2^(1/3) + (-x + 1)^(1/3)) + 3*(-x + 1
)^(1/3)
```

Fricas [A] time = 0.233858, size = 116, normalized size = 1.38

$$-\sqrt{3}2^{\frac{1}{3}}\arctan\left(\frac{1}{6}\sqrt{3}2^{\frac{2}{3}}\left(2^{\frac{1}{3}}+2(-x+1)^{\frac{1}{3}}\right)\right)-\frac{1}{2}\cdot 2^{\frac{1}{3}}\log\left(2^{\frac{2}{3}}+2^{\frac{1}{3}}(-x+1)^{\frac{1}{3}}+(-x+1)^{\frac{2}{3}}\right)+2^{\frac{1}{3}}\log\left(-2^{\frac{1}{3}}+(-x+1)^{\frac{1}{3}}\right)+3(-x+1)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(1/3)/(x + 1),x, algorithm="fricas")
```

```
[Out] -sqrt(3)*2^(1/3)*arctan(1/6*sqrt(3)*2^(2/3)*(2^(1/3) + 2*(-x + 1)
^(1/3))) - 1/2*2^(1/3)*log(2^(2/3) + 2^(1/3)*(-x + 1)^(1/3) + (-x
 + 1)^(2/3)) + 2^(1/3)*log(-2^(1/3) + (-x + 1)^(1/3)) + 3*(-x + 1
)^(1/3)
```

Sympy [A] time = 3.05226, size = 172, normalized size = 2.05

$$\frac{4\sqrt[3]{-1}\sqrt[3]{x-1}\Gamma\left(\frac{4}{3}\right)}{\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{-2}e^{\frac{5i\pi}{3}}\log\left(-\frac{2^{\frac{2}{3}}\sqrt[3]{x-1}e^{\frac{i\pi}{3}}}{2}+1\right)\Gamma\left(\frac{4}{3}\right)}{3\Gamma\left(\frac{7}{3}\right)}-\frac{4\sqrt[3]{-2}\log\left(-\frac{2^{\frac{2}{3}}\sqrt[3]{x-1}e^{i\pi}}{2}+1\right)\Gamma\left(\frac{4}{3}\right)}{3\Gamma\left(\frac{7}{3}\right)}+\frac{4\sqrt[3]{-2}e^{\frac{i\pi}{3}}\log\left(-\frac{2^{\frac{2}{3}}\sqrt[3]{x-1}e^{\frac{5i\pi}{3}}}{2}+1\right)\Gamma\left(\frac{4}{3}\right)}{3\Gamma\left(\frac{7}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/3)/(1+x),x)
```

```
[Out] 4*(-1)**(1/3)*(x - 1)**(1/3)*gamma(4/3)/gamma(7/3) + 4*(-2)**(1/3
)*exp(5*I*pi/3)*log(-2**(2/3)*(x - 1)**(1/3)*exp_polar(I*pi/3)/2
+ 1)*gamma(4/3)/(3*gamma(7/3)) - 4*(-2)**(1/3)*log(-2**(2/3)*(x -
 1)**(1/3)*exp_polar(I*pi)/2 + 1)*gamma(4/3)/(3*gamma(7/3)) + 4*(
-2)**(1/3)*exp(I*pi/3)*log(-2**(2/3)*(x - 1)**(1/3)*exp_polar(5*I
*pi/3)/2 + 1)*gamma(4/3)/(3*gamma(7/3))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^(1/3)/(x + 1),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1456 $\int \sqrt[3]{3-2x}(7+x)\,dx$

Optimal. Leaf size=27

$$\frac{3}{28}(3-2x)^{7/3}-\frac{51}{16}(3-2x)^{4/3}$$

```
[Out] (-51*(3 - 2*x)^(4/3))/16 + (3*(3 - 2*x)^(7/3))/28
```

Rubi [A] time = 0.017681, antiderivative size = 27, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{3}{28}(3-2x)^{7/3}-\frac{51}{16}(3-2x)^{4/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(3 - 2*x)^(1/3)*(7 + x),x]
```

```
[Out] (-51*(3 - 2*x)^(4/3))/16 + (3*(3 - 2*x)^(7/3))/28
```

Rubi in Sympy [A] time = 3.42796, size = 22, normalized size = 0.81

$$\frac{3\left(-2x+3\right)^{\frac{7}{3}}}{28}-\frac{51\left(-2x+3\right)^{\frac{4}{3}}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((3-2*x)**(1/3)*(7+x),x)
```

```
[Out] 3*(-2*x + 3)**(7/3)/28 - 51*(-2*x + 3)**(4/3)/16
```

Mathematica [A] time = 0.0106273, size = 18, normalized size = 0.67

$$-\frac{3}{112}(3-2x)^{4/3}(8x+107)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(3 - 2*x)^(1/3)*(7 + x),x]
```

```
[Out] (-3*(3 - 2*x)^(4/3)*(107 + 8*x))/112
```

Maple [A] time = 0.003, size = 15, normalized size = 0.6

$$-\frac{24\,x+321}{112}\,(3-2\,x)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3-2*x)^(1/3)*(7+x),x)
```

```
[Out] -3/112*(8*x+107)*(3-2*x)^(4/3)
```

Maxima [A] time = 1.3346, size = 26, normalized size = 0.96

$$\frac{3}{28}\,(-2\,x+3)^{\frac{7}{3}}-\frac{51}{16}\,(-2\,x+3)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x + 7)*(-2*x + 3)^(1/3),x, algorithm="maxima")
```

```
[Out] 3/28*(-2*x + 3)^(7/3) - 51/16*(-2*x + 3)^(4/3)
```

Fricas [A] time = 0.217755, size = 26, normalized size = 0.96

$$\frac{3}{112}\,\left(16\,x^{2}+190\,x-321\right)(-2\,x+3)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x + 7)*(-2*x + 3)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/112*(16*x^2 + 190*x - 321)*(-2*x + 3)^(1/3)
```

Sympy [A] time = 1.53664, size = 119, normalized size = 4.41

$$\begin{cases} \frac{3(x+7)^{2}\sqrt[3]{2x-3}e^{\frac{7i\pi}{3}}}{7}-\frac{51(x+7)\sqrt[3]{2x-3}e^{\frac{7i\pi}{3}}}{56}-\frac{2601\sqrt[3]{2x-3}e^{\frac{7i\pi}{3}}}{112} & \text{for}\ \frac{2|x+7|}{17}>1 \\ \frac{3\sqrt[3]{-2x+3}(x+7)^{2}}{7}-\frac{51\sqrt[3]{-2x+3}(x+7)}{56}-\frac{2601\sqrt[3]{-2x+3}}{112} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3-2*x)**(1/3)*(7+x),x)
```

```
[Out] Piecewise((3*(x + 7)**2*(2*x - 3)**(1/3)*exp(7*I*pi/3)/7 - 51*(x
+ 7)*(2*x - 3)**(1/3)*exp(7*I*pi/3)/56 - 2601*(2*x - 3)**(1/3)*ex
p(7*I*pi/3)/112, 2*Abs(x + 7)/17 > 1), (3*(-2*x + 3)**(1/3)*(x +
7)**2/7 - 51*(-2*x + 3)**(1/3)*(x + 7)/56 - 2601*(-2*x + 3)**(1/3
)/112, True))
```

GIAC/XCAS [A] time = 0.213377, size = 35, normalized size = 1.3

$$\frac{3}{28}\,(2\,x-3)^2(-2\,x+3)^{\frac{1}{3}}-\frac{51}{16}\,(-2\,x+3)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 7)*(-2*x + 3)^(1/3),x, algorithm="giac")
```

```
[Out] 3/28*(2*x - 3)^2*(-2*x + 3)^(1/3) - 51/16*(-2*x + 3)^(4/3)
```

3.1457 $\int \sqrt[3]{1-x}(1+x)^2\,dx$

Optimal. Leaf size=38

$$-\frac{3}{10}(1-x)^{10/3}+\frac{12}{7}(1-x)^{7/3}-3(1-x)^{4/3}$$

```
[Out] -3*(1 - x)^(4/3) + (12*(1 - x)^(7/3))/7 - (3*(1 - x)^(10/3))/10
```

Rubi [A] time = 0.0245302, antiderivative size = 38, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3}{10}(1-x)^{10/3}+\frac{12}{7}(1-x)^{7/3}-3(1-x)^{4/3}$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^(1/3)*(1 + x)^2,x]
```

```
[Out] -3*(1 - x)^(4/3) + (12*(1 - x)^(7/3))/7 - (3*(1 - x)^(10/3))/10
```

Rubi in Sympy [A] time = 3.84616, size = 27, normalized size = 0.71

$$-\frac{3\left(-x+1\right)^{\frac{10}{3}}}{10}+\frac{12\left(-x+1\right)^{\frac{7}{3}}}{7}-3\left(-x+1\right)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**(1/3)*(1+x)**2,x)
```

```
[Out] -3*(-x + 1)**(10/3)/10 + 12*(-x + 1)**(7/3)/7 - 3*(-x + 1)**(4/3)
```

Mathematica [A] time = 0.0144524, size = 23, normalized size = 0.61

$$-\frac{3}{70}(1-x)^{4/3}\left(7x^2+26x+37\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(1/3)*(1 + x)^2,x]
```

```
[Out] (-3*(1 - x)^(4/3)*(37 + 26*x + 7*x^2))/70
```

Maple [A] time = 0.004, size = 20, normalized size = 0.5

$$-\frac{21\,x^{2}+78\,x+111}{70}\left(1-x\right)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1-x)^(1/3)*(1+x)^2,x)
```

```
[Out] -3/70*(7*x^2+26*x+37)*(1-x)^(4/3)
```

Maxima [A] time = 1.34057, size = 38, normalized size = 1.

$$-\frac{3}{10}\left(-x+1\right)^{\frac{10}{3}}+\frac{12}{7}\left(-x+1\right)^{\frac{7}{3}}-3\left(-x+1\right)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x + 1)^2*(-x + 1)^(1/3),x, algorithm="maxima")
```

```
[Out] -3/10*(-x + 1)^(10/3) + 12/7*(-x + 1)^(7/3) - 3*(-x + 1)^(4/3)
```

Fricas [A] time = 0.217768, size = 32, normalized size = 0.84

$$\frac{3}{70}\left(7\,x^{3}+19\,x^{2}+11\,x-37\right)\left(-x+1\right)^{\frac{1}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((x + 1)^2*(-x + 1)^(1/3),x, algorithm="fricas")
```

```
[Out] 3/70*(7*x^3 + 19*x^2 + 11*x - 37)*(-x + 1)^(1/3)
```

Sympy [A] time = 2.10523, size = 146, normalized size = 3.84

$$\begin{cases} -\frac{3\sqrt[3]{x-1}(x+1)^{3}e^{\frac{10i\pi}{3}}}{10}+\frac{3\sqrt[3]{x-1}(x+1)^{2}e^{\frac{10i\pi}{3}}}{35}+\frac{9\sqrt[3]{x-1}(x+1)e^{\frac{10i\pi}{3}}}{35}+\frac{54\sqrt[3]{x-1}e^{\frac{10i\pi}{3}}}{35} & \text{for}\ \frac{|x+1|}{2}>1 \\ \frac{3\sqrt[3]{-x+1}(x+1)^{3}}{10}-\frac{3\sqrt[3]{-x+1}(x+1)^{2}}{35}-\frac{9\sqrt[3]{-x+1}(x+1)}{35}-\frac{54\sqrt[3]{-x+1}}{35} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(1/3)*(1+x)**2,x)
```

```
[Out] Piecewise((-3*(x - 1)**(1/3)*(x + 1)**3*exp(10*I*pi/3)/10 + 3*(x
- 1)**(1/3)*(x + 1)**2*exp(10*I*pi/3)/35 + 9*(x - 1)**(1/3)*(x +
1)*exp(10*I*pi/3)/35 + 54*(x - 1)**(1/3)*exp(10*I*pi/3)/35, Abs(x
 + 1)/2 > 1), (3*(-x + 1)**(1/3)*(x + 1)**3/10 - 3*(-x + 1)**(1/3
)*(x + 1)**2/35 - 9*(-x + 1)**(1/3)*(x + 1)/35 - 54*(-x + 1)**(1/
3)/35, True))
```

GIAC/XCAS [A] time = 0.219706, size = 51, normalized size = 1.34

$$\frac{3}{10}(x-1)^3(-x+1)^{\frac{1}{3}} + \frac{12}{7}(x-1)^2(-x+1)^{\frac{1}{3}} - 3(-x+1)^{\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^2*(-x + 1)^(1/3),x, algorithm="giac")
```

```
[Out] 3/10*(x - 1)^3*(-x + 1)^(1/3) + 12/7*(x - 1)^2*(-x + 1)^(1/3) - 3
*(-x + 1)^(4/3)
```

3.1458 $\int \frac{1}{(a+bx)\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=139

$$-\frac{\log(a+bx)}{2b^{2/3}\sqrt[3]{bc-ad}}+\frac{3\log\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{2b^{2/3}\sqrt[3]{bc-ad}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}}+1}{\sqrt{3}}\right)}{b^{2/3}\sqrt[3]{bc-ad}}$$

```
[Out] (Sqrt[3]*ArcTan[(1 + (2*b^(1/3)*(c + d*x)^(1/3))/(b*c - a*d)^(1/3
))/Sqrt[3]])/(b^(2/3)*(b*c - a*d)^(1/3)) - Log[a + b*x]/(2*b^(2/3
)*(b*c - a*d)^(1/3)) + (3*Log[(b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3)])/(2*b^(2/3)*(b*c - a*d)^(1/3))
```

Rubi [A] time = 0.226065, antiderivative size = 139, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235

$$-\frac{\log(a+bx)}{2b^{2/3}\sqrt[3]{bc-ad}}+\frac{3\log\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{2b^{2/3}\sqrt[3]{bc-ad}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}}+1}{\sqrt{3}}\right)}{b^{2/3}\sqrt[3]{bc-ad}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^(1/3)),x]
```

```
[Out] (Sqrt[3]*ArcTan[(1 + (2*b^(1/3)*(c + d*x)^(1/3))/(b*c - a*d)^(1/3
))/Sqrt[3]])/(b^(2/3)*(b*c - a*d)^(1/3)) - Log[a + b*x]/(2*b^(2/3
)*(b*c - a*d)^(1/3)) + (3*Log[(b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3)])/(2*b^(2/3)*(b*c - a*d)^(1/3))
```

Rubi in Sympy [A] time = 12.0138, size = 124, normalized size = 0.89

$$\frac{\log(a+bx)}{2b^{\frac{2}{3}}\sqrt[3]{ad-bc}}-\frac{3\log\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{2b^{\frac{2}{3}}\sqrt[3]{ad-bc}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\sqrt{3}\left(-\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{ad-bc}}+\frac{1}{3}\right)\right)}{b^{\frac{2}{3}}\sqrt[3]{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(1/3),x)
```

```
[Out] log(a + b*x)/(2*b**(2/3)*(a*d - b*c)**(1/3)) - 3*log(b**(1/3)*(c
+ d*x)**(1/3) + (a*d - b*c)**(1/3))/(2*b**(2/3)*(a*d - b*c)**(1/3
)) - sqrt(3)*atan(sqrt(3)*(-2*b**(1/3)*(c + d*x)**(1/3)/(3*(a*d -
 b*c)**(1/3)) + 1/3))/(b**(2/3)*(a*d - b*c)**(1/3))
```

Mathematica [C] time = 0.0430076, size = 47, normalized size = 0.34

$$-\frac{3(c+dx)^{2/3}\,{}_2F_1\left(\frac{2}{3},1;\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{2bc-2ad}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3)*Hypergeometric2F1[2/3, 1, 5/3, (b*(c + d*x))/
(b*c - a*d)])/(2*b*c - 2*a*d)
```

Maple [A] time = 0.012, size = 161, normalized size = 1.2

$$-\frac{1}{b}\ln\left(\sqrt[3]{dx+c}+\sqrt[3]{\frac{ad-bc}{b}}\right)\frac{1}{\sqrt[3]{\frac{ad-bc}{b}}}+\frac{1}{2\,b}\ln\left((dx+c)^{\frac{2}{3}}-\sqrt[3]{dx+c}\sqrt[3]{\frac{ad-bc}{b}}+\left(\frac{ad-bc}{b}\right)^{\frac{2}{3}}\right)\frac{1}{\sqrt[3]{\frac{ad-bc}{b}}}+\frac{\sqrt{3}}{b}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{dx+c}\frac{1}{\sqrt[3]{\frac{ad-bc}{b}}}-1\right)\right)\frac{1}{\sqrt[3]{\frac{ad-bc}{b}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(1/3),x)
```

```
[Out] -1/b/((a*d-b*c)/b)^(1/3)*ln((d*x+c)^(1/3)+((a*d-b*c)/b)^(1/3))+1/
2/b/((a*d-b*c)/b)^(1/3)*ln((d*x+c)^(2/3)-(d*x+c)^(1/3)*((a*d-b*c)
/b)^(1/3)+((a*d-b*c)/b)^(2/3))+3^(1/2)/b/((a*d-b*c)/b)^(1/3)*arct
an(1/3*3^(1/2)*(2/((a*d-b*c)/b)^(1/3)*(d*x+c)^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221533, size = 234, normalized size = 1.68

$$-\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(b^2c-abd+2\left(b^3c-ab^2d\right)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\right)}{3\left(b^2c-abd\right)}\right)+\log\left(b^2c-abd+\left(b^3c-ab^2d\right)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}b+\left(b^3c-ab^2d\right)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\right)-}{2\left(b^3c-ab^2d\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] -1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(b^2*c - a*b*d + 2*(b^3*c - a
*b^2*d)^(2/3)*(d*x + c)^(1/3))/(b^2*c - a*b*d)) + log(b^2*c - a*b
*d + (b^3*c - a*b^2*d)^(1/3)*(d*x + c)^(2/3)*b + (b^3*c - a*b^2*d
)^(2/3)*(d*x + c)^(1/3)) - 2*log(-b^2*c + a*b*d + (b^3*c - a*b^2*
d)^(2/3)*(d*x + c)^(1/3)))/(b^3*c - a*b^2*d)^(1/3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [A] time = 0.249277, size = 265, normalized size = 1.91

$$\frac{3\left(b^{3}c-ab^{2}d\right)^{\frac{2}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(dx+c)^{\frac{1}{3}}+\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}\right)}{3\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}}\right)}{\sqrt{3}b^{3}c-\sqrt{3}ab^{2}d}-\frac{\ln\left((dx+c)^{\frac{2}{3}}+(dx+c)^{\frac{1}{3}}\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}+\left(\frac{bc-ad}{b}\right)^{\frac{2}{3}}\right)}{2\,(b^{3}c-ab^{2}d)^{\frac{1}{3}}}+\frac{\left(\frac{bc-ad}{b}\right)^{\frac{2}{3}}\ln\left(\left|(dx+c)^{\frac{1}{3}}-\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}\right|\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] 3*(b^3*c - a*b^2*d)^(2/3)*arctan(1/3*sqrt(3)*(2*(d*x + c)^(1/3) +
 ((b*c - a*d)/b)^(1/3))/((b*c - a*d)/b)^(1/3))/(sqrt(3)*b^3*c - s
qrt(3)*a*b^2*d) - 1/2*ln((d*x + c)^(2/3) + (d*x + c)^(1/3)*((b*c
- a*d)/b)^(1/3) + ((b*c - a*d)/b)^(2/3))/(b^3*c - a*b^2*d)^(1/3)
+ ((b*c - a*d)/b)^(2/3)*ln(abs((d*x + c)^(1/3) - ((b*c - a*d)/b)^
(1/3)))/(b*c - a*d)
```

3.1459 $\int \frac{1}{(a+bx)(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=140

$$-\frac{\log(a+bx)}{2\sqrt[3]{b}(bc-ad)^{2/3}}+\frac{3\log\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{2\sqrt[3]{b}(bc-ad)^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}}+1}{\sqrt{3}}\right)}{\sqrt[3]{b}(bc-ad)^{2/3}}$$

```
[Out] -((Sqrt[3]*ArcTan[(1 + (2*b^(1/3)*(c + d*x)^(1/3))/(b*c - a*d)^(1
/3))/Sqrt[3]])/(b^(1/3)*(b*c - a*d)^(2/3))) - Log[a + b*x]/(2*b^(
1/3)*(b*c - a*d)^(2/3)) + (3*Log[(b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3)])/(2*b^(1/3)*(b*c - a*d)^(2/3))
```

Rubi [A] time = 0.201887, antiderivative size = 140, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.235$

$$-\frac{\log(a+bx)}{2\sqrt[3]{b}(bc-ad)^{2/3}}+\frac{3\log\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{2\sqrt[3]{b}(bc-ad)^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}}+1}{\sqrt{3}}\right)}{\sqrt[3]{b}(bc-ad)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)*(c + d*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[(1 + (2*b^(1/3)*(c + d*x)^(1/3))/(b*c - a*d)^(1
/3))/Sqrt[3]])/(b^(1/3)*(b*c - a*d)^(2/3))) - Log[a + b*x]/(2*b^(
1/3)*(b*c - a*d)^(2/3)) + (3*Log[(b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3)])/(2*b^(1/3)*(b*c - a*d)^(2/3))
```

Rubi in Sympy [A] time = 12.9267, size = 124, normalized size = 0.89

$$-\frac{\log(a+bx)}{2\sqrt[3]{b}(ad-bc)^{\frac{2}{3}}}+\frac{3\log\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{2\sqrt[3]{b}(ad-bc)^{\frac{2}{3}}}-\frac{\sqrt{3}\,\operatorname{atan}\left(\sqrt{3}\left(-\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{ad-bc}}+\frac{1}{3}\right)\right)}{\sqrt[3]{b}(ad-bc)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)/(d*x+c)**(2/3),x)
```

```
[Out] -log(a + b*x)/(2*b**(1/3)*(a*d - b*c)**(2/3)) + 3*log(b**(1/3)*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))/(2*b**(1/3)*(a*d - b*c)**(2/
3)) - sqrt(3)*atan(sqrt(3)*(-2*b**(1/3)*(c + d*x)**(1/3)/(3*(a*d
- b*c)**(1/3)) + 1/3))/(b**(1/3)*(a*d - b*c)**(2/3))
```

Mathematica [C] time = 0.0317865, size = 46, normalized size = 0.33

$$-\frac{3\sqrt[3]{c+dx}\,{}_2F_1\left(\frac{1}{3},1;\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{bc-ad}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3)*Hypergeometric2F1[1/3, 1, 4/3, (b*(c + d*x))/
(b*c - a*d)])/(b*c - a*d)
```

Maple [A] time = 0.007, size = 160, normalized size = 1.1

$$\frac{1}{b}\ln\left(\sqrt[3]{dx+c}+\sqrt[3]{\frac{ad-bc}{b}}\right)\left(\frac{ad-bc}{b}\right)^{-\frac{2}{3}} -\frac{1}{2b}\ln\left((dx+c)^{\frac{2}{3}}-\sqrt[3]{dx+c}\sqrt[3]{\frac{ad-bc}{b}}+\left(\frac{ad-bc}{b}\right)^{\frac{2}{3}}\right)\left(\frac{ad-bc}{b}\right)^{-\frac{2}{3}} +\frac{\sqrt{3}}{b}\arctan\left(\frac{\sqrt{3}}{3}\left(2\sqrt[3]{dx+c}\frac{1}{\sqrt[3]{\frac{ad-bc}{b}}}-1\right)\right)\left(\frac{ad-bc}{b}\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)/(d*x+c)^(2/3),x)
```

```
[Out] 1/b/((a*d-b*c)/b)^(2/3)*ln((d*x+c)^(1/3)+((a*d-b*c)/b)^(1/3))-1/2
/b/((a*d-b*c)/b)^(2/3)*ln((d*x+c)^(2/3)-(d*x+c)^(1/3)*((a*d-b*c)/
b)^(1/3)+((a*d-b*c)/b)^(2/3))+1/b/((a*d-b*c)/b)^(2/3)*3^(1/2)*arc
tan(1/3*3^(1/2)*(2/((a*d-b*c)/b)^(1/3)*(d*x+c)^(1/3)-1))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217361, size = 321, normalized size = 2.29

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(bc-ad+2\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}\right)}{3\,(bc-ad)}\right)-\log\left(b^2c^2-2\,abcd+a^2d^2+\left(b^3c^2-2\,ab^2cd+a^2bd^2\right)^{\frac{1}{3}}(bc-ad)(a}{2\,(b^3c^2-2\,ab^2cd+a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(b*c - a*d + 2*(b^3*c^2 - 2*a*
b^2*c*d + a^2*b*d^2)^(1/3)*(d*x + c)^(1/3))/(b*c - a*d)) - log(b^
2*c^2 - 2*a*b*c*d + a^2*d^2 + (b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)
^(1/3)*(b*c - a*d)*(d*x + c)^(1/3) + (b^3*c^2 - 2*a*b^2*c*d + a^2
*b*d^2)^(2/3)*(d*x + c)^(2/3)) + 2*log(-b*c + a*d + (b^3*c^2 - 2*
a*b^2*c*d + a^2*b*d^2)^(1/3)*(d*x + c)^(1/3)))/(b^3*c^2 - 2*a*b^2
*c*d + a^2*b*d^2)^(1/3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)\,(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [A] time = 0.250682, size = 279, normalized size = 1.99

$$-\frac{3\left(b^{3}c-ab^{2}d\right)^{\frac{1}{3}}\arctan\left(\frac{\sqrt{3}\left(2\,(dx+c)^{\frac{1}{3}}+\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}\right)}{3\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}}\right)}{\sqrt{3}b^{2}c-\sqrt{3}abd}-\frac{\left(b^{3}c-ab^{2}d\right)^{\frac{1}{3}}\ln\left((dx+c)^{\frac{2}{3}}+(dx+c)^{\frac{1}{3}}\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}+\left(\frac{bc-ad}{b}\right)^{\frac{2}{3}}\right)}{2\,(b^{2}c-abd)}+\frac{\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}\ln\left(\left|(dx+c)^{\frac{1}{3}}-\left(\frac{bc-ad}{b}\right)^{\frac{1}{3}}\right|\right)}{bc-ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] -3*(b^3*c - a*b^2*d)^(1/3)*arctan(1/3*sqrt(3)*(2*(d*x + c)^(1/3)
+ ((b*c - a*d)/b)^(1/3))/((b*c - a*d)/b)^(1/3))/(sqrt(3)*b^2*c -
sqrt(3)*a*b*d) - 1/2*(b^3*c - a*b^2*d)^(1/3)*ln((d*x + c)^(2/3) +
 (d*x + c)^(1/3)*((b*c - a*d)/b)^(1/3) + ((b*c - a*d)/b)^(2/3))/(
b^2*c - a*b*d) + ((b*c - a*d)/b)^(1/3)*ln(abs((d*x + c)^(1/3) - (
(b*c - a*d)/b)^(1/3)))/(b*c - a*d)
```

3.1460 $\int (a+bx)^{7/2}\sqrt{c+dx}\,dx$

Optimal. Leaf size=230

$$\frac{7(bc-ad)^5\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{3/2}d^{9/2}}-\frac{7\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}{128bd^4}+\frac{7(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}{192bd^3}-\frac{7(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}{240bd^2}+\frac{(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)}{40bd}+\frac{(a+bx)^{9/2}\sqrt{c+dx}}{5b}$$

```
[Out] (-7*(b*c - a*d)^4*Sqrt[a + b*x]*Sqrt[c + d*x])/(128*b*d^4) + (7*(
b*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])/(192*b*d^3) - (7*(b*c
 - a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/(240*b*d^2) + ((b*c - a*
d)*(a + b*x)^(7/2)*Sqrt[c + d*x])/(40*b*d) + ((a + b*x)^(9/2)*Sqr
t[c + d*x])/(5*b) + (7*(b*c - a*d)^5*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(128*b^(3/2)*d^(9/2))
```

Rubi [A] time = 0.359112, antiderivative size = 230, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{7(bc-ad)^5\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{3/2}d^{9/2}}-\frac{7\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}{128bd^4}+\frac{7(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}{192bd^3}-\frac{7(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}{240bd^2}+\frac{(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)}{40bd}+\frac{(a+bx)^{9/2}\sqrt{c+dx}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/2)*Sqrt[c + d*x],x]
```

```
[Out] (-7*(b*c - a*d)^4*Sqrt[a + b*x]*Sqrt[c + d*x])/(128*b*d^4) + (7*(
b*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])/(192*b*d^3) - (7*(b*c
 - a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/(240*b*d^2) + ((b*c - a*
d)*(a + b*x)^(7/2)*Sqrt[c + d*x])/(40*b*d) + ((a + b*x)^(9/2)*Sqr
t[c + d*x])/(5*b) + (7*(b*c - a*d)^5*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(128*b^(3/2)*d^(9/2))
```

Rubi in Sympy [A] time = 47.0537, size = 201, normalized size = 0.87

$$\frac{(a+bx)^{\frac{7}{2}}(c+dx)^{\frac{3}{2}}}{5d}+\frac{7(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{3}{2}}(ad-bc)}{40d^2}+\frac{7(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{2}}(ad-bc)^2}{48d^3}+\frac{7(a+bx)^{\frac{3}{2}}\sqrt{c+dx}(ad-bc)^3}{64bd^3}-\frac{7\sqrt{a+bx}\sqrt{c+dx}(ad-bc)^4}{128bd^4}-\frac{7(ad-bc)^5\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{128b^{\frac{3}{2}}d^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/2)*(d*x+c)**(1/2),x)
```

```
[Out] (a + b*x)**(7/2)*(c + d*x)**(3/2)/(5*d) + 7*(a + b*x)**(5/2)*(c +
 d*x)**(3/2)*(a*d - b*c)/(40*d**2) + 7*(a + b*x)**(3/2)*(c + d*x)
**(3/2)*(a*d - b*c)**2/(48*d**3) + 7*(a + b*x)**(3/2)*sqrt(c + d*
x)*(a*d - b*c)**3/(64*b*d**3) - 7*sqrt(a + b*x)*sqrt(c + d*x)*(a*
d - b*c)**4/(128*b*d**4) - 7*(a*d - b*c)**5*atanh(sqrt(b)*sqrt(c
+ d*x)/(sqrt(d)*sqrt(a + b*x)))/(128*b**(3/2)*d**(9/2))
```

Mathematica [A] time = 0.233506, size = 234, normalized size = 1.02

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(105a^4d^4+10a^3bd^3(79c+121dx)+2a^2b^2d^2\left(-448c^2+289cdx+1052d^2x^2\right)+2ab^3d\left(245c^3-161c^2dx+1\right.\right.}{1920bd^4}$$
$$+\frac{7(bc-ad)^5\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{256b^{3/2}d^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/2)*Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(105*a^4*d^4 + 10*a^3*b*d^3*(79*c +
121*d*x) + 2*a^2*b^2*d^2*(-448*c^2 + 289*c*d*x + 1052*d^2*x^2) +
2*a*b^3*d*(245*c^3 - 161*c^2*d*x + 128*c*d^2*x^2 + 744*d^3*x^3) +
 b^4*(-105*c^4 + 70*c^3*d*x - 56*c^2*d^2*x^2 + 48*c*d^3*x^3 + 384
*d^4*x^4)))/(1920*b*d^4) + (7*(b*c - a*d)^5*Log[b*c + a*d + 2*b*d
*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(256*b^(3/2)
*d^(9/2))
```

Maple [B] time = 0.016, size = 858, normalized size = 3.7

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/2)*(d*x+c)^(1/2),x)
```

```
[Out] 1/5/d*(b*x+a)^(7/2)*(d*x+c)^(3/2)+7/40/d*(b*x+a)^(5/2)*(d*x+c)^(3
/2)*a+7/48/d*(b*x+a)^(3/2)*(d*x+c)^(3/2)*a^2+7/64/d*(b*x+a)^(1/2)
*(d*x+c)^(3/2)*a^3-7/24/d^2*(b*x+a)^(3/2)*(d*x+c)^(3/2)*a*b*c-21/
64/d^2*(b*x+a)^(1/2)*(d*x+c)^(3/2)*a^2*b*c+21/64/d^3*(b*x+a)^(1/2
)*(d*x+c)^(3/2)*a*b^2*c^2+21/64/d^2*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a
^2*c^2*b-7/32/d^3*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c^3*b^2-7/256*d/b
*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+
1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)
^(1/2)*a^5+35/128/d^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+
```

```
a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c
)*x+a*c)^(1/2))/(b*d)^(1/2)*a^2*c^3*b^2-35/256/d^3*((b*x+a)*(d*x+
c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/
(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a*c^4*b^
3+35/256*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((
1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2
))/(b*d)^(1/2)*a^4*c-7/32/d*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^3*c+7/1
28/d^4*(d*x+c)^(1/2)*(b*x+a)^(1/2)*c^4*b^3+7/48/d^3*(b*x+a)^(3/2)
*(d*x+c)^(3/2)*b^2*c^2-7/64/d^4*(b*x+a)^(1/2)*(d*x+c)^(3/2)*b^3*c
^3+7/128/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^4-7/40/d^2*(b*x+a)^(5/2)
*(d*x+c)^(3/2)*b*c-35/128/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)
/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a
*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c^2*b+7/256/d^4*((b*x+a)*(d
*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*
x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^5*b
^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)*sqrt(d*x + c),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.253992, size = 1, normalized size = 0.

$$\left[\frac{4\left(384\,b^4d^4x^4 - 105\,b^4c^4 + 490\,ab^3c^3d - 896\,a^2b^2c^2d^2 + 790\,a^3bcd^3 + 105\,a^4d^4 + 48\left(b^4cd^3 + 31\,ab^3d^4\right)x^3 - 8\left(7\,b^4c^2d^2 - 3\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)*sqrt(d*x + c),x, algorithm="fricas")

[Out] [1/7680*(4*(384*b^4*d^4*x^4 - 105*b^4*c^4 + 490*a*b^3*c^3*d - 896
*a^2*b^2*c^2*d^2 + 790*a^3*b*c*d^3 + 105*a^4*d^4 + 48*(b^4*c*d^3
+ 31*a*b^3*d^4)*x^3 - 8*(7*b^4*c^2*d^2 - 32*a*b^3*c*d^3 - 263*a^2
*b^2*d^4)*x^2 + 2*(35*b^4*c^3*d - 161*a*b^3*c^2*d^2 + 289*a^2*b^2
*c*d^3 + 605*a^3*b*d^4)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x + c)
- 105*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*
c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*log(-4*(2*b^2*d^2*x + b^2*c*d
+ a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2
 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(sq
```

```
rt(b*d)*b*d^4), 1/3840*(2*(384*b^4*d^4*x^4 - 105*b^4*c^4 + 490*a*
b^3*c^3*d - 896*a^2*b^2*c^2*d^2 + 790*a^3*b*c*d^3 + 105*a^4*d^4 +
 48*(b^4*c*d^3 + 31*a*b^3*d^4)*x^3 - 8*(7*b^4*c^2*d^2 - 32*a*b^3*
c*d^3 - 263*a^2*b^2*d^4)*x^2 + 2*(35*b^4*c^3*d - 161*a*b^3*c^2*d^
2 + 289*a^2*b^2*c*d^3 + 605*a^3*b*d^4)*x)*sqrt(-b*d)*sqrt(b*x + a
)*sqrt(d*x + c) + 105*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d
^2 - 10*a^3*b^2*c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*arctan(1/2*(2*
b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))
/(sqrt(-b*d)*b*d^4)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/2)*(d*x+c)**(1/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.308568, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)*sqrt(d*x + c),x, algorithm="giac")

[Out] Done
```

3.1461 $\int (a+bx)^{5/2}\sqrt{c+dx}\,dx$

Optimal. Leaf size=192

$$-\frac{5(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{3/2}d^{7/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64bd^3}-\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{96bd^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}{24bd}+\frac{(a+bx)^{7/2}\sqrt{c+dx}}{4b}$$

```
[Out] (5*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*b*d^3) - (5*(b*
c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(96*b*d^2) + ((b*c - a*
d)*(a + b*x)^(5/2)*Sqrt[c + d*x])/(24*b*d) + ((a + b*x)^(7/2)*Sqr
t[c + d*x])/(4*b) - (5*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*b^(3/2)*d^(7/2))
```

Rubi [A] time = 0.248374, antiderivative size = 192, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{5(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{3/2}d^{7/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64bd^3}-\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{96bd^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}{24bd}+\frac{(a+bx)^{7/2}\sqrt{c+dx}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)*Sqrt[c + d*x],x]
```

```
[Out] (5*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*b*d^3) - (5*(b*
c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(96*b*d^2) + ((b*c - a*
d)*(a + b*x)^(5/2)*Sqrt[c + d*x])/(24*b*d) + ((a + b*x)^(7/2)*Sqr
t[c + d*x])/(4*b) - (5*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*b^(3/2)*d^(7/2))
```

Rubi in Sympy [A] time = 34.0301, size = 167, normalized size = 0.87

$$\frac{(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{3}{2}}}{4d}+\frac{5(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{2}}(ad-bc)}{24d^2}+\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}(ad-bc)^2}{32d^3}+\frac{5\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^3}{64bd^3}-\frac{5(ad-bc)^4\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{\frac{3}{2}}d^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)*(d*x+c)**(1/2),x)
```

```
[Out] (a + b*x)**(5/2)*(c + d*x)**(3/2)/(4*d) + 5*(a + b*x)**(3/2)*(c +
 d*x)**(3/2)*(a*d - b*c)/(24*d**2) + 5*sqrt(a + b*x)*(c + d*x)**(
3/2)*(a*d - b*c)**2/(32*d**3) + 5*sqrt(a + b*x)*sqrt(c + d*x)*(a*
d - b*c)**3/(64*b*d**3) - 5*(a*d - b*c)**4*atanh(sqrt(d)*sqrt(a +
 b*x)/(sqrt(b)*sqrt(c + d*x)))/(64*b**(3/2)*d**(7/2))
```

Mathematica [A] time = 0.15737, size = 180, normalized size = 0.94

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(15a^3d^3+a^2bd^2(73c+118dx)+ab^2d\left(-55c^2+36cdx+136d^2x^2\right)+b^3\left(15c^3-10c^2dx+8cd^2x^2+48d^3x^3\right)\right)}{192bd^3}-\frac{5(bc-ad)^4\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{128b^{3/2}d^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)*Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(15*a^3*d^3 + a^2*b*d^2*(73*c + 118*
d*x) + a*b^2*d*(-55*c^2 + 36*c*d*x + 136*d^2*x^2) + b^3*(15*c^3 -
 10*c^2*d*x + 8*c*d^2*x^2 + 48*d^3*x^3)))/(192*b*d^3) - (5*(b*c -
 a*d)^4*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]
*Sqrt[c + d*x]])/(128*b^(3/2)*d^(7/2))
```

Maple [B] time = 0.011, size = 645, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)*(d*x+c)^(1/2),x)
```

```
[Out] 1/4/d*(b*x+a)^(5/2)*(d*x+c)^(3/2)+5/24/d*(b*x+a)^(3/2)*(d*x+c)^(3
/2)*a-5/24/d^2*(b*x+a)^(3/2)*(d*x+c)^(3/2)*b*c+5/32/d*(b*x+a)^(1/
2)*(d*x+c)^(3/2)*a^2-5/16/d^2*(b*x+a)^(1/2)*(d*x+c)^(3/2)*a*b*c+5
/32/d^3*(b*x+a)^(1/2)*(d*x+c)^(3/2)*b^2*c^2+5/64/b*(d*x+c)^(1/2)*
(b*x+a)^(1/2)*a^3-15/64/d*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^2*c+15/64
/d^2*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c^2*b-5/64/d^3*(d*x+c)^(1/2)*(
b*x+a)^(1/2)*c^3*b^2-5/128*d/b*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1
/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b
+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^4+5/32*((b*x+a)*(d*x+c))^(
1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)
^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c-15/64/d
*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+
```

```
1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)
^(1/2)*a^2*c^2*b+5/32/d^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(
b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d
+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a*c^3*b^2-5/128/d^3*((b*x+a)*(d*x
+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)
/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^4*b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*sqrt(d*x + c),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.24091, size = 1, normalized size = 0.01

$$\left[\frac{4\left(48\,b^3d^3x^3+15\,b^3c^3-55\,ab^2c^2d+73\,a^2bcd^2+15\,a^3d^3+8\left(b^3cd^2+17\,ab^2d^3\right)x^2-2\left(5\,b^3c^2d-18\,ab^2cd^2-59\,a^2bd^3\right)x\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*sqrt(d*x + c),x, algorithm="fricas")

[Out] [1/768*(4*(48*b^3*d^3*x^3 + 15*b^3*c^3 - 55*a*b^2*c^2*d + 73*a^2*
b*c*d^2 + 15*a^3*d^3 + 8*(b^3*c*d^2 + 17*a*b^2*d^3)*x^2 - 2*(5*b^
3*c^2*d - 18*a*b^2*c*d^2 - 59*a^2*b*d^3)*x)*sqrt(b*d)*sqrt(b*x +
a)*sqrt(d*x + c) + 15*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^
2 - 4*a^3*b*c*d^3 + a^4*d^4)*log(-4*(2*b^2*d^2*x + b^2*c*d + a*b*
d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a
*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(sqrt(b*d
)*b*d^3), 1/384*(2*(48*b^3*d^3*x^3 + 15*b^3*c^3 - 55*a*b^2*c^2*d
+ 73*a^2*b*c*d^2 + 15*a^3*d^3 + 8*(b^3*c*d^2 + 17*a*b^2*d^3)*x^2
- 2*(5*b^3*c^2*d - 18*a*b^2*c*d^2 - 59*a^2*b*d^3)*x)*sqrt(-b*d)*s
qrt(b*x + a)*sqrt(d*x + c) - 15*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*
b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*arctan(1/2*(2*b*d*x + b*c
+ a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)
*b*d^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)*(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.283961, size = 842, normalized size = 4.39

$$\frac{5\left(\sqrt{b^2c+(bx+a)bd-abd}\left(2\,(bx+a)\left(4\,(bx+a)\left(\frac{6\,(bx+a)}{b^2}+\frac{b^7cd^5-17\,ab^6d^6}{b^8d^6}\right)-\frac{5\,b^8c^2d^4+6\,ab^7cd^5-59\,a^2b^6d^6}{b^8d^6}\right)+\frac{3\,(5\,b^9c^3d^3+ab^8c^2d^4-}{b^8}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 1/960*(5*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*(2*(b*x + a)*(4*(b*
x + a)*(6*(b*x + a)/b^2 + (b^7*c*d^5 - 17*a*b^6*d^6)/(b^8*d^6)) -
 (5*b^8*c^2*d^4 + 6*a*b^7*c*d^5 - 59*a^2*b^6*d^6)/(b^8*d^6)) + 3*
(5*b^9*c^3*d^3 + a*b^8*c^2*d^4 - a^2*b^7*c*d^5 - 5*a^3*b^6*d^6)/(
b^8*d^6))*sqrt(b*x + a) + 3*(5*b^4*c^4 - 4*a*b^3*c^3*d - 2*a^2*b^
2*c^2*d^2 - 4*a^3*b*c*d^3 + 5*a^4*d^4)*ln(abs(-sqrt(b*d)*sqrt(b*x
 + a) + sqrt(b^2*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b*d^3))*
abs(b) + 10*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2
*(b*x + a)/(b^4*d^2) + (b*c*d - a*d^2)/(b^4*d^4)) + (b^2*c^2 - 2*
a*b*c*d + a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c +
 (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3))*a^2*abs(b)/b^2 + (
sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x + a)*(4
*(b*x + a)/(b^6*d^2) + (b*c*d^3 - 7*a*d^4)/(b^6*d^6)) - 3*(b^2*c^
2*d^2 - a^2*d^4)/(b^6*d^6)) - 3*(b^3*c^3 - a*b^2*c^2*d - a^2*b*c*
d^2 + a^3*d^3)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*
x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^5*d^4))*a*abs(b)/b^2)/b
```

3.1462 $\int (a+bx)^{3/2}\sqrt{c+dx}\,dx$

Optimal. Leaf size=154

$$\frac{(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8b^{3/2}d^{5/2}}-\frac{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8bd^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{12bd}+\frac{(a+bx)^{5/2}\sqrt{c+dx}}{3b}$$

```
[Out] -((b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*b*d^2) + ((b*c -
a*d)*(a + b*x)^(3/2)*Sqrt[c + d*x])/(12*b*d) + ((a + b*x)^(5/2)*S
qrt[c + d*x])/(3*b) + ((b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*b^(3/2)*d^(5/2))
```

Rubi [A] time = 0.175329, antiderivative size = 154, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8b^{3/2}d^{5/2}}-\frac{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8bd^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{12bd}+\frac{(a+bx)^{5/2}\sqrt{c+dx}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*Sqrt[c + d*x],x]
```

```
[Out] -((b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*b*d^2) + ((b*c -
a*d)*(a + b*x)^(3/2)*Sqrt[c + d*x])/(12*b*d) + ((a + b*x)^(5/2)*S
qrt[c + d*x])/(3*b) + ((b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*b^(3/2)*d^(5/2))
```

Rubi in Sympy [A] time = 23.9353, size = 129, normalized size = 0.84

$$\frac{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{2}}}{3d}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}(ad-bc)}{4d^2}+\frac{\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^2}{8bd^2}-\frac{(ad-bc)^3\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{8b^{\frac{3}{2}}d^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(1/2),x)
```

```
[Out] (a + b*x)**(3/2)*(c + d*x)**(3/2)/(3*d) + sqrt(a + b*x)*(c + d*x)
**(3/2)*(a*d - b*c)/(4*d**2) + sqrt(a + b*x)*sqrt(c + d*x)*(a*d -
```

```
 b*c)**2/(8*b*d**2) - (a*d - b*c)**3*atanh(sqrt(b)*sqrt(c + d*x)/
(sqrt(d)*sqrt(a + b*x)))/(8*b**(3/2)*d**(5/2))
```

Mathematica [A] time = 0.127927, size = 141, normalized size = 0.92

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(3a^2d^2+2abd(4c+7dx)+b^2\left(-3c^2+2cdx+8d^2x^2\right)\right)}{24bd^2}+\frac{(bc-ad)^3\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{16b^{3/2}d^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(3*a^2*d^2 + 2*a*b*d*(4*c + 7*d*x) +
 b^2*(-3*c^2 + 2*c*d*x + 8*d^2*x^2)))/(24*b*d^2) + ((b*c - a*d)^3
*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c
 + d*x]])/(16*b^(3/2)*d^(5/2))
```

Maple [B] time = 0.01, size = 460, normalized size = 3.

$$\frac{1}{3d}(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{3}{2}}+\frac{a}{4d}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}-\frac{bc}{4d^2}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}$$
$$+\frac{a^2}{8b}\sqrt{bx+a}\sqrt{dx+c}-\frac{ac}{4d}\sqrt{bx+a}\sqrt{dx+c}+\frac{c^2b}{8d^2}\sqrt{bx+a}\sqrt{dx+c}$$
$$-\frac{da^3}{16b}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{3a^2c}{16}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{3ac^2b}{16d}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{c^3b^2}{16d^2}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(1/2),x)
```

```
[Out] 1/3/d*(b*x+a)^(3/2)*(d*x+c)^(3/2)+1/4/d*(b*x+a)^(1/2)*(d*x+c)^(3/
2)*a-1/4/d^2*(b*x+a)^(1/2)*(d*x+c)^(3/2)*b*c+1/8/b*(d*x+c)^(1/2)*
(b*x+a)^(1/2)*a^2-1/4/d*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c+1/8/d^2*(
d*x+c)^(1/2)*(b*x+a)^(1/2)*c^2*b-1/16*d/b*((b*x+a)*(d*x+c))^(1/2)
/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/
2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3+3/16*((b*x+a)
```

```
*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b
*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^
2*c-3/16/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln
((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1
/2))/(b*d)^(1/2)*a*c^2*b+1/16/d^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)
^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^
2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^3*b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.240635, size = 1, normalized size = 0.01

$$\left[\frac{4\left(8\,b^2d^2x^2-3\,b^2c^2+8\,abcd+3\,a^2d^2+2\left(b^2cd+7\,abd^2\right)x\right)\sqrt{bd}\sqrt{bx+a}\sqrt{dx+c}-3\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)}{96\,\sqrt{bd}bd^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] [1/96*(4*(8*b^2*d^2*x^2 - 3*b^2*c^2 + 8*a*b*c*d + 3*a^2*d^2 + 2*(
b^2*c*d + 7*a*b*d^2)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x + c) - 3
*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*log(-4*(2*b^
2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2
*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*
x)*sqrt(b*d)))/(sqrt(b*d)*b*d^2), 1/48*(2*(8*b^2*d^2*x^2 - 3*b^2*
c^2 + 8*a*b*c*d + 3*a^2*d^2 + 2*(b^2*c*d + 7*a*b*d^2)*x)*sqrt(-b*
d)*sqrt(b*x + a)*sqrt(d*x + c) + 3*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a
^2*b*c*d^2 - a^3*d^3)*arctan(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)
/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*b*d^2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.262611, size = 456, normalized size = 2.96

$$\frac{\frac{20\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(\frac{2(bx+a)}{b^4d^2}+\frac{bcd-ad^2}{b^4d^4}\right)+\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}b^3d^3}\right)a|b|}{b^2}+\frac{\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(2\,(bx\right.\right.}{}}{1920\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 1/1920*(20*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*
(b*x + a)/(b^4*d^2) + (b*c*d - a*d^2)/(b^4*d^4)) + (b^2*c^2 - 2*a
*b*c*d + a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c +
(b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3))*a*abs(b)/b^2 + (sqr
t(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x + a)*(4*(b
*x + a)/(b^6*d^2) + (b*c*d^3 - 7*a*d^4)/(b^6*d^6)) - 3*(b^2*c^2*d
^2 - a^2*d^4)/(b^6*d^6)) - 3*(b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2
 + a^3*d^3)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x +
 a)*b*d - a*b*d)))/(sqrt(b*d)*b^5*d^4))*abs(b)/b^2)/b
```

3.1463 $\int \sqrt{a+bx}\sqrt{c+dx}\,dx$

Optimal. Leaf size=116

$$-\frac{(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{3/2}d^{3/2}}+\frac{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4bd}+\frac{(a+bx)^{3/2}\sqrt{c+dx}}{2b}$$

```
[Out] ((b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*b*d) + ((a + b*x)^(3
/2)*Sqrt[c + d*x])/(2*b) - ((b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a
 + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*b^(3/2)*d^(3/2))
```

Rubi [A] time = 0.122224, antiderivative size = 116, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$-\frac{(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{3/2}d^{3/2}}+\frac{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4bd}+\frac{(a+bx)^{3/2}\sqrt{c+dx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*Sqrt[c + d*x],x]
```

```
[Out] ((b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*b*d) + ((a + b*x)^(3
/2)*Sqrt[c + d*x])/(2*b) - ((b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a
 + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*b^(3/2)*d^(3/2))
```

Rubi in Sympy [A] time = 16.1098, size = 97, normalized size = 0.84

$$\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}}{2d}+\frac{\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)}{4bd}-\frac{(ad-bc)^2\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{\frac{3}{2}}d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(1/2),x)
```

```
[Out] sqrt(a + b*x)*(c + d*x)**(3/2)/(2*d) + sqrt(a + b*x)*sqrt(c + d*x
)*(a*d - b*c)/(4*b*d) - (a*d - b*c)**2*atanh(sqrt(d)*sqrt(a + b*x
)/(sqrt(b)*sqrt(c + d*x)))/(4*b**(3/2)*d**(3/2))
```

Mathematica [A] time = 0.066159, size = 110, normalized size = 0.95

$$\sqrt{a+bx}\sqrt{c+dx}\left(\frac{ad+bc}{4bd}+\frac{x}{2}\right)-\frac{(bc-ad)^2\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{8b^{3/2}d^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*Sqrt[c + d*x],x]
```

```
[Out] ((b*c + a*d)/(4*b*d) + x/2)*Sqrt[a + b*x]*Sqrt[c + d*x] - ((b*c -
 a*d)^2*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]
*Sqrt[c + d*x]])/(8*b^(3/2)*d^(3/2))
```

Maple [B] time = 0.008, size = 305, normalized size = 2.6

$$\frac{1}{2d}\sqrt{bx+a}(dx+c)^{\frac{3}{2}}+\frac{a}{4b}\sqrt{bx+a}\sqrt{dx+c}-\frac{c}{4d}\sqrt{bx+a}\sqrt{dx+c}$$
$$-\frac{da^2}{8b}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{ac}{4}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{c^2b}{8d}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(1/2),x)
```

```
[Out] 1/2/d*(b*x+a)^(1/2)*(d*x+c)^(3/2)+1/4/b*(d*x+c)^(1/2)*(b*x+a)^(1/
2)*a-1/4/d*(d*x+c)^(1/2)*(b*x+a)^(1/2)*c-1/8*d/b*((b*x+a)*(d*x+c)
)^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b
*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^2+1/4*((
b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2
*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1
/2)*a*c-1/8/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)
*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)
^(1/2))/(b*d)^(1/2)*c^2*b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.241005, size = 1, normalized size = 0.01

$$\left[\frac{4\,(2\,bdx + bc + ad)\sqrt{bd}\sqrt{bx + a}\sqrt{dx + c} + \left(b^{2}c^{2} - 2\,abcd + a^{2}d^{2}\right)\log\left(-4\,\left(2\,b^{2}d^{2}x + b^{2}cd + abd^{2}\right)\sqrt{bx + a}\sqrt{dx + c} + (8\,b^{2}\right.}{16\,\sqrt{bd}bd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] [1/16*(4*(2*b*d*x + b*c + a*d)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x +
 c) + (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(-4*(2*b^2*d^2*x + b^2*c
*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*
c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/
(sqrt(b*d)*b*d), 1/8*(2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)*sqrt(b*x
 + a)*sqrt(d*x + c) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*arctan(1/2*
(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d
)))/(sqrt(-b*d)*b*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a + bx}\sqrt{c + dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*x)*sqrt(c + d*x), x)
```

GIAC/XCAS [A] time = 0.235621, size = 189, normalized size = 1.63

$$\frac{\left(\sqrt{b^{2}c + (bx + a)bd - abd}\sqrt{bx + a}\left(\frac{2\,(bx+a)}{b^{4}d^{2}} + \frac{bcd-ad^{2}}{b^{4}d^{4}}\right) + \frac{\left(b^{2}c^{2}-2\,abcd+a^{2}d^{2}\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^{2}c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}b^{3}d^{3}}\right)|b|}{96\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 1/96*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x +
 a)/(b^4*d^2) + (b*c*d - a*d^2)/(b^4*d^4)) + (b^2*c^2 - 2*a*b*c*d
 + a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x +
 a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3))*abs(b)/b^3
```

3.1464 $\int \frac{\sqrt{c+dx}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=72

$$\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{3/2}\sqrt{d}}+\frac{\sqrt{a+bx}\sqrt{c+dx}}{b}$$

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x])/b + ((b*c - a*d)*ArcTanh[(Sqrt[d]*S
qrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(b^(3/2)*Sqrt[d])
```

Rubi [A] time = 0.0776794, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{3/2}\sqrt{d}}+\frac{\sqrt{a+bx}\sqrt{c+dx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x])/b + ((b*c - a*d)*ArcTanh[(Sqrt[d]*S
qrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(b^(3/2)*Sqrt[d])
```

Rubi in Sympy [A] time = 10.0075, size = 63, normalized size = 0.88

$$\frac{\sqrt{a+bx}\sqrt{c+dx}}{b}-\frac{(ad-bc)\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{b^{\frac{3}{2}}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(1/2),x)
```

```
[Out] sqrt(a + b*x)*sqrt(c + d*x)/b - (a*d - b*c)*atanh(sqrt(b)*sqrt(c
+ d*x)/(sqrt(d)*sqrt(a + b*x)))/(b**(3/2)*sqrt(d))
```

Mathematica [A] time = 0.0627237, size = 88, normalized size = 1.22

$$\frac{(bc-ad)\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{2b^{3/2}\sqrt{d}}+\frac{\sqrt{a+bx}\sqrt{c+dx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x])/b + ((b*c - a*d)*Log[b*c + a*d + 2*
b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(2*b^(3/2
)*Sqrt[d])
```

Maple [A] time = 0.009, size = 107, normalized size = 1.5

$$\frac{1}{b}\sqrt{bx+a}\sqrt{dx+c}$$
$$-\frac{ad-bc}{2b}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(1/2),x)
```

```
[Out] (b*x+a)^(1/2)*(d*x+c)^(1/2)/b-1/2*(a*d-b*c)/b*((b*x+a)*(d*x+c))^(
1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)
^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.262102, size = 1, normalized size = 0.01

$$\left[-\frac{(bc-ad)\log\left(-4\left(2\,b^2d^2x+b^2cd+abd^2\right)\sqrt{bx+a}\sqrt{dx+c}+\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+8\left(b^2cd+abd^2\right)x\right)\sqrt{bd}\right)}{4\sqrt{bd}b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [-1/4*((b*c - a*d)*log(-4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(
b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a
^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)) - 4*sqrt(b*d)*sqrt(b
*x + a)*sqrt(d*x + c))/(sqrt(b*d)*b), 1/2*((b*c - a*d)*arctan(1/2
*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*
d)) + 2*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c))/(sqrt(-b*d)*b)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{c + dx}}{\sqrt{a + bx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(1/2),x)
```

```
[Out] Integral(sqrt(c + d*x)/sqrt(a + b*x), x)
```

GIAC/XCAS [A] time = 0.232225, size = 126, normalized size = 1.75

$$-\frac{\left(\frac{(b^2c-abd)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}}-\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\right)|b|}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] -((b^2*c - a*b*d)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c +
(b*x + a)*b*d - a*b*d)))/sqrt(b*d) - sqrt(b^2*c + (b*x + a)*b*d -
 a*b*d)*sqrt(b*x + a))*abs(b)/b^3
```

3.1465 $\int \frac{\sqrt{c+dx}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=66

$$\frac{2\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{3/2}}-\frac{2\sqrt{c+dx}}{b\sqrt{a+bx}}$$

```
[Out] (-2*Sqrt[c + d*x])/(b*Sqrt[a + b*x]) + (2*Sqrt[d]*ArcTanh[(Sqrt[d
]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/b^(3/2)
```

Rubi [A] time = 0.0680277, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{2\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{3/2}}-\frac{2\sqrt{c+dx}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[c + d*x])/(b*Sqrt[a + b*x]) + (2*Sqrt[d]*ArcTanh[(Sqrt[d
]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/b^(3/2)
```

Rubi in Sympy [A] time = 10.2039, size = 60, normalized size = 0.91

$$-\frac{2\sqrt{c+dx}}{b\sqrt{a+bx}}+\frac{2\sqrt{d}\,\mathrm{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(3/2),x)
```

```
[Out] -2*sqrt(c + d*x)/(b*sqrt(a + b*x)) + 2*sqrt(d)*atanh(sqrt(d)*sqrt
(a + b*x)/(sqrt(b)*sqrt(c + d*x)))/b**(3/2)
```

Mathematica [A] time = 0.0545014, size = 78, normalized size = 1.18

$$\frac{\sqrt{d}\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{b^{3/2}}-\frac{2\sqrt{c+dx}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[c + d*x])/(b*Sqrt[a + b*x]) + (Sqrt[d]*Log[b*c + a*d + 2
*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/b^(3/2)
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int 1\sqrt{dx+c}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(3/2),x)
```

```
[Out] int((d*x+c)^(1/2)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.292375, size = 1, normalized size = 0.02

$$\left[\frac{(bx+a)\sqrt{\frac{d}{b}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+4\left(2\,b^2dx+b^2c+abd\right)\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{d}{b}}+8\left(b^2cd+abd^2\right)x\right)-4\sqrt{b}}{2\left(b^2x+ab\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((b*x + a)*sqrt(d/b)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d
 + a^2*d^2 + 4*(2*b^2*d*x + b^2*c + a*b*d)*sqrt(b*x + a)*sqrt(d*x
```

```
 + c)*sqrt(d/b) + 8*(b^2*c*d + a*b*d^2)*x) - 4*sqrt(b*x + a)*sqrt
(d*x + c))/(b^2*x + a*b), ((b*x + a)*sqrt(-d/b)*arctan(1/2*(2*b*d
*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*sqrt(-d/b))) - 2*s
qrt(b*x + a)*sqrt(d*x + c))/(b^2*x + a*b)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{c + dx}}{(a + bx)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(3/2),x)
```

```
[Out] Integral(sqrt(c + d*x)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.547128, size = 4, normalized size = 0.06

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.1466 $\int \frac{\sqrt{c+dx}}{(a+bx)^{5/2}} dx$

Optimal. Leaf size=32

$$-\frac{2(c+dx)^{3/2}}{3(a+bx)^{3/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/2))/(3*(b*c - a*d)*(a + b*x)^(3/2))
```

Rubi [A] time = 0.021716, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{2(c+dx)^{3/2}}{3(a+bx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^(5/2),x]

[Out] (-2*(c + d*x)^(3/2))/(3*(b*c - a*d)*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 3.57105, size = 26, normalized size = 0.81

$$\frac{2\left(c+dx\right)^{\frac{3}{2}}}{3\left(a+bx\right)^{\frac{3}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(5/2),x)

[Out] 2*(c + d*x)**(3/2)/(3*(a + b*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0379225, size = 32, normalized size = 1.

$$\frac{2(c+dx)^{3/2}}{3(a+bx)^{3/2}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(3/2))/(3*(-(b*c) + a*d)*(a + b*x)^(3/2))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.8

$$\frac{2}{3\,ad-3\,bc}\,(dx+c)^{\frac{3}{2}}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(5/2),x)
```

```
[Out] 2/3/(b*x+a)^(3/2)*(d*x+c)^(3/2)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.263208, size = 88, normalized size = 2.75

$$-\frac{2\,\sqrt{bx+a}(dx+c)^{\frac{3}{2}}}{3\,(a^2bc-a^3d+(b^3c-ab^2d)x^2+2\,(ab^2c-a^2bd)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(b*x + a)*(d*x + c)^(3/2)/(a^2*b*c - a^3*d + (b^3*c - a*
b^2*d)*x^2 + 2*(a*b^2*c - a^2*b*d)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{c+dx}}{(a+bx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(5/2),x)
```

```
[Out] Integral(sqrt(c + d*x)/(a + b*x)**(5/2), x)
```

GIAC/XCAS [A] time = 0.242175, size = 205, normalized size = 6.41

$$-\frac{4\left(\sqrt{bd}b^4c^2d-2\sqrt{bd}ab^3cd^2+\sqrt{bd}a^2b^2d^3+3\sqrt{bd}\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^2c+(bx+a)bd-abd}\right)^4d\right)|b|}{3\left(b^2c-abd-\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^2c+(bx+a)bd-abd}\right)^2\right)^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] -4/3*(sqrt(b*d)*b^4*c^2*d - 2*sqrt(b*d)*a*b^3*c*d^2 + sqrt(b*d)*a
^2*b^2*d^3 + 3*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c +
(b*x + a)*b*d - a*b*d))^4*d)*abs(b)/((b^2*c - a*b*d - (sqrt(b*d)*
sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^3*b^2)
```

3.1467 $\int \frac{\sqrt{c+dx}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=66

$$\frac{4d(c+dx)^{3/2}}{15(a+bx)^{3/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{5(a+bx)^{5/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/2))/(5*(b*c - a*d)*(a + b*x)^(5/2)) + (4*d*(c +
d*x)^(3/2))/(15*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Rubi [A] time = 0.0472608, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{4d(c+dx)^{3/2}}{15(a+bx)^{3/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{5(a+bx)^{5/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(3/2))/(5*(b*c - a*d)*(a + b*x)^(5/2)) + (4*d*(c +
d*x)^(3/2))/(15*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 7.43648, size = 56, normalized size = 0.85

$$\frac{4d\left(c+dx\right)^{\frac{3}{2}}}{15\left(a+bx\right)^{\frac{3}{2}}\left(ad-bc\right)^{2}}+\frac{2\left(c+dx\right)^{\frac{3}{2}}}{5\left(a+bx\right)^{\frac{5}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(7/2),x)
```

```
[Out] 4*d*(c + d*x)**(3/2)/(15*(a + b*x)**(3/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(3/2)/(5*(a + b*x)**(5/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0652132, size = 46, normalized size = 0.7

$$\frac{2(c+dx)^{3/2}(5ad-3bc+2bdx)}{15(a+bx)^{5/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^(7/2),x]
```

```
[Out] (2*(c + d*x)^(3/2)*(-3*b*c + 5*a*d + 2*b*d*x))/(15*(b*c - a*d)^2*
(a + b*x)^(5/2))
```

Maple [A] time = 0.008, size = 54, normalized size = 0.8

$$\frac{4\,bdx+10\,ad-6\,bc}{15\,a^2d^2-30\,abcd+15\,b^2c^2}\,(dx+c)^{\frac{3}{2}}\,(bx+a)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(7/2),x)
```

```
[Out] 2/15*(d*x+c)^(3/2)*(2*b*d*x+5*a*d-3*b*c)/(b*x+a)^(5/2)/(a^2*d^2-2
*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.343513, size = 236, normalized size = 3.58

$$\frac{2\left(2\,bd^2x^2-3\,bc^2+5\,acd-\left(bcd-5\,ad^2\right)x\right)\sqrt{bx+a}\sqrt{dx+c}}{15\left(a^3b^2c^2-2\,a^4bcd+a^5d^2+(b^5c^2-2\,ab^4cd+a^2b^3d^2)x^3+3\,(ab^4c^2-2\,a^2b^3cd+a^3b^2d^2)x^2+3\,(a^2b^3c^2-2\,a^3b^2cd+a^4bd^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(2*b*d^2*x^2 - 3*b*c^2 + 5*a*c*d - (b*c*d - 5*a*d^2)*x)*sqrt
(b*x + a)*sqrt(d*x + c)/(a^3*b^2*c^2 - 2*a^4*b*c*d + a^5*d^2 + (b
^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*x^3 + 3*(a*b^4*c^2 - 2*a^2*b^
3*c*d + a^3*b^2*d^2)*x^2 + 3*(a^2*b^3*c^2 - 2*a^3*b^2*c*d + a^4*b
*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.255728, size = 603, normalized size = 9.14

$$\frac{8\left(\sqrt{bd}b^7c^3d^2 - 3\sqrt{bd}ab^6c^2d^3 + 3\sqrt{bd}a^2b^5cd^4 - \sqrt{bd}a^3b^4d^5 - 5\sqrt{bd}\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)bd - abd}\right)^2 b^5c^2d^2 + 1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] 8/15*(sqrt(b*d)*b^7*c^3*d^2 - 3*sqrt(b*d)*a*b^6*c^2*d^3 + 3*sqrt(
b*d)*a^2*b^5*c*d^4 - sqrt(b*d)*a^3*b^4*d^5 - 5*sqrt(b*d)*(sqrt(b*
d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*b^5*c^2
*d^2 + 10*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x
+ a)*b*d - a*b*d))^2*a*b^4*c*d^3 - 5*sqrt(b*d)*(sqrt(b*d)*sqrt(b*
x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a^2*b^3*d^4 - 5*s
qrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d -
a*b*d))^4*b^3*c*d^2 + 5*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt
(b^2*c + (b*x + a)*b*d - a*b*d))^4*a*b^2*d^3 - 15*sqrt(b*d)*(sqrt
(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^6*b*d^
2)*abs(b)/((b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c
 + (b*x + a)*b*d - a*b*d))^2)^5*b^2)
```

3.1468 $\int \frac{\sqrt{c+dx}}{(a+bx)^{9/2}}\,dx$

Optimal. Leaf size=101

$$-\frac{16d^2(c+dx)^{3/2}}{105(a+bx)^{3/2}(bc-ad)^3}+\frac{8d(c+dx)^{3/2}}{35(a+bx)^{5/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{7(a+bx)^{7/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/2))/(7*(b*c - a*d)*(a + b*x)^(7/2)) + (8*d*(c +
d*x)^(3/2))/(35*(b*c - a*d)^2*(a + b*x)^(5/2)) - (16*d^2*(c + d*x
)^(3/2))/(105*(b*c - a*d)^3*(a + b*x)^(3/2))
```

Rubi [A] time = 0.0746952, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{16d^2(c+dx)^{3/2}}{105(a+bx)^{3/2}(bc-ad)^3}+\frac{8d(c+dx)^{3/2}}{35(a+bx)^{5/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{7(a+bx)^{7/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^(9/2),x]
```

```
[Out] (-2*(c + d*x)^(3/2))/(7*(b*c - a*d)*(a + b*x)^(7/2)) + (8*d*(c +
d*x)^(3/2))/(35*(b*c - a*d)^2*(a + b*x)^(5/2)) - (16*d^2*(c + d*x
)^(3/2))/(105*(b*c - a*d)^3*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 13.2109, size = 88, normalized size = 0.87

$$\frac{16d^2\left(c+dx\right)^{\frac{3}{2}}}{105\left(a+bx\right)^{\frac{3}{2}}\left(ad-bc\right)^3}+\frac{8d\left(c+dx\right)^{\frac{3}{2}}}{35\left(a+bx\right)^{\frac{5}{2}}\left(ad-bc\right)^2}+\frac{2\left(c+dx\right)^{\frac{3}{2}}}{7\left(a+bx\right)^{\frac{7}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(9/2),x)
```

```
[Out] 16*d**2*(c + d*x)**(3/2)/(105*(a + b*x)**(3/2)*(a*d - b*c)**3) +
8*d*(c + d*x)**(3/2)/(35*(a + b*x)**(5/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(3/2)/(7*(a + b*x)**(7/2)*(a*d - b*c))
```

Mathematica [A] time = 0.106046, size = 77, normalized size = 0.76

$$-\frac{2(c+dx)^{3/2}\left(35a^2d^2+14abd(2dx-3c)+b^2\left(15c^2-12cdx+8d^2x^2\right)\right)}{105(a+bx)^{7/2}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^(9/2),x]
```

```
[Out] (-2*(c + d*x)^(3/2)*(35*a^2*d^2 + 14*a*b*d*(-3*c + 2*d*x) + b^2*(
15*c^2 - 12*c*d*x + 8*d^2*x^2)))/(105*(b*c - a*d)^3*(a + b*x)^(7/
2))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{16\,b^2d^2x^2+56\,abd^2x-24\,b^2cdx+70\,a^2d^2-84\,abcd+30\,b^2c^2}{105\,a^3d^3-315\,a^2bcd^2+315\,ab^2c^2d-105\,b^3c^3}\,(dx+c)^{\frac{3}{2}}\,(bx+a)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(9/2),x)
```

```
[Out] 2/105*(d*x+c)^(3/2)*(8*b^2*d^2*x^2+28*a*b*d^2*x-12*b^2*c*d*x+35*a
^2*d^2-42*a*b*c*d+15*b^2*c^2)/(b*x+a)^(7/2)/(a^3*d^3-3*a^2*b*c*d^
2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.696562, size = 455, normalized size = 4.5

$$-\frac{2\left(8\,b^2d^3x^3+15\,b^2c^3-42\,abc^2d+35\,a^2cd^2-4\left(b^2cd^2-7\,abd^3\right)x^2}{105\left(a^4b^3c^3-3\,a^5b^2c^2d+3\,a^6bcd^2-a^7d^3+(b^7c^3-3\,ab^6c^2d+3\,a^2b^5cd^2-a^3b^4d^3)x^4+4\left(ab^6c^3-3\,a^2b^5c^2d+3\,a^3b^4cd^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(8*b^2*d^3*x^3 + 15*b^2*c^3 - 42*a*b*c^2*d + 35*a^2*c*d^2
- 4*(b^2*c*d^2 - 7*a*b*d^3)*x^2 + (3*b^2*c^2*d - 14*a*b*c*d^2 + 3
```

```
5*a^2*d^3)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^4*b^3*c^3 - 3*a^5*b^
2*c^2*d + 3*a^6*b*c*d^2 - a^7*d^3 + (b^7*c^3 - 3*a*b^6*c^2*d + 3*
a^2*b^5*c*d^2 - a^3*b^4*d^3)*x^4 + 4*(a*b^6*c^3 - 3*a^2*b^5*c^2*d
 + 3*a^3*b^4*c*d^2 - a^4*b^3*d^3)*x^3 + 6*(a^2*b^5*c^3 - 3*a^3*b^
4*c^2*d + 3*a^4*b^3*c*d^2 - a^5*b^2*d^3)*x^2 + 4*(a^3*b^4*c^3 - 3
*a^4*b^3*c^2*d + 3*a^5*b^2*c*d^2 - a^6*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.28452, size = 930, normalized size = 9.21

$$-\frac{32\left(\sqrt{bd}b^{10}c^4d^3 - 4\sqrt{bd}ab^9c^3d^4 + 6\sqrt{bd}a^2b^8c^2d^5 - 4\sqrt{bd}a^3b^7cd^6 + \sqrt{bd}a^4b^6d^7 - 7\sqrt{bd}\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(9/2),x, algorithm="giac")
```

```
[Out] -32/105*(sqrt(b*d)*b^10*c^4*d^3 - 4*sqrt(b*d)*a*b^9*c^3*d^4 + 6*s
qrt(b*d)*a^2*b^8*c^2*d^5 - 4*sqrt(b*d)*a^3*b^7*c*d^6 + sqrt(b*d)*
a^4*b^6*d^7 - 7*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c +
 (b*x + a)*b*d - a*b*d))^2*b^8*c^3*d^3 + 21*sqrt(b*d)*(sqrt(b*d)*
sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a*b^7*c^2*
d^4 - 21*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x +
 a)*b*d - a*b*d))^2*a^2*b^6*c*d^5 + 7*sqrt(b*d)*(sqrt(b*d)*sqrt(b
*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a^3*b^5*d^6 + 21
*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d
- a*b*d))^4*b^6*c^2*d^3 - 42*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) -
 sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a*b^5*c*d^4 + 21*sqrt(b*d
)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))
^4*a^2*b^4*d^5 + 35*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2
*c + (b*x + a)*b*d - a*b*d))^6*b^4*c*d^3 - 35*sqrt(b*d)*(sqrt(b*d
)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^6*a*b^3*d^
4 + 70*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a
)*b*d - a*b*d))^8*b^2*d^3)*abs(b)/((b^2*c - a*b*d - (sqrt(b*d)*sq
rt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^7*b^2)
```

3.1469 $\int \frac{\sqrt{c+dx}}{(a+bx)^{11/2}}\,dx$

Optimal. Leaf size=136

$$\frac{32d^3(c+dx)^{3/2}}{315(a+bx)^{3/2}(bc-ad)^4}-\frac{16d^2(c+dx)^{3/2}}{105(a+bx)^{5/2}(bc-ad)^3}+\frac{4d(c+dx)^{3/2}}{21(a+bx)^{7/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{9(a+bx)^{9/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/2))/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (4*d*(c +
d*x)^(3/2))/(21*(b*c - a*d)^2*(a + b*x)^(7/2)) - (16*d^2*(c + d*x
)^(3/2))/(105*(b*c - a*d)^3*(a + b*x)^(5/2)) + (32*d^3*(c + d*x)^
(3/2))/(315*(b*c - a*d)^4*(a + b*x)^(3/2))
```

Rubi [A] time = 0.112075, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{32d^3(c+dx)^{3/2}}{315(a+bx)^{3/2}(bc-ad)^4}-\frac{16d^2(c+dx)^{3/2}}{105(a+bx)^{5/2}(bc-ad)^3}+\frac{4d(c+dx)^{3/2}}{21(a+bx)^{7/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{9(a+bx)^{9/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^(11/2),x]
```

```
[Out] (-2*(c + d*x)^(3/2))/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (4*d*(c +
d*x)^(3/2))/(21*(b*c - a*d)^2*(a + b*x)^(7/2)) - (16*d^2*(c + d*x
)^(3/2))/(105*(b*c - a*d)^3*(a + b*x)^(5/2)) + (32*d^3*(c + d*x)^
(3/2))/(315*(b*c - a*d)^4*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 21.2151, size = 121, normalized size = 0.89

$$\frac{32d^3\left(c+dx\right)^{\frac{3}{2}}}{315\left(a+bx\right)^{\frac{3}{2}}\left(ad-bc\right)^4}+\frac{16d^2\left(c+dx\right)^{\frac{3}{2}}}{105\left(a+bx\right)^{\frac{5}{2}}\left(ad-bc\right)^3}+\frac{4d\left(c+dx\right)^{\frac{3}{2}}}{21\left(a+bx\right)^{\frac{7}{2}}\left(ad-bc\right)^2}+\frac{2\left(c+dx\right)^{\frac{3}{2}}}{9\left(a+bx\right)^{\frac{9}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(11/2),x)
```

```
[Out] 32*d**3*(c + d*x)**(3/2)/(315*(a + b*x)**(3/2)*(a*d - b*c)**4) +
16*d**2*(c + d*x)**(3/2)/(105*(a + b*x)**(5/2)*(a*d - b*c)**3) +
4*d*(c + d*x)**(3/2)/(21*(a + b*x)**(7/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(3/2)/(9*(a + b*x)**(9/2)*(a*d - b*c))
```

Mathematica [A] time = 0.173878, size = 118, normalized size = 0.87

$$\frac{2(c+dx)^{3/2}\left(105a^3d^3+63a^2bd^2(2dx-3c)+9ab^2d\left(15c^2-12cdx+8d^2x^2\right)+b^3\left(-35c^3+30c^2dx-24cd^2x^2+16d^3x^3\right)\right)}{315(a+bx)^{9/2}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^(11/2),x]
```

```
[Out] (2*(c + d*x)^(3/2)*(105*a^3*d^3 + 63*a^2*b*d^2*(-3*c + 2*d*x) + 9
*a*b^2*d*(15*c^2 - 12*c*d*x + 8*d^2*x^2) + b^3*(-35*c^3 + 30*c^2*
d*x - 24*c*d^2*x^2 + 16*d^3*x^3)))/(315*(b*c - a*d)^4*(a + b*x)^(
9/2))
```

Maple [A] time = 0.014, size = 171, normalized size = 1.3

$$\frac{32\,b^3d^3x^3+144\,ab^2d^3x^2-48\,b^3cd^2x^2+252\,a^2bd^3x-216\,ab^2cd^2x+60\,b^3c^2dx+210\,a^3d^3-378\,a^2bcd^2+270\,ab^2c^2d-70\,b}{315\,d^4a^4-1260\,bd^3ca^3+1890\,b^2d^2c^2a^2-1260\,b^3dc^3a+315\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(11/2),x)
```

```
[Out] 2/315*(d*x+c)^(3/2)*(16*b^3*d^3*x^3+72*a*b^2*d^3*x^2-24*b^3*c*d^2
*x^2+126*a^2*b*d^3*x-108*a*b^2*c*d^2*x+30*b^3*c^2*d*x+105*a^3*d^3
-189*a^2*b*c*d^2+135*a*b^2*c^2*d-35*b^3*c^3)/(b*x+a)^(9/2)/(a^4*d
^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(11/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.13429, size = 718, normalized size = 5.28

$$\frac{2\left(16\,b^3d^4x^4-35\,b^3c^4+135\,ab^2c^3d-18\right.}{315\left(a^5b^4c^4-4\,a^6b^3c^3d+6\,a^7b^2c^2d^2-4\,a^8bcd^3+a^9d^4+(b^9c^4-4\,ab^8c^3d+6\,a^2b^7c^2d^2-4\,a^3b^6cd^3+a^4b^5d^4)x^5+5\,(ab^8c^4-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(16*b^3*d^4*x^4 - 35*b^3*c^4 + 135*a*b^2*c^3*d - 189*a^2*b*
c^2*d^2 + 105*a^3*c*d^3 - 8*(b^3*c*d^3 - 9*a*b^2*d^4)*x^3 + 6*(b^
3*c^2*d^2 - 6*a*b^2*c*d^3 + 21*a^2*b*d^4)*x^2 - (5*b^3*c^3*d - 27
*a*b^2*c^2*d^2 + 63*a^2*b*c*d^3 - 105*a^3*d^4)*x)*sqrt(b*x + a)*s
qrt(d*x + c)/(a^5*b^4*c^4 - 4*a^6*b^3*c^3*d + 6*a^7*b^2*c^2*d^2 -
 4*a^8*b*c*d^3 + a^9*d^4 + (b^9*c^4 - 4*a*b^8*c^3*d + 6*a^2*b^7*c
^2*d^2 - 4*a^3*b^6*c*d^3 + a^4*b^5*d^4)*x^5 + 5*(a*b^8*c^4 - 4*a^
2*b^7*c^3*d + 6*a^3*b^6*c^2*d^2 - 4*a^4*b^5*c*d^3 + a^5*b^4*d^4)*
x^4 + 10*(a^2*b^7*c^4 - 4*a^3*b^6*c^3*d + 6*a^4*b^5*c^2*d^2 - 4*a
^5*b^4*c*d^3 + a^6*b^3*d^4)*x^3 + 10*(a^3*b^6*c^4 - 4*a^4*b^5*c^3
*d + 6*a^5*b^4*c^2*d^2 - 4*a^6*b^3*c*d^3 + a^7*b^2*d^4)*x^2 + 5*(
a^4*b^5*c^4 - 4*a^5*b^4*c^3*d + 6*a^6*b^3*c^2*d^2 - 4*a^7*b^2*c*d
^3 + a^8*b*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(11/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.317932, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(11/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1470 $\int \frac{\sqrt{c+dx}}{(a+bx)^{13/2}}\,dx$

Optimal. Leaf size=171

$$-\frac{256d^4(c+dx)^{3/2}}{3465(a+bx)^{3/2}(bc-ad)^5}+\frac{128d^3(c+dx)^{3/2}}{1155(a+bx)^{5/2}(bc-ad)^4}-\frac{32d^2(c+dx)^{3/2}}{231(a+bx)^{7/2}(bc-ad)^3}+\frac{16d(c+dx)^{3/2}}{99(a+bx)^{9/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{11(a+bx)^{11/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/2))/(11*(b*c - a*d)*(a + b*x)^(11/2)) + (16*d*(c
 + d*x)^(3/2))/(99*(b*c - a*d)^2*(a + b*x)^(9/2)) - (32*d^2*(c +
d*x)^(3/2))/(231*(b*c - a*d)^3*(a + b*x)^(7/2)) + (128*d^3*(c + d
*x)^(3/2))/(1155*(b*c - a*d)^4*(a + b*x)^(5/2)) - (256*d^4*(c + d
*x)^(3/2))/(3465*(b*c - a*d)^5*(a + b*x)^(3/2))
```

Rubi [A] time = 0.158549, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{256d^4(c+dx)^{3/2}}{3465(a+bx)^{3/2}(bc-ad)^5}+\frac{128d^3(c+dx)^{3/2}}{1155(a+bx)^{5/2}(bc-ad)^4}-\frac{32d^2(c+dx)^{3/2}}{231(a+bx)^{7/2}(bc-ad)^3}+\frac{16d(c+dx)^{3/2}}{99(a+bx)^{9/2}(bc-ad)^2}-\frac{2(c+dx)^{3/2}}{11(a+bx)^{11/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[c + d*x]/(a + b*x)^(13/2),x]
```

```
[Out] (-2*(c + d*x)^(3/2))/(11*(b*c - a*d)*(a + b*x)^(11/2)) + (16*d*(c
 + d*x)^(3/2))/(99*(b*c - a*d)^2*(a + b*x)^(9/2)) - (32*d^2*(c +
d*x)^(3/2))/(231*(b*c - a*d)^3*(a + b*x)^(7/2)) + (128*d^3*(c + d
*x)^(3/2))/(1155*(b*c - a*d)^4*(a + b*x)^(5/2)) - (256*d^4*(c + d
*x)^(3/2))/(3465*(b*c - a*d)^5*(a + b*x)^(3/2))
```

Rubi in Sympy [A] time = 30.5674, size = 153, normalized size = 0.89

$$\frac{256d^4\left(c+dx\right)^{\frac{3}{2}}}{3465\left(a+bx\right)^{\frac{3}{2}}\left(ad-bc\right)^5}+\frac{128d^3\left(c+dx\right)^{\frac{3}{2}}}{1155\left(a+bx\right)^{\frac{5}{2}}\left(ad-bc\right)^4}+\frac{32d^2\left(c+dx\right)^{\frac{3}{2}}}{231\left(a+bx\right)^{\frac{7}{2}}\left(ad-bc\right)^3}+\frac{16d\left(c+dx\right)^{\frac{3}{2}}}{99\left(a+bx\right)^{\frac{9}{2}}\left(ad-bc\right)^2}+\frac{2\left(c+dx\right)^{\frac{3}{2}}}{11\left(a+bx\right)^{\frac{11}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/2)/(b*x+a)**(13/2),x)
```

```
[Out] 256*d**4*(c + d*x)**(3/2)/(3465*(a + b*x)**(3/2)*(a*d - b*c)**5)
+ 128*d**3*(c + d*x)**(3/2)/(1155*(a + b*x)**(5/2)*(a*d - b*c)**4
) + 32*d**2*(c + d*x)**(3/2)/(231*(a + b*x)**(7/2)*(a*d - b*c)**3
) + 16*d*(c + d*x)**(3/2)/(99*(a + b*x)**(9/2)*(a*d - b*c)**2) +
2*(c + d*x)**(3/2)/(11*(a + b*x)**(11/2)*(a*d - b*c))
```

Mathematica [A] time = 0.220419, size = 167, normalized size = 0.98

$$\sqrt{a+bx}\sqrt{c+dx}\left(-\frac{256d^5}{3465b(a+bx)(bc-ad)^5}+\frac{128d^4}{3465b(a+bx)^2(bc-ad)^4}-\frac{32d^3}{1155b(a+bx)^3(bc-ad)^3}+\frac{16d^2}{693b(a+bx)^4(bc-ad)^2}-\frac{2d}{99b(a+bx)^5(bc-ad)}-\frac{2}{11b(a+bx)^6}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[c + d*x]/(a + b*x)^(13/2),x]
```

```
[Out] Sqrt[a + b*x]*Sqrt[c + d*x]*(-2/(11*b*(a + b*x)^6) - (2*d)/(99*b*
(b*c - a*d)*(a + b*x)^5) + (16*d^2)/(693*b*(b*c - a*d)^2*(a + b*x
)^4) - (32*d^3)/(1155*b*(b*c - a*d)^3*(a + b*x)^3) + (128*d^4)/(3
465*b*(b*c - a*d)^4*(a + b*x)^2) - (256*d^5)/(3465*b*(b*c - a*d)^
5*(a + b*x)))
```

Maple [A] time = 0.017, size = 256, normalized size = 1.5

$$\frac{256\,b^4d^4x^4+1408\,ab^3d^4x^3-384\,b^4cd^3x^3+3168\,a^2b^2d^4x^2-2112\,ab^3cd^3x^2+480\,b^4c^2d^2x^2+3696\,a^3bd^4x-4752\,a^2b^2cd^3x}{3465\,a^5d^5-17325\,a^4bcd^4+34650\,a^3b^2c^2d^3-34650\,a^2b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/2)/(b*x+a)^(13/2),x)
```

```
[Out] 2/3465*(d*x+c)^(3/2)*(128*b^4*d^4*x^4+704*a*b^3*d^4*x^3-192*b^4*c
*d^3*x^3+1584*a^2*b^2*d^4*x^2-1056*a*b^3*c*d^3*x^2+240*b^4*c^2*d^
2*x^2+1848*a^3*b*d^4*x-2376*a^2*b^2*c*d^3*x+1320*a*b^3*c^2*d^2*x-
280*b^4*c^3*d*x+1155*a^4*d^4-2772*a^3*b*c*d^3+2970*a^2*b^2*c^2*d^
2-1540*a*b^3*c^3*d+315*b^4*c^4)/(b*x+a)^(11/2)/(a^5*d^5-5*a^4*b*c
*d^4+10*a^3*b^2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(13/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 5.53639, size = 1054, normalized size = 6.16

$$-\frac{2(1}{3465(a^6b^5c^5 - 5a^7b^4c^4d + 10a^8b^3c^3d^2 - 10a^9b^2c^2d^3 + 5a^{10}bcd^4 - a^{11}d^5 + (b^{11}c^5 - 5ab^{10}c^4d + 10a^2b^9c^3d^2 - 10a^3b^8c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(13/2),x, algorithm="fricas")
```

```
[Out] -2/3465*(128*b^4*d^5*x^5 + 315*b^4*c^5 - 1540*a*b^3*c^4*d + 2970*
a^2*b^2*c^3*d^2 - 2772*a^3*b*c^2*d^3 + 1155*a^4*c*d^4 - 64*(b^4*c
*d^4 - 11*a*b^3*d^5)*x^4 + 16*(3*b^4*c^2*d^3 - 22*a*b^3*c*d^4 + 9
9*a^2*b^2*d^5)*x^3 - 8*(5*b^4*c^3*d^2 - 33*a*b^3*c^2*d^3 + 99*a^2
*b^2*c*d^4 - 231*a^3*b*d^5)*x^2 + (35*b^4*c^4*d - 220*a*b^3*c^3*d
^2 + 594*a^2*b^2*c^2*d^3 - 924*a^3*b*c*d^4 + 1155*a^4*d^5)*x)*sqr
t(b*x + a)*sqrt(d*x + c)/(a^6*b^5*c^5 - 5*a^7*b^4*c^4*d + 10*a^8*
b^3*c^3*d^2 - 10*a^9*b^2*c^2*d^3 + 5*a^10*b*c*d^4 - a^11*d^5 + (b
^11*c^5 - 5*a*b^10*c^4*d + 10*a^2*b^9*c^3*d^2 - 10*a^3*b^8*c^2*d^
3 + 5*a^4*b^7*c*d^4 - a^5*b^6*d^5)*x^6 + 6*(a*b^10*c^5 - 5*a^2*b^
9*c^4*d + 10*a^3*b^8*c^3*d^2 - 10*a^4*b^7*c^2*d^3 + 5*a^5*b^6*c*d
^4 - a^6*b^5*d^5)*x^5 + 15*(a^2*b^9*c^5 - 5*a^3*b^8*c^4*d + 10*a^
4*b^7*c^3*d^2 - 10*a^5*b^6*c^2*d^3 + 5*a^6*b^5*c*d^4 - a^7*b^4*d^
5)*x^4 + 20*(a^3*b^8*c^5 - 5*a^4*b^7*c^4*d + 10*a^5*b^6*c^3*d^2 -
 10*a^6*b^5*c^2*d^3 + 5*a^7*b^4*c*d^4 - a^8*b^3*d^5)*x^3 + 15*(a^
4*b^7*c^5 - 5*a^5*b^6*c^4*d + 10*a^6*b^5*c^3*d^2 - 10*a^7*b^4*c^2
*d^3 + 5*a^8*b^3*c*d^4 - a^9*b^2*d^5)*x^2 + 6*(a^5*b^6*c^5 - 5*a^
6*b^5*c^4*d + 10*a^7*b^4*c^3*d^2 - 10*a^8*b^3*c^2*d^3 + 5*a^9*b^2
*c*d^4 - a^10*b*d^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/2)/(b*x+a)**(13/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.364064, size = 1, normalized size = 0.01

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(d*x + c)/(b*x + a)^(13/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1471 $\int (a+bx)^{5/2}(c+dx)^{3/2}\,dx$

Optimal. Leaf size=227

$$-\frac{3(bc-ad)^5\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{5/2}d^{7/2}}+\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}{128b^2d^3}-\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}{64b^2d^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}{80b^2d}+\frac{3(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)}{40b^2}+\frac{(a+bx)^{7/2}(c+dx)^{3/2}}{5b}$$

```
[Out] (3*(b*c - a*d)^4*Sqrt[a + b*x]*Sqrt[c + d*x])/(128*b^2*d^3) - ((b
*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])/(64*b^2*d^2) + ((b*c -
 a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/(80*b^2*d) + (3*(b*c - a*d
)*(a + b*x)^(7/2)*Sqrt[c + d*x])/(40*b^2) + ((a + b*x)^(7/2)*(c +
 d*x)^(3/2))/(5*b) - (3*(b*c - a*d)^5*ArcTanh[(Sqrt[d]*Sqrt[a + b
*x])/(Sqrt[b]*Sqrt[c + d*x])])/(128*b^(5/2)*d^(7/2))
```

Rubi [A] time = 0.305819, antiderivative size = 227, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{3(bc-ad)^5\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{5/2}d^{7/2}}+\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}{128b^2d^3}-\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}{64b^2d^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}{80b^2d}+\frac{3(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)}{40b^2}+\frac{(a+bx)^{7/2}(c+dx)^{3/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)*(c + d*x)^(3/2),x]
```

```
[Out] (3*(b*c - a*d)^4*Sqrt[a + b*x]*Sqrt[c + d*x])/(128*b^2*d^3) - ((b
*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])/(64*b^2*d^2) + ((b*c -
 a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/(80*b^2*d) + (3*(b*c - a*d
)*(a + b*x)^(7/2)*Sqrt[c + d*x])/(40*b^2) + ((a + b*x)^(7/2)*(c +
 d*x)^(3/2))/(5*b) - (3*(b*c - a*d)^5*ArcTanh[(Sqrt[d]*Sqrt[a + b
*x])/(Sqrt[b]*Sqrt[c + d*x])])/(128*b^(5/2)*d^(7/2))
```

Rubi in Sympy [A] time = 46.7164, size = 197, normalized size = 0.87

$$\frac{(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{5}{2}}}{5d}+\frac{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{5}{2}}(ad-bc)}{8d^2}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}(ad-bc)^2}{16d^3}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}(ad-bc)^3}{64bd^3}-\frac{3\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^4}{128b^2d^3}+\frac{3\,(ad-bc)^5\,\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{\frac{5}{2}}d^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)*(d*x+c)**(3/2),x)
```

```
[Out] (a + b*x)**(5/2)*(c + d*x)**(5/2)/(5*d) + (a + b*x)**(3/2)*(c + d
*x)**(5/2)*(a*d - b*c)/(8*d**2) + sqrt(a + b*x)*(c + d*x)**(5/2)*
(a*d - b*c)**2/(16*d**3) + sqrt(a + b*x)*(c + d*x)**(3/2)*(a*d -
b*c)**3/(64*b*d**3) - 3*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**
4/(128*b**2*d**3) + 3*(a*d - b*c)**5*atanh(sqrt(d)*sqrt(a + b*x)/
(sqrt(b)*sqrt(c + d*x)))/(128*b**(5/2)*d**(7/2))
```

Mathematica [A] time = 0.242925, size = 233, normalized size = 1.03

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(-15a^4d^4+10a^3bd^3(7c+dx)+2a^2b^2d^2\left(64c^2+233cdx+124d^2x^2\right)+2ab^3d\left(-35c^3+23c^2dx+256cd^2x^2+\cdots\right.\right.}{640b^2d^3}$$
$$-\frac{3(bc-ad)^5\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{256b^{5/2}d^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)*(c + d*x)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(-15*a^4*d^4 + 10*a^3*b*d^3*(7*c + d
*x) + 2*a^2*b^2*d^2*(64*c^2 + 233*c*d*x + 124*d^2*x^2) + 2*a*b^3*
d*(-35*c^3 + 23*c^2*d*x + 256*c*d^2*x^2 + 168*d^3*x^3) + b^4*(15*
c^4 - 10*c^3*d*x + 8*c^2*d^2*x^2 + 176*c*d^3*x^3 + 128*d^4*x^4)))
/(640*b^2*d^3) - (3*(b*c - a*d)^5*Log[b*c + a*d + 2*b*d*x + 2*Sqr
t[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(256*b^(5/2)*d^(7/2))
```

Maple [B] time = 0.011, size = 853, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)*(d*x+c)^(3/2),x)
```

```
[Out] 1/5/d*(b*x+a)^(5/2)*(d*x+c)^(5/2)+1/8/d*(b*x+a)^(3/2)*(d*x+c)^(5/
2)*a+1/16/d*(b*x+a)^(1/2)*(d*x+c)^(5/2)*a^2-1/8/d^2*(b*x+a)^(1/2)
*(d*x+c)^(5/2)*a*b*c+3/64/d^2*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a*c^2*b
+3/32/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^3*c+3/32/d^2*(d*x+c)^(1/2)*
(b*x+a)^(1/2)*a*c^3*b-15/256*d/b*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^
(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2
*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^4*c+15/128*((b*x+a)*(d*x
+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)
/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c^2
+15/256/d^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*l
```

```
n((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(
1/2))/(b*d)^(1/2)*a*c^4*b^2-3/64/d*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a^
2*c-1/64/d^3*(d*x+c)^(3/2)*(b*x+a)^(1/2)*c^3*b^2-3/128*d/b^2*(d*x
+c)^(1/2)*(b*x+a)^(1/2)*a^4-9/64/d*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^
2*c^2-3/128/d^3*(d*x+c)^(1/2)*(b*x+a)^(1/2)*c^4*b^2-1/8/d^2*(b*x+
a)^(3/2)*(d*x+c)^(5/2)*b*c+1/16/d^3*(b*x+a)^(1/2)*(d*x+c)^(5/2)*b
^2*c^2+1/64/b*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a^3+3/256*d^2/b^2*((b*x
+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*
c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)
*a^5-15/128/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)
*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)
^(1/2))/(b*d)^(1/2)*a^2*c^3*b-3/256/d^3*((b*x+a)*(d*x+c))^(1/2)/(
d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)
+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^5*b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.25509, size = 1, normalized size = 0.

$$\left[\frac{4\left(128\,b^4d^4x^4+15\,b^4c^4-70\,ab^3c^3d+128\,a^2b^2c^2d^2+70\,a^3bcd^3-15\,a^4d^4+16\left(11\,b^4cd^3+21\,ab^3d^4\right)x^3+8\left(b^4c^2d^2+64\,ab\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2560*(4*(128*b^4*d^4*x^4 + 15*b^4*c^4 - 70*a*b^3*c^3*d + 128*a
^2*b^2*c^2*d^2 + 70*a^3*b*c*d^3 - 15*a^4*d^4 + 16*(11*b^4*c*d^3 +
 21*a*b^3*d^4)*x^3 + 8*(b^4*c^2*d^2 + 64*a*b^3*c*d^3 + 31*a^2*b^2
*d^4)*x^2 - 2*(5*b^4*c^3*d - 23*a*b^3*c^2*d^2 - 233*a^2*b^2*c*d^3
 - 5*a^3*b*d^4)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x + c) - 15*(b^
5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 +
 5*a^4*b*c*d^4 - a^5*d^5)*log(4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)
*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c
*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(sqrt(b*d)*b^
2*d^3), 1/1280*(2*(128*b^4*d^4*x^4 + 15*b^4*c^4 - 70*a*b^3*c^3*d
+ 128*a^2*b^2*c^2*d^2 + 70*a^3*b*c*d^3 - 15*a^4*d^4 + 16*(11*b^4*
```

```
c*d^3 + 21*a*b^3*d^4)*x^3 + 8*(b^4*c^2*d^2 + 64*a*b^3*c*d^3 + 31*
a^2*b^2*d^4)*x^2 - 2*(5*b^4*c^3*d - 23*a*b^3*c^2*d^2 - 233*a^2*b^
2*c*d^3 - 5*a^3*b*d^4)*x)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c)
- 15*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c
^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*arctan(1/2*(2*b*d*x + b*c + a*d
)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*b^2*
d^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)*(d*x+c)**(3/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.353726, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(3/2),x, algorithm="giac")

[Out] Done
```

3.1472 $\int (a+bx)^{3/2}(c+dx)^{3/2}\,dx$

Optimal. Leaf size=189

$$\frac{3(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{5/2}d^{5/2}}-\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64b^2d^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{32b^2d}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}{8b^2}+\frac{(a+bx)^{5/2}(c+dx)^{3/2}}{4b}$$

```
[Out] (-3*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*b^2*d^2) + ((b
*c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(32*b^2*d) + ((b*c - a
*d)*(a + b*x)^(5/2)*Sqrt[c + d*x])/(8*b^2) + ((a + b*x)^(5/2)*(c
+ d*x)^(3/2))/(4*b) + (3*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*b^(5/2)*d^(5/2))
```

Rubi [A] time = 0.228303, antiderivative size = 189, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{3(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{5/2}d^{5/2}}-\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64b^2d^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{32b^2d}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}{8b^2}+\frac{(a+bx)^{5/2}(c+dx)^{3/2}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(3/2),x]
```

```
[Out] (-3*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*b^2*d^2) + ((b
*c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(32*b^2*d) + ((b*c - a
*d)*(a + b*x)^(5/2)*Sqrt[c + d*x])/(8*b^2) + ((a + b*x)^(5/2)*(c
+ d*x)^(3/2))/(4*b) + (3*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*b^(5/2)*d^(5/2))
```

Rubi in Sympy [A] time = 34.8366, size = 167, normalized size = 0.88

$$\frac{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{5}{2}}}{4d}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}(ad-bc)}{8d^2}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}(ad-bc)^2}{32bd^2}-\frac{3\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^3}{64b^2d^2}+\frac{3(ad-bc)^4\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{64b^{\frac{5}{2}}d^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(3/2),x)
```

```
[Out] (a + b*x)**(3/2)*(c + d*x)**(5/2)/(4*d) + sqrt(a + b*x)*(c + d*x)
**(5/2)*(a*d - b*c)/(8*d**2) + sqrt(a + b*x)*(c + d*x)**(3/2)*(a*
d - b*c)**2/(32*b*d**2) - 3*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*
c)**3/(64*b**2*d**2) + 3*(a*d - b*c)**4*atanh(sqrt(b)*sqrt(c + d*
x)/(sqrt(d)*sqrt(a + b*x)))/(64*b**(5/2)*d**(5/2))
```

Mathematica [A] time = 0.194199, size = 180, normalized size = 0.95

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(-3a^3d^3+a^2bd^2(11c+2dx)+ab^2d\left(11c^2+44cdx+24d^2x^2\right)+b^3\left(-3c^3+2c^2dx+24cd^2x^2+16d^3x^3\right)\right)}{64b^2d^2}+\frac{3(bc-ad)^4\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{128b^{5/2}d^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(-3*a^3*d^3 + a^2*b*d^2*(11*c + 2*d*
x) + a*b^2*d*(11*c^2 + 44*c*d*x + 24*d^2*x^2) + b^3*(-3*c^3 + 2*c
^2*d*x + 24*c*d^2*x^2 + 16*d^3*x^3)))/(64*b^2*d^2) + (3*(b*c - a*
d)^4*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sq
rt[c + d*x]])/(128*b^(5/2)*d^(5/2))
```

Maple [B] time = 0.01, size = 640, normalized size = 3.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(3/2),x)
```

```
[Out] 1/4/d*(b*x+a)^(3/2)*(d*x+c)^(5/2)+1/8/d*(b*x+a)^(1/2)*(d*x+c)^(5/
2)*a-1/8/d^2*(b*x+a)^(1/2)*(d*x+c)^(5/2)*b*c+1/32/b*(d*x+c)^(3/2)
*(b*x+a)^(1/2)*a^2-1/16/d*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a*c+1/32/d^
2*(d*x+c)^(3/2)*(b*x+a)^(1/2)*c^2*b-3/64*d/b^2*(d*x+c)^(1/2)*(b*x
+a)^(1/2)*a^3+9/64/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^2*c-9/64/d*(d*
x+c)^(1/2)*(b*x+a)^(1/2)*a*c^2+3/64/d^2*(d*x+c)^(1/2)*(b*x+a)^(1/
2)*c^3*b+3/128*d^2/b^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x
+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*
c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^4-3/32*d/b*((b*x+a)*(d*x+c))^(1/2)
/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/
2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c+9/64*((b*x+
a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c
```

```
+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*
a^2*c^2-3/32/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2
)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c
)^(1/2))/(b*d)^(1/2)*a*c^3*b+3/128/d^2*((b*x+a)*(d*x+c))^(1/2)/(d
*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+
(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^4*b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.241143, size = 1, normalized size = 0.01

$$\left[\frac{4\left(16\,b^3d^3x^3 - 3\,b^3c^3 + 11\,ab^2c^2d + 11\,a^2bcd^2 - 3\,a^3d^3 + 24\left(b^3cd^2 + ab^2d^3\right)x^2 + 2\left(b^3c^2d + 22\,ab^2cd^2 + a^2bd^3\right)x\right)\sqrt{bd}\sqrt{bx}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/256*(4*(16*b^3*d^3*x^3 - 3*b^3*c^3 + 11*a*b^2*c^2*d + 11*a^2*b
*c*d^2 - 3*a^3*d^3 + 24*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 2*(b^3*c^2*
d + 22*a*b^2*c*d^2 + a^2*b*d^3)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d
*x + c) + 3*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)*log(4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b
*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^
2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(sqrt(b*d)*b^2*d^2),
 1/128*(2*(16*b^3*d^3*x^3 - 3*b^3*c^3 + 11*a*b^2*c^2*d + 11*a^2*b
*c*d^2 - 3*a^3*d^3 + 24*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 2*(b^3*c^2*
d + 22*a*b^2*c*d^2 + a^2*b*d^3)*x)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(
d*x + c) + 3*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3
*b*c*d^3 + a^4*d^4)*arctan(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(
sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*b^2*d^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a + bx)^{\frac{3}{2}} (c + dx)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**(3/2)*(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.308207, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1473 $\int \sqrt{a+bx}(c+dx)^{3/2}\,dx$

Optimal. Leaf size=151

$$-\frac{(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8b^{5/2}d^{3/2}}+\frac{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8b^2d}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{4b^2}+\frac{(a+bx)^{3/2}(c+dx)^{3/2}}{3b}$$

```
[Out] ((b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*b^2*d) + ((b*c - a
*d)*(a + b*x)^(3/2)*Sqrt[c + d*x])/(4*b^2) + ((a + b*x)^(3/2)*(c
+ d*x)^(3/2))/(3*b) - ((b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*b^(5/2)*d^(3/2))
```

Rubi [A] time = 0.160721, antiderivative size = 151, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$-\frac{(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8b^{5/2}d^{3/2}}+\frac{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8b^2d}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{4b^2}+\frac{(a+bx)^{3/2}(c+dx)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(3/2),x]
```

```
[Out] ((b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*b^2*d) + ((b*c - a
*d)*(a + b*x)^(3/2)*Sqrt[c + d*x])/(4*b^2) + ((a + b*x)^(3/2)*(c
+ d*x)^(3/2))/(3*b) - ((b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*b^(5/2)*d^(3/2))
```

Rubi in Sympy [A] time = 23.896, size = 129, normalized size = 0.85

$$\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}}{3d}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}{12bd}-\frac{\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^2}{8b^2d}+\frac{(ad-bc)^3\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{8b^{\frac{5}{2}}d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(3/2),x)
```

```
[Out] sqrt(a + b*x)*(c + d*x)**(5/2)/(3*d) + sqrt(a + b*x)*(c + d*x)**(
3/2)*(a*d - b*c)/(12*b*d) - sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*
```

```
c)**2/(8*b**2*d) + (a*d - b*c)**3*atanh(sqrt(b)*sqrt(c + d*x)/(sq
rt(d)*sqrt(a + b*x)))/(8*b**(5/2)*d**(3/2))
```

Mathematica [A] time = 0.115111, size = 140, normalized size = 0.93

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(-3a^2d^2+2abd(4c+dx)+b^2\left(3c^2+14cdx+8d^2x^2\right)\right)}{24b^2d} - \frac{(bc-ad)^3\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{16b^{5/2}d^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(-3*a^2*d^2 + 2*a*b*d*(4*c + d*x) +
b^2*(3*c^2 + 14*c*d*x + 8*d^2*x^2)))/(24*b^2*d) - ((b*c - a*d)^3*
Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c
+ d*x]])/(16*b^(5/2)*d^(3/2))
```

Maple [B] time = 0.01, size = 459, normalized size = 3.

$$\frac{1}{3d}\sqrt{bx+a}\,(dx+c)^{\frac{5}{2}}+\frac{a}{12b}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}-\frac{c}{12d}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}$$
$$-\frac{da^2}{8b^2}\sqrt{bx+a}\sqrt{dx+c}+\frac{ac}{4b}\sqrt{bx+a}\sqrt{dx+c}-\frac{c^2}{8d}\sqrt{bx+a}\sqrt{dx+c}$$
$$+\frac{d^2a^3}{16b^2}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{3da^2c}{16b}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{3ac^2}{16}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{c^3b}{16d}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(3/2),x)
```

```
[Out] 1/3/d*(b*x+a)^(1/2)*(d*x+c)^(5/2)+1/12/b*(d*x+c)^(3/2)*(b*x+a)^(1
/2)*a-1/12/d*(d*x+c)^(3/2)*(b*x+a)^(1/2)*c-1/8*d/b^2*(d*x+c)^(1/2
)*(b*x+a)^(1/2)*a^2+1/4/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c-1/8/d*(
d*x+c)^(1/2)*(b*x+a)^(1/2)*c^2+1/16*d^2/b^2*((b*x+a)*(d*x+c))^(1/
2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(
1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3-3/16*d/b*((
```

```
b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2
*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1
/2)*a^2*c+3/16*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2
)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c
)^(1/2))/(b*d)^(1/2)*a*c^2-1/16/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)
^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^
2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^3*b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.229566, size = 1, normalized size = 0.01

$$\left[\frac{4\left(8\,b^2d^2x^2+3\,b^2c^2+8\,abcd-3\,a^2d^2+2\left(7\,b^2cd+abd^2\right)x\right)\sqrt{bd}\sqrt{bx+a}\sqrt{dx+c}-3\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a^3d^3\right)}{96\,\sqrt{bd}b^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/96*(4*(8*b^2*d^2*x^2 + 3*b^2*c^2 + 8*a*b*c*d - 3*a^2*d^2 + 2*(
7*b^2*c*d + a*b*d^2)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x + c) - 3
*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*log(4*(2*b^2
*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*
d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x
)*sqrt(b*d)))/(sqrt(b*d)*b^2*d), 1/48*(2*(8*b^2*d^2*x^2 + 3*b^2*c
^2 + 8*a*b*c*d - 3*a^2*d^2 + 2*(7*b^2*c*d + a*b*d^2)*x)*sqrt(-b*d
)*sqrt(b*x + a)*sqrt(d*x + c) - 3*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^
2*b*c*d^2 - a^3*d^3)*arctan(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/
(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*b^2*d)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.258914, size = 458, normalized size = 3.03

$$\frac{\frac{20\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(\frac{2(bx+a)}{b^4d^2}+\frac{bcd-ad^2}{b^4d^4}\right)+\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}b^3d^3}\right)c|b|}{b^2}+\frac{\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(2(bx\cdots\right.\right.}{\cdots}}{1920\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 1/1920*(20*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*
(b*x + a)/(b^4*d^2) + (b*c*d - a*d^2)/(b^4*d^4)) + (b^2*c^2 - 2*a
*b*c*d + a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c +
(b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3))*c*abs(b)/b^2 + (sqr
t(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x + a)*(4*(b
*x + a)/(b^6*d^2) + (b*c*d^3 - 7*a*d^4)/(b^6*d^6)) - 3*(b^2*c^2*d
^2 - a^2*d^4)/(b^6*d^6)) - 3*(b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2
 + a^3*d^3)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x +
 a)*b*d - a*b*d)))/(sqrt(b*d)*b^5*d^4))*d*abs(b)/b^3)/b
```

3.1474 $\int \frac{(c+dx)^{3/2}}{\sqrt{a+bx}} \, dx$

Optimal. Leaf size=113

$$\frac{3(bc-ad)^2 \tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{5/2}\sqrt{d}}+\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4b^2}+\frac{\sqrt{a+bx}(c+dx)^{3/2}}{2b}$$

```
[Out] (3*(b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*b^2) + (Sqrt[a + b
*x]*(c + d*x)^(3/2))/(2*b) + (3*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sq
rt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*b^(5/2)*Sqrt[d])
```

Rubi [A] time = 0.117152, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{3(bc-ad)^2 \tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{5/2}\sqrt{d}}+\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4b^2}+\frac{\sqrt{a+bx}(c+dx)^{3/2}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/Sqrt[a + b*x],x]
```

```
[Out] (3*(b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*b^2) + (Sqrt[a + b
*x]*(c + d*x)^(3/2))/(2*b) + (3*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sq
rt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*b^(5/2)*Sqrt[d])
```

Rubi in Sympy [A] time = 15.9804, size = 100, normalized size = 0.88

$$\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}}{2b}-\frac{3\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)}{4b^2}+\frac{3\,(ad-bc)^2 \operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{\frac{5}{2}}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(1/2),x)
```

```
[Out] sqrt(a + b*x)*(c + d*x)**(3/2)/(2*b) - 3*sqrt(a + b*x)*sqrt(c + d
*x)*(a*d - b*c)/(4*b**2) + 3*(a*d - b*c)**2*atanh(sqrt(d)*sqrt(a
+ b*x)/(sqrt(b)*sqrt(c + d*x)))/(4*b**(5/2)*sqrt(d))
```

Mathematica [A] time = 0.0688043, size = 107, normalized size = 0.95

$$\frac{3(bc-ad)^2\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{8b^{5/2}\sqrt{d}}+\frac{\sqrt{a+bx}\sqrt{c+dx}(-3ad+5bc+2bdx)}{4b^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(5*b*c - 3*a*d + 2*b*d*x))/(4*b^2) +
 (3*(b*c - a*d)^2*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqr
t[a + b*x]*Sqrt[c + d*x]])/(8*b^(5/2)*Sqrt[d])
```

Maple [B] time = 0.009, size = 308, normalized size = 2.7

$$\frac{1}{2\,b}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}-\frac{3\,ad}{4\,b^2}\sqrt{bx+a}\sqrt{dx+c}+\frac{3\,c}{4\,b}\sqrt{bx+a}\sqrt{dx+c}$$
$$+\frac{3\,a^2d^2}{8\,b^2}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{3\,adc}{4\,b}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{3\,c^2}{8}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(1/2),x)
```

```
[Out] 1/2*(d*x+c)^(3/2)*(b*x+a)^(1/2)/b-3/4/b^2*(d*x+c)^(1/2)*(b*x+a)^(
1/2)*a*d+3/4/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*c+3/8/b^2*((b*x+a)*(d*
x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x
)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^2*d^
2-3/4/b*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1
/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2)
)/(b*d)^(1/2)*a*d*c+3/8*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*
x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b
*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.249375, size = 1, normalized size = 0.01

$$\left[\frac{4\,(2\,bdx+5\,bc-3\,ad)\sqrt{bd}\sqrt{bx+a}\sqrt{dx+c}+3\,\left(b^2c^2-2\,abcd+a^2d^2\right)\log\left(4\,\left(2\,b^2d^2x+b^2cd+abd^2\right)\sqrt{bx+a}\sqrt{dx+c}+(8\right.}{16\,\sqrt{bd}b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/16*(4*(2*b*d*x + 5*b*c - 3*a*d)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d
*x + c) + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(4*(2*b^2*d^2*x +
b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 +
 b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*
d)))/(sqrt(b*d)*b^2), 1/8*(2*(2*b*d*x + 5*b*c - 3*a*d)*sqrt(-b*d)
*sqrt(b*x + a)*sqrt(d*x + c) + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*
arctan(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d
*x + c)*b*d)))/(sqrt(-b*d)*b^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{3}{2}}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(3/2)/sqrt(a + b*x), x)
```

GIAC/XCAS [A] time = 0.254618, size = 327, normalized size = 2.89

$$-\frac{\frac{48\left(\frac{\left(b^2c-abd\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}}-\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\right)c|b|}{b^2}-\frac{\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(\frac{2(bx+a)}{b^4d^2}+\frac{bcd-5ad^2}{b^4d^4}\right)+\frac{\left(b^2c^2+2ab\right.}{}\right.}{b^3}}{48\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] -1/48*(48*((b^2*c - a*b*d)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt
(b^2*c + (b*x + a)*b*d - a*b*d)))/sqrt(b*d) - sqrt(b^2*c + (b*x +
 a)*b*d - a*b*d)*sqrt(b*x + a))*c*abs(b)/b^2 - (sqrt(b^2*c + (b*x
 + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x + a)/(b^4*d^2) + (b*c*d
- 5*a*d^2)/(b^4*d^4)) + (b^2*c^2 + 2*a*b*c*d - 3*a^2*d^2)*ln(abs(
-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*d - a*b*d)))/
(sqrt(b*d)*b^3*d^3))*d*abs(b)/b^3)/b
```

3.1475 $\int \frac{(c+dx)^{3/2}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=98

$$\frac{3\sqrt{d}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{5/2}}+\frac{3d\sqrt{a+bx}\sqrt{c+dx}}{b^2}-\frac{2(c+dx)^{3/2}}{b\sqrt{a+bx}}$$

```
[Out] (3*d*Sqrt[a + b*x]*Sqrt[c + d*x])/b^2 - (2*(c + d*x)^(3/2))/(b*Sq
rt[a + b*x]) + (3*Sqrt[d]*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a + b
*x])/(Sqrt[b]*Sqrt[c + d*x])])/b^(5/2)
```

Rubi [A] time = 0.114047, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{3\sqrt{d}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{5/2}}+\frac{3d\sqrt{a+bx}\sqrt{c+dx}}{b^2}-\frac{2(c+dx)^{3/2}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^(3/2),x]
```

```
[Out] (3*d*Sqrt[a + b*x]*Sqrt[c + d*x])/b^2 - (2*(c + d*x)^(3/2))/(b*Sq
rt[a + b*x]) + (3*Sqrt[d]*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a + b
*x])/(Sqrt[b]*Sqrt[c + d*x])])/b^(5/2)
```

Rubi in Sympy [A] time = 14.6617, size = 90, normalized size = 0.92

$$-\frac{2\left(c+dx\right)^{\frac{3}{2}}}{b\sqrt{a+bx}}+\frac{3d\sqrt{a+bx}\sqrt{c+dx}}{b^2}-\frac{3\sqrt{d}\left(ad-bc\right)\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(3/2)/(b*sqrt(a + b*x)) + 3*d*sqrt(a + b*x)*sqrt(c
+ d*x)/b**2 - 3*sqrt(d)*(a*d - b*c)*atanh(sqrt(b)*sqrt(c + d*x)/(
sqrt(d)*sqrt(a + b*x)))/b**(5/2)
```

Mathematica [A] time = 0.163214, size = 101, normalized size = 1.03

$$\frac{3\sqrt{d}(bc-ad)\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{2b^{5/2}}+\frac{\sqrt{c+dx}(3ad-2bc+bdx)}{b^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^(3/2),x]
```

```
[Out] (Sqrt[c + d*x]*(-2*b*c + 3*a*d + b*d*x))/(b^2*Sqrt[a + b*x]) + (3
*Sqrt[d]*(b*c - a*d)*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*
Sqrt[a + b*x]*Sqrt[c + d*x]])/(2*b^(5/2))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{3}{2}}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(3/2),x)
```

```
[Out] int((d*x+c)^(3/2)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.314905, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(abc-a^2d+\left(b^2c-abd\right)x\right)\sqrt{\frac{d}{b}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2-4\left(2\,b^2dx+b^2c+abd\right)\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{d}{b}}+8\right.}{4\left(b^3x+ab^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(3*(a*b*c - a^2*d + (b^2*c - a*b*d)*x)*sqrt(d/b)*log(8*b^2*
d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 - 4*(2*b^2*d*x + b^2*c +
a*b*d)*sqrt(b*x + a)*sqrt(d*x + c)*sqrt(d/b) + 8*(b^2*c*d + a*b*d
^2)*x) - 4*(b*d*x - 2*b*c + 3*a*d)*sqrt(b*x + a)*sqrt(d*x + c))/(
b^3*x + a*b^2), 1/2*(3*(a*b*c - a^2*d + (b^2*c - a*b*d)*x)*sqrt(-
d/b)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c
)*b*sqrt(-d/b))) + 2*(b*d*x - 2*b*c + 3*a*d)*sqrt(b*x + a)*sqrt(d
*x + c))/(b^3*x + a*b^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{3}{2}}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(3/2),x)
```

```
[Out] Integral((c + d*x)**(3/2)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.551146, size = 4, normalized size = 0.04

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.1476 $\int \frac{(c+dx)^{3/2}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=92

$$\frac{2d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{5/2}}-\frac{2d\sqrt{c+dx}}{b^2\sqrt{a+bx}}-\frac{2(c+dx)^{3/2}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*d*Sqrt[c + d*x])/(b^2*Sqrt[a + b*x]) - (2*(c + d*x)^(3/2))/(3
*b*(a + b*x)^(3/2)) + (2*d^(3/2)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/
(Sqrt[b]*Sqrt[c + d*x])])/b^(5/2)
```

Rubi [A] time = 0.0978239, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{2d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{5/2}}-\frac{2d\sqrt{c+dx}}{b^2\sqrt{a+bx}}-\frac{2(c+dx)^{3/2}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*d*Sqrt[c + d*x])/(b^2*Sqrt[a + b*x]) - (2*(c + d*x)^(3/2))/(3
*b*(a + b*x)^(3/2)) + (2*d^(3/2)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/
(Sqrt[b]*Sqrt[c + d*x])])/b^(5/2)
```

Rubi in Sympy [A] time = 14.6893, size = 85, normalized size = 0.92

$$-\frac{2\left(c+dx\right)^{\frac{3}{2}}}{3b\left(a+bx\right)^{\frac{3}{2}}}-\frac{2d\sqrt{c+dx}}{b^2\sqrt{a+bx}}+\frac{2d^{\frac{3}{2}}\,\text{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(5/2),x)
```

```
[Out] -2*(c + d*x)**(3/2)/(3*b*(a + b*x)**(3/2)) - 2*d*sqrt(c + d*x)/(b
**2*sqrt(a + b*x)) + 2*d**(3/2)*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt
(b)*sqrt(c + d*x)))/b**(5/2)
```

Mathematica [A] time = 0.168471, size = 93, normalized size = 1.01

$$\frac{d^{3/2}\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{b^{5/2}}-\frac{2\sqrt{c+dx}(3ad+b(c+4dx))}{3b^2(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[c + d*x]*(3*a*d + b*(c + 4*d*x)))/(3*b^2*(a + b*x)^(3/2)
) + (d^(3/2)*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a +
 b*x]*Sqrt[c + d*x]])/b^(5/2)
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{3}{2}}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(3/2)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.373974, size = 1, normalized size = 0.01

$$\left[\frac{3\left(b^2dx^2+2\,abdx+a^2d\right)\sqrt{\frac{d}{b}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+4\left(2\,b^2dx+b^2c+abd\right)\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{d}{b}}+8\left(b^2cd\right.\right.}{6\left(b^4x^2+2\,ab^3x+a^2b^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(b^2*d*x^2 + 2*a*b*d*x + a^2*d)*sqrt(d/b)*log(8*b^2*d^2*x
^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 4*(2*b^2*d*x + b^2*c + a*b*d
)*sqrt(b*x + a)*sqrt(d*x + c)*sqrt(d/b) + 8*(b^2*c*d + a*b*d^2)*x
) - 4*(4*b*d*x + b*c + 3*a*d)*sqrt(b*x + a)*sqrt(d*x + c))/(b^4*x
^2 + 2*a*b^3*x + a^2*b^2), 1/3*(3*(b^2*d*x^2 + 2*a*b*d*x + a^2*d)
*sqrt(-d/b)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(
d*x + c)*b*sqrt(-d/b))) - 2*(4*b*d*x + b*c + 3*a*d)*sqrt(b*x + a)
*sqrt(d*x + c))/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.578947, size = 4, normalized size = 0.04

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.1477 $\int \frac{(c+dx)^{3/2}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=32

$$-\frac{2(c+dx)^{5/2}}{5(a+bx)^{5/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(5/2))/(5*(b*c - a*d)*(a + b*x)^(5/2))
```

Rubi [A] time = 0.0215797, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{2(c+dx)^{5/2}}{5(a+bx)^{5/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^(7/2),x]

[Out] (-2*(c + d*x)^(5/2))/(5*(b*c - a*d)*(a + b*x)^(5/2))
```

Rubi in Sympy [A] time = 3.88762, size = 26, normalized size = 0.81

$$\frac{2\left(c+dx\right)^{\frac{5}{2}}}{5\left(a+bx\right)^{\frac{5}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(7/2),x)

[Out] 2*(c + d*x)**(5/2)/(5*(a + b*x)**(5/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0708334, size = 32, normalized size = 1.

$$-\frac{2(c+dx)^{5/2}}{5(a+bx)^{5/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(5/2))/(5*(b*c - a*d)*(a + b*x)^(5/2))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.8

$$\frac{2}{5\,ad-5\,bc}\,(dx+c)^{\frac{5}{2}}\,(bx+a)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(7/2),x)
```

```
[Out] 2/5/(b*x+a)^(5/2)*(d*x+c)^(5/2)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.338004, size = 140, normalized size = 4.38

$$-\frac{2\,\left(d^{2}x^{2}+2\,cdx+c^{2}\right)\sqrt{bx+a}\sqrt{dx+c}}{5\,(a^{3}bc-a^{4}d+(b^{4}c-ab^{3}d)x^{3}+3\,(ab^{3}c-a^{2}b^{2}d)x^{2}+3\,(a^{2}b^{2}c-a^{3}bd)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/5*(d^2*x^2 + 2*c*d*x + c^2)*sqrt(b*x + a)*sqrt(d*x + c)/(a^3*b
*c - a^4*d + (b^4*c - a*b^3*d)*x^3 + 3*(a*b^3*c - a^2*b^2*d)*x^2
+ 3*(a^2*b^2*c - a^3*b*d)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.309561, size = 505, normalized size = 15.78

$$-\frac{4\left(\sqrt{bd}b^{8}c^{4}d^{2}|b| - 4\sqrt{bd}ab^{7}c^{3}d^{3}|b| + 6\sqrt{bd}a^{2}b^{6}c^{2}d^{4}|b| - 4\sqrt{bd}a^{3}b^{5}cd^{5}|b| + \sqrt{bd}a^{4}b^{4}d^{6}|b| + 10\sqrt{bd}\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] -4/5*(sqrt(b*d)*b^8*c^4*d^2*abs(b) - 4*sqrt(b*d)*a*b^7*c^3*d^3*ab
s(b) + 6*sqrt(b*d)*a^2*b^6*c^2*d^4*abs(b) - 4*sqrt(b*d)*a^3*b^5*c
*d^5*abs(b) + sqrt(b*d)*a^4*b^4*d^6*abs(b) + 10*sqrt(b*d)*(sqrt(b
*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*b^4*c^
2*d^2*abs(b) - 20*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c
 + (b*x + a)*b*d - a*b*d))^4*a*b^3*c*d^3*abs(b) + 10*sqrt(b*d)*(s
qrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a
^2*b^2*d^4*abs(b) + 5*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b
^2*c + (b*x + a)*b*d - a*b*d))^8*d^2*abs(b))/((b^2*c - a*b*d - (s
qrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^
5*b^3)
```

3.1478 $\int \frac{(c+dx)^{3/2}}{(a+bx)^{9/2}}\,dx$

Optimal. Leaf size=66

$$\frac{4d(c+dx)^{5/2}}{35(a+bx)^{5/2}(bc-ad)^2}-\frac{2(c+dx)^{5/2}}{7(a+bx)^{7/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(5/2))/(7*(b*c - a*d)*(a + b*x)^(7/2)) + (4*d*(c +
d*x)^(5/2))/(35*(b*c - a*d)^2*(a + b*x)^(5/2))
```

Rubi [A] time = 0.0485677, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{4d(c+dx)^{5/2}}{35(a+bx)^{5/2}(bc-ad)^2}-\frac{2(c+dx)^{5/2}}{7(a+bx)^{7/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^(9/2),x]
```

```
[Out] (-2*(c + d*x)^(5/2))/(7*(b*c - a*d)*(a + b*x)^(7/2)) + (4*d*(c +
d*x)^(5/2))/(35*(b*c - a*d)^2*(a + b*x)^(5/2))
```

Rubi in Sympy [A] time = 8.0947, size = 56, normalized size = 0.85

$$\frac{4d\,(c+dx)^{\frac{5}{2}}}{35\,(a+bx)^{\frac{5}{2}}\,(ad-bc)^{2}}+\frac{2\,(c+dx)^{\frac{5}{2}}}{7\,(a+bx)^{\frac{7}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(9/2),x)
```

```
[Out] 4*d*(c + d*x)**(5/2)/(35*(a + b*x)**(5/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(5/2)/(7*(a + b*x)**(7/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0981874, size = 46, normalized size = 0.7

$$\frac{2(c+dx)^{5/2}(7ad-5bc+2bdx)}{35(a+bx)^{7/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^(9/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(-5*b*c + 7*a*d + 2*b*d*x))/(35*(b*c - a*d)^2*
(a + b*x)^(7/2))
```

Maple [A] time = 0.008, size = 54, normalized size = 0.8

$$\frac{4\,bdx+14\,ad-10\,bc}{35\,a^{2}d^{2}-70\,abcd+35\,b^{2}c^{2}}\left(dx+c\right)^{\frac{5}{2}}\left(bx+a\right)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(9/2),x)
```

```
[Out] 2/35*(d*x+c)^(5/2)*(2*b*d*x+7*a*d-5*b*c)/(b*x+a)^(7/2)/(a^2*d^2-2
*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.687278, size = 317, normalized size = 4.8

$$\frac{2\,\left(2\,bd^{3}x^{3}-5\,bc^{3}+7\,ac^{2}d-\left(bcd^{2}-7\,ad^{3}\right)x^{2}-2\,\left(4\,bc^{2}d-7\,acd^{2}\right)x\right)\sqrt{bx+a}\sqrt{dx+}}{35\,(a^{4}b^{2}c^{2}-2\,a^{5}bcd+a^{6}d^{2}+(b^{6}c^{2}-2\,ab^{5}cd+a^{2}b^{4}d^{2})x^{4}+4\,(ab^{5}c^{2}-2\,a^{2}b^{4}cd+a^{3}b^{3}d^{2})x^{3}+6\,(a^{2}b^{4}c^{2}-2\,a^{3}b^{3}cd+a^{4}b^{2}d^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(2*b*d^3*x^3 - 5*b*c^3 + 7*a*c^2*d - (b*c*d^2 - 7*a*d^3)*x^2
 - 2*(4*b*c^2*d - 7*a*c*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^4*
b^2*c^2 - 2*a^5*b*c*d + a^6*d^2 + (b^6*c^2 - 2*a*b^5*c*d + a^2*b^
4*d^2)*x^4 + 4*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*x^3 + 6*
(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*x^2 + 4*(a^3*b^3*c^2
```

```
- 2*a^4*b^2*c*d + a^5*b*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(9/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.357325, size = 1, normalized size = 0.02

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(9/2),x, algorithm="giac")

[Out] Done
```

3.1479 $\int \frac{(c+dx)^{3/2}}{(a+bx)^{11/2}}\,dx$

Optimal. Leaf size=101

$$-\frac{16d^2(c+dx)^{5/2}}{315(a+bx)^{5/2}(bc-ad)^3}+\frac{8d(c+dx)^{5/2}}{63(a+bx)^{7/2}(bc-ad)^2}-\frac{2(c+dx)^{5/2}}{9(a+bx)^{9/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(5/2))/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (8*d*(c +
d*x)^(5/2))/(63*(b*c - a*d)^2*(a + b*x)^(7/2)) - (16*d^2*(c + d*x
)^(5/2))/(315*(b*c - a*d)^3*(a + b*x)^(5/2))
```

Rubi [A] time = 0.0811499, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{16d^2(c+dx)^{5/2}}{315(a+bx)^{5/2}(bc-ad)^3}+\frac{8d(c+dx)^{5/2}}{63(a+bx)^{7/2}(bc-ad)^2}-\frac{2(c+dx)^{5/2}}{9(a+bx)^{9/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^(11/2),x]
```

```
[Out] (-2*(c + d*x)^(5/2))/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (8*d*(c +
d*x)^(5/2))/(63*(b*c - a*d)^2*(a + b*x)^(7/2)) - (16*d^2*(c + d*x
)^(5/2))/(315*(b*c - a*d)^3*(a + b*x)^(5/2))
```

Rubi in Sympy [A] time = 14.1675, size = 88, normalized size = 0.87

$$\frac{16d^2\,(c+dx)^{\frac{5}{2}}}{315\,(a+bx)^{\frac{5}{2}}\,(ad-bc)^3}+\frac{8d\,(c+dx)^{\frac{5}{2}}}{63\,(a+bx)^{\frac{7}{2}}\,(ad-bc)^2}+\frac{2\,(c+dx)^{\frac{5}{2}}}{9\,(a+bx)^{\frac{9}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(11/2),x)
```

```
[Out] 16*d**2*(c + d*x)**(5/2)/(315*(a + b*x)**(5/2)*(a*d - b*c)**3) +
8*d*(c + d*x)**(5/2)/(63*(a + b*x)**(7/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(5/2)/(9*(a + b*x)**(9/2)*(a*d - b*c))
```

Mathematica [A] time = 0.156644, size = 77, normalized size = 0.76

$$\frac{2(c+dx)^{5/2}\left(63a^2d^2+18abd(2dx-5c)+b^2\left(35c^2-20cdx+8d^2x^2\right)\right)}{315(a+bx)^{9/2}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^(11/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(63*a^2*d^2 + 18*a*b*d*(-5*c + 2*d*x) + b^2*(3
5*c^2 - 20*c*d*x + 8*d^2*x^2)))/(315*(-(b*c) + a*d)^3*(a + b*x)^(
9/2))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{16\,b^2d^2x^2+72\,abd^2x-40\,b^2cdx+126\,a^2d^2-180\,abcd+70\,b^2c^2}{315\,a^3d^3-945\,a^2bcd^2+945\,ab^2c^2d-315\,b^3c^3}\left(dx+c\right)^{\frac{5}{2}}\left(bx+a\right)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(11/2),x)
```

```
[Out] 2/315*(d*x+c)^(5/2)*(8*b^2*d^2*x^2+36*a*b*d^2*x-20*b^2*c*d*x+63*a
^2*d^2-90*a*b*c*d+35*b^2*c^2)/(b*x+a)^(9/2)/(a^3*d^3-3*a^2*b*c*d^
2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(11/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.26856, size = 575, normalized size = 5.69

$$-\frac{2\left(8\,b^2d^4x^4+35\,b^2c^4-90\,abc^3d+63\,a^2c^2d^2-4\left(b^2cd^3-9\,ab\right.\right.}{315\left(a^5b^3c^3-3\,a^6b^2c^2d+3\,a^7bcd^2-a^8d^3+\left(b^8c^3-3\,ab^7c^2d+3\,a^2b^6cd^2-a^3b^5d^3\right)x^5+5\left(ab^7c^3-3\,a^2b^6c^2d+3\,a^3b^5cd^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(11/2),x, algorithm="fricas")
```

```
[Out] -2/315*(8*b^2*d^4*x^4 + 35*b^2*c^4 - 90*a*b*c^3*d + 63*a^2*c^2*d^
2 - 4*(b^2*c*d^3 - 9*a*b*d^4)*x^3 + 3*(b^2*c^2*d^2 - 6*a*b*c*d^3
```

```
+ 21*a^2*d^4)*x^2 + 2*(25*b^2*c^3*d - 72*a*b*c^2*d^2 + 63*a^2*c*d
^3)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^5*b^3*c^3 - 3*a^6*b^2*c^2*d
 + 3*a^7*b*c*d^2 - a^8*d^3 + (b^8*c^3 - 3*a*b^7*c^2*d + 3*a^2*b^6
*c*d^2 - a^3*b^5*d^3)*x^5 + 5*(a*b^7*c^3 - 3*a^2*b^6*c^2*d + 3*a^
3*b^5*c*d^2 - a^4*b^4*d^3)*x^4 + 10*(a^2*b^6*c^3 - 3*a^3*b^5*c^2*
d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*x^3 + 10*(a^3*b^5*c^3 - 3*a^4*
b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*x^2 + 5*(a^4*b^4*c^3 -
 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(11/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.425074, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(11/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1480 $\int \frac{(c+dx)^{3/2}}{(a+bx)^{13/2}}\,dx$

Optimal. Leaf size=136

$$\frac{32d^3(c+dx)^{5/2}}{1155(a+bx)^{5/2}(bc-ad)^4}-\frac{16d^2(c+dx)^{5/2}}{231(a+bx)^{7/2}(bc-ad)^3}+\frac{4d(c+dx)^{5/2}}{33(a+bx)^{9/2}(bc-ad)^2}-\frac{2(c+dx)^{5/2}}{11(a+bx)^{11/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(5/2))/(11*(b*c - a*d)*(a + b*x)^(11/2)) + (4*d*(c
+ d*x)^(5/2))/(33*(b*c - a*d)^2*(a + b*x)^(9/2)) - (16*d^2*(c + d
*x)^(5/2))/(231*(b*c - a*d)^3*(a + b*x)^(7/2)) + (32*d^3*(c + d*x
)^(5/2))/(1155*(b*c - a*d)^4*(a + b*x)^(5/2))
```

Rubi [A] time = 0.112921, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{32d^3(c+dx)^{5/2}}{1155(a+bx)^{5/2}(bc-ad)^4}-\frac{16d^2(c+dx)^{5/2}}{231(a+bx)^{7/2}(bc-ad)^3}+\frac{4d(c+dx)^{5/2}}{33(a+bx)^{9/2}(bc-ad)^2}-\frac{2(c+dx)^{5/2}}{11(a+bx)^{11/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/2)/(a + b*x)^(13/2),x]
```

```
[Out] (-2*(c + d*x)^(5/2))/(11*(b*c - a*d)*(a + b*x)^(11/2)) + (4*d*(c
+ d*x)^(5/2))/(33*(b*c - a*d)^2*(a + b*x)^(9/2)) - (16*d^2*(c + d
*x)^(5/2))/(231*(b*c - a*d)^3*(a + b*x)^(7/2)) + (32*d^3*(c + d*x
)^(5/2))/(1155*(b*c - a*d)^4*(a + b*x)^(5/2))
```

Rubi in Sympy [A] time = 22.7216, size = 121, normalized size = 0.89

$$\frac{32d^3\,(c+dx)^{\frac{5}{2}}}{1155\,(a+bx)^{\frac{5}{2}}\,(ad-bc)^4}+\frac{16d^2\,(c+dx)^{\frac{5}{2}}}{231\,(a+bx)^{\frac{7}{2}}\,(ad-bc)^3}+\frac{4d\,(c+dx)^{\frac{5}{2}}}{33\,(a+bx)^{\frac{9}{2}}\,(ad-bc)^2}+\frac{2\,(c+dx)^{\frac{5}{2}}}{11\,(a+bx)^{\frac{11}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/2)/(b*x+a)**(13/2),x)
```

```
[Out] 32*d**3*(c + d*x)**(5/2)/(1155*(a + b*x)**(5/2)*(a*d - b*c)**4) +
 16*d**2*(c + d*x)**(5/2)/(231*(a + b*x)**(7/2)*(a*d - b*c)**3) +
 4*d*(c + d*x)**(5/2)/(33*(a + b*x)**(9/2)*(a*d - b*c)**2) + 2*(c
 + d*x)**(5/2)/(11*(a + b*x)**(11/2)*(a*d - b*c))
```

Mathematica [A] time = 0.216005, size = 118, normalized size = 0.87

$$\frac{2(c+dx)^{5/2}\left(231a^3d^3+99a^2bd^2(2dx-5c)+11ab^2d\left(35c^2-20cdx+8d^2x^2\right)+b^3\left(-105c^3+70c^2dx-40cd^2x^2+16d^3x^3\right)\right)}{1155(a+bx)^{11/2}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/2)/(a + b*x)^(13/2),x]
```

```
[Out] (2*(c + d*x)^(5/2)*(231*a^3*d^3 + 99*a^2*b*d^2*(-5*c + 2*d*x) + 1
1*a*b^2*d*(35*c^2 - 20*c*d*x + 8*d^2*x^2) + b^3*(-105*c^3 + 70*c^
2*d*x - 40*c*d^2*x^2 + 16*d^3*x^3)))/(1155*(b*c - a*d)^4*(a + b*x
)^(11/2))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$\frac{32\,b^3d^3x^3+176\,ab^2d^3x^2-80\,b^3cd^2x^2+396\,a^2bd^3x-440\,ab^2cd^2x+140\,b^3c^2dx+462\,a^3d^3-990\,a^2bcd^2+770\,ab^2c^2d-21}{1155\,d^4a^4-4620\,bd^3ca^3+6930\,b^2d^2c^2a^2-4620\,b^3dc^3a+1155\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/2)/(b*x+a)^(13/2),x)
```

```
[Out] 2/1155*(d*x+c)^(5/2)*(16*b^3*d^3*x^3+88*a*b^2*d^3*x^2-40*b^3*c*d^
2*x^2+198*a^2*b*d^3*x-220*a*b^2*c*d^2*x+70*b^3*c^2*d*x+231*a^3*d^
3-495*a^2*b*c*d^2+385*a*b^2*c^2*d-105*b^3*c^3)/(b*x+a)^(11/2)/(a^
4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(13/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 5.71502, size = 876, normalized size = 6.44

$$\frac{2\left(16\,b^3d^5x^5-105\,b^3c^5+385\,ab^2c^4d-49\right.}{1155\left(a^6b^4c^4-4\,a^7b^3c^3d+6\,a^8b^2c^2d^2-4\,a^9bcd^3+a^{10}d^4+\left(b^{10}c^4-4\,ab^9c^3d+6\,a^2b^8c^2d^2-4\,a^3b^7cd^3+a^4b^6d^4\right)x^6+6\left(ab^9c\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(13/2),x, algorithm="fricas")
```

```
[Out] 2/1155*(16*b^3*d^5*x^5 - 105*b^3*c^5 + 385*a*b^2*c^4*d - 495*a^2*
b*c^3*d^2 + 231*a^3*c^2*d^3 - 8*(b^3*c*d^4 - 11*a*b^2*d^5)*x^4 +
2*(3*b^3*c^2*d^3 - 22*a*b^2*c*d^4 + 99*a^2*b*d^5)*x^3 - (5*b^3*c^
3*d^2 - 33*a*b^2*c^2*d^3 + 99*a^2*b*c*d^4 - 231*a^3*d^5)*x^2 - 2*
(70*b^3*c^4*d - 275*a*b^2*c^3*d^2 + 396*a^2*b*c^2*d^3 - 231*a^3*c
*d^4)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^6*b^4*c^4 - 4*a^7*b^3*c^3
*d + 6*a^8*b^2*c^2*d^2 - 4*a^9*b*c*d^3 + a^10*d^4 + (b^10*c^4 - 4
*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c*d^3 + a^4*b^6*d^4)
*x^6 + 6*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*b^7*c^2*d^2 - 4*a^4
*b^6*c*d^3 + a^5*b^5*d^4)*x^5 + 15*(a^2*b^8*c^4 - 4*a^3*b^7*c^3*d
 + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b^4*d^4)*x^4 + 20*(a
^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d^2 - 4*a^6*b^4*c*d^
3 + a^7*b^3*d^4)*x^3 + 15*(a^4*b^6*c^4 - 4*a^5*b^5*c^3*d + 6*a^6*
b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*x^2 + 6*(a^5*b^5*c^4
 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8*b^2*c*d^3 + a^9*b*
d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/2)/(b*x+a)**(13/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.500726, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/2)/(b*x + a)^(13/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1481 $\int (a+bx)^{5/2}(c+dx)^{5/2}\,dx$

Optimal. Leaf size=262

$$-\frac{5(bc-ad)^6\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{512b^{7/2}d^{7/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^5}{512b^3d^3}-\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^4}{768b^3d^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^3}{192b^3d}+\frac{(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)^2}{32b^3}+\frac{(a+bx)^{7/2}(c+dx)^{3/2}(bc-ad)}{12b^2}+\frac{(a+bx)^{7/2}(c+dx)^{5/2}}{6b}$$

```
[Out] (5*(b*c - a*d)^5*Sqrt[a + b*x]*Sqrt[c + d*x])/(512*b^3*d^3) - (5*
(b*c - a*d)^4*(a + b*x)^(3/2)*Sqrt[c + d*x])/(768*b^3*d^2) + ((b*
c - a*d)^3*(a + b*x)^(5/2)*Sqrt[c + d*x])/(192*b^3*d) + ((b*c - a
*d)^2*(a + b*x)^(7/2)*Sqrt[c + d*x])/(32*b^3) + ((b*c - a*d)*(a +
 b*x)^(7/2)*(c + d*x)^(3/2))/(12*b^2) + ((a + b*x)^(7/2)*(c + d*x
)^(5/2))/(6*b) - (5*(b*c - a*d)^6*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])
/(Sqrt[b]*Sqrt[c + d*x])])/(512*b^(7/2)*d^(7/2))
```

Rubi [A] time = 0.380085, antiderivative size = 262, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{5(bc-ad)^6\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{512b^{7/2}d^{7/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^5}{512b^3d^3}-\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^4}{768b^3d^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^3}{192b^3d}+\frac{(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)^2}{32b^3}+\frac{(a+bx)^{7/2}(c+dx)^{3/2}(bc-ad)}{12b^2}+\frac{(a+bx)^{7/2}(c+dx)^{5/2}}{6b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)*(c + d*x)^(5/2),x]
```

```
[Out] (5*(b*c - a*d)^5*Sqrt[a + b*x]*Sqrt[c + d*x])/(512*b^3*d^3) - (5*
(b*c - a*d)^4*(a + b*x)^(3/2)*Sqrt[c + d*x])/(768*b^3*d^2) + ((b*
c - a*d)^3*(a + b*x)^(5/2)*Sqrt[c + d*x])/(192*b^3*d) + ((b*c - a
*d)^2*(a + b*x)^(7/2)*Sqrt[c + d*x])/(32*b^3) + ((b*c - a*d)*(a +
 b*x)^(7/2)*(c + d*x)^(3/2))/(12*b^2) + ((a + b*x)^(7/2)*(c + d*x
)^(5/2))/(6*b) - (5*(b*c - a*d)^6*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])
/(Sqrt[b]*Sqrt[c + d*x])])/(512*b^(7/2)*d^(7/2))
```

Rubi in Sympy [A] time = 69.2365, size = 233, normalized size = 0.89

$$\frac{(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{7}{2}}}{6d}+\frac{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{7}{2}}(ad-bc)}{12d^2}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{7}{2}}(ad-bc)^2}{32d^3}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}(ad-bc)^3}{192bd^3}-\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}(ad-bc)^4}{768b^2d^3}+\frac{5\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^5}{512b^3d^3}-\frac{5(ad-bc)^6\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{512b^{\frac{7}{2}}d^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)*(d*x+c)**(5/2),x)
```

```
[Out] (a + b*x)**(5/2)*(c + d*x)**(7/2)/(6*d) + (a + b*x)**(3/2)*(c + d
*x)**(7/2)*(a*d - b*c)/(12*d**2) + sqrt(a + b*x)*(c + d*x)**(7/2)
*(a*d - b*c)**2/(32*d**3) + sqrt(a + b*x)*(c + d*x)**(5/2)*(a*d -
 b*c)**3/(192*b*d**3) - 5*sqrt(a + b*x)*(c + d*x)**(3/2)*(a*d - b
*c)**4/(768*b**2*d**3) + 5*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c
)**5/(512*b**3*d**3) - 5*(a*d - b*c)**6*atanh(sqrt(d)*sqrt(a + b*
x)/(sqrt(b)*sqrt(c + d*x)))/(512*b**(7/2)*d**(7/2))
```

Mathematica [A] time = 0.368531, size = 300, normalized size = 1.15

$$2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}\left(15a^5d^5-5a^4bd^4(17c+2dx)+2a^3b^2d^3\left(99c^2+28cdx+4d^2x^2\right)+6a^2b^3d^2\left(33c^3+198c^2dx+212cd\right.\right.$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)*(c + d*x)^(5/2),x]
```

```
[Out] (2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]*(15*a^5*d^5 - 5*a^
4*b*d^4*(17*c + 2*d*x) + 2*a^3*b^2*d^3*(99*c^2 + 28*c*d*x + 4*d^2
*x^2) + 6*a^2*b^3*d^2*(33*c^3 + 198*c^2*d*x + 212*c*d^2*x^2 + 72*
d^3*x^3) + a*b^4*d*(-85*c^4 + 56*c^3*d*x + 1272*c^2*d^2*x^2 + 169
6*c*d^3*x^3 + 640*d^4*x^4) + b^5*(15*c^5 - 10*c^4*d*x + 8*c^3*d^2
*x^2 + 432*c^2*d^3*x^3 + 640*c*d^4*x^4 + 256*d^5*x^5)) - 15*(b*c
- a*d)^6*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x
]*Sqrt[c + d*x]])/(3072*b^(7/2)*d^(7/2))
```

Maple [B] time = 0.009, size = 1089, normalized size = 4.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)*(d*x+c)^(5/2),x)
```

```
[Out] -5/1024*d^3/b^3*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/
2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*
c)^(1/2))/(b*d)^(1/2)*a^6+1/192/b*(d*x+c)^(5/2)*(b*x+a)^(1/2)*a^3
+1/12/d*(b*x+a)^(3/2)*(d*x+c)^(7/2)*a+1/32/d*(b*x+a)^(1/2)*(d*x+c
)^(7/2)*a^2+1/64/d^2*(d*x+c)^(5/2)*(b*x+a)^(1/2)*a*c^2*b+5/192/d^
2*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a*c^3*b-1/16/d^2*(b*x+a)^(1/2)*(d*x
+c)^(7/2)*a*b*c-25/512*d/b^2*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^4*c+25
/512/d^2*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c^4*b-75/1024/d*((b*x+a)*(
d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d
*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^2*
c^4*b+15/512/d^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1
/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a
*c)^(1/2))/(b*d)^(1/2)*a*c^5*b^2-75/1024*d/b*((b*x+a)*(d*x+c))^(1
/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^
(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^4*c^2+15/512
*d^2/b^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((
1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2
))/(b*d)^(1/2)*a^5*c+25/256*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)
/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a
*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c^3-1/64/d*(d*x+c)^(5/2)*(b
*x+a)^(1/2)*a^2*c-1/192/d^3*(d*x+c)^(5/2)*(b*x+a)^(1/2)*c^3*b^2-1
/12/d^2*(b*x+a)^(3/2)*(d*x+c)^(7/2)*b*c-5/768/d^3*(d*x+c)^(3/2)*(
b*x+a)^(1/2)*c^4*b^2-5/768*d/b^2*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a^4-
25/256/d*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^2*c^3-5/128/d*(d*x+c)^(3/2
)*(b*x+a)^(1/2)*a^2*c^2+1/32/d^3*(b*x+a)^(1/2)*(d*x+c)^(7/2)*b^2*
c^2+5/512*d^2/b^3*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^5+5/192/b*(d*x+c)
^(3/2)*(b*x+a)^(1/2)*a^3*c-5/512/d^3*(d*x+c)^(1/2)*(b*x+a)^(1/2)*
c^5*b^2+25/256/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^3*c^2+1/6/d*(b*x+a
)^(5/2)*(d*x+c)^(7/2)-5/1024/d^3*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^
(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2
*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^6*b^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.293121, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6144*(4*(256*b^5*d^5*x^5 + 15*b^5*c^5 - 85*a*b^4*c^4*d + 198*a
^2*b^3*c^3*d^2 + 198*a^3*b^2*c^2*d^3 - 85*a^4*b*c*d^4 + 15*a^5*d^
5 + 640*(b^5*c*d^4 + a*b^4*d^5)*x^4 + 16*(27*b^5*c^2*d^3 + 106*a*
b^4*c*d^4 + 27*a^2*b^3*d^5)*x^3 + 8*(b^5*c^3*d^2 + 159*a*b^4*c^2*
d^3 + 159*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 - 2*(5*b^5*c^4*d - 28*
a*b^4*c^3*d^2 - 594*a^2*b^3*c^2*d^3 - 28*a^3*b^2*c*d^4 + 5*a^4*b*
d^5)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x + c) + 15*(b^6*c^6 - 6*a
*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2
*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*log(-4*(2*b^2*d^2*x + b^2*c*d
 + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^
2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(s
qrt(b*d)*b^3*d^3), 1/3072*(2*(256*b^5*d^5*x^5 + 15*b^5*c^5 - 85*a
*b^4*c^4*d + 198*a^2*b^3*c^3*d^2 + 198*a^3*b^2*c^2*d^3 - 85*a^4*b
*c*d^4 + 15*a^5*d^5 + 640*(b^5*c*d^4 + a*b^4*d^5)*x^4 + 16*(27*b^
5*c^2*d^3 + 106*a*b^4*c*d^4 + 27*a^2*b^3*d^5)*x^3 + 8*(b^5*c^3*d^
2 + 159*a*b^4*c^2*d^3 + 159*a^2*b^3*c*d^4 + a^3*b^2*d^5)*x^2 - 2*
(5*b^5*c^4*d - 28*a*b^4*c^3*d^2 - 594*a^2*b^3*c^2*d^3 - 28*a^3*b^
2*c*d^4 + 5*a^4*b*d^5)*x)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c)
- 15*(b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c
^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*arctan(1/2
*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*
d)))/(sqrt(-b*d)*b^3*d^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)*(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.439663, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1482 $\int (a+bx)^{3/2}(c+dx)^{5/2}\,dx$

Optimal. Leaf size=224

$$\frac{3(bc-ad)^5\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{7/2}d^{5/2}}-\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}{128b^3d^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}{64b^3d}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}{16b^3}+\frac{(a+bx)^{5/2}(c+dx)^{3/2}(bc-ad)}{8b^2}+\frac{(a+bx)^{5/2}(c+dx)^{5/2}}{5b}$$

```
[Out] (-3*(b*c - a*d)^4*Sqrt[a + b*x]*Sqrt[c + d*x])/(128*b^3*d^2) + ((
b*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])/(64*b^3*d) + ((b*c -
a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/(16*b^3) + ((b*c - a*d)*(a
+ b*x)^(5/2)*(c + d*x)^(3/2))/(8*b^2) + ((a + b*x)^(5/2)*(c + d*x
)^(5/2))/(5*b) + (3*(b*c - a*d)^5*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])
/(Sqrt[b]*Sqrt[c + d*x])])/(128*b^(7/2)*d^(5/2))
```

Rubi [A] time = 0.291598, antiderivative size = 224, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{3(bc-ad)^5\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{7/2}d^{5/2}}-\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}{128b^3d^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}{64b^3d}+\frac{(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}{16b^3}+\frac{(a+bx)^{5/2}(c+dx)^{3/2}(bc-ad)}{8b^2}+\frac{(a+bx)^{5/2}(c+dx)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(5/2),x]
```

```
[Out] (-3*(b*c - a*d)^4*Sqrt[a + b*x]*Sqrt[c + d*x])/(128*b^3*d^2) + ((
b*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])/(64*b^3*d) + ((b*c -
a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/(16*b^3) + ((b*c - a*d)*(a
+ b*x)^(5/2)*(c + d*x)^(3/2))/(8*b^2) + ((a + b*x)^(5/2)*(c + d*x
)^(5/2))/(5*b) + (3*(b*c - a*d)^5*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])
/(Sqrt[b]*Sqrt[c + d*x])])/(128*b^(7/2)*d^(5/2))
```

Rubi in Sympy [A] time = 52.6825, size = 202, normalized size = 0.9

$$\frac{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{7}{2}}}{5d}+\frac{3\sqrt{a+bx}\,(c+dx)^{\frac{7}{2}}(ad-bc)}{40d^2}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}(ad-bc)^2}{80bd^2}-\frac{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}(ad-bc)^3}{64b^2d^2}+\frac{3\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^4}{128b^3d^2}-\frac{3\,(ad-bc)^5\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{128b^{\frac{7}{2}}d^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(5/2),x)
```

```
[Out] (a + b*x)**(3/2)*(c + d*x)**(7/2)/(5*d) + 3*sqrt(a + b*x)*(c + d*
x)**(7/2)*(a*d - b*c)/(40*d**2) + sqrt(a + b*x)*(c + d*x)**(5/2)*
(a*d - b*c)**2/(80*b*d**2) - sqrt(a + b*x)*(c + d*x)**(3/2)*(a*d
- b*c)**3/(64*b**2*d**2) + 3*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b
*c)**4/(128*b**3*d**2) - 3*(a*d - b*c)**5*atanh(sqrt(d)*sqrt(a +
b*x)/(sqrt(b)*sqrt(c + d*x)))/(128*b**(7/2)*d**(5/2))
```

Mathematica [A] time = 0.241927, size = 233, normalized size = 1.04

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(15a^4d^4-10a^3bd^3(7c+dx)+2a^2b^2d^2\left(64c^2+23cdx+4d^2x^2\right)+2ab^3d\left(35c^3+233c^2dx+256cd^2x^2+88d\right.\right.}{640b^3d^2}$$
$$+\frac{3(bc-ad)^5\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{256b^{7/2}d^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(15*a^4*d^4 - 10*a^3*b*d^3*(7*c + d*
x) + 2*a^2*b^2*d^2*(64*c^2 + 23*c*d*x + 4*d^2*x^2) + 2*a*b^3*d*(3
5*c^3 + 233*c^2*d*x + 256*c*d^2*x^2 + 88*d^3*x^3) + b^4*(-15*c^4
+ 10*c^3*d*x + 248*c^2*d^2*x^2 + 336*c*d^3*x^3 + 128*d^4*x^4)))/(
640*b^3*d^2) + (3*(b*c - a*d)^5*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[
b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(256*b^(7/2)*d^(5/2))
```

Maple [B] time = 0.012, size = 848, normalized size = 3.8

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(5/2),x)
```

```
[Out] 1/5/d*(b*x+a)^(3/2)*(d*x+c)^(7/2)+3/40/d*(b*x+a)^(1/2)*(d*x+c)^(7
/2)*a+3/64/b*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a^2*c-3/32*d/b^2*(d*x+c)
^(1/2)*(b*x+a)^(1/2)*a^3*c+9/64/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^2
*c^2+15/256*d^2/b^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)
^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*
x+a*c)^(1/2))/(b*d)^(1/2)*a^4*c-15/128*d/b*((b*x+a)*(d*x+c))^(1/2
)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1
/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c^2+15/128*(
(b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/
2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(
```

```
1/2)*a^2*c^3+3/128*d^2/b^3*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^4-3/32/d
*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c^3+3/128/d^2*(d*x+c)^(1/2)*(b*x+a
)^(1/2)*c^4*b+1/64/d^2*(d*x+c)^(3/2)*(b*x+a)^(1/2)*c^3*b+1/80/d^2
*(d*x+c)^(5/2)*(b*x+a)^(1/2)*c^2*b-1/64*d/b^2*(d*x+c)^(3/2)*(b*x+
a)^(1/2)*a^3-3/64/d*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a*c^2-3/40/d^2*(b
*x+a)^(1/2)*(d*x+c)^(7/2)*b*c+1/80/b*(d*x+c)^(5/2)*(b*x+a)^(1/2)*
a^2-1/40/d*(d*x+c)^(5/2)*(b*x+a)^(1/2)*a*c-3/256*d^3/b^3*((b*x+a)
*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b
*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^
5-15/256/d*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln
((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1
/2))/(b*d)^(1/2)*a*c^4*b+3/256/d^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c
)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x
^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^5*b^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.284997, size = 1, normalized size = 0.

$$\left[\frac{4\left(128\,b^4d^4x^4 - 15\,b^4c^4 + 70\,ab^3c^3d + 128\,a^2b^2c^2d^2 - 70\,a^3bcd^3 + 15\,a^4d^4 + 16\left(21\,b^4cd^3 + 11\,ab^3d^4\right)x^3 + 8\left(31\,b^4c^2d^2 + 64\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/2560*(4*(128*b^4*d^4*x^4 - 15*b^4*c^4 + 70*a*b^3*c^3*d + 128*a
^2*b^2*c^2*d^2 - 70*a^3*b*c*d^3 + 15*a^4*d^4 + 16*(21*b^4*c*d^3 +
 11*a*b^3*d^4)*x^3 + 8*(31*b^4*c^2*d^2 + 64*a*b^3*c*d^3 + a^2*b^2
*d^4)*x^2 + 2*(5*b^4*c^3*d + 233*a*b^3*c^2*d^2 + 23*a^2*b^2*c*d^3
 - 5*a^3*b*d^4)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x + c) - 15*(b^
5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*c^2*d^3 +
 5*a^4*b*c*d^4 - a^5*d^5)*log(-4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2
)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*
c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(sqrt(b*d)*b
^3*d^2), 1/1280*(2*(128*b^4*d^4*x^4 - 15*b^4*c^4 + 70*a*b^3*c^3*d
 + 128*a^2*b^2*c^2*d^2 - 70*a^3*b*c*d^3 + 15*a^4*d^4 + 16*(21*b^4
```

```
*c*d^3 + 11*a*b^3*d^4)*x^3 + 8*(31*b^4*c^2*d^2 + 64*a*b^3*c*d^3 +
 a^2*b^2*d^4)*x^2 + 2*(5*b^4*c^3*d + 233*a*b^3*c^2*d^2 + 23*a^2*b
^2*c*d^3 - 5*a^3*b*d^4)*x)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c)
 + 15*(b^5*c^5 - 5*a*b^4*c^4*d + 10*a^2*b^3*c^3*d^2 - 10*a^3*b^2*
c^2*d^3 + 5*a^4*b*c*d^4 - a^5*d^5)*arctan(1/2*(2*b*d*x + b*c + a*
d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*b^3
*d^2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(5/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 0.353588, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/2),x, algorithm="giac")

[Out] Done
```

3.1483 $\int \sqrt{a+bx}(c+dx)^{5/2}\,dx$

Optimal. Leaf size=186

$$-\frac{5(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{7/2}d^{3/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64b^3d}+\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{32b^3}+\frac{5(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)}{24b^2}+\frac{(a+bx)^{3/2}(c+dx)^{5/2}}{4b}$$

```
[Out] (5*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*b^3*d) + (5*(b*
c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(32*b^3) + (5*(b*c - a*
d)*(a + b*x)^(3/2)*(c + d*x)^(3/2))/(24*b^2) + ((a + b*x)^(3/2)*(
c + d*x)^(5/2))/(4*b) - (5*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a
+ b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*b^(7/2)*d^(3/2))
```

Rubi [A] time = 0.223417, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{5(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{7/2}d^{3/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64b^3d}+\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{32b^3}+\frac{5(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)}{24b^2}+\frac{(a+bx)^{3/2}(c+dx)^{5/2}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(5/2),x]
```


```
[Out] (5*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*b^3*d) + (5*(b*
c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(32*b^3) + (5*(b*c - a*
d)*(a + b*x)^(3/2)*(c + d*x)^(3/2))/(24*b^2) + ((a + b*x)^(3/2)*(
c + d*x)^(5/2))/(4*b) - (5*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a
+ b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*b^(7/2)*d^(3/2))
```

Rubi in Sympy [A] time = 39.3478, size = 167, normalized size = 0.9

$$\frac{\sqrt{a+bx}\,(c+dx)^{\frac{7}{2}}}{4d}+\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}\,(ad-bc)}{24bd}-\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^2}{96b^2d}+\frac{5\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^3}{64b^3d}-\frac{5\,(ad-bc)^4\,\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64b^{\frac{7}{2}}d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(5/2),x)
```

```
[Out] sqrt(a + b*x)*(c + d*x)**(7/2)/(4*d) + sqrt(a + b*x)*(c + d*x)**(
5/2)*(a*d - b*c)/(24*b*d) - 5*sqrt(a + b*x)*(c + d*x)**(3/2)*(a*d
 - b*c)**2/(96*b**2*d) + 5*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c
)**3/(64*b**3*d) - 5*(a*d - b*c)**4*atanh(sqrt(d)*sqrt(a + b*x)/(
sqrt(b)*sqrt(c + d*x)))/(64*b**(7/2)*d**(3/2))
```

Mathematica [A] time = 0.162608, size = 181, normalized size = 0.97

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(15a^3d^3-5a^2bd^2(11c+2dx)+ab^2d\left(73c^2+36cdx+8d^2x^2\right)+b^3\left(15c^3+118c^2dx+136cd^2x^2+48d^3x^3\right)\right)}{192b^3d}-\frac{5(bc-ad)^4\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{128b^{7/2}d^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(15*a^3*d^3 - 5*a^2*b*d^2*(11*c + 2*
d*x) + a*b^2*d*(73*c^2 + 36*c*d*x + 8*d^2*x^2) + b^3*(15*c^3 + 11
8*c^2*d*x + 136*c*d^2*x^2 + 48*d^3*x^3)))/(192*b^3*d) - (5*(b*c -
 a*d)^4*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]
*Sqrt[c + d*x]])/(128*b^(7/2)*d^(3/2))
```

Maple [B] time = 0.012, size = 641, normalized size = 3.5

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(5/2),x)
```

```
[Out] 1/4/d*(b*x+a)^(1/2)*(d*x+c)^(7/2)+1/24/b*(d*x+c)^(5/2)*(b*x+a)^(1
/2)*a-1/24/d*(d*x+c)^(5/2)*(b*x+a)^(1/2)*c-5/96*d/b^2*(d*x+c)^(3/
2)*(b*x+a)^(1/2)*a^2+5/48/b*(d*x+c)^(3/2)*(b*x+a)^(1/2)*a*c-5/96/
d*(d*x+c)^(3/2)*(b*x+a)^(1/2)*c^2+5/64*d^2/b^3*(d*x+c)^(1/2)*(b*x
+a)^(1/2)*a^3-15/64*d/b^2*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a^2*c+15/64
/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*c^2-5/64/d*(d*x+c)^(1/2)*(b*x+a)
^(1/2)*c^3-5/128*d^3/b^3*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b
*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+
b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^4+5/32*d^2/b^2*((b*x+a)*(d*x+c))
^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*
d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*c-15/64
*d/b*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*
```

```
a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(
b*d)^(1/2)*a^2*c^2+5/32*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*
x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b
*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a*c^3-5/128/d*((b*x+a)*(d*x+c))^(1/
2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(
1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^4*b
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.25595, size = 1, normalized size = 0.01

$$\left[\frac{4\left(48\,b^3d^3x^3+15\,b^3c^3+73\,ab^2c^2d-55\,a^2bcd^2+15\,a^3d^3+8\left(17\,b^3cd^2+ab^2d^3\right)x^2+2\left(59\,b^3c^2d+18\,ab^2cd^2-5\,a^2bd^3\right)x\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/768*(4*(48*b^3*d^3*x^3 + 15*b^3*c^3 + 73*a*b^2*c^2*d - 55*a^2*
b*c*d^2 + 15*a^3*d^3 + 8*(17*b^3*c*d^2 + a*b^2*d^3)*x^2 + 2*(59*b
^3*c^2*d + 18*a*b^2*c*d^2 - 5*a^2*b*d^3)*x)*sqrt(b*d)*sqrt(b*x +
a)*sqrt(d*x + c) + 15*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^
2 - 4*a^3*b*c*d^3 + a^4*d^4)*log(-4*(2*b^2*d^2*x + b^2*c*d + a*b*
d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a
*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/(sqrt(b*d
)*b^3*d), 1/384*(2*(48*b^3*d^3*x^3 + 15*b^3*c^3 + 73*a*b^2*c^2*d
- 55*a^2*b*c*d^2 + 15*a^3*d^3 + 8*(17*b^3*c*d^2 + a*b^2*d^3)*x^2
+ 2*(59*b^3*c^2*d + 18*a*b^2*c*d^2 - 5*a^2*b*d^3)*x)*sqrt(-b*d)*s
qrt(b*x + a)*sqrt(d*x + c) - 15*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*
b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*arctan(1/2*(2*b*d*x + b*c
+ a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)
*b^3*d)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.2896, size = 852, normalized size = 4.58

$$\frac{\frac{10\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(\frac{2(bx+a)}{b^4d^2}+\frac{bcd-ad^2}{b^4d^4}\right)+\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}\,b^3d^3}\right)c^2|b|}{b^2}+\frac{5\left(\sqrt{b^2c+(bx+a)bd-abd}\left(2\,(bx+a)\left(4\right.\right.\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 1/960*(10*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(
b*x + a)/(b^4*d^2) + (b*c*d - a*d^2)/(b^4*d^4)) + (b^2*c^2 - 2*a*
b*c*d + a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (
b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3))*c^2*abs(b)/b^2 + 5*(
sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*(2*(b*x + a)*(4*(b*x + a)*(6*
(b*x + a)/b^2 + (b^7*c*d^5 - 17*a*b^6*d^6)/(b^8*d^6)) - (5*b^8*c^
2*d^4 + 6*a*b^7*c*d^5 - 59*a^2*b^6*d^6)/(b^8*d^6)) + 3*(5*b^9*c^3
*d^3 + a*b^8*c^2*d^4 - a^2*b^7*c*d^5 - 5*a^3*b^6*d^6)/(b^8*d^6))*
sqrt(b*x + a) + 3*(5*b^4*c^4 - 4*a*b^3*c^3*d - 2*a^2*b^2*c^2*d^2
- 4*a^3*b*c*d^3 + 5*a^4*d^4)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sq
rt(b^2*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b*d^3))*d^2*abs(b)
/b^2 + (sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x
 + a)*(4*(b*x + a)/(b^6*d^2) + (b*c*d^3 - 7*a*d^4)/(b^6*d^6)) - 3
*(b^2*c^2*d^2 - a^2*d^4)/(b^6*d^6)) - 3*(b^3*c^3 - a*b^2*c^2*d -
a^2*b*c*d^2 + a^3*d^3)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2
*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^5*d^4))*c*d*abs(b)/b^3
)/b
```

3.1484 $\int \frac{(c+dx)^{5/2}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=148

$$\frac{5(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8b^{7/2}\sqrt{d}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8b^3}+\frac{5\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)}{12b^2}+\frac{\sqrt{a+bx}(c+dx)^{5/2}}{3b}$$

```
[Out] (5*(b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*b^3) + (5*(b*c -
 a*d)*Sqrt[a + b*x]*(c + d*x)^(3/2))/(12*b^2) + (Sqrt[a + b*x]*(c
 + d*x)^(5/2))/(3*b) + (5*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a +
 b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*b^(7/2)*Sqrt[d])
```

Rubi [A] time = 0.169439, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{5(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8b^{7/2}\sqrt{d}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8b^3}+\frac{5\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)}{12b^2}+\frac{\sqrt{a+bx}(c+dx)^{5/2}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/Sqrt[a + b*x],x]
```

```
[Out] (5*(b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*b^3) + (5*(b*c -
 a*d)*Sqrt[a + b*x]*(c + d*x)^(3/2))/(12*b^2) + (Sqrt[a + b*x]*(c
 + d*x)^(5/2))/(3*b) + (5*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a +
 b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*b^(7/2)*Sqrt[d])
```

Rubi in Sympy [A] time = 27.3511, size = 133, normalized size = 0.9

$$\frac{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}}{3b}-\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}{12b^2}+\frac{5\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^2}{8b^3}-\frac{5\,(ad-bc)^3\,\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{8b^{\frac{7}{2}}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(1/2),x)
```

```
[Out] sqrt(a + b*x)*(c + d*x)**(5/2)/(3*b) - 5*sqrt(a + b*x)*(c + d*x)*
*(3/2)*(a*d - b*c)/(12*b**2) + 5*sqrt(a + b*x)*sqrt(c + d*x)*(a*d
 - b*c)**2/(8*b**3) - 5*(a*d - b*c)**3*atanh(sqrt(b)*sqrt(c + d*x
)/(sqrt(d)*sqrt(a + b*x)))/(8*b**(7/2)*sqrt(d))
```

Mathematica [A] time = 0.138437, size = 137, normalized size = 0.93

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(15a^2d^2-10abd(4c+dx)+b^2\left(33c^2+26cdx+8d^2x^2\right)\right)}{24b^3}+\frac{5(bc-ad)^3\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{16b^{7/2}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/Sqrt[a + b*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(15*a^2*d^2 - 10*a*b*d*(4*c + d*x) +
 b^2*(33*c^2 + 26*c*d*x + 8*d^2*x^2)))/(24*b^3) + (5*(b*c - a*d)^
3*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[
c + d*x]])/(16*b^(7/2)*Sqrt[d])
```

Maple [B] time = 0.01, size = 465, normalized size = 3.1

$$\frac{1}{3b}\sqrt{bx+a}\,(dx+c)^{\frac{5}{2}}-\frac{5\,ad}{12\,b^2}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}+\frac{5\,c}{12\,b}\sqrt{bx+a}\,(dx+c)^{\frac{3}{2}}+\frac{5\,a^2d^2}{8\,b^3}\sqrt{bx+a}\sqrt{dx+c}-\frac{5\,adc}{4\,b^2}\sqrt{bx+a}\sqrt{dx+c}+\frac{5\,c^2}{8\,b}\sqrt{bx+a}\sqrt{dx+c}$$
$$-\frac{5\,a^3d^3}{16\,b^3}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{15\,a^2d^2c}{16\,b^2}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{15\,adc^2}{16\,b}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{5\,c^3}{16}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(1/2),x)
```

```
[Out] 1/3*(d*x+c)^(5/2)*(b*x+a)^(1/2)/b-5/12/b^2*(d*x+c)^(3/2)*(b*x+a)^
(1/2)*a*d+5/12/b*(d*x+c)^(3/2)*(b*x+a)^(1/2)*c+5/8/b^3*(d*x+c)^(1
/2)*(b*x+a)^(1/2)*a^2*d^2-5/4/b^2*(d*x+c)^(1/2)*(b*x+a)^(1/2)*a*d
```

```
*c+5/8/b*(d*x+c)^(1/2)*(b*x+a)^(1/2)*c^2-5/16/b^3*((b*x+a)*(d*x+c
))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(
b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3*d^3+1
5/16/b^2*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((
1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2
))/(b*d)^(1/2)*a^2*d^2*c-15/16/b*((b*x+a)*(d*x+c))^(1/2)/(d*x+c)^
(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2
*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a*d*c^2+5/16*((b*x+a)*(d*x
+c))^(1/2)/(d*x+c)^(1/2)/(b*x+a)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)
/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*c^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.267575, size = 1, normalized size = 0.01

$$\left[\frac{4\left(8\,b^2d^2x^2+33\,b^2c^2-40\,abcd+15\,a^2d^2+2\left(13\,b^2cd-5\,abd^2\right)x\right)\sqrt{bd}\sqrt{bx+a}\sqrt{dx+c}-15\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2\right.}{96\,\sqrt{bd}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] [1/96*(4*(8*b^2*d^2*x^2 + 33*b^2*c^2 - 40*a*b*c*d + 15*a^2*d^2 +
2*(13*b^2*c*d - 5*a*b*d^2)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x +
c) - 15*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*log(-
4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) +
 (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*
b*d^2)*x)*sqrt(b*d)))/(sqrt(b*d)*b^3), 1/48*(2*(8*b^2*d^2*x^2 + 3
3*b^2*c^2 - 40*a*b*c*d + 15*a^2*d^2 + 2*(13*b^2*c*d - 5*a*b*d^2)*
x)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c) + 15*(b^3*c^3 - 3*a*b^2
*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*arctan(1/2*(2*b*d*x + b*c + a*d
)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*b^3)
]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{5}{2}}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(5/2)/sqrt(a + b*x), x)
```

GIAC/XCAS [A] time = 0.282145, size = 614, normalized size = 4.15

$$-\frac{\frac{24\left(\frac{(b^2c-abd)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}}-\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\right)c^2|b|}{b^2}-\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(2(bx+a)\left(\frac{4(bx+a)}{b^2}+\frac{b^6cd^3-13ab^5}{b^7d^4}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] -1/24*(24*((b^2*c - a*b*d)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt
(b^2*c + (b*x + a)*b*d - a*b*d)))/sqrt(b*d) - sqrt(b^2*c + (b*x +
 a)*b*d - a*b*d)*sqrt(b*x + a))*c^2*abs(b)/b^2 - (sqrt(b^2*c + (b
*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x + a)*(4*(b*x + a)/b^2
+ (b^6*c*d^3 - 13*a*b^5*d^4)/(b^7*d^4)) - 3*(b^7*c^2*d^2 + 2*a*b^
6*c*d^3 - 11*a^2*b^5*d^4)/(b^7*d^4)) - 3*(b^3*c^3 + a*b^2*c^2*d +
 3*a^2*b*c*d^2 - 5*a^3*d^3)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqr
t(b^2*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b*d^2))*d^2*abs(b)/
b^2 - (sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x
+ a)/(b^4*d^2) + (b*c*d - 5*a*d^2)/(b^4*d^4)) + (b^2*c^2 + 2*a*b*
c*d - 3*a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (
b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3))*c*d*abs(b)/b^3)/b
```

3.1485 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=138

$$\frac{15\sqrt{d}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{7/2}}+\frac{15d\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4b^3}+\frac{5d\sqrt{a+bx}(c+dx)^{3/2}}{2b^2}-\frac{2(c+dx)^{5/2}}{b\sqrt{a+bx}}$$

```
[Out] (15*d*(b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*b^3) + (5*d*Sqr
t[a + b*x]*(c + d*x)^(3/2))/(2*b^2) - (2*(c + d*x)^(5/2))/(b*Sqrt
[a + b*x]) + (15*Sqrt[d]*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*b^(7/2))
```

Rubi [A] time = 0.160451, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{15\sqrt{d}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{7/2}}+\frac{15d\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4b^3}+\frac{5d\sqrt{a+bx}(c+dx)^{3/2}}{2b^2}-\frac{2(c+dx)^{5/2}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(3/2),x]
```

```
[Out] (15*d*(b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*b^3) + (5*d*Sqr
t[a + b*x]*(c + d*x)^(3/2))/(2*b^2) - (2*(c + d*x)^(5/2))/(b*Sqrt
[a + b*x]) + (15*Sqrt[d]*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*b^(7/2))
```

Rubi in Sympy [A] time = 25.9772, size = 128, normalized size = 0.93

$$-\frac{2\left(c+dx\right)^{\frac{5}{2}}}{b\sqrt{a+bx}}+\frac{5d\sqrt{a+bx}\left(c+dx\right)^{\frac{3}{2}}}{2b^2}-\frac{15d\sqrt{a+bx}\sqrt{c+dx}\left(ad-bc\right)}{4b^3}+\frac{15\sqrt{d}\left(ad-bc\right)^2\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(5/2)/(b*sqrt(a + b*x)) + 5*d*sqrt(a + b*x)*(c + d*
x)**(3/2)/(2*b**2) - 15*d*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)
/(4*b**3) + 15*sqrt(d)*(a*d - b*c)**2*atanh(sqrt(d)*sqrt(a + b*x)
/(sqrt(b)*sqrt(c + d*x)))/(4*b**(7/2))
```

Mathematica [A] time = 0.168394, size = 138, normalized size = 1.

$$\frac{15\sqrt{d}(bc-ad)^2\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{8b^{7/2}}+\sqrt{a+bx}\sqrt{c+dx}\left(-\frac{2(bc-ad)^2}{b^3(a+bx)}+\frac{d(9bc-7ad)}{4b^3}+\frac{d^2x}{2b^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(3/2),x]
```

```
[Out] Sqrt[a + b*x]*Sqrt[c + d*x]*((d*(9*b*c - 7*a*d))/(4*b^3) + (d^2*x
)/(2*b^2) - (2*(b*c - a*d)^2)/(b^3*(a + b*x))) + (15*Sqrt[d]*(b*c
 - a*d)^2*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*
x]*Sqrt[c + d*x]])/(8*b^(7/2))
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{2}}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(3/2),x)
```

```
[Out] int((d*x+c)^(5/2)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.394856, size = 1, normalized size = 0.01

$$\left[\frac{15\left(ab^2c^2 - 2a^2bcd + a^3d^2 + \left(b^3c^2 - 2ab^2cd + a^2bd^2\right)x\right)\sqrt{\frac{d}{b}}\log\left(8b^2d^2x^2 + b^2c^2 + 6abcd + a^2d^2 + 4\left(2b^2dx + b^2c + abd\right.\right.}{16\left(b^4\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/16*(15*(a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*b^2
*c*d + a^2*b*d^2)*x)*sqrt(d/b)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*
b*c*d + a^2*d^2 + 4*(2*b^2*d*x + b^2*c + a*b*d)*sqrt(b*x + a)*sqr
t(d*x + c)*sqrt(d/b) + 8*(b^2*c*d + a*b*d^2)*x) + 4*(2*b^2*d^2*x^
2 - 8*b^2*c^2 + 25*a*b*c*d - 15*a^2*d^2 + (9*b^2*c*d - 5*a*b*d^2)
*x)*sqrt(b*x + a)*sqrt(d*x + c))/(b^4*x + a*b^3), 1/8*(15*(a*b^2*
c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*b^2*c*d + a^2*b*d^2)
*x)*sqrt(-d/b)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sq
rt(d*x + c)*b*sqrt(-d/b))) + 2*(2*b^2*d^2*x^2 - 8*b^2*c^2 + 25*a*
b*c*d - 15*a^2*d^2 + (9*b^2*c*d - 5*a*b*d^2)*x)*sqrt(b*x + a)*sqr
t(d*x + c))/(b^4*x + a*b^3)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{5}{2}}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(3/2),x)
```

```
[Out] Integral((c + d*x)**(5/2)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.626698, size = 4, normalized size = 0.03

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.1486 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=128

$$\frac{5d^{3/2}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{7/2}}+\frac{5d^2\sqrt{a+bx}\sqrt{c+dx}}{b^3}-\frac{10d(c+dx)^{3/2}}{3b^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/2}}{3b(a+bx)^{3/2}}$$

```
[Out] (5*d^2*Sqrt[a + b*x]*Sqrt[c + d*x])/b^3 - (10*d*(c + d*x)^(3/2))/
(3*b^2*Sqrt[a + b*x]) - (2*(c + d*x)^(5/2))/(3*b*(a + b*x)^(3/2))
 + (5*d^(3/2)*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b
]*Sqrt[c + d*x])])/b^(7/2)
```

Rubi [A] time = 0.165741, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{5d^{3/2}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{7/2}}+\frac{5d^2\sqrt{a+bx}\sqrt{c+dx}}{b^3}-\frac{10d(c+dx)^{3/2}}{3b^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/2}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(5/2),x]
```

```
[Out] (5*d^2*Sqrt[a + b*x]*Sqrt[c + d*x])/b^3 - (10*d*(c + d*x)^(3/2))/
(3*b^2*Sqrt[a + b*x]) - (2*(c + d*x)^(5/2))/(3*b*(a + b*x)^(3/2))
 + (5*d^(3/2)*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b
]*Sqrt[c + d*x])])/b^(7/2)
```

Rubi in Sympy [A] time = 23.3497, size = 119, normalized size = 0.93

$$-\frac{2\left(c+dx\right)^{\frac{5}{2}}}{3b\left(a+bx\right)^{\frac{3}{2}}}-\frac{10d\left(c+dx\right)^{\frac{3}{2}}}{3b^2\sqrt{a+bx}}+\frac{5d^2\sqrt{a+bx}\sqrt{c+dx}}{b^3}-\frac{5d^{\frac{3}{2}}\left(ad-bc\right)\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(5/2),x)
```

```
[Out] -2*(c + d*x)**(5/2)/(3*b*(a + b*x)**(3/2)) - 10*d*(c + d*x)**(3/2
)/(3*b**2*sqrt(a + b*x)) + 5*d**2*sqrt(a + b*x)*sqrt(c + d*x)/b**
3 - 5*d**(3/2)*(a*d - b*c)*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*s
qrt(c + d*x)))/b**(7/2)
```

Mathematica [A] time = 0.175998, size = 134, normalized size = 1.05

$$\frac{\sqrt{c+dx}\left(15a^2d^2-10abd(c-2dx)+b^2\left(-2c^2-14cdx+3d^2x^2\right)\right)}{3b^3(a+bx)^{3/2}}+\frac{5d^{3/2}(bc-ad)\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{2b^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(5/2),x]
```

```
[Out] (Sqrt[c + d*x]*(15*a^2*d^2 - 10*a*b*d*(c - 2*d*x) + b^2*(-2*c^2 -
 14*c*d*x + 3*d^2*x^2)))/(3*b^3*(a + b*x)^(3/2)) + (5*d^(3/2)*(b*
c - a*d)*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x
]*Sqrt[c + d*x]])/(2*b^(7/2))
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{2}}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(5/2)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.494466, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(a^{2}bcd-a^{3}d^{2}+\left(b^{3}cd-ab^{2}d^{2}\right)x^{2}+2\left(ab^{2}cd-a^{2}bd^{2}\right)x\right)\sqrt{\frac{d}{b}}\log\left(8\,b^{2}d^{2}x^{2}+b^{2}c^{2}+6\,abcd+a^{2}d^{2}-4\left(2\,b^{2}dx+b^{2}c\right.\right.}{12\,(b^{5}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(15*(a^2*b*c*d - a^3*d^2 + (b^3*c*d - a*b^2*d^2)*x^2 + 2*(
a*b^2*c*d - a^2*b*d^2)*x)*sqrt(d/b)*log(8*b^2*d^2*x^2 + b^2*c^2 +
 6*a*b*c*d + a^2*d^2 - 4*(2*b^2*d*x + b^2*c + a*b*d)*sqrt(b*x + a
)*sqrt(d*x + c)*sqrt(d/b) + 8*(b^2*c*d + a*b*d^2)*x) - 4*(3*b^2*d
^2*x^2 - 2*b^2*c^2 - 10*a*b*c*d + 15*a^2*d^2 - 2*(7*b^2*c*d - 10*
a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c))/(b^5*x^2 + 2*a*b^4*x + a
^2*b^3), 1/6*(15*(a^2*b*c*d - a^3*d^2 + (b^3*c*d - a*b^2*d^2)*x^2
 + 2*(a*b^2*c*d - a^2*b*d^2)*x)*sqrt(-d/b)*arctan(1/2*(2*b*d*x +
b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*sqrt(-d/b))) + 2*(3*b^2
*d^2*x^2 - 2*b^2*c^2 - 10*a*b*c*d + 15*a^2*d^2 - 2*(7*b^2*c*d - 1
0*a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c))/(b^5*x^2 + 2*a*b^4*x +
 a^2*b^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.599363, size = 4, normalized size = 0.03

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.1487 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=120

$$\frac{2d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{7/2}}-\frac{2d^2\sqrt{c+dx}}{b^3\sqrt{a+bx}}-\frac{2d(c+dx)^{3/2}}{3b^2(a+bx)^{3/2}}-\frac{2(c+dx)^{5/2}}{5b(a+bx)^{5/2}}$$

```
[Out] (-2*d^2*Sqrt[c + d*x])/(b^3*Sqrt[a + b*x]) - (2*d*(c + d*x)^(3/2)
)/(3*b^2*(a + b*x)^(3/2)) - (2*(c + d*x)^(5/2))/(5*b*(a + b*x)^(5
/2)) + (2*d^(5/2)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c
 + d*x])])/b^(7/2)
```

Rubi [A] time = 0.137416, antiderivative size = 120, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{2d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{b^{7/2}}-\frac{2d^2\sqrt{c+dx}}{b^3\sqrt{a+bx}}-\frac{2d(c+dx)^{3/2}}{3b^2(a+bx)^{3/2}}-\frac{2(c+dx)^{5/2}}{5b(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*d^2*Sqrt[c + d*x])/(b^3*Sqrt[a + b*x]) - (2*d*(c + d*x)^(3/2)
)/(3*b^2*(a + b*x)^(3/2)) - (2*(c + d*x)^(5/2))/(5*b*(a + b*x)^(5
/2)) + (2*d^(5/2)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c
 + d*x])])/b^(7/2)
```

Rubi in Sympy [A] time = 21.7362, size = 112, normalized size = 0.93

$$-\frac{2\left(c+dx\right)^{\frac{5}{2}}}{5b\left(a+bx\right)^{\frac{5}{2}}}-\frac{2d\left(c+dx\right)^{\frac{3}{2}}}{3b^2\left(a+bx\right)^{\frac{3}{2}}}-\frac{2d^2\sqrt{c+dx}}{b^3\sqrt{a+bx}}+\frac{2d^{\frac{5}{2}}\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{b^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(7/2),x)
```

```
[Out] -2*(c + d*x)**(5/2)/(5*b*(a + b*x)**(5/2)) - 2*d*(c + d*x)**(3/2)
/(3*b**2*(a + b*x)**(3/2)) - 2*d**2*sqrt(c + d*x)/(b**3*sqrt(a +
b*x)) + 2*d**(5/2)*atanh(sqrt(b)*sqrt(c + d*x)/(sqrt(d)*sqrt(a +
b*x)))/b**(7/2)
```

Mathematica [A] time = 0.229234, size = 121, normalized size = 1.01

$$\frac{d^{5/2}\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{b^{7/2}} - \frac{2\sqrt{c+dx}\left(11d(a+bx)(bc-ad)+3(bc-ad)^2+23d^2(a+bx)^2\right)}{15b^3(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[c + d*x]*(3*(b*c - a*d)^2 + 11*d*(b*c - a*d)*(a + b*x) +
 23*d^2*(a + b*x)^2))/(15*b^3*(a + b*x)^(5/2)) + (d^(5/2)*Log[b*c
 + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]]
)/b^(7/2)
```

Maple [F] time = 0.052, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{2}}\,(bx+a)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(7/2),x)
```

```
[Out] int((d*x+c)^(5/2)/(b*x+a)^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.595071, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^3d^2x^3+3\,ab^2d^2x^2+3\,a^2bd^2x+a^3d^2\right)\sqrt{\frac{d}{b}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+4\left(2\,b^2dx+b^2c+abd\right)\sqrt{bx+a}\sqrt{dx\right.}{30\left(b^6x^3+3\,ab^5x^2+3\,a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] [1/30*(15*(b^3*d^2*x^3 + 3*a*b^2*d^2*x^2 + 3*a^2*b*d^2*x + a^3*d^
2)*sqrt(d/b)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 +
4*(2*b^2*d*x + b^2*c + a*b*d)*sqrt(b*x + a)*sqrt(d*x + c)*sqrt(d/
b) + 8*(b^2*c*d + a*b*d^2)*x) - 4*(23*b^2*d^2*x^2 + 3*b^2*c^2 + 5
*a*b*c*d + 15*a^2*d^2 + (11*b^2*c*d + 35*a*b*d^2)*x)*sqrt(b*x + a
)*sqrt(d*x + c))/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3),
 1/15*(15*(b^3*d^2*x^3 + 3*a*b^2*d^2*x^2 + 3*a^2*b*d^2*x + a^3*d^
2)*sqrt(-d/b)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqr
t(d*x + c)*b*sqrt(-d/b))) - 2*(23*b^2*d^2*x^2 + 3*b^2*c^2 + 5*a*b
*c*d + 15*a^2*d^2 + (11*b^2*c*d + 35*a*b*d^2)*x)*sqrt(b*x + a)*sq
rt(d*x + c))/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.639029, size = 4, normalized size = 0.03

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

3.1488 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{9/2}}\,dx$

Optimal. Leaf size=32

$$-\frac{2(c+dx)^{7/2}}{7(a+bx)^{7/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(7/2))/(7*(b*c - a*d)*(a + b*x)^(7/2))
```

Rubi [A] time = 0.0219742, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{2(c+dx)^{7/2}}{7(a+bx)^{7/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(9/2),x]
```

```
[Out] (-2*(c + d*x)^(7/2))/(7*(b*c - a*d)*(a + b*x)^(7/2))
```

Rubi in Sympy [A] time = 3.91702, size = 26, normalized size = 0.81

$$\frac{2\,(c+dx)^{\frac{7}{2}}}{7\,(a+bx)^{\frac{7}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(9/2),x)
```

```
[Out] 2*(c + d*x)**(7/2)/(7*(a + b*x)**(7/2)*(a*d - b*c))
```

Mathematica [A] time = 0.115367, size = 32, normalized size = 1.

$$-\frac{2(c+dx)^{7/2}}{7(a+bx)^{7/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(9/2),x]
```

```
[Out] (-2*(c + d*x)^(7/2))/(7*(b*c - a*d)*(a + b*x)^(7/2))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.8

$$\frac{2}{7\,ad - 7\,bc}\,(dx + c)^{\frac{7}{2}}\,(bx + a)^{-\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(9/2),x)
```

```
[Out] 2/7/(b*x+a)^(7/2)*(d*x+c)^(7/2)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.670846, size = 186, normalized size = 5.81

$$-\frac{2\left(d^{3}x^{3} + 3\,cd^{2}x^{2} + 3\,c^{2}dx + c^{3}\right)\sqrt{bx + a}\sqrt{dx + c}}{7\,(a^{4}bc - a^{5}d + (b^{5}c - ab^{4}d)x^{4} + 4\,(ab^{4}c - a^{2}b^{3}d)x^{3} + 6\,(a^{2}b^{3}c - a^{3}b^{2}d)x^{2} + 4\,(a^{3}b^{2}c - a^{4}bd)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(9/2),x, algorithm="fricas")
```

```
[Out] -2/7*(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*sqrt(b*x + a)*sqrt
(d*x + c)/(a^4*b*c - a^5*d + (b^5*c - a*b^4*d)*x^4 + 4*(a*b^4*c -
 a^2*b^3*d)*x^3 + 6*(a^2*b^3*c - a^3*b^2*d)*x^2 + 4*(a^3*b^2*c -
a^4*b*d)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.435799, size = 953, normalized size = 29.78

$$-\frac{4\left(\sqrt{bd}b^{12}c^{6}d^{3}|b| - 6\sqrt{bd}ab^{11}c^{5}d^{4}|b| + 15\sqrt{bd}a^{2}b^{10}c^{4}d^{5}|b| - 20\sqrt{bd}a^{3}b^{9}c^{3}d^{6}|b| + 15\sqrt{bd}a^{4}b^{8}c^{2}d^{7}|b| - 6\sqrt{bd}a^{5}b^{7}cd^{8}|b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(9/2),x, algorithm="giac")
```

```
[Out] -4/7*(sqrt(b*d)*b^12*c^6*d^3*abs(b) - 6*sqrt(b*d)*a*b^11*c^5*d^4*
abs(b) + 15*sqrt(b*d)*a^2*b^10*c^4*d^5*abs(b) - 20*sqrt(b*d)*a^3*
b^9*c^3*d^6*abs(b) + 15*sqrt(b*d)*a^4*b^8*c^2*d^7*abs(b) - 6*sqrt
(b*d)*a^5*b^7*c*d^8*abs(b) + sqrt(b*d)*a^6*b^6*d^9*abs(b) + 21*sq
rt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a
*b*d))^4*b^8*c^4*d^3*abs(b) - 84*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x +
a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a*b^7*c^3*d^4*abs(b)
+ 126*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)
*b*d - a*b*d))^4*a^2*b^6*c^2*d^5*abs(b) - 84*sqrt(b*d)*(sqrt(b*d)
*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a^3*b^5*c
*d^6*abs(b) + 21*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c
+ (b*x + a)*b*d - a*b*d))^4*a^4*b^4*d^7*abs(b) + 35*sqrt(b*d)*(sq
rt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^8*b^
4*c^2*d^3*abs(b) - 70*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b
^2*c + (b*x + a)*b*d - a*b*d))^8*a*b^3*c*d^4*abs(b) + 35*sqrt(b*d
)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))
^8*a^2*b^2*d^5*abs(b) + 7*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sq
rt(b^2*c + (b*x + a)*b*d - a*b*d))^12*d^3*abs(b))/((b^2*c - a*b*d
 - (sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d)
)^2)^7*b^4)
```

3.1489 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{11/2}}\,dx$

Optimal. Leaf size=66

$$\frac{4d(c+dx)^{7/2}}{63(a+bx)^{7/2}(bc-ad)^2}-\frac{2(c+dx)^{7/2}}{9(a+bx)^{9/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(7/2))/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (4*d*(c +
d*x)^(7/2))/(63*(b*c - a*d)^2*(a + b*x)^(7/2))
```

Rubi [A] time = 0.0489907, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{4d(c+dx)^{7/2}}{63(a+bx)^{7/2}(bc-ad)^2}-\frac{2(c+dx)^{7/2}}{9(a+bx)^{9/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(11/2),x]
```

```
[Out] (-2*(c + d*x)^(7/2))/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (4*d*(c +
d*x)^(7/2))/(63*(b*c - a*d)^2*(a + b*x)^(7/2))
```

Rubi in Sympy [A] time = 8.14923, size = 56, normalized size = 0.85

$$\frac{4d\,(c+dx)^{\frac{7}{2}}}{63\,(a+bx)^{\frac{7}{2}}\,(ad-bc)^2}+\frac{2\,(c+dx)^{\frac{7}{2}}}{9\,(a+bx)^{\frac{9}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(11/2),x)
```

```
[Out] 4*d*(c + d*x)**(7/2)/(63*(a + b*x)**(7/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(7/2)/(9*(a + b*x)**(9/2)*(a*d - b*c))
```

Mathematica [A] time = 0.146034, size = 46, normalized size = 0.7

$$\frac{2(c+dx)^{7/2}(9ad-7bc+2bdx)}{63(a+bx)^{9/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(11/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(-7*b*c + 9*a*d + 2*b*d*x))/(63*(b*c - a*d)^2*
(a + b*x)^(9/2))
```

Maple [A] time = 0.007, size = 54, normalized size = 0.8

$$\frac{4\,bdx+18\,ad-14\,bc}{63\,a^2d^2-126\,abcd+63\,b^2c^2}\,(dx+c)^{\frac{7}{2}}\,(bx+a)^{-\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(11/2),x)
```

```
[Out] 2/63*(d*x+c)^(7/2)*(2*b*d*x+9*a*d-7*b*c)/(b*x+a)^(9/2)/(a^2*d^2-2
*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(11/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 2.12573, size = 398, normalized size = 6.03

$$\frac{2\left(2\,bd^4x^4-7\,bc^4+9\,ac^3d-\left(bcd^3-9\,ad^4\right)x^3-3\left(5\,bc^2d^2-9\,acd^3\right)x^2-\left(19\,bc\right.\right.}{63\,(a^5b^2c^2-2\,a^6bcd+a^7d^2+(b^7c^2-2\,ab^6cd+a^2b^5d^2)x^5+5\,(ab^6c^2-2\,a^2b^5cd+a^3b^4d^2)x^4+10\,(a^2b^5c^2-2\,a^3b^4cd+a^4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(11/2),x, algorithm="fricas")
```

```
[Out] 2/63*(2*b*d^4*x^4 - 7*b*c^4 + 9*a*c^3*d - (b*c*d^3 - 9*a*d^4)*x^3
 - 3*(5*b*c^2*d^2 - 9*a*c*d^3)*x^2 - (19*b*c^3*d - 27*a*c^2*d^2)*
x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^5*b^2*c^2 - 2*a^6*b*c*d + a^7*d
^2 + (b^7*c^2 - 2*a*b^6*c*d + a^2*b^5*d^2)*x^5 + 5*(a*b^6*c^2 - 2
*a^2*b^5*c*d + a^3*b^4*d^2)*x^4 + 10*(a^2*b^5*c^2 - 2*a^3*b^4*c*d
```

```
 + a^4*b^3*d^2)*x^3 + 10*(a^3*b^4*c^2 - 2*a^4*b^3*c*d + a^5*b^2*d
^2)*x^2 + 5*(a^4*b^3*c^2 - 2*a^5*b^2*c*d + a^6*b*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(11/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.538018, size = 1, normalized size = 0.02

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(11/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1490 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{13/2}}\,dx$

Optimal. Leaf size=101

$$-\frac{16d^2(c+dx)^{7/2}}{693(a+bx)^{7/2}(bc-ad)^3}+\frac{8d(c+dx)^{7/2}}{99(a+bx)^{9/2}(bc-ad)^2}-\frac{2(c+dx)^{7/2}}{11(a+bx)^{11/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(7/2))/(11*(b*c - a*d)*(a + b*x)^(11/2)) + (8*d*(c
+ d*x)^(7/2))/(99*(b*c - a*d)^2*(a + b*x)^(9/2)) - (16*d^2*(c + d
*x)^(7/2))/(693*(b*c - a*d)^3*(a + b*x)^(7/2))
```

Rubi [A] time = 0.0795382, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{16d^2(c+dx)^{7/2}}{693(a+bx)^{7/2}(bc-ad)^3}+\frac{8d(c+dx)^{7/2}}{99(a+bx)^{9/2}(bc-ad)^2}-\frac{2(c+dx)^{7/2}}{11(a+bx)^{11/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(13/2),x]
```

```
[Out] (-2*(c + d*x)^(7/2))/(11*(b*c - a*d)*(a + b*x)^(11/2)) + (8*d*(c
+ d*x)^(7/2))/(99*(b*c - a*d)^2*(a + b*x)^(9/2)) - (16*d^2*(c + d
*x)^(7/2))/(693*(b*c - a*d)^3*(a + b*x)^(7/2))
```

Rubi in Sympy [A] time = 14.6113, size = 88, normalized size = 0.87

$$\frac{16d^2\left(c+dx\right)^{\frac{7}{2}}}{693\left(a+bx\right)^{\frac{7}{2}}\left(ad-bc\right)^3}+\frac{8d\left(c+dx\right)^{\frac{7}{2}}}{99\left(a+bx\right)^{\frac{9}{2}}\left(ad-bc\right)^2}+\frac{2\left(c+dx\right)^{\frac{7}{2}}}{11\left(a+bx\right)^{\frac{11}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(13/2),x)
```

```
[Out] 16*d**2*(c + d*x)**(7/2)/(693*(a + b*x)**(7/2)*(a*d - b*c)**3) +
8*d*(c + d*x)**(7/2)/(99*(a + b*x)**(9/2)*(a*d - b*c)**2) + 2*(c
+ d*x)**(7/2)/(11*(a + b*x)**(11/2)*(a*d - b*c))
```

Mathematica [A] time = 0.217843, size = 77, normalized size = 0.76

$$\frac{2(c+dx)^{7/2}\left(99a^2d^2+22abd(2dx-7c)+b^2\left(63c^2-28cdx+8d^2x^2\right)\right)}{693(a+bx)^{11/2}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(13/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(99*a^2*d^2 + 22*a*b*d*(-7*c + 2*d*x) + b^2*(6
3*c^2 - 28*c*d*x + 8*d^2*x^2)))/(693*(-(b*c) + a*d)^3*(a + b*x)^(
11/2))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{16\,b^{2}d^{2}x^{2}+88\,abd^{2}x-56\,b^{2}cdx+198\,a^{2}d^{2}-308\,abcd+126\,b^{2}c^{2}}{693\,a^{3}d^{3}-2079\,a^{2}bcd^{2}+2079\,ab^{2}c^{2}d-693\,b^{3}c^{3}}\left(dx+c\right)^{\frac{7}{2}}\left(bx+a\right)^{-\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(13/2),x)
```

```
[Out] 2/693*(d*x+c)^(7/2)*(8*b^2*d^2*x^2+44*a*b*d^2*x-28*b^2*c*d*x+99*a
^2*d^2-154*a*b*c*d+63*b^2*c^2)/(b*x+a)^(11/2)/(a^3*d^3-3*a^2*b*c*
d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(13/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 5.69704, size = 693, normalized size = 6.86

$$-\frac{2\left(8\,b^{2}d^{5}x^{5}+63\,b^{2}c^{5}-154\,abc^{4}d+99\,a^{2}c^{3}d^{2}-4\left(b^{2}cd^{4}-11\,a\right.\right.}{693\left(a^{6}b^{3}c^{3}-3\,a^{7}b^{2}c^{2}d+3\,a^{8}bcd^{2}-a^{9}d^{3}+\left(b^{9}c^{3}-3\,ab^{8}c^{2}d+3\,a^{2}b^{7}cd^{2}-a^{3}b^{6}d^{3}\right)x^{6}+6\left(ab^{8}c^{3}-3\,a^{2}b^{7}c^{2}d+3\,a^{3}b^{6}cd^{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(13/2),x, algorithm="fricas")
```

```
[Out] -2/693*(8*b^2*d^5*x^5 + 63*b^2*c^5 - 154*a*b*c^4*d + 99*a^2*c^3*d
^2 - 4*(b^2*c*d^4 - 11*a*b*d^5)*x^4 + (3*b^2*c^2*d^3 - 22*a*b*c*d
```

```
^4 + 99*a^2*d^5)*x^3 + (113*b^2*c^3*d^2 - 330*a*b*c^2*d^3 + 297*a
^2*c*d^4)*x^2 + (161*b^2*c^4*d - 418*a*b*c^3*d^2 + 297*a^2*c^2*d^
3)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^6*b^3*c^3 - 3*a^7*b^2*c^2*d
+ 3*a^8*b*c*d^2 - a^9*d^3 + (b^9*c^3 - 3*a*b^8*c^2*d + 3*a^2*b^7*
c*d^2 - a^3*b^6*d^3)*x^6 + 6*(a*b^8*c^3 - 3*a^2*b^7*c^2*d + 3*a^3
*b^6*c*d^2 - a^4*b^5*d^3)*x^5 + 15*(a^2*b^7*c^3 - 3*a^3*b^6*c^2*d
 + 3*a^4*b^5*c*d^2 - a^5*b^4*d^3)*x^4 + 20*(a^3*b^6*c^3 - 3*a^4*b
^5*c^2*d + 3*a^5*b^4*c*d^2 - a^6*b^3*d^3)*x^3 + 15*(a^4*b^5*c^3 -
 3*a^5*b^4*c^2*d + 3*a^6*b^3*c*d^2 - a^7*b^2*d^3)*x^2 + 6*(a^5*b^
4*c^3 - 3*a^6*b^3*c^2*d + 3*a^7*b^2*c*d^2 - a^8*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(13/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.665762, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(13/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1491 $\int \frac{(c+dx)^{5/2}}{(a+bx)^{15/2}}\,dx$

Optimal. Leaf size=136

$$\frac{32d^3(c+dx)^{7/2}}{3003(a+bx)^{7/2}(bc-ad)^4}-\frac{16d^2(c+dx)^{7/2}}{429(a+bx)^{9/2}(bc-ad)^3}+\frac{12d(c+dx)^{7/2}}{143(a+bx)^{11/2}(bc-ad)^2}-\frac{2(c+dx)^{7/2}}{13(a+bx)^{13/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(7/2))/(13*(b*c - a*d)*(a + b*x)^(13/2)) + (12*d*(c
 + d*x)^(7/2))/(143*(b*c - a*d)^2*(a + b*x)^(11/2)) - (16*d^2*(c
+ d*x)^(7/2))/(429*(b*c - a*d)^3*(a + b*x)^(9/2)) + (32*d^3*(c +
d*x)^(7/2))/(3003*(b*c - a*d)^4*(a + b*x)^(7/2))
```

Rubi [A] time = 0.111368, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{32d^3(c+dx)^{7/2}}{3003(a+bx)^{7/2}(bc-ad)^4}-\frac{16d^2(c+dx)^{7/2}}{429(a+bx)^{9/2}(bc-ad)^3}+\frac{12d(c+dx)^{7/2}}{143(a+bx)^{11/2}(bc-ad)^2}-\frac{2(c+dx)^{7/2}}{13(a+bx)^{13/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/2)/(a + b*x)^(15/2),x]
```

```
[Out] (-2*(c + d*x)^(7/2))/(13*(b*c - a*d)*(a + b*x)^(13/2)) + (12*d*(c
 + d*x)^(7/2))/(143*(b*c - a*d)^2*(a + b*x)^(11/2)) - (16*d^2*(c
+ d*x)^(7/2))/(429*(b*c - a*d)^3*(a + b*x)^(9/2)) + (32*d^3*(c +
d*x)^(7/2))/(3003*(b*c - a*d)^4*(a + b*x)^(7/2))
```

Rubi in Sympy [A] time = 22.3387, size = 121, normalized size = 0.89

$$\frac{32d^3\left(c+dx\right)^{\frac{7}{2}}}{3003\left(a+bx\right)^{\frac{7}{2}}\left(ad-bc\right)^4}+\frac{16d^2\left(c+dx\right)^{\frac{7}{2}}}{429\left(a+bx\right)^{\frac{9}{2}}\left(ad-bc\right)^3}+\frac{12d\left(c+dx\right)^{\frac{7}{2}}}{143\left(a+bx\right)^{\frac{11}{2}}\left(ad-bc\right)^2}+\frac{2\left(c+dx\right)^{\frac{7}{2}}}{13\left(a+bx\right)^{\frac{13}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/2)/(b*x+a)**(15/2),x)
```

```
[Out] 32*d**3*(c + d*x)**(7/2)/(3003*(a + b*x)**(7/2)*(a*d - b*c)**4) +
 16*d**2*(c + d*x)**(7/2)/(429*(a + b*x)**(9/2)*(a*d - b*c)**3) +
 12*d*(c + d*x)**(7/2)/(143*(a + b*x)**(11/2)*(a*d - b*c)**2) + 2
*(c + d*x)**(7/2)/(13*(a + b*x)**(13/2)*(a*d - b*c))
```

Mathematica [A] time = 0.26358, size = 118, normalized size = 0.87

$$\frac{2(c+dx)^{7/2}\left(429a^3d^3+143a^2bd^2(2dx-7c)+13ab^2d\left(63c^2-28cdx+8d^2x^2\right)+b^3\left(-231c^3+126c^2dx-56cd^2x^2+16d^3x^3\right)\right)}{3003(a+bx)^{13/2}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/2)/(a + b*x)^(15/2),x]
```

```
[Out] (2*(c + d*x)^(7/2)*(429*a^3*d^3 + 143*a^2*b*d^2*(-7*c + 2*d*x) +
13*a*b^2*d*(63*c^2 - 28*c*d*x + 8*d^2*x^2) + b^3*(-231*c^3 + 126*
c^2*d*x - 56*c*d^2*x^2 + 16*d^3*x^3)))/(3003*(b*c - a*d)^4*(a + b
*x)^(13/2))
```

Maple [A] time = 0.015, size = 171, normalized size = 1.3

$$\frac{32\,b^3d^3x^3+208\,ab^2d^3x^2-112\,b^3cd^2x^2+572\,a^2bd^3x-728\,ab^2cd^2x+252\,b^3c^2dx+858\,a^3d^3-2002\,a^2bcd^2+1638\,ab^2c^2d-}{3003\,d^4a^4-12012\,bd^3ca^3+18018\,b^2d^2c^2a^2-12012\,b^3dc^3a+3003\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/2)/(b*x+a)^(15/2),x)
```

```
[Out] 2/3003*(d*x+c)^(7/2)*(16*b^3*d^3*x^3+104*a*b^2*d^3*x^2-56*b^3*c*d
^2*x^2+286*a^2*b*d^3*x-364*a*b^2*c*d^2*x+126*b^3*c^2*d*x+429*a^3*
d^3-1001*a^2*b*c*d^2+819*a*b^2*c^2*d-231*b^3*c^3)/(b*x+a)^(13/2)/
(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(15/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 13.7752, size = 1033, normalized size = 7.6

$$\frac{2\left(16\,b^3d^6x^6-231\,b^3c^6+819\,ab^2c^5d-1001\right.}{3003\left(a^7b^4c^4-4\,a^8b^3c^3d+6\,a^9b^2c^2d^2-4\,a^{10}bcd^3+a^{11}d^4+(b^{11}c^4-4\,ab^{10}c^3d+6\,a^2b^9c^2d^2-4\,a^3b^8cd^3+a^4b^7d^4)x^7+7\,(ab\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(15/2),x, algorithm="fricas")
```

```
[Out] 2/3003*(16*b^3*d^6*x^6 - 231*b^3*c^6 + 819*a*b^2*c^5*d - 1001*a^2
*b*c^4*d^2 + 429*a^3*c^3*d^3 - 8*(b^3*c*d^5 - 13*a*b^2*d^6)*x^5 +
 2*(3*b^3*c^2*d^4 - 26*a*b^2*c*d^5 + 143*a^2*b*d^6)*x^4 - (5*b^3*
c^3*d^3 - 39*a*b^2*c^2*d^4 + 143*a^2*b*c*d^5 - 429*a^3*d^6)*x^3 -
 (371*b^3*c^4*d^2 - 1469*a*b^2*c^3*d^3 + 2145*a^2*b*c^2*d^4 - 128
7*a^3*c*d^5)*x^2 - (567*b^3*c^5*d - 2093*a*b^2*c^4*d^2 + 2717*a^2
*b*c^3*d^3 - 1287*a^3*c^2*d^4)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^
7*b^4*c^4 - 4*a^8*b^3*c^3*d + 6*a^9*b^2*c^2*d^2 - 4*a^10*b*c*d^3
+ a^11*d^4 + (b^11*c^4 - 4*a*b^10*c^3*d + 6*a^2*b^9*c^2*d^2 - 4*a
^3*b^8*c*d^3 + a^4*b^7*d^4)*x^7 + 7*(a*b^10*c^4 - 4*a^2*b^9*c^3*d
 + 6*a^3*b^8*c^2*d^2 - 4*a^4*b^7*c*d^3 + a^5*b^6*d^4)*x^6 + 21*(a
^2*b^9*c^4 - 4*a^3*b^8*c^3*d + 6*a^4*b^7*c^2*d^2 - 4*a^5*b^6*c*d^
3 + a^6*b^5*d^4)*x^5 + 35*(a^3*b^8*c^4 - 4*a^4*b^7*c^3*d + 6*a^5*
b^6*c^2*d^2 - 4*a^6*b^5*c*d^3 + a^7*b^4*d^4)*x^4 + 35*(a^4*b^7*c^
4 - 4*a^5*b^6*c^3*d + 6*a^6*b^5*c^2*d^2 - 4*a^7*b^4*c*d^3 + a^8*b
^3*d^4)*x^3 + 21*(a^5*b^6*c^4 - 4*a^6*b^5*c^3*d + 6*a^7*b^4*c^2*d
^2 - 4*a^8*b^3*c*d^3 + a^9*b^2*d^4)*x^2 + 7*(a^6*b^5*c^4 - 4*a^7*
b^4*c^3*d + 6*a^8*b^3*c^2*d^2 - 4*a^9*b^2*c*d^3 + a^10*b*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/2)/(b*x+a)**(15/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.823631, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/2)/(b*x + a)^(15/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1492 $\int \frac{(a+bx)^{7/2}}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=183

$$\frac{35(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64\sqrt{b}d^{9/2}}-\frac{35\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64d^4}+\frac{35(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{96d^3}-\frac{7(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}{24d^2}+\frac{(a+bx)^{7/2}\sqrt{c+dx}}{4d}$$

```
[Out] (-35*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*d^4) + (35*(b
*c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(96*d^3) - (7*(b*c - a
*d)*(a + b*x)^(5/2)*Sqrt[c + d*x])/(24*d^2) + ((a + b*x)^(7/2)*Sq
rt[c + d*x])/(4*d) + (35*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*Sqrt[b]*d^(9/2))
```

Rubi [A] time = 0.249057, antiderivative size = 183, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{35(bc-ad)^4\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{64\sqrt{b}d^{9/2}}-\frac{35\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}{64d^4}+\frac{35(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}{96d^3}-\frac{7(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}{24d^2}+\frac{(a+bx)^{7/2}\sqrt{c+dx}}{4d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/2)/Sqrt[c + d*x],x]
```

```
[Out] (-35*(b*c - a*d)^3*Sqrt[a + b*x]*Sqrt[c + d*x])/(64*d^4) + (35*(b
*c - a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(96*d^3) - (7*(b*c - a
*d)*(a + b*x)^(5/2)*Sqrt[c + d*x])/(24*d^2) + ((a + b*x)^(7/2)*Sq
rt[c + d*x])/(4*d) + (35*(b*c - a*d)^4*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(64*Sqrt[b]*d^(9/2))
```

Rubi in Sympy [A] time = 34.3333, size = 165, normalized size = 0.9

$$\frac{(a+bx)^{\frac{7}{2}}\sqrt{c+dx}}{4d}+\frac{7\,(a+bx)^{\frac{5}{2}}\sqrt{c+dx}\,(ad-bc)}{24d^2}+\frac{35\,(a+bx)^{\frac{3}{2}}\sqrt{c+dx}\,(ad-bc)^2}{96d^3}+\frac{35\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^3}{64d^4}+\frac{35\,(ad-bc)^4\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{64\sqrt{b}d^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/2)/(d*x+c)**(1/2),x)
```

```
[Out] (a + b*x)**(7/2)*sqrt(c + d*x)/(4*d) + 7*(a + b*x)**(5/2)*sqrt(c
+ d*x)*(a*d - b*c)/(24*d**2) + 35*(a + b*x)**(3/2)*sqrt(c + d*x)*
(a*d - b*c)**2/(96*d**3) + 35*sqrt(a + b*x)*sqrt(c + d*x)*(a*d -
b*c)**3/(64*d**4) + 35*(a*d - b*c)**4*atanh(sqrt(b)*sqrt(c + d*x)
/(sqrt(d)*sqrt(a + b*x)))/(64*sqrt(b)*d**(9/2))
```

Mathematica [A] time = 0.214678, size = 177, normalized size = 0.97

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(279a^3d^3+a^2bd^2(326dx-511c)+ab^2d\left(385c^2-252cdx+200d^2x^2\right)+b^3\left(-105c^3+70c^2dx-56cd^2x^2+\right.\right.}{192d^4}$$
$$+\frac{35(bc-ad)^4\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{128\sqrt{b}d^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/2)/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(279*a^3*d^3 + a^2*b*d^2*(-511*c + 3
26*d*x) + a*b^2*d*(385*c^2 - 252*c*d*x + 200*d^2*x^2) + b^3*(-105
*c^3 + 70*c^2*d*x - 56*c*d^2*x^2 + 48*d^3*x^3)))/(192*d^4) + (35*
(b*c - a*d)^4*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a
+ b*x]*Sqrt[c + d*x]])/(128*Sqrt[b]*d^(9/2))
```

Maple [B] time = 0.011, size = 650, normalized size = 3.6

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/2)/(d*x+c)^(1/2),x)
```

```
[Out] 1/4*(b*x+a)^(7/2)*(d*x+c)^(1/2)/d+7/24/d*(b*x+a)^(5/2)*(d*x+c)^(1
/2)*a-7/24/d^2*(b*x+a)^(5/2)*(d*x+c)^(1/2)*b*c+35/96/d*(b*x+a)^(3
/2)*(d*x+c)^(1/2)*a^2-35/48/d^2*(b*x+a)^(3/2)*(d*x+c)^(1/2)*a*b*c
+35/96/d^3*(b*x+a)^(3/2)*(d*x+c)^(1/2)*b^2*c^2+35/64/d*(b*x+a)^(1
/2)*(d*x+c)^(1/2)*a^3-105/64/d^2*(b*x+a)^(1/2)*(d*x+c)^(1/2)*a^2*
b*c+105/64/d^3*(b*x+a)^(1/2)*(d*x+c)^(1/2)*a*b^2*c^2-35/64/d^4*(b
*x+a)^(1/2)*(d*x+c)^(1/2)*b^3*c^3+35/128*((b*x+a)*(d*x+c))^(1/2)/
(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2
)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^4-35/32/d*((b*x+
a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c
+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*
a^3*b*c+105/64/d^2*((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^
```

```
(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x
+a*c)^(1/2))/(b*d)^(1/2)*a^2*b^2*c^2-35/32/d^3*((b*x+a)*(d*x+c))^
(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d
)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a*b^3*c^3+35
/128/d^4*((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((
1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2
))/(b*d)^(1/2)*b^4*c^4
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/sqrt(d*x + c),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.271991, size = 1, normalized size = 0.01

$$\left[\frac{4\left(48\,b^3d^3x^3 - 105\,b^3c^3 + 385\,ab^2c^2d - 511\,a^2bcd^2 + 279\,a^3d^3 - 8\left(7\,b^3cd^2 - 25\,ab^2d^3\right)x^2 + 2\left(35\,b^3c^2d - 126\,ab^2cd^2 + 163\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/sqrt(d*x + c),x, algorithm="fricas")

[Out] [1/768*(4*(48*b^3*d^3*x^3 - 105*b^3*c^3 + 385*a*b^2*c^2*d - 511*a
^2*b*c*d^2 + 279*a^3*d^3 - 8*(7*b^3*c*d^2 - 25*a*b^2*d^3)*x^2 + 2
*(35*b^3*c^2*d - 126*a*b^2*c*d^2 + 163*a^2*b*d^3)*x)*sqrt(b*d)*sq
rt(b*x + a)*sqrt(d*x + c) + 105*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*
b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*log(4*(2*b^2*d^2*x + b^2*c
*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*
c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)))/
(sqrt(b*d)*d^4), 1/384*(2*(48*b^3*d^3*x^3 - 105*b^3*c^3 + 385*a*b
^2*c^2*d - 511*a^2*b*c*d^2 + 279*a^3*d^3 - 8*(7*b^3*c*d^2 - 25*a*
b^2*d^3)*x^2 + 2*(35*b^3*c^2*d - 126*a*b^2*c*d^2 + 163*a^2*b*d^3)
*x)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c) + 105*(b^4*c^4 - 4*a*b
^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*arctan(1/
2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b
*d)))/(sqrt(-b*d)*d^4)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/2)/(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.248059, size = 362, normalized size = 1.98

$$\frac{\left(\sqrt{b^2c+(bx+a)bd-abd}\left(2\,(bx+a)\left(4\,(bx+a)\left(\frac{6\,(bx+a)}{bd}-\frac{7\,(bcd^5-ad^6)}{bd^7}\right)+\frac{35\,(b^2c^2d^4-2\,abcd^5+a^2d^6)}{bd^7}\right)-\frac{105\,(b^3c^3d^3-3\,ab^2c^2d^4+3\,a^2}{bd^7}\right.\right.}{192\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 1/192*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*(2*(b*x + a)*(4*(b*x +
 a)*(6*(b*x + a)/(b*d) - 7*(b*c*d^5 - a*d^6)/(b*d^7)) + 35*(b^2*c
^2*d^4 - 2*a*b*c*d^5 + a^2*d^6)/(b*d^7)) - 105*(b^3*c^3*d^3 - 3*a
*b^2*c^2*d^4 + 3*a^2*b*c*d^5 - a^3*d^6)/(b*d^7))*sqrt(b*x + a) -
105*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3
+ a^4*d^4)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x +
a)*b*d - a*b*d)))/(sqrt(b*d)*d^4))*b/abs(b)
```

3.1493 $\int \frac{(a+bx)^{5/2}}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=148

$$-\frac{5(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8\sqrt{b}d^{7/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8d^3}-\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{12d^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}}{3d}$$

```
[Out] (5*(b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*d^3) - (5*(b*c -
 a*d)*(a + b*x)^(3/2)*Sqrt[c + d*x])/(12*d^2) + ((a + b*x)^(5/2)*
Sqrt[c + d*x])/(3*d) - (5*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a +
 b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*Sqrt[b]*d^(7/2))
```

Rubi [A] time = 0.176396, antiderivative size = 148, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{5(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8\sqrt{b}d^{7/2}}+\frac{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8d^3}-\frac{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{12d^2}+\frac{(a+bx)^{5/2}\sqrt{c+dx}}{3d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/Sqrt[c + d*x],x]
```

```
[Out] (5*(b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x])/(8*d^3) - (5*(b*c -
 a*d)*(a + b*x)^(3/2)*Sqrt[c + d*x])/(12*d^2) + ((a + b*x)^(5/2)*
Sqrt[c + d*x])/(3*d) - (5*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a +
 b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*Sqrt[b]*d^(7/2))
```

Rubi in Sympy [A] time = 25.9131, size = 133, normalized size = 0.9

$$\frac{(a+bx)^{\frac{5}{2}}\sqrt{c+dx}}{3d}+\frac{5\,(a+bx)^{\frac{3}{2}}\sqrt{c+dx}\,(ad-bc)}{12d^2}+\frac{5\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^2}{8d^3}+\frac{5\,(ad-bc)^3\,\mathrm{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8\sqrt{b}d^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(1/2),x)
```

```
[Out] (a + b*x)**(5/2)*sqrt(c + d*x)/(3*d) + 5*(a + b*x)**(3/2)*sqrt(c
+ d*x)*(a*d - b*c)/(12*d**2) + 5*sqrt(a + b*x)*sqrt(c + d*x)*(a*d
 - b*c)**2/(8*d**3) + 5*(a*d - b*c)**3*atanh(sqrt(d)*sqrt(a + b*x
)/(sqrt(b)*sqrt(c + d*x)))/(8*sqrt(b)*d**(7/2))
```

Mathematica [A] time = 0.127954, size = 138, normalized size = 0.93

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(33a^2d^2+2abd(13dx-20c)+b^2\left(15c^2-10cdx+8d^2x^2\right)\right)}{24d^3}-\frac{5(bc-ad)^3\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{16\sqrt{b}d^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(33*a^2*d^2 + 2*a*b*d*(-20*c + 13*d*
x) + b^2*(15*c^2 - 10*c*d*x + 8*d^2*x^2)))/(24*d^3) - (5*(b*c - a
*d)^3*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*S
qrt[c + d*x]])/(16*Sqrt[b]*d^(7/2))
```

Maple [B] time = 0.01, size = 465, normalized size = 3.1

$$\frac{1}{3\,d}(bx+a)^{\frac{5}{2}}\sqrt{dx+c}+\frac{5\,a}{12\,d}(bx+a)^{\frac{3}{2}}\sqrt{dx+c}-\frac{5\,bc}{12\,d^2}(bx+a)^{\frac{3}{2}}\sqrt{dx+c}$$
$$+\frac{5\,a^2}{8\,d}\sqrt{bx+a}\sqrt{dx+c}-\frac{5\,abc}{4\,d^2}\sqrt{bx+a}\sqrt{dx+c}+\frac{5\,b^2c^2}{8\,d^3}\sqrt{bx+a}\sqrt{dx+c}$$
$$+\frac{5\,a^3}{16}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{15\,a^2bc}{16\,d}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{15\,ab^2c^2}{16\,d^2}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{5\,b^3c^3}{16\,d^3}\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(1/2),x)
```

```
[Out] 1/3*(b*x+a)^(5/2)*(d*x+c)^(1/2)/d+5/12/d*(b*x+a)^(3/2)*(d*x+c)^(1
/2)*a-5/12/d^2*(b*x+a)^(3/2)*(d*x+c)^(1/2)*b*c+5/8/d*(b*x+a)^(1/2
)*(d*x+c)^(1/2)*a^2-5/4/d^2*(b*x+a)^(1/2)*(d*x+c)^(1/2)*a*b*c+5/8
```

```
/d^3*(b*x+a)^(1/2)*(d*x+c)^(1/2)*b^2*c^2+5/16*((b*x+a)*(d*x+c))^(
1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)
^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^3-15/16/d*(
(b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/
2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(
1/2)*a^2*b*c+15/16/d^2*((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x
+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*
c)*x+a*c)^(1/2))/(b*d)^(1/2)*a*b^2*c^2-5/16/d^3*((b*x+a)*(d*x+c))
^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*
d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*b^3*c^3
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.249362, size = 1, normalized size = 0.01

$$\left[\frac{4\left(8\,b^2d^2x^2+15\,b^2c^2-40\,abcd+33\,a^2d^2-2\left(5\,b^2cd-13\,abd^2\right)x\right)\sqrt{bd}\sqrt{bx+a}\sqrt{dx+c}-15\left(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2+\cdots\right.}{96\sqrt{bd}\cdots}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] [1/96*(4*(8*b^2*d^2*x^2 + 15*b^2*c^2 - 40*a*b*c*d + 33*a^2*d^2 -
2*(5*b^2*c*d - 13*a*b*d^2)*x)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d*x +
c) - 15*(b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*log(4
*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) +
(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b
*d^2)*x)*sqrt(b*d)))/(sqrt(b*d)*d^3), 1/48*(2*(8*b^2*d^2*x^2 + 15
*b^2*c^2 - 40*a*b*c*d + 33*a^2*d^2 - 2*(5*b^2*c*d - 13*a*b*d^2)*x
)*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c) - 15*(b^3*c^3 - 3*a*b^2*
c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*arctan(1/2*(2*b*d*x + b*c + a*d)
*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d)))/(sqrt(-b*d)*d^3)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{2}}}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral((a + b*x)**(5/2)/sqrt(c + d*x), x)
```

GIAC/XCAS [A] time = 0.236028, size = 267, normalized size = 1.8

$$\frac{\left(\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}\left(2\,(bx+a)\left(\frac{4\,(bx+a)}{bd}-\frac{5\,(bcd^3-ad^4)}{bd^5}\right)+\frac{15\,(b^2c^2d^2-2\,abcd^3+a^2d^4)}{bd^5}\right)+\frac{15\,(b^3c^3-3\,ab^2c^2d+3\,a^2bcd^2-a}{}\right.}{24\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 1/24*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x +
 a)*(4*(b*x + a)/(b*d) - 5*(b*c*d^3 - a*d^4)/(b*d^5)) + 15*(b^2*c
^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)/(b*d^5)) + 15*(b^3*c^3 - 3*a*b^2*
c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*ln(abs(-sqrt(b*d)*sqrt(b*x + a)
+ sqrt(b^2*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*d^3))*b/abs(b)
```

3.1494 $\int \frac{(a+bx)^{3/2}}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=113

$$\frac{3(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4\sqrt{b}d^{5/2}}-\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4d^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}}{2d}$$

```
[Out] (-3*(b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*d^2) + ((a + b*x)
^(3/2)*Sqrt[c + d*x])/(2*d) + (3*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*S
qrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*Sqrt[b]*d^(5/2))
```

Rubi [A] time = 0.122497, antiderivative size = 113, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{3(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4\sqrt{b}d^{5/2}}-\frac{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4d^2}+\frac{(a+bx)^{3/2}\sqrt{c+dx}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/Sqrt[c + d*x],x]
```

```
[Out] (-3*(b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x])/(4*d^2) + ((a + b*x)
^(3/2)*Sqrt[c + d*x])/(2*d) + (3*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*S
qrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*Sqrt[b]*d^(5/2))
```

Rubi in Sympy [A] time = 17.2115, size = 100, normalized size = 0.88

$$\frac{(a+bx)^{\frac{3}{2}}\sqrt{c+dx}}{2d}+\frac{3\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)}{4d^2}+\frac{3\,(ad-bc)^2\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{4\sqrt{b}d^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(1/2),x)
```

```
[Out] (a + b*x)**(3/2)*sqrt(c + d*x)/(2*d) + 3*sqrt(a + b*x)*sqrt(c + d
*x)*(a*d - b*c)/(4*d**2) + 3*(a*d - b*c)**2*atanh(sqrt(b)*sqrt(c
+ d*x)/(sqrt(d)*sqrt(a + b*x)))/(4*sqrt(b)*d**(5/2))
```

Mathematica [A] time = 0.0758318, size = 107, normalized size = 0.95

$$\frac{3(bc-ad)^2\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{8\sqrt{b}d^{5/2}}+\frac{\sqrt{a+bx}\sqrt{c+dx}(5ad-3bc+2bdx)}{4d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(-3*b*c + 5*a*d + 2*b*d*x))/(4*d^2)
+ (3*(b*c - a*d)^2*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sq
rt[a + b*x]*Sqrt[c + d*x]])/(8*Sqrt[b]*d^(5/2))
```

Maple [B] time = 0.009, size = 308, normalized size = 2.7

$$\frac{1}{2\,d}(bx+a)^{\frac{3}{2}}\sqrt{dx+c}+\frac{3\,a}{4\,d}\sqrt{bx+a}\sqrt{dx+c}-\frac{3\,bc}{4\,d^2}\sqrt{bx+a}\sqrt{dx+c}$$
$$+\frac{3\,a^2}{8}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$-\frac{3\,abc}{4\,d}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$
$$+\frac{3\,b^2c^2}{8\,d^2}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(1/2),x)
```

```
[Out] 1/2*(b*x+a)^(3/2)*(d*x+c)^(1/2)/d+3/4/d*(b*x+a)^(1/2)*(d*x+c)^(1/
2)*a-3/4/d^2*(b*x+a)^(1/2)*(d*x+c)^(1/2)*b*c+3/8*((b*x+a)*(d*x+c)
)^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b
*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)*a^2-3/4/d*
((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1
/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^
(1/2)*a*b*c+3/8/d^2*((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)
^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*
x+a*c)^(1/2))/(b*d)^(1/2)*b^2*c^2
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.238498, size = 1, normalized size = 0.01

$$\left[\frac{4\,(2\,bdx - 3\,bc + 5\,ad)\sqrt{bd}\sqrt{bx+a}\sqrt{dx+c} + 3\,\left(b^2c^2 - 2\,abcd + a^2d^2\right)\log\left(4\,\left(2\,b^2d^2x + b^2cd + abd^2\right)\sqrt{bx+a}\sqrt{dx+c} + (8\right.}{16\,\sqrt{bd}d^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] [1/16*(4*(2*b*d*x - 3*b*c + 5*a*d)*sqrt(b*d)*sqrt(b*x + a)*sqrt(d
*x + c) + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(4*(2*b^2*d^2*x +
b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 +
 b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*
d)))/(sqrt(b*d)*d^2), 1/8*(2*(2*b*d*x - 3*b*c + 5*a*d)*sqrt(-b*d)
*sqrt(b*x + a)*sqrt(d*x + c) + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*
arctan(1/2*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d
*x + c)*b*d)))/(sqrt(-b*d)*d^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral((a + b*x)**(3/2)/sqrt(c + d*x), x)
```

GIAC/XCAS [A] time = 0.239609, size = 188, normalized size = 1.66

$$\frac{\left(\sqrt{b^2c + (bx+a)bd - abd}\sqrt{bx+a}\left(\frac{2\,(bx+a)}{bd} - \frac{3\,\left(bcd - ad^2\right)}{bd^3}\right) - \frac{3\,\left(b^2c^2 - 2\,abcd + a^2d^2\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a} + \sqrt{b^2c + (bx+a)bd - abd}\right|\right)}{\sqrt{bd}d^2}\right)b}{4\,|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] 1/4*(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*sqrt(b*x + a)*(2*(b*x +
a)/(b*d) - 3*(b*c*d - a*d^2)/(b*d^3)) - 3*(b^2*c^2 - 2*a*b*c*d +
a^2*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)
*b*d - a*b*d)))/(sqrt(b*d)*d^2))*b/abs(b)
```

3.1495 $\int \frac{\sqrt{a+bx}}{\sqrt{c+dx}}\,dx$

Optimal. Leaf size=73

$$\frac{\sqrt{a+bx}\sqrt{c+dx}}{d}-\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}d^{3/2}}$$

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x])/d - ((b*c - a*d)*ArcTanh[(Sqrt[d]*S
qrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqrt[b]*d^(3/2))
```

Rubi [A] time = 0.0778819, antiderivative size = 73, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{\sqrt{a+bx}\sqrt{c+dx}}{d}-\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}d^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x])/d - ((b*c - a*d)*ArcTanh[(Sqrt[d]*S
qrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqrt[b]*d^(3/2))
```

Rubi in Sympy [A] time = 10.9925, size = 63, normalized size = 0.86

$$\frac{\sqrt{a+bx}\sqrt{c+dx}}{d}+\frac{(ad-bc)\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{\sqrt{b}d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] sqrt(a + b*x)*sqrt(c + d*x)/d + (a*d - b*c)*atanh(sqrt(b)*sqrt(c
+ d*x)/(sqrt(d)*sqrt(a + b*x)))/(sqrt(b)*d**(3/2))
```

Mathematica [A] time = 0.0702177, size = 88, normalized size = 1.21

$$\frac{(ad-bc)\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{2\sqrt{b}d^{3/2}}+\frac{\sqrt{a+bx}\sqrt{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/Sqrt[c + d*x],x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x])/d + ((-(b*c) + a*d)*Log[b*c + a*d +
 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(2*Sqr
t[b]*d^(3/2))
```

Maple [A] time = 0.009, size = 107, normalized size = 1.5

$$\frac{1}{d}\sqrt{bx+a}\sqrt{dx+c}$$
$$-\frac{-ad+bc}{2\,d}\sqrt{(bx+a)\,(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)\,x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(1/2),x)
```

```
[Out] (b*x+a)^(1/2)*(d*x+c)^(1/2)/d-1/2*(-a*d+b*c)/d*((b*x+a)*(d*x+c))^
(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1/2*b*c+b*d*x)/(b*d
)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/sqrt(d*x + c),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227173, size = 1, normalized size = 0.01

$$\left[-\frac{(bc-ad)\log\left(4\left(2\,b^2d^2x+b^2cd+abd^2\right)\sqrt{bx+a}\sqrt{dx+c}+\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+8\left(b^2cd+abd^2\right)x\right)\sqrt{bd}\right)-}{4\sqrt{bd}d}\right.$$
$$\left.-\frac{(bc-ad)\arctan\left(\frac{(2\,bdx+bc+ad)\sqrt{-bd}}{2\sqrt{bx+a}\sqrt{dx+c}bd}\right)-2\sqrt{-bd}\sqrt{bx+a}\sqrt{dx+c}}{2\sqrt{-bd}d}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/sqrt(d*x + c),x, algorithm="fricas")
```

```
[Out] [-1/4*((b*c - a*d)*log(4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b
*x + a)*sqrt(d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^
2*d^2 + 8*(b^2*c*d + a*b*d^2)*x)*sqrt(b*d)) - 4*sqrt(b*d)*sqrt(b*
x + a)*sqrt(d*x + c))/(sqrt(b*d)*d), -1/2*((b*c - a*d)*arctan(1/2
*(2*b*d*x + b*c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*
d)) - 2*sqrt(-b*d)*sqrt(b*x + a)*sqrt(d*x + c))/(sqrt(-b*d)*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(sqrt(a + b*x)/sqrt(c + d*x), x)
```

GIAC/XCAS [A] time = 0.233935, size = 131, normalized size = 1.79

$$\frac{b\left(\frac{(bc-ad)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}d}+\frac{\sqrt{b^2c+(bx+a)bd-abd}\sqrt{bx+a}}{bd}\right)}{|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/sqrt(d*x + c),x, algorithm="giac")
```

```
[Out] b*((b*c - a*d)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*
x + a)*b*d - a*b*d)))/(sqrt(b*d)*d) + sqrt(b^2*c + (b*x + a)*b*d
- a*b*d)*sqrt(b*x + a)/(b*d))/abs(b)
```

3.1496 $\int \frac{1}{\sqrt{a+bx}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=42

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqr
t[b]*Sqrt[d])
```

Rubi [A] time = 0.0422992, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*Sqrt[c + d*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqr
t[b]*Sqrt[d])
```

Rubi in Sympy [A] time = 6.89119, size = 39, normalized size = 0.93

$$\frac{2\,\text{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{\sqrt{b}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] 2*atanh(sqrt(b)*sqrt(c + d*x)/(sqrt(d)*sqrt(a + b*x)))/(sqrt(b)*s
qrt(d))
```

Mathematica [A] time = 0.0276475, size = 54, normalized size = 1.29

$$\frac{\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*Sqrt[c + d*x]),x]
```

```
[Out] Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c
+ d*x]]/(Sqrt[b]*Sqrt[d])
```

Maple [B] time = 0.007, size = 76, normalized size = 1.8

$$1\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/2),x)
```

```
[Out] ((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1
/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^
(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219463, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(4\left(2\,b^2d^2x+b^2cd+abd^2\right)\sqrt{bx+a}\sqrt{dx+c}+\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+8\left(b^2cd+abd^2\right)x\right)\sqrt{bd}\right)}{2\sqrt{bd}},\ \arctan\left(\frac{(2\,b\ldots}{2\ldots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/2*log(4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d
*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2
*c*d + a*b*d^2)*x)*sqrt(b*d))/sqrt(b*d), arctan(1/2*(2*b*d*x + b*
c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d))/sqrt(-b*d)
]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.226834, size = 68, normalized size = 1.62

$$-\frac{2\,b\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -2*b*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*d
 - a*b*d)))/(sqrt(b*d)*abs(b))
```

3.1497 $\int \frac{1}{(a+bx)^{3/2}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=30

$$-\frac{2\sqrt{c+dx}}{\sqrt{a+bx}(bc-ad)}$$

```
[Out] (-2*Sqrt[c + d*x])/((b*c - a*d)*Sqrt[a + b*x])
```

Rubi [A] time = 0.0241024, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{2\sqrt{c+dx}}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*Sqrt[c + d*x]),x]

[Out] (-2*Sqrt[c + d*x])/((b*c - a*d)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 3.78672, size = 24, normalized size = 0.8

$$\frac{2\sqrt{c+dx}}{\sqrt{a+bx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/2),x)

[Out] 2*sqrt(c + d*x)/(sqrt(a + b*x)*(a*d - b*c))
```

Mathematica [A] time = 0.0327016, size = 30, normalized size = 1.

$$\frac{2\sqrt{c+dx}}{\sqrt{a+bx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*Sqrt[c + d*x]),x]
```

```
[Out] (2*Sqrt[c + d*x])/((-(b*c) + a*d)*Sqrt[a + b*x])
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$2\,\frac{\sqrt{dx+c}}{\sqrt{bx+a}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(3/2)/(d*x+c)^(1/2),x)
```

```
[Out] 2/(b*x+a)^(1/2)*(d*x+c)^(1/2)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223804, size = 57, normalized size = 1.9

$$-\frac{2\,\sqrt{bx+a}\sqrt{dx+c}}{abc-a^2d+(b^2c-abd)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] -2*sqrt(b*x + a)*sqrt(d*x + c)/(a*b*c - a^2*d + (b^2*c - a*b*d)*x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(a+bx)^{\frac{3}{2}}\,\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.229165, size = 89, normalized size = 2.97

$$-\frac{4\sqrt{bd}b}{\left(b^2c - abd - \left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)bd - abd}\right)^2\right)|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -4*sqrt(b*d)*b/((b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x + a) - sqrt(
b^2*c + (b*x + a)*b*d - a*b*d))^2)*abs(b))
```

3.1498 $\int \frac{1}{(a+bx)^{5/2}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=66

$$\frac{4d\sqrt{c+dx}}{3\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{3(a+bx)^{3/2}(bc-ad)}$$

```
[Out] (-2*Sqrt[c + d*x])/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (4*d*Sqrt[c
+ d*x])/(3*(b*c - a*d)^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.0497228, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{4d\sqrt{c+dx}}{3\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{3(a+bx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*Sqrt[c + d*x])/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (4*d*Sqrt[c
+ d*x])/(3*(b*c - a*d)^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 7.91964, size = 56, normalized size = 0.85

$$\frac{4d\sqrt{c+dx}}{3\sqrt{a+bx}\,(ad-bc)^2}+\frac{2\sqrt{c+dx}}{3\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/2),x)
```

```
[Out] 4*d*sqrt(c + d*x)/(3*sqrt(a + b*x)*(a*d - b*c)**2) + 2*sqrt(c + d
*x)/(3*(a + b*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0600362, size = 46, normalized size = 0.7

$$\frac{2\sqrt{c+dx}(3ad-bc+2bdx)}{3(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*Sqrt[c + d*x]),x]
```

```
[Out] (2*Sqrt[c + d*x]*(-(b*c) + 3*a*d + 2*b*d*x))/(3*(b*c - a*d)^2*(a
+ b*x)^(3/2))
```

Maple [A] time = 0.009, size = 54, normalized size = 0.8

$$\frac{4\,bdx+6\,ad-2\,bc}{3\,a^{2}d^{2}-6\,abcd+3\,b^{2}c^{2}}\sqrt{dx+c}\,(bx+a)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(1/2),x)
```

```
[Out] 2/3*(d*x+c)^(1/2)*(2*b*d*x+3*a*d-b*c)/(b*x+a)^(3/2)/(a^2*d^2-2*a*
b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.250438, size = 159, normalized size = 2.41

$$\frac{2\,(2\,bdx-bc+3\,ad)\sqrt{bx+a}\sqrt{dx+c}}{3\,(a^{2}b^{2}c^{2}-2\,a^{3}bcd+a^{4}d^{2}+(b^{4}c^{2}-2\,ab^{3}cd+a^{2}b^{2}d^{2})x^{2}+2\,(ab^{3}c^{2}-2\,a^{2}b^{2}cd+a^{3}bd^{2})x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] 2/3*(2*b*d*x - b*c + 3*a*d)*sqrt(b*x + a)*sqrt(d*x + c)/(a^2*b^2*
c^2 - 2*a^3*b*c*d + a^4*d^2 + (b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^
2)*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.232389, size = 163, normalized size = 2.47

$$\frac{8\left(b^2c-abd-3\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^2c+(bx+a)bd-abd}\right)^2\right)\sqrt{bd}b^2d}{3\left(b^2c-abd-\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^2c+(bx+a)bd-abd}\right)^2\right)^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] 8/3*(b^2*c - a*b*d - 3*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b
*x + a)*b*d - a*b*d))^2)*sqrt(b*d)*b^2*d/((b^2*c - a*b*d - (sqrt(
b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^3*ab
s(b))
```

3.1499 $\int \frac{1}{(a+bx)^{7/2}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=101

$$-\frac{16d^2\sqrt{c+dx}}{15\sqrt{a+bx}(bc-ad)^3}+\frac{8d\sqrt{c+dx}}{15(a+bx)^{3/2}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{5(a+bx)^{5/2}(bc-ad)}$$

```
[Out] (-2*Sqrt[c + d*x])/(5*(b*c - a*d)*(a + b*x)^(5/2)) + (8*d*Sqrt[c
+ d*x])/(15*(b*c - a*d)^2*(a + b*x)^(3/2)) - (16*d^2*Sqrt[c + d*x
])/(15*(b*c - a*d)^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.0788336, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{16d^2\sqrt{c+dx}}{15\sqrt{a+bx}(bc-ad)^3}+\frac{8d\sqrt{c+dx}}{15(a+bx)^{3/2}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{5(a+bx)^{5/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/2)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*Sqrt[c + d*x])/(5*(b*c - a*d)*(a + b*x)^(5/2)) + (8*d*Sqrt[c
+ d*x])/(15*(b*c - a*d)^2*(a + b*x)^(3/2)) - (16*d^2*Sqrt[c + d*x
])/(15*(b*c - a*d)^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 14.4685, size = 88, normalized size = 0.87

$$\frac{16d^2\sqrt{c+dx}}{15\sqrt{a+bx}\,(ad-bc)^3}+\frac{8d\sqrt{c+dx}}{15\,(a+bx)^{\frac{3}{2}}\,(ad-bc)^2}+\frac{2\sqrt{c+dx}}{5\,(a+bx)^{\frac{5}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/2)/(d*x+c)**(1/2),x)
```

```
[Out] 16*d**2*sqrt(c + d*x)/(15*sqrt(a + b*x)*(a*d - b*c)**3) + 8*d*sqr
t(c + d*x)/(15*(a + b*x)**(3/2)*(a*d - b*c)**2) + 2*sqrt(c + d*x)
/(5*(a + b*x)**(5/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0914764, size = 75, normalized size = 0.74

$$-\frac{2\sqrt{c+dx}\left(15a^2d^2-10abd(c-2dx)+b^2\left(3c^2-4cdx+8d^2x^2\right)\right)}{15(a+bx)^{5/2}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/2)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*Sqrt[c + d*x]*(15*a^2*d^2 - 10*a*b*d*(c - 2*d*x) + b^2*(3*c^2
 - 4*c*d*x + 8*d^2*x^2)))/(15*(b*c - a*d)^3*(a + b*x)^(5/2))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{16\,b^2d^2x^2+40\,abd^2x-8\,b^2cdx+30\,a^2d^2-20\,abcd+6\,b^2c^2}{15\,a^3d^3-45\,a^2bcd^2+45\,ab^2c^2d-15\,b^3c^3}\sqrt{dx+c}\,(bx+a)^{-\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/2)/(d*x+c)^(1/2),x)
```

```
[Out] 2/15*(d*x+c)^(1/2)*(8*b^2*d^2*x^2+20*a*b*d^2*x-4*b^2*c*d*x+15*a^2
*d^2-10*a*b*c*d+3*b^2*c^2)/(b*x+a)^(5/2)/(a^3*d^3-3*a^2*b*c*d^2+3
*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.34263, size = 339, normalized size = 3.36

$$-\frac{2\left(8\,b^2d^2x^2+3\,b^2c^2-10\,abcd+15\,a^2d^2-4\left(b^2cd-5\,abd^2\right)x\right)\sqrt{bx+a}}{15\,(a^3b^3c^3-3\,a^4b^2c^2d+3\,a^5bcd^2-a^6d^3+(b^6c^3-3\,ab^5c^2d+3\,a^2b^4cd^2-a^3b^3d^3)x^3+3\,(ab^5c^3-3\,a^2b^4c^2d+3\,a^3b^3cd^2-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] -2/15*(8*b^2*d^2*x^2 + 3*b^2*c^2 - 10*a*b*c*d + 15*a^2*d^2 - 4*(b
^2*c*d - 5*a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^3*b^3*c^3 -
```

```
 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3 + (b^6*c^3 - 3*a*b^5*c
^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*x^3 + 3*(a*b^5*c^3 - 3*a^2*
b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*x^2 + 3*(a^2*b^4*c^3 -
 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{7}{2}}\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/((a + b*x)**(7/2)*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.238903, size = 306, normalized size = 3.03

$$-\frac{32\left(b^4c^2 - 2\,ab^3cd + a^2b^2d^2 - 5\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)bd - abd}\right)^2 b^2c + 5\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)bd - a\right.\right.}{15\left(b^2c - abd - \left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)bd - abd}\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -32/15*(b^4*c^2 - 2*a*b^3*c*d + a^2*b^2*d^2 - 5*(sqrt(b*d)*sqrt(b
*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*b^2*c + 5*(sqrt(
b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a*b*d
 + 10*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b
*d))^4)*sqrt(b*d)*b^3*d^2/((b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x +
 a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^5*abs(b))
```

3.1500 $\int \frac{1}{(a+bx)^{9/2}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=136

$$\frac{32d^3\sqrt{c+dx}}{35\sqrt{a+bx}(bc-ad)^4}-\frac{16d^2\sqrt{c+dx}}{35(a+bx)^{3/2}(bc-ad)^3}+\frac{12d\sqrt{c+dx}}{35(a+bx)^{5/2}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{7(a+bx)^{7/2}(bc-ad)}$$

```
[Out] (-2*Sqrt[c + d*x])/(7*(b*c - a*d)*(a + b*x)^(7/2)) + (12*d*Sqrt[c
 + d*x])/(35*(b*c - a*d)^2*(a + b*x)^(5/2)) - (16*d^2*Sqrt[c + d*
x])/(35*(b*c - a*d)^3*(a + b*x)^(3/2)) + (32*d^3*Sqrt[c + d*x])/(
35*(b*c - a*d)^4*Sqrt[a + b*x])
```

Rubi [A] time = 0.114538, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{32d^3\sqrt{c+dx}}{35\sqrt{a+bx}(bc-ad)^4}-\frac{16d^2\sqrt{c+dx}}{35(a+bx)^{3/2}(bc-ad)^3}+\frac{12d\sqrt{c+dx}}{35(a+bx)^{5/2}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{7(a+bx)^{7/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(9/2)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*Sqrt[c + d*x])/(7*(b*c - a*d)*(a + b*x)^(7/2)) + (12*d*Sqrt[c
 + d*x])/(35*(b*c - a*d)^2*(a + b*x)^(5/2)) - (16*d^2*Sqrt[c + d*
x])/(35*(b*c - a*d)^3*(a + b*x)^(3/2)) + (32*d^3*Sqrt[c + d*x])/(
35*(b*c - a*d)^4*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 22.8144, size = 121, normalized size = 0.89

$$\frac{32d^3\sqrt{c+dx}}{35\sqrt{a+bx}\,(ad-bc)^4}+\frac{16d^2\sqrt{c+dx}}{35\,(a+bx)^{\frac{3}{2}}\,(ad-bc)^3}+\frac{12d\sqrt{c+dx}}{35\,(a+bx)^{\frac{5}{2}}\,(ad-bc)^2}+\frac{2\sqrt{c+dx}}{7\,(a+bx)^{\frac{7}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/2)/(d*x+c)**(1/2),x)
```

```
[Out] 32*d**3*sqrt(c + d*x)/(35*sqrt(a + b*x)*(a*d - b*c)**4) + 16*d**2
*sqrt(c + d*x)/(35*(a + b*x)**(3/2)*(a*d - b*c)**3) + 12*d*sqrt(c
 + d*x)/(35*(a + b*x)**(5/2)*(a*d - b*c)**2) + 2*sqrt(c + d*x)/(7
*(a + b*x)**(7/2)*(a*d - b*c))
```

Mathematica [A] time = 0.130938, size = 111, normalized size = 0.82

$$\sqrt{a+bx}\sqrt{c+dx}\left(\frac{32d^3}{35(a+bx)(bc-ad)^4}-\frac{16d^2}{35(a+bx)^2(bc-ad)^3}+\frac{12d}{35(a+bx)^3(bc-ad)^2}+\frac{2}{7(a+bx)^4(ad-bc)}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/2)*Sqrt[c + d*x]),x]
```

```
[Out] Sqrt[a + b*x]*Sqrt[c + d*x]*(2/(7*(-(b*c) + a*d)*(a + b*x)^4) + (
12*d)/(35*(b*c - a*d)^2*(a + b*x)^3) - (16*d^2)/(35*(b*c - a*d)^3
*(a + b*x)^2) + (32*d^3)/(35*(b*c - a*d)^4*(a + b*x)))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$\frac{32\,b^3d^3x^3+112\,ab^2d^3x^2-16\,b^3cd^2x^2+140\,a^2bd^3x-56\,ab^2cd^2x+12\,b^3c^2dx+70\,a^3d^3-70\,a^2bcd^2+42\,ab^2c^2d-10\,b^3c^3}{35\,d^4a^4-140\,bd^3ca^3+210\,b^2d^2c^2a^2-140\,b^3dc^3a+35\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/2)/(d*x+c)^(1/2),x)
```

```
[Out] 2/35*(d*x+c)^(1/2)*(16*b^3*d^3*x^3+56*a*b^2*d^3*x^2-8*b^3*c*d^2*x
^2+70*a^2*b*d^3*x-28*a*b^2*c*d^2*x+6*b^3*c^2*d*x+35*a^3*d^3-35*a^
2*b*c*d^2+21*a*b^2*c^2*d-5*b^3*c^3)/(b*x+a)^(7/2)/(a^4*d^4-4*a^3*
b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/2)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.677216, size = 566, normalized size = 4.16

$$\frac{2\left(16\,b^3d^3x^3-5\,b^3c^3+21\,ab^2c^2d-35\,a^2bcd^2\right.}{35\left(a^4b^4c^4-4\,a^5b^3c^3d+6\,a^6b^2c^2d^2-4\,a^7bcd^3+a^8d^4+(b^8c^4-4\,ab^7c^3d+6\,a^2b^6c^2d^2-4\,a^3b^5cd^3+a^4b^4d^4)x^4+4\,(ab^7c^4-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/2)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] 2/35*(16*b^3*d^3*x^3 - 5*b^3*c^3 + 21*a*b^2*c^2*d - 35*a^2*b*c*d^
2 + 35*a^3*d^3 - 8*(b^3*c*d^2 - 7*a*b^2*d^3)*x^2 + 2*(3*b^3*c^2*d
 - 14*a*b^2*c*d^2 + 35*a^2*b*d^3)*x)*sqrt(b*x + a)*sqrt(d*x + c)/
(a^4*b^4*c^4 - 4*a^5*b^3*c^3*d + 6*a^6*b^2*c^2*d^2 - 4*a^7*b*c*d^
3 + a^8*d^4 + (b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^
3*b^5*c*d^3 + a^4*b^4*d^4)*x^4 + 4*(a*b^7*c^4 - 4*a^2*b^6*c^3*d +
 6*a^3*b^5*c^2*d^2 - 4*a^4*b^4*c*d^3 + a^5*b^3*d^4)*x^3 + 6*(a^2*
b^6*c^4 - 4*a^3*b^5*c^3*d + 6*a^4*b^4*c^2*d^2 - 4*a^5*b^3*c*d^3 +
 a^6*b^2*d^4)*x^2 + 4*(a^3*b^5*c^4 - 4*a^4*b^4*c^3*d + 6*a^5*b^3*
c^2*d^2 - 4*a^6*b^2*c*d^3 + a^7*b*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(9/2)/(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.256383, size = 521, normalized size = 3.83

$$\frac{64\left(b^6c^3 - 3\,ab^5c^2d + 3\,a^2b^4cd^2 - a^3b^3d^3 - 7\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c + (bx+a)bd - abd}\right)^2 b^4c^2 + 14\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c +\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/2)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] 64/35*(b^6*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3 -
7*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))
^2*b^4*c^2 + 14*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)
*b*d - a*b*d))^2*a*b^3*c*d - 7*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^
2*c + (b*x + a)*b*d - a*b*d))^2*a^2*b^2*d^2 + 21*(sqrt(b*d)*sqrt(
b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*b^2*c - 21*(sqr
t(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a*b
*d - 35*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a
*b*d))^6)*sqrt(b*d)*b^4*d^3/((b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x
```

```
+ a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^7*abs(b))
```

3.1501 $\int \frac{1}{(a+bx)^{11/2}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=171

$$-\frac{256d^4\sqrt{c+dx}}{315\sqrt{a+bx}(bc-ad)^5}+\frac{128d^3\sqrt{c+dx}}{315(a+bx)^{3/2}(bc-ad)^4}-\frac{32d^2\sqrt{c+dx}}{105(a+bx)^{5/2}(bc-ad)^3}+\frac{16d\sqrt{c+dx}}{63(a+bx)^{7/2}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{9(a+bx)^{9/2}(bc-ad)}$$

```
[Out] (-2*Sqrt[c + d*x])/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (16*d*Sqrt[c
 + d*x])/(63*(b*c - a*d)^2*(a + b*x)^(7/2)) - (32*d^2*Sqrt[c + d*
x])/(105*(b*c - a*d)^3*(a + b*x)^(5/2)) + (128*d^3*Sqrt[c + d*x])
/(315*(b*c - a*d)^4*(a + b*x)^(3/2)) - (256*d^4*Sqrt[c + d*x])/(3
15*(b*c - a*d)^5*Sqrt[a + b*x])
```

Rubi [A] time = 0.15311, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{256d^4\sqrt{c+dx}}{315\sqrt{a+bx}(bc-ad)^5}+\frac{128d^3\sqrt{c+dx}}{315(a+bx)^{3/2}(bc-ad)^4}-\frac{32d^2\sqrt{c+dx}}{105(a+bx)^{5/2}(bc-ad)^3}+\frac{16d\sqrt{c+dx}}{63(a+bx)^{7/2}(bc-ad)^2}-\frac{2\sqrt{c+dx}}{9(a+bx)^{9/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(11/2)*Sqrt[c + d*x]),x]
```

```
[Out] (-2*Sqrt[c + d*x])/(9*(b*c - a*d)*(a + b*x)^(9/2)) + (16*d*Sqrt[c
 + d*x])/(63*(b*c - a*d)^2*(a + b*x)^(7/2)) - (32*d^2*Sqrt[c + d*
x])/(105*(b*c - a*d)^3*(a + b*x)^(5/2)) + (128*d^3*Sqrt[c + d*x])
/(315*(b*c - a*d)^4*(a + b*x)^(3/2)) - (256*d^4*Sqrt[c + d*x])/(3
15*(b*c - a*d)^5*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 34.1677, size = 153, normalized size = 0.89

$$\frac{256d^4\sqrt{c+dx}}{315\sqrt{a+bx}\,(ad-bc)^5}+\frac{128d^3\sqrt{c+dx}}{315\,(a+bx)^{\frac{3}{2}}\,(ad-bc)^4}+\frac{32d^2\sqrt{c+dx}}{105\,(a+bx)^{\frac{5}{2}}\,(ad-bc)^3}+\frac{16d\sqrt{c+dx}}{63\,(a+bx)^{\frac{7}{2}}\,(ad-bc)^2}+\frac{2\sqrt{c+dx}}{9\,(a+bx)^{\frac{9}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/2)/(d*x+c)**(1/2),x)
```

```
[Out] 256*d**4*sqrt(c + d*x)/(315*sqrt(a + b*x)*(a*d - b*c)**5) + 128*d
**3*sqrt(c + d*x)/(315*(a + b*x)**(3/2)*(a*d - b*c)**4) + 32*d**2
*sqrt(c + d*x)/(105*(a + b*x)**(5/2)*(a*d - b*c)**3) + 16*d*sqrt(
c + d*x)/(63*(a + b*x)**(7/2)*(a*d - b*c)**2) + 2*sqrt(c + d*x)/(
9*(a + b*x)**(9/2)*(a*d - b*c))
```

Mathematica [A] time = 0.333191, size = 117, normalized size = 0.68

$$\frac{2\sqrt{c+dx}\left(64d^3(a+bx)^3(bc-ad)-48d^2(a+bx)^2(bc-ad)^2+40d(a+bx)(bc-ad)^3-35(bc-ad)^4-128d^4(a+bx)^4\right)}{315(a+bx)^{9/2}(bc-ad)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/2)*Sqrt[c + d*x]),x]
```

```
[Out] (2*Sqrt[c + d*x]*(-35*(b*c - a*d)^4 + 40*d*(b*c - a*d)^3*(a + b*x
) - 48*d^2*(b*c - a*d)^2*(a + b*x)^2 + 64*d^3*(b*c - a*d)*(a + b*
x)^3 - 128*d^4*(a + b*x)^4))/(315*(b*c - a*d)^5*(a + b*x)^(9/2))
```

Maple [A] time = 0.014, size = 256, normalized size = 1.5

$$\frac{256\,b^4d^4x^4+1152\,ab^3d^4x^3-128\,b^4cd^3x^3+2016\,a^2b^2d^4x^2-576\,ab^3cd^3x^2+96\,b^4c^2d^2x^2+1680\,a^3bd^4x-1008\,a^2b^2cd^3x+}{315\,a^5d^5-1575\,a^4bcd^4+3150\,a^3b^2c^2d^3-3150\,a^2b^3c^3d^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/2)/(d*x+c)^(1/2),x)
```

```
[Out] 2/315*(d*x+c)^(1/2)*(128*b^4*d^4*x^4+576*a*b^3*d^4*x^3-64*b^4*c*d
^3*x^3+1008*a^2*b^2*d^4*x^2-288*a*b^3*c*d^3*x^2+48*b^4*c^2*d^2*x^
2+840*a^3*b*d^4*x-504*a^2*b^2*c*d^3*x+216*a*b^3*c^2*d^2*x-40*b^4*
c^3*d*x+315*a^4*d^4-420*a^3*b*c*d^3+378*a^2*b^2*c^2*d^2-180*a*b^3
*c^3*d+35*b^4*c^4)/(b*x+a)^(9/2)/(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^
2*c^2*d^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/2)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A]   time = 2.16784, size = 861, normalized size = 5.04

$$-\frac{2\,(}{315\,(a^5b^5c^5 - 5\,a^6b^4c^4d + 10\,a^7b^3c^3d^2 - 10\,a^8b^2c^2d^3 + 5\,a^9bcd^4 - a^{10}d^5 + (b^{10}c^5 - 5\,ab^9c^4d + 10\,a^2b^8c^3d^2 - 10\,a^3b^7c^2d^3 +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/2)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] -2/315*(128*b^4*d^4*x^4 + 35*b^4*c^4 - 180*a*b^3*c^3*d + 378*a^2*
b^2*c^2*d^2 - 420*a^3*b*c*d^3 + 315*a^4*d^4 - 64*(b^4*c*d^3 - 9*a
*b^3*d^4)*x^3 + 48*(b^4*c^2*d^2 - 6*a*b^3*c*d^3 + 21*a^2*b^2*d^4)
*x^2 - 8*(5*b^4*c^3*d - 27*a*b^3*c^2*d^2 + 63*a^2*b^2*c*d^3 - 105
*a^3*b*d^4)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^5*b^5*c^5 - 5*a^6*b
^4*c^4*d + 10*a^7*b^3*c^3*d^2 - 10*a^8*b^2*c^2*d^3 + 5*a^9*b*c*d^
4 - a^10*d^5 + (b^10*c^5 - 5*a*b^9*c^4*d + 10*a^2*b^8*c^3*d^2 - 1
0*a^3*b^7*c^2*d^3 + 5*a^4*b^6*c*d^4 - a^5*b^5*d^5)*x^5 + 5*(a*b^9
*c^5 - 5*a^2*b^8*c^4*d + 10*a^3*b^7*c^3*d^2 - 10*a^4*b^6*c^2*d^3
+ 5*a^5*b^5*c*d^4 - a^6*b^4*d^5)*x^4 + 10*(a^2*b^8*c^5 - 5*a^3*b^
7*c^4*d + 10*a^4*b^6*c^3*d^2 - 10*a^5*b^5*c^2*d^3 + 5*a^6*b^4*c*d
^4 - a^7*b^3*d^5)*x^3 + 10*(a^3*b^7*c^5 - 5*a^4*b^6*c^4*d + 10*a^
5*b^5*c^3*d^2 - 10*a^6*b^4*c^2*d^3 + 5*a^7*b^3*c*d^4 - a^8*b^2*d^
5)*x^2 + 5*(a^4*b^6*c^5 - 5*a^5*b^5*c^4*d + 10*a^6*b^4*c^3*d^2 -
10*a^7*b^3*c^2*d^3 + 5*a^8*b^2*c*d^4 - a^9*b*d^5)*x)
```

Sympy [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(11/2)/(d*x+c)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.284503, size = 805, normalized size = 4.71

$$-\frac{512\left(b^{8}c^{4}-4\,ab^{7}c^{3}d+6\,a^{2}b^{6}c^{2}d^{2}-4\,a^{3}b^{5}cd^{3}+a^{4}b^{4}d^{4}-9\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^{2}c+(bx+a)bd-abd}\right)^{2}b^{6}c^{3}+27\left(\sqrt{bd}\sqrt{b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/2)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -512/315*(b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*d^2 - 4*a^3*b^5
*c*d^3 + a^4*b^4*d^4 - 9*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c +
(b*x + a)*b*d - a*b*d))^2*b^6*c^3 + 27*(sqrt(b*d)*sqrt(b*x + a) -
 sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a*b^5*c^2*d - 27*(sqrt(b*
d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a^2*b^4
*c*d^2 + 9*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d
- a*b*d))^2*a^3*b^3*d^3 + 36*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*
c + (b*x + a)*b*d - a*b*d))^4*b^4*c^2 - 72*(sqrt(b*d)*sqrt(b*x +
a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a*b^3*c*d + 36*(sqrt(
b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a^2*b
^2*d^2 - 84*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d
 - a*b*d))^6*b^2*c + 84*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (
b*x + a)*b*d - a*b*d))^6*a*b*d + 126*(sqrt(b*d)*sqrt(b*x + a) - s
qrt(b^2*c + (b*x + a)*b*d - a*b*d))^8)*sqrt(b*d)*b^5*d^4/((b^2*c
- a*b*d - (sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d -
 a*b*d))^2)^9*abs(b))
```

3.1502 $\int \frac{(a+bx)^{7/2}}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=174

$$-\frac{35\sqrt{b}(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8d^{9/2}}+\frac{35b\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8d^4}-\frac{35b(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{12d^3}+\frac{7b(a+bx)^{5/2}\sqrt{c+dx}}{3d^2}-\frac{2(a+bx)^{7/2}}{d\sqrt{c+dx}}$$

```
[Out] (-2*(a + b*x)^(7/2))/(d*Sqrt[c + d*x]) + (35*b*(b*c - a*d)^2*Sqrt
[a + b*x]*Sqrt[c + d*x])/(8*d^4) - (35*b*(b*c - a*d)*(a + b*x)^(3
/2)*Sqrt[c + d*x])/(12*d^3) + (7*b*(a + b*x)^(5/2)*Sqrt[c + d*x])
/(3*d^2) - (35*Sqrt[b]*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*d^(9/2))
```

Rubi [A] time = 0.227519, antiderivative size = 174, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$-\frac{35\sqrt{b}(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8d^{9/2}}+\frac{35b\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8d^4}-\frac{35b(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{12d^3}+\frac{7b(a+bx)^{5/2}\sqrt{c+dx}}{3d^2}-\frac{2(a+bx)^{7/2}}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/2)/(c + d*x)^(3/2),x]
```

```
[Out] (-2*(a + b*x)^(7/2))/(d*Sqrt[c + d*x]) + (35*b*(b*c - a*d)^2*Sqrt
[a + b*x]*Sqrt[c + d*x])/(8*d^4) - (35*b*(b*c - a*d)*(a + b*x)^(3
/2)*Sqrt[c + d*x])/(12*d^3) + (7*b*(a + b*x)^(5/2)*Sqrt[c + d*x])
/(3*d^2) - (35*Sqrt[b]*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*
x])/(Sqrt[b]*Sqrt[c + d*x])])/(8*d^(9/2))
```

Rubi in Sympy [A] time = 33.5876, size = 162, normalized size = 0.93

$$\frac{35\sqrt{b}\left(ad-bc\right)^3\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8d^{\frac{9}{2}}}+\frac{7b\left(a+bx\right)^{\frac{5}{2}}\sqrt{c+dx}}{3d^2}+\frac{35b\left(a+bx\right)^{\frac{3}{2}}\sqrt{c+dx}\left(ad-bc\right)}{12d^3}+\frac{35b\sqrt{a+bx}\sqrt{c+dx}\left(ad-bc\right)^2}{8d^4}-\frac{2\left(a+bx\right)^{\frac{7}{2}}}{d\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/2)/(d*x+c)**(3/2),x)
```

```
[Out] 35*sqrt(b)*(a*d - b*c)**3*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*sq
rt(c + d*x)))/(8*d**(9/2)) + 7*b*(a + b*x)**(5/2)*sqrt(c + d*x)/(
3*d**2) + 35*b*(a + b*x)**(3/2)*sqrt(c + d*x)*(a*d - b*c)/(12*d**
3) + 35*b*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**2/(8*d**4) - 2
*(a + b*x)**(7/2)/(d*sqrt(c + d*x))
```

Mathematica [A] time = 0.337034, size = 165, normalized size = 0.95

$$\frac{\sqrt{a+bx}\sqrt{c+dx}\left(b\left(87a^2d^2-136abcd+57b^2c^2\right)-2b^2dx(11bc-19ad)+\frac{48(bc-ad)^3}{c+dx}+8b^3d^2x^2\right)}{24d^4}-\frac{35\sqrt{b}(bc-ad)^3\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{16d^{9/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/2)/(c + d*x)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x]*Sqrt[c + d*x]*(b*(57*b^2*c^2 - 136*a*b*c*d + 87*a^
2*d^2) - 2*b^2*d*(11*b*c - 19*a*d)*x + 8*b^3*d^2*x^2 + (48*(b*c -
 a*d)^3)/(c + d*x)))/(24*d^4) - (35*Sqrt[b]*(b*c - a*d)^3*Log[b*c
 + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]]
)/(16*d^(9/2))
```

Maple [F] time = 0.048, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{2}}\,(dx+c)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/2)/(d*x+c)^(3/2),x)
```

```
[Out] int((b*x+a)^(7/2)/(d*x+c)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.565602, size = 1, normalized size = 0.01

$$\left[-\frac{105\left(b^3c^4-3\,ab^2c^3d+3\,a^2bc^2d^2-a^3cd^3+\left(b^3c^3d-3\,ab^2c^2d^2+3\,a^2bcd^3-a^3d^4\right)x\right)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+\right.}{}\right.$$

$$-\frac{105\left(b^3c^4-3\,ab^2c^3d+3\,a^2bc^2d^2-a^3cd^3+\left(b^3c^3d-3\,ab^2c^2d^2+3\,a^2bcd^3-a^3d^4\right)x\right)\sqrt{-\frac{b}{d}}\arctan\left(\frac{2\,bdx+bc+ad}{2\,\sqrt{bx+a}\sqrt{dx+c}d\sqrt{-\frac{b}{d}}}\right)-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/96*(105*(b^3*c^4 - 3*a*b^2*c^3*d + 3*a^2*b*c^2*d^2 - a^3*c*d^
3 + (b^3*c^3*d - 3*a*b^2*c^2*d^2 + 3*a^2*b*c*d^3 - a^3*d^4)*x)*sq
rt(b/d)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 4*(2*
b*d^2*x + b*c*d + a*d^2)*sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b/d) +
8*(b^2*c*d + a*b*d^2)*x) - 4*(8*b^3*d^3*x^3 + 105*b^3*c^3 - 280*a
*b^2*c^2*d + 231*a^2*b*c*d^2 - 48*a^3*d^3 - 2*(7*b^3*c*d^2 - 19*a
*b^2*d^3)*x^2 + (35*b^3*c^2*d - 98*a*b^2*c*d^2 + 87*a^2*b*d^3)*x)
*sqrt(b*x + a)*sqrt(d*x + c))/(d^5*x + c*d^4), -1/48*(105*(b^3*c^
4 - 3*a*b^2*c^3*d + 3*a^2*b*c^2*d^2 - a^3*c*d^3 + (b^3*c^3*d - 3*
a*b^2*c^2*d^2 + 3*a^2*b*c*d^3 - a^3*d^4)*x)*sqrt(-b/d)*arctan(1/2
*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c)*d*sqrt(-b/d))
) - 2*(8*b^3*d^3*x^3 + 105*b^3*c^3 - 280*a*b^2*c^2*d + 231*a^2*b*
c*d^2 - 48*a^3*d^3 - 2*(7*b^3*c*d^2 - 19*a*b^2*d^3)*x^2 + (35*b^3
*c^2*d - 98*a*b^2*c*d^2 + 87*a^2*b*d^3)*x)*sqrt(b*x + a)*sqrt(d*x
 + c))/(d^5*x + c*d^4)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/2)/(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.261277, size = 423, normalized size = 2.43

$$\frac{\left(\left(2\left(\frac{4\,(bx+a)b^2d^6}{b^{10}cd^8-ab^9d^9}-\frac{7\left(b^3cd^5-ab^2d^6\right)}{b^{10}cd^8-ab^9d^9}\right)(bx+a)+\frac{35\left(b^4c^2d^4-2\,ab^3cd^5+a^2b^2d^6\right)}{b^{10}cd^8-ab^9d^9}\right)(bx+a)+\frac{105\left(b^5c^3d^3-3\,ab^4c^2d^4+3\,a^2b^3cd^5-a^3b^2d^6\right)}{b^{10}cd^8-ab^9d^9}\right)\sqrt{bx+a}}{184320\,\sqrt{b^2c+(bx+a)bd-abd}}+\frac{7\left(b^2c^2-2\,abcd+a^2d^2\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{12288\,\sqrt{bd}b^7d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 1/184320*((2*(4*(b*x + a)*b^2*d^6/(b^10*c*d^8 - a*b^9*d^9) - 7*(b
^3*c*d^5 - a*b^2*d^6)/(b^10*c*d^8 - a*b^9*d^9))*(b*x + a) + 35*(b
^4*c^2*d^4 - 2*a*b^3*c*d^5 + a^2*b^2*d^6)/(b^10*c*d^8 - a*b^9*d^9
))*(b*x + a) + 105*(b^5*c^3*d^3 - 3*a*b^4*c^2*d^4 + 3*a^2*b^3*c*d
^5 - a^3*b^2*d^6)/(b^10*c*d^8 - a*b^9*d^9))*sqrt(b*x + a)/sqrt(b^
2*c + (b*x + a)*b*d - a*b*d) + 7/12288*(b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*
d - a*b*d)))/(sqrt(b*d)*b^7*d^5)
```

3.1503 $\int \frac{(a+bx)^{5/2}}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=138

$$\frac{15\sqrt{b}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4d^{7/2}}-\frac{15b\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4d^3}+\frac{5b(a+bx)^{3/2}\sqrt{c+dx}}{2d^2}-\frac{2(a+bx)^{5/2}}{d\sqrt{c+dx}}$$

```
[Out] (-2*(a + b*x)^(5/2))/(d*Sqrt[c + d*x]) - (15*b*(b*c - a*d)*Sqrt[a
 + b*x]*Sqrt[c + d*x])/(4*d^3) + (5*b*(a + b*x)^(3/2)*Sqrt[c + d*
x])/(2*d^2) + (15*Sqrt[b]*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a +
 b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*d^(7/2))
```

Rubi [A] time = 0.160276, antiderivative size = 138, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{15\sqrt{b}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4d^{7/2}}-\frac{15b\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4d^3}+\frac{5b(a+bx)^{3/2}\sqrt{c+dx}}{2d^2}-\frac{2(a+bx)^{5/2}}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(3/2),x]
```

```
[Out] (-2*(a + b*x)^(5/2))/(d*Sqrt[c + d*x]) - (15*b*(b*c - a*d)*Sqrt[a
 + b*x]*Sqrt[c + d*x])/(4*d^3) + (5*b*(a + b*x)^(3/2)*Sqrt[c + d*
x])/(2*d^2) + (15*Sqrt[b]*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a +
 b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(4*d^(7/2))
```

Rubi in Sympy [A] time = 23.6935, size = 128, normalized size = 0.93

$$\frac{15\sqrt{b}\left(ad-bc\right)^2\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4d^{\frac{7}{2}}}+\frac{5b\left(a+bx\right)^{\frac{3}{2}}\sqrt{c+dx}}{2d^2}+\frac{15b\sqrt{a+bx}\sqrt{c+dx}\left(ad-bc\right)}{4d^3}-\frac{2\left(a+bx\right)^{\frac{5}{2}}}{d\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(3/2),x)
```

```
[Out] 15*sqrt(b)*(a*d - b*c)**2*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*sq
rt(c + d*x)))/(4*d**(7/2)) + 5*b*(a + b*x)**(3/2)*sqrt(c + d*x)/(
2*d**2) + 15*b*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)/(4*d**3) -
 2*(a + b*x)**(5/2)/(d*sqrt(c + d*x))
```

Mathematica [A] time = 0.163496, size = 138, normalized size = 1.

$$\sqrt{a+bx}\sqrt{c+dx}\left(-\frac{2(ad-bc)^2}{d^3(c+dx)}-\frac{b(7bc-9ad)}{4d^3}+\frac{b^2x}{2d^2}\right)+\frac{15\sqrt{b}(bc-ad)^2\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{8d^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(3/2),x]
```

```
[Out] Sqrt[a + b*x]*Sqrt[c + d*x]*(-(b*(7*b*c - 9*a*d))/(4*d^3) + (b^2*
x)/(2*d^2) - (2*(-(b*c) + a*d)^2)/(d^3*(c + d*x))) + (15*Sqrt[b]*
(b*c - a*d)^2*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a
+ b*x]*Sqrt[c + d*x]])/(8*d^(7/2))
```

Maple [F] time = 0.095, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{2}}\,(dx+c)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(3/2),x)
```

```
[Out] int((b*x+a)^(5/2)/(d*x+c)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.376481, size = 1, normalized size = 0.01

$$\left[\frac{15\left(b^2c^3 - 2\,abc^2d + a^2cd^2 + \left(b^2c^2d - 2\,abcd^2 + a^2d^3\right)x\right)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2 + b^2c^2 + 6\,abcd + a^2d^2 + 4\left(2\,bd^2x + bcd + ad^2\right)\right.}{16\,(d^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/16*(15*(b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2 + (b^2*c^2*d - 2*a*b
*c*d^2 + a^2*d^3)*x)*sqrt(b/d)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*
b*c*d + a^2*d^2 + 4*(2*b*d^2*x + b*c*d + a*d^2)*sqrt(b*x + a)*sqr
t(d*x + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d^2)*x) + 4*(2*b^2*d^2*x^
2 - 15*b^2*c^2 + 25*a*b*c*d - 8*a^2*d^2 - (5*b^2*c*d - 9*a*b*d^2)
*x)*sqrt(b*x + a)*sqrt(d*x + c))/(d^4*x + c*d^3), 1/8*(15*(b^2*c^
3 - 2*a*b*c^2*d + a^2*c*d^2 + (b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)
*x)*sqrt(-b/d)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sq
rt(d*x + c)*d*sqrt(-b/d))) + 2*(2*b^2*d^2*x^2 - 15*b^2*c^2 + 25*a
*b*c*d - 8*a^2*d^2 - (5*b^2*c*d - 9*a*b*d^2)*x)*sqrt(b*x + a)*sqr
t(d*x + c))/(d^4*x + c*d^3)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{2}}}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**(5/2)/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.25012, size = 302, normalized size = 2.19

$$\frac{\left(\left(\frac{2\,(bx+a)b^2d^4}{b^8cd^6-ab^7d^7} - \frac{5\left(b^3cd^3-ab^2d^4\right)}{b^8cd^6-ab^7d^7}\right)(bx+a) - \frac{15\left(b^4c^2d^2-2\,ab^3cd^3+a^2b^2d^4\right)}{b^8cd^6-ab^7d^7}\right)\sqrt{bx+a}}{1536\,\sqrt{b^2c+(bx+a)bd-abd}} - \frac{5\,(bc-ad)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{512\,\sqrt{bd}b^5d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 1/1536*((2*(b*x + a)*b^2*d^4/(b^8*c*d^6 - a*b^7*d^7) - 5*(b^3*c*d
^3 - a*b^2*d^4)/(b^8*c*d^6 - a*b^7*d^7))*(b*x + a) - 15*(b^4*c^2*
d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d^4)/(b^8*c*d^6 - a*b^7*d^7))*sqrt(
b*x + a)/sqrt(b^2*c + (b*x + a)*b*d - a*b*d) - 5/512*(b*c - a*d)*
ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*d - a*
b*d)))/(sqrt(b*d)*b^5*d^4)
```

3.1504 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=98

$$-\frac{3\sqrt{b}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{5/2}}+\frac{3b\sqrt{a+bx}\sqrt{c+dx}}{d^2}-\frac{2(a+bx)^{3/2}}{d\sqrt{c+dx}}$$

```
[Out] (-2*(a + b*x)^(3/2))/(d*Sqrt[c + d*x]) + (3*b*Sqrt[a + b*x]*Sqrt[
c + d*x])/d^2 - (3*Sqrt[b]*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/d^(5/2)
```

Rubi [A] time = 0.110028, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{3\sqrt{b}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{5/2}}+\frac{3b\sqrt{a+bx}\sqrt{c+dx}}{d^2}-\frac{2(a+bx)^{3/2}}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(3/2),x]
```

```
[Out] (-2*(a + b*x)^(3/2))/(d*Sqrt[c + d*x]) + (3*b*Sqrt[a + b*x]*Sqrt[
c + d*x])/d^2 - (3*Sqrt[b]*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a +
b*x])/(Sqrt[b]*Sqrt[c + d*x])])/d^(5/2)
```

Rubi in Sympy [A] time = 15.3823, size = 90, normalized size = 0.92

$$\frac{3\sqrt{b}\,(ad-bc)\,\mathrm{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{\frac{5}{2}}}+\frac{3b\sqrt{a+bx}\sqrt{c+dx}}{d^2}-\frac{2\,(a+bx)^{\frac{3}{2}}}{d\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(3/2),x)
```

```
[Out] 3*sqrt(b)*(a*d - b*c)*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*sqrt(c
 + d*x)))/d**(5/2) + 3*b*sqrt(a + b*x)*sqrt(c + d*x)/d**2 - 2*(a
+ b*x)**(3/2)/(d*sqrt(c + d*x))
```

Mathematica [A] time = 0.230562, size = 101, normalized size = 1.03

$$\frac{3\sqrt{b}(ad-bc)\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{2d^{5/2}}+\frac{\sqrt{a+bx}(-2ad+3bc+bdx)}{d^2\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(3/2),x]
```

```
[Out] (Sqrt[a + b*x]*(3*b*c - 2*a*d + b*d*x))/(d^2*Sqrt[c + d*x]) + (3*
Sqrt[b]*(-(b*c) + a*d)*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d
]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(2*d^(5/2))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(3/2),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.304488, size = 1, normalized size = 0.01

$$\left[-\frac{3\left(bc^2-acd+\left(bcd-ad^2\right)x\right)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+4\left(2\,bd^2x+bcd+ad^2\right)\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{b}{d}}+8\,(\right.}{4\left(d^3x+cd^2\right)}\right.$$

$$\left.-\frac{3\left(bc^2-acd+\left(bcd-ad^2\right)x\right)\sqrt{-\frac{b}{d}}\arctan\left(\frac{2\,bdx+bc+ad}{2\sqrt{bx+a}\sqrt{dx+c}d\sqrt{-\frac{b}{d}}}\right)-2\left(bdx+3\,bc-2\,ad\right)\sqrt{bx+a}\sqrt{dx+c}}{2\left(d^3x+cd^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(3*(b*c^2 - a*c*d + (b*c*d - a*d^2)*x)*sqrt(b/d)*log(8*b^2*
d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 4*(2*b*d^2*x + b*c*d +
a*d^2)*sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d
^2)*x) - 4*(b*d*x + 3*b*c - 2*a*d)*sqrt(b*x + a)*sqrt(d*x + c))/(
d^3*x + c*d^2), -1/2*(3*(b*c^2 - a*c*d + (b*c*d - a*d^2)*x)*sqrt(
-b/d)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x +
c)*d*sqrt(-b/d))) - 2*(b*d*x + 3*b*c - 2*a*d)*sqrt(b*x + a)*sqrt(
d*x + c))/(d^3*x + c*d^2)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(3/2),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.245835, size = 207, normalized size = 2.11

$$\frac{\left(\frac{(bx+a)b^2d^2}{b^6cd^4-ab^5d^5}+\frac{3\left(b^3cd-ab^2d^2\right)}{b^6cd^4-ab^5d^5}\right)\sqrt{bx+a}}{32\sqrt{b^2c+(bx+a)bd-abd}}+\frac{3\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{32\sqrt{bd}b^3d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] 1/32*((b*x + a)*b^2*d^2/(b^6*c*d^4 - a*b^5*d^5) + 3*(b^3*c*d - a*
b^2*d^2)/(b^6*c*d^4 - a*b^5*d^5))*sqrt(b*x + a)/sqrt(b^2*c + (b*x
 + a)*b*d - a*b*d) + 3/32*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(
b^2*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*b^3*d^3)
```

3.1505 $\int \frac{\sqrt{a+bx}}{(c+dx)^{3/2}}\, dx$

Optimal. Leaf size=66

$$\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{3/2}}-\frac{2\sqrt{a+bx}}{d\sqrt{c+dx}}$$

```
[Out] (-2*Sqrt[a + b*x])/(d*Sqrt[c + d*x]) + (2*Sqrt[b]*ArcTanh[(Sqrt[d
]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/d^(3/2)
```

Rubi [A] time = 0.0679286, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{3/2}}-\frac{2\sqrt{a+bx}}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*x])/(d*Sqrt[c + d*x]) + (2*Sqrt[b]*ArcTanh[(Sqrt[d
]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/d^(3/2)
```

Rubi in Sympy [A] time = 10.7924, size = 60, normalized size = 0.91

$$\frac{2\sqrt{b}\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{\frac{3}{2}}}-\frac{2\sqrt{a+bx}}{d\sqrt{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(3/2),x)
```

```
[Out] 2*sqrt(b)*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*sqrt(c + d*x)))/d*
*(3/2) - 2*sqrt(a + b*x)/(d*sqrt(c + d*x))
```

Mathematica [A] time = 0.0564517, size = 78, normalized size = 1.18

$$\frac{\sqrt{b}\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{d^{3/2}}-\frac{2\sqrt{a+bx}}{d\sqrt{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[a + b*x])/(d*Sqrt[c + d*x]) + (Sqrt[b]*Log[b*c + a*d + 2
*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/d^(3/2)
```

Maple [F] time = 0.044, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(3/2),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.278428, size = 1, normalized size = 0.02

$$\left[\frac{(dx+c)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+4\left(2\,bd^2x+bcd+ad^2\right)\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{b}{d}}+8\left(b^2cd+abd^2\right)x\right)-4\sqrt{b}}{2\left(d^2x+cd\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((d*x + c)*sqrt(b/d)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d
 + a^2*d^2 + 4*(2*b*d^2*x + b*c*d + a*d^2)*sqrt(b*x + a)*sqrt(d*x
```

```
 + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d^2)*x) - 4*sqrt(b*x + a)*sqrt
(d*x + c))/(d^2*x + c*d), ((d*x + c)*sqrt(-b/d)*arctan(1/2*(2*b*d
*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c)*d*sqrt(-b/d))) - 2*s
qrt(b*x + a)*sqrt(d*x + c))/(d^2*x + c*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(3/2), x)
```

GIAC/XCAS [A] time = 0.247965, size = 130, normalized size = 1.97

$$-\frac{2\,b^2\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}d|b|}-\frac{2\,\sqrt{bx+a}b^2}{\sqrt{b^2c+(bx+a)bd-abd}d|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(3/2),x, algorithm="giac")
```

```
[Out] -2*b^2*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b
*d - a*b*d)))/(sqrt(b*d)*d*abs(b)) - 2*sqrt(b*x + a)*b^2/(sqrt(b^
2*c + (b*x + a)*b*d - a*b*d)*d*abs(b))
```

3.1506 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=30

$$\frac{2\sqrt{a+bx}}{\sqrt{c+dx}(bc-ad)}$$

```
[Out] (2*Sqrt[a + b*x])/((b*c - a*d)*Sqrt[c + d*x])
```

Rubi [A] time = 0.0221214, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{2\sqrt{a+bx}}{\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(3/2)),x]

[Out] (2*Sqrt[a + b*x])/((b*c - a*d)*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 3.66133, size = 26, normalized size = 0.87

$$-\frac{2\sqrt{a+bx}}{\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(3/2),x)

[Out] -2*sqrt(a + b*x)/(sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.0342251, size = 30, normalized size = 1.

$$-\frac{2\sqrt{a+bx}}{\sqrt{c+dx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(3/2)),x]
```

```
[Out] (-2*Sqrt[a + b*x])/((-(b*c) + a*d)*Sqrt[c + d*x])
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$-2\frac{\sqrt{bx+a}}{\sqrt{dx+c}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(1/2)/(d*x+c)^(3/2),x)
```

```
[Out] -2*(b*x+a)^(1/2)/(d*x+c)^(1/2)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223569, size = 57, normalized size = 1.9

$$\frac{2\sqrt{bx+a}\sqrt{dx+c}}{bc^2-acd+(bcd-ad^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] 2*sqrt(b*x + a)*sqrt(d*x + c)/(b*c^2 - a*c*d + (b*c*d - a*d^2)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(3/2)), x)
```

GIAC/XCAS [A] time = 0.218348, size = 63, normalized size = 2.1

$$\frac{2\sqrt{bx+a}b^2}{\sqrt{b^2c+(bx+a)bd-abd}(bc|b|-ad|b|)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] 2*sqrt(b*x + a)*b^2/(sqrt(b^2*c + (b*x + a)*b*d - a*b*d)*(b*c*abs
(b) - a*d*abs(b)))
```

3.1507 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=62

$$-\frac{4d\sqrt{a+bx}}{\sqrt{c+dx}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}$$

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x]) - (4*d*Sqrt[a + b*x]
)/((b*c - a*d)^2*Sqrt[c + d*x])
```

Rubi [A] time = 0.0522363, antiderivative size = 62, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{4d\sqrt{a+bx}}{\sqrt{c+dx}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(3/2)),x]
```

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*Sqrt[c + d*x]) - (4*d*Sqrt[a + b*x]
)/((b*c - a*d)^2*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 7.7906, size = 53, normalized size = 0.85

$$-\frac{4d\sqrt{a+bx}}{\sqrt{c+dx}\,(ad-bc)^2}+\frac{2}{\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(3/2),x)
```

```
[Out] -4*d*sqrt(a + b*x)/(sqrt(c + d*x)*(a*d - b*c)**2) + 2/(sqrt(a + b
*x)*sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.0634869, size = 42, normalized size = 0.68

$$-\frac{2(ad+b(c+2dx))}{\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(3/2)),x]
```

```
[Out] (-2*(a*d + b*(c + 2*d*x)))/((b*c - a*d)^2*Sqrt[a + b*x]*Sqrt[c +
d*x])
```

Maple [A] time = 0.006, size = 52, normalized size = 0.8

$$-2\,{\frac{2\,bdx+ad+bc}{\sqrt{bx+a}\sqrt{dx+c}\left({a}^{2}{d}^{2}-2\,abcd+{b}^{2}{c}^{2}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(3/2),x)
```

```
[Out] -2*(2*b*d*x+a*d+b*c)/(b*x+a)^(1/2)/(d*x+c)^(1/2)/(a^2*d^2-2*a*b*c
*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.273517, size = 169, normalized size = 2.73

$$-\frac{2\,(2\,bdx+bc+ad)\sqrt{bx+a}\sqrt{dx+c}}{ab^{2}c^{3}-2\,a^{2}bc^{2}d+a^{3}cd^{2}+(b^{3}c^{2}d-2\,ab^{2}cd^{2}+a^{2}bd^{3})x^{2}+(b^{3}c^{3}-ab^{2}c^{2}d-a^{2}bcd^{2}+a^{3}d^{3})x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] -2*(2*b*d*x + b*c + a*d)*sqrt(b*x + a)*sqrt(d*x + c)/(a*b^2*c^3 -
 2*a^2*b*c^2*d + a^3*c*d^2 + (b^3*c^2*d - 2*a*b^2*c*d^2 + a^2*b*d
```

```
^3)*x^2 + (b^3*c^3 - a*b^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(3/2)), x)
```

GIAC/XCAS [A] time = 0.237378, size = 192, normalized size = 3.1

$$-\frac{2\sqrt{bx+a}b^2d}{(b^2c^2|b|-2\,abcd|b|+a^2d^2|b|)\sqrt{b^2c+(bx+a)bd-abd}} - \frac{4\sqrt{bd}b^2}{\left(b^2c-abd-\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^2c+(bx+a)bd-abd}\right)^2\right)(bc|b|-ad|b|)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(b*x + a)*b^2*d/((b^2*c^2*abs(b) - 2*a*b*c*d*abs(b) + a^2*
d^2*abs(b))*sqrt(b^2*c + (b*x + a)*b*d - a*b*d)) - 4*sqrt(b*d)*b^
2/((b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x
+ a)*b*d - a*b*d))^2)*(b*c*abs(b) - a*d*abs(b)))
```

3.1508 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=101

$$\frac{16d^2\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^3}+\frac{8d}{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}$$

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*Sqrt[c + d*x]) + (8*d)/(3*(b*c
- a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x]) + (16*d^2*Sqrt[a + b*x])/(3
*(b*c - a*d)^3*Sqrt[c + d*x])
```

Rubi [A] time = 0.0802226, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{16d^2\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^3}+\frac{8d}{3\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(3/2)),x]
```

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*Sqrt[c + d*x]) + (8*d)/(3*(b*c
- a*d)^2*Sqrt[a + b*x]*Sqrt[c + d*x]) + (16*d^2*Sqrt[a + b*x])/(3
*(b*c - a*d)^3*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 13.9717, size = 88, normalized size = 0.87

$$-\frac{16d^2\sqrt{a+bx}}{3\sqrt{c+dx}\,(ad-bc)^3}+\frac{8d}{3\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^2}+\frac{2}{3\,(a+bx)^{\frac{3}{2}}\,\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(3/2),x)
```

```
[Out] -16*d**2*sqrt(a + b*x)/(3*sqrt(c + d*x)*(a*d - b*c)**3) + 8*d/(3*
sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**2) + 2/(3*(a + b*x)**(3/
2)*sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.113343, size = 75, normalized size = 0.74

$$\frac{2\left(3a^2d^2+6abd(c+2dx)+b^2\left(-c^2+4cdx+8d^2x^2\right)\right)}{3(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(3/2)),x]
```

```
[Out] (2*(3*a^2*d^2 + 6*a*b*d*(c + 2*d*x) + b^2*(-c^2 + 4*c*d*x + 8*d^2
*x^2)))/(3*(b*c - a*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x])
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{16\,b^{2}d^{2}x^{2}+24\,abd^{2}x+8\,b^{2}cdx+6\,a^{2}d^{2}+12\,abcd-2\,b^{2}c^{2}}{3\,a^{3}d^{3}-9\,a^{2}bcd^{2}+9\,ab^{2}c^{2}d-3\,b^{3}c^{3}}(bx+a)^{-\frac{3}{2}}\frac{1}{\sqrt{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(3/2),x)
```

```
[Out] -2/3*(8*b^2*d^2*x^2+12*a*b*d^2*x+4*b^2*c*d*x+3*a^2*d^2+6*a*b*c*d-
b^2*c^2)/(b*x+a)^(3/2)/(d*x+c)^(1/2)/(a^3*d^3-3*a^2*b*c*d^2+3*a*b
^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.36121, size = 369, normalized size = 3.65

$$\frac{2\left(8\,b^{2}d^{2}x^{2}-b^{2}c^{2}+6\,abcd+3\,a^{2}d^{2}+4\left(b^{2}cd+3\,abd^{2}\right)x\right)\sqrt{b}}{3\left(a^{2}b^{3}c^{4}-3\,a^{3}b^{2}c^{3}d+3\,a^{4}bc^{2}d^{2}-a^{5}cd^{3}+\left(b^{5}c^{3}d-3\,ab^{4}c^{2}d^{2}+3\,a^{2}b^{3}cd^{3}-a^{3}b^{2}d^{4}\right)x^{3}+\left(b^{5}c^{4}-ab^{4}c^{3}d-3\,a^{2}b^{3}c^{2}d^{2}+5\,a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(8*b^2*d^2*x^2 - b^2*c^2 + 6*a*b*c*d + 3*a^2*d^2 + 4*(b^2*c*d
 + 3*a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^2*b^3*c^4 - 3*a^3
```

```
*b^2*c^3*d + 3*a^4*b*c^2*d^2 - a^5*c*d^3 + (b^5*c^3*d - 3*a*b^4*c
^2*d^2 + 3*a^2*b^3*c*d^3 - a^3*b^2*d^4)*x^3 + (b^5*c^4 - a*b^4*c^
3*d - 3*a^2*b^3*c^2*d^2 + 5*a^3*b^2*c*d^3 - 2*a^4*b*d^4)*x^2 + (2
*a*b^4*c^4 - 5*a^2*b^3*c^3*d + 3*a^3*b^2*c^2*d^2 + a^4*b*c*d^3 -
a^5*d^4)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(3/2),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(3/2)), x)
```

GIAC/XCAS [A] time = 0.300996, size = 497, normalized size = 4.92

$$\frac{2\sqrt{bx+a}b^2d^2}{(b^3c^3|b| - 3\,ab^2c^2d|b| + 3\,a^2bcd^2|b| - a^3d^3|b|)\sqrt{b^2c+(bx+a)bd-abd}} + \frac{4\left(5\sqrt{bd}b^6c^2d - 10\sqrt{bd}ab^5cd^2 + 5\sqrt{bd}a^2b^4d^3 - 12\sqrt{bd}\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c+(bx+a)bd-abd}\right)^2 b^4cd + 12\sqrt{bd}\left(\sqrt{bd}\sqrt{\right.\right.}{3\,(b^2c^2|b| - 2\,abcd|b| + a^2d^2|b|)\left(b^2c - abd - \left(\sqrt{bd}\sqrt{bx+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] 2*sqrt(b*x + a)*b^2*d^2/((b^3*c^3*abs(b) - 3*a*b^2*c^2*d*abs(b) +
 3*a^2*b*c*d^2*abs(b) - a^3*d^3*abs(b))*sqrt(b^2*c + (b*x + a)*b*
d - a*b*d)) + 4/3*(5*sqrt(b*d)*b^6*c^2*d - 10*sqrt(b*d)*a*b^5*c*d
^2 + 5*sqrt(b*d)*a^2*b^4*d^3 - 12*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x +
 a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*b^4*c*d + 12*sqrt(b*
d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d)
)^2*a*b^3*d^2 + 3*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c
 + (b*x + a)*b*d - a*b*d))^4*b^2*d)/((b^2*c^2*abs(b) - 2*a*b*c*d*
abs(b) + a^2*d^2*abs(b))*(b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x + a
) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^3)
```

3.1509 $\int \frac{1}{(a+bx)^{7/2}(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=136

$$-\frac{32d^3\sqrt{a+bx}}{5\sqrt{c+dx}(bc-ad)^4}-\frac{16d^2}{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}+\frac{4d}{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{5(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}$$

```
[Out] -2/(5*(b*c - a*d)*(a + b*x)^(5/2)*Sqrt[c + d*x]) + (4*d)/(5*(b*c
- a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x]) - (16*d^2)/(5*(b*c - a*d)
^3*Sqrt[a + b*x]*Sqrt[c + d*x]) - (32*d^3*Sqrt[a + b*x])/(5*(b*c
- a*d)^4*Sqrt[c + d*x])
```

Rubi [A] time = 0.114606, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{32d^3\sqrt{a+bx}}{5\sqrt{c+dx}(bc-ad)^4}-\frac{16d^2}{5\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^3}+\frac{4d}{5(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{5(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/2)*(c + d*x)^(3/2)),x]
```

```
[Out] -2/(5*(b*c - a*d)*(a + b*x)^(5/2)*Sqrt[c + d*x]) + (4*d)/(5*(b*c
- a*d)^2*(a + b*x)^(3/2)*Sqrt[c + d*x]) - (16*d^2)/(5*(b*c - a*d)
^3*Sqrt[a + b*x]*Sqrt[c + d*x]) - (32*d^3*Sqrt[a + b*x])/(5*(b*c
- a*d)^4*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 22.7227, size = 121, normalized size = 0.89

$$-\frac{32d^3\sqrt{a+bx}}{5\sqrt{c+dx}\,(ad-bc)^4}+\frac{16d^2}{5\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^3}+\frac{4d}{5\,(a+bx)^{\frac{3}{2}}\,\sqrt{c+dx}\,(ad-bc)^2}+\frac{2}{5\,(a+bx)^{\frac{5}{2}}\,\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/2)/(d*x+c)**(3/2),x)
```

```
[Out] -32*d**3*sqrt(a + b*x)/(5*sqrt(c + d*x)*(a*d - b*c)**4) + 16*d**2
/(5*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**3) + 4*d/(5*(a + b*x
)**(3/2)*sqrt(c + d*x)*(a*d - b*c)**2) + 2/(5*(a + b*x)**(5/2)*sq
rt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.165824, size = 112, normalized size = 0.82

$$\sqrt{a+bx}\sqrt{c+dx}\left(-\frac{2d^3}{(c+dx)(bc-ad)^4}-\frac{22bd^2}{5(a+bx)(bc-ad)^4}+\frac{6bd}{5(a+bx)^2(bc-ad)^3}-\frac{2b}{5(a+bx)^3(bc-ad)^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/2)*(c + d*x)^(3/2)),x]
```

```
[Out] Sqrt[a + b*x]*Sqrt[c + d*x]*((-2*b)/(5*(b*c - a*d)^2*(a + b*x)^3)
 + (6*b*d)/(5*(b*c - a*d)^3*(a + b*x)^2) - (22*b*d^2)/(5*(b*c - a
*d)^4*(a + b*x)) - (2*d^3)/((b*c - a*d)^4*(c + d*x)))
```

Maple [A] time = 0.013, size = 170, normalized size = 1.3

$$-\frac{32\,b^3d^3x^3+80\,ab^2d^3x^2+16\,b^3cd^2x^2+60\,a^2bd^3x+40\,ab^2cd^2x-4\,b^3c^2dx+10\,a^3d^3+30\,a^2bcd^2-10\,ab^2c^2d+2\,b^3c^3}{5\,d^4a^4-20\,bd^3ca^3+30\,b^2d^2c^2a^2-20\,b^3dc^3a+5\,b^4c^4}(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/2)/(d*x+c)^(3/2),x)
```

```
[Out] -2/5*(16*b^3*d^3*x^3+40*a*b^2*d^3*x^2+8*b^3*c*d^2*x^2+30*a^2*b*d^
3*x+20*a*b^2*c*d^2*x-2*b^3*c^2*d*x+5*a^3*d^3+15*a^2*b*c*d^2-5*a*b
^2*c^2*d+b^3*c^3)/(b*x+a)^(5/2)/(d*x+c)^(1/2)/(a^4*d^4-4*a^3*b*c*
d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.788255, size = 614, normalized size = 4.51

$$-\frac{2\left(16\,b^3d^3x^3+b^3c^3-\right.}{5\left(a^3b^4c^5-4\,a^4b^3c^4d+6\,a^5b^2c^3d^2-4\,a^6bc^2d^3+a^7cd^4+(b^7c^4d-4\,ab^6c^3d^2+6\,a^2b^5c^2d^3-4\,a^3b^4cd^4+a^4b^3d^5)x^4+(b^7c^5\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] -2/5*(16*b^3*d^3*x^3 + b^3*c^3 - 5*a*b^2*c^2*d + 15*a^2*b*c*d^2 +
 5*a^3*d^3 + 8*(b^3*c*d^2 + 5*a*b^2*d^3)*x^2 - 2*(b^3*c^2*d - 10*
a*b^2*c*d^2 - 15*a^2*b*d^3)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^3*b
^4*c^5 - 4*a^4*b^3*c^4*d + 6*a^5*b^2*c^3*d^2 - 4*a^6*b*c^2*d^3 +
a^7*c*d^4 + (b^7*c^4*d - 4*a*b^6*c^3*d^2 + 6*a^2*b^5*c^2*d^3 - 4*
a^3*b^4*c*d^4 + a^4*b^3*d^5)*x^4 + (b^7*c^5 - a*b^6*c^4*d - 6*a^2
*b^5*c^3*d^2 + 14*a^3*b^4*c^2*d^3 - 11*a^4*b^3*c*d^4 + 3*a^5*b^2*
d^5)*x^3 + 3*(a*b^6*c^5 - 3*a^2*b^5*c^4*d + 2*a^3*b^4*c^3*d^2 + 2
*a^4*b^3*c^2*d^3 - 3*a^5*b^2*c*d^4 + a^6*b*d^5)*x^2 + (3*a^2*b^5*
c^5 - 11*a^3*b^4*c^4*d + 14*a^4*b^3*c^3*d^2 - 6*a^5*b^2*c^2*d^3 -
 a^6*b*c*d^4 + a^7*d^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/2)/(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.437952, size = 1121, normalized size = 8.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] -2*sqrt(b*x + a)*b^2*d^3/((b^4*c^4*abs(b) - 4*a*b^3*c^3*d*abs(b)
+ 6*a^2*b^2*c^2*d^2*abs(b) - 4*a^3*b*c*d^3*abs(b) + a^4*d^4*abs(b
))*sqrt(b^2*c + (b*x + a)*b*d - a*b*d)) - 4/5*(11*sqrt(b*d)*b^10*
c^4*d^2 - 44*sqrt(b*d)*a*b^9*c^3*d^3 + 66*sqrt(b*d)*a^2*b^8*c^2*d
```

```
^4 - 44*sqrt(b*d)*a^3*b^7*c*d^5 + 11*sqrt(b*d)*a^4*b^6*d^6 - 50*s
qrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d -
a*b*d))^2*b^8*c^3*d^2 + 150*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) -
sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a*b^7*c^2*d^3 - 150*sqrt(b
*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d
))^2*a^2*b^6*c*d^4 + 50*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt
(b^2*c + (b*x + a)*b*d - a*b*d))^2*a^3*b^5*d^5 + 80*sqrt(b*d)*(sq
rt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*b^
6*c^2*d^2 - 160*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c +
 (b*x + a)*b*d - a*b*d))^4*a*b^5*c*d^3 + 80*sqrt(b*d)*(sqrt(b*d)*
sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*a^2*b^4*d^
4 - 30*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a
)*b*d - a*b*d))^6*b^4*c*d^2 + 30*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x +
a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^6*a*b^3*d^3 + 5*sqrt(b*
d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d)
)^8*b^2*d^2)/((b^3*c^3*abs(b) - 3*a*b^2*c^2*d*abs(b) + 3*a^2*b*c*
d^2*abs(b) - a^3*d^3*abs(b))*(b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x
 + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^5)
```

3.1510 $\int \frac{1}{(a+bx)^{9/2}(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=171

$$\frac{256d^4\sqrt{a+bx}}{35\sqrt{c+dx}(bc-ad)^5}+\frac{128d^3}{35\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}-\frac{32d^2}{35(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}+\frac{16d}{35(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{7(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)}$$

```
[Out] -2/(7*(b*c - a*d)*(a + b*x)^(7/2)*Sqrt[c + d*x]) + (16*d)/(35*(b*
c - a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x]) - (32*d^2)/(35*(b*c - a
*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x]) + (128*d^3)/(35*(b*c - a*d)^
4*Sqrt[a + b*x]*Sqrt[c + d*x]) + (256*d^4*Sqrt[a + b*x])/(35*(b*c
 - a*d)^5*Sqrt[c + d*x])
```

Rubi [A] time = 0.152757, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{256d^4\sqrt{a+bx}}{35\sqrt{c+dx}(bc-ad)^5}+\frac{128d^3}{35\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^4}-\frac{32d^2}{35(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^3}+\frac{16d}{35(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{7(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(9/2)*(c + d*x)^(3/2)),x]
```

```
[Out] -2/(7*(b*c - a*d)*(a + b*x)^(7/2)*Sqrt[c + d*x]) + (16*d)/(35*(b*
c - a*d)^2*(a + b*x)^(5/2)*Sqrt[c + d*x]) - (32*d^2)/(35*(b*c - a
*d)^3*(a + b*x)^(3/2)*Sqrt[c + d*x]) + (128*d^3)/(35*(b*c - a*d)^
4*Sqrt[a + b*x]*Sqrt[c + d*x]) + (256*d^4*Sqrt[a + b*x])/(35*(b*c
 - a*d)^5*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 32.6892, size = 155, normalized size = 0.91

$$-\frac{256bd^3\sqrt{c+dx}}{35\sqrt{a+bx}\,(ad-bc)^5}-\frac{128d^3}{35\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^4}+\frac{32d^2}{35\,(a+bx)^{\frac{3}{2}}\,\sqrt{c+dx}\,(ad-bc)^3}+\frac{16d}{35\,(a+bx)^{\frac{5}{2}}\,\sqrt{c+dx}\,(ad-bc)^2}+\frac{2}{7\,(a+bx)^{\frac{7}{2}}\,\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/2)/(d*x+c)**(3/2),x)
```

```
[Out] -256*b*d**3*sqrt(c + d*x)/(35*sqrt(a + b*x)*(a*d - b*c)**5) - 128
*d**3/(35*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**4) + 32*d**2/(
35*(a + b*x)**(3/2)*sqrt(c + d*x)*(a*d - b*c)**3) + 16*d/(35*(a +
 b*x)**(5/2)*sqrt(c + d*x)*(a*d - b*c)**2) + 2/(7*(a + b*x)**(7/2
)*sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.387988, size = 120, normalized size = 0.7

$$\frac{2\sqrt{a+bx}\sqrt{c+dx}\left(-\frac{29bd^2(bc-ad)}{(a+bx)^2}+\frac{13bd(bc-ad)^2}{(a+bx)^3}-\frac{5b(bc-ad)^3}{(a+bx)^4}+\frac{93bd^3}{a+bx}+\frac{35d^4}{c+dx}\right)}{35(bc-ad)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/2)*(c + d*x)^(3/2)),x]
```

```
[Out] (2*Sqrt[a + b*x]*Sqrt[c + d*x]*((-5*b*(b*c - a*d)^3)/(a + b*x)^4
+ (13*b*d*(b*c - a*d)^2)/(a + b*x)^3 - (29*b*d^2*(b*c - a*d))/(a
+ b*x)^2 + (93*b*d^3)/(a + b*x) + (35*d^4)/(c + d*x)))/(35*(b*c -
 a*d)^5)
```

Maple [A] time = 0.015, size = 256, normalized size = 1.5

$$-\frac{256\,b^4d^4x^4+896\,ab^3d^4x^3+128\,b^4cd^3x^3+1120\,a^2b^2d^4x^2+448\,ab^3cd^3x^2-32\,b^4c^2d^2x^2+560\,a^3bd^4x+560\,a^2b^2cd^3x-11}{35\,a^5d^5-175\,a^4bcd^4+350\,a^3b^2c^2d^3-350\,a^2b^3c^3d^2+17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/2)/(d*x+c)^(3/2),x)
```

```
[Out] -2/35*(128*b^4*d^4*x^4+448*a*b^3*d^4*x^3+64*b^4*c*d^3*x^3+560*a^2
*b^2*d^4*x^2+224*a*b^3*c*d^3*x^2-16*b^4*c^2*d^2*x^2+280*a^3*b*d^4
*x+280*a^2*b^2*c*d^3*x-56*a*b^3*c^2*d^2*x+8*b^4*c^3*d*x+35*a^4*d^
4+140*a^3*b*c*d^3-70*a^2*b^2*c^2*d^2+28*a*b^3*c^3*d-5*b^4*c^4)/(b
*x+a)^(7/2)/(d*x+c)^(1/2)/(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d
^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(9/2)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.89178, size = 930, normalized size = 5.44

$$\frac{}{35\left(a^4b^5c^6 - 5\,a^5b^4c^5d + 10\,a^6b^3c^4d^2 - 10\,a^7b^2c^3d^3 + 5\,a^8bc^2d^4 - a^9cd^5 + \left(b^9c^5d - 5\,ab^8c^4d^2 + 10\,a^2b^7c^3d^3 - 10\,a^3b^6c^2d^4 + \right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(9/2)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] 2/35*(128*b^4*d^4*x^4 - 5*b^4*c^4 + 28*a*b^3*c^3*d - 70*a^2*b^2*c
^2*d^2 + 140*a^3*b*c*d^3 + 35*a^4*d^4 + 64*(b^4*c*d^3 + 7*a*b^3*d
^4)*x^3 - 16*(b^4*c^2*d^2 - 14*a*b^3*c*d^3 - 35*a^2*b^2*d^4)*x^2
+ 8*(b^4*c^3*d - 7*a*b^3*c^2*d^2 + 35*a^2*b^2*c*d^3 + 35*a^3*b*d^
4)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^4*b^5*c^6 - 5*a^5*b^4*c^5*d
+ 10*a^6*b^3*c^4*d^2 - 10*a^7*b^2*c^3*d^3 + 5*a^8*b*c^2*d^4 - a^9
*c*d^5 + (b^9*c^5*d - 5*a*b^8*c^4*d^2 + 10*a^2*b^7*c^3*d^3 - 10*a
^3*b^6*c^2*d^4 + 5*a^4*b^5*c*d^5 - a^5*b^4*d^6)*x^5 + (b^9*c^6 -
a*b^8*c^5*d - 10*a^2*b^7*c^4*d^2 + 30*a^3*b^6*c^3*d^3 - 35*a^4*b^
5*c^2*d^4 + 19*a^5*b^4*c*d^5 - 4*a^6*b^3*d^6)*x^4 + 2*(2*a*b^8*c^
6 - 7*a^2*b^7*c^5*d + 5*a^3*b^6*c^4*d^2 + 10*a^4*b^5*c^3*d^3 - 20
*a^5*b^4*c^2*d^4 + 13*a^6*b^3*c*d^5 - 3*a^7*b^2*d^6)*x^3 + 2*(3*a
^2*b^7*c^6 - 13*a^3*b^6*c^5*d + 20*a^4*b^5*c^4*d^2 - 10*a^5*b^4*c
^3*d^3 - 5*a^6*b^3*c^2*d^4 + 7*a^7*b^2*c*d^5 - 2*a^8*b*d^6)*x^2 +
 (4*a^3*b^6*c^6 - 19*a^4*b^5*c^5*d + 35*a^5*b^4*c^4*d^2 - 30*a^6*
b^3*c^3*d^3 + 10*a^7*b^2*c^2*d^4 + a^8*b*c*d^5 - a^9*d^6)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(9/2)/(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.710606, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/2)*(d*x + c)^(3/2)),x, algorithm="giac")

[Out] Done
```

3.1511 $\int \frac{1}{(a+bx)^{11/2}(c+dx)^{3/2}}\,dx$

Optimal. Leaf size=206

$$-\frac{512d^5\sqrt{a+bx}}{63\sqrt{c+dx}(bc-ad)^6}-\frac{256d^4}{63\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^5}+\frac{64d^3}{63(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^4}-\frac{32d^2}{63(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^3}+\frac{20d}{63(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{9(a+bx)^{9/2}\sqrt{c+dx}(bc-ad)}$$

```
[Out] -2/(9*(b*c - a*d)*(a + b*x)^(9/2)*Sqrt[c + d*x]) + (20*d)/(63*(b*
c - a*d)^2*(a + b*x)^(7/2)*Sqrt[c + d*x]) - (32*d^2)/(63*(b*c - a
*d)^3*(a + b*x)^(5/2)*Sqrt[c + d*x]) + (64*d^3)/(63*(b*c - a*d)^4
*(a + b*x)^(3/2)*Sqrt[c + d*x]) - (256*d^4)/(63*(b*c - a*d)^5*Sqr
t[a + b*x]*Sqrt[c + d*x]) - (512*d^5*Sqrt[a + b*x])/(63*(b*c - a*
d)^6*Sqrt[c + d*x])
```

Rubi [A] time = 0.200007, antiderivative size = 206, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{512d^5\sqrt{a+bx}}{63\sqrt{c+dx}(bc-ad)^6}-\frac{256d^4}{63\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^5}+\frac{64d^3}{63(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)^4}-\frac{32d^2}{63(a+bx)^{5/2}\sqrt{c+dx}(bc-ad)^3}+\frac{20d}{63(a+bx)^{7/2}\sqrt{c+dx}(bc-ad)^2}-\frac{2}{9(a+bx)^{9/2}\sqrt{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(11/2)*(c + d*x)^(3/2)),x]
```

```
[Out] -2/(9*(b*c - a*d)*(a + b*x)^(9/2)*Sqrt[c + d*x]) + (20*d)/(63*(b*
c - a*d)^2*(a + b*x)^(7/2)*Sqrt[c + d*x]) - (32*d^2)/(63*(b*c - a
*d)^3*(a + b*x)^(5/2)*Sqrt[c + d*x]) + (64*d^3)/(63*(b*c - a*d)^4
*(a + b*x)^(3/2)*Sqrt[c + d*x]) - (256*d^4)/(63*(b*c - a*d)^5*Sqr
t[a + b*x]*Sqrt[c + d*x]) - (512*d^5*Sqrt[a + b*x])/(63*(b*c - a*
d)^6*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 42.9238, size = 189, normalized size = 0.92

$$-\frac{512bd^4\sqrt{c+dx}}{63\sqrt{a+bx}\,(ad-bc)^6}-\frac{256bd^3\sqrt{c+dx}}{63\,(a+bx)^{\frac{3}{2}}\,(ad-bc)^5}-\frac{64d^3}{21\,(a+bx)^{\frac{3}{2}}\,\sqrt{c+dx}\,(ad-bc)^4}+\frac{32d^2}{63\,(a+bx)^{\frac{5}{2}}\,\sqrt{c+dx}\,(ad-bc)^3}+\frac{20d}{63\,(a+bx)^{\frac{7}{2}}\,\sqrt{c+dx}\,(ad-bc)^2}+\frac{2}{9\,(a+bx)^{\frac{9}{2}}\,\sqrt{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/2)/(d*x+c)**(3/2),x)
```

```
[Out] -512*b*d**4*sqrt(c + d*x)/(63*sqrt(a + b*x)*(a*d - b*c)**6) - 256
*b*d**3*sqrt(c + d*x)/(63*(a + b*x)**(3/2)*(a*d - b*c)**5) - 64*d
**3/(21*(a + b*x)**(3/2)*sqrt(c + d*x)*(a*d - b*c)**4) + 32*d**2/
(63*(a + b*x)**(5/2)*sqrt(c + d*x)*(a*d - b*c)**3) + 20*d/(63*(a
+ b*x)**(7/2)*sqrt(c + d*x)*(a*d - b*c)**2) + 2/(9*(a + b*x)**(9/
2)*sqrt(c + d*x)*(a*d - b*c))
```

Mathematica [A] time = 0.368228, size = 143, normalized size = 0.69

$$\frac{2\sqrt{a+bx}\sqrt{c+dx}\left(\frac{65bd^3(bc-ad)}{(a+bx)^2}-\frac{33bd^2(bc-ad)^2}{(a+bx)^3}+\frac{17bd(bc-ad)^3}{(a+bx)^4}-\frac{7b(bc-ad)^4}{(a+bx)^5}-\frac{193bd^4}{a+bx}-\frac{63d^5}{c+dx}\right)}{63(bc-ad)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/2)*(c + d*x)^(3/2)),x]
```

```
[Out] (2*Sqrt[a + b*x]*Sqrt[c + d*x]*((-7*b*(b*c - a*d)^4)/(a + b*x)^5
+ (17*b*d*(b*c - a*d)^3)/(a + b*x)^4 - (33*b*d^2*(b*c - a*d)^2)/(
a + b*x)^3 + (65*b*d^3*(b*c - a*d))/(a + b*x)^2 - (193*b*d^4)/(a
+ b*x) - (63*d^5)/(c + d*x)))/(63*(b*c - a*d)^6)
```

Maple [B] time = 0.017, size = 356, normalized size = 1.7

$$-\frac{512\,b^5d^5x^5+2304\,ab^4d^5x^4+256\,b^5cd^4x^4+4032\,a^2b^3d^5x^3+1152\,ab^4cd^4x^3-64\,b^5c^2d^3x^3+3360\,a^3b^2d^5x^2+2016\,a^2b^3cd^4}{63\,d^6a^6-37}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/2)/(d*x+c)^(3/2),x)
```

```
[Out] -2/63*(256*b^5*d^5*x^5+1152*a*b^4*d^5*x^4+128*b^5*c*d^4*x^4+2016*
a^2*b^3*d^5*x^3+576*a*b^4*c*d^4*x^3-32*b^5*c^2*d^3*x^3+1680*a^3*b
^2*d^5*x^2+1008*a^2*b^3*c*d^4*x^2-144*a*b^4*c^2*d^3*x^2+16*b^5*c^
3*d^2*x^2+630*a^4*b*d^5*x+840*a^3*b^2*c*d^4*x-252*a^2*b^3*c^2*d^3
*x+72*a*b^4*c^3*d^2*x-10*b^5*c^4*d*x+63*a^5*d^5+315*a^4*b*c*d^4-2
10*a^3*b^2*c^2*d^3+126*a^2*b^3*c^3*d^2-45*a*b^4*c^4*d+7*b^5*c^5)/
(b*x+a)^(9/2)/(d*x+c)^(1/2)/(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2
*d^4-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/2)*(d*x + c)^(3/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 6.56772, size = 1289, normalized size = 6.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/2)*(d*x + c)^(3/2)),x, algorithm="fricas")
```

```
[Out] -2/63*(256*b^5*d^5*x^5 + 7*b^5*c^5 - 45*a*b^4*c^4*d + 126*a^2*b^3
*c^3*d^2 - 210*a^3*b^2*c^2*d^3 + 315*a^4*b*c*d^4 + 63*a^5*d^5 + 1
28*(b^5*c*d^4 + 9*a*b^4*d^5)*x^4 - 32*(b^5*c^2*d^3 - 18*a*b^4*c*d
^4 - 63*a^2*b^3*d^5)*x^3 + 16*(b^5*c^3*d^2 - 9*a*b^4*c^2*d^3 + 63
*a^2*b^3*c*d^4 + 105*a^3*b^2*d^5)*x^2 - 2*(5*b^5*c^4*d - 36*a*b^4
*c^3*d^2 + 126*a^2*b^3*c^2*d^3 - 420*a^3*b^2*c*d^4 - 315*a^4*b*d^
5)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^5*b^6*c^7 - 6*a^6*b^5*c^6*d
+ 15*a^7*b^4*c^5*d^2 - 20*a^8*b^3*c^4*d^3 + 15*a^9*b^2*c^3*d^4 -
6*a^10*b*c^2*d^5 + a^11*c*d^6 + (b^11*c^6*d - 6*a*b^10*c^5*d^2 +
15*a^2*b^9*c^4*d^3 - 20*a^3*b^8*c^3*d^4 + 15*a^4*b^7*c^2*d^5 - 6*
a^5*b^6*c*d^6 + a^6*b^5*d^7)*x^6 + (b^11*c^7 - a*b^10*c^6*d - 15*
a^2*b^9*c^5*d^2 + 55*a^3*b^8*c^4*d^3 - 85*a^4*b^7*c^3*d^4 + 69*a^
5*b^6*c^2*d^5 - 29*a^6*b^5*c*d^6 + 5*a^7*b^4*d^7)*x^5 + 5*(a*b^10
*c^7 - 4*a^2*b^9*c^6*d + 3*a^3*b^8*c^5*d^2 + 10*a^4*b^7*c^4*d^3 -
 25*a^5*b^6*c^3*d^4 + 24*a^6*b^5*c^2*d^5 - 11*a^7*b^4*c*d^6 + 2*a
^8*b^3*d^7)*x^4 + 10*(a^2*b^9*c^7 - 5*a^3*b^8*c^6*d + 9*a^4*b^7*c
^5*d^2 - 5*a^5*b^6*c^4*d^3 - 5*a^6*b^5*c^3*d^4 + 9*a^7*b^4*c^2*d^
5 - 5*a^8*b^3*c*d^6 + a^9*b^2*d^7)*x^3 + 5*(2*a^3*b^8*c^7 - 11*a^
4*b^7*c^6*d + 24*a^5*b^6*c^5*d^2 - 25*a^6*b^5*c^4*d^3 + 10*a^7*b^
4*c^3*d^4 + 3*a^8*b^3*c^2*d^5 - 4*a^9*b^2*c*d^6 + a^10*b*d^7)*x^2
 + (5*a^4*b^7*c^7 - 29*a^5*b^6*c^6*d + 69*a^6*b^5*c^5*d^2 - 85*a^
7*b^4*c^4*d^3 + 55*a^8*b^3*c^3*d^4 - 15*a^9*b^2*c^2*d^5 - a^10*b*
c*d^6 + a^11*d^7)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(11/2)/(d*x+c)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 1.22873, size = 1, normalized size = 0.

$$\text{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/2)*(d*x + c)^(3/2)),x, algorithm="giac")
```

```
[Out] Done
```

3.1512 $\int \frac{(a+bx)^{9/2}}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=204

$$-\frac{105b^{3/2}(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8d^{11/2}}+\frac{105b^2\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8d^5}-\frac{35b^2(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{4d^4}+\frac{7b^2(a+bx)^{5/2}\sqrt{c+dx}}{d^3}-\frac{6b(a+bx)^{7/2}}{d^2\sqrt{c+dx}}-\frac{2(a+bx)^{9/2}}{3d(c+dx)^{3/2}}$$

```
[Out] (-2*(a + b*x)^(9/2))/(3*d*(c + d*x)^(3/2)) - (6*b*(a + b*x)^(7/2)
)/(d^2*Sqrt[c + d*x]) + (105*b^2*(b*c - a*d)^2*Sqrt[a + b*x]*Sqrt
[c + d*x])/(8*d^5) - (35*b^2*(b*c - a*d)*(a + b*x)^(3/2)*Sqrt[c +
 d*x])/(4*d^4) + (7*b^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/d^3 - (105
*b^(3/2)*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*S
qrt[c + d*x])])/(8*d^(11/2))
```

Rubi [A] time = 0.292248, antiderivative size = 204, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{105b^{3/2}(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8d^{11/2}}+\frac{105b^2\sqrt{a+bx}\sqrt{c+dx}(bc-ad)^2}{8d^5}-\frac{35b^2(a+bx)^{3/2}\sqrt{c+dx}(bc-ad)}{4d^4}+\frac{7b^2(a+bx)^{5/2}\sqrt{c+dx}}{d^3}-\frac{6b(a+bx)^{7/2}}{d^2\sqrt{c+dx}}-\frac{2(a+bx)^{9/2}}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(9/2)/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(a + b*x)^(9/2))/(3*d*(c + d*x)^(3/2)) - (6*b*(a + b*x)^(7/2)
)/(d^2*Sqrt[c + d*x]) + (105*b^2*(b*c - a*d)^2*Sqrt[a + b*x]*Sqrt
[c + d*x])/(8*d^5) - (35*b^2*(b*c - a*d)*(a + b*x)^(3/2)*Sqrt[c +
 d*x])/(4*d^4) + (7*b^2*(a + b*x)^(5/2)*Sqrt[c + d*x])/d^3 - (105
*b^(3/2)*(b*c - a*d)^3*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*S
qrt[c + d*x])])/(8*d^(11/2))
```

Rubi in Sympy [A] time = 42.4204, size = 190, normalized size = 0.93

$$\frac{105b^{\frac{3}{2}}(ad-bc)^3\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{8d^{\frac{11}{2}}}+\frac{7b^2(a+bx)^{\frac{5}{2}}\sqrt{c+dx}}{d^3}+\frac{35b^2(a+bx)^{\frac{3}{2}}\sqrt{c+dx}(ad-bc)}{4d^4}+\frac{105b^2\sqrt{a+bx}\sqrt{c+dx}(ad-bc)^2}{8d^5}-\frac{6b(a+bx)^{\frac{7}{2}}}{d^2\sqrt{c+dx}}-\frac{2(a+bx)^{\frac{9}{2}}}{3d(c+dx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(9/2)/(d*x+c)**(5/2),x)
```

```
[Out] 105*b**(3/2)*(a*d - b*c)**3*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*
sqrt(c + d*x)))/(8*d**(11/2)) + 7*b**2*(a + b*x)**(5/2)*sqrt(c +
d*x)/d**3 + 35*b**2*(a + b*x)**(3/2)*sqrt(c + d*x)*(a*d - b*c)/(4
*d**4) + 105*b**2*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**2/(8*d
**5) - 6*b*(a + b*x)**(7/2)/(d**2*sqrt(c + d*x)) - 2*(a + b*x)**(
9/2)/(3*d*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.45911, size = 231, normalized size = 1.13

$$\frac{\sqrt{a+bx}\left(-16a^4d^4-16a^3bd^3(9c+13dx)+3a^2b^2d^2\left(231c^2+318cdx+55d^2x^2\right)-2ab^3d\left(420c^3+567c^2dx+90cd^2x^2-25d^3\right.\right.}{24d^5(c+dx)^{3/2}}$$

$$-\frac{105b^{3/2}(bc-ad)^3\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{16d^{11/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(9/2)/(c + d*x)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x]*(-16*a^4*d^4 - 16*a^3*b*d^3*(9*c + 13*d*x) + 3*a^2
*b^2*d^2*(231*c^2 + 318*c*d*x + 55*d^2*x^2) - 2*a*b^3*d*(420*c^3
+ 567*c^2*d*x + 90*c*d^2*x^2 - 25*d^3*x^3) + b^4*(315*c^4 + 420*c
^3*d*x + 63*c^2*d^2*x^2 - 18*c*d^3*x^3 + 8*d^4*x^4)))/(24*d^5*(c
+ d*x)^(3/2)) - (105*b^(3/2)*(b*c - a*d)^3*Log[b*c + a*d + 2*b*d*
x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(16*d^(11/2))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{9}{2}}\,(dx+c)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(9/2)/(d*x+c)^(5/2),x)
```

```
[Out] int((b*x+a)^(9/2)/(d*x+c)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 1.26284, size = 1, normalized size = 0.

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/96*(315*(b^4*c^5 - 3*a*b^3*c^4*d + 3*a^2*b^2*c^3*d^2 - a^3*b*
c^2*d^3 + (b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*
b*d^5)*x^2 + 2*(b^4*c^4*d - 3*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 -
 a^3*b*c*d^4)*x)*sqrt(b/d)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*
d + a^2*d^2 + 4*(2*b*d^2*x + b*c*d + a*d^2)*sqrt(b*x + a)*sqrt(d*
x + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d^2)*x) - 4*(8*b^4*d^4*x^4 +
315*b^4*c^4 - 840*a*b^3*c^3*d + 693*a^2*b^2*c^2*d^2 - 144*a^3*b*c
*d^3 - 16*a^4*d^4 - 2*(9*b^4*c*d^3 - 25*a*b^3*d^4)*x^3 + 3*(21*b^
4*c^2*d^2 - 60*a*b^3*c*d^3 + 55*a^2*b^2*d^4)*x^2 + 2*(210*b^4*c^3
*d - 567*a*b^3*c^2*d^2 + 477*a^2*b^2*c*d^3 - 104*a^3*b*d^4)*x)*sq
rt(b*x + a)*sqrt(d*x + c))/(d^7*x^2 + 2*c*d^6*x + c^2*d^5), -1/48
*(315*(b^4*c^5 - 3*a*b^3*c^4*d + 3*a^2*b^2*c^3*d^2 - a^3*b*c^2*d^
3 + (b^4*c^3*d^2 - 3*a*b^3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)
*x^2 + 2*(b^4*c^4*d - 3*a*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 - a^3*b
*c*d^4)*x)*sqrt(-b/d)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x
+ a)*sqrt(d*x + c)*d*sqrt(-b/d))) - 2*(8*b^4*d^4*x^4 + 315*b^4*c^
4 - 840*a*b^3*c^3*d + 693*a^2*b^2*c^2*d^2 - 144*a^3*b*c*d^3 - 16*
a^4*d^4 - 2*(9*b^4*c*d^3 - 25*a*b^3*d^4)*x^3 + 3*(21*b^4*c^2*d^2
- 60*a*b^3*c*d^3 + 55*a^2*b^2*d^4)*x^2 + 2*(210*b^4*c^3*d - 567*a
*b^3*c^2*d^2 + 477*a^2*b^2*c*d^3 - 104*a^3*b*d^4)*x)*sqrt(b*x + a
)*sqrt(d*x + c))/(d^7*x^2 + 2*c*d^6*x + c^2*d^5)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(9/2)/(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.298346, size = 675, normalized size = 3.31

$$\frac{\left(\left(\left(2\,(bx+a)\left(\frac{4\,(b^6cd^8-ab^5d^9)(bx+a)}{b^2cd^9|b|-abd^{10}|b|}-\frac{9\,(b^7c^2d^7-2\,ab^6cd^8+a^2b^5d^9)}{b^2cd^9|b|-abd^{10}|b|}\right)+\frac{63\,(b^8c^3d^6-3\,ab^7c^2d^7+3\,a^2b^6cd^8-a^3b^5d^9)}{b^2cd^9|b|-abd^{10}|b|}\right)(bx+a)+\frac{420\,(b^9c^4d^5-4\cdots}{\cdots}\cdots}{24\,(b^2c+(bx+a)bd\cdots}$$

$$+\frac{105\,(b^6c^3-3\,ab^5c^2d+3\,a^2b^4cd^2-a^3b^3d^3)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{8\,\sqrt{bd}d^5|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(9/2)/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 1/24*(((2*(b*x + a)*(4*(b^6*c*d^8 - a*b^5*d^9)*(b*x + a)/(b^2*c*d
^9*abs(b) - a*b*d^10*abs(b)) - 9*(b^7*c^2*d^7 - 2*a*b^6*c*d^8 + a
^2*b^5*d^9)/(b^2*c*d^9*abs(b) - a*b*d^10*abs(b))) + 63*(b^8*c^3*d
^6 - 3*a*b^7*c^2*d^7 + 3*a^2*b^6*c*d^8 - a^3*b^5*d^9)/(b^2*c*d^9*
abs(b) - a*b*d^10*abs(b)))*(b*x + a) + 420*(b^9*c^4*d^5 - 4*a*b^8
*c^3*d^6 + 6*a^2*b^7*c^2*d^7 - 4*a^3*b^6*c*d^8 + a^4*b^5*d^9)/(b^
2*c*d^9*abs(b) - a*b*d^10*abs(b)))*(b*x + a) + 315*(b^10*c^5*d^4
- 5*a*b^9*c^4*d^5 + 10*a^2*b^8*c^3*d^6 - 10*a^3*b^7*c^2*d^7 + 5*a
^4*b^6*c*d^8 - a^5*b^5*d^9)/(b^2*c*d^9*abs(b) - a*b*d^10*abs(b)))
*sqrt(b*x + a)/(b^2*c + (b*x + a)*b*d - a*b*d)^(3/2) + 105/8*(b^6
*c^3 - 3*a*b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*ln(abs(-sqr
t(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*d - a*b*d)))/(sqr
t(b*d)*d^5*abs(b))
```

3.1513 $\int \frac{(a+bx)^{7/2}}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=170

$$\frac{35b^{3/2}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4d^{9/2}}-\frac{35b^2\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4d^4}+\frac{35b^2(a+bx)^{3/2}\sqrt{c+dx}}{6d^3}-\frac{14b(a+bx)^{5/2}}{3d^2\sqrt{c+dx}}-\frac{2(a+bx)^{7/2}}{3d(c+dx)^{3/2}}$$

```
[Out] (-2*(a + b*x)^(7/2))/(3*d*(c + d*x)^(3/2)) - (14*b*(a + b*x)^(5/2
))/(3*d^2*Sqrt[c + d*x]) - (35*b^2*(b*c - a*d)*Sqrt[a + b*x]*Sqrt
[c + d*x])/(4*d^4) + (35*b^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(6*d^
3) + (35*b^(3/2)*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(S
qrt[b]*Sqrt[c + d*x])])/(4*d^(9/2))
```

Rubi [A] time = 0.21308, antiderivative size = 170, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{35b^{3/2}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4d^{9/2}}-\frac{35b^2\sqrt{a+bx}\sqrt{c+dx}(bc-ad)}{4d^4}+\frac{35b^2(a+bx)^{3/2}\sqrt{c+dx}}{6d^3}-\frac{14b(a+bx)^{5/2}}{3d^2\sqrt{c+dx}}-\frac{2(a+bx)^{7/2}}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/2)/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(a + b*x)^(7/2))/(3*d*(c + d*x)^(3/2)) - (14*b*(a + b*x)^(5/2
))/(3*d^2*Sqrt[c + d*x]) - (35*b^2*(b*c - a*d)*Sqrt[a + b*x]*Sqrt
[c + d*x])/(4*d^4) + (35*b^2*(a + b*x)^(3/2)*Sqrt[c + d*x])/(6*d^
3) + (35*b^(3/2)*(b*c - a*d)^2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(S
qrt[b]*Sqrt[c + d*x])])/(4*d^(9/2))
```

Rubi in Sympy [A] time = 29.95, size = 158, normalized size = 0.93

$$\frac{35b^{\frac{3}{2}}\left(ad-bc\right)^2\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{4d^{\frac{9}{2}}}+\frac{35b^2\left(a+bx\right)^{\frac{3}{2}}\sqrt{c+dx}}{6d^3}+\frac{35b^2\sqrt{a+bx}\sqrt{c+dx}\left(ad-bc\right)}{4d^4}-\frac{14b\left(a+bx\right)^{\frac{5}{2}}}{3d^2\sqrt{c+dx}}-\frac{2\left(a+bx\right)^{\frac{7}{2}}}{3d\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/2)/(d*x+c)**(5/2),x)
```

```
[Out] 35*b**(3/2)*(a*d - b*c)**2*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*s
qrt(c + d*x)))/(4*d**(9/2)) + 35*b**2*(a + b*x)**(3/2)*sqrt(c + d
*x)/(6*d**3) + 35*b**2*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)/(4
*d**4) - 14*b*(a + b*x)**(5/2)/(3*d**2*sqrt(c + d*x)) - 2*(a + b*
x)**(7/2)/(3*d*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.274719, size = 159, normalized size = 0.94

$$\frac{35b^{3/2}(bc-ad)^2\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{8d^{9/2}}+\frac{\sqrt{a+bx}\left(-3b^2(c+dx)^2(11bc-13ad)-80b(c+dx)(bc-ad)^2+8(bc-ad)^3+6b^3dx(c+dx)^2\right)}{12d^4(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/2)/(c + d*x)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x]*(8*(b*c - a*d)^3 - 80*b*(b*c - a*d)^2*(c + d*x) -
3*b^2*(11*b*c - 13*a*d)*(c + d*x)^2 + 6*b^3*d*x*(c + d*x)^2))/(12
*d^4*(c + d*x)^(3/2)) + (35*b^(3/2)*(b*c - a*d)^2*Log[b*c + a*d +
 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c + d*x]])/(8*d^(
9/2))
```

Maple [F] time = 0.047, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{2}}\,(dx+c)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/2)/(d*x+c)^(5/2),x)
```

```
[Out] int((b*x+a)^(7/2)/(d*x+c)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.695557, size = 1, normalized size = 0.01

$$\left[\frac{105\left(b^3c^4 - 2\,ab^2c^3d + a^2bc^2d^2 + \left(b^3c^2d^2 - 2\,ab^2cd^3 + a^2bd^4\right)x^2 + 2\left(b^3c^3d - 2\,ab^2c^2d^2 + a^2bcd^3\right)x\right)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2 + b\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/48*(105*(b^3*c^4 - 2*a*b^2*c^3*d + a^2*b*c^2*d^2 + (b^3*c^2*d^
2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*x^2 + 2*(b^3*c^3*d - 2*a*b^2*c^2*d
^2 + a^2*b*c*d^3)*x)*sqrt(b/d)*log(8*b^2*d^2*x^2 + b^2*c^2 + 6*a*
b*c*d + a^2*d^2 + 4*(2*b*d^2*x + b*c*d + a*d^2)*sqrt(b*x + a)*sqr
t(d*x + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d^2)*x) + 4*(6*b^3*d^3*x^
3 - 105*b^3*c^3 + 175*a*b^2*c^2*d - 56*a^2*b*c*d^2 - 8*a^3*d^3 -
3*(7*b^3*c*d^2 - 13*a*b^2*d^3)*x^2 - 2*(70*b^3*c^2*d - 119*a*b^2*
c*d^2 + 40*a^2*b*d^3)*x)*sqrt(b*x + a)*sqrt(d*x + c))/(d^6*x^2 +
2*c*d^5*x + c^2*d^4), 1/24*(105*(b^3*c^4 - 2*a*b^2*c^3*d + a^2*b*
c^2*d^2 + (b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*x^2 + 2*(b^3*
c^3*d - 2*a*b^2*c^2*d^2 + a^2*b*c*d^3)*x)*sqrt(-b/d)*arctan(1/2*(
2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c)*d*sqrt(-b/d)))
+ 2*(6*b^3*d^3*x^3 - 105*b^3*c^3 + 175*a*b^2*c^2*d - 56*a^2*b*c*d
^2 - 8*a^3*d^3 - 3*(7*b^3*c*d^2 - 13*a*b^2*d^3)*x^2 - 2*(70*b^3*c
^2*d - 119*a*b^2*c*d^2 + 40*a^2*b*d^3)*x)*sqrt(b*x + a)*sqrt(d*x
+ c))/(d^6*x^2 + 2*c*d^5*x + c^2*d^4)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/2)/(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.274017, size = 513, normalized size = 3.02

$$\frac{\left(\left(3\,(bx+a)\left(\frac{2\left(b^6cd^6-ab^5d^7\right)(bx+a)}{b^2cd^7|b|-abd^8|b|}-\frac{7\left(b^7c^2d^5-2\,ab^6cd^6+a^2b^5d^7\right)}{b^2cd^7|b|-abd^8|b|}\right)-\frac{140\left(b^8c^3d^4-3\,ab^7c^2d^5+3\,a^2b^6cd^6-a^3b^5d^7\right)}{b^2cd^7|b|-abd^8|b|}\right)(bx+a)-\frac{105\left(b^9c^4d^3-4\right.}{}}{12\left(b^2c+(bx+a)bd-abd\right)^{\frac{3}{2}}}$$

$$-\frac{35\left(b^5c^2-2\,ab^4cd+a^2b^3d^2\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{4\sqrt{bd}d^4|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 1/12*((3*(b*x + a)*(2*(b^6*c*d^6 - a*b^5*d^7)*(b*x + a)/(b^2*c*d^
7*abs(b) - a*b*d^8*abs(b)) - 7*(b^7*c^2*d^5 - 2*a*b^6*c*d^6 + a^2
*b^5*d^7)/(b^2*c*d^7*abs(b) - a*b*d^8*abs(b))) - 140*(b^8*c^3*d^4
 - 3*a*b^7*c^2*d^5 + 3*a^2*b^6*c*d^6 - a^3*b^5*d^7)/(b^2*c*d^7*ab
s(b) - a*b*d^8*abs(b)))*(b*x + a) - 105*(b^9*c^4*d^3 - 4*a*b^8*c^
3*d^4 + 6*a^2*b^7*c^2*d^5 - 4*a^3*b^6*c*d^6 + a^4*b^5*d^7)/(b^2*c
*d^7*abs(b) - a*b*d^8*abs(b)))*sqrt(b*x + a)/(b^2*c + (b*x + a)*b
*d - a*b*d)^(3/2) - 35/4*(b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*ln
(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*d - a*b*
d)))/(sqrt(b*d)*d^4*abs(b))
```

3.1514 $\int \frac{(a+bx)^{5/2}}{(c+dx)^{5/2}} dx$

Optimal. Leaf size=128

$$-\frac{5b^{3/2}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{7/2}}+\frac{5b^2\sqrt{a+bx}\sqrt{c+dx}}{d^3}-\frac{10b(a+bx)^{3/2}}{3d^2\sqrt{c+dx}}-\frac{2(a+bx)^{5/2}}{3d(c+dx)^{3/2}}$$

```
[Out] (-2*(a + b*x)^(5/2))/(3*d*(c + d*x)^(3/2)) - (10*b*(a + b*x)^(3/2
))/(3*d^2*Sqrt[c + d*x]) + (5*b^2*Sqrt[a + b*x]*Sqrt[c + d*x])/d^
3 - (5*b^(3/2)*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[
b]*Sqrt[c + d*x])])/d^(7/2)
```

Rubi [A] time = 0.146591, antiderivative size = 128, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$-\frac{5b^{3/2}(bc-ad)\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{7/2}}+\frac{5b^2\sqrt{a+bx}\sqrt{c+dx}}{d^3}-\frac{10b(a+bx)^{3/2}}{3d^2\sqrt{c+dx}}-\frac{2(a+bx)^{5/2}}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(a + b*x)^(5/2))/(3*d*(c + d*x)^(3/2)) - (10*b*(a + b*x)^(3/2
))/(3*d^2*Sqrt[c + d*x]) + (5*b^2*Sqrt[a + b*x]*Sqrt[c + d*x])/d^
3 - (5*b^(3/2)*(b*c - a*d)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[
b]*Sqrt[c + d*x])])/d^(7/2)
```

Rubi in Sympy [A] time = 19.9603, size = 119, normalized size = 0.93

$$\frac{5b^{\frac{3}{2}}\left(ad-bc\right)\operatorname{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{d^{\frac{7}{2}}}+\frac{5b^2\sqrt{a+bx}\sqrt{c+dx}}{d^3}-\frac{10b\left(a+bx\right)^{\frac{3}{2}}}{3d^2\sqrt{c+dx}}-\frac{2\left(a+bx\right)^{\frac{5}{2}}}{3d\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(5/2),x)
```

```
[Out] 5*b**(3/2)*(a*d - b*c)*atanh(sqrt(b)*sqrt(c + d*x)/(sqrt(d)*sqrt(
a + b*x)))/d**(7/2) + 5*b**2*sqrt(a + b*x)*sqrt(c + d*x)/d**3 - 1
0*b*(a + b*x)**(3/2)/(3*d**2*sqrt(c + d*x)) - 2*(a + b*x)**(5/2)/
(3*d*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.185716, size = 136, normalized size = 1.06

$$\frac{\sqrt{a+bx}\left(-2a^2d^2-2abd(5c+7dx)+b^2\left(15c^2+20cdx+3d^2x^2\right)\right)}{3d^3(c+dx)^{3/2}}-\frac{5b^{3/2}(bc-ad)\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{2d^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(5/2),x]
```

```
[Out] (Sqrt[a + b*x]*(-2*a^2*d^2 - 2*a*b*d*(5*c + 7*d*x) + b^2*(15*c^2
+ 20*c*d*x + 3*d^2*x^2)))/(3*d^3*(c + d*x)^(3/2)) - (5*b^(3/2)*(b
*c - a*d)*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*
x]*Sqrt[c + d*x]])/(2*d^(7/2))
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{2}}\,(dx+c)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(5/2),x)
```

```
[Out] int((b*x+a)^(5/2)/(d*x+c)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.498003, size = 1, normalized size = 0.01

$$\left[-\frac{15\left(b^2c^3 - abc^2d + \left(b^2cd^2 - abd^3\right)x^2 + 2\left(b^2c^2d - abcd^2\right)x\right)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2 + b^2c^2 + 6\,abcd + a^2d^2 + 4\left(2\,bd^2x + bcd + \cdots\right.\right.}{12\left(d^5x \cdots\right.}\right.$$

$$-\frac{15\left(b^2c^3 - abc^2d + \left(b^2cd^2 - abd^3\right)x^2 + 2\left(b^2c^2d - abcd^2\right)x\right)\sqrt{-\frac{b}{d}}\arctan\left(\frac{2\,bdx + bc + ad}{2\sqrt{bx+a}\sqrt{dx+c}d\sqrt{-\frac{b}{d}}}\right) - 2\left(3\,b^2d^2x^2 + 15\,b^2c^2 - 1 \cdots\right.}{6\left(d^5x^2 + 2\,cd^4x + c^2d^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(15*(b^2*c^3 - a*b*c^2*d + (b^2*c*d^2 - a*b*d^3)*x^2 + 2*(
b^2*c^2*d - a*b*c*d^2)*x)*sqrt(b/d)*log(8*b^2*d^2*x^2 + b^2*c^2 +
 6*a*b*c*d + a^2*d^2 + 4*(2*b*d^2*x + b*c*d + a*d^2)*sqrt(b*x + a
)*sqrt(d*x + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d^2)*x) - 4*(3*b^2*d
^2*x^2 + 15*b^2*c^2 - 10*a*b*c*d - 2*a^2*d^2 + 2*(10*b^2*c*d - 7*
a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c))/(d^5*x^2 + 2*c*d^4*x + c
^2*d^3), -1/6*(15*(b^2*c^3 - a*b*c^2*d + (b^2*c*d^2 - a*b*d^3)*x^
2 + 2*(b^2*c^2*d - a*b*c*d^2)*x)*sqrt(-b/d)*arctan(1/2*(2*b*d*x +
 b*c + a*d)/(sqrt(b*x + a)*sqrt(d*x + c)*d*sqrt(-b/d))) - 2*(3*b^
2*d^2*x^2 + 15*b^2*c^2 - 10*a*b*c*d - 2*a^2*d^2 + 2*(10*b^2*c*d -
 7*a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c))/(d^5*x^2 + 2*c*d^4*x
+ c^2*d^3)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.259903, size = 373, normalized size = 2.91

$$\frac{\left((bx+a)\left(\frac{3\left(b^6cd^4-ab^5d^5\right)(bx+a)}{b^2cd^5|b|-abd^6|b|}+\frac{20\left(b^7c^2d^3-2\,ab^6cd^4+a^2b^5d^5\right)}{b^2cd^5|b|-abd^6|b|}\right)+\frac{15\left(b^8c^3d^2-3\,ab^7c^2d^3+3\,a^2b^6cd^4-a^3b^5d^5\right)}{b^2cd^5|b|-abd^6|b|}\right)\sqrt{bx+a}}{3\left(b^2c+(bx+a)bd-abd\right)^{\frac{3}{2}}}+\frac{5\left(b^4c-ab^3d\right)\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}d^3|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((b*x + a)*(3*(b^6*c*d^4 - a*b^5*d^5)*(b*x + a)/(b^2*c*d^5*ab
s(b) - a*b*d^6*abs(b)) + 20*(b^7*c^2*d^3 - 2*a*b^6*c*d^4 + a^2*b^
5*d^5)/(b^2*c*d^5*abs(b) - a*b*d^6*abs(b))) + 15*(b^8*c^3*d^2 - 3
*a*b^7*c^2*d^3 + 3*a^2*b^6*c*d^4 - a^3*b^5*d^5)/(b^2*c*d^5*abs(b)
 - a*b*d^6*abs(b)))*sqrt(b*x + a)/(b^2*c + (b*x + a)*b*d - a*b*d)
^(3/2) + 5*(b^4*c - a*b^3*d)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sq
rt(b^2*c + (b*x + a)*b*d - a*b*d)))/(sqrt(b*d)*d^3*abs(b))
```

3.1515 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=92

$$\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{5/2}}-\frac{2b\sqrt{a+bx}}{d^2\sqrt{c+dx}}-\frac{2(a+bx)^{3/2}}{3d(c+dx)^{3/2}}$$

```
[Out] (-2*(a + b*x)^(3/2))/(3*d*(c + d*x)^(3/2)) - (2*b*Sqrt[a + b*x])/
(d^2*Sqrt[c + d*x]) + (2*b^(3/2)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/
(Sqrt[b]*Sqrt[c + d*x])])/d^(5/2)
```

Rubi [A] time = 0.0970595, antiderivative size = 92, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{5/2}}-\frac{2b\sqrt{a+bx}}{d^2\sqrt{c+dx}}-\frac{2(a+bx)^{3/2}}{3d(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(5/2),x]
```

```
[Out] (-2*(a + b*x)^(3/2))/(3*d*(c + d*x)^(3/2)) - (2*b*Sqrt[a + b*x])/
(d^2*Sqrt[c + d*x]) + (2*b^(3/2)*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/
(Sqrt[b]*Sqrt[c + d*x])])/d^(5/2)
```

Rubi in Sympy [A] time = 14.4513, size = 85, normalized size = 0.92

$$\frac{2b^{\frac{3}{2}}\operatorname{atanh}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{d^{\frac{5}{2}}}-\frac{2b\sqrt{a+bx}}{d^2\sqrt{c+dx}}-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{3d\left(c+dx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(5/2),x)
```

```
[Out] 2*b**(3/2)*atanh(sqrt(d)*sqrt(a + b*x)/(sqrt(b)*sqrt(c + d*x)))/d
**(5/2) - 2*b*sqrt(a + b*x)/(d**2*sqrt(c + d*x)) - 2*(a + b*x)**(
3/2)/(3*d*(c + d*x)**(3/2))
```

Mathematica [A] time = 0.173791, size = 93, normalized size = 1.01

$$\frac{b^{3/2}\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{d^{5/2}}-\frac{2\sqrt{a+bx}(ad+3bc+4bdx)}{3d^2(c+dx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[a + b*x]*(3*b*c + a*d + 4*b*d*x))/(3*d^2*(c + d*x)^(3/2)
) + (b^(3/2)*Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a +
 b*x]*Sqrt[c + d*x]])/d^(5/2)
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(5/2),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.378357, size = 1, normalized size = 0.01

$$\left[\frac{3\left(bd^2x^2+2\,bcdx+bc^2\right)\sqrt{\frac{b}{d}}\log\left(8\,b^2d^2x^2+b^2c^2+6\,abcd+a^2d^2+4\left(2\,bd^2x+bcd+ad^2\right)\sqrt{bx+a}\sqrt{dx+c}\sqrt{\frac{b}{d}}+8\left(b^2cd+\right.\right.}{6\left(d^4x^2+2\,cd^3x+c^2d^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)*sqrt(b/d)*log(8*b^2*d^2*x
^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 4*(2*b*d^2*x + b*c*d + a*d^2
)*sqrt(b*x + a)*sqrt(d*x + c)*sqrt(b/d) + 8*(b^2*c*d + a*b*d^2)*x
) - 4*(4*b*d*x + 3*b*c + a*d)*sqrt(b*x + a)*sqrt(d*x + c))/(d^4*x
^2 + 2*c*d^3*x + c^2*d^2), 1/3*(3*(b*d^2*x^2 + 2*b*c*d*x + b*c^2)
*sqrt(-b/d)*arctan(1/2*(2*b*d*x + b*c + a*d)/(sqrt(b*x + a)*sqrt(
d*x + c)*d*sqrt(-b/d))) - 2*(4*b*d*x + 3*b*c + a*d)*sqrt(b*x + a)
*sqrt(d*x + c))/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)]
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.250972, size = 296, normalized size = 3.22

$$\frac{\sqrt{bd}\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{16\,(b^5cd^4-ab^4d^5)}+\frac{\sqrt{bx+a}\left(\frac{4\,(b^5cd^2-ab^4d^3)(bx+a)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}+\frac{3\,(b^6c^2d-2\,ab^5cd^2+a^2b^4d^3)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}\right)}{48\,(b^2c+(bx+a)bd-abd)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] 1/16*sqrt(b*d)*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*
x + a)*b*d - a*b*d)))/(b^5*c*d^4 - a*b^4*d^5) + 1/48*sqrt(b*x + a
)*(4*(b^5*c*d^2 - a*b^4*d^3)*(b*x + a)/(b^8*c^2*d^4 - 2*a*b^7*c*d
^5 + a^2*b^6*d^6) + 3*(b^6*c^2*d - 2*a*b^5*c*d^2 + a^2*b^4*d^3)/(
b^8*c^2*d^4 - 2*a*b^7*c*d^5 + a^2*b^6*d^6))/(b^2*c + (b*x + a)*b*
d - a*b*d)^(3/2)
```

3.1516 $\int \frac{\sqrt{a+bx}}{(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=32

$$\frac{2(a+bx)^{3/2}}{3(c+dx)^{3/2}(bc-ad)}$$

```
[Out] (2*(a + b*x)^(3/2))/(3*(b*c - a*d)*(c + d*x)^(3/2))
```

Rubi [A] time = 0.0211912, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{2(a+bx)^{3/2}}{3(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(3/2))/(3*(b*c - a*d)*(c + d*x)^(3/2))
```

Rubi in Sympy [A] time = 3.60233, size = 27, normalized size = 0.84

$$-\frac{2\left(a+bx\right)^{\frac{3}{2}}}{3\left(c+dx\right)^{\frac{3}{2}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(5/2),x)
```

```
[Out] -2*(a + b*x)**(3/2)/(3*(c + d*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0382258, size = 32, normalized size = 1.

$$\frac{2(a+bx)^{3/2}}{3(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(5/2),x]
```

```
[Out] (2*(a + b*x)^(3/2))/(3*(b*c - a*d)*(c + d*x)^(3/2))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.8

$$-\frac{2}{3\,ad-3\,bc}\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*(b*x+a)^(3/2)/(d*x+c)^(3/2)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.250558, size = 88, normalized size = 2.75

$$\frac{2\,(bx+a)^{\frac{3}{2}}\sqrt{dx+c}}{3\,(bc^3-ac^2d+(bcd^2-ad^3)x^2+2\,(bc^2d-acd^2)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b*x + a)^(3/2)*sqrt(d*x + c)/(b*c^3 - a*c^2*d + (b*c*d^2 - a
*d^3)*x^2 + 2*(b*c^2*d - a*c*d^2)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\sqrt{a+bx}}{(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(5/2), x)
```

GIAC/XCAS [A] time = 0.234984, size = 90, normalized size = 2.81

$$-\frac{(bx+a)^{\frac{3}{2}}b^4d}{24\,(b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6)(b^2c+(bx+a)bd-abd)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/2),x, algorithm="giac")
```

```
[Out] -1/24*(b*x + a)^(3/2)*b^4*d/((b^8*c^2*d^4 - 2*a*b^7*c*d^5 + a^2*b
^6*d^6)*(b^2*c + (b*x + a)*b*d - a*b*d)^(3/2))
```

3.1517 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=66

$$\frac{4b\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^2}+\frac{2\sqrt{a+bx}}{3(c+dx)^{3/2}(bc-ad)}$$

```
[Out] (2*Sqrt[a + b*x])/(3*(b*c - a*d)*(c + d*x)^(3/2)) + (4*b*Sqrt[a +
 b*x])/(3*(b*c - a*d)^2*Sqrt[c + d*x])
```

Rubi [A] time = 0.0506325, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{4b\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^2}+\frac{2\sqrt{a+bx}}{3(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(5/2)),x]
```

```
[Out] (2*Sqrt[a + b*x])/(3*(b*c - a*d)*(c + d*x)^(3/2)) + (4*b*Sqrt[a +
 b*x])/(3*(b*c - a*d)^2*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 7.34076, size = 56, normalized size = 0.85

$$\frac{4b\sqrt{a+bx}}{3\sqrt{c+dx}\,(ad-bc)^2}-\frac{2\sqrt{a+bx}}{3\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(5/2),x)
```

```
[Out] 4*b*sqrt(a + b*x)/(3*sqrt(c + d*x)*(a*d - b*c)**2) - 2*sqrt(a + b
*x)/(3*(c + d*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.0572872, size = 46, normalized size = 0.7

$$\frac{2\sqrt{a+bx}(-ad+3bc+2bdx)}{3(c+dx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(5/2)),x]
```

```
[Out] (2*Sqrt[a + b*x]*(3*b*c - a*d + 2*b*d*x))/(3*(b*c - a*d)^2*(c + d
*x)^(3/2))
```

Maple [A] time = 0.009, size = 53, normalized size = 0.8

$$-\frac{-4\,bdx+2\,ad-6\,bc}{3\,a^2d^2-6\,abcd+3\,b^2c^2}\sqrt{bx+a}\,(dx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*(b*x+a)^(1/2)*(-2*b*d*x+a*d-3*b*c)/(d*x+c)^(3/2)/(a^2*d^2-2*
a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.26107, size = 159, normalized size = 2.41

$$\frac{2\,(2\,bdx+3\,bc-ad)\sqrt{bx+a}\sqrt{dx+c}}{3\,(b^2c^4-2\,abc^3d+a^2c^2d^2+(b^2c^2d^2-2\,abcd^3+a^2d^4)x^2+2\,(b^2c^3d-2\,abc^2d^2+a^2cd^3)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(2*b*d*x + 3*b*c - a*d)*sqrt(b*x + a)*sqrt(d*x + c)/(b^2*c^4
- 2*a*b*c^3*d + a^2*c^2*d^2 + (b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^
4)*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(5/2)), x)
```

GIAC/XCAS [A] time = 0.225655, size = 173, normalized size = 2.62

$$-\frac{\left(\frac{2\,(bx+a)b^4d^2}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}+\frac{3\,\left(b^5cd-ab^4d^2\right)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}\right)\sqrt{bx+a}}{24\,\left(b^2c+(bx+a)bd-abd\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*(2*(b*x + a)*b^4*d^2/(b^8*c^2*d^4 - 2*a*b^7*c*d^5 + a^2*b^6
*d^6) + 3*(b^5*c*d - a*b^4*d^2)/(b^8*c^2*d^4 - 2*a*b^7*c*d^5 + a^
2*b^6*d^6))*sqrt(b*x + a)/(b^2*c + (b*x + a)*b*d - a*b*d)^(3/2)
```

3.1518 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=98

$$-\frac{16bd\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^3}-\frac{8d\sqrt{a+bx}}{3(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)}$$

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/2)) - (8*d*Sqrt[a + b*
x])/(3*(b*c - a*d)^2*(c + d*x)^(3/2)) - (16*b*d*Sqrt[a + b*x])/(3
*(b*c - a*d)^3*Sqrt[c + d*x])
```

Rubi [A] time = 0.0841926, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{16bd\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^3}-\frac{8d\sqrt{a+bx}}{3(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(5/2)),x]
```

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/2)) - (8*d*Sqrt[a + b*
x])/(3*(b*c - a*d)^2*(c + d*x)^(3/2)) - (16*b*d*Sqrt[a + b*x])/(3
*(b*c - a*d)^3*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 12.8683, size = 87, normalized size = 0.89

$$\frac{16bd\sqrt{a+bx}}{3\sqrt{c+dx}\,(ad-bc)^3}-\frac{8d\sqrt{a+bx}}{3\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^2}+\frac{2}{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(5/2),x)
```

```
[Out] 16*b*d*sqrt(a + b*x)/(3*sqrt(c + d*x)*(a*d - b*c)**3) - 8*d*sqrt(
a + b*x)/(3*(c + d*x)**(3/2)*(a*d - b*c)**2) + 2/(sqrt(a + b*x)*(
c + d*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.11849, size = 78, normalized size = 0.8

$$\frac{2a^2d^2-4abd(3c+2dx)-2b^2\left(3c^2+12cdx+8d^2x^2\right)}{3\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(5/2)),x]
```

```
[Out] (2*a^2*d^2 - 4*a*b*d*(3*c + 2*d*x) - 2*b^2*(3*c^2 + 12*c*d*x + 8*
d^2*x^2))/(3*(b*c - a*d)^3*Sqrt[a + b*x]*(c + d*x)^(3/2))
```

Maple [A] time = 0.01, size = 104, normalized size = 1.1

$$-\frac{-16\,b^2d^2x^2-8\,abd^2x-24\,b^2cdx+2\,a^2d^2-12\,abcd-6\,b^2c^2}{3\,a^3d^3-9\,a^2bcd^2+9\,ab^2c^2d-3\,b^3c^3}\frac{1}{\sqrt{bx+a}}(dx+c)^{-\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*(-8*b^2*d^2*x^2-4*a*b*d^2*x-12*b^2*c*d*x+a^2*d^2-6*a*b*c*d-3
*b^2*c^2)/(b*x+a)^(1/2)/(d*x+c)^(3/2)/(a^3*d^3-3*a^2*b*c*d^2+3*a*
b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.362433, size = 369, normalized size = 3.77

$$-\frac{2\left(8\,b^2d^2x^2+3\,b^2c^2+6\,abcd-a^2d^2+4\left(3\,b^2cd+abd^2\right)x\right)\sqrt{}}{3\left(ab^3c^5-3\,a^2b^2c^4d+3\,a^3bc^3d^2-a^4c^2d^3+(b^4c^3d^2-3\,ab^3c^2d^3+3\,a^2b^2cd^4-a^3bd^5)x^3+(2\,b^4c^4d-5\,ab^3c^3d^2+3\,a^2b^2c^2d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] -2/3*(8*b^2*d^2*x^2 + 3*b^2*c^2 + 6*a*b*c*d - a^2*d^2 + 4*(3*b^2*
c*d + a*b*d^2)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a*b^3*c^5 - 3*a^2*
```

```
b^2*c^4*d + 3*a^3*b*c^3*d^2 - a^4*c^2*d^3 + (b^4*c^3*d^2 - 3*a*b^
3*c^2*d^3 + 3*a^2*b^2*c*d^4 - a^3*b*d^5)*x^3 + (2*b^4*c^4*d - 5*a
*b^3*c^3*d^2 + 3*a^2*b^2*c^2*d^3 + a^3*b*c*d^4 - a^4*d^5)*x^2 + (
b^4*c^5 - a*b^3*c^4*d - 3*a^2*b^2*c^3*d^2 + 5*a^3*b*c^2*d^3 - 2*a
^4*c*d^4)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(5/2)), x)
```

GIAC/XCAS [A] time = 0.252272, size = 393, normalized size = 4.01

$$-\frac{4\sqrt{bd}b^3}{\left(b^2c^2|b|-2\,abcd|b|+a^2d^2|b|\right)\left(b^2c-abd-\left(\sqrt{bd}\sqrt{bx+a}-\sqrt{b^2c+(bx+a)bd-abd}\right)^2\right)}+\frac{\sqrt{bx+a}\left(\frac{5\left(b^6c^2d^3|b|-2\,ab^5cd^4|b|+a^2b^4d^5|b|\right)(bx+a)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}+\frac{6\left(b^7c^3d^2|b|-3\,ab^6c^2d^3|b|+3\,a^2b^5cd^4|b|-a^3b^4d^5|b|\right)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}\right)}{24\left(b^2c+(bx+a)bd-abd\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] -4*sqrt(b*d)*b^3/((b^2*c^2*abs(b) - 2*a*b*c*d*abs(b) + a^2*d^2*ab
s(b))*(b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b
*x + a)*b*d - a*b*d))^2)) + 1/24*sqrt(b*x + a)*(5*(b^6*c^2*d^3*ab
s(b) - 2*a*b^5*c*d^4*abs(b) + a^2*b^4*d^5*abs(b))*(b*x + a)/(b^8*
c^2*d^4 - 2*a*b^7*c*d^5 + a^2*b^6*d^6) + 6*(b^7*c^3*d^2*abs(b) -
3*a*b^6*c^2*d^3*abs(b) + 3*a^2*b^5*c*d^4*abs(b) - a^3*b^4*d^5*abs
(b))/(b^8*c^2*d^4 - 2*a*b^7*c*d^5 + a^2*b^6*d^6))/(b^2*c + (b*x +
 a)*b*d - a*b*d)^(3/2)
```

3.1519 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=135

$$\frac{32bd^2\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^4}+\frac{16d^2\sqrt{a+bx}}{3(c+dx)^{3/2}(bc-ad)^3}+\frac{4d}{\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)}$$

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/2)) + (4*d)/((b*c
- a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/2)) + (16*d^2*Sqrt[a + b*x])/
(3*(b*c - a*d)^3*(c + d*x)^(3/2)) + (32*b*d^2*Sqrt[a + b*x])/(3*(
b*c - a*d)^4*Sqrt[c + d*x])
```

Rubi [A] time = 0.118135, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{32bd^2\sqrt{a+bx}}{3\sqrt{c+dx}(bc-ad)^4}+\frac{16d^2\sqrt{a+bx}}{3(c+dx)^{3/2}(bc-ad)^3}+\frac{4d}{\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(5/2)),x]
```

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/2)) + (4*d)/((b*c
- a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/2)) + (16*d^2*Sqrt[a + b*x])/
(3*(b*c - a*d)^3*(c + d*x)^(3/2)) + (32*b*d^2*Sqrt[a + b*x])/(3*(
b*c - a*d)^4*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 21.1596, size = 121, normalized size = 0.9

$$\frac{32bd^2\sqrt{a+bx}}{3\sqrt{c+dx}\,(ad-bc)^4}-\frac{16d^2\sqrt{a+bx}}{3\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^3}+\frac{4d}{\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^2}+\frac{2}{3\,(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(5/2),x)
```

```
[Out] 32*b*d**2*sqrt(a + b*x)/(3*sqrt(c + d*x)*(a*d - b*c)**4) - 16*d**
2*sqrt(a + b*x)/(3*(c + d*x)**(3/2)*(a*d - b*c)**3) + 4*d/(sqrt(a
```

```
 + b*x)*(c + d*x)**(3/2)*(a*d - b*c)**2) + 2/(3*(a + b*x)**(3/2)*
(c + d*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.162794, size = 118, normalized size = 0.87

$$\sqrt{a+bx}\sqrt{c+dx}\left(\frac{16b^2d}{3(a+bx)(bc-ad)^4}-\frac{2b^2}{3(a+bx)^2(bc-ad)^3}+\frac{16bd^2}{3(c+dx)(bc-ad)^4}+\frac{2d^2}{3(c+dx)^2(bc-ad)^3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(5/2)),x]
```

```
[Out] Sqrt[a + b*x]*Sqrt[c + d*x]*((-2*b^2)/(3*(b*c - a*d)^3*(a + b*x)^
2) + (16*b^2*d)/(3*(b*c - a*d)^4*(a + b*x)) + (2*d^2)/(3*(b*c - a
*d)^3*(c + d*x)^2) + (16*b*d^2)/(3*(b*c - a*d)^4*(c + d*x)))
```

Maple [A] time = 0.012, size = 169, normalized size = 1.3

$$-\frac{-32\,b^3d^3x^3-48\,ab^2d^3x^2-48\,b^3cd^2x^2-12\,a^2bd^3x-72\,ab^2cd^2x-12\,b^3c^2dx+2\,a^3d^3-18\,a^2bcd^2-18\,ab^2c^2d+2\,b^3c^3}{3\,d^4a^4-12\,bd^3ca^3+18\,b^2d^2c^2a^2-12\,b^3dc^3a+3\,b^4c^4}(\ldots$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(5/2),x)
```

```
[Out] -2/3*(-16*b^3*d^3*x^3-24*a*b^2*d^3*x^2-24*b^3*c*d^2*x^2-6*a^2*b*d
^3*x-36*a*b^2*c*d^2*x-6*b^3*c^2*d*x+a^3*d^3-9*a^2*b*c*d^2-9*a*b^2
*c^2*d+b^3*c^3)/(b*x+a)^(3/2)/(d*x+c)^(3/2)/(a^4*d^4-4*a^3*b*c*d^
3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.731149, size = 603, normalized size = 4.47

$$\frac{2\left(16\,b^3d^3x^3 - b^3c^3 + 9\,ab\right.}{3\,(a^2b^4c^6 - 4\,a^3b^3c^5d + 6\,a^4b^2c^4d^2 - 4\,a^5bc^3d^3 + a^6c^2d^4 + (b^6c^4d^2 - 4\,ab^5c^3d^3 + 6\,a^2b^4c^2d^4 - 4\,a^3b^3cd^5 + a^4b^2d^6)x^4 + 2\,(b^6c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] 2/3*(16*b^3*d^3*x^3 - b^3*c^3 + 9*a*b^2*c^2*d + 9*a^2*b*c*d^2 - a
^3*d^3 + 24*(b^3*c*d^2 + a*b^2*d^3)*x^2 + 6*(b^3*c^2*d + 6*a*b^2*
c*d^2 + a^2*b*d^3)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^2*b^4*c^6 -
4*a^3*b^3*c^5*d + 6*a^4*b^2*c^4*d^2 - 4*a^5*b*c^3*d^3 + a^6*c^2*d
^4 + (b^6*c^4*d^2 - 4*a*b^5*c^3*d^3 + 6*a^2*b^4*c^2*d^4 - 4*a^3*b
^3*c*d^5 + a^4*b^2*d^6)*x^4 + 2*(b^6*c^5*d - 3*a*b^5*c^4*d^2 + 2*
a^2*b^4*c^3*d^3 + 2*a^3*b^3*c^2*d^4 - 3*a^4*b^2*c*d^5 + a^5*b*d^6
)*x^3 + (b^6*c^6 - 9*a^2*b^4*c^4*d^2 + 16*a^3*b^3*c^3*d^3 - 9*a^4
*b^2*c^2*d^4 + a^6*d^6)*x^2 + 2*(a*b^5*c^6 - 3*a^2*b^4*c^5*d + 2*
a^3*b^3*c^4*d^2 + 2*a^4*b^2*c^3*d^3 - 3*a^5*b*c^2*d^4 + a^6*c*d^5
)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\,(c+dx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(5/2)/(d*x+c)**(5/2),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(5/2)), x)
```

GIAC/XCAS [A] time = 0.406717, size = 718, normalized size = 5.32

$$-\frac{\sqrt{bx+a}\left(\frac{8\,(b^7c^3d^4|b|-3\,ab^6c^2d^5|b|+3\,a^2b^5cd^6|b|-a^3b^4d^7|b|)(bx+a)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}+\frac{9\,(b^8c^4d^3|b|-4\,ab^7c^3d^4|b|+6\,a^2b^6c^2d^5|b|-4\,a^3b^5cd^6|b|+a^4b^4d^7|b|)}{b^8c^2d^4-2\,ab^7cd^5+a^2b^6d^6}\right)}{24\,(b^2c+(bx+a)bd-abd)^{\frac{3}{2}}} + \frac{8\left(4\,\sqrt{bd}b^7c^2d - 8\,\sqrt{bd}ab^6cd^2 + 4\,\sqrt{bd}a^2b^5d^3 - 9\,\sqrt{bd}\left(\sqrt{bd}\sqrt{bx+a} - \sqrt{b^2c+(bx+a)bd-abd}\right)^2 b^5cd + 9\,\sqrt{bd}\left(\sqrt{bd}\sqrt{bx}\right.\right.}{3\,(b^3c^3|b| - 3\,ab^2c^2d|b| + 3\,a^2bcd^2|b| - a^3d^3|b|)\left(b^2c - abd - \left(\sqrt{bd}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(b*x + a)*(8*(b^7*c^3*d^4*abs(b) - 3*a*b^6*c^2*d^5*abs(
b) + 3*a^2*b^5*c*d^6*abs(b) - a^3*b^4*d^7*abs(b))*(b*x + a)/(b^8*
c^2*d^4 - 2*a*b^7*c*d^5 + a^2*b^6*d^6) + 9*(b^8*c^4*d^3*abs(b) -
4*a*b^7*c^3*d^4*abs(b) + 6*a^2*b^6*c^2*d^5*abs(b) - 4*a^3*b^5*c*d
^6*abs(b) + a^4*b^4*d^7*abs(b))/(b^8*c^2*d^4 - 2*a*b^7*c*d^5 + a^
2*b^6*d^6))/(b^2*c + (b*x + a)*b*d - a*b*d)^(3/2) + 8/3*(4*sqrt(b
*d)*b^7*c^2*d - 8*sqrt(b*d)*a*b^6*c*d^2 + 4*sqrt(b*d)*a^2*b^5*d^3
 - 9*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*
b*d - a*b*d))^2*b^5*c*d + 9*sqrt(b*d)*(sqrt(b*d)*sqrt(b*x + a) -
sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2*a*b^4*d^2 + 3*sqrt(b*d)*(s
qrt(b*d)*sqrt(b*x + a) - sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^4*b
^3*d)/((b^3*c^3*abs(b) - 3*a*b^2*c^2*d*abs(b) + 3*a^2*b*c*d^2*abs
(b) - a^3*d^3*abs(b))*(b^2*c - a*b*d - (sqrt(b*d)*sqrt(b*x + a) -
 sqrt(b^2*c + (b*x + a)*b*d - a*b*d))^2)^3)
```

3.1520 $\int \frac{1}{(a+bx)^{7/2}(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=172

$$-\frac{256bd^3\sqrt{a+bx}}{15\sqrt{c+dx}(bc-ad)^5}-\frac{128d^3\sqrt{a+bx}}{15(c+dx)^{3/2}(bc-ad)^4}-\frac{32d^2}{5\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^3}+\frac{16d}{15(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{5(a+bx)^{5/2}(c+dx)^{3/2}(bc-ad)}$$

```
[Out] -2/(5*(b*c - a*d)*(a + b*x)^(5/2)*(c + d*x)^(3/2)) + (16*d)/(15*(
b*c - a*d)^2*(a + b*x)^(3/2)*(c + d*x)^(3/2)) - (32*d^2)/(5*(b*c
- a*d)^3*Sqrt[a + b*x]*(c + d*x)^(3/2)) - (128*d^3*Sqrt[a + b*x])
/(15*(b*c - a*d)^4*(c + d*x)^(3/2)) - (256*b*d^3*Sqrt[a + b*x])/(
15*(b*c - a*d)^5*Sqrt[c + d*x])
```

Rubi [A] time = 0.159121, antiderivative size = 172, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{256bd^3\sqrt{a+bx}}{15\sqrt{c+dx}(bc-ad)^5}-\frac{128d^3\sqrt{a+bx}}{15(c+dx)^{3/2}(bc-ad)^4}-\frac{32d^2}{5\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^3}+\frac{16d}{15(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{5(a+bx)^{5/2}(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/2)*(c + d*x)^(5/2)),x]
```

```
[Out] -2/(5*(b*c - a*d)*(a + b*x)^(5/2)*(c + d*x)^(3/2)) + (16*d)/(15*(
b*c - a*d)^2*(a + b*x)^(3/2)*(c + d*x)^(3/2)) - (32*d^2)/(5*(b*c
- a*d)^3*Sqrt[a + b*x]*(c + d*x)^(3/2)) - (128*d^3*Sqrt[a + b*x])
/(15*(b*c - a*d)^4*(c + d*x)^(3/2)) - (256*b*d^3*Sqrt[a + b*x])/(
15*(b*c - a*d)^5*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 32.7655, size = 155, normalized size = 0.9

$$\frac{256bd^3\sqrt{a+bx}}{15\sqrt{c+dx}\,(ad-bc)^5}-\frac{128d^3\sqrt{a+bx}}{15\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^4}+\frac{32d^2}{5\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^3}+\frac{16d}{15\,(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^2}+\frac{2}{5\,(a+bx)^{\frac{5}{2}}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/2)/(d*x+c)**(5/2),x)
```

```
[Out] 256*b*d**3*sqrt(a + b*x)/(15*sqrt(c + d*x)*(a*d - b*c)**5) - 128*
d**3*sqrt(a + b*x)/(15*(c + d*x)**(3/2)*(a*d - b*c)**4) + 32*d**2
/(5*sqrt(a + b*x)*(c + d*x)**(3/2)*(a*d - b*c)**3) + 16*d/(15*(a
+ b*x)**(3/2)*(c + d*x)**(3/2)*(a*d - b*c)**2) + 2/(5*(a + b*x)**
(5/2)*(c + d*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.385134, size = 124, normalized size = 0.72

$$\frac{2\sqrt{a+bx}\sqrt{c+dx}\left(\frac{14b^2d(bc-ad)}{(a+bx)^2}-\frac{3b^2(bc-ad)^2}{(a+bx)^3}-\frac{73b^2d^2}{a+bx}+\frac{5d^3(ad-bc)}{(c+dx)^2}-\frac{55bd^3}{c+dx}\right)}{15(bc-ad)^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/2)*(c + d*x)^(5/2)),x]
```

```
[Out] (2*Sqrt[a + b*x]*Sqrt[c + d*x]*((-3*b^2*(b*c - a*d)^2)/(a + b*x)^
3 + (14*b^2*d*(b*c - a*d))/(a + b*x)^2 - (73*b^2*d^2)/(a + b*x) +
 (5*d^3*(-(b*c) + a*d))/(c + d*x)^2 - (55*b*d^3)/(c + d*x)))/(15*
(b*c - a*d)^5)
```

Maple [A] time = 0.014, size = 256, normalized size = 1.5

$$-\frac{-256\,b^4d^4x^4-640\,ab^3d^4x^3-384\,b^4cd^3x^3-480\,a^2b^2d^4x^2-960\,ab^3cd^3x^2-96\,b^4c^2d^2x^2-80\,a^3bd^4x-720\,a^2b^2cd^3x-2}{15\,a^5d^5-75\,a^4bcd^4+150\,a^3b^2c^2d^3-150\,a^2b^3c^3d^2+75}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/2)/(d*x+c)^(5/2),x)
```

```
[Out] -2/15*(-128*b^4*d^4*x^4-320*a*b^3*d^4*x^3-192*b^4*c*d^3*x^3-240*a
^2*b^2*d^4*x^2-480*a*b^3*c*d^3*x^2-48*b^4*c^2*d^2*x^2-40*a^3*b*d^
4*x-360*a^2*b^2*c*d^3*x-120*a*b^3*c^2*d^2*x+8*b^4*c^3*d*x+5*a^4*d
^4-60*a^3*b*c*d^3-90*a^2*b^2*c^2*d^2+20*a*b^3*c^3*d-3*b^4*c^4)/(b
*x+a)^(5/2)/(d*x+c)^(3/2)/(a^5*d^5-5*a^4*b*c*d^4+10*a^3*b^2*c^2*d
^3-10*a^2*b^3*c^3*d^2+5*a*b^4*c^4*d-b^5*c^5)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/2)*(d*x + c)^(5/2)),x, algorithm="maxima")
```

[Out] Exception raised: ValueError

Fricas [A] time = 2.09969, size = 965, normalized size = 5.61

$$-\frac{}{15\,(a^3b^5c^7 - 5\,a^4b^4c^6d + 10\,a^5b^3c^5d^2 - 10\,a^6b^2c^4d^3 + 5\,a^7bc^3d^4 - a^8c^2d^5 + (b^8c^5d^2 - 5\,ab^7c^4d^3 + 10\,a^2b^6c^3d^4 - 10\,a^3b^5c^2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/2)*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] -2/15*(128*b^4*d^4*x^4 + 3*b^4*c^4 - 20*a*b^3*c^3*d + 90*a^2*b^2*
c^2*d^2 + 60*a^3*b*c*d^3 - 5*a^4*d^4 + 64*(3*b^4*c*d^3 + 5*a*b^3*
d^4)*x^3 + 48*(b^4*c^2*d^2 + 10*a*b^3*c*d^3 + 5*a^2*b^2*d^4)*x^2
- 8*(b^4*c^3*d - 15*a*b^3*c^2*d^2 - 45*a^2*b^2*c*d^3 - 5*a^3*b*d^
4)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^3*b^5*c^7 - 5*a^4*b^4*c^6*d
+ 10*a^5*b^3*c^5*d^2 - 10*a^6*b^2*c^4*d^3 + 5*a^7*b*c^3*d^4 - a^8
*c^2*d^5 + (b^8*c^5*d^2 - 5*a*b^7*c^4*d^3 + 10*a^2*b^6*c^3*d^4 -
10*a^3*b^5*c^2*d^5 + 5*a^4*b^4*c*d^6 - a^5*b^3*d^7)*x^5 + (2*b^8*
c^6*d - 7*a*b^7*c^5*d^2 + 5*a^2*b^6*c^4*d^3 + 10*a^3*b^5*c^3*d^4
- 20*a^4*b^4*c^2*d^5 + 13*a^5*b^3*c*d^6 - 3*a^6*b^2*d^7)*x^4 + (b
^8*c^7 + a*b^7*c^6*d - 17*a^2*b^6*c^5*d^2 + 35*a^3*b^5*c^4*d^3 -
25*a^4*b^4*c^3*d^4 - a^5*b^3*c^2*d^5 + 9*a^6*b^2*c*d^6 - 3*a^7*b*
d^7)*x^3 + (3*a*b^7*c^7 - 9*a^2*b^6*c^6*d + a^3*b^5*c^5*d^2 + 25*
a^4*b^4*c^4*d^3 - 35*a^5*b^3*c^3*d^4 + 17*a^6*b^2*c^2*d^5 - a^7*b
*c*d^6 - a^8*d^7)*x^2 + (3*a^2*b^6*c^7 - 13*a^3*b^5*c^6*d + 20*a^
4*b^4*c^5*d^2 - 10*a^5*b^3*c^4*d^3 - 5*a^6*b^2*c^3*d^4 + 7*a^7*b*
c^2*d^5 - 2*a^8*c*d^6)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(7/2)/(d*x+c)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.826491, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/2)*(d*x + c)^(5/2)),x, algorithm="giac")
```

```
[Out] Done
```

3.1521 $\int \frac{1}{(a+bx)^{9/2}(c+dx)^{5/2}}\,dx$

Optimal. Leaf size=207

$$\frac{512bd^4\sqrt{a+bx}}{21\sqrt{c+dx}(bc-ad)^6}+\frac{256d^4\sqrt{a+bx}}{21(c+dx)^{3/2}(bc-ad)^5}+\frac{64d^3}{7\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^4}-\frac{32d^2}{21(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)^3}+\frac{4d}{7(a+bx)^{5/2}(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{7(a+bx)^{7/2}(c+dx)^{3/2}(bc-ad)}$$

```
[Out] -2/(7*(b*c - a*d)*(a + b*x)^(7/2)*(c + d*x)^(3/2)) + (4*d)/(7*(b*
c - a*d)^2*(a + b*x)^(5/2)*(c + d*x)^(3/2)) - (32*d^2)/(21*(b*c -
 a*d)^3*(a + b*x)^(3/2)*(c + d*x)^(3/2)) + (64*d^3)/(7*(b*c - a*d
)^4*Sqrt[a + b*x]*(c + d*x)^(3/2)) + (256*d^4*Sqrt[a + b*x])/(21*
(b*c - a*d)^5*(c + d*x)^(3/2)) + (512*b*d^4*Sqrt[a + b*x])/(21*(b
*c - a*d)^6*Sqrt[c + d*x])
```

Rubi [A] time = 0.203867, antiderivative size = 207, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{512bd^4\sqrt{a+bx}}{21\sqrt{c+dx}(bc-ad)^6}+\frac{256d^4\sqrt{a+bx}}{21(c+dx)^{3/2}(bc-ad)^5}+\frac{64d^3}{7\sqrt{a+bx}(c+dx)^{3/2}(bc-ad)^4}-\frac{32d^2}{21(a+bx)^{3/2}(c+dx)^{3/2}(bc-ad)^3}+\frac{4d}{7(a+bx)^{5/2}(c+dx)^{3/2}(bc-ad)^2}-\frac{2}{7(a+bx)^{7/2}(c+dx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(9/2)*(c + d*x)^(5/2)),x]
```

```
[Out] -2/(7*(b*c - a*d)*(a + b*x)^(7/2)*(c + d*x)^(3/2)) + (4*d)/(7*(b*
c - a*d)^2*(a + b*x)^(5/2)*(c + d*x)^(3/2)) - (32*d^2)/(21*(b*c -
 a*d)^3*(a + b*x)^(3/2)*(c + d*x)^(3/2)) + (64*d^3)/(7*(b*c - a*d
)^4*Sqrt[a + b*x]*(c + d*x)^(3/2)) + (256*d^4*Sqrt[a + b*x])/(21*
(b*c - a*d)^5*(c + d*x)^(3/2)) + (512*b*d^4*Sqrt[a + b*x])/(21*(b
*c - a*d)^6*Sqrt[c + d*x])
```

Rubi in Sympy [A] time = 44.885, size = 190, normalized size = 0.92

$$\frac{512b^2d^3\sqrt{c+dx}}{21\sqrt{a+bx}\,(ad-bc)^6}+\frac{256bd^3}{21\sqrt{a+bx}\sqrt{c+dx}\,(ad-bc)^5}-\frac{64d^3}{21\sqrt{a+bx}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^4}+\frac{32d^2}{21\,(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^3}+\frac{4d}{7\,(a+bx)^{\frac{5}{2}}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)^2}+\frac{2}{7\,(a+bx)^{\frac{7}{2}}\,(c+dx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/2)/(d*x+c)**(5/2),x)
```

```
[Out] 512*b**2*d**3*sqrt(c + d*x)/(21*sqrt(a + b*x)*(a*d - b*c)**6) + 2
56*b*d**3/(21*sqrt(a + b*x)*sqrt(c + d*x)*(a*d - b*c)**5) - 64*d*
*3/(21*sqrt(a + b*x)*(c + d*x)**(3/2)*(a*d - b*c)**4) + 32*d**2/(
21*(a + b*x)**(3/2)*(c + d*x)**(3/2)*(a*d - b*c)**3) + 4*d/(7*(a
+ b*x)**(5/2)*(c + d*x)**(3/2)*(a*d - b*c)**2) + 2/(7*(a + b*x)**
(7/2)*(c + d*x)**(3/2)*(a*d - b*c))
```

Mathematica [A] time = 0.571397, size = 149, normalized size = 0.72

$$\frac{2\sqrt{a+bx}\sqrt{c+dx}\left(-\frac{37b^2d^2(bc-ad)}{(a+bx)^2}+\frac{12b^2d(bc-ad)^2}{(a+bx)^3}-\frac{3b^2(bc-ad)^3}{(a+bx)^4}+\frac{158b^2d^3}{a+bx}+\frac{7d^4(bc-ad)}{(c+dx)^2}+\frac{98bd^4}{c+dx}\right)}{21(bc-ad)^6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/2)*(c + d*x)^(5/2)),x]
```

```
[Out] (2*Sqrt[a + b*x]*Sqrt[c + d*x]*((-3*b^2*(b*c - a*d)^3)/(a + b*x)^
4 + (12*b^2*d*(b*c - a*d)^2)/(a + b*x)^3 - (37*b^2*d^2*(b*c - a*d
))/(a + b*x)^2 + (158*b^2*d^3)/(a + b*x) + (7*d^4*(b*c - a*d))/(c
 + d*x)^2 + (98*b*d^4)/(c + d*x)))/(21*(b*c - a*d)^6)
```

Maple [B] time = 0.019, size = 356, normalized size = 1.7

$$-\frac{-512\,b^5d^5x^5-1792\,ab^4d^5x^4-768\,b^5cd^4x^4-2240\,a^2b^3d^5x^3-2688\,ab^4cd^4x^3-192\,b^5c^2d^3x^3-1120\,a^3b^2d^5x^2-3360\,a^2b}{21\,d^6a^6-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/2)/(d*x+c)^(5/2),x)
```

```
[Out] -2/21*(-256*b^5*d^5*x^5-896*a*b^4*d^5*x^4-384*b^5*c*d^4*x^4-1120*
a^2*b^3*d^5*x^3-1344*a*b^4*c*d^4*x^3-96*b^5*c^2*d^3*x^3-560*a^3*b
```

```
^2*d^5*x^2-1680*a^2*b^3*c*d^4*x^2-336*a*b^4*c^2*d^3*x^2+16*b^5*c^
3*d^2*x^2-70*a^4*b*d^5*x-840*a^3*b^2*c*d^4*x-420*a^2*b^3*c^2*d^3*
x+56*a*b^4*c^3*d^2*x-6*b^5*c^4*d*x+7*a^5*d^5-105*a^4*b*c*d^4-210*
a^3*b^2*c^2*d^3+70*a^2*b^3*c^3*d^2-21*a*b^4*c^4*d+3*b^5*c^5)/(b*x
+a)^(7/2)/(d*x+c)^(3/2)/(a^6*d^6-6*a^5*b*c*d^5+15*a^4*b^2*c^2*d^4
-20*a^3*b^3*c^3*d^3+15*a^2*b^4*c^4*d^2-6*a*b^5*c^5*d+b^6*c^6)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(9/2)*(d*x + c)^(5/2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 6.73524, size = 1349, normalized size = 6.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(9/2)*(d*x + c)^(5/2)),x, algorithm="fricas")
```

```
[Out] 2/21*(256*b^5*d^5*x^5 - 3*b^5*c^5 + 21*a*b^4*c^4*d - 70*a^2*b^3*c
^3*d^2 + 210*a^3*b^2*c^2*d^3 + 105*a^4*b*c*d^4 - 7*a^5*d^5 + 128*
(3*b^5*c*d^4 + 7*a*b^4*d^5)*x^4 + 32*(3*b^5*c^2*d^3 + 42*a*b^4*c*
d^4 + 35*a^2*b^3*d^5)*x^3 - 16*(b^5*c^3*d^2 - 21*a*b^4*c^2*d^3 -
105*a^2*b^3*c*d^4 - 35*a^3*b^2*d^5)*x^2 + 2*(3*b^5*c^4*d - 28*a*b
^4*c^3*d^2 + 210*a^2*b^3*c^2*d^3 + 420*a^3*b^2*c*d^4 + 35*a^4*b*d
^5)*x)*sqrt(b*x + a)*sqrt(d*x + c)/(a^4*b^6*c^8 - 6*a^5*b^5*c^7*d
 + 15*a^6*b^4*c^6*d^2 - 20*a^7*b^3*c^5*d^3 + 15*a^8*b^2*c^4*d^4 -
 6*a^9*b*c^3*d^5 + a^10*c^2*d^6 + (b^10*c^6*d^2 - 6*a*b^9*c^5*d^3
 + 15*a^2*b^8*c^4*d^4 - 20*a^3*b^7*c^3*d^5 + 15*a^4*b^6*c^2*d^6 -
 6*a^5*b^5*c*d^7 + a^6*b^4*d^8)*x^6 + 2*(b^10*c^7*d - 4*a*b^9*c^6
*d^2 + 3*a^2*b^8*c^5*d^3 + 10*a^3*b^7*c^4*d^4 - 25*a^4*b^6*c^3*d^
5 + 24*a^5*b^5*c^2*d^6 - 11*a^6*b^4*c*d^7 + 2*a^7*b^3*d^8)*x^5 +
(b^10*c^8 + 2*a*b^9*c^7*d - 27*a^2*b^8*c^6*d^2 + 64*a^3*b^7*c^5*d
^3 - 55*a^4*b^6*c^4*d^4 - 6*a^5*b^5*c^3*d^5 + 43*a^6*b^4*c^2*d^6
- 28*a^7*b^3*c*d^7 + 6*a^8*b^2*d^8)*x^4 + 4*(a*b^9*c^8 - 3*a^2*b^
8*c^7*d - 2*a^3*b^7*c^6*d^2 + 19*a^4*b^6*c^5*d^3 - 30*a^5*b^5*c^4
*d^4 + 19*a^6*b^4*c^3*d^5 - 2*a^7*b^3*c^2*d^6 - 3*a^8*b^2*c*d^7 +
 a^9*b*d^8)*x^3 + (6*a^2*b^8*c^8 - 28*a^3*b^7*c^7*d + 43*a^4*b^6*
c^6*d^2 - 6*a^5*b^5*c^5*d^3 - 55*a^6*b^4*c^4*d^4 + 64*a^7*b^3*c^3
*d^5 - 27*a^8*b^2*c^2*d^6 + 2*a^9*b*c*d^7 + a^10*d^8)*x^2 + 2*(2*
a^3*b^7*c^8 - 11*a^4*b^6*c^7*d + 24*a^5*b^5*c^6*d^2 - 25*a^6*b^4*
```

```
c^5*d^3 + 10*a^7*b^3*c^4*d^4 + 3*a^8*b^2*c^3*d^5 - 4*a^9*b*c^2*d^
6 + a^10*c*d^7)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(9/2)/(d*x+c)**(5/2),x)

[Out] Timed out
```

GIAC/XCAS [A] time = 1.7122, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/2)*(d*x + c)^(5/2)),x, algorithm="giac")

[Out] Done
```

3.1522 $\int \frac{1}{\sqrt{a+bx}\sqrt{4+a+bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{a+bx}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[a + b*x]/2])/b
```

Rubi [A] time = 0.0270635, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*Sqrt[4 + a + b*x]),x]

[Out] (2*ArcSinh[Sqrt[a + b*x]/2])/b
```

Rubi in Sympy [A] time = 6.96682, size = 14, normalized size = 0.74

$$\frac{2\,\text{asinh}\left(\frac{\sqrt{a+bx}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(b*x+a+4)**(1/2),x)

[Out] 2*asinh(sqrt(a + b*x)/2)/b
```

Mathematica [A] time = 0.0114375, size = 19, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{a+bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*Sqrt[4 + a + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[a + b*x]/2])/b
```

Maple [B] time = 0.012, size = 86, normalized size = 4.5

$$1\sqrt{(bx+a)(bx+a+4)}\ln\left(1\left(\frac{ab}{2}+\frac{b(a+4)}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+(ab+b(a+4))x+a(a+4)}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{bx+a+4}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(b*x+a+4)^(1/2),x)
```

```
[Out] ((b*x+a)*(b*x+a+4))^(1/2)/(b*x+a)^(1/2)/(b*x+a+4)^(1/2)*ln((1/2*a
*b+1/2*b*(a+4)+b^2*x)/(b^2)^(1/2)+(b^2*x^2+(a*b+b*(a+4))*x+a*(a+4
))^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a + 4)*sqrt(b*x + a)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.226534, size = 42, normalized size = 2.21

$$-\frac{\log\left(-bx+\sqrt{bx+a+4}\sqrt{bx+a}-a-2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a + 4)*sqrt(b*x + a)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + a + 4)*sqrt(b*x + a) - a - 2)/b
```

Sympy [A] time = 3.24125, size = 19, normalized size = 1.

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{\frac{a}{b}+x}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(b*x+a+4)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(b)*sqrt(a/b + x)/2)/b
```

GIAC/XCAS [A] time = 0.331838, size = 34, normalized size = 1.79

$$-\frac{2\ln\left(\left|-\sqrt{bx+a+4}+\sqrt{bx+a}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a + 4)*sqrt(b*x + a)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + a + 4) + sqrt(b*x + a)))/b
```

3.1523 $\int \frac{1}{\sqrt{2+bx}\sqrt{6+bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx+2}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[2 + b*x]/2])/b
```

Rubi [A] time = 0.0237856, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx+2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 + b*x]*Sqrt[6 + b*x]),x]

[Out] (2*ArcSinh[Sqrt[2 + b*x]/2])/b
```

Rubi in Sympy [A] time = 4.56024, size = 14, normalized size = 0.74

$$\frac{2\,\text{asinh}\left(\frac{\sqrt{bx+2}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+2)**(1/2)/(b*x+6)**(1/2),x)

[Out] 2*asinh(sqrt(b*x + 2)/2)/b
```

Mathematica [A] time = 0.0121331, size = 19, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx+2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[2 + b*x]*Sqrt[6 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[2 + b*x]/2])/b
```

Maple [B] time = 0.013, size = 66, normalized size = 3.5

$$1\sqrt{(bx+2)(bx+6)}\ln\left((b^2x+4b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+8bx+12}\right)\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{bx+6}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+2)^(1/2)/(b*x+6)^(1/2),x)
```

```
[Out] ((b*x+2)*(b*x+6))^(1/2)/(b*x+2)^(1/2)/(b*x+6)^(1/2)*ln((b^2*x+4*b
)/(b^2)^(1/2)+(b^2*x^2+8*b*x+12)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 6)*sqrt(b*x + 2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.23159, size = 36, normalized size = 1.89

$$-\frac{\log\left(-bx+\sqrt{bx+6}\sqrt{bx+2}-4\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 6)*sqrt(b*x + 2)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 6)*sqrt(b*x + 2) - 4)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+2}\sqrt{bx+6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+2)**(1/2)/(b*x+6)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x + 2)*sqrt(b*x + 6)), x)
```

GIAC/XCAS [A] time = 0.267314, size = 32, normalized size = 1.68

$$-\frac{2\ln\left(\left|-\sqrt{bx+6}+\sqrt{bx+2}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 6)*sqrt(b*x + 2)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 6) + sqrt(b*x + 2)))/b
```

3.1524 $\int \frac{1}{\sqrt{1+bx}\sqrt{5+bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx+1}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[1 + b*x]/2])/b
```

Rubi [A] time = 0.0242426, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx+1}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[1 + b*x]*Sqrt[5 + b*x]),x]

[Out] (2*ArcSinh[Sqrt[1 + b*x]/2])/b
```

Rubi in Sympy [A] time = 4.43883, size = 14, normalized size = 0.74

$$\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{bx+1}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+1)**(1/2)/(b*x+5)**(1/2),x)

[Out] 2*asinh(sqrt(b*x + 1)/2)/b
```

Mathematica [A] time = 0.0123833, size = 19, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx+1}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[1 + b*x]*Sqrt[5 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[1 + b*x]/2])/b
```

Maple [B] time = 0.014, size = 66, normalized size = 3.5

$$1\sqrt{(bx+1)(bx+5)}\ln\left((b^2x+3b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+6bx+5}\right)\frac{1}{\sqrt{bx+1}}\frac{1}{\sqrt{bx+5}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+1)^(1/2)/(b*x+5)^(1/2),x)
```

```
[Out] ((b*x+1)*(b*x+5))^(1/2)/(b*x+1)^(1/2)/(b*x+5)^(1/2)*ln((b^2*x+3*b
)/(b^2)^(1/2)+(b^2*x^2+6*b*x+5)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 5)*sqrt(b*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219299, size = 36, normalized size = 1.89

$$-\frac{\log\left(-bx+\sqrt{bx+5}\sqrt{bx+1}-3\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 5)*sqrt(b*x + 1)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 5)*sqrt(b*x + 1) - 3)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+1}\sqrt{bx+5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+1)**(1/2)/(b*x+5)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x + 1)*sqrt(b*x + 5)), x)
```

GIAC/XCAS [A] time = 0.260656, size = 32, normalized size = 1.68

$$-\frac{2\ln\left(\left|-\sqrt{bx+5}+\sqrt{bx+1}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 5)*sqrt(b*x + 1)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 5) + sqrt(b*x + 1)))/b
```

3.1525 $\int \frac{1}{\sqrt{bx}\sqrt{4+bx}}\,dx$

Optimal. Leaf size=17

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx}}{2}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[b*x]/2])/b
```

Rubi [A] time = 0.0173335, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx}}{2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[b*x]*Sqrt[4 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[b*x]/2])/b
```

Rubi in Sympy [A] time = 3.58326, size = 12, normalized size = 0.71

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{bx}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x)**(1/2)/(b*x+4)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(b*x)/2)/b
```

Mathematica [A] time = 0.0202466, size = 34, normalized size = 2.

$$\frac{2\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{2}\right)}{\sqrt{b}\sqrt{bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[b*x]*Sqrt[4 + b*x]),x]
```

```
[Out] (2*Sqrt[x]*ArcSinh[(Sqrt[b]*Sqrt[x])/2])/(Sqrt[b]*Sqrt[b*x])
```

Maple [B] time = 0.01, size = 60, normalized size = 3.5

$$1\sqrt{xb\,(bx+4)}\ln\left((b^2x+2\,b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+4\,bx}\right)\frac{1}{\sqrt{bx}}\frac{1}{\sqrt{bx+4}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x)^(1/2)/(b*x+4)^(1/2),x)
```

```
[Out] (x*b*(b*x+4))^(1/2)/(b*x)^(1/2)/(b*x+4)^(1/2)*ln((b^2*x+2*b)/(b^2
)^(1/2)+(b^2*x^2+4*b*x)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 4)*sqrt(b*x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215262, size = 34, normalized size = 2.

$$-\frac{\log\left(-bx+\sqrt{bx+4}\sqrt{bx}-2\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 4)*sqrt(b*x)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 4)*sqrt(b*x) - 2)/b
```

Sympy [A] time = 2.17145, size = 15, normalized size = 0.88

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{b}\sqrt{x}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x)**(1/2)/(b*x+4)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(b)*sqrt(x)/2)/b
```

GIAC/XCAS [A] time = 0.254723, size = 30, normalized size = 1.76

$$-\frac{2\ln\left(\left|-\sqrt{bx+4}+\sqrt{bx}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 4)*sqrt(b*x)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 4) + sqrt(b*x)))/b
```

3.1526 $\int \frac{1}{\sqrt{-1+bx}\sqrt{3+bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-1}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[-1 + b*x]/2])/b
```

Rubi [A] time = 0.024224, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-1}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-1 + b*x]*Sqrt[3 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-1 + b*x]/2])/b
```

Rubi in Sympy [A] time = 4.43615, size = 14, normalized size = 0.74

$$\frac{2\,\text{asinh}\left(\frac{\sqrt{bx-1}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-1)**(1/2)/(b*x+3)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(b*x - 1)/2)/b
```

Mathematica [A] time = 0.0120554, size = 19, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-1}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-1 + b*x]*Sqrt[3 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-1 + b*x]/2])/b
```

Maple [B] time = 0.012, size = 64, normalized size = 3.4

$$1\sqrt{(bx-1)(bx+3)}\ln\left((b^2x+b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+2bx-3}\right)\frac{1}{\sqrt{bx-1}}\frac{1}{\sqrt{bx+3}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-1)^(1/2)/(b*x+3)^(1/2),x)
```

```
[Out] ((b*x-1)*(b*x+3))^(1/2)/(b*x-1)^(1/2)/(b*x+3)^(1/2)*ln((b^2*x+b)/
(b^2)^(1/2)+(b^2*x^2+2*b*x-3)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 3)*sqrt(b*x - 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222273, size = 36, normalized size = 1.89

$$-\frac{\log\left(-bx+\sqrt{bx+3}\sqrt{bx-1}-1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 3)*sqrt(b*x - 1)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 3)*sqrt(b*x - 1) - 1)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx-1}\sqrt{bx+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-1)**(1/2)/(b*x+3)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x - 1)*sqrt(b*x + 3)), x)
```

GIAC/XCAS [A] time = 0.272607, size = 32, normalized size = 1.68

$$-\frac{2\ln\left(\left|-\sqrt{bx+3}+\sqrt{bx-1}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 3)*sqrt(b*x - 1)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 3) + sqrt(b*x - 1)))/b
```

3.1527 $\int \frac{1}{\sqrt{-2+bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=11

$$\frac{\cosh^{-1}\left(\frac{bx}{2}\right)}{b}$$

```
[Out] ArcCosh[(b*x)/2]/b
```

Rubi [A] time = 0.0175203, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{\cosh^{-1}\left(\frac{bx}{2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-2 + b*x]*Sqrt[2 + b*x]),x]

[Out] ArcCosh[(b*x)/2]/b
```

Rubi in Sympy [A] time = 3.62395, size = 7, normalized size = 0.64

$$\frac{\operatorname{acosh}\left(\frac{bx}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-2)**(1/2)/(b*x+2)**(1/2),x)

[Out] acosh(b*x/2)/b
```

Mathematica [A] time = 0.0107997, size = 19, normalized size = 1.73

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-2 + b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-2 + b*x]/2])/b
```

Maple [B] time = 0.009, size = 57, normalized size = 5.2

$$1\sqrt{(bx-2)(bx+2)}\ln\left(b^2x\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-4}\right)\frac{1}{\sqrt{bx-2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-2)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((b*x-2)*(b*x+2))^(1/2)/(b*x-2)^(1/2)/(b*x+2)^(1/2)*ln(b^2*x/(b^2
)^(1/2)+(b^2*x^2-4)^(1/2))/(b^2)^(1/2)
```

Maxima [A] time = 1.36544, size = 43, normalized size = 3.91

$$\frac{\log\left(2\,b^2x+2\,\sqrt{b^2x^2-4}\sqrt{b^2}\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 2)),x, algorithm="maxima")
```

```
[Out] log(2*b^2*x + 2*sqrt(b^2*x^2 - 4)*sqrt(b^2))/sqrt(b^2)
```

Fricas [A] time = 0.222477, size = 35, normalized size = 3.18

$$-\frac{\log\left(-bx+\sqrt{bx+2}\sqrt{bx-2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 2)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 2)*sqrt(b*x - 2))/b
```

Sympy [A] time = 4.78841, size = 75, normalized size = 6.82

$$\frac{G_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4}, \frac{3}{4} & \frac{1}{2}, \frac{1}{2}, 1, 1 \\ 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, 0 & \end{matrix} \middle| \frac{4e^{2i\pi}}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b} + \frac{iG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2}, -\frac{1}{4}, 0, \frac{1}{4}, \frac{1}{2}, 1 & \\ -\frac{1}{4}, \frac{1}{4} & -\frac{1}{2}, 0, 0, 0 \end{matrix} \middle| \frac{4}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-2)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0)
, ()), 4*exp_polar(2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b) + I*meije
rg(((-1/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0,
 0)), 4/(b**2*x**2))/(4*pi**(3/2)*b)
```

GIAC/XCAS [A] time = 0.236922, size = 32, normalized size = 2.91

$$-\frac{2 \ln\left(\left|-\sqrt{bx+2} + \sqrt{bx-2}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 2)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 2) + sqrt(b*x - 2)))/b
```

3.1528 $\int \frac{1}{\sqrt{-3+bx}\sqrt{1+bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-3}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[-3 + b*x]/2])/b
```

Rubi [A] time = 0.0237165, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-3}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-3 + b*x]*Sqrt[1 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-3 + b*x]/2])/b
```

Rubi in Sympy [A] time = 5.23613, size = 20, normalized size = 1.05

$$\frac{2\,\text{atanh}\left(\frac{\sqrt{bx+1}}{\sqrt{bx-3}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-3)**(1/2)/(b*x+1)**(1/2),x)
```

```
[Out] 2*atanh(sqrt(b*x + 1)/sqrt(b*x - 3))/b
```

Mathematica [A] time = 0.011098, size = 19, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-3}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-3 + b*x]*Sqrt[1 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-3 + b*x]/2])/b
```

Maple [B] time = 0.012, size = 66, normalized size = 3.5

$$1\sqrt{(bx-3)(bx+1)}\ln\left((b^2x-b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-2\,bx-3}\right)\frac{1}{\sqrt{bx-3}}\frac{1}{\sqrt{bx+1}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-3)^(1/2)/(b*x+1)^(1/2),x)
```

```
[Out] ((b*x-3)*(b*x+1))^(1/2)/(b*x-3)^(1/2)/(b*x+1)^(1/2)*ln((b^2*x-b)/
(b^2)^(1/2)+(b^2*x^2-2*b*x-3)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 1)*sqrt(b*x - 3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.225295, size = 36, normalized size = 1.89

$$-\frac{\log\left(-bx+\sqrt{bx+1}\sqrt{bx-3}+1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 1)*sqrt(b*x - 3)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 1)*sqrt(b*x - 3) + 1)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx-3}\sqrt{bx+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-3)**(1/2)/(b*x+1)**(1/2),x)

[Out] Integral(1/(sqrt(b*x - 3)*sqrt(b*x + 1)), x)
```

GIAC/XCAS [A] time = 0.258737, size = 32, normalized size = 1.68

$$-\frac{2\ln\left(\left|-\sqrt{bx+1}+\sqrt{bx-3}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 1)*sqrt(b*x - 3)),x, algorithm="giac")

[Out] -2*ln(abs(-sqrt(b*x + 1) + sqrt(b*x - 3)))/b
```

3.1529 $\int \frac{1}{\sqrt{2+bx}\sqrt{3+bx}}\,dx$

Optimal. Leaf size=15

$$\frac{2\sinh^{-1}\left(\sqrt{bx+2}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[2 + b*x]])/b
```

Rubi [A] time = 0.0219876, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2\sinh^{-1}\left(\sqrt{bx+2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 + b*x]*Sqrt[3 + b*x]),x]

[Out] (2*ArcSinh[Sqrt[2 + b*x]])/b
```

Rubi in Sympy [A] time = 4.45438, size = 12, normalized size = 0.8

$$\frac{2\,\mathrm{asinh}\left(\sqrt{bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+2)**(1/2)/(b*x+3)**(1/2),x)

[Out] 2*asinh(sqrt(b*x + 2))/b
```

Mathematica [A] time = 0.00979564, size = 15, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\sqrt{bx+2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[2 + b*x]*Sqrt[3 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[2 + b*x]])/b
```

Maple [B] time = 0.01, size = 66, normalized size = 4.4

$$1\sqrt{(bx+2)(bx+3)}\ln\left(1\left(\frac{5b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+5bx+6}\right)\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{bx+3}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+2)^(1/2)/(b*x+3)^(1/2),x)
```

```
[Out] ((b*x+2)*(b*x+3))^(1/2)/(b*x+2)^(1/2)/(b*x+3)^(1/2)*ln((5/2*b+b^2
*x)/(b^2)^(1/2)+(b^2*x^2+5*b*x+6)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 3)*sqrt(b*x + 2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.224498, size = 38, normalized size = 2.53

$$-\frac{\log\left(-2\,bx+2\,\sqrt{bx+3}\sqrt{bx+2}-5\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 3)*sqrt(b*x + 2)),x, algorithm="fricas")
```

```
[Out] -log(-2*b*x + 2*sqrt(b*x + 3)*sqrt(b*x + 2) - 5)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+2}\sqrt{bx+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+2)**(1/2)/(b*x+3)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x + 2)*sqrt(b*x + 3)), x)
```

GIAC/XCAS [A] time = 0.265542, size = 32, normalized size = 2.13

$$-\frac{2\ln\left(\left|-\sqrt{bx+3}+\sqrt{bx+2}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 3)*sqrt(b*x + 2)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 3) + sqrt(b*x + 2)))/b
```

3.1530 $\int \frac{1}{2+bx}\, dx$

Optimal. Leaf size=10

$$\frac{\log(bx+2)}{b}$$

```
[Out] Log[2 + b*x]/b
```

Rubi [A] time = 0.00650141, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$

$$\frac{\log(bx+2)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + b*x)^(-1),x]
```

```
[Out] Log[2 + b*x]/b
```

Rubi in Sympy [A] time = 1.35383, size = 7, normalized size = 0.7

$$\frac{\log(bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+2),x)
```

```
[Out] log(b*x + 2)/b
```

Mathematica [A] time = 0.00126105, size = 10, normalized size = 1.

$$\frac{\log(bx+2)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + b*x)^(-1),x]
```

```
[Out] Log[2 + b*x]/b
```

Maple [A] time = 0.002, size = 11, normalized size = 1.1

$$\frac{\ln(bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+2),x)
```

```
[Out] ln(b*x+2)/b
```

Maxima [A] time = 1.38989, size = 14, normalized size = 1.4

$$\frac{\log(bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x + 2),x, algorithm="maxima")
```

```
[Out] log(b*x + 2)/b
```

Fricas [A] time = 0.211517, size = 14, normalized size = 1.4

$$\frac{\log(bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x + 2),x, algorithm="fricas")
```

```
[Out] log(b*x + 2)/b
```

Sympy [A] time = 0.033749, size = 7, normalized size = 0.7

$$\frac{\log(bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+2),x)

[Out] log(b*x + 2)/b
```

GIAC/XCAS [A] time = 0.214762, size = 15, normalized size = 1.5

$$\frac{\ln\left(|bx+2|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x + 2),x, algorithm="giac")

[Out] ln(abs(b*x + 2))/b
```

3.1531 $\int \frac{1}{\sqrt{1+bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=15

$$\frac{2\sinh^{-1}\left(\sqrt{bx+1}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[1 + b*x]])/b
```

Rubi [A] time = 0.0220705, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2\sinh^{-1}\left(\sqrt{bx+1}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[1 + b*x]*Sqrt[2 + b*x]),x]

[Out] (2*ArcSinh[Sqrt[1 + b*x]])/b
```

Rubi in Sympy [A] time = 4.8963, size = 12, normalized size = 0.8

$$\frac{2\operatorname{asinh}\left(\sqrt{bx+1}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+1)**(1/2)/(b*x+2)**(1/2),x)

[Out] 2*asinh(sqrt(b*x + 1))/b
```

Mathematica [A] time = 0.00968269, size = 15, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\sqrt{bx+1}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[1 + b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[1 + b*x]])/b
```

Maple [B] time = 0.009, size = 66, normalized size = 4.4

$$1\sqrt{(bx+1)(bx+2)}\ln\left(1\left(\frac{3b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+3bx+2}\right)\frac{1}{\sqrt{bx+1}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+1)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((b*x+1)*(b*x+2))^(1/2)/(b*x+1)^(1/2)/(b*x+2)^(1/2)*ln((3/2*b+b^2
*x)/(b^2)^(1/2)+(b^2*x^2+3*b*x+2)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204533, size = 38, normalized size = 2.53

$$-\frac{\log\left(-2\,bx+2\,\sqrt{bx+2}\sqrt{bx+1}-3\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x + 1)),x, algorithm="fricas")
```

```
[Out] -log(-2*b*x + 2*sqrt(b*x + 2)*sqrt(b*x + 1) - 3)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+1}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+1)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x + 1)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.271166, size = 32, normalized size = 2.13

$$-\frac{2\ln\left(\left|-\sqrt{bx+2}+\sqrt{bx+1}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x + 1)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 2) + sqrt(b*x + 1)))/b
```

3.1532 $\int \frac{1}{\sqrt{bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=19

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx}}{\sqrt{2}}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[b*x]/Sqrt[2]])/b
```

Rubi [A] time = 0.0195618, antiderivative size = 19, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx}}{\sqrt{2}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[b*x]/Sqrt[2]])/b
```

Rubi in Sympy [A] time = 3.60663, size = 17, normalized size = 0.89

$$\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{bx}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(2)*sqrt(b*x)/2)/b
```

Mathematica [A] time = 0.0188604, size = 36, normalized size = 1.89

$$\frac{2\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}\sqrt{bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*Sqrt[x]*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(Sqrt[b]*Sqrt[b*x]
)
```

Maple [B] time = 0.007, size = 58, normalized size = 3.1

$$1\sqrt{xb\,(bx+2)}\ln\left((b^2x+b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+2\,bx}\right)\frac{1}{\sqrt{bx}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] (x*b*(b*x+2))^(1/2)/(b*x)^(1/2)/(b*x+2)^(1/2)*ln((b^2*x+b)/(b^2)^
(1/2)+(b^2*x^2+2*b*x)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204132, size = 34, normalized size = 1.79

$$-\frac{\log\left(-bx+\sqrt{bx+2}\sqrt{bx}-1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 2)*sqrt(b*x) - 1)/b
```

Sympy [A] time = 2.21744, size = 20, normalized size = 1.05

$$\frac{2\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b
```

GIAC/XCAS [A] time = 0.25721, size = 30, normalized size = 1.58

$$-\frac{2\ln\left(\left|-\sqrt{bx+2}+\sqrt{bx}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 2) + sqrt(b*x)))/b
```

3.1533 $\int \frac{1}{\sqrt{-1+bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=21

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-1}}{\sqrt{3}}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[-1 + b*x]/Sqrt[3]])/b
```

Rubi [A] time = 0.0253353, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-1}}{\sqrt{3}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-1 + b*x]*Sqrt[2 + b*x]),x]

[Out] (2*ArcSinh[Sqrt[-1 + b*x]/Sqrt[3]])/b
```

Rubi in Sympy [A] time = 4.49889, size = 19, normalized size = 0.9

$$\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{3}\sqrt{bx-1}}{3}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-1)**(1/2)/(b*x+2)**(1/2),x)

[Out] 2*asinh(sqrt(3)*sqrt(b*x - 1)/3)/b
```

Mathematica [A] time = 0.009827, size = 21, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-1}}{\sqrt{3}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-1 + b*x]*Sqrt[2 + b*x]),x]

[Out] (2*ArcSinh[Sqrt[-1 + b*x]/Sqrt[3]])/b
```

Maple [B] time = 0.01, size = 65, normalized size = 3.1

$$1\sqrt{(bx-1)(bx+2)}\ln\left(1\left(\frac{b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+bx-2}\right)\frac{1}{\sqrt{bx-1}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-1)^(1/2)/(b*x+2)^(1/2),x)

[Out] ((b*x-1)*(b*x+2))^(1/2)/(b*x-1)^(1/2)/(b*x+2)^(1/2)*ln((1/2*b+b^2
*x)/(b^2)^(1/2)+(b^2*x^2+b*x-2)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 1)),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.221595, size = 38, normalized size = 1.81

$$-\frac{\log\left(-2\,bx+2\,\sqrt{bx+2}\sqrt{bx-1}-1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 1)),x, algorithm="fricas")

[Out] -log(-2*b*x + 2*sqrt(b*x + 2)*sqrt(b*x - 1) - 1)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx-1}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-1)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x - 1)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.26311, size = 32, normalized size = 1.52

$$-\frac{2\ln\left(\left|-\sqrt{bx+2}+\sqrt{bx-1}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 1)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 2) + sqrt(b*x - 1)))/b
```

3.1534 $\int \frac{1}{\sqrt{-2+bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=11

$$\frac{\cosh^{-1}\left(\frac{bx}{2}\right)}{b}$$

```
[Out] ArcCosh[(b*x)/2]/b
```

Rubi [A] time = 0.0171533, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{\cosh^{-1}\left(\frac{bx}{2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-2 + b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] ArcCosh[(b*x)/2]/b
```

Rubi in Sympy [A] time = 3.55288, size = 7, normalized size = 0.64

$$\frac{\operatorname{acosh}\left(\frac{bx}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-2)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] acosh(b*x/2)/b
```

Mathematica [A] time = 0.00732921, size = 19, normalized size = 1.73

$$\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{bx-2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-2 + b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-2 + b*x]/2])/b
```

Maple [B] time = 0., size = 57, normalized size = 5.2

$$1\sqrt{(bx-2)(bx+2)}\ln\left(b^2x\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-4}\right)\frac{1}{\sqrt{bx-2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-2)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((b*x-2)*(b*x+2))^(1/2)/(b*x-2)^(1/2)/(b*x+2)^(1/2)*ln(b^2*x/(b^2
)^(1/2)+(b^2*x^2-4)^(1/2))/(b^2)^(1/2)
```

Maxima [A] time = 1.54486, size = 43, normalized size = 3.91

$$\frac{\log\left(2\,b^2x+2\,\sqrt{b^2x^2-4}\sqrt{b^2}\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 2)),x, algorithm="maxima")
```

```
[Out] log(2*b^2*x + 2*sqrt(b^2*x^2 - 4)*sqrt(b^2))/sqrt(b^2)
```

Fricas [A] time = 0.23344, size = 35, normalized size = 3.18

$$-\frac{\log\left(-bx+\sqrt{bx+2}\sqrt{bx-2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 2)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 2)*sqrt(b*x - 2))/b
```

Sympy [A] time = 4.97936, size = 75, normalized size = 6.82

$$\frac{G_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4}, \frac{3}{4} & \frac{1}{2}, \frac{1}{2}, 1, 1 \\ 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, 0 & \end{matrix} \middle| \frac{4e^{2i\pi}}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b} + \frac{iG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2}, -\frac{1}{4}, 0, \frac{1}{4}, \frac{1}{2}, 1 & \\ -\frac{1}{4}, \frac{1}{4} & -\frac{1}{2}, 0, 0, 0 \end{matrix} \middle| \frac{4}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-2)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0)
, ()), 4*exp_polar(2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b) + I*meije
rg(((-1/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0,
 0)), 4/(b**2*x**2))/(4*pi**(3/2)*b)
```

GIAC/XCAS [A] time = 0.239415, size = 32, normalized size = 2.91

$$-\frac{2\ln\left(\left|-\sqrt{bx+2}+\sqrt{bx-2}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 2)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 2) + sqrt(b*x - 2)))/b
```

3.1535 $\int \frac{1}{\sqrt{-3+bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=21

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-3}}{\sqrt{5}}\right)}{b}$$

```
[Out] (2*ArcSinh[Sqrt[-3 + b*x]/Sqrt[5]])/b
```

Rubi [A] time = 0.0253459, antiderivative size = 21, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-3}}{\sqrt{5}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-3 + b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-3 + b*x]/Sqrt[5]])/b
```

Rubi in Sympy [A] time = 4.6251, size = 19, normalized size = 0.9

$$\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{5}\sqrt{bx-3}}{5}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-3)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] 2*asinh(sqrt(5)*sqrt(b*x - 3)/5)/b
```

Mathematica [A] time = 0.0100958, size = 21, normalized size = 1.

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-3}}{\sqrt{5}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-3 + b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-3 + b*x]/Sqrt[5]])/b
```

Maple [B] time = 0.009, size = 66, normalized size = 3.1

$$1\sqrt{(bx-3)(bx+2)}\ln\left(1\left(-\frac{b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-bx-6}\right)\frac{1}{\sqrt{bx-3}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-3)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((b*x-3)*(b*x+2))^(1/2)/(b*x-3)^(1/2)/(b*x+2)^(1/2)*ln((-1/2*b+b^
2*x)/(b^2)^(1/2)+(b^2*x^2-b*x-6)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.227814, size = 38, normalized size = 1.81

$$-\frac{\log\left(-2\,bx+2\,\sqrt{bx+2}\sqrt{bx-3}+1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 3)),x, algorithm="fricas")
```

```
[Out] -log(-2*b*x + 2*sqrt(b*x + 2)*sqrt(b*x - 3) + 1)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx-3}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-3)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*x - 3)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.26358, size = 32, normalized size = 1.52

$$-\frac{2\ln\left(\left|-\sqrt{bx+2}+\sqrt{bx-3}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(b*x - 3)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 2) + sqrt(b*x - 3)))/b
```

3.1536 $\int \frac{1}{\sqrt{3-bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=16

$$-\frac{\sin^{-1}\left(\frac{1}{5}(1-2bx)\right)}{b}$$

```
[Out] -(ArcSin[(1 - 2*b*x)/5]/b)
```

Rubi [A] time = 0.0389211, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.15

$$-\frac{\sin^{-1}\left(\frac{1}{5}(1-2bx)\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[3 - b*x]*Sqrt[2 + b*x]),x]

[Out] -(ArcSin[(1 - 2*b*x)/5]/b)
```

Rubi in Sympy [A] time = 6.21244, size = 27, normalized size = 1.69

$$-\frac{\operatorname{atan}\left(\frac{-2bx+1}{2\sqrt{-b^2x^2+bx+6}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+3)**(1/2)/(b*x+2)**(1/2),x)

[Out] -atan((-2*b*x + 1)/(2*sqrt(-b**2*x**2 + b*x + 6)))/b
```

Mathematica [A] time = 0.0271915, size = 21, normalized size = 1.31

$$\frac{2\sin^{-1}\left(\frac{\sqrt{bx+2}}{\sqrt{5}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[3 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSin[Sqrt[2 + b*x]/Sqrt[5]])/b
```

Maple [B] time = 0.013, size = 65, normalized size = 4.1

$$1\sqrt{(-bx+3)(bx+2)}\arctan\left(1\sqrt{b^2}\left(x-\frac{1}{2b}\right)\frac{1}{\sqrt{-b^2x^2+bx+6}}\right)\frac{1}{\sqrt{-bx+3}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+3)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((-b*x+3)*(b*x+2))^(1/2)/(-b*x+3)^(1/2)/(b*x+2)^(1/2)/(b^2)^(1/2)
*arctan((b^2)^(1/2)*(x-1/2/b)/(-b^2*x^2+b*x+6)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22282, size = 38, normalized size = 2.38

$$\frac{\arctan\left(\frac{2bx-1}{2\sqrt{bx+2}\sqrt{-bx+3}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 3)),x, algorithm="fricas")
```

```
[Out] arctan(1/2*(2*b*x - 1)/(sqrt(b*x + 2)*sqrt(-b*x + 3)))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{-bx+3}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+3)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x + 3)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.217134, size = 24, normalized size = 1.5

$$\frac{2 \arcsin\left(\frac{1}{5}\sqrt{5}\sqrt{bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 3)),x, algorithm="giac")
```

```
[Out] 2*arcsin(1/5*sqrt(5)*sqrt(b*x + 2))/b
```

3.1537 $\int \frac{1}{\sqrt{2-bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=11

$$\frac{\sin^{-1}\left(\frac{bx}{2}\right)}{b}$$

```
[Out] ArcSin[(b*x)/2]/b
```

Rubi [A] time = 0.0212299, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{\sin^{-1}\left(\frac{bx}{2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[2 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] ArcSin[(b*x)/2]/b
```

Rubi in Sympy [A] time = 5.31366, size = 7, normalized size = 0.64

$$\frac{\operatorname{asin}\left(\frac{bx}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+2)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] asin(b*x/2)/b
```

Mathematica [A] time = 0.0118723, size = 11, normalized size = 1.

$$\frac{\sin^{-1}\left(\frac{bx}{2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[2 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] ArcSin[(b*x)/2]/b
```

Maple [B] time = 0.01, size = 56, normalized size = 5.1

$$1\sqrt{(-bx+2)(bx+2)}\arctan\left(x\sqrt{b^2}\frac{1}{\sqrt{-b^2x^2+4}}\right)\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+2)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((-b*x+2)*(b*x+2))^(1/2)/(-b*x+2)^(1/2)/(b*x+2)^(1/2)/(b^2)^(1/2)
*arctan((b^2)^(1/2)*x/(-b^2*x^2+4)^(1/2))
```

Maxima [A] time = 1.54097, size = 24, normalized size = 2.18

$$\frac{\arcsin\left(\frac{b^2x}{2\sqrt{b^2}}\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 2)),x, algorithm="maxima")
```

```
[Out] arcsin(1/2*b^2*x/sqrt(b^2))/sqrt(b^2)
```

Fricas [A] time = 0.210135, size = 42, normalized size = 3.82

$$-\frac{2\arctan\left(\frac{\sqrt{bx+2}\sqrt{-bx+2}-2}{bx}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 2)),x, algorithm="fricas")
```

```
[Out] -2*arctan((sqrt(b*x + 2)*sqrt(-b*x + 2) - 2)/(b*x))/b
```

Sympy [A] time = 4.84782, size = 76, normalized size = 6.91

$$-\frac{iG_{6,6}^{6,2}\left(\begin{matrix}\frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1\\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix}\middle|\frac{4}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b}+\frac{G_{6,6}^{2,6}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0\end{matrix}\middle|\frac{4e^{-2i\pi}}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+2)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] -I*meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1,
 0), ()), 4/(b**2*x**2))/(4*pi**(3/2)*b) + meijerg(((-1/2, -1/4,
0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), 4*exp_polar
(-2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b)
```

GIAC/XCAS [A] time = 0.215587, size = 20, normalized size = 1.82

$$\frac{2\arcsin\left(\frac{1}{2}\sqrt{bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 2)),x, algorithm="giac")
```

```
[Out] 2*arcsin(1/2*sqrt(b*x + 2))/b
```

3.1538 $\int \frac{1}{\sqrt{1-bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=16

$$-\frac{\sin^{-1}\left(\frac{1}{3}(-2bx-1)\right)}{b}$$

```
[Out] -(ArcSin[(-1 - 2*b*x)/3]/b)
```

Rubi [A] time = 0.0385896, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$-\frac{\sin^{-1}\left(\frac{1}{3}(-2bx-1)\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[1 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] -(ArcSin[(-1 - 2*b*x)/3]/b)
```

Rubi in Sympy [A] time = 6.33969, size = 29, normalized size = 1.81

$$\frac{\operatorname{atan}\left(-\frac{-2bx-1}{2\sqrt{-b^2x^2-bx+2}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(-b*x+1)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] atan(-(-2*b*x - 1)/(2*sqrt(-b**2*x**2 - b*x + 2)))/b
```

Mathematica [A] time = 0.026101, size = 21, normalized size = 1.31

$$\frac{2\sin^{-1}\left(\frac{\sqrt{bx+2}}{\sqrt{3}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[1 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*ArcSin[Sqrt[2 + b*x]/Sqrt[3]])/b
```

Maple [B] time = 0.013, size = 66, normalized size = 4.1

$$1\sqrt{(-bx+1)(bx+2)}\arctan\left(1\sqrt{b^2}\left(x+\frac{1}{2b}\right)\frac{1}{\sqrt{-b^2x^2-bx+2}}\right)\frac{1}{\sqrt{-bx+1}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+1)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((-b*x+1)*(b*x+2))^(1/2)/(-b*x+1)^(1/2)/(b*x+2)^(1/2)/(b^2)^(1/2)
*arctan((b^2)^(1/2)*(x+1/2/b)/(-b^2*x^2-b*x+2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.21641, size = 38, normalized size = 2.38

$$\frac{\arctan\left(\frac{2\,bx+1}{2\,\sqrt{bx+2}\sqrt{-bx+1}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 1)),x, algorithm="fricas")
```

```
[Out] arctan(1/2*(2*b*x + 1)/(sqrt(b*x + 2)*sqrt(-b*x + 1)))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{-bx+1}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+1)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x + 1)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.221891, size = 24, normalized size = 1.5

$$\frac{2 \arcsin\left(\frac{1}{3}\sqrt{3}\sqrt{bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x + 1)),x, algorithm="giac")
```

```
[Out] 2*arcsin(1/3*sqrt(3)*sqrt(b*x + 2))/b
```

3.1539 $\int \frac{1}{\sqrt{-bx}\sqrt{2+bx}} \, dx$

Optimal. Leaf size=10

$$\frac{\sin^{-1}(bx+1)}{b}$$

```
[Out] ArcSin[1 + b*x]/b
```

Rubi [A] time = 0.0271461, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$

$$\frac{\sin^{-1}(bx+1)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[-(b*x)]*Sqrt[2 + b*x]),x]
```

```
[Out] ArcSin[1 + b*x]/b
```

Rubi in Sympy [A] time = 5.44114, size = 7, normalized size = 0.7

$$\frac{\operatorname{asin}(bx+1)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(-b*x)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] asin(b*x + 1)/b
```

Mathematica [B] time = 0.0251494, size = 51, normalized size = 5.1

$$\frac{2\sqrt{x}\sqrt{bx+2}\sinh^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}\sqrt{-bx(bx+2)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/(Sqrt[-(b*x)]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*Sqrt[x]*Sqrt[2 + b*x]*ArcSinh[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(Sqr
t[b]*Sqrt[-(b*x*(2 + b*x))])
```

Maple [B] time = 0.008, size = 58, normalized size = 5.8

$$1\sqrt{-xb\left(bx+2\right)}\arctan\left(\left(x+b^{-1}\right)\sqrt{b^{2}}\frac{1}{\sqrt{-b^{2}x^{2}-2\,bx}}\right)\frac{1}{\sqrt{-bx}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] (-x*b*(b*x+2))^(1/2)/(-b*x)^(1/2)/(b*x+2)^(1/2)/(b^2)^(1/2)*arcta
n((b^2)^(1/2)*(x+1/b)/(-b^2*x^2-2*b*x)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.212694, size = 35, normalized size = 3.5

$$-\frac{2\arctan\left(\frac{\sqrt{bx+2}\sqrt{-bx}}{bx}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x)),x, algorithm="fricas")
```

```
[Out] -2*arctan(sqrt(b*x + 2)*sqrt(-b*x)/(b*x))/b
```

Sympy [A] time = 2.24657, size = 24, normalized size = 2.4

$$-\frac{2i\,\operatorname{asinh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] -2*I*asinh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b
```

GIAC/XCAS [A] time = 0.21416, size = 24, normalized size = 2.4

$$\frac{2\arcsin\left(\frac{1}{2}\sqrt{2}\sqrt{bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x)),x, algorithm="giac")
```

```
[Out] 2*arcsin(1/2*sqrt(2)*sqrt(b*x + 2))/b
```

3.1540 $\int \frac{1}{\sqrt{-1-bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=11

$$\frac{\sin^{-1}(2bx+3)}{b}$$

```
[Out] ArcSin[3 + 2*b*x]/b
```

Rubi [A] time = 0.0326453, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.15$

$$\frac{\sin^{-1}(2bx+3)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-1 - b*x]*Sqrt[2 + b*x]),x]

[Out] ArcSin[3 + 2*b*x]/b
```

Rubi in Sympy [A] time = 6.05018, size = 32, normalized size = 2.91

$$\frac{\operatorname{atan}\left(-\frac{-2bx-3}{2\sqrt{-b^2x^2-3bx-2}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x-1)**(1/2)/(b*x+2)**(1/2),x)

[Out] atan(-(-2*b*x - 3)/(2*sqrt(-b**2*x**2 - 3*b*x - 2)))/b
```

Mathematica [B] time = 0.0263087, size = 49, normalized size = 4.45

$$\frac{2\sqrt{bx+1}\sqrt{bx+2}\sinh^{-1}\left(\sqrt{bx+1}\right)}{b\sqrt{-(bx+1)(bx+2)}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-1 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (2*Sqrt[1 + b*x]*Sqrt[2 + b*x]*ArcSinh[Sqrt[1 + b*x]])/(b*Sqrt[-(
(1 + b*x)*(2 + b*x))])
```

Maple [B] time = 0.011, size = 66, normalized size = 6.

$$1\sqrt{(-bx-1)(bx+2)}\arctan\left(1\sqrt{b^2}\left(x+\frac{3}{2b}\right)\frac{1}{\sqrt{-b^2x^2-3bx-2}}\right)\frac{1}{\sqrt{-bx-1}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x-1)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((-b*x-1)*(b*x+2))^(1/2)/(-b*x-1)^(1/2)/(b*x+2)^(1/2)/(b^2)^(1/2)
*arctan((b^2)^(1/2)*(x+3/2/b)/(-b^2*x^2-3*b*x-2)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215441, size = 38, normalized size = 3.45

$$\frac{\arctan\left(\frac{2\,bx+3}{2\,\sqrt{bx+2}\sqrt{-bx-1}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 1)),x, algorithm="fricas")
```

```
[Out] arctan(1/2*(2*b*x + 3)/(sqrt(b*x + 2)*sqrt(-b*x - 1)))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{-bx-1}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x-1)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x - 1)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.219075, size = 18, normalized size = 1.64

$$\frac{2 \arcsin\left(\sqrt{bx + 2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 1)),x, algorithm="giac")
```

```
[Out] 2*arcsin(sqrt(b*x + 2))/b
```

3.1541 $\int \frac{1}{\sqrt{-2-bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=29

$$\frac{\sqrt{bx+2}\log(bx+2)}{b\sqrt{-bx-2}}$$

```
[Out] (Sqrt[2 + b*x]*Log[2 + b*x])/(b*Sqrt[-2 - b*x])
```

Rubi [A] time = 0.0138421, antiderivative size = 29, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$\frac{\sqrt{bx+2}\log(bx+2)}{b\sqrt{-bx-2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-2 - b*x]*Sqrt[2 + b*x]),x]

[Out] (Sqrt[2 + b*x]*Log[2 + b*x])/(b*Sqrt[-2 - b*x])
```

Rubi in Sympy [A] time = 3.68873, size = 26, normalized size = 0.9

$$\frac{\sqrt{bx+2}\log\left(bx+2\right)}{b\sqrt{-bx-2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x-2)**(1/2)/(b*x+2)**(1/2),x)

[Out] sqrt(b*x + 2)*log(b*x + 2)/(b*sqrt(-b*x - 2))
```

Mathematica [A] time = 0.0137218, size = 28, normalized size = 0.97

$$\frac{(bx+2)\log(bx+2)}{b\sqrt{-(bx+2)^2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-2 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] ((2 + b*x)*Log[2 + b*x])/(b*Sqrt[-(2 + b*x)^2])
```

Maple [A] time = 0.004, size = 26, normalized size = 0.9

$$\frac{\ln(bx+2)}{b}\sqrt{bx+2}\frac{1}{\sqrt{-bx-2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x-2)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ln(b*x+2)*(b*x+2)^(1/2)/b/(-b*x-2)^(1/2)
```

Maxima [A] time = 1.41417, size = 22, normalized size = 0.76

$$\sqrt{-\frac{1}{b^2}}\log\left(x+\frac{2}{b}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 2)),x, algorithm="maxima")
```

```
[Out] sqrt(-1/b^2)*log(x + 2/b)
```

Fricas [A] time = 0.220082, size = 1, normalized size = 0.03

$$0$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 2)),x, algorithm="fricas")
```

```
[Out] 0
```

Sympy [A] time = 2.64467, size = 53, normalized size = 1.83

$$\begin{cases} -\frac{i\log\left(x+\frac{2}{b}\right)}{b} & \text{for } \left|x+\frac{2}{b}\right|<1 \\ \frac{i\log\left(\frac{1}{x+\frac{2}{b}}\right)}{b} & \text{for } \left|\frac{1}{x+\frac{2}{b}}\right|<1 \\ \frac{iG_{2,2}^{2,0}\left(\begin{matrix} & 1,1 \\ 0,0 & \end{matrix}\middle| x+\frac{2}{b}\right)}{b} - \frac{iG_{2,2}^{0,2}\left(\begin{matrix} 1,1 & \\ & 0,0 \end{matrix}\middle| x+\frac{2}{b}\right)}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x-2)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-I*log(x + 2/b)/b, Abs(x + 2/b) < 1), (I*log(1/(x + 2/
b))/b, Abs(1/(x + 2/b)) < 1), (I*meijerg(((), (1, 1)), ((0, 0), (
)), x + 2/b)/b - I*meijerg(((1, 1), ()), ((), (0, 0)), x + 2/b)/b
, True))
```

GIAC/XCAS [A] time = 0.211939, size = 16, normalized size = 0.55

$$-\frac{i\ln\left(|bx+2|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 2)),x, algorithm="giac")
```

```
[Out] -I*ln(abs(b*x + 2))/b
```

3.1542 $\int \frac{1}{\sqrt{-3-bx}\sqrt{2+bx}}\,dx$

Optimal. Leaf size=26

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{-bx-3}}{\sqrt{bx+2}}\right)}{b}$$

```
[Out] (-2*ArcTan[Sqrt[-3 - b*x]/Sqrt[2 + b*x]])/b
```

Rubi [A] time = 0.0332318, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.1$

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{-bx-3}}{\sqrt{bx+2}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-3 - b*x]*Sqrt[2 + b*x]),x]

[Out] (-2*ArcTan[Sqrt[-3 - b*x]/Sqrt[2 + b*x]])/b
```

Rubi in Sympy [A] time = 4.589, size = 22, normalized size = 0.85

$$\frac{2\,\mathrm{atan}\left(\frac{\sqrt{bx+2}}{\sqrt{-bx-3}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x-3)**(1/2)/(b*x+2)**(1/2),x)

[Out] 2*atan(sqrt(b*x + 2)/sqrt(-b*x - 3))/b
```

Mathematica [A] time = 0.0132892, size = 33, normalized size = 1.27

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{-bx-3}\sqrt{bx+2}}{bx+3}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-3 - b*x]*Sqrt[2 + b*x]),x]
```

```
[Out] (-2*ArcTan[(Sqrt[-3 - b*x]*Sqrt[2 + b*x])/(3 + b*x)])/b
```

Maple [B] time = 0.013, size = 66, normalized size = 2.5

$$1\sqrt{(-bx-3)(bx+2)}\arctan\left(1\sqrt{b^2}\left(x+\frac{5}{2b}\right)\frac{1}{\sqrt{-b^2x^2-5bx-6}}\right)\frac{1}{\sqrt{-bx-3}}\frac{1}{\sqrt{bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x-3)^(1/2)/(b*x+2)^(1/2),x)
```

```
[Out] ((-b*x-3)*(b*x+2))^(1/2)/(-b*x-3)^(1/2)/(b*x+2)^(1/2)/(b^2)^(1/2)
*arctan((b^2)^(1/2)*(x+5/2/b)/(-b^2*x^2-5*b*x-6)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 3)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.215201, size = 38, normalized size = 1.46

$$\frac{\arctan\left(\frac{2bx+5}{2\sqrt{bx+2}\sqrt{-bx-3}}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 3)),x, algorithm="fricas")
```

```
[Out] arctan(1/2*(2*b*x + 5)/(sqrt(b*x + 2)*sqrt(-b*x - 3)))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-bx-3}\sqrt{bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x-3)**(1/2)/(b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x - 3)*sqrt(b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.216893, size = 20, normalized size = 0.77

$$-\frac{2i\,\arcsin\left(i\sqrt{bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 2)*sqrt(-b*x - 3)),x, algorithm="giac")
```

```
[Out] -2*I*arcsin(I*sqrt(b*x + 2))/b
```

3.1543 $\int \frac{1}{\sqrt{2-bx}\sqrt{3-bx}}\,dx$

Optimal. Leaf size=16

$$-\frac{2\sinh^{-1}\left(\sqrt{2-bx}\right)}{b}$$

```
[Out] (-2*ArcSinh[Sqrt[2 - b*x]])/b
```

Rubi [A] time = 0.0259772, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$-\frac{2\sinh^{-1}\left(\sqrt{2-bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[2 - b*x]*Sqrt[3 - b*x]),x]

[Out] (-2*ArcSinh[Sqrt[2 - b*x]])/b
```

Rubi in Sympy [A] time = 6.87606, size = 14, normalized size = 0.88

$$-\frac{2\,\mathrm{asinh}\left(\sqrt{-bx+2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(-b*x+2)**(1/2)/(-b*x+3)**(1/2),x)

[Out] -2*asinh(sqrt(-b*x + 2))/b
```

Mathematica [A] time = 0.0120554, size = 16, normalized size = 1.

$$-\frac{2\sinh^{-1}\left(\sqrt{2-bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[2 - b*x]*Sqrt[3 - b*x]),x]
```

```
[Out] (-2*ArcSinh[Sqrt[2 - b*x]])/b
```

Maple [B] time = 0.008, size = 70, normalized size = 4.4

$$1\sqrt{(-bx+2)(-bx+3)}\ln\left(1\left(-\frac{5\,b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-5\,bx+6}\right)\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{-bx+3}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+2)^(1/2)/(-b*x+3)^(1/2),x)
```

```
[Out] ((-b*x+2)*(-b*x+3))^(1/2)/(-b*x+2)^(1/2)/(-b*x+3)^(1/2)*ln((-5/2*
b+b^2*x)/(b^2)^(1/2)+(b^2*x^2-5*b*x+6)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 3)*sqrt(-b*x + 2)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.208236, size = 41, normalized size = 2.56

$$-\frac{\log\left(-2\,bx+2\,\sqrt{-bx+3}\sqrt{-bx+2}+5\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 3)*sqrt(-b*x + 2)),x, algorithm="fricas")
```

```
[Out] -log(-2*b*x + 2*sqrt(-b*x + 3)*sqrt(-b*x + 2) + 5)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-bx+2}\sqrt{-bx+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+2)**(1/2)/(-b*x+3)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x + 2)*sqrt(-b*x + 3)), x)
```

GIAC/XCAS [A] time = 0.273011, size = 35, normalized size = 2.19

$$\frac{2\ln\left(\left|-\sqrt{-bx+3}+\sqrt{-bx+2}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 3)*sqrt(-b*x + 2)),x, algorithm="giac")
```

```
[Out] 2*ln(abs(-sqrt(-b*x + 3) + sqrt(-b*x + 2)))/b
```

3.1544 $\int \frac{1}{2-bx}\,dx$

Optimal. Leaf size=12

$$-\frac{\log(2-bx)}{b}$$

```
[Out] -(Log[2 - b*x]/b)
```

Rubi [A] time = 0.00735001, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$

$$-\frac{\log(2-bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 - b*x)^(-1),x]

[Out] -(Log[2 - b*x]/b)
```

Rubi in Sympy [A] time = 1.35898, size = 8, normalized size = 0.67

$$-\frac{\log(-bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+2),x)

[Out] -log(-b*x + 2)/b
```

Mathematica [A] time = 0.00134137, size = 12, normalized size = 1.

$$-\frac{\log(2-bx)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 - b*x)^(-1),x]
```

```
[Out] -(Log[2 - b*x]/b)
```

Maple [A] time = 0.001, size = 13, normalized size = 1.1

$$-\frac{\ln(-bx+2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+2),x)
```

```
[Out] -ln(-b*x+2)/b
```

Maxima [A] time = 1.3813, size = 15, normalized size = 1.25

$$-\frac{\log(bx-2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(b*x - 2),x, algorithm="maxima")
```

```
[Out] -log(b*x - 2)/b
```

Fricas [A] time = 0.198107, size = 15, normalized size = 1.25

$$-\frac{\log(bx-2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(b*x - 2),x, algorithm="fricas")
```

```
[Out] -log(b*x - 2)/b
```

Sympy [A] time = 0.040248, size = 8, normalized size = 0.67

$$-\frac{\log(bx-2)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+2),x)

[Out] -log(b*x - 2)/b
```

GIAC/XCAS [A] time = 0.21768, size = 16, normalized size = 1.33

$$-\frac{\ln\left(|bx-2|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/(b*x - 2),x, algorithm="giac")

[Out] -ln(abs(b*x - 2))/b
```

3.1545 $\int \frac{1}{\sqrt{1-bx}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=16

$$-\frac{2\sinh^{-1}\left(\sqrt{1-bx}\right)}{b}$$

```
[Out] (-2*ArcSinh[Sqrt[1 - b*x]])/b
```

Rubi [A] time = 0.0261071, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$-\frac{2\sinh^{-1}\left(\sqrt{1-bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[1 - b*x]*Sqrt[2 - b*x]),x]

[Out] (-2*ArcSinh[Sqrt[1 - b*x]])/b
```

Rubi in Sympy [A] time = 6.90194, size = 14, normalized size = 0.88

$$-\frac{2\,\mathrm{asinh}\left(\sqrt{-bx+1}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+1)**(1/2)/(-b*x+2)**(1/2),x)

[Out] -2*asinh(sqrt(-b*x + 1))/b
```

Mathematica [A] time = 0.0111236, size = 16, normalized size = 1.

$$-\frac{2\sinh^{-1}\left(\sqrt{1-bx}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[1 - b*x]*Sqrt[2 - b*x]),x]
```

```
[Out] (-2*ArcSinh[Sqrt[1 - b*x]])/b
```

Maple [B] time = 0.01, size = 70, normalized size = 4.4

$$1\sqrt{(-bx+1)(-bx+2)}\ln\left(1\left(-\frac{3b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-3bx+2}\right)\frac{1}{\sqrt{-bx+1}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+1)^(1/2)/(-b*x+2)^(1/2),x)
```

```
[Out] ((-b*x+1)*(-b*x+2))^(1/2)/(-b*x+1)^(1/2)/(-b*x+2)^(1/2)*ln((-3/2*
b+b^2*x)/(b^2)^(1/2)+(b^2*x^2-3*b*x+2)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x + 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.20239, size = 41, normalized size = 2.56

$$-\frac{\log\left(-2bx+2\sqrt{-bx+2}\sqrt{-bx+1}+3\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x + 1)),x, algorithm="fricas")
```

```
[Out] -log(-2*b*x + 2*sqrt(-b*x + 2)*sqrt(-b*x + 1) + 3)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-bx+1}\sqrt{-bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+1)**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x + 1)*sqrt(-b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.265179, size = 35, normalized size = 2.19

$$\frac{2\ln\left(\left|-\sqrt{-bx+2}+\sqrt{-bx+1}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x + 1)),x, algorithm="giac")
```

```
[Out] 2*ln(abs(-sqrt(-b*x + 2) + sqrt(-b*x + 1)))/b
```

3.1546 $\int \frac{1}{\sqrt{-bx}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=20

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx}}{\sqrt{2}}\right)}{b}$$

```
[Out] (-2*ArcSinh[Sqrt[-(b*x)]/Sqrt[2]])/b
```

Rubi [A] time = 0.0209205, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx}}{\sqrt{2}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-(b*x)]*Sqrt[2 - b*x]),x]

[Out] (-2*ArcSinh[Sqrt[-(b*x)]/Sqrt[2]])/b
```

Rubi in Sympy [A] time = 5.34128, size = 20, normalized size = 1.

$$-\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{2}\sqrt{-bx}}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x)**(1/2)/(-b*x+2)**(1/2),x)

[Out] -2*asinh(sqrt(2)*sqrt(-b*x)/2)/b
```

Mathematica [A] time = 0.0169434, size = 37, normalized size = 1.85

$$\frac{2\sqrt{x}\sin^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{2}}\right)}{\sqrt{b}\sqrt{-bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-(b*x)]*Sqrt[2 - b*x]),x]
```

```
[Out] (2*Sqrt[x]*ArcSin[(Sqrt[b]*Sqrt[x])/Sqrt[2]])/(Sqrt[b]*Sqrt[-(b*x
)])
```

Maple [B] time = 0.009, size = 64, normalized size = 3.2

$$1\sqrt{-xb(-bx+2)}\ln\left((b^2x-b)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-2\,bx}\right)\frac{1}{\sqrt{-bx}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x)^(1/2)/(-b*x+2)^(1/2),x)
```

```
[Out] (-x*b*(-b*x+2))^(1/2)/(-b*x)^(1/2)/(-b*x+2)^(1/2)*ln((b^2*x-b)/(b
^2)^(1/2)+(b^2*x^2-2*b*x)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.202253, size = 36, normalized size = 1.8

$$-\frac{\log\left(-bx+\sqrt{-bx+2}\sqrt{-bx}+1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(-b*x + 2)*sqrt(-b*x) + 1)/b
```

Sympy [A] time = 2.32438, size = 53, normalized size = 2.65

$$\begin{cases} -\frac{2\operatorname{acosh}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b} & \text{for } \frac{|bx|}{2} > 1 \\ -\frac{2i\operatorname{asin}\left(\frac{\sqrt{2}\sqrt{b}\sqrt{x}}{2}\right)}{b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x)**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Piecewise((-2*acosh(sqrt(2)*sqrt(b)*sqrt(x)/2)/b, Abs(b*x)/2 > 1)
, (-2*I*asin(sqrt(2)*sqrt(b)*sqrt(x)/2)/b, True))
```

GIAC/XCAS [A] time = 0.262722, size = 32, normalized size = 1.6

$$\frac{2\ln\left(\left|-\sqrt{-bx+2}+\sqrt{-bx}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x)),x, algorithm="giac")
```

```
[Out] 2*ln(abs(-sqrt(-b*x + 2) + sqrt(-b*x)))/b
```

3.1547 $\int \frac{1}{\sqrt{-1-bx}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=22

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx-1}}{\sqrt{3}}\right)}{b}$$

```
[Out] (-2*ArcSinh[Sqrt[-1 - b*x]/Sqrt[3]])/b
```

Rubi [A] time = 0.0296426, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx-1}}{\sqrt{3}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[1/(Sqrt[-1 - b*x]*Sqrt[2 - b*x]),x]

[Out] (-2*ArcSinh[Sqrt[-1 - b*x]/Sqrt[3]])/b
```

Rubi in Sympy [A] time = 8.2054, size = 22, normalized size = 1.

$$-\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{3}\sqrt{-bx-1}}{3}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(-b*x-1)**(1/2)/(-b*x+2)**(1/2),x)

[Out] -2*asinh(sqrt(3)*sqrt(-b*x - 1)/3)/b
```

Mathematica [A] time = 0.0117949, size = 22, normalized size = 1.

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx-1}}{\sqrt{3}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-1 - b*x]*Sqrt[2 - b*x]),x]
```

```
[Out] (-2*ArcSinh[Sqrt[-1 - b*x]/Sqrt[3]])/b
```

Maple [B] time = 0.01, size = 70, normalized size = 3.2

$$1\sqrt{(-bx-1)(-bx+2)}\ln\left(1\left(-\frac{b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-bx-2}\right)\frac{1}{\sqrt{-bx-1}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x-1)^(1/2)/(-b*x+2)^(1/2),x)
```

```
[Out] ((-b*x-1)*(-b*x+2))^(1/2)/(-b*x-1)^(1/2)/(-b*x+2)^(1/2)*ln((-1/2*
b+b^2*x)/(b^2)^(1/2)+(b^2*x^2-b*x-2)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 1)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.204246, size = 41, normalized size = 1.86

$$-\frac{\log\left(-2\,bx+2\,\sqrt{-bx+2}\sqrt{-bx-1}+1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 1)),x, algorithm="fricas")
```

```
[Out] -log(-2*b*x + 2*sqrt(-b*x + 2)*sqrt(-b*x - 1) + 1)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-bx-1}\sqrt{-bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x-1)**(1/2)/(-b*x+2)**(1/2),x)

[Out] Integral(1/(sqrt(-b*x - 1)*sqrt(-b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.26603, size = 35, normalized size = 1.59

$$\frac{2\ln\left(\left|-\sqrt{-bx+2}+\sqrt{-bx-1}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 1)),x, algorithm="giac")

[Out] 2*ln(abs(-sqrt(-b*x + 2) + sqrt(-b*x - 1)))/b
```

3.1548 $\int \frac{1}{\sqrt{-2-bx}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=12

$$-\frac{\cosh^{-1}\left(-\frac{bx}{2}\right)}{b}$$

```
[Out] -(ArcCosh[-(b*x)/2]/b)
```

Rubi [A] time = 0.0202261, antiderivative size = 12, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048

$$-\frac{\cosh^{-1}\left(-\frac{bx}{2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-2 - b*x]*Sqrt[2 - b*x]),x]
```

```
[Out] -(ArcCosh[-(b*x)/2]/b)
```

Rubi in Sympy [A] time = 5.12808, size = 10, normalized size = 0.83

$$-\frac{\operatorname{acosh}\left(-\frac{bx}{2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x-2)**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] -acosh(-b*x/2)/b
```

Mathematica [A] time = 0.0112807, size = 20, normalized size = 1.67

$$-\frac{2\sinh^{-1}\left(\frac{1}{2}\sqrt{-bx-2}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-2 - b*x]*Sqrt[2 - b*x]),x]
```

```
[Out] (-2*ArcSinh[Sqrt[-2 - b*x]/2])/b
```

Maple [B] time = 0.007, size = 61, normalized size = 5.1

$$1\sqrt{(-bx-2)(-bx+2)}\ln\left(b^2x\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-4}\right)\frac{1}{\sqrt{-bx-2}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x-2)^(1/2)/(-b*x+2)^(1/2),x)
```

```
[Out] ((-b*x-2)*(-b*x+2))^(1/2)/(-b*x-2)^(1/2)/(-b*x+2)^(1/2)*ln(b^2*x/
(b^2)^(1/2)+(b^2*x^2-4)^(1/2))/(b^2)^(1/2)
```

Maxima [A] time = 1.35268, size = 43, normalized size = 3.58

$$\frac{\log\left(2\,b^2x+2\,\sqrt{b^2x^2-4}\sqrt{b^2}\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 2)),x, algorithm="maxima")
```

```
[Out] log(2*b^2*x + 2*sqrt(b^2*x^2 - 4)*sqrt(b^2))/sqrt(b^2)
```

Fricas [A] time = 0.204478, size = 38, normalized size = 3.17

$$-\frac{\log\left(-bx+\sqrt{-bx+2}\sqrt{-bx-2}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 2)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(-b*x + 2)*sqrt(-b*x - 2))/b
```

Sympy [A] time = 5.02862, size = 78, normalized size = 6.5

$$-\frac{G_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4}, \frac{3}{4} & \frac{1}{2}, \frac{1}{2}, 1, 1 \\ 0, \frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, 0 & \end{matrix} \middle| \frac{4}{b^{2}x^{2}} \right)}{4\pi^{\frac{3}{2}}b} - \frac{iG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2}, -\frac{1}{4}, 0, \frac{1}{4}, \frac{1}{2}, 1 & \\ -\frac{1}{4}, \frac{1}{4} & -\frac{1}{2}, 0, 0, 0 \end{matrix} \middle| \frac{4e^{-2i\pi}}{b^{2}x^{2}} \right)}{4\pi^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x-2)**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] -meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0
), ()), 4/(b**2*x**2))/(4*pi**(3/2)*b) - I*meijerg(((-1/2, -1/4,
0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0, 0)), 4*exp_polar
(-2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b)
```

GIAC/XCAS [A] time = 0.236498, size = 35, normalized size = 2.92

$$\frac{2\ln\left(\left|-\sqrt{-bx+2}+\sqrt{-bx-2}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 2)),x, algorithm="giac")
```

```
[Out] 2*ln(abs(-sqrt(-b*x + 2) + sqrt(-b*x - 2)))/b
```

3.1549 $\int \frac{1}{\sqrt{-3-bx}\sqrt{2-bx}}\,dx$

Optimal. Leaf size=22

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx-3}}{\sqrt{5}}\right)}{b}$$

```
[Out] (-2*ArcSinh[Sqrt[-3 - b*x]/Sqrt[5]])/b
```

Rubi [A] time = 0.0288001, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx-3}}{\sqrt{5}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-3 - b*x]*Sqrt[2 - b*x]),x]
```

```
[Out] (-2*ArcSinh[Sqrt[-3 - b*x]/Sqrt[5]])/b
```

Rubi in Sympy [A] time = 7.74144, size = 22, normalized size = 1.

$$-\frac{2\,\mathrm{asinh}\left(\frac{\sqrt{5}\sqrt{-bx-3}}{5}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x-3)**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] -2*asinh(sqrt(5)*sqrt(-b*x - 3)/5)/b
```

Mathematica [A] time = 0.0112506, size = 22, normalized size = 1.

$$-\frac{2\sinh^{-1}\left(\frac{\sqrt{-bx-3}}{\sqrt{5}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-3 - b*x]*Sqrt[2 - b*x]),x]

[Out] (-2*ArcSinh[Sqrt[-3 - b*x]/Sqrt[5]])/b
```

Maple [B] time = 0.009, size = 69, normalized size = 3.1

$$1\sqrt{(-bx-3)(-bx+2)}\ln\left(1\left(\frac{b}{2}+b^2x\right)\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2+bx-6}\right)\frac{1}{\sqrt{-bx-3}}\frac{1}{\sqrt{-bx+2}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x-3)^(1/2)/(-b*x+2)^(1/2),x)

[Out] ((-b*x-3)*(-b*x+2))^(1/2)/(-b*x-3)^(1/2)/(-b*x+2)^(1/2)*ln((1/2*b
+b^2*x)/(b^2)^(1/2)+(b^2*x^2+b*x-6)^(1/2))/(b^2)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 3)),x, algorithm="maxima")

[Out] Exception raised: ValueError
```

Fricas [A] time = 0.202906, size = 41, normalized size = 1.86

$$-\frac{\log\left(-2\,bx+2\,\sqrt{-bx+2}\sqrt{-bx-3}-1\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 3)),x, algorithm="fricas")

[Out] -log(-2*b*x + 2*sqrt(-b*x + 2)*sqrt(-b*x - 3) - 1)/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{-bx-3}\sqrt{-bx+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x-3)**(1/2)/(-b*x+2)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(-b*x - 3)*sqrt(-b*x + 2)), x)
```

GIAC/XCAS [A] time = 0.263259, size = 35, normalized size = 1.59

$$\frac{2\ln\left(\left|-\sqrt{-bx+2}+\sqrt{-bx-3}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + 2)*sqrt(-b*x - 3)),x, algorithm="giac")
```

```
[Out] 2*ln(abs(-sqrt(-b*x + 2) + sqrt(-b*x - 3)))/b
```

3.1550 $\int \frac{1}{\sqrt{-4+bx}\sqrt{4+bx}} \, dx$

Optimal. Leaf size=11

$$\frac{\cosh^{-1}\left(\frac{bx}{4}\right)}{b}$$

```
[Out] ArcCosh[(b*x)/4]/b
```

Rubi [A] time = 0.0178026, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{\cosh^{-1}\left(\frac{bx}{4}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-4 + b*x]*Sqrt[4 + b*x]),x]

[Out] ArcCosh[(b*x)/4]/b
```

Rubi in Sympy [A] time = 4.193, size = 7, normalized size = 0.64

$$\frac{\operatorname{acosh}\left(\frac{bx}{4}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x-4)**(1/2)/(b*x+4)**(1/2),x)

[Out] acosh(b*x/4)/b
```

Mathematica [B] time = 0.0120525, size = 24, normalized size = 2.18

$$\frac{2\sinh^{-1}\left(\frac{\sqrt{bx-4}}{2\sqrt{2}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-4 + b*x]*Sqrt[4 + b*x]),x]
```

```
[Out] (2*ArcSinh[Sqrt[-4 + b*x]/(2*Sqrt[2])])/b
```

Maple [B] time = 0.01, size = 57, normalized size = 5.2

$$1\sqrt{(bx-4)(bx+4)}\ln\left(b^2x\frac{1}{\sqrt{b^2}}+\sqrt{b^2x^2-16}\right)\frac{1}{\sqrt{bx-4}}\frac{1}{\sqrt{bx+4}}\frac{1}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x-4)^(1/2)/(b*x+4)^(1/2),x)
```

```
[Out] ((b*x-4)*(b*x+4))^(1/2)/(b*x-4)^(1/2)/(b*x+4)^(1/2)*ln(b^2*x/(b^2
)^(1/2)+(b^2*x^2-16)^(1/2))/(b^2)^(1/2)
```

Maxima [A] time = 1.34354, size = 43, normalized size = 3.91

$$\frac{\log\left(2\,b^2x+2\,\sqrt{b^2x^2-16}\sqrt{b^2}\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 4)*sqrt(b*x - 4)),x, algorithm="maxima")
```

```
[Out] log(2*b^2*x + 2*sqrt(b^2*x^2 - 16)*sqrt(b^2))/sqrt(b^2)
```

Fricas [A] time = 0.202789, size = 35, normalized size = 3.18

$$-\frac{\log\left(-bx+\sqrt{bx+4}\sqrt{bx-4}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 4)*sqrt(b*x - 4)),x, algorithm="fricas")
```

```
[Out] -log(-b*x + sqrt(b*x + 4)*sqrt(b*x - 4))/b
```

Sympy [A] time = 4.80517, size = 75, normalized size = 6.82

$$\frac{G_{6,6}^{6,2}\left(\begin{matrix} \frac{1}{4},\frac{3}{4} & \frac{1}{2},\frac{1}{2},1,1 \\ 0,\frac{1}{4},\frac{1}{2},\frac{3}{4},1,0 & \end{matrix} \middle| \frac{16e^{2i\pi}}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b}+\frac{iG_{6,6}^{2,6}\left(\begin{matrix} -\frac{1}{2},-\frac{1}{4},0,\frac{1}{4},\frac{1}{2},1 & \\ -\frac{1}{4},\frac{1}{4} & -\frac{1}{2},0,0,0 \end{matrix} \middle| \frac{16}{b^2x^2}\right)}{4\pi^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x-4)**(1/2)/(b*x+4)**(1/2),x)
```

```
[Out] meijerg(((1/4, 3/4), (1/2, 1/2, 1, 1)), ((0, 1/4, 1/2, 3/4, 1, 0)
, ()), 16*exp_polar(2*I*pi)/(b**2*x**2))/(4*pi**(3/2)*b) + I*meij
erg(((-1/2, -1/4, 0, 1/4, 1/2, 1), ()), ((-1/4, 1/4), (-1/2, 0, 0
, 0)), 16/(b**2*x**2))/(4*pi**(3/2)*b)
```

GIAC/XCAS [A] time = 0.241617, size = 32, normalized size = 2.91

$$-\frac{2\ln\left(\left|-\sqrt{bx+4}+\sqrt{bx-4}\right|\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + 4)*sqrt(b*x - 4)),x, algorithm="giac")
```

```
[Out] -2*ln(abs(-sqrt(b*x + 4) + sqrt(b*x - 4)))/b
```

3.1551 $\int \frac{1}{\sqrt{\frac{-b+bc}{d}+bx}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=52

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{bx-\frac{b(1-c)}{d}}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[-((b*(1 - c))/d) + b*x])/(Sqrt[b]*Sqrt[c
 + d*x])])/(Sqrt[b]*Sqrt[d])
```

Rubi [A] time = 0.0606125, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{bx-\frac{b(1-c)}{d}}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[(-b + b*c)/d + b*x]*Sqrt[c + d*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[-((b*(1 - c))/d) + b*x])/(Sqrt[b]*Sqrt[c
 + d*x])])/(Sqrt[b]*Sqrt[d])
```

Rubi in Sympy [A] time = 7.98201, size = 44, normalized size = 0.85

$$\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{d}\sqrt{bx+\frac{b(c-1)}{d}}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/((b*c-b)/d+b*x)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] 2*atanh(sqrt(d)*sqrt(b*x + b*(c - 1)/d)/(sqrt(b)*sqrt(c + d*x)))/
(sqrt(b)*sqrt(d))
```

Mathematica [A] time = 0.0441413, size = 51, normalized size = 0.98

$$\frac{2\sqrt{c+dx-1}\log\left(\sqrt{c+dx-1}+\sqrt{c+dx}\right)}{d\sqrt{\frac{b(c+dx-1)}{d}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[(-b + b*c)/d + b*x]*Sqrt[c + d*x]),x]
```

```
[Out] (2*Sqrt[-1 + c + d*x]*Log[Sqrt[-1 + c + d*x] + Sqrt[c + d*x]])/(d
*Sqrt[(b*(-1 + c + d*x))/d])
```

Maple [B] time = 0.021, size = 100, normalized size = 1.9

$$1\sqrt{\left(bx+\frac{b\left(c-1\right)}{d}\right)\left(dx+c\right)}\ln\left(1\left(\frac{b\left(c-1\right)}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^{2}b+\left(b\left(c-1\right)+bc\right)x+\frac{b\left(c-1\right)c}{d}}\right)\frac{1}{\sqrt{bx+\frac{b(c-1)}{d}}}\frac{}{\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/((b*c-b)/d+b*x)^(1/2)/(d*x+c)^(1/2),x)
```

```
[Out] ((b*x+b*(c-1)/d)*(d*x+c))^(1/2)/(b*x+b*(c-1)/d)^(1/2)/(d*x+c)^(1/
2)*ln((1/2*b*(c-1)+1/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(b*(c-1)+b
*c)*x+b*(c-1)/d*c)^(1/2))/(b*d)^(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + (b*c - b)/d)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.223591, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(4\left(2d^{2}x+(2c-1)d\right)\sqrt{dx+c}\sqrt{\frac{bdx+bc-b}{d}}+\left(8d^{2}x^{2}+8(2c-1)dx+8c^{2}-8c+1\right)\sqrt{bd}\right)}{2\sqrt{bd}}, \frac{\arctan\left(\frac{\sqrt{-bd}(2dx+2c-1)}{2\sqrt{dx+c}d\sqrt{\frac{bdx+bc-b}{d}}}\right)}{\sqrt{-bd}}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + (b*c - b)/d)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/2*log(4*(2*d^2*x + (2*c - 1)*d)*sqrt(d*x + c)*sqrt((b*d*x + b*
c - b)/d) + (8*d^2*x^2 + 8*(2*c - 1)*d*x + 8*c^2 - 8*c + 1)*sqrt(
b*d))/sqrt(b*d), arctan(1/2*sqrt(-b*d)*(2*d*x + 2*c - 1)/(sqrt(d*
x + c)*d*sqrt((b*d*x + b*c - b)/d)))/sqrt(-b*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{b\left(\frac{c}{d}+x-\frac{1}{d}\right)}\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*c-b)/d+b*x)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*(c/d + x - 1/d))*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.213063, size = 84, normalized size = 1.62

$$-\frac{2b\ln\left(-\sqrt{bd}\sqrt{bx+\frac{bc-b}{d}}+\sqrt{\left(bx+\frac{bc-b}{d}\right)bd+b^{2}}\right)}{\sqrt{bd}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x + (b*c - b)/d)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -2*b*ln(-sqrt(b*d)*sqrt(b*x + (b*c - b)/d) + sqrt((b*x + (b*c - b
)/d)*b*d + b^2))/(sqrt(b*d)*abs(b))
```

3.1552 $\int \frac{1}{\sqrt{x}\sqrt{-3+2x}}\,dx$

Optimal. Leaf size=22

$$\sqrt{2}\sinh^{-1}\left(\frac{\sqrt{2x-3}}{\sqrt{3}}\right)$$

```
[Out] Sqrt[2]*ArcSinh[Sqrt[-3 + 2*x]/Sqrt[3]]
```

Rubi [A] time = 0.0161486, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\sqrt{2}\sinh^{-1}\left(\frac{\sqrt{2x-3}}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[x]*Sqrt[-3 + 2*x]),x]

[Out] Sqrt[2]*ArcSinh[Sqrt[-3 + 2*x]/Sqrt[3]]
```

Rubi in Sympy [A] time = 2.62344, size = 20, normalized size = 0.91

$$\sqrt{2}\,\mathrm{asinh}\left(\frac{\sqrt{3}\sqrt{2x-3}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(1/2)/(-3+2*x)**(1/2),x)

[Out] sqrt(2)*asinh(sqrt(3)*sqrt(2*x - 3)/3)
```

Mathematica [A] time = 0.0153173, size = 24, normalized size = 1.09

$$\sqrt{2}\log\left(2\sqrt{x}+\sqrt{4x-6}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[x]*Sqrt[-3 + 2*x]),x]
```

```
[Out] Sqrt[2]*Log[2*Sqrt[x] + Sqrt[-6 + 4*x]]
```

Maple [B] time = 0.009, size = 48, normalized size = 2.2

$$\frac{\sqrt{2}}{2}\sqrt{x\left(-3+2x\right)}\ln\left(\frac{\sqrt{2}}{2}\left(-\frac{3}{2}+2x\right)+\sqrt{2x^{2}-3x}\right)\frac{1}{\sqrt{x}}\frac{1}{\sqrt{-3+2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(1/2)/(-3+2*x)^(1/2),x)
```

```
[Out] 1/2*(x*(-3+2*x))^(1/2)/x^(1/2)/(-3+2*x)^(1/2)*ln(1/2*(-3/2+2*x)*2
^(1/2)+(2*x^2-3*x)^(1/2))*2^(1/2)
```

Maxima [A] time = 1.49366, size = 57, normalized size = 2.59

$$-\frac{1}{2}\sqrt{2}\log\left(-\frac{2\left(\sqrt{2}-\frac{\sqrt{2x-3}}{\sqrt{x}}\right)}{2\sqrt{2}+\frac{2\sqrt{2x-3}}{\sqrt{x}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(2*x - 3)*sqrt(x)),x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(2)*log(-2*(sqrt(2) - sqrt(2*x - 3)/sqrt(x))/((2*sqrt(2)
) + 2*sqrt(2*x - 3)/sqrt(x)))
```

Fricas [A] time = 0.212996, size = 35, normalized size = 1.59

$$\frac{1}{2}\sqrt{2}\log\left(-2\sqrt{2}\sqrt{2x-3}\sqrt{x}-4x+3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(2*x - 3)*sqrt(x)),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*log(-2*sqrt(2)*sqrt(2*x - 3)*sqrt(x) - 4*x + 3)
```

Sympy [A] time = 1.70016, size = 44, normalized size = 2.

$$\begin{cases} \sqrt{2}\,\mathrm{acosh}\left(\frac{\sqrt{6}\sqrt{x}}{3}\right) & \text{for } \frac{2|x|}{3} > 1 \\ -\sqrt{2}i\,\mathrm{asin}\left(\frac{\sqrt{6}\sqrt{x}}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(1/2)/(-3+2*x)**(1/2),x)
```

```
[Out] Piecewise((sqrt(2)*acosh(sqrt(6)*sqrt(x)/3), 2*Abs(x)/3 > 1), (-s
qrt(2)*I*asin(sqrt(6)*sqrt(x)/3), True))
```

GIAC/XCAS [A] time = 0.210884, size = 31, normalized size = 1.41

$$-\sqrt{2}\ln\left(\sqrt{2}\sqrt{x} - \sqrt{2\,x - 3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(2*x - 3)*sqrt(x)),x, algorithm="giac")
```

```
[Out] -sqrt(2)*ln(sqrt(2)*sqrt(x) - sqrt(2*x - 3))
```

3.1553 $\int \frac{1}{\sqrt{-3+2x}\sqrt{2+3x}}\,dx$

Optimal. Leaf size=26

$$\sqrt{\frac{2}{3}}\sinh^{-1}\left(\sqrt{\frac{3}{13}}\sqrt{2x-3}\right)$$

```
[Out] Sqrt[2/3]*ArcSinh[Sqrt[3/13]*Sqrt[-3 + 2*x]]
```

Rubi [A] time = 0.0260841, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\sqrt{\frac{2}{3}}\sinh^{-1}\left(\sqrt{\frac{3}{13}}\sqrt{2x-3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[-3 + 2*x]*Sqrt[2 + 3*x]),x]

[Out] Sqrt[2/3]*ArcSinh[Sqrt[3/13]*Sqrt[-3 + 2*x]]
```

Rubi in Sympy [A] time = 4.05435, size = 22, normalized size = 0.85

$$\frac{\sqrt{6}\,\operatorname{asinh}\left(\frac{\sqrt{39}\sqrt{2x-3}}{13}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-3+2*x)**(1/2)/(2+3*x)**(1/2),x)

[Out] sqrt(6)*asinh(sqrt(39)*sqrt(2*x - 3)/13)/3
```

Mathematica [A] time = 0.0229953, size = 26, normalized size = 1.

$$\sqrt{\frac{2}{3}}\sinh^{-1}\left(\sqrt{\frac{3}{13}}\sqrt{2x-3}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[-3 + 2*x]*Sqrt[2 + 3*x]),x]
```

```
[Out] Sqrt[2/3]*ArcSinh[Sqrt[3/13]*Sqrt[-3 + 2*x]]
```

Maple [B] time = 0.01, size = 57, normalized size = 2.2

$$\frac{\sqrt{6}}{6}\sqrt{(-3+2x)(2+3x)}\ln\left(\frac{\sqrt{6}}{6}\left(-\frac{5}{2}+6x\right)+\sqrt{6x^2-5x-6}\right)\frac{1}{\sqrt{-3+2x}}\frac{1}{\sqrt{2+3x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-3+2*x)^(1/2)/(2+3*x)^(1/2),x)
```

```
[Out] 1/6*((-3+2*x)*(2+3*x))^(1/2)/(-3+2*x)^(1/2)/(2+3*x)^(1/2)*ln(1/6*
(-5/2+6*x)*6^(1/2)+(6*x^2-5*x-6)^(1/2))*6^(1/2)
```

Maxima [A] time = 1.49226, size = 38, normalized size = 1.46

$$\frac{1}{6}\sqrt{6}\log\left(2\sqrt{6}\sqrt{6x^2-5x-6}+12x-5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(3*x + 2)*sqrt(2*x - 3)),x, algorithm="maxima")
```

```
[Out] 1/6*sqrt(6)*log(2*sqrt(6)*sqrt(6*x^2 - 5*x - 6) + 12*x - 5)
```

Fricas [A] time = 0.212637, size = 65, normalized size = 2.5

$$\frac{1}{12}\sqrt{3}\sqrt{2}\log\left(12\sqrt{2}(12x-5)\sqrt{3x+2}\sqrt{2x-3}+\sqrt{3}\left(288x^2-240x-119\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(3*x + 2)*sqrt(2*x - 3)),x, algorithm="fricas")
```

```
[Out] 1/12*sqrt(3)*sqrt(2)*log(12*sqrt(2)*(12*x - 5)*sqrt(3*x + 2)*sqrt
(2*x - 3) + sqrt(3)*(288*x^2 - 240*x - 119))
```

Sympy [A] time = 1.78181, size = 58, normalized size = 2.23

$$\begin{cases} \frac{\sqrt{6}\,\text{acosh}\left(\frac{\sqrt{78}\sqrt{x+\frac{2}{3}}}{13}\right)}{3} & \text{for}\ \frac{6\left|x+\frac{2}{3}\right|}{13} > 1 \\ -\frac{\sqrt{6}i\,\text{asin}\left(\frac{\sqrt{78}\sqrt{x+\frac{2}{3}}}{13}\right)}{3} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-3+2*x)**(1/2)/(2+3*x)**(1/2),x)
```

```
[Out] Piecewise((sqrt(6)*acosh(sqrt(78)*sqrt(x + 2/3)/13)/3, 6*Abs(x +
2/3)/13 > 1), (-sqrt(6)*I*asin(sqrt(78)*sqrt(x + 2/3)/13)/3, True
))
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(3*x + 2)*sqrt(2*x - 3)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1554 $\int \frac{1}{\sqrt{a+bx}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=42

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqr
t[b]*Sqrt[d])
```

Rubi [A] time = 0.0430672, antiderivative size = 42, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2\tanh^{-1}\left(\frac{\sqrt{d}\sqrt{a+bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*Sqrt[c + d*x]),x]
```

```
[Out] (2*ArcTanh[(Sqrt[d]*Sqrt[a + b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqr
t[b]*Sqrt[d])
```

Rubi in Sympy [A] time = 6.83575, size = 39, normalized size = 0.93

$$\frac{2\,\mathrm{atanh}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a+bx}}\right)}{\sqrt{b}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] 2*atanh(sqrt(b)*sqrt(c + d*x)/(sqrt(d)*sqrt(a + b*x)))/(sqrt(b)*s
qrt(d))
```

Mathematica [A] time = 0.0427731, size = 54, normalized size = 1.29

$$\frac{\log\left(2\sqrt{b}\sqrt{d}\sqrt{a+bx}\sqrt{c+dx}+ad+bc+2bdx\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*Sqrt[c + d*x]),x]
```

```
[Out] Log[b*c + a*d + 2*b*d*x + 2*Sqrt[b]*Sqrt[d]*Sqrt[a + b*x]*Sqrt[c
+ d*x]]/(Sqrt[b]*Sqrt[d])
```

Maple [B] time = 0., size = 76, normalized size = 1.8

$$1\sqrt{(bx+a)(dx+c)}\ln\left(1\left(\frac{ad}{2}+\frac{bc}{2}+bdx\right)\frac{1}{\sqrt{bd}}+\sqrt{dx^2b+(ad+bc)x+ac}\right)\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/2),x)
```

```
[Out] ((b*x+a)*(d*x+c))^(1/2)/(b*x+a)^(1/2)/(d*x+c)^(1/2)*ln((1/2*a*d+1
/2*b*c+b*d*x)/(b*d)^(1/2)+(d*x^2*b+(a*d+b*c)*x+a*c)^(1/2))/(b*d)^
(1/2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219414, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(4\left(2b^2d^2x+b^2cd+abd^2\right)\sqrt{bx+a}\sqrt{dx+c}+\left(8b^2d^2x^2+b^2c^2+6abcd+a^2d^2+8\left(b^2cd+abd^2\right)x\right)\sqrt{bd}\right)}{2\sqrt{bd}}, \frac{\arctan\left(\frac{(2b\ldots}{2\sqrt{\ldots}}\right.}{\sqrt{\ldots}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/2*log(4*(2*b^2*d^2*x + b^2*c*d + a*b*d^2)*sqrt(b*x + a)*sqrt(d
*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 + 6*a*b*c*d + a^2*d^2 + 8*(b^2
*c*d + a*b*d^2)*x)*sqrt(b*d))/sqrt(b*d), arctan(1/2*(2*b*d*x + b*
c + a*d)*sqrt(-b*d)/(sqrt(b*x + a)*sqrt(d*x + c)*b*d))/sqrt(-b*d)
]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.221441, size = 68, normalized size = 1.62

$$-\frac{2\,b\ln\left(\left|-\sqrt{bd}\sqrt{bx+a}+\sqrt{b^2c+(bx+a)bd-abd}\right|\right)}{\sqrt{bd}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] -2*b*ln(abs(-sqrt(b*d)*sqrt(b*x + a) + sqrt(b^2*c + (b*x + a)*b*d
 - a*b*d)))/(sqrt(b*d)*abs(b))
```

3.1555 $\int \frac{1}{\sqrt{\frac{b-bc}{d}+bx}\sqrt{c-dx}}\,dx$

Optimal. Leaf size=52

$$\frac{2\tan^{-1}\left(\frac{\sqrt{d}\sqrt{\frac{b(1-c)}{d}+bx}}{\sqrt{b}\sqrt{c-dx}}\right)}{\sqrt{b}\sqrt{d}}$$

```
[Out] (2*ArcTan[(Sqrt[d]*Sqrt[(b*(1 - c))/d + b*x])/(Sqrt[b]*Sqrt[c - d
*x])])/(Sqrt[b]*Sqrt[d])
```

Rubi [A] time = 0.0615046, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$

$$\frac{2\tan^{-1}\left(\frac{\sqrt{d}\sqrt{\frac{b(1-c)}{d}+bx}}{\sqrt{b}\sqrt{c-dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[(b - b*c)/d + b*x]*Sqrt[c - d*x]),x]
```

```
[Out] (2*ArcTan[(Sqrt[d]*Sqrt[(b*(1 - c))/d + b*x])/(Sqrt[b]*Sqrt[c - d
*x])])/(Sqrt[b]*Sqrt[d])
```

Rubi in Sympy [A] time = 7.33741, size = 44, normalized size = 0.85

$$\frac{2\,\text{atan}\left(\frac{\sqrt{d}\sqrt{bx-\frac{b(c-1)}{d}}}{\sqrt{b}\sqrt{c-dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/((-b*c+b)/d+b*x)**(1/2)/(-d*x+c)**(1/2),x)
```

```
[Out] 2*atan(sqrt(d)*sqrt(b*x - b*(c - 1)/d)/(sqrt(b)*sqrt(c - d*x)))/(
sqrt(b)*sqrt(d))
```

Mathematica [A] time = 0.0524695, size = 45, normalized size = 0.87

$$-\frac{2\sqrt{-c+dx+1}\sin^{-1}\left(\sqrt{c-dx}\right)}{d\sqrt{\frac{b(-c+dx+1)}{d}}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[(b - b*c)/d + b*x]*Sqrt[c - d*x]),x]
```

```
[Out] (-2*Sqrt[1 - c + d*x]*ArcSin[Sqrt[c - d*x]])/(d*Sqrt[(b*(1 - c +
d*x))/d])
```

Maple [B] time = 0.046, size = 118, normalized size = 2.3

$$1\sqrt{\left(\frac{b(1-c)}{d}+bx\right)(-dx+c)}\arctan\left(1\sqrt{bd}\left(x-\frac{-b(1-c)+bc}{2bd}\right)\frac{1}{\sqrt{-dx^2b+(-b(1-c)+bc)x+\frac{b(1-c)c}{d}}}\right)\frac{1}{\sqrt{\frac{b(1-c)}{d}+bx}}\frac{}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/((-b*c+b)/d+b*x)^(1/2)/(-d*x+c)^(1/2),x)
```

```
[Out] ((b*(1-c)/d+b*x)*(-d*x+c))^(1/2)/(b*(1-c)/d+b*x)^(1/2)/(-d*x+c)^(
1/2)/(b*d)^(1/2)*arctan((b*d)^(1/2)*(x-1/2*(-b*(1-c)+b*c)/b/d)/(-
d*x^2*b+(-b*(1-c)+b*c)*x+b*(1-c)/d*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x - (b*c - b)/d)*sqrt(-d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22558, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(4\left(2d^2x-(2c-1)d\right)\sqrt{-dx+c}\sqrt{\frac{bdx-bc+b}{d}}+\left(8d^2x^2-8(2c-1)dx+8c^2-8c+1\right)\sqrt{-bd}\right)}{2\sqrt{-bd}},\ \frac{\arctan\left(\frac{\sqrt{bd}(2dx-2c+1}{2\sqrt{-dx+c}d\sqrt{\frac{bdx-}{d}}}\right.}{\sqrt{bd}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x - (b*c - b)/d)*sqrt(-d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/2*log(4*(2*d^2*x - (2*c - 1)*d)*sqrt(-d*x + c)*sqrt((b*d*x - b
*c + b)/d) + (8*d^2*x^2 - 8*(2*c - 1)*d*x + 8*c^2 - 8*c + 1)*sqrt
(-b*d))/sqrt(-b*d), arctan(1/2*sqrt(b*d)*(2*d*x - 2*c + 1)/(sqrt(
-d*x + c)*d*sqrt((b*d*x - b*c + b)/d)))/sqrt(b*d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\sqrt{b\left(-\frac{c}{d}+x+\frac{1}{d}\right)}\sqrt{c-dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-b*c+b)/d+b*x)**(1/2)/(-d*x+c)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(b*(-c/d + x + 1/d))*sqrt(c - d*x)), x)
```

GIAC/XCAS [A] time = 0.219282, size = 90, normalized size = 1.73

$$-\frac{2b\ln\left(-\sqrt{-bd}\sqrt{bx-\frac{bc-b}{d}}+\sqrt{-\left(bx-\frac{bc-b}{d}\right)bd+b^2}\right)}{\sqrt{-bd}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(sqrt(b*x - (b*c - b)/d)*sqrt(-d*x + c)),x, algorithm="giac")
```

```
[Out] -2*b*ln(-sqrt(-b*d)*sqrt(b*x - (b*c - b)/d) + sqrt(-(b*x - (b*c -
 b)/d)*b*d + b^2))/(sqrt(-b*d)*abs(b))
```

3.1556 $\int \frac{1}{\sqrt{4-x}\sqrt{x}}\,dx$

Optimal. Leaf size=10

$$-\sin^{-1}\left(1-\frac{x}{2}\right)$$

```
[Out] -ArcSin[1 - x/2]
```

Rubi [A] time = 0.0194822, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.2

$$-\sin^{-1}\left(1-\frac{x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[4 - x]*Sqrt[x]),x]

[Out] -ArcSin[1 - x/2]
```

Rubi in Sympy [A] time = 2.67414, size = 5, normalized size = 0.5

$$\operatorname{asin}\left(\frac{x}{2}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(4-x)**(1/2)/x**(1/2),x)

[Out] asin(x/2 - 1)
```

Mathematica [B] time = 0.015555, size = 38, normalized size = 3.8

$$\frac{2\sqrt{x-4}\sqrt{x}\log\left(\sqrt{x-4}+\sqrt{x}\right)}{\sqrt{-(x-4)x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[4 - x]*Sqrt[x]),x]
```

```
[Out] (2*Sqrt[-4 + x]*Sqrt[x]*Log[Sqrt[-4 + x] + Sqrt[x]])/Sqrt[-((-4 +
 x)*x)]
```

Maple [B] time = 0.009, size = 27, normalized size = 2.7

$$1\sqrt{(4-x)\,x}\arcsin\left(-1+\frac{x}{2}\right)\frac{1}{\sqrt{4-x}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(4-x)^(1/2)/x^(1/2),x)
```

```
[Out] ((4-x)*x)^(1/2)/(4-x)^(1/2)/x^(1/2)*arcsin(-1+1/2*x)
```

Maxima [A] time = 1.49773, size = 19, normalized size = 1.9

$$-2\arctan\left(\frac{\sqrt{-x+4}}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-x + 4)),x, algorithm="maxima")
```

```
[Out] -2*arctan(sqrt(-x + 4)/sqrt(x))
```

Fricas [A] time = 0.208504, size = 19, normalized size = 1.9

$$-2\arctan\left(\frac{\sqrt{-x+4}}{\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-x + 4)),x, algorithm="fricas")
```

```
[Out] -2*arctan(sqrt(-x + 4)/sqrt(x))
```

Sympy [A] time = 1.65439, size = 26, normalized size = 2.6

$$\begin{cases} -2i\operatorname{acosh}\left(\frac{\sqrt{x}}{2}\right) & \text{for}\ \frac{|x|}{4} > 1 \\ 2\operatorname{asin}\left(\frac{\sqrt{x}}{2}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(4-x)**(1/2)/x**(1/2),x)
```

```
[Out] Piecewise((-2*I*acosh(sqrt(x)/2), Abs(x)/4 > 1), (2*asin(sqrt(x)/
2), True))
```

GIAC/XCAS [A] time = 0.217645, size = 11, normalized size = 1.1

$$2 \arcsin\left(\frac{1}{2}\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-x + 4)),x, algorithm="giac")
```

```
[Out] 2*arcsin(1/2*sqrt(x))
```

3.1557 $\int \frac{1}{\sqrt{3-2x}\sqrt{x}}\,dx$

Optimal. Leaf size=20

$$\sqrt{2}\sin^{-1}\left(\sqrt{\frac{2}{3}}\sqrt{x}\right)$$

```
[Out] Sqrt[2]*ArcSin[Sqrt[2/3]*Sqrt[x]]
```

Rubi [A] time = 0.0194492, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\sqrt{2}\sin^{-1}\left(\sqrt{\frac{2}{3}}\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[3 - 2*x]*Sqrt[x]),x]

[Out] Sqrt[2]*ArcSin[Sqrt[2/3]*Sqrt[x]]
```

Rubi in Sympy [A] time = 2.56503, size = 17, normalized size = 0.85

$$\sqrt{2}\,\mathrm{asin}\left(\frac{\sqrt{6}\sqrt{x}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-2*x)**(1/2)/x**(1/2),x)

[Out] sqrt(2)*asin(sqrt(6)*sqrt(x)/3)
```

Mathematica [A] time = 0.00934318, size = 20, normalized size = 1.

$$\sqrt{2}\sin^{-1}\left(\sqrt{\frac{2}{3}}\sqrt{x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[3 - 2*x]*Sqrt[x]),x]
```

```
[Out] Sqrt[2]*ArcSin[Sqrt[2/3]*Sqrt[x]]
```

Maple [B] time = 0.008, size = 31, normalized size = 1.6

$$\frac{\sqrt{2}}{2}\sqrt{(3-2\,x)\,x}\arcsin\left(\frac{4\,x}{3}-1\right)\frac{1}{\sqrt{3-2\,x}}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-2*x)^(1/2)/x^(1/2),x)
```

```
[Out] 1/2*((3-2*x)*x)^(1/2)/(3-2*x)^(1/2)/x^(1/2)*2^(1/2)*arcsin(4/3*x-
1)
```

Maxima [A] time = 1.50453, size = 28, normalized size = 1.4

$$-\sqrt{2}\arctan\left(\frac{\sqrt{2}\sqrt{-2\,x+3}}{2\,\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-2*x + 3)),x, algorithm="maxima")
```

```
[Out] -sqrt(2)*arctan(1/2*sqrt(2)*sqrt(-2*x + 3)/sqrt(x))
```

Fricas [A] time = 0.208743, size = 28, normalized size = 1.4

$$-\sqrt{2}\arctan\left(\frac{\sqrt{2}\sqrt{-2\,x+3}}{2\,\sqrt{x}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-2*x + 3)),x, algorithm="fricas")
```

```
[Out] -sqrt(2)*arctan(1/2*sqrt(2)*sqrt(-2*x + 3)/sqrt(x))
```

Sympy [A] time = 1.70845, size = 44, normalized size = 2.2

$$\begin{cases} -\sqrt{2}i \operatorname{acosh}\left(\frac{\sqrt{6}\sqrt{x}}{3}\right) & \text{for } \frac{2|x|}{3} > 1 \\ \sqrt{2}\operatorname{asin}\left(\frac{\sqrt{6}\sqrt{x}}{3}\right) & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-2*x)**(1/2)/x**(1/2),x)
```

```
[Out] Piecewise((-sqrt(2)*I*acosh(sqrt(6)*sqrt(x)/3), 2*Abs(x)/3 > 1),
(sqrt(2)*asin(sqrt(6)*sqrt(x)/3), True))
```

GIAC/XCAS [A] time = 0.217587, size = 18, normalized size = 0.9

$$\sqrt{2}\arcsin\left(\frac{1}{3}\sqrt{6}\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(x)*sqrt(-2*x + 3)),x, algorithm="giac")
```

```
[Out] sqrt(2)*arcsin(1/3*sqrt(6)*sqrt(x))
```

3.1558 $\int \frac{1}{\sqrt{3-2x}\sqrt{3+5x}}\,dx$

Optimal. Leaf size=26

$$\sqrt{\frac{2}{5}}\sin^{-1}\left(\sqrt{\frac{2}{21}}\sqrt{5x+3}\right)$$

```
[Out] Sqrt[2/5]*ArcSin[Sqrt[2/21]*Sqrt[3 + 5*x]]
```

Rubi [A] time = 0.0284756, antiderivative size = 26, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\sqrt{\frac{2}{5}}\sin^{-1}\left(\sqrt{\frac{2}{21}}\sqrt{5x+3}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[3 - 2*x]*Sqrt[3 + 5*x]),x]
```

```
[Out] Sqrt[2/5]*ArcSin[Sqrt[2/21]*Sqrt[3 + 5*x]]
```

Rubi in Sympy [A] time = 3.68111, size = 22, normalized size = 0.85

$$\frac{\sqrt{10}\,\mathrm{asin}\left(\frac{\sqrt{42}\sqrt{5x+3}}{21}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(3-2*x)**(1/2)/(3+5*x)**(1/2),x)
```

```
[Out] sqrt(10)*asin(sqrt(42)*sqrt(5*x + 3)/21)/5
```

Mathematica [A] time = 0.0243206, size = 27, normalized size = 1.04

$$-\sqrt{\frac{2}{5}}\sin^{-1}\left(\sqrt{\frac{5}{21}}\sqrt{3-2x}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[3 - 2*x]*Sqrt[3 + 5*x]),x]
```

```
[Out] -(Sqrt[2/5]*ArcSin[Sqrt[5/21]*Sqrt[3 - 2*x]])
```

Maple [B] time = 0.01, size = 39, normalized size = 1.5

$$\frac{\sqrt{10}}{10}\sqrt{(3-2x)(3+5x)}\arcsin\left(\frac{20x}{21}-\frac{3}{7}\right)\frac{1}{\sqrt{3-2x}}\frac{1}{\sqrt{3+5x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(3-2*x)^(1/2)/(3+5*x)^(1/2),x)
```

```
[Out] 1/10*((3-2*x)*(3+5*x))^(1/2)/(3-2*x)^(1/2)/(3+5*x)^(1/2)*10^(1/2)
*arcsin(20/21*x-3/7)
```

Maxima [A] time = 1.49045, size = 15, normalized size = 0.58

$$-\frac{1}{10}\sqrt{10}\arcsin\left(-\frac{20}{21}x+\frac{3}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 3)*sqrt(-2*x + 3)),x, algorithm="maxima")
```

```
[Out] -1/10*sqrt(10)*arcsin(-20/21*x + 3/7)
```

Fricas [A] time = 0.206481, size = 55, normalized size = 2.12

$$-\frac{1}{5}\sqrt{5}\sqrt{2}\arctan\left(\frac{\sqrt{2}\left(\sqrt{5}\sqrt{5x+3}\sqrt{-2x+3}-3\sqrt{5}\right)}{10x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 3)*sqrt(-2*x + 3)),x, algorithm="fricas")
```

```
[Out] -1/5*sqrt(5)*sqrt(2)*arctan(1/10*sqrt(2)*(sqrt(5)*sqrt(5*x + 3)*s
qrt(-2*x + 3) - 3*sqrt(5))/x)
```

Sympy [A] time = 1.70415, size = 58, normalized size = 2.23

$$\begin{cases} -\frac{\sqrt{10}i\operatorname{acosh}\left(\frac{\sqrt{210}\sqrt{x+\frac{3}{5}}}{21}\right)}{5} & \text{for } \frac{10\left|x+\frac{3}{5}\right|}{21} > 1 \\ \frac{\sqrt{10}\operatorname{asin}\left(\frac{\sqrt{210}\sqrt{x+\frac{3}{5}}}{21}\right)}{5} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(3-2*x)**(1/2)/(3+5*x)**(1/2),x)
```

```
[Out] Piecewise((-sqrt(10)*I*acosh(sqrt(210)*sqrt(x + 3/5)/21)/5, 10*Ab
s(x + 3/5)/21 > 1), (sqrt(10)*asin(sqrt(210)*sqrt(x + 3/5)/21)/5,
 True))
```

GIAC/XCAS [A] time = 0.215693, size = 28, normalized size = 1.08

$$\frac{1}{5}\sqrt{5}\sqrt{2}\arcsin\left(\frac{1}{21}\sqrt{42}\sqrt{5x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(5*x + 3)*sqrt(-2*x + 3)),x, algorithm="giac")
```

```
[Out] 1/5*sqrt(5)*sqrt(2)*arcsin(1/21*sqrt(42)*sqrt(5*x + 3))
```

3.1559 $\int \frac{1}{\sqrt{a-bx}\sqrt{c+dx}}\,dx$

Optimal. Leaf size=43

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a-bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

```
[Out] (-2*ArcTan[(Sqrt[d]*Sqrt[a - b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqr
t[b]*Sqrt[d])
```

Rubi [A] time = 0.0454478, antiderivative size = 43, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.1

$$-\frac{2\tan^{-1}\left(\frac{\sqrt{d}\sqrt{a-bx}}{\sqrt{b}\sqrt{c+dx}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a - b*x]*Sqrt[c + d*x]),x]
```

```
[Out] (-2*ArcTan[(Sqrt[d]*Sqrt[a - b*x])/(Sqrt[b]*Sqrt[c + d*x])])/(Sqr
t[b]*Sqrt[d])
```

Rubi in Sympy [A] time = 6.8135, size = 39, normalized size = 0.91

$$\frac{2\,\text{atan}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{d}\sqrt{a-bx}}\right)}{\sqrt{b}\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] 2*atan(sqrt(b)*sqrt(c + d*x)/(sqrt(d)*sqrt(a - b*x)))/(sqrt(b)*sq
rt(d))
```

Mathematica [C] time = 0.110626, size = 64, normalized size = 1.49

$$\frac{i\log\left(2\sqrt{a-bx}\sqrt{c+dx}-\frac{i(-ad+bc+2bdx)}{\sqrt{b}\sqrt{d}}\right)}{\sqrt{b}\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a - b*x]*Sqrt[c + d*x]),x]
```

```
[Out] (I*Log[2*Sqrt[a - b*x]*Sqrt[c + d*x] - (I*(b*c - a*d + 2*b*d*x))/
(Sqrt[b]*Sqrt[d])])/(Sqrt[b]*Sqrt[d])
```

Maple [B] time = 0.015, size = 84, normalized size = 2.

$$1\sqrt{(-bx+a)(dx+c)}\arctan\left(1\sqrt{bd}\left(x-\frac{ad-bc}{2\,bd}\right)\frac{1}{\sqrt{-dx^2b+(ad-bc)\,x+ac}}\right)\frac{1}{\sqrt{-bx+a}}\frac{1}{\sqrt{dx+c}}\frac{1}{\sqrt{bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-b*x+a)^(1/2)/(d*x+c)^(1/2),x)
```

```
[Out] ((-b*x+a)*(d*x+c))^(1/2)/(-b*x+a)^(1/2)/(d*x+c)^(1/2)/(b*d)^(1/2)
*arctan((b*d)^(1/2)*(x-1/2*(a*d-b*c)/b/d)/(-d*x^2*b+(a*d-b*c)*x+a
*c)^(1/2))
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*sqrt(d*x + c)),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219046, size = 1, normalized size = 0.02

$$\left[\frac{\log\left(4\left(2\,b^2d^2x+b^2cd-abd^2\right)\sqrt{-bx+a}\sqrt{dx+c}+\left(8\,b^2d^2x^2+b^2c^2-6\,abcd+a^2d^2+8\left(b^2cd-abd^2\right)x\right)\sqrt{-bd}\right)}{2\,\sqrt{-bd}}, \frac{\arctan\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*sqrt(d*x + c)),x, algorithm="fricas")
```

```
[Out] [1/2*log(4*(2*b^2*d^2*x + b^2*c*d - a*b*d^2)*sqrt(-b*x + a)*sqrt(
d*x + c) + (8*b^2*d^2*x^2 + b^2*c^2 - 6*a*b*c*d + a^2*d^2 + 8*(b^
2*c*d - a*b*d^2)*x)*sqrt(-b*d))/sqrt(-b*d), arctan(1/2*(2*b*d*x +
 b*c - a*d)*sqrt(b*d)/(sqrt(-b*x + a)*sqrt(d*x + c)*b*d))/sqrt(b*
d)]
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a-bx}\sqrt{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-b*x+a)**(1/2)/(d*x+c)**(1/2),x)
```

```
[Out] Integral(1/(sqrt(a - b*x)*sqrt(c + d*x)), x)
```

GIAC/XCAS [A] time = 0.228959, size = 73, normalized size = 1.7

$$\frac{2\,b\ln\left(\left|-\sqrt{-bd}\sqrt{-bx+a}+\sqrt{b^2c+(bx-a)bd+abd}\right|\right)}{\sqrt{-bd}|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(-b*x + a)*sqrt(d*x + c)),x, algorithm="giac")
```

```
[Out] 2*b*ln(abs(-sqrt(-b*d)*sqrt(-b*x + a) + sqrt(b^2*c + (b*x - a)*b*
d + a*b*d)))/(sqrt(-b*d)*abs(b))
```

3.1560 $\int (a+bx)^{3/2}\sqrt[3]{c+dx}\,dx$

Optimal. Leaf size=457

$$-\frac{108\ 3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)^3\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\Bigg(\sin^{-1}\Bigg(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-\cdots}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-\cdots}}\cdots}{935b^{4/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{108\sqrt{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}{935bd^2}+\frac{12(a+bx)^{3/2}\sqrt[3]{c+dx}(bc-ad)}{187bd}+\frac{6(a+bx)^{5/2}\sqrt[3]{c+dx}}{17b}$$

```
[Out] (-108*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/3))/(935*b*d^2) +
(12*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/3))/(187*b*d) + (6*(
a + b*x)^(5/2)*(c + d*x)^(1/3))/(17*b) - (108*3^(3/4)*Sqrt[2 - Sq
rt[3]]*(b*c - a*d)^3*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)
)*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(
1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*
c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a
*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(935*b^(4
/3)*d^3*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3
) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3))^2])
```

Rubi [A] time = 1.1164, antiderivative size = 457, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$-\frac{108\ 3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)^3\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\Bigg(\sin^{-1}\Bigg(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-\cdots}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-\cdots}}\cdots}{935b^{4/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{108\sqrt{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}{935bd^2}+\frac{12(a+bx)^{3/2}\sqrt[3]{c+dx}(bc-ad)}{187bd}+\frac{6(a+bx)^{5/2}\sqrt[3]{c+dx}}{17b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(1/3),x]
```


```
[Out] (-108*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/3))/(935*b*d^2) +
(12*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/3))/(187*b*d) + (6*(
a + b*x)^(5/2)*(c + d*x)^(1/3))/(17*b) - (108*3^(3/4)*Sqrt[2 - Sq
rt[3]]*(b*c - a*d)^3*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)
```

```
)*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(
1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*
c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a
*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(935*b^(4
/3)*d^3*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3
) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3))^2])
```

Rubi in Sympy [A] time = 53.5847, size = 389, normalized size = 0.85

$$\frac{6(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{4}{3}}}{17d}+\frac{54\sqrt{a+bx}\,(c+dx)^{\frac{4}{3}}(ad-bc)}{187d^2}+\frac{162\sqrt{a+bx}\sqrt[3]{c+dx}\,(ad-bc)^2}{935bd^2} - \frac{108\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{\sqrt{3}+2}\,(ad-bc)^3\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1\right.}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1\right.}\right.\right.}{935b^{\frac{4}{3}}d^3\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(1/3),x)
```

```
[Out] 6*(a + b*x)**(3/2)*(c + d*x)**(4/3)/(17*d) + 54*sqrt(a + b*x)*(c
+ d*x)**(4/3)*(a*d - b*c)/(187*d**2) + 162*sqrt(a + b*x)*(c + d*x
)**(1/3)*(a*d - b*c)**2/(935*b*d**2) - 108*3**(3/4)*sqrt((b**(2/3
)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
 + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))
*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**3*(b**(1/
3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/
3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3
)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*s
qrt(3))/(935*b**(4/3)*d**3*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (
1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)
/d))
```

Mathematica [C] time = 0.285936, size = 142, normalized size = 0.31

$$-\frac{6\sqrt[3]{c+dx}\left(-d(a+bx)\left(27a^2d^2+2abd(23c+50dx)+b^2\left(-18c^2+10cdx+55d^2x^2\right)\right)-27(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b\right.\right.}{935bd^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(1/3),x]
```

```
[Out] (-6*(c + d*x)^(1/3)*(-(d*(a + b*x)*(27*a^2*d^2 + 2*a*b*d*(23*c +
50*d*x) + b^2*(-18*c^2 + 10*c*d*x + 55*d^2*x^2))) - 27*(b*c - a*d
)^3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/3, 1/2
, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(935*b*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} \sqrt[3]{dx+c}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(3/2)*(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} (dx+c)^{\frac{1}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{3}{2}} (dx+c)^{\frac{1}{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)*(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{3}{2}}\sqrt[3]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(3/2)*(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(1/3), x)
```

3.1561 $\int \sqrt{a+bx}\sqrt[3]{c+dx}\,dx$

Optimal. Leaf size=419

$$\frac{12\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-a}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-a}}\right.\right.}{55b^{4/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{12\sqrt{a+bx}\sqrt[3]{c+dx}(bc-ad)}{55bd}+\frac{6(a+bx)^{3/2}\sqrt[3]{c+dx}}{11b}$$

```
[Out] (12*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/3))/(55*b*d) + (6*(a +
 b*x)^(3/2)*(c + d*x)^(1/3))/(11*b) + (12*3^(3/4)*Sqrt[2 - Sqrt[3
]]*(b*c - a*d)^2*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sq
rt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3)
 + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^
(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(55*b^(4/3)*d
^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.704626, antiderivative size = 419, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{12\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-a}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-a}}\right.\right.}{55b^{4/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{12\sqrt{a+bx}\sqrt[3]{c+dx}(bc-ad)}{55bd}+\frac{6(a+bx)^{3/2}\sqrt[3]{c+dx}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(1/3),x]
```

```
[Out] (12*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/3))/(55*b*d) + (6*(a +
 b*x)^(3/2)*(c + d*x)^(1/3))/(11*b) + (12*3^(3/4)*Sqrt[2 - Sqrt[3
]]*(b*c - a*d)^2*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sq
rt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3)
 + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
```

```
(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^
(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(55*b^(4/3)*d
^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 41.7804, size = 355, normalized size = 0.85

$$\frac{6\sqrt{a+bx}\,(c+dx)^{\frac{4}{3}}}{11d}+\frac{18\sqrt{a+bx}\sqrt[3]{c+dx}\,(ad-bc)}{55bd}-\frac{12\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{\sqrt{3}+2}\,(ad-bc)^{2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\right.}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\right.}\right.\right.}{55b^{\frac{4}{3}}d^{2}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(1/3),x)
```

```
[Out] 6*sqrt(a + b*x)*(c + d*x)**(4/3)/(11*d) + 18*sqrt(a + b*x)*(c + d
*x)**(1/3)*(a*d - b*c)/(55*b*d) - 12*3**(3/4)*sqrt((b**(2/3)*(c +
 d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*
d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d
- b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**2*(b**(1/3)*(c
+ d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*(c
+ d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c +
 d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3)
)/(55*b**(4/3)*d**2*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**
(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqr
t(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.192236, size = 110, normalized size = 0.26

$$\frac{6\sqrt[3]{c+dx}\left(d(a+bx)(3ad+2bc+5bdx)-3(bc-ad)^{2}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{55bd^{2}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(1/3),x]
```

```
[Out] (6*(c + d*x)^(1/3)*(d*(a + b*x)*(2*b*c + 3*a*d + 5*b*d*x) - 3*(b*
c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1
```

```
/3, 1/2, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(55*b*d^2*Sqrt[a + b*x
])
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int \sqrt{bx+a}\,\sqrt[3]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(1/2)*(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}(dx+c)^{\frac{1}{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)*(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+bx}\,\sqrt[3]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(1/3),x)
```

```
[Out] Integral(sqrt(a + b*x)*(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(1/3), x)
```

3.1562 $\int \frac{\sqrt[3]{c+dx}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=381

$$\frac{6\sqrt{a+bx}\sqrt[3]{c+dx}}{5b} - \frac{4\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-a\ldots}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-a\ldots}}\right.\right.}{5b^{4/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

```
[Out] (6*Sqrt[a + b*x]*(c + d*x)^(1/3))/(5*b) - (4*3^(3/4)*Sqrt[2 - Sqr
t[3]]*(b*c - a*d)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(5*b^(4/3)*d
*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)
*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.554236, antiderivative size = 381, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{6\sqrt{a+bx}\sqrt[3]{c+dx}}{5b} - \frac{4\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-a\ldots}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-a\ldots}}\right.\right.}{5b^{4/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/Sqrt[a + b*x],x]
```

```
[Out] (6*Sqrt[a + b*x]*(c + d*x)^(1/3))/(5*b) - (4*3^(3/4)*Sqrt[2 - Sqr
t[3]]*(b*c - a*d)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
```

```
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(5*b^(4/3)*d
*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)
*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 29.2598, size = 321, normalized size = 0.84

$$\frac{6\sqrt{a+bx}\sqrt[3]{c+dx}}{5b} - \frac{4\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{\sqrt{3}+2}\,(ad-bc)\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\ldots}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\ldots}\right.\right.}{5b^{\frac{4}{3}}d\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(1/2),x)
```

```
[Out] 6*sqrt(a + b*x)*(c + d*x)**(1/3)/(5*b) - 4*3**(3/4)*sqrt((b**(2/3
)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
 + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))
*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)*(b**(1/3)*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*
(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(
c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt
(3))/(5*b**(4/3)*d*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(
1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt
(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.154502, size = 93, normalized size = 0.24

$$\frac{6\sqrt[3]{c+dx}\left((bc-ad)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{5bd\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/Sqrt[a + b*x],x]
```

```
[Out] (6*(c + d*x)^(1/3)*(d*(a + b*x) + (b*c - a*d)*Sqrt[(d*(a + b*x))/
(-(b*c) + a*d)]*Hypergeometric2F1[1/3, 1/2, 4/3, (b*(c + d*x))/(b
```

```
*c - a*d)]))/(5*b*d*Sqrt[a + b*x])
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(1/2),x)

[Out] int((d*x+c)^(1/3)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/sqrt(b*x + a),x, algorithm="maxima")

[Out] integrate((d*x + c)^(1/3)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/sqrt(b*x + a),x, algorithm="fricas")

[Out] integral((d*x + c)^(1/3)/sqrt(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(1/3)/sqrt(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/sqrt(b*x + a), x)
```

3.1563 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=366

$$-\frac{4\sqrt{2-\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\Bigg(\sin^{-1}\Bigg(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}}{\sqrt[4]{3}\,b^{4/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[3]{c+dx}}{b\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(1/3))/(b*Sqrt[a + b*x]) - (4*Sqrt[2 - Sqrt[3]]*((b
*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3
) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)
^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)
*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))], -7 + 4*Sqrt[3]])/(3^(1/4)*b^(4/3)*Sqrt[a + b*x]*Sq
rt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1
/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
^2)])
```

Rubi [A] time = 0.522132, antiderivative size = 366, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$-\frac{4\sqrt{2-\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\Bigg(\sin^{-1}\Bigg(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}}{\sqrt[4]{3}\,b^{4/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[3]{c+dx}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*(c + d*x)^(1/3))/(b*Sqrt[a + b*x]) - (4*Sqrt[2 - Sqrt[3]]*((b
*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3
) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)
^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
```

```
))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)
*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))], -7 + 4*Sqrt[3]])/(3^(1/4)*b^(4/3)*Sqrt[a + b*x]*Sq
rt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1
/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
^2)])
```

Rubi in Sympy [A] time = 29.1923, size = 311, normalized size = 0.85

$$-\frac{2\sqrt[3]{c+dx}}{b\sqrt{a+bx}}+\frac{4\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{\sqrt{3}+2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad-bc}}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}}\right.\right.}{3b^{\frac{4}{3}}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(1/3)/(b*sqrt(a + b*x)) + 4*3**(3/4)*sqrt((b**(2/3)
*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
+ (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*
(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(b**(1/3)*(c + d*x)**(1
/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*(c + d*x)**(1
/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/
3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))/(3*b**(4
/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c
)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.0916073, size = 74, normalized size = 0.2

$$\frac{2\sqrt[3]{c+dx}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(1/3)*(-1 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/3, 1/2, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(b*Sqrt[
```

```
a + b*x])
```

Maple [F] time = 0.078, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(3/2),x)

[Out] int((d*x+c)^(1/3)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(3/2),x, algorithm="maxima")

[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(3/2),x, algorithm="fricas")

[Out] integral((d*x + c)^(1/3)/(b*x + a)^(3/2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(3/2),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(3/2), x)
```

3.1564 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=417

$$\frac{4\sqrt{2-\sqrt{3}}\,d\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{9\sqrt[4]{3}\,b^{4/3}\sqrt{a+bx}(bc-ad)\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{4d\sqrt[3]{c+dx}}{9b\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt[3]{c+dx}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(1/3))/(3*b*(a + b*x)^(3/2)) - (4*d*(c + d*x)^(1/3)
)/(9*b*(b*c - a*d)*Sqrt[a + b*x]) + (4*Sqrt[2 - Sqrt[3]]*d*((b*c
- a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) +
 b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2
/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^
2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c
 + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))], -7 + 4*Sqrt[3]])/(9*3^(1/4)*b^(4/3)*(b*c - a*d)*Sqrt[
a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(
c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3))^2)])
```

Rubi [A] time = 0.676094, antiderivative size = 417, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{4\sqrt{2-\sqrt{3}}\,d\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{9\sqrt[4]{3}\,b^{4/3}\sqrt{a+bx}(bc-ad)\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{4d\sqrt[3]{c+dx}}{9b\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt[3]{c+dx}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*(c + d*x)^(1/3))/(3*b*(a + b*x)^(3/2)) - (4*d*(c + d*x)^(1/3)
)/(9*b*(b*c - a*d)*Sqrt[a + b*x]) + (4*Sqrt[2 - Sqrt[3]]*d*((b*c
- a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) +
```

```
 b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2
/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^
2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c
 + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))], -7 + 4*Sqrt[3]])/(9*3^(1/4)*b^(4/3)*(b*c - a*d)*Sqrt[
a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(
c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 41.5671, size = 352, normalized size = 0.84

$$\frac{4d\sqrt[3]{c+dx}}{9b\sqrt{a+bx}\,(ad-bc)}-\frac{2\sqrt[3]{c+dx}}{3b\,(a+bx)^{\frac{3}{2}}}+\frac{4\cdot 3^{\frac{3}{4}}d\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{\sqrt{3}+2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad-\cdots}}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-b\cdots}}\cdots\right.\right.}{27b^{\frac{4}{3}}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\,(ad-bc)\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(5/2),x)
```

```
[Out] 4*d*(c + d*x)**(1/3)/(9*b*sqrt(a + b*x)*(a*d - b*c)) - 2*(c + d*x
)**(1/3)/(3*b*(a + b*x)**(3/2)) + 4*3**(3/4)*d*sqrt((b**(2/3)*(c
+ d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a
*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d
 - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(b**(1/3)*(c + d*x)**(1/3)
+ (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*(c + d*x)**(1/3)
- (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) +
 (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))/(27*b**(4/3)
*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)
**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**
(1/3))**2)*(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.193995, size = 104, normalized size = 0.25

$$\frac{2\sqrt[3]{c+dx}\left(d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)-ad+3bc+2bdx\right)}{9b(a+bx)^{3/2}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(1/3)*(3*b*c - a*d + 2*b*d*x + d*(a + b*x)*Sqrt[(d*(
a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/3, 1/2, 4/3, (b*(c
+ d*x))/(b*c - a*d)]))/(9*b*(-(b*c) + a*d)*(a + b*x)^(3/2))
```

Maple [F] time = 0.107, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/3)/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(5/2),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(5/2), x)
```

3.1565 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=457

$$-\frac{28\sqrt{2-\sqrt{3}}d^2\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7+4\sqrt{3}\right)}{135\sqrt[4]{3}b^{4/3}\sqrt{a+bx}(bc-ad)^2\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{28d^2\sqrt[3]{c+dx}}{135b\sqrt{a+bx}(bc-ad)^2}-\frac{4d\sqrt[3]{c+dx}}{45b(a+bx)^{3/2}(bc-ad)}-\frac{2\sqrt[3]{c+dx}}{5b(a+bx)^{5/2}}$$

```
[Out] (-2*(c + d*x)^(1/3))/(5*b*(a + b*x)^(5/2)) - (4*d*(c + d*x)^(1/3)
)/(45*b*(b*c - a*d)*(a + b*x)^(3/2)) + (28*d^2*(c + d*x)^(1/3))/(
135*b*(b*c - a*d)^2*Sqrt[a + b*x]) - (28*Sqrt[2 - Sqrt[3]]*d^2*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/
3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x
)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/
3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3
)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3))], -7 + 4*Sqrt[3]])/(135*3^(1/4)*b^(4/3)*(b*c - a*d)
^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.768938, antiderivative size = 457, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{28\sqrt{2-\sqrt{3}}d^2\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7+4\sqrt{3}\right)}{135\sqrt[4]{3}b^{4/3}\sqrt{a+bx}(bc-ad)^2\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{28d^2\sqrt[3]{c+dx}}{135b\sqrt{a+bx}(bc-ad)^2}-\frac{4d\sqrt[3]{c+dx}}{45b(a+bx)^{3/2}(bc-ad)}-\frac{2\sqrt[3]{c+dx}}{5b(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(1/3))/(5*b*(a + b*x)^(5/2)) - (4*d*(c + d*x)^(1/3)
)/(45*b*(b*c - a*d)*(a + b*x)^(3/2)) + (28*d^2*(c + d*x)^(1/3))/(
```

```
135*b*(b*c - a*d)^2*Sqrt[a + b*x]) - (28*Sqrt[2 - Sqrt[3]]*d^2*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/
3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x
)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/
3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3
)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3))], -7 + 4*Sqrt[3]])/(135*3^(1/4)*b^(4/3)*(b*c - a*d)
^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 56.2976, size = 389, normalized size = 0.85

$$\frac{28d^2\sqrt[3]{c+dx}}{135b\sqrt{a+bx}\,(ad-bc)^2}+\frac{4d\sqrt[3]{c+dx}}{45b\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}-\frac{2\sqrt[3]{c+dx}}{5b\,(a+bx)^{\frac{5}{2}}}+\frac{28\cdot 3^{\frac{3}{4}}d^2\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{\sqrt{3}+2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad\cdots}}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad\cdots}}\right.\right.}{405b^{\frac{4}{3}}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\,(ad-bc)^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(7/2),x)
```

```
[Out] 28*d**2*(c + d*x)**(1/3)/(135*b*sqrt(a + b*x)*(a*d - b*c)**2) + 4
*d*(c + d*x)**(1/3)/(45*b*(a + b*x)**(3/2)*(a*d - b*c)) - 2*(c +
d*x)**(1/3)/(5*b*(a + b*x)**(5/2)) + 28*3**(3/4)*d**2*sqrt((b**(2
/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/
3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3
))*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(b**(1/3)*(c + d*x)*
*(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*(c + d*x)*
*(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**
(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))/(405*
b**(4/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d
- b*c)**(1/3))**2)*(a*d - b*c)**2*sqrt(a - b*c/d + b*(c + d*x)/d)
)
```

Mathematica [C] time = 0.341816, size = 140, normalized size = 0.31

$$\frac{2\sqrt[3]{c+dx}\left(-7a^2d^2+7d^2(a+bx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+2abd(24c+17dx)+b^2\left(-27c^2-6cdx+14d^2x^2\right)\right)}{135b(a+bx)^{5/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(7/2),x]
```

```
[Out] (2*(c + d*x)^(1/3)*(-7*a^2*d^2 + 2*a*b*d*(24*c + 17*d*x) + b^2*(-
27*c^2 - 6*c*d*x + 14*d^2*x^2) + 7*d^2*(a + b*x)^2*Sqrt[(d*(a + b
*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/3, 1/2, 4/3, (b*(c + d*x
))/(b*c - a*d)]))/(135*b*(b*c - a*d)^2*(a + b*x)^(5/2))
```

Maple [F] time = 0.085, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(7/2),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(7/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/3)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)*sqrt(b*x + a)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(7/2),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(7/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(7/2), x)
```

3.1566 $\int \frac{(a+bx)^{3/2}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=839

$$\frac{81\sqrt[4]{3}\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+\ldots}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+\ldots}}\right.\right.}{91b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{54\sqrt{2}3^{3/4}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{91b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{162\sqrt{a+bx}(bc-ad)^2}{91b^{2/3}d^2\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{54\sqrt{a+bx}(c+dx)^{2/3}(bc-ad)}{91d^2}+\frac{6(a+bx)^{3/2}(c+dx)^{2/3}}{13d}$$

```
[Out] (-54*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(2/3))/(91*d^2) + (6*(a
+ b*x)^(3/2)*(c + d*x)^(2/3))/(13*d) - (162*(b*c - a*d)^2*Sqrt[a
+ b*x])/(91*b^(2/3)*d^2*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3
)*(c + d*x)^(1/3))) + (81*3^(1/4)*Sqrt[2 + Sqrt[3]]*(b*c - a*d)^(
7/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a
*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(
c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d
*x)^(1/3))^2]*EllipticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(91*b^(2/3)*d^3*Sqrt[a +
b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)
^(1/3))^2)]) - (54*Sqrt[2]*3^(3/4)*(b*c - a*d)^(7/3)*((b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/
3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/(
(1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Ell
ipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x
)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/
3))], -7 + 4*Sqrt[3]])/(91*b^(2/3)*d^3*Sqrt[a + b*x]*Sqrt[-(((b*c
 - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1
- Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.83401, antiderivative size = 839, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{81\sqrt[4]{3}\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+d}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+d}}\right.\right.}{91b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{54\sqrt{2}3^{3/4}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{91b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{162\sqrt{a+bx}(bc-ad)^2}{91b^{2/3}d^2\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{54\sqrt{a+bx}(c+dx)^{2/3}(bc-ad)}{91d^2}+\frac{6(a+bx)^{3/2}(c+dx)^{2/3}}{13d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(1/3),x]
```

```
[Out] (-54*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(2/3))/(91*d^2) + (6*(a
+ b*x)^(3/2)*(c + d*x)^(2/3))/(13*d) - (162*(b*c - a*d)^2*Sqrt[a
+ b*x])/(91*b^(2/3)*d^2*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3
)*(c + d*x)^(1/3))) + (81*3^(1/4)*Sqrt[2 + Sqrt[3]]*(b*c - a*d)^(
7/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a
*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(
c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d
*x)^(1/3))^2]*EllipticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(91*b^(2/3)*d^3*Sqrt[a +
b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)
^(1/3))^2)]) - (54*Sqrt[2]*3^(3/4)*(b*c - a*d)^(7/3)*((b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/
3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/(
(1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Ell
ipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x
)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/
3))], -7 + 4*Sqrt[3]])/(91*b^(2/3)*d^3*Sqrt[a + b*x]*Sqrt[-(((b*c
 - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1
- Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 112.794, size = 728, normalized size = 0.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(1/3),x)
```

```
[Out] 6*(a + b*x)**(3/2)*(c + d*x)**(2/3)/(13*d) + 54*sqrt(a + b*x)*(c
+ d*x)**(2/3)*(a*d - b*c)/(91*d**2) + 162*(a*d - b*c)**2*sqrt(a -
 b*c/d + b*(c + d*x)/d)/(91*b**(2/3)*d**2*(b**(1/3)*(c + d*x)**(1
/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))) - 81*3**(1/4)*sqrt((b**(
2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1
/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(
3))*(a*d - b*c)**(1/3))**2)*sqrt(-sqrt(3) + 2)*(a*d - b*c)**(7/3)
*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_e(asin
((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/
(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))),
-7 - 4*sqrt(3))/(91*b**(2/3)*d**3*sqrt((a*d - b*c)**(1/3)*(b**(1/
3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1
/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c
 + d*x)/d)) + 54*sqrt(2)*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3)
 - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2
/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3
))**2)*(a*d - b*c)**(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))*elliptic_f(asin((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt
(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3
))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))/(91*b**(2/3)*d**3*sqrt((
a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))*
*2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.225252, size = 108, normalized size = 0.13

$$\frac{3(c+dx)^{2/3}\left(27(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)+4d(a+bx)(16ad-9bc+7bdx)\right)}{182d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(1/3),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(4*d*(a + b*x)*(-9*b*c + 16*a*d + 7*b*d*x) + 2
7*(b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric
2F1[1/2, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)]))/(182*d^3*Sqrt[a +
 b*x])
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/3), x)
```

3.1567 $\int \frac{\sqrt{a+bx}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=804

$$-\frac{9\sqrt[4]{3}\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{7b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{6\sqrt{2}3^{3/4}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{7b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{18\sqrt{a+bx}(bc-ad)}{7b^{2/3}d\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{6\sqrt{a+bx}(c+dx)^{2/3}}{7d}$$

```
[Out] (6*Sqrt[a + b*x]*(c + d*x)^(2/3))/(7*d) + (18*(b*c - a*d)*Sqrt[a
+ b*x])/(7*b^(2/3)*d*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(
c + d*x)^(1/3))) - (9*3^(1/4)*Sqrt[2 + Sqrt[3]]*(b*c - a*d)^(4/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^
(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c +
d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3))^2]*EllipticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*
(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(7*b^(2/3)*d^2*Sqrt[a + b*x]*
Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))^2)]) + (6*Sqrt[2]*3^(3/4)*(b*c - a*d)^(4/3)*((b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*
c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - S
qrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF
[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))],
-7 + 4*Sqrt[3]])/(7*b^(2/3)*d^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)
^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[
3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.54371, antiderivative size = 804, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{9\sqrt[4]{3}\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{7b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{6\sqrt{2}3^{3/4}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{7b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{18\sqrt{a+bx}(bc-ad)}{7b^{2/3}d\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{6\sqrt{a+bx}(c+dx)^{2/3}}{7d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(1/3),x]
```

```
[Out] (6*Sqrt[a + b*x]*(c + d*x)^(2/3))/(7*d) + (18*(b*c - a*d)*Sqrt[a
+ b*x])/(7*b^(2/3)*d*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(
c + d*x)^(1/3))) - (9*3^(1/4)*Sqrt[2 + Sqrt[3]]*(b*c - a*d)^(4/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^
(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c +
d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3))^2]*EllipticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*
(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(7*b^(2/3)*d^2*Sqrt[a + b*x]*
Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))^2)]) + (6*Sqrt[2]*3^(3/4)*(b*c - a*d)^(4/3)*((b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*
c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - S
qrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF
[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))],
-7 + 4*Sqrt[3]])/(7*b^(2/3)*d^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)
^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[
3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 86.4593, size = 694, normalized size = 0.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(1/3),x)
```

```
[Out] 6*sqrt(a + b*x)*(c + d*x)**(2/3)/(7*d) + 18*(a*d - b*c)*sqrt(a -
b*c/d + b*(c + d*x)/d)/(7*b**(2/3)*d*(b**(1/3)*(c + d*x)**(1/3) +
 (1 + sqrt(3))*(a*d - b*c)**(1/3))) - 9*3**(1/4)*sqrt((b**(2/3)*(
c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) +
(a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a
*d - b*c)**(1/3))**2)*sqrt(-sqrt(3) + 2)*(a*d - b*c)**(4/3)*(b**(
1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_e(asin((b**(
1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1
/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4
*sqrt(3))/(7*b**(2/3)*d**2*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (
1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)
/d)) + 6*sqrt(2)*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1
/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b*
*(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*(
a*d - b*c)**(4/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)*elliptic_f(asin((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*
d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d
- b*c)**(1/3))), -7 - 4*sqrt(3))/(7*b**(2/3)*d**2*sqrt((a*d - b*c
)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/
3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(
a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.185775, size = 77, normalized size = 0.1

$$\frac{3\sqrt{a+bx}(c+dx)^{2/3}\left(\frac{3\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+4\right)}{14d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(1/3),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(2/3)*(4 + (3*Hypergeometric2F1[1/2, 2
/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) +
 a*d)]))/(14*d)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(1/3),x)

[Out] int((b*x+a)^(1/2)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/3),x, algorithm="maxima")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/3),x, algorithm="fricas")

[Out] integral(sqrt(b*x + a)/(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(1/3),x)

[Out] Integral(sqrt(a + b*x)/(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx + a}}{(dx + c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/3),x, algorithm="giac")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/3), x)
```

3.1568 $\int \frac{1}{\sqrt{a+bx}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=762

$$-\frac{6\sqrt{a+bx}}{b^{2/3}\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{2\sqrt{2}3^{3/4}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}}\right.\right.}{b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{3\sqrt[4]{3}\sqrt{2+\sqrt{3}}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-}\right.\right.}{b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

```
[Out] (-6*Sqrt[a + b*x])/(b^(2/3)*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))) + (3*3^(1/4)*Sqrt[2 + Sqrt[3]]*(b*c - a*d
)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c
- a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3
)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3))^2]*EllipticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3
) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(b^(2/3)*d*Sqrt[a + b*
x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(
1/3))^2)]) - (2*Sqrt[2]*3^(3/4)*(b*c - a*d)^(1/3)*((b*c - a*d)^(1
/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*
(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1
- Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Ellipt
icF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(
1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
], -7 + 4*Sqrt[3]])/(b^(2/3)*d*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^
(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3
])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.2798, antiderivative size = 762, normalized size of antiderivative = 1., number of

steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{6\sqrt{a+bx}}{b^{2/3}\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{2\sqrt{2}3^{3/4}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\,\cdots}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\,\cdots}\right.\right.}{b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\sqrt[4]{3}\sqrt{2+\sqrt{3}}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\cdots}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\cdots}\right.\right.}{b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(1/3)),x]
```

```
[Out] (-6*Sqrt[a + b*x])/(b^(2/3)*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))) + (3*3^(1/4)*Sqrt[2 + Sqrt[3]]*(b*c - a*d
)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c
- a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3
)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3))^2]*EllipticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3
) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(b^(2/3)*d*Sqrt[a + b*
x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(
1/3))^2)]) - (2*Sqrt[2]*3^(3/4)*(b*c - a*d)^(1/3)*((b*c - a*d)^(1
/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*
(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1
- Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Ellipt
icF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(
1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
], -7 + 4*Sqrt[3]])/(b^(2/3)*d*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^
(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3
])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 64.1664, size = 654, normalized size = 0.86

$$\frac{6\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{b^{\frac{2}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)}-\frac{3\sqrt[4]{3}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{-\sqrt{3}+2}\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)E\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\cdots}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\cdots}\right.\right.}{b^{\frac{2}{3}}d\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{2\sqrt{2}\cdot3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad\cdots}}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-\cdots}}\right.\right.}{b^{\frac{2}{3}}d\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/3),x)
```

```
[Out] 6*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(2/3)*(b**(1/3)*(c + d*x)**
(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))) - 3*3**(1/4)*sqrt((b**
(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(
1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt
(3))*(a*d - b*c)**(1/3))**2)*sqrt(-sqrt(3) + 2)*(a*d - b*c)**(1/3
)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_e(asi
n((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))
/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))),
 -7 - 4*sqrt(3))/(b**(2/3)*d*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) +
 (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*
x)/d)) + 2*sqrt(2)*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**
(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(
b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)
*(a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/
3))*elliptic_f(asin((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(
a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*
d - b*c)**(1/3))), -7 - 4*sqrt(3))/(b**(2/3)*d*sqrt((a*d - b*c)**
(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*
(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a -
 b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.066143, size = 73, normalized size = 0.1

$$\frac{3(c+dx)^{2/3}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{2d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(1/3)),x]
```

```
[Out] (3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(2/3)*Hypergeomet
ric2F1[1/2, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/(2*d*Sqrt[a + b
*x])
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/3)),x, algorithm="fricas")

[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(1/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/3),x)

[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/3)),x, algorithm="giac")

[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/3)), x)
```

3.1569 $\int \frac{1}{(a+bx)^{3/2}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=796

$$-\frac{2\sqrt{a+bx}\,d}{b^{2/3}(bc-ad)\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$+\frac{\sqrt[4]{3}\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\cdots\right)\right)}{b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt{2}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|-7\cdots\right)}{\sqrt[4]{3}\,b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2(c+dx)^{2/3}}{(bc-ad)\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(2/3))/((b*c - a*d)*Sqrt[a + b*x]) - (2*d*Sqrt[a +
b*x])/(b^(2/3)*(b*c - a*d)*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3))) + (3^(1/4)*Sqrt[2 + Sqrt[3]]*((b*c - a*d)^
(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3
)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((
1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Elli
pticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)
^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))], -7 + 4*Sqrt[3]])/(b^(2/3)*(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sq
rt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1
/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
^2)]) - (2*Sqrt[2]*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*
Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/
3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c
- a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d
)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(3^(1/4)*b^
(2/3)*(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*(
(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c
 - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.51451, antiderivative size = 796, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{2\sqrt{a+bx}d}{b^{2/3}(bc-ad)\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$+\frac{\sqrt[4]{3}\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7+4\sqrt{3}\right)}{b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt{2}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7+4\sqrt{3}\right)}{\sqrt[4]{3}b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2(c+dx)^{2/3}}{(bc-ad)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(1/3)),x]
```

```
[Out] (-2*(c + d*x)^(2/3))/((b*c - a*d)*Sqrt[a + b*x]) - (2*d*Sqrt[a +
b*x])/(b^(2/3)*(b*c - a*d)*((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3))) + (3^(1/4)*Sqrt[2 + Sqrt[3]]*((b*c - a*d)^
(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3
)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((
1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Elli
pticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)
^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))], -7 + 4*Sqrt[3]])/(b^(2/3)*(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sq
rt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1
/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
^2)]) - (2*Sqrt[2]*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*
Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/
3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c
- a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d
)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(3^(1/4)*b^
(2/3)*(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*(
(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c
 - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 83.546, size = 685, normalized size = 0.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/3),x)
```

```
[Out] 2*(c + d*x)**(2/3)/(sqrt(a + b*x)*(a*d - b*c)) - 2*d*sqrt(a - b*c
/d + b*(c + d*x)/d)/(b**(2/3)*(a*d - b*c)*(b**(1/3)*(c + d*x)**(1
/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))) + 3**(1/4)*sqrt((b**(2/3
)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
 + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))
*(a*d - b*c)**(1/3))**2)*sqrt(-sqrt(3) + 2)*(b**(1/3)*(c + d*x)**
(1/3) + (a*d - b*c)**(1/3))*elliptic_e(asin((b**(1/3)*(c + d*x)**
(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(
1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))/(b**(2
/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c
)**(1/3))**2)*(a*d - b*c)**(2/3)*sqrt(a - b*c/d + b*(c + d*x)/d))
 - 2*sqrt(2)*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*
(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/
3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*(b**(
1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(
1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1
/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4
*sqrt(3))/(3*b**(2/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + s
qrt(3))*(a*d - b*c)**(1/3))**2)*(a*d - b*c)**(2/3)*sqrt(a - b*c/d
 + b*(c + d*x)/d))
```

Mathematica [C] time = 0.10675, size = 83, normalized size = 0.1

$$\frac{(c+dx)^{2/3}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)-4\right)}{2\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(1/3)),x]
```

```
[Out] ((c + d*x)^(2/3)*(-4 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyperge
ometric2F1[1/2, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)]))/(2*(b*c -
a*d)*Sqrt[a + b*x])
```

Maple [F] time = 0.08, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(1/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/3)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/3)), x)
```

3.1570 $\int \frac{1}{(a+bx)^{5/2}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=842

$$\frac{10\sqrt{a+bx}\,d^2}{9b^{2/3}(bc-ad)^2\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{5\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{3\,3^{3/4}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{10\sqrt{2}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|-7\right.}{9\sqrt[4]{3}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{10(c+dx)^{2/3}d}{9(bc-ad)^2\sqrt{a+bx}}-\frac{2(c+dx)^{2/3}}{3(bc-ad)(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(2/3))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (10*d*(c +
 d*x)^(2/3))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) + (10*d^2*Sqrt[a + b
*x])/(9*b^(2/3)*(b*c - a*d)^2*((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3))) - (5*Sqrt[2 + Sqrt[3]]*d*((b*c - a*d)^(
1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)
*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1
 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Ellip
ticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)
)], -7 + 4*Sqrt[3]])/(3*3^(3/4)*b^(2/3)*(b*c - a*d)^(5/3)*Sqrt[a
+ b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))^2)]) + (10*Sqrt[2]*d*((b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(
c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a
*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sq
rt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3]
)*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])
/(9*3^(1/4)*b^(2/3)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-(((b*c
- a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 -
 Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.79538, antiderivative size = 842, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{10\sqrt{a+bx}d^2}{9b^{2/3}(bc-ad)^2\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)} - \frac{5\sqrt{2+\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{3\,3^{3/4}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}} + \frac{10\sqrt{2}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7\right.}{9\sqrt[4]{3}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}} + \frac{10(c+dx)^{2/3}d}{9(bc-ad)^2\sqrt{a+bx}} - \frac{2(c+dx)^{2/3}}{3(bc-ad)(a+bx)^{3/2}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(1/3)),x]
```

```
[Out] (-2*(c + d*x)^(2/3))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (10*d*(c +
 d*x)^(2/3))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) + (10*d^2*Sqrt[a + b
*x])/(9*b^(2/3)*(b*c - a*d)^2*((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3))) - (5*Sqrt[2 + Sqrt[3]]*d*((b*c - a*d)^(
1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)
*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1
 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*Ellip
ticE[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)
)], -7 + 4*Sqrt[3]])/(3*3^(3/4)*b^(2/3)*(b*c - a*d)^(5/3)*Sqrt[a
+ b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))^2)]) + (10*Sqrt[2]*d*((b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(
c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a
*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sq
rt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3]
)*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])
/(9*3^(1/4)*b^(2/3)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-(((b*c
- a*d)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 -
 Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 107.233, size = 729, normalized size = 0.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/3),x)
```

```
[Out] 10*d*(c + d*x)**(2/3)/(9*sqrt(a + b*x)*(a*d - b*c)**2) + 2*(c + d
*x)**(2/3)/(3*(a + b*x)**(3/2)*(a*d - b*c)) - 10*d**2*sqrt(a - b*
c/d + b*(c + d*x)/d)/(9*b**(2/3)*(a*d - b*c)**2*(b**(1/3)*(c + d*
x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))) + 5*3**(1/4)*d*sqr
t((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b
*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1
+ sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(-sqrt(3) + 2)*(b**(1/3)*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_e(asin((b**(1/3)*(
c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c
 + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(
3))/(9*b**(2/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3)
)*(a*d - b*c)**(1/3))**2)*(a*d - b*c)**(5/3)*sqrt(a - b*c/d + b*(
c + d*x)/d)) - 10*sqrt(2)*3**(3/4)*d*sqrt((b**(2/3)*(c + d*x)**(2
/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)*
*(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(
1/3))**2)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*ellipt
ic_f(asin((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)
**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**
(1/3))), -7 - 4*sqrt(3))/(27*b**(2/3)*sqrt((a*d - b*c)**(1/3)*(b*
*(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)
**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*(a*d - b*c)**(5/3
)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.248248, size = 105, normalized size = 0.12

$$\frac{(c+dx)^{2/3}\left(4(8ad-3bc+5bdx)-5d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{18(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(1/3)),x]
```

```
[Out] ((c + d*x)^(2/3)*(4*(-3*b*c + 8*a*d + 5*b*d*x) - 5*d*(a + b*x)*Sq
rt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 2/3, 5/3,
 (b*(c + d*x))/(b*c - a*d)]))/(18*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(1/
3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/3)), x)
```

3.1571 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=416

$$-\frac{54\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-}}\right.\right.}{55\sqrt[3]{b}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{54\sqrt{a+bx}\sqrt[3]{c+dx}(bc-ad)}{55d^2}+\frac{6(a+bx)^{3/2}\sqrt[3]{c+dx}}{11d}$$

```
[Out] (-54*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/3))/(55*d^2) + (6*(a
+ b*x)^(3/2)*(c + d*x)^(1/3))/(11*d) - (54*3^(3/4)*Sqrt[2 - Sqrt[
3]]*(b*c - a*d)^2*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(55*b^(1/3)*
d^3*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.768847, antiderivative size = 416, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{54\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-}}\right.\right.}{55\sqrt[3]{b}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{54\sqrt{a+bx}\sqrt[3]{c+dx}(bc-ad)}{55d^2}+\frac{6(a+bx)^{3/2}\sqrt[3]{c+dx}}{11d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(2/3),x]
```

```
[Out] (-54*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/3))/(55*d^2) + (6*(a
+ b*x)^(3/2)*(c + d*x)^(1/3))/(11*d) - (54*3^(3/4)*Sqrt[2 - Sqrt[
3]]*(b*c - a*d)^2*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
```

```
) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(55*b^(1/3)*
d^3*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 39.3866, size = 355, normalized size = 0.85

$$\frac{6\left(a+bx\right)^{\frac{3}{2}}\sqrt[3]{c+dx}}{11d}+\frac{54\sqrt{a+bx}\sqrt[3]{c+dx}\left(ad-bc\right)}{55d^{2}}+\frac{54\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{\sqrt{3}+2}\left(ad-bc\right)^{2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\cdots\right.}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{\cdots}\right.}\right.\right.}{55\sqrt[3]{b}d^{3}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(2/3),x)
```

```
[Out] 6*(a + b*x)**(3/2)*(c + d*x)**(1/3)/(11*d) + 54*sqrt(a + b*x)*(c
+ d*x)**(1/3)*(a*d - b*c)/(55*d**2) + 54*3**(3/4)*sqrt((b**(2/3)*
(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) +
 (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(
a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**2*(b**(1/3)
*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)
*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*
(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqr
t(3))/(55*b**(1/3)*d**3*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 +
 sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)
)
```

Mathematica [C] time = 0.201678, size = 108, normalized size = 0.26

$$\frac{3\sqrt[3]{c+dx}\left(27(bc-ad)^{2}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_{2}F_{1}\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+2d(a+bx)(14ad-9bc+5bdx)\right)}{55d^{3}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(2/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(2*d*(a + b*x)*(-9*b*c + 14*a*d + 5*b*d*x) + 2
7*(b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric
2F1[1/3, 1/2, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(55*d^3*Sqrt[a +
b*x])
```

Maple [F] time = 0.045, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(2/3),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(2/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(2/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(2/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(2/3),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(2/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(2/3), x)
```

3.1572 $\int \frac{\sqrt{a+bx}}{(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=381

$$\frac{6\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|-7+4\sqrt{3}\right)}{5\sqrt[3]{b}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{6\sqrt{a+bx}\sqrt[3]{c+dx}}{5d}$$

```
[Out] (6*Sqrt[a + b*x]*(c + d*x)^(1/3))/(5*d) + (6*3^(3/4)*Sqrt[2 - Sqr
t[3]]*(b*c - a*d)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(5*b^(1/3)*d
^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.622433, antiderivative size = 381, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{6\,3^{3/4}\sqrt{2-\sqrt{3}}(bc-ad)\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|-7+4\sqrt{3}\right)}{5\sqrt[3]{b}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{6\sqrt{a+bx}\sqrt[3]{c+dx}}{5d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(2/3),x]
```

```
[Out] (6*Sqrt[a + b*x]*(c + d*x)^(1/3))/(5*d) + (6*3^(3/4)*Sqrt[2 - Sqr
t[3]]*(b*c - a*d)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c -
```

```
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(5*b^(1/3)*d
^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 26.9449, size = 323, normalized size = 0.85

$$\frac{6\sqrt{a+bx}\sqrt[3]{c+dx}}{5d} + \frac{6\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{\sqrt{3}+2}\,(ad-bc)\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\cdots}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\cdots}\right)\cdots\right)}{5\sqrt[3]{b}d^{2}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(2/3),x)
```

```
[Out] 6*sqrt(a + b*x)*(c + d*x)**(1/3)/(5*d) + 6*3**(3/4)*sqrt((b**(2/3
)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
 + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))
*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)*(b**(1/3)*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*
(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(
c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt
(3))/(5*b**(1/3)*d**2*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + s
qrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.162799, size = 77, normalized size = 0.2

$$\frac{3\sqrt{a+bx}\sqrt[3]{c+dx}\left(\frac{3\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+2\right)}{5d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(2/3),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(1/3)*(2 + (3*Hypergeometric2F1[1/3, 1
/2, 4/3, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) +
```

```
a*d)]))/(5*d)
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(2/3),x)

[Out] int((b*x+a)^(1/2)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(2/3),x, algorithm="maxima")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(2/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(2/3),x, algorithm="fricas")

[Out] integral(sqrt(b*x + a)/(d*x + c)^(2/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(2/3),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(2/3), x)
```

3.1573 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=345

$$-\frac{2\,3^{3/4}\sqrt{2-\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|-7+4\sqrt{3}\right)}{\sqrt[3]{b}\,d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

```
[Out] (-2*3^(3/4)*Sqrt[2 - Sqrt[3]]*((b*c - a*d)^(1/3) - b^(1/3)*(c + d
*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
 + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*
d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqr
t[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])
*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/
(b^(1/3)*d*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(
1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.47562, antiderivative size = 345, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{2\,3^{3/4}\sqrt{2-\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|-7+4\sqrt{3}\right)}{\sqrt[3]{b}\,d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(2/3)),x]
```


```
[Out] (-2*3^(3/4)*Sqrt[2 - Sqrt[3]]*((b*c - a*d)^(1/3) - b^(1/3)*(c + d
*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
 + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*
d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqr
t[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])
*(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/
(b^(1/3)*d*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(
1/3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 17.8364, size = 291, normalized size = 0.84

$$\frac{2\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{\sqrt{3}+2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad-bc}}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}}\right.\right.}{\sqrt[3]{b}d\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(2/3),x)
```

```
[Out] 2*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**
(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x
)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2
)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asi
n((b**(1/3)*(c + d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))
/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))),
 -7 - 4*sqrt(3))/(b**(1/3)*d*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) +
 (1 + sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*
x)/d))
```

Mathematica [C] time = 0.0585537, size = 71, normalized size = 0.21

$$\frac{3\sqrt[3]{c+dx}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(2/3)),x]
```

```
[Out] (3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(1/3)*Hypergeomet
ric2F1[1/3, 1/2, 4/3, (b*(c + d*x))/(b*c - a*d)])/(d*Sqrt[a + b*x
])
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(2/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx + a}(dx + c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(2/3)), x)
```

3.1574 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=383

$$\frac{2\sqrt{2-\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right)}{\sqrt[4]{3}\sqrt[3]{b}\sqrt{a+bx}(bc-ad)\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[3]{c+dx}}{\sqrt{a+bx}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(1/3))/((b*c - a*d)*Sqrt[a + b*x]) + (2*Sqrt[2 - Sq
rt[3]]*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c -
 a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)
*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(3^(1/4)*b^(1/3)*(b*c -
 a*d)*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.609237, antiderivative size = 383, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{2\sqrt{2-\sqrt{3}}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right)}{\sqrt[4]{3}\sqrt[3]{b}\sqrt{a+bx}(bc-ad)\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[3]{c+dx}}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(2/3)),x]
```

```
[Out] (-2*(c + d*x)^(1/3))/((b*c - a*d)*Sqrt[a + b*x]) + (2*Sqrt[2 - Sq
rt[3]]*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c -
 a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)
*(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3)
```

```
 - b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(3^(1/4)*b^(1/3)*(b*c -
 a*d)*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 26.9737, size = 323, normalized size = 0.84

$$\frac{2\sqrt[3]{c+dx}}{\sqrt{a+bx}\,(ad-bc)} + \frac{2\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{\sqrt{3}+2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad-bc}}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}}\right)\right.}{3\sqrt[3]{b}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\,(ad-bc)\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(2/3),x)
```

```
[Out] 2*(c + d*x)**(1/3)/(sqrt(a + b*x)*(a*d - b*c)) + 2*3**(3/4)*sqrt(
(b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c
)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 +
sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*(c +
 d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c +
d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))
/(3*b**(1/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) +
 (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*(
a*d - b*c)**(1/3))**2)*(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d
))
```

Mathematica [C] time = 0.0998017, size = 81, normalized size = 0.21

$$-\frac{\sqrt[3]{c+dx}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+2\right)}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(2/3)),x]
```

```
[Out] -(((c + d*x)^(1/3)*(2 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyperg
eometric2F1[1/3, 1/2, 4/3, (b*(c + d*x))/(b*c - a*d)]))/((b*c - a
```

```
*d)*Sqrt[a + b*x]))
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(2/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(2/3)), x)
```

3.1575 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=421

$$-\frac{14\sqrt{2-\sqrt{3}}d\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7+4\sqrt{3}\right)}{9\sqrt[4]{3}\sqrt[3]{b}\sqrt{a+bx}(bc-ad)^2\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{14d\sqrt[3]{c+dx}}{9\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt[3]{c+dx}}{3(a+bx)^{3/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(1/3))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (14*d*(c +
 d*x)^(1/3))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) - (14*Sqrt[2 - Sqrt[
3]]*d*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c -
a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*
(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(9*3^(1/4)*b^(1/3)*(b*c
- a*d)^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/
3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.719291, antiderivative size = 421, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{14\sqrt{2-\sqrt{3}}d\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\sin^{-1}\left(\frac{\left(1+\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}{\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|-7+4\sqrt{3}\right)}{9\sqrt[4]{3}\sqrt[3]{b}\sqrt{a+bx}(bc-ad)^2\sqrt{-\frac{\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{14d\sqrt[3]{c+dx}}{9\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt[3]{c+dx}}{3(a+bx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(2/3)),x]
```

```
[Out] (-2*(c + d*x)^(1/3))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (14*d*(c +
 d*x)^(1/3))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) - (14*Sqrt[2 - Sqrt[
3]]*d*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c -
a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*
```

```
(c + d*x)^(2/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(1/3)*(c +
d*x)^(1/3))^2]*EllipticF[ArcSin[((1 + Sqrt[3])*(b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) - b^(
1/3)*(c + d*x)^(1/3))], -7 + 4*Sqrt[3]])/(9*3^(1/4)*b^(1/3)*(b*c
- a*d)^2*Sqrt[a + b*x]*Sqrt[-(((b*c - a*d)^(1/3)*((b*c - a*d)^(1/
3) - b^(1/3)*(c + d*x)^(1/3)))/((1 - Sqrt[3])*(b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 36.9857, size = 359, normalized size = 0.85

$$\frac{14d\sqrt[3]{c+dx}}{9\sqrt{a+bx}\,(ad-bc)^2}+\frac{2\sqrt[3]{c+dx}}{3\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}$$
$$+\frac{14\cdot 3^{\frac{3}{4}}d\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\sqrt{\sqrt{3}+2}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{asin}\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}-\left(-1+\sqrt{3}\right)\sqrt[3]{ad-}\cdots}{\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-}\cdots}\right.\right.}{27\sqrt[3]{b}\sqrt{\frac{\sqrt[3]{ad-bc}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\left(1+\sqrt{3}\right)\sqrt[3]{ad-bc}\right)^2}}\,(ad-bc)^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(2/3),x)
```

```
[Out] 14*d*(c + d*x)**(1/3)/(9*sqrt(a + b*x)*(a*d - b*c)**2) + 2*(c + d
*x)**(1/3)/(3*(a + b*x)**(3/2)*(a*d - b*c)) + 14*3**(3/4)*d*sqrt(
(b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c
)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 +
sqrt(3))*(a*d - b*c)**(1/3))**2)*sqrt(sqrt(3) + 2)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(asin((b**(1/3)*(c +
 d*x)**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(1/3))/(b**(1/3)*(c +
d*x)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(1/3))), -7 - 4*sqrt(3))
/(27*b**(1/3)*sqrt((a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3)
+ (a*d - b*c)**(1/3))/(b**(1/3)*(c + d*x)**(1/3) + (1 + sqrt(3))*
(a*d - b*c)**(1/3))**2)*(a*d - b*c)**2*sqrt(a - b*c/d + b*(c + d*
x)/d))
```

Mathematica [C] time = 0.2031, size = 102, normalized size = 0.24

$$\frac{\sqrt[3]{c+dx}\left(7d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{2};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+20ad-6bc+14bdx\right)}{9(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(2/3)),x]
```

```
[Out] ((c + d*x)^(1/3)*(-6*b*c + 20*a*d + 14*b*d*x + 7*d*(a + b*x)*Sqrt
[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/3, 1/2, 4/3, (
b*(c + d*x))/(b*c - a*d)]))/(9*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Maple [F] time = 0.089, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(2/
3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(2/3),x)

[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(2/3)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(2/3)), x)
```

3.1576 $\int (a+bx)^{2/3}\sqrt[3]{c+dx}\,dx$

Optimal. Leaf size=219

$$\frac{(bc-ad)^2\log(c+dx)}{18b^{4/3}d^{5/3}}+\frac{(bc-ad)^2\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{6b^{4/3}d^{5/3}}+\frac{(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}b^{4/3}d^{5/3}}+\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)}{6bd}+\frac{(a+bx)^{5/3}\sqrt[3]{c+dx}}{2b}$$

```
[Out] ((b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(1/3))/(6*b*d) + ((a + b*x
)^(5/3)*(c + d*x)^(1/3))/(2*b) + ((b*c - a*d)^2*ArcTan[1/Sqrt[3]
+ (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/3))])
/(3*Sqrt[3]*b^(4/3)*d^(5/3)) + ((b*c - a*d)^2*Log[c + d*x])/(18*b
^(4/3)*d^(5/3)) + ((b*c - a*d)^2*Log[-1 + (d^(1/3)*(a + b*x)^(1/3
))/(b^(1/3)*(c + d*x)^(1/3))])/(6*b^(4/3)*d^(5/3))
```

Rubi [A] time = 0.263208, antiderivative size = 219, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{(bc-ad)^2\log(c+dx)}{18b^{4/3}d^{5/3}}+\frac{(bc-ad)^2\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{6b^{4/3}d^{5/3}}+\frac{(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}b^{4/3}d^{5/3}}+\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)}{6bd}+\frac{(a+bx)^{5/3}\sqrt[3]{c+dx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(2/3)*(c + d*x)^(1/3),x]
```


```
[Out] ((b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(1/3))/(6*b*d) + ((a + b*x
)^(5/3)*(c + d*x)^(1/3))/(2*b) + ((b*c - a*d)^2*ArcTan[1/Sqrt[3]
+ (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/3))])
/(3*Sqrt[3]*b^(4/3)*d^(5/3)) + ((b*c - a*d)^2*Log[c + d*x])/(18*b
^(4/3)*d^(5/3)) + ((b*c - a*d)^2*Log[-1 + (d^(1/3)*(a + b*x)^(1/3
))/(b^(1/3)*(c + d*x)^(1/3))])/(6*b^(4/3)*d^(5/3))
```

Rubi in Sympy [A] time = 22.6447, size = 196, normalized size = 0.89

$$\frac{(a+bx)^{\frac{2}{3}}(c+dx)^{\frac{4}{3}}}{2d}+\frac{(a+bx)^{\frac{2}{3}}\sqrt[3]{c+dx}\,(ad-bc)}{3bd}+\frac{(ad-bc)^2\log\left(-1+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{6b^{\frac{4}{3}}d^{\frac{5}{3}}}+\frac{(ad-bc)^2\log(c+dx)}{18b^{\frac{4}{3}}d^{\frac{5}{3}}}+\frac{\sqrt{3}\,(ad-bc)^2\operatorname{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}{3\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{9b^{\frac{4}{3}}d^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)*(d*x+c)**(1/3),x)
```

```
[Out] (a + b*x)**(2/3)*(c + d*x)**(4/3)/(2*d) + (a + b*x)**(2/3)*(c + d
*x)**(1/3)*(a*d - b*c)/(3*b*d) + (a*d - b*c)**2*log(-1 + d**(1/3)
*(a + b*x)**(1/3)/(b**(1/3)*(c + d*x)**(1/3)))/(6*b**(4/3)*d**(5/
3)) + (a*d - b*c)**2*log(c + d*x)/(18*b**(4/3)*d**(5/3)) + sqrt(3
)*(a*d - b*c)**2*atan(sqrt(3)/3 + 2*sqrt(3)*d**(1/3)*(a + b*x)**(
1/3)/(3*b**(1/3)*(c + d*x)**(1/3)))/(9*b**(4/3)*d**(5/3))
```

Mathematica [C] time = 0.202419, size = 109, normalized size = 0.5

$$\frac{\sqrt[3]{c+dx}\left(d(a+bx)(2ad+b(c+3dx))-2(bc-ad)^2\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{6bd^2\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)*(c + d*x)^(1/3),x]
```

```
[Out] ((c + d*x)^(1/3)*(d*(a + b*x)*(2*a*d + b*(c + 3*d*x)) - 2*(b*c -
a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*Hypergeometric2F1[1/3
, 1/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(6*b*d^2*(a + b*x)^(1/3)
)
```

Maple [F] time = 0.044, size = 0, normalized size = 0.

$$\int(bx+a)^{\frac{2}{3}}\sqrt[3]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)*(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(2/3)*(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(2/3)*(d*x + c)^(1/3), x)
```

Fricas [A] time = 0.224263, size = 394, normalized size = 1.8

$$\frac{\sqrt{3}\left(3\sqrt{3}\left(bd^2\right)^{\frac{1}{3}}(3\,bdx+bc+2\,ad)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}-\sqrt{3}\left(b^2c^2-2\,abcd+a^2d^2\right)\log\left(\frac{bd^2x+ad^2+\left(bd^2\right)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}d+\left(bd^2\right.}{bx+a}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] 1/54*sqrt(3)*(3*sqrt(3)*(b*d^2)^(1/3)*(3*b*d*x + b*c + 2*a*d)*(b*
x + a)^(2/3)*(d*x + c)^(1/3) - sqrt(3)*(b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*log((b*d^2*x + a*d^2 + (b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x +
 c)^(1/3)*d + (b*d^2)^(2/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(b*x
 + a)) + 2*sqrt(3)*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log(-(b*d*x +
a*d - (b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x + a)) -
 6*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*arctan(1/3*(2*sqrt(3)*(b*d^2)^
(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + sqrt(3)*(b*d*x + a*d))/(b
*d*x + a*d)))/((b*d^2)^(1/3)*b*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{2}{3}}\sqrt[3]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)*(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(2/3)*(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)*(d*x + c)^(1/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(2/3)*(d*x + c)^(1/3), x)
```

3.1577 $\int \frac{\sqrt[3]{c+dx}}{\sqrt[3]{a+bx}}\,dx$

Optimal. Leaf size=172

$$-\frac{(bc-ad)\log(c+dx)}{6b^{4/3}d^{2/3}}-\frac{(bc-ad)\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{2b^{4/3}d^{2/3}}-\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}b^{4/3}d^{2/3}}+\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}}{b}$$

```
[Out] ((a + b*x)^(2/3)*(c + d*x)^(1/3))/b - ((b*c - a*d)*ArcTan[1/Sqrt[
3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/3)
)])/(Sqrt[3]*b^(4/3)*d^(2/3)) - ((b*c - a*d)*Log[c + d*x])/(6*b^(
4/3)*d^(2/3)) - ((b*c - a*d)*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))/(
b^(1/3)*(c + d*x)^(1/3))])/(2*b^(4/3)*d^(2/3))
```

Rubi [A] time = 0.147964, antiderivative size = 172, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{(bc-ad)\log(c+dx)}{6b^{4/3}d^{2/3}}-\frac{(bc-ad)\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{2b^{4/3}d^{2/3}}-\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}b^{4/3}d^{2/3}}+\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(1/3),x]
```

```
[Out] ((a + b*x)^(2/3)*(c + d*x)^(1/3))/b - ((b*c - a*d)*ArcTan[1/Sqrt[
3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/3)
)])/(Sqrt[3]*b^(4/3)*d^(2/3)) - ((b*c - a*d)*Log[c + d*x])/(6*b^(
4/3)*d^(2/3)) - ((b*c - a*d)*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))/(
b^(1/3)*(c + d*x)^(1/3))])/(2*b^(4/3)*d^(2/3))
```

Rubi in Sympy [A] time = 12.7766, size = 160, normalized size = 0.93

$$\frac{(a+bx)^{\frac{2}{3}}\sqrt[3]{c+dx}}{b}+\frac{(ad-bc)\log\left(-1+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{2b^{\frac{4}{3}}d^{\frac{2}{3}}}+\frac{(ad-bc)\log(c+dx)}{6b^{\frac{4}{3}}d^{\frac{2}{3}}}+\frac{\sqrt{3}(ad-bc)\,\mathrm{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}{3\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{3b^{\frac{4}{3}}d^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(1/3),x)
```

```
[Out] (a + b*x)**(2/3)*(c + d*x)**(1/3)/b + (a*d - b*c)*log(-1 + d**(1/
3)*(a + b*x)**(1/3)/(b**(1/3)*(c + d*x)**(1/3)))/(2*b**(4/3)*d**(
2/3)) + (a*d - b*c)*log(c + d*x)/(6*b**(4/3)*d**(2/3)) + sqrt(3)*
(a*d - b*c)*atan(sqrt(3)/3 + 2*sqrt(3)*d**(1/3)*(a + b*x)**(1/3)/
(3*b**(1/3)*(c + d*x)**(1/3)))/(3*b**(4/3)*d**(2/3))
```

Mathematica [C] time = 0.151228, size = 90, normalized size = 0.52

$$\frac{\sqrt[3]{c+dx}\left((bc-ad)\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{bd\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(1/3),x]
```

```
[Out] ((c + d*x)^(1/3)*(d*(a + b*x) + (b*c - a*d)*((d*(a + b*x))/(-(b*c
) + a*d))^(1/3)*Hypergeometric2F1[1/3, 1/3, 4/3, (b*(c + d*x))/(b
*c - a*d)]))/(b*d*(a + b*x)^(1/3))
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\frac{1}{\sqrt[3]{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(1/3),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(1/3), x)
```

Fricas [A] time = 0.220981, size = 319, normalized size = 1.85

$$\frac{\sqrt{3}\left(\sqrt{3}(bc-ad)\log\left(\frac{bd^2x+ad^2+\left(bd^2\right)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}d+\left(bd^2\right)^{\frac{2}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}{bx+a}\right)-2\sqrt{3}(bc-ad)\log\left(-\frac{bdx+ad-\left(bd^2\right)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c\cdots}{bx+a}\cdots\right.\right.}{18\left(bd^2\right)^{\frac{1}{3}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(1/3),x, algorithm="fricas")
```

```
[Out] 1/18*sqrt(3)*(sqrt(3)*(b*c - a*d)*log((b*d^2*x + a*d^2 + (b*d^2)^
(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3)*d + (b*d^2)^(2/3)*(b*x + a)
^(1/3)*(d*x + c)^(2/3))/(b*x + a)) - 2*sqrt(3)*(b*c - a*d)*log(-(
b*d*x + a*d - (b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x
 + a)) + 6*(b*c - a*d)*arctan(1/3*(2*sqrt(3)*(b*d^2)^(1/3)*(b*x +
 a)^(2/3)*(d*x + c)^(1/3) + sqrt(3)*(b*d*x + a*d))/(b*d*x + a*d))
 + 6*sqrt(3)*(b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/((b*d
^2)^(1/3)*b)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{\sqrt[3]{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(1/3),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(1/3), x)
```

3.1578 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{4/3}}\,dx$

Optimal. Leaf size=149

$$-\frac{3\sqrt[3]{d}\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{2b^{4/3}}-\frac{\sqrt{3}\sqrt[3]{d}\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{b^{4/3}}-\frac{3\sqrt[3]{c+dx}}{b\sqrt[3]{a+bx}}-\frac{\sqrt[3]{d}\log(c+dx)}{2b^{4/3}}$$

```
[Out] (-3*(c + d*x)^(1/3))/(b*(a + b*x)^(1/3)) - (Sqrt[3]*d^(1/3)*ArcTa
n[1/Sqrt[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d
*x)^(1/3))])/b^(4/3) - (d^(1/3)*Log[c + d*x])/(2*b^(4/3)) - (3*d^
(1/3)*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))/(b^(1/3)*(c + d*x)^(1/3)
)])/(2*b^(4/3))
```

Rubi [A] time = 0.110484, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{3\sqrt[3]{d}\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{2b^{4/3}}-\frac{\sqrt{3}\sqrt[3]{d}\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{b^{4/3}}-\frac{3\sqrt[3]{c+dx}}{b\sqrt[3]{a+bx}}-\frac{\sqrt[3]{d}\log(c+dx)}{2b^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(4/3),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(b*(a + b*x)^(1/3)) - (Sqrt[3]*d^(1/3)*ArcTa
n[1/Sqrt[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d
*x)^(1/3))])/b^(4/3) - (d^(1/3)*Log[c + d*x])/(2*b^(4/3)) - (3*d^
(1/3)*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))/(b^(1/3)*(c + d*x)^(1/3)
)])/(2*b^(4/3))
```

Rubi in Sympy [A] time = 12.3233, size = 143, normalized size = 0.96

$$-\frac{3\sqrt[3]{c+dx}}{b\sqrt[3]{a+bx}}-\frac{3\sqrt[3]{d}\log\left(-1+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{2b^{\frac{4}{3}}}-\frac{\sqrt[3]{d}\log(c+dx)}{2b^{\frac{4}{3}}}-\frac{\sqrt{3}\sqrt[3]{d}\,\operatorname{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}{3\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{b^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(4/3),x)
```

```
[Out] -3*(c + d*x)**(1/3)/(b*(a + b*x)**(1/3)) - 3*d**(1/3)*log(-1 + d*
*(1/3)*(a + b*x)**(1/3)/(b**(1/3)*(c + d*x)**(1/3)))/(2*b**(4/3))
```

```
 - d**(1/3)*log(c + d*x)/(2*b**(4/3)) - sqrt(3)*d**(1/3)*atan(sqr
t(3)/3 + 2*sqrt(3)*d**(1/3)*(a + b*x)**(1/3)/(3*b**(1/3)*(c + d*x
)**(1/3)))/b**(4/3)
```

Mathematica [C] time = 0.0920463, size = 74, normalized size = 0.5

$$\frac{3\sqrt[3]{c+dx}\left(\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(4/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(-1 + ((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*Hyp
ergeometric2F1[1/3, 1/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(b*(a
+ b*x)^(1/3))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(4/3),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(4/3), x)
```

Fricas [A] time = 0.220327, size = 313, normalized size = 2.1

$$\frac{2\sqrt{3}(bx+a)\left(-\frac{d}{b}\right)^{\frac{1}{3}}\arctan\left(-\frac{\sqrt{3}\left((bx+a)\left(-\frac{d}{b}\right)^{\frac{1}{3}}-2\,(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\right)}{3\,(bx+a)\left(-\frac{d}{b}\right)^{\frac{1}{3}}}\right)-(bx+a)\left(-\frac{d}{b}\right)^{\frac{1}{3}}\log\left(\frac{(bx+a)\left(-\frac{d}{b}\right)^{\frac{2}{3}}-(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\left(-\frac{d}{b}\right)^{\frac{1}{3}}+(b}{bx+a}\right.}{2\left(b^2x+ab\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(4/3),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*(b*x + a)*(-d/b)^(1/3)*arctan(-1/3*sqrt(3)*((b*x +
 a)*(-d/b)^(1/3) - 2*(b*x + a)^(2/3)*(d*x + c)^(1/3))/((b*x + a)*
(-d/b)^(1/3))) - (b*x + a)*(-d/b)^(1/3)*log(((b*x + a)*(-d/b)^(2/
3) - (b*x + a)^(2/3)*(d*x + c)^(1/3)*(-d/b)^(1/3) + (b*x + a)^(1/
3)*(d*x + c)^(2/3))/(b*x + a)) + 2*(b*x + a)*(-d/b)^(1/3)*log(((b
*x + a)*(-d/b)^(1/3) + (b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x + a)
) - 6*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b^2*x + a*b)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(4/3),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(4/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(4/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(4/3), x)
```

3.1579 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{7/3}}\,dx$

Optimal. Leaf size=32

$$-\frac{3(c+dx)^{4/3}}{4(a+bx)^{4/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(4/3))/(4*(b*c - a*d)*(a + b*x)^(4/3))
```

Rubi [A] time = 0.0233357, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{3(c+dx)^{4/3}}{4(a+bx)^{4/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(7/3),x]
```

```
[Out] (-3*(c + d*x)^(4/3))/(4*(b*c - a*d)*(a + b*x)^(4/3))
```

Rubi in Sympy [A] time = 3.56704, size = 26, normalized size = 0.81

$$\frac{3\,(c+dx)^{\frac{4}{3}}}{4\,(a+bx)^{\frac{4}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(7/3),x)
```

```
[Out] 3*(c + d*x)**(4/3)/(4*(a + b*x)**(4/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0383013, size = 32, normalized size = 1.

$$\frac{3(c+dx)^{4/3}}{4(a+bx)^{4/3}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(7/3),x]
```

```
[Out] (3*(c + d*x)^(4/3))/(4*(-(b*c) + a*d)*(a + b*x)^(4/3))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.8

$$\frac{3}{4\,ad-4\,bc}\,(dx+c)^{\frac{4}{3}}\,(bx+a)^{-\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(7/3),x)
```

```
[Out] 3/4/(b*x+a)^(4/3)*(d*x+c)^(4/3)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(7/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(7/3), x)
```

Fricas [A] time = 0.209446, size = 88, normalized size = 2.75

$$-\frac{3\,(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{4}{3}}}{4\,(a^2bc-a^3d+(b^3c-ab^2d)x^2+2\,(ab^2c-a^2bd)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(7/3),x, algorithm="fricas")
```

```
[Out] -3/4*(b*x + a)^(2/3)*(d*x + c)^(4/3)/(a^2*b*c - a^3*d + (b^3*c -
a*b^2*d)*x^2 + 2*(a*b^2*c - a^2*b*d)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(7/3),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(7/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{7}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(7/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(7/3), x)
```

3.1580 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{10/3}}\,dx$

Optimal. Leaf size=66

$$\frac{9d(c+dx)^{4/3}}{28(a+bx)^{4/3}(bc-ad)^2}-\frac{3(c+dx)^{4/3}}{7(a+bx)^{7/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(4/3))/(7*(b*c - a*d)*(a + b*x)^(7/3)) + (9*d*(c +
d*x)^(4/3))/(28*(b*c - a*d)^2*(a + b*x)^(4/3))
```

Rubi [A] time = 0.0527406, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{9d(c+dx)^{4/3}}{28(a+bx)^{4/3}(bc-ad)^2}-\frac{3(c+dx)^{4/3}}{7(a+bx)^{7/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(10/3),x]
```

```
[Out] (-3*(c + d*x)^(4/3))/(7*(b*c - a*d)*(a + b*x)^(7/3)) + (9*d*(c +
d*x)^(4/3))/(28*(b*c - a*d)^2*(a + b*x)^(4/3))
```

Rubi in Sympy [A] time = 7.29053, size = 56, normalized size = 0.85

$$\frac{9d\,(c+dx)^{\frac{4}{3}}}{28\,(a+bx)^{\frac{4}{3}}\,(ad-bc)^2}+\frac{3\,(c+dx)^{\frac{4}{3}}}{7\,(a+bx)^{\frac{7}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(10/3),x)
```

```
[Out] 9*d*(c + d*x)**(4/3)/(28*(a + b*x)**(4/3)*(a*d - b*c)**2) + 3*(c
+ d*x)**(4/3)/(7*(a + b*x)**(7/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0688351, size = 46, normalized size = 0.7

$$\frac{3(c+dx)^{4/3}(7ad-4bc+3bdx)}{28(a+bx)^{7/3}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(10/3),x]
```

```
[Out] (3*(c + d*x)^(4/3)*(-4*b*c + 7*a*d + 3*b*d*x))/(28*(b*c - a*d)^2*
(a + b*x)^(7/3))
```

Maple [A] time = 0.007, size = 54, normalized size = 0.8

$$\frac{9\,bdx+21\,ad-12\,bc}{28\,a^2d^2-56\,abcd+28\,b^2c^2}\,(dx+c)^{\frac{4}{3}}\,(bx+a)^{-\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(10/3),x)
```

```
[Out] 3/28*(d*x+c)^(4/3)*(3*b*d*x+7*a*d-4*b*c)/(b*x+a)^(7/3)/(a^2*d^2-2
*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{10}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(10/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(10/3), x)
```

Fricas [A] time = 0.210012, size = 236, normalized size = 3.58

$$\frac{3\left(3\,bd^2x^2-4\,bc^2+7\,acd-\left(bcd-7\,ad^2\right)x\right)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{28\,(a^3b^2c^2-2\,a^4bcd+a^5d^2+(b^5c^2-2\,ab^4cd+a^2b^3d^2)x^3+3\,(ab^4c^2-2\,a^2b^3cd+a^3b^2d^2)x^2+3\,(a^2b^3c^2-2\,a^3b^2cd+a^4bd^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(10/3),x, algorithm="fricas")
```

```
[Out] 3/28*(3*b*d^2*x^2 - 4*b*c^2 + 7*a*c*d - (b*c*d - 7*a*d^2)*x)*(b*x
 + a)^(2/3)*(d*x + c)^(1/3)/(a^3*b^2*c^2 - 2*a^4*b*c*d + a^5*d^2
+ (b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*x^3 + 3*(a*b^4*c^2 - 2*a^
2*b^3*c*d + a^3*b^2*d^2)*x^2 + 3*(a^2*b^3*c^2 - 2*a^3*b^2*c*d + a
```

```
^4*b*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(10/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{10}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(10/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(10/3), x)
```

3.1581 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{13/3}}\,dx$

Optimal. Leaf size=101

$$-\frac{27d^2(c+dx)^{4/3}}{140(a+bx)^{4/3}(bc-ad)^3}+\frac{9d(c+dx)^{4/3}}{35(a+bx)^{7/3}(bc-ad)^2}-\frac{3(c+dx)^{4/3}}{10(a+bx)^{10/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(4/3))/(10*(b*c - a*d)*(a + b*x)^(10/3)) + (9*d*(c
+ d*x)^(4/3))/(35*(b*c - a*d)^2*(a + b*x)^(7/3)) - (27*d^2*(c + d
*x)^(4/3))/(140*(b*c - a*d)^3*(a + b*x)^(4/3))
```

Rubi [A] time = 0.0880948, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{27d^2(c+dx)^{4/3}}{140(a+bx)^{4/3}(bc-ad)^3}+\frac{9d(c+dx)^{4/3}}{35(a+bx)^{7/3}(bc-ad)^2}-\frac{3(c+dx)^{4/3}}{10(a+bx)^{10/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(13/3),x]
```

```
[Out] (-3*(c + d*x)^(4/3))/(10*(b*c - a*d)*(a + b*x)^(10/3)) + (9*d*(c
+ d*x)^(4/3))/(35*(b*c - a*d)^2*(a + b*x)^(7/3)) - (27*d^2*(c + d
*x)^(4/3))/(140*(b*c - a*d)^3*(a + b*x)^(4/3))
```

Rubi in Sympy [A] time = 13.3253, size = 88, normalized size = 0.87

$$\frac{27d^2\left(c+dx\right)^{\frac{4}{3}}}{140\left(a+bx\right)^{\frac{4}{3}}\left(ad-bc\right)^3}+\frac{9d\left(c+dx\right)^{\frac{4}{3}}}{35\left(a+bx\right)^{\frac{7}{3}}\left(ad-bc\right)^2}+\frac{3\left(c+dx\right)^{\frac{4}{3}}}{10\left(a+bx\right)^{\frac{10}{3}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(13/3),x)
```

```
[Out] 27*d**2*(c + d*x)**(4/3)/(140*(a + b*x)**(4/3)*(a*d - b*c)**3) +
9*d*(c + d*x)**(4/3)/(35*(a + b*x)**(7/3)*(a*d - b*c)**2) + 3*(c
+ d*x)**(4/3)/(10*(a + b*x)**(10/3)*(a*d - b*c))
```

Mathematica [A] time = 0.103824, size = 77, normalized size = 0.76

$$-\frac{3(c+dx)^{4/3}\left(35a^2d^2+10abd(3dx-4c)+b^2\left(14c^2-12cdx+9d^2x^2\right)\right)}{140(a+bx)^{10/3}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(13/3),x]
```

```
[Out] (-3*(c + d*x)^(4/3)*(35*a^2*d^2 + 10*a*b*d*(-4*c + 3*d*x) + b^2*(
14*c^2 - 12*c*d*x + 9*d^2*x^2)))/(140*(b*c - a*d)^3*(a + b*x)^(10
/3))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{27\,b^{2}d^{2}x^{2}+90\,abd^{2}x-36\,b^{2}cdx+105\,a^{2}d^{2}-120\,abcd+42\,b^{2}c^{2}}{140\,a^{3}d^{3}-420\,a^{2}cbd^{2}+420\,ab^{2}c^{2}d-140\,b^{3}c^{3}}\left(dx+c\right)^{\frac{4}{3}}\left(bx+a\right)^{-\frac{10}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(13/3),x)
```

```
[Out] 3/140*(d*x+c)^(4/3)*(9*b^2*d^2*x^2+30*a*b*d^2*x-12*b^2*c*d*x+35*a
^2*d^2-40*a*b*c*d+14*b^2*c^2)/(b*x+a)^(10/3)/(a^3*d^3-3*a^2*b*c*d
^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(dx+c\right)^{\frac{1}{3}}}{\left(bx+a\right)^{\frac{13}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(13/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(13/3), x)
```

Fricas [A] time = 0.211151, size = 455, normalized size = 4.5

$$-\frac{3\left(9\,b^{2}d^{3}x^{3}+14\,b^{2}c^{3}-40\,abc^{2}d+35\,a^{2}cd^{2}-3\left(b^{2}cd^{2}-10\,abd^{3}\right)x^{2}\right.}{140\left(a^{4}b^{3}c^{3}-3\,a^{5}b^{2}c^{2}d+3\,a^{6}bcd^{2}-a^{7}d^{3}+\left(b^{7}c^{3}-3\,ab^{6}c^{2}d+3\,a^{2}b^{5}cd^{2}-a^{3}b^{4}d^{3}\right)x^{4}+4\left(ab^{6}c^{3}-3\,a^{2}b^{5}c^{2}d+3\,a^{3}b^{4}cd^{2}-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(13/3),x, algorithm="fricas")
```

```
[Out] -3/140*(9*b^2*d^3*x^3 + 14*b^2*c^3 - 40*a*b*c^2*d + 35*a^2*c*d^2
- 3*(b^2*c*d^2 - 10*a*b*d^3)*x^2 + (2*b^2*c^2*d - 10*a*b*c*d^2 +
35*a^2*d^3)*x)*(b*x + a)^(2/3)*(d*x + c)^(1/3)/(a^4*b^3*c^3 - 3*a
^5*b^2*c^2*d + 3*a^6*b*c*d^2 - a^7*d^3 + (b^7*c^3 - 3*a*b^6*c^2*d
 + 3*a^2*b^5*c*d^2 - a^3*b^4*d^3)*x^4 + 4*(a*b^6*c^3 - 3*a^2*b^5*
c^2*d + 3*a^3*b^4*c*d^2 - a^4*b^3*d^3)*x^3 + 6*(a^2*b^5*c^3 - 3*a
^3*b^4*c^2*d + 3*a^4*b^3*c*d^2 - a^5*b^2*d^3)*x^2 + 4*(a^3*b^4*c^
3 - 3*a^4*b^3*c^2*d + 3*a^5*b^2*c*d^2 - a^6*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(13/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{13}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(13/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(13/3), x)
```

3.1582 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{16/3}} \, dx$

Optimal. Leaf size=136

$$\frac{243d^3(c+dx)^{4/3}}{1820(a+bx)^{4/3}(bc-ad)^4}-\frac{81d^2(c+dx)^{4/3}}{455(a+bx)^{7/3}(bc-ad)^3}+\frac{27d(c+dx)^{4/3}}{130(a+bx)^{10/3}(bc-ad)^2}-\frac{3(c+dx)^{4/3}}{13(a+bx)^{13/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(4/3))/(13*(b*c - a*d)*(a + b*x)^(13/3)) + (27*d*(c
 + d*x)^(4/3))/(130*(b*c - a*d)^2*(a + b*x)^(10/3)) - (81*d^2*(c
+ d*x)^(4/3))/(455*(b*c - a*d)^3*(a + b*x)^(7/3)) + (243*d^3*(c +
 d*x)^(4/3))/(1820*(b*c - a*d)^4*(a + b*x)^(4/3))
```

Rubi [A] time = 0.126472, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{243d^3(c+dx)^{4/3}}{1820(a+bx)^{4/3}(bc-ad)^4}-\frac{81d^2(c+dx)^{4/3}}{455(a+bx)^{7/3}(bc-ad)^3}+\frac{27d(c+dx)^{4/3}}{130(a+bx)^{10/3}(bc-ad)^2}-\frac{3(c+dx)^{4/3}}{13(a+bx)^{13/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(16/3),x]
```

```
[Out] (-3*(c + d*x)^(4/3))/(13*(b*c - a*d)*(a + b*x)^(13/3)) + (27*d*(c
 + d*x)^(4/3))/(130*(b*c - a*d)^2*(a + b*x)^(10/3)) - (81*d^2*(c
+ d*x)^(4/3))/(455*(b*c - a*d)^3*(a + b*x)^(7/3)) + (243*d^3*(c +
 d*x)^(4/3))/(1820*(b*c - a*d)^4*(a + b*x)^(4/3))
```

Rubi in Sympy [A] time = 20.9597, size = 121, normalized size = 0.89

$$\frac{243d^3\left(c+dx\right)^{\frac{4}{3}}}{1820\left(a+bx\right)^{\frac{4}{3}}\left(ad-bc\right)^4}+\frac{81d^2\left(c+dx\right)^{\frac{4}{3}}}{455\left(a+bx\right)^{\frac{7}{3}}\left(ad-bc\right)^3}+\frac{27d\left(c+dx\right)^{\frac{4}{3}}}{130\left(a+bx\right)^{\frac{10}{3}}\left(ad-bc\right)^2}+\frac{3\left(c+dx\right)^{\frac{4}{3}}}{13\left(a+bx\right)^{\frac{13}{3}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(16/3),x)
```

```
[Out] 243*d**3*(c + d*x)**(4/3)/(1820*(a + b*x)**(4/3)*(a*d - b*c)**4)
+ 81*d**2*(c + d*x)**(4/3)/(455*(a + b*x)**(7/3)*(a*d - b*c)**3)
+ 27*d*(c + d*x)**(4/3)/(130*(a + b*x)**(10/3)*(a*d - b*c)**2) +
3*(c + d*x)**(4/3)/(13*(a + b*x)**(13/3)*(a*d - b*c))
```

Mathematica [A] time = 0.180244, size = 118, normalized size = 0.87

$$\frac{3(c+dx)^{4/3}\left(455a^3d^3+195a^2bd^2(3dx-4c)+39ab^2d\left(14c^2-12cdx+9d^2x^2\right)+b^3\left(-140c^3+126c^2dx-108cd^2x^2+81d^3x^3\right.\right.}{1820(a+bx)^{13/3}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(16/3),x]
```

```
[Out] (3*(c + d*x)^(4/3)*(455*a^3*d^3 + 195*a^2*b*d^2*(-4*c + 3*d*x) +
39*a*b^2*d*(14*c^2 - 12*c*d*x + 9*d^2*x^2) + b^3*(-140*c^3 + 126*
c^2*d*x - 108*c*d^2*x^2 + 81*d^3*x^3)))/(1820*(b*c - a*d)^4*(a +
b*x)^(13/3))
```

Maple [A] time = 0.012, size = 171, normalized size = 1.3

$$\frac{243\,b^3d^3x^3+1053\,ab^2d^3x^2-324\,b^3cd^2x^2+1755\,a^2bd^3x-1404\,ab^2cd^2x+378\,b^3c^2dx+1365\,a^3d^3-2340\,a^2cbd^2+1638\,ab}{1820\,d^4a^4-7280\,bd^3ca^3+10920\,b^2d^2c^2a^2-7280\,b^3dc^3a+1820\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(16/3),x)
```

```
[Out] 3/1820*(d*x+c)^(4/3)*(81*b^3*d^3*x^3+351*a*b^2*d^3*x^2-108*b^3*c*
d^2*x^2+585*a^2*b*d^3*x-468*a*b^2*c*d^2*x+126*b^3*c^2*d*x+455*a^3
*d^3-780*a^2*b*c*d^2+546*a*b^2*c^2*d-140*b^3*c^3)/(b*x+a)^(13/3)/
(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{16}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(16/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(16/3), x)
```

Fricas [A] time = 0.211152, size = 720, normalized size = 5.29

$$\frac{3\left(81\,b^3d^4x^4-140\,b^3c^4+546\,ab^2c^3d-780\,a^2\right.}{1820\left(a^5b^4c^4-4\,a^6b^3c^3d+6\,a^7b^2c^2d^2-4\,a^8bcd^3+a^9d^4+(b^9c^4-4\,ab^8c^3d+6\,a^2b^7c^2d^2-4\,a^3b^6cd^3+a^4b^5d^4)x^5+5\,(ab^8c^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(16/3),x, algorithm="fricas")
```

```
[Out] 3/1820*(81*b^3*d^4*x^4 - 140*b^3*c^4 + 546*a*b^2*c^3*d - 780*a^2*
b*c^2*d^2 + 455*a^3*c*d^3 - 27*(b^3*c*d^3 - 13*a*b^2*d^4)*x^3 + 9
*(2*b^3*c^2*d^2 - 13*a*b^2*c*d^3 + 65*a^2*b*d^4)*x^2 - (14*b^3*c^
3*d - 78*a*b^2*c^2*d^2 + 195*a^2*b*c*d^3 - 455*a^3*d^4)*x)*(b*x +
 a)^(2/3)*(d*x + c)^(1/3)/(a^5*b^4*c^4 - 4*a^6*b^3*c^3*d + 6*a^7*
b^2*c^2*d^2 - 4*a^8*b*c*d^3 + a^9*d^4 + (b^9*c^4 - 4*a*b^8*c^3*d
+ 6*a^2*b^7*c^2*d^2 - 4*a^3*b^6*c*d^3 + a^4*b^5*d^4)*x^5 + 5*(a*b
^8*c^4 - 4*a^2*b^7*c^3*d + 6*a^3*b^6*c^2*d^2 - 4*a^4*b^5*c*d^3 +
a^5*b^4*d^4)*x^4 + 10*(a^2*b^7*c^4 - 4*a^3*b^6*c^3*d + 6*a^4*b^5*
c^2*d^2 - 4*a^5*b^4*c*d^3 + a^6*b^3*d^4)*x^3 + 10*(a^3*b^6*c^4 -
4*a^4*b^5*c^3*d + 6*a^5*b^4*c^2*d^2 - 4*a^6*b^3*c*d^3 + a^7*b^2*d
^4)*x^2 + 5*(a^4*b^5*c^4 - 4*a^5*b^4*c^3*d + 6*a^6*b^3*c^2*d^2 -
4*a^7*b^2*c*d^3 + a^8*b*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(16/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{16}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(16/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(16/3), x)
```

3.1583 $\int (a+bx)^{4/3}\sqrt[3]{c+dx}\,dx$

Optimal. Leaf size=655

$$\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^3((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a}{\cdots}}}{10\,2^{2/3}b^{4/3}d^{7/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-}{\left(2^{2/}\right.}}}$$

$$-\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}{20bd^2}+\frac{3(a+bx)^{4/3}\sqrt[3]{c+dx}(bc-ad)}{40bd}+\frac{3(a+bx)^{7/3}\sqrt[3]{c+dx}}{8b}$$

```
[Out] (-3*(b*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(20*b*d^2) + (
3*(b*c - a*d)*(a + b*x)^(4/3)*(c + d*x)^(1/3))/(40*b*d) + (3*(a +
 b*x)^(7/3)*(c + d*x)^(1/3))/(8*b) + (3^(3/4)*Sqrt[2 + Sqrt[3]]*(
b*c - a*d)^3*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d*
x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
+ d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*
(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)
*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*E
llipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -
7 - 4*Sqrt[3]])/(10*2^(2/3)*b^(4/3)*d^(7/3)*(a + b*x)^(2/3)*(c +
d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 2.77496, antiderivative size = 655, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^3((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a}{\cdots}}}{10\,2^{2/3}b^{4/3}d^{7/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-}{\left(2^{2/}\right.}}}$$

$$-\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}{20bd^2}+\frac{3(a+bx)^{4/3}\sqrt[3]{c+dx}(bc-ad)}{40bd}+\frac{3(a+bx)^{7/3}\sqrt[3]{c+dx}}{8b}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(4/3)*(c + d*x)^(1/3),x]
```

```
[Out] (-3*(b*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(20*b*d^2) + (
3*(b*c - a*d)*(a + b*x)^(4/3)*(c + d*x)^(1/3))/(40*b*d) + (3*(a +
 b*x)^(7/3)*(c + d*x)^(1/3))/(8*b) + (3^(3/4)*Sqrt[2 + Sqrt[3]]*(
b*c - a*d)^3*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d*
x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
+ d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*
(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)
*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*E
llipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -
7 - 4*Sqrt[3]])/(10*2^(2/3)*b^(4/3)*d^(7/3)*(a + b*x)^(2/3)*(c +
d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 91.6502, size = 680, normalized size = 1.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)*(d*x+c)**(1/3),x)
```

```
[Out] 3*(a + b*x)**(4/3)*(c + d*x)**(4/3)/(8*d) + 3*(a + b*x)**(1/3)*(c
 + d*x)**(4/3)*(a*d - b*c)/(10*d**2) + 3*(a + b*x)**(1/3)*(c + d*
x)**(1/3)*(a*d - b*c)**2/(20*b*d**2) - 2**(1/3)*3**(3/4)*sqrt((2*
2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3
) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2
 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)
*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))
*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**3*(2**(2/
3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a
*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt((a
*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(1/
3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d
- b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*sq
rt(3))/(20*b**(4/3)*d**(7/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b*
*(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d -
b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d
 + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)
**(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
+ 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.273914, size = 140, normalized size = 0.21

$$-\frac{3\sqrt[3]{c+dx}\left(-d(a+bx)\left(2a^2d^2+abd(5c+9dx)+b^2\left(-2c^2+cdx+5d^2x^2\right)\right)-2(bc-ad)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{40bd^3(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)*(c + d*x)^(1/3),x]
```

```
[Out] (-3*(c + d*x)^(1/3)*(-(d*(a + b*x)*(2*a^2*d^2 + a*b*d*(5*c + 9*d*
x) + b^2*(-2*c^2 + c*d*x + 5*d^2*x^2))) - 2*(b*c - a*d)^3*((d*(a
+ b*x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[1/3, 2/3, 4/3, (b
*(c + d*x))/(b*c - a*d)]))/(40*b*d^3*(a + b*x)^(2/3))
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{4}{3}}\sqrt[3]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)*(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(4/3)*(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{4}{3}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(4/3)*(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((bx+a)^{\frac{4}{3}}(dx+c)^{\frac{1}{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(4/3)*(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{4}{3}}\sqrt[3]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)*(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(4/3)*(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{4}{3}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)*(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(4/3)*(d*x + c)^(1/3), x)
```

3.1584 $\int \sqrt[3]{a+bx}\sqrt[3]{c+dx}\,dx$

Optimal. Leaf size=617

$$-\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^2((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}}{}}}{5\,2^{2/3}b^{4/3}d^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc}{(2}}}$$

$$+\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)}{10bd}+\frac{3(a+bx)^{4/3}\sqrt[3]{c+dx}}{5b}$$

```
[Out] (3*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(10*b*d) + (3*(a
+ b*x)^(4/3)*(c + d*x)^(1/3))/(5*b) - (3^(3/4)*Sqrt[2 + Sqrt[3]]*
(b*c - a*d)^2*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d
*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)
*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3
)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))],
-7 - 4*Sqrt[3]])/(5*2^(2/3)*b^(4/3)*d^(4/3)*(a + b*x)^(2/3)*(c +
d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.84212, antiderivative size = 617, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^2((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}}{}}}{5\,2^{2/3}b^{4/3}d^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc}{(2}}}$$

$$+\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)}{10bd}+\frac{3(a+bx)^{4/3}\sqrt[3]{c+dx}}{5b}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(1/3)*(c + d*x)^(1/3),x]
```

```
[Out] (3*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(10*b*d) + (3*(a
+ b*x)^(4/3)*(c + d*x)^(1/3))/(5*b) - (3^(3/4)*Sqrt[2 + Sqrt[3]]*
(b*c - a*d)^2*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d
*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)
*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3
)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))],
-7 - 4*Sqrt[3]])/(5*2^(2/3)*b^(4/3)*d^(4/3)*(a + b*x)^(2/3)*(c +
d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 79.4076, size = 646, normalized size = 1.05

$$\frac{3\sqrt[3]{a+bx}\,(c+dx)^{\frac{4}{3}}}{5d}+\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}\,(ad-bc)}{10bd}-\frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}(ac+bdx^2+x(ad+bc))^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\,(ad-bc)^2\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{a\cdots}\right.}{10b^{\frac{4}{3}}d^{\frac{4}{3}}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(a\cdots\right.}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad\cdots\right.}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)*(d*x+c)**(1/3),x)
```

```
[Out] 3*(a + b*x)**(1/3)*(c + d*x)**(4/3)/(5*d) + 3*(a + b*x)**(1/3)*(c
 + d*x)**(1/3)*(a*d - b*c)/(10*b*d) - 2**(1/3)*3**(3/4)*sqrt((2*2
**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)
 - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2
+ x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*
d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*
(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**2*(2**(2/3
)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*
d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt((a*
d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(1/3
)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d -
 b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*sqr
t(3))/(10*b**(4/3)*d**(4/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**
(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b
*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d
+ b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)*
*(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d +
```

```
4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.184541, size = 108, normalized size = 0.18

$$\frac{3\sqrt[3]{c+dx}\left(d(a+bx)(ad+b(c+2dx))-(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{10bd^2(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)*(c + d*x)^(1/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(d*(a + b*x)*(a*d + b*(c + 2*d*x)) - (b*c - a*
d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[1/3,
2/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(10*b*d^2*(a + b*x)^(2/3))
```

Maple [F] time = 0.031, size = 0, normalized size = 0.

$$\int \sqrt[3]{bx+a}\sqrt[3]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)*(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(1/3)*(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/3)*(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/3)*(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt[3]{a+bx}\sqrt[3]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)*(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(1/3)*(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)*(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(1/3)*(d*x + c)^(1/3), x)
```

3.1585 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{2/3}}\,dx$

Optimal. Leaf size=576

$$\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\cdots}}{2^{2/3}b^{4/3}\sqrt[3]{d}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\cdots}}$$

$$+\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}}{2b}$$

```
[Out] (3*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(2*b) + (3^(3/4)*Sqrt[2 + Sqr
t[3]]*(b*c - a*d)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2
*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(
1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^
(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)], -7 - 4*Sqrt[3]])/(2^(2/3)*b^(4/3)*d^(1/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.28048, antiderivative size = 576, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\cdots}}{2^{2/3}b^{4/3}\sqrt[3]{d}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\cdots}}$$

$$+\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}}{2b}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(2/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(2*b) + (3^(3/4)*Sqrt[2 + Sqr
t[3]]*(b*c - a*d)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2
*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(
1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^
(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)], -7 - 4*Sqrt[3]])/(2^(2/3)*b^(4/3)*d^(1/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 58.0901, size = 614, normalized size = 1.07

$$\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}}{2b} - \frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}(ac+bdx^2+x(ad+bc))^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\,(ad-bc)\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac\cdots}\right.}{2b^{\frac{4}{3}}\sqrt[3]{d}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(a\cdots\right.}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-\cdots\right.}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(2/3),x)
```

```
[Out] 3*(a + b*x)**(1/3)*(c + d*x)**(1/3)/(2*b) - 2**(1/3)*3**(3/4)*sqr
t((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d
*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**
(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqr
t(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)*(2**(
2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) +
(a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt(
(a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(
1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*
d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*
(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*
sqrt(3))/(2*b**(4/3)*d**(1/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b
**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d -
 b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x
)**(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
 + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.151941, size = 93, normalized size = 0.16

$$\frac{3\sqrt[3]{c+dx}\left((bc-ad)\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{2bd(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(2/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(d*(a + b*x) + (b*c - a*d)*((d*(a + b*x))/(-(b
*c) + a*d))^(2/3)*Hypergeometric2F1[1/3, 2/3, 4/3, (b*(c + d*x))/
(b*c - a*d)]))/(2*b*d*(a + b*x)^(2/3))
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(2/3),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(2/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(2/3),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/3)/(b*x + a)^(2/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(2/3),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(2/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(2/3), x)
```

3.1586 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{5/3}}\,dx$

Optimal. Leaf size=568

$$\frac{3^{3/4}\sqrt{2+\sqrt{3}}d^{2/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)(c\cdots}{\left(2^{2/3}\sqrt[3]{\cdots}\right.}}}{2^{2/3}b^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(2\cdots\right.}{\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{\cdots}\right.}}}$$

$$-\frac{3\sqrt[3]{c+dx}}{2b(a+bx)^{2/3}}$$

```
[Out] (-3*(c + d*x)^(1/3))/(2*b*(a + b*x)^(2/3)) + (3^(3/4)*Sqrt[2 + Sq
rt[3]]*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*
d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(
c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3
)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/
3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]
*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))],
 -7 - 4*Sqrt[3]])/(2^(2/3)*b^(4/3)*(a + b*x)^(2/3)*(c + d*x)^(2/3
)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.36829, antiderivative size = 568, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{3^{3/4}\sqrt{2+\sqrt{3}}d^{2/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)(c\cdots}{\left(2^{2/3}\sqrt[3]{\cdots}\right.}}}{2^{2/3}b^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(2\cdots\right.}{\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{\cdots}\right.}}}$$

$$-\frac{3\sqrt[3]{c+dx}}{2b(a+bx)^{2/3}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(5/3),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(2*b*(a + b*x)^(2/3)) + (3^(3/4)*Sqrt[2 + Sq
rt[3]]*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*
d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(
c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3
)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/
3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]
*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))],
 -7 - 4*Sqrt[3]])/(2^(2/3)*b^(4/3)*(a + b*x)^(2/3)*(c + d*x)^(2/3
)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 56.616, size = 607, normalized size = 1.07

$$-\frac{3\sqrt[3]{c+dx}}{2b\,(a+bx)^{\frac{2}{3}}}+\frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}d^{\frac{2}{3}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}(ac+bdx^2+x(ad+bc))^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x\,(ad+bc)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\,(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2\cdots}\right.}{2b^{\frac{4}{3}}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\,(ad+bc)}+(ad-bc)^{\frac{2}{3}}\cdots\right.}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\,(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(5/3),x)
```

```
[Out] -3*(c + d*x)**(1/3)/(2*b*(a + b*x)**(2/3)) + 2**(1/3)*3**(3/4)*d*
*(2/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2*
*(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3)
+ (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(2**(2/
3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a
*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt((a
*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(1/
3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d
- b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*sq
rt(3))/(2*b**(4/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**
(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3
))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**
(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)**(2/3)*(c
 + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c))
+ (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.0873333, size = 76, normalized size = 0.13

$$\frac{3\sqrt[3]{c+dx}\left(\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{2b(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(5/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(-1 + ((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*Hyp
ergeometric2F1[1/3, 2/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(2*b*(
a + b*x)^(2/3))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{5}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(5/3),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(5/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(5/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(5/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{5}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(5/3),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/3)/(b*x + a)^(5/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(5/3),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(5/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{5}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(5/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(5/3), x)
```

3.1587 $\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{8/3}}\,dx$

Optimal. Leaf size=617

$$-\frac{3^{3/4}\sqrt{2+\sqrt{3}}\,d^{5/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)\cdots}{\left(2^{2/3}\cdots\right.}}\cdots}{5\,2^{2/3}b^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)(ad+bc+2bdx)\sqrt{\frac{(bc-\cdots}{\left(2^{2}\cdots\right.}}\cdots}$$

$$-\frac{3d\sqrt[3]{c+dx}}{10b(a+bx)^{2/3}(bc-ad)}-\frac{3\sqrt[3]{c+dx}}{5b(a+bx)^{5/3}}$$

```
[Out] (-3*(c + d*x)^(1/3))/(5*b*(a + b*x)^(5/3)) - (3*d*(c + d*x)^(1/3)
)/(10*b*(b*c - a*d)*(a + b*x)^(2/3)) - (3^(3/4)*Sqrt[2 + Sqrt[3]]
*d^(5/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2
]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*
x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c
 - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(
2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Ellip
ticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/
3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 -
4*Sqrt[3]])/(5*2^(2/3)*b^(4/3)*(b*c - a*d)*(a + b*x)^(2/3)*(c + d
*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a
*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
 b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.82786, antiderivative size = 617, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{3^{3/4}\sqrt{2+\sqrt{3}}\,d^{5/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)\cdots}{\left(2^{2/3}\cdots\right.}}\cdots}{5\,2^{2/3}b^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)(ad+bc+2bdx)\sqrt{\frac{(bc-\cdots}{\left(2^{2}\cdots\right.}}\cdots}$$

$$-\frac{3d\sqrt[3]{c+dx}}{10b(a+bx)^{2/3}(bc-ad)}-\frac{3\sqrt[3]{c+dx}}{5b(a+bx)^{5/3}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(1/3)/(a + b*x)^(8/3),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(5*b*(a + b*x)^(5/3)) - (3*d*(c + d*x)^(1/3)
)/(10*b*(b*c - a*d)*(a + b*x)^(2/3)) - (3^(3/4)*Sqrt[2 + Sqrt[3]]
*d^(5/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2
]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*
x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c
 - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(
2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Ellip
ticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/
3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 -
4*Sqrt[3]])/(5*2^(2/3)*b^(4/3)*(b*c - a*d)*(a + b*x)^(2/3)*(c + d
*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a
*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
 b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 75.2807, size = 644, normalized size = 1.04

$$\frac{3d\sqrt[3]{c+dx}}{10b\left(a+bx\right)^{\frac{2}{3}}\left(ad-bc\right)}-\frac{3\sqrt[3]{c+dx}}{5b\left(a+bx\right)^{\frac{5}{3}}}+\frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}d^{\frac{5}{3}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}\left(ac+bdx^2+x\left(ad+bc\right)\right)^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\left(ad-bc\right)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+\left(ad-bc\right)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+\left(1+\sqrt{3}\right)\left(ad-bc\right)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^{2}\cdots}\right.}{10b^{\frac{4}{3}}\sqrt{\frac{\left(ad-bc\right)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+\left(ad-bc\right)^{\frac{2}{3}}\right)}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+\left(1+\sqrt{3}\right)\left(ad-bc\right)^{\frac{2}{3}}\right)^2}}\left(a\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/3)/(b*x+a)**(8/3),x)
```

```
[Out] 3*d*(c + d*x)**(1/3)/(10*b*(a + b*x)**(2/3)*(a*d - b*c)) - 3*(c +
 d*x)**(1/3)/(5*b*(a + b*x)**(5/3)) + 2**(1/3)*3**(3/4)*d**(5/3)*
sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c
))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c +
b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*
b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 +
sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(2**(2/3)*b**(
1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*
c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt((a*d + b*
c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(1/3)*(a*c
 + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d - b*c)*
*(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*
c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*sqrt(3))/
(10*b**(4/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))/(2*
*(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3)
+ (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)**(2/3)*(c + d*x
)**(2/3)*(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
```

```
b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.197252, size = 103, normalized size = 0.17

$$\frac{3\sqrt[3]{c+dx}\left(d(a+bx)\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)-ad+2bc+bdx\right)}{10b(a+bx)^{5/3}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/3)/(a + b*x)^(8/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(2*b*c - a*d + b*d*x + d*(a + b*x)*((d*(a + b*
x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[1/3, 2/3, 4/3, (b*(c
+ d*x))/(b*c - a*d)]))/(10*b*(-(b*c) + a*d)*(a + b*x)^(5/3))
```

Maple [F] time = 0.061, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{dx+c}\,(bx+a)^{-\frac{8}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/3)/(b*x+a)^(8/3),x)
```

```
[Out] int((d*x+c)^(1/3)/(b*x+a)^(8/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{8}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(8/3),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(8/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{3}}}{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(8/3),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/3)/((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(2/
3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{c+dx}}{(a+bx)^{\frac{8}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/3)/(b*x+a)**(8/3),x)
```

```
[Out] Integral((c + d*x)**(1/3)/(a + b*x)**(8/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{3}}}{(bx+a)^{\frac{8}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/3)/(b*x + a)^(8/3),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/3)/(b*x + a)^(8/3), x)
```

3.1588 $\int \frac{(a+bx)^{4/3}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=216

$$-\frac{(bc-ad)^2\log(a+bx)}{9b^{2/3}d^{7/3}}-\frac{(bc-ad)^2\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{3b^{2/3}d^{7/3}}-\frac{2(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}b^{2/3}d^{7/3}}-\frac{2\sqrt[3]{a+bx}(c+dx)^{2/3}(bc-ad)}{3d^2}+\frac{(a+bx)^{4/3}(c+dx)^{2/3}}{2d}$$

```
[Out] (-2*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(2/3))/(3*d^2) + ((a + b*x)^(4/3)*(c + d*x)^(2/3))/(2*d) - (2*(b*c - a*d)^2*ArcTan[1/Sqrt[3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3))])/(3*Sqrt[3]*b^(2/3)*d^(7/3)) - ((b*c - a*d)^2*Log[a + b*x])/(9*b^(2/3)*d^(7/3)) - ((b*c - a*d)^2*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^(1/3)*(a + b*x)^(1/3))])/(3*b^(2/3)*d^(7/3))
```

Rubi [A] time = 0.269772, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{(bc-ad)^2\log(a+bx)}{9b^{2/3}d^{7/3}}-\frac{(bc-ad)^2\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{3b^{2/3}d^{7/3}}-\frac{2(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}b^{2/3}d^{7/3}}-\frac{2\sqrt[3]{a+bx}(c+dx)^{2/3}(bc-ad)}{3d^2}+\frac{(a+bx)^{4/3}(c+dx)^{2/3}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(4/3)/(c + d*x)^(1/3),x]
```

```
[Out] (-2*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(2/3))/(3*d^2) + ((a + b*x)^(4/3)*(c + d*x)^(2/3))/(2*d) - (2*(b*c - a*d)^2*ArcTan[1/Sqrt[3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3))])/(3*Sqrt[3]*b^(2/3)*d^(7/3)) - ((b*c - a*d)^2*Log[a + b*x])/(9*b^(2/3)*d^(7/3)) - ((b*c - a*d)^2*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^(1/3)*(a + b*x)^(1/3))])/(3*b^(2/3)*d^(7/3))
```

Rubi in Sympy [A] time = 22.4504, size = 199, normalized size = 0.92

$$\frac{(a+bx)^{\frac{4}{3}}(c+dx)^{\frac{2}{3}}}{2d}+\frac{2\sqrt[3]{a+bx}\,(c+dx)^{\frac{2}{3}}(ad-bc)}{3d^2}-\frac{(ad-bc)^2\log(a+bx)}{9b^{\frac{2}{3}}d^{\frac{7}{3}}}-\frac{(ad-bc)^2\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{3b^{\frac{2}{3}}d^{\frac{7}{3}}}-\frac{2\sqrt{3}(ad-bc)^2\operatorname{atan}\left(\frac{2\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{\sqrt{3}}{3}\right)}{9b^{\frac{2}{3}}d^{\frac{7}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)/(d*x+c)**(1/3),x)
```

```
[Out] (a + b*x)**(4/3)*(c + d*x)**(2/3)/(2*d) + 2*(a + b*x)**(1/3)*(c +
 d*x)**(2/3)*(a*d - b*c)/(3*d**2) - (a*d - b*c)**2*log(a + b*x)/(
9*b**(2/3)*d**(7/3)) - (a*d - b*c)**2*log(b**(1/3)*(c + d*x)**(1/
3)/(d**(1/3)*(a + b*x)**(1/3)) - 1)/(3*b**(2/3)*d**(7/3)) - 2*sqr
t(3)*(a*d - b*c)**2*atan(2*sqrt(3)*b**(1/3)*(c + d*x)**(1/3)/(3*d
**(1/3)*(a + b*x)**(1/3)) + sqrt(3)/3)/(9*b**(2/3)*d**(7/3))
```

Mathematica [C] time = 0.204386, size = 107, normalized size = 0.5

$$\frac{(c+dx)^{2/3}\left(2(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(7ad-4bc+3bdx)\right)}{6d^3(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)/(c + d*x)^(1/3),x]
```

```
[Out] ((c + d*x)^(2/3)*(d*(a + b*x)*(-4*b*c + 7*a*d + 3*b*d*x) + 2*(b*c
 - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[
2/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)]))/(6*d^3*(a + b*x)^(2/3
))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{4}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)/(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(4/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{4}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(4/3)/(d*x + c)^(1/3), x)
```

Fricas [A] time = 0.224471, size = 400, normalized size = 1.85

$$\frac{\sqrt{3}\left(3\sqrt{3}\left(-b^2d\right)^{\frac{1}{3}}\left(3\,bdx-4\,bc+7\,ad\right)(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}-2\sqrt{3}\left(b^2c^2-2\,abcd+a^2d^2\right)\log\left(\frac{b^2dx+b^2c-\left(-b^2d\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}{dx+c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] 1/54*sqrt(3)*(3*sqrt(3)*(-b^2*d)^(1/3)*(3*b*d*x - 4*b*c + 7*a*d)*
(b*x + a)^(1/3)*(d*x + c)^(2/3) - 2*sqrt(3)*(b^2*c^2 - 2*a*b*c*d
+ a^2*d^2)*log((b^2*d*x + b^2*c - (-b^2*d)^(1/3)*(b*x + a)^(1/3)*
(d*x + c)^(2/3)*b + (-b^2*d)^(2/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3
))/(d*x + c)) + 4*sqrt(3)*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log((b*
d*x + b*c + (-b^2*d)^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(d*x
+ c)) + 12*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*arctan(1/3*(2*sqrt(3)*
(-b^2*d)^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - sqrt(3)*(b*d*x +
 b*c))/(b*d*x + b*c)))/((-b^2*d)^(1/3)*d^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{4}{3}}}{\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(4/3)/(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{4}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(4/3)/(d*x + c)^(1/3), x)
```

3.1589 $\int \frac{\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=171

$$\frac{(bc-ad)\log(a+bx)}{6b^{2/3}d^{4/3}}+\frac{(bc-ad)\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2b^{2/3}d^{4/3}}+\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}b^{2/3}d^{4/3}}+\frac{\sqrt[3]{a+bx}(c+dx)^{2/3}}{d}$$

```
[Out] ((a + b*x)^(1/3)*(c + d*x)^(2/3))/d + ((b*c - a*d)*ArcTan[1/Sqrt[
3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3)
)])/(Sqrt[3]*b^(2/3)*d^(4/3)) + ((b*c - a*d)*Log[a + b*x])/(6*b^(
2/3)*d^(4/3)) + ((b*c - a*d)*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(
d^(1/3)*(a + b*x)^(1/3))])/(2*b^(2/3)*d^(4/3))
```

Rubi [A] time = 0.147105, antiderivative size = 171, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{(bc-ad)\log(a+bx)}{6b^{2/3}d^{4/3}}+\frac{(bc-ad)\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2b^{2/3}d^{4/3}}+\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}b^{2/3}d^{4/3}}+\frac{\sqrt[3]{a+bx}(c+dx)^{2/3}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/3)/(c + d*x)^(1/3),x]
```

```
[Out] ((a + b*x)^(1/3)*(c + d*x)^(2/3))/d + ((b*c - a*d)*ArcTan[1/Sqrt[
3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3)
)])/(Sqrt[3]*b^(2/3)*d^(4/3)) + ((b*c - a*d)*Log[a + b*x])/(6*b^(
2/3)*d^(4/3)) + ((b*c - a*d)*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(
d^(1/3)*(a + b*x)^(1/3))])/(2*b^(2/3)*d^(4/3))
```

Rubi in Sympy [A] time = 12.5358, size = 160, normalized size = 0.94

$$\frac{\sqrt[3]{a+bx}\,(c+dx)^{\frac{2}{3}}}{d}-\frac{(ad-bc)\log(a+bx)}{6b^{\frac{2}{3}}d^{\frac{4}{3}}}-\frac{(ad-bc)\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2b^{\frac{2}{3}}d^{\frac{4}{3}}}-\frac{\sqrt{3}\,(ad-bc)\,\mathrm{atan}\left(\frac{2\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{\sqrt{3}}{3}\right)}{3b^{\frac{2}{3}}d^{\frac{4}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)/(d*x+c)**(1/3),x)
```

```
[Out] (a + b*x)**(1/3)*(c + d*x)**(2/3)/d - (a*d - b*c)*log(a + b*x)/(6
*b**(2/3)*d**(4/3)) - (a*d - b*c)*log(b**(1/3)*(c + d*x)**(1/3)/(
d**(1/3)*(a + b*x)**(1/3)) - 1)/(2*b**(2/3)*d**(4/3)) - sqrt(3)*(
a*d - b*c)*atan(2*sqrt(3)*b**(1/3)*(c + d*x)**(1/3)/(3*d**(1/3)*(
a + b*x)**(1/3)) + sqrt(3)/3)/(3*b**(2/3)*d**(4/3))
```

Mathematica [C] time = 0.180656, size = 76, normalized size = 0.44

$$\frac{\sqrt[3]{a+bx}(c+dx)^{2/3}\left(\frac{{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[3]{\frac{d(a+bx)}{ad-bc}}}+2\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)/(c + d*x)^(1/3),x]
```

```
[Out] ((a + b*x)^(1/3)*(c + d*x)^(2/3)*(2 + Hypergeometric2F1[2/3, 2/3,
 5/3, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))^(
1/3)))/(2*d)
```

Maple [F] time = 0.031, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{bx+a}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)/(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(1/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/3)/(d*x + c)^(1/3), x)
```

Fricas [A] time = 0.218595, size = 327, normalized size = 1.91

$$\frac{\sqrt{3}\left(\sqrt{3}(bc-ad)\log\left(\frac{b^2dx+b^2c-\left(-b^2d\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}b+\left(-b^2d\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{dx+c}\right)-2\sqrt{3}(bc-ad)\log\left(\frac{bdx+bc+\left(-b^2d\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}(dx \cdots}{dx+c}\right.\cdots}{18\left(-b^2d\right)^{\frac{1}{3}}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] 1/18*sqrt(3)*(sqrt(3)*(b*c - a*d)*log((b^2*d*x + b^2*c - (-b^2*d)
^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3)*b + (-b^2*d)^(2/3)*(b*x +
a)^(2/3)*(d*x + c)^(1/3))/(d*x + c)) - 2*sqrt(3)*(b*c - a*d)*log(
(b*d*x + b*c + (-b^2*d)^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(d
*x + c)) - 6*(b*c - a*d)*arctan(1/3*(2*sqrt(3)*(-b^2*d)^(1/3)*(b*
x + a)^(1/3)*(d*x + c)^(2/3) - sqrt(3)*(b*d*x + b*c))/(b*d*x + b*
c)) + 6*sqrt(3)*(-b^2*d)^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(
(-b^2*d)^(1/3)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(1/3)/(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(1/3)/(d*x + c)^(1/3), x)
```

3.1590 $\int \frac{1}{(a+bx)^{2/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=126

$$-\frac{3\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2b^{2/3}\sqrt[3]{d}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{b^{2/3}\sqrt[3]{d}}-\frac{\log(a+bx)}{2b^{2/3}\sqrt[3]{d}}$$

```
[Out] -((Sqrt[3]*ArcTan[1/Sqrt[3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3
]*d^(1/3)*(a + b*x)^(1/3))])/(b^(2/3)*d^(1/3))) - Log[a + b*x]/(2
*b^(2/3)*d^(1/3)) - (3*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^(1/3
)*(a + b*x)^(1/3))])/(2*b^(2/3)*d^(1/3))
```

Rubi [A] time = 0.0634427, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{3\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2b^{2/3}\sqrt[3]{d}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{b^{2/3}\sqrt[3]{d}}-\frac{\log(a+bx)}{2b^{2/3}\sqrt[3]{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(2/3)*(c + d*x)^(1/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[1/Sqrt[3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3
]*d^(1/3)*(a + b*x)^(1/3))])/(b^(2/3)*d^(1/3))) - Log[a + b*x]/(2
*b^(2/3)*d^(1/3)) - (3*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^(1/3
)*(a + b*x)^(1/3))])/(2*b^(2/3)*d^(1/3))
```

Rubi in Sympy [A] time = 6.24435, size = 122, normalized size = 0.97

$$-\frac{\log(a+bx)}{2b^{\frac{2}{3}}\sqrt[3]{d}}-\frac{3\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2b^{\frac{2}{3}}\sqrt[3]{d}}-\frac{\sqrt{3}\,\mathrm{atan}\left(\frac{2\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{\sqrt{3}}{3}\right)}{b^{\frac{2}{3}}\sqrt[3]{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(2/3)/(d*x+c)**(1/3),x)
```

```
[Out] -log(a + b*x)/(2*b**(2/3)*d**(1/3)) - 3*log(b**(1/3)*(c + d*x)**(
1/3)/(d**(1/3)*(a + b*x)**(1/3)) - 1)/(2*b**(2/3)*d**(1/3)) - sqr
t(3)*atan(2*sqrt(3)*b**(1/3)*(c + d*x)**(1/3)/(3*d**(1/3)*(a + b*
```

```
x)**(1/3)) + sqrt(3)/3)/(b**(2/3)*d**(1/3))
```

Mathematica [C] time = 0.0666333, size = 73, normalized size = 0.58

$$\frac{3(c+dx)^{2/3}\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{2d(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(2/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*(c + d*x)^(2/3)*Hypergeom
etric2F1[2/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/(2*d*(a + b*x
)^(2/3))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{2}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(2/3)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(2/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(1/3)), x)
```

Fricas [A] time = 0.224163, size = 239, normalized size = 1.9

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(bdx+bc-2\left(-b^2d\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}\right)}{3\,(bdx+bc)}\right)-\log\left(\frac{b^2dx+b^2c-\left(-b^2d\right)^{\frac{1}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}b+\left(-b^2d\right)^{\frac{2}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{dx+c}\right)+2\log\left(\cdots\right.}{2\left(-b^2d\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(b*d*x + b*c - 2*(-b^2*d)^(1/3
)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(b*d*x + b*c)) - log((b^2*d*x
+ b^2*c - (-b^2*d)^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3)*b + (-b^
2*d)^(2/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(d*x + c)) + 2*log((b
*d*x + b*c + (-b^2*d)^(1/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(d*x
 + c)))/(-b^2*d)^(1/3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{2}{3}}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(2/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(2/3)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(1/3)), x)
```

3.1591 $\int \frac{1}{(a+bx)^{5/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=32

$$-\frac{3(c+dx)^{2/3}}{2(a+bx)^{2/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(2/3))/(2*(b*c - a*d)*(a + b*x)^(2/3))
```

Rubi [A] time = 0.0236, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{3(c+dx)^{2/3}}{2(a+bx)^{2/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/3)*(c + d*x)^(1/3)),x]

[Out] (-3*(c + d*x)^(2/3))/(2*(b*c - a*d)*(a + b*x)^(2/3))
```

Rubi in Sympy [A] time = 3.53857, size = 26, normalized size = 0.81

$$\frac{3\,(c+dx)^{\frac{2}{3}}}{2\,(a+bx)^{\frac{2}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/3)/(d*x+c)**(1/3),x)

[Out] 3*(c + d*x)**(2/3)/(2*(a + b*x)**(2/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0375807, size = 32, normalized size = 1.

$$\frac{3(c+dx)^{2/3}}{2(a+bx)^{2/3}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*(c + d*x)^(2/3))/(2*(-(b*c) + a*d)*(a + b*x)^(2/3))
```

Maple [A] time = 0.008, size = 27, normalized size = 0.8

$$\frac{3}{2\,ad-2\,bc}\left(dx+c\right)^{\frac{2}{3}}\left(bx+a\right)^{-\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/3)/(d*x+c)^(1/3),x)
```

```
[Out] 3/2/(b*x+a)^(2/3)*(d*x+c)^(2/3)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(bx+a\right)^{\frac{5}{3}}\left(dx+c\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(1/3)), x)
```

Fricas [A] time = 0.209897, size = 35, normalized size = 1.09

$$-\frac{3\left(dx+c\right)^{\frac{2}{3}}}{2\left(bc-ad\right)\left(bx+a\right)^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] -3/2*(d*x + c)^(2/3)/((b*c - a*d)*(b*x + a)^(2/3))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+bx\right)^{\frac{5}{3}}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(5/3)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(1/3)), x)
```

3.1592 $\int \frac{1}{(a+bx)^{8/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=66

$$\frac{9d(c+dx)^{2/3}}{10(a+bx)^{2/3}(bc-ad)^2}-\frac{3(c+dx)^{2/3}}{5(a+bx)^{5/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(2/3))/(5*(b*c - a*d)*(a + b*x)^(5/3)) + (9*d*(c +
d*x)^(2/3))/(10*(b*c - a*d)^2*(a + b*x)^(2/3))
```

Rubi [A] time = 0.0531332, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{9d(c+dx)^{2/3}}{10(a+bx)^{2/3}(bc-ad)^2}-\frac{3(c+dx)^{2/3}}{5(a+bx)^{5/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(8/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3))/(5*(b*c - a*d)*(a + b*x)^(5/3)) + (9*d*(c +
d*x)^(2/3))/(10*(b*c - a*d)^2*(a + b*x)^(2/3))
```

Rubi in Sympy [A] time = 7.389, size = 56, normalized size = 0.85

$$\frac{9d\,(c+dx)^{\frac{2}{3}}}{10\,(a+bx)^{\frac{2}{3}}\,(ad-bc)^{2}}+\frac{3\,(c+dx)^{\frac{2}{3}}}{5\,(a+bx)^{\frac{5}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(8/3)/(d*x+c)**(1/3),x)
```

```
[Out] 9*d*(c + d*x)**(2/3)/(10*(a + b*x)**(2/3)*(a*d - b*c)**2) + 3*(c
+ d*x)**(2/3)/(5*(a + b*x)**(5/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0619596, size = 46, normalized size = 0.7

$$\frac{3(c+dx)^{2/3}(5ad-2bc+3bdx)}{10(a+bx)^{5/3}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(8/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(-2*b*c + 5*a*d + 3*b*d*x))/(10*(b*c - a*d)^2*
(a + b*x)^(5/3))
```

Maple [A] time = 0.007, size = 54, normalized size = 0.8

$$\frac{9\,bdx+15\,ad-6\,bc}{10\,a^2d^2-20\,abcd+10\,b^2c^2}\,(dx+c)^{\frac{2}{3}}\,(bx+a)^{-\frac{5}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(8/3)/(d*x+c)^(1/3),x)
```

```
[Out] 3/10*(d*x+c)^(2/3)*(3*b*d*x+5*a*d-2*b*c)/(b*x+a)^(5/3)/(a^2*d^2-2
*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{8}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(8/3)*(d*x + c)^(1/3)), x)
```

Fricas [A] time = 0.211737, size = 138, normalized size = 2.09

$$\frac{3\left(3\,bd^2x^2-2\,bc^2+5\,acd+\left(bcd+5\,ad^2\right)x\right)}{10\,(ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] 3/10*(3*b*d^2*x^2 - 2*b*c^2 + 5*a*c*d + (b*c*d + 5*a*d^2)*x)/((a*
b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*b^2*c*d + a^2*b*
d^2)*x)*(b*x + a)^(2/3)*(d*x + c)^(1/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(8/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{8}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(8/3)*(d*x + c)^(1/3)), x)
```

3.1593 $\int \frac{1}{(a+bx)^{11/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=101

$$-\frac{27d^2(c+dx)^{2/3}}{40(a+bx)^{2/3}(bc-ad)^3}+\frac{9d(c+dx)^{2/3}}{20(a+bx)^{5/3}(bc-ad)^2}-\frac{3(c+dx)^{2/3}}{8(a+bx)^{8/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(2/3))/(8*(b*c - a*d)*(a + b*x)^(8/3)) + (9*d*(c +
d*x)^(2/3))/(20*(b*c - a*d)^2*(a + b*x)^(5/3)) - (27*d^2*(c + d*x
)^(2/3))/(40*(b*c - a*d)^3*(a + b*x)^(2/3))
```

Rubi [A] time = 0.0872245, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{27d^2(c+dx)^{2/3}}{40(a+bx)^{2/3}(bc-ad)^3}+\frac{9d(c+dx)^{2/3}}{20(a+bx)^{5/3}(bc-ad)^2}-\frac{3(c+dx)^{2/3}}{8(a+bx)^{8/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(11/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3))/(8*(b*c - a*d)*(a + b*x)^(8/3)) + (9*d*(c +
d*x)^(2/3))/(20*(b*c - a*d)^2*(a + b*x)^(5/3)) - (27*d^2*(c + d*x
)^(2/3))/(40*(b*c - a*d)^3*(a + b*x)^(2/3))
```

Rubi in Sympy [A] time = 13.5638, size = 88, normalized size = 0.87

$$\frac{27d^2\left(c+dx\right)^{\frac{2}{3}}}{40\left(a+bx\right)^{\frac{2}{3}}\left(ad-bc\right)^3}+\frac{9d\left(c+dx\right)^{\frac{2}{3}}}{20\left(a+bx\right)^{\frac{5}{3}}\left(ad-bc\right)^2}+\frac{3\left(c+dx\right)^{\frac{2}{3}}}{8\left(a+bx\right)^{\frac{8}{3}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/3)/(d*x+c)**(1/3),x)
```

```
[Out] 27*d**2*(c + d*x)**(2/3)/(40*(a + b*x)**(2/3)*(a*d - b*c)**3) + 9
*d*(c + d*x)**(2/3)/(20*(a + b*x)**(5/3)*(a*d - b*c)**2) + 3*(c +
 d*x)**(2/3)/(8*(a + b*x)**(8/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0969337, size = 77, normalized size = 0.76

$$-\frac{3(c+dx)^{2/3}\left(20a^2d^2+8abd(3dx-2c)+b^2\left(5c^2-6cdx+9d^2x^2\right)\right)}{40(a+bx)^{8/3}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3)*(20*a^2*d^2 + 8*a*b*d*(-2*c + 3*d*x) + b^2*(5
*c^2 - 6*c*d*x + 9*d^2*x^2)))/(40*(b*c - a*d)^3*(a + b*x)^(8/3))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{27\,b^2d^2x^2+72\,abd^2x-18\,b^2cdx+60\,a^2d^2-48\,abcd+15\,b^2c^2}{40\,a^3d^3-120\,a^2cbd^2+120\,ab^2c^2d-40\,b^3c^3}\,(dx+c)^{\frac{2}{3}}\,(bx+a)^{-\frac{8}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/3)/(d*x+c)^(1/3),x)
```

```
[Out] 3/40*(d*x+c)^(2/3)*(9*b^2*d^2*x^2+24*a*b*d^2*x-6*b^2*c*d*x+20*a^2
*d^2-16*a*b*c*d+5*b^2*c^2)/(b*x+a)^(8/3)/(a^3*d^3-3*a^2*b*c*d^2+3
*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(1/3)), x)
```

Fricas [A] time = 0.212706, size = 317, normalized size = 3.14

$$-\frac{3\left(9\,b^2d^3x^3+5\,b^2c^3-16\,abc^2d+20\,a^2cd^2+3\left(b^2cd^2+8\,abd^3\right)x^2-\left(b^2c^2d-8\,abcd^2-20\,a^2d^3\right)\right.}{40\,(a^2b^3c^3-3\,a^3b^2c^2d+3\,a^4bcd^2-a^5d^3+(b^5c^3-3\,ab^4c^2d+3\,a^2b^3cd^2-a^3b^2d^3)x^2+2\,(ab^4c^3-3\,a^2b^3c^2d+3\,a^3b^2cd^2-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] -3/40*(9*b^2*d^3*x^3 + 5*b^2*c^3 - 16*a*b*c^2*d + 20*a^2*c*d^2 +
3*(b^2*c*d^2 + 8*a*b*d^3)*x^2 - (b^2*c^2*d - 8*a*b*c*d^2 - 20*a^2
*d^3)*x)/((a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 - a^5*d^
3 + (b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d^3)*x^2
 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*b*d^3)*
x)*(b*x + a)^(2/3)*(d*x + c)^(1/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(11/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(1/3)), x)
```

3.1594 $\int \frac{1}{(a+bx)^{14/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=136

$$\frac{243d^3(c+dx)^{2/3}}{440(a+bx)^{2/3}(bc-ad)^4}-\frac{81d^2(c+dx)^{2/3}}{220(a+bx)^{5/3}(bc-ad)^3}+\frac{27d(c+dx)^{2/3}}{88(a+bx)^{8/3}(bc-ad)^2}-\frac{3(c+dx)^{2/3}}{11(a+bx)^{11/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(2/3))/(11*(b*c - a*d)*(a + b*x)^(11/3)) + (27*d*(c
 + d*x)^(2/3))/(88*(b*c - a*d)^2*(a + b*x)^(8/3)) - (81*d^2*(c +
d*x)^(2/3))/(220*(b*c - a*d)^3*(a + b*x)^(5/3)) + (243*d^3*(c + d
*x)^(2/3))/(440*(b*c - a*d)^4*(a + b*x)^(2/3))
```

Rubi [A] time = 0.123087, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{243d^3(c+dx)^{2/3}}{440(a+bx)^{2/3}(bc-ad)^4}-\frac{81d^2(c+dx)^{2/3}}{220(a+bx)^{5/3}(bc-ad)^3}+\frac{27d(c+dx)^{2/3}}{88(a+bx)^{8/3}(bc-ad)^2}-\frac{3(c+dx)^{2/3}}{11(a+bx)^{11/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(14/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3))/(11*(b*c - a*d)*(a + b*x)^(11/3)) + (27*d*(c
 + d*x)^(2/3))/(88*(b*c - a*d)^2*(a + b*x)^(8/3)) - (81*d^2*(c +
d*x)^(2/3))/(220*(b*c - a*d)^3*(a + b*x)^(5/3)) + (243*d^3*(c + d
*x)^(2/3))/(440*(b*c - a*d)^4*(a + b*x)^(2/3))
```

Rubi in Sympy [A] time = 21.6377, size = 121, normalized size = 0.89

$$\frac{243d^3\left(c+dx\right)^{\frac{2}{3}}}{440\left(a+bx\right)^{\frac{2}{3}}\left(ad-bc\right)^4}+\frac{81d^2\left(c+dx\right)^{\frac{2}{3}}}{220\left(a+bx\right)^{\frac{5}{3}}\left(ad-bc\right)^3}+\frac{27d\left(c+dx\right)^{\frac{2}{3}}}{88\left(a+bx\right)^{\frac{8}{3}}\left(ad-bc\right)^2}+\frac{3\left(c+dx\right)^{\frac{2}{3}}}{11\left(a+bx\right)^{\frac{11}{3}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(14/3)/(d*x+c)**(1/3),x)
```

```
[Out] 243*d**3*(c + d*x)**(2/3)/(440*(a + b*x)**(2/3)*(a*d - b*c)**4) +
 81*d**2*(c + d*x)**(2/3)/(220*(a + b*x)**(5/3)*(a*d - b*c)**3) +
 27*d*(c + d*x)**(2/3)/(88*(a + b*x)**(8/3)*(a*d - b*c)**2) + 3*(
c + d*x)**(2/3)/(11*(a + b*x)**(11/3)*(a*d - b*c))
```

Mathematica [A] time = 0.208534, size = 95, normalized size = 0.7

$$\frac{3(c+dx)^{2/3}\left(54d^2(a+bx)^2(ad-bc)+45d(a+bx)(bc-ad)^2-40(bc-ad)^3+81d^3(a+bx)^3\right)}{440(a+bx)^{11/3}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(14/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(-40*(b*c - a*d)^3 + 45*d*(b*c - a*d)^2*(a + b
*x) + 54*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 81*d^3*(a + b*x)^3))/(4
40*(b*c - a*d)^4*(a + b*x)^(11/3))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$\frac{243\,b^3d^3x^3+891\,ab^2d^3x^2-162\,b^3cd^2x^2+1188\,a^2bd^3x-594\,ab^2cd^2x+135\,b^3c^2dx+660\,a^3d^3-792\,a^2cbd^2+495\,ab^2c^2d-}{440\,d^4a^4-1760\,bd^3ca^3+2640\,b^2d^2c^2a^2-1760\,b^3dc^3a+440\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(14/3)/(d*x+c)^(1/3),x)
```

```
[Out] 3/440*(d*x+c)^(2/3)*(81*b^3*d^3*x^3+297*a*b^2*d^3*x^2-54*b^3*c*d^
2*x^2+396*a^2*b*d^3*x-198*a*b^2*c*d^2*x+45*b^3*c^2*d*x+220*a^3*d^
3-264*a^2*b*c*d^2+165*a*b^2*c^2*d-40*b^3*c^3)/(b*x+a)^(11/3)/(a^4
*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{14}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(14/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(14/3)*(d*x + c)^(1/3)), x)
```

Fricas [A] time = 0.216331, size = 544, normalized size = 4.

$$\frac{3\left(81\,b^3d^4x^4-40\,b^3c^4+165\,ab^2c^3d-264\,a^2bc^2d^2+220\,a^3cd^3+27\left(b^3cd^3+11\,ab^2d^4\right)x^3\right.}{440\left(a^3b^4c^4-4\,a^4b^3c^3d+6\,a^5b^2c^2d^2-4\,a^6bcd^3+a^7d^4+(b^7c^4-4\,ab^6c^3d+6\,a^2b^5c^2d^2-4\,a^3b^4cd^3+a^4b^3d^4)x^3+3\,(ab^6c^4-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(14/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] 3/440*(81*b^3*d^4*x^4 - 40*b^3*c^4 + 165*a*b^2*c^3*d - 264*a^2*b*
c^2*d^2 + 220*a^3*c*d^3 + 27*(b^3*c*d^3 + 11*a*b^2*d^4)*x^3 - 9*(
b^3*c^2*d^2 - 11*a*b^2*c*d^3 - 44*a^2*b*d^4)*x^2 + (5*b^3*c^3*d -
 33*a*b^2*c^2*d^2 + 132*a^2*b*c*d^3 + 220*a^3*d^4)*x)/((a^3*b^4*c
^4 - 4*a^4*b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7*d^
4 + (b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c*d^
3 + a^4*b^3*d^4)*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*b^4
*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b^2*d^4)*x^2 + 3*(a^2*b^5*c^4 -
4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*d^4
)*x)*(b*x + a)^(2/3)*(d*x + c)^(1/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(14/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{14}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(14/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(14/3)*(d*x + c)^(1/3)), x)
```

3.1595 $\int \frac{(a+bx)^{8/3}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1365

result too large to display

```
[Out] (3*(b*c - a*d)^2*(a + b*x)^(2/3)*(c + d*x)^(2/3))/(7*d^3) - (12*(
b*c - a*d)*(a + b*x)^(5/3)*(c + d*x)^(2/3))/(35*d^2) + (3*(a + b*
x)^(8/3)*(c + d*x)^(2/3))/(10*d) - (3*2^(2/3)*(b*c - a*d)^3*((a +
 b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d +
b*(c + 2*d*x))^2])/(7*b^(2/3)*d^(11/3)*(a + b*x)^(1/3)*(c + d*x)^
(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (3*3^(1/4)*
Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(11/3)*((a + b*x)*(c + d*x))^(1/3)*
Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(
1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1
 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*2^(1/3)*b^(2/3)*d^(11/
3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b
*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2]) - (2*2^(1/6)*3^(3/4)*(b*c - a*d)^(11/3)*((a + b
*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[
((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((
a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*
(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1
- Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*b
^(2/3)*d^(11/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*
d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 5.67757, antiderivative size = 1365, normalized size of antiderivative = 1., number

of steps used = 8, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a-\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-a\cdots\right.}}}{7\sqrt[3]{2}b^{2/3}d^{11/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{\cdots}}{\left(\left(1+\sqrt{3}\cdots\right.\right.}}}$$

$$-\frac{2\sqrt[6]{2}3^{3/4}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+b\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/\cdots}\right.}}}{7b^{2/3}d^{11/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\cdots}{\left(\left(1+\sqrt{3}\right)(b\cdots\right.}}}$$

$$-\frac{3\,2^{2/3}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}(bc-ad)^3}{7b^{2/3}d^{11/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$+\frac{3(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)^2}{7d^3}-\frac{12(a+bx)^{5/3}(c+dx)^{2/3}(bc-ad)}{35d^2}+\frac{3(a+bx)^{8/3}(c+dx)^{2/3}}{10d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(8/3)/(c + d*x)^(1/3),x]
```

```
[Out] (3*(b*c - a*d)^2*(a + b*x)^(2/3)*(c + d*x)^(2/3))/(7*d^3) - (12*(
b*c - a*d)*(a + b*x)^(5/3)*(c + d*x)^(2/3))/(35*d^2) + (3*(a + b*
x)^(8/3)*(c + d*x)^(2/3))/(10*d) - (3*2^(2/3)*(b*c - a*d)^3*((a +
 b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d +
b*(c + 2*d*x))^2])/(7*b^(2/3)*d^(11/3)*(a + b*x)^(1/3)*(c + d*x)^
(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (3*3^(1/4)*
Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(11/3)*((a + b*x)*(c + d*x))^(1/3)*
Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(
1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1
 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*2^(1/3)*b^(2/3)*d^(11/
3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b
*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2]) - (2*2^(1/6)*3^(3/4)*(b*c - a*d)^(11/3)*((a + b
*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[
((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((
a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*
(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1
```

```
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1
- Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*b
^(2/3)*d^(11/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*
d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(8/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.296626, size = 138, normalized size = 0.1

$$\frac{3(c+dx)^{2/3}\left(d(a+bx)\left(25a^2d^2+2abd(11dx-14c)+b^2\left(10c^2-8cdx+7d^2x^2\right)\right)-10(bc-ad)^3\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{70d^4\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(8/3)/(c + d*x)^(1/3),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(d*(a + b*x)*(25*a^2*d^2 + 2*a*b*d*(-14*c + 11
*d*x) + b^2*(10*c^2 - 8*c*d*x + 7*d^2*x^2)) - 10*(b*c - a*d)^3*((
d*(a + b*x))/(-(b*c) + a*d))^(1/3)*Hypergeometric2F1[1/3, 2/3, 5/
3, (b*(c + d*x))/(b*c - a*d)]))/(70*d^4*(a + b*x)^(1/3))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{\frac{8}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(8/3)/(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(8/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{8}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(8/3)/(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(8/3)/(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(8/3)/(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(2/3)/(d*x + c)^(1/3
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(8/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{8}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(8/3)/(d*x + c)^(1/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(8/3)/(d*x + c)^(1/3), x)
```

3.1596 $\int \frac{(a+bx)^{5/3}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1330

result too large to display

```
[Out] (-15*(b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(2/3))/(28*d^2) + (3*(
a + b*x)^(5/3)*(c + d*x)^(2/3))/(7*d) + (15*(b*c - a*d)^2*((a + b
*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*
(c + 2*d*x))^2])/(14*2^(1/3)*b^(2/3)*d^(8/3)*(a + b*x)^(1/3)*(c +
 d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (15*3
^(1/4)*Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(8/3)*((a + b*x)*(c + d*x))^
(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4
/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d
*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
 - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/
3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(28*2^(1/3)*b^(2/3)
*d^(8/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sq
rt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3
)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3)
+ 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a
*d + b*(c + 2*d*x))^2]) + (5*3^(3/4)*(b*c - a*d)^(8/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*2^(5
/6)*b^(2/3)*d^(8/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 4.40534, antiderivative size = 1330, normalized size of antiderivative = 1., number

of steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{15\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(\cdots}}{\left(\left(1+\sqrt{3}\right)(b\cdots\right.}}}{28\sqrt[3]{2}b^{2/3}d^{8/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(\left(1+\cdots\right.}}}$$

$$+\frac{5\ 3^{3/4}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2\cdots\right.}}}{7\ 2^{5/6}b^{2/3}d^{8/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}(\cdots}{\left(\left(1+\sqrt{3}\right)(b\cdots\right.}}}$$

$$+\frac{15\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}(bc-ad)^2}{14\sqrt[3]{2}b^{2/3}d^{8/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$-\frac{15(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)}{28d^2}+\frac{3(a+bx)^{5/3}(c+dx)^{2/3}}{7d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(5/3)/(c + d*x)^(1/3),x]
```

```
[Out] (-15*(b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(2/3))/(28*d^2) + (3*(
a + b*x)^(5/3)*(c + d*x)^(2/3))/(7*d) + (15*(b*c - a*d)^2*((a + b
*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*
(c + 2*d*x))^2])/(14*2^(1/3)*b^(2/3)*d^(8/3)*(a + b*x)^(1/3)*(c +
 d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (15*3
^(1/4)*Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(8/3)*((a + b*x)*(c + d*x))^
(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4
/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d
*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
 - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/
3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(28*2^(1/3)*b^(2/3)
*d^(8/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sq
rt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3
)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3)
+ 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a
*d + b*(c + 2*d*x))^2]) + (5*3^(3/4)*(b*c - a*d)^(8/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
```

```
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*2^(5
/6)*b^(2/3)*d^(8/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.192126, size = 107, normalized size = 0.08

$$\frac{3(c+dx)^{2/3}\left(5(bc-ad)^2\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(9ad-5bc+4bdx)\right)}{28d^3\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/3)/(c + d*x)^(1/3),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(d*(a + b*x)*(-5*b*c + 9*a*d + 4*b*d*x) + 5*(b
*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*Hypergeometric2F
1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)]))/(28*d^3*(a + b*x)^(
1/3))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/3)/(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(5/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/3)/(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/3)/(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{3}}}{\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(5/3)/(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(1/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(5/3)/(d*x + c)^(1/3), x)
```

3.1597 $\int \frac{(a+bx)^{2/3}}{\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1293

result too large to display

```
[Out] (3*(a + b*x)^(2/3)*(c + d*x)^(2/3))/(4*d) - (3*(b*c - a*d)*((a + 
b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/(2*2^(1/3)*b^(2/3)*d^(5/3)*(a + b*x)^(1/3)*(c +
 d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (3*3^
(1/4)*Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(5/3)*((a + b*x)*(c + d*x))^(
1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/
3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*
x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*b^(2/3)*d
^(5/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt
[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*
((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) +
2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d
 + b*(c + 2*d*x))^2]) - (3^(3/4)*(b*c - a*d)^(5/3)*((a + b*x)*(c
+ d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) +
2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c -
 a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x
)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*
x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(
1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[
3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)*b^
(2/3)*d^(5/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*
x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sq
rt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 3.47922, antiderivative size = 1293, normalized size of antiderivative = 1., number

of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a-}}{\left(\left(1+\sqrt{3}\right)(bc-a\right.}}}{4\sqrt[3]{2}b^{2/3}d^{5/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/}}{\left(\left(1+\sqrt{3}\right)\right.}}}$$

$$-\frac{3^{3/4}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/}\right.}}}{2^{5/6}b^{2/3}d^{5/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(\right.}{\left(\left(1+\sqrt{3}\right)(bc\right.}}}$$

$$-\frac{3\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}(bc-ad)}{2\sqrt[3]{2}b^{2/3}d^{5/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$+\frac{3(a+bx)^{2/3}(c+dx)^{2/3}}{4d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(2/3)/(c + d*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(c + d*x)^(2/3))/(4*d) - (3*(b*c - a*d)*((a +
b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/(2*2^(1/3)*b^(2/3)*d^(5/3)*(a + b*x)^(1/3)*(c +
 d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (3*3^
(1/4)*Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(5/3)*((a + b*x)*(c + d*x))^(
1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/
3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*
x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*b^(2/3)*d
^(5/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt
[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*
((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) +
2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d
 + b*(c + 2*d*x))^2]) - (3^(3/4)*(b*c - a*d)^(5/3)*((a + b*x)*(c
+ d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) +
2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c -
 a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x
)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*
x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(
1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[
3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
```

```
*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)*b^
(2/3)*d^(5/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*
x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sq
rt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 165.312, size = 1397, normalized size = 1.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)/(d*x+c)**(1/3),x)
```

```
[Out] 3*(a + b*x)**(2/3)*(c + d*x)**(2/3)/(4*d) - 3*2**(2/3)*3**(1/4)*s
qrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c)
)**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b
*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b
**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + s
qrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(-sqrt(3) + 2)*(a*d - b*c)**(
5/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))
**(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(
1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_e(asin((2**(2/3)*b**
(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sq
rt(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d
*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))
), -7 - 4*sqrt(3))/(8*b**(2/3)*d**(5/3)*sqrt((a*d - b*c)**(2/3)*(
2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2
)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2
+ x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x)) + 2
**(1/6)*3**(3/4)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*
c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**
(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c
))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a*d - b*c)**(5
/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(1
/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(
1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqr
t(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*
x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3)))
, -7 - 4*sqrt(3))/(2*b**(2/3)*d**(5/3)*sqrt((a*d - b*c)**(2/3)*(2
**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3)
 + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**
2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)
*(a + b*x)**(1/3)*(c + d*x)**(1/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 +
 x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x)) + 3*
2**(2/3)*(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
```

```
b*c)) + (a*d - b*c)**2)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3)*s
qrt((a*d + b*c + 2*b*d*x)**2)/(4*b**(2/3)*d**(5/3)*(a + b*x)**(1/
3)*(c + d*x)**(1/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 +
 x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))*(a*d +
 b*c + 2*b*d*x))
```

Mathematica [C] time = 0.17369, size = 76, normalized size = 0.06

$$\frac{3(a+bx)^{2/3}(c+dx)^{2/3}\left(\frac{{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}}+1\right)}{4d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)/(c + d*x)^(1/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(c + d*x)^(2/3)*(1 + Hypergeometric2F1[1/3, 2/
3, 5/3, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))
^(2/3)))/(4*d)
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{2}{3}}\,\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)/(d*x+c)^(1/3),x)
```

```
[Out] int((b*x+a)^(2/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(2/3)/(d*x + c)^(1/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(1/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(2/3)/(d*x + c)^(1/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{2}{3}}}{\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral((a + b*x)**(2/3)/(c + d*x)**(1/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(2/3)/(d*x + c)^(1/3), x)
```

3.1598 $\int \frac{1}{\sqrt[3]{a+bx}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1257

result too large to display

```
[Out] (3*((a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt
[(a*d + b*(c + 2*d*x))^2])/(2^(1/3)*b^(2/3)*d^(2/3)*(a + b*x)^(1/
3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
- (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(2/3)*((a + b*x)*(c +
d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a
*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*
(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x)
)^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/
3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3]
)*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x
))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1
/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2*2^(1/3)*b^
(2/3)*d^(2/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*
x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sq
rt[(a*d + b*(c + 2*d*x))^2]) + (2^(1/6)*3^(3/4)*(b*c - a*d)^(2/3)
*((a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^
(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a
 + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[Arc
Sin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(
2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3
]])/(b^(2/3)*d^(2/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^
(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 2.68985, antiderivative size = 1257, normalized size of antiderivative = 1., number

of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}(bc-ad)^{2/3}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\cdots}{\cdots}}}{2\sqrt[3]{2}b^{2/3}d^{2/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)\cdots}{\left(\left(1+\sqrt{3}\right)\cdots\right.}}}$$

$$+\frac{\sqrt[6]{2}3^{3/4}(bc-ad)^{2/3}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\cdots}{\left(\left(1+\sqrt{\cdots}\right.\right.}}}{b^{2/3}d^{2/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left((bc\cdots\right.}{\left(\left(1+\sqrt{3}\right)(bc-\cdots\right.}}}$$

$$+\frac{3\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt[3]{2}b^{2/3}d^{2/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(1/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*((a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt
[(a*d + b*(c + 2*d*x))^2])/(2^(1/3)*b^(2/3)*d^(2/3)*(a + b*x)^(1/
3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
- (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*(b*c - a*d)^(2/3)*((a + b*x)*(c +
d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a
*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*
(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x)
)^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/
3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3]
)*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x
))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1
/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2*2^(1/3)*b^
(2/3)*d^(2/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*
x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sq
rt[(a*d + b*(c + 2*d*x))^2]) + (2^(1/6)*3^(3/4)*(b*c - a*d)^(2/3)
*((a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^
(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a
 + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[Arc
Sin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(
2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3
]])/(b^(2/3)*d^(2/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
```

```
 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^
(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 133.28, size = 1367, normalized size = 1.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/3)/(d*x+c)**(1/3),x)
```

```
[Out] -3*2**(2/3)*3**(1/4)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*
d*x**2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d
- b*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*
c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d +
 b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(-sqrt(
3) + 2)*(a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d
*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*ellipti
c_e(asin((2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b
*c))**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/
3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3
))*(a*d - b*c)**(2/3))), -7 - 4*sqrt(3))/(4*b**(2/3)*d**(2/3)*sqr
t((a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2
+ x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*
d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*
(a*d - b*c)**(2/3))**2)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*sqrt(b*
d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d
 + b*c + 2*b*d*x)) + 2**(1/6)*3**(3/4)*sqrt((2*2**(1/3)*b**(2/3)*
d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1
/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b
*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3
))**2)*(a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*
x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**
2 + x*(a*d + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic
_f(asin((2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*
c))**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3
)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3)
)*(a*d - b*c)**(2/3))), -7 - 4*sqrt(3))/(b**(2/3)*d**(2/3)*sqrt((
a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x
*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**
(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*
d - b*c)**(2/3))**2)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*sqrt(b*d*(
4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d +
b*c + 2*b*d*x)) + 3*2**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*
a*d + 4*b*c)) + (a*d - b*c)**2)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)/(2*b**(2/3)*d**(2/3)*(a + b
*x)**(1/3)*(c + d*x)**(1/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*
d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3)
```

```
)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.0583316, size = 73, normalized size = 0.06

$$\frac{3(c+dx)^{2/3}\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{2d\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*(c + d*x)^(2/3)*Hypergeom
etric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/(2*d*(a + b*x
)^(1/3))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[3]{bx+a}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/3)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(1/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(1/3)*(d*x + c)^(1/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[3]{a+bx}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(1/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(1/3)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(1/3)), x)
```

3.1599 $\int \frac{1}{(a+bx)^{4/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1297

result too large to display

```
[Out] (-3*(c + d*x)^(2/3))/((b*c - a*d)*(a + b*x)^(1/3)) + (3*d^(1/3)*(
(a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*
d + b*(c + 2*d*x))^2])/(2^(1/3)*b^(2/3)*(b*c - a*d)*(a + b*x)^(1/
3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
- (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3)
- 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))
^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a
*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/
((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2*2^(1/3)*b^(2/3)*(b*c
 - a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*
x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sq
rt[(a*d + b*(c + 2*d*x))^2]) + (2^(1/6)*3^(3/4)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/
3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((
b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a
+ b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
 + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 -
Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(
c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(b^(2/
3)*(b*c - a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^
(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 3.40174, antiderivative size = 1297, normalized size of antiderivative = 1., number

of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\cdots}{\left(\left(1+\sqrt{3}\right)\cdots\right.}}\cdots}{2\sqrt[3]{2}b^{2/3}\sqrt[3]{bc-ad}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/}\cdots}{\left(\left(1+\sqrt{3}\right)\cdots\right.}}\cdots}$$

$$+\frac{\sqrt[6]{2}3^{3/4}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-ad)\cdots\right.}}\cdots}{b^{2/3}\sqrt[3]{bc-ad}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left((bc-\cdots\right.}{\left(\left(1+\sqrt{3}\right)(bc-a\cdots\right.}}\cdots}$$

$$-\frac{3(c+dx)^{2/3}}{(bc-ad)\sqrt[3]{a+bx}}$$

$$+\frac{3\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt[3]{2}b^{2/3}(bc-ad)\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(4/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3))/((b*c - a*d)*(a + b*x)^(1/3)) + (3*d^(1/3)*(
(a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*
d + b*(c + 2*d*x))^2])/(2^(1/3)*b^(2/3)*(b*c - a*d)*(a + b*x)^(1/
3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
- (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3)
- 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))
^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a
*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/
((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2*2^(1/3)*b^(2/3)*(b*c
 - a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*
x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(
2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sq
rt[(a*d + b*(c + 2*d*x))^2]) + (2^(1/6)*3^(3/4)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/
3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((
b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a
+ b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
 + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 -
```

```
Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(
c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(b^(2/
3)*(b*c - a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^
(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 163.213, size = 1399, normalized size = 1.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(4/3)/(d*x+c)**(1/3),x)
```

```
[Out] 3*(c + d*x)**(2/3)/((a + b*x)**(1/3)*(a*d - b*c)) + 3*2**(2/3)*3*
*(1/4)*d**(1/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**
2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c
)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(
4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c)
)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(-sqrt(3) +
2)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**
(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/
3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_e(asin((2**(2/3)*b**(1
/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt
(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x
**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))),
 -7 - 4*sqrt(3))/(4*b**(2/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b*
*(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d -
b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d
 + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)
**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)*sqrt(b*d*(4*a*c + 4*b
*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d
*x)) - 2**(1/6)*3**(3/4)*d**(1/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2
/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d
**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2
)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(
1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/
3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(
3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))),
-7 - 4*sqrt(3))/(b**(2/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**(1
/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c
)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d +
b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)**(
1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)*sqrt(b*d*(4*a*c + 4*b*d*
x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x)
```

```
) - 3*2**(2/3)*d**(1/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d +
 4*b*c)) + (a*d - b*c)**2)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
)*sqrt((a*d + b*c + 2*b*d*x)**2)/(2*b**(2/3)*(a + b*x)**(1/3)*(c
+ d*x)**(1/3)*(a*d - b*c)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*
x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))*
(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.102696, size = 83, normalized size = 0.06

$$\frac{3(c+dx)^{2/3}\left(\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)-2\right)}{2\sqrt[3]{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(4/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(-2 + ((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*Hyp
ergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)]))/(2*(b*
c - a*d)*(a + b*x)^(1/3))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{4}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(4/3)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(4/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(4/3)*(d*x + c)^(1/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{4}{3}}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(4/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(4/3)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(1/3)), x)
```

3.1600 $\int \frac{1}{(a+bx)^{7/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1335

result too large to display

```
[Out] (-3*(c + d*x)^(2/3))/(4*(b*c - a*d)*(a + b*x)^(4/3)) + (3*d*(c +
d*x)^(2/3))/(2*(b*c - a*d)^2*(a + b*x)^(1/3)) - (3*d^(4/3)*((a +
b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/(2*2^(1/3)*b^(2/3)*(b*c - a*d)^2*(a + b*x)^(1/3
)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) +
 (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*d^(4/3)*((a + b*x)*(c + d*x))^(1/3)
*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^
(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*b^(2/3)*(b*c
- a*d)^(4/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x
)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2
/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqr
t[(a*d + b*(c + 2*d*x))^2]) - (3^(3/4)*d^(4/3)*((a + b*x)*(c + d*
x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d
)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c
 + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^
(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)
*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3
)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)*b^(2/3
)*(b*c - a*d)^(4/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 4.15285, antiderivative size = 1335, normalized size of antiderivative = 1., number

of steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a-\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-a\cdots}}}{4\sqrt[3]{2}b^{2/3}(bc-ad)^{4/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/\cdots}}{\left(\left(1+\sqrt{3}\right)\cdots}}}$$

$$-\frac{3^{3/4}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/\cdots}}}}{2^{5/6}b^{2/3}(bc-ad)^{4/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(\cdots\right.}{\left(\left(1+\sqrt{3}\right)(bc\cdots}}}$$

$$-\frac{3\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}d^{4/3}}{2\sqrt[3]{2}b^{2/3}(bc-ad)^2\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$+\frac{3(c+dx)^{2/3}d}{2(bc-ad)^2\sqrt[3]{a+bx}}-\frac{3(c+dx)^{2/3}}{4(bc-ad)(a+bx)^{4/3}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(7/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3))/(4*(b*c - a*d)*(a + b*x)^(4/3)) + (3*d*(c +
d*x)^(2/3))/(2*(b*c - a*d)^2*(a + b*x)^(1/3)) - (3*d^(4/3)*((a +
b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/(2*2^(1/3)*b^(2/3)*(b*c - a*d)^2*(a + b*x)^(1/3
)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) +
 (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*d^(4/3)*((a + b*x)*(c + d*x))^(1/3)
*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^
(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*b^(2/3)*(b*c
- a*d)^(4/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x
)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2
/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqr
t[(a*d + b*(c + 2*d*x))^2]) - (3^(3/4)*d^(4/3)*((a + b*x)*(c + d*
x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d
)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c
 + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^
(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)
```

```
*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3
)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)*b^(2/3
)*(b*c - a*d)^(4/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.203559, size = 100, normalized size = 0.07

$$-\frac{3(c+dx)^{2/3}\left(d(a+bx)\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)-3ad+b(c-2dx)\right)}{4(a+bx)^{4/3}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3)*(-3*a*d + b*(c - 2*d*x) + d*(a + b*x)*((d*(a
+ b*x))/(-(b*c) + a*d))^(1/3)*Hypergeometric2F1[1/3, 2/3, 5/3, (b
*(c + d*x))/(b*c - a*d)]))/(4*(b*c - a*d)^2*(a + b*x)^(4/3))
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/3)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(7/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(1/3)*(d*x + c)^(
1/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{7}{3}}\sqrt[3]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(7/3)/(d*x+c)**(1/3),x)
```

```
[Out] Integral(1/((a + b*x)**(7/3)*(c + d*x)**(1/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(1/3)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(1/3)), x)
```

3.1601 $\int \frac{1}{(a+bx)^{10/3}\sqrt[3]{c+dx}}\,dx$

Optimal. Leaf size=1372

result too large to display

```
[Out] (-3*(c + d*x)^(2/3))/(7*(b*c - a*d)*(a + b*x)^(7/3)) + (15*d*(c +
 d*x)^(2/3))/(28*(b*c - a*d)^2*(a + b*x)^(4/3)) - (15*d^2*(c + d*
x)^(2/3))/(14*(b*c - a*d)^3*(a + b*x)^(1/3)) + (15*d^(7/3)*((a +
b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/(14*2^(1/3)*b^(2/3)*(b*c - a*d)^3*(a + b*x)^(1/
3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
- (15*3^(1/4)*Sqrt[2 - Sqrt[3]]*d^(7/3)*((a + b*x)*(c + d*x))^(1/
3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3)
 - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x)
)^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/
((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
 b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(28*2^(1/3)*b^(2/3)*(b
*c - a*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*
d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
Sqrt[(a*d + b*(c + 2*d*x))^2]) + (5*3^(3/4)*d^(7/3)*((a + b*x)*(c
 + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) +
 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c
- a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*
x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d
*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt
[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*2^(5/6)
*b^(2/3)*(b*c - a*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c +
 a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 5.04131, antiderivative size = 1372, normalized size of antiderivative = 1., number

of steps used = 8, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{15\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(}}{\left(\left(1+\sqrt{3}\right)(b}}}{28\sqrt[3]{2}b^{2/3}(bc-ad)^{7/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-a}{\left(\left(1+\right.\right.}}}$$

$$+\frac{5\,3^{3/4}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2\right.}}}{7\,2^{5/6}b^{2/3}(bc-ad)^{7/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(\right.}{\left(\left(1+\sqrt{3}\right)(b\right.}}}$$

$$+\frac{15\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}d^{7/3}}{14\sqrt[3]{2}b^{2/3}(bc-ad)^3\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$-\frac{15(c+dx)^{2/3}d^2}{14(bc-ad)^3\sqrt[3]{a+bx}}+\frac{15(c+dx)^{2/3}d}{28(bc-ad)^2(a+bx)^{4/3}}-\frac{3(c+dx)^{2/3}}{7(bc-ad)(a+bx)^{7/3}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(10/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (-3*(c + d*x)^(2/3))/(7*(b*c - a*d)*(a + b*x)^(7/3)) + (15*d*(c +
 d*x)^(2/3))/(28*(b*c - a*d)^2*(a + b*x)^(4/3)) - (15*d^2*(c + d*
x)^(2/3))/(14*(b*c - a*d)^3*(a + b*x)^(1/3)) + (15*d^(7/3)*((a +
b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/(14*2^(1/3)*b^(2/3)*(b*c - a*d)^3*(a + b*x)^(1/
3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))
- (15*3^(1/4)*Sqrt[2 - Sqrt[3]]*d^(7/3)*((a + b*x)*(c + d*x))^(1/
3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3)
 - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x)
)^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/
((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
 b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(28*2^(1/3)*b^(2/3)*(b
*c - a*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*
d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
Sqrt[(a*d + b*(c + 2*d*x))^2]) + (5*3^(3/4)*d^(7/3)*((a + b*x)*(c
 + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) +
 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c
- a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*
x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d
```

```
*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt
[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*2^(5/6)
*b^(2/3)*(b*c - a*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c +
 a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(10/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.347201, size = 136, normalized size = 0.1

$$\frac{3(c+dx)^{2/3}\left(-19a^2d^2+5d^2(a+bx)^2\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)+abd(13c-25dx)+b^2\left(-4c^2+5cdx-10d^2x^2\right)\right)}{28(a+bx)^{7/3}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(10/3)*(c + d*x)^(1/3)),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(-19*a^2*d^2 + a*b*d*(13*c - 25*d*x) + b^2*(-4
*c^2 + 5*c*d*x - 10*d^2*x^2) + 5*d^2*(a + b*x)^2*((d*(a + b*x))/(
-(b*c) + a*d))^(1/3)*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x
))/(b*c - a*d)]))/(28*(b*c - a*d)^3*(a + b*x)^(7/3))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{10}{3}}\frac{1}{\sqrt[3]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(10/3)/(d*x+c)^(1/3),x)
```

```
[Out] int(1/(b*x+a)^(10/3)/(d*x+c)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{10}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(1/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(1/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(1/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*(b*x + a)^(
1/3)*(d*x + c)^(1/3)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(10/3)/(d*x+c)**(1/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{10}{3}}(dx+c)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(10/3)*(d*x + c)^(1/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(1/3)), x)
```

3.1602 $\int \frac{(a+bx)^{5/3}}{(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=216

$$-\frac{5(bc-ad)^2\log(c+dx)}{18\sqrt[3]{b}d^{8/3}}-\frac{5(bc-ad)^2\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{6\sqrt[3]{b}d^{8/3}}-\frac{5(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}\sqrt[3]{b}d^{8/3}}-\frac{5(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)}{6d^2}+\frac{(a+bx)^{5/3}\sqrt[3]{c+dx}}{2d}$$

```
[Out] (-5*(b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(1/3))/(6*d^2) + ((a +
b*x)^(5/3)*(c + d*x)^(1/3))/(2*d) - (5*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/
3))])/(3*Sqrt[3]*b^(1/3)*d^(8/3)) - (5*(b*c - a*d)^2*Log[c + d*x]
)/(18*b^(1/3)*d^(8/3)) - (5*(b*c - a*d)^2*Log[-1 + (d^(1/3)*(a +
b*x)^(1/3))/(b^(1/3)*(c + d*x)^(1/3))])/(6*b^(1/3)*d^(8/3))
```

Rubi [A] time = 0.258619, antiderivative size = 216, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{5(bc-ad)^2\log(c+dx)}{18\sqrt[3]{b}d^{8/3}}-\frac{5(bc-ad)^2\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{6\sqrt[3]{b}d^{8/3}}-\frac{5(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}\sqrt[3]{b}d^{8/3}}-\frac{5(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)}{6d^2}+\frac{(a+bx)^{5/3}\sqrt[3]{c+dx}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/3)/(c + d*x)^(2/3),x]
```

```
[Out] (-5*(b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(1/3))/(6*d^2) + ((a +
b*x)^(5/3)*(c + d*x)^(1/3))/(2*d) - (5*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/
3))])/(3*Sqrt[3]*b^(1/3)*d^(8/3)) - (5*(b*c - a*d)^2*Log[c + d*x]
)/(18*b^(1/3)*d^(8/3)) - (5*(b*c - a*d)^2*Log[-1 + (d^(1/3)*(a +
b*x)^(1/3))/(b^(1/3)*(c + d*x)^(1/3))])/(6*b^(1/3)*d^(8/3))
```

Rubi in Sympy [A] time = 21.557, size = 202, normalized size = 0.94

$$\frac{(a+bx)^{\frac{5}{3}}\sqrt[3]{c+dx}}{2d}+\frac{5(a+bx)^{\frac{2}{3}}\sqrt[3]{c+dx}\,(ad-bc)}{6d^2}-\frac{5(ad-bc)^2\log\left(-1+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{6\sqrt[3]{b}d^{\frac{8}{3}}}-\frac{5(ad-bc)^2\log(c+dx)}{18\sqrt[3]{b}d^{\frac{8}{3}}}-\frac{5\sqrt{3}(ad-bc)^2\operatorname{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}{3\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{9\sqrt[3]{b}d^{\frac{8}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/3)/(d*x+c)**(2/3),x)
```

```
[Out] (a + b*x)**(5/3)*(c + d*x)**(1/3)/(2*d) + 5*(a + b*x)**(2/3)*(c +
 d*x)**(1/3)*(a*d - b*c)/(6*d**2) - 5*(a*d - b*c)**2*log(-1 + d**
(1/3)*(a + b*x)**(1/3)/(b**(1/3)*(c + d*x)**(1/3)))/(6*b**(1/3)*d
**(8/3)) - 5*(a*d - b*c)**2*log(c + d*x)/(18*b**(1/3)*d**(8/3)) -
 5*sqrt(3)*(a*d - b*c)**2*atan(sqrt(3)/3 + 2*sqrt(3)*d**(1/3)*(a
+ b*x)**(1/3)/(3*b**(1/3)*(c + d*x)**(1/3)))/(9*b**(1/3)*d**(8/3)
)
```

Mathematica [C] time = 0.200296, size = 107, normalized size = 0.5

$$\frac{\sqrt[3]{c+dx}\left(10(bc-ad)^2\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(8ad-5bc+3bdx)\right)}{6d^3\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/3)/(c + d*x)^(2/3),x]
```

```
[Out] ((c + d*x)^(1/3)*(d*(a + b*x)*(-5*b*c + 8*a*d + 3*b*d*x) + 10*(b*
c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*Hypergeometric2F1
[1/3, 1/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(6*d^3*(a + b*x)^(1/
3))
```

Maple [F] time = 0.038, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{3}}(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/3)/(d*x+c)^(2/3),x)
```

```
[Out] int((b*x+a)^(5/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/3)/(d*x + c)^(2/3), x)
```

Fricas [A] time = 0.233596, size = 400, normalized size = 1.85

$$\sqrt{3}\left(3\sqrt{3}\left(-bd^2\right)^{\frac{1}{3}}(3\,bdx - 5\,bc + 8\,ad)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}} - 5\sqrt{3}\left(b^2c^2 - 2\,abcd + a^2d^2\right)\log\left(\frac{bd^2x + ad^2 - \left(-bd^2\right)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{bx+a}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(2/3),x, algorithm="fricas")
```

```
[Out] 1/54*sqrt(3)*(3*sqrt(3)*(-b*d^2)^(1/3)*(3*b*d*x - 5*b*c + 8*a*d)*
(b*x + a)^(2/3)*(d*x + c)^(1/3) - 5*sqrt(3)*(b^2*c^2 - 2*a*b*c*d
+ a^2*d^2)*log((b*d^2*x + a*d^2 - (-b*d^2)^(1/3)*(b*x + a)^(2/3)*
(d*x + c)^(1/3)*d + (-b*d^2)^(2/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3
))/(b*x + a)) + 10*sqrt(3)*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*log((b
*d*x + a*d + (-b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x
 + a)) + 30*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*arctan(1/3*(2*sqrt(3)
*(-b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3) - sqrt(3)*(b*d*x
+ a*d))/(b*d*x + a*d)))/((-b*d^2)^(1/3)*d^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{3}}}{(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral((a + b*x)**(5/3)/(c + d*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(2/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/3)/(d*x + c)^(2/3), x)
```

3.1603 $\int \frac{(a+bx)^{2/3}}{(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=169

$$\frac{(bc-ad)\log(c+dx)}{3\sqrt[3]{b}d^{5/3}}+\frac{(bc-ad)\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{\sqrt[3]{b}d^{5/3}}+\frac{2(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}\sqrt[3]{b}d^{5/3}}+\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}}{d}$$

```
[Out] ((a + b*x)^(2/3)*(c + d*x)^(1/3))/d + (2*(b*c - a*d)*ArcTan[1/Sqr
t[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/
3))])/(Sqrt[3]*b^(1/3)*d^(5/3)) + ((b*c - a*d)*Log[c + d*x])/(3*b
^(1/3)*d^(5/3)) + ((b*c - a*d)*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))
/(b^(1/3)*(c + d*x)^(1/3))])/(b^(1/3)*d^(5/3))
```

Rubi [A] time = 0.146693, antiderivative size = 169, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{(bc-ad)\log(c+dx)}{3\sqrt[3]{b}d^{5/3}}+\frac{(bc-ad)\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{\sqrt[3]{b}d^{5/3}}+\frac{2(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}\sqrt[3]{b}d^{5/3}}+\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(2/3)/(c + d*x)^(2/3),x]
```

```
[Out] ((a + b*x)^(2/3)*(c + d*x)^(1/3))/d + (2*(b*c - a*d)*ArcTan[1/Sqr
t[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3]*b^(1/3)*(c + d*x)^(1/
3))])/(Sqrt[3]*b^(1/3)*d^(5/3)) + ((b*c - a*d)*Log[c + d*x])/(3*b
^(1/3)*d^(5/3)) + ((b*c - a*d)*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))
/(b^(1/3)*(c + d*x)^(1/3))])/(b^(1/3)*d^(5/3))
```

Rubi in Sympy [A] time = 11.9117, size = 160, normalized size = 0.95

$$\frac{(a+bx)^{\frac{2}{3}}\sqrt[3]{c+dx}}{d}-\frac{(ad-bc)\log\left(-1+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{\sqrt[3]{b}d^{\frac{5}{3}}}-\frac{(ad-bc)\log(c+dx)}{3\sqrt[3]{b}d^{\frac{5}{3}}}-\frac{2\sqrt{3}(ad-bc)\,\mathrm{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}{3\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{3\sqrt[3]{b}d^{\frac{5}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)/(d*x+c)**(2/3),x)
```

```
[Out] (a + b*x)**(2/3)*(c + d*x)**(1/3)/d - (a*d - b*c)*log(-1 + d**(1/
3)*(a + b*x)**(1/3)/(b**(1/3)*(c + d*x)**(1/3)))/(b**(1/3)*d**(5/
3)) - (a*d - b*c)*log(c + d*x)/(3*b**(1/3)*d**(5/3)) - 2*sqrt(3)*
(a*d - b*c)*atan(sqrt(3)/3 + 2*sqrt(3)*d**(1/3)*(a + b*x)**(1/3)/
(3*b**(1/3)*(c + d*x)**(1/3)))/(3*b**(1/3)*d**(5/3))
```

Mathematica [C] time = 0.169299, size = 74, normalized size = 0.44

$$\frac{(a+bx)^{2/3}\sqrt[3]{c+dx}\left(\frac{2\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}}+1\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)/(c + d*x)^(2/3),x]
```

```
[Out] ((a + b*x)^(2/3)*(c + d*x)^(1/3)*(1 + (2*Hypergeometric2F1[1/3, 1
/3, 4/3, (b*(c + d*x))/(b*c - a*d)])/((d*(a + b*x))/(-(b*c) + a*d
))^(2/3)))/d
```

Maple [F] time = 0.029, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{2}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)/(d*x+c)^(2/3),x)
```

```
[Out] int((b*x+a)^(2/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(2/3)/(d*x + c)^(2/3), x)
```

Fricas [A] time = 0.22859, size = 327, normalized size = 1.93

$$\frac{\sqrt{3}\left(\sqrt{3}(bc-ad)\log\left(\frac{bd^2x+ad^2-(-bd^2)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}d+(-bd^2)^{\frac{2}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}{bx+a}\right)-2\sqrt{3}(bc-ad)\log\left(\frac{bdx+ad+(-bd^2)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx}{bx+a}\right.\right.}{9\,(-bd^2)^{\frac{1}{3}}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(2/3),x, algorithm="fricas")
```

```
[Out] 1/9*sqrt(3)*(sqrt(3)*(b*c - a*d)*log((b*d^2*x + a*d^2 - (-b*d^2)^
(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3)*d + (-b*d^2)^(2/3)*(b*x + a
)^(1/3)*(d*x + c)^(2/3))/(b*x + a)) - 2*sqrt(3)*(b*c - a*d)*log((
b*d*x + a*d + (-b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*
x + a)) - 6*(b*c - a*d)*arctan(1/3*(2*sqrt(3)*(-b*d^2)^(1/3)*(b*x
 + a)^(2/3)*(d*x + c)^(1/3) - sqrt(3)*(b*d*x + a*d))/(b*d*x + a*d
)) + 3*sqrt(3)*(-b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/((
-b*d^2)^(1/3)*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{2}{3}}}{(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral((a + b*x)**(2/3)/(c + d*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(2/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(2/3)/(d*x + c)^(2/3), x)
```

3.1604 $\int \frac{1}{\sqrt[3]{a+bx}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=126

$$-\frac{3\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{2\sqrt[3]{b}d^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt[3]{b}d^{2/3}}-\frac{\log(c+dx)}{2\sqrt[3]{b}d^{2/3}}$$

```
[Out] -((Sqrt[3]*ArcTan[1/Sqrt[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3
]*b^(1/3)*(c + d*x)^(1/3))])/(b^(1/3)*d^(2/3))) - Log[c + d*x]/(2
*b^(1/3)*d^(2/3)) - (3*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))/(b^(1/3
)*(c + d*x)^(1/3))])/(2*b^(1/3)*d^(2/3))
```

Rubi [A] time = 0.0652503, antiderivative size = 126, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{3\log\left(\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}-1\right)}{2\sqrt[3]{b}d^{2/3}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt[3]{b}d^{2/3}}-\frac{\log(c+dx)}{2\sqrt[3]{b}d^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/3)*(c + d*x)^(2/3)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[1/Sqrt[3] + (2*d^(1/3)*(a + b*x)^(1/3))/(Sqrt[3
]*b^(1/3)*(c + d*x)^(1/3))])/(b^(1/3)*d^(2/3))) - Log[c + d*x]/(2
*b^(1/3)*d^(2/3)) - (3*Log[-1 + (d^(1/3)*(a + b*x)^(1/3))/(b^(1/3
)*(c + d*x)^(1/3))])/(2*b^(1/3)*d^(2/3))
```

Rubi in Sympy [A] time = 5.93353, size = 122, normalized size = 0.97

$$-\frac{3\log\left(-1+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{2\sqrt[3]{b}d^{\frac{2}{3}}}-\frac{\log(c+dx)}{2\sqrt[3]{b}d^{\frac{2}{3}}}-\frac{\sqrt{3}\operatorname{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}{3\sqrt[3]{b}\sqrt[3]{c+dx}}\right)}{\sqrt[3]{b}d^{\frac{2}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/3)/(d*x+c)**(2/3),x)
```

```
[Out] -3*log(-1 + d**(1/3)*(a + b*x)**(1/3)/(b**(1/3)*(c + d*x)**(1/3))
)/(2*b**(1/3)*d**(2/3)) - log(c + d*x)/(2*b**(1/3)*d**(2/3)) - sq
rt(3)*atan(sqrt(3)/3 + 2*sqrt(3)*d**(1/3)*(a + b*x)**(1/3)/(3*b**
```

```
(1/3)*(c + d*x)**(1/3)))/(b**(1/3)*d**(2/3))
```

Mathematica [C] time = 0.0687032, size = 71, normalized size = 0.56

$$\frac{3\sqrt[3]{c+dx}\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{d\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*(c + d*x)^(1/3)*Hypergeom
etric2F1[1/3, 1/3, 4/3, (b*(c + d*x))/(b*c - a*d)])/(d*(a + b*x)^
(1/3))
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[3]{bx+a}}\left(dx+c\right)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/3)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(1/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(2/3)), x)
```

Fricas [A] time = 0.221913, size = 239, normalized size = 1.9

$$\frac{2\sqrt{3}\arctan\left(-\frac{\sqrt{3}\left(bdx+ad-2\left(-bd^2\right)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}\right)}{3\,(bdx+ad)}\right)-\log\left(\frac{bd^2x+ad^2-\left(-bd^2\right)^{\frac{1}{3}}(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}d+\left(-bd^2\right)^{\frac{2}{3}}(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}{bx+a}\right)+2\log\left(\right.}{2\left(-bd^2\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*arctan(-1/3*sqrt(3)*(b*d*x + a*d - 2*(-b*d^2)^(1/3
)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*d*x + a*d)) - log((b*d^2*x
+ a*d^2 - (-b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3)*d + (-b*
d^2)^(2/3)*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(b*x + a)) + 2*log((b
*d*x + a*d + (-b*d^2)^(1/3)*(b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x
 + a)))/(-b*d^2)^(1/3)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[3]{a+bx}\,(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)**(1/3)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(2/3)), x)
```

3.1605 $\int \frac{1}{(a+bx)^{4/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=30

$$-\frac{3\sqrt[3]{c+dx}}{\sqrt[3]{a+bx}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/((b*c - a*d)*(a + b*x)^(1/3))
```

Rubi [A] time = 0.0252009, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{3\sqrt[3]{c+dx}}{\sqrt[3]{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(4/3)*(c + d*x)^(2/3)),x]

[Out] (-3*(c + d*x)^(1/3))/((b*c - a*d)*(a + b*x)^(1/3))
```

Rubi in Sympy [A] time = 3.27639, size = 24, normalized size = 0.8

$$\frac{3\sqrt[3]{c+dx}}{\sqrt[3]{a+bx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(4/3)/(d*x+c)**(2/3),x)

[Out] 3*(c + d*x)**(1/3)/((a + b*x)**(1/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0327291, size = 30, normalized size = 1.

$$\frac{3\sqrt[3]{c+dx}}{\sqrt[3]{a+bx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(4/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*(c + d*x)^(1/3))/((-(b*c) + a*d)*(a + b*x)^(1/3))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$3\,\frac{\sqrt[3]{dx+c}}{\sqrt[3]{bx+a}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(4/3)/(d*x+c)^(2/3),x)
```

```
[Out] 3/(b*x+a)^(1/3)*(d*x+c)^(1/3)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(2/3)), x)
```

Fricas [A] time = 0.204533, size = 57, normalized size = 1.9

$$-\frac{3\,(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{abc-a^2d+(b^2c-abd)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] -3*(b*x + a)^(2/3)*(d*x + c)^(1/3)/(a*b*c - a^2*d + (b^2*c - a*b*
d)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{4}{3}}\,(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(4/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)**(4/3)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(2/3)), x)
```

3.1606 $\int \frac{1}{(a+bx)^{7/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=66

$$\frac{9d\sqrt[3]{c+dx}}{4\sqrt[3]{a+bx}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{4(a+bx)^{4/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/(4*(b*c - a*d)*(a + b*x)^(4/3)) + (9*d*(c +
d*x)^(1/3))/(4*(b*c - a*d)^2*(a + b*x)^(1/3))
```

Rubi [A] time = 0.0543008, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{9d\sqrt[3]{c+dx}}{4\sqrt[3]{a+bx}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{4(a+bx)^{4/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)^(7/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(4*(b*c - a*d)*(a + b*x)^(4/3)) + (9*d*(c +
d*x)^(1/3))/(4*(b*c - a*d)^2*(a + b*x)^(1/3))
```

Rubi in Sympy [A] time = 6.83539, size = 56, normalized size = 0.85

$$\frac{9d\sqrt[3]{c+dx}}{4\sqrt[3]{a+bx}\,(ad-bc)^2}+\frac{3\sqrt[3]{c+dx}}{4\,(a+bx)^{\frac{4}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(7/3)/(d*x+c)**(2/3),x)
```

```
[Out] 9*d*(c + d*x)**(1/3)/(4*(a + b*x)**(1/3)*(a*d - b*c)**2) + 3*(c +
 d*x)**(1/3)/(4*(a + b*x)**(4/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0611251, size = 46, normalized size = 0.7

$$\frac{3\sqrt[3]{c+dx}(4ad-bc+3bdx)}{4(a+bx)^{4/3}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(-(b*c) + 4*a*d + 3*b*d*x))/(4*(b*c - a*d)^2*(
a + b*x)^(4/3))
```

Maple [A] time = 0.009, size = 54, normalized size = 0.8

$$\frac{9\,bdx+12\,ad-3\,bc}{4\,a^{2}d^{2}-8\,abcd+4\,b^{2}c^{2}}\sqrt[3]{dx+c}\,(bx+a)^{-\frac{4}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/3)/(d*x+c)^(2/3),x)
```

```
[Out] 3/4*(d*x+c)^(1/3)*(3*b*d*x+4*a*d-b*c)/(b*x+a)^(4/3)/(a^2*d^2-2*a*
b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(2/3)), x)
```

Fricas [A] time = 0.207665, size = 159, normalized size = 2.41

$$\frac{3\,(3\,bdx-bc+4\,ad)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{4\,(a^{2}b^{2}c^{2}-2\,a^{3}bcd+a^{4}d^{2}+(b^{4}c^{2}-2\,ab^{3}cd+a^{2}b^{2}d^{2})x^{2}+2\,(ab^{3}c^{2}-2\,a^{2}b^{2}cd+a^{3}bd^{2})x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] 3/4*(3*b*d*x - b*c + 4*a*d)*(b*x + a)^(2/3)*(d*x + c)^(1/3)/(a^2*
b^2*c^2 - 2*a^3*b*c*d + a^4*d^2 + (b^4*c^2 - 2*a*b^3*c*d + a^2*b^
2*d^2)*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{7}{3}}(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)**(7/3)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(2/3)), x)
```

3.1607 $\int \frac{1}{(a+bx)^{10/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=101

$$-\frac{27d^2\sqrt[3]{c+dx}}{14\sqrt[3]{a+bx}(bc-ad)^3}+\frac{9d\sqrt[3]{c+dx}}{14(a+bx)^{4/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{7(a+bx)^{7/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/(7*(b*c - a*d)*(a + b*x)^(7/3)) + (9*d*(c +
d*x)^(1/3))/(14*(b*c - a*d)^2*(a + b*x)^(4/3)) - (27*d^2*(c + d*x
)^(1/3))/(14*(b*c - a*d)^3*(a + b*x)^(1/3))
```

Rubi [A] time = 0.0856323, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{27d^2\sqrt[3]{c+dx}}{14\sqrt[3]{a+bx}(bc-ad)^3}+\frac{9d\sqrt[3]{c+dx}}{14(a+bx)^{4/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{7(a+bx)^{7/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(10/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(7*(b*c - a*d)*(a + b*x)^(7/3)) + (9*d*(c +
d*x)^(1/3))/(14*(b*c - a*d)^2*(a + b*x)^(4/3)) - (27*d^2*(c + d*x
)^(1/3))/(14*(b*c - a*d)^3*(a + b*x)^(1/3))
```

Rubi in Sympy [A] time = 12.8044, size = 88, normalized size = 0.87

$$\frac{27d^2\sqrt[3]{c+dx}}{14\sqrt[3]{a+bx}\,(ad-bc)^3}+\frac{9d\sqrt[3]{c+dx}}{14\,(a+bx)^{\frac{4}{3}}\,(ad-bc)^2}+\frac{3\sqrt[3]{c+dx}}{7\,(a+bx)^{\frac{7}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(10/3)/(d*x+c)**(2/3),x)
```

```
[Out] 27*d**2*(c + d*x)**(1/3)/(14*(a + b*x)**(1/3)*(a*d - b*c)**3) + 9
*d*(c + d*x)**(1/3)/(14*(a + b*x)**(4/3)*(a*d - b*c)**2) + 3*(c +
 d*x)**(1/3)/(7*(a + b*x)**(7/3)*(a*d - b*c))
```

Mathematica [A] time = 0.092654, size = 75, normalized size = 0.74

$$-\frac{3\sqrt[3]{c+dx}\left(14a^2d^2-7abd(c-3dx)+b^2\left(2c^2-3cdx+9d^2x^2\right)\right)}{14(a+bx)^{7/3}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(10/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3)*(14*a^2*d^2 - 7*a*b*d*(c - 3*d*x) + b^2*(2*c^
2 - 3*c*d*x + 9*d^2*x^2)))/(14*(b*c - a*d)^3*(a + b*x)^(7/3))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{27\,b^2d^2x^2+63\,abd^2x-9\,b^2cdx+42\,a^2d^2-21\,abcd+6\,b^2c^2}{14\,a^3d^3-42\,a^2cbd^2+42\,ab^2c^2d-14\,b^3c^3}\sqrt[3]{dx+c}\,(bx+a)^{-\frac{7}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(10/3)/(d*x+c)^(2/3),x)
```

```
[Out] 3/14*(d*x+c)^(1/3)*(9*b^2*d^2*x^2+21*a*b*d^2*x-3*b^2*c*d*x+14*a^2
*d^2-7*a*b*c*d+2*b^2*c^2)/(b*x+a)^(7/3)/(a^3*d^3-3*a^2*b*c*d^2+3*
a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)^{\frac{10}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(2/3)), x)
```

Fricas [A] time = 0.209761, size = 339, normalized size = 3.36

$$-\frac{3\left(9\,b^2d^2x^2+2\,b^2c^2-7\,abcd+14\,a^2d^2-3\left(b^2cd-7\,abd^2\right)x\right)(bx+a)^{\frac{2}{3}}(d}{14\,(a^3b^3c^3-3\,a^4b^2c^2d+3\,a^5bcd^2-a^6d^3+(b^6c^3-3\,ab^5c^2d+3\,a^2b^4cd^2-a^3b^3d^3)x^3+3\,(ab^5c^3-3\,a^2b^4c^2d+3\,a^3b^3cd^2-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] -3/14*(9*b^2*d^2*x^2 + 2*b^2*c^2 - 7*a*b*c*d + 14*a^2*d^2 - 3*(b^
2*c*d - 7*a*b*d^2)*x)*(b*x + a)^(2/3)*(d*x + c)^(1/3)/(a^3*b^3*c^
```

```
3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3 + (b^6*c^3 - 3*a*b^
5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*x^3 + 3*(a*b^5*c^3 - 3*a
^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*x^2 + 3*(a^2*b^4*c^
3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(10/3)/(d*x+c)**(2/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{10}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(10/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(10/3)*(d*x + c)^(2/3)), x)
```

3.1608 $\int \frac{1}{(a+bx)^{13/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=136

$$\frac{243d^3\sqrt[3]{c+dx}}{140\sqrt[3]{a+bx}(bc-ad)^4}-\frac{81d^2\sqrt[3]{c+dx}}{140(a+bx)^{4/3}(bc-ad)^3}+\frac{27d\sqrt[3]{c+dx}}{70(a+bx)^{7/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{10(a+bx)^{10/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/(10*(b*c - a*d)*(a + b*x)^(10/3)) + (27*d*(c
 + d*x)^(1/3))/(70*(b*c - a*d)^2*(a + b*x)^(7/3)) - (81*d^2*(c +
d*x)^(1/3))/(140*(b*c - a*d)^3*(a + b*x)^(4/3)) + (243*d^3*(c + d
*x)^(1/3))/(140*(b*c - a*d)^4*(a + b*x)^(1/3))
```

Rubi [A] time = 0.124892, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{243d^3\sqrt[3]{c+dx}}{140\sqrt[3]{a+bx}(bc-ad)^4}-\frac{81d^2\sqrt[3]{c+dx}}{140(a+bx)^{4/3}(bc-ad)^3}+\frac{27d\sqrt[3]{c+dx}}{70(a+bx)^{7/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{10(a+bx)^{10/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(13/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(10*(b*c - a*d)*(a + b*x)^(10/3)) + (27*d*(c
 + d*x)^(1/3))/(70*(b*c - a*d)^2*(a + b*x)^(7/3)) - (81*d^2*(c +
d*x)^(1/3))/(140*(b*c - a*d)^3*(a + b*x)^(4/3)) + (243*d^3*(c + d
*x)^(1/3))/(140*(b*c - a*d)^4*(a + b*x)^(1/3))
```

Rubi in Sympy [A] time = 19.4857, size = 121, normalized size = 0.89

$$\frac{243d^3\sqrt[3]{c+dx}}{140\sqrt[3]{a+bx}\,(ad-bc)^4}+\frac{81d^2\sqrt[3]{c+dx}}{140\,(a+bx)^{\frac{4}{3}}\,(ad-bc)^3}+\frac{27d\sqrt[3]{c+dx}}{70\,(a+bx)^{\frac{7}{3}}\,(ad-bc)^2}+\frac{3\sqrt[3]{c+dx}}{10\,(a+bx)^{\frac{10}{3}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(13/3)/(d*x+c)**(2/3),x)
```

```
[Out] 243*d**3*(c + d*x)**(1/3)/(140*(a + b*x)**(1/3)*(a*d - b*c)**4) +
 81*d**2*(c + d*x)**(1/3)/(140*(a + b*x)**(4/3)*(a*d - b*c)**3) +
 27*d*(c + d*x)**(1/3)/(70*(a + b*x)**(7/3)*(a*d - b*c)**2) + 3*(
c + d*x)**(1/3)/(10*(a + b*x)**(10/3)*(a*d - b*c))
```

Mathematica [A] time = 0.240098, size = 95, normalized size = 0.7

$$\frac{3\sqrt[3]{c+dx}\left(27d^2(a+bx)^2(ad-bc)+18d(a+bx)(bc-ad)^2-14(bc-ad)^3+81d^3(a+bx)^3\right)}{140(a+bx)^{10/3}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(13/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(-14*(b*c - a*d)^3 + 18*d*(b*c - a*d)^2*(a + b
*x) + 27*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 81*d^3*(a + b*x)^3))/(1
40*(b*c - a*d)^4*(a + b*x)^(10/3))
```

Maple [A] time = 0.014, size = 171, normalized size = 1.3

$$\frac{243\,b^3d^3x^3+810\,ab^2d^3x^2-81\,b^3cd^2x^2+945\,a^2bd^3x-270\,ab^2cd^2x+54\,b^3c^2dx+420\,a^3d^3-315\,a^2cbd^2+180\,ab^2c^2d-42}{140\,d^4a^4-560\,bd^3ca^3+840\,b^2d^2c^2a^2-560\,b^3dc^3a+140\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(13/3)/(d*x+c)^(2/3),x)
```

```
[Out] 3/140*(d*x+c)^(1/3)*(81*b^3*d^3*x^3+270*a*b^2*d^3*x^2-27*b^3*c*d^
2*x^2+315*a^2*b*d^3*x-90*a*b^2*c*d^2*x+18*b^3*c^2*d*x+140*a^3*d^3
-105*a^2*b*c*d^2+60*a*b^2*c^2*d-14*b^3*c^3)/(b*x+a)^(10/3)/(a^4*d
^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{13}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(13/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(13/3)*(d*x + c)^(2/3)), x)
```

Fricas [A] time = 0.214053, size = 566, normalized size = 4.16

$$\frac{3\left(81\,b^3d^3x^3-14\,b^3c^3+60\,ab^2c^2d-105\,a^2bcd^2\right.}{140\left(a^4b^4c^4-4\,a^5b^3c^3d+6\,a^6b^2c^2d^2-4\,a^7bcd^3+a^8d^4+(b^8c^4-4\,ab^7c^3d+6\,a^2b^6c^2d^2-4\,a^3b^5cd^3+a^4b^4d^4)x^4+4\,(ab^7c^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(13/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] 3/140*(81*b^3*d^3*x^3 - 14*b^3*c^3 + 60*a*b^2*c^2*d - 105*a^2*b*c
*d^2 + 140*a^3*d^3 - 27*(b^3*c*d^2 - 10*a*b^2*d^3)*x^2 + 9*(2*b^3
*c^2*d - 10*a*b^2*c*d^2 + 35*a^2*b*d^3)*x)*(b*x + a)^(2/3)*(d*x +
 c)^(1/3)/(a^4*b^4*c^4 - 4*a^5*b^3*c^3*d + 6*a^6*b^2*c^2*d^2 - 4*
a^7*b*c*d^3 + a^8*d^4 + (b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^2*
d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*x^4 + 4*(a*b^7*c^4 - 4*a^2*b
^6*c^3*d + 6*a^3*b^5*c^2*d^2 - 4*a^4*b^4*c*d^3 + a^5*b^3*d^4)*x^3
 + 6*(a^2*b^6*c^4 - 4*a^3*b^5*c^3*d + 6*a^4*b^4*c^2*d^2 - 4*a^5*b
^3*c*d^3 + a^6*b^2*d^4)*x^2 + 4*(a^3*b^5*c^4 - 4*a^4*b^4*c^3*d +
6*a^5*b^3*c^2*d^2 - 4*a^6*b^2*c*d^3 + a^7*b*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(13/3)/(d*x+c)**(2/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{13}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(13/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(13/3)*(d*x + c)^(2/3)), x)
```

3.1609 $\int \frac{(a+bx)^{7/3}}{(c+dx)^{2/3}}\, dx$

Optimal. Leaf size=649

$$-\frac{7\, 3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^3((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2}\cdots}{\cdots}}}{10\, 2^{2/3}\sqrt[3]{b}d^{10/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(b\cdots}{\cdots}}}$$

$$+\frac{21\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}{20d^3}-\frac{21(a+bx)^{4/3}\sqrt[3]{c+dx}(bc-ad)}{40d^2}+\frac{3(a+bx)^{7/3}\sqrt[3]{c+dx}}{8d}$$

```
[Out] (21*(b*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(20*d^3) - (21
*(b*c - a*d)*(a + b*x)^(4/3)*(c + d*x)^(1/3))/(40*d^2) + (3*(a +
b*x)^(7/3)*(c + d*x)^(1/3))/(8*d) - (7*3^(3/4)*Sqrt[2 + Sqrt[3]]*
(b*c - a*d)^3*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d
*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)
*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3
)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))],
-7 - 4*Sqrt[3]])/(10*2^(2/3)*b^(1/3)*d^(10/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 2.41318, antiderivative size = 649, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$-\frac{7\, 3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^3((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2}\cdots}{\cdots}}}{10\, 2^{2/3}\sqrt[3]{b}d^{10/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(b\cdots}{\cdots}}}$$

$$+\frac{21\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}{20d^3}-\frac{21(a+bx)^{4/3}\sqrt[3]{c+dx}(bc-ad)}{40d^2}+\frac{3(a+bx)^{7/3}\sqrt[3]{c+dx}}{8d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(7/3)/(c + d*x)^(2/3),x]
```

```
[Out] (21*(b*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(20*d^3) - (21
*(b*c - a*d)*(a + b*x)^(4/3)*(c + d*x)^(1/3))/(40*d^2) + (3*(a +
b*x)^(7/3)*(c + d*x)^(1/3))/(8*d) - (7*3^(3/4)*Sqrt[2 + Sqrt[3]]*
(b*c - a*d)^3*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2*b*d
*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)
*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3
)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)
^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*
EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))],
-7 - 4*Sqrt[3]])/(10*2^(2/3)*b^(1/3)*d^(10/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 92.6699, size = 680, normalized size = 1.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/3)/(d*x+c)**(2/3),x)
```

```
[Out] 3*(a + b*x)**(7/3)*(c + d*x)**(1/3)/(8*d) + 21*(a + b*x)**(4/3)*(
c + d*x)**(1/3)*(a*d - b*c)/(40*d**2) + 21*(a + b*x)**(1/3)*(c +
d*x)**(1/3)*(a*d - b*c)**2/(20*d**3) + 7*2**(1/3)*3**(3/4)*sqrt((
2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2
/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/
3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3
))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**3*(2**(
2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) +
(a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt(
(a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(
1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*
d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*
(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*
sqrt(3))/(20*b**(1/3)*d**(10/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)
*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d
 - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(
a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b
*x)**(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a
*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.28733, size = 137, normalized size = 0.21

$$\frac{3\sqrt[3]{c+dx}\left(d(a+bx)\left(26a^2d^2+abd(17dx-35c)+b^2\left(14c^2-7cdx+5d^2x^2\right)\right)-14(bc-ad)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+d}{bc-a}\right.\right.}{40d^4(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/3)/(c + d*x)^(2/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(d*(a + b*x)*(26*a^2*d^2 + a*b*d*(-35*c + 17*d
*x) + b^2*(14*c^2 - 7*c*d*x + 5*d^2*x^2)) - 14*(b*c - a*d)^3*((d*
(a + b*x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[1/3, 2/3, 4/3,
 (b*(c + d*x))/(b*c - a*d)]))/(40*d^4*(a + b*x)^(2/3))
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/3)/(d*x+c)^(2/3),x)
```

```
[Out] int((b*x+a)^(7/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/3)/(d*x + c)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/3)/(d*x + c)^(2/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/3)/(d*x + c)^(2/3),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(1/3)/(d*x + c)^(2/3
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/3)/(d*x+c)**(2/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/3)/(d*x + c)^(2/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(7/3)/(d*x + c)^(2/3), x)
```

3.1610 $\int \frac{(a+bx)^{4/3}}{(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=614

$$\frac{2\sqrt[3]{2}3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^2((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d\cdots}{\cdots}}}{5\sqrt[3]{b}d^{7/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(2^{2/3}\cdots\right.}}}$$

$$-\frac{6\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)}{5d^2}+\frac{3(a+bx)^{4/3}\sqrt[3]{c+dx}}{5d}$$

```
[Out] (-6*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(5*d^2) + (3*(a
+ b*x)^(4/3)*(c + d*x)^(1/3))/(5*d) + (2*2^(1/3)*3^(3/4)*Sqrt[2 +
 Sqrt[3]]*(b*c - a*d)^2*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a
*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/
3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1
/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(
b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^
(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(
2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))], -7 - 4*Sqrt[3]])/(5*b^(1/3)*d^(7/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.80139, antiderivative size = 614, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{2\sqrt[3]{2}3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)^2((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d\cdots}{\cdots}}}{5\sqrt[3]{b}d^{7/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(2^{2/3}\cdots\right.}}}$$

$$-\frac{6\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)}{5d^2}+\frac{3(a+bx)^{4/3}\sqrt[3]{c+dx}}{5d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(4/3)/(c + d*x)^(2/3),x]
```

```
[Out] (-6*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(5*d^2) + (3*(a
+ b*x)^(4/3)*(c + d*x)^(1/3))/(5*d) + (2*2^(1/3)*3^(3/4)*Sqrt[2 +
 Sqrt[3]]*(b*c - a*d)^2*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a
*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/
3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1
/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(
b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^
(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(
2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))], -7 - 4*Sqrt[3]])/(5*b^(1/3)*d^(7/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 70.1928, size = 648, normalized size = 1.06

$$\frac{3(a+bx)^{\frac{4}{3}}\sqrt[3]{c+dx}}{5d}+\frac{6\sqrt[3]{a+bx}\sqrt[3]{c+dx}\,(ad-bc)}{5d^2}+\frac{2\sqrt[3]{2}\cdot 3^{\frac{3}{4}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}(ac+bdx^2+x(ad+bc))^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\,(ad-bc)^2\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{\cdots}\right.}{5\sqrt[3]{b}d^{\frac{7}{3}}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(a\cdots\right.}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-\cdots\right.}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)/(d*x+c)**(2/3),x)
```

```
[Out] 3*(a + b*x)**(4/3)*(c + d*x)**(1/3)/(5*d) + 6*(a + b*x)**(1/3)*(c
 + d*x)**(1/3)*(a*d - b*c)/(5*d**2) + 2*2**(1/3)*3**(3/4)*sqrt((2
*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/
3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**
2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3
)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3)
)*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)**2*(2**(2
/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (
a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt((
a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(1
/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d
 - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(
a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*s
qrt(3))/(5*b**(1/3)*d**(7/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b*
*(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d -
b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d
 + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)
**(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
```

```
+ 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.188068, size = 106, normalized size = 0.17

$$\frac{3\sqrt[3]{c+dx}\left(2(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(3ad-2bc+bdx)\right)}{5d^3(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)/(c + d*x)^(2/3),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(d*(a + b*x)*(-2*b*c + 3*a*d + b*d*x) + 2*(b*c
 - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[
1/3, 2/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(5*d^3*(a + b*x)^(2/3
))
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{4}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)/(d*x+c)^(2/3),x)
```

```
[Out] int((b*x+a)^(4/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{4}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(4/3)/(d*x + c)^(2/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{4}{3}}}{(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(2/3),x, algorithm="fricas")

[Out] integral((b*x + a)^(4/3)/(d*x + c)^(2/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{4}{3}}}{(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)/(d*x+c)**(2/3),x)

[Out] Integral((a + b*x)**(4/3)/(c + d*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{4}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(2/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(4/3)/(d*x + c)^(2/3), x)
```

3.1611 $\int \frac{\sqrt[3]{a+bx}}{(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=577

$$\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}}{2d}-\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}(\cdots}{\cdots}}\cdots}{2^{2/3}\sqrt[3]{b}d^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-\cdots}{\left(2^{2/3}\cdots\right.}}}$$

```
[Out] (3*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(2*d) - (3^(3/4)*Sqrt[2 + Sqr
t[3]]*(b*c - a*d)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2
*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(
1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^
(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)], -7 - 4*Sqrt[3]])/(2^(2/3)*b^(1/3)*d^(4/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.27299, antiderivative size = 577, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}}{2d}-\frac{3^{3/4}\sqrt{2+\sqrt{3}}(bc-ad)((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}(\cdots}{\cdots}}\cdots}{2^{2/3}\sqrt[3]{b}d^{4/3}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-\cdots}{\left(2^{2/3}\cdots\right.}}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(1/3)/(c + d*x)^(2/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(c + d*x)^(1/3))/(2*d) - (3^(3/4)*Sqrt[2 + Sqr
t[3]]*(b*c - a*d)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d + 2
*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x
)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(
1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^
(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)], -7 - 4*Sqrt[3]])/(2^(2/3)*b^(1/3)*d^(4/3)*(a + b*x)^(2/3)*(c
+ d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 55.5021, size = 614, normalized size = 1.06

$$\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}}{2d} + \frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}(ac+bdx^2+x(ad+bc))^{\frac{2}{3}} - 2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\,(ad-bc)\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac\cdots}\right.}{2\sqrt[3]{b}d^{\frac{4}{3}}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad\cdots\right.}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-\cdots\right.}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)/(d*x+c)**(2/3),x)
```

```
[Out] 3*(a + b*x)**(1/3)*(c + d*x)**(1/3)/(2*d) + 2**(1/3)*3**(3/4)*sqr
t((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d
*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**
(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqr
t(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(a*d - b*c)*(2**(
2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) +
(a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sqrt(
(a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(
1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*
d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*
(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*
sqrt(3))/(2*b**(1/3)*d**(4/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b
**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d -
 b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x
)**(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
 + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.165534, size = 76, normalized size = 0.13

$$\frac{3\sqrt[3]{a+bx}\sqrt[3]{c+dx}\left(\frac{{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[3]{\frac{d(a+bx)}{ad-bc}}}+1\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)/(c + d*x)^(2/3),x]
```

```
[Out] (3*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(1 + Hypergeometric2F1[1/3, 2/
3, 4/3, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))
^(1/3)))/(2*d)
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{bx+a}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)/(d*x+c)^(2/3),x)
```

```
[Out] int((b*x+a)^(1/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(2/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/3)/(d*x + c)^(2/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(2/3),x, algorithm="fricas")

[Out] integral((b*x + a)^(1/3)/(d*x + c)^(2/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{a+bx}}{(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)/(d*x+c)**(2/3),x)

[Out] Integral((a + b*x)**(1/3)/(c + d*x)**(2/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(2/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(1/3)/(d*x + c)^(2/3), x)
```

3.1612 $\int \frac{1}{(a+bx)^{2/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=542

$$\frac{\sqrt[3]{2}3^{3/4}\sqrt{2+\sqrt{3}}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)(c+\ldots}{\left(2^{2/3}\sqrt[3]{b}\ldots\right.}}}{\sqrt[3]{b}\sqrt[3]{d}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(2^{2/}\ldots\right.}{\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\ldots\right.}}}$$

```
[Out] (2^(1/3)*3^(3/4)*Sqrt[2 + Sqrt[3]]*((a + b*x)*(c + d*x))^(2/3)*Sq
rt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^
(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/
3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 +
 Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*
(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1
+ Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(b^(1/3)*d^(1/3)*(a + b*x)^
(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/
3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))
^2])
```

Rubi [A] time = 1.00395, antiderivative size = 542, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{\sqrt[3]{2}3^{3/4}\sqrt{2+\sqrt{3}}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)(c+\ldots}{\left(2^{2/3}\sqrt[3]{b}\ldots\right.}}}{\sqrt[3]{b}\sqrt[3]{d}(a+bx)^{2/3}(c+dx)^{2/3}(ad+bc+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(2^{2/}\ldots\right.}{\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\ldots\right.}}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(2/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (2^(1/3)*3^(3/4)*Sqrt[2 + Sqrt[3]]*((a + b*x)*(c + d*x))^(2/3)*Sq
rt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^
(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/
3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 +
 Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*
```

```
(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1
+ Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(b^(1/3)*d^(1/3)*(a + b*x)^
(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/
3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))
^2])
```

Rubi in Sympy [A] time = 41.0373, size = 583, normalized size = 1.08

$$\frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}\left(ac+bdx^2+x(ad+bc)\right)^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x}\right.}{\sqrt[3]{b}\sqrt[3]{d}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+(ad-bc)^{\frac{2}{3}}\right)}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x\left(ad+bc\right)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(2/3)/(d*x+c)**(2/3),x)
```

```
[Out] 2**(1/3)*3**(3/4)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x
**2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b
*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)*
*(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*
c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) +
 2)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2
/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(
1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqr
t(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*
x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3)))
, -7 - 4*sqrt(3))/(b**(1/3)*d**(1/3)*sqrt((a*d - b*c)**(2/3)*(2**
(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) +
 (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2
+ x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(
a + b*x)**(2/3)*(c + d*x)**(2/3)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x
*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.0562325, size = 71, normalized size = 0.13

$$\frac{3\sqrt[3]{c+dx}\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)}{d(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(2/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*(c + d*x)^(1/3)*Hypergeom
etric2F1[1/3, 2/3, 4/3, (b*(c + d*x))/(b*c - a*d)])/(d*(a + b*x)^
(2/3))
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{2}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(2/3)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(2/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(2/3)*(d*x + c)^(2/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(2/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)**(2/3)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(2/3)), x)
```

3.1613 $\int \frac{1}{(a+bx)^{5/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=586

$$-\frac{3^{3/4}\sqrt{2+\sqrt{3}}\,d^{2/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)\cdots}{\left(2^{2/3}\cdots\right.}}}{2^{2/3}\sqrt[3]{b}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)(ad+bc+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(2^{2/3}\cdots\right.}}}$$

$$-\frac{3\sqrt[3]{c+dx}}{2(a+bx)^{2/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/(2*(b*c - a*d)*(a + b*x)^(2/3)) - (3^(3/4)*S
qrt[2 + Sqrt[3]]*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c +
a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1
/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(
1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])
*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x)
)^(1/3))], -7 - 4*Sqrt[3]])/(2^(2/3)*b^(1/3)*(b*c - a*d)*(a + b*x
)^(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(
2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
 d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x
))^2])
```

Rubi [A] time = 1.31136, antiderivative size = 586, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{3^{3/4}\sqrt{2+\sqrt{3}}\,d^{2/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+bx)\cdots}{\left(2^{2/3}\cdots\right.}}}{2^{2/3}\sqrt[3]{b}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)(ad+bc+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(2^{2/3}\cdots\right.}}}$$

$$-\frac{3\sqrt[3]{c+dx}}{2(a+bx)^{2/3}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(5/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(2*(b*c - a*d)*(a + b*x)^(2/3)) - (3^(3/4)*S
qrt[2 + Sqrt[3]]*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c +
a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1
/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(
1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*
(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))
^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])
*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x)
)^(1/3))], -7 - 4*Sqrt[3]])/(2^(2/3)*b^(1/3)*(b*c - a*d)*(a + b*x
)^(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(
2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
 d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x
))^2])
```

Rubi in Sympy [A] time = 58.1202, size = 619, normalized size = 1.06

$$\frac{3\sqrt[3]{c+dx}}{2(a+bx)^{\frac{2}{3}}(ad-bc)} + \frac{\sqrt[3]{2}\cdot 3^{\frac{3}{4}}d^{\frac{2}{3}}\sqrt{\frac{2\sqrt[3]{2}b^{\frac{2}{3}}d^{\frac{2}{3}}(ac+bdx^2+x(ad+bc))^{\frac{2}{3}}-2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}(ad-bc)^{\frac{2}{3}}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad-bc)^{\frac{4}{3}}}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}\sqrt{\sqrt{3}+2}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2\cdots}\right.}{2\sqrt[3]{b}\sqrt{\frac{(ad-bc)^{\frac{2}{3}}\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+(ad-bc)^{\frac{2}{3}}\right)}{\left(2^{\frac{2}{3}}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{ac+bdx^2+x(ad+bc)}+\left(1+\sqrt{3}\right)(ad-bc)^{\frac{2}{3}}\right)^2}}(a\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/3)/(d*x+c)**(2/3),x)
```

```
[Out] 3*(c + d*x)**(1/3)/(2*(a + b*x)**(2/3)*(a*d - b*c)) + 2**(1/3)*3*
*(3/4)*d**(2/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**
2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c
)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(
4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c)
)**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2
)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(
1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3
)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/
3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(
3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))),
-7 - 4*sqrt(3))/(2*b**(1/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**
(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b
*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d
+ b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)*
*(2/3)*(c + d*x)**(2/3)*(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x**2
```

```
+ x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.10653, size = 83, normalized size = 0.14

$$-\frac{3\sqrt[3]{c+dx}\left(\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+1\right)}{2(a+bx)^{2/3}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3)*(1 + ((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*Hyp
ergeometric2F1[1/3, 2/3, 4/3, (b*(c + d*x))/(b*c - a*d)]))/(2*(b*
c - a*d)*(a + b*x)^(2/3))
```

Maple [F] time = 0.062, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/3)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(5/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{5}{3}}(dx+c)^{\frac{2}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(5/3)*(d*x + c)^(2/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{3}}\,(c+dx)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/3)/(d*x+c)**(2/3),x)
```

```
[Out] Integral(1/((a + b*x)**(5/3)*(c + d*x)**(2/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(2/3)), x)
```

3.1614 $\int \frac{1}{(a+bx)^{8/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=621

$$\frac{2\sqrt[3]{2}3^{3/4}\sqrt{2+\sqrt{3}}d^{5/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+b\cdots}{\left(2\cdots\right.}}}{5\sqrt[3]{b}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)^2(ad+bc+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(2^{2/3}\cdots\right.}}}$$

$$+\frac{6d\sqrt[3]{c+dx}}{5(a+bx)^{2/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{5(a+bx)^{5/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/(5*(b*c - a*d)*(a + b*x)^(5/3)) + (6*d*(c +
d*x)^(1/3))/(5*(b*c - a*d)^2*(a + b*x)^(2/3)) + (2*2^(1/3)*3^(3/4
)*Sqrt[2 + Sqrt[3]]*d^(5/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c
 + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)
*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b
^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*
2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3
])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*
x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) +
 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[
3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3))], -7 - 4*Sqrt[3]])/(5*b^(1/3)*(b*c - a*d)^2*(a + b*x)
^(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2
/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x)
)^2])
```

Rubi [A] time = 1.66537, antiderivative size = 621, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{2\sqrt[3]{2}3^{3/4}\sqrt{2+\sqrt{3}}d^{5/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+b\cdots}{\left(2\cdots\right.}}}{5\sqrt[3]{b}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)^2(ad+bc+2bdx)\sqrt{\frac{(bc-a\cdots}{\left(2^{2/3}\cdots\right.}}}$$

$$+\frac{6d\sqrt[3]{c+dx}}{5(a+bx)^{2/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{5(a+bx)^{5/3}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(8/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(5*(b*c - a*d)*(a + b*x)^(5/3)) + (6*d*(c +
d*x)^(1/3))/(5*(b*c - a*d)^2*(a + b*x)^(2/3)) + (2*2^(1/3)*3^(3/4
)*Sqrt[2 + Sqrt[3]]*d^(5/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c
 + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)
*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b
^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*
2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3
])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*
x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) +
 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[
3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3))], -7 - 4*Sqrt[3]])/(5*b^(1/3)*(b*c - a*d)^2*(a + b*x)
^(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2
/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x)
)^2])
```

Rubi in Sympy [A] time = 74.1483, size = 653, normalized size = 1.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(8/3)/(d*x+c)**(2/3),x)
```

```
[Out] 6*d*(c + d*x)**(1/3)/(5*(a + b*x)**(2/3)*(a*d - b*c)**2) + 3*(c +
 d*x)**(1/3)/(5*(a + b*x)**(5/3)*(a*d - b*c)) + 2*2**(1/3)*3**(3/
4)*d**(5/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 +
x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(
2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3)
)/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(
1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(2
**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3)
 + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*sq
rt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d
**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*
(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 +
 x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 -
 4*sqrt(3))/(5*b**(1/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3
)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)*
*(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*
c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)**(2/
3)*(c + d*x)**(2/3)*(a*d - b*c)**2*sqrt(b*d*(4*a*c + 4*b*d*x**2 +
 x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.233637, size = 102, normalized size = 0.16

$$\frac{3\sqrt[3]{c+dx}\left(2d(a+bx)\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+3ad-bc+2bdx\right)}{5(a+bx)^{5/3}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(8/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(-(b*c) + 3*a*d + 2*b*d*x + 2*d*(a + b*x)*((d*
(a + b*x))/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[1/3, 2/3, 4/3,
 (b*(c + d*x))/(b*c - a*d)]))/(5*(b*c - a*d)^2*(a + b*x)^(5/3))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{8}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(8/3)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(8/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{8}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(8/3)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(2/3)*(d*x + c)^(
2/3)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(8/3)/(d*x+c)**(2/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{8}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(8/3)*(d*x + c)^(2/3)), x)
```

3.1615 $\int \frac{1}{(a+bx)^{11/3}(c+dx)^{2/3}}\,dx$

Optimal. Leaf size=656

$$-\frac{7\,3^{3/4}\sqrt{2+\sqrt{3}}\,d^{8/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+b\cdots}{\left(2\cdots\right.}}}{10\,2^{2/3}\sqrt[3]{b}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)^3(ad+bc+2bdx)\sqrt{\frac{(b\cdots}{(\cdots}}}$$

$$-\frac{21d^2\sqrt[3]{c+dx}}{20(a+bx)^{2/3}(bc-ad)^3}+\frac{21d\sqrt[3]{c+dx}}{40(a+bx)^{5/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{8(a+bx)^{8/3}(bc-ad)}$$

```
[Out] (-3*(c + d*x)^(1/3))/(8*(b*c - a*d)*(a + b*x)^(8/3)) + (21*d*(c +
 d*x)^(1/3))/(40*(b*c - a*d)^2*(a + b*x)^(5/3)) - (21*d^2*(c + d*
x)^(1/3))/(20*(b*c - a*d)^3*(a + b*x)^(2/3)) - (7*3^(3/4)*Sqrt[2
+ Sqrt[3]]*d^(8/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d +
2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^
(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b
^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))], -7 - 4*Sqrt[3]])/(10*2^(2/3)*b^(1/3)*(b*c - a*d)^3*(a + b*x)
^(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2
/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x)
)^2])
```

Rubi [A] time = 2.06401, antiderivative size = 656, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{7\,3^{3/4}\sqrt{2+\sqrt{3}}\,d^{8/3}((a+bx)(c+dx))^{2/3}\sqrt{(ad+bc+2bdx)^2}\left(2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}+(bc-ad)^{2/3}\right)\sqrt{\frac{2\sqrt[3]{2}b^{2/3}d^{2/3}((a+b\cdots}{\left(2\cdots\right.}}}{10\,2^{2/3}\sqrt[3]{b}(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)^3(ad+bc+2bdx)\sqrt{\frac{(b\cdots}{(\cdots}}}$$

$$-\frac{21d^2\sqrt[3]{c+dx}}{20(a+bx)^{2/3}(bc-ad)^3}+\frac{21d\sqrt[3]{c+dx}}{40(a+bx)^{5/3}(bc-ad)^2}-\frac{3\sqrt[3]{c+dx}}{8(a+bx)^{8/3}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(11/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (-3*(c + d*x)^(1/3))/(8*(b*c - a*d)*(a + b*x)^(8/3)) + (21*d*(c +
 d*x)^(1/3))/(40*(b*c - a*d)^2*(a + b*x)^(5/3)) - (21*d^2*(c + d*
x)^(1/3))/(20*(b*c - a*d)^3*(a + b*x)^(2/3)) - (7*3^(3/4)*Sqrt[2
+ Sqrt[3]]*d^(8/3)*((a + b*x)*(c + d*x))^(2/3)*Sqrt[(b*c + a*d +
2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^
(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b
^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 + Sqrt[3])*(b*c -
 a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1 + Sqrt[3])*(b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))], -7 - 4*Sqrt[3]])/(10*2^(2/3)*b^(1/3)*(b*c - a*d)^3*(a + b*x)
^(2/3)*(c + d*x)^(2/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2
/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x)
)^2])
```

Rubi in Sympy [A] time = 91.8755, size = 685, normalized size = 1.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/3)/(d*x+c)**(2/3),x)
```

```
[Out] 21*d**2*(c + d*x)**(1/3)/(20*(a + b*x)**(2/3)*(a*d - b*c)**3) + 2
1*d*(c + d*x)**(1/3)/(40*(a + b*x)**(5/3)*(a*d - b*c)**2) + 3*(c
+ d*x)**(1/3)/(8*(a + b*x)**(8/3)*(a*d - b*c)) + 7*2**(1/3)*3**(3
/4)*d**(8/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 +
 x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**
(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(4/3
))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**
(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sqrt(sqrt(3) + 2)*(
2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3)*s
qrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2**(2/3)*b**(1/3)*
d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))
*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2
+ x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))), -7
- 4*sqrt(3))/(20*b**(1/3)*sqrt((a*d - b*c)**(2/3)*(2**(2/3)*b**(1
/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c
)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d +
b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*(a + b*x)**(
2/3)*(c + d*x)**(2/3)*(a*d - b*c)**3*sqrt(b*d*(4*a*c + 4*b*d*x**2
 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.337718, size = 136, normalized size = 0.21

$$\frac{3\sqrt[3]{c+dx}\left(26a^2d^2+14d^2(a+bx)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{4}{3};\frac{b(c+dx)}{bc-ad}\right)+abd(35dx-17c)+b^2\left(5c^2-7cdx+14d^2x^2\right)\right)}{40(a+bx)^{8/3}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/3)*(c + d*x)^(2/3)),x]
```

```
[Out] (3*(c + d*x)^(1/3)*(26*a^2*d^2 + a*b*d*(-17*c + 35*d*x) + b^2*(5*
c^2 - 7*c*d*x + 14*d^2*x^2) + 14*d^2*(a + b*x)^2*((d*(a + b*x))/(
-(b*c) + a*d))^(2/3)*Hypergeometric2F1[1/3, 2/3, 4/3, (b*(c + d*x
))/(b*c - a*d)]))/(40*(-(b*c) + a*d)^3*(a + b*x)^(8/3))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{11}{3}}\,(dx+c)^{-\frac{2}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/3)/(d*x+c)^(2/3),x)
```

```
[Out] int(1/(b*x+a)^(11/3)/(d*x+c)^(2/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/3)*(d*x + c)^(2/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(2/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{2}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/3)*(d*x + c)^(2/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*(b*x + a)^(
2/3)*(d*x + c)^(2/3)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(11/3)/(d*x+c)**(2/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{3}}(dx+c)^{\frac{2}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/3)*(d*x + c)^(2/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(2/3)), x)
```

3.1616 $\int \frac{(a+bx)^{7/3}}{(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=241

$$-\frac{7\sqrt[3]{b}(bc-ad)^2\log(a+bx)}{9d^{10/3}}-\frac{7\sqrt[3]{b}(bc-ad)^2\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{3d^{10/3}}-\frac{14\sqrt[3]{b}(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}d^{10/3}}-\frac{14b\sqrt[3]{a+bx}(c+dx)^{2/3}(bc-ad)}{3d^3}+\frac{7b(a+bx)^{4/3}(c+dx)^{2/3}}{2d^2}-\frac{3(a+bx)^{7/3}}{d\sqrt[3]{c+dx}}$$

```
[Out] (-3*(a + b*x)^(7/3))/(d*(c + d*x)^(1/3)) - (14*b*(b*c - a*d)*(a +
 b*x)^(1/3)*(c + d*x)^(2/3))/(3*d^3) + (7*b*(a + b*x)^(4/3)*(c +
d*x)^(2/3))/(2*d^2) - (14*b^(1/3)*(b*c - a*d)^2*ArcTan[1/Sqrt[3]
+ (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3))])
/(3*Sqrt[3]*d^(10/3)) - (7*b^(1/3)*(b*c - a*d)^2*Log[a + b*x])/(9
*d^(10/3)) - (7*b^(1/3)*(b*c - a*d)^2*Log[-1 + (b^(1/3)*(c + d*x)
^(1/3))/(d^(1/3)*(a + b*x)^(1/3))])/(3*d^(10/3))
```

Rubi [A] time = 0.291789, antiderivative size = 241, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{7\sqrt[3]{b}(bc-ad)^2\log(a+bx)}{9d^{10/3}}-\frac{7\sqrt[3]{b}(bc-ad)^2\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{3d^{10/3}}-\frac{14\sqrt[3]{b}(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{3\sqrt{3}d^{10/3}}-\frac{14b\sqrt[3]{a+bx}(c+dx)^{2/3}(bc-ad)}{3d^3}+\frac{7b(a+bx)^{4/3}(c+dx)^{2/3}}{2d^2}-\frac{3(a+bx)^{7/3}}{d\sqrt[3]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/3)/(c + d*x)^(4/3),x]
```


```
[Out] (-3*(a + b*x)^(7/3))/(d*(c + d*x)^(1/3)) - (14*b*(b*c - a*d)*(a +
 b*x)^(1/3)*(c + d*x)^(2/3))/(3*d^3) + (7*b*(a + b*x)^(4/3)*(c +
d*x)^(2/3))/(2*d^2) - (14*b^(1/3)*(b*c - a*d)^2*ArcTan[1/Sqrt[3]
+ (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3))])
/(3*Sqrt[3]*d^(10/3)) - (7*b^(1/3)*(b*c - a*d)^2*Log[a + b*x])/(9
*d^(10/3)) - (7*b^(1/3)*(b*c - a*d)^2*Log[-1 + (b^(1/3)*(c + d*x)
^(1/3))/(d^(1/3)*(a + b*x)^(1/3))])/(3*d^(10/3))
```

Rubi in Sympy [A] time = 33.9065, size = 230, normalized size = 0.95

$$-\frac{7\sqrt[3]{b}\,(ad-bc)^2\log(a+bx)}{9d^{\frac{10}{3}}}-\frac{7\sqrt[3]{b}\,(ad-bc)^2\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{3d^{\frac{10}{3}}}-\frac{14\sqrt{3}\sqrt[3]{b}\,(ad-bc)^2\operatorname{atan}\left(\frac{2\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{\sqrt{3}}{3}\right)}{9d^{\frac{10}{3}}}+\frac{7b\,(a+bx)^{\frac{4}{3}}\,(c+dx)^{\frac{2}{3}}}{2d^2}+\frac{14b\sqrt[3]{a+bx}\,(c+dx)^{\frac{2}{3}}\,(ad-bc)}{3d^3}-\frac{3\,(a+bx)^{\frac{7}{3}}}{d\sqrt[3]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/3)/(d*x+c)**(4/3),x)
```

```
[Out] -7*b**(1/3)*(a*d - b*c)**2*log(a + b*x)/(9*d**(10/3)) - 7*b**(1/3
)*(a*d - b*c)**2*log(b**(1/3)*(c + d*x)**(1/3)/(d**(1/3)*(a + b*x
)**(1/3)) - 1)/(3*d**(10/3)) - 14*sqrt(3)*b**(1/3)*(a*d - b*c)**2
*atan(2*sqrt(3)*b**(1/3)*(c + d*x)**(1/3)/(3*d**(1/3)*(a + b*x)**
(1/3)) + sqrt(3)/3)/(9*d**(10/3)) + 7*b*(a + b*x)**(4/3)*(c + d*x
)**(2/3)/(2*d**2) + 14*b*(a + b*x)**(1/3)*(c + d*x)**(2/3)*(a*d -
 b*c)/(3*d**3) - 3*(a + b*x)**(7/3)/(d*(c + d*x)**(1/3))
```

Mathematica [C] time = 0.28635, size = 132, normalized size = 0.55

$$\frac{(c+dx)^{2/3}\left(d(a+bx)\left(-\frac{18(bc-ad)^2}{c+dx}+b(13ad-10bc)+3b^2dx\right)+14b(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{6d^4(a+bx)^{2/3}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/3)/(c + d*x)^(4/3),x]
```

```
[Out] ((c + d*x)^(2/3)*(d*(a + b*x)*(b*(-10*b*c + 13*a*d) + 3*b^2*d*x -
 (18*(b*c - a*d)^2)/(c + d*x)) + 14*b*(b*c - a*d)^2*((d*(a + b*x)
)/(-(b*c) + a*d))^(2/3)*Hypergeometric2F1[2/3, 2/3, 5/3, (b*(c +
d*x))/(b*c - a*d)]))/(6*d^4*(a + b*x)^(2/3))
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/3)/(d*x+c)^(4/3),x)
```

```
[Out] int((b*x+a)^(7/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/3)/(d*x + c)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/3)/(d*x + c)^(4/3), x)
```

Fricas [A] time = 0.223075, size = 585, normalized size = 2.43

$$-\frac{\sqrt{3}\left(14\sqrt{3}\left(b^2c^3-2\,abc^2d+a^2cd^2+\left(b^2c^2d-2\,abcd^2+a^2d^3\right)x\right)\left(-\frac{b}{d}\right)^{\frac{1}{3}}\log\left(\frac{(dx+c)\left(-\frac{b}{d}\right)^{\frac{2}{3}}-(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}\left(-\frac{b}{d}\right)^{\frac{1}{3}}+(bx+a)^{\frac{2}{3}}(dx+c}{dx+c}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/3)/(d*x + c)^(4/3),x, algorithm="fricas")
```

```
[Out] -1/54*sqrt(3)*(14*sqrt(3)*(b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2 + (b
^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*x)*(-b/d)^(1/3)*log(((d*x + c)*
(-b/d)^(2/3) - (b*x + a)^(1/3)*(d*x + c)^(2/3)*(-b/d)^(1/3) + (b*
x + a)^(2/3)*(d*x + c)^(1/3))/(d*x + c)) - 28*sqrt(3)*(b^2*c^3 -
2*a*b*c^2*d + a^2*c*d^2 + (b^2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*x)*
(-b/d)^(1/3)*log(((d*x + c)*(-b/d)^(1/3) + (b*x + a)^(1/3)*(d*x +
 c)^(2/3))/(d*x + c)) - 3*sqrt(3)*(3*b^2*d^2*x^2 - 28*b^2*c^2 + 4
9*a*b*c*d - 18*a^2*d^2 - (7*b^2*c*d - 13*a*b*d^2)*x)*(b*x + a)^(1
/3)*(d*x + c)^(2/3) - 84*(b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2 + (b^
2*c^2*d - 2*a*b*c*d^2 + a^2*d^3)*x)*(-b/d)^(1/3)*arctan(-1/3*(sqr
t(3)*(d*x + c)*(-b/d)^(1/3) - 2*sqrt(3)*(b*x + a)^(1/3)*(d*x + c)
^(2/3))/((d*x + c)*(-b/d)^(1/3))))/(d^4*x + c*d^3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/3)/(d*x + c)^(4/3),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1617 $\int \frac{(a+bx)^{4/3}}{(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=195

$$\frac{2\sqrt[3]{b}(bc-ad)\log(a+bx)}{3d^{7/3}}+\frac{2\sqrt[3]{b}(bc-ad)\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{d^{7/3}}+\frac{4\sqrt[3]{b}(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}d^{7/3}}+\frac{4b\sqrt[3]{a+bx}(c+dx)^{2/3}}{d^2}-\frac{3(a+bx)^{4/3}}{d\sqrt[3]{c+dx}}$$

```
[Out] (-3*(a + b*x)^(4/3))/(d*(c + d*x)^(1/3)) + (4*b*(a + b*x)^(1/3)*(
c + d*x)^(2/3))/d^2 + (4*b^(1/3)*(b*c - a*d)*ArcTan[1/Sqrt[3] + (
2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3))])/(S
qrt[3]*d^(7/3)) + (2*b^(1/3)*(b*c - a*d)*Log[a + b*x])/(3*d^(7/3)
) + (2*b^(1/3)*(b*c - a*d)*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^
(1/3)*(a + b*x)^(1/3))])/d^(7/3)
```

Rubi [A] time = 0.178237, antiderivative size = 195, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{2\sqrt[3]{b}(bc-ad)\log(a+bx)}{3d^{7/3}}+\frac{2\sqrt[3]{b}(bc-ad)\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{d^{7/3}}+\frac{4\sqrt[3]{b}(bc-ad)\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}d^{7/3}}+\frac{4b\sqrt[3]{a+bx}(c+dx)^{2/3}}{d^2}-\frac{3(a+bx)^{4/3}}{d\sqrt[3]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(4/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-3*(a + b*x)^(4/3))/(d*(c + d*x)^(1/3)) + (4*b*(a + b*x)^(1/3)*(
c + d*x)^(2/3))/d^2 + (4*b^(1/3)*(b*c - a*d)*ArcTan[1/Sqrt[3] + (
2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b*x)^(1/3))])/(S
qrt[3]*d^(7/3)) + (2*b^(1/3)*(b*c - a*d)*Log[a + b*x])/(3*d^(7/3)
) + (2*b^(1/3)*(b*c - a*d)*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^
(1/3)*(a + b*x)^(1/3))])/d^(7/3)
```

Rubi in Sympy [A] time = 19.7735, size = 189, normalized size = 0.97

$$-\frac{2\sqrt[3]{b}\,(ad-bc)\log(a+bx)}{3d^{\frac{7}{3}}}-\frac{2\sqrt[3]{b}\,(ad-bc)\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{d^{\frac{7}{3}}}-\frac{4\sqrt{3}\sqrt[3]{b}\,(ad-bc)\operatorname{atan}\left(\frac{2\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{\sqrt{3}}{3}\right)}{3d^{\frac{7}{3}}}+\frac{4b\sqrt[3]{a+bx}\,(c+dx)^{\frac{2}{3}}}{d^2}-\frac{3\,(a+bx)^{\frac{4}{3}}}{d\sqrt[3]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(4/3)/(d*x+c)**(4/3),x)
```

```
[Out] -2*b**(1/3)*(a*d - b*c)*log(a + b*x)/(3*d**(7/3)) - 2*b**(1/3)*(a
*d - b*c)*log(b**(1/3)*(c + d*x)**(1/3)/(d**(1/3)*(a + b*x)**(1/3
)) - 1)/d**(7/3) - 4*sqrt(3)*b**(1/3)*(a*d - b*c)*atan(2*sqrt(3)*
b**(1/3)*(c + d*x)**(1/3)/(3*d**(1/3)*(a + b*x)**(1/3)) + sqrt(3)
/3)/(3*d**(7/3)) + 4*b*(a + b*x)**(1/3)*(c + d*x)**(2/3)/d**2 - 3
*(a + b*x)**(4/3)/(d*(c + d*x)**(1/3))
```

Mathematica [C] time = 0.372927, size = 95, normalized size = 0.49

$$\frac{\sqrt[3]{a+bx}(c+dx)^{2/3}\left(\frac{2b\,{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[3]{\frac{d(a+bx)}{ad-bc}}}+\frac{-3ad+4bc+bdx}{c+dx}\right)}{d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(4/3)/(c + d*x)^(4/3),x]
```

```
[Out] ((a + b*x)^(1/3)*(c + d*x)^(2/3)*((4*b*c - 3*a*d + b*d*x)/(c + d*
x) + (2*b*Hypergeometric2F1[2/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a
*d)])/((d*(a + b*x))/(-(b*c) + a*d))^(1/3)))/d^2
```

Maple [F] time = 0.071, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{4}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(4/3)/(d*x+c)^(4/3),x)
```

```
[Out] int((b*x+a)^(4/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{4}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(4/3)/(d*x + c)^(4/3), x)
```

Fricas [A] time = 0.220856, size = 427, normalized size = 2.19

$$\sqrt{3}\left(2\sqrt{3}\left(bc^2 - acd + \left(bcd - ad^2\right)x\right)\left(-\frac{b}{d}\right)^{\frac{1}{3}}\log\left(\frac{(dx+c)\left(-\frac{b}{d}\right)^{\frac{2}{3}} - (bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}\left(-\frac{b}{d}\right)^{\frac{1}{3}} + (bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}{dx+c}\right) - 4\sqrt{3}\left(bc^2 - acd + \left(bcd\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(4/3)/(d*x + c)^(4/3),x, algorithm="fricas")
```

```
[Out] 1/9*sqrt(3)*(2*sqrt(3)*(b*c^2 - a*c*d + (b*c*d - a*d^2)*x)*(-b/d)
^(1/3)*log(((d*x + c)*(-b/d)^(2/3) - (b*x + a)^(1/3)*(d*x + c)^(2
/3)*(-b/d)^(1/3) + (b*x + a)^(2/3)*(d*x + c)^(1/3))/(d*x + c)) -
4*sqrt(3)*(b*c^2 - a*c*d + (b*c*d - a*d^2)*x)*(-b/d)^(1/3)*log(((
d*x + c)*(-b/d)^(1/3) + (b*x + a)^(1/3)*(d*x + c)^(2/3))/(d*x + c
)) + 3*sqrt(3)*(b*d*x + 4*b*c - 3*a*d)*(b*x + a)^(1/3)*(d*x + c)^
(2/3) - 12*(b*c^2 - a*c*d + (b*c*d - a*d^2)*x)*(-b/d)^(1/3)*arcta
n(-1/3*(sqrt(3)*(d*x + c)*(-b/d)^(1/3) - 2*sqrt(3)*(b*x + a)^(1/3
)*(d*x + c)^(2/3))/((d*x + c)*(-b/d)^(1/3))))/(d^3*x + c*d^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{4}{3}}}{(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(4/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral((a + b*x)**(4/3)/(c + d*x)**(4/3), x)
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(4/3)/(d*x + c)^(4/3),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1618 $\int \frac{\sqrt[3]{a+bx}}{(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=149

$$-\frac{3\sqrt[3]{b}\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2d^{4/3}}-\frac{\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{d^{4/3}}-\frac{3\sqrt[3]{a+bx}}{d\sqrt[3]{c+dx}}-\frac{\sqrt[3]{b}\log(a+bx)}{2d^{4/3}}$$

```
[Out] (-3*(a + b*x)^(1/3))/(d*(c + d*x)^(1/3)) - (Sqrt[3]*b^(1/3)*ArcTa
n[1/Sqrt[3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b
*x)^(1/3))])/d^(4/3) - (b^(1/3)*Log[a + b*x])/(2*d^(4/3)) - (3*b^
(1/3)*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^(1/3)*(a + b*x)^(1/3)
)])/(2*d^(4/3))
```

Rubi [A] time = 0.0952669, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{3\sqrt[3]{b}\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2d^{4/3}}-\frac{\sqrt{3}\sqrt[3]{b}\tan^{-1}\left(\frac{2\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt{3}\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{1}{\sqrt{3}}\right)}{d^{4/3}}-\frac{3\sqrt[3]{a+bx}}{d\sqrt[3]{c+dx}}-\frac{\sqrt[3]{b}\log(a+bx)}{2d^{4/3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-3*(a + b*x)^(1/3))/(d*(c + d*x)^(1/3)) - (Sqrt[3]*b^(1/3)*ArcTa
n[1/Sqrt[3] + (2*b^(1/3)*(c + d*x)^(1/3))/(Sqrt[3]*d^(1/3)*(a + b
*x)^(1/3))])/d^(4/3) - (b^(1/3)*Log[a + b*x])/(2*d^(4/3)) - (3*b^
(1/3)*Log[-1 + (b^(1/3)*(c + d*x)^(1/3))/(d^(1/3)*(a + b*x)^(1/3)
)])/(2*d^(4/3))
```

Rubi in Sympy [A] time = 12.1706, size = 143, normalized size = 0.96

$$-\frac{\sqrt[3]{b}\log\left(a+bx\right)}{2d^{\frac{4}{3}}}-\frac{3\sqrt[3]{b}\log\left(\frac{\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{d}\sqrt[3]{a+bx}}-1\right)}{2d^{\frac{4}{3}}}-\frac{\sqrt{3}\sqrt[3]{b}\,\mathrm{atan}\left(\frac{2\sqrt{3}\sqrt[3]{b}\sqrt[3]{c+dx}}{3\sqrt[3]{d}\sqrt[3]{a+bx}}+\frac{\sqrt{3}}{3}\right)}{d^{\frac{4}{3}}}-\frac{3\sqrt[3]{a+bx}}{d\sqrt[3]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/3)/(d*x+c)**(4/3),x)
```

```
[Out] -b**(1/3)*log(a + b*x)/(2*d**(4/3)) - 3*b**(1/3)*log(b**(1/3)*(c
+ d*x)**(1/3)/(d**(1/3)*(a + b*x)**(1/3)) - 1)/(2*d**(4/3)) - sqr
```

```
t(3)*b**(1/3)*atan(2*sqrt(3)*b**(1/3)*(c + d*x)**(1/3)/(3*d**(1/3
)*(a + b*x)**(1/3)) + sqrt(3)/3)/d**(4/3) - 3*(a + b*x)**(1/3)/(d
*(c + d*x)**(1/3))
```

Mathematica [C] time = 0.157413, size = 90, normalized size = 0.6

$$\frac{3b(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}{}_2F_1\left(\frac{2}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)}{2d^2(a+bx)^{2/3}\sqrt[3]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-6*d*(a + b*x) + 3*b*((d*(a + b*x))/(-(b*c) + a*d))^(2/3)*(c + d
*x)*Hypergeometric2F1[2/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/
(2*d^2*(a + b*x)^(2/3)*(c + d*x)^(1/3))
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{bx+a}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/3)/(d*x+c)^(4/3),x)
```

```
[Out] int((b*x+a)^(1/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/3)/(d*x + c)^(4/3), x)
```

Fricas [A] time = 0.217463, size = 313, normalized size = 2.1

$$\frac{2\sqrt{3}(dx+c)\left(-\frac{b}{d}\right)^{\frac{1}{3}}\arctan\left(-\frac{\sqrt{3}\left((dx+c)\left(-\frac{b}{d}\right)^{\frac{1}{3}}-2\,(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}\right)}{3\,(dx+c)\left(-\frac{b}{d}\right)^{\frac{1}{3}}}\right)-(dx+c)\left(-\frac{b}{d}\right)^{\frac{1}{3}}\log\left(\frac{(dx+c)\left(-\frac{b}{d}\right)^{\frac{2}{3}}-(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}\left(-\frac{b}{d}\right)^{\frac{1}{3}}+(bx}{dx+c}\right.}{2\,(d^2x+cd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(4/3),x, algorithm="fricas")
```

```
[Out] 1/2*(2*sqrt(3)*(d*x + c)*(-b/d)^(1/3)*arctan(-1/3*sqrt(3)*((d*x +
 c)*(-b/d)^(1/3) - 2*(b*x + a)^(1/3)*(d*x + c)^(2/3))/((d*x + c)*
(-b/d)^(1/3))) - (d*x + c)*(-b/d)^(1/3)*log(((d*x + c)*(-b/d)^(2/
3) - (b*x + a)^(1/3)*(d*x + c)^(2/3)*(-b/d)^(1/3) + (b*x + a)^(2/
3)*(d*x + c)^(1/3))/(d*x + c)) + 2*(d*x + c)*(-b/d)^(1/3)*log(((d
*x + c)*(-b/d)^(1/3) + (b*x + a)^(1/3)*(d*x + c)^(2/3))/(d*x + c)
) - 6*(b*x + a)^(1/3)*(d*x + c)^(2/3))/(d^2*x + c*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[3]{a+bx}}{(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral((a + b*x)**(1/3)/(c + d*x)**(4/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/3)/(d*x + c)^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(1/3)/(d*x + c)^(4/3), x)
```

3.1619 $\int \frac{1}{(a+bx)^{2/3}(c+dx)^{4/3}} dx$

Optimal. Leaf size=30

$$\frac{3\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}(bc-ad)}$$

```
[Out] (3*(a + b*x)^(1/3))/((b*c - a*d)*(c + d*x)^(1/3))
```

Rubi [A] time = 0.021083, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{3\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(2/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (3*(a + b*x)^(1/3))/((b*c - a*d)*(c + d*x)^(1/3))
```

Rubi in Sympy [A] time = 3.60265, size = 26, normalized size = 0.87

$$-\frac{3\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(2/3)/(d*x+c)**(4/3),x)
```

```
[Out] -3*(a + b*x)**(1/3)/((c + d*x)**(1/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0370064, size = 30, normalized size = 1.

$$-\frac{3\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(2/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (-3*(a + b*x)^(1/3))/((-(b*c) + a*d)*(c + d*x)^(1/3))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$-3\,\frac{\sqrt[3]{bx+a}}{\sqrt[3]{dx+c}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(2/3)/(d*x+c)^(4/3),x)
```

```
[Out] -3*(b*x+a)^(1/3)/(d*x+c)^(1/3)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(4/3)), x)
```

Fricas [A] time = 0.222576, size = 57, normalized size = 1.9

$$\frac{3\,(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{2}{3}}}{bc^2-acd+(bcd-ad^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] 3*(b*x + a)^(1/3)*(d*x + c)^(2/3)/(b*c^2 - a*c*d + (b*c*d - a*d^2
)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{2}{3}}\,(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(2/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral(1/((a + b*x)**(2/3)*(c + d*x)**(4/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(2/3)*(d*x + c)^(4/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(2/3)*(d*x + c)^(4/3)), x)
```

3.1620 $\int \frac{1}{(a+bx)^{5/3}(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=66

$$-\frac{9d\sqrt[3]{a+bx}}{2\sqrt[3]{c+dx}(bc-ad)^2}-\frac{3}{2(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)}$$

```
[Out] -3/(2*(b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(1/3)) - (9*d*(a + b*
x)^(1/3))/(2*(b*c - a*d)^2*(c + d*x)^(1/3))
```

Rubi [A] time = 0.047648, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{9d\sqrt[3]{a+bx}}{2\sqrt[3]{c+dx}(bc-ad)^2}-\frac{3}{2(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/3)*(c + d*x)^(4/3)),x]
```

```
[Out] -3/(2*(b*c - a*d)*(a + b*x)^(2/3)*(c + d*x)^(1/3)) - (9*d*(a + b*
x)^(1/3))/(2*(b*c - a*d)^2*(c + d*x)^(1/3))
```

Rubi in Sympy [A] time = 7.46661, size = 56, normalized size = 0.85

$$-\frac{9d\sqrt[3]{a+bx}}{2\sqrt[3]{c+dx}\,(ad-bc)^2}+\frac{3}{2\,(a+bx)^{\frac{2}{3}}\,\sqrt[3]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/3)/(d*x+c)**(4/3),x)
```

```
[Out] -9*d*(a + b*x)**(1/3)/(2*(c + d*x)**(1/3)*(a*d - b*c)**2) + 3/(2*
(a + b*x)**(2/3)*(c + d*x)**(1/3)*(a*d - b*c))
```

Mathematica [A] time = 0.0699262, size = 45, normalized size = 0.68

$$-\frac{3(2ad+b(c+3dx))}{2(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (-3*(2*a*d + b*(c + 3*d*x)))/(2*(b*c - a*d)^2*(a + b*x)^(2/3)*(c
+ d*x)^(1/3))
```

Maple [A] time = 0.008, size = 53, normalized size = 0.8

$$-\frac{9\,bdx+6\,ad+3\,bc}{2\,a^2d^2-4\,abcd+2\,b^2c^2}\left(bx+a\right)^{-\frac{2}{3}}\frac{1}{\sqrt[3]{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/3)/(d*x+c)^(4/3),x)
```

```
[Out] -3/2*(3*b*d*x+2*a*d+b*c)/(b*x+a)^(2/3)/(d*x+c)^(1/3)/(a^2*d^2-2*a
*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{\left(bx+a\right)^{\frac{5}{3}}\left(dx+c\right)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(4/3)), x)
```

Fricas [A] time = 0.210547, size = 70, normalized size = 1.06

$$-\frac{3\left(3\,bdx+bc+2\,ad\right)}{2\left(b^2c^2-2\,abcd+a^2d^2\right)\left(bx+a\right)^{\frac{2}{3}}\left(dx+c\right)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] -3/2*(3*b*d*x + b*c + 2*a*d)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*
x + a)^(2/3)*(d*x + c)^(1/3))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{3}}\,(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral(1/((a + b*x)**(5/3)*(c + d*x)**(4/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/3)*(d*x + c)^(4/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/3)*(d*x + c)^(4/3)), x)
```

3.1621 $\int \frac{1}{(a+bx)^{8/3}(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=101

$$\frac{27d^2\sqrt[3]{a+bx}}{5\sqrt[3]{c+dx}(bc-ad)^3}+\frac{9d}{5(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)^2}-\frac{3}{5(a+bx)^{5/3}\sqrt[3]{c+dx}(bc-ad)}$$

```
[Out] -3/(5*(b*c - a*d)*(a + b*x)^(5/3)*(c + d*x)^(1/3)) + (9*d)/(5*(b*
c - a*d)^2*(a + b*x)^(2/3)*(c + d*x)^(1/3)) + (27*d^2*(a + b*x)^(
1/3))/(5*(b*c - a*d)^3*(c + d*x)^(1/3))
```

Rubi [A] time = 0.0752693, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{27d^2\sqrt[3]{a+bx}}{5\sqrt[3]{c+dx}(bc-ad)^3}+\frac{9d}{5(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)^2}-\frac{3}{5(a+bx)^{5/3}\sqrt[3]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(8/3)*(c + d*x)^(4/3)),x]
```

```
[Out] -3/(5*(b*c - a*d)*(a + b*x)^(5/3)*(c + d*x)^(1/3)) + (9*d)/(5*(b*
c - a*d)^2*(a + b*x)^(2/3)*(c + d*x)^(1/3)) + (27*d^2*(a + b*x)^(
1/3))/(5*(b*c - a*d)^3*(c + d*x)^(1/3))
```

Rubi in Sympy [A] time = 13.4129, size = 88, normalized size = 0.87

$$-\frac{27d^2\sqrt[3]{a+bx}}{5\sqrt[3]{c+dx}\,(ad-bc)^3}+\frac{9d}{5\,(a+bx)^{\frac{2}{3}}\,\sqrt[3]{c+dx}\,(ad-bc)^2}+\frac{3}{5\,(a+bx)^{\frac{5}{3}}\,\sqrt[3]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(8/3)/(d*x+c)**(4/3),x)
```

```
[Out] -27*d**2*(a + b*x)**(1/3)/(5*(c + d*x)**(1/3)*(a*d - b*c)**3) + 9
*d/(5*(a + b*x)**(2/3)*(c + d*x)**(1/3)*(a*d - b*c)**2) + 3/(5*(a
 + b*x)**(5/3)*(c + d*x)**(1/3)*(a*d - b*c))
```

Mathematica [A] time = 0.116215, size = 75, normalized size = 0.74

$$\frac{3\left(5a^2d^2+5abd(c+3dx)+b^2\left(-c^2+3cdx+9d^2x^2\right)\right)}{5(a+bx)^{5/3}\sqrt[3]{c+dx}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(8/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (3*(5*a^2*d^2 + 5*a*b*d*(c + 3*d*x) + b^2*(-c^2 + 3*c*d*x + 9*d^2
*x^2)))/(5*(b*c - a*d)^3*(a + b*x)^(5/3)*(c + d*x)^(1/3))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{27 b^2 d^2 x^2+45 a b d^2 x+9 b^2 c d x+15 a^2 d^2+15 a b c d-3 b^2 c^2}{5 a^3 d^3-15 a^2 c b d^2+15 a b^2 c^2 d-5 b^3 c^3}(bx+a)^{-\frac{5}{3}}\frac{1}{\sqrt[3]{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(8/3)/(d*x+c)^(4/3),x)
```

```
[Out] -3/5*(9*b^2*d^2*x^2+15*a*b*d^2*x+3*b^2*c*d*x+5*a^2*d^2+5*a*b*c*d-
b^2*c^2)/(b*x+a)^(5/3)/(d*x+c)^(1/3)/(a^3*d^3-3*a^2*b*c*d^2+3*a*b
^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)^{\frac{8}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(8/3)*(d*x + c)^(4/3)), x)
```

Fricas [A] time = 0.211508, size = 201, normalized size = 1.99

$$\frac{3\left(9 b^2 d^2 x^2-b^2 c^2+5 a b c d+5 a^2 d^2+3\left(b^2 c d+5 a b d^2\right)x\right)}{5\left(a b^3 c^3-3 a^2 b^2 c^2 d+3 a^3 b c d^2-a^4 d^3+\left(b^4 c^3-3 a b^3 c^2 d+3 a^2 b^2 c d^2-a^3 b d^3\right)x\right)(bx+a)^{\frac{2}{3}}(dx+c)^{\frac{1}{3}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] 3/5*(9*b^2*d^2*x^2 - b^2*c^2 + 5*a*b*c*d + 5*a^2*d^2 + 3*(b^2*c*d
 + 5*a*b*d^2)*x)/((a*b^3*c^3 - 3*a^2*b^2*c^2*d + 3*a^3*b*c*d^2 -
a^4*d^3 + (b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*b*d^3)
*x)*(b*x + a)^(2/3)*(d*x + c)^(1/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(8/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{8}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(8/3)*(d*x + c)^(4/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(8/3)*(d*x + c)^(4/3)), x)
```

3.1622 $\int \frac{1}{(a+bx)^{11/3}(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=136

$$-\frac{243d^3\sqrt[3]{a+bx}}{40\sqrt[3]{c+dx}(bc-ad)^4}-\frac{81d^2}{40(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)^3}+\frac{27d}{40(a+bx)^{5/3}\sqrt[3]{c+dx}(bc-ad)^2}-\frac{3}{8(a+bx)^{8/3}\sqrt[3]{c+dx}(bc-ad)}$$

```
[Out] -3/(8*(b*c - a*d)*(a + b*x)^(8/3)*(c + d*x)^(1/3)) + (27*d)/(40*(
b*c - a*d)^2*(a + b*x)^(5/3)*(c + d*x)^(1/3)) - (81*d^2)/(40*(b*c
 - a*d)^3*(a + b*x)^(2/3)*(c + d*x)^(1/3)) - (243*d^3*(a + b*x)^(
1/3))/(40*(b*c - a*d)^4*(c + d*x)^(1/3))
```

Rubi [A] time = 0.110903, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{243d^3\sqrt[3]{a+bx}}{40\sqrt[3]{c+dx}(bc-ad)^4}-\frac{81d^2}{40(a+bx)^{2/3}\sqrt[3]{c+dx}(bc-ad)^3}+\frac{27d}{40(a+bx)^{5/3}\sqrt[3]{c+dx}(bc-ad)^2}-\frac{3}{8(a+bx)^{8/3}\sqrt[3]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(11/3)*(c + d*x)^(4/3)),x]
```

```
[Out] -3/(8*(b*c - a*d)*(a + b*x)^(8/3)*(c + d*x)^(1/3)) + (27*d)/(40*(
b*c - a*d)^2*(a + b*x)^(5/3)*(c + d*x)^(1/3)) - (81*d^2)/(40*(b*c
 - a*d)^3*(a + b*x)^(2/3)*(c + d*x)^(1/3)) - (243*d^3*(a + b*x)^(
1/3))/(40*(b*c - a*d)^4*(c + d*x)^(1/3))
```

Rubi in Sympy [A] time = 21.0168, size = 121, normalized size = 0.89

$$-\frac{243d^3\sqrt[3]{a+bx}}{40\sqrt[3]{c+dx}\,(ad-bc)^4}+\frac{81d^2}{40\,(a+bx)^{\frac{2}{3}}\,\sqrt[3]{c+dx}\,(ad-bc)^3}+\frac{27d}{40\,(a+bx)^{\frac{5}{3}}\,\sqrt[3]{c+dx}\,(ad-bc)^2}+\frac{3}{8\,(a+bx)^{\frac{8}{3}}\,\sqrt[3]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/3)/(d*x+c)**(4/3),x)
```

```
[Out] -243*d**3*(a + b*x)**(1/3)/(40*(c + d*x)**(1/3)*(a*d - b*c)**4) +
 81*d**2/(40*(a + b*x)**(2/3)*(c + d*x)**(1/3)*(a*d - b*c)**3) +
27*d/(40*(a + b*x)**(5/3)*(c + d*x)**(1/3)*(a*d - b*c)**2) + 3/(8
*(a + b*x)**(8/3)*(c + d*x)**(1/3)*(a*d - b*c))
```

Mathematica [A] time = 0.180667, size = 112, normalized size = 0.82

$$\sqrt[3]{a+bx}(c+dx)^{2/3}\left(-\frac{3d^3}{(c+dx)(bc-ad)^4}-\frac{123bd^2}{40(a+bx)(bc-ad)^4}+\frac{21bd}{20(a+bx)^2(bc-ad)^3}-\frac{3b}{8(a+bx)^3(bc-ad)^2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (a + b*x)^(1/3)*(c + d*x)^(2/3)*((-3*b)/(8*(b*c - a*d)^2*(a + b*x
)^3) + (21*b*d)/(20*(b*c - a*d)^3*(a + b*x)^2) - (123*b*d^2)/(40*
(b*c - a*d)^4*(a + b*x)) - (3*d^3)/((b*c - a*d)^4*(c + d*x)))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$-\frac{243\,b^3d^3x^3+648\,ab^2d^3x^2+81\,b^3cd^2x^2+540\,a^2bd^3x+216\,ab^2cd^2x-27\,b^3c^2dx+120\,a^3d^3+180\,a^2cbd^2-72\,ab^2c^2d+15}{40\,d^4a^4-160\,bd^3ca^3+240\,b^2d^2c^2a^2-160\,b^3dc^3a+40\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/3)/(d*x+c)^(4/3),x)
```

```
[Out] -3/40*(81*b^3*d^3*x^3+216*a*b^2*d^3*x^2+27*b^3*c*d^2*x^2+180*a^2*
b*d^3*x+72*a*b^2*c*d^2*x-9*b^3*c^2*d*x+40*a^3*d^3+60*a^2*b*c*d^2-
24*a*b^2*c^2*d+5*b^3*c^3)/(b*x+a)^(8/3)/(d*x+c)^(1/3)/(a^4*d^4-4*
a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(4/3)), x)
```

Fricas [A] time = 0.217988, size = 392, normalized size = 2.88

$$-\frac{3\left(81\,b^3d^3x^3+5\,b^3c^3-24\,ab^2c^2d+60\,a^2bcd^2+40\,a^3d^3+27\left(b^3cd^2+8\,ab^2d^3\right)x^2-9\left(b\right.\right.}{40\,(a^2b^4c^4-4\,a^3b^3c^3d+6\,a^4b^2c^2d^2-4\,a^5bcd^3+a^6d^4+(b^6c^4-4\,ab^5c^3d+6\,a^2b^4c^2d^2-4\,a^3b^3cd^3+a^4b^2d^4)x^2+2\,(ab^5c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] -3/40*(81*b^3*d^3*x^3 + 5*b^3*c^3 - 24*a*b^2*c^2*d + 60*a^2*b*c*d
^2 + 40*a^3*d^3 + 27*(b^3*c*d^2 + 8*a*b^2*d^3)*x^2 - 9*(b^3*c^2*d
 - 8*a*b^2*c*d^2 - 20*a^2*b*d^3)*x)/((a^2*b^4*c^4 - 4*a^3*b^3*c^3
*d + 6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (b^6*c^4 - 4*a
*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d^4)*x
^2 + 2*(a*b^5*c^4 - 4*a^2*b^4*c^3*d + 6*a^3*b^3*c^2*d^2 - 4*a^4*b
^2*c*d^3 + a^5*b*d^4)*x)*(b*x + a)^(2/3)*(d*x + c)^(1/3))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(11/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-2)] time = 0., size = 0, normalized size = 0.

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/3)*(d*x + c)^(4/3)),x, algorithm="giac")
```

```
[Out] Exception raised: NotImplementedError
```

3.1623 $\int \frac{(a+bx)^{8/3}}{(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=1355

result too large to display

```
[Out] (-3*(a + b*x)^(8/3))/(d*(c + d*x)^(1/3)) - (30*b*(b*c - a*d)*(a +
 b*x)^(2/3)*(c + d*x)^(2/3))/(7*d^3) + (24*b*(a + b*x)^(5/3)*(c +
 d*x)^(2/3))/(7*d^2) + (30*2^(2/3)*b^(1/3)*(b*c - a*d)^2*((a + b*
x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(
c + 2*d*x))^2])/(7*d^(11/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c
+ a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (15*2^(2/3)*3^(1/4)*Sq
rt[2 - Sqrt[3]]*b^(1/3)*(b*c - a*d)^(8/3)*((a + b*x)*(c + d*x))^(
1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/
3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*
x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*d^(11/3)*(a + b*x
)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(
2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
 d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x
))^2]) + (20*2^(1/6)*3^(3/4)*b^(1/3)*(b*c - a*d)^(8/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*d^(1
1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[(
(b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d +
 b*(c + 2*d*x))^2])
```

Rubi [A] time = 4.75571, antiderivative size = 1355, normalized size of antiderivative = 1., number

of steps used = 8, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$

$$-\frac{15\, 2^{2/3}\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{\cdots}}{(\cdots}}}{7d^{11/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-a\cdots}{((1+\cdots}}}$$

$$+\frac{20\sqrt[6]{2}3^{3/4}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-\cdots}}}{7d^{11/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}(\cdots}{\left(\left(1+\sqrt{3}\right)(b\cdots}}}$$

$$+\frac{30\, 2^{2/3}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}(bc-ad)^2}{7d^{11/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$
$$-\frac{30b(a+bx)^{2/3}(c+dx)^{2/3}(bc-ad)}{7d^3}+\frac{24b(a+bx)^{5/3}(c+dx)^{2/3}}{7d^2}-\frac{3(a+bx)^{8/3}}{d\sqrt[3]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(8/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-3*(a + b*x)^(8/3))/(d*(c + d*x)^(1/3)) - (30*b*(b*c - a*d)*(a +
 b*x)^(2/3)*(c + d*x)^(2/3))/(7*d^3) + (24*b*(a + b*x)^(5/3)*(c +
 d*x)^(2/3))/(7*d^2) + (30*2^(2/3)*b^(1/3)*(b*c - a*d)^2*((a + b*
x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(
c + 2*d*x))^2])/(7*d^(11/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c
+ a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (15*2^(2/3)*3^(1/4)*Sq
rt[2 - Sqrt[3]]*b^(1/3)*(b*c - a*d)^(8/3)*((a + b*x)*(c + d*x))^(
1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b
^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/
3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*
x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3)
)/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
- a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*d^(11/3)*(a + b*x
)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(
2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
 d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x
))^2]) + (20*2^(1/6)*3^(3/4)*b^(1/3)*(b*c - a*d)^(8/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
```

```
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(7*d^(1
1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[(
(b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^
(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d +
 b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(8/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.274742, size = 131, normalized size = 0.1

$$\frac{3(c+dx)^{2/3}\left(d(a+bx)\left(-\frac{7(bc-ad)^2}{c+dx}+b(4ad-3bc)+b^2dx\right)+10b(bc-ad)^2\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)\right)}{7d^4\sqrt[3]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(8/3)/(c + d*x)^(4/3),x]
```

```
[Out] (3*(c + d*x)^(2/3)*(d*(a + b*x)*(b*(-3*b*c + 4*a*d) + b^2*d*x - (
7*(b*c - a*d)^2)/(c + d*x)) + 10*b*(b*c - a*d)^2*((d*(a + b*x))/(
-(b*c) + a*d))^(1/3)*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x
))/(b*c - a*d)]))/(7*d^4*(a + b*x)^(1/3))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{8}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(8/3)/(d*x+c)^(4/3),x)
```

```
[Out] int((b*x+a)^(8/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{8}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(8/3)/(d*x + c)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(8/3)/(d*x + c)^(4/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{4}{3}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(8/3)/(d*x + c)^(4/3),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(2/3)/(d*x + c)^(4/3
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(8/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{8}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(8/3)/(d*x + c)^(4/3),x, algorithm="giac")

[Out] integrate((b*x + a)^(8/3)/(d*x + c)^(4/3), x)
```

3.1624 $\int \frac{(a+bx)^{5/3}}{(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=1317

result too large to display

```
[Out] (-3*(a + b*x)^(5/3))/(d*(c + d*x)^(1/3)) + (15*b*(a + b*x)^(2/3)*
(c + d*x)^(2/3))/(4*d^2) - (15*b^(1/3)*(b*c - a*d)*((a + b*x)*(c
+ d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*
d*x))^2])/(2*2^(1/3)*d^(8/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c
 + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (15*3^(1/4)*Sqrt[2 -
Sqrt[3]]*b^(1/3)*(b*c - a*d)^(5/3)*((a + b*x)*(c + d*x))^(1/3)*Sq
rt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^
(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/
3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 +
 Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*
(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1
+ Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*d^(8/3)*(a + b*x
)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(
2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
 d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x
))^2]) - (5*3^(3/4)*b^(1/3)*(b*c - a*d)^(5/3)*((a + b*x)*(c + d*x
))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/
3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)
^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c
+ d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(
2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*
((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(
b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^
(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)
*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)*d^(8/3)
*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c
 - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3
)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(
c + 2*d*x))^2])
```

Rubi [A] time = 3.82172, antiderivative size = 1317, normalized size of antiderivative = 1., number

of steps used = 7, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$

$$\frac{15\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{\cdots}}{\left(\left(1+\sqrt{3}\right)(\cdots\right.}}}{4\sqrt[3]{2}d^{8/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/\cdots}}{\left(\left(1+\sqrt{3}\right)\cdots\right.}}}$$

$$-\frac{5\,3^{3/4}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+b\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^{2\cdots}\right.}}}{2^{5/6}d^{8/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(\cdots\right.}{\left(\left(1+\sqrt{3}\right)(bc\cdots\right.}}}$$

$$-\frac{15\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}(bc-ad)}{2\sqrt[3]{2}d^{8/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$+\frac{15b(a+bx)^{2/3}(c+dx)^{2/3}}{4d^2}-\frac{3(a+bx)^{5/3}}{d\sqrt[3]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(5/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-3*(a + b*x)^(5/3))/(d*(c + d*x)^(1/3)) + (15*b*(a + b*x)^(2/3)*
(c + d*x)^(2/3))/(4*d^2) - (15*b^(1/3)*(b*c - a*d)*((a + b*x)*(c
+ d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*
d*x))^2])/(2*2^(1/3)*d^(8/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c
 + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (15*3^(1/4)*Sqrt[2 -
Sqrt[3]]*b^(1/3)*(b*c - a*d)^(5/3)*((a + b*x)*(c + d*x))^(1/3)*Sq
rt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^
(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/
3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 +
 Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*
(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1
+ Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*d^(8/3)*(a + b*x
)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(
2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
 d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x
))^2]) - (5*3^(3/4)*b^(1/3)*(b*c - a*d)^(5/3)*((a + b*x)*(c + d*x
))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/
3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)
^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c
+ d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(
2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*
((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt[3])*(
```

```
b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^
(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)
*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)*d^(8/3)
*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c
 - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a +
b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3
)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(
c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.326871, size = 98, normalized size = 0.07

$$\frac{3(a+bx)^{2/3}(c+dx)^{2/3}\left(\frac{5b\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{2/3}}+\frac{-4ad+5bc+bdx}{c+dx}\right)}{4d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/3)/(c + d*x)^(4/3),x]
```

```
[Out] (3*(a + b*x)^(2/3)*(c + d*x)^(2/3)*((5*b*c - 4*a*d + b*d*x)/(c +
d*x) + (5*b*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c -
 a*d)])/((d*(a + b*x))/(-(b*c) + a*d))^(2/3)))/(4*d^2)
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/3)/(d*x+c)^(4/3),x)
```

```
[Out] int((b*x+a)^(5/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/3)/(d*x + c)^(4/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{4}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(4/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/3)/(d*x + c)^(4/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{3}}}{(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral((a + b*x)**(5/3)/(c + d*x)**(4/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/3)/(d*x + c)^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/3)/(d*x + c)^(4/3), x)
```

3.1625 $\int \frac{(a+bx)^{2/3}}{(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=1279

result too large to display

```
[Out] (-3*(a + b*x)^(2/3))/(d*(c + d*x)^(1/3)) + (3*2^(2/3)*b^(1/3)*((a
 + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
+ b*(c + 2*d*x))^2])/(d^(5/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*
c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (3*3^(1/4)*Sqrt[2 -
Sqrt[3]]*b^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3)*Sq
rt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^
(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/
3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 +
 Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*
(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1
+ Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(1/3)*d^(5/3)*(a + b*x)^
(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/
3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))
^2]) + (2*2^(1/6)*3^(3/4)*b^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c
 + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) +
 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c
- a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*
x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d
*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt
[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(d^(5/3)*(
a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c -
 a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c
+ 2*d*x))^2])
```

Rubi [A] time = 2.97025, antiderivative size = 1279, normalized size of antiderivative = 1., number

of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$-\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{b}(bc-ad)^{2/3}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}\cdots}{\cdots}}}{\sqrt[3]{2}d^{5/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2}\cdots}{\left(\left(1+\sqrt{3}\right)\cdots}}}$$

$$+\frac{2\sqrt[6]{2}3^{3/4}\sqrt[3]{b}(bc-ad)^{2/3}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\cdots}{\cdots}}}{d^{5/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left((bc\cdots\right.}{\left(\left(1+\sqrt{3}\right)(bc-\cdots\right.}}}$$

$$+\frac{3\,2^{2/3}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{d^{5/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$-\frac{3(a+bx)^{2/3}}{d\sqrt[3]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(2/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-3*(a + b*x)^(2/3))/(d*(c + d*x)^(1/3)) + (3*2^(2/3)*b^(1/3)*((a
 + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
+ b*(c + 2*d*x))^2])/(d^(5/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*
c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (3*3^(1/4)*Sqrt[2 -
Sqrt[3]]*b^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/3)*Sq
rt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) - 2^
(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^(1/
3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((1 +
 Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*
(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*d)^
(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/((1
+ Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(1/3)*d^(5/3)*(a + b*x)^
(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c - a*d)^(2/
3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d
*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c + 2*d*x))
^2]) + (2*2^(1/6)*3^(3/4)*b^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c
 + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) +
 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c
- a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*
x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d
*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sqrt
[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c +
```

```
d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d
^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(d^(5/3)*(
a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b*c -
 a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b*(c
+ 2*d*x))^2])
```

Rubi in Sympy [A] time = 165.908, size = 1387, normalized size = 1.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2/3)/(d*x+c)**(4/3),x)
```

```
[Out] -3*2**(2/3)*3**(1/4)*b**(1/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1
/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) +
(a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 +
 x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sq
rt(-sqrt(3) + 2)*(a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(
a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))*(a*c
 + b*d*x**2 + x*(a*d + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2
)*elliptic_e(asin((2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x
*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(2/3))/(2**(2/
3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1
 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*sqrt(3))/(2*d**(5/3)*sqr
t((a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2
+ x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*
d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*
(a*d - b*c)**(2/3))**2)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*sqrt(b*
d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d
 + b*c + 2*b*d*x)) + 2*2**(1/6)*3**(3/4)*b**(1/3)*sqrt((2*2**(1/3
)*b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3) - 2**
(2/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/
3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d -
 b*c)**(2/3))**2)*(a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))*(a*
c + b*d*x**2 + x*(a*d + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**
2)*elliptic_f(asin((2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 +
x*(a*d + b*c))**(1/3) - (-1 + sqrt(3))*(a*d - b*c)**(2/3))/(2**(2
/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (
1 + sqrt(3))*(a*d - b*c)**(2/3))), -7 - 4*sqrt(3))/(d**(5/3)*sqrt
((a*d - b*c)**(2/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 +
 x*(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d
**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(
a*d - b*c)**(2/3))**2)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*sqrt(b*d
*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d
+ b*c + 2*b*d*x)) + 3*2**(2/3)*b**(1/3)*sqrt(b*d*(4*a*c + 4*b*d*x
**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*c + b*d*x**2 + x*(a
```

```
*d + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)/(d**(5/3)*(a + b
*x)**(1/3)*(c + d*x)**(1/3)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*
d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3)
)*(a*d + b*c + 2*b*d*x)) - 3*(a + b*x)**(2/3)/(d*(c + d*x)**(1/3)
)
```

Mathematica [C] time = 0.145281, size = 87, normalized size = 0.07

$$\frac{3b(c+dx)\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)-3d(a+bx)}{d^2\sqrt[3]{a+bx}\sqrt[3]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(2/3)/(c + d*x)^(4/3),x]
```

```
[Out] (-3*d*(a + b*x) + 3*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*(c + d
*x)*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/
(d^2*(a + b*x)^(1/3)*(c + d*x)^(1/3))
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{2}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2/3)/(d*x+c)^(4/3),x)
```

```
[Out] int((b*x+a)^(2/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(4/3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(2/3)/(d*x + c)^(4/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{4}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(4/3),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(2/3)/(d*x + c)^(4/3), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{2}{3}}}{(c+dx)^{\frac{4}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral((a + b*x)**(2/3)/(c + d*x)**(4/3), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{2}{3}}}{(dx+c)^{\frac{4}{3}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(2/3)/(d*x + c)^(4/3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(2/3)/(d*x + c)^(4/3), x)
```

3.1626 $\int \frac{1}{\sqrt[3]{a+bx}(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=1298

result too large to display

```
[Out] (3*(a + b*x)^(2/3))/((b*c - a*d)*(c + d*x)^(1/3)) - (3*b^(1/3)*((
a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
 + b*(c + 2*d*x))^2])/(2^(1/3)*d^(2/3)*(b*c - a*d)*(a + b*x)^(1/3
)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) +
 (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*b^(1/3)*((a + b*x)*(c + d*x))^(1/3)
*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^
(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2*2^(1/3)*d^(2/3)*(b*c
- a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x
)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2
/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqr
t[(a*d + b*(c + 2*d*x))^2]) - (2^(1/6)*3^(3/4)*b^(1/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(d^(2/3
)*(b*c - a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 2.95866, antiderivative size = 1298, normalized size of antiderivative = 1., number

of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(}}{\left(\left(1+\sqrt{3}\right)(b\right.}}}{2\sqrt[3]{2}d^{2/3}\sqrt[3]{bc-ad}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(\right.}{\left(\left(1+\sqrt{3}\right)(b\right.}}}$$

$$-\frac{\sqrt[6]{2}3^{3/4}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+}}{\left(\left(1+\sqrt{3}\right)(bc-ad\right.}}}{d^{2/3}\sqrt[3]{bc-ad}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left((bc-\right.}{\left(\left(1+\sqrt{3}\right)(bc-a\right.}}}$$

$$-\frac{3\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt[3]{2}d^{2/3}(bc-ad)\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$+\frac{3(a+bx)^{2/3}}{(bc-ad)\sqrt[3]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(1/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (3*(a + b*x)^(2/3))/((b*c - a*d)*(c + d*x)^(1/3)) - (3*b^(1/3)*((
a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
 + b*(c + 2*d*x))^2])/(2^(1/3)*d^(2/3)*(b*c - a*d)*(a + b*x)^(1/3
)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d
)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) +
 (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*b^(1/3)*((a + b*x)*(c + d*x))^(1/3)
*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^
(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2*2^(1/3)*d^(2/3)*(b*c
- a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x
)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^
(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2
/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqr
t[(a*d + b*(c + 2*d*x))^2]) - (2^(1/6)*3^(3/4)*b^(1/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
```

```
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(d^(2/3
)*(b*c - a*d)^(1/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d +
2*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(
1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c -
a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))
^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 157.301, size = 1399, normalized size = 1.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/3)/(d*x+c)**(4/3),x)
```

```
[Out] -3*2**(2/3)*3**(1/4)*b**(1/3)*sqrt((2*2**(1/3)*b**(2/3)*d**(2/3)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3) - 2**(2/3)*b**(1/3)*d**(1
/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) +
(a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 +
 x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2)*sq
rt(-sqrt(3) + 2)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*
(a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*
d + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_e(asin((
2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
) - (-1 + sqrt(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3
)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d -
b*c)**(2/3))), -7 - 4*sqrt(3))/(4*d**(2/3)*sqrt((a*d - b*c)**(2/3
)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(
1/3) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d
*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))
**2)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)*sqrt(b*
d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d
 + b*c + 2*b*d*x)) + 2**(1/6)*3**(3/4)*b**(1/3)*sqrt((2*2**(1/3)*
b**(2/3)*d**(2/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(2/3) - 2**(2
/3)*b**(1/3)*d**(1/3)*(a*d - b*c)**(2/3)*(a*c + b*d*x**2 + x*(a*d
 + b*c))**(1/3) + (a*d - b*c)**(4/3))/(2**(2/3)*b**(1/3)*d**(1/3)
*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b
*c)**(2/3))**2)*(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(
a*d + b*c))**(1/3) + (a*d - b*c)**(2/3))*(a*c + b*d*x**2 + x*(a*d
 + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(asin((2
**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3)
 - (-1 + sqrt(3))*(a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)
*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b
*c)**(2/3))), -7 - 4*sqrt(3))/(d**(2/3)*sqrt((a*d - b*c)**(2/3)*(
2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3
) + (a*d - b*c)**(2/3))/(2**(2/3)*b**(1/3)*d**(1/3)*(a*c + b*d*x*
*2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d - b*c)**(2/3))**2
)*(a + b*x)**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)*sqrt(b*d*(
4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d +
b*c + 2*b*d*x)) + 3*2**(2/3)*b**(1/3)*sqrt(b*d*(4*a*c + 4*b*d*x**
```

```
2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*c + b*d*x**2 + x*(a*d
 + b*c))**(1/3)*sqrt((a*d + b*c + 2*b*d*x)**2)/(2*d**(2/3)*(a + b
*x)**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)*(2**(2/3)*b**(1/3)*d**(1/
3)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/3) + (1 + sqrt(3))*(a*d -
 b*c)**(2/3))*(a*d + b*c + 2*b*d*x)) - 3*(a + b*x)**(2/3)/((c + d
*x)**(1/3)*(a*d - b*c))
```

Mathematica [C] time = 0.1638, size = 100, normalized size = 0.08

$$\frac{6d(a+bx)-3b(c+dx)\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)}{2d\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (6*d*(a + b*x) - 3*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*(c + d*
x)*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*d)])/(
2*d*(b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3))
```

Maple [F] time = 0.054, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[3]{bx+a}}(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/3)/(d*x+c)^(4/3),x)
```

```
[Out] int(1/(b*x+a)^(1/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(4/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{4}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(1/3)*(d*x + c)^(4/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[3]{a+bx}\,(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(1/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral(1/((a + b*x)**(1/3)*(c + d*x)**(4/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(4/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/3)*(d*x + c)^(4/3)), x)
```

3.1627 $\int \frac{1}{(a+bx)^{4/3}(c+dx)^{4/3}}\,dx$

Optimal. Leaf size=1327

result too large to display

```
[Out] -3/((b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3)) - (6*d*(a + b*x)
^(2/3))/((b*c - a*d)^2*(c + d*x)^(1/3)) + (3*2^(2/3)*b^(1/3)*d^(1
/3)*((a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqr
t[(a*d + b*(c + 2*d*x))^2])/((b*c - a*d)^2*(a + b*x)^(1/3)*(c + d
*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3)
+ 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (3*3^(1
/4)*Sqrt[2 - Sqrt[3]]*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^
(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(1/3)*(b*c - a*d)^(4/
3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b
*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2]) + (2*2^(1/6)*3^(3/4)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/((b*c -
 a*d)^(4/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)
*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(
1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/
3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt
[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 3.84676, antiderivative size = 1327, normalized size of antiderivative = 1., number

of steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{6(a+bx)^{2/3}d}{(bc-ad)^2\sqrt[3]{c+dx}}$$

$$-\frac{3\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\cdots}{\left(\left(1+\sqrt{3}\right)\cdots\right.}}\cdots}{\sqrt[3]{2}(bc-ad)^{4/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\cdots}{\left(\left(1+\sqrt{3}\right)\cdots\right.}}\cdots}$$

$$+\frac{2\sqrt[6]{2}3^{3/4}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+\cdots}}{\left(\left(1+\sqrt{3}\right)(bc-a\cdots\right.}}\cdots}{(bc-ad)^{4/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left((bc\cdots\right.}{\left(\left(1+\sqrt{3}\right)(bc-\cdots\right.}}\cdots}$$

$$+\frac{3\,2^{2/3}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}\sqrt[3]{d}}{(bc-ad)^2\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$-\frac{3}{(bc-ad)\sqrt[3]{a+bx}\sqrt[3]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(4/3)*(c + d*x)^(4/3)),x]
```

```
[Out] -3/((b*c - a*d)*(a + b*x)^(1/3)*(c + d*x)^(1/3)) - (6*d*(a + b*x)
^(2/3))/((b*c - a*d)^2*(c + d*x)^(1/3)) + (3*2^(2/3)*b^(1/3)*d^(1
/3)*((a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqr
t[(a*d + b*(c + 2*d*x))^2])/((b*c - a*d)^2*(a + b*x)^(1/3)*(c + d
*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2/3)
+ 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) - (3*3^(1
/4)*Sqrt[2 - Sqrt[3]]*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)
*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/
3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4/3) -
 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d*x))^
(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3))/((
1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*
x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c - a*
d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))/(
(1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b
*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(1/3)*(b*c - a*d)^(4/
3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*Sqrt[((b
*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
+ b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2
/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2]) + (2*2^(1/6)*3^(3/4)*b^(1/3)*d^(1/3)*((a + b*x)
*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3
) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b
*c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
```

```
 b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c
+ d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - S
qrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
 + d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3
)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/((b*c -
 a*d)^(4/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)
*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(
1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/
3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt
[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(4/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.287019, size = 98, normalized size = 0.07

$$-\frac{3\left(-b(c+dx)\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)+ad+b(c+2dx)\right)}{\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(4/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (-3*(a*d + b*(c + 2*d*x) - b*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)
*(c + d*x)*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c -
a*d)]))/((b*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3))
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{4}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(4/3)/(d*x+c)^(4/3),x)
```

```
[Out] int(1/(b*x+a)^(4/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(4/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bdx^2+ac+(bc+ad)x)(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(1/3)*(d*x
+ c)^(1/3)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{4}{3}}\,(c+dx)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(4/3)/(d*x+c)**(4/3),x)
```

```
[Out] Integral(1/((a + b*x)**(4/3)*(c + d*x)**(4/3)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{4}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(4/3)*(d*x + c)^(4/3)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(4/3)*(d*x + c)^(4/3)), x)
```

3.1628 $\int \frac{1}{(a+bx)^{7/3}(c+dx)^{4/3}} dx$

Optimal. Leaf size=1370

result too large to display

```
[Out] -3/(4*(b*c - a*d)*(a + b*x)^(4/3)*(c + d*x)^(1/3)) + (15*d)/(4*(b
*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3)) + (15*d^2*(a + b*x)^
(2/3))/(2*(b*c - a*d)^3*(c + d*x)^(1/3)) - (15*b^(1/3)*d^(4/3)*((
a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
 + b*(c + 2*d*x))^2])/(2*2^(1/3)*(b*c - a*d)^3*(a + b*x)^(1/3)*(c
 + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2
/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (15
*3^(1/4)*Sqrt[2 - Sqrt[3]]*b^(1/3)*d^(4/3)*((a + b*x)*(c + d*x))^
(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4
/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d
*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
 - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/
3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*(b*c - a
*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*S
qrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/
3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3)
 + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(
a*d + b*(c + 2*d*x))^2]) - (5*3^(3/4)*b^(1/3)*d^(4/3)*((a + b*x)*
(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3)
 + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*
c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c +
 d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sq
rt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
+ d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)
*(b*c - a*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2
*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a
*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^
2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 4.51947, antiderivative size = 1370, normalized size of antiderivative = 1., number

of steps used = 8, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{15(a+bx)^{2/3}d^2}{2(bc-ad)^3\sqrt[3]{c+dx}}$$

$$+\frac{15\sqrt[4]{3}\sqrt{2-\sqrt{3}}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}}{\left(\left(1+\sqrt{3}\right)\right.}}}{4\sqrt[3]{2}(bc-ad)^{7/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)}{\left(\left(1+\sqrt{3}\right.\right.}}}$$

$$-\frac{5\ 3^{3/4}\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left((bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)\sqrt{\frac{(bc-ad)^{4/3}-2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+b}}{\left(\left(1+\sqrt{3}\right)(bc-ad)^2\right.}}}{2^{5/6}(bc-ad)^{7/3}\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\sqrt{\frac{(bc-ad)^{2/3}\left(\right.}{\left(\left(1+\sqrt{3}\right)(bc\right.}}}$$

$$-\frac{15\sqrt[3]{b}\sqrt[3]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}d^{4/3}}{2\sqrt[3]{2}(bc-ad)^3\sqrt[3]{a+bx}\sqrt[3]{c+dx}(bc+ad+2bdx)\left(\left(1+\sqrt{3}\right)(bc-ad)^{2/3}+2^{2/3}\sqrt[3]{b}\sqrt[3]{d}\sqrt[3]{(a+bx)(c+dx)}\right)}$$

$$+\frac{15d}{4(bc-ad)^2\sqrt[3]{a+bx}\sqrt[3]{c+dx}}-\frac{3}{4(bc-ad)(a+bx)^{4/3}\sqrt[3]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(7/3)*(c + d*x)^(4/3)),x]
```

```
[Out] -3/(4*(b*c - a*d)*(a + b*x)^(4/3)*(c + d*x)^(1/3)) + (15*d)/(4*(b
*c - a*d)^2*(a + b*x)^(1/3)*(c + d*x)^(1/3)) + (15*d^2*(a + b*x)^
(2/3))/(2*(b*c - a*d)^3*(c + d*x)^(1/3)) - (15*b^(1/3)*d^(4/3)*((
a + b*x)*(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
 + b*(c + 2*d*x))^2])/(2*2^(1/3)*(b*c - a*d)^3*(a + b*x)^(1/3)*(c
 + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*((1 + Sqrt[3])*(b*c - a*d)^(2
/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))) + (15
*3^(1/4)*Sqrt[2 - Sqrt[3]]*b^(1/3)*d^(4/3)*((a + b*x)*(c + d*x))^
(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3) + 2^(2/3)*
b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*c - a*d)^(4
/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a + b*x)*(c + d
*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c + d*x))^(2/3
))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a
 + b*x)*(c + d*x))^(1/3))^2]*EllipticE[ArcSin[((1 - Sqrt[3])*(b*c
 - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/
3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((
a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(4*2^(1/3)*(b*c - a
*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2*b*d*x)*S
qrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/
3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a*d)^(2/3)
 + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*Sqrt[(
a*d + b*(c + 2*d*x))^2]) - (5*3^(3/4)*b^(1/3)*d^(4/3)*((a + b*x)*
(c + d*x))^(1/3)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*((b*c - a*d)^(2/3)
 + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))*Sqrt[((b*
```

```
c - a*d)^(4/3) - 2^(2/3)*b^(1/3)*d^(1/3)*(b*c - a*d)^(2/3)*((a +
b*x)*(c + d*x))^(1/3) + 2*2^(1/3)*b^(2/3)*d^(2/3)*((a + b*x)*(c +
 d*x))^(2/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*
d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^2]*EllipticF[ArcSin[((1 - Sq
rt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c
+ d*x))^(1/3))/((1 + Sqrt[3])*(b*c - a*d)^(2/3) + 2^(2/3)*b^(1/3)
*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))], -7 - 4*Sqrt[3]])/(2^(5/6)
*(b*c - a*d)^(7/3)*(a + b*x)^(1/3)*(c + d*x)^(1/3)*(b*c + a*d + 2
*b*d*x)*Sqrt[((b*c - a*d)^(2/3)*((b*c - a*d)^(2/3) + 2^(2/3)*b^(1
/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3)))/((1 + Sqrt[3])*(b*c - a
*d)^(2/3) + 2^(2/3)*b^(1/3)*d^(1/3)*((a + b*x)*(c + d*x))^(1/3))^
2]*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.304935, size = 138, normalized size = 0.1

$$-\frac{3\left(4a^2d^2-5bd(a+bx)(c+dx)\sqrt[3]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{3},\frac{2}{3};\frac{5}{3};\frac{b(c+dx)}{bc-ad}\right)+abd(7c+15dx)+b^2\left(-c^2+5cdx+10d^2x^2\right)\right)}{4(a+bx)^{4/3}\sqrt[3]{c+dx}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/3)*(c + d*x)^(4/3)),x]
```

```
[Out] (-3*(4*a^2*d^2 + a*b*d*(7*c + 15*d*x) + b^2*(-c^2 + 5*c*d*x + 10*
d^2*x^2) - 5*b*d*(a + b*x)*((d*(a + b*x))/(-(b*c) + a*d))^(1/3)*(
c + d*x)*Hypergeometric2F1[1/3, 2/3, 5/3, (b*(c + d*x))/(b*c - a*
d)]))/(4*(-(b*c) + a*d)^3*(a + b*x)^(4/3)*(c + d*x)^(1/3))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{3}}\,(dx+c)^{-\frac{4}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/3)/(d*x+c)^(4/3),x)
```

```
[Out] int(1/(b*x+a)^(7/3)/(d*x+c)^(4/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(4/3)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(4/3)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2dx^3 + a^2c + (b^2c + 2\,abd)x^2 + (2\,abc + a^2d)x)(bx+a)^{\frac{1}{3}}(dx+c)^{\frac{1}{3}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(4/3)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*d*x^3 + a^2*c + (b^2*c + 2*a*b*d)*x^2 + (2*a*b*c
 + a^2*d)*x)*(b*x + a)^(1/3)*(d*x + c)^(1/3)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/3)/(d*x+c)**(4/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{3}}(dx+c)^{\frac{4}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/3)*(d*x + c)^(4/3)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(7/3)*(d*x + c)^(4/3)), x)
```

3.1629 $\int \frac{\sqrt[3]{-1+x}}{\sqrt[3]{1+x}}\,dx$

Optimal. Leaf size=77

$$\sqrt[3]{x-1}(x+1)^{2/3}+\frac{1}{3}\log(x-1)+\log\left(\frac{\sqrt[3]{x+1}}{\sqrt[3]{x-1}}-1\right)+\frac{2\tan^{-1}\left(\frac{2\sqrt[3]{x+1}}{\sqrt{3}\sqrt[3]{x-1}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}}$$

```
[Out] (-1 + x)^(1/3)*(1 + x)^(2/3) + (2*ArcTan[1/Sqrt[3] + (2*(1 + x)^(
1/3))/(Sqrt[3]*(-1 + x)^(1/3))])/Sqrt[3] + Log[-1 + x]/3 + Log[-1
 + (1 + x)^(1/3)/(-1 + x)^(1/3)]
```

Rubi [A] time = 0.0441209, antiderivative size = 77, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133

$$\sqrt[3]{x-1}(x+1)^{2/3}+\frac{1}{3}\log(x-1)+\log\left(\frac{\sqrt[3]{x+1}}{\sqrt[3]{x-1}}-1\right)+\frac{2\tan^{-1}\left(\frac{2\sqrt[3]{x+1}}{\sqrt{3}\sqrt[3]{x-1}}+\frac{1}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In]  Int[(-1 + x)^(1/3)/(1 + x)^(1/3),x]
```

```
[Out] (-1 + x)^(1/3)*(1 + x)^(2/3) + (2*ArcTan[1/Sqrt[3] + (2*(1 + x)^(
1/3))/(Sqrt[3]*(-1 + x)^(1/3))])/Sqrt[3] + Log[-1 + x]/3 + Log[-1
 + (1 + x)^(1/3)/(-1 + x)^(1/3)]
```

Rubi in Sympy [A] time = 3.65314, size = 75, normalized size = 0.97

$$\sqrt[3]{x-1}\,(x+1)^{\frac{2}{3}}+\log\left(-1+\frac{\sqrt[3]{x+1}}{\sqrt[3]{x-1}}\right)+\frac{\log\left(x-1\right)}{3}+\frac{2\sqrt{3}\,\mathrm{atan}\left(\frac{\sqrt{3}}{3}+\frac{2\sqrt{3}\sqrt[3]{x+1}}{3\sqrt[3]{x-1}}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((-1+x)**(1/3)/(1+x)**(1/3),x)
```

```
[Out] (x - 1)**(1/3)*(x + 1)**(2/3) + log(-1 + (x + 1)**(1/3)/(x - 1)**
(1/3)) + log(x - 1)/3 + 2*sqrt(3)*atan(sqrt(3)/3 + 2*sqrt(3)*(x +
 1)**(1/3)/(3*(x - 1)**(1/3)))/3
```

Mathematica [C] time = 0.0295901, size = 50, normalized size = 0.65

$$\sqrt[3]{\frac{x-1}{x+1}}\left(-2^{2/3}\sqrt[3]{x+1}\,{}_2F_1\left(\frac{1}{3},\frac{1}{3};\frac{4}{3};\frac{1-x}{2}\right)+x+1\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(-1 + x)^(1/3)/(1 + x)^(1/3),x]
```

```
[Out] ((-1 + x)/(1 + x))^(1/3)*(1 + x - 2^(2/3)*(1 + x)^(1/3)*Hypergeom
etric2F1[1/3, 1/3, 4/3, (1 - x)/2])
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int 1\sqrt[3]{-1+x}\frac{1}{\sqrt[3]{1+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((-1+x)^(1/3)/(1+x)^(1/3),x)
```

```
[Out] int((-1+x)^(1/3)/(1+x)^(1/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(x-1)^{\frac{1}{3}}}{(x+1)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x - 1)^(1/3)/(x + 1)^(1/3),x, algorithm="maxima")
```

```
[Out] integrate((x - 1)^(1/3)/(x + 1)^(1/3), x)
```

Fricas [A] time = 0.211761, size = 161, normalized size = 2.09

$$\frac{1}{9}\sqrt{3}\left(3\sqrt{3}(x+1)^{\frac{2}{3}}(x-1)^{\frac{1}{3}}-\sqrt{3}\log\left(\frac{(x+1)^{\frac{2}{3}}(x-1)^{\frac{1}{3}}+(x+1)^{\frac{1}{3}}(x-1)^{\frac{2}{3}}+x+1}{x+1}\right)+2\sqrt{3}\log\left(\frac{(x+1)^{\frac{2}{3}}(x-1)^{\frac{1}{3}}-x-1}{x+1}\right)-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x - 1)^(1/3)/(x + 1)^(1/3),x, algorithm="fricas")
```

```
[Out] 1/9*sqrt(3)*(3*sqrt(3)*(x + 1)^(2/3)*(x - 1)^(1/3) - sqrt(3)*log(
((x + 1)^(2/3)*(x - 1)^(1/3) + (x + 1)^(1/3)*(x - 1)^(2/3) + x +
1)/(x + 1)) + 2*sqrt(3)*log(((x + 1)^(2/3)*(x - 1)^(1/3) - x - 1)
/(x + 1)) - 6*arctan(1/3*(sqrt(3)*(x + 1) + 2*sqrt(3)*(x + 1)^(2/
3)*(x - 1)^(1/3))/(x + 1)))
```

Sympy [A] time = 3.68554, size = 39, normalized size = 0.51

$$\frac{2^{\frac{2}{3}}\left(x-1\right)^{\frac{4}{3}}\left(\frac{4}{3}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{3},\frac{4}{3}\\ \frac{7}{3}\end{matrix}\middle|\frac{(x-1)e^{i\pi}}{2}\right)}{2\left(\frac{7}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-1+x)**(1/3)/(1+x)**(1/3),x)
```

```
[Out] 2**(2/3)*(x - 1)**(4/3)*gamma(4/3)*hyper((1/3, 4/3), (7/3,), (x -
 1)*exp_polar(I*pi)/2)/(2*gamma(7/3))
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{\left(x-1\right)^{\frac{1}{3}}}{\left(x+1\right)^{\frac{1}{3}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x - 1)^(1/3)/(x + 1)^(1/3),x, algorithm="giac")
```

```
[Out] integrate((x - 1)^(1/3)/(x + 1)^(1/3), x)
```

3.1630 $\int (a+bx)^{3/2}\sqrt[4]{c+dx}\,dx$

Optimal. Leaf size=185

$$\frac{16(bc-ad)^{13/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{77b^{5/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{77bd^2}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}{77bd}+\frac{4(a+bx)^{5/2}\sqrt[4]{c+dx}}{11b}$$

```
[Out] (-8*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4))/(77*b*d^2) + (4*
(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/4))/(77*b*d) + (4*(a + b
*x)^(5/2)*(c + d*x)^(1/4))/(11*b) + (16*(b*c - a*d)^(13/4)*Sqrt[-
((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^
(1/4))/(b*c - a*d)^(1/4)], -1])/(77*b^(5/4)*d^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.439367, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{16(bc-ad)^{13/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{77b^{5/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{77bd^2}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}{77bd}+\frac{4(a+bx)^{5/2}\sqrt[4]{c+dx}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(1/4),x]
```

```
[Out] (-8*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4))/(77*b*d^2) + (4*
(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/4))/(77*b*d) + (4*(a + b
*x)^(5/2)*(c + d*x)^(1/4))/(11*b) + (16*(b*c - a*d)^(13/4)*Sqrt[-
((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^
(1/4))/(b*c - a*d)^(1/4)], -1])/(77*b^(5/4)*d^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 40.8486, size = 233, normalized size = 1.26

$$\frac{4\,(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{5}{4}}}{11d}+\frac{24\sqrt{a+bx}\,(c+dx)^{\frac{5}{4}}\,(ad-bc)}{77d^2}+\frac{16\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)^2}{77bd^2}-\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{13}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{77b^{\frac{5}{4}}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(1/4),x)
```

```
[Out] 4*(a + b*x)**(3/2)*(c + d*x)**(5/4)/(11*d) + 24*sqrt(a + b*x)*(c
+ d*x)**(5/4)*(a*d - b*c)/(77*d**2) + 16*sqrt(a + b*x)*(c + d*x)*
*(1/4)*(a*d - b*c)**2/(77*b*d**2) - 8*sqrt((a*d - b*c + b*(c + d*
x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))
*(a*d - b*c)**(13/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*
elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)),
1/2)/(77*b**(5/4)*d**3*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.277334, size = 140, normalized size = 0.76

$$-\frac{4\sqrt[4]{c+dx}\left(-d(a+bx)\left(4a^2d^2+abd(5c+13dx)+b^2\left(-2c^2+cdx+7d^2x^2\right)\right)-4(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)\right)}{77bd^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(1/4),x]
```

```
[Out] (-4*(c + d*x)^(1/4)*(-(d*(a + b*x)*(4*a^2*d^2 + a*b*d*(5*c + 13*d
*x) + b^2*(-2*c^2 + c*d*x + 7*d^2*x^2))) - 4*(b*c - a*d)^3*Sqrt[(
d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*
(c + d*x))/(b*c - a*d)]))/(77*b*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}\sqrt[4]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(3/2)*(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/4),x, algorithm="fricas")

[Out] integral((b*x + a)^(3/2)*(d*x + c)^(1/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{3}{2}}\sqrt[4]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(1/4),x)

[Out] Integral((a + b*x)**(3/2)*(c + d*x)**(1/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/4),x, algorithm="giac")

[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(1/4), x)
```

3.1631 $\int \sqrt{a+bx}\sqrt[4]{c+dx}\,dx$

Optimal. Leaf size=147

$$-\frac{8(bc-ad)^{9/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{21b^{5/4}d^2\sqrt{a+bx}}+\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}{21bd}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}}{7b}$$

```
[Out] (4*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))/(21*b*d) + (4*(a +
b*x)^(3/2)*(c + d*x)^(1/4))/(7*b) - (8*(b*c - a*d)^(9/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(21*b^(5/4)*d^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.234486, antiderivative size = 147, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{8(bc-ad)^{9/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{21b^{5/4}d^2\sqrt{a+bx}}+\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}{21bd}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(1/4),x]
```

```
[Out] (4*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))/(21*b*d) + (4*(a +
b*x)^(3/2)*(c + d*x)^(1/4))/(7*b) - (8*(b*c - a*d)^(9/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(21*b^(5/4)*d^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 30.2235, size = 199, normalized size = 1.35

$$\frac{4\sqrt{a+bx}\,(c+dx)^{\frac{5}{4}}}{7d}+\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)}{21bd}-\frac{4\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{9}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{21b^{\frac{5}{4}}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(1/4),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(5/4)/(7*d) + 8*sqrt(a + b*x)*(c + d*x
)**(1/4)*(a*d - b*c)/(21*b*d) - 4*sqrt((a*d - b*c + b*(c + d*x))/
```

```
((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*
d - b*c)**(9/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ellip
tic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/
(21*b**(5/4)*d**2*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.19848, size = 109, normalized size = 0.74

$$\frac{4\sqrt[4]{c+dx}\left(d(a+bx)(2ad+b(c+3dx))-2(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)\right)}{21bd^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(1/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(d*(a + b*x)*(2*a*d + b*(c + 3*d*x)) - 2*(b*c
- a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4
, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(21*b*d^2*Sqrt[a + b*x])
```

Maple [F] time = 0.035, size = 0, normalized size = 0.

$$\int\sqrt{bx+a}\sqrt[4]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(1/2)*(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\sqrt{bx+a}(dx+c)^{\frac{1}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}(dx+c)^{\frac{1}{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/4),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)*(d*x + c)^(1/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+bx}\sqrt[4]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(1/4),x)
```

```
[Out] Integral(sqrt(a + b*x)*(c + d*x)**(1/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{1}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(1/4), x)
```

3.1632 $\int \frac{\sqrt[4]{c+dx}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=111

$$\frac{4(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{5/4}d\sqrt{a+bx}}+\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}}{3b}$$

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(1/4))/(3*b) + (4*(b*c - a*d)^(5/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*b^(5/4)*d*Sqrt[a + b*x])
```

Rubi [A] time = 0.164162, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{4(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{5/4}d\sqrt{a+bx}}+\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/4)/Sqrt[a + b*x],x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(1/4))/(3*b) + (4*(b*c - a*d)^(5/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*b^(5/4)*d*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 21.0175, size = 167, normalized size = 1.5

$$\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}}{3b}-\frac{2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{5}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3b^{\frac{5}{4}}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/4)/(b*x+a)**(1/2),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(1/4)/(3*b) - 2*sqrt((a*d - b*c + b*(c
 + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)
**2))*(a*d - b*c)**(5/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) +
 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4
```

```
)), 1/2)/(3*b**(5/4)*d*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.155237, size = 93, normalized size = 0.84

$$\frac{4\sqrt[4]{c+dx}\left((bc-ad)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{3bd\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/4)/Sqrt[a + b*x],x]
```

```
[Out] (4*(c + d*x)^(1/4)*(d*(a + b*x) + (b*c - a*d)*Sqrt[(d*(a + b*x))/
(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b
*c - a*d)]))/(3*b*d*Sqrt[a + b*x])
```

Maple [F] time = 0.041, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{dx+c}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/4)/(b*x+a)^(1/2),x)
```

```
[Out] int((d*x+c)^(1/4)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/4)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{4}}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/4)/sqrt(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{c+dx}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/4)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(1/4)/sqrt(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/4)/sqrt(b*x + a), x)
```

3.1633 $\int \frac{\sqrt[4]{c+dx}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=104

$$\frac{2\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{5/4}\sqrt{a+bx}}-\frac{2\sqrt[4]{c+dx}}{b\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(1/4))/(b*Sqrt[a + b*x]) + (2*(b*c - a*d)^(1/4)*Sqr
t[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*
x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(5/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.1523, antiderivative size = 104, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{2\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{5/4}\sqrt{a+bx}}-\frac{2\sqrt[4]{c+dx}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/4)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*(c + d*x)^(1/4))/(b*Sqrt[a + b*x]) + (2*(b*c - a*d)^(1/4)*Sqr
t[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*
x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(5/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 20.5396, size = 160, normalized size = 1.54

$$-\frac{2\sqrt[4]{c+dx}}{b\sqrt{a+bx}}+\frac{\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\sqrt[4]{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/4)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(1/4)/(b*sqrt(a + b*x)) + sqrt((a*d - b*c + b*(c +
d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2
))*(a*d - b*c)**(1/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)
*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)),
```

```
1/2)/(b**(5/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.0920358, size = 74, normalized size = 0.71

$$\frac{2\sqrt[4]{c+dx}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/4)/(a + b*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(1/4)*(-1 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(b*Sqrt[
a + b*x])
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{dx+c}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/4)/(b*x+a)^(3/2),x)
```

```
[Out] int((d*x+c)^(1/4)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/4)/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{4}}}{(bx+a)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/4)/(b*x + a)^(3/2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{c+dx}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/4)/(b*x+a)**(3/2),x)
```

```
[Out] Integral((c + d*x)**(1/4)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/4)/(b*x + a)^(3/2), x)
```

3.1634 $\int \frac{\sqrt[4]{c+dx}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=145

$$-\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{5/4}\sqrt{a+bx}(bc-ad)^{3/4}}-\frac{d\sqrt[4]{c+dx}}{3b\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt[4]{c+dx}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(1/4))/(3*b*(a + b*x)^(3/2)) - (d*(c + d*x)^(1/4))/
(3*b*(b*c - a*d)*Sqrt[a + b*x]) - (d*Sqrt[-((d*(a + b*x))/(b*c -
a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/
4)], -1])/(3*b^(5/4)*(b*c - a*d)^(3/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.21815, antiderivative size = 145, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{5/4}\sqrt{a+bx}(bc-ad)^{3/4}}-\frac{d\sqrt[4]{c+dx}}{3b\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt[4]{c+dx}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/4)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*(c + d*x)^(1/4))/(3*b*(a + b*x)^(3/2)) - (d*(c + d*x)^(1/4))/
(3*b*(b*c - a*d)*Sqrt[a + b*x]) - (d*Sqrt[-((d*(a + b*x))/(b*c -
a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/
4)], -1])/(3*b^(5/4)*(b*c - a*d)^(3/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 29.0954, size = 194, normalized size = 1.34

$$\frac{d\sqrt[4]{c+dx}}{3b\sqrt{a+bx}\,(ad-bc)}-\frac{2\sqrt[4]{c+dx}}{3b\,(a+bx)^{\frac{3}{2}}}+\frac{d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{6b^{\frac{5}{4}}\,(ad-bc)^{\frac{3}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/4)/(b*x+a)**(5/2),x)
```

```
[Out] d*(c + d*x)**(1/4)/(3*b*sqrt(a + b*x)*(a*d - b*c)) - 2*(c + d*x)*
*(1/4)/(3*b*(a + b*x)**(3/2)) + d*sqrt((a*d - b*c + b*(c + d*x))/
```

```
((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sq
rt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/
4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(6*b**(5/4)*(a*d -
b*c)**(3/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.197459, size = 103, normalized size = 0.71

$$\frac{\sqrt[4]{c+dx}\left(d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-ad+2bc+bdx\right)}{3b(a+bx)^{3/2}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/4)/(a + b*x)^(5/2),x]
```

```
[Out] ((c + d*x)^(1/4)*(2*b*c - a*d + b*d*x + d*(a + b*x)*Sqrt[(d*(a +
b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*
x))/(b*c - a*d)]))/(3*b*(-(b*c) + a*d)*(a + b*x)^(3/2))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{dx+c}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/4)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(1/4)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/4)/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{4}}}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/4)/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{c+dx}}{(a+bx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/4)/(b*x+a)**(5/2),x)
```

```
[Out] Integral((c + d*x)**(1/4)/(a + b*x)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/4)/(b*x + a)^(5/2), x)
```

3.1635 $\int \frac{\sqrt[4]{c+dx}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=185

$$\frac{d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{6b^{5/4}\sqrt{a+bx}(bc-ad)^{7/4}}+\frac{d^2\sqrt[4]{c+dx}}{6b\sqrt{a+bx}(bc-ad)^2}-\frac{d\sqrt[4]{c+dx}}{15b(a+bx)^{3/2}(bc-ad)}-\frac{2\sqrt[4]{c+dx}}{5b(a+bx)^{5/2}}$$

```
[Out] (-2*(c + d*x)^(1/4))/(5*b*(a + b*x)^(5/2)) - (d*(c + d*x)^(1/4))/
(15*b*(b*c - a*d)*(a + b*x)^(3/2)) + (d^2*(c + d*x)^(1/4))/(6*b*(
b*c - a*d)^2*Sqrt[a + b*x]) + (d^2*Sqrt[-((d*(a + b*x))/(b*c - a*
d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)
], -1])/(6*b^(5/4)*(b*c - a*d)^(7/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.30493, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{6b^{5/4}\sqrt{a+bx}(bc-ad)^{7/4}}+\frac{d^2\sqrt[4]{c+dx}}{6b\sqrt{a+bx}(bc-ad)^2}-\frac{d\sqrt[4]{c+dx}}{15b(a+bx)^{3/2}(bc-ad)}-\frac{2\sqrt[4]{c+dx}}{5b(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/4)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(1/4))/(5*b*(a + b*x)^(5/2)) - (d*(c + d*x)^(1/4))/
(15*b*(b*c - a*d)*(a + b*x)^(3/2)) + (d^2*(c + d*x)^(1/4))/(6*b*(
b*c - a*d)^2*Sqrt[a + b*x]) + (d^2*Sqrt[-((d*(a + b*x))/(b*c - a*
d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)
], -1])/(6*b^(5/4)*(b*c - a*d)^(7/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 40.7991, size = 228, normalized size = 1.23

$$\frac{d^2\sqrt[4]{c+dx}}{6b\sqrt{a+bx}\,(ad-bc)^2}+\frac{d\sqrt[4]{c+dx}}{15b\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}-\frac{2\sqrt[4]{c+dx}}{5b\,(a+bx)^{\frac{5}{2}}}+\frac{d^2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{12b^{\frac{5}{4}}\,(ad-bc)^{\frac{7}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/4)/(b*x+a)**(7/2),x)
```

```
[Out] d**2*(c + d*x)**(1/4)/(6*b*sqrt(a + b*x)*(a*d - b*c)**2) + d*(c +
 d*x)**(1/4)/(15*b*(a + b*x)**(3/2)*(a*d - b*c)) - 2*(c + d*x)**(
1/4)/(5*b*(a + b*x)**(5/2)) + d**2*sqrt((a*d - b*c + b*(c + d*x))
/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(s
qrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1
/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(12*b**(5/4)*(a*d
- b*c)**(7/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.333263, size = 140, normalized size = 0.76

$$\frac{\sqrt[4]{c+dx}\left(-5a^2d^2+5d^2(a+bx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+2abd(11c+6dx)+b^2\left(-12c^2-2cdx+5d^2x^2\right)\right)}{30b(a+bx)^{5/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/4)/(a + b*x)^(7/2),x]
```

```
[Out] ((c + d*x)^(1/4)*(-5*a^2*d^2 + 2*a*b*d*(11*c + 6*d*x) + b^2*(-12*
c^2 - 2*c*d*x + 5*d^2*x^2) + 5*d^2*(a + b*x)^2*Sqrt[(d*(a + b*x))
/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(
b*c - a*d)]))/(30*b*(b*c - a*d)^2*(a + b*x)^(5/2))
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{dx+c}\,(bx+a)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/4)/(b*x+a)^(7/2),x)
```

```
[Out] int((d*x+c)^(1/4)/(b*x+a)^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{4}}}{(bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/4)/(b*x + a)^(7/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{4}}}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/4)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)*sqrt(b*x + a)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{c+dx}}{(a+bx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/4)/(b*x+a)**(7/2),x)
```

```
[Out] Integral((c + d*x)**(1/4)/(a + b*x)**(7/2), x)
```

GIAC/XCAS [A] time = 0.449926, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/4)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1636 $\int (a+bx)^{3/2}(c+dx)^{3/4}\,dx$

Optimal. Leaf size=270

$$-\frac{16(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{65b^{7/4}d^3\sqrt{a+bx}}+\frac{16(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{65b^{7/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}{65bd^2}+\frac{4(a+bx)^{3/2}(c+dx)^{3/4}(bc-ad)}{39bd}+\frac{4(a+bx)^{5/2}(c+dx)^{3/4}}{13b}$$

```
[Out] (-8*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4))/(65*b*d^2) + (4*
(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/4))/(39*b*d) + (4*(a + b
*x)^(5/2)*(c + d*x)^(3/4))/(13*b) + (16*(b*c - a*d)^(15/4)*Sqrt[-
((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^
(1/4))/(b*c - a*d)^(1/4)], -1])/(65*b^(7/4)*d^3*Sqrt[a + b*x]) -
(16*(b*c - a*d)^(15/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipti
cF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(65*
b^(7/4)*d^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.939521, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{16(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{65b^{7/4}d^3\sqrt{a+bx}}+\frac{16(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{65b^{7/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}{65bd^2}+\frac{4(a+bx)^{3/2}(c+dx)^{3/4}(bc-ad)}{39bd}+\frac{4(a+bx)^{5/2}(c+dx)^{3/4}}{13b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(3/4),x]
```


```
[Out] (-8*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4))/(65*b*d^2) + (4*
(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/4))/(39*b*d) + (4*(a + b
*x)^(5/2)*(c + d*x)^(3/4))/(13*b) + (16*(b*c - a*d)^(15/4)*Sqrt[-
((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^
(1/4))/(b*c - a*d)^(1/4)], -1])/(65*b^(7/4)*d^3*Sqrt[a + b*x]) -
(16*(b*c - a*d)^(15/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipti
cF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(65*
b^(7/4)*d^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 103.324, size = 456, normalized size = 1.69

$$\frac{4(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{7}{4}}}{13d}+\frac{8\sqrt{a+bx}\,(c+dx)^{\frac{7}{4}}(ad-bc)}{39d^2}+\frac{16\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}(ad-bc)^2}{195bd^2}-\frac{16\sqrt[4]{c+dx}\,(ad-bc)^{\frac{5}{2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{65b^{\frac{3}{2}}d^2\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{16\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{15}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{65b^{\frac{7}{4}}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{15}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{65b^{\frac{7}{4}}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(3/4),x)
```

```
[Out] 4*(a + b*x)**(3/2)*(c + d*x)**(7/4)/(13*d) + 8*sqrt(a + b*x)*(c +
 d*x)**(7/4)*(a*d - b*c)/(39*d**2) + 16*sqrt(a + b*x)*(c + d*x)**
(3/4)*(a*d - b*c)**2/(195*b*d**2) - 16*(c + d*x)**(1/4)*(a*d - b*
c)**(5/2)*sqrt(a - b*c/d + b*(c + d*x)/d)/(65*b**(3/2)*d**2*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 16*sqrt((a*d - b*c + b*
(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) +
1)**2))*(a*d - b*c)**(15/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c
) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(
1/4)), 1/2)/(65*b**(7/4)*d**3*sqrt(a - b*c/d + b*(c + d*x)/d)) -
8*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d
*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(15/4)*(sqrt(b)*sqrt(c
 + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)
**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(65*b**(7/4)*d**3*sqrt(a - b*c/
d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.271283, size = 141, normalized size = 0.52

$$-\frac{4(c+dx)^{3/4}\left(-d(a+bx)\left(4a^2d^2+abd(17c+25dx)+b^2\left(-6c^2+5cdx+15d^2x^2\right)\right)-4(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+\cdots}{bc-\cdots}\right.\right.}{195bd^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(3/4),x]
```

```
[Out] (-4*(c + d*x)^(3/4)*(-(d*(a + b*x)*(4*a^2*d^2 + a*b*d*(17*c + 25*
d*x) + b^2*(-6*c^2 + 5*c*d*x + 15*d^2*x^2))) - 4*(b*c - a*d)^3*Sq
rt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4,
 (b*(c + d*x))/(b*c - a*d)]))/(195*b*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} (dx+c)^{\frac{3}{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(3/2)*(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} (dx+c)^{\frac{3}{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((bx+a)^{\frac{3}{2}} (dx+c)^{\frac{3}{4}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)*(d*x + c)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{3}{2}} (c+dx)^{\frac{3}{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(3/4),x)
```

```
[Out] Integral((a + b*x)**(3/2)*(c + d*x)**(3/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(3/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(3/4), x)
```

3.1637 $\int \sqrt{a+bx}(c+dx)^{3/4}\,dx$

Optimal. Leaf size=232

$$\frac{8(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{7/4}d^2\sqrt{a+bx}} - \frac{8(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{7/4}d^2\sqrt{a+bx}} + \frac{4\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{15bd} + \frac{4(a+bx)^{3/2}(c+dx)^{3/4}}{9b}$$

```
[Out] (4*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4))/(15*b*d) + (4*(a +
b*x)^(3/2)*(c + d*x)^(3/4))/(9*b) - (8*(b*c - a*d)^(11/4)*Sqrt[-(
(d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(
1/4))/(b*c - a*d)^(1/4)], -1])/(15*b^(7/4)*d^2*Sqrt[a + b*x]) + (
8*(b*c - a*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF
[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(15*b^
(7/4)*d^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.726952, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{8(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{7/4}d^2\sqrt{a+bx}} - \frac{8(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{7/4}d^2\sqrt{a+bx}} + \frac{4\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{15bd} + \frac{4(a+bx)^{3/2}(c+dx)^{3/4}}{9b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(3/4),x]
```



```
[Out] (4*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4))/(15*b*d) + (4*(a +
b*x)^(3/2)*(c + d*x)^(3/4))/(9*b) - (8*(b*c - a*d)^(11/4)*Sqrt[-(
(d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(
1/4))/(b*c - a*d)^(1/4)], -1])/(15*b^(7/4)*d^2*Sqrt[a + b*x]) + (
8*(b*c - a*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF
[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(15*b^
(7/4)*d^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 83.4974, size = 420, normalized size = 1.81

$$\frac{4\sqrt{a+bx}\,(c+dx)^{\frac{7}{4}}}{9d}+\frac{8\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}\,(ad-bc)}{45bd}-\frac{8\sqrt[4]{c+dx}\,(ad-bc)^{\frac{3}{2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{15b^{\frac{3}{2}}d\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{7}{4}}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{4\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{7}{4}}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(3/4),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(7/4)/(9*d) + 8*sqrt(a + b*x)*(c + d*x
)**(3/4)*(a*d - b*c)/(45*b*d) - 8*(c + d*x)**(1/4)*(a*d - b*c)**(
3/2)*sqrt(a - b*c/d + b*(c + d*x)/d)/(15*b**(3/2)*d*(sqrt(b)*sqrt
(c + d*x)/sqrt(a*d - b*c) + 1)) + 8*sqrt((a*d - b*c + b*(c + d*x)
)/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(
a*d - b*c)**(11/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*el
liptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/
2)/(15*b**(7/4)*d**2*sqrt(a - b*c/d + b*(c + d*x)/d)) - 4*sqrt((a
*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(
a*d - b*c) + 1)**2))*(a*d - b*c)**(11/4)*(sqrt(b)*sqrt(c + d*x)/s
qrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(
a*d - b*c)**(1/4)), 1/2)/(15*b**(7/4)*d**2*sqrt(a - b*c/d + b*(c
+ d*x)/d))
```

Mathematica [C] time = 0.177267, size = 110, normalized size = 0.47

$$\frac{4(c+dx)^{3/4}\left(d(a+bx)(2ad+3bc+5bdx)-2(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)\right)}{45bd^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(3/4),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(d*(a + b*x)*(3*b*c + 2*a*d + 5*b*d*x) - 2*(b*
c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1
/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(45*b*d^2*Sqrt[a + b*x
])
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \sqrt{bx+a}\,(dx+c)^{\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(1/2)*(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}(dx+c)^{\frac{3}{4}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)*(d*x + c)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(3/4),x)
```

```
[Out] Integral(sqrt(a + b*x)*(c + d*x)**(3/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx + a}(dx + c)^{\frac{3}{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(3/4),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(3/4), x)
```

3.1638 $\int \frac{(c+dx)^{3/4}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=196

$$-\frac{12(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{7/4}d\sqrt{a+bx}}+\frac{12(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{7/4}d\sqrt{a+bx}}+\frac{4\sqrt{a+bx}(c+dx)^{3/4}}{5b}$$

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(3/4))/(5*b) + (12*(b*c - a*d)^(7/4)*S
qrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c +
d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*b^(7/4)*d*Sqrt[a + b*x])
- (12*(b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*
b^(7/4)*d*Sqrt[a + b*x])
```

Rubi [A] time = 0.652876, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$-\frac{12(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{7/4}d\sqrt{a+bx}}+\frac{12(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{7/4}d\sqrt{a+bx}}+\frac{4\sqrt{a+bx}(c+dx)^{3/4}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/4)/Sqrt[a + b*x],x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(3/4))/(5*b) + (12*(b*c - a*d)^(7/4)*S
qrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c +
d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*b^(7/4)*d*Sqrt[a + b*x])
- (12*(b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*
b^(7/4)*d*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 65.8739, size = 384, normalized size = 1.96

$$\frac{4\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}}{5b}-\frac{12\sqrt[4]{c+dx}\sqrt{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5b^{\frac{3}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{12\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{7}{4}}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{6\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{7}{4}}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/4)/(b*x+a)**(1/2),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(3/4)/(5*b) - 12*(c + d*x)**(1/4)*sqrt
(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*b**(3/2)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 12*sqrt((a*d - b*c + b*(c +
 d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**
2))*(a*d - b*c)**(7/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1
)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4))
, 1/2)/(5*b**(7/4)*d*sqrt(a - b*c/d + b*(c + d*x)/d)) - 6*sqrt((a
*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(
a*d - b*c) + 1)**2))*(a*d - b*c)**(7/4)*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/(5*b**(7/4)*d*sqrt(a - b*c/d + b*(c + d*x
)/d))
```

Mathematica [C] time = 0.159962, size = 93, normalized size = 0.47

$$\frac{4(c+dx)^{3/4}\left((bc-ad)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{5bd\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/4)/Sqrt[a + b*x],x]
```

```
[Out] (4*(c + d*x)^(3/4)*(d*(a + b*x) + (b*c - a*d)*Sqrt[(d*(a + b*x))/
(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b
*c - a*d)]))/(5*b*d*Sqrt[a + b*x])
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\left(dx+c\right)^{\frac{3}{4}}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/4)/(b*x+a)^(1/2),x)

[Out] int((d*x+c)^(3/4)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(dx+c\right)^{\frac{3}{4}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/sqrt(b*x + a),x, algorithm="maxima")

[Out] integrate((d*x + c)^(3/4)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(dx+c\right)^{\frac{3}{4}}}{\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/sqrt(b*x + a),x, algorithm="fricas")

[Out] integral((d*x + c)^(3/4)/sqrt(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(c+dx\right)^{\frac{3}{4}}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/4)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(3/4)/sqrt(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{4}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(3/4)/sqrt(b*x + a), x)
```

3.1639 $\int \frac{(c+dx)^{3/4}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=184

$$-\frac{6(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}}+\frac{6(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}}-\frac{2(c+dx)^{3/4}}{b\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(3/4))/(b*Sqrt[a + b*x]) + (6*(b*c - a*d)^(3/4)*Sqr
t[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*
x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(7/4)*Sqrt[a + b*x]) - (6*(
b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[Arc
Sin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(7/4)*S
qrt[a + b*x])
```

Rubi [A] time = 0.626476, antiderivative size = 184, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{6(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}}+\frac{6(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}}-\frac{2(c+dx)^{3/4}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/4)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*(c + d*x)^(3/4))/(b*Sqrt[a + b*x]) + (6*(b*c - a*d)^(3/4)*Sqr
t[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*
x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(7/4)*Sqrt[a + b*x]) - (6*(
b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[Arc
Sin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(7/4)*S
qrt[a + b*x])
```

Rubi in Sympy [A] time = 64.3171, size = 376, normalized size = 2.04

$$-\frac{2(c+dx)^{\frac{3}{4}}}{b\sqrt{a+bx}}+\frac{6d\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{b^{\frac{3}{2}}\sqrt{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{6\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{7}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{3\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{7}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/4)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(3/4)/(b*sqrt(a + b*x)) + 6*d*(c + d*x)**(1/4)*sqrt
(a - b*c/d + b*(c + d*x)/d)/(b**(3/2)*sqrt(a*d - b*c)*(sqrt(b)*sq
rt(c + d*x)/sqrt(a*d - b*c) + 1)) - 6*sqrt((a*d - b*c + b*(c + d*
x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))
*(a*d - b*c)**(3/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*e
lliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1
/2)/(b**(7/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 3*sqrt((a*d - b*
c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b
*c) + 1)**2))*(a*d - b*c)**(3/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d
- b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*
c)**(1/4)), 1/2)/(b**(7/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.0962483, size = 74, normalized size = 0.4

$$\frac{2(c+dx)^{3/4}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/4)/(a + b*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(3/4)*(-1 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(b*Sqrt[
a + b*x])
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{3}{4}}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/4)/(b*x+a)^(3/2),x)

[Out] int((d*x+c)^(3/4)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{4}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(3/2),x, algorithm="maxima")

[Out] integrate((d*x + c)^(3/4)/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{3}{4}}}{(bx+a)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(3/2),x, algorithm="fricas")

[Out] integral((d*x + c)^(3/4)/(b*x + a)^(3/2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{3}{4}}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/4)/(b*x+a)**(3/2),x)

[Out] Integral((c + d*x)**(3/4)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{4}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(3/2),x, algorithm="giac")

[Out] integrate((d*x + c)^(3/4)/(b*x + a)^(3/2), x)
```

3.1640 $\int \frac{(c+dx)^{3/4}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=221

$$-\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}+\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}-\frac{d(c+dx)^{3/4}}{b\sqrt{a+bx}(bc-ad)}-\frac{2(c+dx)^{3/4}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(3/4))/(3*b*(a + b*x)^(3/2)) - (d*(c + d*x)^(3/4))/
(b*(b*c - a*d)*Sqrt[a + b*x]) + (d*Sqrt[-((d*(a + b*x))/(b*c - a*
d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)
], -1])/(b^(7/4)*(b*c - a*d)^(1/4)*Sqrt[a + b*x]) - (d*Sqrt[-((d*
(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4
))/(b*c - a*d)^(1/4)], -1])/(b^(7/4)*(b*c - a*d)^(1/4)*Sqrt[a + b
*x])
```

Rubi [A] time = 0.675101, antiderivative size = 221, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$-\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}+\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{7/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}-\frac{d(c+dx)^{3/4}}{b\sqrt{a+bx}(bc-ad)}-\frac{2(c+dx)^{3/4}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/4)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*(c + d*x)^(3/4))/(3*b*(a + b*x)^(3/2)) - (d*(c + d*x)^(3/4))/
(b*(b*c - a*d)*Sqrt[a + b*x]) + (d*Sqrt[-((d*(a + b*x))/(b*c - a*
d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)
], -1])/(b^(7/4)*(b*c - a*d)^(1/4)*Sqrt[a + b*x]) - (d*Sqrt[-((d*
(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4
))/(b*c - a*d)^(1/4)], -1])/(b^(7/4)*(b*c - a*d)^(1/4)*Sqrt[a + b
*x])
```

Rubi in Sympy [A] time = 80.8208, size = 406, normalized size = 1.84

$$\frac{d\,(c+dx)^{\frac{3}{4}}}{b\sqrt{a+bx}\,(ad-bc)}-\frac{2\,(c+dx)^{\frac{3}{4}}}{3b\,(a+bx)^{\frac{3}{2}}}-\frac{d^2\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{b^{\frac{3}{2}}\,(ad-bc)^{\frac{3}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{7}{4}}\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{2b^{\frac{7}{4}}\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/4)/(b*x+a)**(5/2),x)
```

```
[Out] d*(c + d*x)**(3/4)/(b*sqrt(a + b*x)*(a*d - b*c)) - 2*(c + d*x)**(
3/4)/(3*b*(a + b*x)**(3/2)) - d**2*(c + d*x)**(1/4)*sqrt(a - b*c/
d + b*(c + d*x)/d)/(b**(3/2)*(a*d - b*c)**(3/2)*(sqrt(b)*sqrt(c +
 d*x)/sqrt(a*d - b*c) + 1)) + d*sqrt((a*d - b*c + b*(c + d*x))/((
a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)
*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(b**(7/4)*(a*d - b*c)
**(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) - d*sqrt((a*d - b*c + b*
(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) +
1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*
atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(2*b**(7
/4)*(a*d - b*c)**(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.227657, size = 104, normalized size = 0.47

$$\frac{(c+dx)^{3/4}\left(-d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+ad+2bc+3bdx\right)}{3b(a+bx)^{3/2}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/4)/(a + b*x)^(5/2),x]
```

```
[Out] ((c + d*x)^(3/4)*(2*b*c + a*d + 3*b*d*x - d*(a + b*x)*Sqrt[(d*(a
+ b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c +
d*x))/(b*c - a*d)]))/(3*b*(-(b*c) + a*d)*(a + b*x)^(3/2))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{3}{4}}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/4)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(3/4)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{4}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(3/4)/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{3}{4}}}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(3/4)/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{3}{4}}}{(a+bx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/4)/(b*x+a)**(5/2),x)
```

```
[Out] Integral((c + d*x)**(3/4)/(a + b*x)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{4}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(3/4)/(b*x + a)^(5/2), x)
```

3.1641 $\int \frac{(c+dx)^{3/4}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=270

$$\frac{3d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{10b^{7/4}\sqrt{a+bx}(bc-ad)^{5/4}}-\frac{3d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{10b^{7/4}\sqrt{a+bx}(bc-ad)^{5/4}}+\frac{3d^2(c+dx)^{3/4}}{10b\sqrt{a+bx}(bc-ad)^2}-\frac{d(c+dx)^{3/4}}{5b(a+bx)^{3/2}(bc-ad)}-\frac{2(c+dx)^{3/4}}{5b(a+bx)^{5/2}}$$

```
[Out] (-2*(c + d*x)^(3/4))/(5*b*(a + b*x)^(5/2)) - (d*(c + d*x)^(3/4))/
(5*b*(b*c - a*d)*(a + b*x)^(3/2)) + (3*d^2*(c + d*x)^(3/4))/(10*b
*(b*c - a*d)^2*Sqrt[a + b*x]) - (3*d^2*Sqrt[-((d*(a + b*x))/(b*c
- a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(
1/4)], -1])/(10*b^(7/4)*(b*c - a*d)^(5/4)*Sqrt[a + b*x]) + (3*d^2
*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c
+ d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(10*b^(7/4)*(b*c - a*d)^(5
/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.781017, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$\frac{3d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{10b^{7/4}\sqrt{a+bx}(bc-ad)^{5/4}}-\frac{3d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{10b^{7/4}\sqrt{a+bx}(bc-ad)^{5/4}}+\frac{3d^2(c+dx)^{3/4}}{10b\sqrt{a+bx}(bc-ad)^2}-\frac{d(c+dx)^{3/4}}{5b(a+bx)^{3/2}(bc-ad)}-\frac{2(c+dx)^{3/4}}{5b(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(3/4)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(3/4))/(5*b*(a + b*x)^(5/2)) - (d*(c + d*x)^(3/4))/
(5*b*(b*c - a*d)*(a + b*x)^(3/2)) + (3*d^2*(c + d*x)^(3/4))/(10*b
*(b*c - a*d)^2*Sqrt[a + b*x]) - (3*d^2*Sqrt[-((d*(a + b*x))/(b*c
- a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(
1/4)], -1])/(10*b^(7/4)*(b*c - a*d)^(5/4)*Sqrt[a + b*x]) + (3*d^2
*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c
+ d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(10*b^(7/4)*(b*c - a*d)^(5
/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 102.207, size = 454, normalized size = 1.68

$$\frac{3d^2(c+dx)^{\frac{3}{4}}}{10b\sqrt{a+bx}\,(ad-bc)^2}+\frac{d\,(c+dx)^{\frac{3}{4}}}{5b\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}-\frac{2\,(c+dx)^{\frac{3}{4}}}{5b\,(a+bx)^{\frac{5}{2}}}-\frac{3d^3\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{10b^{\frac{3}{2}}\,(ad-bc)^{\frac{5}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}$$
$$+\frac{3d^2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{10b^{\frac{7}{4}}\,(ad-bc)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$
$$-\frac{3d^2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{20b^{\frac{7}{4}}\,(ad-bc)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(3/4)/(b*x+a)**(7/2),x)
```

```
[Out] 3*d**2*(c + d*x)**(3/4)/(10*b*sqrt(a + b*x)*(a*d - b*c)**2) + d*(
c + d*x)**(3/4)/(5*b*(a + b*x)**(3/2)*(a*d - b*c)) - 2*(c + d*x)*
*(3/4)/(5*b*(a + b*x)**(5/2)) - 3*d**3*(c + d*x)**(1/4)*sqrt(a -
b*c/d + b*(c + d*x)/d)/(10*b**(3/2)*(a*d - b*c)**(5/2)*(sqrt(b)*s
qrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 3*d**2*sqrt((a*d - b*c + b*(
c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1
)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*a
tan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(10*b**(7
/4)*(a*d - b*c)**(5/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 3*d**2*
sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x
)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c
) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(
1/4)), 1/2)/(20*b**(7/4)*(a*d - b*c)**(5/4)*sqrt(a - b*c/d + b*(c
 + d*x)/d))
```

Mathematica [C] time = 0.326375, size = 140, normalized size = 0.52

$$\frac{(c+dx)^{3/4}\left(a^2d^2-d^2(a+bx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+2abd(3c+4dx)+b^2\left(-\left(4c^2+2cdx-3d^2x^2\right)\right)\right)}{10b(a+bx)^{5/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(3/4)/(a + b*x)^(7/2),x]
```

```
[Out] ((c + d*x)^(3/4)*(a^2*d^2 + 2*a*b*d*(3*c + 4*d*x) - b^2*(4*c^2 +
2*c*d*x - 3*d^2*x^2) - d^2*(a + b*x)^2*Sqrt[(d*(a + b*x))/(-(b*c)
 + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*
```

```
d)]))/(10*b*(b*c - a*d)^2*(a + b*x)^(5/2))
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{3}{4}}\,(bx+a)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(3/4)/(b*x+a)^(7/2),x)
```

```
[Out] int((d*x+c)^(3/4)/(b*x+a)^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{3}{4}}}{(bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(3/4)/(b*x + a)^(7/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{3}{4}}}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(3/4)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)*sqrt(b*x + a)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{3}{4}}}{(a+bx)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(3/4)/(b*x+a)**(7/2),x)
```

```
[Out] Integral((c + d*x)**(3/4)/(a + b*x)**(7/2), x)
```

GIAC/XCAS [A] time = 0.503108, size = 1, normalized size = 0.

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(3/4)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1642 $\int (a+bx)^{3/2}(c+dx)^{5/4}\,dx$

Optimal. Leaf size=220

$$\frac{16(bc-ad)^{17/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{231b^{9/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^3}{231b^2d^2}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)^2}{231b^2d}+\frac{4(a+bx)^{5/2}\sqrt[4]{c+dx}(bc-ad)}{33b^2}+\frac{4(a+bx)^{5/2}(c+dx)^{5/4}}{15b}$$

```
[Out] (-8*(b*c - a*d)^3*Sqrt[a + b*x]*(c + d*x)^(1/4))/(231*b^2*d^2) +
(4*(b*c - a*d)^2*(a + b*x)^(3/2)*(c + d*x)^(1/4))/(231*b^2*d) + (
4*(b*c - a*d)*(a + b*x)^(5/2)*(c + d*x)^(1/4))/(33*b^2) + (4*(a +
 b*x)^(5/2)*(c + d*x)^(5/4))/(15*b) + (16*(b*c - a*d)^(17/4)*Sqrt
[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x
)^(1/4))/(b*c - a*d)^(1/4)], -1])/(231*b^(9/4)*d^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.416716, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{16(bc-ad)^{17/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{231b^{9/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^3}{231b^2d^2}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)^2}{231b^2d}+\frac{4(a+bx)^{5/2}\sqrt[4]{c+dx}(bc-ad)}{33b^2}+\frac{4(a+bx)^{5/2}(c+dx)^{5/4}}{15b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(5/4),x]
```

```
[Out] (-8*(b*c - a*d)^3*Sqrt[a + b*x]*(c + d*x)^(1/4))/(231*b^2*d^2) +
(4*(b*c - a*d)^2*(a + b*x)^(3/2)*(c + d*x)^(1/4))/(231*b^2*d) + (
4*(b*c - a*d)*(a + b*x)^(5/2)*(c + d*x)^(1/4))/(33*b^2) + (4*(a +
 b*x)^(5/2)*(c + d*x)^(5/4))/(15*b) + (16*(b*c - a*d)^(17/4)*Sqrt
[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x
)^(1/4))/(b*c - a*d)^(1/4)], -1])/(231*b^(9/4)*d^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 54.4552, size = 269, normalized size = 1.22

$$\frac{4(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{9}{4}}}{15d}+\frac{8\sqrt{a+bx}\,(c+dx)^{\frac{9}{4}}(ad-bc)}{55d^2}+\frac{16\sqrt{a+bx}\,(c+dx)^{\frac{5}{4}}(ad-bc)^2}{385bd^2}-\frac{16\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)^3}{231b^2d^2}+\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{17}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{231b^{\frac{9}{4}}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(5/4),x)
```

```
[Out] 4*(a + b*x)**(3/2)*(c + d*x)**(9/4)/(15*d) + 8*sqrt(a + b*x)*(c +
 d*x)**(9/4)*(a*d - b*c)/(55*d**2) + 16*sqrt(a + b*x)*(c + d*x)**
(5/4)*(a*d - b*c)**2/(385*b*d**2) - 16*sqrt(a + b*x)*(c + d*x)**(
1/4)*(a*d - b*c)**3/(231*b**2*d**2) + 8*sqrt((a*d - b*c + b*(c +
d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2
))*(a*d - b*c)**(17/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1
)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4))
, 1/2)/(231*b**(9/4)*d**3*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.366982, size = 182, normalized size = 0.83

$$\frac{4\sqrt[4]{c+dx}\left(20(bc-ad)^4\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)\left(20a^3d^3-12a^2bd^2(6c+dx)-ab^2d\left(35c^2+214cdx+119\right.\right.\right.}{1155b^2d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(5/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-(d*(a + b*x)*(20*a^3*d^3 - 12*a^2*b*d^2*(6*c
 + d*x) - a*b^2*d*(35*c^2 + 214*c*d*x + 119*d^2*x^2) + b^3*(10*c^
3 - 5*c^2*d*x - 112*c*d^2*x^2 - 77*d^3*x^3))) + 20*(b*c - a*d)^4*
Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/
4, (b*(c + d*x))/(b*c - a*d)]))/(1155*b^2*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(3/2)*(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(bdx^2+ac+(bc+ad)x\right)\sqrt{bx+a}(dx+c)^{\frac{1}{4}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral((b*d*x^2 + a*c + (b*c + a*d)*x)*sqrt(b*x + a)*(d*x + c)^
(1/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{\frac{3}{2}} (dx + c)^{\frac{5}{4}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/4),x, algorithm="giac")

[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(5/4), x)
```

3.1643 $\int \sqrt{a+bx}(c+dx)^{5/4}\,dx$

Optimal. Leaf size=182

$$-\frac{40(bc-ad)^{13/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{231b^{9/4}d^2\sqrt{a+bx}}+\frac{20\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{231b^2d}+\frac{20(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}{77b^2}+\frac{4(a+bx)^{3/2}(c+dx)^{5/4}}{11b}$$

```
[Out] (20*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4))/(231*b^2*d) + (2
0*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/4))/(77*b^2) + (4*(a +
 b*x)^(3/2)*(c + d*x)^(5/4))/(11*b) - (40*(b*c - a*d)^(13/4)*Sqrt
[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x
)^(1/4))/(b*c - a*d)^(1/4)], -1])/(231*b^(9/4)*d^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.279924, antiderivative size = 182, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{40(bc-ad)^{13/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{231b^{9/4}d^2\sqrt{a+bx}}+\frac{20\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{231b^2d}+\frac{20(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}{77b^2}+\frac{4(a+bx)^{3/2}(c+dx)^{5/4}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(5/4),x]
```

```
[Out] (20*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4))/(231*b^2*d) + (2
0*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/4))/(77*b^2) + (4*(a +
 b*x)^(3/2)*(c + d*x)^(5/4))/(11*b) - (40*(b*c - a*d)^(13/4)*Sqrt
[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x
)^(1/4))/(b*c - a*d)^(1/4)], -1])/(231*b^(9/4)*d^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 40.9237, size = 233, normalized size = 1.28

$$\frac{4\sqrt{a+bx}\,(c+dx)^{\frac{9}{4}}}{11d}+\frac{8\sqrt{a+bx}\,(c+dx)^{\frac{5}{4}}\,(ad-bc)}{77bd}-\frac{40\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)^2}{231b^2d}+\frac{20\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{13}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{231b^{\frac{9}{4}}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(5/4),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(9/4)/(11*d) + 8*sqrt(a + b*x)*(c + d*
x)**(5/4)*(a*d - b*c)/(77*b*d) - 40*sqrt(a + b*x)*(c + d*x)**(1/4
)*(a*d - b*c)**2/(231*b**2*d) + 20*sqrt((a*d - b*c + b*(c + d*x))
/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a
*d - b*c)**(13/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ell
iptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2
)/(231*b**(9/4)*d**2*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.274081, size = 143, normalized size = 0.79

$$\frac{4\sqrt[4]{c+dx}\left(-d(a+bx)\left(10a^2d^2-2abd(13c+3dx)+b^2\left(-\left(5c^2+36cdx+21d^2x^2\right)\right)\right)-10(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(\cdots}{b\cdots}\right.\right.}{231b^2d^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(5/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-(d*(a + b*x)*(10*a^2*d^2 - 2*a*b*d*(13*c + 3
*d*x) - b^2*(5*c^2 + 36*c*d*x + 21*d^2*x^2))) - 10*(b*c - a*d)^3*
Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/
4, (b*(c + d*x))/(b*c - a*d)]))/(231*b^2*d^2*Sqrt[a + b*x])
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int \sqrt{bx+a}\,(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(1/2)*(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}(dx+c)^{\frac{5}{4}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)*(d*x + c)^(5/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(5/4), x)
```

3.1644 $\int \frac{(c+dx)^{5/4}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=144

$$\frac{20(bc-ad)^{9/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{21b^{9/4}d\sqrt{a+bx}}+\frac{20\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}{21b^2}+\frac{4\sqrt{a+bx}(c+dx)^{5/4}}{7b}$$

```
[Out] (20*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))/(21*b^2) + (4*Sqrt
[a + b*x]*(c + d*x)^(5/4))/(7*b) + (20*(b*c - a*d)^(9/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(21*b^(9/4)*d*Sqrt[a + b*x])
```

Rubi [A] time = 0.207746, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{20(bc-ad)^{9/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{21b^{9/4}d\sqrt{a+bx}}+\frac{20\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}{21b^2}+\frac{4\sqrt{a+bx}(c+dx)^{5/4}}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/Sqrt[a + b*x],x]
```

```
[Out] (20*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))/(21*b^2) + (4*Sqrt
[a + b*x]*(c + d*x)^(5/4))/(7*b) + (20*(b*c - a*d)^(9/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(21*b^(9/4)*d*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 29.9499, size = 197, normalized size = 1.37

$$\frac{4\sqrt{a+bx}\,(c+dx)^{\frac{5}{4}}}{7b}-\frac{20\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)}{21b^2}+\frac{10\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{9}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{21b^{\frac{9}{4}}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(1/2),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(5/4)/(7*b) - 20*sqrt(a + b*x)*(c + d*
x)**(1/4)*(a*d - b*c)/(21*b**2) + 10*sqrt((a*d - b*c + b*(c + d*x
))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*
(a*d - b*c)**(9/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*el
liptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/
2)/(21*b**(9/4)*d*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.206123, size = 111, normalized size = 0.77

$$\frac{4\sqrt[4]{c+dx}\left(5(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(5ad-8bc-3bdx)\right)}{21b^2d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/Sqrt[a + b*x],x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-(d*(a + b*x)*(-8*b*c + 5*a*d - 3*b*d*x)) + 5
*(b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2
F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(21*b^2*d*Sqrt[a +
 b*x])
```

Maple [F] time = 0.041, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(1/2),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/sqrt(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{5}{4}}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(5/4)/sqrt(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/sqrt(b*x + a), x)
```

3.1645 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=132

$$\frac{10(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{9/4}\sqrt{a+bx}}+\frac{10d\sqrt{a+bx}\sqrt[4]{c+dx}}{3b^2}-\frac{2(c+dx)^{5/4}}{b\sqrt{a+bx}}$$

```
[Out] (10*d*Sqrt[a + b*x]*(c + d*x)^(1/4))/(3*b^2) - (2*(c + d*x)^(5/4)
)/(b*Sqrt[a + b*x]) + (10*(b*c - a*d)^(5/4)*Sqrt[-((d*(a + b*x))/
(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a
*d)^(1/4)], -1])/(3*b^(9/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.192153, antiderivative size = 132, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$\frac{10(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{9/4}\sqrt{a+bx}}+\frac{10d\sqrt{a+bx}\sqrt[4]{c+dx}}{3b^2}-\frac{2(c+dx)^{5/4}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(3/2),x]
```

```
[Out] (10*d*Sqrt[a + b*x]*(c + d*x)^(1/4))/(3*b^2) - (2*(c + d*x)^(5/4)
)/(b*Sqrt[a + b*x]) + (10*(b*c - a*d)^(5/4)*Sqrt[-((d*(a + b*x))/
(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a
*d)^(1/4)], -1])/(3*b^(9/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 29.2521, size = 189, normalized size = 1.43

$$-\frac{2\left(c+dx\right)^{\frac{5}{4}}}{b\sqrt{a+bx}}+\frac{10d\sqrt{a+bx}\sqrt[4]{c+dx}}{3b^2}-\frac{5\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(ad-bc\right)^{\frac{5}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3b^{\frac{9}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(5/4)/(b*sqrt(a + b*x)) + 10*d*sqrt(a + b*x)*(c + d
*x)**(1/4)/(3*b**2) - 5*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*
c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**
(5/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*at
an(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(3*b**(9/4
)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.177141, size = 95, normalized size = 0.72

$$-\frac{2\sqrt[4]{c+dx}\left(\frac{5d(a+bx)\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}-5ad+3bc-2bdx\right)}{3b^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*(c + d*x)^(1/4)*(3*b*c - 5*a*d - 2*b*d*x + (5*d*(a + b*x)*Hyp
ergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d
*(a + b*x))/(-(b*c) + a*d)]))/(3*b^2*Sqrt[a + b*x])
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(3/2),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/(b*x + a)^(3/2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{5}{4}}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(3/2),x)
```

```
[Out] Integral((c + d*x)**(5/4)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(3/2), x)
```

3.1646 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=135

$$\frac{5d\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{9/4}\sqrt{a+bx}}-\frac{5d\sqrt[4]{c+dx}}{3b^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/4}}{3b(a+bx)^{3/2}}$$

```
[Out] (-5*d*(c + d*x)^(1/4))/(3*b^2*Sqrt[a + b*x]) - (2*(c + d*x)^(5/4)
)/(3*b*(a + b*x)^(3/2)) + (5*d*(b*c - a*d)^(1/4)*Sqrt[-((d*(a + b
*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*
c - a*d)^(1/4)], -1])/(3*b^(9/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.188186, antiderivative size = 135, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{5d\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3b^{9/4}\sqrt{a+bx}}-\frac{5d\sqrt[4]{c+dx}}{3b^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/4}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(5/2),x]
```

```
[Out] (-5*d*(c + d*x)^(1/4))/(3*b^2*Sqrt[a + b*x]) - (2*(c + d*x)^(5/4)
)/(3*b*(a + b*x)^(3/2)) + (5*d*(b*c - a*d)^(1/4)*Sqrt[-((d*(a + b
*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*
c - a*d)^(1/4)], -1])/(3*b^(9/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 28.0572, size = 192, normalized size = 1.42

$$-\frac{2\left(c+dx\right)^{\frac{5}{4}}}{3b\left(a+bx\right)^{\frac{3}{2}}}-\frac{5d\sqrt[4]{c+dx}}{3b^2\sqrt{a+bx}}+\frac{5d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\sqrt[4]{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{6b^{\frac{9}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(5/2),x)
```

```
[Out] -2*(c + d*x)**(5/4)/(3*b*(a + b*x)**(3/2)) - 5*d*(c + d*x)**(1/4)
/(3*b**2*sqrt(a + b*x)) + 5*d*sqrt((a*d - b*c + b*(c + d*x))/((a*
d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d -
```

```
b*c)**(1/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_
f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(6*b
**(9/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.20178, size = 95, normalized size = 0.7

$$\frac{\sqrt[4]{c+dx}\left(5d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-5ad-2bc-7bdx\right)}{3b^2(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(5/2),x]
```

```
[Out] ((c + d*x)^(1/4)*(-2*b*c - 5*a*d - 7*b*d*x + 5*d*(a + b*x)*Sqrt[(
d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*
(c + d*x))/(b*c - a*d)]))/(3*b^2*(a + b*x)^(3/2))
```

Maple [F] time = 0.064, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(c+dx)^{\frac{5}{4}}}{(a+bx)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(5/2),x)
```

```
[Out] Integral((c + d*x)**(5/4)/(a + b*x)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(5/2), x)
```

3.1647 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=175

$$-\frac{d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{6b^{9/4}\sqrt{a+bx}(bc-ad)^{3/4}}-\frac{d^2\sqrt[4]{c+dx}}{6b^2\sqrt{a+bx}(bc-ad)}-\frac{d\sqrt[4]{c+dx}}{3b^2(a+bx)^{3/2}}-\frac{2(c+dx)^{5/4}}{5b(a+bx)^{5/2}}$$

```
[Out] -(d*(c + d*x)^(1/4))/(3*b^2*(a + b*x)^(3/2)) - (d^2*(c + d*x)^(1/
4))/(6*b^2*(b*c - a*d)*Sqrt[a + b*x]) - (2*(c + d*x)^(5/4))/(5*b*
(a + b*x)^(5/2)) - (d^2*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(6*
b^(9/4)*(b*c - a*d)^(3/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.249855, antiderivative size = 175, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{d^2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{6b^{9/4}\sqrt{a+bx}(bc-ad)^{3/4}}-\frac{d^2\sqrt[4]{c+dx}}{6b^2\sqrt{a+bx}(bc-ad)}-\frac{d\sqrt[4]{c+dx}}{3b^2(a+bx)^{3/2}}-\frac{2(c+dx)^{5/4}}{5b(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(7/2),x]
```

```
[Out] -(d*(c + d*x)^(1/4))/(3*b^2*(a + b*x)^(3/2)) - (d^2*(c + d*x)^(1/
4))/(6*b^2*(b*c - a*d)*Sqrt[a + b*x]) - (2*(c + d*x)^(5/4))/(5*b*
(a + b*x)^(5/2)) - (d^2*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(6*
b^(9/4)*(b*c - a*d)^(3/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 38.2771, size = 223, normalized size = 1.27

$$-\frac{2\left(c+dx\right)^{\frac{5}{4}}}{5b\left(a+bx\right)^{\frac{5}{2}}}+\frac{d^2\sqrt[4]{c+dx}}{6b^2\sqrt{a+bx}\left(ad-bc\right)}-\frac{d\sqrt[4]{c+dx}}{3b^2\left(a+bx\right)^{\frac{3}{2}}}+\frac{d^2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{12b^{\frac{9}{4}}\left(ad-bc\right)^{\frac{3}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(7/2),x)
```

```
[Out] -2*(c + d*x)**(5/4)/(5*b*(a + b*x)**(5/2)) + d**2*(c + d*x)**(1/4
)/(6*b**2*sqrt(a + b*x)*(a*d - b*c)) - d*(c + d*x)**(1/4)/(3*b**2
*(a + b*x)**(3/2)) + d**2*sqrt((a*d - b*c + b*(c + d*x))/((a*d -
b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sq
rt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c +
d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(12*b**(9/4)*(a*d - b*c)**(
3/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.366704, size = 138, normalized size = 0.79

$$\frac{\sqrt[4]{c+dx}\left(-5a^2d^2+5d^2(a+bx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-2abd(c+6dx)+b^2\left(12c^2+22cdx+5d^2x^2\right)\right)}{30b^2(a+bx)^{5/2}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(7/2),x]
```

```
[Out] ((c + d*x)^(1/4)*(-5*a^2*d^2 - 2*a*b*d*(c + 6*d*x) + b^2*(12*c^2
+ 22*c*d*x + 5*d^2*x^2) + 5*d^2*(a + b*x)^2*Sqrt[(d*(a + b*x))/(-
(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c
 - a*d)]))/(30*b^2*(-(b*c) + a*d)*(a + b*x)^(5/2))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(7/2),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(7/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)*sqrt(b*x + a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.463258, size = 1, normalized size = 0.01

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1648 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{9/2}}\,dx$

Optimal. Leaf size=213

$$\frac{5d^3\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{84b^{9/4}\sqrt{a+bx}(bc-ad)^{7/4}}+\frac{5d^3\sqrt[4]{c+dx}}{84b^2\sqrt{a+bx}(bc-ad)^2}-\frac{d^2\sqrt[4]{c+dx}}{42b^2(a+bx)^{3/2}(bc-ad)}-\frac{d\sqrt[4]{c+dx}}{7b^2(a+bx)^{5/2}}-\frac{2(c+dx)^{5/4}}{7b(a+bx)^{7/2}}$$

```
[Out] -(d*(c + d*x)^(1/4))/(7*b^2*(a + b*x)^(5/2)) - (d^2*(c + d*x)^(1/
4))/(42*b^2*(b*c - a*d)*(a + b*x)^(3/2)) + (5*d^3*(c + d*x)^(1/4)
)/(84*b^2*(b*c - a*d)^2*Sqrt[a + b*x]) - (2*(c + d*x)^(5/4))/(7*b
*(a + b*x)^(7/2)) + (5*d^3*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ell
ipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/
(84*b^(9/4)*(b*c - a*d)^(7/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.305429, antiderivative size = 213, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{5d^3\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{84b^{9/4}\sqrt{a+bx}(bc-ad)^{7/4}}+\frac{5d^3\sqrt[4]{c+dx}}{84b^2\sqrt{a+bx}(bc-ad)^2}-\frac{d^2\sqrt[4]{c+dx}}{42b^2(a+bx)^{3/2}(bc-ad)}-\frac{d\sqrt[4]{c+dx}}{7b^2(a+bx)^{5/2}}-\frac{2(c+dx)^{5/4}}{7b(a+bx)^{7/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(9/2),x]
```

```
[Out] -(d*(c + d*x)^(1/4))/(7*b^2*(a + b*x)^(5/2)) - (d^2*(c + d*x)^(1/
4))/(42*b^2*(b*c - a*d)*(a + b*x)^(3/2)) + (5*d^3*(c + d*x)^(1/4)
)/(84*b^2*(b*c - a*d)^2*Sqrt[a + b*x]) - (2*(c + d*x)^(5/4))/(7*b
*(a + b*x)^(7/2)) + (5*d^3*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ell
ipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/
(84*b^(9/4)*(b*c - a*d)^(7/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 52.0886, size = 260, normalized size = 1.22

$$-\frac{2(c+dx)^{\frac{5}{4}}}{7b(a+bx)^{\frac{7}{2}}}+\frac{5d^3\sqrt[4]{c+dx}}{84b^2\sqrt{a+bx}(ad-bc)^2}+\frac{d^2\sqrt[4]{c+dx}}{42b^2(a+bx)^{\frac{3}{2}}(ad-bc)}-\frac{d\sqrt[4]{c+dx}}{7b^2(a+bx)^{\frac{5}{2}}}+\frac{5d^3\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{168b^{\frac{9}{4}}(ad-bc)^{\frac{7}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(9/2),x)
```

```
[Out] -2*(c + d*x)**(5/4)/(7*b*(a + b*x)**(7/2)) + 5*d**3*(c + d*x)**(1
/4)/(84*b**2*sqrt(a + b*x)*(a*d - b*c)**2) + d**2*(c + d*x)**(1/4
)/(42*b**2*(a + b*x)**(3/2)*(a*d - b*c)) - d*(c + d*x)**(1/4)/(7*
b**2*(a + b*x)**(5/2)) + 5*d**3*sqrt((a*d - b*c + b*(c + d*x))/((
a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)
*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(168*b**(9/4)*(a*d -
b*c)**(7/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.334209, size = 181, normalized size = 0.85

$$\frac{\sqrt[4]{c+dx}\left(-5a^3d^3-a^2bd^2(2c+17dx)+ab^2d\left(36c^2+68cdx+17d^2x^2\right)+5d^3(a+bx)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+b^3\left(-\right.\right.}{84b^2(a+bx)^{7/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(9/2),x]
```

```
[Out] ((c + d*x)^(1/4)*(-5*a^3*d^3 - a^2*b*d^2*(2*c + 17*d*x) + a*b^2*d
*(36*c^2 + 68*c*d*x + 17*d^2*x^2) - b^3*(24*c^3 + 36*c^2*d*x + 2*
c*d^2*x^2 - 5*d^3*x^3) + 5*d^3*(a + b*x)^3*Sqrt[(d*(a + b*x))/(-(
b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c
- a*d)]))/(84*b^2*(b*c - a*d)^2*(a + b*x)^(7/2))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}(bx+a)^{-\frac{9}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(9/2),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(9/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(9/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(9/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/((b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2
+ 4*a^3*b*x + a^4)*sqrt(b*x + a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(9/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.680455, size = 1, normalized size = 0.

$$Done$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(9/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1649 $\int \frac{(a+bx)^{5/2}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=264

$$\frac{32(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{39b^{3/4}d^4\sqrt{a+bx}} - \frac{32(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{39b^{3/4}d^4\sqrt{a+bx}} + \frac{16\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}{39d^3} - \frac{40(a+bx)^{3/2}(c+dx)^{3/4}(bc-ad)}{117d^2} + \frac{4(a+bx)^{5/2}(c+dx)^{3/4}}{13d}$$

```
[Out] (16*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4))/(39*d^3) - (40*(
b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/4))/(117*d^2) + (4*(a + b
*x)^(5/2)*(c + d*x)^(3/4))/(13*d) - (32*(b*c - a*d)^(15/4)*Sqrt[-
((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^
(1/4))/(b*c - a*d)^(1/4)], -1])/(39*b^(3/4)*d^4*Sqrt[a + b*x]) +
(32*(b*c - a*d)^(15/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipti
cF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(39*
b^(3/4)*d^4*Sqrt[a + b*x])
```

Rubi [A] time = 0.828385, antiderivative size = 264, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{32(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{39b^{3/4}d^4\sqrt{a+bx}} - \frac{32(bc-ad)^{15/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{39b^{3/4}d^4\sqrt{a+bx}} + \frac{16\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}{39d^3} - \frac{40(a+bx)^{3/2}(c+dx)^{3/4}(bc-ad)}{117d^2} + \frac{4(a+bx)^{5/2}(c+dx)^{3/4}}{13d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(1/4),x]
```

```
[Out] (16*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4))/(39*d^3) - (40*(
b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/4))/(117*d^2) + (4*(a + b
*x)^(5/2)*(c + d*x)^(3/4))/(13*d) - (32*(b*c - a*d)^(15/4)*Sqrt[-
((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^
(1/4))/(b*c - a*d)^(1/4)], -1])/(39*b^(3/4)*d^4*Sqrt[a + b*x]) +
(32*(b*c - a*d)^(15/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipti
cF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(39*
```

```
b^(3/4)*d^4*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 102.957, size = 454, normalized size = 1.72

$$\frac{4(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{3}{4}}}{13d}+\frac{40(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{4}}(ad-bc)}{117d^2}+\frac{16\sqrt{a+bx}(c+dx)^{\frac{3}{4}}(ad-bc)^2}{39d^3}+\frac{32\sqrt[4]{c+dx}(ad-bc)^{\frac{5}{2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{39\sqrt{b}d^3\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{32\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{15}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{39b^{\frac{3}{4}}d^4\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{16\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{15}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{39b^{\frac{3}{4}}d^4\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(1/4),x)
```

```
[Out] 4*(a + b*x)**(5/2)*(c + d*x)**(3/4)/(13*d) + 40*(a + b*x)**(3/2)*
(c + d*x)**(3/4)*(a*d - b*c)/(117*d**2) + 16*sqrt(a + b*x)*(c + d
*x)**(3/4)*(a*d - b*c)**2/(39*d**3) + 32*(c + d*x)**(1/4)*(a*d -
b*c)**(5/2)*sqrt(a - b*c/d + b*(c + d*x)/d)/(39*sqrt(b)*d**3*(sqr
t(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) - 32*sqrt((a*d - b*c + b
*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) +
 1)**2))*(a*d - b*c)**(15/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*
c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**
(1/4)), 1/2)/(39*b**(3/4)*d**4*sqrt(a - b*c/d + b*(c + d*x)/d)) +
 16*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c +
 d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(15/4)*(sqrt(b)*sqrt
(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*
x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(39*b**(3/4)*d**4*sqrt(a - b*
c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.292158, size = 138, normalized size = 0.52

$$\frac{4(c+dx)^{3/4}\left(d(a+bx)\left(31a^2d^2+2abd(14dx-17c)+b^2\left(12c^2-10cdx+9d^2x^2\right)\right)-8(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+d}{bc-a}\right.\right.}{117d^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(1/4),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(d*(a + b*x)*(31*a^2*d^2 + 2*a*b*d*(-17*c + 14
*d*x) + b^2*(12*c^2 - 10*c*d*x + 9*d^2*x^2)) - 8*(b*c - a*d)^3*Sq
rt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4,
 (b*(c + d*x))/(b*c - a*d)]))/(117*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{\frac{5}{2}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(5/2)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(1/4),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/(d*x + c)^(1/4),
 x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{2}}}{\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(1/4),x)
```

```
[Out] Integral((a + b*x)**(5/2)/(c + d*x)**(1/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(1/4), x)
```

3.1650 $\int \frac{(a+bx)^{3/2}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=229

$$-\frac{16(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{3/4}d^3\sqrt{a+bx}}+\frac{16(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{3/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{15d^2}+\frac{4(a+bx)^{3/2}(c+dx)^{3/4}}{9d}$$

```
[Out] (-8*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4))/(15*d^2) + (4*(a +
 b*x)^(3/2)*(c + d*x)^(3/4))/(9*d) + (16*(b*c - a*d)^(11/4)*Sqrt[
-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)
^(1/4))/(b*c - a*d)^(1/4)], -1])/(15*b^(3/4)*d^3*Sqrt[a + b*x]) -
 (16*(b*c - a*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(15
*b^(3/4)*d^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.722679, antiderivative size = 229, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$-\frac{16(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{3/4}d^3\sqrt{a+bx}}+\frac{16(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15b^{3/4}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{15d^2}+\frac{4(a+bx)^{3/2}(c+dx)^{3/4}}{9d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(1/4),x]
```


```
[Out] (-8*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4))/(15*d^2) + (4*(a +
 b*x)^(3/2)*(c + d*x)^(3/4))/(9*d) + (16*(b*c - a*d)^(11/4)*Sqrt[
-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)
^(1/4))/(b*c - a*d)^(1/4)], -1])/(15*b^(3/4)*d^3*Sqrt[a + b*x]) -
 (16*(b*c - a*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(15
*b^(3/4)*d^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 83.5821, size = 422, normalized size = 1.84

$$\frac{4(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{4}}}{9d}+\frac{8\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}(ad-bc)}{15d^2}+\frac{16\sqrt[4]{c+dx}\,(ad-bc)^{\frac{3}{2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{15\sqrt{b}d^2\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}$$
$$-\frac{16\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{3}{4}}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$
$$+\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{15b^{\frac{3}{4}}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(1/4),x)
```

```
[Out] 4*(a + b*x)**(3/2)*(c + d*x)**(3/4)/(9*d) + 8*sqrt(a + b*x)*(c +
d*x)**(3/4)*(a*d - b*c)/(15*d**2) + 16*(c + d*x)**(1/4)*(a*d - b*
c)**(3/2)*sqrt(a - b*c/d + b*(c + d*x)/d)/(15*sqrt(b)*d**2*(sqrt(
b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) - 16*sqrt((a*d - b*c + b*(
c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1
)**2))*(a*d - b*c)**(11/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c)
 + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1
/4)), 1/2)/(15*b**(3/4)*d**3*sqrt(a - b*c/d + b*(c + d*x)/d)) + 8
*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*
x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(11/4)*(sqrt(b)*sqrt(c
+ d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)*
*(1/4)/(a*d - b*c)**(1/4)), 1/2)/(15*b**(3/4)*d**3*sqrt(a - b*c/d
 + b*(c + d*x)/d))
```

Mathematica [C] time = 0.20255, size = 107, normalized size = 0.47

$$\frac{4(c+dx)^{3/4}\left(4(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(11ad-6bc+5bdx)\right)}{45d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(1/4),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(d*(a + b*x)*(-6*b*c + 11*a*d + 5*b*d*x) + 4*(
b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1
[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(45*d^3*Sqrt[a + b*x
```

```
])
```

Maple [F] time = 0.037, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{4}}},\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(1/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(1/4),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(1/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/4), x)
```

3.1651 $\int \frac{\sqrt{a+bx}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=196

$$\frac{8(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{3/4}d^2\sqrt{a+bx}} - \frac{8(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{3/4}d^2\sqrt{a+bx}} + \frac{4\sqrt{a+bx}(c+dx)^{3/4}}{5d}$$

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(3/4))/(5*d) - (8*(b*c - a*d)^(7/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*b^(3/4)*d^2*Sqrt[a + b*x])
 + (8*(b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*
b^(3/4)*d^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.653413, antiderivative size = 196, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{8(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{3/4}d^2\sqrt{a+bx}} - \frac{8(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5b^{3/4}d^2\sqrt{a+bx}} + \frac{4\sqrt{a+bx}(c+dx)^{3/4}}{5d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(1/4),x]
```



```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(3/4))/(5*d) - (8*(b*c - a*d)^(7/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*b^(3/4)*d^2*Sqrt[a + b*x])
 + (8*(b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*Ellipt
icF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*
b^(3/4)*d^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 66.5413, size = 389, normalized size = 1.98

$$\frac{4\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}}{5d}+\frac{8\sqrt[4]{c+dx}\sqrt{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5\sqrt{b}d\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{3}{4}}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{4\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5b^{\frac{3}{4}}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(1/4),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(3/4)/(5*d) + 8*(c + d*x)**(1/4)*sqrt(
a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*sqrt(b)*d*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) - 8*sqrt((a*d - b*c + b*(c +
d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2
))*(a*d - b*c)**(7/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)
*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)),
 1/2)/(5*b**(3/4)*d**2*sqrt(a - b*c/d + b*(c + d*x)/d)) + 4*sqrt(
(a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqr
t(a*d - b*c) + 1)**2))*(a*d - b*c)**(7/4)*(sqrt(b)*sqrt(c + d*x)/
sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/
(a*d - b*c)**(1/4)), 1/2)/(5*b**(3/4)*d**2*sqrt(a - b*c/d + b*(c
+ d*x)/d))
```

Mathematica [C] time = 0.173131, size = 77, normalized size = 0.39

$$\frac{4\sqrt{a+bx}(c+dx)^{3/4}\left(\frac{2\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+3\right)}{15d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(1/4),x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(3/4)*(3 + (2*Hypergeometric2F1[1/2, 3
/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) +
 a*d)]))/(15*d)
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(1/4),x)

[Out] int((b*x+a)^(1/2)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/4),x, algorithm="maxima")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/4),x, algorithm="fricas")

[Out] integral(sqrt(b*x + a)/(d*x + c)^(1/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(1/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/4), x)
```

3.1652 $\int \frac{1}{\sqrt{a+bx}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=167

$$\frac{4(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}d\sqrt{a+bx}}-\frac{4(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}d\sqrt{a+bx}}$$

```
[Out] (4*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE
[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(3/
4)*d*Sqrt[a + b*x]) - (4*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(
b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*
d)^(1/4)], -1])/(b^(3/4)*d*Sqrt[a + b*x])
```

Rubi [A] time = 0.595253, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.368

$$\frac{4(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}d\sqrt{a+bx}}-\frac{4(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(1/4)),x]
```

```
[Out] (4*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE
[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(3/
4)*d*Sqrt[a + b*x]) - (4*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(
b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*
d)^(1/4)], -1])/(b^(3/4)*d*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 50.5507, size = 357, normalized size = 2.14

$$\frac{4\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{\sqrt{b}\sqrt{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)} - \frac{4\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} + \frac{2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/4),x)
```

```
[Out] 4*(c + d*x)**(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)/(sqrt(b)*sqrt(
a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) - 4*sqrt(
(a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqr
t(a*d - b*c) + 1)**2))*(a*d - b*c)**(3/4)*(sqrt(b)*sqrt(c + d*x)/
sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/
(a*d - b*c)**(1/4)), 1/2)/(b**(3/4)*d*sqrt(a - b*c/d + b*(c + d*x
)/d)) + 2*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sq
rt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(3/4)*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c
 + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(b**(3/4)*d*sqrt(a - b*c
/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.0594388, size = 73, normalized size = 0.44

$$\frac{4(c+dx)^{3/4}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{3d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(1/4)),x]
```

```
[Out] (4*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(3/4)*Hypergeomet
ric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/(3*d*Sqrt[a + b
*x])
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/4)),x, algorithm="giac")

[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/4)), x)
```

3.1653 $\int \frac{1}{(a+bx)^{3/2}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=191

$$-\frac{2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}+\frac{2\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}-\frac{2(c+dx)^{3/4}}{\sqrt{a+bx}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/4))/((b*c - a*d)*Sqrt[a + b*x]) + (2*Sqrt[-((d*(
a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4)
)/(b*c - a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*d)^(1/4)*Sqrt[a + b*
x]) - (2*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(
1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*
d)^(1/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.644875, antiderivative size = 191, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$-\frac{2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}+\frac{2\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}\sqrt[4]{bc-ad}}-\frac{2(c+dx)^{3/4}}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(1/4)),x]
```


```
[Out] (-2*(c + d*x)^(3/4))/((b*c - a*d)*Sqrt[a + b*x]) + (2*Sqrt[-((d*(
a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4)
)/(b*c - a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*d)^(1/4)*Sqrt[a + b*
x]) - (2*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(
1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*
d)^(1/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 65.5061, size = 379, normalized size = 1.98

$$\frac{2\left(c+dx\right)^{\frac{3}{4}}}{\sqrt{a+bx}\left(ad-bc\right)}-\frac{2d\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{\sqrt{b}\left(ad-bc\right)^{\frac{3}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^{2}}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^{2}}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/4),x)
```

```
[Out] 2*(c + d*x)**(3/4)/(sqrt(a + b*x)*(a*d - b*c)) - 2*d*(c + d*x)**(
1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)/(sqrt(b)*(a*d - b*c)**(3/2)*
(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 2*sqrt((a*d - b*c
+ b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c
) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_
e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(b**
(3/4)*(a*d - b*c)**(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) - sqrt(
(a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqr
t(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1
)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4))
, 1/2)/(b**(3/4)*(a*d - b*c)**(1/4)*sqrt(a - b*c/d + b*(c + d*x)/
d))
```

Mathematica [C] time = 0.107385, size = 83, normalized size = 0.43

$$\frac{2(c+dx)^{3/4}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-3\right)}{3\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(1/4)),x]
```

```
[Out] (2*(c + d*x)^(3/4)*(-3 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(3*(b*c
- a*d)*Sqrt[a + b*x])
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1 \left(bx + a\right)^{-\frac{3}{2}} \frac{1}{\sqrt[4]{dx + c}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(bx + a\right)^{\frac{3}{2}} \left(dx + c\right)^{\frac{1}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{\left(bx + a\right)^{\frac{3}{2}} \left(dx + c\right)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + bx\right)^{\frac{3}{2}} \sqrt[4]{c + dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/4)), x)
```

3.1654 $\int \frac{1}{(a+bx)^{5/2}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=224

$$\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}(bc-ad)^{5/4}}-\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}(bc-ad)^{5/4}}+\frac{d(c+dx)^{3/4}}{\sqrt{a+bx}(bc-ad)^2}-\frac{2(c+dx)^{3/4}}{3(a+bx)^{3/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(3/4))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (d*(c + d*
x)^(3/4))/((b*c - a*d)^2*Sqrt[a + b*x]) - (d*Sqrt[-((d*(a + b*x))
/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*d)^(5/4)*Sqrt[a + b*x]) + (d*
Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c +
 d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*d)^(5/4)*
Sqrt[a + b*x])
```

Rubi [A] time = 0.678393, antiderivative size = 224, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}(bc-ad)^{5/4}}-\frac{d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{b^{3/4}\sqrt{a+bx}(bc-ad)^{5/4}}+\frac{d(c+dx)^{3/4}}{\sqrt{a+bx}(bc-ad)^2}-\frac{2(c+dx)^{3/4}}{3(a+bx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(1/4)),x]
```


```
[Out] (-2*(c + d*x)^(3/4))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (d*(c + d*
x)^(3/4))/((b*c - a*d)^2*Sqrt[a + b*x]) - (d*Sqrt[-((d*(a + b*x))
/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*d)^(5/4)*Sqrt[a + b*x]) + (d*
Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c +
 d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(3/4)*(b*c - a*d)^(5/4)*
Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 84.7901, size = 411, normalized size = 1.83

$$\frac{d\left(c+dx\right)^{\frac{3}{4}}}{\sqrt{a+bx}\left(ad-bc\right)^{2}}+\frac{2\left(c+dx\right)^{\frac{3}{4}}}{3\left(a+bx\right)^{\frac{3}{2}}\left(ad-bc\right)}-\frac{d^{2}\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{\sqrt{b}\left(ad-bc\right)^{\frac{5}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^{2}}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{b^{\frac{3}{4}}\left(ad-bc\right)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^{2}}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{2b^{\frac{3}{4}}\left(ad-bc\right)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/4),x)
```

```
[Out] d*(c + d*x)**(3/4)/(sqrt(a + b*x)*(a*d - b*c)**2) + 2*(c + d*x)**
(3/4)/(3*(a + b*x)**(3/2)*(a*d - b*c)) - d**2*(c + d*x)**(1/4)*sq
rt(a - b*c/d + b*(c + d*x)/d)/(sqrt(b)*(a*d - b*c)**(5/2)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + d*sqrt((a*d - b*c + b*(c
+ d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*
*2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*ata
n(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(b**(3/4)*(
a*d - b*c)**(5/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) - d*sqrt((a*d
- b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d
 - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ell
iptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2
)/(2*b**(3/4)*(a*d - b*c)**(5/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.247237, size = 102, normalized size = 0.46

$$\frac{(c+dx)^{3/4}\left(-d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+5ad-2bc+3bdx\right)}{3(a+bx)^{3/2}(bc-ad)^{2}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(1/4)),x]
```

```
[Out] ((c + d*x)^(3/4)*(-2*b*c + 5*a*d + 3*b*d*x - d*(a + b*x)*Sqrt[(d*
(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c
 + d*x))/(b*c - a*d)]))/(3*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(1/
4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/4),x)

[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/4)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/4)), x)
```

3.1655 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=144

$$\frac{16(bc-ad)^{9/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{7\sqrt[4]{b}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}{7d^2}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}}{7d}$$

```
[Out] (-8*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))/(7*d^2) + (4*(a +
b*x)^(3/2)*(c + d*x)^(1/4))/(7*d) + (16*(b*c - a*d)^(9/4)*Sqrt[-(
(d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(
1/4))/(b*c - a*d)^(1/4)], -1])/(7*b^(1/4)*d^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.230577, antiderivative size = 144, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{16(bc-ad)^{9/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{7\sqrt[4]{b}d^3\sqrt{a+bx}}-\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}{7d^2}+\frac{4(a+bx)^{3/2}\sqrt[4]{c+dx}}{7d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(3/4),x]
```

```
[Out] (-8*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))/(7*d^2) + (4*(a +
b*x)^(3/2)*(c + d*x)^(1/4))/(7*d) + (16*(b*c - a*d)^(9/4)*Sqrt[-(
(d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(
1/4))/(b*c - a*d)^(1/4)], -1])/(7*b^(1/4)*d^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 29.446, size = 199, normalized size = 1.38

$$\frac{4\,(a+bx)^{\frac{3}{2}}\,\sqrt[4]{c+dx}}{7d}+\frac{8\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)}{7d^2}+\frac{8\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{9}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\text{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{7\sqrt[4]{b}d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(3/4),x)
```

```
[Out] 4*(a + b*x)**(3/2)*(c + d*x)**(1/4)/(7*d) + 8*sqrt(a + b*x)*(c +
d*x)**(1/4)*(a*d - b*c)/(7*d**2) + 8*sqrt((a*d - b*c + b*(c + d*x
))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*
(a*d - b*c)**(9/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*el
liptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/
2)/(7*b**(1/4)*d**3*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.201557, size = 106, normalized size = 0.74

$$\frac{4\sqrt[4]{c+dx}\left(4(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(3ad-2bc+bdx)\right)}{7d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(3/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(d*(a + b*x)*(-2*b*c + 3*a*d + b*d*x) + 4*(b*c
 - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/
4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(7*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(3/4),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(3/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(3/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(3/4), x)
```

3.1656 $\int \frac{\sqrt{a+bx}}{(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=111

$$\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}}{3d}-\frac{8(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3\sqrt[4]{b}d^2\sqrt{a+bx}}$$

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(1/4))/(3*d) - (8*(b*c - a*d)^(5/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*b^(1/4)*d^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.167426, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}}{3d}-\frac{8(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3\sqrt[4]{b}d^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(3/4),x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(1/4))/(3*d) - (8*(b*c - a*d)^(5/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*b^(1/4)*d^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 21.1155, size = 168, normalized size = 1.51

$$\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}}{3d}+\frac{4\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{5}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3\sqrt[4]{b}d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(3/4),x)
```

```
[Out] 4*sqrt(a + b*x)*(c + d*x)**(1/4)/(3*d) + 4*sqrt((a*d - b*c + b*(c
 + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)
**2))*(a*d - b*c)**(5/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) +
 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4
```

```
)), 1/2)/(3*b**(1/4)*d**2*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.161622, size = 77, normalized size = 0.69

$$\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}\left(\frac{2\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+1\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(3/4),x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(1/4)*(1 + (2*Hypergeometric2F1[1/4, 1
/2, 5/4, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) +
 a*d)]))/(3*d)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)/(d*x + c)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{3}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(3/4),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(3/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{3}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(3/4),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(3/4), x)
```

3.1657 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=83

$$\frac{4\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt[4]{b}d\sqrt{a+bx}}$$

```
[Out] (4*(b*c - a*d)^(1/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF
[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(1/
4)*d*Sqrt[a + b*x])
```

Rubi [A] time = 0.117542, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{4\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt[4]{b}d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(3/4)),x]
```

```
[Out] (4*(b*c - a*d)^(1/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF
[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(b^(1/
4)*d*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 13.6796, size = 143, normalized size = 1.72

$$\frac{2\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\sqrt[4]{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{\sqrt[4]{b}d\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(3/4),x)
```

```
[Out] 2*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d
*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(1/4)*(sqrt(b)*sqrt(c
+ d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)*
*(1/4)/(a*d - b*c)**(1/4)), 1/2)/(b**(1/4)*d*sqrt(a - b*c/d + b*(
```

```
c + d*x)/d))
```

Mathematica [C] time = 0.0567138, size = 71, normalized size = 0.86

$$\frac{4\sqrt[4]{c+dx}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(3/4)),x]
```

```
[Out] (4*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(1/4)*Hypergeomet
ric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)])/(d*Sqrt[a + b*x
])
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/4)),x, algorithm="fricas")

[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(3/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(3/4),x)

[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/4)),x, algorithm="giac")

[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(3/4)), x)
```

3.1658 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=111

$$-\frac{2\sqrt[4]{c+dx}}{\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt[4]{b}\sqrt{a+bx}(bc-ad)^{3/4}}$$

```
[Out] (-2*(c + d*x)^(1/4))/((b*c - a*d)*Sqrt[a + b*x]) - (2*Sqrt[-((d*(
a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4)
)/(b*c - a*d)^(1/4)], -1])/(b^(1/4)*(b*c - a*d)^(3/4)*Sqrt[a + b*
x])
```

Rubi [A] time = 0.157032, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{2\sqrt[4]{c+dx}}{\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt[4]{b}\sqrt{a+bx}(bc-ad)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(3/4)),x]
```

```
[Out] (-2*(c + d*x)^(1/4))/((b*c - a*d)*Sqrt[a + b*x]) - (2*Sqrt[-((d*(
a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4)
)/(b*c - a*d)^(1/4)], -1])/(b^(1/4)*(b*c - a*d)^(3/4)*Sqrt[a + b*
x])
```

Rubi in Sympy [A] time = 20.7952, size = 165, normalized size = 1.49

$$\frac{2\sqrt[4]{c+dx}}{\sqrt{a+bx}\,(ad-bc)}+\frac{\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{\sqrt[4]{b}\,(ad-bc)^{\frac{3}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(3/4),x)
```

```
[Out] 2*(c + d*x)**(1/4)/(sqrt(a + b*x)*(a*d - b*c)) + sqrt((a*d - b*c
+ b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c
) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_
```

```
f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(b**
(1/4)*(a*d - b*c)**(3/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.109709, size = 81, normalized size = 0.73

$$-\frac{2\sqrt[4]{c+dx}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+1\right)}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(3/4)),x]
```

```
[Out] (-2*(c + d*x)^(1/4)*(1 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/((b*c -
a*d)*Sqrt[a + b*x])
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(3/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(3/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(3/4)), x)
```

3.1659 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=149

$$\frac{5d\sqrt[4]{c+dx}}{3\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt[4]{c+dx}}{3(a+bx)^{3/2}(bc-ad)}+\frac{5d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3\sqrt[4]{b}\sqrt{a+bx}(bc-ad)^{7/4}}$$

```
[Out] (-2*(c + d*x)^(1/4))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (5*d*(c +
d*x)^(1/4))/(3*(b*c - a*d)^2*Sqrt[a + b*x]) + (5*d*Sqrt[-((d*(a +
 b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(
b*c - a*d)^(1/4)], -1])/(3*b^(1/4)*(b*c - a*d)^(7/4)*Sqrt[a + b*x
])
```

Rubi [A] time = 0.190031, antiderivative size = 149, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.21

$$\frac{5d\sqrt[4]{c+dx}}{3\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt[4]{c+dx}}{3(a+bx)^{3/2}(bc-ad)}+\frac{5d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3\sqrt[4]{b}\sqrt{a+bx}(bc-ad)^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(3/4)),x]
```


```
[Out] (-2*(c + d*x)^(1/4))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (5*d*(c +
d*x)^(1/4))/(3*(b*c - a*d)^2*Sqrt[a + b*x]) + (5*d*Sqrt[-((d*(a +
 b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(
b*c - a*d)^(1/4)], -1])/(3*b^(1/4)*(b*c - a*d)^(7/4)*Sqrt[a + b*x
])
```

Rubi in Sympy [A] time = 29.9737, size = 202, normalized size = 1.36

$$\frac{5d\sqrt[4]{c+dx}}{3\sqrt{a+bx}\,(ad-bc)^2}+\frac{2\sqrt[4]{c+dx}}{3\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}+\frac{5d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{6\sqrt[4]{b}\,(ad-bc)^{\frac{7}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(3/4),x)
```

```
[Out] 5*d*(c + d*x)**(1/4)/(3*sqrt(a + b*x)*(a*d - b*c)**2) + 2*(c + d*
x)**(1/4)/(3*(a + b*x)**(3/2)*(a*d - b*c)) + 5*d*sqrt((a*d - b*c
+ b*(c + d*x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c
) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_
f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(6*b
**(1/4)*(a*d - b*c)**(7/4)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.207412, size = 102, normalized size = 0.68

$$\frac{\sqrt[4]{c+dx}\left(5d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+7ad-2bc+5bdx\right)}{3(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(3/4)),x]
```

```
[Out] ((c + d*x)^(1/4)*(-2*b*c + 7*a*d + 5*b*d*x + 5*d*(a + b*x)*Sqrt[(
d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1/2, 5/4, (b*
(c + d*x))/(b*c - a*d)]))/(3*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{3}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(3/
4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(a+bx)^{\frac{5}{2}}\,(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(3/4),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(3/4)), x)
```

3.1660 $\int \frac{(a+bx)^{5/2}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=254

$$-\frac{32\sqrt[4]{b}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^4\sqrt{a+bx}}+\frac{32\sqrt[4]{b}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^4\sqrt{a+bx}}-\frac{16b\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{3d^3}+\frac{40b(a+bx)^{3/2}(c+dx)^{3/4}}{9d^2}-\frac{4(a+bx)^{5/2}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(5/2))/(d*(c + d*x)^(1/4)) - (16*b*(b*c - a*d)*Sqrt
[a + b*x]*(c + d*x)^(3/4))/(3*d^3) + (40*b*(a + b*x)^(3/2)*(c + d
*x)^(3/4))/(9*d^2) + (32*b^(1/4)*(b*c - a*d)^(11/4)*Sqrt[-((d*(a
+ b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/
(b*c - a*d)^(1/4)], -1])/(3*d^4*Sqrt[a + b*x]) - (32*b^(1/4)*(b*c
 - a*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSi
n[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*d^4*Sqrt[
a + b*x])
```

Rubi [A] time = 0.787367, antiderivative size = 254, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$-\frac{32\sqrt[4]{b}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^4\sqrt{a+bx}}+\frac{32\sqrt[4]{b}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^4\sqrt{a+bx}}-\frac{16b\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{3d^3}+\frac{40b(a+bx)^{3/2}(c+dx)^{3/4}}{9d^2}-\frac{4(a+bx)^{5/2}}{d\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(5/4),x]
```


```
[Out] (-4*(a + b*x)^(5/2))/(d*(c + d*x)^(1/4)) - (16*b*(b*c - a*d)*Sqrt
[a + b*x]*(c + d*x)^(3/4))/(3*d^3) + (40*b*(a + b*x)^(3/2)*(c + d
*x)^(3/4))/(9*d^2) + (32*b^(1/4)*(b*c - a*d)^(11/4)*Sqrt[-((d*(a
+ b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/
(b*c - a*d)^(1/4)], -1])/(3*d^4*Sqrt[a + b*x]) - (32*b^(1/4)*(b*c
 - a*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSi
n[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*d^4*Sqrt[
```

```
a + b*x])
```

Rubi in Sympy [A] time = 101.099, size = 447, normalized size = 1.76

$$-\frac{32\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3d^4\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{16\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3d^4\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{32\sqrt{b}\sqrt[4]{c+dx}(ad-bc)^{\frac{3}{2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{3d^3\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{40b(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{4}}}{9d^2}+\frac{16b\sqrt{a+bx}(c+dx)^{\frac{3}{4}}(ad-bc)}{3d^3}-\frac{4(a+bx)^{\frac{5}{2}}}{d\sqrt[4]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(5/4),x)
```

```
[Out] -32*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(11/4)*(sqr
t(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4
)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(3*d**4*sqrt(a - b*c
/d + b*(c + d*x)/d)) + 16*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))
/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a
*d - b*c)**(11/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ell
iptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2
)/(3*d**4*sqrt(a - b*c/d + b*(c + d*x)/d)) + 32*sqrt(b)*(c + d*x)
**(1/4)*(a*d - b*c)**(3/2)*sqrt(a - b*c/d + b*(c + d*x)/d)/(3*d**
3*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 40*b*(a + b*x)**
(3/2)*(c + d*x)**(3/4)/(9*d**2) + 16*b*sqrt(a + b*x)*(c + d*x)**(
3/4)*(a*d - b*c)/(3*d**3) - 4*(a + b*x)**(5/2)/(d*(c + d*x)**(1/4
))
```

Mathematica [C] time = 0.294941, size = 131, normalized size = 0.52

$$\frac{4(c+dx)^{3/4}\left(d(a+bx)\left(-\frac{9(bc-ad)^2}{c+dx}+b(4ad-3bc)+b^2dx\right)+8b(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)\right)}{9d^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(5/4),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(d*(a + b*x)*(b*(-3*b*c + 4*a*d) + b^2*d*x - (
9*(b*c - a*d)^2)/(c + d*x)) + 8*b*(b*c - a*d)^2*Sqrt[(d*(a + b*x)
)/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/
(b*c - a*d)]))/(9*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.104, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{2}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(5/2)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{(dx+c)^{\frac{5}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/(d*x + c)^(5/4),
 x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{2}}}{(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(5/4),x)

[Out] Integral((a + b*x)**(5/2)/(c + d*x)**(5/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/4),x, algorithm="giac")

[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(5/4), x)
```

3.1661 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=220

$$\frac{48\sqrt[4]{b}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}} - \frac{48\sqrt[4]{b}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}} + \frac{24b\sqrt{a+bx}(c+dx)^{3/4}}{5d^2} - \frac{4(a+bx)^{3/2}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(3/2))/(d*(c + d*x)^(1/4)) + (24*b*Sqrt[a + b*x]*(c
 + d*x)^(3/4))/(5*d^2) - (48*b^(1/4)*(b*c - a*d)^(7/4)*Sqrt[-((d*
(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4
))/(b*c - a*d)^(1/4)], -1])/(5*d^3*Sqrt[a + b*x]) + (48*b^(1/4)*(
b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[Arc
Sin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^3*Sqr
t[a + b*x])
```

Rubi [A] time = 0.685242, antiderivative size = 220, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$\frac{48\sqrt[4]{b}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}} - \frac{48\sqrt[4]{b}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}} + \frac{24b\sqrt{a+bx}(c+dx)^{3/4}}{5d^2} - \frac{4(a+bx)^{3/2}}{d\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(5/4),x]
```


```
[Out] (-4*(a + b*x)^(3/2))/(d*(c + d*x)^(1/4)) + (24*b*Sqrt[a + b*x]*(c
 + d*x)^(3/4))/(5*d^2) - (48*b^(1/4)*(b*c - a*d)^(7/4)*Sqrt[-((d*
(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4
))/(b*c - a*d)^(1/4)], -1])/(5*d^3*Sqrt[a + b*x]) + (48*b^(1/4)*(
b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[Arc
Sin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^3*Sqr
t[a + b*x])
```

Rubi in Sympy [A] time = 82.5275, size = 415, normalized size = 1.89

$$-\frac{48\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{24\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{48\sqrt{b}\sqrt[4]{c+dx}\sqrt{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5d^2\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{24b\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}}{5d^2}-\frac{4\,(a+bx)^{\frac{3}{2}}}{d\sqrt[4]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(5/4),x)
```

```
[Out] -48*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(7/4)*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)
*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(5*d**3*sqrt(a - b*c/
d + b*(c + d*x)/d)) + 24*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/
((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*
d - b*c)**(7/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ellip
tic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/
(5*d**3*sqrt(a - b*c/d + b*(c + d*x)/d)) + 48*sqrt(b)*(c + d*x)**
(1/4)*sqrt(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*d**2*(sq
rt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 24*b*sqrt(a + b*x)*(c
 + d*x)**(3/4)/(5*d**2) - 4*(a + b*x)**(3/2)/(d*(c + d*x)**(1/4))
```

Mathematica [C] time = 0.311935, size = 98, normalized size = 0.45

$$\frac{4\sqrt{a+bx}(c+dx)^{3/4}\left(\frac{4b\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+\frac{-5ad+6bc+bdx}{c+dx}\right)}{5d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(5/4),x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(3/4)*((6*b*c - 5*a*d + b*d*x)/(c + d*
x) + (4*b*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a
*d)])/Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]))/(5*d^2)
```

Maple [F] time = 0.084, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(5/4),x)

[Out] int((b*x+a)^(3/2)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/4),x, algorithm="fricas")

[Out] integral((b*x + a)^(3/2)/(d*x + c)^(5/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(5/4),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(5/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(5/4), x)
```

3.1662 $\int \frac{\sqrt{a+bx}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=190

$$-\frac{8\sqrt[4]{b}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d^2\sqrt{a+bx}}+\frac{8\sqrt[4]{b}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d^2\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*Sqrt[a + b*x])/(d*(c + d*x)^(1/4)) + (8*b^(1/4)*(b*c - a*d)^(
3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)
*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(d^2*Sqrt[a + b*x]) -
(8*b^(1/4)*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*E
llipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1]
)/(d^2*Sqrt[a + b*x])
```

Rubi [A] time = 0.628667, antiderivative size = 190, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{8\sqrt[4]{b}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d^2\sqrt{a+bx}}+\frac{8\sqrt[4]{b}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d^2\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{d\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(5/4),x]
```


```
[Out] (-4*Sqrt[a + b*x])/(d*(c + d*x)^(1/4)) + (8*b^(1/4)*(b*c - a*d)^(
3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)
*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(d^2*Sqrt[a + b*x]) -
(8*b^(1/4)*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*E
llipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1]
)/(d^2*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 65.4317, size = 382, normalized size = 2.01

$$-\frac{8\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{4\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{8\sqrt{b}\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{d\sqrt{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{4\sqrt{a+bx}}{d\sqrt[4]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(5/4),x)
```

```
[Out] -8*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(3/4)*(sqrt(
b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*
(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(d**2*sqrt(a - b*c/d +
 b*(c + d*x)/d)) + 4*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*
d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d -
b*c)**(3/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_
f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(d**
2*sqrt(a - b*c/d + b*(c + d*x)/d)) + 8*sqrt(b)*(c + d*x)**(1/4)*s
qrt(a - b*c/d + b*(c + d*x)/d)/(d*sqrt(a*d - b*c)*(sqrt(b)*sqrt(c
 + d*x)/sqrt(a*d - b*c) + 1)) - 4*sqrt(a + b*x)/(d*(c + d*x)**(1/
4))
```

Mathematica [C] time = 0.159089, size = 90, normalized size = 0.47

$$\frac{8b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-12d(a+bx)}{3d^2\sqrt{a+bx}\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(5/4),x]
```

```
[Out] (-12*d*(a + b*x) + 8*b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*
x)*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/(
3*d^2*Sqrt[a + b*x]*(c + d*x)^(1/4))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)/(d*x + c)^(5/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(5/4),x)

[Out] Integral(sqrt(a + b*x)/(c + d*x)**(5/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/4),x, algorithm="giac")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(5/4), x)
```

3.1663 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=197

$$\frac{4\sqrt{a+bx}}{\sqrt[4]{c+dx}(bc-ad)}+\frac{4\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d\sqrt{a+bx}\sqrt[4]{bc-ad}}-\frac{4\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d\sqrt{a+bx}\sqrt[4]{bc-ad}}$$

```
[Out] (4*Sqrt[a + b*x])/((b*c - a*d)*(c + d*x)^(1/4)) - (4*b^(1/4)*Sqrt
[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x
)^(1/4))/(b*c - a*d)^(1/4)], -1])/(d*(b*c - a*d)^(1/4)*Sqrt[a + b
*x]) + (4*b^(1/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[Ar
cSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(d*(b*c -
 a*d)^(1/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.639619, antiderivative size = 197, normalized size of antiderivative = 1., number of steps used = 8, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$\frac{4\sqrt{a+bx}}{\sqrt[4]{c+dx}(bc-ad)}+\frac{4\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d\sqrt{a+bx}\sqrt[4]{bc-ad}}-\frac{4\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{d\sqrt{a+bx}\sqrt[4]{bc-ad}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(5/4)),x]
```

```
[Out] (4*Sqrt[a + b*x])/((b*c - a*d)*(c + d*x)^(1/4)) - (4*b^(1/4)*Sqrt
[-((d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x
)^(1/4))/(b*c - a*d)^(1/4)], -1])/(d*(b*c - a*d)^(1/4)*Sqrt[a + b
*x]) + (4*b^(1/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[Ar
cSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(d*(b*c -
 a*d)^(1/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 66.4754, size = 382, normalized size = 1.94

$$-\frac{4\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{d\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{2\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{d\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{4\sqrt{b}\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{(ad-bc)^{\frac{3}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{4\sqrt{a+bx}}{\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(5/4),x)
```

```
[Out] -4*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/(d*(a*d - b*c)**(1/4)*sqrt(a - b*c/d + b*
(c + d*x)/d)) + 2*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d -
 b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*s
qrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c +
 d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(d*(a*d - b*c)**(1/4)*sqrt
(a - b*c/d + b*(c + d*x)/d)) + 4*sqrt(b)*(c + d*x)**(1/4)*sqrt(a
- b*c/d + b*(c + d*x)/d)/((a*d - b*c)**(3/2)*(sqrt(b)*sqrt(c + d*
x)/sqrt(a*d - b*c) + 1)) - 4*sqrt(a + b*x)/((c + d*x)**(1/4)*(a*d
 - b*c))
```

Mathematica [C] time = 0.226155, size = 100, normalized size = 0.51

$$\frac{12d(a+bx)-4b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{3d\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(5/4)),x]
```

```
[Out] (12*d*(a + b*x) - 4*b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x
)*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/(3
*d*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4))
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(5/4),x)

[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/4)),x, algorithm="maxima")

[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/4)),x, algorithm="fricas")

[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(5/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(5/4),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(5/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/4)), x)
```

3.1664 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=222

$$-\frac{6d\sqrt{a+bx}}{\sqrt[4]{c+dx}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}-\frac{6\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{5/4}}+\frac{6\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{5/4}}$$

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4)) - (6*d*Sqrt[a + b*
x])/((b*c - a*d)^2*(c + d*x)^(1/4)) + (6*b^(1/4)*Sqrt[-((d*(a + b
*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*
c - a*d)^(1/4)], -1])/((b*c - a*d)^(5/4)*Sqrt[a + b*x]) - (6*b^(1
/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*
(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/((b*c - a*d)^(5/4)*Sqrt
[a + b*x])
```

Rubi [A] time = 0.678642, antiderivative size = 222, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{6d\sqrt{a+bx}}{\sqrt[4]{c+dx}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)}-\frac{6\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{5/4}}+\frac{6\sqrt[4]{b}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(5/4)),x]
```

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/4)) - (6*d*Sqrt[a + b*
x])/((b*c - a*d)^2*(c + d*x)^(1/4)) + (6*b^(1/4)*Sqrt[-((d*(a + b
*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*
c - a*d)^(1/4)], -1])/((b*c - a*d)^(5/4)*Sqrt[a + b*x]) - (6*b^(1
/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*
(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/((b*c - a*d)^(5/4)*Sqrt
[a + b*x])
```

Rubi in Sympy [A] time = 83.1945, size = 410, normalized size = 1.85

$$-\frac{6\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{(ad-bc)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{3\sqrt[4]{b}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{(ad-bc)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{6\sqrt{b}d\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{(ad-bc)^{\frac{5}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{6d\sqrt{a+bx}}{\sqrt[4]{c+dx}\,(ad-bc)^2}+\frac{2}{\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(5/4),x)
```

```
[Out] -6*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/((a*d - b*c)**(5/4)*sqrt(a - b*c/d + b*(c
 + d*x)/d)) + 3*b**(1/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b
*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqr
t(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d
*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/((a*d - b*c)**(5/4)*sqrt(a -
 b*c/d + b*(c + d*x)/d)) + 6*sqrt(b)*d*(c + d*x)**(1/4)*sqrt(a -
b*c/d + b*(c + d*x)/d)/((a*d - b*c)**(5/2)*(sqrt(b)*sqrt(c + d*x)
/sqrt(a*d - b*c) + 1)) - 6*d*sqrt(a + b*x)/((c + d*x)**(1/4)*(a*d
 - b*c)**2) + 2/(sqrt(a + b*x)*(c + d*x)**(1/4)*(a*d - b*c))
```

Mathematica [C] time = 0.242213, size = 99, normalized size = 0.45

$$\frac{2b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-4ad-2b(c+3dx)}{\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(5/4)),x]
```

```
[Out] (-4*a*d - 2*b*(c + 3*d*x) + 2*b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)
]*(c + d*x)*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c -
 a*d)])/((b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(5/4),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bdx^2+ac+(bc+ad)x)\sqrt{bx+a}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*sqrt(b*x + a)*(d*x +
c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(5/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(5/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/4)), x)
```

3.1665 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=261

$$\frac{7d^2\sqrt{a+bx}}{\sqrt[4]{c+dx}(bc-ad)^3}+\frac{7d}{3\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}+\frac{7\sqrt[4]{b}d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{9/4}}-\frac{7\sqrt[4]{b}d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{9/4}}$$

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/4)) + (7*d)/(3*(b*
c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4)) + (7*d^2*Sqrt[a + b*x])
/((b*c - a*d)^3*(c + d*x)^(1/4)) - (7*b^(1/4)*d*Sqrt[-((d*(a + b*
x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c
 - a*d)^(1/4)], -1])/((b*c - a*d)^(9/4)*Sqrt[a + b*x]) + (7*b^(1/
4)*d*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)
*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/((b*c - a*d)^(9/4)*Sqr
t[a + b*x])
```

Rubi [A] time = 0.76998, antiderivative size = 261, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{7d^2\sqrt{a+bx}}{\sqrt[4]{c+dx}(bc-ad)^3}+\frac{7d}{3\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}+\frac{7\sqrt[4]{b}d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{9/4}}-\frac{7\sqrt[4]{b}d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{9/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(5/4)),x]
```


```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/4)) + (7*d)/(3*(b*
c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/4)) + (7*d^2*Sqrt[a + b*x])
/((b*c - a*d)^3*(c + d*x)^(1/4)) - (7*b^(1/4)*d*Sqrt[-((d*(a + b*
x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c
 - a*d)^(1/4)], -1])/((b*c - a*d)^(9/4)*Sqrt[a + b*x]) + (7*b^(1/
4)*d*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)
*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/((b*c - a*d)^(9/4)*Sqr
t[a + b*x])
```

Rubi in Sympy [A] time = 102.62, size = 450, normalized size = 1.72

$$-\frac{7\sqrt[4]{b}d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{(ad-bc)^{\frac{9}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{7\sqrt[4]{b}d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{2\,(ad-bc)^{\frac{9}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{7\sqrt{b}d^2\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{(ad-bc)^{\frac{7}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{7d^2\sqrt{a+bx}}{\sqrt[4]{c+dx}\,(ad-bc)^3}+\frac{7d}{3\sqrt{a+bx}\sqrt[4]{c+dx}\,(ad-bc)^2}+\frac{2}{3\,(a+bx)^{\frac{3}{2}}\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(5/4),x)
```

```
[Out] -7*b**(1/4)*d*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/
sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/
(a*d - b*c)**(1/4)), 1/2)/((a*d - b*c)**(9/4)*sqrt(a - b*c/d + b*
(c + d*x)/d)) + 7*b**(1/4)*d*sqrt((a*d - b*c + b*(c + d*x))/((a*d
 - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c
 + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(2*(a*d - b*c)**(9/4)*sq
rt(a - b*c/d + b*(c + d*x)/d)) + 7*sqrt(b)*d**2*(c + d*x)**(1/4)*
sqrt(a - b*c/d + b*(c + d*x)/d)/((a*d - b*c)**(7/2)*(sqrt(b)*sqrt
(c + d*x)/sqrt(a*d - b*c) + 1)) - 7*d**2*sqrt(a + b*x)/((c + d*x)
**(1/4)*(a*d - b*c)**3) + 7*d/(3*sqrt(a + b*x)*(c + d*x)**(1/4)*(
a*d - b*c)**2) + 2/(3*(a + b*x)**(3/2)*(c + d*x)**(1/4)*(a*d - b*
c))
```

Mathematica [C] time = 0.281326, size = 139, normalized size = 0.53

$$\frac{-12a^2d^2+7bd(a+bx)(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-abd(11c+35dx)+b^2\left(2c^2-7cdx-21d^2x^2\right)}{3(a+bx)^{3/2}\sqrt[4]{c+dx}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(5/4)),x]
```

```
[Out] (-12*a^2*d^2 - a*b*d*(11*c + 35*d*x) + b^2*(2*c^2 - 7*c*d*x - 21*
d^2*x^2) + 7*b*d*(a + b*x)*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c
```

```
+ d*x)*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)
])/(3*(-(b*c) + a*d)^3*(a + b*x)^(3/2)*(c + d*x)^(1/4))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(5/4),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2dx^3+a^2c+(b^2c+2\,abd)x^2+(2\,abc+a^2d)x)\sqrt{bx+a}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*d*x^3 + a^2*c + (b^2*c + 2*a*b*d)*x^2 + (2*a*b*c
 + a^2*d)*x)*sqrt(b*x + a)*(d*x + c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\,(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(5/4),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(5/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/4)), x)
```

3.1666 $\int \frac{(a+bx)^{7/2}}{(c+dx)^{7/4}}\,dx$

Optimal. Leaf size=207

$$-\frac{320b^{3/4}(bc-ad)^{13/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{33d^5\sqrt{a+bx}}+\frac{160b\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{33d^4}-\frac{80b(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}{33d^3}+\frac{56b(a+bx)^{5/2}\sqrt[4]{c+dx}}{33d^2}-\frac{4(a+bx)^{7/2}}{3d(c+dx)^{3/4}}$$

```
[Out] (-4*(a + b*x)^(7/2))/(3*d*(c + d*x)^(3/4)) + (160*b*(b*c - a*d)^2
*Sqrt[a + b*x]*(c + d*x)^(1/4))/(33*d^4) - (80*b*(b*c - a*d)*(a +
 b*x)^(3/2)*(c + d*x)^(1/4))/(33*d^3) + (56*b*(a + b*x)^(5/2)*(c
+ d*x)^(1/4))/(33*d^2) - (320*b^(3/4)*(b*c - a*d)^(13/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(33*d^5*Sqrt[a + b*x])
```

Rubi [A] time = 0.342726, antiderivative size = 207, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{320b^{3/4}(bc-ad)^{13/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{33d^5\sqrt{a+bx}}+\frac{160b\sqrt{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{33d^4}-\frac{80b(a+bx)^{3/2}\sqrt[4]{c+dx}(bc-ad)}{33d^3}+\frac{56b(a+bx)^{5/2}\sqrt[4]{c+dx}}{33d^2}-\frac{4(a+bx)^{7/2}}{3d(c+dx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/2)/(c + d*x)^(7/4),x]
```

```
[Out] (-4*(a + b*x)^(7/2))/(3*d*(c + d*x)^(3/4)) + (160*b*(b*c - a*d)^2
*Sqrt[a + b*x]*(c + d*x)^(1/4))/(33*d^4) - (80*b*(b*c - a*d)*(a +
 b*x)^(3/2)*(c + d*x)^(1/4))/(33*d^3) + (56*b*(a + b*x)^(5/2)*(c
+ d*x)^(1/4))/(33*d^2) - (320*b^(3/4)*(b*c - a*d)^(13/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(33*d^5*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 51.0033, size = 260, normalized size = 1.26

$$\frac{160b^{\frac{3}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{13}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{33d^5\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} + \frac{56b(a+bx)^{\frac{5}{2}}\sqrt[4]{c+dx}}{33d^2} + \frac{80b(a+bx)^{\frac{3}{2}}\sqrt[4]{c+dx}(ad-bc)}{33d^3} + \frac{160b\sqrt{a+bx}\sqrt[4]{c+dx}(ad-bc)^2}{33d^4} - \frac{4(a+bx)^{\frac{7}{2}}}{3d(c+dx)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/2)/(d*x+c)**(7/4),x)
```

```
[Out] 160*b**(3/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(13/4)*(sqr
t(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4
)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(33*d**5*sqrt(a - b*
c/d + b*(c + d*x)/d)) + 56*b*(a + b*x)**(5/2)*(c + d*x)**(1/4)/(3
3*d**2) + 80*b*(a + b*x)**(3/2)*(c + d*x)**(1/4)*(a*d - b*c)/(33*
d**3) + 160*b*sqrt(a + b*x)*(c + d*x)**(1/4)*(a*d - b*c)**2/(33*d
**4) - 4*(a + b*x)**(7/2)/(3*d*(c + d*x)**(3/4))
```

Mathematica [C] time = 0.340966, size = 181, normalized size = 0.87

$$\frac{4\sqrt[4]{c+dx}\left(\frac{d(a+bx)\left(b(c+dx)\left(41a^2d^2-67abcd+29b^2c^2\right)-3b^2dx(c+dx)(3bc-5ad)+11(bc-ad)^3+3b^3d^2x^2(c+dx)\right)}{c+dx}-80b(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\right.\right.}{33d^5\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/2)/(c + d*x)^(7/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*((d*(a + b*x)*(11*(b*c - a*d)^3 + b*(29*b^2*c^
2 - 67*a*b*c*d + 41*a^2*d^2)*(c + d*x) - 3*b^2*d*(3*b*c - 5*a*d)*
x*(c + d*x) + 3*b^3*d^2*x^2*(c + d*x)))/(c + d*x) - 80*b*(b*c - a
*d)^3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/4, 1
/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(33*d^5*Sqrt[a + b*x])
```

Maple [F] time = 0.093, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{2}}(dx+c)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/2)/(d*x+c)^(7/4),x)
```

```
[Out] int((b*x+a)^(7/2)/(d*x+c)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{2}}}{(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/2)/(d*x + c)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^{3}x^{3}+3\,ab^{2}x^{2}+3\,a^{2}bx+a^{3}\right)\sqrt{bx+a}}{(dx+c)^{\frac{7}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(7/4),x, algorithm="fricas")
```

```
[Out] integral((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*sqrt(b*x + a)/
(d*x + c)^(7/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/2)/(d*x+c)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{2}}}{(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(7/4),x, algorithm="giac")

[Out] integrate((b*x + a)^(7/2)/(d*x + c)^(7/4), x)
```

3.1667 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{7/4}}\,dx$

Optimal. Leaf size=137

$$-\frac{16b^{3/4}(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^3\sqrt{a+bx}}+\frac{8b\sqrt{a+bx}\sqrt[4]{c+dx}}{3d^2}-\frac{4(a+bx)^{3/2}}{3d(c+dx)^{3/4}}$$

```
[Out] (-4*(a + b*x)^(3/2))/(3*d*(c + d*x)^(3/4)) + (8*b*Sqrt[a + b*x]*(
c + d*x)^(1/4))/(3*d^2) - (16*b^(3/4)*(b*c - a*d)^(5/4)*Sqrt[-((d
*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/
4))/(b*c - a*d)^(1/4)], -1])/(3*d^3*Sqrt[a + b*x])
```

Rubi [A] time = 0.20091, antiderivative size = 137, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{16b^{3/4}(bc-ad)^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^3\sqrt{a+bx}}+\frac{8b\sqrt{a+bx}\sqrt[4]{c+dx}}{3d^2}-\frac{4(a+bx)^{3/2}}{3d(c+dx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(7/4),x]
```

```
[Out] (-4*(a + b*x)^(3/2))/(3*d*(c + d*x)^(3/4)) + (8*b*Sqrt[a + b*x]*(
c + d*x)^(1/4))/(3*d^2) - (16*b^(3/4)*(b*c - a*d)^(5/4)*Sqrt[-((d
*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/
4))/(b*c - a*d)^(1/4)], -1])/(3*d^3*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 29.6633, size = 194, normalized size = 1.42

$$\frac{8b^{\frac{3}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{5}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{8b\sqrt{a+bx}\sqrt[4]{c+dx}}{3d^2}-\frac{4\,(a+bx)^{\frac{3}{2}}}{3d\,(c+dx)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(7/4),x)
```

```
[Out] 8*b**(3/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*s
qrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(5/4)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(
c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(3*d**3*sqrt(a - b*c/d
+ b*(c + d*x)/d)) + 8*b*sqrt(a + b*x)*(c + d*x)**(1/4)/(3*d**2) -
 4*(a + b*x)**(3/2)/(3*d*(c + d*x)**(3/4))
```

Mathematica [C] time = 0.354895, size = 98, normalized size = 0.72

$$\frac{4\sqrt{a+bx}\sqrt[4]{c+dx}\left(\frac{4b\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+\frac{-ad+2bc+bdx}{c+dx}\right)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(7/4),x]
```

```
[Out] (4*Sqrt[a + b*x]*(c + d*x)^(1/4)*((2*b*c - a*d + b*d*x)/(c + d*x)
 + (4*b*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d
)])/Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]))/(3*d^2)
```

Maple [F] time = 0.085, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{\frac{3}{2}}\left(dx+c\right)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(7/4),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{7}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(7/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(7/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{7}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(7/4),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(7/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{7}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(7/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(7/4), x)
```

3.1668 $\int \frac{\sqrt{a+bx}}{(c+dx)^{7/4}}\,dx$

Optimal. Leaf size=111

$$\frac{8b^{3/4}\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^2\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{3d(c+dx)^{3/4}}$$

```
[Out] (-4*Sqrt[a + b*x])/(3*d*(c + d*x)^(3/4)) + (8*b^(3/4)*(b*c - a*d)
^(1/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/
4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*d^2*Sqrt[a + b*x]
)
```

Rubi [A] time = 0.157277, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{8b^{3/4}\sqrt[4]{bc-ad}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d^2\sqrt{a+bx}}-\frac{4\sqrt{a+bx}}{3d(c+dx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(7/4),x]
```

```
[Out] (-4*Sqrt[a + b*x])/(3*d*(c + d*x)^(3/4)) + (8*b^(3/4)*(b*c - a*d)
^(1/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/
4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*d^2*Sqrt[a + b*x]
)
```

Rubi in Sympy [A] time = 21.1064, size = 168, normalized size = 1.51

$$\frac{4b^{\frac{3}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\sqrt[4]{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3d^2\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{4\sqrt{a+bx}}{3d\left(c+dx\right)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(7/4),x)
```

```
[Out] 4*b**(3/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*s
qrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(1/4)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(
```

```
c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(3*d**2*sqrt(a - b*c/d
+ b*(c + d*x)/d)) - 4*sqrt(a + b*x)/(3*d*(c + d*x)**(3/4))
```

Mathematica [C] time = 0.148307, size = 90, normalized size = 0.81

$$\frac{8b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-4d(a+bx)}{3d^2\sqrt{a+bx}(c+dx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(7/4),x]
```

```
[Out] (-4*d*(a + b*x) + 8*b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x
)*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)])/(3
*d^2*Sqrt[a + b*x]*(c + d*x)^(3/4))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(7/4),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{7}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(7/4),x, algorithm="fricas")

[Out] integral(sqrt(b*x + a)/(d*x + c)^(7/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(7/4),x)

[Out] Integral(sqrt(a + b*x)/(c + d*x)**(7/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(7/4),x, algorithm="giac")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(7/4), x)
```

3.1669 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{7/4}}\,dx$

Optimal. Leaf size=118

$$\frac{4b^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}\,F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d\sqrt{a+bx}(bc-ad)^{3/4}}+\frac{4\sqrt{a+bx}}{3(c+dx)^{3/4}(bc-ad)}$$

```
[Out] (4*Sqrt[a + b*x])/(3*(b*c - a*d)*(c + d*x)^(3/4)) + (4*b^(3/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*d*(b*c - a*d)^(3/4)*Sqrt[a
 + b*x])
```

Rubi [A] time = 0.161414, antiderivative size = 118, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{4b^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}\,F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3d\sqrt{a+bx}(bc-ad)^{3/4}}+\frac{4\sqrt{a+bx}}{3(c+dx)^{3/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(7/4)),x]
```

```
[Out] (4*Sqrt[a + b*x])/(3*(b*c - a*d)*(c + d*x)^(3/4)) + (4*b^(3/4)*Sq
rt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d
*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(3*d*(b*c - a*d)^(3/4)*Sqrt[a
 + b*x])
```

Rubi in Sympy [A] time = 21.5172, size = 173, normalized size = 1.47

$$-\frac{2b^{\frac{3}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3d\,(ad-bc)^{\frac{3}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{4\sqrt{a+bx}}{3\,(c+dx)^{\frac{3}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(7/4),x)
```

```
[Out] -2*b**(3/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
```

```
*d - b*c)**(1/4)), 1/2)/(3*d*(a*d - b*c)**(3/4)*sqrt(a - b*c/d +
b*(c + d*x)/d)) - 4*sqrt(a + b*x)/(3*(c + d*x)**(3/4)*(a*d - b*c)
)
```

Mathematica [C] time = 0.172464, size = 98, normalized size = 0.83

$$\frac{4\left(b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{3d\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(7/4)),x]
```

```
[Out] (4*(d*(a + b*x) + b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)*
Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(3*
d*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}(dx+c)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(7/4),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{7}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/4)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(7/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(7/4),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(7/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/4)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/4)), x)
```

3.1670 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{7/4}}\,dx$

Optimal. Leaf size=146

$$-\frac{10b^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3\sqrt{a+bx}(bc-ad)^{7/4}}-\frac{10d\sqrt{a+bx}}{3(c+dx)^{3/4}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}$$

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4)) - (10*d*Sqrt[a + b
*x])/(3*(b*c - a*d)^2*(c + d*x)^(3/4)) - (10*b^(3/4)*Sqrt[-((d*(a
 + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))
/(b*c - a*d)^(1/4)], -1])/(3*(b*c - a*d)^(7/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.206575, antiderivative size = 146, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{10b^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{3\sqrt{a+bx}(bc-ad)^{7/4}}-\frac{10d\sqrt{a+bx}}{3(c+dx)^{3/4}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(7/4)),x]
```

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(3/4)) - (10*d*Sqrt[a + b
*x])/(3*(b*c - a*d)^2*(c + d*x)^(3/4)) - (10*b^(3/4)*Sqrt[-((d*(a
 + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))
/(b*c - a*d)^(1/4)], -1])/(3*(b*c - a*d)^(7/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 30.535, size = 199, normalized size = 1.36

$$-\frac{5b^{\frac{3}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{3(ad-bc)^{\frac{7}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{10d\sqrt{a+bx}}{3(c+dx)^{\frac{3}{4}}(ad-bc)^2}+\frac{2}{\sqrt{a+bx}(c+dx)^{\frac{3}{4}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(7/4),x)
```

```
[Out] -5*b**(3/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/(3*(a*d - b*c)**(7/4)*sqrt(a - b*c/d + b*
(c + d*x)/d)) - 10*d*sqrt(a + b*x)/(3*(c + d*x)**(3/4)*(a*d - b*c
)**2) + 2/(sqrt(a + b*x)*(c + d*x)**(3/4)*(a*d - b*c))
```

Mathematica [C] time = 0.21511, size = 102, normalized size = 0.7

$$-\frac{2\left(5b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+2ad+3bc+5bdx\right)}{3\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(7/4)),x]
```

```
[Out] (-2*(3*b*c + 2*a*d + 5*b*d*x + 5*b*Sqrt[(d*(a + b*x))/(-(b*c) + a
*d)]*(c + d*x)*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*
c - a*d)]))/(3*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4))
```

Maple [F] time = 0.078, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\,(dx+c)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(7/4),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bdx^2+ac+(bc+ad)x)\sqrt{bx+a}(dx+c)^{\frac{3}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*sqrt(b*x + a)*(d*x +
c)^(3/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(3/2)/(d*x+c)**(7/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(7/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/4)), x)
```

3.1671 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{7/4}}\,dx$

Optimal. Leaf size=178

$$\frac{5b^{3/4}d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{11/4}}+\frac{5d^2\sqrt{a+bx}}{(c+dx)^{3/4}(bc-ad)^3}+\frac{3d}{\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}(c+dx)^{3/4}(bc-ad)}$$

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/4)) + (3*d)/((b*c
- a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4)) + (5*d^2*Sqrt[a + b*x])/(
(b*c - a*d)^3*(c + d*x)^(3/4)) + (5*b^(3/4)*d*Sqrt[-((d*(a + b*x)
)/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
 a*d)^(1/4)], -1])/((b*c - a*d)^(11/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.275959, antiderivative size = 178, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{5b^{3/4}d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{\sqrt{a+bx}(bc-ad)^{11/4}}+\frac{5d^2\sqrt{a+bx}}{(c+dx)^{3/4}(bc-ad)^3}+\frac{3d}{\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)^2}-\frac{2}{3(a+bx)^{3/2}(c+dx)^{3/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(7/4)),x]
```

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(3/4)) + (3*d)/((b*c
- a*d)^2*Sqrt[a + b*x]*(c + d*x)^(3/4)) + (5*d^2*Sqrt[a + b*x])/(
(b*c - a*d)^3*(c + d*x)^(3/4)) + (5*b^(3/4)*d*Sqrt[-((d*(a + b*x)
)/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
 a*d)^(1/4)], -1])/((b*c - a*d)^(11/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 42.2773, size = 231, normalized size = 1.3

$$-\frac{5b^{\frac{3}{4}}d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{2(ad-bc)^{\frac{11}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}-\frac{5d^2\sqrt{a+bx}}{(c+dx)^{\frac{3}{4}}(ad-bc)^3}+\frac{3d}{\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}(ad-bc)^2}+\frac{2}{3(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{4}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(7/4),x)
```

```
[Out] -5*b**(3/4)*d*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/
sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/
(a*d - b*c)**(1/4)), 1/2)/(2*(a*d - b*c)**(11/4)*sqrt(a - b*c/d +
 b*(c + d*x)/d)) - 5*d**2*sqrt(a + b*x)/((c + d*x)**(3/4)*(a*d -
b*c)**3) + 3*d/(sqrt(a + b*x)*(c + d*x)**(3/4)*(a*d - b*c)**2) +
2/(3*(a + b*x)**(3/2)*(c + d*x)**(3/4)*(a*d - b*c))
```

Mathematica [C] time = 0.279332, size = 139, normalized size = 0.78

$$\frac{-4a^2d^2-15bd(a+bx)(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-abd(13c+21dx)+b^2\left(2c^2-9cdx-15d^2x^2\right)}{3(a+bx)^{3/2}(c+dx)^{3/4}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(7/4)),x]
```

```
[Out] (-4*a^2*d^2 - a*b*d*(13*c + 21*d*x) + b^2*(2*c^2 - 9*c*d*x - 15*d
^2*x^2) - 15*b*d*(a + b*x)*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c
+ d*x)*Hypergeometric2F1[1/4, 1/2, 5/4, (b*(c + d*x))/(b*c - a*d)
])/(3*(-(b*c) + a*d)^3*(a + b*x)^(3/2)*(c + d*x)^(3/4))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,(dx+c)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(7/4),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2dx^3 + a^2c + (b^2c + 2\,abd)x^2 + (2\,abc + a^2d)x)\sqrt{bx+a}(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*d*x^3 + a^2*c + (b^2*c + 2*a*b*d)*x^2 + (2*a*b*c
 + a^2*d)*x)*sqrt(b*x + a)*(d*x + c)^(3/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/4)), x)
```

3.1672 $\int \frac{(a+bx)^{7/2}}{(c+dx)^{9/4}}\,dx$

Optimal. Leaf size=286

$$-\frac{448b^{5/4}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15d^5\sqrt{a+bx}}+\frac{448b^{5/4}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15d^5\sqrt{a+bx}}-\frac{224b^2\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{15d^4}+\frac{112b^2(a+bx)^{3/2}(c+dx)^{3/4}}{9d^3}-\frac{56b(a+bx)^{5/2}}{5d^2\sqrt[4]{c+dx}}-\frac{4(a+bx)^{7/2}}{5d(c+dx)^{5/4}}$$

```
[Out] (-4*(a + b*x)^(7/2))/(5*d*(c + d*x)^(5/4)) - (56*b*(a + b*x)^(5/2
))/(5*d^2*(c + d*x)^(1/4)) - (224*b^2*(b*c - a*d)*Sqrt[a + b*x]*(
c + d*x)^(3/4))/(15*d^4) + (112*b^2*(a + b*x)^(3/2)*(c + d*x)^(3/
4))/(9*d^3) + (448*b^(5/4)*(b*c - a*d)^(11/4)*Sqrt[-((d*(a + b*x)
)/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
 a*d)^(1/4)], -1])/(15*d^5*Sqrt[a + b*x]) - (448*b^(5/4)*(b*c - a
*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b
^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(15*d^5*Sqrt[a +
 b*x])
```

Rubi [A] time = 0.849067, antiderivative size = 286, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.474

$$-\frac{448b^{5/4}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15d^5\sqrt{a+bx}}+\frac{448b^{5/4}(bc-ad)^{11/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{15d^5\sqrt{a+bx}}-\frac{224b^2\sqrt{a+bx}(c+dx)^{3/4}(bc-ad)}{15d^4}+\frac{112b^2(a+bx)^{3/2}(c+dx)^{3/4}}{9d^3}-\frac{56b(a+bx)^{5/2}}{5d^2\sqrt[4]{c+dx}}-\frac{4(a+bx)^{7/2}}{5d(c+dx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/2)/(c + d*x)^(9/4),x]
```

```
[Out] (-4*(a + b*x)^(7/2))/(5*d*(c + d*x)^(5/4)) - (56*b*(a + b*x)^(5/2
))/(5*d^2*(c + d*x)^(1/4)) - (224*b^2*(b*c - a*d)*Sqrt[a + b*x]*(
c + d*x)^(3/4))/(15*d^4) + (112*b^2*(a + b*x)^(3/2)*(c + d*x)^(3/
4))/(9*d^3) + (448*b^(5/4)*(b*c - a*d)^(11/4)*Sqrt[-((d*(a + b*x)
)/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
 a*d)^(1/4)], -1])/(15*d^5*Sqrt[a + b*x]) - (448*b^(5/4)*(b*c - a
```

```
*d)^(11/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b
^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(15*d^5*Sqrt[a +
 b*x])
```

Rubi in Sympy [A] time = 121.044, size = 478, normalized size = 1.67

$$-\frac{448b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{15d^5\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} + \frac{224b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\,(ad-bc)^{\frac{11}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{15d^5\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} + \frac{448b^{\frac{3}{2}}\sqrt[4]{c+dx}\,(ad-bc)^{\frac{3}{2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{15d^4\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)} + \frac{112b^2(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{3}{4}}}{9d^3} + \frac{224b^2\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}(ad-bc)}{15d^4} - \frac{56b(a+bx)^{\frac{5}{2}}}{5d^2\sqrt[4]{c+dx}} - \frac{4(a+bx)^{\frac{7}{2}}}{5d(c+dx)^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/2)/(d*x+c)**(9/4),x)
```

```
[Out] -448*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(11/4)*(sq
rt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/
4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(15*d**5*sqrt(a - b
*c/d + b*(c + d*x)/d)) + 224*b**(5/4)*sqrt((a*d - b*c + b*(c + d*
x))/((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))
*(a*d - b*c)**(11/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*
elliptic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)),
1/2)/(15*d**5*sqrt(a - b*c/d + b*(c + d*x)/d)) + 448*b**(3/2)*(c
+ d*x)**(1/4)*(a*d - b*c)**(3/2)*sqrt(a - b*c/d + b*(c + d*x)/d)/
(15*d**4*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 112*b**2*
(a + b*x)**(3/2)*(c + d*x)**(3/4)/(9*d**3) + 224*b**2*sqrt(a + b*
x)*(c + d*x)**(3/4)*(a*d - b*c)/(15*d**4) - 56*b*(a + b*x)**(5/2)
/(5*d**2*(c + d*x)**(1/4)) - 4*(a + b*x)**(7/2)/(5*d*(c + d*x)**(
5/4))
```

Mathematica [C] time = 0.378175, size = 169, normalized size = 0.59

$$\frac{4(c+dx)^{3/4}\left(112b^2(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+\frac{d(a+bx)\left(-b^2(c+dx)^2(24bc-29ad)-153b(c+dx)(bc-ad)^2+9(bc-ad)^3+5b^3dx(\right.}{(c+dx)^2}\right.}{45d^5\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/2)/(c + d*x)^(9/4),x]
```

```
[Out] (4*(c + d*x)^(3/4)*((d*(a + b*x)*(9*(b*c - a*d)^3 - 153*b*(b*c -
a*d)^2*(c + d*x) - b^2*(24*b*c - 29*a*d)*(c + d*x)^2 + 5*b^3*d*x*
(c + d*x)^2))/(c + d*x)^2 + 112*b^2*(b*c - a*d)^2*Sqrt[(d*(a + b*
x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x)
)/(b*c - a*d)]))/(45*d^5*Sqrt[a + b*x])
```

Maple [F] time = 0.156, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{2}}\,(dx+c)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/2)/(d*x+c)^(9/4),x)
```

```
[Out] int((b*x+a)^(7/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{2}}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/2)/(d*x + c)^(9/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3\right)\sqrt{bx+a}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(9/4),x, algorithm="fricas")
```

```
[Out] integral((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3)*sqrt(b*x + a)/
((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(1/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{2}}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/2)/(d*x + c)^(9/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(7/2)/(d*x + c)^(9/4), x)
```

3.1673 $\int \frac{(a+bx)^{5/2}}{(c+dx)^{9/4}} \, dx$

Optimal. Leaf size=248

$$\frac{96b^{5/4}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^4\sqrt{a+bx}} - \frac{96b^{5/4}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^4\sqrt{a+bx}} + \frac{48b^2\sqrt{a+bx}(c+dx)^{3/4}}{5d^3} - \frac{8b(a+bx)^{3/2}}{d^2\sqrt[4]{c+dx}} - \frac{4(a+bx)^{5/2}}{5d(c+dx)^{5/4}}$$

```
[Out] (-4*(a + b*x)^(5/2))/(5*d*(c + d*x)^(5/4)) - (8*b*(a + b*x)^(3/2)
)/(d^2*(c + d*x)^(1/4)) + (48*b^2*Sqrt[a + b*x]*(c + d*x)^(3/4))/
(5*d^3) - (96*b^(5/4)*(b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c
 - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^
(1/4)], -1])/(5*d^4*Sqrt[a + b*x]) + (96*b^(5/4)*(b*c - a*d)^(7/4
)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c
 + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^4*Sqrt[a + b*x])
```

Rubi [A] time = 0.754715, antiderivative size = 248, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$\frac{96b^{5/4}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^4\sqrt{a+bx}} - \frac{96b^{5/4}(bc-ad)^{7/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^4\sqrt{a+bx}} + \frac{48b^2\sqrt{a+bx}(c+dx)^{3/4}}{5d^3} - \frac{8b(a+bx)^{3/2}}{d^2\sqrt[4]{c+dx}} - \frac{4(a+bx)^{5/2}}{5d(c+dx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(9/4),x]
```


```
[Out] (-4*(a + b*x)^(5/2))/(5*d*(c + d*x)^(5/4)) - (8*b*(a + b*x)^(3/2)
)/(d^2*(c + d*x)^(1/4)) + (48*b^2*Sqrt[a + b*x]*(c + d*x)^(3/4))/
(5*d^3) - (96*b^(5/4)*(b*c - a*d)^(7/4)*Sqrt[-((d*(a + b*x))/(b*c
 - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^
(1/4)], -1])/(5*d^4*Sqrt[a + b*x]) + (96*b^(5/4)*(b*c - a*d)^(7/4
)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)*(c
 + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^4*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 100.779, size = 442, normalized size = 1.78

$$-\frac{96b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^4\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{48b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{7}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^4\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{96b^{\frac{3}{2}}\sqrt[4]{c+dx}\sqrt{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5d^3\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}+\frac{48b^2\sqrt{a+bx}\,(c+dx)^{\frac{3}{4}}}{5d^3}-\frac{8b\,(a+bx)^{\frac{3}{2}}}{d^2\sqrt[4]{c+dx}}-\frac{4\,(a+bx)^{\frac{5}{2}}}{5d\,(c+dx)^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(9/4),x)
```

```
[Out] -96*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(7/4)*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)
*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(5*d**4*sqrt(a - b*c/
d + b*(c + d*x)/d)) + 48*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/
((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*
d - b*c)**(7/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ellip
tic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/
(5*d**4*sqrt(a - b*c/d + b*(c + d*x)/d)) + 96*b**(3/2)*(c + d*x)*
*(1/4)*sqrt(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*d**3*(s
qrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 48*b**2*sqrt(a + b*x
)*(c + d*x)**(3/4)/(5*d**3) - 8*b*(a + b*x)**(3/2)/(d**2*(c + d*x
)**(1/4)) - 4*(a + b*x)**(5/2)/(5*d*(c + d*x)**(5/4))
```

Mathematica [C] time = 0.250912, size = 141, normalized size = 0.57

$$\frac{4(c+dx)^{3/4}\left(-8b^2(bc-ad)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-\frac{d(a+bx)\left(-12b(c+dx)(bc-ad)+(bc-ad)^2-b^2(c+dx)^2\right)}{(c+dx)^2}\right)}{5d^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(9/4),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(-((d*(a + b*x)*((b*c - a*d)^2 - 12*b*(b*c - a
*d)*(c + d*x) - b^2*(c + d*x)^2))/(c + d*x)^2) - 8*b^2*(b*c - a*d
)*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 3/4,
```

```
7/4, (b*(c + d*x))/(b*c - a*d)]))/(5*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.125, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{2}}\,(dx+c)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(9/4),x)

[Out] int((b*x+a)^(5/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(9/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(9/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(9/4),x, algorithm="fricas")

[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/((d^2*x^2 + 2*c*
d*x + c^2)*(d*x + c)^(1/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(9/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(9/4), x)
```

3.1674 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{9/4}}\,dx$

Optimal. Leaf size=222

$$-\frac{48b^{5/4}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}}+\frac{48b^{5/4}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}}-\frac{24b\sqrt{a+bx}}{5d^2\sqrt[4]{c+dx}}-\frac{4(a+bx)^{3/2}}{5d(c+dx)^{5/4}}$$

```
[Out] (-4*(a + b*x)^(3/2))/(5*d*(c + d*x)^(5/4)) - (24*b*Sqrt[a + b*x])
/(5*d^2*(c + d*x)^(1/4)) + (48*b^(5/4)*(b*c - a*d)^(3/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(5*d^3*Sqrt[a + b*x]) - (48*b^(5/4)
*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[A
rcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^3*S
qrt[a + b*x])
```

Rubi [A] time = 0.677457, antiderivative size = 222, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{48b^{5/4}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}}+\frac{48b^{5/4}(bc-ad)^{3/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^3\sqrt{a+bx}}-\frac{24b\sqrt{a+bx}}{5d^2\sqrt[4]{c+dx}}-\frac{4(a+bx)^{3/2}}{5d(c+dx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(9/4),x]
```


```
[Out] (-4*(a + b*x)^(3/2))/(5*d*(c + d*x)^(5/4)) - (24*b*Sqrt[a + b*x])
/(5*d^2*(c + d*x)^(1/4)) + (48*b^(5/4)*(b*c - a*d)^(3/4)*Sqrt[-((
d*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1
/4))/(b*c - a*d)^(1/4)], -1])/(5*d^3*Sqrt[a + b*x]) - (48*b^(5/4)
*(b*c - a*d)^(3/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[A
rcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^3*S
qrt[a + b*x])
```

Rubi in Sympy [A] time = 80.9538, size = 416, normalized size = 1.87

$$-\frac{48b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{24b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}(ad-bc)^{\frac{3}{4}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^3\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{48b^{\frac{3}{2}}\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5d^2\sqrt{ad-bc}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{24b\sqrt{a+bx}}{5d^2\sqrt[4]{c+dx}}-\frac{4(a+bx)^{\frac{3}{2}}}{5d(c+dx)^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(9/4),x)
```

```
[Out] -48*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*d - b*c)**(3/4)*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)
*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(5*d**3*sqrt(a - b*c/
d + b*(c + d*x)/d)) + 24*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/
((a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(a*
d - b*c)**(3/4)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*ellip
tic_f(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/
(5*d**3*sqrt(a - b*c/d + b*(c + d*x)/d)) + 48*b**(3/2)*(c + d*x)*
*(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*d**2*sqrt(a*d - b*c)*(s
qrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) - 24*b*sqrt(a + b*x)/(
5*d**2*(c + d*x)**(1/4)) - 4*(a + b*x)**(3/2)/(5*d*(c + d*x)**(5/
4))
```

Mathematica [C] time = 0.219551, size = 107, normalized size = 0.48

$$\frac{16b^2(c+dx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-4d(a+bx)(ad+6bc+7bdx)}{5d^3\sqrt{a+bx}(c+dx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(9/4),x]
```

```
[Out] (-4*d*(a + b*x)*(6*b*c + a*d + 7*b*d*x) + 16*b^2*Sqrt[(d*(a + b*x
))/(-(b*c) + a*d)]*(c + d*x)^2*Hypergeometric2F1[1/2, 3/4, 7/4, (
b*(c + d*x))/(b*c - a*d)])/(5*d^3*Sqrt[a + b*x]*(c + d*x)^(5/4))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(9/4),x)

[Out] int((b*x+a)^(3/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(9/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(9/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(9/4),x, algorithm="fricas")

[Out] integral((b*x + a)^(3/2)/((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(1/
4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(9/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(9/4), x)
```

3.1675 $\int \frac{\sqrt{a+bx}}{(c+dx)^{9/4}} dx$

Optimal. Leaf size=232

$$\frac{8b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^2\sqrt{a+bx}\sqrt[4]{bc-ad}} - \frac{8b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^2\sqrt{a+bx}\sqrt[4]{bc-ad}} + \frac{8b\sqrt{a+bx}}{5d\sqrt[4]{c+dx}(bc-ad)} - \frac{4\sqrt{a+bx}}{5d(c+dx)^{5/4}}$$

```
[Out] (-4*Sqrt[a + b*x])/(5*d*(c + d*x)^(5/4)) + (8*b*Sqrt[a + b*x])/(5
*d*(b*c - a*d)*(c + d*x)^(1/4)) - (8*b^(5/4)*Sqrt[-((d*(a + b*x))
/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
a*d)^(1/4)], -1])/(5*d^2*(b*c - a*d)^(1/4)*Sqrt[a + b*x]) + (8*b^
(5/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4
)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^2*(b*c - a*d)^(1
/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.694057, antiderivative size = 232, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$\frac{8b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^2\sqrt{a+bx}\sqrt[4]{bc-ad}} - \frac{8b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d^2\sqrt{a+bx}\sqrt[4]{bc-ad}} + \frac{8b\sqrt{a+bx}}{5d\sqrt[4]{c+dx}(bc-ad)} - \frac{4\sqrt{a+bx}}{5d(c+dx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(9/4),x]
```

```
[Out] (-4*Sqrt[a + b*x])/(5*d*(c + d*x)^(5/4)) + (8*b*Sqrt[a + b*x])/(5
*d*(b*c - a*d)*(c + d*x)^(1/4)) - (8*b^(5/4)*Sqrt[-((d*(a + b*x))
/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c -
a*d)^(1/4)], -1])/(5*d^2*(b*c - a*d)^(1/4)*Sqrt[a + b*x]) + (8*b^
(5/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4
)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d^2*(b*c - a*d)^(1
/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 82.6812, size = 420, normalized size = 1.81

$$-\frac{8b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^2\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{4b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d^2\sqrt[4]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}+\frac{8b^{\frac{3}{2}}\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5d(ad-bc)^{\frac{3}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)}-\frac{8b\sqrt{a+bx}}{5d\sqrt[4]{c+dx}(ad-bc)}-\frac{4\sqrt{a+bx}}{5d(c+dx)^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(9/4),x)
```

```
[Out] -8*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/(5*d**2*(a*d - b*c)**(1/4)*sqrt(a - b*c/d
 + b*(c + d*x)/d)) + 4*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((
a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)
*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(5*d**2*(a*d - b*c)**
(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 8*b**(3/2)*(c + d*x)**(1
/4)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*d*(a*d - b*c)**(3/2)*(sqrt
(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) - 8*b*sqrt(a + b*x)/(5*d*
(c + d*x)**(1/4)*(a*d - b*c)) - 4*sqrt(a + b*x)/(5*d*(c + d*x)**(
5/4))
```

Mathematica [C] time = 0.218899, size = 116, normalized size = 0.5

$$\frac{8b^2(c+dx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-12d(a+bx)(ad+b(c+2dx))}{15d^2\sqrt{a+bx}(c+dx)^{5/4}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(9/4),x]
```

```
[Out] (-12*d*(a + b*x)*(a*d + b*(c + 2*d*x)) + 8*b^2*Sqrt[(d*(a + b*x))
/(-(b*c) + a*d)]*(c + d*x)^2*Hypergeometric2F1[1/2, 3/4, 7/4, (b*
(c + d*x))/(b*c - a*d)])/(15*d^2*(-(b*c) + a*d)*Sqrt[a + b*x]*(c
+ d*x)^(5/4))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(9/4),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(9/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(9/4),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)/((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(1/4)
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(9/4),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(9/4), x)
```

3.1676 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{9/4}} dx$

Optimal. Leaf size=236

$$\frac{12b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d\sqrt{a+bx}(bc-ad)^{5/4}} - \frac{12b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d\sqrt{a+bx}(bc-ad)^{5/4}} + \frac{12b\sqrt{a+bx}}{5\sqrt[4]{c+dx}(bc-ad)^2} + \frac{4\sqrt{a+bx}}{5(c+dx)^{5/4}(bc-ad)}$$

```
[Out] (4*Sqrt[a + b*x])/(5*(b*c - a*d)*(c + d*x)^(5/4)) + (12*b*Sqrt[a
+ b*x])/(5*(b*c - a*d)^2*(c + d*x)^(1/4)) - (12*b^(5/4)*Sqrt[-((d
*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/
4))/(b*c - a*d)^(1/4)], -1])/(5*d*(b*c - a*d)^(5/4)*Sqrt[a + b*x]
) + (12*b^(5/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcS
in[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d*(b*c -
 a*d)^(5/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.696794, antiderivative size = 236, normalized size of antiderivative = 1., number of steps used = 9, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{12b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d\sqrt{a+bx}(bc-ad)^{5/4}} - \frac{12b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5d\sqrt{a+bx}(bc-ad)^{5/4}} + \frac{12b\sqrt{a+bx}}{5\sqrt[4]{c+dx}(bc-ad)^2} + \frac{4\sqrt{a+bx}}{5(c+dx)^{5/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(9/4)),x]
```

```
[Out] (4*Sqrt[a + b*x])/(5*(b*c - a*d)*(c + d*x)^(5/4)) + (12*b*Sqrt[a
+ b*x])/(5*(b*c - a*d)^2*(c + d*x)^(1/4)) - (12*b^(5/4)*Sqrt[-((d
*(a + b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/
4))/(b*c - a*d)^(1/4)], -1])/(5*d*(b*c - a*d)^(5/4)*Sqrt[a + b*x]
) + (12*b^(5/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcS
in[(b^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*d*(b*c -
 a*d)^(5/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 84.3008, size = 420, normalized size = 1.78

$$\frac{12b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d(ad-bc)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} - \frac{6b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5d(ad-bc)^{\frac{5}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} - \frac{12b^{\frac{3}{2}}\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5(ad-bc)^{\frac{5}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)} + \frac{12b\sqrt{a+bx}}{5\sqrt[4]{c+dx}(ad-bc)^2} - \frac{4\sqrt{a+bx}}{5(c+dx)^{\frac{5}{4}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(9/4),x)
```

```
[Out] 12*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/(5*d*(a*d - b*c)**(5/4)*sqrt(a - b*c/d +
b*(c + d*x)/d)) - 6*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d
 - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)
*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c
 + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(5*d*(a*d - b*c)**(5/4)*
sqrt(a - b*c/d + b*(c + d*x)/d)) - 12*b**(3/2)*(c + d*x)**(1/4)*s
qrt(a - b*c/d + b*(c + d*x)/d)/(5*(a*d - b*c)**(5/2)*(sqrt(b)*sqr
t(c + d*x)/sqrt(a*d - b*c) + 1)) + 12*b*sqrt(a + b*x)/(5*(c + d*x
)**(1/4)*(a*d - b*c)**2) - 4*sqrt(a + b*x)/(5*(c + d*x)**(5/4)*(a
*d - b*c))
```

Mathematica [C] time = 0.217096, size = 115, normalized size = 0.49

$$-\frac{4\left(b^2(c+dx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(ad-4bc-3bdx)\right)}{5d\sqrt{a+bx}(c+dx)^{5/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(9/4)),x]
```

```
[Out] (-4*(d*(a + b*x)*(-4*b*c + a*d - 3*b*d*x) + b^2*Sqrt[(d*(a + b*x)
)/(-(b*c) + a*d)]*(c + d*x)^2*Hypergeometric2F1[1/2, 3/4, 7/4, (b
*(c + d*x))/(b*c - a*d)]))/(5*d*(b*c - a*d)^2*Sqrt[a + b*x]*(c +
d*x)^(5/4))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\left(dx+c\right)^{-\frac{9}{4}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(9/4),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(9/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(9/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(d^2x^2+2\,cdx+c^2)\sqrt{bx+a}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(9/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((d^2*x^2 + 2*c*d*x + c^2)*sqrt(b*x + a)*(d*x + c)^(1/
4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(9/4)),x, algorithm="giac")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(9/4)), x)
```

3.1677 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{9/4}}\,dx$

Optimal. Leaf size=262

$$-\frac{42b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{9/4}}+\frac{42b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{9/4}}-\frac{42bd\sqrt{a+bx}}{5\sqrt[4]{c+dx}(bc-ad)^3}-\frac{14d\sqrt{a+bx}}{5(c+dx)^{5/4}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}(c+dx)^{5/4}(bc-ad)}$$

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(5/4)) - (14*d*Sqrt[a + b
*x])/(5*(b*c - a*d)^2*(c + d*x)^(5/4)) - (42*b*d*Sqrt[a + b*x])/(
5*(b*c - a*d)^3*(c + d*x)^(1/4)) + (42*b^(5/4)*Sqrt[-((d*(a + b*x
))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c
- a*d)^(1/4)], -1])/(5*(b*c - a*d)^(9/4)*Sqrt[a + b*x]) - (42*b^(
5/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)
*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*(b*c - a*d)^(9/4)*S
qrt[a + b*x])
```

Rubi [A] time = 0.74926, antiderivative size = 262, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{42b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{9/4}}+\frac{42b^{5/4}\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{9/4}}-\frac{42bd\sqrt{a+bx}}{5\sqrt[4]{c+dx}(bc-ad)^3}-\frac{14d\sqrt{a+bx}}{5(c+dx)^{5/4}(bc-ad)^2}-\frac{2}{\sqrt{a+bx}(c+dx)^{5/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(9/4)),x]
```


```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(5/4)) - (14*d*Sqrt[a + b
*x])/(5*(b*c - a*d)^2*(c + d*x)^(5/4)) - (42*b*d*Sqrt[a + b*x])/(
5*(b*c - a*d)^3*(c + d*x)^(1/4)) + (42*b^(5/4)*Sqrt[-((d*(a + b*x
))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b*c
- a*d)^(1/4)], -1])/(5*(b*c - a*d)^(9/4)*Sqrt[a + b*x]) - (42*b^(
5/4)*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b^(1/4)
*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*(b*c - a*d)^(9/4)*S
qrt[a + b*x])
```

Rubi in Sympy [A] time = 102.671, size = 449, normalized size = 1.71

$$\frac{42b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5(ad-bc)^{\frac{9}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} - \frac{21b^{\frac{5}{4}}\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5(ad-bc)^{\frac{9}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} - \frac{42b^{\frac{3}{2}}d\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5(ad-bc)^{\frac{7}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)} + \frac{42bd\sqrt{a+bx}}{5\sqrt[4]{c+dx}(ad-bc)^3} - \frac{14d\sqrt{a+bx}}{5(c+dx)^{\frac{5}{4}}(ad-bc)^2} + \frac{2}{\sqrt{a+bx}(c+dx)^{\frac{5}{4}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(9/4),x)
```

```
[Out] 42*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/sq
rt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/(a
*d - b*c)**(1/4)), 1/2)/(5*(a*d - b*c)**(9/4)*sqrt(a - b*c/d + b*
(c + d*x)/d)) - 21*b**(5/4)*sqrt((a*d - b*c + b*(c + d*x))/((a*d
- b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*
sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4)*(c
+ d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(5*(a*d - b*c)**(9/4)*sqr
t(a - b*c/d + b*(c + d*x)/d)) - 42*b**(3/2)*d*(c + d*x)**(1/4)*sq
rt(a - b*c/d + b*(c + d*x)/d)/(5*(a*d - b*c)**(7/2)*(sqrt(b)*sqrt
(c + d*x)/sqrt(a*d - b*c) + 1)) + 42*b*d*sqrt(a + b*x)/(5*(c + d*
x)**(1/4)*(a*d - b*c)**3) - 14*d*sqrt(a + b*x)/(5*(c + d*x)**(5/4
)*(a*d - b*c)**2) + 2/(sqrt(a + b*x)*(c + d*x)**(5/4)*(a*d - b*c)
)
```

Mathematica [C] time = 0.37058, size = 138, normalized size = 0.53

$$\frac{-4a^2d^2-14b^2(c+dx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+4abd(9c+7dx)+2b^2\left(5c^2+28cdx+21d^2x^2\right)}{5\sqrt{a+bx}(c+dx)^{5/4}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(9/4)),x]
```

```
[Out] (-4*a^2*d^2 + 4*a*b*d*(9*c + 7*d*x) + 2*b^2*(5*c^2 + 28*c*d*x + 2
1*d^2*x^2) - 14*b^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^
```

```
2*Hypergeometric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/(5
*(-(b*c) + a*d)^3*Sqrt[a + b*x]*(c + d*x)^(5/4))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\,(dx+c)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(9/4),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(9/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(9/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bd^2x^3+ac^2+(2\,bcd+ad^2)x^2+(bc^2+2\,acd)x)\sqrt{bx+a}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(9/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d^2*x^3 + a*c^2 + (2*b*c*d + a*d^2)*x^2 + (b*c^2 +
 2*a*c*d)*x)*sqrt(b*x + a)*(d*x + c)^(1/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(9/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(9/4)), x)
```

3.1678 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{9/4}}\,dx$

Optimal. Leaf size=303

$$\frac{77b^{5/4}d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{13/4}} - \frac{77b^{5/4}d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{13/4}} + \frac{77bd^2\sqrt{a+bx}}{5\sqrt[4]{c+dx}(bc-ad)^4} + \frac{77d^2\sqrt{a+bx}}{15(c+dx)^{5/4}(bc-ad)^3} + \frac{11d}{3\sqrt{a+bx}(c+dx)^{5/4}(bc-ad)^2} - \frac{2}{3(a+bx)^{3/2}(c+dx)^{5/4}(bc-ad)}$$

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(5/4)) + (11*d)/(3*(b
*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(5/4)) + (77*d^2*Sqrt[a + b*x
])/(15*(b*c - a*d)^3*(c + d*x)^(5/4)) + (77*b*d^2*Sqrt[a + b*x])/
(5*(b*c - a*d)^4*(c + d*x)^(1/4)) - (77*b^(5/4)*d*Sqrt[-((d*(a +
b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b
*c - a*d)^(1/4)], -1])/(5*(b*c - a*d)^(13/4)*Sqrt[a + b*x]) + (77
*b^(5/4)*d*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b
^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*(b*c - a*d)^(
13/4)*Sqrt[a + b*x])
```

Rubi [A] time = 0.861511, antiderivative size = 303, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$\frac{77b^{5/4}d\sqrt{-\frac{d(a+bx)}{bc-ad}}F\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{13/4}} - \frac{77b^{5/4}d\sqrt{-\frac{d(a+bx)}{bc-ad}}E\left(\sin^{-1}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{bc-ad}}\right)\middle|-1\right)}{5\sqrt{a+bx}(bc-ad)^{13/4}} + \frac{77bd^2\sqrt{a+bx}}{5\sqrt[4]{c+dx}(bc-ad)^4} + \frac{77d^2\sqrt{a+bx}}{15(c+dx)^{5/4}(bc-ad)^3} + \frac{11d}{3\sqrt{a+bx}(c+dx)^{5/4}(bc-ad)^2} - \frac{2}{3(a+bx)^{3/2}(c+dx)^{5/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(9/4)),x]
```


```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(5/4)) + (11*d)/(3*(b
*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(5/4)) + (77*d^2*Sqrt[a + b*x
])/(15*(b*c - a*d)^3*(c + d*x)^(5/4)) + (77*b*d^2*Sqrt[a + b*x])/
(5*(b*c - a*d)^4*(c + d*x)^(1/4)) - (77*b^(5/4)*d*Sqrt[-((d*(a +
b*x))/(b*c - a*d))]*EllipticE[ArcSin[(b^(1/4)*(c + d*x)^(1/4))/(b
*c - a*d)^(1/4)], -1])/(5*(b*c - a*d)^(13/4)*Sqrt[a + b*x]) + (77
```

```
*b^(5/4)*d*Sqrt[-((d*(a + b*x))/(b*c - a*d))]*EllipticF[ArcSin[(b
^(1/4)*(c + d*x)^(1/4))/(b*c - a*d)^(1/4)], -1])/(5*(b*c - a*d)^(
13/4)*Sqrt[a + b*x])
```

Rubi in Sympy [A] time = 126.415, size = 490, normalized size = 1.62

$$\frac{77b^{\frac{5}{4}}d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)E\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{5(ad-bc)^{\frac{13}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} - \frac{77b^{\frac{5}{4}}d\sqrt{\frac{ad-bc+b(c+dx)}{(ad-bc)\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)^2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)F\left(2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{ad-bc}}\right)\middle|\frac{1}{2}\right)}{10(ad-bc)^{\frac{13}{4}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} - \frac{77b^{\frac{3}{2}}d^2\sqrt[4]{c+dx}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}{5(ad-bc)^{\frac{9}{2}}\left(\frac{\sqrt{b}\sqrt{c+dx}}{\sqrt{ad-bc}}+1\right)} + \frac{77bd^2\sqrt{a+bx}}{5\sqrt[4]{c+dx}(ad-bc)^4} - \frac{77d^2\sqrt{a+bx}}{15(c+dx)^{\frac{5}{4}}(ad-bc)^3} + \frac{11d}{3\sqrt{a+bx}(c+dx)^{\frac{5}{4}}(ad-bc)^2} + \frac{2}{3(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{5}{4}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(9/4),x)
```

```
[Out] 77*b**(5/4)*d*sqrt((a*d - b*c + b*(c + d*x))/((a*d - b*c)*(sqrt(b
)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqrt(b)*sqrt(c + d*x)/
sqrt(a*d - b*c) + 1)*elliptic_e(2*atan(b**(1/4)*(c + d*x)**(1/4)/
(a*d - b*c)**(1/4)), 1/2)/(5*(a*d - b*c)**(13/4)*sqrt(a - b*c/d +
 b*(c + d*x)/d)) - 77*b**(5/4)*d*sqrt((a*d - b*c + b*(c + d*x))/(
(a*d - b*c)*(sqrt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)**2))*(sqr
t(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)*elliptic_f(2*atan(b**(1/4
)*(c + d*x)**(1/4)/(a*d - b*c)**(1/4)), 1/2)/(10*(a*d - b*c)**(13
/4)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 77*b**(3/2)*d**2*(c + d*x)
**(1/4)*sqrt(a - b*c/d + b*(c + d*x)/d)/(5*(a*d - b*c)**(9/2)*(sq
rt(b)*sqrt(c + d*x)/sqrt(a*d - b*c) + 1)) + 77*b*d**2*sqrt(a + b*
x)/(5*(c + d*x)**(1/4)*(a*d - b*c)**4) - 77*d**2*sqrt(a + b*x)/(1
5*(c + d*x)**(5/4)*(a*d - b*c)**3) + 11*d/(3*sqrt(a + b*x)*(c + d
*x)**(5/4)*(a*d - b*c)**2) + 2/(3*(a + b*x)**(3/2)*(c + d*x)**(5/
4)*(a*d - b*c))
```

Mathematica [C] time = 0.382015, size = 156, normalized size = 0.51

$$\frac{(c+dx)^{3/4}\left(-77b^2d\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-\frac{10b^2(bc-ad)}{a+bx}+\frac{156bd^2(a+bx)}{c+dx}+\frac{12d^2(a+bx)(bc-ad)}{(c+dx)^2}+75b^2d\right)}{15\sqrt{a+bx}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(9/4)),x]
```

```
[Out] ((c + d*x)^(3/4)*(75*b^2*d - (10*b^2*(b*c - a*d))/(a + b*x) + (12
*d^2*(b*c - a*d)*(a + b*x))/(c + d*x)^2 + (156*b*d^2*(a + b*x))/(
c + d*x) - 77*b^2*d*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeome
tric2F1[1/2, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(15*(b*c - a*
d)^4*Sqrt[a + b*x])
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,(dx+c)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(9/4),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(9/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(9/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(b^2d^2x^4+a^2c^2+2\,(b^2cd+abd^2)x^3+(b^2c^2+4\,abcd+a^2d^2)x^2+2\,(abc^2+a^2cd)x)\sqrt{bx+a}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(9/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*d^2*x^4 + a^2*c^2 + 2*(b^2*c*d + a*b*d^2)*x^3 +
(b^2*c^2 + 4*a*b*c*d + a^2*d^2)*x^2 + 2*(a*b*c^2 + a^2*c*d)*x)*sq
rt(b*x + a)*(d*x + c)^(1/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.550249, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(9/4)),x, algorithm="giac")
```

```
[Out] Done
```

3.1679 $\int (a+bx)^{3/4}(c+dx)^{5/4}\,dx$

Optimal. Leaf size=205

$$\frac{5(bc-ad)^3\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{64b^{9/4}d^{7/4}}-\frac{5(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{64b^{9/4}d^{7/4}}+\frac{5(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^2}{96b^2d}+\frac{5(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)}{24b^2}+\frac{(a+bx)^{7/4}(c+dx)^{5/4}}{3b}$$

```
[Out] (5*(b*c - a*d)^2*(a + b*x)^(3/4)*(c + d*x)^(1/4))/(96*b^2*d) + (5
*(b*c - a*d)*(a + b*x)^(7/4)*(c + d*x)^(1/4))/(24*b^2) + ((a + b*
x)^(7/4)*(c + d*x)^(5/4))/(3*b) + (5*(b*c - a*d)^3*ArcTan[(d^(1/4
)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(64*b^(9/4)*d^(7/4
)) - (5*(b*c - a*d)^3*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*
(c + d*x)^(1/4))])/(64*b^(9/4)*d^(7/4))
```

Rubi [A] time = 0.269895, antiderivative size = 205, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$\frac{5(bc-ad)^3\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{64b^{9/4}d^{7/4}}-\frac{5(bc-ad)^3\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{64b^{9/4}d^{7/4}}+\frac{5(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^2}{96b^2d}+\frac{5(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)}{24b^2}+\frac{(a+bx)^{7/4}(c+dx)^{5/4}}{3b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/4)*(c + d*x)^(5/4),x]
```

```
[Out] (5*(b*c - a*d)^2*(a + b*x)^(3/4)*(c + d*x)^(1/4))/(96*b^2*d) + (5
*(b*c - a*d)*(a + b*x)^(7/4)*(c + d*x)^(1/4))/(24*b^2) + ((a + b*
x)^(7/4)*(c + d*x)^(5/4))/(3*b) + (5*(b*c - a*d)^3*ArcTan[(d^(1/4
)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(64*b^(9/4)*d^(7/4
)) - (5*(b*c - a*d)^3*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*
(c + d*x)^(1/4))])/(64*b^(9/4)*d^(7/4))
```

Rubi in Sympy [A] time = 37.123, size = 184, normalized size = 0.9

$$\frac{(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{9}{4}}}{3d}+\frac{(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{5}{4}}(ad-bc)}{8bd}-\frac{5(a+bx)^{\frac{3}{4}}\sqrt[4]{c+dx}(ad-bc)^2}{32b^2d}+\frac{5(ad-bc)^3\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{64b^{\frac{9}{4}}d^{\frac{7}{4}}}+\frac{5(ad-bc)^3\operatorname{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{64b^{\frac{9}{4}}d^{\frac{7}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/4)*(d*x+c)**(5/4),x)
```

```
[Out] (a + b*x)**(3/4)*(c + d*x)**(9/4)/(3*d) + (a + b*x)**(3/4)*(c + d
*x)**(5/4)*(a*d - b*c)/(8*b*d) - 5*(a + b*x)**(3/4)*(c + d*x)**(1
/4)*(a*d - b*c)**2/(32*b**2*d) + 5*(a*d - b*c)**3*atan(b**(1/4)*(
c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(64*b**(9/4)*d**(7/4
)) + 5*(a*d - b*c)**3*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(
a + b*x)**(1/4)))/(64*b**(9/4)*d**(7/4))
```

Mathematica [C] time = 0.275688, size = 143, normalized size = 0.7

$$\frac{\sqrt[4]{c+dx}\left(-d(a+bx)\left(15a^2d^2-6abd(7c+2dx)+b^2\left(-\left(5c^2+52cdx+32d^2x^2\right)\right)\right)-15(bc-ad)^3\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b}{b}\right.\right.}{96b^2d^2\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/4)*(c + d*x)^(5/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(-(d*(a + b*x)*(15*a^2*d^2 - 6*a*b*d*(7*c + 2*d*
x) - b^2*(5*c^2 + 52*c*d*x + 32*d^2*x^2))) - 15*(b*c - a*d)^3*((d
*(a + b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2F1[1/4, 1/4, 5/4
, (b*(c + d*x))/(b*c - a*d)]))/(96*b^2*d^2*(a + b*x)^(1/4))
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{4}}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/4)*(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(3/4)*(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{4}}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)*(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/4)*(d*x + c)^(5/4), x)
```

Fricas [A] time = 0.261882, size = 2225, normalized size = 10.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)*(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] -1/384*(60*b^2*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^1
0*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c
^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*
c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*
c*d^11 + a^12*d^12)/(b^9*d^7))^(1/4)*arctan(-(b^3*d^2*x + a*b^2*d
^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a
^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*
a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220
*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12
*d^12)/(b^9*d^7))^(1/4)/((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2
 - a^3*d^3)*(b*x + a)^(3/4)*(d*x + c)^(1/4) - (b*x + a)*sqrt(((b^
6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 +
 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)*sqrt(b*x + a)*sqrt
(d*x + c) + (b^5*d^4*x + a*b^4*d^4)*sqrt((b^12*c^12 - 12*a*b^11*c
^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*
c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5
*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^
2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^9*d^7)))/(b*x + a))
)) + 15*b^2*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d
^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*
d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4
*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d
^11 + a^12*d^12)/(b^9*d^7))^(1/4)*log(-5*((b^3*c^3 - 3*a*b^2*c^2*
d + 3*a^2*b*c*d^2 - a^3*d^3)*(b*x + a)^(3/4)*(d*x + c)^(1/4) + (b
^3*d^2*x + a*b^2*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^1
0*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*
b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8
*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^
11*b*c*d^11 + a^12*d^12)/(b^9*d^7))^(1/4))/(b*x + a)) - 15*b^2*d*
((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b
^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*
b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9
*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^1
2)/(b^9*d^7))^(1/4)*log(-5*((b^3*c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*
d^2 - a^3*d^3)*(b*x + a)^(3/4)*(d*x + c)^(1/4) - (b^3*d^2*x + a*b
^2*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 2
20*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 +
924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 -
 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 +
```

```
a^12*d^12)/(b^9*d^7))^(1/4))/(b*x + a)) - 4*(32*b^2*d^2*x^2 + 5*b
^2*c^2 + 42*a*b*c*d - 15*a^2*d^2 + 4*(13*b^2*c*d + 3*a*b*d^2)*x)*
(b*x + a)^(3/4)*(d*x + c)^(1/4))/(b^2*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/4)*(d*x+c)**(5/4),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{\frac{3}{4}} (dx + c)^{\frac{5}{4}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)*(d*x + c)^(5/4),x, algorithm="giac")

[Out] integrate((b*x + a)^(3/4)*(d*x + c)^(5/4), x)
```

3.1680 $\int \frac{(c+dx)^{5/4}}{\sqrt[4]{a+bx}}\,dx$

Optimal. Leaf size=167

$$-\frac{5(bc-ad)^2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{9/4}d^{3/4}}+\frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{9/4}d^{3/4}}+\frac{5(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)}{8b^2}+\frac{(a+bx)^{3/4}(c+dx)^{5/4}}{2b}$$

```
[Out] (5*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(1/4))/(8*b^2) + ((a + b
*x)^(3/4)*(c + d*x)^(5/4))/(2*b) - (5*(b*c - a*d)^2*ArcTan[(d^(1/
4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(16*b^(9/4)*d^(3/
4)) + (5*(b*c - a*d)^2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)
*(c + d*x)^(1/4))])/(16*b^(9/4)*d^(3/4))
```

Rubi [A] time = 0.194379, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{5(bc-ad)^2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{9/4}d^{3/4}}+\frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{9/4}d^{3/4}}+\frac{5(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)}{8b^2}+\frac{(a+bx)^{3/4}(c+dx)^{5/4}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(1/4),x]
```

```
[Out] (5*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(1/4))/(8*b^2) + ((a + b
*x)^(3/4)*(c + d*x)^(5/4))/(2*b) - (5*(b*c - a*d)^2*ArcTan[(d^(1/
4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(16*b^(9/4)*d^(3/
4)) + (5*(b*c - a*d)^2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)
*(c + d*x)^(1/4))])/(16*b^(9/4)*d^(3/4))
```

Rubi in Sympy [A] time = 29.0573, size = 151, normalized size = 0.9

$$\frac{(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{5}{4}}}{2b}-\frac{5(a+bx)^{\frac{3}{4}}\sqrt[4]{c+dx}\,(ad-bc)}{8b^2}-\frac{5(ad-bc)^2\operatorname{atan}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{\frac{9}{4}}d^{\frac{3}{4}}}+\frac{5(ad-bc)^2\operatorname{atanh}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{\frac{9}{4}}d^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(1/4),x)
```

```
[Out] (a + b*x)**(3/4)*(c + d*x)**(5/4)/(2*b) - 5*(a + b*x)**(3/4)*(c +
 d*x)**(1/4)*(a*d - b*c)/(8*b**2) - 5*(a*d - b*c)**2*atan(d**(1/4
)*(a + b*x)**(1/4)/(b**(1/4)*(c + d*x)**(1/4)))/(16*b**(9/4)*d**(
3/4)) + 5*(a*d - b*c)**2*atanh(d**(1/4)*(a + b*x)**(1/4)/(b**(1/4
)*(c + d*x)**(1/4)))/(16*b**(9/4)*d**(3/4))
```

Mathematica [C] time = 0.196465, size = 111, normalized size = 0.66

$$\frac{\sqrt[4]{c+dx}\left(5(bc-ad)^2\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(5ad-9bc-4bdx)\right)}{8b^2d\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(1/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(-(d*(a + b*x)*(-9*b*c + 5*a*d - 4*b*d*x)) + 5*(
b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2
F1[1/4, 1/4, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(8*b^2*d*(a + b*x)
^(1/4))
```

Maple [F] time = 0.038, size = 0, normalized size = 0.

$$\int 1\left(dx+c\right)^{\frac{5}{4}}\frac{1}{\sqrt[4]{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(1/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(1/4),x, algorithm="maxima")

[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(1/4), x)
```

Fricas [A] time = 0.250449, size = 1519, normalized size = 9.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(1/4),x, algorithm="fricas")

[Out] -1/32*(20*b^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56
*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a
^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d^3))^(1/4)*arctan
((b^3*d*x + a*b^2*d)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d
^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5
 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d^3))^(1/4)
/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(3/4)*(d*x + c)^(1/4)
 + (b*x + a)*sqrt(((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 -
 4*a^3*b*c*d^3 + a^4*d^4)*sqrt(b*x + a)*sqrt(d*x + c) + (b^5*d^2*
x + a*b^4*d^2)*sqrt((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2
 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 +
 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d^3)))/(b*x +
 a)))) - 5*b^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 5
6*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*
a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d^3))^(1/4)*log(5
*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(3/4)*(d*x + c)^(1/4)
 + (b^3*d*x + a*b^2*d)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6
*d^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d
^5 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d^3))^(1/
4))/(b*x + a)) + 5*b^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6
*d^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d
^5 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d^3))^(1/
4)*log(5*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(3/4)*(d*x +
c)^(1/4) - (b^3*d*x + a*b^2*d)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2
*b^6*c^6*d^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b
^3*c^3*d^5 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^9*d
^3))^(1/4))/(b*x + a)) - 4*(4*b*d*x + 9*b*c - 5*a*d)*(b*x + a)^(3
/4)*(d*x + c)^(1/4))/b^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c + dx)^{\frac{5}{4}}}{\sqrt[4]{a + bx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(1/4),x)

[Out] Integral((c + d*x)**(5/4)/(a + b*x)**(1/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(1/4),x, algorithm="giac")

[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(1/4), x)
```

3.1681 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{5/4}}\,dx$

Optimal. Leaf size=152

$$-\frac{5\sqrt[4]{d}(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{9/4}}+\frac{5\sqrt[4]{d}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{9/4}}+\frac{5d(a+bx)^{3/4}\sqrt[4]{c+dx}}{b^2}-\frac{4(c+dx)^{5/4}}{b\sqrt[4]{a+bx}}$$

```
[Out] (5*d*(a + b*x)^(3/4)*(c + d*x)^(1/4))/b^2 - (4*(c + d*x)^(5/4))/(
b*(a + b*x)^(1/4)) - (5*d^(1/4)*(b*c - a*d)*ArcTan[(d^(1/4)*(a +
b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*b^(9/4)) + (5*d^(1/4)*
(b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^
(1/4))])/(2*b^(9/4))
```

Rubi [A] time = 0.179246, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$-\frac{5\sqrt[4]{d}(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{9/4}}+\frac{5\sqrt[4]{d}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{9/4}}+\frac{5d(a+bx)^{3/4}\sqrt[4]{c+dx}}{b^2}-\frac{4(c+dx)^{5/4}}{b\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(5/4),x]
```

```
[Out] (5*d*(a + b*x)^(3/4)*(c + d*x)^(1/4))/b^2 - (4*(c + d*x)^(5/4))/(
b*(a + b*x)^(1/4)) - (5*d^(1/4)*(b*c - a*d)*ArcTan[(d^(1/4)*(a +
b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*b^(9/4)) + (5*d^(1/4)*
(b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^
(1/4))])/(2*b^(9/4))
```

Rubi in Sympy [A] time = 24.4875, size = 141, normalized size = 0.93

$$-\frac{4\left(c+dx\right)^{\frac{5}{4}}}{b\sqrt[4]{a+bx}}+\frac{5d\left(a+bx\right)^{\frac{3}{4}}\sqrt[4]{c+dx}}{b^2}-\frac{5\sqrt[4]{d}\left(ad-bc\right)\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{2b^{\frac{9}{4}}}-\frac{5\sqrt[4]{d}\left(ad-bc\right)\operatorname{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{2b^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(5/4),x)
```

```
[Out] -4*(c + d*x)**(5/4)/(b*(a + b*x)**(1/4)) + 5*d*(a + b*x)**(3/4)*(
c + d*x)**(1/4)/b**2 - 5*d**(1/4)*(a*d - b*c)*atan(b**(1/4)*(c +
d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(2*b**(9/4)) - 5*d**(1/4
)*(a*d - b*c)*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(a + b*x)
**(1/4)))/(2*b**(9/4))
```

Mathematica [C] time = 0.20474, size = 93, normalized size = 0.61

$$\frac{\sqrt[4]{c+dx}\left(5(bc-ad)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+5ad-4bc+bdx\right)}{b^2\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(5/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(-4*b*c + 5*a*d + b*d*x + 5*(b*c - a*d)*((d*(a +
 b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2F1[1/4, 1/4, 5/4, (b*
(c + d*x))/(b*c - a*d)]))/(b^2*(a + b*x)^(1/4))
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(5/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(5/4),x, algorithm="maxima")

[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(5/4), x)
```

Fricas [A] time = 0.243948, size = 930, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(5/4),x, algorithm="fricas")

[Out] 1/4*(20*(b^3*x + a*b^2)*((b^4*c^4*d - 4*a*b^3*c^3*d^2 + 6*a^2*b^2
*c^2*d^3 - 4*a^3*b*c*d^4 + a^4*d^5)/b^9)^(1/4)*arctan(-(b^3*x + a
*b^2)*((b^4*c^4*d - 4*a*b^3*c^3*d^2 + 6*a^2*b^2*c^2*d^3 - 4*a^3*b
*c*d^4 + a^4*d^5)/b^9)^(1/4)/((b*c - a*d)*(b*x + a)^(3/4)*(d*x +
c)^(1/4) - (b*x + a)*sqrt(((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*sqrt(b
*x + a)*sqrt(d*x + c) + (b^5*x + a*b^4)*sqrt((b^4*c^4*d - 4*a*b^3
*c^3*d^2 + 6*a^2*b^2*c^2*d^3 - 4*a^3*b*c*d^4 + a^4*d^5)/b^9))/(b*
x + a)))) + 5*(b^3*x + a*b^2)*((b^4*c^4*d - 4*a*b^3*c^3*d^2 + 6*a
^2*b^2*c^2*d^3 - 4*a^3*b*c*d^4 + a^4*d^5)/b^9)^(1/4)*log(-5*((b*c
 - a*d)*(b*x + a)^(3/4)*(d*x + c)^(1/4) + (b^3*x + a*b^2)*((b^4*c
^4*d - 4*a*b^3*c^3*d^2 + 6*a^2*b^2*c^2*d^3 - 4*a^3*b*c*d^4 + a^4*
d^5)/b^9)^(1/4))/(b*x + a)) - 5*(b^3*x + a*b^2)*((b^4*c^4*d - 4*a
*b^3*c^3*d^2 + 6*a^2*b^2*c^2*d^3 - 4*a^3*b*c*d^4 + a^4*d^5)/b^9)^
(1/4)*log(-5*((b*c - a*d)*(b*x + a)^(3/4)*(d*x + c)^(1/4) - (b^3*
x + a*b^2)*((b^4*c^4*d - 4*a*b^3*c^3*d^2 + 6*a^2*b^2*c^2*d^3 - 4*
a^3*b*c*d^4 + a^4*d^5)/b^9)^(1/4))/(b*x + a)) + 4*(b*d*x - 4*b*c
+ 5*a*d)*(b*x + a)^(3/4)*(d*x + c)^(1/4))/(b^3*x + a*b^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{5}{4}}}{(a+bx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(5/4),x)

[Out] Integral((c + d*x)**(5/4)/(a + b*x)**(5/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(5/4),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(5/4), x)
```

3.1682 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{9/4}}\,dx$

Optimal. Leaf size=134

$$-\frac{2d^{5/4}\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{9/4}}+\frac{2d^{5/4}\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{9/4}}-\frac{4d\sqrt[4]{c+dx}}{b^2\sqrt[4]{a+bx}}-\frac{4(c+dx)^{5/4}}{5b(a+bx)^{5/4}}$$

```
[Out] (-4*d*(c + d*x)^(1/4))/(b^2*(a + b*x)^(1/4)) - (4*(c + d*x)^(5/4)
)/(5*b*(a + b*x)^(5/4)) - (2*d^(5/4)*ArcTan[(d^(1/4)*(a + b*x)^(1
/4))/(b^(1/4)*(c + d*x)^(1/4))])/b^(9/4) + (2*d^(5/4)*ArcTanh[(d^
(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/b^(9/4)
```

Rubi [A] time = 0.152463, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{2d^{5/4}\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{9/4}}+\frac{2d^{5/4}\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{9/4}}-\frac{4d\sqrt[4]{c+dx}}{b^2\sqrt[4]{a+bx}}-\frac{4(c+dx)^{5/4}}{5b(a+bx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(9/4),x]
```

```
[Out] (-4*d*(c + d*x)^(1/4))/(b^2*(a + b*x)^(1/4)) - (4*(c + d*x)^(5/4)
)/(5*b*(a + b*x)^(5/4)) - (2*d^(5/4)*ArcTan[(d^(1/4)*(a + b*x)^(1
/4))/(b^(1/4)*(c + d*x)^(1/4))])/b^(9/4) + (2*d^(5/4)*ArcTanh[(d^
(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/b^(9/4)
```

Rubi in Sympy [A] time = 25.5671, size = 126, normalized size = 0.94

$$-\frac{4\left(c+dx\right)^{\frac{5}{4}}}{5b\left(a+bx\right)^{\frac{5}{4}}}-\frac{4d\sqrt[4]{c+dx}}{b^2\sqrt[4]{a+bx}}-\frac{2d^{\frac{5}{4}}\operatorname{atan}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{\frac{9}{4}}}+\frac{2d^{\frac{5}{4}}\operatorname{atanh}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(9/4),x)
```

```
[Out] -4*(c + d*x)**(5/4)/(5*b*(a + b*x)**(5/4)) - 4*d*(c + d*x)**(1/4)
/(b**2*(a + b*x)**(1/4)) - 2*d**(5/4)*atan(d**(1/4)*(a + b*x)**(1
/4)/(b**(1/4)*(c + d*x)**(1/4)))/b**(9/4) + 2*d**(5/4)*atanh(d**(
```

```
1/4)*(a + b*x)**(1/4)/(b**(1/4)*(c + d*x)**(1/4)))/b**(9/4)
```

Mathematica [C] time = 0.260452, size = 94, normalized size = 0.7

$$-\frac{4\sqrt[4]{c+dx}\left(-5d(a+bx)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+5ad+b(c+6dx)\right)}{5b^2(a+bx)^{5/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(9/4),x]
```

```
[Out] (-4*(c + d*x)^(1/4)*(5*a*d + b*(c + 6*d*x) - 5*d*(a + b*x)*((d*(a
 + b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2F1[1/4, 1/4, 5/4, (
b*(c + d*x))/(b*c - a*d)]))/(5*b^2*(a + b*x)^(5/4))
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{9}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(9/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(9/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(9/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(9/4), x)
```

Fricas [A] time = 0.242576, size = 468, normalized size = 3.49

$$-\frac{20\left(b^4x^2+2\,ab^3x+a^2b^2\right)\left(\frac{d^5}{b^9}\right)^{\frac{1}{4}}\arctan\left(\frac{\left(b^3x+ab^2\right)\left(\frac{d^5}{b^9}\right)^{\frac{1}{4}}}{(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}d+(bx+a)\sqrt{\frac{\sqrt{bx+a}\sqrt{dx+c}d^2+\left(b^5x+ab^4\right)\sqrt{\frac{d^5}{b^9}}}{bx+a}}}\right)-5\left(b^4x^2+2\,ab^3x+a^2b^2\right)\left(\frac{d^5}{b^9}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(9/4),x, algorithm="fricas")
```

```
[Out] -1/5*(20*(b^4*x^2 + 2*a*b^3*x + a^2*b^2)*(d^5/b^9)^(1/4)*arctan((
b^3*x + a*b^2)*(d^5/b^9)^(1/4)/((b*x + a)^(3/4)*(d*x + c)^(1/4)*d
 + (b*x + a)*sqrt((sqrt(b*x + a)*sqrt(d*x + c)*d^2 + (b^5*x + a*b
^4)*sqrt(d^5/b^9))/(b*x + a)))) - 5*(b^4*x^2 + 2*a*b^3*x + a^2*b^
2)*(d^5/b^9)^(1/4)*log(((b*x + a)^(3/4)*(d*x + c)^(1/4)*d + (b^3*
x + a*b^2)*(d^5/b^9)^(1/4))/(b*x + a)) + 5*(b^4*x^2 + 2*a*b^3*x +
 a^2*b^2)*(d^5/b^9)^(1/4)*log(((b*x + a)^(3/4)*(d*x + c)^(1/4)*d
- (b^3*x + a*b^2)*(d^5/b^9)^(1/4))/(b*x + a)) + 4*(6*b*d*x + b*c
+ 5*a*d)*(b*x + a)^(3/4)*(d*x + c)^(1/4))/(b^4*x^2 + 2*a*b^3*x +
a^2*b^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(9/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{9}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(9/4),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(9/4), x)
```

3.1683 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{13/4}}\,dx$

Optimal. Leaf size=32

$$-\frac{4(c+dx)^{9/4}}{9(a+bx)^{9/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(9/4))/(9*(b*c - a*d)*(a + b*x)^(9/4))
```

Rubi [A] time = 0.0215166, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{4(c+dx)^{9/4}}{9(a+bx)^{9/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(13/4),x]

[Out] (-4*(c + d*x)^(9/4))/(9*(b*c - a*d)*(a + b*x)^(9/4))
```

Rubi in Sympy [A] time = 3.3049, size = 26, normalized size = 0.81

$$\frac{4\,(c+dx)^{\frac{9}{4}}}{9\,(a+bx)^{\frac{9}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(13/4),x)

[Out] 4*(c + d*x)**(9/4)/(9*(a + b*x)**(9/4)*(a*d - b*c))
```

Mathematica [A] time = 0.074325, size = 32, normalized size = 1.

$$-\frac{4(c+dx)^{9/4}}{9(a+bx)^{9/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(13/4),x]
```

```
[Out] (-4*(c + d*x)^(9/4))/(9*(b*c - a*d)*(a + b*x)^(9/4))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.8

$$\frac{4}{9\,ad-9\,bc}\,(dx+c)^{\frac{9}{4}}\,(bx+a)^{-\frac{9}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(13/4),x)
```

```
[Out] 4/9/(b*x+a)^(9/4)*(d*x+c)^(9/4)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{13}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(13/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(13/4), x)
```

Fricas [A] time = 0.228905, size = 140, normalized size = 4.38

$$-\frac{4\left(d^2x^2+2\,cdx+c^2\right)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}{9\,(a^3bc-a^4d+(b^4c-ab^3d)x^3+3\,(ab^3c-a^2b^2d)x^2+3\,(a^2b^2c-a^3bd)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(13/4),x, algorithm="fricas")
```

```
[Out] -4/9*(d^2*x^2 + 2*c*d*x + c^2)*(b*x + a)^(3/4)*(d*x + c)^(1/4)/(a
^3*b*c - a^4*d + (b^4*c - a*b^3*d)*x^3 + 3*(a*b^3*c - a^2*b^2*d)*
x^2 + 3*(a^2*b^2*c - a^3*b*d)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(13/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{13}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(13/4),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(13/4), x)
```

3.1684 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{17/4}}\,dx$

Optimal. Leaf size=66

$$\frac{16d(c+dx)^{9/4}}{117(a+bx)^{9/4}(bc-ad)^2}-\frac{4(c+dx)^{9/4}}{13(a+bx)^{13/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(9/4))/(13*(b*c - a*d)*(a + b*x)^(13/4)) + (16*d*(c
 + d*x)^(9/4))/(117*(b*c - a*d)^2*(a + b*x)^(9/4))
```

Rubi [A] time = 0.0471783, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{16d(c+dx)^{9/4}}{117(a+bx)^{9/4}(bc-ad)^2}-\frac{4(c+dx)^{9/4}}{13(a+bx)^{13/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(17/4),x]
```

```
[Out] (-4*(c + d*x)^(9/4))/(13*(b*c - a*d)*(a + b*x)^(13/4)) + (16*d*(c
 + d*x)^(9/4))/(117*(b*c - a*d)^2*(a + b*x)^(9/4))
```

Rubi in Sympy [A] time = 6.76898, size = 56, normalized size = 0.85

$$\frac{16d\,(c+dx)^{\frac{9}{4}}}{117\,(a+bx)^{\frac{9}{4}}\,(ad-bc)^2}+\frac{4\,(c+dx)^{\frac{9}{4}}}{13\,(a+bx)^{\frac{13}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(17/4),x)
```

```
[Out] 16*d*(c + d*x)**(9/4)/(117*(a + b*x)**(9/4)*(a*d - b*c)**2) + 4*(
c + d*x)**(9/4)/(13*(a + b*x)**(13/4)*(a*d - b*c))
```

Mathematica [A] time = 0.104648, size = 46, normalized size = 0.7

$$\frac{4(c+dx)^{9/4}(13ad-9bc+4bdx)}{117(a+bx)^{13/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(17/4),x]
```

```
[Out] (4*(c + d*x)^(9/4)*(-9*b*c + 13*a*d + 4*b*d*x))/(117*(b*c - a*d)^
2*(a + b*x)^(13/4))
```

Maple [A] time = 0.008, size = 54, normalized size = 0.8

$$\frac{16\,bdx + 52\,ad - 36\,bc}{117\,a^2d^2 - 234\,abcd + 117\,b^2c^2}\,(dx + c)^{\frac{9}{4}}\,(bx + a)^{-\frac{13}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(17/4),x)
```

```
[Out] 4/117*(d*x+c)^(9/4)*(4*b*d*x+13*a*d-9*b*c)/(b*x+a)^(13/4)/(a^2*d^
2-2*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx + c)^{\frac{5}{4}}}{(bx + a)^{\frac{17}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(17/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(17/4), x)
```

Fricas [A] time = 0.262955, size = 317, normalized size = 4.8

$$\frac{4\left(4\,bd^3x^3 - 9\,bc^3 + 13\,ac^2d - \left(bcd^2 - 13\,ad^3\right)x^2 - 2\left(7\,bc^2d - 13\,acd^2\right)x\right)(bx + a)^{\frac{3}{4}}(dx +}{117\,(a^4b^2c^2 - 2\,a^5bcd + a^6d^2 + (b^6c^2 - 2\,ab^5cd + a^2b^4d^2)x^4 + 4\,(ab^5c^2 - 2\,a^2b^4cd + a^3b^3d^2)x^3 + 6\,(a^2b^4c^2 - 2\,a^3b^3cd + a^4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(17/4),x, algorithm="fricas")
```

```
[Out] 4/117*(4*b*d^3*x^3 - 9*b*c^3 + 13*a*c^2*d - (b*c*d^2 - 13*a*d^3)*
x^2 - 2*(7*b*c^2*d - 13*a*c*d^2)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/
```

```
4)/(a^4*b^2*c^2 - 2*a^5*b*c*d + a^6*d^2 + (b^6*c^2 - 2*a*b^5*c*d
+ a^2*b^4*d^2)*x^4 + 4*(a*b^5*c^2 - 2*a^2*b^4*c*d + a^3*b^3*d^2)*
x^3 + 6*(a^2*b^4*c^2 - 2*a^3*b^3*c*d + a^4*b^2*d^2)*x^2 + 4*(a^3*
b^3*c^2 - 2*a^4*b^2*c*d + a^5*b*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(17/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{17}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(17/4),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(17/4), x)
```

3.1685 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{21/4}}\,dx$

Optimal. Leaf size=101

$$-\frac{128d^2(c+dx)^{9/4}}{1989(a+bx)^{9/4}(bc-ad)^3}+\frac{32d(c+dx)^{9/4}}{221(a+bx)^{13/4}(bc-ad)^2}-\frac{4(c+dx)^{9/4}}{17(a+bx)^{17/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(9/4))/(17*(b*c - a*d)*(a + b*x)^(17/4)) + (32*d*(c
 + d*x)^(9/4))/(221*(b*c - a*d)^2*(a + b*x)^(13/4)) - (128*d^2*(c
 + d*x)^(9/4))/(1989*(b*c - a*d)^3*(a + b*x)^(9/4))
```

Rubi [A] time = 0.0742277, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{128d^2(c+dx)^{9/4}}{1989(a+bx)^{9/4}(bc-ad)^3}+\frac{32d(c+dx)^{9/4}}{221(a+bx)^{13/4}(bc-ad)^2}-\frac{4(c+dx)^{9/4}}{17(a+bx)^{17/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(21/4),x]
```

```
[Out] (-4*(c + d*x)^(9/4))/(17*(b*c - a*d)*(a + b*x)^(17/4)) + (32*d*(c
 + d*x)^(9/4))/(221*(b*c - a*d)^2*(a + b*x)^(13/4)) - (128*d^2*(c
 + d*x)^(9/4))/(1989*(b*c - a*d)^3*(a + b*x)^(9/4))
```

Rubi in Sympy [A] time = 12.2614, size = 88, normalized size = 0.87

$$\frac{128d^2\left(c+dx\right)^{\frac{9}{4}}}{1989\left(a+bx\right)^{\frac{9}{4}}\left(ad-bc\right)^3}+\frac{32d\left(c+dx\right)^{\frac{9}{4}}}{221\left(a+bx\right)^{\frac{13}{4}}\left(ad-bc\right)^2}+\frac{4\left(c+dx\right)^{\frac{9}{4}}}{17\left(a+bx\right)^{\frac{17}{4}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(21/4),x)
```

```
[Out] 128*d**2*(c + d*x)**(9/4)/(1989*(a + b*x)**(9/4)*(a*d - b*c)**3)
+ 32*d*(c + d*x)**(9/4)/(221*(a + b*x)**(13/4)*(a*d - b*c)**2) +
4*(c + d*x)**(9/4)/(17*(a + b*x)**(17/4)*(a*d - b*c))
```

Mathematica [A] time = 0.165562, size = 77, normalized size = 0.76

$$\frac{4(c+dx)^{9/4}\left(221a^2d^2+34abd(4dx-9c)+b^2\left(117c^2-72cdx+32d^2x^2\right)\right)}{1989(a+bx)^{17/4}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(21/4),x]
```

```
[Out] (4*(c + d*x)^(9/4)*(221*a^2*d^2 + 34*a*b*d*(-9*c + 4*d*x) + b^2*(
117*c^2 - 72*c*d*x + 32*d^2*x^2)))/(1989*(-(b*c) + a*d)^3*(a + b*
x)^(17/4))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{128\,b^{2}d^{2}x^{2}+544\,abd^{2}x-288\,b^{2}cdx+884\,a^{2}d^{2}-1224\,abcd+468\,b^{2}c^{2}}{1989\,a^{3}d^{3}-5967\,a^{2}cbd^{2}+5967\,ab^{2}c^{2}d-1989\,b^{3}c^{3}}\left(dx+c\right)^{\frac{9}{4}}\left(bx+a\right)^{-\frac{17}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(21/4),x)
```

```
[Out] 4/1989*(d*x+c)^(9/4)*(32*b^2*d^2*x^2+136*a*b*d^2*x-72*b^2*c*d*x+2
21*a^2*d^2-306*a*b*c*d+117*b^2*c^2)/(b*x+a)^(17/4)/(a^3*d^3-3*a^2
*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(dx+c\right)^{\frac{5}{4}}}{\left(bx+a\right)^{\frac{21}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(21/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(21/4), x)
```

Fricas [A] time = 0.314613, size = 575, normalized size = 5.69

$$-\frac{4\left(32\,b^{2}d^{4}x^{4}+117\,b^{2}c^{4}-306\,abc^{3}d+221\,a^{2}c^{2}d^{2}-8\left(b^{2}cd^{3}-17\,ab\right.\right.}{1989\left(a^{5}b^{3}c^{3}-3\,a^{6}b^{2}c^{2}d+3\,a^{7}bcd^{2}-a^{8}d^{3}+\left(b^{8}c^{3}-3\,ab^{7}c^{2}d+3\,a^{2}b^{6}cd^{2}-a^{3}b^{5}d^{3}\right)x^{5}+5\left(ab^{7}c^{3}-3\,a^{2}b^{6}c^{2}d+3\,a^{3}b^{5}cd^{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(21/4),x, algorithm="fricas")
```

```
[Out] -4/1989*(32*b^2*d^4*x^4 + 117*b^2*c^4 - 306*a*b*c^3*d + 221*a^2*c
^2*d^2 - 8*(b^2*c*d^3 - 17*a*b*d^4)*x^3 + (5*b^2*c^2*d^2 - 34*a*b
*c*d^3 + 221*a^2*d^4)*x^2 + 2*(81*b^2*c^3*d - 238*a*b*c^2*d^2 + 2
21*a^2*c*d^3)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4)/(a^5*b^3*c^3 - 3
*a^6*b^2*c^2*d + 3*a^7*b*c*d^2 - a^8*d^3 + (b^8*c^3 - 3*a*b^7*c^2
*d + 3*a^2*b^6*c*d^2 - a^3*b^5*d^3)*x^5 + 5*(a*b^7*c^3 - 3*a^2*b^
6*c^2*d + 3*a^3*b^5*c*d^2 - a^4*b^4*d^3)*x^4 + 10*(a^2*b^6*c^3 -
3*a^3*b^5*c^2*d + 3*a^4*b^4*c*d^2 - a^5*b^3*d^3)*x^3 + 10*(a^3*b^
5*c^3 - 3*a^4*b^4*c^2*d + 3*a^5*b^3*c*d^2 - a^6*b^2*d^3)*x^2 + 5*
(a^4*b^4*c^3 - 3*a^5*b^3*c^2*d + 3*a^6*b^2*c*d^2 - a^7*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(21/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{21}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(21/4),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(21/4), x)
```

3.1686 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{25/4}}\,dx$

Optimal. Leaf size=136

$$\frac{512d^3(c+dx)^{9/4}}{13923(a+bx)^{9/4}(bc-ad)^4}-\frac{128d^2(c+dx)^{9/4}}{1547(a+bx)^{13/4}(bc-ad)^3}+\frac{16d(c+dx)^{9/4}}{119(a+bx)^{17/4}(bc-ad)^2}-\frac{4(c+dx)^{9/4}}{21(a+bx)^{21/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(9/4))/(21*(b*c - a*d)*(a + b*x)^(21/4)) + (16*d*(c
 + d*x)^(9/4))/(119*(b*c - a*d)^2*(a + b*x)^(17/4)) - (128*d^2*(c
 + d*x)^(9/4))/(1547*(b*c - a*d)^3*(a + b*x)^(13/4)) + (512*d^3*(
c + d*x)^(9/4))/(13923*(b*c - a*d)^4*(a + b*x)^(9/4))
```

Rubi [A] time = 0.111014, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{512d^3(c+dx)^{9/4}}{13923(a+bx)^{9/4}(bc-ad)^4}-\frac{128d^2(c+dx)^{9/4}}{1547(a+bx)^{13/4}(bc-ad)^3}+\frac{16d(c+dx)^{9/4}}{119(a+bx)^{17/4}(bc-ad)^2}-\frac{4(c+dx)^{9/4}}{21(a+bx)^{21/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(25/4),x]
```

```
[Out] (-4*(c + d*x)^(9/4))/(21*(b*c - a*d)*(a + b*x)^(21/4)) + (16*d*(c
 + d*x)^(9/4))/(119*(b*c - a*d)^2*(a + b*x)^(17/4)) - (128*d^2*(c
 + d*x)^(9/4))/(1547*(b*c - a*d)^3*(a + b*x)^(13/4)) + (512*d^3*(
c + d*x)^(9/4))/(13923*(b*c - a*d)^4*(a + b*x)^(9/4))
```

Rubi in Sympy [A] time = 19.3519, size = 121, normalized size = 0.89

$$\frac{512d^3\left(c+dx\right)^{\frac{9}{4}}}{13923\left(a+bx\right)^{\frac{9}{4}}\left(ad-bc\right)^4}+\frac{128d^2\left(c+dx\right)^{\frac{9}{4}}}{1547\left(a+bx\right)^{\frac{13}{4}}\left(ad-bc\right)^3}+\frac{16d\left(c+dx\right)^{\frac{9}{4}}}{119\left(a+bx\right)^{\frac{17}{4}}\left(ad-bc\right)^2}+\frac{4\left(c+dx\right)^{\frac{9}{4}}}{21\left(a+bx\right)^{\frac{21}{4}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(25/4),x)
```

```
[Out] 512*d**3*(c + d*x)**(9/4)/(13923*(a + b*x)**(9/4)*(a*d - b*c)**4)
 + 128*d**2*(c + d*x)**(9/4)/(1547*(a + b*x)**(13/4)*(a*d - b*c)*
```

```
*3) + 16*d*(c + d*x)**(9/4)/(119*(a + b*x)**(17/4)*(a*d - b*c)**2
) + 4*(c + d*x)**(9/4)/(21*(a + b*x)**(21/4)*(a*d - b*c))
```

Mathematica [A] time = 0.222961, size = 118, normalized size = 0.87

$$\frac{4(c+dx)^{9/4}\left(1547a^3d^3+357a^2bd^2(4dx-9c)+21ab^2d\left(117c^2-72cdx+32d^2x^2\right)+b^3\left(-663c^3+468c^2dx-288cd^2x^2+12\right.\right.}{13923(a+bx)^{21/4}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(25/4),x]
```

```
[Out] (4*(c + d*x)^(9/4)*(1547*a^3*d^3 + 357*a^2*b*d^2*(-9*c + 4*d*x) +
 21*a*b^2*d*(117*c^2 - 72*c*d*x + 32*d^2*x^2) + b^3*(-663*c^3 + 4
68*c^2*d*x - 288*c*d^2*x^2 + 128*d^3*x^3)))/(13923*(b*c - a*d)^4*
(a + b*x)^(21/4))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$\frac{512\,x^3b^3d^3+2688\,ab^2d^3x^2-1152\,b^3cd^2x^2+5712\,a^2bd^3x-6048\,ab^2cd^2x+1872\,b^3c^2dx+6188\,a^3d^3-12852\,a^2cbd^2+982}{13923\,a^4d^4-55692\,a^3bcd^3+83538\,a^2c^2b^2d^2-55692\,ab^3c^3d+13923\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(25/4),x)
```

```
[Out] 4/13923*(d*x+c)^(9/4)*(128*b^3*d^3*x^3+672*a*b^2*d^3*x^2-288*b^3*
c*d^2*x^2+1428*a^2*b*d^3*x-1512*a*b^2*c*d^2*x+468*b^3*c^2*d*x+154
7*a^3*d^3-3213*a^2*b*c*d^2+2457*a*b^2*c^2*d-663*b^3*c^3)/(b*x+a)^
(21/4)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4
*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{25}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(25/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(25/4), x)
```

Fricas [A] time = 0.407286, size = 876, normalized size = 6.44

$$\frac{4\left(128\,b^{3}d^{5}x^{5}-663\,b^{3}c^{5}+2457\,ab^{2}c^{4}d-3213\,a^{2}b\right.}{13923\,(a^{6}b^{4}c^{4}-4\,a^{7}b^{3}c^{3}d+6\,a^{8}b^{2}c^{2}d^{2}-4\,a^{9}bcd^{3}+a^{10}d^{4}+(b^{10}c^{4}-4\,ab^{9}c^{3}d+6\,a^{2}b^{8}c^{2}d^{2}-4\,a^{3}b^{7}cd^{3}+a^{4}b^{6}d^{4})x^{6}+6\,(ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(25/4),x, algorithm="fricas")
```

```
[Out] 4/13923*(128*b^3*d^5*x^5 - 663*b^3*c^5 + 2457*a*b^2*c^4*d - 3213*
a^2*b*c^3*d^2 + 1547*a^3*c^2*d^3 - 32*(b^3*c*d^4 - 21*a*b^2*d^5)*
x^4 + 4*(5*b^3*c^2*d^3 - 42*a*b^2*c*d^4 + 357*a^2*b*d^5)*x^3 - (1
5*b^3*c^3*d^2 - 105*a*b^2*c^2*d^3 + 357*a^2*b*c*d^4 - 1547*a^3*d^
5)*x^2 - 2*(429*b^3*c^4*d - 1701*a*b^2*c^3*d^2 + 2499*a^2*b*c^2*d
^3 - 1547*a^3*c*d^4)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4)/(a^6*b^4*
c^4 - 4*a^7*b^3*c^3*d + 6*a^8*b^2*c^2*d^2 - 4*a^9*b*c*d^3 + a^10*
d^4 + (b^10*c^4 - 4*a*b^9*c^3*d + 6*a^2*b^8*c^2*d^2 - 4*a^3*b^7*c
*d^3 + a^4*b^6*d^4)*x^6 + 6*(a*b^9*c^4 - 4*a^2*b^8*c^3*d + 6*a^3*
b^7*c^2*d^2 - 4*a^4*b^6*c*d^3 + a^5*b^5*d^4)*x^5 + 15*(a^2*b^8*c^
4 - 4*a^3*b^7*c^3*d + 6*a^4*b^6*c^2*d^2 - 4*a^5*b^5*c*d^3 + a^6*b
^4*d^4)*x^4 + 20*(a^3*b^7*c^4 - 4*a^4*b^6*c^3*d + 6*a^5*b^5*c^2*d
^2 - 4*a^6*b^4*c*d^3 + a^7*b^3*d^4)*x^3 + 15*(a^4*b^6*c^4 - 4*a^5
*b^5*c^3*d + 6*a^6*b^4*c^2*d^2 - 4*a^7*b^3*c*d^3 + a^8*b^2*d^4)*x
^2 + 6*(a^5*b^5*c^4 - 4*a^6*b^4*c^3*d + 6*a^7*b^3*c^2*d^2 - 4*a^8
*b^2*c*d^3 + a^9*b*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(25/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{25}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(25/4),x, algorithm="giac")

[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(25/4), x)
```

3.1687 $\int (a+bx)^{5/4}(c+dx)^{5/4}\,dx$

Optimal. Leaf size=408

$$\frac{5(bc-ad)^{9/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{168\sqrt{2}b^{9/4}d^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^3}{84b^2d^2}+\frac{(a+bx)^{5/4}\sqrt[4]{c+dx}(bc-ad)^2}{42b^2d}+\frac{(a+bx)^{9/4}\sqrt[4]{c+dx}(bc-ad)}{7b^2}+\frac{2(a+bx)^{9/4}(c+dx)^{5/4}}{7b}$$

```
[Out] (-5*(b*c - a*d)^3*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(84*b^2*d^2) +
 ((b*c - a*d)^2*(a + b*x)^(5/4)*(c + d*x)^(1/4))/(42*b^2*d) + ((b
*c - a*d)*(a + b*x)^(9/4)*(c + d*x)^(1/4))/(7*b^2) + (2*(a + b*x)
^(9/4)*(c + d*x)^(5/4))/(7*b) + (5*(b*c - a*d)^(9/2)*((a + b*x)*(
c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2
*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
 + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^
(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(168*S
qrt[2]*b^(9/4)*d^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d
 + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.17692, antiderivative size = 408, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{5(bc-ad)^{9/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{168\sqrt{2}b^{9/4}d^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^3}{84b^2d^2}+\frac{(a+bx)^{5/4}\sqrt[4]{c+dx}(bc-ad)^2}{42b^2d}+\frac{(a+bx)^{9/4}\sqrt[4]{c+dx}(bc-ad)}{7b^2}+\frac{2(a+bx)^{9/4}(c+dx)^{5/4}}{7b}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(5/4)*(c + d*x)^(5/4),x]
```

```
[Out] (-5*(b*c - a*d)^3*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(84*b^2*d^2) +
 ((b*c - a*d)^2*(a + b*x)^(5/4)*(c + d*x)^(1/4))/(42*b^2*d) + ((b
*c - a*d)*(a + b*x)^(9/4)*(c + d*x)^(1/4))/(7*b^2) + (2*(a + b*x)
^(9/4)*(c + d*x)^(5/4))/(7*b) + (5*(b*c - a*d)^(9/2)*((a + b*x)*(
c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqr
```

```
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2
*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
 + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^
(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(168*S
qrt[2]*b^(9/4)*d^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d
 + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 89.1864, size = 449, normalized size = 1.1

$$\frac{2(a+bx)^{\frac{5}{4}}(c+dx)^{\frac{9}{4}}}{7d}+\frac{\sqrt[4]{a+bx}\,(c+dx)^{\frac{9}{4}}(ad-bc)}{7d^2}+\frac{\sqrt[4]{a+bx}\,(c+dx)^{\frac{5}{4}}(ad-bc)^2}{42bd^2}-\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}\,(ad-bc)^3}{84b^2d^2}+\frac{5\sqrt{2}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\,(ad-bc)^{\frac{9}{2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2}}{336b^{\frac{9}{4}}d^{\frac{9}{4}}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}\,(ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/4)*(d*x+c)**(5/4),x)
```

```
[Out] 2*(a + b*x)**(5/4)*(c + d*x)**(9/4)/(7*d) + (a + b*x)**(1/4)*(c +
 d*x)**(9/4)*(a*d - b*c)/(7*d**2) + (a + b*x)**(1/4)*(c + d*x)**(
5/4)*(a*d - b*c)**2/(42*b*d**2) - 5*(a + b*x)**(1/4)*(c + d*x)**(
1/4)*(a*d - b*c)**3/(84*b**2*d**2) + 5*sqrt(2)*sqrt((b*d*(4*a*c +
 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**
2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
b*c) + 1)**2))*(a*d - b*c)**(9/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b
*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan
(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4
)/sqrt(a*d - b*c)), 1/2)/(336*b**(9/4)*d**(9/4)*(a + b*x)**(3/4)*
(c + d*x)**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)
) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.245064, size = 183, normalized size = 0.45

$$\frac{\sqrt[4]{c+dx}\left(5(bc-ad)^4\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)\left(5a^3d^3-a^2bd^2(17c+2dx)-ab^2d\left(17c^2+68cdx+36d\right.\right.\right.}{84b^2d^3(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/4)*(c + d*x)^(5/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(-(d*(a + b*x)*(5*a^3*d^3 - a^2*b*d^2*(17*c + 2*
d*x) - a*b^2*d*(17*c^2 + 68*c*d*x + 36*d^2*x^2) + b^3*(5*c^3 - 2*
c^2*d*x - 36*c*d^2*x^2 - 24*d^3*x^3))) + 5*(b*c - a*d)^4*((d*(a +
 b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4, (b*
(c + d*x))/(b*c - a*d)]))/(84*b^2*d^3*(a + b*x)^(3/4))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{4}} (dx+c)^{\frac{5}{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/4)*(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(5/4)*(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{4}}(dx+c)^{\frac{5}{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)*(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/4)*(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(bdx^2+ac+(bc+ad)x\right)(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{1}{4}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)*(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral((b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(1/4)*(d*x + c
)^(1/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/4)*(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)*(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1688 $\int \sqrt[4]{a+bx}(c+dx)^{5/4}\,dx$

Optimal. Leaf size=370

$$-\frac{(bc-ad)^{7/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{\cdots}\right)\right)}{12\sqrt{2}b^{9/4}d^{5/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{6b^2d}+\frac{(a+bx)^{5/4}\sqrt[4]{c+dx}(bc-ad)}{3b^2}+\frac{2(a+bx)^{5/4}(c+dx)^{5/4}}{5b}$$

```
[Out] ((b*c - a*d)^2*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(6*b^2*d) + ((b*c
 - a*d)*(a + b*x)^(5/4)*(c + d*x)^(1/4))/(3*b^2) + (2*(a + b*x)^(
5/4)*(c + d*x)^(5/4))/(5*b) - ((b*c - a*d)^(7/2)*((a + b*x)*(c +
d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]
*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x
))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d
*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4
)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(12*Sqrt[2
]*b^(9/4)*d^(5/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d + 2*
b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.862669, antiderivative size = 370, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{(bc-ad)^{7/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{\cdots}\right)\right)}{12\sqrt{2}b^{9/4}d^{5/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}{6b^2d}+\frac{(a+bx)^{5/4}\sqrt[4]{c+dx}(bc-ad)}{3b^2}+\frac{2(a+bx)^{5/4}(c+dx)^{5/4}}{5b}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(1/4)*(c + d*x)^(5/4),x]
```

```
[Out] ((b*c - a*d)^2*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(6*b^2*d) + ((b*c
 - a*d)*(a + b*x)^(5/4)*(c + d*x)^(1/4))/(3*b^2) + (2*(a + b*x)^(
5/4)*(c + d*x)^(5/4))/(5*b) - ((b*c - a*d)^(7/2)*((a + b*x)*(c +
d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]
*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x
))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d
*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4
)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(12*Sqrt[2
]*b^(9/4)*d^(5/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d + 2*
b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 72.1298, size = 411, normalized size = 1.11

$$\frac{2\sqrt[4]{a+bx}\,(c+dx)^{\frac{9}{4}}}{5d}+\frac{\sqrt[4]{a+bx}\,(c+dx)^{\frac{5}{4}}\,(ad-bc)}{15bd}-\frac{\sqrt[4]{a+bx}\sqrt[4]{c+dx}\,(ad-bc)^2}{6b^2d}+\frac{\sqrt{2}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\,(ad-bc)^{\frac{7}{2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2b}}{24b^{\frac{9}{4}}d^{\frac{5}{4}}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}\,(ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/4)*(d*x+c)**(5/4),x)
```

```
[Out] 2*(a + b*x)**(1/4)*(c + d*x)**(9/4)/(5*d) + (a + b*x)**(1/4)*(c +
 d*x)**(5/4)*(a*d - b*c)/(15*b*d) - (a + b*x)**(1/4)*(c + d*x)**(
1/4)*(a*d - b*c)**2/(6*b**2*d) + sqrt(2)*sqrt((b*d*(4*a*c + 4*b*d
*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*s
qrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) +
 1)**2))*(a*d - b*c)**(7/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**
2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*
c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(
2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt
(a*d - b*c)), 1/2)/(24*b**(9/4)*d**(5/4)*(a + b*x)**(3/4)*(c + d*
x)**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*
d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.264554, size = 142, normalized size = 0.38

$$\frac{\sqrt[4]{c+dx}\left(-d(a+bx)\left(5a^2d^2-2abd(6c+dx)+b^2\left(-\left(5c^2+22cdx+12d^2x^2\right)\right)\right)-5(bc-ad)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+}{bc-}\right.\right.}{30b^2d^2(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/4)*(c + d*x)^(5/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(-(d*(a + b*x)*(5*a^2*d^2 - 2*a*b*d*(6*c + d*x)
- b^2*(5*c^2 + 22*c*d*x + 12*d^2*x^2))) - 5*(b*c - a*d)^3*((d*(a
+ b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4, (b
*(c + d*x))/(b*c - a*d)]))/(30*b^2*d^2*(a + b*x)^(3/4))
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int \sqrt[4]{bx+a}\,(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/4)*(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(1/4)*(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{4}}(dx+c)^{\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)*(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/4)*(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((bx+a)^{\frac{1}{4}}(dx+c)^{\frac{5}{4}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)*(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/4)*(d*x + c)^(5/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/4)*(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)*(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1689 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{3/4}}\,dx$

Optimal. Leaf size=332

$$\frac{5(bc-ad)^{5/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{6\sqrt{2}b^{9/4}\sqrt[4]{d}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}} + \frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}{3b^2} + \frac{2\sqrt[4]{a+bx}(c+dx)^{5/4}}{3b}$$

```
[Out] (5*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(3*b^2) + (2*(a +
 b*x)^(1/4)*(c + d*x)^(5/4))/(3*b) + (5*(b*c - a*d)^(5/2)*((a + b
*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b
]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(
c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*
x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/
4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(
6*Sqrt[2]*b^(9/4)*d^(1/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c +
a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.689963, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{5(bc-ad)^{5/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{6\sqrt{2}b^{9/4}\sqrt[4]{d}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}} + \frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}{3b^2} + \frac{2\sqrt[4]{a+bx}(c+dx)^{5/4}}{3b}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(3/4),x]
```

```
[Out] (5*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(3*b^2) + (2*(a +
 b*x)^(1/4)*(c + d*x)^(5/4))/(3*b) + (5*(b*c - a*d)^(5/2)*((a + b
*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b
]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(
c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*
x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/
4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(
6*Sqrt[2]*b^(9/4)*d^(1/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c +
a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 57.2998, size = 382, normalized size = 1.15

$$\frac{2\sqrt[4]{a+bx}\,(c+dx)^{\frac{5}{4}}}{3b}-\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}\,(ad-bc)}{3b^2}+\frac{5\sqrt{2}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\,(ad-bc)^{\frac{5}{2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x\,(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2}}{12b^{\frac{9}{4}}\sqrt[4]{d}\,(a+bx)^{\frac{3}{4}}\,(c+dx)^{\frac{3}{4}}\sqrt{bd\,(4ac+4bdx^2+x\,(4ad+4bc))+(ad-bc)^2}\,(ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(3/4),x)
```

```
[Out] 2*(a + b*x)**(1/4)*(c + d*x)**(5/4)/(3*b) - 5*(a + b*x)**(1/4)*(c
 + d*x)**(1/4)*(a*d - b*c)/(3*b**2) + 5*sqrt(2)*sqrt((b*d*(4*a*c
+ 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)*
*2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
 b*c) + 1)**2))*(a*d - b*c)**(5/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c +
b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*ata
n(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/
4)/sqrt(a*d - b*c)), 1/2)/(12*b**(9/4)*d**(1/4)*(a + b*x)**(3/4)*
(c + d*x)**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)
) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.195065, size = 111, normalized size = 0.33

$$\frac{\sqrt[4]{c+dx}\left(5(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(5ad-7bc-2bdx)\right)}{3b^2d(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(3/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(-(d*(a + b*x)*(-7*b*c + 5*a*d - 2*b*d*x)) + 5*(
b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2
F1[1/4, 3/4, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(3*b^2*d*(a + b*x)
^(3/4))
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(3/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(3/4),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/(b*x + a)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^{\frac{5}{4}}}{(a+bx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(3/4),x)
```

```
[Out] Integral((c + d*x)**(5/4)/(a + b*x)**(3/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(3/4),x, algorithm="giac")

[Out] Timed out
```

3.1690 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{7/4}}\,dx$

Optimal. Leaf size=325

$$\frac{5d^{3/4}(bc-ad)^{3/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\right.}{3\sqrt{2}b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{10d\sqrt[4]{a+bx}\sqrt[4]{c+dx}}{3b^2}-\frac{4(c+dx)^{5/4}}{3b(a+bx)^{3/4}}$$

```
[Out] (10*d*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(3*b^2) - (4*(c + d*x)^(5/
4))/(3*b*(a + b*x)^(3/4)) + (5*d^(3/4)*(b*c - a*d)^(3/2)*((a + b*
x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]
*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c
 + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x
)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4
)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(3
*Sqrt[2]*b^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d + 2*b
*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.677848, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{5d^{3/4}(bc-ad)^{3/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\right.}{3\sqrt{2}b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{10d\sqrt[4]{a+bx}\sqrt[4]{c+dx}}{3b^2}-\frac{4(c+dx)^{5/4}}{3b(a+bx)^{3/4}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(7/4),x]
```

```
[Out] (10*d*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(3*b^2) - (4*(c + d*x)^(5/
4))/(3*b*(a + b*x)^(3/4)) + (5*d^(3/4)*(b*c - a*d)^(3/2)*((a + b*
x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]
*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c
 + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x
)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4
)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(3
*Sqrt[2]*b^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d + 2*b
*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 57.0925, size = 377, normalized size = 1.16

$$-\frac{4\left(c+dx\right)^{\frac{5}{4}}}{3b\left(a+bx\right)^{\frac{3}{4}}}+\frac{10d\sqrt[4]{a+bx}\sqrt[4]{c+dx}}{3b^{2}}-\frac{5\sqrt{2}d^{\frac{3}{4}}\sqrt{\frac{bd(4ac+4bdx^{2}+x(4ad+4bc))+(ad-bc)^{2}}{(ad-bc)^{2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^{2}+x(ad+bc)}}{ad-bc}+1\right)^{2}}}\left(ad-bc\right)^{\frac{3}{2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^{2}+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^{2}+x\left(ad+bc\right)\right)^{\frac{3}{4}}\sqrt{(ad+bc}\cdots}{6b^{\frac{9}{4}}\left(a+bx\right)^{\frac{3}{4}}\left(c+dx\right)^{\frac{3}{4}}\sqrt{bd\left(4ac+4bdx^{2}+x\left(4ad+4bc\right)\right)+\left(ad-bc\right)^{2}}\left(ad\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(7/4),x)
```

```
[Out] -4*(c + d*x)**(5/4)/(3*b*(a + b*x)**(3/4)) + 10*d*(a + b*x)**(1/4
)*(c + d*x)**(1/4)/(3*b**2) - 5*sqrt(2)*d**(3/4)*sqrt((b*d*(4*a*c
 + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)
**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d
- b*c) + 1)**2))*(a*d - b*c)**(3/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c +
 b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(
a*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*at
an(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1
/4)/sqrt(a*d - b*c)), 1/2)/(6*b**(9/4)*(a + b*x)**(3/4)*(c + d*x)
**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d
- b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.184341, size = 95, normalized size = 0.29

$$-\frac{2\sqrt[4]{c+dx}\left(\frac{5d(a+bx)\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[4]{\frac{d(a+bx)}{ad-bc}}}-5ad+2bc-3bdx\right)}{3b^{2}(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(7/4),x]
```

```
[Out] (-2*(c + d*x)^(1/4)*(2*b*c - 5*a*d - 3*b*d*x + (5*d*(a + b*x)*Hyp
ergeometric2F1[1/4, 3/4, 5/4, (b*(c + d*x))/(b*c - a*d)])/((d*(a
+ b*x))/(-(b*c) + a*d))^(1/4)))/(3*b^2*(a + b*x)^(3/4))
```

Maple [F] time = 0.085, size = 0, normalized size = 0.

$$\int 1\left(dx+c\right)^{\frac{5}{4}}\left(bx+a\right)^{-\frac{7}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(7/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(7/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{7}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(7/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(7/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{7}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(7/4),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/(b*x + a)^(7/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(7/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(7/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1691 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{11/4}}\,dx$

Optimal. Leaf size=325

$$\frac{5\sqrt{2}d^{7/4}\sqrt{bc-ad}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\right.}{21b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{20d\sqrt[4]{c+dx}}{21b^2(a+bx)^{3/4}}-\frac{4(c+dx)^{5/4}}{7b(a+bx)^{7/4}}$$

```
[Out] (-20*d*(c + d*x)^(1/4))/(21*b^2*(a + b*x)^(3/4)) - (4*(c + d*x)^(
5/4))/(7*b*(a + b*x)^(7/4)) + (5*Sqrt[2]*d^(7/4)*Sqrt[b*c - a*d]*
((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2
*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*
d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[
(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2
]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]],
1/2])/(21*b^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d + 2*
b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.724009, antiderivative size = 325, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{5\sqrt{2}d^{7/4}\sqrt{bc-ad}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\right.}{21b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{20d\sqrt[4]{c+dx}}{21b^2(a+bx)^{3/4}}-\frac{4(c+dx)^{5/4}}{7b(a+bx)^{7/4}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(11/4),x]
```

```
[Out] (-20*d*(c + d*x)^(1/4))/(21*b^2*(a + b*x)^(3/4)) - (4*(c + d*x)^(
5/4))/(7*b*(a + b*x)^(7/4)) + (5*Sqrt[2]*d^(7/4)*Sqrt[b*c - a*d]*
((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2
*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*
d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[
(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2
]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]],
1/2])/(21*b^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d + 2*
b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 56.2123, size = 377, normalized size = 1.16

$$-\frac{4(c+dx)^{\frac{5}{4}}}{7b(a+bx)^{\frac{7}{4}}}-\frac{20d\sqrt[4]{c+dx}}{21b^2(a+bx)^{\frac{3}{4}}}+\frac{5\sqrt{2}d^{\frac{7}{4}}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\sqrt{ad-bc}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+}}{21b^{\frac{9}{4}}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}(ad+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(11/4),x)
```

```
[Out] -4*(c + d*x)**(5/4)/(7*b*(a + b*x)**(7/4)) - 20*d*(c + d*x)**(1/4
)/(21*b**2*(a + b*x)**(3/4)) + 5*sqrt(2)*d**(7/4)*sqrt((b*d*(4*a*
c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c
)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d
 - b*c) + 1)**2))*sqrt(a*d - b*c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b
*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan
(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4
)/sqrt(a*d - b*c)), 1/2)/(21*b**(9/4)*(a + b*x)**(3/4)*(c + d*x)*
*(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d -
 b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.228423, size = 95, normalized size = 0.29

$$-\frac{4\sqrt[4]{c+dx}\left(-5d(a+bx)\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+5ad+3bc+8bdx\right)}{21b^2(a+bx)^{7/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(11/4),x]
```

```
[Out] (-4*(c + d*x)^(1/4)*(3*b*c + 5*a*d + 8*b*d*x - 5*d*(a + b*x)*((d*
(a + b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4,
 (b*(c + d*x))/(b*c - a*d)]))/(21*b^2*(a + b*x)^(7/4))
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{11}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(11/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(11/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{11}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(11/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(11/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(11/4),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(3/
4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(11/4),x)
```

```
[Out] Timed out
```

<u>GIAC/XCAS</u> [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(11/4),x, algorithm="giac")

[Out] Timed out
```

3.1692 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{15/4}}\,dx$

Optimal. Leaf size=363

$$-\frac{10\sqrt{2}d^{11/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\sqrt[4]{\cdots}\right.\right.}{231b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{20d^2\sqrt[4]{c+dx}}{231b^2(a+bx)^{3/4}(bc-ad)}-\frac{20d\sqrt[4]{c+dx}}{77b^2(a+bx)^{7/4}}-\frac{4(c+dx)^{5/4}}{11b(a+bx)^{11/4}}$$

```
[Out] (-20*d*(c + d*x)^(1/4))/(77*b^2*(a + b*x)^(7/4)) - (20*d^2*(c + d
*x)^(1/4))/(231*b^2*(b*c - a*d)*(a + b*x)^(3/4)) - (4*(c + d*x)^(
5/4))/(11*b*(a + b*x)^(11/4)) - (10*Sqrt[2]*d^(11/4)*((a + b*x)*(
c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2
*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
 + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^
(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(231*b
^(9/4)*Sqrt[b*c - a*d]*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d
 + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.829174, antiderivative size = 363, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{10\sqrt{2}d^{11/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\sqrt[4]{\cdots}\right.\right.}{231b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{20d^2\sqrt[4]{c+dx}}{231b^2(a+bx)^{3/4}(bc-ad)}-\frac{20d\sqrt[4]{c+dx}}{77b^2(a+bx)^{7/4}}-\frac{4(c+dx)^{5/4}}{11b(a+bx)^{11/4}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(15/4),x]
```

```
[Out] (-20*d*(c + d*x)^(1/4))/(77*b^2*(a + b*x)^(7/4)) - (20*d^2*(c + d
*x)^(1/4))/(231*b^2*(b*c - a*d)*(a + b*x)^(3/4)) - (4*(c + d*x)^(
5/4))/(11*b*(a + b*x)^(11/4)) - (10*Sqrt[2]*d^(11/4)*((a + b*x)*(
c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2
*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
 + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^
(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(231*b
^(9/4)*Sqrt[b*c - a*d]*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*d
 + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 72.1444, size = 411, normalized size = 1.13

$$-\frac{4\,(c+dx)^{\frac{5}{4}}}{11b\,(a+bx)^{\frac{11}{4}}}+\frac{20d^2\sqrt[4]{c+dx}}{231b^2\,(a+bx)^{\frac{3}{4}}\,(ad-bc)}-\frac{20d\sqrt[4]{c+dx}}{77b^2\,(a+bx)^{\frac{7}{4}}}$$

$$+\frac{10\sqrt{2}d^{\frac{11}{4}}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x\,(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2bdx)^2}F}{231b^{\frac{9}{4}}\,(a+bx)^{\frac{3}{4}}\,(c+dx)^{\frac{3}{4}}\,\sqrt{ad-bc}\sqrt{bd\,(4ac+4bdx^2+x\,(4ad+4bc))+(ad-bc)^2}\,(ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(15/4),x)
```

```
[Out] -4*(c + d*x)**(5/4)/(11*b*(a + b*x)**(11/4)) + 20*d**2*(c + d*x)*
*(1/4)/(231*b**2*(a + b*x)**(3/4)*(a*d - b*c)) - 20*d*(c + d*x)**
(1/4)/(77*b**2*(a + b*x)**(7/4)) + 10*sqrt(2)*d**(11/4)*sqrt((b*d
*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d
 - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c)
)/(a*d - b*c) + 1)**2))*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 +
x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))*
*(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b
**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d
 - b*c)), 1/2)/(231*b**(9/4)*(a + b*x)**(3/4)*(c + d*x)**(3/4)*sq
rt(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) +
 (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.323713, size = 140, normalized size = 0.39

$$\frac{4\sqrt[4]{c+dx}\left(-10a^2d^2+10d^2(a+bx)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)-2abd(3c+13dx)+b^2\left(21c^2+36cdx+5d^2x^2\right)\right)}{231b^2(a+bx)^{11/4}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(15/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-10*a^2*d^2 - 2*a*b*d*(3*c + 13*d*x) + b^2*(2
1*c^2 + 36*c*d*x + 5*d^2*x^2) + 10*d^2*(a + b*x)^2*((d*(a + b*x))
/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4, (b*(c + d
*x))/(b*c - a*d)]))/(231*b^2*(-(b*c) + a*d)*(a + b*x)^(11/4))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{15}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(15/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(15/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{15}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(15/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(15/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)(bx+a)^{\frac{3}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(15/4),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)*(b*x + a)^(3/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(15/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(15/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1693 $\int \frac{(c+dx)^{5/4}}{(a+bx)^{19/4}}\,dx$

Optimal. Leaf size=401

$$\frac{4\sqrt{2}d^{15/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\right.\right.}{231b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)^{3/2}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{8d^3\sqrt[4]{c+dx}}{231b^2(a+bx)^{3/4}(bc-ad)^2}-\frac{4d^2\sqrt[4]{c+dx}}{231b^2(a+bx)^{7/4}(bc-ad)}-\frac{4d\sqrt[4]{c+dx}}{33b^2(a+bx)^{11/4}}-\frac{4(c+dx)^{5/4}}{15b(a+bx)^{15/4}}$$

```
[Out] (-4*d*(c + d*x)^(1/4))/(33*b^2*(a + b*x)^(11/4)) - (4*d^2*(c + d*
x)^(1/4))/(231*b^2*(b*c - a*d)*(a + b*x)^(7/4)) + (8*d^3*(c + d*x
)^(1/4))/(231*b^2*(b*c - a*d)^2*(a + b*x)^(3/4)) - (4*(c + d*x)^(
5/4))/(15*b*(a + b*x)^(15/4)) + (4*Sqrt[2]*d^(15/4)*((a + b*x)*(c
 + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt
[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*
d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
+ d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(
1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(231*b^
(9/4)*(b*c - a*d)^(3/2)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*
d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.01361, antiderivative size = 401, normalized size of antiderivative = 1., number of steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{4\sqrt{2}d^{15/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\right.\right.}{231b^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)^{3/2}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{8d^3\sqrt[4]{c+dx}}{231b^2(a+bx)^{3/4}(bc-ad)^2}-\frac{4d^2\sqrt[4]{c+dx}}{231b^2(a+bx)^{7/4}(bc-ad)}-\frac{4d\sqrt[4]{c+dx}}{33b^2(a+bx)^{11/4}}-\frac{4(c+dx)^{5/4}}{15b(a+bx)^{15/4}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(c + d*x)^(5/4)/(a + b*x)^(19/4),x]
```

```
[Out] (-4*d*(c + d*x)^(1/4))/(33*b^2*(a + b*x)^(11/4)) - (4*d^2*(c + d*
x)^(1/4))/(231*b^2*(b*c - a*d)*(a + b*x)^(7/4)) + (8*d^3*(c + d*x
)^(1/4))/(231*b^2*(b*c - a*d)^2*(a + b*x)^(3/4)) - (4*(c + d*x)^(
5/4))/(15*b*(a + b*x)^(15/4)) + (4*Sqrt[2]*d^(15/4)*((a + b*x)*(c
 + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt
[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*
d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
+ d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(
1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(231*b^
```

```
(9/4)*(b*c - a*d)^(3/2)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a*
d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 88.0072, size = 447, normalized size = 1.11

$$-\frac{4(c+dx)^{\frac{5}{4}}}{15b(a+bx)^{\frac{15}{4}}}+\frac{8d^3\sqrt[4]{c+dx}}{231b^2(a+bx)^{\frac{3}{4}}(ad-bc)^2}+\frac{4d^2\sqrt[4]{c+dx}}{231b^2(a+bx)^{\frac{7}{4}}(ad-bc)}-\frac{4d\sqrt[4]{c+dx}}{33b^2(a+bx)^{\frac{11}{4}}}+\frac{4\sqrt{2}d^{\frac{15}{4}}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)(ac+bdx^2+x(ad+bc))^{\frac{3}{4}}\sqrt{(ad+bc+2bdx)^2}F}{231b^{\frac{9}{4}}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}(ad-bc)^{\frac{3}{2}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}(ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/4)/(b*x+a)**(19/4),x)
```

```
[Out] -4*(c + d*x)**(5/4)/(15*b*(a + b*x)**(15/4)) + 8*d**3*(c + d*x)**
(1/4)/(231*b**2*(a + b*x)**(3/4)*(a*d - b*c)**2) + 4*d**2*(c + d*
x)**(1/4)/(231*b**2*(a + b*x)**(7/4)*(a*d - b*c)) - 4*d*(c + d*x)
**(1/4)/(33*b**2*(a + b*x)**(11/4)) + 4*sqrt(2)*d**(15/4)*sqrt((b
*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a
*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*
c))/(a*d - b*c) + 1)**2))*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2
+ x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c)
)**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)
*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a
*d - b*c)), 1/2)/(231*b**(9/4)*(a + b*x)**(3/4)*(c + d*x)**(3/4)*
(a*d - b*c)**(3/2)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*
c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.328222, size = 179, normalized size = 0.45

$$\frac{4\sqrt[4]{c+dx}\left(-20a^3d^3-12a^2bd^2(c+6dx)+ab^2d\left(119c^2+214cdx+35d^2x^2\right)+20d^3(a+bx)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx}{bc-ad}\right.\right.}{1155b^2(a+bx)^{15/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/4)/(a + b*x)^(19/4),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-20*a^3*d^3 - 12*a^2*b*d^2*(c + 6*d*x) + a*b^
2*d*(119*c^2 + 214*c*d*x + 35*d^2*x^2) - b^3*(77*c^3 + 112*c^2*d*
x + 5*c*d^2*x^2 - 10*d^3*x^3) + 20*d^3*(a + b*x)^3*((d*(a + b*x))
/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4, (b*(c + d
```

```
*x))/(b*c - a*d)]))/(1155*b^2*(b*c - a*d)^2*(a + b*x)^(15/4))
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{4}}\,(bx+a)^{-\frac{19}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/4)/(b*x+a)^(19/4),x)
```

```
[Out] int((d*x+c)^(5/4)/(b*x+a)^(19/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{4}}}{(bx+a)^{\frac{19}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(19/4),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/4)/(b*x + a)^(19/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{5}{4}}}{(b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4)(bx+a)^{\frac{3}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(19/4),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/4)/((b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2
+ 4*a^3*b*x + a^4)*(b*x + a)^(3/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/4)/(b*x+a)**(19/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/4)/(b*x + a)^(19/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1694 $\int \frac{(a+bx)^{5/4}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=167

$$\frac{5(bc-ad)^2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{3/4}d^{9/4}}+\frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{3/4}d^{9/4}}-\frac{5\sqrt[4]{a+bx}(c+dx)^{3/4}(bc-ad)}{8d^2}+\frac{(a+bx)^{5/4}(c+dx)^{3/4}}{2d}$$

```
[Out] (-5*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(3/4))/(8*d^2) + ((a +
b*x)^(5/4)*(c + d*x)^(3/4))/(2*d) + (5*(b*c - a*d)^2*ArcTan[(d^(1
/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(16*b^(3/4)*d^(9
/4)) + (5*(b*c - a*d)^2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4
)*(c + d*x)^(1/4))])/(16*b^(3/4)*d^(9/4))
```

Rubi [A] time = 0.20935, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{5(bc-ad)^2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{3/4}d^{9/4}}+\frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16b^{3/4}d^{9/4}}-\frac{5\sqrt[4]{a+bx}(c+dx)^{3/4}(bc-ad)}{8d^2}+\frac{(a+bx)^{5/4}(c+dx)^{3/4}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/4)/(c + d*x)^(1/4),x]
```

```
[Out] (-5*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(3/4))/(8*d^2) + ((a +
b*x)^(5/4)*(c + d*x)^(3/4))/(2*d) + (5*(b*c - a*d)^2*ArcTan[(d^(1
/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(16*b^(3/4)*d^(9
/4)) + (5*(b*c - a*d)^2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4
)*(c + d*x)^(1/4))])/(16*b^(3/4)*d^(9/4))
```

Rubi in Sympy [A] time = 28.726, size = 151, normalized size = 0.9

$$\frac{(a+bx)^{\frac{5}{4}}(c+dx)^{\frac{3}{4}}}{2d}+\frac{5\sqrt[4]{a+bx}\,(c+dx)^{\frac{3}{4}}\,(ad-bc)}{8d^2}-\frac{5\,(ad-bc)^2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{16b^{\frac{3}{4}}d^{\frac{9}{4}}}+\frac{5\,(ad-bc)^2\operatorname{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{16b^{\frac{3}{4}}d^{\frac{9}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/4)/(d*x+c)**(1/4),x)
```

```
[Out] (a + b*x)**(5/4)*(c + d*x)**(3/4)/(2*d) + 5*(a + b*x)**(1/4)*(c +
 d*x)**(3/4)*(a*d - b*c)/(8*d**2) - 5*(a*d - b*c)**2*atan(b**(1/4
)*(c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(16*b**(3/4)*d**(
9/4)) + 5*(a*d - b*c)**2*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4
)*(a + b*x)**(1/4)))/(16*b**(3/4)*d**(9/4))
```

Mathematica [C] time = 0.207, size = 108, normalized size = 0.65

$$\frac{(c+dx)^{3/4}\left(5(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+3d(a+bx)(9ad-5bc+4bdx)\right)}{24d^3(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/4)/(c + d*x)^(1/4),x]
```

```
[Out] ((c + d*x)^(3/4)*(3*d*(a + b*x)*(-5*b*c + 9*a*d + 4*b*d*x) + 5*(b
*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2F
1[3/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(24*d^3*(a + b*x)^(
3/4))
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{4}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/4)/(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(5/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{4}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/4)/(d*x + c)^(1/4), x)
```

Fricas [A] time = 0.248163, size = 1519, normalized size = 9.1

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(1/4),x, algorithm="fricas")
```

```
[Out] -1/32*(20*d^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56
*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a
^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d^9))^(1/4)*arctan
((b*d^3*x + b*c*d^2)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d
^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5
 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d^9))^(1/4)
/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/4)*(d*x + c)^(3/4)
 + (d*x + c)*sqrt(((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 -
 4*a^3*b*c*d^3 + a^4*d^4)*sqrt(b*x + a)*sqrt(d*x + c) + (b^2*d^5*
x + b^2*c*d^4)*sqrt((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2
 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 +
 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d^9)))/(d*x +
 c)))) - 5*d^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 5
6*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*
a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d^9))^(1/4)*log(5
*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/4)*(d*x + c)^(3/4)
 + (b*d^3*x + b*c*d^2)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6
*d^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d
^5 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d^9))^(1/
4))/(d*x + c)) + 5*d^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6
*d^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d
^5 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d^9))^(1/
4)*log(5*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/4)*(d*x +
c)^(3/4) - (b*d^3*x + b*c*d^2)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2
*b^6*c^6*d^2 - 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b
^3*c^3*d^5 + 28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b^3*d
^9))^(1/4))/(d*x + c)) - 4*(4*b*d*x - 5*b*c + 9*a*d)*(b*x + a)^(1
/4)*(d*x + c)^(3/4))/d^2
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + bx)^{\frac{5}{4}}}{\sqrt[4]{c + dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral((a + b*x)**(5/4)/(c + d*x)**(1/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1695 $\int \frac{\sqrt[4]{a+bx}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=127

$$-\frac{(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{3/4}d^{5/4}}-\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{3/4}d^{5/4}}+\frac{\sqrt[4]{a+bx}(c+dx)^{3/4}}{d}$$

```
[Out] ((a + b*x)^(1/4)*(c + d*x)^(3/4))/d - ((b*c - a*d)*ArcTan[(d^(1/4
)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*b^(3/4)*d^(5/4)
) - ((b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c +
d*x)^(1/4))])/(2*b^(3/4)*d^(5/4))
```

Rubi [A] time = 0.132048, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{3/4}d^{5/4}}-\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2b^{3/4}d^{5/4}}+\frac{\sqrt[4]{a+bx}(c+dx)^{3/4}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/4)/(c + d*x)^(1/4),x]
```

```
[Out] ((a + b*x)^(1/4)*(c + d*x)^(3/4))/d - ((b*c - a*d)*ArcTan[(d^(1/4
)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*b^(3/4)*d^(5/4)
) - ((b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c +
d*x)^(1/4))])/(2*b^(3/4)*d^(5/4))
```

Rubi in Sympy [A] time = 20.7121, size = 112, normalized size = 0.88

$$\frac{\sqrt[4]{a+bx}\,(c+dx)^{\frac{3}{4}}}{d}-\frac{(ad-bc)\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{2b^{\frac{3}{4}}d^{\frac{5}{4}}}+\frac{(ad-bc)\operatorname{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{2b^{\frac{3}{4}}d^{\frac{5}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/4)/(d*x+c)**(1/4),x)
```

```
[Out] (a + b*x)**(1/4)*(c + d*x)**(3/4)/d - (a*d - b*c)*atan(b**(1/4)*(
c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(2*b**(3/4)*d**(5/4)
) + (a*d - b*c)*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(a + b*
```

```
x)**(1/4)))/(2*b**(3/4)*d**(5/4))
```

Mathematica [C] time = 0.179051, size = 76, normalized size = 0.6

$$\frac{\sqrt[4]{a+bx}(c+dx)^{3/4}\left(\frac{{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[4]{\frac{d(a+bx)}{ad-bc}}}+3\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/4)/(c + d*x)^(1/4),x]
```

```
[Out] ((a + b*x)^(1/4)*(c + d*x)^(3/4)*(3 + Hypergeometric2F1[3/4, 3/4,
 7/4, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))^(
1/4)))/(3*d)
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{bx+a}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/4)/(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(1/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{4}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/4)/(d*x + c)^(1/4), x)
```

Fricas [A] time = 0.234211, size = 865, normalized size = 6.81

$$-\frac{4\,d\left(\frac{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}{b^3d^5}\right)^{\frac{1}{4}}\arctan\left(-\frac{(bd^2x+bcd)\left(\frac{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}{b^3d^5}\right.}{(bc-ad)(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}-(dx+c)\sqrt{\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\sqrt{bx+a}\sqrt{dx+c}+\left(b^2d^3x+b^2cd^2\right)\sqrt{\frac{b^4c}{}}}{dx+c}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(1/4),x, algorithm="fricas")
```

```
[Out] -1/4*(4*d*((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b
*c*d^3 + a^4*d^4)/(b^3*d^5))^(1/4)*arctan(-(b*d^2*x + b*c*d)*((b^
4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d
^4)/(b^3*d^5))^(1/4)/((b*c - a*d)*(b*x + a)^(1/4)*(d*x + c)^(3/4)
 - (d*x + c)*sqrt(((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*sqrt(b*x + a)*
sqrt(d*x + c) + (b^2*d^3*x + b^2*c*d^2)*sqrt((b^4*c^4 - 4*a*b^3*c
^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b^3*d^5)))/(
d*x + c)))) + d*((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4
*a^3*b*c*d^3 + a^4*d^4)/(b^3*d^5))^(1/4)*log(-((b*c - a*d)*(b*x +
 a)^(1/4)*(d*x + c)^(3/4) + (b*d^2*x + b*c*d)*((b^4*c^4 - 4*a*b^3
*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b^3*d^5))^
(1/4))/(d*x + c)) - d*((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d
^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b^3*d^5))^(1/4)*log(-((b*c - a*d)*
(b*x + a)^(1/4)*(d*x + c)^(3/4) - (b*d^2*x + b*c*d)*((b^4*c^4 - 4
*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b^3*
d^5))^(1/4))/(d*x + c)) - 4*(b*x + a)^(1/4)*(d*x + c)^(3/4))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{a+bx}}{\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral((a + b*x)**(1/4)/(c + d*x)**(1/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1696 $\int \frac{1}{(a+bx)^{3/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=85

$$\frac{2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{3/4}\sqrt[4]{d}}+\frac{2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{3/4}\sqrt[4]{d}}$$

```
[Out] (2*ArcTan[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(
b^(3/4)*d^(1/4)) + (2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*
(c + d*x)^(1/4))])/(b^(3/4)*d^(1/4))
```

Rubi [A] time = 0.0792831, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{3/4}\sqrt[4]{d}}+\frac{2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{b^{3/4}\sqrt[4]{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (2*ArcTan[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(
b^(3/4)*d^(1/4)) + (2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*
(c + d*x)^(1/4))])/(b^(3/4)*d^(1/4))
```

Rubi in Sympy [A] time = 16.0545, size = 80, normalized size = 0.94

$$-\frac{2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{b^{\frac{3}{4}}\sqrt[4]{d}}+\frac{2\,\mathrm{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{b^{\frac{3}{4}}\sqrt[4]{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/4)/(d*x+c)**(1/4),x)
```

```
[Out] -2*atan(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(b
**(3/4)*d**(1/4)) + 2*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(
a + b*x)**(1/4)))/(b**(3/4)*d**(1/4))
```

Mathematica [C] time = 0.0651121, size = 73, normalized size = 0.86

$$\frac{4(c+dx)^{3/4}\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{3d(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (4*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*(c + d*x)^(3/4)*Hypergeom
etric2F1[3/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/(3*d*(a + b*x
)^(3/4))
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/4)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(3/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/4)*(d*x + c)^(1/4)), x)
```

Fricas [A] time = 0.22863, size = 286, normalized size = 3.36

$$-4\left(\frac{1}{b^{3}d}\right)^{\frac{1}{4}}\arctan\left(\frac{(bdx+bc)\left(\frac{1}{b^{3}d}\right)^{\frac{1}{4}}}{(dx+c)\sqrt{\frac{(b^{2}dx+b^{2}c)\sqrt{\frac{1}{b^{3}d}}+\sqrt{bx+a}\sqrt{dx+c}}{dx+c}}+(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}}\right)+\left(\frac{1}{b^{3}d}\right)^{\frac{1}{4}}\log\left(\frac{(bdx+bc)\left(\frac{1}{b^{3}d}\right)^{\frac{1}{4}}+(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}}{dx+c}\right)-\left(\frac{1}{b^{3}d}\right)^{\frac{1}{4}}\log\left(-\frac{(bdx+bc)\left(\frac{1}{b^{3}d}\right)^{\frac{1}{4}}-(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}}{dx+c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] -4*(1/(b^3*d))^(1/4)*arctan((b*d*x + b*c)*(1/(b^3*d))^(1/4)/((d*x
 + c)*sqrt(((b^2*d*x + b^2*c)*sqrt(1/(b^3*d)) + sqrt(b*x + a)*sqr
t(d*x + c))/(d*x + c)) + (b*x + a)^(1/4)*(d*x + c)^(3/4))) + (1/(
b^3*d))^(1/4)*log(((b*d*x + b*c)*(1/(b^3*d))^(1/4) + (b*x + a)^(1
/4)*(d*x + c)^(3/4))/(d*x + c)) - (1/(b^3*d))^(1/4)*log(-((b*d*x
+ b*c)*(1/(b^3*d))^(1/4) - (b*x + a)^(1/4)*(d*x + c)^(3/4))/(d*x
+ c))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(a+bx)^{\frac{3}{4}}\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(3/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/4)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/4)*(d*x + c)^(1/4)),x, algorithm="giac")

[Out] Timed out
```

3.1697 $\int \frac{1}{(a+bx)^{7/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=32

$$-\frac{4(c+dx)^{3/4}}{3(a+bx)^{3/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(3/4))/(3*(b*c - a*d)*(a + b*x)^(3/4))
```

Rubi [A] time = 0.021604, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{4(c+dx)^{3/4}}{3(a+bx)^{3/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4))/(3*(b*c - a*d)*(a + b*x)^(3/4))
```

Rubi in Sympy [A] time = 3.31653, size = 26, normalized size = 0.81

$$\frac{4\,(c+dx)^{\frac{3}{4}}}{3\,(a+bx)^{\frac{3}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/4)/(d*x+c)**(1/4),x)
```

```
[Out] 4*(c + d*x)**(3/4)/(3*(a + b*x)**(3/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0420122, size = 32, normalized size = 1.

$$\frac{4(c+dx)^{3/4}}{3(a+bx)^{3/4}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (4*(c + d*x)^(3/4))/(3*(-(b*c) + a*d)*(a + b*x)^(3/4))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.8

$$\frac{4}{3\,ad-3\,bc}\,(dx+c)^{\frac{3}{4}}\,(bx+a)^{-\frac{3}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/4)/(d*x+c)^(1/4),x)
```

```
[Out] 4/3/(b*x+a)^(3/4)*(d*x+c)^(3/4)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/4)*(d*x + c)^(1/4)), x)
```

Fricas [A] time = 0.210648, size = 35, normalized size = 1.09

$$-\frac{4\,(dx+c)^{\frac{3}{4}}}{3\,(bc-ad)(bx+a)^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] -4/3*(d*x + c)^(3/4)/((b*c - a*d)*(b*x + a)^(3/4))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{7}{4}}\,\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(1/((a + b*x)**(7/4)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1698 $\int \frac{1}{(a+bx)^{11/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=66

$$\frac{16d(c+dx)^{3/4}}{21(a+bx)^{3/4}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{7(a+bx)^{7/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(3/4))/(7*(b*c - a*d)*(a + b*x)^(7/4)) + (16*d*(c +
 d*x)^(3/4))/(21*(b*c - a*d)^2*(a + b*x)^(3/4))
```

Rubi [A] time = 0.0498358, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{16d(c+dx)^{3/4}}{21(a+bx)^{3/4}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{7(a+bx)^{7/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(11/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4))/(7*(b*c - a*d)*(a + b*x)^(7/4)) + (16*d*(c +
 d*x)^(3/4))/(21*(b*c - a*d)^2*(a + b*x)^(3/4))
```

Rubi in Sympy [A] time = 6.82151, size = 56, normalized size = 0.85

$$\frac{16d\,(c+dx)^{\frac{3}{4}}}{21\,(a+bx)^{\frac{3}{4}}\,(ad-bc)^2}+\frac{4\,(c+dx)^{\frac{3}{4}}}{7\,(a+bx)^{\frac{7}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/4)/(d*x+c)**(1/4),x)
```

```
[Out] 16*d*(c + d*x)**(3/4)/(21*(a + b*x)**(3/4)*(a*d - b*c)**2) + 4*(c
 + d*x)**(3/4)/(7*(a + b*x)**(7/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0688213, size = 46, normalized size = 0.7

$$\frac{4(c+dx)^{3/4}(7ad-3bc+4bdx)}{21(a+bx)^{7/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(-3*b*c + 7*a*d + 4*b*d*x))/(21*(b*c - a*d)^2*
(a + b*x)^(7/4))
```

Maple [A] time = 0.007, size = 54, normalized size = 0.8

$$\frac{16\,bdx+28\,ad-12\,bc}{21\,a^2d^2-42\,abcd+21\,b^2c^2}\left(dx+c\right)^{\frac{3}{4}}\left(bx+a\right)^{-\frac{7}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/4)/(d*x+c)^(1/4),x)
```

```
[Out] 4/21*(d*x+c)^(3/4)*(4*b*d*x+7*a*d-3*b*c)/(b*x+a)^(7/4)/(a^2*d^2-2
*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(11/4)*(d*x + c)^(1/4)), x)
```

Fricas [A] time = 0.21484, size = 138, normalized size = 2.09

$$\frac{4\left(4\,bd^2x^2-3\,bc^2+7\,acd+\left(bcd+7\,ad^2\right)x\right)}{21\,(ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] 4/21*(4*b*d^2*x^2 - 3*b*c^2 + 7*a*c*d + (b*c*d + 7*a*d^2)*x)/((a*
b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*b^2*c*d + a^2*b*
d^2)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(11/4)/(d*x+c)**(1/4),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(1/4)),x, algorithm="giac")

[Out] Timed out
```

3.1699 $\int \frac{1}{(a+bx)^{15/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=101

$$-\frac{128d^2(c+dx)^{3/4}}{231(a+bx)^{3/4}(bc-ad)^3}+\frac{32d(c+dx)^{3/4}}{77(a+bx)^{7/4}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{11(a+bx)^{11/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(3/4))/(11*(b*c - a*d)*(a + b*x)^(11/4)) + (32*d*(c
 + d*x)^(3/4))/(77*(b*c - a*d)^2*(a + b*x)^(7/4)) - (128*d^2*(c +
 d*x)^(3/4))/(231*(b*c - a*d)^3*(a + b*x)^(3/4))
```

Rubi [A] time = 0.0802399, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{128d^2(c+dx)^{3/4}}{231(a+bx)^{3/4}(bc-ad)^3}+\frac{32d(c+dx)^{3/4}}{77(a+bx)^{7/4}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{11(a+bx)^{11/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(15/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4))/(11*(b*c - a*d)*(a + b*x)^(11/4)) + (32*d*(c
 + d*x)^(3/4))/(77*(b*c - a*d)^2*(a + b*x)^(7/4)) - (128*d^2*(c +
 d*x)^(3/4))/(231*(b*c - a*d)^3*(a + b*x)^(3/4))
```

Rubi in Sympy [A] time = 12.412, size = 88, normalized size = 0.87

$$\frac{128d^2\left(c+dx\right)^{\frac{3}{4}}}{231\left(a+bx\right)^{\frac{3}{4}}\left(ad-bc\right)^3}+\frac{32d\left(c+dx\right)^{\frac{3}{4}}}{77\left(a+bx\right)^{\frac{7}{4}}\left(ad-bc\right)^2}+\frac{4\left(c+dx\right)^{\frac{3}{4}}}{11\left(a+bx\right)^{\frac{11}{4}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(15/4)/(d*x+c)**(1/4),x)
```

```
[Out] 128*d**2*(c + d*x)**(3/4)/(231*(a + b*x)**(3/4)*(a*d - b*c)**3) +
 32*d*(c + d*x)**(3/4)/(77*(a + b*x)**(7/4)*(a*d - b*c)**2) + 4*(
c + d*x)**(3/4)/(11*(a + b*x)**(11/4)*(a*d - b*c))
```

Mathematica [A] time = 0.101085, size = 77, normalized size = 0.76

$$-\frac{4(c+dx)^{3/4}\left(77a^2d^2+22abd(4dx-3c)+b^2\left(21c^2-24cdx+32d^2x^2\right)\right)}{231(a+bx)^{11/4}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(15/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4)*(77*a^2*d^2 + 22*a*b*d*(-3*c + 4*d*x) + b^2*(
21*c^2 - 24*c*d*x + 32*d^2*x^2)))/(231*(b*c - a*d)^3*(a + b*x)^(1
1/4))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{128\,b^2d^2x^2+352\,abd^2x-96\,b^2cdx+308\,a^2d^2-264\,abcd+84\,b^2c^2}{231\,a^3d^3-693\,a^2cbd^2+693\,ab^2c^2d-231\,b^3c^3}\,(dx+c)^{\frac{3}{4}}\,(bx+a)^{-\frac{11}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(15/4)/(d*x+c)^(1/4),x)
```

```
[Out] 4/231*(d*x+c)^(3/4)*(32*b^2*d^2*x^2+88*a*b*d^2*x-24*b^2*c*d*x+77*
a^2*d^2-66*a*b*c*d+21*b^2*c^2)/(b*x+a)^(11/4)/(a^3*d^3-3*a^2*b*c*
d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{15}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(15/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(15/4)*(d*x + c)^(1/4)), x)
```

Fricas [A] time = 0.211999, size = 319, normalized size = 3.16

$$-\frac{4\left(32\,b^2d^3x^3+21\,b^2c^3-66\,abc^2d+77\,a^2cd^2+8\left(b^2cd^2+11\,abd^3\right)x^2-\left(3\,b^2c^2d-22\,abcd^2-77\,a^2\right.}{231\left(a^2b^3c^3-3\,a^3b^2c^2d+3\,a^4bcd^2-a^5d^3+(b^5c^3-3\,ab^4c^2d+3\,a^2b^3cd^2-a^3b^2d^3)x^2+2\left(ab^4c^3-3\,a^2b^3c^2d+3\,a^3b^2cd^2-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(15/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] -4/231*(32*b^2*d^3*x^3 + 21*b^2*c^3 - 66*a*b*c^2*d + 77*a^2*c*d^2
 + 8*(b^2*c*d^2 + 11*a*b*d^3)*x^2 - (3*b^2*c^2*d - 22*a*b*c*d^2 -
 77*a^2*d^3)*x)/((a^2*b^3*c^3 - 3*a^3*b^2*c^2*d + 3*a^4*b*c*d^2 -
 a^5*d^3 + (b^5*c^3 - 3*a*b^4*c^2*d + 3*a^2*b^3*c*d^2 - a^3*b^2*d
^3)*x^2 + 2*(a*b^4*c^3 - 3*a^2*b^3*c^2*d + 3*a^3*b^2*c*d^2 - a^4*
b*d^3)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(15/4)/(d*x+c)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(15/4)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1700 $\int \frac{1}{(a+bx)^{19/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=136

$$\frac{512d^3(c+dx)^{3/4}}{1155(a+bx)^{3/4}(bc-ad)^4}-\frac{128d^2(c+dx)^{3/4}}{385(a+bx)^{7/4}(bc-ad)^3}+\frac{16d(c+dx)^{3/4}}{55(a+bx)^{11/4}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{15(a+bx)^{15/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(3/4))/(15*(b*c - a*d)*(a + b*x)^(15/4)) + (16*d*(c
 + d*x)^(3/4))/(55*(b*c - a*d)^2*(a + b*x)^(11/4)) - (128*d^2*(c
+ d*x)^(3/4))/(385*(b*c - a*d)^3*(a + b*x)^(7/4)) + (512*d^3*(c +
 d*x)^(3/4))/(1155*(b*c - a*d)^4*(a + b*x)^(3/4))
```

Rubi [A] time = 0.113177, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{512d^3(c+dx)^{3/4}}{1155(a+bx)^{3/4}(bc-ad)^4}-\frac{128d^2(c+dx)^{3/4}}{385(a+bx)^{7/4}(bc-ad)^3}+\frac{16d(c+dx)^{3/4}}{55(a+bx)^{11/4}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{15(a+bx)^{15/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(19/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4))/(15*(b*c - a*d)*(a + b*x)^(15/4)) + (16*d*(c
 + d*x)^(3/4))/(55*(b*c - a*d)^2*(a + b*x)^(11/4)) - (128*d^2*(c
+ d*x)^(3/4))/(385*(b*c - a*d)^3*(a + b*x)^(7/4)) + (512*d^3*(c +
 d*x)^(3/4))/(1155*(b*c - a*d)^4*(a + b*x)^(3/4))
```

Rubi in Sympy [A] time = 19.346, size = 121, normalized size = 0.89

$$\frac{512d^3\left(c+dx\right)^{\frac{3}{4}}}{1155\left(a+bx\right)^{\frac{3}{4}}\left(ad-bc\right)^4}+\frac{128d^2\left(c+dx\right)^{\frac{3}{4}}}{385\left(a+bx\right)^{\frac{7}{4}}\left(ad-bc\right)^3}+\frac{16d\left(c+dx\right)^{\frac{3}{4}}}{55\left(a+bx\right)^{\frac{11}{4}}\left(ad-bc\right)^2}+\frac{4\left(c+dx\right)^{\frac{3}{4}}}{15\left(a+bx\right)^{\frac{15}{4}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(19/4)/(d*x+c)**(1/4),x)
```

```
[Out] 512*d**3*(c + d*x)**(3/4)/(1155*(a + b*x)**(3/4)*(a*d - b*c)**4)
+ 128*d**2*(c + d*x)**(3/4)/(385*(a + b*x)**(7/4)*(a*d - b*c)**3)
 + 16*d*(c + d*x)**(3/4)/(55*(a + b*x)**(11/4)*(a*d - b*c)**2) +
4*(c + d*x)**(3/4)/(15*(a + b*x)**(15/4)*(a*d - b*c))
```

Mathematica [A] time = 0.194258, size = 95, normalized size = 0.7

$$\frac{4(c+dx)^{3/4}\left(96d^2(a+bx)^2(ad-bc)+84d(a+bx)(bc-ad)^2-77(bc-ad)^3+128d^3(a+bx)^3\right)}{1155(a+bx)^{15/4}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(19/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(-77*(b*c - a*d)^3 + 84*d*(b*c - a*d)^2*(a + b
*x) + 96*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 128*d^3*(a + b*x)^3))/(
1155*(b*c - a*d)^4*(a + b*x)^(15/4))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$\frac{512\,x^3b^3d^3+1920\,ab^2d^3x^2-384\,b^3cd^2x^2+2640\,a^2bd^3x-1440\,ab^2cd^2x+336\,b^3c^2dx+1540\,a^3d^3-1980\,a^2cbd^2+1260\,ab}{1155\,a^4d^4-4620\,a^3bcd^3+6930\,a^2c^2b^2d^2-4620\,ab^3c^3d+1155\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(19/4)/(d*x+c)^(1/4),x)
```

```
[Out] 4/1155*(d*x+c)^(3/4)*(128*b^3*d^3*x^3+480*a*b^2*d^3*x^2-96*b^3*c*
d^2*x^2+660*a^2*b*d^3*x-360*a*b^2*c*d^2*x+84*b^3*c^2*d*x+385*a^3*
d^3-495*a^2*b*c*d^2+315*a*b^2*c^2*d-77*b^3*c^3)/(b*x+a)^(15/4)/(a
^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{19}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(19/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(19/4)*(d*x + c)^(1/4)), x)
```

Fricas [A] time = 0.216609, size = 544, normalized size = 4.

$$\frac{4\left(128\,b^3d^4x^4-77\,b^3c^4+315\,ab^2c^3d-495\,a^2bc^2d^2+385\,a^3cd^3+32\left(b^3cd^3+15\,ab^2d^4\right)x\right.}{1155\left(a^3b^4c^4-4\,a^4b^3c^3d+6\,a^5b^2c^2d^2-4\,a^6bcd^3+a^7d^4+(b^7c^4-4\,ab^6c^3d+6\,a^2b^5c^2d^2-4\,a^3b^4cd^3+a^4b^3d^4)x^3+3\,(ab^6c^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(19/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] 4/1155*(128*b^3*d^4*x^4 - 77*b^3*c^4 + 315*a*b^2*c^3*d - 495*a^2*
b*c^2*d^2 + 385*a^3*c*d^3 + 32*(b^3*c*d^3 + 15*a*b^2*d^4)*x^3 - 1
2*(b^3*c^2*d^2 - 10*a*b^2*c*d^3 - 55*a^2*b*d^4)*x^2 + (7*b^3*c^3*
d - 45*a*b^2*c^2*d^2 + 165*a^2*b*c*d^3 + 385*a^3*d^4)*x)/((a^3*b^
4*c^4 - 4*a^4*b^3*c^3*d + 6*a^5*b^2*c^2*d^2 - 4*a^6*b*c*d^3 + a^7
*d^4 + (b^7*c^4 - 4*a*b^6*c^3*d + 6*a^2*b^5*c^2*d^2 - 4*a^3*b^4*c
*d^3 + a^4*b^3*d^4)*x^3 + 3*(a*b^6*c^4 - 4*a^2*b^5*c^3*d + 6*a^3*
b^4*c^2*d^2 - 4*a^4*b^3*c*d^3 + a^5*b^2*d^4)*x^2 + 3*(a^2*b^5*c^4
 - 4*a^3*b^4*c^3*d + 6*a^4*b^3*c^2*d^2 - 4*a^5*b^2*c*d^3 + a^6*b*
d^4)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(19/4)/(d*x+c)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(19/4)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1701 $\int \frac{(a+bx)^{7/4}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=751

$$\frac{7(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{\cdots}}{\cdots}\right.\right.}{20\sqrt{2}b^{3/4}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{7(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\cdots}{\cdots}\right.\right.}{10\sqrt{2}b^{3/4}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{7(bc-ad)\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{10\sqrt{b}d^{5/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

$$-\frac{7(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)}{15d^2}+\frac{2(a+bx)^{7/4}(c+dx)^{3/4}}{5d}$$

```
[Out] (-7*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(3/4))/(15*d^2) + (2*(a
 + b*x)^(7/4)*(c + d*x)^(3/4))/(5*d) + (7*(b*c - a*d)*Sqrt[(a + b
*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2
*d*x))^2])/(10*Sqrt[b]*d^(5/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b
*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d
*x)])/(b*c - a*d))) - (7*(b*c - a*d)^(7/2)*((a + b*x)*(c + d*x))^
(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[
(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/(
(b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/
(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a
+ b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(10*Sqrt[2]*b^(3
/4)*d^(11/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x
)*Sqrt[(a*d + b*(c + 2*d*x))^2]) + (7*(b*c - a*d)^(7/2)*((a + b*x
)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*
Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c
+ 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)
*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)
*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(20
*Sqrt[2]*b^(3/4)*d^(11/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c +
a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.72266, antiderivative size = 751, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{7(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\sqrt[4]{(a+bx)(c+dx)}}{\sqrt{bc-ad}}\right)|\frac{1}{2}\right)}{20\sqrt{2}b^{3/4}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{7(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\sqrt[4]{(a+bx)(c+dx)}}{\sqrt{bc-ad}}\right)|\frac{1}{2}\right)}{10\sqrt{2}b^{3/4}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{7(bc-ad)\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{10\sqrt{b}d^{5/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$-\frac{7(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)}{15d^2}+\frac{2(a+bx)^{7/4}(c+dx)^{3/4}}{5d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(7/4)/(c + d*x)^(1/4),x]
```

```
[Out] (-7*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(3/4))/(15*d^2) + (2*(a
 + b*x)^(7/4)*(c + d*x)^(3/4))/(5*d) + (7*(b*c - a*d)*Sqrt[(a + b
*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2
*d*x))^2])/(10*Sqrt[b]*d^(5/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b
*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d
*x)])/(b*c - a*d))) - (7*(b*c - a*d)^(7/2)*((a + b*x)*(c + d*x))^
(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[
(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/(
(b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/
(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a
+ b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(10*Sqrt[2]*b^(3
/4)*d^(11/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x
)*Sqrt[(a*d + b*(c + 2*d*x))^2]) + (7*(b*c - a*d)^(7/2)*((a + b*x
)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*
Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c
+ 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)
*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)
*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(20
*Sqrt[2]*b^(3/4)*d^(11/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c +
a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 156.368, size = 889, normalized size = 1.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/4)/(d*x+c)**(1/4),x)
```

```
[Out] 2*(a + b*x)**(7/4)*(c + d*x)**(3/4)/(5*d) + 7*(a + b*x)**(3/4)*(c
 + d*x)**(3/4)*(a*d - b*c)/(15*d**2) + 7*(a*d - b*c)*sqrt(b*d*(4*
a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*sqrt(a*c
+ b*d*x**2 + x*(a*d + b*c))*sqrt((a*d + b*c + 2*b*d*x)**2)/(10*sq
rt(b)*d**(5/2)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*(2*sqrt(b)*sqrt(
d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*d + b
*c + 2*b*d*x)) - 7*sqrt(2)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a
*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)
*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d
- b*c)**(7/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b
*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqr
t((a*d + b*c + 2*b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d*
*(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)),
1/2)/(20*b**(3/4)*d**(11/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqr
t(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*
(a*d + b*c + 2*b*d*x)) + 7*sqrt(2)*sqrt((b*d*(4*a*c + 4*b*d*x**2
+ x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)
*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2
))*(a*d - b*c)**(7/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*
(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(
1/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**
(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d -
 b*c)), 1/2)/(40*b**(3/4)*d**(11/4)*(a + b*x)**(1/4)*(c + d*x)**(
1/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b
*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.221917, size = 107, normalized size = 0.14

$$\frac{(c+dx)^{3/4}\left(7(bc-ad)^2\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(13ad-7bc+6bdx)\right)}{15d^3\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/4)/(c + d*x)^(1/4),x]
```

```
[Out] ((c + d*x)^(3/4)*(d*(a + b*x)*(-7*b*c + 13*a*d + 6*b*d*x) + 7*(b*
c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2F1
[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(15*d^3*(a + b*x)^(1
/4))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{4}}\,\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/4)/(d*x+c)^(1/4),x)

[Out] int((b*x+a)^(7/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{4}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(1/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(7/4)/(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{7}{4}}}{(dx+c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(1/4),x, algorithm="fricas")

[Out] integral((b*x + a)^(7/4)/(d*x + c)^(1/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/4)/(d*x+c)**(1/4),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1702 $\int \frac{(a+bx)^{3/4}}{\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=705

$$-\frac{(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\sqrt[4]{\right.\right.}{2\sqrt{2}b^{3/4}d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\sqrt{2}\sqrt[4]{\right.\right.}{\sqrt{2}b^{3/4}d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{b}d^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}+\frac{2(a+bx)^{3/4}(c+dx)^{3/4}}{3d}$$

```
[Out] (2*(a + b*x)^(3/4)*(c + d*x)^(3/4))/(3*d) - (Sqrt[(a + b*x)*(c +
d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2]
)/(Sqrt[b]*d^(3/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c -
 a*d))) + ((b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*
c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*
(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2
)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*
x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(Sqrt[2]*b^(3/4)*d^(7/4)*(a +
b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c
 + 2*d*x))^2]) - ((b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*S
qrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*
x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c -
a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c -
a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*
(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(2*Sqrt[2]*b^(3/4)*d^(7
/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a
*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.45874, antiderivative size = 705, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{\cdots}}{\cdots}\right.\right.}{2\sqrt{2}b^{3/4}d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{\cdots}}{\cdots}\right.\right.}{\sqrt{2}b^{3/4}d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{b}d^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}+\frac{2(a+bx)^{3/4}(c+dx)^{3/4}}{3d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(3/4)/(c + d*x)^(1/4),x]
```

```
[Out] (2*(a + b*x)^(3/4)*(c + d*x)^(3/4))/(3*d) - (Sqrt[(a + b*x)*(c +
d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2]
)/(Sqrt[b]*d^(3/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c -
 a*d))) + ((b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*
c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*
(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2
)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*
x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(Sqrt[2]*b^(3/4)*d^(7/4)*(a +
b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c
 + 2*d*x))^2]) - ((b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*S
qrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*
x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c -
a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c -
a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*
(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(2*Sqrt[2]*b^(3/4)*d^(7
/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a
*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 131.227, size = 845, normalized size = 1.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/4)/(d*x+c)**(1/4),x)
```

```
[Out] 2*(a + b*x)**(3/4)*(c + d*x)**(3/4)/(3*d) + sqrt(b*d*(4*a*c + 4*b
*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*sqrt(a*c + b*d*x**
```

```
2 + x*(a*d + b*c))*sqrt((a*d + b*c + 2*b*d*x)**2)/(sqrt(b)*d**(3/
2)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*(2*sqrt(b)*sqrt(d)*sqrt(a*c
+ b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*d + b*c + 2*b*d*x
)) - sqrt(2)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) +
 (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*
d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d - b*c)**(5/2)*
(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*
c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d + b*c +
 2*b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*c +
b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(2*b**(3/
4)*d**(7/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c + 4
*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b
*d*x)) + sqrt(2)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c
)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c
+ b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d - b*c)**(5
/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d
- b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d + b
*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*
c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(4*b*
*(3/4)*d**(7/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c
 + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c +
 2*b*d*x))
```

Mathematica [C] time = 0.185494, size = 76, normalized size = 0.11

$$\frac{2(a+bx)^{3/4}(c+dx)^{3/4}\left(\frac{{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}}+1\right)}{3d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/4)/(c + d*x)^(1/4),x]
```

```
[Out] (2*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(1 + Hypergeometric2F1[1/4, 3/
4, 7/4, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))
^(3/4)))/(3*d)
```

Maple [F] time = 0.041, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{4}}\,\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/4)/(d*x+c)^(1/4),x)
```

```
[Out] int((b*x+a)^(3/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{4}}}{(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(1/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/4)/(d*x + c)^(1/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{4}}}{(dx+c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(1/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/4)/(d*x + c)^(1/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{4}}}{\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral((a + b*x)**(3/4)/(c + d*x)**(1/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(1/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1703 $\int \frac{1}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=688

$$\frac{(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\cdots}{\cdots}\right)\right)}{\sqrt{2}b^{3/4}d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{\sqrt{2}(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\cdots\right)\right)}{b^{3/4}d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{2\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{b}\sqrt{d}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

```
[Out] (2*Sqrt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(
a*d + b*(c + 2*d*x))^2])/(Sqrt[b]*Sqrt[d]*(b*c - a*d)*(a + b*x)^(
1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d
]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))) - (Sqrt[2]*(b*c - a*d)
^(3/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*
(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*S
qrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d
]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[
(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c -
a*d]], 1/2])/(b^(3/4)*d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*
c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) + ((b*c - a*d)^
(3/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(
1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sq
rt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]
*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(
Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a
*d]], 1/2])/(Sqrt[2]*b^(3/4)*d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1
/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.2327, antiderivative size = 688, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}}{}\right.\right.}{\sqrt{2}b^{3/4}d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{\sqrt{2}(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\right.\right.}{b^{3/4}d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{2\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{b}\sqrt{d}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(1/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (2*Sqrt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(
a*d + b*(c + 2*d*x))^2])/(Sqrt[b]*Sqrt[d]*(b*c - a*d)*(a + b*x)^(
1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d
]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))) - (Sqrt[2]*(b*c - a*d)
^(3/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*
(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*S
qrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d
]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[
(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c -
a*d]], 1/2])/(b^(3/4)*d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*
c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) + ((b*c - a*d)^
(3/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(
1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sq
rt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]
*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(
Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a
*d]], 1/2])/(Sqrt[2]*b^(3/4)*d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1
/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 106.582, size = 830, normalized size = 1.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/4)/(d*x+c)**(1/4),x)
```

```
[Out] 2*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)
**2)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))*sqrt((a*d + b*c + 2*b*d
```

```
*x)**2)/(sqrt(b)*sqrt(d)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*(a*d -
 b*c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*
d - b*c) + 1)*(a*d + b*c + 2*b*d*x)) - sqrt(2)*sqrt((b*d*(4*a*c +
 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**
2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
b*c) + 1)**2))*(a*d - b*c)**(3/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b
*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*
d + b*c))**(1/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_e(2*atan
(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4
)/sqrt(a*d - b*c)), 1/2)/(b**(3/4)*d**(3/4)*(a + b*x)**(1/4)*(c +
 d*x)**(1/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) +
(a*d - b*c)**2)*(a*d + b*c + 2*b*d*x)) + sqrt(2)*sqrt((b*d*(4*a*c
 + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)
**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d
- b*c) + 1)**2))*(a*d - b*c)**(3/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c +
 b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(
a*d + b*c))**(1/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*at
an(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1
/4)/sqrt(a*d - b*c)), 1/2)/(2*b**(3/4)*d**(3/4)*(a + b*x)**(1/4)*
(c + d*x)**(1/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)
) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.0683935, size = 73, normalized size = 0.11

$$\frac{4(c+dx)^{3/4}\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{3d\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (4*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*(c + d*x)^(3/4)*Hypergeom
etric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/(3*d*(a + b*x
)^(1/4))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{bx+a}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/4)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(1/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(1/4)*(d*x + c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(1/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(1/((a + b*x)**(1/4)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/4)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1704 $\int \frac{1}{(a+bx)^{5/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=718

$$\frac{\sqrt{2}\sqrt[4]{d}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\ldots}{}\right.\right.}{b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{2\sqrt{2}\sqrt[4]{d}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\ldots\right.\right.}{b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{4(c+dx)^{3/4}}{\sqrt[4]{a+bx}(bc-ad)}+\frac{4\sqrt{d}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{b}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

```
[Out] (-4*(c + d*x)^(3/4))/((b*c - a*d)*(a + b*x)^(1/4)) + (4*Sqrt[d]*S
qrt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
+ b*(c + 2*d*x))^2])/(Sqrt[b]*(b*c - a*d)^2*(a + b*x)^(1/4)*(c +
d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a
+ b*x)*(c + d*x)])/(b*c - a*d))) - (2*Sqrt[2]*d^(1/4)*Sqrt[b*c -
a*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1
 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqr
t[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*
Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(S
qrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*
d]], 1/2])/(b^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d +
2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) + (Sqrt[2]*d^(1/4)*Sqrt[b
*c - a*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^
2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d)
)*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcT
an[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c
 - a*d]], 1/2])/(b^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a
*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.43217, antiderivative size = 718, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$\frac{\sqrt{2}\sqrt[4]{d}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{2\sqrt{2}\sqrt[4]{d}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\right.\right.}{b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{4(c+dx)^{3/4}}{\sqrt[4]{a+bx}(bc-ad)}+\frac{4\sqrt{d}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{b}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(5/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4))/((b*c - a*d)*(a + b*x)^(1/4)) + (4*Sqrt[d]*S
qrt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d
+ b*(c + 2*d*x))^2])/(Sqrt[b]*(b*c - a*d)^2*(a + b*x)^(1/4)*(c +
d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a
+ b*x)*(c + d*x)])/(b*c - a*d))) - (2*Sqrt[2]*d^(1/4)*Sqrt[b*c -
a*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1
 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqr
t[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*
Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(S
qrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*
d]], 1/2])/(b^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d +
2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) + (Sqrt[2]*d^(1/4)*Sqrt[b
*c - a*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^
2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d)
)*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcT
an[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c
 - a*d]], 1/2])/(b^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a
*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 130.42, size = 857, normalized size = 1.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/4)/(d*x+c)**(1/4),x)
```

```
[Out] 4*(c + d*x)**(3/4)/((a + b*x)**(1/4)*(a*d - b*c)) - 4*sqrt(d)*sqr
t(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*
```

```
sqrt(a*c + b*d*x**2 + x*(a*d + b*c))*sqrt((a*d + b*c + 2*b*d*x)**
2)/(sqrt(b)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*(a*d - b*c)**2*(2*s
qrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) +
 1)*(a*d + b*c + 2*b*d*x)) + 2*sqrt(2)*d**(1/4)*sqrt((b*d*(4*a*c
+ 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)*
*2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
 b*c) + 1)**2))*sqrt(a*d - b*c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d
*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d
+ b*c))**(1/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_e(2*atan(s
qrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/
sqrt(a*d - b*c)), 1/2)/(b**(3/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4
)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)
**2)*(a*d + b*c + 2*b*d*x)) - sqrt(2)*d**(1/4)*sqrt((b*d*(4*a*c +
 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**
2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
b*c) + 1)**2))*sqrt(a*d - b*c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*
x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d +
 b*c))**(1/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sq
rt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/s
qrt(a*d - b*c)), 1/2)/(b**(3/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)
*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)*
*2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.114963, size = 84, normalized size = 0.12

$$\frac{4(c+dx)^{3/4}\left(2\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-3\right)}{3\sqrt[4]{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (4*(c + d*x)^(3/4)*(-3 + 2*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*H
ypergeometric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)]))/(3*(
b*c - a*d)*(a + b*x)^(1/4))
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{4}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/4)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(5/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{5}{4}}(dx+c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(5/4)*(d*x + c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{4}}\sqrt[4]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(5/4)/(d*x+c)**(1/4),x)
```

```
[Out] Integral(1/((a + b*x)**(5/4)*(c + d*x)**(1/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/4)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1705 $\int \frac{1}{(a+bx)^{9/4}\sqrt[4]{c+dx}}\,dx$

Optimal. Leaf size=760

$$-\frac{2\sqrt{2}d^{5/4}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\ldots}{}\right.\right.}{5b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{4\sqrt{2}d^{5/4}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\ldots}{}\right.\right.}{5b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{8d^{3/2}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{5\sqrt{b}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^3(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$+\frac{8d(c+dx)^{3/4}}{5\sqrt[4]{a+bx}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{5(a+bx)^{5/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(3/4))/(5*(b*c - a*d)*(a + b*x)^(5/4)) + (8*d*(c +
d*x)^(3/4))/(5*(b*c - a*d)^2*(a + b*x)^(1/4)) - (8*d^(3/2)*Sqrt[(
a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(
c + 2*d*x))^2])/(5*Sqrt[b]*(b*c - a*d)^3*(a + b*x)^(1/4)*(c + d*x
)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b
*x)*(c + d*x)])/(b*c - a*d))) + (4*Sqrt[2]*d^(5/4)*((a + b*x)*(c
+ d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[
d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d
*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1
/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(5*b^(3/
4)*Sqrt[b*c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) - (2*Sqrt[2]*d^(5/4)*((a +
 b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt
[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b
*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(
1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])
/(5*b^(3/4)*Sqrt[b*c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c
+ a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.63554, antiderivative size = 760, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{2\sqrt{2}d^{5/4}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{\cdots}}{\cdots}\right.\right.}{5b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{4\sqrt{2}d^{5/4}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{\cdots}}{\cdots}\right.\right.}{5b^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{8d^{3/2}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{5\sqrt{b}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^3(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$+\frac{8d(c+dx)^{3/4}}{5\sqrt[4]{a+bx}(bc-ad)^2}-\frac{4(c+dx)^{3/4}}{5(a+bx)^{5/4}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(9/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4))/(5*(b*c - a*d)*(a + b*x)^(5/4)) + (8*d*(c +
d*x)^(3/4))/(5*(b*c - a*d)^2*(a + b*x)^(1/4)) - (8*d^(3/2)*Sqrt[(
a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(
c + 2*d*x))^2])/(5*Sqrt[b]*(b*c - a*d)^3*(a + b*x)^(1/4)*(c + d*x
)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b
*x)*(c + d*x)])/(b*c - a*d))) + (4*Sqrt[2]*d^(5/4)*((a + b*x)*(c
+ d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[
d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d
*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1
/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(5*b^(3/
4)*Sqrt[b*c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) - (2*Sqrt[2]*d^(5/4)*((a +
 b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt
[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b
*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(
1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])
/(5*b^(3/4)*Sqrt[b*c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c
+ a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 156.849, size = 896, normalized size = 1.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/4)/(d*x+c)**(1/4),x)
```

```
[Out] 8*d*(c + d*x)**(3/4)/(5*(a + b*x)**(1/4)*(a*d - b*c)**2) + 4*(c +
 d*x)**(3/4)/(5*(a + b*x)**(5/4)*(a*d - b*c)) - 8*d**(3/2)*sqrt(b
*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*sqr
t(a*c + b*d*x**2 + x*(a*d + b*c))*sqrt((a*d + b*c + 2*b*d*x)**2)/
(5*sqrt(b)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*(a*d - b*c)**3*(2*sq
rt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) +
1)*(a*d + b*c + 2*b*d*x)) + 4*sqrt(2)*d**(5/4)*sqrt((b*d*(4*a*c +
 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**
2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
b*c) + 1)**2))*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d +
b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sq
rt((a*d + b*c + 2*b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d
**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)),
 1/2)/(5*b**(3/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(a*d - b*
c)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c
)**2)*(a*d + b*c + 2*b*d*x)) - 2*sqrt(2)*d**(5/4)*sqrt((b*d*(4*a*
c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c
)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d
 - b*c) + 1)**2))*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d
 + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)
*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4
)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c
)), 1/2)/(5*b**(3/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(a*d -
 b*c)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d -
b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.227483, size = 102, normalized size = 0.13

$$-\frac{4(c+dx)^{3/4}\left(4d(a+bx)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-9ad+3b(c-2dx)\right)}{15(a+bx)^{5/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/4)*(c + d*x)^(1/4)),x]
```

```
[Out] (-4*(c + d*x)^(3/4)*(-9*a*d + 3*b*(c - 2*d*x) + 4*d*(a + b*x)*((d
*(a + b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2F1[1/4, 3/4, 7/4
, (b*(c + d*x))/(b*c - a*d)]))/(15*(b*c - a*d)^2*(a + b*x)^(5/4))
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{9}{4}}\frac{1}{\sqrt[4]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/4)/(d*x+c)^(1/4),x)
```

```
[Out] int(1/(b*x+a)^(9/4)/(d*x+c)^(1/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{9}{4}}(dx+c)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(9/4)*(d*x + c)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(9/4)*(d*x + c)^(1/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(9/4)*(d*x + c)^(1/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(1/4)*(d*x + c)^(
1/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(9/4)/(d*x+c)**(1/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(1/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1706 $\int \frac{(a+bx)^{7/4}}{(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=167

$$-\frac{21(bc-ad)^2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16\sqrt[4]{b}d^{11/4}}+\frac{21(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16\sqrt[4]{b}d^{11/4}}-\frac{7(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)}{8d^2}+\frac{(a+bx)^{7/4}\sqrt[4]{c+dx}}{2d}$$

```
[Out] (-7*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(1/4))/(8*d^2) + ((a +
b*x)^(7/4)*(c + d*x)^(1/4))/(2*d) - (21*(b*c - a*d)^2*ArcTan[(d^(
1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(16*b^(1/4)*d^(
11/4)) + (21*(b*c - a*d)^2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(
1/4)*(c + d*x)^(1/4))])/(16*b^(1/4)*d^(11/4))
```

Rubi [A] time = 0.21508, antiderivative size = 167, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$-\frac{21(bc-ad)^2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16\sqrt[4]{b}d^{11/4}}+\frac{21(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{16\sqrt[4]{b}d^{11/4}}-\frac{7(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)}{8d^2}+\frac{(a+bx)^{7/4}\sqrt[4]{c+dx}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/4)/(c + d*x)^(3/4),x]
```

```
[Out] (-7*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(1/4))/(8*d^2) + ((a +
b*x)^(7/4)*(c + d*x)^(1/4))/(2*d) - (21*(b*c - a*d)^2*ArcTan[(d^(
1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(16*b^(1/4)*d^(
11/4)) + (21*(b*c - a*d)^2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(
1/4)*(c + d*x)^(1/4))])/(16*b^(1/4)*d^(11/4))
```

Rubi in Sympy [A] time = 26.3413, size = 151, normalized size = 0.9

$$\frac{(a+bx)^{\frac{7}{4}}\sqrt[4]{c+dx}}{2d}+\frac{7\,(a+bx)^{\frac{3}{4}}\sqrt[4]{c+dx}\,(ad-bc)}{8d^2}+\frac{21\,(ad-bc)^2\operatorname{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{16\sqrt[4]{b}d^{\frac{11}{4}}}+\frac{21\,(ad-bc)^2\operatorname{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{16\sqrt[4]{b}d^{\frac{11}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/4)/(d*x+c)**(3/4),x)
```

```
[Out] (a + b*x)**(7/4)*(c + d*x)**(1/4)/(2*d) + 7*(a + b*x)**(3/4)*(c +
 d*x)**(1/4)*(a*d - b*c)/(8*d**2) + 21*(a*d - b*c)**2*atan(b**(1/
4)*(c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(16*b**(1/4)*d**
(11/4)) + 21*(a*d - b*c)**2*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(
1/4)*(a + b*x)**(1/4)))/(16*b**(1/4)*d**(11/4))
```

Mathematica [C] time = 0.196304, size = 107, normalized size = 0.64

$$\frac{\sqrt[4]{c+dx}\left(21(bc-ad)^2\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(11ad-7bc+4bdx)\right)}{8d^3\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/4)/(c + d*x)^(3/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(d*(a + b*x)*(-7*b*c + 11*a*d + 4*b*d*x) + 21*(b
*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*Hypergeometric2F
1[1/4, 1/4, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(8*d^3*(a + b*x)^(1
/4))
```

Maple [F] time = 0.038, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{4}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/4)/(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(7/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{4}}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/4)/(d*x + c)^(3/4), x)
```

Fricas [A] time = 0.254043, size = 1508, normalized size = 9.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] -1/32*(84*d^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56
*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a
^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11))^(1/4)*arctan(
(b*d^3*x + a*d^3)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2
- 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 +
28*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11))^(1/4)/((b
^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(3/4)*(d*x + c)^(1/4) + (
b*x + a)*sqrt(((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a
^3*b*c*d^3 + a^4*d^4)*sqrt(b*x + a)*sqrt(d*x + c) + (b*d^6*x + a*
d^6)*sqrt((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56*a^3*
b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a^6*b^
2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11)))/(b*x + a)))) - 21
*d^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56*a^3*b^5*
c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a^6*b^2*c^
2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11))^(1/4)*log(21*((b^2*c^2
 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(3/4)*(d*x + c)^(1/4) + (b*d^3*
x + a*d^3)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56*a^
3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a^6*
b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11))^(1/4))/(b*x + a)
) + 21*d^2*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 - 56*a^
3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 28*a^6*
b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11))^(1/4)*log(21*((b
^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(3/4)*(d*x + c)^(1/4) - (
b*d^3*x + a*d^3)*((b^8*c^8 - 8*a*b^7*c^7*d + 28*a^2*b^6*c^6*d^2 -
 56*a^3*b^5*c^5*d^3 + 70*a^4*b^4*c^4*d^4 - 56*a^5*b^3*c^3*d^5 + 2
8*a^6*b^2*c^2*d^6 - 8*a^7*b*c*d^7 + a^8*d^8)/(b*d^11))^(1/4))/(b*
x + a)) - 4*(4*b*d*x - 7*b*c + 11*a*d)*(b*x + a)^(3/4)*(d*x + c)^
(1/4))/d^2
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/4)/(d*x+c)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(3/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1707 $\int \frac{(a+bx)^{3/4}}{(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=127

$$\frac{3(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2\sqrt[4]{b}d^{7/4}}-\frac{3(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2\sqrt[4]{b}d^{7/4}}+\frac{(a+bx)^{3/4}\sqrt[4]{c+dx}}{d}$$

```
[Out] ((a + b*x)^(3/4)*(c + d*x)^(1/4))/d + (3*(b*c - a*d)*ArcTan[(d^(1
/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*b^(1/4)*d^(7/
4)) - (3*(b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(
c + d*x)^(1/4))])/(2*b^(1/4)*d^(7/4))
```

Rubi [A] time = 0.137071, antiderivative size = 127, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$\frac{3(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2\sqrt[4]{b}d^{7/4}}-\frac{3(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2\sqrt[4]{b}d^{7/4}}+\frac{(a+bx)^{3/4}\sqrt[4]{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/4)/(c + d*x)^(3/4),x]
```

```
[Out] ((a + b*x)^(3/4)*(c + d*x)^(1/4))/d + (3*(b*c - a*d)*ArcTan[(d^(1
/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*b^(1/4)*d^(7/
4)) - (3*(b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(
c + d*x)^(1/4))])/(2*b^(1/4)*d^(7/4))
```

Rubi in Sympy [A] time = 18.7808, size = 116, normalized size = 0.91

$$\frac{(a+bx)^{\frac{3}{4}}\sqrt[4]{c+dx}}{d}+\frac{3\,(ad-bc)\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{2\sqrt[4]{b}d^{\frac{7}{4}}}+\frac{3\,(ad-bc)\,\mathrm{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{2\sqrt[4]{b}d^{\frac{7}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/4)/(d*x+c)**(3/4),x)
```

```
[Out] (a + b*x)**(3/4)*(c + d*x)**(1/4)/d + 3*(a*d - b*c)*atan(b**(1/4)
*(c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(2*b**(1/4)*d**(7/
4)) + 3*(a*d - b*c)*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(a
```

```
+ b*x)**(1/4)))/(2*b**(1/4)*d**(7/4))
```

Mathematica [C] time = 0.166288, size = 74, normalized size = 0.58

$$\frac{(a+bx)^{3/4}\sqrt[4]{c+dx}\left(\frac{3\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}}+1\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/4)/(c + d*x)^(3/4),x]
```

```
[Out] ((a + b*x)^(3/4)*(c + d*x)^(1/4)*(1 + (3*Hypergeometric2F1[1/4, 1
/4, 5/4, (b*(c + d*x))/(b*c - a*d)])/((d*(a + b*x))/(-(b*c) + a*d
))^(3/4)))/d
```

Maple [F] time = 0.032, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{4}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/4)/(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(3/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{4}}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/4)/(d*x + c)^(3/4), x)
```

Fricas [A] time = 0.249621, size = 864, normalized size = 6.8

$$-\frac{12\,d\left(\frac{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}{bd^7}\right)^{\frac{1}{4}}\arctan\left(-\frac{(bd^2x+ad^2)\left(\frac{b^4c^4-4\,ab^3c^3d+6\,a^2b^2c^2d^2-4\,a^3bcd^3+a^4d^4}{bd^7}\right.}{(bc-ad)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}-(bx+a)\sqrt{\frac{\left(b^2c^2-2\,abcd+a^2d^2\right)\sqrt{bx+a}\sqrt{dx+c}+\left(bd^4x+ad^4\right)\sqrt{\frac{b^4c^4}{}}}{bx+a}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] -1/4*(12*d*((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*
b*c*d^3 + a^4*d^4)/(b*d^7))^(1/4)*arctan(-(b*d^2*x + a*d^2)*((b^4
*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^
4)/(b*d^7))^(1/4)/((b*c - a*d)*(b*x + a)^(3/4)*(d*x + c)^(1/4) -
(b*x + a)*sqrt(((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*sqrt(b*x + a)*sqr
t(d*x + c) + (b*d^4*x + a*d^4)*sqrt((b^4*c^4 - 4*a*b^3*c^3*d + 6*
a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b*d^7)))/(b*x + a))))
 + 3*d*((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*
d^3 + a^4*d^4)/(b*d^7))^(1/4)*log(-3*((b*c - a*d)*(b*x + a)^(3/4)
*(d*x + c)^(1/4) + (b*d^2*x + a*d^2)*((b^4*c^4 - 4*a*b^3*c^3*d +
6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b*d^7))^(1/4))/(b*x
 + a)) - 3*d*((b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^
3*b*c*d^3 + a^4*d^4)/(b*d^7))^(1/4)*log(-3*((b*c - a*d)*(b*x + a)
^(3/4)*(d*x + c)^(1/4) - (b*d^2*x + a*d^2)*((b^4*c^4 - 4*a*b^3*c^
3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)/(b*d^7))^(1/4)
)/(b*x + a)) - 4*(b*x + a)^(3/4)*(d*x + c)^(1/4))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{4}}}{(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/4)/(d*x+c)**(3/4),x)
```

```
[Out] Integral((a + b*x)**(3/4)/(c + d*x)**(3/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(3/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1708 $\int \frac{1}{\sqrt[4]{a+bx}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=85

$$\frac{2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{\sqrt[4]{b}d^{3/4}}-\frac{2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{\sqrt[4]{b}d^{3/4}}$$

```
[Out] (-2*ArcTan[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/
(b^(1/4)*d^(3/4)) + (2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)
*(c + d*x)^(1/4))])/(b^(1/4)*d^(3/4))
```

Rubi [A] time = 0.0867464, antiderivative size = 85, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{2\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{\sqrt[4]{b}d^{3/4}}-\frac{2\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{\sqrt[4]{b}d^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-2*ArcTan[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/
(b^(1/4)*d^(3/4)) + (2*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)
*(c + d*x)^(1/4))])/(b^(1/4)*d^(3/4))
```

Rubi in Sympy [A] time = 13.7028, size = 80, normalized size = 0.94

$$\frac{2\,\mathrm{atan}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{\sqrt[4]{b}d^{\frac{3}{4}}}+\frac{2\,\mathrm{atanh}\left(\frac{\sqrt[4]{b}\sqrt[4]{c+dx}}{\sqrt[4]{d}\sqrt[4]{a+bx}}\right)}{\sqrt[4]{b}d^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/4)/(d*x+c)**(3/4),x)
```

```
[Out] 2*atan(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(a + b*x)**(1/4)))/(b*
*(1/4)*d**(3/4)) + 2*atanh(b**(1/4)*(c + d*x)**(1/4)/(d**(1/4)*(a
 + b*x)**(1/4)))/(b**(1/4)*d**(3/4))
```

Mathematica [C] time = 0.0666838, size = 71, normalized size = 0.84

$$\frac{4\sqrt[4]{c+dx}\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{d\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (4*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*(c + d*x)^(1/4)*Hypergeom
etric2F1[1/4, 1/4, 5/4, (b*(c + d*x))/(b*c - a*d)])/(d*(a + b*x)^
(1/4))
```

Maple [F] time = 0.054, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{bx+a}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/4)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(1/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(3/4)), x)
```

Fricas [A] time = 0.237062, size = 286, normalized size = 3.36

$$-4\left(\frac{1}{bd^3}\right)^{\frac{1}{4}}\arctan\left(\frac{(bdx+ad)\left(\frac{1}{bd^3}\right)^{\frac{1}{4}}}{(bx+a)\sqrt{\frac{(bd^2x+ad^2)\sqrt{\frac{1}{bd^3}}+\sqrt{bx+a}\sqrt{dx+c}}{bx+a}}+(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}\right)+\left(\frac{1}{bd^3}\right)^{\frac{1}{4}}\log\left(\frac{(bdx+ad)\left(\frac{1}{bd^3}\right)^{\frac{1}{4}}+(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}{bx+a}\right)-\left(\frac{1}{bd^3}\right)^{\frac{1}{4}}\log\left(-\frac{(bdx+ad)\left(\frac{1}{bd^3}\right)^{\frac{1}{4}}-(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}{bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] -4*(1/(b*d^3))^(1/4)*arctan((b*d*x + a*d)*(1/(b*d^3))^(1/4)/((b*x
 + a)*sqrt(((b*d^2*x + a*d^2)*sqrt(1/(b*d^3)) + sqrt(b*x + a)*sqr
t(d*x + c))/(b*x + a)) + (b*x + a)^(3/4)*(d*x + c)^(1/4))) + (1/(
b*d^3))^(1/4)*log(((b*d*x + a*d)*(1/(b*d^3))^(1/4) + (b*x + a)^(3
/4)*(d*x + c)^(1/4))/(b*x + a)) - (1/(b*d^3))^(1/4)*log(-((b*d*x
+ a*d)*(1/(b*d^3))^(1/4) - (b*x + a)^(3/4)*(d*x + c)^(1/4))/(b*x
+ a))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{a+bx}\,(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/4)/(d*x+c)**(3/4),x)
```

```
[Out] Integral(1/((a + b*x)**(1/4)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1709 $\int \frac{1}{(a+bx)^{5/4}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=30

$$-\frac{4\sqrt[4]{c+dx}}{\sqrt[4]{a+bx}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(1/4))/((b*c - a*d)*(a + b*x)^(1/4))
```

Rubi [A] time = 0.0229597, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$-\frac{4\sqrt[4]{c+dx}}{\sqrt[4]{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-4*(c + d*x)^(1/4))/((b*c - a*d)*(a + b*x)^(1/4))
```

Rubi in Sympy [A] time = 3.24859, size = 24, normalized size = 0.8

$$\frac{4\sqrt[4]{c+dx}}{\sqrt[4]{a+bx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/4)/(d*x+c)**(3/4),x)
```

```
[Out] 4*(c + d*x)**(1/4)/((a + b*x)**(1/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0334161, size = 30, normalized size = 1.

$$\frac{4\sqrt[4]{c+dx}}{\sqrt[4]{a+bx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (4*(c + d*x)^(1/4))/((-(b*c) + a*d)*(a + b*x)^(1/4))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$4\,{\frac {\sqrt [4]{dx+c}}{\sqrt [4]{bx+a} \left(ad-bc \right) }}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(5/4)/(d*x+c)^(3/4),x)
```

```
[Out] 4/(b*x+a)^(1/4)*(d*x+c)^(1/4)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{{\left(bx + a\right)}^{\frac{5}{4}} {\left(dx + c\right)}^{\frac{3}{4}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(3/4)), x)
```

Fricas [A] time = 0.213955, size = 57, normalized size = 1.9

$$-\frac{4 \,{\left(bx + a\right)}^{\frac{3}{4}}{\left(dx + c\right)}^{\frac{1}{4}}}{abc - a^{2} d +{\left(b^{2} c - abd\right)} x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] -4*(b*x + a)^(3/4)*(d*x + c)^(1/4)/(a*b*c - a^2*d + (b^2*c - a*b*
d)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a + bx\right)^{\frac{5}{4}} \left(c + dx\right)^{\frac{3}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/4)/(d*x+c)**(3/4),x)

[Out] Integral(1/((a + b*x)**(5/4)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/4)*(d*x + c)^(3/4)),x, algorithm="giac")

[Out] Timed out
```

3.1710 $\int \frac{1}{(a+bx)^{9/4}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=66

$$\frac{16d\sqrt[4]{c+dx}}{5\sqrt[4]{a+bx}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{5(a+bx)^{5/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(1/4))/(5*(b*c - a*d)*(a + b*x)^(5/4)) + (16*d*(c +
 d*x)^(1/4))/(5*(b*c - a*d)^2*(a + b*x)^(1/4))
```

Rubi [A] time = 0.0505276, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{16d\sqrt[4]{c+dx}}{5\sqrt[4]{a+bx}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{5(a+bx)^{5/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(9/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-4*(c + d*x)^(1/4))/(5*(b*c - a*d)*(a + b*x)^(5/4)) + (16*d*(c +
 d*x)^(1/4))/(5*(b*c - a*d)^2*(a + b*x)^(1/4))
```

Rubi in Sympy [A] time = 6.78994, size = 56, normalized size = 0.85

$$\frac{16d\sqrt[4]{c+dx}}{5\sqrt[4]{a+bx}\,(ad-bc)^2}+\frac{4\sqrt[4]{c+dx}}{5\,(a+bx)^{\frac{5}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/4)/(d*x+c)**(3/4),x)
```

```
[Out] 16*d*(c + d*x)**(1/4)/(5*(a + b*x)**(1/4)*(a*d - b*c)**2) + 4*(c
+ d*x)**(1/4)/(5*(a + b*x)**(5/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0628399, size = 46, normalized size = 0.7

$$\frac{4\sqrt[4]{c+dx}(5ad-bc+4bdx)}{5(a+bx)^{5/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-(b*c) + 5*a*d + 4*b*d*x))/(5*(b*c - a*d)^2*(
a + b*x)^(5/4))
```

Maple [A] time = 0.009, size = 54, normalized size = 0.8

$$\frac{16\,bdx+20\,ad-4\,bc}{5\,a^{2}d^{2}-10\,abcd+5\,b^{2}c^{2}}\sqrt[4]{dx+c}\,(bx+a)^{-\frac{5}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/4)/(d*x+c)^(3/4),x)
```

```
[Out] 4/5*(d*x+c)^(1/4)*(4*b*d*x+5*a*d-b*c)/(b*x+a)^(5/4)/(a^2*d^2-2*a*
b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{9}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(9/4)*(d*x + c)^(3/4)), x)
```

Fricas [A] time = 0.225615, size = 159, normalized size = 2.41

$$\frac{4\,(4\,bdx-bc+5\,ad)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}{5\,(a^{2}b^{2}c^{2}-2\,a^{3}bcd+a^{4}d^{2}+(b^{4}c^{2}-2\,ab^{3}cd+a^{2}b^{2}d^{2})x^{2}+2\,(ab^{3}c^{2}-2\,a^{2}b^{2}cd+a^{3}bd^{2})x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] 4/5*(4*b*d*x - b*c + 5*a*d)*(b*x + a)^(3/4)*(d*x + c)^(1/4)/(a^2*
b^2*c^2 - 2*a^3*b*c*d + a^4*d^2 + (b^4*c^2 - 2*a*b^3*c*d + a^2*b^
2*d^2)*x^2 + 2*(a*b^3*c^2 - 2*a^2*b^2*c*d + a^3*b*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(9/4)/(d*x+c)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1711 $\int \frac{1}{(a+bx)^{13/4}(c+dx)^{3/4}} dx$

Optimal. Leaf size=101

$$-\frac{128d^2\sqrt[4]{c+dx}}{45\sqrt[4]{a+bx}(bc-ad)^3}+\frac{32d\sqrt[4]{c+dx}}{45(a+bx)^{5/4}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{9(a+bx)^{9/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(1/4))/(9*(b*c - a*d)*(a + b*x)^(9/4)) + (32*d*(c +
 d*x)^(1/4))/(45*(b*c - a*d)^2*(a + b*x)^(5/4)) - (128*d^2*(c + d
*x)^(1/4))/(45*(b*c - a*d)^3*(a + b*x)^(1/4))
```

Rubi [A] time = 0.081931, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{128d^2\sqrt[4]{c+dx}}{45\sqrt[4]{a+bx}(bc-ad)^3}+\frac{32d\sqrt[4]{c+dx}}{45(a+bx)^{5/4}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{9(a+bx)^{9/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(13/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-4*(c + d*x)^(1/4))/(9*(b*c - a*d)*(a + b*x)^(9/4)) + (32*d*(c +
 d*x)^(1/4))/(45*(b*c - a*d)^2*(a + b*x)^(5/4)) - (128*d^2*(c + d
*x)^(1/4))/(45*(b*c - a*d)^3*(a + b*x)^(1/4))
```

Rubi in Sympy [A] time = 12.1989, size = 88, normalized size = 0.87

$$\frac{128d^2\sqrt[4]{c+dx}}{45\sqrt[4]{a+bx}\,(ad-bc)^3}+\frac{32d\sqrt[4]{c+dx}}{45\,(a+bx)^{\frac{5}{4}}\,(ad-bc)^2}+\frac{4\sqrt[4]{c+dx}}{9\,(a+bx)^{\frac{9}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(13/4)/(d*x+c)**(3/4),x)
```

```
[Out] 128*d**2*(c + d*x)**(1/4)/(45*(a + b*x)**(1/4)*(a*d - b*c)**3) +
32*d*(c + d*x)**(1/4)/(45*(a + b*x)**(5/4)*(a*d - b*c)**2) + 4*(c
 + d*x)**(1/4)/(9*(a + b*x)**(9/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0985909, size = 75, normalized size = 0.74

$$-\frac{4\sqrt[4]{c+dx}\left(45a^2d^2-18abd(c-4dx)+b^2\left(5c^2-8cdx+32d^2x^2\right)\right)}{45(a+bx)^{9/4}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(13/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-4*(c + d*x)^(1/4)*(45*a^2*d^2 - 18*a*b*d*(c - 4*d*x) + b^2*(5*c
^2 - 8*c*d*x + 32*d^2*x^2)))/(45*(b*c - a*d)^3*(a + b*x)^(9/4))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$\frac{128\,b^2d^2x^2+288\,abd^2x-32\,b^2cdx+180\,a^2d^2-72\,abcd+20\,b^2c^2}{45\,a^3d^3-135\,a^2cbd^2+135\,ab^2c^2d-45\,b^3c^3}\sqrt[4]{dx+c}\,(bx+a)^{-\frac{9}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(13/4)/(d*x+c)^(3/4),x)
```

```
[Out] 4/45*(d*x+c)^(1/4)*(32*b^2*d^2*x^2+72*a*b*d^2*x-8*b^2*c*d*x+45*a^
2*d^2-18*a*b*c*d+5*b^2*c^2)/(b*x+a)^(9/4)/(a^3*d^3-3*a^2*b*c*d^2+
3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)^{\frac{13}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(13/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(13/4)*(d*x + c)^(3/4)), x)
```

Fricas [A] time = 0.213561, size = 339, normalized size = 3.36

$$-\frac{4\left(32\,b^2d^2x^2+5\,b^2c^2-18\,abcd+45\,a^2d^2-8\left(b^2cd-9\,abd^2\right)x\right)(bx+a)^{\frac{3}{4}}}{45\left(a^3b^3c^3-3\,a^4b^2c^2d+3\,a^5bcd^2-a^6d^3+(b^6c^3-3\,ab^5c^2d+3\,a^2b^4cd^2-a^3b^3d^3)x^3+3\left(ab^5c^3-3\,a^2b^4c^2d+3\,a^3b^3cd^2-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(13/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] -4/45*(32*b^2*d^2*x^2 + 5*b^2*c^2 - 18*a*b*c*d + 45*a^2*d^2 - 8*(
b^2*c*d - 9*a*b*d^2)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4)/(a^3*b^3*
```

```
c^3 - 3*a^4*b^2*c^2*d + 3*a^5*b*c*d^2 - a^6*d^3 + (b^6*c^3 - 3*a*
b^5*c^2*d + 3*a^2*b^4*c*d^2 - a^3*b^3*d^3)*x^3 + 3*(a*b^5*c^3 - 3
*a^2*b^4*c^2*d + 3*a^3*b^3*c*d^2 - a^4*b^2*d^3)*x^2 + 3*(a^2*b^4*
c^3 - 3*a^3*b^3*c^2*d + 3*a^4*b^2*c*d^2 - a^5*b*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(13/4)/(d*x+c)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(13/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1712 $\int \frac{1}{(a+bx)^{17/4}(c+dx)^{3/4}} dx$

Optimal. Leaf size=136

$$\frac{512d^3\sqrt[4]{c+dx}}{195\sqrt[4]{a+bx}(bc-ad)^4}-\frac{128d^2\sqrt[4]{c+dx}}{195(a+bx)^{5/4}(bc-ad)^3}+\frac{16d\sqrt[4]{c+dx}}{39(a+bx)^{9/4}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{13(a+bx)^{13/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(1/4))/(13*(b*c - a*d)*(a + b*x)^(13/4)) + (16*d*(c
 + d*x)^(1/4))/(39*(b*c - a*d)^2*(a + b*x)^(9/4)) - (128*d^2*(c +
 d*x)^(1/4))/(195*(b*c - a*d)^3*(a + b*x)^(5/4)) + (512*d^3*(c +
d*x)^(1/4))/(195*(b*c - a*d)^4*(a + b*x)^(1/4))
```

Rubi [A] time = 0.113855, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{512d^3\sqrt[4]{c+dx}}{195\sqrt[4]{a+bx}(bc-ad)^4}-\frac{128d^2\sqrt[4]{c+dx}}{195(a+bx)^{5/4}(bc-ad)^3}+\frac{16d\sqrt[4]{c+dx}}{39(a+bx)^{9/4}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{13(a+bx)^{13/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(17/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-4*(c + d*x)^(1/4))/(13*(b*c - a*d)*(a + b*x)^(13/4)) + (16*d*(c
 + d*x)^(1/4))/(39*(b*c - a*d)^2*(a + b*x)^(9/4)) - (128*d^2*(c +
 d*x)^(1/4))/(195*(b*c - a*d)^3*(a + b*x)^(5/4)) + (512*d^3*(c +
d*x)^(1/4))/(195*(b*c - a*d)^4*(a + b*x)^(1/4))
```

Rubi in Sympy [A] time = 19.296, size = 121, normalized size = 0.89

$$\frac{512d^3\sqrt[4]{c+dx}}{195\sqrt[4]{a+bx}\,(ad-bc)^4}+\frac{128d^2\sqrt[4]{c+dx}}{195\,(a+bx)^{\frac{5}{4}}\,(ad-bc)^3}+\frac{16d\sqrt[4]{c+dx}}{39\,(a+bx)^{\frac{9}{4}}\,(ad-bc)^2}+\frac{4\sqrt[4]{c+dx}}{13\,(a+bx)^{\frac{13}{4}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(17/4)/(d*x+c)**(3/4),x)
```

```
[Out] 512*d**3*(c + d*x)**(1/4)/(195*(a + b*x)**(1/4)*(a*d - b*c)**4) +
 128*d**2*(c + d*x)**(1/4)/(195*(a + b*x)**(5/4)*(a*d - b*c)**3)
+ 16*d*(c + d*x)**(1/4)/(39*(a + b*x)**(9/4)*(a*d - b*c)**2) + 4*
(c + d*x)**(1/4)/(13*(a + b*x)**(13/4)*(a*d - b*c))
```

Mathematica [A] time = 0.245342, size = 95, normalized size = 0.7

$$\frac{4\sqrt[4]{c+dx}\left(32d^2(a+bx)^2(ad-bc)+20d(a+bx)(bc-ad)^2-15(bc-ad)^3+128d^3(a+bx)^3\right)}{195(a+bx)^{13/4}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(17/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-15*(b*c - a*d)^3 + 20*d*(b*c - a*d)^2*(a + b
*x) + 32*d^2*(-(b*c) + a*d)*(a + b*x)^2 + 128*d^3*(a + b*x)^3))/(
195*(b*c - a*d)^4*(a + b*x)^(13/4))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$\frac{512\,x^3b^3d^3+1664\,ab^2d^3x^2-128\,b^3cd^2x^2+1872\,a^2bd^3x-416\,ab^2cd^2x+80\,b^3c^2dx+780\,a^3d^3-468\,a^2cbd^2+260\,ab^2c^2d-}{195\,a^4d^4-780\,a^3bcd^3+1170\,a^2c^2b^2d^2-780\,ab^3c^3d+195\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(17/4)/(d*x+c)^(3/4),x)
```

```
[Out] 4/195*(d*x+c)^(1/4)*(128*b^3*d^3*x^3+416*a*b^2*d^3*x^2-32*b^3*c*d
^2*x^2+468*a^2*b*d^3*x-104*a*b^2*c*d^2*x+20*b^3*c^2*d*x+195*a^3*d
^3-117*a^2*b*c*d^2+65*a*b^2*c^2*d-15*b^3*c^3)/(b*x+a)^(13/4)/(a^4
*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{17}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(17/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(17/4)*(d*x + c)^(3/4)), x)
```

Fricas [A] time = 0.216689, size = 566, normalized size = 4.16

$$\frac{4\left(128\,b^3d^3x^3-15\,b^3c^3+65\,ab^2c^2d-117\,a^2bcd^2\right.}{195\left(a^4b^4c^4-4\,a^5b^3c^3d+6\,a^6b^2c^2d^2-4\,a^7bcd^3+a^8d^4+(b^8c^4-4\,ab^7c^3d+6\,a^2b^6c^2d^2-4\,a^3b^5cd^3+a^4b^4d^4)x^4+4\,(ab^7c^4-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(17/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] 4/195*(128*b^3*d^3*x^3 - 15*b^3*c^3 + 65*a*b^2*c^2*d - 117*a^2*b*
c*d^2 + 195*a^3*d^3 - 32*(b^3*c*d^2 - 13*a*b^2*d^3)*x^2 + 4*(5*b^
3*c^2*d - 26*a*b^2*c*d^2 + 117*a^2*b*d^3)*x)*(b*x + a)^(3/4)*(d*x
 + c)^(1/4)/(a^4*b^4*c^4 - 4*a^5*b^3*c^3*d + 6*a^6*b^2*c^2*d^2 -
4*a^7*b*c*d^3 + a^8*d^4 + (b^8*c^4 - 4*a*b^7*c^3*d + 6*a^2*b^6*c^
2*d^2 - 4*a^3*b^5*c*d^3 + a^4*b^4*d^4)*x^4 + 4*(a*b^7*c^4 - 4*a^2
*b^6*c^3*d + 6*a^3*b^5*c^2*d^2 - 4*a^4*b^4*c*d^3 + a^5*b^3*d^4)*x
^3 + 6*(a^2*b^6*c^4 - 4*a^3*b^5*c^3*d + 6*a^4*b^4*c^2*d^2 - 4*a^5
*b^3*c*d^3 + a^6*b^2*d^4)*x^2 + 4*(a^3*b^5*c^4 - 4*a^4*b^4*c^3*d
+ 6*a^5*b^3*c^2*d^2 - 4*a^6*b^2*c*d^3 + a^7*b*d^4)*x)
```

Sympy [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(17/4)/(d*x+c)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(17/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1713 $\int \frac{(a+bx)^{5/4}}{(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=332

$$\frac{5(bc-ad)^{5/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{6\sqrt{2}\sqrt[4]{b}d^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}{3d^2}+\frac{2(a+bx)^{5/4}\sqrt[4]{c+dx}}{3d}$$

```
[Out] (-5*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(3*d^2) + (2*(a
+ b*x)^(5/4)*(c + d*x)^(1/4))/(3*d) + (5*(b*c - a*d)^(5/2)*((a +
b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[
b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*
(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b
*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1
/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/
(6*Sqrt[2]*b^(1/4)*d^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c +
 a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.720706, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{5(bc-ad)^{5/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{2}\right.\right.}{6\sqrt{2}\sqrt[4]{b}d^{9/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}{3d^2}+\frac{2(a+bx)^{5/4}\sqrt[4]{c+dx}}{3d}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(5/4)/(c + d*x)^(3/4),x]
```

```
[Out] (-5*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4))/(3*d^2) + (2*(a
+ b*x)^(5/4)*(c + d*x)^(1/4))/(3*d) + (5*(b*c - a*d)^(5/2)*((a +
b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[
b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*
(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b
*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1
/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/
(6*Sqrt[2]*b^(1/4)*d^(9/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c +
 a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 57.3553, size = 382, normalized size = 1.15

$$\frac{2(a+bx)^{\frac{5}{4}}\sqrt[4]{c+dx}}{3d}+\frac{5\sqrt[4]{a+bx}\sqrt[4]{c+dx}\,(ad-bc)}{3d^2}+\frac{5\sqrt{2}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\,(ad-bc)^{\frac{5}{2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2\cdots}}{12\sqrt[4]{b}d^{\frac{9}{4}}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}\,(ad\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/4)/(d*x+c)**(3/4),x)
```

```
[Out] 2*(a + b*x)**(5/4)*(c + d*x)**(1/4)/(3*d) + 5*(a + b*x)**(1/4)*(c
 + d*x)**(1/4)*(a*d - b*c)/(3*d**2) + 5*sqrt(2)*sqrt((b*d*(4*a*c
+ 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)*
*2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
 b*c) + 1)**2))*(a*d - b*c)**(5/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c +
b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*ata
n(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/
4)/sqrt(a*d - b*c)), 1/2)/(12*b**(1/4)*d**(9/4)*(a + b*x)**(3/4)*
(c + d*x)**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)
) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.195763, size = 107, normalized size = 0.32

$$\frac{\sqrt[4]{c+dx}\left(5(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(7ad-5bc+2bdx)\right)}{3d^3(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/4)/(c + d*x)^(3/4),x]
```

```
[Out] ((c + d*x)^(1/4)*(d*(a + b*x)*(-5*b*c + 7*a*d + 2*b*d*x) + 5*(b*c
 - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[
1/4, 3/4, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(3*d^3*(a + b*x)^(3/4
))
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{4}}(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/4)/(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(5/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{4}}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/4)/(d*x + c)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{4}}}{(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/4)/(d*x + c)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{4}}}{(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/4)/(d*x+c)**(3/4),x)
```

```
[Out] Integral((a + b*x)**(5/4)/(c + d*x)**(3/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(3/4),x, algorithm="giac")

[Out] Timed out
```

3.1714 $\int \frac{\sqrt[4]{a+bx}}{(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=295

$$\frac{2\sqrt[4]{a+bx}\sqrt[4]{c+dx}}{d} - \frac{(bc-ad)^{3/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{\right.\right.}{\sqrt{2}\sqrt[4]{b}d^{5/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

```
[Out] (2*(a + b*x)^(1/4)*(c + d*x)^(1/4))/d - ((b*c - a*d)^(3/2)*((a +
b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[
b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*
(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b
*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1
/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/
(Sqrt[2]*b^(1/4)*d^(5/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a
*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.578724, antiderivative size = 295, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{2\sqrt[4]{a+bx}\sqrt[4]{c+dx}}{d} - \frac{(bc-ad)^{3/2}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\sqrt{\right.\right.}{\sqrt{2}\sqrt[4]{b}d^{5/4}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(1/4)/(c + d*x)^(3/4),x]
```


```
[Out] (2*(a + b*x)^(1/4)*(c + d*x)^(1/4))/d - ((b*c - a*d)^(3/2)*((a +
b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[
b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*
(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b
*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1
/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/
(Sqrt[2]*b^(1/4)*d^(5/4)*(a + b*x)^(3/4)*(c + d*x)^(3/4)*(b*c + a
*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 45.1414, size = 348, normalized size = 1.18

$$\frac{2\sqrt[4]{a+bx}\sqrt[4]{c+dx}}{d}+\frac{\sqrt{2}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}(ad-bc)^{\frac{3}{2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)(ac+bdx^2+x(ad+bc))^{\frac{3}{4}}\sqrt{(ad+bc+2b}}{2\sqrt[4]{b}d^{\frac{5}{4}}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}(ad+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/4)/(d*x+c)**(3/4),x)
```

```
[Out] 2*(a + b*x)**(1/4)*(c + d*x)**(1/4)/d + sqrt(2)*sqrt((b*d*(4*a*c
+ 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)*
*2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
 b*c) + 1)**2))*(a*d - b*c)**(3/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c +
b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*ata
n(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/
4)/sqrt(a*d - b*c)), 1/2)/(2*b**(1/4)*d**(5/4)*(a + b*x)**(3/4)*(
c + d*x)**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c))
 + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.163668, size = 74, normalized size = 0.25

$$\frac{2\sqrt[4]{a+bx}\sqrt[4]{c+dx}\left(\frac{{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[4]{\frac{d(a+bx)}{ad-bc}}}+1\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/4)/(c + d*x)^(3/4),x]
```

```
[Out] (2*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(1 + Hypergeometric2F1[1/4, 3/
4, 5/4, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))
^(1/4)))/d
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{bx+a}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/4)/(d*x+c)^(3/4),x)
```

```
[Out] int((b*x+a)^(1/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{4}}}{(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(3/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/4)/(d*x + c)^(3/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{\frac{1}{4}}}{(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(3/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/4)/(d*x + c)^(3/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{a+bx}}{(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/4)/(d*x+c)**(3/4),x)
```

```
[Out] Integral((a + b*x)**(1/4)/(c + d*x)**(3/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(3/4),x, algorithm="giac")

[Out] Timed out
```

3.1715 $\int \frac{1}{(a+bx)^{3/4}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=270

$$\frac{\sqrt{2}\sqrt{bc-ad}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\ldots}{}\right.\right.}{\sqrt[4]{b}\sqrt[4]{d}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

```
[Out] (Sqrt[2]*Sqrt[b*c - a*d]*((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c +
a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x
)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 +
 (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*E
llipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^
(1/4))/Sqrt[b*c - a*d]], 1/2])/(b^(1/4)*d^(1/4)*(a + b*x)^(3/4)*(
c + d*x)^(3/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2
])
```

Rubi [A] time = 0.447543, antiderivative size = 270, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{\sqrt{2}\sqrt{bc-ad}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\ldots}{}\right.\right.}{\sqrt[4]{b}\sqrt[4]{d}(a+bx)^{3/4}(c+dx)^{3/4}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (Sqrt[2]*Sqrt[b*c - a*d]*((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c +
a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x
)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 +
 (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*E
llipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^
(1/4))/Sqrt[b*c - a*d]], 1/2])/(b^(1/4)*d^(1/4)*(a + b*x)^(3/4)*(
c + d*x)^(3/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2
])
```

Rubi in Sympy [A] time = 33.9922, size = 326, normalized size = 1.21

$$\frac{\sqrt{2}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\sqrt{ad-bc}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2bdx\ldots}}{\sqrt[4]{b}\sqrt[4]{d}\,(a+bx)^{\frac{3}{4}}\,(c+dx)^{\frac{3}{4}}\,\sqrt{bd\,(4ac+4bdx^2+x\,(4ad+4bc))+(ad-bc)^2}\,(ad+b\ldots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/4)/(d*x+c)**(3/4),x)
```

```
[Out] sqrt(2)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d
 - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**
2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*sqrt(a*d - b*c)*(2*sqrt(
b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x
)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2
 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(b**(1/4)*d**(1/4
)*(a + b*x)**(3/4)*(c + d*x)**(3/4)*sqrt(b*d*(4*a*c + 4*b*d*x**2
+ x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.0590116, size = 71, normalized size = 0.26

$$\frac{4\sqrt[4]{c+dx}\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)}{d(a+bx)^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (4*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*(c + d*x)^(1/4)*Hypergeom
etric2F1[1/4, 3/4, 5/4, (b*(c + d*x))/(b*c - a*d)])/(d*(a + b*x)^
(3/4))
```

Maple [F] time = 0.078, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{4}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/4)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(3/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/4)*(d*x + c)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/4)*(d*x + c)^(3/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{4}}\,(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/4)/(d*x+c)**(3/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/4)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1716 $\int \frac{1}{(a+bx)^{7/4}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=306

$$-\frac{2\sqrt{2}d^{3/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\right.\right.}{3\sqrt[4]{b}(a+bx)^{3/4}(c+dx)^{3/4}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{4\sqrt[4]{c+dx}}{3(a+bx)^{3/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(1/4))/(3*(b*c - a*d)*(a + b*x)^(3/4)) - (2*Sqrt[2]
*d^(3/4)*((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2
]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))
*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt
[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTa
n[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c
- a*d]], 1/2])/(3*b^(1/4)*Sqrt[b*c - a*d]*(a + b*x)^(3/4)*(c + d*
x)^(3/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.555092, antiderivative size = 306, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{2\sqrt{2}d^{3/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\right.\right.}{3\sqrt[4]{b}(a+bx)^{3/4}(c+dx)^{3/4}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{4\sqrt[4]{c+dx}}{3(a+bx)^{3/4}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(7/4)*(c + d*x)^(3/4)),x]
```


```
[Out] (-4*(c + d*x)^(1/4))/(3*(b*c - a*d)*(a + b*x)^(3/4)) - (2*Sqrt[2]
*d^(3/4)*((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2
]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))
*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt
[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTa
n[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c
- a*d]], 1/2])/(3*b^(1/4)*Sqrt[b*c - a*d]*(a + b*x)^(3/4)*(c + d*
x)^(3/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 45.4722, size = 357, normalized size = 1.17

$$\frac{4\sqrt[4]{c+dx}}{3(a+bx)^{\frac{3}{4}}(ad-bc)} + \frac{2\sqrt{2}d^{\frac{3}{4}}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2bdx)^2}F\left(\right.}{3\sqrt[4]{b}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}\sqrt{ad-bc}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}(ad+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/4)/(d*x+c)**(3/4),x)
```

```
[Out] 4*(c + d*x)**(1/4)/(3*(a + b*x)**(3/4)*(a*d - b*c)) + 2*sqrt(2)*d
**(3/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d
 - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**
2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(2*sqrt(b)*sqrt(d)*sqrt(
a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2
+ x*(a*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f
(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c)
)**(1/4)/sqrt(a*d - b*c)), 1/2)/(3*b**(1/4)*(a + b*x)**(3/4)*(c +
 d*x)**(3/4)*sqrt(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*
a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.107391, size = 84, normalized size = 0.27

$$-\frac{4\sqrt[4]{c+dx}\left(2\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+1\right)}{3(a+bx)^{3/4}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (-4*(c + d*x)^(1/4)*(1 + 2*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*H
ypergeometric2F1[1/4, 3/4, 5/4, (b*(c + d*x))/(b*c - a*d)]))/(3*(
b*c - a*d)*(a + b*x)^(3/4))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{4}}(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/4)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(7/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/4)*(d*x + c)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bx+a)^{\frac{7}{4}}(dx+c)^{\frac{3}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(7/4)*(d*x + c)^(3/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{7}{4}}\,(c+dx)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/4)/(d*x+c)**(3/4),x)
```

```
[Out] Integral(1/((a + b*x)**(7/4)*(c + d*x)**(3/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1717 $\int \frac{1}{(a+bx)^{11/4}(c+dx)^{3/4}}\,dx$

Optimal. Leaf size=339

$$\frac{4\sqrt{2}d^{7/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{\cdots}}{\cdots}\right)\right)}{7\sqrt[4]{b}(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)^{3/2}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}+\frac{8d\sqrt[4]{c+dx}}{7(a+bx)^{3/4}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{7(a+bx)^{7/4}(bc-ad)}$$

```
[Out] (-4*(c + d*x)^(1/4))/(7*(b*c - a*d)*(a + b*x)^(7/4)) + (8*d*(c +
d*x)^(1/4))/(7*(b*c - a*d)^2*(a + b*x)^(3/4)) + (4*Sqrt[2]*d^(7/4
)*((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 +
(2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(
a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqr
t[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt
[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]]
, 1/2])/(7*b^(1/4)*(b*c - a*d)^(3/2)*(a + b*x)^(3/4)*(c + d*x)^(3
/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 0.698904, antiderivative size = 339, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$\frac{4\sqrt{2}d^{7/4}((a+bx)(c+dx))^{3/4}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{\cdots}}{\cdots}\right)\right)}{7\sqrt[4]{b}(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)^{3/2}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}+\frac{8d\sqrt[4]{c+dx}}{7(a+bx)^{3/4}(bc-ad)^2}-\frac{4\sqrt[4]{c+dx}}{7(a+bx)^{7/4}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(11/4)*(c + d*x)^(3/4)),x]
```


```
[Out] (-4*(c + d*x)^(1/4))/(7*(b*c - a*d)*(a + b*x)^(7/4)) + (8*d*(c +
d*x)^(1/4))/(7*(b*c - a*d)^2*(a + b*x)^(3/4)) + (4*Sqrt[2]*d^(7/4
)*((a + b*x)*(c + d*x))^(3/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 +
(2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(
a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqr
t[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt
[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]]
, 1/2])/(7*b^(1/4)*(b*c - a*d)^(3/2)*(a + b*x)^(3/4)*(c + d*x)^(3
/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 58.4099, size = 388, normalized size = 1.14

$$\frac{8d\sqrt[4]{c+dx}}{7(a+bx)^{\frac{3}{4}}(ad-bc)^2}+\frac{4\sqrt[4]{c+dx}}{7(a+bx)^{\frac{7}{4}}(ad-bc)}+\frac{4\sqrt{2}d^{\frac{7}{4}}\sqrt{\frac{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}{(ad-bc)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)^2}}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{ac+bdx^2+x(ad+bc)}}{ad-bc}+1\right)\left(ac+bdx^2+x(ad+bc)\right)^{\frac{3}{4}}\sqrt{(ad+bc+2bdx)^2}F\left(\right.}{7\sqrt[4]{b}(a+bx)^{\frac{3}{4}}(c+dx)^{\frac{3}{4}}(ad-bc)^{\frac{3}{2}}\sqrt{bd(4ac+4bdx^2+x(4ad+4bc))+(ad-bc)^2}(ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/4)/(d*x+c)**(3/4),x)
```

```
[Out] 8*d*(c + d*x)**(1/4)/(7*(a + b*x)**(3/4)*(a*d - b*c)**2) + 4*(c +
 d*x)**(1/4)/(7*(a + b*x)**(7/4)*(a*d - b*c)) + 4*sqrt(2)*d**(7/4
)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c
)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*
(a*d + b*c))/(a*d - b*c) + 1)**2))*(2*sqrt(b)*sqrt(d)*sqrt(a*c +
b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a
*d + b*c))**(3/4)*sqrt((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*ata
n(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/
4)/sqrt(a*d - b*c)), 1/2)/(7*b**(1/4)*(a + b*x)**(3/4)*(c + d*x)*
*(3/4)*(a*d - b*c)**(3/2)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
 + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
```

Mathematica [C] time = 0.209089, size = 102, normalized size = 0.3

$$\frac{4\sqrt[4]{c+dx}\left(4d(a+bx)\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{5}{4};\frac{b(c+dx)}{bc-ad}\right)+3ad-bc+2bdx\right)}{7(a+bx)^{7/4}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/4)*(c + d*x)^(3/4)),x]
```

```
[Out] (4*(c + d*x)^(1/4)*(-(b*c) + 3*a*d + 2*b*d*x + 4*d*(a + b*x)*((d*
(a + b*x))/(-(b*c) + a*d))^(3/4)*Hypergeometric2F1[1/4, 3/4, 5/4,
 (b*(c + d*x))/(b*c - a*d)]))/(7*(b*c - a*d)^2*(a + b*x)^(7/4))
```

Maple [F] time = 0.092, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{11}{4}}\,(dx+c)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/4)/(d*x+c)^(3/4),x)
```

```
[Out] int(1/(b*x+a)^(11/4)/(d*x+c)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{4}}(dx+c)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/4)*(d*x + c)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(11/4)*(d*x + c)^(3/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{3}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(11/4)*(d*x + c)^(3/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(3/4)*(d*x + c)^(
3/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(11/4)/(d*x+c)**(3/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(3/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1718 $\int \frac{(a+bx)^{5/4}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=152

$$-\frac{5\sqrt[4]{b}(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2d^{9/4}}-\frac{5\sqrt[4]{b}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2d^{9/4}}+\frac{5b\sqrt[4]{a+bx}(c+dx)^{3/4}}{d^2}-\frac{4(a+bx)^{5/4}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(5/4))/(d*(c + d*x)^(1/4)) + (5*b*(a + b*x)^(1/4)*(
c + d*x)^(3/4))/d^2 - (5*b^(1/4)*(b*c - a*d)*ArcTan[(d^(1/4)*(a +
 b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*d^(9/4)) - (5*b^(1/4)
*(b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)
^(1/4))])/(2*d^(9/4))
```

Rubi [A] time = 0.185936, antiderivative size = 152, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.316

$$-\frac{5\sqrt[4]{b}(bc-ad)\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2d^{9/4}}-\frac{5\sqrt[4]{b}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2d^{9/4}}+\frac{5b\sqrt[4]{a+bx}(c+dx)^{3/4}}{d^2}-\frac{4(a+bx)^{5/4}}{d\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/4)/(c + d*x)^(5/4),x]
```

```
[Out] (-4*(a + b*x)^(5/4))/(d*(c + d*x)^(1/4)) + (5*b*(a + b*x)^(1/4)*(
c + d*x)^(3/4))/d^2 - (5*b^(1/4)*(b*c - a*d)*ArcTan[(d^(1/4)*(a +
 b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/(2*d^(9/4)) - (5*b^(1/4)
*(b*c - a*d)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)
^(1/4))])/(2*d^(9/4))
```

Rubi in Sympy [A] time = 24.5443, size = 141, normalized size = 0.93

$$\frac{5\sqrt[4]{b}\,(ad-bc)\,\mathrm{atan}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2d^{\frac{9}{4}}}+\frac{5\sqrt[4]{b}\,(ad-bc)\,\mathrm{atanh}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{2d^{\frac{9}{4}}}+\frac{5b\sqrt[4]{a+bx}\,(c+dx)^{\frac{3}{4}}}{d^2}-\frac{4\,(a+bx)^{\frac{5}{4}}}{d\sqrt[4]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/4)/(d*x+c)**(5/4),x)
```

```
[Out] 5*b**(1/4)*(a*d - b*c)*atan(d**(1/4)*(a + b*x)**(1/4)/(b**(1/4)*(
c + d*x)**(1/4)))/(2*d**(9/4)) + 5*b**(1/4)*(a*d - b*c)*atanh(d**
(1/4)*(a + b*x)**(1/4)/(b**(1/4)*(c + d*x)**(1/4)))/(2*d**(9/4))
+ 5*b*(a + b*x)**(1/4)*(c + d*x)**(3/4)/d**2 - 4*(a + b*x)**(5/4)
/(d*(c + d*x)**(1/4))
```

Mathematica [C] time = 0.382733, size = 99, normalized size = 0.65

$$\frac{\sqrt[4]{a+bx}(c+dx)^{3/4}\left(\frac{5b\,{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[4]{\frac{d(a+bx)}{ad-bc}}}+\frac{3(-4ad+5bc+bdx)}{c+dx}\right)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/4)/(c + d*x)^(5/4),x]
```

```
[Out] ((a + b*x)^(1/4)*(c + d*x)^(3/4)*((3*(5*b*c - 4*a*d + b*d*x))/(c
+ d*x) + (5*b*Hypergeometric2F1[3/4, 3/4, 7/4, (b*(c + d*x))/(b*c
 - a*d)])/((d*(a + b*x))/(-(b*c) + a*d))^(1/4)))/(3*d^2)
```

Maple [F] time = 0.09, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{4}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/4)/(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(5/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(5/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(5/4)/(d*x + c)^(5/4), x)
```

Fricas [A] time = 0.243598, size = 930, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(5/4),x, algorithm="fricas")

[Out] -1/4*(20*(d^3*x + c*d^2)*((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^
2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)/d^9)^(1/4)*arctan(-(d^3*x +
c*d^2)*((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*
c*d^3 + a^4*b*d^4)/d^9)^(1/4)/((b*c - a*d)*(b*x + a)^(1/4)*(d*x +
 c)^(3/4) - (d*x + c)*sqrt(((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*sqrt(
b*x + a)*sqrt(d*x + c) + (d^5*x + c*d^4)*sqrt((b^5*c^4 - 4*a*b^4*
c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)/d^9))/(d
*x + c)))) + 5*(d^3*x + c*d^2)*((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*
b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)/d^9)^(1/4)*log(-5*((b*
c - a*d)*(b*x + a)^(1/4)*(d*x + c)^(3/4) + (d^3*x + c*d^2)*((b^5*
c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b
*d^4)/d^9)^(1/4))/(d*x + c)) - 5*(d^3*x + c*d^2)*((b^5*c^4 - 4*a*
b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3*b^2*c*d^3 + a^4*b*d^4)/d^9)
^(1/4)*log(-5*((b*c - a*d)*(b*x + a)^(1/4)*(d*x + c)^(3/4) - (d^3
*x + c*d^2)*((b^5*c^4 - 4*a*b^4*c^3*d + 6*a^2*b^3*c^2*d^2 - 4*a^3
*b^2*c*d^3 + a^4*b*d^4)/d^9)^(1/4))/(d*x + c)) - 4*(b*d*x + 5*b*c
 - 4*a*d)*(b*x + a)^(1/4)*(d*x + c)^(3/4))/(d^3*x + c*d^2)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + bx)^{\frac{5}{4}}}{(c + dx)^{\frac{5}{4}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/4)/(d*x+c)**(5/4),x)

[Out] Integral((a + b*x)**(5/4)/(c + d*x)**(5/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/4)/(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1719 $\int \frac{\sqrt[4]{a+bx}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=108

$$\frac{2\sqrt[4]{b}\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{d^{5/4}}+\frac{2\sqrt[4]{b}\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{d^{5/4}}-\frac{4\sqrt[4]{a+bx}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(1/4))/(d*(c + d*x)^(1/4)) + (2*b^(1/4)*ArcTan[(d^(
1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/d^(5/4) + (2*b^
(1/4)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))
])/d^(5/4)
```

Rubi [A] time = 0.110975, antiderivative size = 108, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263

$$\frac{2\sqrt[4]{b}\tan^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{d^{5/4}}+\frac{2\sqrt[4]{b}\tanh^{-1}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{d^{5/4}}-\frac{4\sqrt[4]{a+bx}}{d\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/4)/(c + d*x)^(5/4),x]
```

```
[Out] (-4*(a + b*x)^(1/4))/(d*(c + d*x)^(1/4)) + (2*b^(1/4)*ArcTan[(d^(
1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))])/d^(5/4) + (2*b^
(1/4)*ArcTanh[(d^(1/4)*(a + b*x)^(1/4))/(b^(1/4)*(c + d*x)^(1/4))
])/d^(5/4)
```

Rubi in Sympy [A] time = 18.3012, size = 100, normalized size = 0.93

$$\frac{2\sqrt[4]{b}\operatorname{atan}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{d^{\frac{5}{4}}}+\frac{2\sqrt[4]{b}\operatorname{atanh}\left(\frac{\sqrt[4]{d}\sqrt[4]{a+bx}}{\sqrt[4]{b}\sqrt[4]{c+dx}}\right)}{d^{\frac{5}{4}}}-\frac{4\sqrt[4]{a+bx}}{d\sqrt[4]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/4)/(d*x+c)**(5/4),x)
```

```
[Out] 2*b**(1/4)*atan(d**(1/4)*(a + b*x)**(1/4)/(b**(1/4)*(c + d*x)**(1
/4)))/d**(5/4) + 2*b**(1/4)*atanh(d**(1/4)*(a + b*x)**(1/4)/(b**(
1/4)*(c + d*x)**(1/4)))/d**(5/4) - 4*(a + b*x)**(1/4)/(d*(c + d*x
```

```
)**(1/4))
```

Mathematica [C] time = 0.164692, size = 89, normalized size = 0.82

$$\frac{4\left(b(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}{}_2F_1\left(\frac{3}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-3d(a+bx)\right)}{3d^2(a+bx)^{3/4}\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/4)/(c + d*x)^(5/4),x]
```

```
[Out] (4*(-3*d*(a + b*x) + b*((d*(a + b*x))/(-(b*c) + a*d))^(3/4)*(c +
d*x)*Hypergeometric2F1[3/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])
)/(3*d^2*(a + b*x)^(3/4)*(c + d*x)^(1/4))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\sqrt[4]{bx+a}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/4)/(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(1/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/4)/(d*x + c)^(5/4), x)
```

Fricas [A] time = 0.231707, size = 346, normalized size = 3.2

$$-\frac{4\left(d^2x+cd\right)\left(\frac{b}{d^5}\right)^{\frac{1}{4}}\arctan\left(\frac{\left(d^2x+cd\right)\left(\frac{b}{d^5}\right)^{\frac{1}{4}}}{(dx+c)\sqrt{\frac{\left(d^3x+cd^2\right)\sqrt{\frac{b}{d^5}}+\sqrt{bx+a}\sqrt{dx+c}}{dx+c}}+(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}}\right)-\left(d^2x+cd\right)\left(\frac{b}{d^5}\right)^{\frac{1}{4}}\log\left(\frac{\left(d^2x+cd\right)\left(\frac{b}{d^5}\right)^{\frac{1}{4}}+(bx+a)^{\frac{1}{4}}(}{dx+c}\right.}{d^2x+cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] -(4*(d^2*x + c*d)*(b/d^5)^(1/4)*arctan((d^2*x + c*d)*(b/d^5)^(1/4
)/((d*x + c)*sqrt(((d^3*x + c*d^2)*sqrt(b/d^5) + sqrt(b*x + a)*sq
rt(d*x + c))/(d*x + c)) + (b*x + a)^(1/4)*(d*x + c)^(3/4))) - (d^
2*x + c*d)*(b/d^5)^(1/4)*log(((d^2*x + c*d)*(b/d^5)^(1/4) + (b*x
+ a)^(1/4)*(d*x + c)^(3/4))/(d*x + c)) + (d^2*x + c*d)*(b/d^5)^(1
/4)*log(-((d^2*x + c*d)*(b/d^5)^(1/4) - (b*x + a)^(1/4)*(d*x + c)
^(3/4))/(d*x + c)) + 4*(b*x + a)^(1/4)*(d*x + c)^(3/4))/(d^2*x +
c*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[4]{a+bx}}{(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/4)/(d*x+c)**(5/4),x)
```

```
[Out] Integral((a + b*x)**(1/4)/(c + d*x)**(5/4), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/4)/(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1720 $\int \frac{1}{(a+bx)^{3/4}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=30

$$\frac{4\sqrt[4]{a+bx}}{\sqrt[4]{c+dx}(bc-ad)}$$

```
[Out] (4*(a + b*x)^(1/4))/((b*c - a*d)*(c + d*x)^(1/4))
```

Rubi [A] time = 0.021731, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{4\sqrt[4]{a+bx}}{\sqrt[4]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)^(3/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (4*(a + b*x)^(1/4))/((b*c - a*d)*(c + d*x)^(1/4))
```

Rubi in Sympy [A] time = 3.34419, size = 26, normalized size = 0.87

$$-\frac{4\sqrt[4]{a+bx}}{\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(3/4)/(d*x+c)**(5/4),x)
```

```
[Out] -4*(a + b*x)**(1/4)/((c + d*x)**(1/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0360822, size = 30, normalized size = 1.

$$-\frac{4\sqrt[4]{a+bx}}{\sqrt[4]{c+dx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In] Integrate[1/((a + b*x)^(3/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (-4*(a + b*x)^(1/4))/((-(b*c) + a*d)*(c + d*x)^(1/4))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$-4\frac{\sqrt[4]{bx+a}}{\sqrt[4]{dx+c}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(3/4)/(d*x+c)^(5/4),x)
```

```
[Out] -4*(b*x+a)^(1/4)/(d*x+c)^(1/4)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/4)*(d*x + c)^(5/4)), x)
```

Fricas [A] time = 0.209427, size = 57, normalized size = 1.9

$$\frac{4\,(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{3}{4}}}{bc^2-acd+(bcd-ad^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(3/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] 4*(b*x + a)^(1/4)*(d*x + c)^(3/4)/(b*c^2 - a*c*d + (b*c*d - a*d^2
)*x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{4}}\,(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/4)/(d*x+c)**(5/4),x)
```

```
[Out] Integral(1/((a + b*x)**(3/4)*(c + d*x)**(5/4)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1721 $\int \frac{1}{(a+bx)^{7/4}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=66

$$-\frac{16d\sqrt[4]{a+bx}}{3\sqrt[4]{c+dx}(bc-ad)^2}-\frac{4}{3(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)}$$

```
[Out] -4/(3*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(1/4)) - (16*d*(a + b
*x)^(1/4))/(3*(b*c - a*d)^2*(c + d*x)^(1/4))
```

Rubi [A] time = 0.0491631, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{16d\sqrt[4]{a+bx}}{3\sqrt[4]{c+dx}(bc-ad)^2}-\frac{4}{3(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/4)*(c + d*x)^(5/4)),x]
```

```
[Out] -4/(3*(b*c - a*d)*(a + b*x)^(3/4)*(c + d*x)^(1/4)) - (16*d*(a + b
*x)^(1/4))/(3*(b*c - a*d)^2*(c + d*x)^(1/4))
```

Rubi in Sympy [A] time = 6.91172, size = 56, normalized size = 0.85

$$-\frac{16d\sqrt[4]{a+bx}}{3\sqrt[4]{c+dx}\,(ad-bc)^2}+\frac{4}{3\,(a+bx)^{\frac{3}{4}}\,\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/4)/(d*x+c)**(5/4),x)
```

```
[Out] -16*d*(a + b*x)**(1/4)/(3*(c + d*x)**(1/4)*(a*d - b*c)**2) + 4/(3
*(a + b*x)**(3/4)*(c + d*x)**(1/4)*(a*d - b*c))
```

Mathematica [A] time = 0.0661789, size = 45, normalized size = 0.68

$$-\frac{4(3ad+b(c+4dx))}{3(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (-4*(3*a*d + b*(c + 4*d*x)))/(3*(b*c - a*d)^2*(a + b*x)^(3/4)*(c
+ d*x)^(1/4))
```

Maple [A] time = 0.009, size = 53, normalized size = 0.8

$$-\frac{16\,bdx+12\,ad+4\,bc}{3\,a^2d^2-6\,abcd+3\,b^2c^2}(bx+a)^{-\frac{3}{4}}\frac{1}{\sqrt[4]{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/4)/(d*x+c)^(5/4),x)
```

```
[Out] -4/3*(4*b*d*x+3*a*d+b*c)/(b*x+a)^(3/4)/(d*x+c)^(1/4)/(a^2*d^2-2*a
*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{1}{(bx+a)^{\frac{7}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/4)*(d*x + c)^(5/4)), x)
```

Fricas [A] time = 0.215202, size = 70, normalized size = 1.06

$$-\frac{4\,(4\,bdx+bc+3\,ad)}{3\,(b^2c^2-2\,abcd+a^2d^2)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] -4/3*(4*b*d*x + b*c + 3*a*d)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*
x + a)^(3/4)*(d*x + c)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1722 $\int \frac{1}{(a+bx)^{11/4}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=101

$$\frac{128d^2\sqrt[4]{a+bx}}{21\sqrt[4]{c+dx}(bc-ad)^3}+\frac{32d}{21(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^2}-\frac{4}{7(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)}$$

```
[Out] -4/(7*(b*c - a*d)*(a + b*x)^(7/4)*(c + d*x)^(1/4)) + (32*d)/(21*(
b*c - a*d)^2*(a + b*x)^(3/4)*(c + d*x)^(1/4)) + (128*d^2*(a + b*x
)^(1/4))/(21*(b*c - a*d)^3*(c + d*x)^(1/4))
```

Rubi [A] time = 0.0816494, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{128d^2\sqrt[4]{a+bx}}{21\sqrt[4]{c+dx}(bc-ad)^3}+\frac{32d}{21(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^2}-\frac{4}{7(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(11/4)*(c + d*x)^(5/4)),x]
```

```
[Out] -4/(7*(b*c - a*d)*(a + b*x)^(7/4)*(c + d*x)^(1/4)) + (32*d)/(21*(
b*c - a*d)^2*(a + b*x)^(3/4)*(c + d*x)^(1/4)) + (128*d^2*(a + b*x
)^(1/4))/(21*(b*c - a*d)^3*(c + d*x)^(1/4))
```

Rubi in Sympy [A] time = 12.264, size = 88, normalized size = 0.87

$$-\frac{128d^2\sqrt[4]{a+bx}}{21\sqrt[4]{c+dx}\,(ad-bc)^3}+\frac{32d}{21\,(a+bx)^{\frac{3}{4}}\,\sqrt[4]{c+dx}\,(ad-bc)^2}+\frac{4}{7\,(a+bx)^{\frac{7}{4}}\,\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(11/4)/(d*x+c)**(5/4),x)
```

```
[Out] -128*d**2*(a + b*x)**(1/4)/(21*(c + d*x)**(1/4)*(a*d - b*c)**3) +
 32*d/(21*(a + b*x)**(3/4)*(c + d*x)**(1/4)*(a*d - b*c)**2) + 4/(
7*(a + b*x)**(7/4)*(c + d*x)**(1/4)*(a*d - b*c))
```

Mathematica [A] time = 0.118972, size = 76, normalized size = 0.75

$$\frac{84a^2d^2+56abd(c+4dx)+4b^2\left(-3c^2+8cdx+32d^2x^2\right)}{21(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(11/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (84*a^2*d^2 + 56*a*b*d*(c + 4*d*x) + 4*b^2*(-3*c^2 + 8*c*d*x + 32
*d^2*x^2))/(21*(b*c - a*d)^3*(a + b*x)^(7/4)*(c + d*x)^(1/4))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{128\,b^2d^2x^2+224\,abd^2x+32\,b^2cdx+84\,a^2d^2+56\,abcd-12\,b^2c^2}{21\,a^3d^3-63\,a^2cbd^2+63\,ab^2c^2d-21\,b^3c^3}\,(bx+a)^{-\frac{7}{4}}\,\frac{1}{\sqrt[4]{dx+c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(11/4)/(d*x+c)^(5/4),x)
```

```
[Out] -4/21*(32*b^2*d^2*x^2+56*a*b*d^2*x+8*b^2*c*d*x+21*a^2*d^2+14*a*b*
c*d-3*b^2*c^2)/(b*x+a)^(7/4)/(d*x+c)^(1/4)/(a^3*d^3-3*a^2*b*c*d^2
+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{11}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(11/4)*(d*x + c)^(5/4)), x)
```

Fricas [A] time = 0.216311, size = 201, normalized size = 1.99

$$\frac{4\left(32\,b^2d^2x^2-3\,b^2c^2+14\,abcd+21\,a^2d^2+8\left(b^2cd+7\,abd^2\right)x\right)}{21\,(ab^3c^3-3\,a^2b^2c^2d+3\,a^3bcd^2-a^4d^3+(b^4c^3-3\,ab^3c^2d+3\,a^2b^2cd^2-a^3bd^3)x)(bx+a)^{\frac{3}{4}}(dx+c)^{\frac{1}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] 4/21*(32*b^2*d^2*x^2 - 3*b^2*c^2 + 14*a*b*c*d + 21*a^2*d^2 + 8*(b
^2*c*d + 7*a*b*d^2)*x)/((a*b^3*c^3 - 3*a^2*b^2*c^2*d + 3*a^3*b*c*
d^2 - a^4*d^3 + (b^4*c^3 - 3*a*b^3*c^2*d + 3*a^2*b^2*c*d^2 - a^3*
b*d^3)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(11/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(11/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1723 $\int \frac{1}{(a+bx)^{15/4}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=136

$$-\frac{512d^3\sqrt[4]{a+bx}}{77\sqrt[4]{c+dx}(bc-ad)^4}-\frac{128d^2}{77(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^3}+\frac{48d}{77(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)^2}-\frac{4}{11(a+bx)^{11/4}\sqrt[4]{c+dx}(bc-ad)}$$

```
[Out] -4/(11*(b*c - a*d)*(a + b*x)^(11/4)*(c + d*x)^(1/4)) + (48*d)/(77
*(b*c - a*d)^2*(a + b*x)^(7/4)*(c + d*x)^(1/4)) - (128*d^2)/(77*(
b*c - a*d)^3*(a + b*x)^(3/4)*(c + d*x)^(1/4)) - (512*d^3*(a + b*x
)^(1/4))/(77*(b*c - a*d)^4*(c + d*x)^(1/4))
```

Rubi [A] time = 0.113606, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{512d^3\sqrt[4]{a+bx}}{77\sqrt[4]{c+dx}(bc-ad)^4}-\frac{128d^2}{77(a+bx)^{3/4}\sqrt[4]{c+dx}(bc-ad)^3}+\frac{48d}{77(a+bx)^{7/4}\sqrt[4]{c+dx}(bc-ad)^2}-\frac{4}{11(a+bx)^{11/4}\sqrt[4]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(15/4)*(c + d*x)^(5/4)),x]
```

```
[Out] -4/(11*(b*c - a*d)*(a + b*x)^(11/4)*(c + d*x)^(1/4)) + (48*d)/(77
*(b*c - a*d)^2*(a + b*x)^(7/4)*(c + d*x)^(1/4)) - (128*d^2)/(77*(
b*c - a*d)^3*(a + b*x)^(3/4)*(c + d*x)^(1/4)) - (512*d^3*(a + b*x
)^(1/4))/(77*(b*c - a*d)^4*(c + d*x)^(1/4))
```

Rubi in Sympy [A] time = 19.4514, size = 121, normalized size = 0.89

$$-\frac{512d^3\sqrt[4]{a+bx}}{77\sqrt[4]{c+dx}\,(ad-bc)^4}+\frac{128d^2}{77\,(a+bx)^{\frac{3}{4}}\,\sqrt[4]{c+dx}\,(ad-bc)^3}+\frac{48d}{77\,(a+bx)^{\frac{7}{4}}\,\sqrt[4]{c+dx}\,(ad-bc)^2}+\frac{4}{11\,(a+bx)^{\frac{11}{4}}\,\sqrt[4]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(15/4)/(d*x+c)**(5/4),x)
```

```
[Out] -512*d**3*(a + b*x)**(1/4)/(77*(c + d*x)**(1/4)*(a*d - b*c)**4) +
 128*d**2/(77*(a + b*x)**(3/4)*(c + d*x)**(1/4)*(a*d - b*c)**3) +
 48*d/(77*(a + b*x)**(7/4)*(c + d*x)**(1/4)*(a*d - b*c)**2) + 4/(
11*(a + b*x)**(11/4)*(c + d*x)**(1/4)*(a*d - b*c))
```

Mathematica [A] time = 0.253635, size = 97, normalized size = 0.71

$$\frac{4\sqrt[4]{a+bx}(c+dx)^{3/4}\left(\frac{19bd(bc-ad)}{(a+bx)^2}-\frac{7b(bc-ad)^2}{(a+bx)^3}-\frac{51bd^2}{a+bx}-\frac{77d^3}{c+dx}\right)}{77(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(15/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (4*(a + b*x)^(1/4)*(c + d*x)^(3/4)*((-7*b*(b*c - a*d)^2)/(a + b*x
)^3 + (19*b*d*(b*c - a*d))/(a + b*x)^2 - (51*b*d^2)/(a + b*x) - (
77*d^3)/(c + d*x)))/(77*(b*c - a*d)^4)
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$-\frac{512\,x^3b^3d^3+1408\,ab^2d^3x^2+128\,b^3cd^2x^2+1232\,a^2bd^3x+352\,ab^2cd^2x-48\,b^3c^2dx+308\,a^3d^3+308\,a^2cbd^2-132\,ab^2c^2d}{77\,a^4d^4-308\,a^3bcd^3+462\,a^2c^2b^2d^2-308\,ab^3c^3d+77\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(15/4)/(d*x+c)^(5/4),x)
```

```
[Out] -4/77*(128*b^3*d^3*x^3+352*a*b^2*d^3*x^2+32*b^3*c*d^2*x^2+308*a^2
*b*d^3*x+88*a*b^2*c*d^2*x-12*b^3*c^2*d*x+77*a^3*d^3+77*a^2*b*c*d^
2-33*a*b^2*c^2*d+7*b^3*c^3)/(b*x+a)^(11/4)/(d*x+c)^(1/4)/(a^4*d^4
-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{15}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(15/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(15/4)*(d*x + c)^(5/4)), x)
```

Fricas [A] time = 0.221312, size = 393, normalized size = 2.89

$$-\frac{4\left(128\,b^3d^3x^3+7\,b^3c^3-33\,ab^2c^2d+77\,a^2bcd^2+77\,a^3d^3+32\left(b^3cd^2+11\,ab^2d^3\right)x^2-4\left(3\right.\right.}{77\left(a^2b^4c^4-4\,a^3b^3c^3d+6\,a^4b^2c^2d^2-4\,a^5bcd^3+a^6d^4+\left(b^6c^4-4\,ab^5c^3d+6\,a^2b^4c^2d^2-4\,a^3b^3cd^3+a^4b^2d^4\right)x^2+2\left(ab^5c^4\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(15/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] -4/77*(128*b^3*d^3*x^3 + 7*b^3*c^3 - 33*a*b^2*c^2*d + 77*a^2*b*c*
d^2 + 77*a^3*d^3 + 32*(b^3*c*d^2 + 11*a*b^2*d^3)*x^2 - 4*(3*b^3*c
^2*d - 22*a*b^2*c*d^2 - 77*a^2*b*d^3)*x)/((a^2*b^4*c^4 - 4*a^3*b^
3*c^3*d + 6*a^4*b^2*c^2*d^2 - 4*a^5*b*c*d^3 + a^6*d^4 + (b^6*c^4
- 4*a*b^5*c^3*d + 6*a^2*b^4*c^2*d^2 - 4*a^3*b^3*c*d^3 + a^4*b^2*d
^4)*x^2 + 2*(a*b^5*c^4 - 4*a^2*b^4*c^3*d + 6*a^3*b^3*c^2*d^2 - 4*
a^4*b^2*c*d^3 + a^5*b*d^4)*x)*(b*x + a)^(3/4)*(d*x + c)^(1/4))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(15/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(15/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1724 $\int \frac{(a+bx)^{11/4}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=776

$$\frac{77\sqrt{b}(bc-ad)\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{10d^{7/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

$$+\frac{77\sqrt[4]{b}(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\right.\right.}{20\sqrt{2}d^{15/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{77\sqrt[4]{b}(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\right.}{10\sqrt{2}d^{15/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{77b(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)}{15d^3}+\frac{22b(a+bx)^{7/4}(c+dx)^{3/4}}{5d^2}-\frac{4(a+bx)^{11/4}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(11/4))/(d*(c + d*x)^(1/4)) - (77*b*(b*c - a*d)*(a
+ b*x)^(3/4)*(c + d*x)^(3/4))/(15*d^3) + (22*b*(a + b*x)^(7/4)*(c
 + d*x)^(3/4))/(5*d^2) + (77*Sqrt[b]*(b*c - a*d)*Sqrt[(a + b*x)*(
c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*d*x)
)^2])/(10*d^(7/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*
b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c -
a*d))) - (77*b^(1/4)*(b*c - a*d)^(7/2)*((a + b*x)*(c + d*x))^(1/4
)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
 b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c
 - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c
 - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*
x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(10*Sqrt[2]*d^(15/4)
*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d
+ b*(c + 2*d*x))^2]) + (77*b^(1/4)*(b*c - a*d)^(7/2)*((a + b*x)*(
c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2
*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
 + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^
(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(20*Sq
rt[2]*d^(15/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d
*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.94556, antiderivative size = 776, normalized size of antiderivative = 1., number of

steps used = 8, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$

$$\frac{77\sqrt{b}(bc-ad)\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{10d^{7/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$+\frac{77\sqrt[4]{b}(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\right.\right.}{20\sqrt{2}d^{15/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{77\sqrt[4]{b}(bc-ad)^{7/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\right.\right.}{10\sqrt{2}d^{15/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{77b(a+bx)^{3/4}(c+dx)^{3/4}(bc-ad)}{15d^3}+\frac{22b(a+bx)^{7/4}(c+dx)^{3/4}}{5d^2}-\frac{4(a+bx)^{11/4}}{d\sqrt[4]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(11/4)/(c + d*x)^(5/4),x]
```

```
[Out] (-4*(a + b*x)^(11/4))/(d*(c + d*x)^(1/4)) - (77*b*(b*c - a*d)*(a
+ b*x)^(3/4)*(c + d*x)^(3/4))/(15*d^3) + (22*b*(a + b*x)^(7/4)*(c
 + d*x)^(3/4))/(5*d^2) + (77*Sqrt[b]*(b*c - a*d)*Sqrt[(a + b*x)*(
c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*d*x)
)^2])/(10*d^(7/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*
b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c -
a*d))) - (77*b^(1/4)*(b*c - a*d)^(7/2)*((a + b*x)*(c + d*x))^(1/4
)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
 b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c
 - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c
 - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*
x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(10*Sqrt[2]*d^(15/4)
*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d
+ b*(c + 2*d*x))^2]) + (77*b^(1/4)*(b*c - a*d)^(7/2)*((a + b*x)*(
c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqr
t[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2
*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c
 + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^
(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(20*Sq
rt[2]*d^(15/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d
*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(11/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.294822, size = 132, normalized size = 0.17

$$\frac{(c+dx)^{3/4}\left(d(a+bx)\left(-\frac{60(bc-ad)^2}{c+dx}+b(23ad-17bc)+6b^2dx\right)+77b(bc-ad)^2\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)\right)}{15d^4\sqrt[4]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(11/4)/(c + d*x)^(5/4),x]
```

```
[Out] ((c + d*x)^(3/4)*(d*(a + b*x)*(b*(-17*b*c + 23*a*d) + 6*b^2*d*x -
 (60*(b*c - a*d)^2)/(c + d*x)) + 77*b*(b*c - a*d)^2*((d*(a + b*x)
)/(-(b*c) + a*d))^(1/4)*Hypergeometric2F1[1/4, 3/4, 7/4, (b*(c +
d*x))/(b*c - a*d)]))/(15*d^4*(a + b*x)^(1/4))
```

Maple [F] time = 0.058, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{11}{4}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(11/4)/(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(11/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{11}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(11/4)/(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(11/4)/(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(b^2x^2 + 2\,abx + a^2)\,(bx + a)^{\frac{3}{4}}}{(dx + c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(11/4)/(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(3/4)/(d*x + c)^(5/4
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(11/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^{\frac{11}{4}}}{(dx + c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(11/4)/(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(11/4)/(d*x + c)^(5/4), x)
```

3.1725 $\int \frac{(a+bx)^{7/4}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=730

$$-\frac{7\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{d^{5/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}-\frac{7\sqrt[4]{b}(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\right.\right.}{2\sqrt{2}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}+\frac{7\sqrt[4]{b}(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\right.\right.}{\sqrt{2}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}+\frac{14b(a+bx)^{3/4}(c+dx)^{3/4}}{3d^2}-\frac{4(a+bx)^{7/4}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(7/4))/(d*(c + d*x)^(1/4)) + (14*b*(a + b*x)^(3/4)*
(c + d*x)^(3/4))/(3*d^2) - (7*Sqrt[b]*Sqrt[(a + b*x)*(c + d*x)]*S
qrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])/(d^(5
/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2
*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))) + (7*b^
(1/4)*(b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a
*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)
])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 +
(2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*El
lipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(
1/4))/Sqrt[b*c - a*d]], 1/2])/(Sqrt[2]*d^(11/4)*(a + b*x)^(1/4)*(
c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2
]) - (7*b^(1/4)*(b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*Sqr
t[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)
*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*
d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*
d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c
 + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(2*Sqrt[2]*d^(11/4)*(a +
b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c
 + 2*d*x))^2])
```

Rubi [A] time = 1.65393, antiderivative size = 730, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$

$$-\frac{7\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{d^{5/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

$$-\frac{7\sqrt[4]{b}(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\right.\right.}{2\sqrt{2}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{7\sqrt[4]{b}(bc-ad)^{5/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\right.\right.}{\sqrt{2}d^{11/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$+\frac{14b(a+bx)^{3/4}(c+dx)^{3/4}}{3d^2}-\frac{4(a+bx)^{7/4}}{d\sqrt[4]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(7/4)/(c + d*x)^(5/4),x]
```

```
[Out] (-4*(a + b*x)^(7/4))/(d*(c + d*x)^(1/4)) + (14*b*(a + b*x)^(3/4)*
(c + d*x)^(3/4))/(3*d^2) - (7*Sqrt[b]*Sqrt[(a + b*x)*(c + d*x)]*S
qrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2*d*x))^2])/(d^(5
/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2
*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))) + (7*b^
(1/4)*(b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a
*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)
])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 +
(2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*El
lipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(
1/4))/Sqrt[b*c - a*d]], 1/2])/(Sqrt[2]*d^(11/4)*(a + b*x)^(1/4)*(
c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2
]) - (7*b^(1/4)*(b*c - a*d)^(5/2)*((a + b*x)*(c + d*x))^(1/4)*Sqr
t[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)
*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*
d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*
d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c
 + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(2*Sqrt[2]*d^(11/4)*(a +
b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c
 + 2*d*x))^2])
```

Rubi in Sympy [A] time = 154.84, size = 874, normalized size = 1.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/4)/(d*x+c)**(5/4),x)
```

```
[Out] -7*sqrt(2)*b**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a
*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d - b*c)*
*(5/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a
*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d
+ b*c + 2*b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(2
*d**(11/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c + 4*
b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*
d*x)) + 7*sqrt(2)*b**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a
*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)
*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d
- b*c)**(5/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b
*c))/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqr
t((a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4)*d*
*(1/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)),
1/2)/(4*d**(11/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a
*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c
 + 2*b*d*x)) + 7*sqrt(b)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
+ 4*b*c)) + (a*d - b*c)**2)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))*
sqrt((a*d + b*c + 2*b*d*x)**2)/(d**(5/2)*(a + b*x)**(1/4)*(c + d*
x)**(1/4)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))
/(a*d - b*c) + 1)*(a*d + b*c + 2*b*d*x)) + 14*b*(a + b*x)**(3/4)*
(c + d*x)**(3/4)/(3*d**2) - 4*(a + b*x)**(7/4)/(d*(c + d*x)**(1/4
))
```

Mathematica [C] time = 0.360694, size = 98, normalized size = 0.13

$$\frac{2(a+bx)^{3/4}(c+dx)^{3/4}\left(\frac{7b\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{3/4}}+\frac{-6ad+7bc+bdx}{c+dx}\right)}{3d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/4)/(c + d*x)^(5/4),x]
```

```
[Out] (2*(a + b*x)^(3/4)*(c + d*x)^(3/4)*((7*b*c - 6*a*d + b*d*x)/(c +
d*x) + (7*b*Hypergeometric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c -
 a*d)])/((d*(a + b*x))/(-(b*c) + a*d))^(3/4)))/(3*d^2)
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{4}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/4)/(d*x+c)^(5/4),x)

[Out] int((b*x+a)^(7/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(5/4),x, algorithm="maxima")

[Out] integrate((b*x + a)^(7/4)/(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{7}{4}}}{(dx+c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(5/4),x, algorithm="fricas")

[Out] integral((b*x + a)^(7/4)/(d*x + c)^(5/4), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/4)/(d*x+c)**(5/4),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/4)/(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(7/4)/(d*x + c)^(5/4), x)
```

3.1726 $\int \frac{(a+bx)^{3/4}}{(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=712

$$\frac{6\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{d^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}+\frac{3\sqrt[4]{b}(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\cdots\right.\right.}{\sqrt{2}d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}-\frac{3\sqrt{2}\sqrt[4]{b}(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{\cdots}\right.}{d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}-\frac{4(a+bx)^{3/4}}{d\sqrt[4]{c+dx}}$$

```
[Out] (-4*(a + b*x)^(3/4))/(d*(c + d*x)^(1/4)) + (6*Sqrt[b]*Sqrt[(a + b
*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2
*d*x))^2])/(d^(3/2)*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(
b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
d*x)])/(b*c - a*d))) - (3*Sqrt[2]*b^(1/4)*(b*c - a*d)^(3/2)*((a +
 b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt
[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b
*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(
1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])
/(d^(7/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*S
qrt[(a*d + b*(c + 2*d*x))^2]) + (3*b^(1/4)*(b*c - a*d)^(3/2)*((a
+ b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqr
t[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d +
b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
 b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^
(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2]
)/(Sqrt[2]*d^(7/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.45406, antiderivative size = 712, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{6\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{d^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$+\frac{3\sqrt[4]{b}(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\right.\right.}{\sqrt{2}d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{3\sqrt{2}\sqrt[4]{b}(bc-ad)^{3/2}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\right.}{d^{7/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{4(a+bx)^{3/4}}{d\sqrt[4]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[(a + b*x)^(3/4)/(c + d*x)^(5/4),x]
```

```
[Out] (-4*(a + b*x)^(3/4))/(d*(c + d*x)^(1/4)) + (6*Sqrt[b]*Sqrt[(a + b
*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b*(c + 2
*d*x))^2])/(d^(3/2)*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(
b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
d*x)])/(b*c - a*d))) - (3*Sqrt[2]*b^(1/4)*(b*c - a*d)^(3/2)*((a +
 b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt
[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b
*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(
1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])
/(d^(7/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*S
qrt[(a*d + b*(c + 2*d*x))^2]) + (3*b^(1/4)*(b*c - a*d)^(3/2)*((a
+ b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqr
t[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d +
b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
 b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^
(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2]
)/(Sqrt[2]*d^(7/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 130.635, size = 853, normalized size = 1.2

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/4)/(d*x+c)**(5/4),x)
```

```
[Out] -3*sqrt(2)*b**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a
*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d - b*c)*
*(3/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a
*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d
+ b*c + 2*b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*
(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(d
**(7/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c + 4*b*d
*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x
)) + 3*sqrt(2)*b**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d
+ 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sq
rt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(a*d - b
*c)**(3/2)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c)
)/(a*d - b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((
a*d + b*c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4)*d**(1
/4)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2
)/(2*d**(7/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c +
 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2
*b*d*x)) + 6*sqrt(b)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
b*c)) + (a*d - b*c)**2)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))*sqrt
((a*d + b*c + 2*b*d*x)**2)/(d**(3/2)*(a + b*x)**(1/4)*(c + d*x)**
(1/4)*(a*d - b*c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d
 + b*c))/(a*d - b*c) + 1)*(a*d + b*c + 2*b*d*x)) - 4*(a + b*x)**(
3/4)/(d*(c + d*x)**(1/4))
```

Mathematica [C] time = 0.148941, size = 87, normalized size = 0.12

$$\frac{4b(c+dx)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)-4d(a+bx)}{d^2\sqrt[4]{a+bx}\sqrt[4]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/4)/(c + d*x)^(5/4),x]
```

```
[Out] (-4*d*(a + b*x) + 4*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*(c + d
*x)*Hypergeometric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/
(d^2*(a + b*x)^(1/4)*(c + d*x)^(1/4))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{4}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/4)/(d*x+c)^(5/4),x)
```

```
[Out] int((b*x+a)^(3/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(5/4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/4)/(d*x + c)^(5/4), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{4}}}{(dx+c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(5/4),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/4)/(d*x + c)^(5/4), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{4}}}{(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/4)/(d*x+c)**(5/4),x)
```

```
[Out] Integral((a + b*x)**(3/4)/(c + d*x)**(5/4), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{4}}}{(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/4)/(d*x + c)^(5/4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/4)/(d*x + c)^(5/4), x)
```

3.1727 $\int \frac{1}{\sqrt[4]{a+bx}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=719

$$-\frac{\sqrt{2}\sqrt[4]{b}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\cdots\right.\right.}{d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{2\sqrt{2}\sqrt[4]{b}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\cdots\right.\right.}{d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{4\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{d}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}+\frac{4(a+bx)^{3/4}}{\sqrt[4]{c+dx}(bc-ad)}$$

```
[Out] (4*(a + b*x)^(3/4))/((b*c - a*d)*(c + d*x)^(1/4)) - (4*Sqrt[b]*Sq
rt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d +
 b*(c + 2*d*x))^2])/(Sqrt[d]*(b*c - a*d)^2*(a + b*x)^(1/4)*(c + d
*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
 b*x)*(c + d*x)])/(b*c - a*d))) + (2*Sqrt[2]*b^(1/4)*Sqrt[b*c - a
*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1
+ (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt
[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*S
qrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sq
rt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d
]], 1/2])/(d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) - (Sqrt[2]*b^(1/4)*Sqrt[b*
c - a*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2
]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))
*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt
[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTa
n[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c
- a*d]], 1/2])/(d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*
d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.43092, antiderivative size = 719, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{\sqrt{2}\sqrt[4]{b}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\right.\right.}{d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{2\sqrt{2}\sqrt[4]{b}\sqrt{bc-ad}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\right.\right.}{d^{3/4}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{4\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt{d}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}+\frac{4(a+bx)^{3/4}}{\sqrt[4]{c+dx}(bc-ad)}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(1/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (4*(a + b*x)^(3/4))/((b*c - a*d)*(c + d*x)^(1/4)) - (4*Sqrt[b]*Sq
rt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d +
 b*(c + 2*d*x))^2])/(Sqrt[d]*(b*c - a*d)^2*(a + b*x)^(1/4)*(c + d
*x)^(1/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a +
 b*x)*(c + d*x)])/(b*c - a*d))) + (2*Sqrt[2]*b^(1/4)*Sqrt[b*c - a
*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1
+ (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt
[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*S
qrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sq
rt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d
]], 1/2])/(d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2
*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) - (Sqrt[2]*b^(1/4)*Sqrt[b*
c - a*d]*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2
]*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))
*Sqrt[(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt
[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTa
n[(Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c
- a*d]], 1/2])/(d^(3/4)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*
d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 131.125, size = 857, normalized size = 1.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/4)/(d*x+c)**(5/4),x)
```

```
[Out] -2*sqrt(2)*b**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a
```

```
*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*sqrt(a*d - b
*c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d
- b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d + b
*c + 2*b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*
c + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(d**(
3/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c + 4*b*d*x*
*2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
+ sqrt(2)*b**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b
*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*
c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*sqrt(a*d - b*
c)*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d -
 b*c) + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d + b*
c + 2*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*c
 + b*d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/(d**(3
/4)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*sqrt(b*d*(4*a*c + 4*b*d*x**
2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x)) +
 4*sqrt(b)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*b*c)) + (a
*d - b*c)**2)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))*sqrt((a*d + b*
c + 2*b*d*x)**2)/(sqrt(d)*(a + b*x)**(1/4)*(c + d*x)**(1/4)*(a*d
- b*c)**2*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))
/(a*d - b*c) + 1)*(a*d + b*c + 2*b*d*x)) - 4*(a + b*x)**(3/4)/((c
 + d*x)**(1/4)*(a*d - b*c))
```

Mathematica [C] time = 0.202932, size = 100, normalized size = 0.14

$$\frac{12d(a+bx)-8b(c+dx)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)}{3d\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (12*d*(a + b*x) - 8*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*(c + d
*x)*Hypergeometric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a*d)])/
(3*d*(b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{bx+a}}(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/4)/(d*x+c)^(5/4),x)
```

```
[Out] int(1/(b*x+a)^(1/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{5}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(1/4)*(d*x + c)^(5/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{a+bx}\,(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/4)/(d*x+c)**(5/4),x)
```

```
[Out] Integral(1/((a + b*x)**(1/4)*(c + d*x)**(5/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/4)*(d*x + c)^(5/4)), x)
```

3.1728 $\int \frac{1}{(a+bx)^{5/4}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=750

$$-\frac{8d(a+bx)^{3/4}}{\sqrt[4]{c+dx}(bc-ad)^2}+\frac{8\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^3(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

$$-\frac{4}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}$$

$$+\frac{2\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{}\right.\right.}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{4\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}}{}\right.\right.}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

```
[Out] -4/((b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4)) - (8*d*(a + b*x)
^(3/4))/((b*c - a*d)^2*(c + d*x)^(1/4)) + (8*Sqrt[b]*Sqrt[d]*Sqrt
[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/((b*c - a*d)^3*(a + b*x)^(1/4)*(c + d*x)^(1/4)*
(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))) - (4*Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c
+ d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[
d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d
*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1
/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(Sqrt[b*
c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sq
rt[(a*d + b*(c + 2*d*x))^2]) + (2*Sqrt[2]*b^(1/4)*d^(1/4)*((a + b
*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b
]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(
c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*
x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/
4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(
Sqrt[b*c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*
d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.69547, antiderivative size = 750, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{8d(a+bx)^{3/4}}{\sqrt[4]{c+dx}(bc-ad)^2}+\frac{8\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^3(ad+bc+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$

$$-\frac{4}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)}$$

$$+\frac{2\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\cdots}{}\right.\right.}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

$$-\frac{4\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(ad+bc+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\cdots}{}\right.\right.}{\sqrt[4]{a+bx}\sqrt[4]{c+dx}\sqrt{bc-ad}(ad+bc+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(5/4)*(c + d*x)^(5/4)),x]
```

```
[Out] -4/((b*c - a*d)*(a + b*x)^(1/4)*(c + d*x)^(1/4)) - (8*d*(a + b*x)
^(3/4))/((b*c - a*d)^2*(c + d*x)^(1/4)) + (8*Sqrt[b]*Sqrt[d]*Sqrt
[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d + b
*(c + 2*d*x))^2])/((b*c - a*d)^3*(a + b*x)^(1/4)*(c + d*x)^(1/4)*
(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))) - (4*Sqrt[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c
+ d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*Sqrt[
d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c + 2*d
*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c +
 d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)*d^(1
/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(Sqrt[b*
c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*d*x)*Sq
rt[(a*d + b*(c + 2*d*x))^2]) + (2*Sqrt[2]*b^(1/4)*d^(1/4)*((a + b
*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b
]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(
c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*
x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqrt[2]*b^(1/
4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(
Sqrt[b*c - a*d]*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*b*
d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [A] time = 157.758, size = 887, normalized size = 1.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/4)/(d*x+c)**(5/4),x)
```

```
[Out] -4*sqrt(2)*b**(1/4)*d**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(4
*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt(
d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(2*
sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c)
+ 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d + b*c + 2*
b*d*x)**2)*elliptic_e(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*d
*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/((a + b*x)**
(1/4)*(c + d*x)**(1/4)*sqrt(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x*
*2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
+ 2*sqrt(2)*b**(1/4)*d**(1/4)*sqrt((b*d*(4*a*c + 4*b*d*x**2 + x*(
4*a*d + 4*b*c)) + (a*d - b*c)**2)/((a*d - b*c)**2*(2*sqrt(b)*sqrt
(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c) + 1)**2))*(2
*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))/(a*d - b*c)
 + 1)*(a*c + b*d*x**2 + x*(a*d + b*c))**(1/4)*sqrt((a*d + b*c + 2
*b*d*x)**2)*elliptic_f(2*atan(sqrt(2)*b**(1/4)*d**(1/4)*(a*c + b*
d*x**2 + x*(a*d + b*c))**(1/4)/sqrt(a*d - b*c)), 1/2)/((a + b*x)*
*(1/4)*(c + d*x)**(1/4)*sqrt(a*d - b*c)*sqrt(b*d*(4*a*c + 4*b*d*x
**2 + x*(4*a*d + 4*b*c)) + (a*d - b*c)**2)*(a*d + b*c + 2*b*d*x))
 + 8*sqrt(b)*sqrt(d)*sqrt(b*d*(4*a*c + 4*b*d*x**2 + x*(4*a*d + 4*
b*c)) + (a*d - b*c)**2)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c))*sqrt
((a*d + b*c + 2*b*d*x)**2)/((a + b*x)**(1/4)*(c + d*x)**(1/4)*(a*
d - b*c)**3*(2*sqrt(b)*sqrt(d)*sqrt(a*c + b*d*x**2 + x*(a*d + b*c
))/(a*d - b*c) + 1)*(a*d + b*c + 2*b*d*x)) - 8*d*(a + b*x)**(3/4)
/((c + d*x)**(1/4)*(a*d - b*c)**2) + 4/((a + b*x)**(1/4)*(c + d*x
)**(1/4)*(a*d - b*c))
```

Mathematica [C] time = 0.292065, size = 102, normalized size = 0.14

$$-\frac{4\left(-4b(c+dx)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+3ad+3b(c+2dx)\right)}{3\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (-4*(3*a*d + 3*b*(c + 2*d*x) - 4*b*((d*(a + b*x))/(-(b*c) + a*d))
^(1/4)*(c + d*x)*Hypergeometric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(
b*c - a*d)]))/(3*(b*c - a*d)^2*(a + b*x)^(1/4)*(c + d*x)^(1/4))
```

Maple [F] time = 0.061, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{4}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/4)/(d*x+c)^(5/4),x)
```

```
[Out] int(1/(b*x+a)^(5/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bdx^2+ac+(bc+ad)x)(bx+a)^{\frac{1}{4}}(dx+c)^{\frac{1}{4}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(1/4)*(d*x
+ c)^(1/4)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{4}}\,(c+dx)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/4)/(d*x+c)**(5/4),x)
```

```
[Out] Integral(1/((a + b*x)**(5/4)*(c + d*x)**(5/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/4)*(d*x + c)^(5/4)), x)
```

3.1729 $\int \frac{1}{(a+bx)^{9/4}(c+dx)^{5/4}}\,dx$

Optimal. Leaf size=795

$$\frac{48(a+bx)^{3/4}d^2}{5(bc-ad)^3\sqrt[4]{c+dx}}-\frac{48\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}\,d^{3/2}}{5(bc-ad)^4\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc+ad+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$+\frac{24\sqrt{2}\sqrt[4]{b}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}}{}\right.\right.}{5(bc-ad)^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc+ad+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$-\frac{12\sqrt{2}\sqrt[4]{b}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{d}}{}\right.\right.}{5(bc-ad)^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc+ad+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+\frac{24d}{5(bc-ad)^2\sqrt[4]{a+bx}\sqrt[4]{c+dx}}-\frac{4}{5(bc-ad)(a+bx)^{5/4}\sqrt[4]{c+dx}}$$

```
[Out] -4/(5*(b*c - a*d)*(a + b*x)^(5/4)*(c + d*x)^(1/4)) + (24*d)/(5*(b
*c - a*d)^2*(a + b*x)^(1/4)*(c + d*x)^(1/4)) + (48*d^2*(a + b*x)^
(3/4))/(5*(b*c - a*d)^3*(c + d*x)^(1/4)) - (48*Sqrt[b]*d^(3/2)*Sq
rt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d +
 b*(c + 2*d*x))^2])/(5*(b*c - a*d)^4*(a + b*x)^(1/4)*(c + d*x)^(1
/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*
(c + d*x)])/(b*c - a*d))) + (24*Sqrt[2]*b^(1/4)*d^(5/4)*((a + b*x
)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*
Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c
+ 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)
*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)
*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(5*
(b*c - a*d)^(3/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*
b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) - (12*Sqrt[2]*b^(1/4)*d^(5/
4)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 +
 (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[
(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sq
rt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqr
t[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]
], 1/2])/(5*(b*c - a*d)^(3/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*
c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi [A] time = 1.95552, antiderivative size = 795, normalized size of antiderivative = 1., number of

steps used = 8, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{48(a+bx)^{3/4}d^2}{5(bc-ad)^3\sqrt[4]{c+dx}} - \frac{48\sqrt{b}\sqrt{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\sqrt{(ad+b(c+2dx))^2}d^{3/2}}{5(bc-ad)^4\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc+ad+2bdx)\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)}$$
$$+ \frac{24\sqrt{2}\sqrt[4]{b}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{a}}{}\right.\right.}{5(bc-ad)^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc+ad+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$- \frac{12\sqrt{2}\sqrt[4]{b}\sqrt[4]{(a+bx)(c+dx)}\sqrt{(bc+ad+2bdx)^2}\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)\sqrt{\frac{(ad+b(c+2dx))^2}{(bc-ad)^2\left(\frac{2\sqrt{b}\sqrt{d}\sqrt{(a+bx)(c+dx)}}{bc-ad}+1\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{}}{}\right.\right.}{5(bc-ad)^{3/2}\sqrt[4]{a+bx}\sqrt[4]{c+dx}(bc+ad+2bdx)\sqrt{(ad+b(c+2dx))^2}}$$
$$+ \frac{24d}{5(bc-ad)^2\sqrt[4]{a+bx}\sqrt[4]{c+dx}} - \frac{4}{5(bc-ad)(a+bx)^{5/4}\sqrt[4]{c+dx}}$$

Warning: Unable to verify antiderivative.

```
[In]  Int[1/((a + b*x)^(9/4)*(c + d*x)^(5/4)),x]
```

```
[Out] -4/(5*(b*c - a*d)*(a + b*x)^(5/4)*(c + d*x)^(1/4)) + (24*d)/(5*(b
*c - a*d)^2*(a + b*x)^(1/4)*(c + d*x)^(1/4)) + (48*d^2*(a + b*x)^
(3/4))/(5*(b*c - a*d)^3*(c + d*x)^(1/4)) - (48*Sqrt[b]*d^(3/2)*Sq
rt[(a + b*x)*(c + d*x)]*Sqrt[(b*c + a*d + 2*b*d*x)^2]*Sqrt[(a*d +
 b*(c + 2*d*x))^2])/(5*(b*c - a*d)^4*(a + b*x)^(1/4)*(c + d*x)^(1
/4)*(b*c + a*d + 2*b*d*x)*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*
(c + d*x)])/(b*c - a*d))) + (24*Sqrt[2]*b^(1/4)*d^(5/4)*((a + b*x
)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 + (2*Sqrt[b]*
Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[(a*d + b*(c
+ 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)
*(c + d*x)])/(b*c - a*d))^2)]*EllipticE[2*ArcTan[(Sqrt[2]*b^(1/4)
*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]], 1/2])/(5*
(b*c - a*d)^(3/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*c + a*d + 2*
b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2]) - (12*Sqrt[2]*b^(1/4)*d^(5/
4)*((a + b*x)*(c + d*x))^(1/4)*Sqrt[(b*c + a*d + 2*b*d*x)^2]*(1 +
 (2*Sqrt[b]*Sqrt[d]*Sqrt[(a + b*x)*(c + d*x)])/(b*c - a*d))*Sqrt[
(a*d + b*(c + 2*d*x))^2/((b*c - a*d)^2*(1 + (2*Sqrt[b]*Sqrt[d]*Sq
rt[(a + b*x)*(c + d*x)])/(b*c - a*d))^2)]*EllipticF[2*ArcTan[(Sqr
t[2]*b^(1/4)*d^(1/4)*((a + b*x)*(c + d*x))^(1/4))/Sqrt[b*c - a*d]
], 1/2])/(5*(b*c - a*d)^(3/2)*(a + b*x)^(1/4)*(c + d*x)^(1/4)*(b*
c + a*d + 2*b*d*x)*Sqrt[(a*d + b*(c + 2*d*x))^2])
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(9/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.308926, size = 139, normalized size = 0.17

$$-\frac{4\left(5a^2d^2-8bd(a+bx)(c+dx)\sqrt[4]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{4},\frac{3}{4};\frac{7}{4};\frac{b(c+dx)}{bc-ad}\right)+2abd(4c+9dx)+b^2\left(-c^2+6cdx+12d^2x^2\right)\right)}{5(a+bx)^{5/4}\sqrt[4]{c+dx}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(9/4)*(c + d*x)^(5/4)),x]
```

```
[Out] (-4*(5*a^2*d^2 + 2*a*b*d*(4*c + 9*d*x) + b^2*(-c^2 + 6*c*d*x + 12
*d^2*x^2) - 8*b*d*(a + b*x)*((d*(a + b*x))/(-(b*c) + a*d))^(1/4)*
(c + d*x)*Hypergeometric2F1[1/4, 3/4, 7/4, (b*(c + d*x))/(b*c - a
*d)]))/(5*(-(b*c) + a*d)^3*(a + b*x)^(5/4)*(c + d*x)^(1/4))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{9}{4}}\,(dx+c)^{-\frac{5}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(9/4)/(d*x+c)^(5/4),x)
```

```
[Out] int(1/(b*x+a)^(9/4)/(d*x+c)^(5/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{9}{4}}(dx+c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(5/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(9/4)*(d*x + c)^(5/4)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2dx^3 + a^2c + (b^2c + 2\,abd)x^2 + (2\,abc + a^2d)x)(bx + a)^{\frac{1}{4}}(dx + c)^{\frac{1}{4}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(5/4)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*d*x^3 + a^2*c + (b^2*c + 2*a*b*d)*x^2 + (2*a*b*c
 + a^2*d)*x)*(b*x + a)^(1/4)*(d*x + c)^(1/4)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(9/4)/(d*x+c)**(5/4),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx + a)^{\frac{9}{4}}(dx + c)^{\frac{5}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(9/4)*(d*x + c)^(5/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(9/4)*(d*x + c)^(5/4)), x)
```

3.1730 $\int \frac{1}{\sqrt[4]{1-ax}(1+bx)^{3/4}}\,dx$

Optimal. Leaf size=279

$$-\frac{\log\left(-\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{bx+1}}+\frac{\sqrt{b}\sqrt{1-ax}}{\sqrt{bx+1}}+\sqrt{a}\right)}{\sqrt{2}\sqrt[4]{a}b^{3/4}}+\frac{\log\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{bx+1}}+\frac{\sqrt{b}\sqrt{1-ax}}{\sqrt{bx+1}}+\sqrt{a}\right)}{\sqrt{2}\sqrt[4]{a}b^{3/4}}+\frac{\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{a}\sqrt[4]{bx+1}}\right)}{\sqrt[4]{a}b^{3/4}}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{a}\sqrt[4]{bx+1}}+1\right)}{\sqrt[4]{a}b^{3/4}}$$

```
[Out] (Sqrt[2]*ArcTan[1 - (Sqrt[2]*b^(1/4)*(1 - a*x)^(1/4))/(a^(1/4)*(1
 + b*x)^(1/4))])/(a^(1/4)*b^(3/4)) - (Sqrt[2]*ArcTan[1 + (Sqrt[2]
*b^(1/4)*(1 - a*x)^(1/4))/(a^(1/4)*(1 + b*x)^(1/4))])/(a^(1/4)*b^
(3/4)) - Log[Sqrt[a] + (Sqrt[b]*Sqrt[1 - a*x])/Sqrt[1 + b*x] - (S
qrt[2]*a^(1/4)*b^(1/4)*(1 - a*x)^(1/4))/(1 + b*x)^(1/4)]/(Sqrt[2]
*a^(1/4)*b^(3/4)) + Log[Sqrt[a] + (Sqrt[b]*Sqrt[1 - a*x])/Sqrt[1
+ b*x] + (Sqrt[2]*a^(1/4)*b^(1/4)*(1 - a*x)^(1/4))/(1 + b*x)^(1/4
)]/(Sqrt[2]*a^(1/4)*b^(3/4))
```

Rubi [A] time = 0.415887, antiderivative size = 279, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.35$

$$-\frac{\log\left(-\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{bx+1}}+\frac{\sqrt{b}\sqrt{1-ax}}{\sqrt{bx+1}}+\sqrt{a}\right)}{\sqrt{2}\sqrt[4]{a}b^{3/4}}+\frac{\log\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{bx+1}}+\frac{\sqrt{b}\sqrt{1-ax}}{\sqrt{bx+1}}+\sqrt{a}\right)}{\sqrt{2}\sqrt[4]{a}b^{3/4}}+\frac{\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{a}\sqrt[4]{bx+1}}\right)}{\sqrt[4]{a}b^{3/4}}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{1-ax}}{\sqrt[4]{a}\sqrt[4]{bx+1}}+1\right)}{\sqrt[4]{a}b^{3/4}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - a*x)^(1/4)*(1 + b*x)^(3/4)),x]
```


```
[Out] (Sqrt[2]*ArcTan[1 - (Sqrt[2]*b^(1/4)*(1 - a*x)^(1/4))/(a^(1/4)*(1
 + b*x)^(1/4))])/(a^(1/4)*b^(3/4)) - (Sqrt[2]*ArcTan[1 + (Sqrt[2]
*b^(1/4)*(1 - a*x)^(1/4))/(a^(1/4)*(1 + b*x)^(1/4))])/(a^(1/4)*b^
(3/4)) - Log[Sqrt[a] + (Sqrt[b]*Sqrt[1 - a*x])/Sqrt[1 + b*x] - (S
qrt[2]*a^(1/4)*b^(1/4)*(1 - a*x)^(1/4))/(1 + b*x)^(1/4)]/(Sqrt[2]
*a^(1/4)*b^(3/4)) + Log[Sqrt[a] + (Sqrt[b]*Sqrt[1 - a*x])/Sqrt[1
+ b*x] + (Sqrt[2]*a^(1/4)*b^(1/4)*(1 - a*x)^(1/4))/(1 + b*x)^(1/4
)]/(Sqrt[2]*a^(1/4)*b^(3/4))
```

Rubi in Sympy [A] time = 56.9012, size = 257, normalized size = 0.92

$$-\frac{\sqrt{2}\log\left(-\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{b}\sqrt[4]{-ax+1}}{\sqrt[4]{bx+1}}+\sqrt{a}+\frac{\sqrt{b}\sqrt{-ax+1}}{\sqrt{bx+1}}\right)}{2\sqrt[4]{a}b^{\frac{3}{4}}}+\frac{\sqrt{2}\log\left(\frac{\sqrt{2}\sqrt[4]{a}\sqrt[4]{b}\sqrt[4]{-ax+1}}{\sqrt[4]{bx+1}}+\sqrt{a}+\frac{\sqrt{b}\sqrt{-ax+1}}{\sqrt{bx+1}}\right)}{2\sqrt[4]{a}b^{\frac{3}{4}}}+\frac{\sqrt{2}\,\mathrm{atan}\left(1-\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{-ax+1}}{\sqrt[4]{a}\sqrt[4]{bx+1}}\right)}{\sqrt[4]{a}b^{\frac{3}{4}}}-\frac{\sqrt{2}\,\mathrm{atan}\left(1+\frac{\sqrt{2}\sqrt[4]{b}\sqrt[4]{-ax+1}}{\sqrt[4]{a}\sqrt[4]{bx+1}}\right)}{\sqrt[4]{a}b^{\frac{3}{4}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-a*x+1)**(1/4)/(b*x+1)**(3/4),x)
```

```
[Out] -sqrt(2)*log(-sqrt(2)*a**(1/4)*b**(1/4)*(-a*x + 1)**(1/4)/(b*x +
1)**(1/4) + sqrt(a) + sqrt(b)*sqrt(-a*x + 1)/sqrt(b*x + 1))/(2*a*
*(1/4)*b**(3/4)) + sqrt(2)*log(sqrt(2)*a**(1/4)*b**(1/4)*(-a*x +
1)**(1/4)/(b*x + 1)**(1/4) + sqrt(a) + sqrt(b)*sqrt(-a*x + 1)/sqr
t(b*x + 1))/(2*a**(1/4)*b**(3/4)) + sqrt(2)*atan(1 - sqrt(2)*b**(
1/4)*(-a*x + 1)**(1/4)/(a**(1/4)*(b*x + 1)**(1/4)))/(a**(1/4)*b**
(3/4)) - sqrt(2)*atan(1 + sqrt(2)*b**(1/4)*(-a*x + 1)**(1/4)/(a**
(1/4)*(b*x + 1)**(1/4)))/(a**(1/4)*b**(3/4))
```

Mathematica [C] time = 0.0686255, size = 63, normalized size = 0.23

$$\frac{4\sqrt[4]{bx+1}\sqrt[4]{\frac{b-abx}{a+b}}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{bxa+a}{a+b}\right)}{b\sqrt[4]{1-ax}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - a*x)^(1/4)*(1 + b*x)^(3/4)),x]
```

```
[Out] (4*(1 + b*x)^(1/4)*((b - a*b*x)/(a + b))^(1/4)*Hypergeometric2F1[
1/4, 1/4, 5/4, (a + a*b*x)/(a + b)])/(b*(1 - a*x)^(1/4))
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{-ax+1}}(bx+1)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-a*x+1)^(1/4)/(b*x+1)^(3/4),x)
```

```
[Out] int(1/(-a*x+1)^(1/4)/(b*x+1)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(-ax+1)^{\frac{1}{4}}(bx+1)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-a*x + 1)^(1/4)*(b*x + 1)^(3/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((-a*x + 1)^(1/4)*(b*x + 1)^(3/4)), x)
```

Fricas [A] time = 0.241662, size = 302, normalized size = 1.08

$$4\left(-\frac{1}{ab^3}\right)^{\frac{1}{4}}\arctan\left(\frac{(abx-b)\left(-\frac{1}{ab^3}\right)^{\frac{1}{4}}}{(ax-1)\sqrt{\frac{(ab^2x-b^2)\sqrt{-\frac{1}{ab^3}}-\sqrt{-ax+1}\sqrt{bx+1}}{ax-1}}+(-ax+1)^{\frac{3}{4}}(bx+1)^{\frac{1}{4}}}\right) - \left(-\frac{1}{ab^3}\right)^{\frac{1}{4}}\log\left(\frac{(abx-b)\left(-\frac{1}{ab^3}\right)^{\frac{1}{4}}+(-ax+1)^{\frac{3}{4}}(bx+1)^{\frac{1}{4}}}{ax-1}\right) + \left(-\frac{1}{ab^3}\right)^{\frac{1}{4}}\log\left(-\frac{(abx-b)\left(-\frac{1}{ab^3}\right)^{\frac{1}{4}}-(-ax+1)^{\frac{3}{4}}(bx+1)^{\frac{1}{4}}}{ax-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((-a*x + 1)^(1/4)*(b*x + 1)^(3/4)),x, algorithm="fricas")
```

```
[Out] 4*(-1/(a*b^3))^(1/4)*arctan((a*b*x - b)*(-1/(a*b^3))^(1/4)/((a*x
- 1)*sqrt(((a*b^2*x - b^2)*sqrt(-1/(a*b^3)) - sqrt(-a*x + 1)*sqrt
(b*x + 1))/(a*x - 1)) + (-a*x + 1)^(3/4)*(b*x + 1)^(1/4))) - (-1/
(a*b^3))^(1/4)*log(((a*b*x - b)*(-1/(a*b^3))^(1/4) + (-a*x + 1)^(
3/4)*(b*x + 1)^(1/4))/(a*x - 1)) + (-1/(a*b^3))^(1/4)*log(-((a*b*
x - b)*(-1/(a*b^3))^(1/4) - (-a*x + 1)^(3/4)*(b*x + 1)^(1/4))/(a*
x - 1))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{-ax+1}\,(bx+1)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-a*x+1)**(1/4)/(b*x+1)**(3/4),x)
```

```
[Out] Integral(1/((-a*x + 1)**(1/4)*(b*x + 1)**(3/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(-ax+1)^{\frac{1}{4}}(bx+1)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((-a*x + 1)^(1/4)*(b*x + 1)^(3/4)),x, algorithm="giac")
```

```
[Out] integrate(1/((-a*x + 1)^(1/4)*(b*x + 1)^(3/4)), x)
```

3.1731 $\int \frac{1}{\sqrt[4]{1-ax}(1+ax)^{3/4}}\,dx$

Optimal. Leaf size=193

$$-\frac{\log\left(\frac{\sqrt{1-ax}}{\sqrt{ax+1}}-\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}+1\right)}{\sqrt{2}a}+\frac{\log\left(\frac{\sqrt{1-ax}}{\sqrt{ax+1}}+\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}+1\right)}{\sqrt{2}a}+\frac{\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}\right)}{a}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}+1\right)}{a}$$

```
[Out] (Sqrt[2]*ArcTan[1 - (Sqrt[2]*(1 - a*x)^(1/4))/(1 + a*x)^(1/4)])/a
 - (Sqrt[2]*ArcTan[1 + (Sqrt[2]*(1 - a*x)^(1/4))/(1 + a*x)^(1/4)]
)/a - Log[1 + Sqrt[1 - a*x]/Sqrt[1 + a*x] - (Sqrt[2]*(1 - a*x)^(1
/4))/(1 + a*x)^(1/4)]/(Sqrt[2]*a) + Log[1 + Sqrt[1 - a*x]/Sqrt[1
+ a*x] + (Sqrt[2]*(1 - a*x)^(1/4))/(1 + a*x)^(1/4)]/(Sqrt[2]*a)
```

Rubi [A] time = 0.220637, antiderivative size = 193, normalized size of antiderivative = 1., number of steps used = 10, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.35$

$$-\frac{\log\left(\frac{\sqrt{1-ax}}{\sqrt{ax+1}}-\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}+1\right)}{\sqrt{2}a}+\frac{\log\left(\frac{\sqrt{1-ax}}{\sqrt{ax+1}}+\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}+1\right)}{\sqrt{2}a}+\frac{\sqrt{2}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}\right)}{a}-\frac{\sqrt{2}\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{1-ax}}{\sqrt[4]{ax+1}}+1\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((1 - a*x)^(1/4)*(1 + a*x)^(3/4)),x]
```

```
[Out] (Sqrt[2]*ArcTan[1 - (Sqrt[2]*(1 - a*x)^(1/4))/(1 + a*x)^(1/4)])/a
 - (Sqrt[2]*ArcTan[1 + (Sqrt[2]*(1 - a*x)^(1/4))/(1 + a*x)^(1/4)]
)/a - Log[1 + Sqrt[1 - a*x]/Sqrt[1 + a*x] - (Sqrt[2]*(1 - a*x)^(1
/4))/(1 + a*x)^(1/4)]/(Sqrt[2]*a) + Log[1 + Sqrt[1 - a*x]/Sqrt[1
+ a*x] + (Sqrt[2]*(1 - a*x)^(1/4))/(1 + a*x)^(1/4)]/(Sqrt[2]*a)
```

Rubi in Sympy [A] time = 22.1406, size = 165, normalized size = 0.85

$$-\frac{\sqrt{2}\log\left(-\frac{\sqrt{2}\sqrt[4]{-ax+1}}{\sqrt[4]{ax+1}}+\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}+1\right)}{2a}+\frac{\sqrt{2}\log\left(\frac{\sqrt{2}\sqrt[4]{-ax+1}}{\sqrt[4]{ax+1}}+\frac{\sqrt{-ax+1}}{\sqrt{ax+1}}+1\right)}{2a}-\frac{\sqrt{2}\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-ax+1}}{\sqrt[4]{ax+1}}-1\right)}{a}-\frac{\sqrt{2}\,\mathrm{atan}\left(\frac{\sqrt{2}\sqrt[4]{-ax+1}}{\sqrt[4]{ax+1}}+1\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(-a*x+1)**(1/4)/(a*x+1)**(3/4),x)
```

```
[Out] -sqrt(2)*log(-sqrt(2)*(-a*x + 1)**(1/4)/(a*x + 1)**(1/4) + sqrt(-
a*x + 1)/sqrt(a*x + 1) + 1)/(2*a) + sqrt(2)*log(sqrt(2)*(-a*x + 1
)**(1/4)/(a*x + 1)**(1/4) + sqrt(-a*x + 1)/sqrt(a*x + 1) + 1)/(2*
a) - sqrt(2)*atan(sqrt(2)*(-a*x + 1)**(1/4)/(a*x + 1)**(1/4) - 1)
/a - sqrt(2)*atan(sqrt(2)*(-a*x + 1)**(1/4)/(a*x + 1)**(1/4) + 1)
/a
```

Mathematica [C] time = 0.0257151, size = 38, normalized size = 0.2

$$\frac{2\,2^{3/4}\sqrt[4]{ax+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{4};\frac{5}{4};\frac{1}{2}(ax+1)\right)}{a}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((1 - a*x)^(1/4)*(1 + a*x)^(3/4)),x]
```

```
[Out] (2*2^(3/4)*(1 + a*x)^(1/4)*Hypergeometric2F1[1/4, 1/4, 5/4, (1 +
a*x)/2])/a
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[4]{-ax+1}}\,(ax+1)^{-\frac{3}{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(-a*x+1)^(1/4)/(a*x+1)^(3/4),x)
```

```
[Out] int(1/(-a*x+1)^(1/4)/(a*x+1)^(3/4),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ax+1)^{\frac{3}{4}}(-ax+1)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + 1)^(3/4)*(-a*x + 1)^(1/4)),x, algorithm="maxima")
```

```
[Out] integrate(1/((a*x + 1)^(3/4)*(-a*x + 1)^(1/4)), x)
```

Fricas [A] time = 0.25399, size = 608, normalized size = 3.15

$$2\sqrt{2}\left(\frac{1}{a^4}\right)^{\frac{1}{4}}\arctan\left(\frac{\sqrt{2}(a^2x-a)\left(\frac{1}{a^4}\right)^{\frac{1}{4}}}{\sqrt{2}(a^2x-a)\left(\frac{1}{a^4}\right)^{\frac{1}{4}}+2(ax-1)\sqrt{\frac{\sqrt{2}(ax+1)^{\frac{1}{4}}(-ax+1)^{\frac{3}{4}}a\left(\frac{1}{a^4}\right)^{\frac{1}{4}}+(a^3x-a^2)\sqrt{\frac{1}{a^4}}-\sqrt{ax+1}\sqrt{-ax+1}}{ax-1}}+2(ax+1)^{\frac{1}{4}}(-ax+1)^{\frac{3}{4}}}\right)$$
$$+2\sqrt{2}\left(\frac{1}{a^4}\right)^{\frac{1}{4}}\arctan\left(-\frac{\sqrt{2}(a^2x-a)\left(\frac{1}{a^4}\right)^{\frac{1}{4}}}{\sqrt{2}(a^2x-a)\left(\frac{1}{a^4}\right)^{\frac{1}{4}}-2(ax-1)\sqrt{-\frac{\sqrt{2}(ax+1)^{\frac{1}{4}}(-ax+1)^{\frac{3}{4}}a\left(\frac{1}{a^4}\right)^{\frac{1}{4}}-(a^3x-a^2)\sqrt{\frac{1}{a^4}}+\sqrt{ax+1}\sqrt{-ax+1}}{ax-1}}-2(ax+1)^{\frac{1}{4}}(-ax+1)\ldots}\right)$$
$$-\frac{1}{2}\sqrt{2}\left(\frac{1}{a^4}\right)^{\frac{1}{4}}\log\left(\frac{\sqrt{2}(ax+1)^{\frac{1}{4}}(-ax+1)^{\frac{3}{4}}a\left(\frac{1}{a^4}\right)^{\frac{1}{4}}+(a^3x-a^2)\sqrt{\frac{1}{a^4}}-\sqrt{ax+1}\sqrt{-ax+1}}{ax-1}\right)$$
$$+\frac{1}{2}\sqrt{2}\left(\frac{1}{a^4}\right)^{\frac{1}{4}}\log\left(-\frac{\sqrt{2}(ax+1)^{\frac{1}{4}}(-ax+1)^{\frac{3}{4}}a\left(\frac{1}{a^4}\right)^{\frac{1}{4}}-(a^3x-a^2)\sqrt{\frac{1}{a^4}}+\sqrt{ax+1}\sqrt{-ax+1}}{ax-1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((a*x + 1)^(3/4)*(-a*x + 1)^(1/4)),x, algorithm="fricas")
```

```
[Out] 2*sqrt(2)*(a^(-4))^(1/4)*arctan(sqrt(2)*(a^2*x - a)*(a^(-4))^(1/4
)/(sqrt(2)*(a^2*x - a)*(a^(-4))^(1/4) + 2*(a*x - 1)*sqrt((sqrt(2)
*(a*x + 1)^(1/4)*(-a*x + 1)^(3/4)*a*(a^(-4))^(1/4) + (a^3*x - a^2
)*sqrt(a^(-4)) - sqrt(a*x + 1)*sqrt(-a*x + 1))/(a*x - 1)) + 2*(a*
x + 1)^(1/4)*(-a*x + 1)^(3/4))) + 2*sqrt(2)*(a^(-4))^(1/4)*arctan
(-sqrt(2)*(a^2*x - a)*(a^(-4))^(1/4)/(sqrt(2)*(a^2*x - a)*(a^(-4)
)^(1/4) - 2*(a*x - 1)*sqrt(-(sqrt(2)*(a*x + 1)^(1/4)*(-a*x + 1)^(
3/4)*a*(a^(-4))^(1/4) - (a^3*x - a^2)*sqrt(a^(-4)) + sqrt(a*x + 1
)*sqrt(-a*x + 1))/(a*x - 1)) - 2*(a*x + 1)^(1/4)*(-a*x + 1)^(3/4)
)) - 1/2*sqrt(2)*(a^(-4))^(1/4)*log((sqrt(2)*(a*x + 1)^(1/4)*(-a*
x + 1)^(3/4)*a*(a^(-4))^(1/4) + (a^3*x - a^2)*sqrt(a^(-4)) - sqrt
(a*x + 1)*sqrt(-a*x + 1))/(a*x - 1)) + 1/2*sqrt(2)*(a^(-4))^(1/4)
*log(-(sqrt(2)*(a*x + 1)^(1/4)*(-a*x + 1)^(3/4)*a*(a^(-4))^(1/4)
- (a^3*x - a^2)*sqrt(a^(-4)) + sqrt(a*x + 1)*sqrt(-a*x + 1))/(a*x
 - 1))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[4]{-ax+1}\,(ax+1)^{\frac{3}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(-a*x+1)**(1/4)/(a*x+1)**(3/4),x)

[Out] Integral(1/((-a*x + 1)**(1/4)*(a*x + 1)**(3/4)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(ax+1)^{\frac{3}{4}}(-ax+1)^{\frac{1}{4}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((a*x + 1)^(3/4)*(-a*x + 1)^(1/4)),x, algorithm="giac")

[Out] integrate(1/((a*x + 1)^(3/4)*(-a*x + 1)^(1/4)), x)
```

3.1732 $\int \frac{(a+bx)^{3/2}}{\sqrt[5]{c+dx}}\,dx$

Optimal. Leaf size=74

$$\frac{2(a+bx)^{5/2}\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{5},\frac{5}{2};\frac{7}{2};-\frac{d(a+bx)}{bc-ad}\right)}{5b\sqrt[5]{c+dx}}$$

```
[Out] (2*(a + b*x)^(5/2)*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometr
ic2F1[1/5, 5/2, 7/2, -((d*(a + b*x))/(b*c - a*d))])/(5*b*(c + d*x
)^(1/5))
```

Rubi [A] time = 0.101747, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{2(a+bx)^{5/2}\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{5},\frac{5}{2};\frac{7}{2};-\frac{d(a+bx)}{bc-ad}\right)}{5b\sqrt[5]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(1/5),x]
```

```
[Out] (2*(a + b*x)^(5/2)*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometr
ic2F1[1/5, 5/2, 7/2, -((d*(a + b*x))/(b*c - a*d))])/(5*b*(c + d*x
)^(1/5))
```

Rubi in Sympy [A] time = 13.164, size = 70, normalized size = 0.95

$$\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{4}{5}}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{3}{2},\frac{4}{5}\\ \frac{9}{5}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{4d^2\sqrt{\frac{d(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(1/5),x)
```

```
[Out] 5*sqrt(a + b*x)*(c + d*x)**(4/5)*(a*d - b*c)*hyper((-3/2, 4/5), (
9/5,), b*(-c - d*x)/(a*d - b*c))/(4*d**2*sqrt(d*(a + b*x)/(a*d -
b*c)))
```

Mathematica [A] time = 0.285143, size = 108, normalized size = 1.46

$$\frac{5(c+dx)^{4/5}\left(75(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{4}{5};\frac{9}{5};\frac{b(c+dx)}{bc-ad}\right)+8d(a+bx)(28ad-15bc+13bdx)\right)}{1196d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(1/5),x]
```

```
[Out] (5*(c + d*x)^(4/5)*(8*d*(a + b*x)*(-15*b*c + 28*a*d + 13*b*d*x) +
 75*(b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometr
ic2F1[1/2, 4/5, 9/5, (b*(c + d*x))/(b*c - a*d)]))/(1196*d^3*Sqrt[
a + b*x])
```

Maple [F] time = 0.063, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,\frac{1}{\sqrt[5]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(1/5),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(1/5),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/5),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/5), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{5}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/5),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(1/5), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{\sqrt[5]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(1/5),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(1/5), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/5),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/5), x)
```

3.1733 $\int \frac{\sqrt{a+bx}}{\sqrt[5]{c+dx}}\,dx$

Optimal. Leaf size=74

$$\frac{2(a+bx)^{3/2}\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{5},\frac{3}{2};\frac{5}{2};-\frac{d(a+bx)}{bc-ad}\right)}{3b\sqrt[5]{c+dx}}$$

```
[Out] (2*(a + b*x)^(3/2)*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometr
ic2F1[1/5, 3/2, 5/2, -((d*(a + b*x))/(b*c - a*d))])/(3*b*(c + d*x
)^(1/5))
```

Rubi [A] time = 0.0840637, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2(a+bx)^{3/2}\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{5},\frac{3}{2};\frac{5}{2};-\frac{d(a+bx)}{bc-ad}\right)}{3b\sqrt[5]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(1/5),x]
```

```
[Out] (2*(a + b*x)^(3/2)*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometr
ic2F1[1/5, 3/2, 5/2, -((d*(a + b*x))/(b*c - a*d))])/(3*b*(c + d*x
)^(1/5))
```

Rubi in Sympy [A] time = 12.7144, size = 61, normalized size = 0.82

$$\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{4}{5}}\,{}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{4}{5}\\ \frac{9}{5}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{4d\sqrt{\frac{d(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(1/5),x)
```

```
[Out] 5*sqrt(a + b*x)*(c + d*x)**(4/5)*hyper((-1/2, 4/5), (9/5,), b*(-c
 - d*x)/(a*d - b*c))/(4*d*sqrt(d*(a + b*x)/(a*d - b*c)))
```

Mathematica [A] time = 0.214534, size = 77, normalized size = 1.04

$$\frac{5\sqrt{a+bx}(c+dx)^{4/5}\left(\frac{5\,{}_2F_1\left(\frac{1}{2},\frac{4}{5};\frac{9}{5};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+8\right)}{52d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(1/5),x]
```

```
[Out] (5*Sqrt[a + b*x]*(c + d*x)^(4/5)*(8 + (5*Hypergeometric2F1[1/2, 4
/5, 9/5, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) +
 a*d)]))/(52*d)
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\frac{1}{\sqrt[5]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(1/5),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(1/5),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/5),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/5), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{5}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/5),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)/(d*x + c)^(1/5), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a + bx}}{\sqrt[5]{c + dx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(1/5),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(1/5), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx + a}}{(dx + c)^{\frac{1}{5}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/5),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/5), x)
```

3.1734 $\int \frac{1}{\sqrt{a+bx}\sqrt[5]{c+dx}}\,dx$

Optimal. Leaf size=72

$$\frac{2\sqrt{a+bx}\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{5},\frac{1}{2};\frac{3}{2};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[5]{c+dx}}$$

```
[Out] (2*Sqrt[a + b*x]*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometric
2F1[1/5, 1/2, 3/2, -((d*(a + b*x))/(b*c - a*d))])/(b*(c + d*x)^(1
/5))
```

Rubi [A] time = 0.0843859, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2\sqrt{a+bx}\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{5},\frac{1}{2};\frac{3}{2};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[5]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(1/5)),x]
```

```
[Out] (2*Sqrt[a + b*x]*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometric
2F1[1/5, 1/2, 3/2, -((d*(a + b*x))/(b*c - a*d))])/(b*(c + d*x)^(1
/5))
```

Rubi in Sympy [A] time = 13.4989, size = 65, normalized size = 0.9

$$\frac{5\sqrt{a+bx}\,(c+dx)^{\frac{4}{5}}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},\frac{4}{5}\\ \frac{9}{5}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{4\sqrt{\frac{d(a+bx)}{ad-bc}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/5),x)
```

```
[Out] 5*sqrt(a + b*x)*(c + d*x)**(4/5)*hyper((1/2, 4/5), (9/5,), b*(-c
- d*x)/(a*d - b*c))/(4*sqrt(d*(a + b*x)/(a*d - b*c))*(a*d - b*c))
```

Mathematica [A] time = 0.0853798, size = 73, normalized size = 1.01

$$\frac{5(c+dx)^{4/5}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{4}{5};\frac{9}{5};\frac{b(c+dx)}{bc-ad}\right)}{4d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(1/5)),x]
```

```
[Out] (5*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(4/5)*Hypergeomet
ric2F1[1/2, 4/5, 9/5, (b*(c + d*x))/(b*c - a*d)])/(4*d*Sqrt[a + b
*x])
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt[5]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/5),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(1/5),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/5)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{5}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/5)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(1/5)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt[5]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/5),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(1/5)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/5)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1735 $\int \frac{1}{(a+bx)^{3/2}\sqrt[5]{c+dx}}\,dx$

Optimal. Leaf size=72

$$-\frac{2\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{2},\frac{1}{5};\frac{1}{2};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt{a+bx}\sqrt[5]{c+dx}}$$

```
[Out] (-2*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometric2F1[-1/2, 1/5
, 1/2, -((d*(a + b*x))/(b*c - a*d))])/(b*Sqrt[a + b*x]*(c + d*x)^
(1/5))
```

Rubi [A] time = 0.083009, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{2\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{2},\frac{1}{5};\frac{1}{2};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt{a+bx}\sqrt[5]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(1/5)),x]
```

```
[Out] (-2*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometric2F1[-1/2, 1/5
, 1/2, -((d*(a + b*x))/(b*c - a*d))])/(b*Sqrt[a + b*x]*(c + d*x)^
(1/5))
```

Rubi in Sympy [A] time = 13.9482, size = 68, normalized size = 0.94

$$\frac{5d\sqrt{a+bx}\,(c+dx)^{\frac{4}{5}}\,{}_2F_1\left(\begin{matrix}\frac{3}{2},\frac{4}{5}\\ \frac{9}{5}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{4\sqrt{\frac{d(a+bx)}{ad-bc}}\,(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/5),x)
```

```
[Out] 5*d*sqrt(a + b*x)*(c + d*x)**(4/5)*hyper((3/2, 4/5), (9/5,), b*(-
c - d*x)/(a*d - b*c))/(4*sqrt(d*(a + b*x)/(a*d - b*c))*(a*d - b*c
)**2)
```

Mathematica [A] time = 0.139928, size = 84, normalized size = 1.17

$$\frac{(c+dx)^{4/5}\left(3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{4}{5};\frac{9}{5};\frac{b(c+dx)}{bc-ad}\right)-8\right)}{4\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(1/5)),x]
```

```
[Out] ((c + d*x)^(4/5)*(-8 + 3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/2, 4/5, 9/5, (b*(c + d*x))/(b*c - a*d)]))/(4*(b*c
- a*d)*Sqrt[a + b*x])
```

Maple [F] time = 0.082, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\frac{1}{\sqrt[5]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(1/5),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(1/5),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/5)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{5}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/5)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(1/5)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\sqrt[5]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/5),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(1/5)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/5)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/5)), x)
```

3.1736 $\int \frac{1}{(a+bx)^{5/2}\sqrt[5]{c+dx}}\,dx$

Optimal. Leaf size=74

$$-\frac{2\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{3}{2},\frac{1}{5};-\frac{1}{2};-\frac{d(a+bx)}{bc-ad}\right)}{3b(a+bx)^{3/2}\sqrt[5]{c+dx}}$$

```
[Out] (-2*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometric2F1[-3/2, 1/5
, -1/2, -((d*(a + b*x))/(b*c - a*d))])/(3*b*(a + b*x)^(3/2)*(c +
d*x)^(1/5))
```

Rubi [A] time = 0.084057, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{2\sqrt[5]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{3}{2},\frac{1}{5};-\frac{1}{2};-\frac{d(a+bx)}{bc-ad}\right)}{3b(a+bx)^{3/2}\sqrt[5]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(1/5)),x]
```

```
[Out] (-2*((b*(c + d*x))/(b*c - a*d))^(1/5)*Hypergeometric2F1[-3/2, 1/5
, -1/2, -((d*(a + b*x))/(b*c - a*d))])/(3*b*(a + b*x)^(3/2)*(c +
d*x)^(1/5))
```

Rubi in Sympy [A] time = 14.5676, size = 70, normalized size = 0.95

$$\frac{5d^2\sqrt{a+bx}\,(c+dx)^{\frac{4}{5}}\,{}_2F_1\left(\begin{matrix}\frac{5}{2},\frac{4}{5}\\ \frac{9}{5}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{4\sqrt{\frac{d(a+bx)}{ad-bc}}\,(ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/5),x)
```

```
[Out] 5*d**2*sqrt(a + b*x)*(c + d*x)**(4/5)*hyper((5/2, 4/5), (9/5,), b
*(-c - d*x)/(a*d - b*c))/(4*sqrt(d*(a + b*x)/(a*d - b*c))*(a*d -
b*c)**3)
```

Mathematica [A] time = 0.279729, size = 105, normalized size = 1.42

$$\frac{(c+dx)^{4/5}\left(8(12ad-5bc+7bdx)-21d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{4}{5};\frac{9}{5};\frac{b(c+dx)}{bc-ad}\right)\right)}{60(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(1/5)),x]
```

```
[Out] ((c + d*x)^(4/5)*(8*(-5*b*c + 12*a*d + 7*b*d*x) - 21*d*(a + b*x)*
Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 4/5, 9/
5, (b*(c + d*x))/(b*c - a*d)]))/(60*(b*c - a*d)^2*(a + b*x)^(3/2)
)
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\frac{1}{\sqrt[5]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(1/5),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(1/5),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/5)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/5)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{1}{5}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/5)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(1/
5)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\sqrt[5]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/5),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(1/5)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{5}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/5)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/5)), x)
```

3.1737 $\int (a+bx)^{5/2}\sqrt[6]{c+dx}\,dx$

Optimal. Leaf size=487

$$-\frac{81\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{11/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-}{\sqrt[3]{bc-ad}-}\right.\right.}{2816bd^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$
$$+\frac{81\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}{1408bd^3}-\frac{9(a+bx)^{3/2}\sqrt[6]{c+dx}(bc-ad)^2}{352bd^2}$$
$$+\frac{3(a+bx)^{5/2}\sqrt[6]{c+dx}(bc-ad)}{176bd}+\frac{3(a+bx)^{7/2}\sqrt[6]{c+dx}}{11b}$$

```
[Out] (81*(b*c - a*d)^3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(1408*b*d^3) - (
9*(b*c - a*d)^2*(a + b*x)^(3/2)*(c + d*x)^(1/6))/(352*b*d^2) + (3
*(b*c - a*d)*(a + b*x)^(5/2)*(c + d*x)^(1/6))/(176*b*d) + (3*(a +
 b*x)^(7/2)*(c + d*x)^(1/6))/(11*b) - (81*3^(3/4)*(b*c - a*d)^(11
/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1
/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3)
- (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(2816*b*d
^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/
3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.08841, antiderivative size = 487, normalized size of antiderivative = 1., number of steps used = 6, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{81\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{11/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-}{\sqrt[3]{bc-ad}-}\right.\right.}{2816bd^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$
$$+\frac{81\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}{1408bd^3}-\frac{9(a+bx)^{3/2}\sqrt[6]{c+dx}(bc-ad)^2}{352bd^2}$$
$$+\frac{3(a+bx)^{5/2}\sqrt[6]{c+dx}(bc-ad)}{176bd}+\frac{3(a+bx)^{7/2}\sqrt[6]{c+dx}}{11b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)*(c + d*x)^(1/6),x]
```

```
[Out] (81*(b*c - a*d)^3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(1408*b*d^3) - (
9*(b*c - a*d)^2*(a + b*x)^(3/2)*(c + d*x)^(1/6))/(352*b*d^2) + (3
*(b*c - a*d)*(a + b*x)^(5/2)*(c + d*x)^(1/6))/(176*b*d) + (3*(a +
 b*x)^(7/2)*(c + d*x)^(1/6))/(11*b) - (81*3^(3/4)*(b*c - a*d)^(11
/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1
/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3)
- (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(2816*b*d
^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/
3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 53.7203, size = 422, normalized size = 0.87

$$\frac{3(a+bx)^{\frac{5}{2}}(c+dx)^{\frac{7}{6}}}{11d} + \frac{45(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{7}{6}}(ad-bc)}{176d^2} + \frac{81\sqrt{a+bx}(c+dx)^{\frac{7}{6}}(ad-bc)^2}{352d^3} + \frac{243\sqrt{a+bx}\sqrt[6]{c+dx}(ad-bc)^3}{1408bd^3} - \frac{81\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}(ad-bc)^{\frac{11}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+}}\right.\right.}{2816bd^4\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)*(d*x+c)**(1/6),x)
```

```
[Out] 3*(a + b*x)**(5/2)*(c + d*x)**(7/6)/(11*d) + 45*(a + b*x)**(3/2)*
(c + d*x)**(7/6)*(a*d - b*c)/(176*d**2) + 81*sqrt(a + b*x)*(c + d
*x)**(7/6)*(a*d - b*c)**2/(352*d**3) + 243*sqrt(a + b*x)*(c + d*x
)**(1/6)*(a*d - b*c)**3/(1408*b*d**3) - 81*3**(3/4)*sqrt((b**(2/3
)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
 + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
 (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(11/3)*(b*
*(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b*
*(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**
(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt
(3)/4 + 1/2)/(2816*b*d**4*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3
)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c
+ d*x)/d))
```

Mathematica [C] time = 0.353164, size = 181, normalized size = 0.37

$$-\frac{3\sqrt[6]{c+dx}\left(81(bc-ad)^4\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)\left(81a^3d^3+a^2bd^2(113c+356dx)+ab^2d\left(-93c^2+40cdx\right.\right.\right.}{1408bd^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)*(c + d*x)^(1/6),x]
```

```
[Out] (-3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(81*a^3*d^3 + a^2*b*d^2*(113*c
 + 356*d*x) + a*b^2*d*(-93*c^2 + 40*c*d*x + 376*d^2*x^2) + b^3*(2
7*c^3 - 12*c^2*d*x + 8*c*d^2*x^2 + 128*d^3*x^3))) + 81*(b*c - a*d
)^4*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/6, 1/2
, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(1408*b*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.072, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{2}}\sqrt[6]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)*(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(5/2)*(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/2)*(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}(dx+c)^{\frac{1}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(1/6),
 x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{5}{2}} \sqrt[6]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)*(d*x+c)**(1/6),x)
```

```
[Out] Integral((a + b*x)**(5/2)*(c + d*x)**(1/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)*(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)*(d*x + c)^(1/6), x)
```

3.1738 $\int (a+bx)^{3/2}\sqrt[6]{c+dx}\,dx$

Optimal. Leaf size=449

$$\frac{27\, 3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{8/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{640bd^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{320bd^2}+\frac{3(a+bx)^{3/2}\sqrt[6]{c+dx}(bc-ad)}{80bd}+\frac{3(a+bx)^{5/2}\sqrt[6]{c+dx}}{8b}$$

```
[Out] (-27*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(320*b*d^2) + (
3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/6))/(80*b*d) + (3*(a +
 b*x)^(5/2)*(c + d*x)^(1/6))/(8*b) + (27*3^(3/4)*(b*c - a*d)^(8/3
)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) -
(1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(640*b*d^3*
Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^
(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.763009, antiderivative size = 449, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{27\, 3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{8/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{640bd^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{320bd^2}+\frac{3(a+bx)^{3/2}\sqrt[6]{c+dx}(bc-ad)}{80bd}+\frac{3(a+bx)^{5/2}\sqrt[6]{c+dx}}{8b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(1/6),x]
```

```
[Out] (-27*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(320*b*d^2) + (
3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/6))/(80*b*d) + (3*(a +
 b*x)^(5/2)*(c + d*x)^(1/6))/(8*b) + (27*3^(3/4)*(b*c - a*d)^(8/3
)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*S
```

```
qrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3
) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) -
(1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(640*b*d^3*
Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^
(1/3)*(c + d*x)^(1/3))^2])
```

Rubi in Sympy [A] time = 40.9115, size = 389, normalized size = 0.87

$$\frac{3(a+bx)^{\frac{3}{2}}(c+dx)^{\frac{7}{6}}}{8d}+\frac{27\sqrt{a+bx}(c+dx)^{\frac{7}{6}}(ad-bc)}{80d^2}+\frac{81\sqrt{a+bx}\sqrt[6]{c+dx}(ad-bc)^2}{320bd^2} - \frac{27\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}(1+\sqrt{3})\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}(ad-bc)^{\frac{8}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}(-\sqrt{3}+1)\sqrt[3]{c+\cdots}}{\sqrt[3]{b}(1+\sqrt{3})\sqrt[3]{c+\cdots}}\right.\right.}{640bd^3\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}(1+\sqrt{3})\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(1/6),x)
```

```
[Out] 3*(a + b*x)**(3/2)*(c + d*x)**(7/6)/(8*d) + 27*sqrt(a + b*x)*(c +
 d*x)**(7/6)*(a*d - b*c)/(80*d**2) + 81*sqrt(a + b*x)*(c + d*x)**
(1/6)*(a*d - b*c)**2/(320*b*d**2) - 27*3**(3/4)*sqrt((b**(2/3)*(c
 + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (
a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(8/3)*(b**(1/3
)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3
)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)
*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4
 + 1/2)/(640*b*d**3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)
/d))
```

Mathematica [C] time = 0.267472, size = 142, normalized size = 0.32

$$-\frac{3\sqrt[6]{c+dx}\left(-d(a+bx)\left(27a^2d^2+2abd(11c+38dx)+b^2\left(-9c^2+4cdx+40d^2x^2\right)\right)-27(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c\cdots}{bc\cdots}\right.\right.}{320bd^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(1/6),x]
```

```
[Out] (-3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(27*a^2*d^2 + 2*a*b*d*(11*c +
38*d*x) + b^2*(-9*c^2 + 4*c*d*x + 40*d^2*x^2))) - 27*(b*c - a*d)^
3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/6, 1/2,
7/6, (b*(c + d*x))/(b*c - a*d)]))/(320*b*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} \sqrt[6]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(3/2)*(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{6}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)*(d*x + c)^(1/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^{\frac{3}{2}}\sqrt[6]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(1/6),x)
```

```
[Out] Integral((a + b*x)**(3/2)*(c + d*x)**(1/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(1/6), x)
```

3.1739 $\int \sqrt{a+bx}\sqrt[6]{c+dx}\,dx$

Optimal. Leaf size=411

$$-\frac{3\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{5/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1}{\sqrt[3]{bc-ad}-(1}\right.\right.}{40bd^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{20bd}+\frac{3(a+bx)^{3/2}\sqrt[6]{c+dx}}{5b}$$

```
[Out] (3*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(20*b*d) + (3*(a +
b*x)^(3/2)*(c + d*x)^(1/6))/(5*b) - (3*3^(3/4)*(b*c - a*d)^(5/3)*
(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqr
t[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3)
+ b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(
1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1
 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(40*b*d^2*Sqr
t[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.632897, antiderivative size = 411, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{3\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{5/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1}{\sqrt[3]{bc-ad}-(1}\right.\right.}{40bd^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{20bd}+\frac{3(a+bx)^{3/2}\sqrt[6]{c+dx}}{5b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(1/6),x]
```

```
[Out] (3*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(20*b*d) + (3*(a +
b*x)^(3/2)*(c + d*x)^(1/6))/(5*b) - (3*3^(3/4)*(b*c - a*d)^(5/3)*
(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqr
t[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3)
+ b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(
```

```
1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1
 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4]])/(40*b*d^2*Sqr
t[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 29.8642, size = 355, normalized size = 0.86

$$\frac{3\sqrt{a+bx}\,(c+dx)^{\frac{7}{6}}}{5d}+\frac{9\sqrt{a+bx}\sqrt[6]{c+dx}\,(ad-bc)}{20bd}-\frac{3\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}\sqrt[6]{c+dx}\,(ad-bc)^{\frac{5}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+d\ldots}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}\ldots}\right.\right.}{40bd^{2}\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(1/6),x)
```

```
[Out] 3*sqrt(a + b*x)*(c + d*x)**(7/6)/(5*d) + 9*sqrt(a + b*x)*(c + d*x
)**(1/6)*(a*d - b*c)/(20*b*d) - 3*3**(3/4)*sqrt((b**(2/3)*(c + d*
x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d -
 b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(5/3)*(b**(1/3)*(c
+ d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)*(-s
qrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 +
 sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/
2)/(40*b*d**2*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)*
*(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(
1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.19598, size = 109, normalized size = 0.27

$$\frac{3\sqrt[6]{c+dx}\left(d(a+bx)(3ad+b(c+4dx))-3(bc-ad)^{2}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{20bd^{2}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(1/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x)*(3*a*d + b*(c + 4*d*x)) - 3*(b*c
- a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/6
```

```
, 1/2, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(20*b*d^2*Sqrt[a + b*x])
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int \sqrt{bx+a}\,\sqrt[6]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(1/6),x)

[Out] int((b*x+a)^(1/2)*(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/6),x, algorithm="maxima")

[Out] integrate(sqrt(b*x + a)*(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}(dx+c)^{\frac{1}{6}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/6),x, algorithm="fricas")

[Out] integral(sqrt(b*x + a)*(d*x + c)^(1/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{a+bx}\,\sqrt[6]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(1/6),x)
```

```
[Out] Integral(sqrt(a + b*x)*(c + d*x)**(1/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(1/6), x)
```

3.1740 $\int \frac{\sqrt[6]{c+dx}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=375

$$\frac{3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{2/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\ldots}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\ldots}\right.\right.}{4bd\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}}{2b}$$

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(2*b) + (3^(3/4)*(b*c - a*d)^(2
/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1
/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3)
- (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(4*b*d*Sq
rt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.544646, antiderivative size = 375, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{2/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\ldots}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\ldots}\right.\right.}{4bd\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/6)/Sqrt[a + b*x],x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(2*b) + (3^(3/4)*(b*c - a*d)^(2
/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1
/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3)
```

```
- (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(4*b*d*Sq
rt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 20.8751, size = 321, normalized size = 0.86

$$\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}}{2b} - \frac{3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}} - \sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc} + (ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}\,(ad-bc)^{\frac{2}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}\right)\middle|\frac{\sqrt{3}}{4}+\frac{1}{2}\right)}{4bd\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/6)/(b*x+a)**(1/2),x)
```

```
[Out] 3*sqrt(a + b*x)*(c + d*x)**(1/6)/(2*b) - 3**(3/4)*sqrt((b**(2/3)*
(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) +
 (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (
a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(2/3)*(b**(1
/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1
/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/
3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)
/4 + 1/2)/(4*b*d*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)
)
```

Mathematica [C] time = 0.154368, size = 93, normalized size = 0.25

$$\frac{3\sqrt[6]{c+dx}\left((bc-ad)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{2bd\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/6)/Sqrt[a + b*x],x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x) + (b*c - a*d)*Sqrt[(d*(a + b*x))/
(-(b*c) + a*d)]*Hypergeometric2F1[1/6, 1/2, 7/6, (b*(c + d*x))/(b
```

```
*c - a*d)]))/(2*b*d*Sqrt[a + b*x])
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{dx+c}\,\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/6)/(b*x+a)^(1/2),x)

[Out] int((d*x+c)^(1/6)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/sqrt(b*x + a),x, algorithm="maxima")

[Out] integrate((d*x + c)^(1/6)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{6}}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/sqrt(b*x + a),x, algorithm="fricas")

[Out] integral((d*x + c)^(1/6)/sqrt(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{c+dx}}{\sqrt{a+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/6)/(b*x+a)**(1/2),x)
```

```
[Out] Integral((c + d*x)**(1/6)/sqrt(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/6)/sqrt(b*x + a), x)
```

3.1741 $\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=367

$$\frac{\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|\right.}{\sqrt[4]{3}b\sqrt{a+bx}\sqrt[3]{bc-ad}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[6]{c+dx}}{b\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(1/6))/(b*Sqrt[a + b*x]) + ((c + d*x)^(1/6)*((b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) +
b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/
3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2
]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c
+ d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x
)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*b*(b*c - a*d)^(1/3)*Sqrt[a
+ b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(
c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.531794, antiderivative size = 367, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)|\right.}{\sqrt[4]{3}b\sqrt{a+bx}\sqrt[3]{bc-ad}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[6]{c+dx}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/6)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*(c + d*x)^(1/6))/(b*Sqrt[a + b*x]) + ((c + d*x)^(1/6)*((b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) +
b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/
3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2
```

```
]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c
+ d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x
)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*b*(b*c - a*d)^(1/3)*Sqrt[a
+ b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(
c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 20.4576, size = 318, normalized size = 0.87

$$\frac{3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}\right)\middle|\frac{\sqrt{3}}{4}\right.}{3b\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[3]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

$$-\frac{2\sqrt[6]{c+dx}}{b\sqrt{a+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/6)/(b*x+a)**(3/2),x)
```

```
[Out] 3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1
/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(
3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(
b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((
b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b
**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sq
rt(3)/4 + 1/2)/(3*b*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(1/3)*sqrt(a -
b*c/d + b*(c + d*x)/d)) - 2*(c + d*x)**(1/6)/(b*sqrt(a + b*x))
```

Mathematica [C] time = 0.0883351, size = 74, normalized size = 0.2

$$\frac{2\sqrt[6]{c+dx}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/6)/(a + b*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(1/6)*(-1 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/6, 1/2, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(b*Sqrt[
```

```
a + b*x])
```

Maple [F] time = 0.078, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{dx+c}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/6)/(b*x+a)^(3/2),x)

[Out] int((d*x+c)^(1/6)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(3/2),x, algorithm="maxima")

[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(3/2),x, algorithm="fricas")

[Out] integral((d*x + c)^(1/6)/(b*x + a)^(3/2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/6)/(b*x+a)**(3/2),x)
```

```
[Out] Integral((c + d*x)**(1/6)/(a + b*x)**(3/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(3/2), x)
```

3.1742 $\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=409

$$-\frac{2d\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{9\sqrt[4]{3}b\sqrt{a+bx}(bc-ad)^{4/3}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2d\sqrt[6]{c+dx}}{9b\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt[6]{c+dx}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(1/6))/(3*b*(a + b*x)^(3/2)) - (2*d*(c + d*x)^(1/6)
)/(9*b*(b*c - a*d)*Sqrt[a + b*x]) - (2*d*(c + d*x)^(1/6)*((b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b
^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3
))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]
*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c +
 d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)
^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4)*b*(b*c - a*d)^(4/3)*Sqrt[a
 + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.657172, antiderivative size = 409, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{2d\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{9\sqrt[4]{3}b\sqrt{a+bx}(bc-ad)^{4/3}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2d\sqrt[6]{c+dx}}{9b\sqrt{a+bx}(bc-ad)}-\frac{2\sqrt[6]{c+dx}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/6)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*(c + d*x)^(1/6))/(3*b*(a + b*x)^(3/2)) - (2*d*(c + d*x)^(1/6)
)/(9*b*(b*c - a*d)*Sqrt[a + b*x]) - (2*d*(c + d*x)^(1/6)*((b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b
```

```
^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3
))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]
*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c +
 d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)
^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4)*b*(b*c - a*d)^(4/3)*Sqrt[a
 + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2])
```

Rubi in Sympy [A] time = 29.7129, size = 354, normalized size = 0.87

$$\frac{2\cdot 3^{\frac{3}{4}} d \sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}} - \sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc} + (ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right) F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}\right)\right)}{27b\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\,(ad-bc)^{\frac{4}{3}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}} + \frac{2d\sqrt[6]{c+dx}}{9b\sqrt{a+bx}\,(ad-bc)} - \frac{2\sqrt[6]{c+dx}}{3b\,(a+bx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/6)/(b*x+a)**(5/2),x)
```

```
[Out] 2*3**(3/4)*d*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)
**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + s
qrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/
6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(ac
os((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)))
, sqrt(3)/4 + 1/2)/(27*b*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)
*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(4/3)*sqrt
(a - b*c/d + b*(c + d*x)/d)) + 2*d*(c + d*x)**(1/6)/(9*b*sqrt(a +
 b*x)*(a*d - b*c)) - 2*(c + d*x)**(1/6)/(3*b*(a + b*x)**(3/2))
```

Mathematica [C] time = 0.205352, size = 104, normalized size = 0.25

$$\frac{2\sqrt[6]{c+dx}\left(2d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-2ad+3bc+bdx\right)}{9b(a+bx)^{3/2}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/6)/(a + b*x)^(5/2),x]
```

```
[Out] (2*(c + d*x)^(1/6)*(3*b*c - 2*a*d + b*d*x + 2*d*(a + b*x)*Sqrt[(d
*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/6, 1/2, 7/6, (b*(
c + d*x))/(b*c - a*d)]))/(9*b*(-(b*c) + a*d)*(a + b*x)^(3/2))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{dx+c}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d*x+c)^(1/6)/(b*x+a)^(5/2),x)
```

```
[Out] int((d*x+c)^(1/6)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(1/6)/(b*x + a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{6}}}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^(1/6)/(b*x + a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/6)/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)
), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{c + dx}}{(a + bx)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/6)/(b*x+a)**(5/2),x)
```

```
[Out] Integral((c + d*x)**(1/6)/(a + b*x)**(5/2), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx + c)^{\frac{1}{6}}}{(bx + a)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(5/2), x)
```

3.1743 $\int (a+bx)^{3/2}(c+dx)^{5/6}\,dx$

Optimal. Leaf size=896

$$-\frac{81\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\ldots}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\ldots}}\right.\right.}{448b^{5/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\ldots}{\sqrt[3]{bc-ad}-(1\ldots}\right.\right.}{896b^{5/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{81\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}{448b^{5/3}d^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{27\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)^2}{224bd^2}$$

$$+\frac{3(a+bx)^{3/2}(c+dx)^{5/6}(bc-ad)}{28bd}+\frac{3(a+bx)^{5/2}(c+dx)^{5/6}}{10b}$$

```
[Out] (-27*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(5/6))/(224*b*d^2) + (
3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(5/6))/(28*b*d) + (3*(a +
 b*x)^(5/2)*(c + d*x)^(5/6))/(10*b) - (81*(1 + Sqrt[3])*(b*c - a*
d)^3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(448*b^(5/3)*d^2*((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (81*3^(1/4)*(b
*c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)
*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) -
(1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c
- a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d
)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/
4])/(448*b^(5/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3
)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (27*3^(3/4)*(1
 - Sqrt[3])*(b*c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*
c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF
[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3
))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))],
(2 + Sqrt[3])/4])/(896*b^(5/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*
(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((
b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 2.13246, antiderivative size = 896, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{81\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{448b^{5/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1}{\sqrt[3]{bc-ad}-(1}\right.\right.}{896b^{5/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{81\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}{448b^{5/3}d^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{27\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)^2}{224bd^2}$$
$$+\frac{3(a+bx)^{3/2}(c+dx)^{5/6}(bc-ad)}{28bd}+\frac{3(a+bx)^{5/2}(c+dx)^{5/6}}{10b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)*(c + d*x)^(5/6),x]
```

```
[Out] (-27*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(5/6))/(224*b*d^2) + (
3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(5/6))/(28*b*d) + (3*(a +
 b*x)^(5/2)*(c + d*x)^(5/6))/(10*b) - (81*(1 + Sqrt[3])*(b*c - a*
d)^3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(448*b^(5/3)*d^2*((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (81*3^(1/4)*(b
*c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c
+ d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)
*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) -
(1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c
- a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d
)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/
4])/(448*b^(5/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3
)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (27*3^(3/4)*(1
 - Sqrt[3])*(b*c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*
c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF
[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3
))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))],
(2 + Sqrt[3])/4])/(896*b^(5/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*
(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((
b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 105.552, size = 794, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)*(d*x+c)**(5/6),x)
```

```
[Out] 3*(a + b*x)**(3/2)*(c + d*x)**(11/6)/(10*d) + 27*sqrt(a + b*x)*(c
 + d*x)**(11/6)*(a*d - b*c)/(140*d**2) + 81*sqrt(a + b*x)*(c + d*
x)**(5/6)*(a*d - b*c)**2/(1120*b*d**2) - (81/448 + 81*sqrt(3)/448
)*(c + d*x)**(1/6)*(a*d - b*c)**3*sqrt(a - b*c/d + b*(c + d*x)/d)
/(b**(5/3)*d**2*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d -
 b*c)**(1/3))) + 81*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b*
*(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/
(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2
)*(c + d*x)**(1/6)*(a*d - b*c)**(10/3)*(b**(1/3)*(c + d*x)**(1/3)
 + (a*d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c
+ d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(448*b**(5
/3)*d**3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3)
+ (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 27*3
**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/
3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3
))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c +
 d*x)**(1/6)*(a*d - b*c)**(10/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(896*b**(5/3)*d*
*3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a
*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d
 - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.296418, size = 142, normalized size = 0.16

$$-\frac{3(c+dx)^{5/6}\left(-d(a+bx)\left(27a^2d^2+2abd(65c+92dx)+b^2\left(-45c^2+40cdx+112d^2x^2\right)\right)-27(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\right.\right.}{1120bd^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)*(c + d*x)^(5/6),x]
```

```
[Out] (-3*(c + d*x)^(5/6)*(-(d*(a + b*x)*(27*a^2*d^2 + 2*a*b*d*(65*c +
92*d*x) + b^2*(-45*c^2 + 40*c*d*x + 112*d^2*x^2))) - 27*(b*c - a*
d)^3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5/
6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(1120*b*d^3*Sqrt[a + b*x])
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} (dx+c)^{\frac{5}{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)*(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(3/2)*(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{3}{2}} (dx+c)^{\frac{5}{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)*(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{3}{2}} (dx+c)^{\frac{5}{6}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)*(d*x + c)^(5/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)*(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)*(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1744 $\int \sqrt{a+bx}(c+dx)^{5/6}\,dx$

Optimal. Leaf size=858

$$\frac{45\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+a}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+a}}\right.\right.}{112b^{5/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{15\ 3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{224b^{5/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{45\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{112b^{5/3}d\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{15\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)}{56bd}+\frac{3(a+bx)^{3/2}(c+dx)^{5/6}}{7b}$$

```
[Out] (15*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(5/6))/(56*b*d) + (3*(a +
 b*x)^(3/2)*(c + d*x)^(5/6))/(7*b) + (45*(1 + Sqrt[3])*(b*c - a*d
)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(112*b^(5/3)*d*((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (45*3^(1/4)*(b*c
- a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*
d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/
(112*b^(5/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (15*3^(3/4)*(1 - S
qrt[3])*(b*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a
*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcC
os[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((
b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 +
Sqrt[3])/4])/(224*b^(5/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c +
d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.70399, antiderivative size = 858, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{45\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+a}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+a}}\right.\right.}{112b^{5/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{15\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{224b^{5/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{45\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{112b^{5/3}d\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{15\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)}{56bd}+\frac{3(a+bx)^{3/2}(c+dx)^{5/6}}{7b}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]*(c + d*x)^(5/6),x]
```

```
[Out] (15*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(5/6))/(56*b*d) + (3*(a +
 b*x)^(3/2)*(c + d*x)^(5/6))/(7*b) + (45*(1 + Sqrt[3])*(b*c - a*d
)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(112*b^(5/3)*d*((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (45*3^(1/4)*(b*c
- a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*
d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/
(112*b^(5/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (15*3^(3/4)*(1 - S
qrt[3])*(b*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^
(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a
*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcC
os[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((
b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 +
Sqrt[3])/4])/(224*b^(5/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c +
d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 85.1169, size = 758, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)*(d*x+c)**(5/6),x)
```

```
[Out] 3*sqrt(a + b*x)*(c + d*x)**(11/6)/(7*d) + 9*sqrt(a + b*x)*(c + d*
x)**(5/6)*(a*d - b*c)/(56*b*d) - (45/112 + 45*sqrt(3)/112)*(c + d
*x)**(1/6)*(a*d - b*c)**2*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(5/
3)*d*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3
))) + 45*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c +
 d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(
1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)
**(1/6)*(a*d - b*c)**(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*
c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1
/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(112*b**(5/3)*d**2*sqr
t(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 15*3**(3/4)*sqrt
((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*
c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)
*(a*d - b*c)**(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/
3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (
a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(224*b**(5/3)*d**2*sqrt(b**(1
/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1
/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3
))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.218833, size = 110, normalized size = 0.13

$$\frac{3(c+dx)^{5/6}\left(d(a+bx)(3ad+5bc+8bdx)-3(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{56bd^2\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]*(c + d*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(d*(a + b*x)*(5*b*c + 3*a*d + 8*b*d*x) - 3*(b*
c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1
/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(56*b*d^2*Sqrt[a + b*
x])
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int \sqrt{bx+a}\,(dx+c)^{\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)*(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(1/2)*(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt{bx+a}(dx+c)^{\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)*(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\sqrt{bx+a}(dx+c)^{\frac{5}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)*(d*x + c)^(5/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)*(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)*(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1745 $\int \frac{(c+dx)^{5/6}}{\sqrt{a+bx}}\,dx$

Optimal. Leaf size=817

$$-\frac{15\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{8b^{5/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{5\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{16b^{5/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{15\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{8b^{5/3}\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{3\sqrt{a+bx}(c+dx)^{5/6}}{4b}$$

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(5/6))/(4*b) - (15*(1 + Sqrt[3])*(b*c
- a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(8*b^(5/3)*((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (15*3^(1/4)*(b*c -
 a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x
)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c +
 d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d
)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(
8*b^(5/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (5*3^(3/4)*(1 - Sqrt[3]
)*(b*c - a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*
(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1
/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b
*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3
])/4])/(16*b^(5/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3
)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.44344, antiderivative size = 817, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{15\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{8b^{5/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{5\ 3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{16b^{5/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{15\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{8b^{5/3}\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{3\sqrt{a+bx}(c+dx)^{5/6}}{4b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/Sqrt[a + b*x],x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(5/6))/(4*b) - (15*(1 + Sqrt[3])*(b*c
- a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(8*b^(5/3)*((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (15*3^(1/4)*(b*c -
 a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x
)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c +
 d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d
)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(
8*b^(5/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c -
 a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (5*3^(3/4)*(1 - Sqrt[3]
)*(b*c - a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*
(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1
/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b
*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3
])/4])/(16*b^(5/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3
)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 66.6389, size = 721, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(1/2),x)
```

```
[Out] 3*sqrt(a + b*x)*(c + d*x)**(5/6)/(4*b) - (15/8 + 15*sqrt(3)/8)*(c
 + d*x)**(1/6)*(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(5
/3)*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)) + 15*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c +
d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1
 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)*
*(1/6)*(a*d - b*c)**(4/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/
3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3)
 + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(8*b**(5/3)*d*sqrt(b**(
1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(
1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/
3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 5*3**(3/4)*sqrt((b**(2
/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/
3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3)
 + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(a*d -
 b*c)**(4/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*ell
iptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))), sqrt(3)/4 + 1/2)/(16*b**(5/3)*d*sqrt(b**(1/3)*(c + d*
x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1
/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt
(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.160231, size = 93, normalized size = 0.11

$$\frac{3(c+dx)^{5/6}\left((bc-ad)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{4bd\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/Sqrt[a + b*x],x]
```

```
[Out] (3*(c + d*x)^(5/6)*(d*(a + b*x) + (b*c - a*d)*Sqrt[(d*(a + b*x))/
(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(
b*c - a*d)]))/(4*b*d*Sqrt[a + b*x])
```

Maple [F] time = 0.037, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\frac{1}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(1/2),x)
```

```
[Out] int((d*x+c)^(5/6)/(b*x+a)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{\sqrt{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/sqrt(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/6)/sqrt(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{6}}}{\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/sqrt(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/6)/sqrt(b*x + a), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(1/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/sqrt(b*x + a),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1746 $\int \frac{(c+dx)^{5/6}}{(a+bx)^{3/2}}\,dx$

Optimal. Leaf size=798

$$-\frac{5\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d}{b^{5/3}\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{5\sqrt[4]{3}\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\ldots}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\ldots}\right.\right.}{b^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{5\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-a\ldots}}{\sqrt[3]{bc-a\ldots}}\right.\right.}{2\sqrt[4]{3}b^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2(c+dx)^{5/6}}{b\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(5/6))/(b*Sqrt[a + b*x]) - (5*(1 + Sqrt[3])*d*Sqrt[
a + b*x]*(c + d*x)^(1/6))/(b^(5/3)*((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))) - (5*3^(1/4)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[(
(b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b
^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 -
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[
3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(b^(5/3)*Sqrt[a
+ b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(
c + d*x)^(1/3))^2)]) - (5*(1 - Sqrt[3])*(b*c - a*d)^(1/3)*(c + d*
x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c
 - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/
3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c
 + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*
b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(2*3^(1/4)*b^(5/3)*S
qrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(
1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.40826, antiderivative size = 798, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{5\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d}{b^{5/3}\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$
$$-\frac{5\sqrt[4]{3}\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)}\right.\right.}{b^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$
$$-\frac{5\left(1-\sqrt{3}\right)\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}}{\sqrt[3]{bc-ad}}\right.\right.}{2\sqrt[4]{3}b^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$
$$-\frac{2(c+dx)^{5/6}}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/(a + b*x)^(3/2),x]
```

```
[Out] (-2*(c + d*x)^(5/6))/(b*Sqrt[a + b*x]) - (5*(1 + Sqrt[3])*d*Sqrt[
a + b*x]*(c + d*x)^(1/6))/(b^(5/3)*((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))) - (5*3^(1/4)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[(
(b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b
^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 -
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[
3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(b^(5/3)*Sqrt[a
+ b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/
3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(
c + d*x)^(1/3))^2)]) - (5*(1 - Sqrt[3])*(b*c - a*d)^(1/3)*(c + d*
x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c
 - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/
3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c
 + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*
b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(2*3^(1/4)*b^(5/3)*S
qrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(
1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 65.0025, size = 706, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(3/2),x)
```

```
[Out] -2*(c + d*x)**(5/6)/(b*sqrt(a + b*x)) + d*(5 + 5*sqrt(3))*(c + d*
x)**(1/6)*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(5/3)*(b**(1/3)*(1
+ sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))) - 5*3**(1/4)*s
qrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d -
 b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)
**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic
_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**
(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1
/3))), sqrt(3)/4 + 1/2)/(b**(5/3)*sqrt(b**(1/3)*(c + d*x)**(1/3)*
(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + s
qrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d
 + b*(c + d*x)/d)) - 5*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) -
 b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3
))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))
**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(a*d - b*c)**(1/3)*(b**(1/3)
*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)
*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*
(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4
+ 1/2)/(6*b**(5/3)*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c +
d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/
d))
```

Mathematica [C] time = 0.0993128, size = 74, normalized size = 0.09

$$\frac{2(c+dx)^{5/6}\left(\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/(a + b*x)^(3/2),x]
```

```
[Out] (2*(c + d*x)^(5/6)*(-1 + Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyper
geometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(b*Sqrt
[a + b*x])
```

Maple [F] time = 0.132, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\,(bx+a)^{-\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(3/2),x)

[Out] int((d*x+c)^(5/6)/(b*x+a)^(3/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(3/2),x, algorithm="maxima")

[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(3/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(3/2),x, algorithm="fricas")

[Out] integral((d*x + c)^(5/6)/(b*x + a)^(3/2), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(3/2), x)
```

3.1747 $\int \frac{(c+dx)^{5/6}}{(a+bx)^{5/2}}\,dx$

Optimal. Leaf size=854

$$-\frac{10\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}\,d^2}{9b^{5/3}(bc-ad)\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{10\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|\frac{2+\sqrt{3}}{4}\right)d}{3\,3^{3/4}b^{5/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{5\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|\frac{2+\sqrt{3}}{4}\right)d}{9\sqrt[4]{3}b^{5/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{10(c+dx)^{5/6}d}{9b(bc-ad)\sqrt{a+bx}}-\frac{2(c+dx)^{5/6}}{3b(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(5/6))/(3*b*(a + b*x)^(3/2)) - (10*d*(c + d*x)^(5/6
))/(9*b*(b*c - a*d)*Sqrt[a + b*x]) - (10*(1 + Sqrt[3])*d^2*Sqrt[a
 + b*x]*(c + d*x)^(1/6))/(9*b^(5/3)*(b*c - a*d)*((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (10*d*(c + d*x)^(1/
6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d
)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c
+ d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x
)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3*3^(3/4)*b^(5/3)*(b*c -
a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (5*(1 - Sqrt[3])*d*(c +
d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b
*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(
2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4)*b^(5/3)
*(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*
((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.63174, antiderivative size = 854, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{10\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d^2}{9b^{5/3}(bc-ad)\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{10\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{3\,3^{3/4}b^{5/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{5\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{}}\right.\right.}{9\sqrt[4]{3}b^{5/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{10(c+dx)^{5/6}d}{9b(bc-ad)\sqrt{a+bx}}-\frac{2(c+dx)^{5/6}}{3b(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/(a + b*x)^(5/2),x]


[Out] (-2*(c + d*x)^(5/6))/(3*b*(a + b*x)^(3/2)) - (10*d*(c + d*x)^(5/6
))/(9*b*(b*c - a*d)*Sqrt[a + b*x]) - (10*(1 + Sqrt[3])*d^2*Sqrt[a
 + b*x]*(c + d*x)^(1/6))/(9*b^(5/3)*(b*c - a*d)*((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (10*d*(c + d*x)^(1/
6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d
)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c
+ d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x
)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3*3^(3/4)*b^(5/3)*(b*c -
a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (5*(1 - Sqrt[3])*d*(c +
d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b
*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(
2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4)*b^(5/3)
*(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*
((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 82.4518, size = 755, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(5/2),x)
```

```
[Out] 10*d*(c + d*x)**(5/6)/(9*b*sqrt(a + b*x)*(a*d - b*c)) - 2*(c + d*
x)**(5/6)/(3*b*(a + b*x)**(3/2)) - d**2*(10/9 + 10*sqrt(3)/9)*(c
+ d*x)**(1/6)*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(5/3)*(a*d - b*
c)*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))
) + 10*3**(1/4)*d*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c +
 d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(
1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)
**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic
_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**
(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1
/3))), sqrt(3)/4 + 1/2)/(9*b**(5/3)*sqrt(b**(1/3)*(c + d*x)**(1/3
)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 +
 sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)*
*(2/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 5*3**(3/4)*d*sqrt((b**(
2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1
/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(b**(
1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(
1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1
/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3
)/4 + 1/2)/(27*b**(5/3)*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(2/3)*sqrt(
a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.239232, size = 105, normalized size = 0.12

$$-\frac{2(c+dx)^{5/6}\left(-2d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+2ad+3bc+5bdx\right)}{9b(a+bx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/(a + b*x)^(5/2),x]
```

```
[Out] (-2*(c + d*x)^(5/6)*(3*b*c + 2*a*d + 5*b*d*x - 2*d*(a + b*x)*Sqrt
[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5/6, 11/6,
(b*(c + d*x))/(b*c - a*d)]))/(9*b*(b*c - a*d)*(a + b*x)^(3/2))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\,(bx+a)^{-\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(5/2),x)

[Out] int((d*x+c)^(5/6)/(b*x+a)^(5/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(5/2),x, algorithm="maxima")

[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(5/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{6}}}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(5/2),x, algorithm="fricas")

[Out] integral((d*x + c)^(5/6)/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(5/2), x)
```

3.1748 $\int \frac{(c+dx)^{5/6}}{(a+bx)^{7/2}}\,dx$

Optimal. Leaf size=896

$$\frac{8\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d^3}{27b^{5/3}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$+\frac{8\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{9\,3^{3/4}b^{5/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{4\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{\cdots}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{\cdots}}\right.\right.}{27\sqrt[4]{3}b^{5/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{8(c+dx)^{5/6}d^2}{27b(bc-ad)^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/6}d}{9b(bc-ad)(a+bx)^{3/2}}-\frac{2(c+dx)^{5/6}}{5b(a+bx)^{5/2}}$$

```
[Out] (-2*(c + d*x)^(5/6))/(5*b*(a + b*x)^(5/2)) - (2*d*(c + d*x)^(5/6)
)/(9*b*(b*c - a*d)*(a + b*x)^(3/2)) + (8*d^2*(c + d*x)^(5/6))/(27
*b*(b*c - a*d)^2*Sqrt[a + b*x]) + (8*(1 + Sqrt[3])*d^3*Sqrt[a + b
*x]*(c + d*x)^(1/6))/(27*b^(5/3)*(b*c - a*d)^2*((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (8*d^2*(c + d*x)^(1/
6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d
)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c
+ d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x
)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(3/4)*b^(5/3)*(b*c -
a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (4*(1 - Sqrt[3])*d^2*(c
+ d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[(
(b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b
^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 -
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[
3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(27*3^(1/4)*b^(5
/3)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/
3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.87069, antiderivative size = 896, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$\frac{8\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d^3}{27b^{5/3}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$+\frac{8\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.\cdots}{9\,3^{3/4}b^{5/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{4\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\cdots}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\cdots}\right.\right.\cdots}{27\sqrt[4]{3}b^{5/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{8(c+dx)^{5/6}d^2}{27b(bc-ad)^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/6}d}{9b(bc-ad)(a+bx)^{3/2}}-\frac{2(c+dx)^{5/6}}{5b(a+bx)^{5/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(5/6))/(5*b*(a + b*x)^(5/2)) - (2*d*(c + d*x)^(5/6)
)/(9*b*(b*c - a*d)*(a + b*x)^(3/2)) + (8*d^2*(c + d*x)^(5/6))/(27
*b*(b*c - a*d)^2*Sqrt[a + b*x]) + (8*(1 + Sqrt[3])*d^3*Sqrt[a + b
*x]*(c + d*x)^(1/6))/(27*b^(5/3)*(b*c - a*d)^2*((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (8*d^2*(c + d*x)^(1/
6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d
)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c
+ d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x
)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4]]/(9*3^(3/4)*b^(5/3)*(b*c -
a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c -
a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (4*(1 - Sqrt[3])*d^2*(c
+ d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[(
(b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b
^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3
)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 -
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[
3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(27*3^(1/4)*b^(5
/3)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/
3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 104.021, size = 794, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(7/2),x)
```

```
[Out] 8*d**2*(c + d*x)**(5/6)/(27*b*sqrt(a + b*x)*(a*d - b*c)**2) + 2*d
*(c + d*x)**(5/6)/(9*b*(a + b*x)**(3/2)*(a*d - b*c)) - 2*(c + d*x
)**(5/6)/(5*b*(a + b*x)**(5/2)) - d**3*(8/27 + 8*sqrt(3)/27)*(c +
 d*x)**(1/6)*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(5/3)*(a*d - b*c
)**2*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3
))) + 8*3**(1/4)*d**2*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*
(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/
3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c +
d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elli
ptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*
c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)
**(1/3))), sqrt(3)/4 + 1/2)/(27*b**(5/3)*sqrt(b**(1/3)*(c + d*x)*
*(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)
*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d -
b*c)**(5/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 4*3**(3/4)*d**2*sq
rt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d -
b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/
6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(ac
os((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)))
, sqrt(3)/4 + 1/2)/(81*b**(5/3)*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b
**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqr
t(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(5/
3)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.326907, size = 140, normalized size = 0.16

$$-\frac{2(c+dx)^{5/6}\left(-8a^2d^2+8d^2(a+bx)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-abd(39c+55dx)+b^2\left(27c^2+15cdx-20d^2x^2\right)\right)}{135b(a+bx)^{5/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/(a + b*x)^(7/2),x]
```

```
[Out] (-2*(c + d*x)^(5/6)*(-8*a^2*d^2 - a*b*d*(39*c + 55*d*x) + b^2*(27
*c^2 + 15*c*d*x - 20*d^2*x^2) + 8*d^2*(a + b*x)^2*Sqrt[(d*(a + b*
x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x
))/(b*c - a*d)]))/(135*b*(b*c - a*d)^2*(a + b*x)^(5/2))
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\,(bx+a)^{-\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(7/2),x)

[Out] int((d*x+c)^(5/6)/(b*x+a)^(7/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(7/2),x, algorithm="maxima")

[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(7/2), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{6}}}{(b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3)\sqrt{bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(7/2),x, algorithm="fricas")

[Out] integral((d*x + c)^(5/6)/((b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^
3)*sqrt(b*x + a)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.837715, size = 1, normalized size = 0.

$$\mathit{Done}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(7/2),x, algorithm="giac")
```

```
[Out] Done
```

3.1749 $\int \frac{(a+bx)^{5/2}}{\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=890

$$\frac{243\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{448b^{2/3}d^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{81\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{896b^{2/3}d^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{243\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}{448b^{2/3}d^3\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{81\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)^2}{224d^3}$$

$$-\frac{9(a+bx)^{3/2}(c+dx)^{5/6}(bc-ad)}{28d^2}+\frac{3(a+bx)^{5/2}(c+dx)^{5/6}}{10d}$$

```
[Out] (81*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(5/6))/(224*d^3) - (9*(
b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(5/6))/(28*d^2) + (3*(a + b*
x)^(5/2)*(c + d*x)^(5/6))/(10*d) + (243*(1 + Sqrt[3])*(b*c - a*d)
^3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(448*b^(2/3)*d^3*((b*c - a*d)^(
1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (243*3^(1/4)*(b*
c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*
(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c -
 a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4
])/(448*b^(2/3)*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (81*3^(3/4)*(1
- Sqrt[3])*(b*c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c
 - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[
ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3)
)/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (
2 + Sqrt[3])/4])/(896*b^(2/3)*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(
c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b
*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 2.06235, antiderivative size = 890, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{243\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\cdots}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\cdots}}\right.\right.}{448b^{2/3}d^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{81\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\cdots\right.}{\sqrt[3]{bc-ad}-\left(1+\cdots\right.}\right.\right.}{896b^{2/3}d^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{243\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}{448b^{2/3}d^3\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{81\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)^2}{224d^3}$$

$$-\frac{9(a+bx)^{3/2}(c+dx)^{5/6}(bc-ad)}{28d^2}+\frac{3(a+bx)^{5/2}(c+dx)^{5/6}}{10d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(1/6),x]
```

```
[Out] (81*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(5/6))/(224*d^3) - (9*(
b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(5/6))/(28*d^2) + (3*(a + b*
x)^(5/2)*(c + d*x)^(5/6))/(10*d) + (243*(1 + Sqrt[3])*(b*c - a*d)
^3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(448*b^(2/3)*d^3*((b*c - a*d)^(
1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (243*3^(1/4)*(b*
c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*
(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c -
 a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4
])/(448*b^(2/3)*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (81*3^(3/4)*(1
- Sqrt[3])*(b*c - a*d)^(10/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c
 - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[
ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3)
)/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (
2 + Sqrt[3])/4])/(896*b^(2/3)*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(
c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b
*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 105.235, size = 792, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(1/6),x)
```

```
[Out] 3*(a + b*x)**(5/2)*(c + d*x)**(5/6)/(10*d) + 9*(a + b*x)**(3/2)*(
c + d*x)**(5/6)*(a*d - b*c)/(28*d**2) + 81*sqrt(a + b*x)*(c + d*x
)**(5/6)*(a*d - b*c)**2/(224*d**3) + (243/448 + 243*sqrt(3)/448)*
(c + d*x)**(1/6)*(a*d - b*c)**3*sqrt(a - b*c/d + b*(c + d*x)/d)/(
b**(2/3)*d**3*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))) - 243*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**
(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(
b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)
*(c + d*x)**(1/6)*(a*d - b*c)**(10/3)*(b**(1/3)*(c + d*x)**(1/3)
+ (a*d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(448*b**(2/
3)*d**4*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3)
 + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
 (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 81*3*
*(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3
)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3)
)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c +
d*x)**(1/6)*(a*d - b*c)**(10/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d
 - b*c)**(1/3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x
)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)*
*(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(896*b**(2/3)*d**
4*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d
- b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.297344, size = 138, normalized size = 0.16

$$\frac{3(c+dx)^{5/6}\left(d(a+bx)\left(367a^2d^2+2abd(172dx-195c)+b^2\left(135c^2-120cdx+112d^2x^2\right)\right)-81(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\right.\right.}{1120d^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(1/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(d*(a + b*x)*(367*a^2*d^2 + 2*a*b*d*(-195*c +
172*d*x) + b^2*(135*c^2 - 120*c*d*x + 112*d^2*x^2)) - 81*(b*c - a
*d)^3*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5
/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(1120*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.045, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{\frac{5}{2}}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(1/6),x)

[Out] int((b*x+a)^(5/2)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(bx+a\right)^{\frac{5}{2}}}{\left(dx+c\right)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(1/6),x, algorithm="maxima")

[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{\left(dx+c\right)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(1/6),x, algorithm="fricas")

[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/(d*x + c)^(1/6),
 x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+bx\right)^{\frac{5}{2}}}{\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(1/6),x)
```

```
[Out] Integral((a + b*x)**(5/2)/(c + d*x)**(1/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(1/6), x)
```

3.1750 $\int \frac{(a+bx)^{3/2}}{\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=855

$$-\frac{81\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\cdots}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\cdots}}\right.\right.}{112b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{224b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{81\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{112b^{2/3}d^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{27\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)}{56d^2}+\frac{3(a+bx)^{3/2}(c+dx)^{5/6}}{7d}$$

```
[Out] (-27*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(5/6))/(56*d^2) + (3*(a
+ b*x)^(3/2)*(c + d*x)^(5/6))/(7*d) - (81*(1 + Sqrt[3])*(b*c - a*
d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(112*b^(2/3)*d^2*((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (81*3^(1/4)*(b
*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*
(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c -
 a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4
])/(112*b^(2/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (27*3^(3/4)*(1
- Sqrt[3])*(b*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c
- a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a
*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[A
rcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))
/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2
 + Sqrt[3])/4])/(224*b^(2/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c
 + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*
c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.75054, antiderivative size = 855, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{81\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{112b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\ 3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1}{\sqrt[3]{bc-ad}-(1}\right.\right.}{224b^{2/3}d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{81\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{112b^{2/3}d^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{27\sqrt{a+bx}(c+dx)^{5/6}(bc-ad)}{56d^2}+\frac{3(a+bx)^{3/2}(c+dx)^{5/6}}{7d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(1/6),x]
```

```
[Out] (-27*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(5/6))/(56*d^2) + (3*(a
+ b*x)^(3/2)*(c + d*x)^(5/6))/(7*d) - (81*(1 + Sqrt[3])*(b*c - a*
d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(112*b^(2/3)*d^2*((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (81*3^(1/4)*(b
*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c +
 d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*
(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c -
 a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4
])/(112*b^(2/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (27*3^(3/4)*(1
- Sqrt[3])*(b*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) -
 b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c
- a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a
*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[A
rcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))
/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2
 + Sqrt[3])/4])/(224*b^(2/3)*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c
 + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*
c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 84.8632, size = 760, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(1/6),x)
```

```
[Out] 3*(a + b*x)**(3/2)*(c + d*x)**(5/6)/(7*d) + 27*sqrt(a + b*x)*(c +
 d*x)**(5/6)*(a*d - b*c)/(56*d**2) + (81/112 + 81*sqrt(3)/112)*(c
 + d*x)**(1/6)*(a*d - b*c)**2*sqrt(a - b*c/d + b*(c + d*x)/d)/(b*
*(2/3)*d**2*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))) - 81*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/
3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**
(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c
 + d*x)**(1/6)*(a*d - b*c)**(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a
*d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x
)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(112*b**(2/3)*d
**3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (
a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 27*3**(3/
4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a
*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)
**(1/6)*(a*d - b*c)**(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*
c)**(1/3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1
/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(224*b**(2/3)*d**3*sqr
t(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.214092, size = 108, normalized size = 0.13

$$\frac{3(c+dx)^{5/6}\left(27(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+5d(a+bx)(17ad-9bc+8bdx)\right)}{280d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(1/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(5*d*(a + b*x)*(-9*b*c + 17*a*d + 8*b*d*x) + 2
7*(b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric
2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(280*d^3*Sqrt[a
+ b*x])
```

Maple [F] time = 0.038, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(1/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(1/6),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(1/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(1/6),x, algorithm="giac")

[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(1/6), x)
```

3.1751 $\int \frac{\sqrt{a+bx}}{\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=820

$$\frac{9\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{8b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\right.}{\sqrt[3]{bc-ad}-\left(1+\right.}\right.\right.}{16b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{9\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{8b^{2/3}d\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{3\sqrt{a+bx}(c+dx)^{5/6}}{4d}$$

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(5/6))/(4*d) + (9*(1 + Sqrt[3])*(b*c -
 a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(8*b^(2/3)*d*((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (9*3^(1/4)*(b*c -
 a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x
)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c +
 d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d
)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(
8*b^(2/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c
 - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1
 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (3*3^(3/4)*(1 - Sqrt[
3])*(b*c - a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3
)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^
(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[(
(b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c
- a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt
[3])/4])/(16*b^(2/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^
(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.49737, antiderivative size = 820, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{9\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{8b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{16b^{2/3}d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{9\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{8b^{2/3}d\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{3\sqrt{a+bx}(c+dx)^{5/6}}{4d}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(1/6),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(5/6))/(4*d) + (9*(1 + Sqrt[3])*(b*c -
 a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(8*b^(2/3)*d*((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (9*3^(1/4)*(b*c -
 a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x
)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c +
 d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d
)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(
8*b^(2/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c
 - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1
 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (3*3^(3/4)*(1 - Sqrt[
3])*(b*c - a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3
)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^
(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/
3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[(
(b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c
- a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt
[3])/4])/(16*b^(2/3)*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^
(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)
^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 66.8865, size = 726, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(1/6),x)
```

```
[Out] 3*sqrt(a + b*x)*(c + d*x)**(5/6)/(4*d) + (9/8 + 9*sqrt(3)/8)*(c +
 d*x)**(1/6)*(a*d - b*c)*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(2/3
)*d*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)) - 9*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d
*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1
+ sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**
(1/6)*(a*d - b*c)**(4/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)
**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3)
+ (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(8*b**(2/3)*d**2*sqrt(b*
*(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)*
*(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(
1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 3*3**(3/4)*sqrt((b**
(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(
1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/
3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(a*d
 - b*c)**(4/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*e
lliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d -
 b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))), sqrt(3)/4 + 1/2)/(16*b**(2/3)*d**2*sqrt(b**(1/3)*(c
 + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(
b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)
*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.180663, size = 77, normalized size = 0.09

$$\frac{3\sqrt{a+bx}(c+dx)^{5/6}\left(\frac{3\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+5\right)}{20d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(1/6),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(5/6)*(5 + (3*Hypergeometric2F1[1/2, 5
/6, 11/6, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c)
+ a*d)]))/(20*d)
```

Maple [F] time = 0.033, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)/(d*x + c)^(1/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(1/6),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(1/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(1/6), x)
```

3.1752 $\int \frac{1}{\sqrt{a+bx}\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=780

$$-\frac{3\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}}{b^{2/3}\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-}}{\sqrt[3]{bc-}}\right.\right.}{2b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{3\sqrt[4]{3}\sqrt[6]{c+dx}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)}\right.\right.}{b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

```
[Out] (-3*(1 + Sqrt[3])*Sqrt[a + b*x]*(c + d*x)^(1/6))/(b^(2/3)*((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (3*3^(1/4
)*(b*c - a*d)^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*
(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1
/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b
*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3
])/4])/(b^(2/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*(
(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (3^(3/4)*(1 - Sqr
t[3])*(b*c - a*d)^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d
)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(
1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos
[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*
c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sq
rt[3])/4])/(2*b^(2/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(
1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^
(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.23567, antiderivative size = 780, normalized size of antiderivative = 1., number of

steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.21$

$$-\frac{3\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}}{b^{2/3}\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)} - \frac{3^{3/4}\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-}}{\sqrt[3]{bc-}}\right.\right.}{2b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}} - \frac{3\sqrt[4]{3}\sqrt[6]{c+dx}\sqrt[3]{bc-ad}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)}\right.\right.}{b^{2/3}d\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(1/6)),x]
```

```
[Out] (-3*(1 + Sqrt[3])*Sqrt[a + b*x]*(c + d*x)^(1/6))/(b^(2/3)*((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (3*3^(1/4
)*(b*c - a*d)^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*
(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1
/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b
*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3
])/4])/(b^(2/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*(
(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (3^(3/4)*(1 - Sqr
t[3])*(b*c - a*d)^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d
)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(
1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos
[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*
c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sq
rt[3])/4])/(2*b^(2/3)*d*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(
1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^
(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 50.9204, size = 685, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/6),x)
```

```
[Out] (3 + 3*sqrt(3))*(c + d*x)**(1/6)*sqrt(a - b*c/d + b*(c + d*x)/d)/
(b**(2/3)*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)*
*(1/3))) - 3*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*
(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/
3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c +
d*x)**(1/6)*(a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d
- b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**
(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(b**(2/3)*d*sqrt(b
**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)
**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**
(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 3**(3/4)*sqrt((b**(
2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1
/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(a*d
- b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*el
liptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d -
b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*
c)**(1/3))), sqrt(3)/4 + 1/2)/(2*b**(2/3)*d*sqrt(b**(1/3)*(c + d*
x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1
/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt
(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.0650253, size = 73, normalized size = 0.09

$$\frac{6(c+dx)^{5/6}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{5d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(1/6)),x]
```

```
[Out] (6*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(5/6)*Hypergeomet
ric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])/(5*d*Sqrt[a +
b*x])
```

Maple [F] time = 0.06, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(1/6),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{1}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/6)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(1/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(1/6),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(1/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(1/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1753 $\int \frac{1}{(a+bx)^{3/2}\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=813

$$-\frac{2\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}\,d}{b^{2/3}(bc-ad)\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{2\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|\frac{1}{4}\left(2+\sqrt{3}\right)\right)}{b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\middle|\frac{1}{4}\left(2+\sqrt{3}\right)\right)}{\sqrt[4]{3}\,b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2(c+dx)^{5/6}}{(bc-ad)\sqrt{a+bx}}$$

```
[Out] (-2*(c + d*x)^(5/6))/((b*c - a*d)*Sqrt[a + b*x]) - (2*(1 + Sqrt[3
])*d*Sqrt[a + b*x]*(c + d*x)^(1/6))/(b^(2/3)*(b*c - a*d)*((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (2*3^(1/4)
*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sq
rt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3)
 + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^
(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (
1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + S
qrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(b^(2/3)*(b*
c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*
c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - ((1 - Sqrt[3])*(c +
d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b
*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(
2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*b^(2/3)*(
b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.43699, antiderivative size = 813, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{2\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d}{b^{2/3}(bc-ad)\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}-\frac{2\sqrt[4]{3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}-\frac{\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}}\right.\right.}{\sqrt[4]{3}b^{2/3}(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}-\frac{2(c+dx)^{5/6}}{(bc-ad)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(1/6)),x]
```

```
[Out] (-2*(c + d*x)^(5/6))/((b*c - a*d)*Sqrt[a + b*x]) - (2*(1 + Sqrt[3
])*d*Sqrt[a + b*x]*(c + d*x)^(1/6))/(b^(2/3)*(b*c - a*d)*((b*c -
a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (2*3^(1/4)
*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sq
rt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3)
 + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^
(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (
1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + S
qrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(b^(2/3)*(b*
c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*
c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - ((1 - Sqrt[3])*(c +
d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b
*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(
2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*b^(2/3)*(
b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 66.2415, size = 716, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/6),x)
```

```
[Out] 2*(c + d*x)**(5/6)/(sqrt(a + b*x)*(a*d - b*c)) - 2*d*(1 + sqrt(3)
)*(c + d*x)**(1/6)*sqrt(a - b*c/d + b*(c + d*x)/d)/(b**(2/3)*(a*d
 - b*c)*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(
1/3))) + 2*3**(1/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c
 + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)
*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*
x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*ellipt
ic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)
**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**
(1/3))), sqrt(3)/4 + 1/2)/(b**(2/3)*sqrt(b**(1/3)*(c + d*x)**(1/3
)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 +
 sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)*
*(2/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 3**(3/4)*sqrt((b**(2/3)
*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
+ (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
(a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(b**(1/3)
*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)
*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*
(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4
+ 1/2)/(3*b**(2/3)*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c +
d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(2/3)*sqrt(a - b
*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.109148, size = 84, normalized size = 0.1

$$\frac{2(c+dx)^{5/6}\left(2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-5\right)}{5\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(1/6)),x]
```

```
[Out] (2*(c + d*x)^(5/6)*(-5 + 2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyp
ergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(5*(b
*c - a*d)*Sqrt[a + b*x])
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{-\frac{3}{2}} \frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(1/6),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(bx+a\right)^{\frac{3}{2}}\left(dx+c\right)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{\left(bx+a\right)^{\frac{3}{2}}\left(dx+c\right)^{\frac{1}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(1/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(a+bx\right)^{\frac{3}{2}}\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(1/6),x)

[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(1/6)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/6)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(1/6)), x)
```

3.1754 $\int \frac{1}{(a+bx)^{5/2}\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=858

$$\frac{8\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}\,d^2}{9b^{2/3}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{8\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{3\,3^{3/4}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{4\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{}}\right.\right.}{9\sqrt[4]{3}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}+\frac{8(c+dx)^{5/6}d}{9(bc-ad)^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/6}}{3(bc-ad)(a+bx)^{3/2}}$$

```
[Out] (-2*(c + d*x)^(5/6))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (8*d*(c +
d*x)^(5/6))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) + (8*(1 + Sqrt[3])*d^
2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(9*b^(2/3)*(b*c - a*d)^2*((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (8*d*(c +
 d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((
b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^
(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)
*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 - S
qrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3
])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3*3^(3/4)*b^(2/3
)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (4*(1 - Sqrt[3]
)*d*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1
/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3)
- (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4
)*b^(2/3)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*
x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a
*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.62407, antiderivative size = 858, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{8\left(1+\sqrt{3}\right)\sqrt{a+bx}\sqrt[6]{c+dx}d^2}{9b^{2/3}(bc-ad)^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$
$$+\frac{8\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{3\,3^{3/4}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$
$$+\frac{4\left(1-\sqrt{3}\right)\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{}}\right.\right.}{9\sqrt[4]{3}b^{2/3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$
$$+\frac{8(c+dx)^{5/6}d}{9(bc-ad)^2\sqrt{a+bx}}-\frac{2(c+dx)^{5/6}}{3(bc-ad)(a+bx)^{3/2}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(1/6)),x]
```

```
[Out] (-2*(c + d*x)^(5/6))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (8*d*(c +
d*x)^(5/6))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) + (8*(1 + Sqrt[3])*d^
2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(9*b^(2/3)*(b*c - a*d)^2*((b*c -
 a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (8*d*(c +
 d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((
b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^
(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)
*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 - S
qrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3
])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3*3^(3/4)*b^(2/3
)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)
*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3
) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (4*(1 - Sqrt[3]
)*d*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))
*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1
/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3)
- (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4
)*b^(2/3)*(b*c - a*d)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*
x)^(1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a
*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 84.1818, size = 765, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/6),x)
```

```
[Out] 8*d*(c + d*x)**(5/6)/(9*sqrt(a + b*x)*(a*d - b*c)**2) + 2*(c + d*
x)**(5/6)/(3*(a + b*x)**(3/2)*(a*d - b*c)) - 2*d**2*(4/3 + 4*sqrt
(3)/3)*(c + d*x)**(1/6)*sqrt(a - b*c/d + b*(c + d*x)/d)/(3*b**(2/
3)*(a*d - b*c)**2*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d
 - b*c)**(1/3))) + 8*3**(1/4)*d*sqrt((b**(2/3)*(c + d*x)**(2/3) -
 b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3
))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))
**2)*(c + d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(
1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) +
 (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (
a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(9*b**(2/3)*sqrt(b**(1/3)*(
c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/
(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2
)*(a*d - b*c)**(5/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) + 4*3**(3/4
)*d*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(
a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x
)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*ellipti
c_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)*
*(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(
1/3))), sqrt(3)/4 + 1/2)/(27*b**(2/3)*sqrt(b**(1/3)*(c + d*x)**(1
/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1
 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c
)**(5/3)*sqrt(a - b*c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.217443, size = 105, normalized size = 0.12

$$-\frac{2(c+dx)^{5/6}\left(8d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-5(7ad-3bc+4bdx)\right)}{45(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(1/6)),x]
```

```
[Out] (-2*(c + d*x)^(5/6)*(-5*(-3*b*c + 7*a*d + 4*b*d*x) + 8*d*(a + b*x
)*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5/6,
11/6, (b*(c + d*x))/(b*c - a*d)]))/(45*(b*c - a*d)^2*(a + b*x)^(3
/2))
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(1/6),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(1/
6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\,\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(1/6),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(1/6)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(1/6)), x)
```

3.1755 $\int \frac{(a+bx)^{5/2}}{(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=440

$$-\frac{81\, 3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{8/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(}{\sqrt[3]{bc-ad}-(}\right.\right.}{128d^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{81\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{64d^3}-\frac{9(a+bx)^{3/2}\sqrt[6]{c+dx}(bc-ad)}{16d^2}+\frac{3(a+bx)^{5/2}\sqrt[6]{c+dx}}{8d}$$

```
[Out] (81*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(64*d^3) - (9*(b
*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/6))/(16*d^2) + (3*(a + b*x
)^(5/2)*(c + d*x)^(1/6))/(8*d) - (81*3^(3/4)*(b*c - a*d)^(8/3)*(c
 + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[
((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) +
b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 -
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(128*d^4*Sqrt[a
 + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.773243, antiderivative size = 440, normalized size of antiderivative = 1., number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$-\frac{81\, 3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{8/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(}{\sqrt[3]{bc-ad}-(}\right.\right.}{128d^4\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{81\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}{64d^3}-\frac{9(a+bx)^{3/2}\sqrt[6]{c+dx}(bc-ad)}{16d^2}+\frac{3(a+bx)^{5/2}\sqrt[6]{c+dx}}{8d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(5/6),x]
```

```
[Out] (81*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(64*d^3) - (9*(b
*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/6))/(16*d^2) + (3*(a + b*x
)^(5/2)*(c + d*x)^(1/6))/(8*d) - (81*3^(3/4)*(b*c - a*d)^(8/3)*(c
```

```
 + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[
((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) +
b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 -
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(128*d^4*Sqrt[a
 + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b^(1
/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*
(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 38.5319, size = 386, normalized size = 0.88

$$\frac{3(a+bx)^{\frac{5}{2}}\sqrt[6]{c+dx}}{8d}+\frac{9(a+bx)^{\frac{3}{2}}\sqrt[6]{c+dx}\,(ad-bc)}{16d^2}+\frac{81\sqrt{a+bx}\sqrt[6]{c+dx}\,(ad-bc)^2}{64d^3}+\frac{81\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}\,(ad-bc)^{\frac{8}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\dots}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\dots}\right)\dots\right)}{128d^4\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(5/6),x)
```

```
[Out] 3*(a + b*x)**(5/2)*(c + d*x)**(1/6)/(8*d) + 9*(a + b*x)**(3/2)*(c
 + d*x)**(1/6)*(a*d - b*c)/(16*d**2) + 81*sqrt(a + b*x)*(c + d*x)
**(1/6)*(a*d - b*c)**2/(64*d**3) + 81*3**(3/4)*sqrt((b**(2/3)*(c
+ d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a
*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d
 - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(8/3)*(b**(1/3)
*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)
*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*
(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4
+ 1/2)/(128*d**4*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)
)
```

Mathematica [C] time = 0.281593, size = 138, normalized size = 0.31

$$\frac{3\sqrt[6]{c+dx}\left(d(a+bx)\left(47a^2d^2+2abd(14dx-33c)+b^2\left(27c^2-12cdx+8d^2x^2\right)\right)-81(bc-ad)^3\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)\dots\right)}{64d^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x)*(47*a^2*d^2 + 2*a*b*d*(-33*c + 14
*d*x) + b^2*(27*c^2 - 12*c*d*x + 8*d^2*x^2)) - 81*(b*c - a*d)^3*S
qrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/6, 1/2, 7/6
, (b*(c + d*x))/(b*c - a*d)]))/(64*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{2}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(5/2)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/(d*x + c)^(5/6),
 x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{5}{2}}}{(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(5/6),x)
```

```
[Out] Integral((a + b*x)**(5/2)/(c + d*x)**(5/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(5/6), x)
```

3.1756 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=405

$$\frac{27\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{5/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{40d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{20d^2}+\frac{3(a+bx)^{3/2}\sqrt[6]{c+dx}}{5d}$$

```
[Out] (-27*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(20*d^2) + (3*(a
+ b*x)^(3/2)*(c + d*x)^(1/6))/(5*d) + (27*3^(3/4)*(b*c - a*d)^(5/
3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*
Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/
3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*
b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) -
 (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(40*d^3*Sq
rt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.648686, antiderivative size = 405, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{27\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{5/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{40d^3\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{27\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}{20d^2}+\frac{3(a+bx)^{3/2}\sqrt[6]{c+dx}}{5d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(5/6),x]
```

```
[Out] (-27*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))/(20*d^2) + (3*(a
+ b*x)^(3/2)*(c + d*x)^(1/6))/(5*d) + (27*3^(3/4)*(b*c - a*d)^(5/
3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*
Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/
```

```
3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*
b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) -
 (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(40*d^3*Sq
rt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) -
b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 28.7852, size = 354, normalized size = 0.87

$$\frac{3(a+bx)^{\frac{3}{2}}\sqrt[6]{c+dx}}{5d}+\frac{27\sqrt{a+bx}\sqrt[6]{c+dx}\,(ad-bc)}{20d^2}+\frac{27\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}\,(ad-bc)^{\frac{5}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+a}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+d}}\right.\right.}{40d^3\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(5/6),x)
```

```
[Out] 3*(a + b*x)**(3/2)*(c + d*x)**(1/6)/(5*d) + 27*sqrt(a + b*x)*(c +
 d*x)**(1/6)*(a*d - b*c)/(20*d**2) + 27*3**(3/4)*sqrt((b**(2/3)*(
c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) +
(a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a
*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(5/3)*(b**(1/
3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/
3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3
)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/
4 + 1/2)/(40*d**3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x
)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d
))
```

Mathematica [C] time = 0.175934, size = 107, normalized size = 0.26

$$\frac{3\sqrt[6]{c+dx}\left(27(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(13ad-9bc+4bdx)\right)}{20d^3\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x)*(-9*b*c + 13*a*d + 4*b*d*x) + 27*
(b*c - a*d)^2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F
1[1/6, 1/2, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(20*d^3*Sqrt[a + b*
x])
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(5/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(5/6),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(5/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(5/6), x)
```

3.1757 $\int \frac{\sqrt{a+bx}}{(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=372

$$\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}}{2d}-\frac{3\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{2/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{4d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(2*d) - (3*3^(3/4)*(b*c - a*d)^
(2/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^
(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3
])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3
) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(4*d^2*
Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^
(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.538651, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}}{2d}-\frac{3\,3^{3/4}\sqrt[6]{c+dx}(bc-ad)^{2/3}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1\cdots}{\sqrt[3]{bc-ad}-(1\cdots}\right.\right.}{4d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(5/6),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(1/6))/(2*d) - (3*3^(3/4)*(b*c - a*d)^
(2/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^
(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3
])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3
```

```
) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(4*d^2*
Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3)
- b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^
(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 20.055, size = 323, normalized size = 0.87

$$\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}}{2d}+\frac{3\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}\sqrt[6]{c+dx}\,(ad-bc)^{\frac{2}{3}}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}\right)\middle|\frac{\sqrt{3}}{4}+\frac{1}{2}\right)}{4d^{2}\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(5/6),x)
```

```
[Out] 3*sqrt(a + b*x)*(c + d*x)**(1/6)/(2*d) + 3*3**(3/4)*sqrt((b**(2/3
)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3)
 + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
 (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(2/3)*(b**
(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**
(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(
1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(
3)/4 + 1/2)/(4*d**2*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)
/d))
```

Mathematica [C] time = 0.152822, size = 77, normalized size = 0.21

$$\frac{3\sqrt{a+bx}\sqrt[6]{c+dx}\left(\frac{3\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+1\right)}{2d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(5/6),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(1/6)*(1 + (3*Hypergeometric2F1[1/6, 1
/2, 7/6, (b*(c + d*x))/(b*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) +
```

```
a*d)]))/(2*d)
```

Maple [F] time = 0.042, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(5/6),x)

[Out] int((b*x+a)^(1/2)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/6),x, algorithm="maxima")

[Out] integrate(sqrt(b*x + a)/(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/6),x, algorithm="fricas")

[Out] integral(sqrt(b*x + a)/(d*x + c)^(5/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(5/6),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(5/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(5/6), x)
```

3.1758 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=343

$$\frac{3^{3/4}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right)}{d\sqrt{a+bx}\sqrt[3]{bc-ad}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

```
[Out] (3^(3/4)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(
1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*
x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(
1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d*(
b*c - a*d)^(1/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.41919, antiderivative size = 343, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{3^{3/4}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right)}{d\sqrt{a+bx}\sqrt[3]{bc-ad}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(5/6)),x]
```


```
[Out] (3^(3/4)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(
1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*
x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(
1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d*(
b*c - a*d)^(1/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((
b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 13.2263, size = 296, normalized size = 0.86

$$\frac{3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[6]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}\right)\middle|\cdots\right)}{d\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^2}}\sqrt[3]{ad-bc}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(5/6),x)
```

```
[Out] 3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1
/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(
3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(
b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((
b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b
**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sq
rt(3)/4 + 1/2)/(d*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x
)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(1/3)*sqrt(a - b*
c/d + b*(c + d*x)/d))
```

Mathematica [C] time = 0.054463, size = 71, normalized size = 0.21

$$\frac{6\sqrt[6]{c+dx}\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{d\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(5/6)),x]
```

```
[Out] (6*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d*x)^(1/6)*Hypergeomet
ric2F1[1/6, 1/2, 7/6, (b*(c + d*x))/(b*c - a*d)])/(d*Sqrt[a + b*x
])
```

Maple [F] time = 0.065, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(5/6),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/6)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(5/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(5/6),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(5/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(5/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1759 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=372

$$-\frac{2\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{\sqrt[4]{3}\sqrt{a+bx}(bc-ad)^{4/3}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[6]{c+dx}}{\sqrt{a+bx}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(1/6))/((b*c - a*d)*Sqrt[a + b*x]) - (2*(c + d*x)^(
1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a
*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(
c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d
*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*(b*c - a*d)^(4/
3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/
3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.532043, antiderivative size = 372, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$

$$-\frac{2\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right)\right.}{\sqrt[4]{3}\sqrt{a+bx}(bc-ad)^{4/3}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2\sqrt[6]{c+dx}}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(5/6)),x]
```

```
[Out] (-2*(c + d*x)^(1/6))/((b*c - a*d)*Sqrt[a + b*x]) - (2*(c + d*x)^(
1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a
*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(
c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d
*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])
```

```
*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*(b*c - a*d)^(4/
3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/
3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 20.8287, size = 323, normalized size = 0.87

$$\frac{2\cdot 3^{\frac{3}{4}}\sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}\sqrt[6]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}}\right.\right.}{3\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}(ad-bc)^{\frac{4}{3}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

$$+\frac{2\sqrt[6]{c+dx}}{\sqrt{a+bx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(5/6),x)
```

```
[Out] 2*3**(3/4)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**
(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqr
t(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)
*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos
((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/
(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))),
sqrt(3)/4 + 1/2)/(3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c +
 d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(4/3)*sqrt(a -
b*c/d + b*(c + d*x)/d)) + 2*(c + d*x)**(1/6)/(sqrt(a + b*x)*(a*d
- b*c))
```

Mathematica [C] time = 0.108004, size = 82, normalized size = 0.22

$$-\frac{2\sqrt[6]{c+dx}\left(2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+1\right)}{\sqrt{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(5/6)),x]
```

```
[Out] (-2*(c + d*x)^(1/6)*(1 + 2*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*Hyp
ergeometric2F1[1/6, 1/2, 7/6, (b*(c + d*x))/(b*c - a*d)]))/((b*c
```

```
- a*d)*Sqrt[a + b*x])
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{3}{2}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(5/6),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(3/2)*(d*x + c)^(5/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(5/6),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(5/6)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(5/6)), x)
```

3.1760 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=410

$$\frac{16d\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{9\sqrt[4]{3}\sqrt{a+bx}(bc-ad)^{7/3}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{16d\sqrt[6]{c+dx}}{9\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt[6]{c+dx}}{3(a+bx)^{3/2}(bc-ad)}$$

```
[Out] (-2*(c + d*x)^(1/6))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (16*d*(c +
 d*x)^(1/6))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) + (16*d*(c + d*x)^(1
/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*
d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c
 + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*
x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*
b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4)*(b*c - a*d)^(7
/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1
/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 0.621258, antiderivative size = 410, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158

$$\frac{16d\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+(bc-ad)^{2/3}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}}\right.\right.}{9\sqrt[4]{3}\sqrt{a+bx}(bc-ad)^{7/3}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{16d\sqrt[6]{c+dx}}{9\sqrt{a+bx}(bc-ad)^2}-\frac{2\sqrt[6]{c+dx}}{3(a+bx)^{3/2}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(5/6)),x]
```

```
[Out] (-2*(c + d*x)^(1/6))/(3*(b*c - a*d)*(a + b*x)^(3/2)) + (16*d*(c +
 d*x)^(1/6))/(9*(b*c - a*d)^2*Sqrt[a + b*x]) + (16*d*(c + d*x)^(1
/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*
d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c
```

```
 + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*
x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*
b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^(1/4)*(b*c - a*d)^(7
/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1
/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 29.6919, size = 357, normalized size = 0.87

$$\frac{16\cdot 3^{\frac{3}{4}} d \sqrt{\frac{b^{\frac{2}{3}}(c+dx)^{\frac{2}{3}}-\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{ad-bc}+(ad-bc)^{\frac{2}{3}}}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}\sqrt[6]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)F\left(\operatorname{acos}\left(\frac{\sqrt[3]{b}\left(-\sqrt{3}+1\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-b\cdots}}{\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-b\cdots}}\right.\right.}{27\sqrt{\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{b}\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)}{\left(\sqrt[3]{b}\left(1+\sqrt{3}\right)\sqrt[3]{c+dx}+\sqrt[3]{ad-bc}\right)^{2}}}(ad-bc)^{\frac{7}{3}}\sqrt{a-\frac{bc}{d}+\frac{b(c+dx)}{d}}}$$

$$+\frac{16d\sqrt[6]{c+dx}}{9\sqrt{a+bx}\,(ad-bc)^{2}}+\frac{2\sqrt[6]{c+dx}}{3\,(a+bx)^{\frac{3}{2}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(5/6),x)
```

```
[Out] 16*3**(3/4)*d*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x
)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 +
sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1
/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(a
cos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3
))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))
), sqrt(3)/4 + 1/2)/(27*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(7/3)*sqrt(
a - b*c/d + b*(c + d*x)/d)) + 16*d*(c + d*x)**(1/6)/(9*sqrt(a + b
*x)*(a*d - b*c)**2) + 2*(c + d*x)**(1/6)/(3*(a + b*x)**(3/2)*(a*d
 - b*c))
```

Mathematica [C] time = 0.203622, size = 102, normalized size = 0.25

$$\frac{2\sqrt[6]{c+dx}\left(16d(a+bx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{2};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+11ad-3bc+8bdx\right)}{9(a+bx)^{3/2}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(5/6)),x]
```

```
[Out] (2*(c + d*x)^(1/6)*(-3*b*c + 11*a*d + 8*b*d*x + 16*d*(a + b*x)*Sq
rt[(d*(a + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/6, 1/2, 7/6,
 (b*(c + d*x))/(b*c - a*d)]))/(9*(b*c - a*d)^2*(a + b*x)^(3/2))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{2}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(5/6),x)
```

```
[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(b^2x^2+2\,abx+a^2)\sqrt{bx+a}(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)*(d*x + c)^(5/
6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{2}}\,(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(5/6),x)
```

```
[Out] Integral(1/((a + b*x)**(5/2)*(c + d*x)**(5/6)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{2}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(5/6)), x)
```

3.1761 $\int \frac{(a+bx)^{5/2}}{(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=880

$$-\frac{6(a+bx)^{5/2}}{d\sqrt[6]{c+dx}}+\frac{45b(c+dx)^{5/6}(a+bx)^{3/2}}{7d^2}-\frac{405b(bc-ad)(c+dx)^{5/6}\sqrt{a+bx}}{56d^3}$$
$$-\frac{1215\left(1+\sqrt{3}\right)\sqrt[3]{b}(bc-ad)^2\sqrt[6]{c+dx}\sqrt{a+bx}}{112d^3\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$
$$-\frac{1215\sqrt[4]{3}\sqrt[3]{b}(bc-ad)^{7/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-}}{\sqrt[3]{bc-}}\right.\right.}{112d^4\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$
$$-\frac{405\ 3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}(bc-ad)^{7/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-}\right.}{224d^4\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$

```
[Out] (-6*(a + b*x)^(5/2))/(d*(c + d*x)^(1/6)) - (405*b*(b*c - a*d)*Sqr
t[a + b*x]*(c + d*x)^(5/6))/(56*d^3) + (45*b*(a + b*x)^(3/2)*(c +
 d*x)^(5/6))/(7*d^2) - (1215*(1 + Sqrt[3])*b^(1/3)*(b*c - a*d)^2*
Sqrt[a + b*x]*(c + d*x)^(1/6))/(112*d^3*((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (1215*3^(1/4)*b^(1/3)*(b*c
- a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*
d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/
(112*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*
d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (405*3^(3/4)*(1 - Sqrt[3])
*b^(1/3)*(b*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c -
a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d
)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[Arc
Cos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/(
(b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 +
 Sqrt[3])/4])/(224*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1
/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(
1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.95626, antiderivative size = 880, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{6(a+bx)^{5/2}}{d\sqrt[6]{c+dx}}+\frac{45b(c+dx)^{5/6}(a+bx)^{3/2}}{7d^2}-\frac{405b(bc-ad)(c+dx)^{5/6}\sqrt{a+bx}}{56d^3}$$
$$-\frac{1215\left(1+\sqrt{3}\right)\sqrt[3]{b}(bc-ad)^2\sqrt[6]{c+dx}\sqrt{a+bx}}{112d^3\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$
$$-\frac{1215\sqrt[4]{3}\sqrt[3]{b}(bc-ad)^{7/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-\cdots}}{\sqrt[3]{bc-\cdots}}\right.\right.}{112d^4\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$
$$-\frac{405\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}(bc-ad)^{7/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{\cdots}\right.}{224d^4\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/2)/(c + d*x)^(7/6),x]
```

```
[Out] (-6*(a + b*x)^(5/2))/(d*(c + d*x)^(1/6)) - (405*b*(b*c - a*d)*Sqr
t[a + b*x]*(c + d*x)^(5/6))/(56*d^3) + (45*b*(a + b*x)^(3/2)*(c +
 d*x)^(5/6))/(7*d^2) - (1215*(1 + Sqrt[3])*b^(1/3)*(b*c - a*d)^2*
Sqrt[a + b*x]*(c + d*x)^(1/6))/(112*d^3*((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (1215*3^(1/4)*b^(1/3)*(b*c
- a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*
d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/
(112*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*
d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) - (405*3^(3/4)*(1 - Sqrt[3])
*b^(1/3)*(b*c - a*d)^(7/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c -
a*d)^(1/3)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d
)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[Arc
Cos[((b*c - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/(
(b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 +
 Sqrt[3])/4])/(224*d^4*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1
/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(
1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 102.835, size = 785, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/2)/(d*x+c)**(7/6),x)
```

```
[Out] b**(1/3)*(1215/112 + 1215*sqrt(3)/112)*(c + d*x)**(1/6)*(a*d - b*
c)**2*sqrt(a - b*c/d + b*(c + d*x)/d)/(d**3*(b**(1/3)*(1 + sqrt(3
))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))) - 1215*3**(1/4)*b**(1/
3)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a
*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d -
b*c)**(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elli
ptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*
c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)
**(1/3))), sqrt(3)/4 + 1/2)/(112*d**4*sqrt(b**(1/3)*(c + d*x)**(1
/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1
 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b
*c/d + b*(c + d*x)/d)) - 405*3**(3/4)*b**(1/3)*sqrt((b**(2/3)*(c
+ d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a
*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d
 - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(a*d - b*c)**
(7/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f
(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1
/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3
))), sqrt(3)/4 + 1/2)/(224*d**4*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b
**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqr
t(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d +
 b*(c + d*x)/d)) + 45*b*(a + b*x)**(3/2)*(c + d*x)**(5/6)/(7*d**2
) + 405*b*sqrt(a + b*x)*(c + d*x)**(5/6)*(a*d - b*c)/(56*d**3) -
6*(a + b*x)**(5/2)/(d*(c + d*x)**(1/6))
```

Mathematica [C] time = 0.326707, size = 132, normalized size = 0.15

$$\frac{3(c+dx)^{5/6}\left(d(a+bx)\left(-\frac{112(bc-ad)^2}{c+dx}+b(31ad-23bc)+8b^2dx\right)+81b(bc-ad)^2\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{56d^4\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/2)/(c + d*x)^(7/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(d*(a + b*x)*(b*(-23*b*c + 31*a*d) + 8*b^2*d*x
 - (112*(b*c - a*d)^2)/(c + d*x)) + 81*b*(b*c - a*d)^2*Sqrt[(d*(a
 + b*x))/(-(b*c) + a*d)]*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c
+ d*x))/(b*c - a*d)]))/(56*d^4*Sqrt[a + b*x])
```

Maple [F] time = 0.085, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{\frac{5}{2}}\left(dx+c\right)^{-\frac{7}{6}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/2)/(d*x+c)^(7/6),x)

[Out] int((b*x+a)^(5/2)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(bx+a\right)^{\frac{5}{2}}}{\left(dx+c\right)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(7/6),x, algorithm="maxima")

[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(b^2x^2+2\,abx+a^2\right)\sqrt{bx+a}}{\left(dx+c\right)^{\frac{7}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(7/6),x, algorithm="fricas")

[Out] integral((b^2*x^2 + 2*a*b*x + a^2)*sqrt(b*x + a)/(d*x + c)^(7/6),
 x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\left(a+bx\right)^{\frac{5}{2}}}{\left(c+dx\right)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/2)/(d*x+c)**(7/6),x)
```

```
[Out] Integral((a + b*x)**(5/2)/(c + d*x)**(7/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{2}}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/2)/(d*x + c)^(7/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/2)/(d*x + c)^(7/6), x)
```

3.1762 $\int \frac{(a+bx)^{3/2}}{(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=844

$$-\frac{6(a+bx)^{3/2}}{d\sqrt[6]{c+dx}}+\frac{27b(c+dx)^{5/6}\sqrt{a+bx}}{4d^2}+\frac{81\left(1+\sqrt{3}\right)\sqrt[3]{b}(bc-ad)\sqrt[6]{c+dx}\sqrt{a+bx}}{8d^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}+\frac{81\sqrt[4]{3}\sqrt[3]{b}(bc-ad)^{4/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\ldots}{\sqrt[3]{bc-ad}-\ldots}\right.\right.}{8d^3\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}+\frac{27\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}(bc-ad)^{4/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\ldots\right.}{16d^3\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$

```
[Out] (-6*(a + b*x)^(3/2))/(d*(c + d*x)^(1/6)) + (27*b*Sqrt[a + b*x]*(c
 + d*x)^(5/6))/(4*d^2) + (81*(1 + Sqrt[3])*b^(1/3)*(b*c - a*d)*Sq
rt[a + b*x]*(c + d*x)^(1/6))/(8*d^2*((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))) + (81*3^(1/4)*b^(1/3)*(b*c - a*d)
^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/
3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)
^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[
3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/
3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) -
(1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(8*d^3
*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))^2)]) + (27*3^(3/4)*(1 - Sqrt[3])*b^(1/3)*
(b*c - a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c
 + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3
)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c
 - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*
d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])
/4])/(16*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c
- a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.6579, antiderivative size = 844, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 6, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.316$

$$-\frac{6(a+bx)^{3/2}}{d\sqrt[6]{c+dx}}+\frac{27b(c+dx)^{5/6}\sqrt{a+bx}}{4d^2}+\frac{81\left(1+\sqrt{3}\right)\sqrt[3]{b}(bc-ad)\sqrt[6]{c+dx}\sqrt{a+bx}}{8d^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$
$$+\frac{81\sqrt[4]{3}\sqrt[3]{b}(bc-ad)^{4/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-}{\sqrt[3]{bc-ad}-}\right.\right.}{8d^3\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$
$$+\frac{27\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}(bc-ad)^{4/3}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\right.}{16d^3\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(3/2)/(c + d*x)^(7/6),x]
```

```
[Out] (-6*(a + b*x)^(3/2))/(d*(c + d*x)^(1/6)) + (27*b*Sqrt[a + b*x]*(c
 + d*x)^(5/6))/(4*d^2) + (81*(1 + Sqrt[3])*b^(1/3)*(b*c - a*d)*Sq
rt[a + b*x]*(c + d*x)^(1/6))/(8*d^2*((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))) + (81*3^(1/4)*b^(1/3)*(b*c - a*d)
^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/
3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)
^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[
3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/
3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) -
(1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(8*d^3
*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3)
 - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b
^(1/3)*(c + d*x)^(1/3))^2)]) + (27*3^(3/4)*(1 - Sqrt[3])*b^(1/3)*
(b*c - a*d)^(4/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c
 + d*x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3
)*(c + d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c
 - a*d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*
d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])
/4])/(16*d^3*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c
- a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1
+ Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 83.6657, size = 751, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(3/2)/(d*x+c)**(7/6),x)
```

```
[Out] b**(1/3)*(81/8 + 81*sqrt(3)/8)*(c + d*x)**(1/6)*(a*d - b*c)*sqrt(
a - b*c/d + b*(c + d*x)/d)/(d**2*(b**(1/3)*(1 + sqrt(3))*(c + d*x
)**(1/3) + (a*d - b*c)**(1/3))) - 81*3**(1/4)*b**(1/3)*sqrt((b**(
2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1
/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(a*d - b*c)**(4/3)*(
b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_e(acos((
b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b
**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sq
rt(3)/4 + 1/2)/(8*d**3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c
+ d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d
*x)/d)) - 27*3**(3/4)*b**(1/3)*sqrt((b**(2/3)*(c + d*x)**(2/3) -
b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3)
)/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*
*2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(a*d - b*c)**(4/3)*(b**(1/3)*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)*
(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(
1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 +
 1/2)/(16*d**3*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**
(1/3) + (a*d - b*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d))
+ 27*b*sqrt(a + b*x)*(c + d*x)**(5/6)/(4*d**2) - 6*(a + b*x)**(3/
2)/(d*(c + d*x)**(1/6))
```

Mathematica [C] time = 0.340406, size = 99, normalized size = 0.12

$$\frac{3\sqrt{a+bx}(c+dx)^{5/6}\left(\frac{27b\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt{\frac{d(a+bx)}{ad-bc}}}+\frac{5(-8ad+9bc+bdx)}{c+dx}\right)}{20d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(3/2)/(c + d*x)^(7/6),x]
```

```
[Out] (3*Sqrt[a + b*x]*(c + d*x)^(5/6)*((5*(9*b*c - 8*a*d + b*d*x))/(c
+ d*x) + (27*b*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b
*c - a*d)])/Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]))/(20*d^2)
```

Maple [F] time = 0.086, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{3}{2}}\,(dx+c)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(3/2)/(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(3/2)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{7}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(3/2)/(d*x + c)^(7/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^{\frac{3}{2}}}{(c+dx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(3/2)/(d*x+c)**(7/6),x)
```

```
[Out] Integral((a + b*x)**(3/2)/(c + d*x)**(7/6), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{3}{2}}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(3/2)/(d*x + c)^(7/6),x, algorithm="giac")

[Out] integrate((b*x + a)^(3/2)/(d*x + c)^(7/6), x)
```

3.1763 $\int \frac{\sqrt{a+bx}}{(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=806

$$-\frac{9\sqrt[4]{3}\sqrt[3]{b}\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{3\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\right.\right.}{2d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{6\sqrt{a+bx}}{d\sqrt[6]{c+dx}}-\frac{9\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}}{d\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

```
[Out] (-6*Sqrt[a + b*x])/(d*(c + d*x)^(1/6)) - (9*(1 + Sqrt[3])*b^(1/3)
*Sqrt[a + b*x]*(c + d*x)^(1/6))/(d*((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))) - (9*3^(1/4)*b^(1/3)*(b*c - a*d)^(
1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)
)*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(
1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3)
 - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d^2*Sqr
t[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2)]) - (3*3^(3/4)*(1 - Sqrt[3])*b^(1/3)*(b*c
- a*d)^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*
d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/
(2*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.39219, antiderivative size = 806, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{9\sqrt[4]{3}\sqrt[3]{b}\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{3\,3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{bc-ad}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\right.\right.}{2d^2\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{6\sqrt{a+bx}}{d\sqrt[6]{c+dx}}-\frac{9\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}}{d\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[Sqrt[a + b*x]/(c + d*x)^(7/6),x]
```

```
[Out] (-6*Sqrt[a + b*x])/(d*(c + d*x)^(1/6)) - (9*(1 + Sqrt[3])*b^(1/3)
*Sqrt[a + b*x]*(c + d*x)^(1/6))/(d*((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))) - (9*3^(1/4)*b^(1/3)*(b*c - a*d)^(
1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)
)*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(
1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3)
 - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1
 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d^2*Sqr
t[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1/3) - b
^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2)]) - (3*3^(3/4)*(1 - Sqrt[3])*b^(1/3)*(b*c
- a*d)^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*
x)^(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c
+ d*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 +
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*
d)^(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1
/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/
(2*d^2*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)
^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 66.5082, size = 712, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/2)/(d*x+c)**(7/6),x)
```

```
[Out] b**(1/3)*(9 + 9*sqrt(3))*(c + d*x)**(1/6)*sqrt(a - b*c/d + b*(c +
 d*x)/d)/(d*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))) - 9*3**(1/4)*b**(1/3)*sqrt((b**(2/3)*(c + d*x)**(2/3)
- b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/
3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)**2)*(c + d*x)**(1/6)*(a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1
/3) + (a*d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1
)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(d**2*s
qrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d -
 b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 3*3**(3/4)*b**
(1/3)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)
*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))
*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(c + d
*x)**(1/6)*(a*d - b*c)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d -
 b*c)**(1/3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)*
*(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(
1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(2*d**2*sqrt(b**(1/
3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/
3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)**2)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 6*sqrt(a + b*x)/(d*(c +
d*x)**(1/6))
```

Mathematica [C]   time = 0.19828, size = 90, normalized size = 0.11

$$\frac{18b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-30d(a+bx)}{5d^2\sqrt{a+bx}\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[Sqrt[a + b*x]/(c + d*x)^(7/6),x]
```

```
[Out] (-30*d*(a + b*x) + 18*b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d
*x)*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])
/(5*d^2*Sqrt[a + b*x]*(c + d*x)^(1/6))
```

Maple [F]   time = 0.062, size = 0, normalized size = 0.

$$\int 1\sqrt{bx+a}\,(dx+c)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/2)/(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(1/2)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{bx+a}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(b*x + a)/(d*x + c)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\sqrt{bx+a}}{(dx+c)^{\frac{7}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] integral(sqrt(b*x + a)/(d*x + c)^(7/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt{a+bx}}{(c+dx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/2)/(d*x+c)**(7/6),x)
```

```
[Out] Integral(sqrt(a + b*x)/(c + d*x)**(7/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(sqrt(b*x + a)/(d*x + c)^(7/6),x, algorithm="giac")

[Out] Timed out
```

3.1764 $\int \frac{1}{\sqrt{a+bx}(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=817

$$\frac{6\sqrt[4]{3}\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\cdots}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+\cdots}}\right.\right.}{d(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\cdots\right.}{\sqrt[3]{bc-ad}-\left(1+\cdots\right.}\right.\right.}{d(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{6\sqrt{a+bx}}{(bc-ad)\sqrt[6]{c+dx}}+\frac{6\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}}{(bc-ad)\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

```
[Out] (6*Sqrt[a + b*x])/((b*c - a*d)*(c + d*x)^(1/6)) + (6*(1 + Sqrt[3]
)*b^(1/3)*Sqrt[a + b*x]*(c + d*x)^(1/6))/((b*c - a*d)*((b*c - a*d
)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (6*3^(1/4)*b^
(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^
(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3
])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3
) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d*(b*c
 - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c
 - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1
 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (3^(3/4)*(1 - Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d
*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^
(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d*
(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*(
(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.42454, antiderivative size = 817, normalized size of antiderivative = 1., number of

steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{6\sqrt[4]{3}\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{d(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{3^{3/4}\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-}{\sqrt[3]{bc-ad}-(1+}\right.\right.}{d(bc-ad)^{2/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{6\sqrt{a+bx}}{(bc-ad)\sqrt[6]{c+dx}}+\frac{6\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}}{(bc-ad)\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(Sqrt[a + b*x]*(c + d*x)^(7/6)),x]
```

```
[Out] (6*Sqrt[a + b*x])/((b*c - a*d)*(c + d*x)^(1/6)) + (6*(1 + Sqrt[3]
)*b^(1/3)*Sqrt[a + b*x]*(c + d*x)^(1/6))/((b*c - a*d)*((b*c - a*d
)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (6*3^(1/4)*b^
(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3
))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^
(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3
])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3
) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d*(b*c
 - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c
 - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1
 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (3^(3/4)*(1 - Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^
(1/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d
*x)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sq
rt[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^
(1/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3)
 - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(d*
(b*c - a*d)^(2/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*(
(b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 66.9928, size = 716, normalized size = 0.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/2)/(d*x+c)**(7/6),x)
```

```
[Out] 6*b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/6)*sqrt(a - b*c/d + b*(c +
 d*x)/d)/((a*d - b*c)*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
(a*d - b*c)**(1/3))) - 6*3**(1/4)*b**(1/3)*sqrt((b**(2/3)*(c + d*
x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d -
 b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))**2)*(c + d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*
d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*
x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)
**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(d*sqrt(b**(1/3)
*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3)
)/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*
*2)*(a*d - b*c)**(2/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 3**(3/4
)*b**(1/3)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**
(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqr
t(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3) + 1)*(
c + d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))*
elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d
- b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d -
b*c)**(1/3))), sqrt(3)/4 + 1/2)/(d*sqrt(b**(1/3)*(c + d*x)**(1/3)
*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 +
sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d - b*c)**
(2/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 6*sqrt(a + b*x)/((c + d*
x)**(1/6)*(a*d - b*c))
```

Mathematica [C] time = 0.18217, size = 100, normalized size = 0.12

$$\frac{6\left(5d(a+bx)-2b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{5d\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(Sqrt[a + b*x]*(c + d*x)^(7/6)),x]
```

```
[Out] (6*(5*d*(a + b*x) - 2*b*Sqrt[(d*(a + b*x))/(-(b*c) + a*d)]*(c + d
*x)*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])
)/(5*d*(b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt{bx+a}}\left(dx+c\right)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/2)/(d*x+c)^(7/6),x)
```

```
[Out] int(1/(b*x+a)^(1/2)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{bx+a}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{\sqrt{bx+a}(dx+c)^{\frac{7}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/6)),x, algorithm="fricas")
```

```
[Out] integral(1/(sqrt(b*x + a)*(d*x + c)^(7/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt{a+bx}\,(c+dx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/2)/(d*x+c)**(7/6),x)
```

```
[Out] Integral(1/(sqrt(a + b*x)*(c + d*x)**(7/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(sqrt(b*x + a)*(d*x + c)^(7/6)),x, algorithm="giac")

[Out] Timed out
```

3.1765 $\int \frac{1}{(a+bx)^{3/2}(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=844

$$-\frac{8\sqrt{a+bx}\,d}{(bc-ad)^2\sqrt[6]{c+dx}}-\frac{8\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}\,d}{(bc-ad)^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{8\sqrt[4]{3}\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c}}\right.\right.}{(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{4\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right.}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right.}\right.\right.}{\sqrt[4]{3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2}{(bc-ad)\sqrt{a+bx}\sqrt[6]{c+dx}}$$

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6)) - (8*d*Sqrt[a + b*
x])/((b*c - a*d)^2*(c + d*x)^(1/6)) - (8*(1 + Sqrt[3])*b^(1/3)*d*
Sqrt[a + b*x]*(c + d*x)^(1/6))/((b*c - a*d)^2*((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (8*3^(1/4)*b^(1/3)*(c
 + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[
((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) +
b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 -
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/((b*c - a*d)^(5
/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1
/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))^2)]) - (4*(1 - Sqrt[3])*b^(1/3)*(c + d
*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*
c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2
/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(
c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*(b*c - a*d
)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d
)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.64465, antiderivative size = 844, normalized size of antiderivative = 1., number of

steps used = 6, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$-\frac{8\sqrt{a+bx}\,d}{(bc-ad)^2\sqrt[6]{c+dx}}-\frac{8\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}\,d}{(bc-ad)^2\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$-\frac{8\sqrt[4]{3}\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c}}\right.\right.}{(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{4\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right.}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right.}\right.\right.}{\sqrt[4]{3}(bc-ad)^{5/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$-\frac{2}{(bc-ad)\sqrt{a+bx}\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(3/2)*(c + d*x)^(7/6)),x]
```

```
[Out] -2/((b*c - a*d)*Sqrt[a + b*x]*(c + d*x)^(1/6)) - (8*d*Sqrt[a + b*
x])/((b*c - a*d)^2*(c + d*x)^(1/6)) - (8*(1 + Sqrt[3])*b^(1/3)*d*
Sqrt[a + b*x]*(c + d*x)^(1/6))/((b*c - a*d)^2*((b*c - a*d)^(1/3)
- (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) - (8*3^(1/4)*b^(1/3)*(c
 + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[
((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) +
b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/
3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1 -
 Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/((b*c - a*d)^(5
/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d)^(1
/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqrt[3]
)*b^(1/3)*(c + d*x)^(1/3))^2)]) - (4*(1 - Sqrt[3])*b^(1/3)*(c + d
*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt[((b*
c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) + b^(2
/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1/3)*(
c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1/3) - (1 - Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])
*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3^(1/4)*(b*c - a*d
)^(5/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*c - a*d
)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 84.0437, size = 750, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(3/2)/(d*x+c)**(7/6),x)
```

```
[Out] 2*b**(1/3)*d*(4 + 4*sqrt(3))*(c + d*x)**(1/6)*sqrt(a - b*c/d + b*
(c + d*x)/d)/((a*d - b*c)**2*(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(
1/3) + (a*d - b*c)**(1/3))) - 8*3**(1/4)*b**(1/3)*sqrt((b**(2/3)*
(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) +
 (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (
a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3
) + (a*d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(-sqrt(3) + 1)*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c
 + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(sqrt(b**
(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**
(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1
/3))**2)*(a*d - b*c)**(5/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 4*
3**(3/4)*b**(1/3)*sqrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c +
 d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(
1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(-sqrt(3)
 + 1)*(c + d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**
(1/3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1)*(c + d*x)**(1/3)
+ (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
(a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(3*sqrt(b**(1/3)*(c + d*x)
**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3
)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(a*d -
 b*c)**(5/3)*sqrt(a - b*c/d + b*(c + d*x)/d)) - 8*d*sqrt(a + b*x)
/((c + d*x)**(1/6)*(a*d - b*c)**2) + 2/(sqrt(a + b*x)*(c + d*x)**
(1/6)*(a*d - b*c))
```

Mathematica [C] time = 0.294701, size = 102, normalized size = 0.12

$$-\frac{2\left(-8b(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+15ad+5b(c+4dx)\right)}{5\sqrt{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(3/2)*(c + d*x)^(7/6)),x]
```

```
[Out] (-2*(15*a*d + 5*b*(c + 4*d*x) - 8*b*Sqrt[(d*(a + b*x))/(-(b*c) +
a*d)]*(c + d*x)*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(
b*c - a*d)]))/(5*(b*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6))
```

Maple [F] time = 0.067, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{-\frac{3}{2}}\left(dx+c\right)^{-\frac{7}{6}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(3/2)/(d*x+c)^(7/6),x)
```

```
[Out] int(1/(b*x+a)^(3/2)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bdx^2+ac+(bc+ad)x)\sqrt{bx+a}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*sqrt(b*x + a)*(d*x +
c)^(1/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{3}{2}}\,(c+dx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(3/2)/(d*x+c)**(7/6),x)
```

```
[Out] Integral(1/((a + b*x)**(3/2)*(c + d*x)**(7/6)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{3}{2}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(3/2)*(d*x + c)^(7/6)), x)
```

3.1766 $\int \frac{1}{(a+bx)^{5/2}(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=893

$$\frac{80\sqrt{a+bx}\,d^2}{9(bc-ad)^3\sqrt[6]{c+dx}}+\frac{80\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}\,d^2}{9(bc-ad)^3\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$+\frac{80\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{3\,3^{3/4}(bc-ad)^{8/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{40\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}\,F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{\right.}\right.}{\sqrt[3]{bc-ad}-\left(1+\sqrt{\right.}\right.}\right.\right.}{9\sqrt[4]{3}(bc-ad)^{8/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{20d}{9(bc-ad)^2\sqrt{a+bx}\sqrt[6]{c+dx}}-\frac{2}{3(bc-ad)(a+bx)^{3/2}\sqrt[6]{c+dx}}$$

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/6)) + (20*d)/(9*(b
*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6)) + (80*d^2*Sqrt[a + b*x
])/(9*(b*c - a*d)^3*(c + d*x)^(1/6)) + (80*(1 + Sqrt[3])*b^(1/3)*
d^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(9*(b*c - a*d)^3*((b*c - a*d)^
(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (80*b^(1/3)*d*(
c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt
[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) +
 b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1
- Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3*3^(3/4)*(b*
c - a*d)^(8/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*
c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (40*(1 - Sqrt[3])*b^
(1/3)*d*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1
/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x
)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1
/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^
(1/4)*(b*c - a*d)^(8/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(
1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^
(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi [A] time = 1.88325, antiderivative size = 893, normalized size of antiderivative = 1., number of

steps used = 7, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.263$

$$\frac{80\sqrt{a+bx}d^2}{9(bc-ad)^3\sqrt[6]{c+dx}}+\frac{80\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt{a+bx}\sqrt[6]{c+dx}d^2}{9(bc-ad)^3\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)}$$

$$+\frac{80\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}E\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}{\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+}}\right.\right.}{3\,3^{3/4}(bc-ad)^{8/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{40\left(1-\sqrt{3}\right)\sqrt[3]{b}\sqrt[6]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)\sqrt{\frac{(bc-ad)^{2/3}+\sqrt[3]{b}\sqrt[3]{c+dx}\sqrt[3]{bc-ad}+b^{2/3}(c+dx)^{2/3}}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}F\left(\cos^{-1}\left(\frac{\sqrt[3]{bc-ad}-(1-\sqrt{}}{\sqrt[3]{bc-ad}-(1+\sqrt{}}\right.\right.}{9\sqrt[4]{3}(bc-ad)^{8/3}\sqrt{a+bx}\sqrt{-\frac{\sqrt[3]{b}\sqrt[3]{c+dx}\left(\sqrt[3]{bc-ad}-\sqrt[3]{b}\sqrt[3]{c+dx}\right)}{\left(\sqrt[3]{bc-ad}-\left(1+\sqrt{3}\right)\sqrt[3]{b}\sqrt[3]{c+dx}\right)^2}}}$$

$$+\frac{20d}{9(bc-ad)^2\sqrt{a+bx}\sqrt[6]{c+dx}}-\frac{2}{3(bc-ad)(a+bx)^{3/2}\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/2)*(c + d*x)^(7/6)),x]
```

```
[Out] -2/(3*(b*c - a*d)*(a + b*x)^(3/2)*(c + d*x)^(1/6)) + (20*d)/(9*(b
*c - a*d)^2*Sqrt[a + b*x]*(c + d*x)^(1/6)) + (80*d^2*Sqrt[a + b*x
])/(9*(b*c - a*d)^3*(c + d*x)^(1/6)) + (80*(1 + Sqrt[3])*b^(1/3)*
d^2*Sqrt[a + b*x]*(c + d*x)^(1/6))/(9*(b*c - a*d)^3*((b*c - a*d)^
(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))) + (80*b^(1/3)*d*(
c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3))*Sqrt
[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x)^(1/3) +
 b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt[3])*b^(1
/3)*(c + d*x)^(1/3))^2]*EllipticE[ArcCos[((b*c - a*d)^(1/3) - (1
- Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) - (1 + Sqr
t[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(3*3^(3/4)*(b*
c - a*d)^(8/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(1/3)*((b*
c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^(1/3) - (
1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)]) + (40*(1 - Sqrt[3])*b^
(1/3)*d*(c + d*x)^(1/6)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1
/3))*Sqrt[((b*c - a*d)^(2/3) + b^(1/3)*(b*c - a*d)^(1/3)*(c + d*x
)^(1/3) + b^(2/3)*(c + d*x)^(2/3))/((b*c - a*d)^(1/3) - (1 + Sqrt
[3])*b^(1/3)*(c + d*x)^(1/3))^2]*EllipticF[ArcCos[((b*c - a*d)^(1
/3) - (1 - Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))/((b*c - a*d)^(1/3) -
 (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))], (2 + Sqrt[3])/4])/(9*3^
(1/4)*(b*c - a*d)^(8/3)*Sqrt[a + b*x]*Sqrt[-((b^(1/3)*(c + d*x)^(
1/3)*((b*c - a*d)^(1/3) - b^(1/3)*(c + d*x)^(1/3)))/((b*c - a*d)^
(1/3) - (1 + Sqrt[3])*b^(1/3)*(c + d*x)^(1/3))^2)])
```

Rubi in Sympy [A] time = 103.749, size = 797, normalized size = 0.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/2)/(d*x+c)**(7/6),x)
```

```
[Out] 2*b**(1/3)*d**2*(40/3 + 40*sqrt(3)/3)*(c + d*x)**(1/6)*sqrt(a - b
*c/d + b*(c + d*x)/d)/(3*(a*d - b*c)**3*(b**(1/3)*(1 + sqrt(3))*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))) - 80*3**(1/4)*b**(1/3)*d*s
qrt((b**(2/3)*(c + d*x)**(2/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d -
 b*c)**(1/3) + (a*d - b*c)**(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d
*x)**(1/3) + (a*d - b*c)**(1/3))**2)*(c + d*x)**(1/6)*(b**(1/3)*(
c + d*x)**(1/3) + (a*d - b*c)**(1/3))*elliptic_e(acos((b**(1/3)*(
-sqrt(3) + 1)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1
 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 +
1/2)/(9*sqrt(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3)
 + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) +
 (a*d - b*c)**(1/3))**2)*(a*d - b*c)**(8/3)*sqrt(a - b*c/d + b*(c
 + d*x)/d)) - 40*3**(3/4)*b**(1/3)*d*sqrt((b**(2/3)*(c + d*x)**(2
/3) - b**(1/3)*(c + d*x)**(1/3)*(a*d - b*c)**(1/3) + (a*d - b*c)*
*(2/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c)**(
1/3))**2)*(-sqrt(3) + 1)*(c + d*x)**(1/6)*(b**(1/3)*(c + d*x)**(1
/3) + (a*d - b*c)**(1/3))*elliptic_f(acos((b**(1/3)*(-sqrt(3) + 1
)*(c + d*x)**(1/3) + (a*d - b*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*
(c + d*x)**(1/3) + (a*d - b*c)**(1/3))), sqrt(3)/4 + 1/2)/(27*sqr
t(b**(1/3)*(c + d*x)**(1/3)*(b**(1/3)*(c + d*x)**(1/3) + (a*d - b
*c)**(1/3))/(b**(1/3)*(1 + sqrt(3))*(c + d*x)**(1/3) + (a*d - b*c
)**(1/3))**2)*(a*d - b*c)**(8/3)*sqrt(a - b*c/d + b*(c + d*x)/d))
 - 80*d**2*sqrt(a + b*x)/(9*(c + d*x)**(1/6)*(a*d - b*c)**3) + 20
*d/(9*sqrt(a + b*x)*(c + d*x)**(1/6)*(a*d - b*c)**2) + 2/(3*(a +
b*x)**(3/2)*(c + d*x)**(1/6)*(a*d - b*c))
```

Mathematica [C] time = 0.306189, size = 139, normalized size = 0.16

$$-\frac{2\left(27a^2d^2-16bd(a+bx)(c+dx)\sqrt{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{2},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+2abd(8c+35dx)+b^2\left(-3c^2+10cdx+40d^2x^2\right)\right)}{9(a+bx)^{3/2}\sqrt[6]{c+dx}(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/2)*(c + d*x)^(7/6)),x]
```

```
[Out] (-2*(27*a^2*d^2 + 2*a*b*d*(8*c + 35*d*x) + b^2*(-3*c^2 + 10*c*d*x
 + 40*d^2*x^2) - 16*b*d*(a + b*x)*Sqrt[(d*(a + b*x))/(-(b*c) + a*
d)]*(c + d*x)*Hypergeometric2F1[1/2, 5/6, 11/6, (b*(c + d*x))/(b*
c - a*d)]))/(9*(-(b*c) + a*d)^3*(a + b*x)^(3/2)*(c + d*x)^(1/6))
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int 1\left(bx+a\right)^{-\frac{5}{2}} \left(dx+c\right)^{-\frac{7}{6}}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/2)/(d*x+c)^(7/6),x)

[Out] int(1/(b*x+a)^(5/2)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\left(bx+a\right)^{\frac{5}{2}}\left(dx+c\right)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/6)),x, algorithm="maxima")

[Out] integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{\left(b^{2}dx^{3}+a^{2}c+\left(b^{2}c+2\,abd\right)x^{2}+\left(2\,abc+a^{2}d\right)x\right)\sqrt{bx+a}\left(dx+c\right)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/6)),x, algorithm="fricas")

[Out] integral(1/((b^2*d*x^3 + a^2*c + (b^2*c + 2*a*b*d)*x^2 + (2*a*b*c
 + a^2*d)*x)*sqrt(b*x + a)*(d*x + c)^(1/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/2)/(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [A] time = 0.692101, size = 1, normalized size = 0.

Done

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/2)*(d*x + c)^(7/6)),x, algorithm="giac")
```

```
[Out] Done
```

3.1767 $\int \sqrt[6]{a+bx}(c+dx)^{13/6}\,dx$

Optimal. Leaf size=84

$$\frac{6(a+bx)^{7/6}\sqrt[6]{c+dx}(bc-ad)^2\,{}_2F_1\left(-\frac{13}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b^3\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(b*c - a*d)^2*(a + b*x)^(7/6)*(c + d*x)^(1/6)*Hypergeometric2F
1[-13/6, 7/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b^3*((b*(c
+ d*x))/(b*c - a*d))^(1/6))
```

Rubi [A] time = 0.0955645, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{7/6}\sqrt[6]{c+dx}(bc-ad)^2\,{}_2F_1\left(-\frac{13}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b^3\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)*(c + d*x)^(13/6),x]
```

```
[Out] (6*(b*c - a*d)^2*(a + b*x)^(7/6)*(c + d*x)^(1/6)*Hypergeometric2F
1[-13/6, 7/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b^3*((b*(c
+ d*x))/(b*c - a*d))^(1/6))
```

Rubi in Sympy [A] time = 12.863, size = 61, normalized size = 0.73

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{19}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{1}{6},\frac{19}{6}\\ \frac{25}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{19d\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)*(d*x+c)**(13/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(19/6)*hyper((-1/6, 19/6), (25/6,),
 b*(-c - d*x)/(a*d - b*c))/(19*d*(d*(a + b*x)/(a*d - b*c))**(1/6)
```

)

Mathematica [B] time = 0.354003, size = 182, normalized size = 2.17

$$-\frac{3\sqrt[6]{c+dx}\left(91(bc-ad)^4\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)\left(91a^3d^3-13a^2bd^2(23c+2dx)+ab^2d\left(341c^2+84c\right.\right.\right.}{2240b^3d^2(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)*(c + d*x)^(13/6),x]
```

```
[Out] (-3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(91*a^3*d^3 - 13*a^2*b*d^2*(23
*c + 2*d*x) + a*b^2*d*(341*c^2 + 84*c*d*x + 16*d^2*x^2) + b^3*(91
*c^3 + 614*c^2*d*x + 656*c*d^2*x^2 + 224*d^3*x^3))) + 91*(b*c - a
*d)^4*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[1/6,
 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(2240*b^3*d^2*(a + b*x)^(
5/6))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int \sqrt[6]{bx+a}\,(dx+c)^{\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)*(d*x+c)^(13/6),x)
```

```
[Out] int((b*x+a)^(1/6)*(d*x+c)^(13/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{6}}(dx+c)^{\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(13/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)*(d*x + c)^(13/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(d^2x^2+2\,cdx+c^2\right)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(13/6),x, algorithm="fricas")
```

```
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*(b*x + a)^(1/6)*(d*x + c)^(1/6
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)*(d*x+c)**(13/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(13/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1768 $\int \sqrt[6]{a+bx}(c+dx)^{7/6}\,dx$

Optimal. Leaf size=82

$$\frac{6(a+bx)^{7/6}\sqrt[6]{c+dx}(bc-ad)\,{}_2F_1\left(-\frac{7}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(b*c - a*d)*(a + b*x)^(7/6)*(c + d*x)^(1/6)*Hypergeometric2F1[
-7/6, 7/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b^2*((b*(c + d
*x))/(b*c - a*d))^(1/6))
```

Rubi [A] time = 0.0927567, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{7/6}\sqrt[6]{c+dx}(bc-ad)\,{}_2F_1\left(-\frac{7}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)*(c + d*x)^(7/6),x]
```

```
[Out] (6*(b*c - a*d)*(a + b*x)^(7/6)*(c + d*x)^(1/6)*Hypergeometric2F1[
-7/6, 7/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b^2*((b*(c + d
*x))/(b*c - a*d))^(1/6))
```

Rubi in Sympy [A] time = 13.0374, size = 61, normalized size = 0.74

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{13}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{1}{6},\frac{13}{6}\\\frac{19}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{13d\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)*(d*x+c)**(7/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(13/6)*hyper((-1/6, 13/6), (19/6,),
 b*(-c - d*x)/(a*d - b*c))/(13*d*(d*(a + b*x)/(a*d - b*c))**(1/6)
```

)

Mathematica [A] time = 0.261103, size = 142, normalized size = 1.73

$$\frac{3\sqrt[6]{c+dx}\left(-d(a+bx)\left(7a^2d^2-2abd(8c+dx)+b^2\left(-\left(7c^2+30cdx+16d^2x^2\right)\right)\right)-7(bc-ad)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c}{bc}\right.\right.}{112b^2d^2(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)*(c + d*x)^(7/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(7*a^2*d^2 - 2*a*b*d*(8*c + d*x
) - b^2*(7*c^2 + 30*c*d*x + 16*d^2*x^2))) - 7*(b*c - a*d)^3*((d*(
a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[1/6, 5/6, 7/6,
(b*(c + d*x))/(b*c - a*d)]))/(112*b^2*d^2*(a + b*x)^(5/6))
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int \sqrt[6]{bx+a}\,(dx+c)^{\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)*(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(1/6)*(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{6}}(dx+c)^{\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)*(d*x + c)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{1}{6}}(dx+c)^{\frac{7}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/6)*(d*x + c)^(7/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)*(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(7/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1769 $\int \sqrt[6]{a+bx}\sqrt[6]{c+dx}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{7/6}\sqrt[6]{c+dx}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(a + b*x)^(7/6)*(c + d*x)^(1/6)*Hypergeometric2F1[-1/6, 7/6, 1
3/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b*((b*(c + d*x))/(b*c - a*
d))^(1/6))
```

Rubi [A] time = 0.0839888, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{7/6}\sqrt[6]{c+dx}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)*(c + d*x)^(1/6),x]
```

```
[Out] (6*(a + b*x)^(7/6)*(c + d*x)^(1/6)*Hypergeometric2F1[-1/6, 7/6, 1
3/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b*((b*(c + d*x))/(b*c - a*
d))^(1/6))
```

Rubi in Sympy [A] time = 15.0169, size = 61, normalized size = 0.82

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{7}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{1}{6},\frac{7}{6}\\ \frac{13}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{7d\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)*(d*x+c)**(1/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(7/6)*hyper((-1/6, 7/6), (13/6,), b
*(-c - d*x)/(a*d - b*c))/(7*d*(d*(a + b*x)/(a*d - b*c))**(1/6))
```

Mathematica [A] time = 0.187683, size = 108, normalized size = 1.46

$$\frac{3\sqrt[6]{c+dx}\left(d(a+bx)(ad+b(c+2dx))-(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{8bd^2(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)*(c + d*x)^(1/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x)*(a*d + b*(c + 2*d*x)) - (b*c - a*
d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[1/6,
5/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(8*b*d^2*(a + b*x)^(5/6))
```

Maple [F] time = 0.046, size = 0, normalized size = 0.

$$\int \sqrt[6]{bx+a}\sqrt[6]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)*(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(1/6)*(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)*(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/6)*(d*x + c)^(1/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \sqrt[6]{a+bx}\sqrt[6]{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)*(d*x+c)**(1/6),x)
```

```
[Out] Integral((a + b*x)**(1/6)*(c + d*x)**(1/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1770 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{7/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b(c+dx)^{5/6}}$$

```
[Out] (6*(a + b*x)^(7/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[5/6, 7/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b*(c + d*
x)^(5/6))
```

Rubi [A] time = 0.0829447, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{7/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{7}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7b(c+dx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(5/6),x]
```

```
[Out] (6*(a + b*x)^(7/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[5/6, 7/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*b*(c + d*
x)^(5/6))
```

Rubi in Sympy [A] time = 13.0172, size = 60, normalized size = 0.81

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}\,{}_2F_1\left(\begin{matrix}-\frac{1}{6},\frac{1}{6}\\ \frac{7}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d\sqrt[6]{\frac{d(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(1/6)*hyper((-1/6, 1/6), (7/6,), b*
(-c - d*x)/(a*d - b*c))/(d*(d*(a + b*x)/(a*d - b*c))**(1/6))
```

Mathematica [A] time = 0.166545, size = 74, normalized size = 1.

$$\frac{3\sqrt[6]{a+bx}\sqrt[6]{c+dx}\left(\frac{{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[6]{\frac{d(a+bx)}{ad-bc}}}+1\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(5/6),x]
```

```
[Out] (3*(a + b*x)^(1/6)*(c + d*x)^(1/6)*(1 + Hypergeometric2F1[1/6, 5/
6, 7/6, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))
^(1/6)))/d
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{bx+a}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(1/6)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/6)/(d*x + c)^(5/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(5/6),x)
```

```
[Out] Integral((a + b*x)**(1/6)/(c + d*x)**(5/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1771 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{11/6}} \, dx$

Optimal. Leaf size=81

$$\frac{6(a+bx)^{7/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{7}{6},\frac{11}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7(c+dx)^{5/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(7/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[7/6, 11/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*(b*c - a
*d)*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0850665, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{7/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{7}{6},\frac{11}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7(c+dx)^{5/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(11/6),x]
```

```
[Out] (6*(a + b*x)^(7/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[7/6, 11/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*(b*c - a
*d)*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 12.9461, size = 65, normalized size = 0.8

$$-\frac{6\sqrt[6]{a+bx}\,{}_2F_1\left(\begin{matrix}-\frac{1}{6},-\frac{5}{6}\\ \frac{1}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{5d\sqrt[6]{\frac{d(a+bx)}{ad-bc}}(c+dx)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(11/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)*hyper((-1/6, -5/6), (1/6,), b*(-c - d*x)/(a*d
 - b*c))/(5*d*(d*(a + b*x)/(a*d - b*c))**(1/6)*(c + d*x)**(5/6))
```

Mathematica [A] time = 0.155755, size = 90, normalized size = 1.11

$$\frac{6b(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)}{5d^2(a+bx)^{5/6}(c+dx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(11/6),x]
```

```
[Out] (-6*d*(a + b*x) + 6*b*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*(c + d
*x)*Hypergeometric2F1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)])/
(5*d^2*(a + b*x)^(5/6)*(c + d*x)^(5/6))
```

Maple [F] time = 0.069, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{bx+a}\,(dx+c)^{-\frac{11}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(11/6),x)
```

```
[Out] int((b*x+a)^(1/6)/(d*x+c)^(11/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(11/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(11/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{11}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(11/6),x, algorithm="fricas")

[Out] integral((b*x + a)^(1/6)/(d*x + c)^(11/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(11/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(11/6),x, algorithm="giac")

[Out] Timed out
```

3.1772 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{17/6}}\,dx$

Optimal. Leaf size=82

$$\frac{6b(a+bx)^{7/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{7}{6},\frac{17}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7(c+dx)^{5/6}(bc-ad)^2}$$

```
[Out] (6*b*(a + b*x)^(7/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeome
tric2F1[7/6, 17/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*(b*c -
 a*d)^2*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0879256, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6b(a+bx)^{7/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{7}{6},\frac{17}{6};\frac{13}{6};-\frac{d(a+bx)}{bc-ad}\right)}{7(c+dx)^{5/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(17/6),x]
```

```
[Out] (6*b*(a + b*x)^(7/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeome
tric2F1[7/6, 17/6, 13/6, -((d*(a + b*x))/(b*c - a*d))])/(7*(b*c -
 a*d)^2*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 12.6664, size = 66, normalized size = 0.8

$$-\frac{6\sqrt[6]{a+bx}\,{}_2F_1\left(\begin{matrix}-\frac{1}{6},-\frac{11}{6}\\-\frac{5}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{11d\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,(c+dx)^{\frac{11}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(17/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)*hyper((-1/6, -11/6), (-5/6,), b*(-c - d*x)/(a
*d - b*c))/(11*d*(d*(a + b*x)/(a*d - b*c))**(1/6)*(c + d*x)**(11/
6))
```

Mathematica [A] time = 0.202372, size = 116, normalized size = 1.41

$$-\frac{6\left(4b^2(c+dx)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(5ad-4bc+bdx)\right)}{55d^2(a+bx)^{5/6}(c+dx)^{11/6}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(17/6),x]
```

```
[Out] (-6*(d*(a + b*x)*(-4*b*c + 5*a*d + b*d*x) + 4*b^2*((d*(a + b*x))/
(-(b*c) + a*d))^(5/6)*(c + d*x)^2*Hypergeometric2F1[1/6, 5/6, 7/6
, (b*(c + d*x))/(b*c - a*d)]))/(55*d^2*(-(b*c) + a*d)*(a + b*x)^(
5/6)*(c + d*x)^(11/6))
```

Maple [F] time = 0.085, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{bx+a}\,(dx+c)^{-\frac{17}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(17/6),x)
```

```
[Out] int((b*x+a)^(1/6)/(d*x+c)^(17/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(17/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(17/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{1}{6}}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(17/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(1/6)/((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(5/
6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(17/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(17/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1773 $\int \sqrt[6]{a+bx}(c+dx)^{5/6}\,dx$

Optimal. Leaf size=427

$$\frac{5(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{11/6}d^{7/6}}-\frac{5(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{11/6}d^{7/6}}+\frac{5(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{11/6}d^{7/6}}-\frac{5(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{11/6}d^{7/6}}-\frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{11/6}d^{7/6}}+\frac{5\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}{12bd}+\frac{(a+bx)^{7/6}(c+dx)^{5/6}}{2b}$$

```
[Out] (5*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6))/(12*b*d) + ((a +
b*x)^(7/6)*(c + d*x)^(5/6))/(2*b) + (5*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(24*Sqrt[3]*b^(11/6)*d^(7/6)) - (5*(b*c - a*d)^2*ArcTan[1/S
qrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(
1/6))])/(24*Sqrt[3]*b^(11/6)*d^(7/6)) - (5*(b*c - a*d)^2*ArcTanh[
(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(11/6
)*d^(7/6)) + (5*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(144*b^(11/6)*d^(7/6)) - (5*(b*c - a*d)^2*Log[b^(1/3) +
 (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
+ b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(11/6)*d^(7/6))
```

Rubi [A] time = 0.983138, antiderivative size = 427, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{5(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{11/6}d^{7/6}}-\frac{5(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{11/6}d^{7/6}}+\frac{5(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{11/6}d^{7/6}}-\frac{5(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{11/6}d^{7/6}}-\frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{11/6}d^{7/6}}+\frac{5\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}{12bd}+\frac{(a+bx)^{7/6}(c+dx)^{5/6}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)*(c + d*x)^(5/6),x]
```

```
[Out] (5*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6))/(12*b*d) + ((a +
b*x)^(7/6)*(c + d*x)^(5/6))/(2*b) + (5*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(24*Sqrt[3]*b^(11/6)*d^(7/6)) - (5*(b*c - a*d)^2*ArcTan[1/S
qrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(
1/6))])/(24*Sqrt[3]*b^(11/6)*d^(7/6)) - (5*(b*c - a*d)^2*ArcTanh[
(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(11/6
)*d^(7/6)) + (5*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(144*b^(11/6)*d^(7/6)) - (5*(b*c - a*d)^2*Log[b^(1/3) +
 (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
+ b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(11/6)*d^(7/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)*(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.18551, size = 109, normalized size = 0.26

$$\frac{(c+dx)^{5/6}\left(d(a+bx)(ad+5bc+6bdx)-(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{12bd^2(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)*(c + d*x)^(5/6),x]
```

```
[Out] ((c + d*x)^(5/6)*(d*(a + b*x)*(5*b*c + a*d + 6*b*d*x) - (b*c - a*
d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[5/6,
5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(12*b*d^2*(a + b*x)^(5/6)
)
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int \sqrt[6]{bx+a}\,(dx+c)^{\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)*(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(1/6)*(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)*(d*x + c)^(5/6), x)
```

Fricas [A] time = 0.309633, size = 5825, normalized size = 13.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] 1/144*(20*sqrt(3)*b*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^1
0*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*
b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8
*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^
11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6)*arctan(sqrt(3)*(b^2*d^
2*x + b^2*c*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*
d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7
*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^
4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*
d^11 + a^12*d^12)/(b^11*d^7))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + 2*(d*x + c)*sqrt(((b^4*c^
2*d - 2*a*b^3*c*d^2 + a^2*b^2*d^3)*(b*x + a)^(1/6)*(d*x + c)^(5/6
)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3
*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^
6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a
^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d
^12)/(b^11*d^7))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2
*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) +
 (b^4*d^3*x + b^4*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*
b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a
^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*
```

a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12
*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/3))/(d*x + c)) + (b^2*
d^2*x + b^2*c*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^1
0*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c
^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*
c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*
c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6))) + 20*sqrt(3)*b*d*((b^12*c
^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d
^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*
d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3
*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11
*d^7))^(1/6)*arctan(sqrt(3)*(b^2*d^2*x + b^2*c*d)*((b^12*c^12 - 1
2*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 49
5*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 7
92*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 +
66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^
(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/6)*(d*x + c
)^(5/6) + 2*(d*x + c)*sqrt(-((b^4*c^2*d - 2*a*b^3*c*d^2 + a^2*b^2
d^3)(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^12*c^12 - 12*a*b^11*c^1
1*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^
8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c
^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*
c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6) - (b^4
*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^
4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (b^4*d^3*x + b^4*c*d^2)*((b^
12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c
^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*
c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3
*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(
b^11*d^7))^(1/3))/(d*x + c)) - (b^2*d^2*x + b^2*c*d)*((b^12*c^12
- 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 +
495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6
- 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9
+ 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7
))^(1/6))) - 5*b*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c
^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7
*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^
4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*
b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6)*log(25*((b^4*c^2*d - 2*a*
b^3*c*d^2 + a^2*b^2*d^3)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^12*c
^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d
^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*
d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3
*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11
*d^7))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a
^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^4*d^3*
x + b^4*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*
d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7
*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^
4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*
d^11 + a^12*d^12)/(b^11*d^7))^(1/3))/(d*x + c)) + 5*b*d*((b^12*c^
12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^
3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d
^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*
d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*
d^7))^(1/6)*log(-25*((b^4*c^2*d - 2*a*b^3*c*d^2 + a^2*b^2*d^3)*(b

```
*x + a)^(1/6)*(d*x + c)^(5/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66
*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 -
792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 +
 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10
 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6) - (b^4*c^4 - 4
*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x
+ a)^(1/3)*(d*x + c)^(2/3) - (b^4*d^3*x + b^4*c*d^2)*((b^12*c^12
- 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 +
 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6
- 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9
 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7
))^(1/3))/(d*x + c)) - 10*b*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66
*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 -
792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 +
 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10
 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6)*log(5*((b^2*c^
2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + (b^2*d
^2*x + b^2*c*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10
*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^
7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c
^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c
*d^11 + a^12*d^12)/(b^11*d^7))^(1/6))/(d*x + c)) + 10*b*d*((b^12*
c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*
d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6
*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^
3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^1
1*d^7))^(1/6)*log(5*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1
/6)*(d*x + c)^(5/6) - (b^2*d^2*x + b^2*c*d)*((b^12*c^12 - 12*a*b^
11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*
b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7
*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^1
0*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^11*d^7))^(1/6))
/(d*x + c)) + 12*(6*b*d*x + 5*b*c + a*d)*(b*x + a)^(1/6)*(d*x + c
)^(5/6))/(b*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)*(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)*(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1774 $\int \frac{\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=378

$$\frac{(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{5/6}d^{7/6}}-\frac{(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{5/6}d^{7/6}}+\frac{(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{5/6}d^{7/6}}-\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{5/6}d^{7/6}}-\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{5/6}d^{7/6}}+\frac{\sqrt[6]{a+bx}(c+dx)^{5/6}}{d}$$

```
[Out] ((a + b*x)^(1/6)*(c + d*x)^(5/6))/d + ((b*c - a*d)*ArcTan[1/Sqrt[
3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6)
)])/(2*Sqrt[3]*b^(5/6)*d^(7/6)) - ((b*c - a*d)*ArcTan[1/Sqrt[3] +
 (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/
(2*Sqrt[3]*b^(5/6)*d^(7/6)) - ((b*c - a*d)*ArcTanh[(d^(1/6)*(a +
b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(5/6)*d^(7/6)) + ((b
*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3)
 - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*b^(5/6
)*d^(7/6)) - ((b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))
/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1
/6)])/(12*b^(5/6)*d^(7/6))
```

Rubi [A] time = 0.789342, antiderivative size = 378, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{5/6}d^{7/6}}-\frac{(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{5/6}d^{7/6}}+\frac{(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{5/6}d^{7/6}}-\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{5/6}d^{7/6}}-\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{5/6}d^{7/6}}+\frac{\sqrt[6]{a+bx}(c+dx)^{5/6}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(1/6),x]
```

```
[Out] ((a + b*x)^(1/6)*(c + d*x)^(5/6))/d + ((b*c - a*d)*ArcTan[1/Sqrt[
3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6)
```

```
)])/(2*Sqrt[3]*b^(5/6)*d^(7/6)) - ((b*c - a*d)*ArcTan[1/Sqrt[3] +
 (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/
(2*Sqrt[3]*b^(5/6)*d^(7/6)) - ((b*c - a*d)*ArcTanh[(d^(1/6)*(a +
b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(5/6)*d^(7/6)) + ((b
*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3)
 - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*b^(5/6
)*d^(7/6)) - ((b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))
/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1
/6)])/(12*b^(5/6)*d^(7/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.159797, size = 76, normalized size = 0.2

$$\frac{\sqrt[6]{a+bx}(c+dx)^{5/6}\left(\frac{{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[6]{\frac{d(a+bx)}{ad-bc}}}+5\right)}{5d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(1/6),x]
```

```
[Out] ((a + b*x)^(1/6)*(c + d*x)^(5/6)*(5 + Hypergeometric2F1[5/6, 5/6,
 11/6, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d))^
(1/6)))/(5*d)
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{bx+a}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(1/6),x)

[Out] int((b*x+a)^(1/6)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(1/6),x, algorithm="maxima")

[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(1/6), x)
```

Fricas [A] time = 0.280718, size = 3193, normalized size = 8.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(1/6),x, algorithm="fricas")

[Out] -1/12*(4*sqrt(3)*d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2
 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*
d^6)/(b^5*d^7))^(1/6)*arctan(-sqrt(3)*(b*d^2*x + b*c*d)*((b^6*c^6
 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a
^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6)/(2*(b*
c - a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6) - 2*(d*x + c)*sqrt(((b^2
*c*d - a*b*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^6*c^6 - 6*a*b
^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c
^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6) + (b^2*c^2 - 2
*a*b*c*d + a^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^2*d^3*x
+ b^2*c*d^2)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*
a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(
b^5*d^7))^(1/3))/(d*x + c)) + (b*d^2*x + b*c*d)*((b^6*c^6 - 6*a*b
^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c
^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6))) + 4*sqrt(3)*
d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3
*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(
1/6)*arctan(-sqrt(3)*(b*d^2*x + b*c*d)*((b^6*c^6 - 6*a*b^5*c^5*d
+ 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 -
6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6)/(2*(b*c - a*d)*(b*x + a
)^(1/6)*(d*x + c)^(5/6) - 2*(d*x + c)*sqrt(-((b^2*c*d - a*b*d^2)*
(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^
2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b
```

```
*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d
^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (b^2*d^3*x + b^2*c*d^2)*((b
^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3
+ 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/3))
/(d*x + c)) - (b*d^2*x + b*c*d)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^
2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b
*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6))) + d*((b^6*c^6 - 6*a*b^5*c^5*
d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4
- 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6)*log(((b^2*c*d - a*b*d
^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 1
5*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a
^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6) + (b^2*c^2 - 2*a*b*c*d + a
^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^2*d^3*x + b^2*c*d^2)
*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*
d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1
/3))/(d*x + c)) - d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^
2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6
*d^6)/(b^5*d^7))^(1/6)*log(-((b^2*c*d - a*b*d^2)*(b*x + a)^(1/6)*
(d*x + c)^(5/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 -
20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6
)/(b^5*d^7))^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1
/3)*(d*x + c)^(2/3) - (b^2*d^3*x + b^2*c*d^2)*((b^6*c^6 - 6*a*b^5
*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2
*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/3))/(d*x + c)) + 2*
d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3
*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(
1/6)*log(-((b*c - a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + (b*d^2*x
 + b*c*d)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3
*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^5
*d^7))^(1/6))/(d*x + c)) - 2*d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2
*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*
c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6)*log(-((b*c - a*d)*(b*x + a)^(1/
6)*(d*x + c)^(5/6) - (b*d^2*x + b*c*d)*((b^6*c^6 - 6*a*b^5*c^5*d
+ 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 -
6*a^5*b*c*d^5 + a^6*d^6)/(b^5*d^7))^(1/6))/(d*x + c)) - 12*(b*x +
 a)^(1/6)*(d*x + c)^(5/6))/d
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(1/6),x)
```

```
[Out] Integral((a + b*x)**(1/6)/(c + d*x)**(1/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(1/6),x, algorithm="giac")

[Out] Timed out
```

3.1775 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=332

$$-\frac{\sqrt[6]{b}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{7/6}}+\frac{\sqrt[6]{b}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{7/6}}-\frac{\sqrt{3}\sqrt[6]{b}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{7/6}}+\frac{\sqrt{3}\sqrt[6]{b}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{d^{7/6}}+\frac{2\sqrt[6]{b}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{7/6}}-\frac{6\sqrt[6]{a+bx}}{d\sqrt[6]{c+dx}}$$

```
[Out] (-6*(a + b*x)^(1/6))/(d*(c + d*x)^(1/6)) - (Sqrt[3]*b^(1/6)*ArcTa
n[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d
*x)^(1/6))])/d^(7/6) + (Sqrt[3]*b^(1/6)*ArcTan[1/Sqrt[3] + (2*d^(
1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(7/6)
 + (2*b^(1/6)*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x
)^(1/6))])/d^(7/6) - (b^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(2*d^(7/6)) + (b^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)
^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c +
d*x)^(1/6)])/(2*d^(7/6))
```

Rubi [A] time = 0.760496, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{\sqrt[6]{b}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{7/6}}+\frac{\sqrt[6]{b}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{7/6}}-\frac{\sqrt{3}\sqrt[6]{b}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{7/6}}+\frac{\sqrt{3}\sqrt[6]{b}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{d^{7/6}}+\frac{2\sqrt[6]{b}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{7/6}}-\frac{6\sqrt[6]{a+bx}}{d\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(7/6),x]
```

```
[Out] (-6*(a + b*x)^(1/6))/(d*(c + d*x)^(1/6)) - (Sqrt[3]*b^(1/6)*ArcTa
n[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d
*x)^(1/6))])/d^(7/6) + (Sqrt[3]*b^(1/6)*ArcTan[1/Sqrt[3] + (2*d^(
```

```
1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(7/6)
 + (2*b^(1/6)*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x
)^(1/6))])/d^(7/6) - (b^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(2*d^(7/6)) + (b^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)
^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c +
d*x)^(1/6)])/(2*d^(7/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.168872, size = 89, normalized size = 0.27

$$\frac{6\left(b(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-5d(a+bx)\right)}{5d^2(a+bx)^{5/6}\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(7/6),x]
```

```
[Out] (6*(-5*d*(a + b*x) + b*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*(c +
d*x)*Hypergeometric2F1[5/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]
))/(5*d^2*(a + b*x)^(5/6)*(c + d*x)^(1/6))
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{bx+a}\,(dx+c)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(1/6)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(7/6), x)
```

Fricas [A] time = 0.252835, size = 857, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] -1/2*(4*sqrt(3)*(d^2*x + c*d)*(b/d^7)^(1/6)*arctan(sqrt(3)*(d^2*x
 + c*d)*(b/d^7)^(1/6)/(2*(d*x + c)*sqrt(((b*x + a)^(1/6)*(d*x + c
)^(5/6)*d*(b/d^7)^(1/6) + (d^3*x + c*d^2)*(b/d^7)^(1/3) + (b*x +
a)^(1/3)*(d*x + c)^(2/3))/(d*x + c)) + (d^2*x + c*d)*(b/d^7)^(1/6
) + 2*(b*x + a)^(1/6)*(d*x + c)^(5/6))) + 4*sqrt(3)*(d^2*x + c*d)
*(b/d^7)^(1/6)*arctan(sqrt(3)*(d^2*x + c*d)*(b/d^7)^(1/6)/(2*(d*x
 + c)*sqrt(-((b*x + a)^(1/6)*(d*x + c)^(5/6)*d*(b/d^7)^(1/6) - (d
^3*x + c*d^2)*(b/d^7)^(1/3) - (b*x + a)^(1/3)*(d*x + c)^(2/3))/(d
*x + c)) - (d^2*x + c*d)*(b/d^7)^(1/6) + 2*(b*x + a)^(1/6)*(d*x +
 c)^(5/6))) - (d^2*x + c*d)*(b/d^7)^(1/6)*log(4*((b*x + a)^(1/6)*
(d*x + c)^(5/6)*d*(b/d^7)^(1/6) + (d^3*x + c*d^2)*(b/d^7)^(1/3) +
 (b*x + a)^(1/3)*(d*x + c)^(2/3))/(d*x + c)) + (d^2*x + c*d)*(b/d
^7)^(1/6)*log(-4*((b*x + a)^(1/6)*(d*x + c)^(5/6)*d*(b/d^7)^(1/6)
 - (d^3*x + c*d^2)*(b/d^7)^(1/3) - (b*x + a)^(1/3)*(d*x + c)^(2/3
))/(d*x + c)) - 2*(d^2*x + c*d)*(b/d^7)^(1/6)*log(((d^2*x + c*d)*
(b/d^7)^(1/6) + (b*x + a)^(1/6)*(d*x + c)^(5/6))/(d*x + c)) + 2*(
d^2*x + c*d)*(b/d^7)^(1/6)*log(-((d^2*x + c*d)*(b/d^7)^(1/6) - (b
*x + a)^(1/6)*(d*x + c)^(5/6))/(d*x + c)) + 12*(b*x + a)^(1/6)*(d
*x + c)^(5/6))/(d^2*x + c*d)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(7/6),x)
```

```
[Out] Integral((a + b*x)**(1/6)/(c + d*x)**(7/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(7/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1776 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{13/6}}\,dx$

Optimal. Leaf size=32

$$\frac{6(a+bx)^{7/6}}{7(c+dx)^{7/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(7/6))/(7*(b*c - a*d)*(c + d*x)^(7/6))
```

Rubi [A] time = 0.0216651, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{6(a+bx)^{7/6}}{7(c+dx)^{7/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(13/6),x]
```

```
[Out] (6*(a + b*x)^(7/6))/(7*(b*c - a*d)*(c + d*x)^(7/6))
```

Rubi in Sympy [A] time = 3.34077, size = 27, normalized size = 0.84

$$-\frac{6\left(a+bx\right)^{\frac{7}{6}}}{7\left(c+dx\right)^{\frac{7}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(13/6),x)
```

```
[Out] -6*(a + b*x)**(7/6)/(7*(c + d*x)**(7/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0422275, size = 32, normalized size = 1.

$$\frac{6(a+bx)^{7/6}}{7(c+dx)^{7/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(13/6),x]
```

```
[Out] (6*(a + b*x)^(7/6))/(7*(b*c - a*d)*(c + d*x)^(7/6))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.8

$$-\frac{6}{7\,ad-7\,bc}\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{7}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(13/6),x)
```

```
[Out] -6/7*(b*x+a)^(7/6)/(d*x+c)^(7/6)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(13/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(13/6), x)
```

Fricas [A] time = 0.214205, size = 88, normalized size = 2.75

$$\frac{6\,(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{5}{6}}}{7\,(bc^3-ac^2d+(bcd^2-ad^3)x^2+2\,(bc^2d-acd^2)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(13/6),x, algorithm="fricas")
```

```
[Out] 6/7*(b*x + a)^(7/6)*(d*x + c)^(5/6)/(b*c^3 - a*c^2*d + (b*c*d^2 -
 a*d^3)*x^2 + 2*(b*c^2*d - a*c*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(13/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(13/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1777 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{19/6}}\,dx$

Optimal. Leaf size=66

$$\frac{36b(a+bx)^{7/6}}{91(c+dx)^{7/6}(bc-ad)^2}+\frac{6(a+bx)^{7/6}}{13(c+dx)^{13/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(7/6))/(13*(b*c - a*d)*(c + d*x)^(13/6)) + (36*b*(a
+ b*x)^(7/6))/(91*(b*c - a*d)^2*(c + d*x)^(7/6))
```

Rubi [A] time = 0.0512597, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{36b(a+bx)^{7/6}}{91(c+dx)^{7/6}(bc-ad)^2}+\frac{6(a+bx)^{7/6}}{13(c+dx)^{13/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(19/6),x]
```

```
[Out] (6*(a + b*x)^(7/6))/(13*(b*c - a*d)*(c + d*x)^(13/6)) + (36*b*(a
+ b*x)^(7/6))/(91*(b*c - a*d)^2*(c + d*x)^(7/6))
```

Rubi in Sympy [A] time = 6.93188, size = 56, normalized size = 0.85

$$\frac{36b\,(a+bx)^{\frac{7}{6}}}{91\,(c+dx)^{\frac{7}{6}}\,(ad-bc)^2}-\frac{6\,(a+bx)^{\frac{7}{6}}}{13\,(c+dx)^{\frac{13}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(19/6),x)
```

```
[Out] 36*b*(a + b*x)**(7/6)/(91*(c + d*x)**(7/6)*(a*d - b*c)**2) - 6*(a
 + b*x)**(7/6)/(13*(c + d*x)**(13/6)*(a*d - b*c))
```

Mathematica [A] time = 0.071513, size = 46, normalized size = 0.7

$$\frac{6(a+bx)^{7/6}(-7ad+13bc+6bdx)}{91(c+dx)^{13/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(19/6),x]
```

```
[Out] (6*(a + b*x)^(7/6)*(13*b*c - 7*a*d + 6*b*d*x))/(91*(b*c - a*d)^2*
(c + d*x)^(13/6))
```

Maple [A] time = 0.007, size = 54, normalized size = 0.8

$$-\frac{-36\,bdx+42\,ad-78\,bc}{91\,a^{2}d^{2}-182\,abcd+91\,b^{2}c^{2}}\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{13}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(19/6),x)
```

```
[Out] -6/91*(b*x+a)^(7/6)*(-6*b*d*x+7*a*d-13*b*c)/(d*x+c)^(13/6)/(a^2*d
^2-2*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(19/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(19/6), x)
```

Fricas [A] time = 0.207391, size = 236, normalized size = 3.58

$$\frac{6\left(6\,b^{2}dx^{2}+13\,abc-7\,a^{2}d+\left(13\,b^{2}c-abd\right)x\right)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}{91\,(b^{2}c^{5}-2\,abc^{4}d+a^{2}c^{3}d^{2}+(b^{2}c^{2}d^{3}-2\,abcd^{4}+a^{2}d^{5})x^{3}+3\,(b^{2}c^{3}d^{2}-2\,abc^{2}d^{3}+a^{2}cd^{4})x^{2}+3\,(b^{2}c^{4}d-2\,abc^{3}d^{2}+a^{2}c^{2}d^{3})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(19/6),x, algorithm="fricas")
```

```
[Out] 6/91*(6*b^2*d*x^2 + 13*a*b*c - 7*a^2*d + (13*b^2*c - a*b*d)*x)*(b
*x + a)^(1/6)*(d*x + c)^(5/6)/(b^2*c^5 - 2*a*b*c^4*d + a^2*c^3*d^
```

```
2 + (b^2*c^2*d^3 - 2*a*b*c*d^4 + a^2*d^5)*x^3 + 3*(b^2*c^3*d^2 -
2*a*b*c^2*d^3 + a^2*c*d^4)*x^2 + 3*(b^2*c^4*d - 2*a*b*c^3*d^2 + a
^2*c^2*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**(1/6)/(d*x+c)**(19/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(1/6)/(d*x + c)^(19/6),x, algorithm="giac")

[Out] Timed out
```

3.1778 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{25/6}} \, dx$

Optimal. Leaf size=101

$$\frac{432b^2(a+bx)^{7/6}}{1729(c+dx)^{7/6}(bc-ad)^3}+\frac{72b(a+bx)^{7/6}}{247(c+dx)^{13/6}(bc-ad)^2}+\frac{6(a+bx)^{7/6}}{19(c+dx)^{19/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(7/6))/(19*(b*c - a*d)*(c + d*x)^(19/6)) + (72*b*(a
+ b*x)^(7/6))/(247*(b*c - a*d)^2*(c + d*x)^(13/6)) + (432*b^2*(a
+ b*x)^(7/6))/(1729*(b*c - a*d)^3*(c + d*x)^(7/6))
```

Rubi [A] time = 0.0839149, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{432b^2(a+bx)^{7/6}}{1729(c+dx)^{7/6}(bc-ad)^3}+\frac{72b(a+bx)^{7/6}}{247(c+dx)^{13/6}(bc-ad)^2}+\frac{6(a+bx)^{7/6}}{19(c+dx)^{19/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(25/6),x]
```

```
[Out] (6*(a + b*x)^(7/6))/(19*(b*c - a*d)*(c + d*x)^(19/6)) + (72*b*(a
+ b*x)^(7/6))/(247*(b*c - a*d)^2*(c + d*x)^(13/6)) + (432*b^2*(a
+ b*x)^(7/6))/(1729*(b*c - a*d)^3*(c + d*x)^(7/6))
```

Rubi in Sympy [A] time = 12.4849, size = 88, normalized size = 0.87

$$-\frac{432b^2\left(a+bx\right)^{\frac{7}{6}}}{1729\left(c+dx\right)^{\frac{7}{6}}\left(ad-bc\right)^3}+\frac{72b\left(a+bx\right)^{\frac{7}{6}}}{247\left(c+dx\right)^{\frac{13}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{7}{6}}}{19\left(c+dx\right)^{\frac{19}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(25/6),x)
```

```
[Out] -432*b**2*(a + b*x)**(7/6)/(1729*(c + d*x)**(7/6)*(a*d - b*c)**3)
 + 72*b*(a + b*x)**(7/6)/(247*(c + d*x)**(13/6)*(a*d - b*c)**2) -
 6*(a + b*x)**(7/6)/(19*(c + d*x)**(19/6)*(a*d - b*c))
```

Mathematica [A] time = 0.103769, size = 77, normalized size = 0.76

$$\frac{6(a+bx)^{7/6}\left(91a^2d^2-14abd(19c+6dx)+b^2\left(247c^2+228cdx+72d^2x^2\right)\right)}{1729(c+dx)^{19/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(25/6),x]
```

```
[Out] (6*(a + b*x)^(7/6)*(91*a^2*d^2 - 14*a*b*d*(19*c + 6*d*x) + b^2*(2
47*c^2 + 228*c*d*x + 72*d^2*x^2)))/(1729*(b*c - a*d)^3*(c + d*x)^
(19/6))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{432\,b^{2}d^{2}x^{2}-504\,abd^{2}x+1368\,b^{2}cdx+546\,a^{2}d^{2}-1596\,abcd+1482\,b^{2}c^{2}}{1729\,a^{3}d^{3}-5187\,a^{2}cbd^{2}+5187\,ab^{2}c^{2}d-1729\,b^{3}c^{3}}\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{19}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(25/6),x)
```

```
[Out] -6/1729*(b*x+a)^(7/6)*(72*b^2*d^2*x^2-84*a*b*d^2*x+228*b^2*c*d*x+
91*a^2*d^2-266*a*b*c*d+247*b^2*c^2)/(d*x+c)^(19/6)/(a^3*d^3-3*a^2
*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int\frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{25}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(25/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(25/6), x)
```

Fricas [A] time = 0.225582, size = 456, normalized size = 4.51

$$\frac{6\left(72\,b^{3}d^{2}x^{3}+247\,ab^{2}c^{2}-266\,a^{2}bcd+91\,a^{3}d^{2}+12\left(19\,b^{3}cd-ab^{2}d^{2}\right)x^{2}}{1729\,(b^{3}c^{7}-3\,ab^{2}c^{6}d+3\,a^{2}bc^{5}d^{2}-a^{3}c^{4}d^{3}+(b^{3}c^{3}d^{4}-3\,ab^{2}c^{2}d^{5}+3\,a^{2}bcd^{6}-a^{3}d^{7})x^{4}+4\,(b^{3}c^{4}d^{3}-3\,ab^{2}c^{3}d^{4}+3\,a^{2}bc^{2}d^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(25/6),x, algorithm="fricas")
```

```
[Out] 6/1729*(72*b^3*d^2*x^3 + 247*a*b^2*c^2 - 266*a^2*b*c*d + 91*a^3*d
^2 + 12*(19*b^3*c*d - a*b^2*d^2)*x^2 + (247*b^3*c^2 - 38*a*b^2*c*
d + 7*a^2*b*d^2)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b^3*c^7 - 3*
a*b^2*c^6*d + 3*a^2*b*c^5*d^2 - a^3*c^4*d^3 + (b^3*c^3*d^4 - 3*a*
b^2*c^2*d^5 + 3*a^2*b*c*d^6 - a^3*d^7)*x^4 + 4*(b^3*c^4*d^3 - 3*a
*b^2*c^3*d^4 + 3*a^2*b*c^2*d^5 - a^3*c*d^6)*x^3 + 6*(b^3*c^5*d^2
- 3*a*b^2*c^4*d^3 + 3*a^2*b*c^3*d^4 - a^3*c^2*d^5)*x^2 + 4*(b^3*c
^6*d - 3*a*b^2*c^5*d^2 + 3*a^2*b*c^4*d^3 - a^3*c^3*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(25/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(25/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1779 $\int \frac{\sqrt[6]{a+bx}}{(c+dx)^{31/6}}\,dx$

Optimal. Leaf size=136

$$\frac{7776b^3(a+bx)^{7/6}}{43225(c+dx)^{7/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{7/6}}{6175(c+dx)^{13/6}(bc-ad)^3}+\frac{108b(a+bx)^{7/6}}{475(c+dx)^{19/6}(bc-ad)^2}+\frac{6(a+bx)^{7/6}}{25(c+dx)^{25/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(7/6))/(25*(b*c - a*d)*(c + d*x)^(25/6)) + (108*b*(a
 + b*x)^(7/6))/(475*(b*c - a*d)^2*(c + d*x)^(19/6)) + (1296*b^2*(
a + b*x)^(7/6))/(6175*(b*c - a*d)^3*(c + d*x)^(13/6)) + (7776*b^3
*(a + b*x)^(7/6))/(43225*(b*c - a*d)^4*(c + d*x)^(7/6))
```

Rubi [A] time = 0.121648, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{7776b^3(a+bx)^{7/6}}{43225(c+dx)^{7/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{7/6}}{6175(c+dx)^{13/6}(bc-ad)^3}+\frac{108b(a+bx)^{7/6}}{475(c+dx)^{19/6}(bc-ad)^2}+\frac{6(a+bx)^{7/6}}{25(c+dx)^{25/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1/6)/(c + d*x)^(31/6),x]
```

```
[Out] (6*(a + b*x)^(7/6))/(25*(b*c - a*d)*(c + d*x)^(25/6)) + (108*b*(a
 + b*x)^(7/6))/(475*(b*c - a*d)^2*(c + d*x)^(19/6)) + (1296*b^2*(
a + b*x)^(7/6))/(6175*(b*c - a*d)^3*(c + d*x)^(13/6)) + (7776*b^3
*(a + b*x)^(7/6))/(43225*(b*c - a*d)^4*(c + d*x)^(7/6))
```

Rubi in Sympy [A] time = 19.8812, size = 121, normalized size = 0.89

$$\frac{7776b^3\left(a+bx\right)^{\frac{7}{6}}}{43225\left(c+dx\right)^{\frac{7}{6}}\left(ad-bc\right)^4}-\frac{1296b^2\left(a+bx\right)^{\frac{7}{6}}}{6175\left(c+dx\right)^{\frac{13}{6}}\left(ad-bc\right)^3}+\frac{108b\left(a+bx\right)^{\frac{7}{6}}}{475\left(c+dx\right)^{\frac{19}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{7}{6}}}{25\left(c+dx\right)^{\frac{25}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1/6)/(d*x+c)**(31/6),x)
```

```
[Out] 7776*b**3*(a + b*x)**(7/6)/(43225*(c + d*x)**(7/6)*(a*d - b*c)**4
) - 1296*b**2*(a + b*x)**(7/6)/(6175*(c + d*x)**(13/6)*(a*d - b*c
)**3) + 108*b*(a + b*x)**(7/6)/(475*(c + d*x)**(19/6)*(a*d - b*c)
**2) - 6*(a + b*x)**(7/6)/(25*(c + d*x)**(25/6)*(a*d - b*c))
```

Mathematica [A] time = 0.160801, size = 118, normalized size = 0.87

$$\frac{6(a+bx)^{7/6}\left(-1729a^3d^3+273a^2bd^2(25c+6dx)-21ab^2d\left(475c^2+300cdx+72d^2x^2\right)+b^3\left(6175c^3+8550c^2dx+5400cd^2x^2\right.\right.}{43225(c+dx)^{25/6}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1/6)/(c + d*x)^(31/6),x]
```

```
[Out] (6*(a + b*x)^(7/6)*(-1729*a^3*d^3 + 273*a^2*b*d^2*(25*c + 6*d*x)
- 21*a*b^2*d*(475*c^2 + 300*c*d*x + 72*d^2*x^2) + b^3*(6175*c^3 +
 8550*c^2*d*x + 5400*c*d^2*x^2 + 1296*d^3*x^3)))/(43225*(b*c - a*
d)^4*(c + d*x)^(25/6))
```

Maple [A] time = 0.012, size = 171, normalized size = 1.3

$$-\frac{-7776\,x^3b^3d^3+9072\,ab^2d^3x^2-32400\,b^3cd^2x^2-9828\,a^2bd^3x+37800\,ab^2cd^2x-51300\,b^3c^2dx+10374\,a^3d^3-40950\,a^2cb}{43225\,a^4d^4-172900\,a^3bcd^3+259350\,a^2c^2b^2d^2-172900\,ab^3c^3d+43225\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1/6)/(d*x+c)^(31/6),x)
```

```
[Out] -6/43225*(b*x+a)^(7/6)*(-1296*b^3*d^3*x^3+1512*a*b^2*d^3*x^2-5400
*b^3*c*d^2*x^2-1638*a^2*b*d^3*x+6300*a*b^2*c*d^2*x-8550*b^3*c^2*d
*x+1729*a^3*d^3-6825*a^2*b*c*d^2+9975*a*b^2*c^2*d-6175*b^3*c^3)/(
d*x+c)^(25/6)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^
3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{1}{6}}}{(dx+c)^{\frac{31}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(31/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(1/6)/(d*x + c)^(31/6), x)
```

Fricas [A] time = 0.223434, size = 720, normalized size = 5.29

$$\frac{6\left(1296\,b^4d^3x^4+6175\,ab^3c^3-9975\,a^2b^2c^2d+6825\,a\cdots\right.}{43225\left(b^4c^9-4\,ab^3c^8d+6\,a^2b^2c^7d^2-4\,a^3bc^6d^3+a^4c^5d^4+(b^4c^4d^5-4\,ab^3c^3d^6+6\,a^2b^2c^2d^7-4\,a^3bcd^8+a^4d^9)x^5+5\,(b^4c^5\cdots\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(31/6),x, algorithm="fricas")
```

```
[Out] 6/43225*(1296*b^4*d^3*x^4 + 6175*a*b^3*c^3 - 9975*a^2*b^2*c^2*d +
 6825*a^3*b*c*d^2 - 1729*a^4*d^3 + 216*(25*b^4*c*d^2 - a*b^3*d^3)
*x^3 + 18*(475*b^4*c^2*d - 50*a*b^3*c*d^2 + 7*a^2*b^2*d^3)*x^2 +
(6175*b^4*c^3 - 1425*a*b^3*c^2*d + 525*a^2*b^2*c*d^2 - 91*a^3*b*d
^3)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b^4*c^9 - 4*a*b^3*c^8*d +
 6*a^2*b^2*c^7*d^2 - 4*a^3*b*c^6*d^3 + a^4*c^5*d^4 + (b^4*c^4*d^5
 - 4*a*b^3*c^3*d^6 + 6*a^2*b^2*c^2*d^7 - 4*a^3*b*c*d^8 + a^4*d^9)
*x^5 + 5*(b^4*c^5*d^4 - 4*a*b^3*c^4*d^5 + 6*a^2*b^2*c^3*d^6 - 4*a
^3*b*c^2*d^7 + a^4*c*d^8)*x^4 + 10*(b^4*c^6*d^3 - 4*a*b^3*c^5*d^4
 + 6*a^2*b^2*c^4*d^5 - 4*a^3*b*c^3*d^6 + a^4*c^2*d^7)*x^3 + 10*(b
^4*c^7*d^2 - 4*a*b^3*c^6*d^3 + 6*a^2*b^2*c^5*d^4 - 4*a^3*b*c^4*d^
5 + a^4*c^3*d^6)*x^2 + 5*(b^4*c^8*d - 4*a*b^3*c^7*d^2 + 6*a^2*b^2
*c^6*d^3 - 4*a^3*b*c^5*d^4 + a^4*c^4*d^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1/6)/(d*x+c)**(31/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(1/6)/(d*x + c)^(31/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1780 $\int (a+bx)^{5/6}\sqrt[6]{c+dx}\,dx$

Optimal. Leaf size=427

$$\frac{5(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{7/6}d^{11/6}} - \frac{5(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{7/6}d^{11/6}} - \frac{5(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{7/6}d^{11/6}} + \frac{5(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{7/6}d^{11/6}} - \frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{7/6}d^{11/6}} + \frac{(a+bx)^{5/6}\sqrt[6]{c+dx}(bc-ad)}{12bd} + \frac{(a+bx)^{11/6}\sqrt[6]{c+dx}}{2b}$$

```
[Out] ((b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(1/6))/(12*b*d) + ((a + b*
x)^(11/6)*(c + d*x)^(1/6))/(2*b) - (5*(b*c - a*d)^2*ArcTan[1/Sqrt
[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6
))])/(24*Sqrt[3]*b^(7/6)*d^(11/6)) + (5*(b*c - a*d)^2*ArcTan[1/Sq
rt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1
/6))])/(24*Sqrt[3]*b^(7/6)*d^(11/6)) - (5*(b*c - a*d)^2*ArcTanh[(
d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(7/6)*
d^(11/6)) + (5*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/
3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)
^(1/6)])/(144*b^(7/6)*d^(11/6)) - (5*(b*c - a*d)^2*Log[b^(1/3) +
(d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a +
 b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(7/6)*d^(11/6))
```

Rubi [A] time = 1.17116, antiderivative size = 427, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$\frac{5(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{7/6}d^{11/6}} - \frac{5(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{7/6}d^{11/6}} - \frac{5(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{7/6}d^{11/6}} + \frac{5(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{7/6}d^{11/6}} - \frac{5(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{7/6}d^{11/6}} + \frac{(a+bx)^{5/6}\sqrt[6]{c+dx}(bc-ad)}{12bd} + \frac{(a+bx)^{11/6}\sqrt[6]{c+dx}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)*(c + d*x)^(1/6),x]
```

```
[Out] ((b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(1/6))/(12*b*d) + ((a + b*
x)^(11/6)*(c + d*x)^(1/6))/(2*b) - (5*(b*c - a*d)^2*ArcTan[1/Sqrt
[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6
))])/(24*Sqrt[3]*b^(7/6)*d^(11/6)) + (5*(b*c - a*d)^2*ArcTan[1/Sq
rt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1
/6))])/(24*Sqrt[3]*b^(7/6)*d^(11/6)) - (5*(b*c - a*d)^2*ArcTanh[(
d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(7/6)*
d^(11/6)) + (5*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/
3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)
^(1/6)])/(144*b^(7/6)*d^(11/6)) - (5*(b*c - a*d)^2*Log[b^(1/3) +
(d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a +
 b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(7/6)*d^(11/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)*(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.20768, size = 109, normalized size = 0.26

$$\frac{\sqrt[6]{c+dx}\left(d(a+bx)(5ad+b(c+6dx))-5(bc-ad)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{12bd^2\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)*(c + d*x)^(1/6),x]
```

```
[Out] ((c + d*x)^(1/6)*(d*(a + b*x)*(5*a*d + b*(c + 6*d*x)) - 5*(b*c -
a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hypergeometric2F1[1/6
, 1/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(12*b*d^2*(a + b*x)^(1/6
))
```

Maple [F] time = 0.047, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{6}}\sqrt[6]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)*(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(5/6)*(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{6}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)*(d*x + c)^(1/6), x)
```

Fricas [A] time = 0.328567, size = 5825, normalized size = 13.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] 1/144*(20*sqrt(3)*b*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^1
0*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*
b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8
*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^
11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6)*arctan(sqrt(3)*(b^2*d^
2*x + a*b*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*
d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7
*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^
4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*
d^11 + a^12*d^12)/(b^7*d^11))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2
*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + 2*(b*x + a)*sqrt(((b^3*c^
2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*(b*x + a)^(5/6)*(d*x + c)^(1/6
)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3
*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^
6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a
^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d
^12)/(b^7*d^11))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2
*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(1/3) +
 (b^3*d^4*x + a*b^2*d^4)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*
b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a
^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*
```

a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12
*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/3))/(b*x + a)) + (b^2*
d^2*x + a*b*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^1
0*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c
^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*
c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*
c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6))) + 20*sqrt(3)*b*d*((b^12*c
^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d
^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*
d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3
*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*
d^11))^(1/6)*arctan(sqrt(3)*(b^2*d^2*x + a*b*d^2)*((b^12*c^12 - 1
2*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 49
5*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 7
92*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 +
66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^
(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c
)^(1/6) + 2*(b*x + a)*sqrt(-((b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b
d^4)(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^12*c^12 - 12*a*b^11*c^1
1*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^
8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c
^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*
c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6) - (b^4
*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^
4)*(b*x + a)^(2/3)*(d*x + c)^(1/3) - (b^3*d^4*x + a*b^2*d^4)*((b^
12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c
^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*
c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3
*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(
b^7*d^11))^(1/3))/(b*x + a)) - (b^2*d^2*x + a*b*d^2)*((b^12*c^12
- 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 +
495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6
- 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9
+ 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11
))^(1/6))) - 5*b*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c
^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7
*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^
4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*
b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6)*log(25*((b^3*c^2*d^2 - 2*
a*b^2*c*d^3 + a^2*b*d^4)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^12*c
^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d
^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*
d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3
*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*
d^11))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a
^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^3*d^4*
x + a*b^2*d^4)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*
d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7
*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^
4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*
d^11 + a^12*d^12)/(b^7*d^11))^(1/3))/(b*x + a)) + 5*b*d*((b^12*c^
12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^
3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d
^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*
d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d
^11))^(1/6)*log(-25*((b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*(b

```
*x + a)^(5/6)*(d*x + c)^(1/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66
*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 -
792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 +
 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10
 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6) - (b^4*c^4 - 4
*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x
+ a)^(2/3)*(d*x + c)^(1/3) - (b^3*d^4*x + a*b^2*d^4)*((b^12*c^12
- 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 +
 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6
- 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9
 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11
))^(1/3))/(b*x + a)) - 10*b*d*((b^12*c^12 - 12*a*b^11*c^11*d + 66
*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 -
792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 +
 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10
 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6)*log(5*((b^2*c^
2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + (b^2*d
^2*x + a*b*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10
*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^
7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c
^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c
*d^11 + a^12*d^12)/(b^7*d^11))^(1/6))/(b*x + a)) + 10*b*d*((b^12*
c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*
d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6
*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^
3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7
*d^11))^(1/6)*log(5*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5
/6)*(d*x + c)^(1/6) - (b^2*d^2*x + a*b*d^2)*((b^12*c^12 - 12*a*b^
11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*
b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7
*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^1
0*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^7*d^11))^(1/6))
/(b*x + a)) + 12*(6*b*d*x + b*c + 5*a*d)*(b*x + a)^(5/6)*(d*x + c
)^(1/6))/(b*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)*(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1781 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=378

$$\frac{5(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12\sqrt[6]{b}d^{11/6}}-\frac{5(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12\sqrt[6]{b}d^{11/6}}-\frac{5(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}\sqrt[6]{b}d^{11/6}}+\frac{5(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}\sqrt[6]{b}d^{11/6}}-\frac{5(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3\sqrt[6]{b}d^{11/6}}+\frac{(a+bx)^{5/6}\sqrt[6]{c+dx}}{d}$$

```
[Out] ((a + b*x)^(5/6)*(c + d*x)^(1/6))/d - (5*(b*c - a*d)*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(2*Sqrt[3]*b^(1/6)*d^(11/6)) + (5*(b*c - a*d)*ArcTan[1/Sqrt
[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6
))])/(2*Sqrt[3]*b^(1/6)*d^(11/6)) - (5*(b*c - a*d)*ArcTanh[(d^(1/
6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(1/6)*d^(11/
6)) + (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c +
 d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])
/(12*b^(1/6)*d^(11/6)) - (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a
 + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6)
)/(c + d*x)^(1/6)])/(12*b^(1/6)*d^(11/6))
```

Rubi [A] time = 0.942668, antiderivative size = 378, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$\frac{5(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12\sqrt[6]{b}d^{11/6}}-\frac{5(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12\sqrt[6]{b}d^{11/6}}-\frac{5(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}\sqrt[6]{b}d^{11/6}}+\frac{5(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}\sqrt[6]{b}d^{11/6}}-\frac{5(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3\sqrt[6]{b}d^{11/6}}+\frac{(a+bx)^{5/6}\sqrt[6]{c+dx}}{d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(5/6),x]
```

```
[Out] ((a + b*x)^(5/6)*(c + d*x)^(1/6))/d - (5*(b*c - a*d)*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
```

```
6))])/(2*Sqrt[3]*b^(1/6)*d^(11/6)) + (5*(b*c - a*d)*ArcTan[1/Sqrt
[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6
))])/(2*Sqrt[3]*b^(1/6)*d^(11/6)) - (5*(b*c - a*d)*ArcTanh[(d^(1/
6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(1/6)*d^(11/
6)) + (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c +
 d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])
/(12*b^(1/6)*d^(11/6)) - (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a
 + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6)
)/(c + d*x)^(1/6)])/(12*b^(1/6)*d^(11/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.175937, size = 74, normalized size = 0.2

$$\frac{(a+bx)^{5/6}\sqrt[6]{c+dx}\left(\frac{5\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}}+1\right)}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(5/6),x]
```

```
[Out] ((a + b*x)^(5/6)*(c + d*x)^(1/6)*(1 + (5*Hypergeometric2F1[1/6, 1
/6, 7/6, (b*(c + d*x))/(b*c - a*d)])/((d*(a + b*x))/(-(b*c) + a*d
))^(5/6)))/d
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(5/6)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(5/6), x)
```

Fricas [A] time = 0.283543, size = 3171, normalized size = 8.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] -1/12*(20*sqrt(3)*d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^
2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6
*d^6)/(b*d^11))^(1/6)*arctan(-sqrt(3)*(b*d^2*x + a*d^2)*((b^6*c^6
 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a
^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6)/(2*(b*c
 - a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6) - 2*(b*x + a)*sqrt(((b*c*
d^2 - a*d^3)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6 - 6*a*b^5*
c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*
d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6) + (b^2*c^2 - 2*a*b
*c*d + a^2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b*d^4*x + a*d^
4)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^
3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(
1/3))/(b*x + a)) + (b*d^2*x + a*d^2)*((b^6*c^6 - 6*a*b^5*c^5*d +
15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*
a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6))) + 20*sqrt(3)*d*((b^6*c^6
 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a
^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6)*arctan(
-sqrt(3)*(b*d^2*x + a*d^2)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4
*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^
5 + a^6*d^6)/(b*d^11))^(1/6)/(2*(b*c - a*d)*(b*x + a)^(5/6)*(d*x
+ c)^(1/6) - 2*(b*x + a)*sqrt(-((b*c*d^2 - a*d^3)*(b*x + a)^(5/6)
*(d*x + c)^(1/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 -
 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^
6)/(b*d^11))^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(2
/3)*(d*x + c)^(1/3) - (b*d^4*x + a*d^4)*((b^6*c^6 - 6*a*b^5*c^5*d
 + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 -
```

```
6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/3))/(b*x + a)) - (b*d^2*x
+ a*d^2)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*
b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^
11))^(1/6))) + 5*d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2
 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*
d^6)/(b*d^11))^(1/6)*log(25*((b*c*d^2 - a*d^3)*(b*x + a)^(5/6)*(d
*x + c)^(1/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20
*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/
(b*d^11))^(1/6) + (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(2/3)
*(d*x + c)^(1/3) + (b*d^4*x + a*d^4)*((b^6*c^6 - 6*a*b^5*c^5*d +
15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*
a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/3))/(b*x + a)) - 5*d*((b^6*c^
6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*
a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6)*log(-2
5*((b*c*d^2 - a*d^3)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6 -
6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*
b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6) - (b^2*c^2
 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) - (b*d^4*
x + a*d^4)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^
3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*
d^11))^(1/3))/(b*x + a)) + 10*d*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^
2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b
*c*d^5 + a^6*d^6)/(b*d^11))^(1/6)*log(-5*((b*c - a*d)*(b*x + a)^(
5/6)*(d*x + c)^(1/6) + (b*d^2*x + a*d^2)*((b^6*c^6 - 6*a*b^5*c^5*
d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4
- 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6))/(b*x + a)) - 10*d*((b
^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3
+ 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11))^(1/6)*l
og(-5*((b*c - a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6) - (b*d^2*x + a
*d^2)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3
*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b*d^11)
)^(1/6))/(b*x + a)) - 12*(b*x + a)^(5/6)*(d*x + c)^(1/6))/d
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1782 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{11/6}}\,dx$

Optimal. Leaf size=334

$$-\frac{b^{5/6}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{11/6}}+\frac{b^{5/6}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{11/6}}+\frac{\sqrt{3}b^{5/6}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{11/6}}-\frac{\sqrt{3}b^{5/6}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{d^{11/6}}+\frac{2b^{5/6}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{11/6}}-\frac{6(a+bx)^{5/6}}{5d(c+dx)^{5/6}}$$

```
[Out] (-6*(a + b*x)^(5/6))/(5*d*(c + d*x)^(5/6)) + (Sqrt[3]*b^(5/6)*Arc
Tan[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c +
 d*x)^(1/6))])/d^(11/6) - (Sqrt[3]*b^(5/6)*ArcTan[1/Sqrt[3] + (2*
d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(1
1/6) + (2*b^(5/6)*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c +
 d*x)^(1/6))])/d^(11/6) - (b^(5/6)*Log[b^(1/3) + (d^(1/3)*(a + b*
x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c
+ d*x)^(1/6)])/(2*d^(11/6)) + (b^(5/6)*Log[b^(1/3) + (d^(1/3)*(a
+ b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))
/(c + d*x)^(1/6)])/(2*d^(11/6))
```

Rubi [A] time = 0.911429, antiderivative size = 334, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$-\frac{b^{5/6}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{11/6}}+\frac{b^{5/6}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{11/6}}+\frac{\sqrt{3}b^{5/6}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{11/6}}-\frac{\sqrt{3}b^{5/6}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{d^{11/6}}+\frac{2b^{5/6}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{11/6}}-\frac{6(a+bx)^{5/6}}{5d(c+dx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(11/6),x]
```


```
[Out] (-6*(a + b*x)^(5/6))/(5*d*(c + d*x)^(5/6)) + (Sqrt[3]*b^(5/6)*Arc
Tan[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c +
 d*x)^(1/6))])/d^(11/6) - (Sqrt[3]*b^(5/6)*ArcTan[1/Sqrt[3] + (2*
d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(1
```

```
1/6) + (2*b^(5/6)*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c +
 d*x)^(1/6))])/d^(11/6) - (b^(5/6)*Log[b^(1/3) + (d^(1/3)*(a + b*
x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c
+ d*x)^(1/6)])/(2*d^(11/6)) + (b^(5/6)*Log[b^(1/3) + (d^(1/3)*(a
+ b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))
/(c + d*x)^(1/6)])/(2*d^(11/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(11/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.175265, size = 90, normalized size = 0.27

$$\frac{30b(c+dx)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)}{5d^2\sqrt[6]{a+bx}(c+dx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(11/6),x]
```

```
[Out] (-6*d*(a + b*x) + 30*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c +
d*x)*Hypergeometric2F1[1/6, 1/6, 7/6, (b*(c + d*x))/(b*c - a*d)])
/(5*d^2*(a + b*x)^(1/6)*(c + d*x)^(5/6))
```

Maple [F] time = 0.07, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{11}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(11/6),x)
```

```
[Out] int((b*x+a)^(5/6)/(d*x+c)^(11/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(11/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(11/6), x)
```

Fricas [A] time = 0.256044, size = 1023, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(11/6),x, algorithm="fricas")
```

```
[Out] -1/10*(20*sqrt(3)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*d*(b^5/d^11)^(1
/6)*arctan(sqrt(3)*(b*d^2*x + a*d^2)*(b^5/d^11)^(1/6)/(2*(b*x + a
)^(5/6)*(d*x + c)^(1/6)*b + 2*(b*x + a)*sqrt(((b*x + a)^(5/6)*(d*
x + c)^(1/6)*b*d^2*(b^5/d^11)^(1/6) + (b*x + a)^(2/3)*(d*x + c)^(
1/3)*b^2 + (b*d^4*x + a*d^4)*(b^5/d^11)^(1/3))/(b*x + a)) + (b*d^
2*x + a*d^2)*(b^5/d^11)^(1/6))) + 20*sqrt(3)*(b*x + a)^(1/6)*(d*x
 + c)^(5/6)*d*(b^5/d^11)^(1/6)*arctan(sqrt(3)*(b*d^2*x + a*d^2)*(
b^5/d^11)^(1/6)/(2*(b*x + a)^(5/6)*(d*x + c)^(1/6)*b + 2*(b*x + a
)*sqrt(-((b*x + a)^(5/6)*(d*x + c)^(1/6)*b*d^2*(b^5/d^11)^(1/6) -
 (b*x + a)^(2/3)*(d*x + c)^(1/3)*b^2 - (b*d^4*x + a*d^4)*(b^5/d^1
1)^(1/3))/(b*x + a)) - (b*d^2*x + a*d^2)*(b^5/d^11)^(1/6))) - 5*(
b*x + a)^(1/6)*(d*x + c)^(5/6)*d*(b^5/d^11)^(1/6)*log(4*((b*x + a
)^(5/6)*(d*x + c)^(1/6)*b*d^2*(b^5/d^11)^(1/6) + (b*x + a)^(2/3)*
(d*x + c)^(1/3)*b^2 + (b*d^4*x + a*d^4)*(b^5/d^11)^(1/3))/(b*x +
a)) + 5*(b*x + a)^(1/6)*(d*x + c)^(5/6)*d*(b^5/d^11)^(1/6)*log(-4
*((b*x + a)^(5/6)*(d*x + c)^(1/6)*b*d^2*(b^5/d^11)^(1/6) - (b*x +
 a)^(2/3)*(d*x + c)^(1/3)*b^2 - (b*d^4*x + a*d^4)*(b^5/d^11)^(1/3
))/(b*x + a)) - 10*(b*x + a)^(1/6)*(d*x + c)^(5/6)*d*(b^5/d^11)^(
1/6)*log(((b*x + a)^(5/6)*(d*x + c)^(1/6)*b + (b*d^2*x + a*d^2)*(
b^5/d^11)^(1/6))/(b*x + a)) + 10*(b*x + a)^(1/6)*(d*x + c)^(5/6)*
d*(b^5/d^11)^(1/6)*log(((b*x + a)^(5/6)*(d*x + c)^(1/6)*b - (b*d^
2*x + a*d^2)*(b^5/d^11)^(1/6))/(b*x + a)) + 12*b*x + 12*a)/((b*x
+ a)^(1/6)*(d*x + c)^(5/6)*d)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(11/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(11/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(11/6), x)
```

3.1783 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{17/6}}\,dx$

Optimal. Leaf size=32

$$\frac{6(a+bx)^{11/6}}{11(c+dx)^{11/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(11/6))/(11*(b*c - a*d)*(c + d*x)^(11/6))
```

Rubi [A] time = 0.0218222, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{6(a+bx)^{11/6}}{11(c+dx)^{11/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(17/6),x]
```

```
[Out] (6*(a + b*x)^(11/6))/(11*(b*c - a*d)*(c + d*x)^(11/6))
```

Rubi in Sympy [A] time = 3.37898, size = 27, normalized size = 0.84

$$-\frac{6\,(a+bx)^{\frac{11}{6}}}{11\,(c+dx)^{\frac{11}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(17/6),x)
```

```
[Out] -6*(a + b*x)**(11/6)/(11*(c + d*x)**(11/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0434233, size = 32, normalized size = 1.

$$\frac{6(a+bx)^{11/6}}{11(c+dx)^{11/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(17/6),x]
```

```
[Out] (6*(a + b*x)^(11/6))/(11*(b*c - a*d)*(c + d*x)^(11/6))
```

Maple [A] time = 0.006, size = 27, normalized size = 0.8

$$-\frac{6}{11\,ad-11\,bc}\,(bx+a)^{\frac{11}{6}}\,(dx+c)^{-\frac{11}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(17/6),x)
```

```
[Out] -6/11*(b*x+a)^(11/6)/(d*x+c)^(11/6)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(17/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(17/6), x)
```

Fricas [A] time = 0.225187, size = 78, normalized size = 2.44

$$\frac{6\left(b^2x^2+2\,abx+a^2\right)}{11\,(bc^2-acd+(bcd-ad^2)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(17/6),x, algorithm="fricas")
```

```
[Out] 6/11*(b^2*x^2 + 2*a*b*x + a^2)/((b*c^2 - a*c*d + (b*c*d - a*d^2)*
x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(17/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(17/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(17/6), x)
```

3.1784 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{23/6}}\,dx$

Optimal. Leaf size=66

$$\frac{36b(a+bx)^{11/6}}{187(c+dx)^{11/6}(bc-ad)^2}+\frac{6(a+bx)^{11/6}}{17(c+dx)^{17/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(11/6))/(17*(b*c - a*d)*(c + d*x)^(17/6)) + (36*b*(a
 + b*x)^(11/6))/(187*(b*c - a*d)^2*(c + d*x)^(11/6))
```

Rubi [A] time = 0.0524878, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{36b(a+bx)^{11/6}}{187(c+dx)^{11/6}(bc-ad)^2}+\frac{6(a+bx)^{11/6}}{17(c+dx)^{17/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(23/6),x]
```

```
[Out] (6*(a + b*x)^(11/6))/(17*(b*c - a*d)*(c + d*x)^(17/6)) + (36*b*(a
 + b*x)^(11/6))/(187*(b*c - a*d)^2*(c + d*x)^(11/6))
```

Rubi in Sympy [A] time = 7.03273, size = 56, normalized size = 0.85

$$\frac{36b\left(a+bx\right)^{\frac{11}{6}}}{187\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{11}{6}}}{17\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(23/6),x)
```

```
[Out] 36*b*(a + b*x)**(11/6)/(187*(c + d*x)**(11/6)*(a*d - b*c)**2) - 6
*(a + b*x)**(11/6)/(17*(c + d*x)**(17/6)*(a*d - b*c))
```

Mathematica [A] time = 0.074357, size = 46, normalized size = 0.7

$$\frac{6(a+bx)^{11/6}(-11ad+17bc+6bdx)}{187(c+dx)^{17/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(23/6),x]
```

```
[Out] (6*(a + b*x)^(11/6)*(17*b*c - 11*a*d + 6*b*d*x))/(187*(b*c - a*d)
^2*(c + d*x)^(17/6))
```

Maple [A]   time = 0.007, size = 54, normalized size = 0.8

$$-\frac{-36\,bdx+66\,ad-102\,bc}{187\,a^2d^2-374\,abcd+187\,b^2c^2}\,(bx+a)^{\frac{11}{6}}\,(dx+c)^{-\frac{17}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(23/6),x)
```

```
[Out] -6/187*(b*x+a)^(11/6)*(-6*b*d*x+11*a*d-17*b*c)/(d*x+c)^(17/6)/(a^
2*d^2-2*a*b*c*d+b^2*c^2)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$\int\frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{23}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(23/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(23/6), x)
```

Fricas [A]   time = 0.223522, size = 219, normalized size = 3.32

$$\frac{6\left(6\,b^3dx^3+17\,a^2bc-11\,a^3d+\left(17\,b^3c+ab^2d\right)x^2+2\left(17\,ab^2c-8\,a^2bd\right)x\right)}{187\,(b^2c^4-2\,abc^3d+a^2c^2d^2+(b^2c^2d^2-2\,abcd^3+a^2d^4)x^2+2\,(b^2c^3d-2\,abc^2d^2+a^2cd^3)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(23/6),x, algorithm="fricas")
```

```
[Out] 6/187*(6*b^3*d*x^3 + 17*a^2*b*c - 11*a^3*d + (17*b^3*c + a*b^2*d)
*x^2 + 2*(17*a*b^2*c - 8*a^2*b*d)*x)/((b^2*c^4 - 2*a*b*c^3*d + a^
```

```
2*c^2*d^2 + (b^2*c^2*d^2 - 2*a*b*c*d^3 + a^2*d^4)*x^2 + 2*(b^2*c^
3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/
6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(23/6),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{23}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(23/6),x, algorithm="giac")

[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(23/6), x)
```

3.1785 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{29/6}}\,dx$

Optimal. Leaf size=101

$$\frac{432b^2(a+bx)^{11/6}}{4301(c+dx)^{11/6}(bc-ad)^3}+\frac{72b(a+bx)^{11/6}}{391(c+dx)^{17/6}(bc-ad)^2}+\frac{6(a+bx)^{11/6}}{23(c+dx)^{23/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(11/6))/(23*(b*c - a*d)*(c + d*x)^(23/6)) + (72*b*(a
 + b*x)^(11/6))/(391*(b*c - a*d)^2*(c + d*x)^(17/6)) + (432*b^2*(
a + b*x)^(11/6))/(4301*(b*c - a*d)^3*(c + d*x)^(11/6))
```

Rubi [A] time = 0.0847501, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{432b^2(a+bx)^{11/6}}{4301(c+dx)^{11/6}(bc-ad)^3}+\frac{72b(a+bx)^{11/6}}{391(c+dx)^{17/6}(bc-ad)^2}+\frac{6(a+bx)^{11/6}}{23(c+dx)^{23/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(29/6),x]
```

```
[Out] (6*(a + b*x)^(11/6))/(23*(b*c - a*d)*(c + d*x)^(23/6)) + (72*b*(a
 + b*x)^(11/6))/(391*(b*c - a*d)^2*(c + d*x)^(17/6)) + (432*b^2*(
a + b*x)^(11/6))/(4301*(b*c - a*d)^3*(c + d*x)^(11/6))
```

Rubi in Sympy [A] time = 12.5119, size = 88, normalized size = 0.87

$$-\frac{432b^2\left(a+bx\right)^{\frac{11}{6}}}{4301\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^3}+\frac{72b\left(a+bx\right)^{\frac{11}{6}}}{391\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{11}{6}}}{23\left(c+dx\right)^{\frac{23}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(29/6),x)
```

```
[Out] -432*b**2*(a + b*x)**(11/6)/(4301*(c + d*x)**(11/6)*(a*d - b*c)**
3) + 72*b*(a + b*x)**(11/6)/(391*(c + d*x)**(17/6)*(a*d - b*c)**2
) - 6*(a + b*x)**(11/6)/(23*(c + d*x)**(23/6)*(a*d - b*c))
```

Mathematica [A] time = 0.106167, size = 77, normalized size = 0.76

$$\frac{6(a+bx)^{11/6}\left(187a^2d^2-22abd(23c+6dx)+b^2\left(391c^2+276cdx+72d^2x^2\right)\right)}{4301(c+dx)^{23/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(29/6),x]
```

```
[Out] (6*(a + b*x)^(11/6)*(187*a^2*d^2 - 22*a*b*d*(23*c + 6*d*x) + b^2*
(391*c^2 + 276*c*d*x + 72*d^2*x^2)))/(4301*(b*c - a*d)^3*(c + d*x
)^(23/6))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{432\,b^2d^2x^2 - 792\,abd^2x + 1656\,b^2cdx + 1122\,a^2d^2 - 3036\,abcd + 2346\,b^2c^2}{4301\,a^3d^3 - 12903\,a^2cbd^2 + 12903\,ab^2c^2d - 4301\,b^3c^3}\,(bx + a)^{\frac{11}{6}}\,(dx + c)^{-\frac{23}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(29/6),x)
```

```
[Out] -6/4301*(b*x+a)^(11/6)*(72*b^2*d^2*x^2-132*a*b*d^2*x+276*b^2*c*d*
x+187*a^2*d^2-506*a*b*c*d+391*b^2*c^2)/(d*x+c)^(23/6)/(a^3*d^3-3*
a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^{\frac{5}{6}}}{(dx + c)^{\frac{29}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(29/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(29/6), x)
```

Fricas [A] time = 0.238176, size = 437, normalized size = 4.33

$$\frac{6\left(72\,b^4d^2x^4 + 391\,a^2b^2c^2 - 506\,a^3bcd + 187\,a^4d^2 + 12\left(23\,b^4cd + ab^3d^2\right)x^3 + \left(391\,b^4c^2 + 46\,ab^3cd - 5\right.\right.}{4301\,(b^3c^6 - 3\,ab^2c^5d + 3\,a^2bc^4d^2 - a^3c^3d^3 + (b^3c^3d^3 - 3\,ab^2c^2d^4 + 3\,a^2bcd^5 - a^3d^6)x^3 + 3\,(b^3c^4d^2 - 3\,ab^2c^3d^3 + 3\,a^2bc^2d^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(29/6),x, algorithm="fricas")
```

```
[Out] 6/4301*(72*b^4*d^2*x^4 + 391*a^2*b^2*c^2 - 506*a^3*b*c*d + 187*a^
4*d^2 + 12*(23*b^4*c*d + a*b^3*d^2)*x^3 + (391*b^4*c^2 + 46*a*b^3
*c*d - 5*a^2*b^2*d^2)*x^2 + 2*(391*a*b^3*c^2 - 368*a^2*b^2*c*d +
121*a^3*b*d^2)*x)/((b^3*c^6 - 3*a*b^2*c^5*d + 3*a^2*b*c^4*d^2 - a
^3*c^3*d^3 + (b^3*c^3*d^3 - 3*a*b^2*c^2*d^4 + 3*a^2*b*c*d^5 - a^3
*d^6)*x^3 + 3*(b^3*c^4*d^2 - 3*a*b^2*c^3*d^3 + 3*a^2*b*c^2*d^4 -
a^3*c*d^5)*x^2 + 3*(b^3*c^5*d - 3*a*b^2*c^4*d^2 + 3*a^2*b*c^3*d^3
 - a^3*c^2*d^4)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(29/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{29}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(29/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(29/6), x)
```

3.1786 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{35/6}}\,dx$

Optimal. Leaf size=136

$$\frac{7776b^3(a+bx)^{11/6}}{124729(c+dx)^{11/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{11/6}}{11339(c+dx)^{17/6}(bc-ad)^3}+\frac{108b(a+bx)^{11/6}}{667(c+dx)^{23/6}(bc-ad)^2}+\frac{6(a+bx)^{11/6}}{29(c+dx)^{29/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(11/6))/(29*(b*c - a*d)*(c + d*x)^(29/6)) + (108*b*(
a + b*x)^(11/6))/(667*(b*c - a*d)^2*(c + d*x)^(23/6)) + (1296*b^2
*(a + b*x)^(11/6))/(11339*(b*c - a*d)^3*(c + d*x)^(17/6)) + (7776
*b^3*(a + b*x)^(11/6))/(124729*(b*c - a*d)^4*(c + d*x)^(11/6))
```

Rubi [A] time = 0.119045, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{7776b^3(a+bx)^{11/6}}{124729(c+dx)^{11/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{11/6}}{11339(c+dx)^{17/6}(bc-ad)^3}+\frac{108b(a+bx)^{11/6}}{667(c+dx)^{23/6}(bc-ad)^2}+\frac{6(a+bx)^{11/6}}{29(c+dx)^{29/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(35/6),x]
```

```
[Out] (6*(a + b*x)^(11/6))/(29*(b*c - a*d)*(c + d*x)^(29/6)) + (108*b*(
a + b*x)^(11/6))/(667*(b*c - a*d)^2*(c + d*x)^(23/6)) + (1296*b^2
*(a + b*x)^(11/6))/(11339*(b*c - a*d)^3*(c + d*x)^(17/6)) + (7776
*b^3*(a + b*x)^(11/6))/(124729*(b*c - a*d)^4*(c + d*x)^(11/6))
```

Rubi in Sympy [A] time = 19.6731, size = 121, normalized size = 0.89

$$\frac{7776b^3\left(a+bx\right)^{\frac{11}{6}}}{124729\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^4}-\frac{1296b^2\left(a+bx\right)^{\frac{11}{6}}}{11339\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)^3}+\frac{108b\left(a+bx\right)^{\frac{11}{6}}}{667\left(c+dx\right)^{\frac{23}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{11}{6}}}{29\left(c+dx\right)^{\frac{29}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(35/6),x)
```

```
[Out] 7776*b**3*(a + b*x)**(11/6)/(124729*(c + d*x)**(11/6)*(a*d - b*c)
**4) - 1296*b**2*(a + b*x)**(11/6)/(11339*(c + d*x)**(17/6)*(a*d
- b*c)**3) + 108*b*(a + b*x)**(11/6)/(667*(c + d*x)**(23/6)*(a*d
- b*c)**2) - 6*(a + b*x)**(11/6)/(29*(c + d*x)**(29/6)*(a*d - b*c
))
```

Mathematica [A] time = 0.163194, size = 118, normalized size = 0.87

$$\frac{6(a+bx)^{11/6}\left(-4301a^3d^3+561a^2bd^2(29c+6dx)-33ab^2d\left(667c^2+348cdx+72d^2x^2\right)+b^3\left(11339c^3+12006c^2dx+6264cd\right.\right.}{124729(c+dx)^{29/6}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(35/6),x]
```

```
[Out] (6*(a + b*x)^(11/6)*(-4301*a^3*d^3 + 561*a^2*b*d^2*(29*c + 6*d*x)
 - 33*a*b^2*d*(667*c^2 + 348*c*d*x + 72*d^2*x^2) + b^3*(11339*c^3
 + 12006*c^2*d*x + 6264*c*d^2*x^2 + 1296*d^3*x^3)))/(124729*(b*c
- a*d)^4*(c + d*x)^(29/6))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$-\frac{-7776\,x^3b^3d^3+14256\,ab^2d^3x^2-37584\,b^3cd^2x^2-20196\,a^2bd^3x+68904\,ab^2cd^2x-72036\,b^3c^2dx+25806\,a^3d^3-97614\,a}{124729\,d^4a^4-498916\,a^3bcd^3+748374\,a^2c^2b^2d^2-498916\,ab^3c^3d+124729\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(35/6),x)
```

```
[Out] -6/124729*(b*x+a)^(11/6)*(-1296*b^3*d^3*x^3+2376*a*b^2*d^3*x^2-62
64*b^3*c*d^2*x^2-3366*a^2*b*d^3*x+11484*a*b^2*c*d^2*x-12006*b^3*c
^2*d*x+4301*a^3*d^3-16269*a^2*b*c*d^2+22011*a*b^2*c^2*d-11339*b^3
*c^3)/(d*x+c)^(29/6)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a
*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{35}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(35/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(35/6), x)
```

Fricas [A] time = 0.245005, size = 702, normalized size = 5.16

$$\frac{6\left(1296\,b^5d^3x^5 + 11339\,a^2b^3c^3 - 22011\,a^3b^2c^2d + 16269\,a^4bcd^2 - 4301\,a^5d^3 + 216\left(29\,b^5cd^2 + ab^4d^3\right)x^4\right.}{124729\,(b^4c^8 - 4\,ab^3c^7d + 6\,a^2b^2c^6d^2 - 4\,a^3bc^5d^3 + a^4c^4d^4 + (b^4c^4d^4 - 4\,ab^3c^3d^5 + 6\,a^2b^2c^2d^6 - 4\,a^3bcd^7 + a^4d^8)x^4 + 4\,(b^4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(35/6),x, algorithm="fricas")
```

```
[Out] 6/124729*(1296*b^5*d^3*x^5 + 11339*a^2*b^3*c^3 - 22011*a^3*b^2*c^
2*d + 16269*a^4*b*c*d^2 - 4301*a^5*d^3 + 216*(29*b^5*c*d^2 + a*b^
4*d^3)*x^4 + 18*(667*b^5*c^2*d + 58*a*b^4*c*d^2 - 5*a^2*b^3*d^3)*
x^3 + (11339*b^5*c^3 + 2001*a*b^4*c^2*d - 435*a^2*b^3*c*d^2 + 55*
a^3*b^2*d^3)*x^2 + 2*(11339*a*b^4*c^3 - 16008*a^2*b^3*c^2*d + 105
27*a^3*b^2*c*d^2 - 2618*a^4*b*d^3)*x)/((b^4*c^8 - 4*a*b^3*c^7*d +
 6*a^2*b^2*c^6*d^2 - 4*a^3*b*c^5*d^3 + a^4*c^4*d^4 + (b^4*c^4*d^4
 - 4*a*b^3*c^3*d^5 + 6*a^2*b^2*c^2*d^6 - 4*a^3*b*c*d^7 + a^4*d^8)
*x^4 + 4*(b^4*c^5*d^3 - 4*a*b^3*c^4*d^4 + 6*a^2*b^2*c^3*d^5 - 4*a
^3*b*c^2*d^6 + a^4*c*d^7)*x^3 + 6*(b^4*c^6*d^2 - 4*a*b^3*c^5*d^3
+ 6*a^2*b^2*c^4*d^4 - 4*a^3*b*c^3*d^5 + a^4*c^2*d^6)*x^2 + 4*(b^4
*c^7*d - 4*a*b^3*c^6*d^2 + 6*a^2*b^2*c^5*d^3 - 4*a^3*b*c^4*d^4 +
a^4*c^3*d^5)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(35/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{35}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(35/6),x, algorithm="giac")

[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(35/6), x)
```

3.1787 $\int (a+bx)^{5/6}(c+dx)^{11/6}\,dx$

Optimal. Leaf size=82

$$\frac{6(a+bx)^{11/6}(c+dx)^{5/6}(bc-ad)\,{}_2F_1\left(-\frac{11}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11b^2\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

```
[Out] (6*(b*c - a*d)*(a + b*x)^(11/6)*(c + d*x)^(5/6)*Hypergeometric2F1
[-11/6, 11/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*b^2*((b*(c
 + d*x))/(b*c - a*d))^(5/6))
```

Rubi [A] time = 0.100364, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{11/6}(c+dx)^{5/6}(bc-ad)\,{}_2F_1\left(-\frac{11}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11b^2\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)*(c + d*x)^(11/6),x]
```

```
[Out] (6*(b*c - a*d)*(a + b*x)^(11/6)*(c + d*x)^(5/6)*Hypergeometric2F1
[-11/6, 11/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*b^2*((b*(c
 + d*x))/(b*c - a*d))^(5/6))
```

Rubi in Sympy [A] time = 12.9241, size = 61, normalized size = 0.74

$$\frac{6\,(a+bx)^{\frac{5}{6}}\,(c+dx)^{\frac{17}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{5}{6},\frac{17}{6}\\ \frac{23}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{17d\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)*(d*x+c)**(11/6),x)
```

```
[Out] 6*(a + b*x)**(5/6)*(c + d*x)**(17/6)*hyper((-5/6, 17/6), (23/6,),
 b*(-c - d*x)/(a*d - b*c))/(17*d*(d*(a + b*x)/(a*d - b*c))**(5/6)
)
```

Mathematica [A] time = 0.321171, size = 143, normalized size = 1.74

$$\frac{3(c+dx)^{5/6}\left(-d(a+bx)\left(11a^2d^2-2abd(16c+5dx)+b^2\left(-\left(11c^2+54cdx+32d^2x^2\right)\right)\right)-11(bc-ad)^3\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\right.\right.}{352b^2d^2\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)*(c + d*x)^(11/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(-(d*(a + b*x)*(11*a^2*d^2 - 2*a*b*d*(16*c + 5
*d*x) - b^2*(11*c^2 + 54*c*d*x + 32*d^2*x^2))) - 11*(b*c - a*d)^3
*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hypergeometric2F1[1/6, 5/6,
 11/6, (b*(c + d*x))/(b*c - a*d)]))/(352*b^2*d^2*(a + b*x)^(1/6))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{6}}(dx+c)^{\frac{11}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)*(d*x+c)^(11/6),x)
```

```
[Out] int((b*x+a)^(5/6)*(d*x+c)^(11/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{6}}(dx+c)^{\frac{11}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(11/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)*(d*x + c)^(11/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{5}{6}}(dx+c)^{\frac{11}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(11/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/6)*(d*x + c)^(11/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)*(d*x+c)**(11/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(11/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1788 $\int (a+bx)^{5/6}(c+dx)^{5/6}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{11/6}(c+dx)^{5/6}\,{}_2F_1\left(-\frac{5}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11b\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

```
[Out] (6*(a + b*x)^(11/6)*(c + d*x)^(5/6)*Hypergeometric2F1[-5/6, 11/6,
 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*b*((b*(c + d*x))/(b*c -
 a*d))^(5/6))
```

Rubi [A] time = 0.0851136, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{11/6}(c+dx)^{5/6}\,{}_2F_1\left(-\frac{5}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11b\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)*(c + d*x)^(5/6),x]
```

```
[Out] (6*(a + b*x)^(11/6)*(c + d*x)^(5/6)*Hypergeometric2F1[-5/6, 11/6,
 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*b*((b*(c + d*x))/(b*c -
 a*d))^(5/6))
```

Rubi in Sympy [A] time = 15.3284, size = 61, normalized size = 0.82

$$\frac{6\left(a+bx\right)^{\frac{5}{6}}\left(c+dx\right)^{\frac{11}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{5}{6},\frac{11}{6}\\ \frac{17}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{11d\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)*(d*x+c)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(5/6)*(c + d*x)**(11/6)*hyper((-5/6, 11/6), (17/6,),
 b*(-c - d*x)/(a*d - b*c))/(11*d*(d*(a + b*x)/(a*d - b*c))**(5/6)
)
```

Mathematica [A] time = 0.230219, size = 108, normalized size = 1.46

$$\frac{3(c+dx)^{5/6}\left(d(a+bx)(ad+b(c+2dx))-(bc-ad)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{16bd^2\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)*(c + d*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(d*(a + b*x)*(a*d + b*(c + 2*d*x)) - (b*c - a*
d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hypergeometric2F1[1/6,
5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(16*b*d^2*(a + b*x)^(1/6)
)
```

Maple [F] time = 0.124, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{6}} (dx+c)^{\frac{5}{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)*(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(5/6)*(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{5}{6}}(dx+c)^{\frac{5}{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)*(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{5}{6}}(dx+c)^{\frac{5}{6}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/6)*(d*x + c)^(5/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)*(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)*(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1789 $\int \frac{(a+bx)^{5/6}}{\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11b\sqrt[6]{c+dx}}$$

```
[Out] (6*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeomet
ric2F1[1/6, 11/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*b*(c +
 d*x)^(1/6))
```

Rubi [A] time = 0.0853679, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11b\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(1/6),x]
```

```
[Out] (6*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeomet
ric2F1[1/6, 11/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*b*(c +
 d*x)^(1/6))
```

Rubi in Sympy [A] time = 12.9014, size = 61, normalized size = 0.82

$$\frac{6\,(a+bx)^{\frac{5}{6}}\,(c+dx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{5}{6},\frac{5}{6}\\ \frac{11}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{5d\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(1/6),x)
```

```
[Out] 6*(a + b*x)**(5/6)*(c + d*x)**(5/6)*hyper((-5/6, 5/6), (11/6,), b
*(-c - d*x)/(a*d - b*c))/(5*d*(d*(a + b*x)/(a*d - b*c))**(5/6))
```

Mathematica [A] time = 0.199655, size = 76, normalized size = 1.03

$$\frac{3(a+bx)^{5/6}(c+dx)^{5/6}\left(\frac{{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}}+1\right)}{5d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(1/6),x]
```

```
[Out] (3*(a + b*x)^(5/6)*(c + d*x)^(5/6)*(1 + Hypergeometric2F1[1/6, 5/
6, 11/6, (b*(c + d*x))/(b*c - a*d)]/((d*(a + b*x))/(-(b*c) + a*d)
)^(5/6)))/(5*d)
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{6}}\,\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(5/6)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(1/6),x, algorithm="fricas")

[Out] integral((b*x + a)^(5/6)/(d*x + c)^(1/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(1/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(1/6),x, algorithm="giac")

[Out] Timed out
```

3.1790 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=81

$$\frac{6(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{7}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11\sqrt[6]{c+dx}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeomet
ric2F1[7/6, 11/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*(b*c -
 a*d)*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0874021, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{7}{6},\frac{11}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11\sqrt[6]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(7/6),x]
```

```
[Out] (6*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeomet
ric2F1[7/6, 11/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*(b*c -
 a*d)*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 13.0401, size = 63, normalized size = 0.78

$$-\frac{6\left(a+bx\right)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{5}{6},-\frac{1}{6}\\ \frac{5}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\sqrt[6]{c+dx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(7/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)*hyper((-5/6, -1/6), (5/6,), b*(-c - d*x)/(a*d
 - b*c))/(d*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(1/6))
```

Mathematica [A] time = 0.154923, size = 87, normalized size = 1.07

$$\frac{6b(c+dx)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)}{d^2\sqrt[6]{a+bx}\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(7/6),x]
```

```
[Out] (-6*d*(a + b*x) + 6*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c + d
*x)*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])
/(d^2*(a + b*x)^(1/6)*(c + d*x)^(1/6))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(5/6)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{7}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/6)/(d*x + c)^(7/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(7/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(7/6), x)
```

3.1791 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{13/6}}\,dx$

Optimal. Leaf size=82

$$\frac{6b(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{11}{6},\frac{13}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11\sqrt[6]{c+dx}\,(bc-ad)^2}$$

```
[Out] (6*b*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeom
etric2F1[11/6, 13/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*(b*
c - a*d)^2*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0883566, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{11}{6},\frac{13}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11\sqrt[6]{c+dx}\,(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(13/6),x]
```

```
[Out] (6*b*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeom
etric2F1[11/6, 13/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*(b*
c - a*d)^2*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 12.8603, size = 66, normalized size = 0.8

$$-\frac{6\left(a+bx\right)^{\frac{5}{6}}{}_2F_1\left(\begin{matrix}-\frac{5}{6},-\frac{7}{6}\\-\frac{1}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{7d\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\left(c+dx\right)^{\frac{7}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(13/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)*hyper((-5/6, -7/6), (-1/6,), b*(-c - d*x)/(a*
d - b*c))/(7*d*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(7/6))
```

Mathematica [A] time = 0.22573, size = 117, normalized size = 1.43

$$\frac{24b^2(c+dx)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)(ad+4bc+5bdx)}{7d^2\sqrt[6]{a+bx}(c+dx)^{7/6}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(13/6),x]
```

```
[Out] (-6*d*(a + b*x)*(4*b*c + a*d + 5*b*d*x) + 24*b^2*((d*(a + b*x))/(
-(b*c) + a*d))^(1/6)*(c + d*x)^2*Hypergeometric2F1[1/6, 5/6, 11/6
, (b*(c + d*x))/(b*c - a*d)])/(7*d^2*(-(b*c) + a*d)*(a + b*x)^(1/
6)*(c + d*x)^(7/6))
```

Maple [F] time = 0.053, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(13/6),x)
```

```
[Out] int((b*x+a)^(5/6)/(d*x+c)^(13/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(13/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(13/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{6}}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(13/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/6)/((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(1/
6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(13/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(13/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(13/6), x)
```

3.1792 $\int \frac{(a+bx)^{5/6}}{(c+dx)^{19/6}}\,dx$

Optimal. Leaf size=84

$$\frac{6b^2(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{11}{6},\frac{19}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11\sqrt[6]{c+dx}(bc-ad)^3}$$

```
[Out] (6*b^2*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hyperge
ometric2F1[11/6, 19/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*(
b*c - a*d)^3*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0899331, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b^2(a+bx)^{11/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{11}{6},\frac{19}{6};\frac{17}{6};-\frac{d(a+bx)}{bc-ad}\right)}{11\sqrt[6]{c+dx}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(5/6)/(c + d*x)^(19/6),x]
```

```
[Out] (6*b^2*(a + b*x)^(11/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hyperge
ometric2F1[11/6, 19/6, 17/6, -((d*(a + b*x))/(b*c - a*d))])/(11*(
b*c - a*d)^3*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 13.0176, size = 66, normalized size = 0.79

$$-\frac{6\,(a+bx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}-\frac{5}{6},-\frac{13}{6}\\ -\frac{7}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{13d\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(c+dx)^{\frac{13}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(5/6)/(d*x+c)**(19/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)*hyper((-5/6, -13/6), (-7/6,), b*(-c - d*x)/(a
*d - b*c))/(13*d*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(13/
6))
```

Mathematica [A] time = 0.232073, size = 144, normalized size = 1.71

$$-\frac{6\left(8b^3(c+dx)^3\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\left(-5b(c+dx)(bc-ad)+7(bc-ad)^2-10b^2(c+dx)^2\right)\right)}{91d^2\sqrt[6]{a+bx}(c+dx)^{13/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(5/6)/(c + d*x)^(19/6),x]
```

```
[Out] (-6*(d*(a + b*x)*(7*(b*c - a*d)^2 - 5*b*(b*c - a*d)*(c + d*x) - 1
0*b^2*(c + d*x)^2) + 8*b^3*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(
c + d*x)^3*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c -
 a*d)]))/(91*d^2*(b*c - a*d)^2*(a + b*x)^(1/6)*(c + d*x)^(13/6))
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{19}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(5/6)/(d*x+c)^(19/6),x)
```

```
[Out] int((b*x+a)^(5/6)/(d*x+c)^(19/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(19/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(19/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{5}{6}}}{(d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3)(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(19/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(5/6)/((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^
3)*(d*x + c)^(1/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(5/6)/(d*x+c)**(19/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{5}{6}}}{(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(5/6)/(d*x + c)^(19/6),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(5/6)/(d*x + c)^(19/6), x)
```

3.1793 $\int (a+bx)^{7/6}(c+dx)^{13/6}\,dx$

Optimal. Leaf size=84

$$\frac{6(a+bx)^{13/6}\sqrt[6]{c+dx}(bc-ad)^2\,{}_2F_1\left(-\frac{13}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b^3\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(b*c - a*d)^2*(a + b*x)^(13/6)*(c + d*x)^(1/6)*Hypergeometric2
F1[-13/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b^3*((b*
(c + d*x))/(b*c - a*d))^(1/6))
```

Rubi [A] time = 0.0907859, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{13/6}\sqrt[6]{c+dx}(bc-ad)^2\,{}_2F_1\left(-\frac{13}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b^3\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)*(c + d*x)^(13/6),x]
```

```
[Out] (6*(b*c - a*d)^2*(a + b*x)^(13/6)*(c + d*x)^(1/6)*Hypergeometric2
F1[-13/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b^3*((b*
(c + d*x))/(b*c - a*d))^(1/6))
```

Rubi in Sympy [A] time = 13.6823, size = 70, normalized size = 0.83

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{19}{6}}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{7}{6},\frac{19}{6}\\ \frac{25}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{19d^2\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)*(d*x+c)**(13/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(19/6)*(a*d - b*c)*hyper((-7/6, 19/
6), (25/6,), b*(-c - d*x)/(a*d - b*c))/(19*d**2*(d*(a + b*x)/(a*d
 - b*c))**(1/6))
```

Mathematica [B] time = 0.459845, size = 234, normalized size = 2.79

$$-\frac{3\sqrt[6]{c+dx}\left(-d(a+bx)\left(91a^4d^4-26a^3bd^3(15c+dx)+2a^2b^2d^2\left(320c^2+55cdx+8d^2x^2\right)+2ab^3d\left(195c^3+1225c^2dx+1280\right.\right.\right.}{8320}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)*(c + d*x)^(13/6),x]
```

```
[Out] (-3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(91*a^4*d^4 - 26*a^3*b*d^3*(15
*c + d*x) + 2*a^2*b^2*d^2*(320*c^2 + 55*c*d*x + 8*d^2*x^2) + 2*a*
b^3*d*(195*c^3 + 1225*c^2*d*x + 1280*c*d^2*x^2 + 432*d^3*x^3) + b
^4*(-91*c^4 + 26*c^3*d*x + 1264*c^2*d^2*x^2 + 1696*c*d^3*x^3 + 64
0*d^4*x^4))) - 91*(b*c - a*d)^5*((d*(a + b*x))/(-(b*c) + a*d))^(5
/6)*Hypergeometric2F1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))
/(8320*b^3*d^3*(a + b*x)^(5/6))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{7}{6}}(dx+c)^{\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)*(d*x+c)^(13/6),x)
```

```
[Out] int((b*x+a)^(7/6)*(d*x+c)^(13/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{7}{6}}(dx+c)^{\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(13/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)*(d*x + c)^(13/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(bd^2x^3+ac^2+\left(2\,bcd+ad^2\right)x^2+\left(bc^2+2\,acd\right)x\right)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(13/6),x, algorithm="fricas")
```

```
[Out] integral((b*d^2*x^3 + a*c^2 + (2*b*c*d + a*d^2)*x^2 + (b*c^2 + 2*
a*c*d)*x)*(b*x + a)^(1/6)*(d*x + c)^(1/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)*(d*x+c)**(13/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(13/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1794 $\int (a+bx)^{7/6}(c+dx)^{7/6}\,dx$

Optimal. Leaf size=82

$$\frac{6(a+bx)^{13/6}\sqrt[6]{c+dx}(bc-ad)\,{}_2F_1\left(-\frac{7}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(b*c - a*d)*(a + b*x)^(13/6)*(c + d*x)^(1/6)*Hypergeometric2F1
[-7/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b^2*((b*(c
+ d*x))/(b*c - a*d))^(1/6))
```

Rubi [A] time = 0.096567, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{13/6}\sqrt[6]{c+dx}(bc-ad)\,{}_2F_1\left(-\frac{7}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)*(c + d*x)^(7/6),x]
```

```
[Out] (6*(b*c - a*d)*(a + b*x)^(13/6)*(c + d*x)^(1/6)*Hypergeometric2F1
[-7/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b^2*((b*(c
+ d*x))/(b*c - a*d))^(1/6))
```

Rubi in Sympy [A] time = 15.7937, size = 70, normalized size = 0.85

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{13}{6}}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{7}{6},\frac{13}{6}\\ \frac{19}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{13d^2\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)*(d*x+c)**(7/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(13/6)*(a*d - b*c)*hyper((-7/6, 13/
6), (19/6,), b*(-c - d*x)/(a*d - b*c))/(13*d**2*(d*(a + b*x)/(a*d
 - b*c))**(1/6))
```

Mathematica [B] time = 0.346107, size = 183, normalized size = 2.23

$$\frac{3\sqrt[6]{c+dx}\left(7(bc-ad)^4\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)\left(7a^3d^3-a^2bd^2(23c+2dx)-ab^2d\left(23c^2+92cdx+48\right.\right.\right.}{320b^2d^3(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)*(c + d*x)^(7/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(7*a^3*d^3 - a^2*b*d^2*(23*c +
2*d*x) - a*b^2*d*(23*c^2 + 92*c*d*x + 48*d^2*x^2) + b^3*(7*c^3 -
2*c^2*d*x - 48*c*d^2*x^2 - 32*d^3*x^3))) + 7*(b*c - a*d)^4*((d*(a
 + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[1/6, 5/6, 7/6, (
b*(c + d*x))/(b*c - a*d)]))/(320*b^2*d^3*(a + b*x)^(5/6))
```

Maple [F] time = 0.052, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{7}{6}}(dx+c)^{\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)*(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(7/6)*(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{7}{6}}(dx+c)^{\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)*(d*x + c)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(bdx^2+ac+(bc+ad)x\right)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] integral((b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(1/6)*(d*x + c
)^(1/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)*(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(7/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1795 $\int (a+bx)^{7/6}\sqrt[6]{c+dx}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{13/6}\sqrt[6]{c+dx}\,{}_2F_1\left(-\frac{1}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(a + b*x)^(13/6)*(c + d*x)^(1/6)*Hypergeometric2F1[-1/6, 13/6,
 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b*((b*(c + d*x))/(b*c -
 a*d))^(1/6))
```

Rubi [A] time = 0.0846937, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{13/6}\sqrt[6]{c+dx}\,{}_2F_1\left(-\frac{1}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)*(c + d*x)^(1/6),x]
```

```
[Out] (6*(a + b*x)^(13/6)*(c + d*x)^(1/6)*Hypergeometric2F1[-1/6, 13/6,
 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b*((b*(c + d*x))/(b*c -
 a*d))^(1/6))
```

Rubi in Sympy [A] time = 13.7489, size = 70, normalized size = 0.95

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{7}{6}}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{7}{6},\frac{7}{6}\\\frac{13}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{7d^2\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)*(d*x+c)**(1/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(7/6)*(a*d - b*c)*hyper((-7/6, 7/6)
, (13/6,), b*(-c - d*x)/(a*d - b*c))/(7*d**2*(d*(a + b*x)/(a*d -
b*c))**(1/6))
```

Mathematica [A] time = 0.265569, size = 142, normalized size = 1.92

$$-\frac{3\sqrt[6]{c+dx}\left(-d(a+bx)\left(7a^2d^2+2abd(8c+15dx)+b^2\left(-7c^2+2cdx+16d^2x^2\right)\right)-7(bc-ad)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c}{bc}\right.\right.}{112bd^3(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)*(c + d*x)^(1/6),x]
```

```
[Out] (-3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(7*a^2*d^2 + 2*a*b*d*(8*c + 15
*d*x) + b^2*(-7*c^2 + 2*c*d*x + 16*d^2*x^2))) - 7*(b*c - a*d)^3*(
(d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[1/6, 5/6, 7
/6, (b*(c + d*x))/(b*c - a*d)]))/(112*b*d^3*(a + b*x)^(5/6))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{7}{6}}\sqrt[6]{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)*(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(7/6)*(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{\frac{7}{6}}(dx+c)^{\frac{1}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)*(d*x + c)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{\frac{7}{6}}(dx+c)^{\frac{1}{6}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(7/6)*(d*x + c)^(1/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)*(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)*(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1796 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{13/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b(c+dx)^{5/6}}$$

```
[Out] (6*(a + b*x)^(13/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeomet
ric2F1[5/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b*(c +
 d*x)^(5/6))
```

Rubi [A] time = 0.0853894, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{13/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13b(c+dx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(5/6),x]
```

```
[Out] (6*(a + b*x)^(13/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeomet
ric2F1[5/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*b*(c +
 d*x)^(5/6))
```

Rubi in Sympy [A] time = 13.3608, size = 68, normalized size = 0.92

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{7}{6},\frac{1}{6}\\\frac{7}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(1/6)*(a*d - b*c)*hyper((-7/6, 1/6)
, (7/6,), b*(-c - d*x)/(a*d - b*c))/(d**2*(d*(a + b*x)/(a*d - b*c
))**(1/6))
```

Mathematica [A] time = 0.188247, size = 107, normalized size = 1.45

$$\frac{3\sqrt[6]{c+dx}\left(7(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)(9ad-7bc+2bdx)\right)}{8d^3(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x)*(-7*b*c + 9*a*d + 2*b*d*x) + 7*(b
*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F
1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(8*d^3*(a + b*x)^(5
/6))
```

Maple [F] time = 0.051, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(5/6),x)
```

```
[Out] int((b*x+a)^(7/6)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(7/6)/(d*x + c)^(5/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1797 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{11/6}}\,dx$

Optimal. Leaf size=81

$$\frac{6(a+bx)^{13/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{11}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13(c+dx)^{5/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(13/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeomet
ric2F1[11/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*(b*c
- a*d)*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0871387, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{13/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}{}_2F_1\left(\frac{11}{6},\frac{13}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13(c+dx)^{5/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(11/6),x]
```

```
[Out] (6*(a + b*x)^(13/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeomet
ric2F1[11/6, 13/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*(b*c
- a*d)*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 13.4812, size = 73, normalized size = 0.9

$$-\frac{6\sqrt[6]{a+bx}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{7}{6},-\frac{5}{6}\\ \frac{1}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{5d^2\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}\,(c+dx)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(11/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)*(a*d - b*c)*hyper((-7/6, -5/6), (1/6,), b*(-c
 - d*x)/(a*d - b*c))/(5*d**2*(d*(a + b*x)/(a*d - b*c))**(1/6)*(c
+ d*x)**(5/6))
```

Mathematica [A] time = 0.347527, size = 99, normalized size = 1.22

$$\frac{3\sqrt[6]{a+bx}\sqrt[6]{c+dx}\left(\frac{7b\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[6]{\frac{d(a+bx)}{ad-bc}}}+\frac{-2ad+7bc+5bdx}{c+dx}\right)}{5d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(11/6),x]
```

```
[Out] (3*(a + b*x)^(1/6)*(c + d*x)^(1/6)*((7*b*c - 2*a*d + 5*b*d*x)/(c
+ d*x) + (7*b*Hypergeometric2F1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c
 - a*d)])/((d*(a + b*x))/(-(b*c) + a*d))^(1/6)))/(5*d^2)
```

Maple [F] time = 0.093, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{11}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(11/6),x)
```

```
[Out] int((b*x+a)^(7/6)/(d*x+c)^(11/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(11/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(11/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{11}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(11/6),x, algorithm="fricas")

[Out] integral((b*x + a)^(7/6)/(d*x + c)^(11/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(11/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(11/6),x, algorithm="giac")

[Out] Timed out
```

3.1798 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{17/6}}\,dx$

Optimal. Leaf size=82

$$\frac{6b(a+bx)^{13/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6} {}_2F_1\left(\frac{13}{6},\frac{17}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13(c+dx)^{5/6}(bc-ad)^2}$$

```
[Out] (6*b*(a + b*x)^(13/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeom
etric2F1[13/6, 17/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*(b*
c - a*d)^2*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0893847, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b(a+bx)^{13/6}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6} {}_2F_1\left(\frac{13}{6},\frac{17}{6};\frac{19}{6};-\frac{d(a+bx)}{bc-ad}\right)}{13(c+dx)^{5/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(17/6),x]
```

```
[Out] (6*b*(a + b*x)^(13/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeom
etric2F1[13/6, 17/6, 19/6, -((d*(a + b*x))/(b*c - a*d))])/(13*(b*
c - a*d)^2*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 13.3946, size = 75, normalized size = 0.91

$$-\frac{6\sqrt[6]{a+bx}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-\frac{7}{6},-\frac{11}{6}\\-\frac{5}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{11d^2\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}\,(c+dx)^{\frac{11}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(17/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)*(a*d - b*c)*hyper((-7/6, -11/6), (-5/6,), b*(
-c - d*x)/(a*d - b*c))/(11*d**2*(d*(a + b*x)/(a*d - b*c))**(1/6)*
(c + d*x)**(11/6))
```

Mathematica [A] time = 0.219369, size = 108, normalized size = 1.32

$$\frac{42b^2(c+dx)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)(5ad+7bc+12bdx)}{55d^3(a+bx)^{5/6}(c+dx)^{11/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(17/6),x]
```

```
[Out] (-6*d*(a + b*x)*(7*b*c + 5*a*d + 12*b*d*x) + 42*b^2*((d*(a + b*x)
)/(-(b*c) + a*d))^(5/6)*(c + d*x)^2*Hypergeometric2F1[1/6, 5/6, 7
/6, (b*(c + d*x))/(b*c - a*d)])/(55*d^3*(a + b*x)^(5/6)*(c + d*x)
^(11/6))
```

Maple [F] time = 0.073, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{17}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(17/6),x)
```

```
[Out] int((b*x+a)^(7/6)/(d*x+c)^(17/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(17/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(17/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(bx+a)^{\frac{7}{6}}}{(d^2x^2+2\,cdx+c^2)(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(17/6),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(7/6)/((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(5/
6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(17/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(17/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1799 $\int \frac{(a+bx)^{7/6}}{\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=424

$$-\frac{7(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{5/6}d^{13/6}}+\frac{7(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{5/6}d^{13/6}}-\frac{7(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{5/6}d^{13/6}}+\frac{7(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{5/6}d^{13/6}}+\frac{7(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{5/6}d^{13/6}}-\frac{7\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}{12d^2}+\frac{(a+bx)^{7/6}(c+dx)^{5/6}}{2d}$$

```
[Out] (-7*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6))/(12*d^2) + ((a +
 b*x)^(7/6)*(c + d*x)^(5/6))/(2*d) - (7*(b*c - a*d)^2*ArcTan[1/Sq
rt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1
/6))])/(24*Sqrt[3]*b^(5/6)*d^(13/6)) + (7*(b*c - a*d)^2*ArcTan[1/
Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^
(1/6))])/(24*Sqrt[3]*b^(5/6)*d^(13/6)) + (7*(b*c - a*d)^2*ArcTanh
[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(5/6
)*d^(13/6)) - (7*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(
1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*
x)^(1/6)])/(144*b^(5/6)*d^(13/6)) + (7*(b*c - a*d)^2*Log[b^(1/3)
+ (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
 + b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(5/6)*d^(13/6))
```

Rubi [A] time = 0.971138, antiderivative size = 424, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.421

$$-\frac{7(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{5/6}d^{13/6}}+\frac{7(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{5/6}d^{13/6}}-\frac{7(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{5/6}d^{13/6}}+\frac{7(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{5/6}d^{13/6}}+\frac{7(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{5/6}d^{13/6}}-\frac{7\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}{12d^2}+\frac{(a+bx)^{7/6}(c+dx)^{5/6}}{2d}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(1/6),x]
```

```
[Out] (-7*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6))/(12*d^2) + ((a +
 b*x)^(7/6)*(c + d*x)^(5/6))/(2*d) - (7*(b*c - a*d)^2*ArcTan[1/Sq
rt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1
/6))])/(24*Sqrt[3]*b^(5/6)*d^(13/6)) + (7*(b*c - a*d)^2*ArcTan[1/
Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^
(1/6))])/(24*Sqrt[3]*b^(5/6)*d^(13/6)) + (7*(b*c - a*d)^2*ArcTanh
[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(5/6
)*d^(13/6)) - (7*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(
1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*
x)^(1/6)])/(144*b^(5/6)*d^(13/6)) + (7*(b*c - a*d)^2*Log[b^(1/3)
+ (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
 + b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(5/6)*d^(13/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.190856, size = 108, normalized size = 0.25

$$\frac{(c+dx)^{5/6}\left(7(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+5d(a+bx)(13ad-7bc+6bdx)\right)}{60d^3(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(1/6),x]
```

```
[Out] ((c + d*x)^(5/6)*(5*d*(a + b*x)*(-7*b*c + 13*a*d + 6*b*d*x) + 7*(
b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2
F1[5/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(60*d^3*(a + b*x)
^(5/6))
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{6}}\,\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(1/6),x)
```

```
[Out] int((b*x+a)^(7/6)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(1/6), x)
```

Fricas [A] time = 0.318203, size = 5814, normalized size = 13.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(1/6),x, algorithm="fricas")
```

```
[Out] -1/144*(28*sqrt(3)*d^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^
10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5
*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^
8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a
^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6)*arctan(sqrt(3)*(b*d^3
*x + b*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d
^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*
d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4
*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d
^11 + a^12*d^12)/(b^5*d^13))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*
d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + 2*(d*x + c)*sqrt(((b^3*c^2
*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*(b*x + a)^(1/6)*(d*x + c)^(5/6)
*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*
b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6
```

*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^2*d^5*x + b^2*c*d^4)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/3))/(d*x + c)) + (b*d^3*x + b*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6))) + 28*sqrt(3)*d^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6)*arctan(sqrt(3)*(b*d^3*x + b*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + 2*(d*x + c)*sqrt(-((b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6) - (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (b^2*d^5*x + b^2*c*d^4)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/3))/(d*x + c)) - (b*d^3*x + b*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6))) - 7*d^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6)*log(49*((b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^2*d^5*x + b^2*c*d^4)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 -

```
 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 +
a^12*d^12)/(b^5*d^13))^(1/3))/(d*x + c)) + 7*d^2*((b^12*c^12 - 12
*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495
*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 79
2*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 6
6*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(
1/6)*log(-49*((b^3*c^2*d^2 - 2*a*b^2*c*d^3 + a^2*b*d^4)*(b*x + a)
^(1/6)*(d*x + c)^(5/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^
10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5
*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^
8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a
^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6) - (b^4*c^4 - 4*a*b^3*
c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1
/3)*(d*x + c)^(2/3) - (b^2*d^5*x + b^2*c*d^4)*((b^12*c^12 - 12*a*
b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^
4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a
^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a
^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/3
))/(d*x + c)) - 14*d^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^
10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5
*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^
8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a
^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6)*log(7*((b^2*c^2 - 2*a
*b*c*d + a^2*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + (b*d^3*x + b*
c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 22
0*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 9
24*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 -
220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a
^12*d^12)/(b^5*d^13))^(1/6))/(d*x + c)) + 14*d^2*((b^12*c^12 - 12
*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495
*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 79
2*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 6
6*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(
1/6)*log(7*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/6)*(d*x
+ c)^(5/6) - (b*d^3*x + b*c*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d +
 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4
 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^
7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d
^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^5*d^13))^(1/6))/(d*x + c))
 - 12*(6*b*d*x - 7*b*c + 13*a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
/d^2
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1800 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=403

$$\frac{7\sqrt[6]{b}(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12d^{13/6}}-\frac{7\sqrt[6]{b}(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12d^{13/6}}+\frac{7\sqrt[6]{b}(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}d^{13/6}}-\frac{7\sqrt[6]{b}(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}d^{13/6}}-\frac{7\sqrt[6]{b}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3d^{13/6}}+\frac{7b\sqrt[6]{a+bx}(c+dx)^{5/6}}{d^2}-\frac{6(a+bx)^{7/6}}{d\sqrt[6]{c+dx}}$$

```
[Out] (-6*(a + b*x)^(7/6))/(d*(c + d*x)^(1/6)) + (7*b*(a + b*x)^(1/6)*(
c + d*x)^(5/6))/d^2 + (7*b^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] - (
2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2
*Sqrt[3]*d^(13/6)) - (7*b^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] + (2
*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2*
Sqrt[3]*d^(13/6)) - (7*b^(1/6)*(b*c - a*d)*ArcTanh[(d^(1/6)*(a +
b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*d^(13/6)) + (7*b^(1/6)
*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1
/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*d^(
13/6)) - (7*b^(1/6)*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^
(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d
*x)^(1/6)])/(12*d^(13/6))
```

Rubi [A] time = 0.910602, antiderivative size = 403, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.474

$$\frac{7\sqrt[6]{b}(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12d^{13/6}}-\frac{7\sqrt[6]{b}(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12d^{13/6}}+\frac{7\sqrt[6]{b}(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}d^{13/6}}-\frac{7\sqrt[6]{b}(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}d^{13/6}}-\frac{7\sqrt[6]{b}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3d^{13/6}}+\frac{7b\sqrt[6]{a+bx}(c+dx)^{5/6}}{d^2}-\frac{6(a+bx)^{7/6}}{d\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(7/6),x]
```

```
[Out] (-6*(a + b*x)^(7/6))/(d*(c + d*x)^(1/6)) + (7*b*(a + b*x)^(1/6)*(
c + d*x)^(5/6))/d^2 + (7*b^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] - (
2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2
*Sqrt[3]*d^(13/6)) - (7*b^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] + (2
*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2*
Sqrt[3]*d^(13/6)) - (7*b^(1/6)*(b*c - a*d)*ArcTanh[(d^(1/6)*(a +
b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*d^(13/6)) + (7*b^(1/6)
*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1
/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*d^(
13/6)) - (7*b^(1/6)*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^
(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d
*x)^(1/6)])/(12*d^(13/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.385283, size = 99, normalized size = 0.25

$$\frac{\sqrt[6]{a+bx}(c+dx)^{5/6}\left(\frac{7b\,{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{\sqrt[6]{\frac{d(a+bx)}{ad-bc}}}+\frac{5(-6ad+7bc+bdx)}{c+dx}\right)}{5d^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(7/6),x]
```

```
[Out] ((a + b*x)^(1/6)*(c + d*x)^(5/6)*((5*(7*b*c - 6*a*d + b*d*x))/(c
+ d*x) + (7*b*Hypergeometric2F1[5/6, 5/6, 11/6, (b*(c + d*x))/(b*
c - a*d)])/((d*(a + b*x))/(-(b*c) + a*d))^(1/6)))/(5*d^2)
```

Maple [F] time = 0.077, size = 0, normalized size = 0.

$$\int 1\, (bx+a)^{\frac{7}{6}} (dx+c)^{-\frac{7}{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(7/6),x)
```

```
[Out] int((b*x+a)^(7/6)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{7}{6}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(7/6), x)
```

Fricas [A] time = 0.286668, size = 3270, normalized size = 8.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(7/6),x, algorithm="fricas")
```

```
[Out] -1/12*(28*sqrt(3)*(d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*
a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5
*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6)*arctan(-sqrt(3)*(d^3*x + c*d^
2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^
3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(
1/6)/(2*(b*c - a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6) - 2*(d*x + c)
*sqrt(((b*c*d^2 - a*d^3)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^7*c^
6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*
a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6) + (b^2
*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (d^
5*x + c*d^4)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*
a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^
6)/d^13)^(1/3))/(d*x + c)) + (d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*
c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*
```

```
d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6))) + 28*sqrt(3)*(d^
3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*
a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^
6)/d^13)^(1/6)*arctan(-sqrt(3)*(d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^
6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^
2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6)/(2*(b*c - a*d)*(
b*x + a)^(1/6)*(d*x + c)^(5/6) - 2*(d*x + c)*sqrt(-((b*c*d^2 - a*
d^3)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^7*c^6 - 6*a*b^6*c^5*d +
15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*
a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6) - (b^2*c^2 - 2*a*b*c*d + a
^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (d^5*x + c*d^4)*((b^7*c
^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15
*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/3))/(d*x
 + c)) - (d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c
^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^
5 + a^6*b*d^6)/d^13)^(1/6))) + 7*(d^3*x + c*d^2)*((b^7*c^6 - 6*a*
b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*
c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6)*log(49*((b*c*d
^2 - a*d^3)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^7*c^6 - 6*a*b^6*c
^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d
^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6) + (b^2*c^2 - 2*a*b*
c*d + a^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (d^5*x + c*d^4)*
((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d
^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/3
))/(d*x + c)) - 7*(d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*
a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5
*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6)*log(-49*((b*c*d^2 - a*d^3)*(b
*x + a)^(1/6)*(d*x + c)^(5/6)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*
b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2
*c*d^5 + a^6*b*d^6)/d^13)^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)
*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (d^5*x + c*d^4)*((b^7*c^6 - 6*
a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^
3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/3))/(d*x + c))
+ 14*(d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d
^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 +
a^6*b*d^6)/d^13)^(1/6)*log(-7*((b*c - a*d)*(b*x + a)^(1/6)*(d*x +
 c)^(5/6) + (d^3*x + c*d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^
5*c^4*d^2 - 20*a^3*b^4*c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c
*d^5 + a^6*b*d^6)/d^13)^(1/6))/(d*x + c)) - 14*(d^3*x + c*d^2)*((
b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*c^3*d^3
 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)^(1/6)*
log(-7*((b*c - a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6) - (d^3*x + c*
d^2)*((b^7*c^6 - 6*a*b^6*c^5*d + 15*a^2*b^5*c^4*d^2 - 20*a^3*b^4*
c^3*d^3 + 15*a^4*b^3*c^2*d^4 - 6*a^5*b^2*c*d^5 + a^6*b*d^6)/d^13)
^(1/6))/(d*x + c)) - 12*(b*d*x + 7*b*c - 6*a*d)*(b*x + a)^(1/6)*(
d*x + c)^(5/6))/(d^3*x + c*d^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(7/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(7/6),x, algorithm="giac")

[Out] Timed out
```

3.1801 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{13/6}}\,dx$

Optimal. Leaf size=358

$$-\frac{b^{7/6}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{13/6}}+\frac{b^{7/6}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{13/6}}-\frac{\sqrt{3}b^{7/6}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{13/6}}+\frac{\sqrt{3}b^{7/6}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{d^{13/6}}+\frac{2b^{7/6}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{13/6}}-\frac{6b\sqrt[6]{a+bx}}{d^2\sqrt[6]{c+dx}}-\frac{6(a+bx)^{7/6}}{7d(c+dx)^{7/6}}$$

```
[Out] (-6*(a + b*x)^(7/6))/(7*d*(c + d*x)^(7/6)) - (6*b*(a + b*x)^(1/6)
)/(d^2*(c + d*x)^(1/6)) - (Sqrt[3]*b^(7/6)*ArcTan[1/Sqrt[3] - (2*
d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(1
3/6) + (Sqrt[3]*b^(7/6)*ArcTan[1/Sqrt[3] + (2*d^(1/6)*(a + b*x)^(
1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(13/6) + (2*b^(7/6)*A
rcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/d^(1
3/6) - (b^(7/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)
^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(2*d
^(13/6)) + (b^(7/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c +
d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/
(2*d^(13/6))
```

Rubi [A] time = 0.841701, antiderivative size = 358, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{b^{7/6}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{13/6}}+\frac{b^{7/6}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2d^{13/6}}-\frac{\sqrt{3}b^{7/6}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{13/6}}+\frac{\sqrt{3}b^{7/6}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{d^{13/6}}+\frac{2b^{7/6}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{d^{13/6}}-\frac{6b\sqrt[6]{a+bx}}{d^2\sqrt[6]{c+dx}}-\frac{6(a+bx)^{7/6}}{7d(c+dx)^{7/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(13/6),x]
```



```
[Out] (-6*(a + b*x)^(7/6))/(7*d*(c + d*x)^(7/6)) - (6*b*(a + b*x)^(1/6)
)/(d^2*(c + d*x)^(1/6)) - (Sqrt[3]*b^(7/6)*ArcTan[1/Sqrt[3] - (2*
d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/d^(1
```

```
3/6) + (Sqrt[3]*b^(7/6)*ArcTan[1/Sqrt[3] + (2*d^(1/6)*(a + b*x)^(
1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))]])/d^(13/6) + (2*b^(7/6)*A
rcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))]])/d^(1
3/6) - (b^(7/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)
^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)]])/(2*d
^(13/6)) + (b^(7/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c +
d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)]])/
(2*d^(13/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(13/6),x)

[Out] Timed out
```

Mathematica [C] time = 0.231015, size = 107, normalized size = 0.3

$$\frac{42b^2(c+dx)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-30d(a+bx)(ad+7bc+8bdx)}{35d^3(a+bx)^{5/6}(c+dx)^{7/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(13/6),x]

[Out] (-30*d*(a + b*x)*(7*b*c + a*d + 8*b*d*x) + 42*b^2*((d*(a + b*x))/
(-(b*c) + a*d))^(5/6)*(c + d*x)^2*Hypergeometric2F1[5/6, 5/6, 11/
6, (b*(c + d*x))/(b*c - a*d)])/(35*d^3*(a + b*x)^(5/6)*(c + d*x)^
(7/6))
```

Maple [F] time = 0.068, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{\frac{7}{6}}\,(dx+c)^{-\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(13/6),x)
```

```
[Out] int((b*x+a)^(7/6)/(d*x+c)^(13/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(13/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(13/6), x)
```

Fricas [A] time = 0.26625, size = 1106, normalized size = 3.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(13/6),x, algorithm="fricas")
```

```
[Out] -1/14*(28*sqrt(3)*(d^4*x^2 + 2*c*d^3*x + c^2*d^2)*(b^7/d^13)^(1/6
)*arctan(sqrt(3)*(d^3*x + c*d^2)*(b^7/d^13)^(1/6)/(2*(b*x + a)^(1
/6)*(d*x + c)^(5/6)*b + 2*(d*x + c)*sqrt(((b*x + a)^(1/6)*(d*x +
c)^(5/6)*b*d^2*(b^7/d^13)^(1/6) + (b*x + a)^(1/3)*(d*x + c)^(2/3)
*b^2 + (d^5*x + c*d^4)*(b^7/d^13)^(1/3))/(d*x + c)) + (d^3*x + c*
d^2)*(b^7/d^13)^(1/6))) + 28*sqrt(3)*(d^4*x^2 + 2*c*d^3*x + c^2*d
^2)*(b^7/d^13)^(1/6)*arctan(sqrt(3)*(d^3*x + c*d^2)*(b^7/d^13)^(1
/6)/(2*(b*x + a)^(1/6)*(d*x + c)^(5/6)*b + 2*(d*x + c)*sqrt(-((b*
x + a)^(1/6)*(d*x + c)^(5/6)*b*d^2*(b^7/d^13)^(1/6) - (b*x + a)^(
1/3)*(d*x + c)^(2/3)*b^2 - (d^5*x + c*d^4)*(b^7/d^13)^(1/3))/(d*x
 + c)) - (d^3*x + c*d^2)*(b^7/d^13)^(1/6))) - 7*(d^4*x^2 + 2*c*d^
3*x + c^2*d^2)*(b^7/d^13)^(1/6)*log(4*((b*x + a)^(1/6)*(d*x + c)^
(5/6)*b*d^2*(b^7/d^13)^(1/6) + (b*x + a)^(1/3)*(d*x + c)^(2/3)*b^
2 + (d^5*x + c*d^4)*(b^7/d^13)^(1/3))/(d*x + c)) + 7*(d^4*x^2 + 2
*c*d^3*x + c^2*d^2)*(b^7/d^13)^(1/6)*log(-4*((b*x + a)^(1/6)*(d*x
 + c)^(5/6)*b*d^2*(b^7/d^13)^(1/6) - (b*x + a)^(1/3)*(d*x + c)^(2
/3)*b^2 - (d^5*x + c*d^4)*(b^7/d^13)^(1/3))/(d*x + c)) - 14*(d^4*
x^2 + 2*c*d^3*x + c^2*d^2)*(b^7/d^13)^(1/6)*log(((b*x + a)^(1/6)*
(d*x + c)^(5/6)*b + (d^3*x + c*d^2)*(b^7/d^13)^(1/6))/(d*x + c))
+ 14*(d^4*x^2 + 2*c*d^3*x + c^2*d^2)*(b^7/d^13)^(1/6)*log(((b*x +
 a)^(1/6)*(d*x + c)^(5/6)*b - (d^3*x + c*d^2)*(b^7/d^13)^(1/6))/(
d*x + c)) + 12*(8*b*d*x + 7*b*c + a*d)*(b*x + a)^(1/6)*(d*x + c)^
(5/6))/(d^4*x^2 + 2*c*d^3*x + c^2*d^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(13/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(13/6),x, algorithm="giac")

[Out] Timed out
```

3.1802 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{19/6}}\,dx$

Optimal. Leaf size=32

$$\frac{6(a+bx)^{13/6}}{13(c+dx)^{13/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(13/6))/(13*(b*c - a*d)*(c + d*x)^(13/6))
```

Rubi [A] time = 0.0215768, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{6(a+bx)^{13/6}}{13(c+dx)^{13/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(19/6),x]

[Out] (6*(a + b*x)^(13/6))/(13*(b*c - a*d)*(c + d*x)^(13/6))
```

Rubi in Sympy [A] time = 3.33481, size = 27, normalized size = 0.84

$$-\frac{6\,(a+bx)^{\frac{13}{6}}}{13\,(c+dx)^{\frac{13}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(19/6),x)

[Out] -6*(a + b*x)**(13/6)/(13*(c + d*x)**(13/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0746415, size = 32, normalized size = 1.

$$\frac{6(a+bx)^{13/6}}{13(c+dx)^{13/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(19/6),x]
```

```
[Out] (6*(a + b*x)^(13/6))/(13*(b*c - a*d)*(c + d*x)^(13/6))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.8

$$-\frac{6}{13\,ad-13\,bc}\,(bx+a)^{\frac{13}{6}}\,(dx+c)^{-\frac{13}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(19/6),x)
```

```
[Out] -6/13*(b*x+a)^(13/6)/(d*x+c)^(13/6)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(19/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(19/6), x)
```

Fricas [A] time = 0.221757, size = 140, normalized size = 4.38

$$\frac{6\left(b^2x^2+2\,abx+a^2\right)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}{13\,(bc^4-ac^3d+(bcd^3-ad^4)x^3+3\,(bc^2d^2-acd^3)x^2+3\,(bc^3d-ac^2d^2)x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(19/6),x, algorithm="fricas")
```

```
[Out] 6/13*(b^2*x^2 + 2*a*b*x + a^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b
*c^4 - a*c^3*d + (b*c*d^3 - a*d^4)*x^3 + 3*(b*c^2*d^2 - a*c*d^3)*
x^2 + 3*(b*c^3*d - a*c^2*d^2)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(19/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(19/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1803 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{25/6}}\,dx$

Optimal. Leaf size=66

$$\frac{36b(a+bx)^{13/6}}{247(c+dx)^{13/6}(bc-ad)^2}+\frac{6(a+bx)^{13/6}}{19(c+dx)^{19/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(13/6))/(19*(b*c - a*d)*(c + d*x)^(19/6)) + (36*b*(a
 + b*x)^(13/6))/(247*(b*c - a*d)^2*(c + d*x)^(13/6))
```

Rubi [A] time = 0.0512555, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{36b(a+bx)^{13/6}}{247(c+dx)^{13/6}(bc-ad)^2}+\frac{6(a+bx)^{13/6}}{19(c+dx)^{19/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(25/6),x]
```

```
[Out] (6*(a + b*x)^(13/6))/(19*(b*c - a*d)*(c + d*x)^(19/6)) + (36*b*(a
 + b*x)^(13/6))/(247*(b*c - a*d)^2*(c + d*x)^(13/6))
```

Rubi in Sympy [A] time = 6.83288, size = 56, normalized size = 0.85

$$\frac{36b\left(a+bx\right)^{\frac{13}{6}}}{247\left(c+dx\right)^{\frac{13}{6}}\left(ad-bc\right)^{2}}-\frac{6\left(a+bx\right)^{\frac{13}{6}}}{19\left(c+dx\right)^{\frac{19}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(25/6),x)
```

```
[Out] 36*b*(a + b*x)**(13/6)/(247*(c + d*x)**(13/6)*(a*d - b*c)**2) - 6
*(a + b*x)**(13/6)/(19*(c + d*x)**(19/6)*(a*d - b*c))
```

Mathematica [A] time = 0.101637, size = 46, normalized size = 0.7

$$\frac{6(a+bx)^{13/6}(-13ad+19bc+6bdx)}{247(c+dx)^{19/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(25/6),x]
```

```
[Out] (6*(a + b*x)^(13/6)*(19*b*c - 13*a*d + 6*b*d*x))/(247*(b*c - a*d)
^2*(c + d*x)^(19/6))
```

Maple [A] time = 0.009, size = 54, normalized size = 0.8

$$-\frac{-36\,bdx+78\,ad-114\,bc}{247\,a^2d^2-494\,abcd+247\,b^2c^2}\,(bx+a)^{\frac{13}{6}}\,(dx+c)^{-\frac{19}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(25/6),x)
```

```
[Out] -6/247*(b*x+a)^(13/6)*(-6*b*d*x+13*a*d-19*b*c)/(d*x+c)^(19/6)/(a^
2*d^2-2*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{25}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(25/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(25/6), x)
```

Fricas [A] time = 0.222859, size = 317, normalized size = 4.8

$$\frac{6\left(6\,b^3dx^3+19\,a^2bc-13\,a^3d+\left(19\,b^3c-ab^2d\right)x^2+2\left(19\,ab^2c-10\,a^2bd\right)x\right)(bx+a)^{\frac{1}{6}}(dx}{247\,(b^2c^6-2\,abc^5d+a^2c^4d^2+(b^2c^2d^4-2\,abcd^5+a^2d^6)x^4+4\,(b^2c^3d^3-2\,abc^2d^4+a^2cd^5)x^3+6\,(b^2c^4d^2-2\,abc^3d^3+a^2c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(25/6),x, algorithm="fricas")
```

```
[Out] 6/247*(6*b^3*d*x^3 + 19*a^2*b*c - 13*a^3*d + (19*b^3*c - a*b^2*d)
*x^2 + 2*(19*a*b^2*c - 10*a^2*b*d)*x)*(b*x + a)^(1/6)*(d*x + c)^(
```

```
5/6)/(b^2*c^6 - 2*a*b*c^5*d + a^2*c^4*d^2 + (b^2*c^2*d^4 - 2*a*b*
c*d^5 + a^2*d^6)*x^4 + 4*(b^2*c^3*d^3 - 2*a*b*c^2*d^4 + a^2*c*d^5
)*x^3 + 6*(b^2*c^4*d^2 - 2*a*b*c^3*d^3 + a^2*c^2*d^4)*x^2 + 4*(b^
2*c^5*d - 2*a*b*c^4*d^2 + a^2*c^3*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(25/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(25/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1804 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{31/6}}\,dx$

Optimal. Leaf size=101

$$\frac{432b^2(a+bx)^{13/6}}{6175(c+dx)^{13/6}(bc-ad)^3}+\frac{72b(a+bx)^{13/6}}{475(c+dx)^{19/6}(bc-ad)^2}+\frac{6(a+bx)^{13/6}}{25(c+dx)^{25/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(13/6))/(25*(b*c - a*d)*(c + d*x)^(25/6)) + (72*b*(a
 + b*x)^(13/6))/(475*(b*c - a*d)^2*(c + d*x)^(19/6)) + (432*b^2*(
a + b*x)^(13/6))/(6175*(b*c - a*d)^3*(c + d*x)^(13/6))
```

Rubi [A] time = 0.0845827, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{432b^2(a+bx)^{13/6}}{6175(c+dx)^{13/6}(bc-ad)^3}+\frac{72b(a+bx)^{13/6}}{475(c+dx)^{19/6}(bc-ad)^2}+\frac{6(a+bx)^{13/6}}{25(c+dx)^{25/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(31/6),x]
```

```
[Out] (6*(a + b*x)^(13/6))/(25*(b*c - a*d)*(c + d*x)^(25/6)) + (72*b*(a
 + b*x)^(13/6))/(475*(b*c - a*d)^2*(c + d*x)^(19/6)) + (432*b^2*(
a + b*x)^(13/6))/(6175*(b*c - a*d)^3*(c + d*x)^(13/6))
```

Rubi in Sympy [A] time = 12.6338, size = 88, normalized size = 0.87

$$-\frac{432b^2\left(a+bx\right)^{\frac{13}{6}}}{6175\left(c+dx\right)^{\frac{13}{6}}\left(ad-bc\right)^3}+\frac{72b\left(a+bx\right)^{\frac{13}{6}}}{475\left(c+dx\right)^{\frac{19}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{13}{6}}}{25\left(c+dx\right)^{\frac{25}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(31/6),x)
```

```
[Out] -432*b**2*(a + b*x)**(13/6)/(6175*(c + d*x)**(13/6)*(a*d - b*c)**
3) + 72*b*(a + b*x)**(13/6)/(475*(c + d*x)**(19/6)*(a*d - b*c)**2
) - 6*(a + b*x)**(13/6)/(25*(c + d*x)**(25/6)*(a*d - b*c))
```

Mathematica [A] time = 0.13536, size = 77, normalized size = 0.76

$$\frac{6(a+bx)^{13/6}\left(247a^2d^2-26abd(25c+6dx)+b^2\left(475c^2+300cdx+72d^2x^2\right)\right)}{6175(c+dx)^{25/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(31/6),x]
```

```
[Out] (6*(a + b*x)^(13/6)*(247*a^2*d^2 - 26*a*b*d*(25*c + 6*d*x) + b^2*
(475*c^2 + 300*c*d*x + 72*d^2*x^2)))/(6175*(b*c - a*d)^3*(c + d*x
)^(25/6))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{432\,b^2d^2x^2 - 936\,abd^2x + 1800\,b^2cdx + 1482\,a^2d^2 - 3900\,abcd + 2850\,b^2c^2}{6175\,a^3d^3 - 18525\,a^2cbd^2 + 18525\,ab^2c^2d - 6175\,b^3c^3}\,(bx+a)^{\frac{13}{6}}\,(dx+c)^{-\frac{25}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(31/6),x)
```

```
[Out] -6/6175*(b*x+a)^(13/6)*(72*b^2*d^2*x^2-156*a*b*d^2*x+300*b^2*c*d*
x+247*a^2*d^2-650*a*b*c*d+475*b^2*c^2)/(d*x+c)^(25/6)/(a^3*d^3-3*
a^2*b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{31}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(31/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(31/6), x)
```

Fricas [A] time = 0.227909, size = 576, normalized size = 5.7

$$\frac{6\,\big(72\,b^4d^2x^4 + 475\,a^2b^2c^2 - 650\,a^3bcd + 247\,a^4d^2 + 12\,\big(25\,b^4cd - ab^3d^2}{6175\,(b^3c^8 - 3\,ab^2c^7d + 3\,a^2bc^6d^2 - a^3c^5d^3 + (b^3c^3d^5 - 3\,ab^2c^2d^6 + 3\,a^2bcd^7 - a^3d^8)x^5 + 5\,(b^3c^4d^4 - 3\,ab^2c^3d^5 + 3\,a^2bc^2d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(31/6),x, algorithm="fricas")
```

```
[Out] 6/6175*(72*b^4*d^2*x^4 + 475*a^2*b^2*c^2 - 650*a^3*b*c*d + 247*a^
4*d^2 + 12*(25*b^4*c*d - a*b^3*d^2)*x^3 + (475*b^4*c^2 - 50*a*b^3
*c*d + 7*a^2*b^2*d^2)*x^2 + 2*(475*a*b^3*c^2 - 500*a^2*b^2*c*d +
169*a^3*b*d^2)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b^3*c^8 - 3*a*
b^2*c^7*d + 3*a^2*b*c^6*d^2 - a^3*c^5*d^3 + (b^3*c^3*d^5 - 3*a*b^
2*c^2*d^6 + 3*a^2*b*c*d^7 - a^3*d^8)*x^5 + 5*(b^3*c^4*d^4 - 3*a*b
^2*c^3*d^5 + 3*a^2*b*c^2*d^6 - a^3*c*d^7)*x^4 + 10*(b^3*c^5*d^3 -
 3*a*b^2*c^4*d^4 + 3*a^2*b*c^3*d^5 - a^3*c^2*d^6)*x^3 + 10*(b^3*c
^6*d^2 - 3*a*b^2*c^5*d^3 + 3*a^2*b*c^4*d^4 - a^3*c^3*d^5)*x^2 + 5
*(b^3*c^7*d - 3*a*b^2*c^6*d^2 + 3*a^2*b*c^5*d^3 - a^3*c^4*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(31/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(31/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1805 $\int \frac{(a+bx)^{7/6}}{(c+dx)^{37/6}}\,dx$

Optimal. Leaf size=136

$$\frac{7776b^3(a+bx)^{13/6}}{191425(c+dx)^{13/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{13/6}}{14725(c+dx)^{19/6}(bc-ad)^3}+\frac{108b(a+bx)^{13/6}}{775(c+dx)^{25/6}(bc-ad)^2}+\frac{6(a+bx)^{13/6}}{31(c+dx)^{31/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(13/6))/(31*(b*c - a*d)*(c + d*x)^(31/6)) + (108*b*(
a + b*x)^(13/6))/(775*(b*c - a*d)^2*(c + d*x)^(25/6)) + (1296*b^2
*(a + b*x)^(13/6))/(14725*(b*c - a*d)^3*(c + d*x)^(19/6)) + (7776
*b^3*(a + b*x)^(13/6))/(191425*(b*c - a*d)^4*(c + d*x)^(13/6))
```

Rubi [A] time = 0.120551, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{7776b^3(a+bx)^{13/6}}{191425(c+dx)^{13/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{13/6}}{14725(c+dx)^{19/6}(bc-ad)^3}+\frac{108b(a+bx)^{13/6}}{775(c+dx)^{25/6}(bc-ad)^2}+\frac{6(a+bx)^{13/6}}{31(c+dx)^{31/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(7/6)/(c + d*x)^(37/6),x]
```


```
[Out] (6*(a + b*x)^(13/6))/(31*(b*c - a*d)*(c + d*x)^(31/6)) + (108*b*(
a + b*x)^(13/6))/(775*(b*c - a*d)^2*(c + d*x)^(25/6)) + (1296*b^2
*(a + b*x)^(13/6))/(14725*(b*c - a*d)^3*(c + d*x)^(19/6)) + (7776
*b^3*(a + b*x)^(13/6))/(191425*(b*c - a*d)^4*(c + d*x)^(13/6))
```

Rubi in Sympy [A] time = 20.1018, size = 121, normalized size = 0.89

$$\frac{7776b^3\left(a+bx\right)^{\frac{13}{6}}}{191425\left(c+dx\right)^{\frac{13}{6}}\left(ad-bc\right)^4}-\frac{1296b^2\left(a+bx\right)^{\frac{13}{6}}}{14725\left(c+dx\right)^{\frac{19}{6}}\left(ad-bc\right)^3}+\frac{108b\left(a+bx\right)^{\frac{13}{6}}}{775\left(c+dx\right)^{\frac{25}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{13}{6}}}{31\left(c+dx\right)^{\frac{31}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(7/6)/(d*x+c)**(37/6),x)
```

```
[Out] 7776*b**3*(a + b*x)**(13/6)/(191425*(c + d*x)**(13/6)*(a*d - b*c)
**4) - 1296*b**2*(a + b*x)**(13/6)/(14725*(c + d*x)**(19/6)*(a*d
- b*c)**3) + 108*b*(a + b*x)**(13/6)/(775*(c + d*x)**(25/6)*(a*d
- b*c)**2) - 6*(a + b*x)**(13/6)/(31*(c + d*x)**(31/6)*(a*d - b*c
))
```

Mathematica [A] time = 0.212472, size = 118, normalized size = 0.87

$$\frac{6(a+bx)^{13/6}\left(-6175a^3d^3+741a^2bd^2(31c+6dx)-39ab^2d\left(775c^2+372cdx+72d^2x^2\right)+b^3\left(14725c^3+13950c^2dx+6696cd\right.\right.}{191425(c+dx)^{31/6}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(7/6)/(c + d*x)^(37/6),x]
```

```
[Out] (6*(a + b*x)^(13/6)*(-6175*a^3*d^3 + 741*a^2*b*d^2*(31*c + 6*d*x)
 - 39*a*b^2*d*(775*c^2 + 372*c*d*x + 72*d^2*x^2) + b^3*(14725*c^3
 + 13950*c^2*d*x + 6696*c*d^2*x^2 + 1296*d^3*x^3)))/(191425*(b*c
- a*d)^4*(c + d*x)^(31/6))
```

Maple [A] time = 0.012, size = 171, normalized size = 1.3

$$-\frac{-7776\,x^3b^3d^3+16848\,ab^2d^3x^2-40176\,b^3cd^2x^2-26676\,a^2bd^3x+87048\,ab^2cd^2x-83700\,b^3c^2dx+37050\,a^3d^3-137826}{191425\,a^4d^4-765700\,a^3bcd^3+1148550\,a^2c^2b^2d^2-765700\,ab^3c^3d+191425\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(7/6)/(d*x+c)^(37/6),x)
```

```
[Out] -6/191425*(b*x+a)^(13/6)*(-1296*b^3*d^3*x^3+2808*a*b^2*d^3*x^2-66
96*b^3*c*d^2*x^2-4446*a^2*b*d^3*x+14508*a*b^2*c*d^2*x-13950*b^3*c
^2*d*x+6175*a^3*d^3-22971*a^2*b*c*d^2+30225*a*b^2*c^2*d-14725*b^3
*c^3)/(d*x+c)^(31/6)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a
*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{\frac{7}{6}}}{(dx+c)^{\frac{37}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(37/6),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(7/6)/(d*x + c)^(37/6), x)
```

Fricas [A] time = 0.23667, size = 876, normalized size = 6.44

$$\frac{6\left(1296\,b^{5}d^{3}x^{5}+14725\,a^{2}b^{3}c^{3}-30225\,a^{3}b^{2}c^{2}d+22971\,a\right.}{191425\left(b^{4}c^{10}-4\,ab^{3}c^{9}d+6\,a^{2}b^{2}c^{8}d^{2}-4\,a^{3}bc^{7}d^{3}+a^{4}c^{6}d^{4}+\left(b^{4}c^{4}d^{6}-4\,ab^{3}c^{3}d^{7}+6\,a^{2}b^{2}c^{2}d^{8}-4\,a^{3}bcd^{9}+a^{4}d^{10}\right)x^{6}+6\left(b\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(37/6),x, algorithm="fricas")
```

```
[Out] 6/191425*(1296*b^5*d^3*x^5 + 14725*a^2*b^3*c^3 - 30225*a^3*b^2*c^
2*d + 22971*a^4*b*c*d^2 - 6175*a^5*d^3 + 216*(31*b^5*c*d^2 - a*b^
4*d^3)*x^4 + 18*(775*b^5*c^2*d - 62*a*b^4*c*d^2 + 7*a^2*b^3*d^3)*
x^3 + (14725*b^5*c^3 - 2325*a*b^4*c^2*d + 651*a^2*b^3*c*d^2 - 91*
a^3*b^2*d^3)*x^2 + 2*(14725*a*b^4*c^3 - 23250*a^2*b^3*c^2*d + 157
17*a^3*b^2*c*d^2 - 3952*a^4*b*d^3)*x)*(b*x + a)^(1/6)*(d*x + c)^(
5/6)/(b^4*c^10 - 4*a*b^3*c^9*d + 6*a^2*b^2*c^8*d^2 - 4*a^3*b*c^7*
d^3 + a^4*c^6*d^4 + (b^4*c^4*d^6 - 4*a*b^3*c^3*d^7 + 6*a^2*b^2*c^
2*d^8 - 4*a^3*b*c*d^9 + a^4*d^10)*x^6 + 6*(b^4*c^5*d^5 - 4*a*b^3*
c^4*d^6 + 6*a^2*b^2*c^3*d^7 - 4*a^3*b*c^2*d^8 + a^4*c*d^9)*x^5 +
15*(b^4*c^6*d^4 - 4*a*b^3*c^5*d^5 + 6*a^2*b^2*c^4*d^6 - 4*a^3*b*c
^3*d^7 + a^4*c^2*d^8)*x^4 + 20*(b^4*c^7*d^3 - 4*a*b^3*c^6*d^4 + 6
*a^2*b^2*c^5*d^5 - 4*a^3*b*c^4*d^6 + a^4*c^3*d^7)*x^3 + 15*(b^4*c
^8*d^2 - 4*a*b^3*c^7*d^3 + 6*a^2*b^2*c^6*d^4 - 4*a^3*b*c^5*d^5 +
a^4*c^4*d^6)*x^2 + 6*(b^4*c^9*d - 4*a*b^3*c^8*d^2 + 6*a^2*b^2*c^7
*d^3 - 4*a^3*b*c^6*d^4 + a^4*c^5*d^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(7/6)/(d*x+c)**(37/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(7/6)/(d*x + c)^(37/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1806 $\int \frac{(c+dx)^{7/6}}{\sqrt[6]{a+bx}}\,dx$

Optimal. Leaf size=424

$$-\frac{7(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{13/6}d^{5/6}}+\frac{7(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{13/6}d^{5/6}}+\frac{7(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{13/6}d^{5/6}}-\frac{7(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{13/6}d^{5/6}}+\frac{7(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{13/6}d^{5/6}}+\frac{7(a+bx)^{5/6}\sqrt[6]{c+dx}(bc-ad)}{12b^2}+\frac{(a+bx)^{5/6}(c+dx)^{7/6}}{2b}$$

```
[Out] (7*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(1/6))/(12*b^2) + ((a +
b*x)^(5/6)*(c + d*x)^(7/6))/(2*b) + (7*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(24*Sqrt[3]*b^(13/6)*d^(5/6)) - (7*(b*c - a*d)^2*ArcTan[1/S
qrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(
1/6))])/(24*Sqrt[3]*b^(13/6)*d^(5/6)) + (7*(b*c - a*d)^2*ArcTanh[
(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(13/6
)*d^(5/6)) - (7*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(144*b^(13/6)*d^(5/6)) + (7*(b*c - a*d)^2*Log[b^(1/3) +
 (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
+ b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(13/6)*d^(5/6))
```

Rubi [A] time = 1.07779, antiderivative size = 424, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{7(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{13/6}d^{5/6}}+\frac{7(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{13/6}d^{5/6}}+\frac{7(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{13/6}d^{5/6}}-\frac{7(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{13/6}d^{5/6}}+\frac{7(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{13/6}d^{5/6}}+\frac{7(a+bx)^{5/6}\sqrt[6]{c+dx}(bc-ad)}{12b^2}+\frac{(a+bx)^{5/6}(c+dx)^{7/6}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(7/6)/(a + b*x)^(1/6),x]
```

```
[Out] (7*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(1/6))/(12*b^2) + ((a +
b*x)^(5/6)*(c + d*x)^(7/6))/(2*b) + (7*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(24*Sqrt[3]*b^(13/6)*d^(5/6)) - (7*(b*c - a*d)^2*ArcTan[1/S
qrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(
1/6))])/(24*Sqrt[3]*b^(13/6)*d^(5/6)) + (7*(b*c - a*d)^2*ArcTanh[
(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(13/6
)*d^(5/6)) - (7*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(144*b^(13/6)*d^(5/6)) + (7*(b*c - a*d)^2*Log[b^(1/3) +
 (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
+ b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(13/6)*d^(5/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(7/6)/(b*x+a)**(1/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.214815, size = 111, normalized size = 0.26

$$\frac{\sqrt[6]{c+dx}\left(7(bc-ad)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(7ad-13bc-6bdx)\right)}{12b^2d\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(7/6)/(a + b*x)^(1/6),x]
```

```
[Out] ((c + d*x)^(1/6)*(-(d*(a + b*x)*(-13*b*c + 7*a*d - 6*b*d*x)) + 7*
(b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hypergeometric
2F1[1/6, 1/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(12*b^2*d*(a + b*
x)^(1/6))
```

Maple [F] time = 0.041, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{7}{6}}\,\frac{1}{\sqrt[6]{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(7/6)/(b*x+a)^(1/6),x)

[Out] int((d*x+c)^(7/6)/(b*x+a)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{7}{6}}}{(bx+a)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(1/6),x, algorithm="maxima")

[Out] integrate((d*x + c)^(7/6)/(b*x + a)^(1/6), x)
```

Fricas [A] time = 0.328281, size = 5814, normalized size = 13.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(1/6),x, algorithm="fricas")

[Out] -1/144*(28*sqrt(3)*b^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^
10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5
*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^
8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a
^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6)*arctan(sqrt(3)*(b^3*d
*x + a*b^2*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d
^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*
d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4
*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d
^11 + a^12*d^12)/(b^13*d^5))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*
d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + 2*(b*x + a)*sqrt(((b^4*c^2
*d - 2*a*b^3*c*d^2 + a^2*b^2*d^3)*(b*x + a)^(5/6)*(d*x + c)^(1/6)
*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*
b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6
```

*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^5*d^2*x + a*b^4*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/3))/(b*x + a)) + (b^3*d*x + a*b^2*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6))) + 28*sqrt(3)*b^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6)*arctan(sqrt(3)*(b^3*d*x + a*b^2*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + 2*(b*x + a)*sqrt(-((b^4*c^2*d - 2*a*b^3*c*d^2 + a^2*b^2*d^3)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6) - (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(1/3) - (b^5*d^2*x + a*b^4*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/3))/(b*x + a)) - (b^3*d*x + a*b^2*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6))) - 7*b^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6)*log(49*((b^4*c^2*d - 2*a*b^3*c*d^2 + a^2*b^2*d^3)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^5*d^2*x + a*b^4*d^2)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 -

```
 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 +
a^12*d^12)/(b^13*d^5))^(1/3))/(b*x + a)) + 7*b^2*((b^12*c^12 - 12
*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495
*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 79
2*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 6
6*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(
1/6)*log(-49*((b^4*c^2*d - 2*a*b^3*c*d^2 + a^2*b^2*d^3)*(b*x + a)
^(5/6)*(d*x + c)^(1/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^
10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5
*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^
8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a
^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6) - (b^4*c^4 - 4*a*b^3*
c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2
/3)*(d*x + c)^(1/3) - (b^5*d^2*x + a*b^4*d^2)*((b^12*c^12 - 12*a*
b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^
4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a
^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a
^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/3
))/(b*x + a)) - 14*b^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^
10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5
*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^
8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a
^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6)*log(7*((b^2*c^2 - 2*a
*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + (b^3*d*x + a*
b^2*d)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 22
0*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 9
24*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 -
220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a
^12*d^12)/(b^13*d^5))^(1/6))/(b*x + a)) + 14*b^2*((b^12*c^12 - 12
*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495
*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 79
2*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 6
6*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(
1/6)*log(7*((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x
+ c)^(1/6) - (b^3*d*x + a*b^2*d)*((b^12*c^12 - 12*a*b^11*c^11*d +
 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4
 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^
7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d
^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^13*d^5))^(1/6))/(b*x + a))
 - 12*(6*b*d*x + 13*b*c - 7*a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6))
/b^2
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(7/6)/(b*x+a)**(1/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1807 $\int \frac{\sqrt[6]{c+dx}}{\sqrt[6]{a+bx}}\,dx$

Optimal. Leaf size=378

$$-\frac{(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{7/6}d^{5/6}}+\frac{(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{7/6}d^{5/6}}+\frac{(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{7/6}d^{5/6}}-\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{7/6}d^{5/6}}+\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{7/6}d^{5/6}}+\frac{(a+bx)^{5/6}\sqrt[6]{c+dx}}{b}$$

```
[Out] ((a + b*x)^(5/6)*(c + d*x)^(1/6))/b + ((b*c - a*d)*ArcTan[1/Sqrt[
3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6)
)])/(2*Sqrt[3]*b^(7/6)*d^(5/6)) - ((b*c - a*d)*ArcTan[1/Sqrt[3] +
 (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/
(2*Sqrt[3]*b^(7/6)*d^(5/6)) + ((b*c - a*d)*ArcTanh[(d^(1/6)*(a +
b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(7/6)*d^(5/6)) - ((b
*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3)
 - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*b^(7/6
)*d^(5/6)) + ((b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))
/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1
/6)])/(12*b^(7/6)*d^(5/6))
```

Rubi [A] time = 0.922887, antiderivative size = 378, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{7/6}d^{5/6}}+\frac{(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{7/6}d^{5/6}}+\frac{(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{7/6}d^{5/6}}-\frac{(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{7/6}d^{5/6}}+\frac{(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{7/6}d^{5/6}}+\frac{(a+bx)^{5/6}\sqrt[6]{c+dx}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/6)/(a + b*x)^(1/6),x]
```

```
[Out] ((a + b*x)^(5/6)*(c + d*x)^(1/6))/b + ((b*c - a*d)*ArcTan[1/Sqrt[
3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6)
```

```
)])/(2*Sqrt[3]*b^(7/6)*d^(5/6)) - ((b*c - a*d)*ArcTan[1/Sqrt[3] +
 (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/
(2*Sqrt[3]*b^(7/6)*d^(5/6)) + ((b*c - a*d)*ArcTanh[(d^(1/6)*(a +
b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(7/6)*d^(5/6)) - ((b
*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3)
 - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*b^(7/6
)*d^(5/6)) + ((b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))
/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1
/6)])/(12*b^(7/6)*d^(5/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/6)/(b*x+a)**(1/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.153086, size = 90, normalized size = 0.24

$$\frac{\sqrt[6]{c+dx}\left((bc-ad)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{bd\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/6)/(a + b*x)^(1/6),x]
```

```
[Out] ((c + d*x)^(1/6)*(d*(a + b*x) + (b*c - a*d)*((d*(a + b*x))/(-(b*c
) + a*d))^(1/6)*Hypergeometric2F1[1/6, 1/6, 7/6, (b*(c + d*x))/(b
*c - a*d)]))/(b*d*(a + b*x)^(1/6))
```

Maple [F] time = 0.031, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{dx+c}\frac{1}{\sqrt[6]{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/6)/(b*x+a)^(1/6),x)
```

```
[Out] int((d*x+c)^(1/6)/(b*x+a)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(1/6), x)
```

Fricas [A] time = 0.286854, size = 3193, normalized size = 8.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(1/6),x, algorithm="fricas")
```

```
[Out] 1/12*(4*sqrt(3)*b*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2
- 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d
^6)/(b^7*d^5))^(1/6)*arctan(-sqrt(3)*(b^2*d*x + a*b*d)*((b^6*c^6
- 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^
4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6)/(2*(b*c
 - a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6) - 2*(b*x + a)*sqrt(((b^2*
c*d - a*b*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6 - 6*a*b^
5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^
2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6) + (b^2*c^2 - 2*
a*b*c*d + a^2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^3*d^2*x +
 a*b^2*d^2)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a
^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b
^7*d^5))^(1/3))/(b*x + a)) + (b^2*d*x + a*b*d)*((b^6*c^6 - 6*a*b^
5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^
2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6))) + 4*sqrt(3)*b
*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*
d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1
/6)*arctan(-sqrt(3)*(b^2*d*x + a*b*d)*((b^6*c^6 - 6*a*b^5*c^5*d +
 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6
*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6)/(2*(b*c - a*d)*(b*x + a)
^(5/6)*(d*x + c)^(1/6) - 2*(b*x + a)*sqrt(-((b^2*c*d - a*b*d^2)*(
b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2
*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*
c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^
2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) - (b^3*d^2*x + a*b^2*d^2)*((b^
6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 +
```

```
 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/3))/
(b*x + a)) - (b^2*d*x + a*b*d)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2
*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*
c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6))) + b*((b^6*c^6 - 6*a*b^5*c^5*d
 + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 -
 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6)*log(((b^2*c*d - a*b*d^
2)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15
*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^
5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6) + (b^2*c^2 - 2*a*b*c*d + a^
2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^3*d^2*x + a*b^2*d^2)*
((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d
^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/
3))/(b*x + a)) - b*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2
 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*
d^6)/(b^7*d^5))^(1/6)*log(-((b^2*c*d - a*b*d^2)*(b*x + a)^(5/6)*(
d*x + c)^(1/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 2
0*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)
/(b^7*d^5))^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(2/
3)*(d*x + c)^(1/3) - (b^3*d^2*x + a*b^2*d^2)*((b^6*c^6 - 6*a*b^5*
c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*
d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/3))/(b*x + a)) + 2*b
*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*
d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1
/6)*log(-((b*c - a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + (b^2*d*x
+ a*b*d)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*
b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^7*
d^5))^(1/6))/(b*x + a)) - 2*b*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*
b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c
*d^5 + a^6*d^6)/(b^7*d^5))^(1/6)*log(-((b*c - a*d)*(b*x + a)^(5/6
)*(d*x + c)^(1/6) - (b^2*d*x + a*b*d)*((b^6*c^6 - 6*a*b^5*c^5*d +
 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6
*a^5*b*c*d^5 + a^6*d^6)/(b^7*d^5))^(1/6))/(b*x + a)) + 12*(b*x +
a)^(5/6)*(d*x + c)^(1/6))/b
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{c + dx}}{\sqrt[6]{a + bx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/6)/(b*x+a)**(1/6),x)
```

```
[Out] Integral((c + d*x)**(1/6)/(a + b*x)**(1/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1808 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=309

$$-\frac{\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2\sqrt[6]{b}d^{5/6}}+\frac{\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2\sqrt[6]{b}d^{5/6}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{\sqrt[6]{b}d^{5/6}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt[6]{b}d^{5/6}}+\frac{2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{\sqrt[6]{b}d^{5/6}}$$

```
[Out] (Sqrt[3]*ArcTan[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*
b^(1/6)*(c + d*x)^(1/6))])/(b^(1/6)*d^(5/6)) - (Sqrt[3]*ArcTan[1/
Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^
(1/6))])/(b^(1/6)*d^(5/6)) + (2*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))
/(b^(1/6)*(c + d*x)^(1/6))])/(b^(1/6)*d^(5/6)) - Log[b^(1/3) + (d
^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b
*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(1/6)*d^(5/6)) + Log[b^(1/3) + (
d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a +
b*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(1/6)*d^(5/6))
```

Rubi [A] time = 0.856433, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$

$$-\frac{\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2\sqrt[6]{b}d^{5/6}}+\frac{\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2\sqrt[6]{b}d^{5/6}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{\sqrt[6]{b}d^{5/6}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{\sqrt[6]{b}d^{5/6}}+\frac{2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{\sqrt[6]{b}d^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(5/6)),x]
```

```
[Out] (Sqrt[3]*ArcTan[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*
b^(1/6)*(c + d*x)^(1/6))])/(b^(1/6)*d^(5/6)) - (Sqrt[3]*ArcTan[1/
Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^
(1/6))])/(b^(1/6)*d^(5/6)) + (2*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))
/(b^(1/6)*(c + d*x)^(1/6))])/(b^(1/6)*d^(5/6)) - Log[b^(1/3) + (d
^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b
*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(1/6)*d^(5/6)) + Log[b^(1/3) + (
d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a +
b*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(1/6)*d^(5/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.0663434, size = 71, normalized size = 0.23

$$\frac{6\sqrt[6]{c+dx}\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{d\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(5/6)),x]
```

```
[Out] (6*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c + d*x)^(1/6)*Hypergeom
etric2F1[1/6, 1/6, 7/6, (b*(c + d*x))/(b*c - a*d)])/(d*(a + b*x)^
(1/6))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[6]{bx+a}}(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(5/6),x)
```

```
[Out] int(1/(b*x+a)^(1/6)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(5/6)),x, algorithm="maxima")

[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(5/6)), x)
```

Fricas [A] time = 0.256867, size = 797, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(5/6)),x, algorithm="fricas")

[Out] -2*sqrt(3)*(1/(b*d^5))^(1/6)*arctan(sqrt(3)*(b*d*x + a*d)*(1/(b*d
^5))^(1/6)/(2*(b*x + a)*sqrt(((b*x + a)^(5/6)*(d*x + c)^(1/6)*d*(
1/(b*d^5))^(1/6) + (b*d^2*x + a*d^2)*(1/(b*d^5))^(1/3) + (b*x + a
)^(2/3)*(d*x + c)^(1/3))/(b*x + a)) + (b*d*x + a*d)*(1/(b*d^5))^(
1/6) + 2*(b*x + a)^(5/6)*(d*x + c)^(1/6))) - 2*sqrt(3)*(1/(b*d^5)
)^(1/6)*arctan(sqrt(3)*(b*d*x + a*d)*(1/(b*d^5))^(1/6)/(2*(b*x +
a)*sqrt(-((b*x + a)^(5/6)*(d*x + c)^(1/6)*d*(1/(b*d^5))^(1/6) - (
b*d^2*x + a*d^2)*(1/(b*d^5))^(1/3) - (b*x + a)^(2/3)*(d*x + c)^(1
/3))/(b*x + a)) - (b*d*x + a*d)*(1/(b*d^5))^(1/6) + 2*(b*x + a)^(
5/6)*(d*x + c)^(1/6))) + 1/2*(1/(b*d^5))^(1/6)*log(4*((b*x + a)^(
5/6)*(d*x + c)^(1/6)*d*(1/(b*d^5))^(1/6) + (b*d^2*x + a*d^2)*(1/(
b*d^5))^(1/3) + (b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x + a)) - 1/2
*(1/(b*d^5))^(1/6)*log(-4*((b*x + a)^(5/6)*(d*x + c)^(1/6)*d*(1/(
b*d^5))^(1/6) - (b*d^2*x + a*d^2)*(1/(b*d^5))^(1/3) - (b*x + a)^(
2/3)*(d*x + c)^(1/3))/(b*x + a)) + (1/(b*d^5))^(1/6)*log(((b*d*x
+ a*d)*(1/(b*d^5))^(1/6) + (b*x + a)^(5/6)*(d*x + c)^(1/6))/(b*x
+ a)) - (1/(b*d^5))^(1/6)*log(-((b*d*x + a*d)*(1/(b*d^5))^(1/6) -
 (b*x + a)^(5/6)*(d*x + c)^(1/6))/(b*x + a))
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[6]{a + bx}\,(c + dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(5/6),x)

[Out] Integral(1/((a + b*x)**(1/6)*(c + d*x)**(5/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(5/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1809 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{11/6}} dx$

Optimal. Leaf size=32

$$\frac{6(a+bx)^{5/6}}{5(c+dx)^{5/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(5/6))/(5*(b*c - a*d)*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0225633, antiderivative size = 32, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{6(a+bx)^{5/6}}{5(c+dx)^{5/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(11/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6))/(5*(b*c - a*d)*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 3.40151, size = 27, normalized size = 0.84

$$-\frac{6(a+bx)^{\frac{5}{6}}}{5(c+dx)^{\frac{5}{6}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(11/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)/(5*(c + d*x)**(5/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0446239, size = 32, normalized size = 1.

$$-\frac{6(a+bx)^{5/6}}{5(c+dx)^{5/6}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(11/6)),x]
```

```
[Out] (-6*(a + b*x)^(5/6))/(5*(-(b*c) + a*d)*(c + d*x)^(5/6))
```

Maple [A] time = 0.005, size = 27, normalized size = 0.8

$$-\frac{6}{5\,ad-5\,bc}\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{5}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(11/6),x)

[Out] -6/5*(b*x+a)^(5/6)/(d*x+c)^(5/6)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(11/6)),x, algorithm="maxima")

[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(11/6)), x)
```

Fricas [A] time = 0.222877, size = 35, normalized size = 1.09

$$\frac{6\,(bx+a)^{\frac{5}{6}}}{5\,(bc-ad)(dx+c)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(11/6)),x, algorithm="fricas")

[Out] 6/5*(b*x + a)^(5/6)/((b*c - a*d)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(11/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(11/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(11/6)), x)
```

3.1810 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{17/6}}\,dx$

Optimal. Leaf size=66

$$\frac{36b(a+bx)^{5/6}}{55(c+dx)^{5/6}(bc-ad)^2}+\frac{6(a+bx)^{5/6}}{11(c+dx)^{11/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(5/6))/(11*(b*c - a*d)*(c + d*x)^(11/6)) + (36*b*(a
+ b*x)^(5/6))/(55*(b*c - a*d)^2*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0511038, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{36b(a+bx)^{5/6}}{55(c+dx)^{5/6}(bc-ad)^2}+\frac{6(a+bx)^{5/6}}{11(c+dx)^{11/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(17/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6))/(11*(b*c - a*d)*(c + d*x)^(11/6)) + (36*b*(a
+ b*x)^(5/6))/(55*(b*c - a*d)^2*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 6.9303, size = 56, normalized size = 0.85

$$\frac{36b\,(a+bx)^{\frac{5}{6}}}{55\,(c+dx)^{\frac{5}{6}}\,(ad-bc)^2}-\frac{6\,(a+bx)^{\frac{5}{6}}}{11\,(c+dx)^{\frac{11}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(17/6),x)
```

```
[Out] 36*b*(a + b*x)**(5/6)/(55*(c + d*x)**(5/6)*(a*d - b*c)**2) - 6*(a
 + b*x)**(5/6)/(11*(c + d*x)**(11/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0641339, size = 46, normalized size = 0.7

$$\frac{6(a+bx)^{5/6}(-5ad+11bc+6bdx)}{55(c+dx)^{11/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(17/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6)*(11*b*c - 5*a*d + 6*b*d*x))/(55*(b*c - a*d)^2*
(c + d*x)^(11/6))
```

Maple [A] time = 0.008, size = 54, normalized size = 0.8

$$-\frac{-36\,bdx+30\,ad-66\,bc}{55\,a^2d^2-110\,abcd+55\,b^2c^2}\left(bx+a\right)^{\frac{5}{6}}\left(dx+c\right)^{-\frac{11}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(17/6),x)
```

```
[Out] -6/55*(b*x+a)^(5/6)*(-6*b*d*x+5*a*d-11*b*c)/(d*x+c)^(11/6)/(a^2*d
^2-2*a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(17/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(17/6)), x)
```

Fricas [A] time = 0.228813, size = 138, normalized size = 2.09

$$\frac{6\left(6\,b^2dx^2+11\,abc-5\,a^2d+\left(11\,b^2c+abd\right)x\right)}{55\,(b^2c^3-2\,abc^2d+a^2cd^2+(b^2c^2d-2\,abcd^2+a^2d^3)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(17/6)),x, algorithm="fricas")
```

```
[Out] 6/55*(6*b^2*d*x^2 + 11*a*b*c - 5*a^2*d + (11*b^2*c + a*b*d)*x)/((
b^2*c^3 - 2*a*b*c^2*d + a^2*c*d^2 + (b^2*c^2*d - 2*a*b*c*d^2 + a^
```

```
2*d^3)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(17/6),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(17/6)),x, algorithm="giac")

[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(17/6)), x)
```

3.1811 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{23/6}}\,dx$

Optimal. Leaf size=101

$$\frac{432b^2(a+bx)^{5/6}}{935(c+dx)^{5/6}(bc-ad)^3}+\frac{72b(a+bx)^{5/6}}{187(c+dx)^{11/6}(bc-ad)^2}+\frac{6(a+bx)^{5/6}}{17(c+dx)^{17/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(5/6))/(17*(b*c - a*d)*(c + d*x)^(17/6)) + (72*b*(a
+ b*x)^(5/6))/(187*(b*c - a*d)^2*(c + d*x)^(11/6)) + (432*b^2*(a
+ b*x)^(5/6))/(935*(b*c - a*d)^3*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0843786, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{432b^2(a+bx)^{5/6}}{935(c+dx)^{5/6}(bc-ad)^3}+\frac{72b(a+bx)^{5/6}}{187(c+dx)^{11/6}(bc-ad)^2}+\frac{6(a+bx)^{5/6}}{17(c+dx)^{17/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In] Int[1/((a + b*x)^(1/6)*(c + d*x)^(23/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6))/(17*(b*c - a*d)*(c + d*x)^(17/6)) + (72*b*(a
+ b*x)^(5/6))/(187*(b*c - a*d)^2*(c + d*x)^(11/6)) + (432*b^2*(a
+ b*x)^(5/6))/(935*(b*c - a*d)^3*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 12.4571, size = 88, normalized size = 0.87

$$-\frac{432b^2\left(a+bx\right)^{\frac{5}{6}}}{935\left(c+dx\right)^{\frac{5}{6}}\left(ad-bc\right)^3}+\frac{72b\left(a+bx\right)^{\frac{5}{6}}}{187\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{5}{6}}}{17\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(23/6),x)
```

```
[Out] -432*b**2*(a + b*x)**(5/6)/(935*(c + d*x)**(5/6)*(a*d - b*c)**3)
+ 72*b*(a + b*x)**(5/6)/(187*(c + d*x)**(11/6)*(a*d - b*c)**2) -
6*(a + b*x)**(5/6)/(17*(c + d*x)**(17/6)*(a*d - b*c))
```

Mathematica [A] time = 0.098668, size = 77, normalized size = 0.76

$$\frac{6(a+bx)^{5/6}\left(55a^2d^2-10abd(17c+6dx)+b^2\left(187c^2+204cdx+72d^2x^2\right)\right)}{935(c+dx)^{17/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(23/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6)*(55*a^2*d^2 - 10*a*b*d*(17*c + 6*d*x) + b^2*(1
87*c^2 + 204*c*d*x + 72*d^2*x^2)))/(935*(b*c - a*d)^3*(c + d*x)^(
17/6))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{432\,b^{2}d^{2}x^{2}-360\,abd^{2}x+1224\,b^{2}cdx+330\,a^{2}d^{2}-1020\,abcd+1122\,b^{2}c^{2}}{935\,a^{3}d^{3}-2805\,a^{2}cbd^{2}+2805\,ab^{2}c^{2}d-935\,b^{3}c^{3}}\,(bx+a)^{\frac{5}{6}}\,(dx+c)^{-\frac{17}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(23/6),x)
```

```
[Out] -6/935*(b*x+a)^(5/6)*(72*b^2*d^2*x^2-60*a*b*d^2*x+204*b^2*c*d*x+5
5*a^2*d^2-170*a*b*c*d+187*b^2*c^2)/(d*x+c)^(17/6)/(a^3*d^3-3*a^2*
b*c*d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{23}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(23/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(23/6)), x)
```

Fricas [A] time = 0.226384, size = 317, normalized size = 3.14

$$\frac{6\,(72\,b^{3}d^{2}x^{3}+187\,ab^{2}c^{2}-170\,a^{2}bcd+55\,a^{3}d^{2}+12\,(17\,b^{3}cd+ab^{2}d^{2})\,x^{2}+(187\,b^{3}c^{2}+34\,ab^{2}cd-5\,a^{2}b}{935\,(b^{3}c^{5}-3\,ab^{2}c^{4}d+3\,a^{2}bc^{3}d^{2}-a^{3}c^{2}d^{3}+(b^{3}c^{3}d^{2}-3\,ab^{2}c^{2}d^{3}+3\,a^{2}bcd^{4}-a^{3}d^{5})x^{2}+2\,(b^{3}c^{4}d-3\,ab^{2}c^{3}d^{2}+3\,a^{2}bc^{2}d^{3}-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(23/6)),x, algorithm="fricas")
```

```
[Out] 6/935*(72*b^3*d^2*x^3 + 187*a*b^2*c^2 - 170*a^2*b*c*d + 55*a^3*d^
2 + 12*(17*b^3*c*d + a*b^2*d^2)*x^2 + (187*b^3*c^2 + 34*a*b^2*c*d
 - 5*a^2*b*d^2)*x)/((b^3*c^5 - 3*a*b^2*c^4*d + 3*a^2*b*c^3*d^2 -
a^3*c^2*d^3 + (b^3*c^3*d^2 - 3*a*b^2*c^2*d^3 + 3*a^2*b*c*d^4 - a^
3*d^5)*x^2 + 2*(b^3*c^4*d - 3*a*b^2*c^3*d^2 + 3*a^2*b*c^2*d^3 - a
^3*c*d^4)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(23/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{23}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(23/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(23/6)), x)
```

3.1812 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{29/6}}\,dx$

Optimal. Leaf size=136

$$\frac{7776b^3(a+bx)^{5/6}}{21505(c+dx)^{5/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{5/6}}{4301(c+dx)^{11/6}(bc-ad)^3}+\frac{108b(a+bx)^{5/6}}{391(c+dx)^{17/6}(bc-ad)^2}+\frac{6(a+bx)^{5/6}}{23(c+dx)^{23/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(5/6))/(23*(b*c - a*d)*(c + d*x)^(23/6)) + (108*b*(a
 + b*x)^(5/6))/(391*(b*c - a*d)^2*(c + d*x)^(17/6)) + (1296*b^2*(
a + b*x)^(5/6))/(4301*(b*c - a*d)^3*(c + d*x)^(11/6)) + (7776*b^3
*(a + b*x)^(5/6))/(21505*(b*c - a*d)^4*(c + d*x)^(5/6))
```

Rubi [A] time = 0.120106, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{7776b^3(a+bx)^{5/6}}{21505(c+dx)^{5/6}(bc-ad)^4}+\frac{1296b^2(a+bx)^{5/6}}{4301(c+dx)^{11/6}(bc-ad)^3}+\frac{108b(a+bx)^{5/6}}{391(c+dx)^{17/6}(bc-ad)^2}+\frac{6(a+bx)^{5/6}}{23(c+dx)^{23/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(29/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6))/(23*(b*c - a*d)*(c + d*x)^(23/6)) + (108*b*(a
 + b*x)^(5/6))/(391*(b*c - a*d)^2*(c + d*x)^(17/6)) + (1296*b^2*(
a + b*x)^(5/6))/(4301*(b*c - a*d)^3*(c + d*x)^(11/6)) + (7776*b^3
*(a + b*x)^(5/6))/(21505*(b*c - a*d)^4*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 19.9706, size = 121, normalized size = 0.89

$$\frac{7776b^3\left(a+bx\right)^{\frac{5}{6}}}{21505\left(c+dx\right)^{\frac{5}{6}}\left(ad-bc\right)^4}-\frac{1296b^2\left(a+bx\right)^{\frac{5}{6}}}{4301\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^3}+\frac{108b\left(a+bx\right)^{\frac{5}{6}}}{391\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)^2}-\frac{6\left(a+bx\right)^{\frac{5}{6}}}{23\left(c+dx\right)^{\frac{23}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(29/6),x)
```

```
[Out] 7776*b**3*(a + b*x)**(5/6)/(21505*(c + d*x)**(5/6)*(a*d - b*c)**4
) - 1296*b**2*(a + b*x)**(5/6)/(4301*(c + d*x)**(11/6)*(a*d - b*c
)**3) + 108*b*(a + b*x)**(5/6)/(391*(c + d*x)**(17/6)*(a*d - b*c)
**2) - 6*(a + b*x)**(5/6)/(23*(c + d*x)**(23/6)*(a*d - b*c))
```

Mathematica [A] time = 0.189617, size = 95, normalized size = 0.7

$$\frac{6(a+bx)^{5/6}\left(1080b^2(c+dx)^2(bc-ad)+990b(c+dx)(bc-ad)^2+935(bc-ad)^3+1296b^3(c+dx)^3\right)}{21505(c+dx)^{23/6}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(29/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6)*(935*(b*c - a*d)^3 + 990*b*(b*c - a*d)^2*(c +
d*x) + 1080*b^2*(b*c - a*d)*(c + d*x)^2 + 1296*b^3*(c + d*x)^3))/
(21505*(b*c - a*d)^4*(c + d*x)^(23/6))
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$-\frac{-7776\,x^3b^3d^3+6480\,ab^2d^3x^2-29808\,b^3cd^2x^2-5940\,a^2bd^3x+24840\,ab^2cd^2x-42228\,b^3c^2dx+5610\,a^3d^3-22770\,a^2cbc}{21505\,a^4d^4-86020\,a^3bcd^3+129030\,a^2c^2b^2d^2-86020\,ab^3c^3d+21505\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(29/6),x)
```

```
[Out] -6/21505*(b*x+a)^(5/6)*(-1296*b^3*d^3*x^3+1080*a*b^2*d^3*x^2-4968
*b^3*c*d^2*x^2-990*a^2*b*d^3*x+4140*a*b^2*c*d^2*x-7038*b^3*c^2*d*
x+935*a^3*d^3-3795*a^2*b*c*d^2+5865*a*b^2*c^2*d-4301*b^3*c^3)/(d*
x+c)^(23/6)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*
d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{29}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(29/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(29/6)), x)
```

Fricas [A] time = 0.23598, size = 545, normalized size = 4.01

$$\frac{6\left(1296\,b^4d^3x^4+4301\,ab^3c^3-5865\,a^2b^2c^2d+3795\,a^3bcd^2-935\,a^4d^3+216\left(23\,b^4cd^2+ab^3d^3\right)x\right.}{21505\,(b^4c^7-4\,ab^3c^6d+6\,a^2b^2c^5d^2-4\,a^3bc^4d^3+a^4c^3d^4+(b^4c^4d^3-4\,ab^3c^3d^4+6\,a^2b^2c^2d^5-4\,a^3bcd^6+a^4d^7)x^3+3\,(b^4c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(29/6)),x, algorithm="fricas")
```

```
[Out] 6/21505*(1296*b^4*d^3*x^4 + 4301*a*b^3*c^3 - 5865*a^2*b^2*c^2*d +
 3795*a^3*b*c*d^2 - 935*a^4*d^3 + 216*(23*b^4*c*d^2 + a*b^3*d^3)*
x^3 + 18*(391*b^4*c^2*d + 46*a*b^3*c*d^2 - 5*a^2*b^2*d^3)*x^2 + (
4301*b^4*c^3 + 1173*a*b^3*c^2*d - 345*a^2*b^2*c*d^2 + 55*a^3*b*d^
3)*x)/((b^4*c^7 - 4*a*b^3*c^6*d + 6*a^2*b^2*c^5*d^2 - 4*a^3*b*c^4
*d^3 + a^4*c^3*d^4 + (b^4*c^4*d^3 - 4*a*b^3*c^3*d^4 + 6*a^2*b^2*c
^2*d^5 - 4*a^3*b*c*d^6 + a^4*d^7)*x^3 + 3*(b^4*c^5*d^2 - 4*a*b^3*
c^4*d^3 + 6*a^2*b^2*c^3*d^4 - 4*a^3*b*c^2*d^5 + a^4*c*d^6)*x^2 +
3*(b^4*c^6*d - 4*a*b^3*c^5*d^2 + 6*a^2*b^2*c^4*d^3 - 4*a^3*b*c^3*
d^4 + a^4*c^2*d^5)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(29/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{29}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(29/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(29/6)), x)
```

3.1813 $\int \frac{(c+dx)^{11/6}}{\sqrt[6]{a+bx}}\,dx$

Optimal. Leaf size=82

$$\frac{6(a+bx)^{5/6}(c+dx)^{5/6}(bc-ad)\,{}_2F_1\left(-\frac{11}{6},\frac{5}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5b^2\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

```
[Out] (6*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(5/6)*Hypergeometric2F1[
-11/6, 5/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*b^2*((b*(c +
d*x))/(b*c - a*d))^(5/6))
```

Rubi [A] time = 0.100153, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{5/6}(c+dx)^{5/6}(bc-ad)\,{}_2F_1\left(-\frac{11}{6},\frac{5}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5b^2\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(11/6)/(a + b*x)^(1/6),x]
```

```
[Out] (6*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(5/6)*Hypergeometric2F1[
-11/6, 5/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*b^2*((b*(c +
d*x))/(b*c - a*d))^(5/6))
```

Rubi in Sympy [A] time = 13.7333, size = 65, normalized size = 0.79

$$\frac{6\left(a+bx\right)^{\frac{5}{6}}\left(c+dx\right)^{\frac{17}{6}}{}_2F_1\left(\begin{matrix}\frac{1}{6},\frac{17}{6}\\ \frac{23}{6}\end{matrix}\middle|\frac{b\left(-c-dx\right)}{ad-bc}\right)}{17\left(\frac{d\left(a+bx\right)}{ad-bc}\right)^{\frac{5}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(11/6)/(b*x+a)**(1/6),x)
```

```
[Out] 6*(a + b*x)**(5/6)*(c + d*x)**(17/6)*hyper((1/6, 17/6), (23/6,),
b*(-c - d*x)/(a*d - b*c))/(17*(d*(a + b*x)/(a*d - b*c))**(5/6)*(a
*d - b*c))
```

Mathematica [A] time = 0.239431, size = 111, normalized size = 1.35

$$\frac{3(c+dx)^{5/6}\left(11(bc-ad)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(11ad-21bc-10bdx)\right)}{80b^2d\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(11/6)/(a + b*x)^(1/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(-(d*(a + b*x)*(-21*b*c + 11*a*d - 10*b*d*x))
+ 11*(b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hypergeom
etric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(80*b^2*d*(
a + b*x)^(1/6))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{11}{6}}\,\frac{1}{\sqrt[6]{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(11/6)/(b*x+a)^(1/6),x)
```

```
[Out] int((d*x+c)^(11/6)/(b*x+a)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{11}{6}}}{(bx+a)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(11/6)/(b*x + a)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{11}{6}}}{(bx+a)^{\frac{1}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(1/6),x, algorithm="fricas")

[Out] integral((d*x + c)^(11/6)/(b*x + a)^(1/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(11/6)/(b*x+a)**(1/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(1/6),x, algorithm="giac")

[Out] Timed out
```

3.1814 $\int \frac{(c+dx)^{5/6}}{\sqrt[6]{a+bx}}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{5/6}(c+dx)^{5/6}\,{}_2F_1\left(-\frac{5}{6},\frac{5}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5b\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

```
[Out] (6*(a + b*x)^(5/6)*(c + d*x)^(5/6)*Hypergeometric2F1[-5/6, 5/6, 1
1/6, -((d*(a + b*x))/(b*c - a*d))])/(5*b*((b*(c + d*x))/(b*c - a*
d))^(5/6))
```

Rubi [A] time = 0.0855705, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{5/6}(c+dx)^{5/6}\,{}_2F_1\left(-\frac{5}{6},\frac{5}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5b\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/(a + b*x)^(1/6),x]
```

```
[Out] (6*(a + b*x)^(5/6)*(c + d*x)^(5/6)*Hypergeometric2F1[-5/6, 5/6, 1
1/6, -((d*(a + b*x))/(b*c - a*d))])/(5*b*((b*(c + d*x))/(b*c - a*
d))^(5/6))
```

Rubi in Sympy [A] time = 13.691, size = 65, normalized size = 0.88

$$\frac{6\,(a+bx)^{\frac{5}{6}}\,(c+dx)^{\frac{11}{6}}\,{}_2F_1\left(\begin{matrix}\frac{1}{6},\frac{11}{6}\\ \frac{17}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{11\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(1/6),x)
```

```
[Out] 6*(a + b*x)**(5/6)*(c + d*x)**(11/6)*hyper((1/6, 11/6), (17/6,),
b*(-c - d*x)/(a*d - b*c))/(11*(d*(a + b*x)/(a*d - b*c))**(5/6)*(a
*d - b*c))
```

Mathematica [A] time = 0.185948, size = 93, normalized size = 1.26

$$\frac{3(c+dx)^{5/6}\left((bc-ad)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{5bd\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/(a + b*x)^(1/6),x]
```

```
[Out] (3*(c + d*x)^(5/6)*(d*(a + b*x) + (b*c - a*d)*((d*(a + b*x))/(-(b
*c) + a*d))^(1/6)*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))
/(b*c - a*d)]))/(5*b*d*(a + b*x)^(1/6))
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\frac{1}{\sqrt[6]{bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(1/6),x)
```

```
[Out] int((d*x+c)^(5/6)/(b*x+a)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(1/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(1/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(1/6),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/6)/(b*x + a)^(1/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(1/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(1/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1815 $\int \frac{1}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=74

$$\frac{6(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5b\sqrt[6]{c+dx}}$$

```
[Out] (6*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometr
ic2F1[1/6, 5/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*b*(c + d*
x)^(1/6))
```

Rubi [A] time = 0.0858006, antiderivative size = 74, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5b\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(1/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometr
ic2F1[1/6, 5/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*b*(c + d*
x)^(1/6))
```

Rubi in Sympy [A] time = 15.9241, size = 65, normalized size = 0.88

$$\frac{6\left(a+bx\right)^{\frac{5}{6}}\left(c+dx\right)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}\frac{1}{6},\frac{5}{6}\\ \frac{11}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{5\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(1/6),x)
```

```
[Out] 6*(a + b*x)**(5/6)*(c + d*x)**(5/6)*hyper((1/6, 5/6), (11/6,), b*
(-c - d*x)/(a*d - b*c))/(5*(d*(a + b*x)/(a*d - b*c))**(5/6)*(a*d
- b*c))
```

Mathematica [A] time = 0.0744748, size = 73, normalized size = 0.99

$$\frac{6(c+dx)^{5/6}\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{5d\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(1/6)),x]
```

```
[Out] (6*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c + d*x)^(5/6)*Hypergeom
etric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])/(5*d*(a + b*
x)^(1/6))
```

Maple [F] time = 0.049, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[6]{bx+a}}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(1/6),x)
```

```
[Out] int(1/(b*x+a)^(1/6)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(1/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(1/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(1/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(1/6)*(d*x + c)^(1/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(1/6),x)
```

```
[Out] Integral(1/((a + b*x)**(1/6)*(c + d*x)**(1/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(1/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1816 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=81

$$\frac{6(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{5}{6},\frac{7}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5\sqrt[6]{c+dx}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometr
ic2F1[5/6, 7/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*(b*c - a*
d)*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0854623, antiderivative size = 81, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{5}{6},\frac{7}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5\sqrt[6]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(7/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometr
ic2F1[5/6, 7/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*(b*c - a*
d)*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 13.6453, size = 66, normalized size = 0.81

$$-\frac{6\left(a+bx\right)^{\frac{5}{6}}{}_2F_1\left(\begin{matrix}\frac{1}{6},-\frac{1}{6}\\ \frac{5}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\sqrt[6]{c+dx}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(7/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)*hyper((1/6, -1/6), (5/6,), b*(-c - d*x)/(a*d
- b*c))/((d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(1/6)*(a*d -
 b*c))
```

Mathematica [A] time = 0.185715, size = 100, normalized size = 1.23

$$\frac{6\left(5d(a+bx)-4b(c+dx)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{5d\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(7/6)),x]
```

```
[Out] (6*(5*d*(a + b*x) - 4*b*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c +
 d*x)*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)
]))/(5*d*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(1/6))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[6]{bx+a}}(dx+c)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(7/6),x)
```

```
[Out] int(1/(b*x+a)^(1/6)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(7/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(7/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{7}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(7/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(1/6)*(d*x + c)^(7/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{\sqrt[6]{a+bx}\,(c+dx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(7/6),x)
```

```
[Out] Integral(1/((a + b*x)**(1/6)*(c + d*x)**(7/6)), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(7/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(7/6)), x)
```

3.1817 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{13/6}}\,dx$

Optimal. Leaf size=82

$$\frac{6b(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{5}{6},\frac{13}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5\sqrt[6]{c+dx}(bc-ad)^2}$$

```
[Out] (6*b*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeome
tric2F1[5/6, 13/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*(b*c -
 a*d)^2*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0884465, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{5}{6},\frac{13}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5\sqrt[6]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(13/6)),x]
```

```
[Out] (6*b*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeome
tric2F1[5/6, 13/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*(b*c -
 a*d)^2*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 13.3749, size = 70, normalized size = 0.85

$$-\frac{6\left(a+bx\right)^{\frac{5}{6}}{}_2F_1\left(\begin{matrix}\frac{1}{6},-\frac{7}{6}\\-\frac{1}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{7\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\left(c+dx\right)^{\frac{7}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(13/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)*hyper((1/6, -7/6), (-1/6,), b*(-c - d*x)/(a*d
 - b*c))/(7*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(7/6)*(a*
d - b*c))
```

Mathematica [A] time = 0.237125, size = 117, normalized size = 1.43

$$-\frac{6\left(8b^2(c+dx)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+5d(a+bx)(ad-3bc-2bdx)\right)}{35d\sqrt[6]{a+bx}(c+dx)^{7/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(13/6)),x]
```

```
[Out] (-6*(5*d*(a + b*x)*(-3*b*c + a*d - 2*b*d*x) + 8*b^2*((d*(a + b*x)
)/(-(b*c) + a*d))^(1/6)*(c + d*x)^2*Hypergeometric2F1[1/6, 5/6, 1
1/6, (b*(c + d*x))/(b*c - a*d)]))/(35*d*(b*c - a*d)^2*(a + b*x)^(
1/6)*(c + d*x)^(7/6))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[6]{bx+a}}(dx+c)^{-\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(13/6),x)
```

```
[Out] int(1/(b*x+a)^(1/6)/(d*x+c)^(13/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(13/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(13/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(d^2x^2+2\,cdx+c^2)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(13/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((d^2*x^2 + 2*c*d*x + c^2)*(b*x + a)^(1/6)*(d*x + c)^(
1/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(13/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(13/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(13/6)), x)
```

3.1818 $\int \frac{1}{\sqrt[6]{a+bx}(c+dx)^{19/6}}\,dx$

Optimal. Leaf size=84

$$\frac{6b^2(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{5}{6},\frac{19}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5\sqrt[6]{c+dx}(bc-ad)^3}$$

```
[Out] (6*b^2*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeo
metric2F1[5/6, 19/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*(b*c
 - a*d)^3*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0890289, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b^2(a+bx)^{5/6}\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(\frac{5}{6},\frac{19}{6};\frac{11}{6};-\frac{d(a+bx)}{bc-ad}\right)}{5\sqrt[6]{c+dx}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(1/6)*(c + d*x)^(19/6)),x]
```

```
[Out] (6*b^2*(a + b*x)^(5/6)*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeo
metric2F1[5/6, 19/6, 11/6, -((d*(a + b*x))/(b*c - a*d))])/(5*(b*c
 - a*d)^3*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 13.477, size = 70, normalized size = 0.83

$$-\frac{6\,(a+bx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}\frac{1}{6},-\frac{13}{6}\\-\frac{7}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{13\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(c+dx)^{\frac{13}{6}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(1/6)/(d*x+c)**(19/6),x)
```

```
[Out] -6*(a + b*x)**(5/6)*hyper((1/6, -13/6), (-7/6,), b*(-c - d*x)/(a*
d - b*c))/(13*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(13/6)*
(a*d - b*c))
```

Mathematica [A] time = 0.249842, size = 145, normalized size = 1.73

$$\frac{6\left(5d(a+bx)\left(8b(c+dx)(bc-ad)+7(bc-ad)^2+16b^2(c+dx)^2\right)-64b^3(c+dx)^3\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)\right)}{455d\sqrt[6]{a+bx}(c+dx)^{13/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(1/6)*(c + d*x)^(19/6)),x]
```

```
[Out] (6*(5*d*(a + b*x)*(7*(b*c - a*d)^2 + 8*b*(b*c - a*d)*(c + d*x) +
16*b^2*(c + d*x)^2) - 64*b^3*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)
*(c + d*x)^3*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c
 - a*d)]))/(455*d*(b*c - a*d)^3*(a + b*x)^(1/6)*(c + d*x)^(13/6))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\frac{1}{\sqrt[6]{bx+a}}(dx+c)^{-\frac{19}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(1/6)/(d*x+c)^(19/6),x)
```

```
[Out] int(1/(b*x+a)^(1/6)/(d*x+c)^(19/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(19/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(19/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(19/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3)*(b*x + a)^(
1/6)*(d*x + c)^(1/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(1/6)/(d*x+c)**(19/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(1/6)*(d*x + c)^(19/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(1/6)*(d*x + c)^(19/6)), x)
```

3.1819 $\int \frac{(c+dx)^{13/6}}{(a+bx)^{5/6}} dx$

Optimal. Leaf size=82

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^2\,{}_2F_1\left(-\frac{13}{6},\frac{1}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b^3\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(b*c - a*d)^2*(a + b*x)^(1/6)*(c + d*x)^(1/6)*Hypergeometric2F
1[-13/6, 1/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/(b^3*((b*(c + d
*x))/(b*c - a*d))^(1/6))
```

Rubi [A] time = 0.0911788, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^2\,{}_2F_1\left(-\frac{13}{6},\frac{1}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b^3\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(13/6)/(a + b*x)^(5/6),x]
```

```
[Out] (6*(b*c - a*d)^2*(a + b*x)^(1/6)*(c + d*x)^(1/6)*Hypergeometric2F
1[-13/6, 1/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/(b^3*((b*(c + d
*x))/(b*c - a*d))^(1/6))
```

Rubi in Sympy [A] time = 13.572, size = 65, normalized size = 0.79

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{19}{6}}\,{}_2F_1\left(\begin{matrix}\frac{5}{6},\frac{19}{6}\\ \frac{25}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{19\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(13/6)/(b*x+a)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(19/6)*hyper((5/6, 19/6), (25/6,),
b*(-c - d*x)/(a*d - b*c))/(19*(d*(a + b*x)/(a*d - b*c))**(1/6)*(a
```

```
*d - b*c))
```

Mathematica [A] time = 0.277603, size = 141, normalized size = 1.72

$$-\frac{3\sqrt[6]{c+dx}\left(-d(a+bx)\left(91a^2d^2-26abd(8c+dx)+b^2\left(133c^2+58cdx+16d^2x^2\right)\right)-91(bc-ad)^3\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\right.\right.}{112b^3d(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(13/6)/(a + b*x)^(5/6),x]
```

```
[Out] (-3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(91*a^2*d^2 - 26*a*b*d*(8*c +
d*x) + b^2*(133*c^2 + 58*c*d*x + 16*d^2*x^2))) - 91*(b*c - a*d)^3
*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometric2F1[1/6, 5/6,
 7/6, (b*(c + d*x))/(b*c - a*d)]))/(112*b^3*d*(a + b*x)^(5/6))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{13}{6}}\,(bx+a)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(13/6)/(b*x+a)^(5/6),x)
```

```
[Out] int((d*x+c)^(13/6)/(b*x+a)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{13}{6}}}{(bx+a)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(13/6)/(b*x + a)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(13/6)/(b*x + a)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{\left(d^2x^2 + 2\,cdx + c^2\right)(dx + c)^{\frac{1}{6}}}{(bx + a)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(13/6)/(b*x + a)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((d^2*x^2 + 2*c*d*x + c^2)*(d*x + c)^(1/6)/(b*x + a)^(5/6
), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(13/6)/(b*x+a)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(13/6)/(b*x + a)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1820 $\int \frac{(c+dx)^{7/6}}{(a+bx)^{5/6}}\,dx$

Optimal. Leaf size=80

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)\,{}_2F_1\left(-\frac{7}{6},\frac{1}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(1/6)*Hypergeometric2F1[
-7/6, 1/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/(b^2*((b*(c + d*x)
)/(b*c - a*d))^(1/6))
```

Rubi [A] time = 0.0960253, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)\,{}_2F_1\left(-\frac{7}{6},\frac{1}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(7/6)/(a + b*x)^(5/6),x]
```



```
[Out] (6*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(1/6)*Hypergeometric2F1[
-7/6, 1/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/(b^2*((b*(c + d*x)
)/(b*c - a*d))^(1/6))
```

Rubi in Sympy [A] time = 13.6336, size = 65, normalized size = 0.81

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{13}{6}}\,{}_2F_1\left(\begin{matrix}\frac{5}{6},\frac{13}{6}\\\frac{19}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{13\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(7/6)/(b*x+a)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(13/6)*hyper((5/6, 13/6), (19/6,),
b*(-c - d*x)/(a*d - b*c))/(13*(d*(a + b*x)/(a*d - b*c))**(1/6)*(a
```

```
*d - b*c))
```

Mathematica [A] time = 0.186931, size = 111, normalized size = 1.39

$$\frac{3\sqrt[6]{c+dx}\left(7(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(7ad-9bc-2bdx)\right)}{8b^2d(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(7/6)/(a + b*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(-(d*(a + b*x)*(-9*b*c + 7*a*d - 2*b*d*x)) + 7
*(b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometri
c2F1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(8*b^2*d*(a + b*
x)^(5/6))
```

Maple [F] time = 0.05, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{7}{6}}\,(bx+a)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(7/6)/(b*x+a)^(5/6),x)
```

```
[Out] int((d*x+c)^(7/6)/(b*x+a)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{7}{6}}}{(bx+a)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(7/6)/(b*x + a)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{7}{6}}}{(bx+a)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(7/6)/(b*x + a)^(5/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(7/6)/(b*x+a)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1821 $\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{5/6}}\,dx$

Optimal. Leaf size=72

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

```
[Out] (6*(a + b*x)^(1/6)*(c + d*x)^(1/6)*Hypergeometric2F1[-1/6, 1/6, 7
/6, -((d*(a + b*x))/(b*c - a*d))])/(b*((b*(c + d*x))/(b*c - a*d))
^(1/6))
```

Rubi [A] time = 0.0848262, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/6)/(a + b*x)^(5/6),x]
```

```
[Out] (6*(a + b*x)^(1/6)*(c + d*x)^(1/6)*Hypergeometric2F1[-1/6, 1/6, 7
/6, -((d*(a + b*x))/(b*c - a*d))])/(b*((b*(c + d*x))/(b*c - a*d))
^(1/6))
```

Rubi in Sympy [A] time = 13.4542, size = 65, normalized size = 0.9

$$\frac{6\sqrt[6]{a+bx}\,(c+dx)^{\frac{7}{6}}\,{}_2F_1\left(\begin{matrix}\frac{5}{6},\frac{7}{6}\\ \frac{13}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{7\sqrt[6]{\frac{d\,(a+bx)}{ad-bc}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/6)/(b*x+a)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(7/6)*hyper((5/6, 7/6), (13/6,), b*
(-c - d*x)/(a*d - b*c))/(7*(d*(a + b*x)/(a*d - b*c))**(1/6)*(a*d
```

```
- b*c))
```

Mathematica [A] time = 0.145655, size = 91, normalized size = 1.26

$$\frac{3\sqrt[6]{c+dx}\left((bc-ad)\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{bd(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/6)/(a + b*x)^(5/6),x]
```

```
[Out] (3*(c + d*x)^(1/6)*(d*(a + b*x) + (b*c - a*d)*((d*(a + b*x))/(-(b
*c) + a*d))^(5/6)*Hypergeometric2F1[1/6, 5/6, 7/6, (b*(c + d*x))/
(b*c - a*d)]))/(b*d*(a + b*x)^(5/6))
```

Maple [F] time = 0.047, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{dx+c}\,(bx+a)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/6)/(b*x+a)^(5/6),x)
```

```
[Out] int((d*x+c)^(1/6)/(b*x+a)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(5/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(5/6),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(1/6)/(b*x + a)^(5/6), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{\frac{5}{6}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/6)/(b*x+a)**(5/6),x)
```

```
[Out] Integral((c + d*x)**(1/6)/(a + b*x)**(5/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1822 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=72

$$\frac{6\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b(c+dx)^{5/6}}$$

```
[Out] (6*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[1/6, 5/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/(b*(c + d*x)^
(5/6))
```

Rubi [A] time = 0.0879739, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b(c+dx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(5/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[1/6, 5/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/(b*(c + d*x)^
(5/6))
```

Rubi in Sympy [A] time = 15.7338, size = 63, normalized size = 0.88

$$\frac{6\sqrt[6]{a+bx}\sqrt[6]{c+dx}\,{}_2F_1\left(\begin{matrix}\frac{5}{6},\frac{1}{6}\\ \frac{7}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(5/6),x)
```

```
[Out] 6*(a + b*x)**(1/6)*(c + d*x)**(1/6)*hyper((5/6, 1/6), (7/6,), b*(
-c - d*x)/(a*d - b*c))/((d*(a + b*x)/(a*d - b*c))**(1/6)*(a*d - b
*c))
```

Mathematica [A] time = 0.0550848, size = 71, normalized size = 0.99

$$\frac{6\sqrt[6]{c+dx}\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)}{d(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(5/6)),x]
```

```
[Out] (6*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*(c + d*x)^(1/6)*Hypergeom
etric2F1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)])/(d*(a + b*x)^
(5/6))
```

Maple [F] time = 0.079, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{6}}\,(dx+c)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(5/6),x)
```

```
[Out] int(1/(b*x+a)^(5/6)/(d*x+c)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(5/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(5/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{5}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(5/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(5/6)*(d*x + c)^(5/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{6}}(c+dx)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(5/6),x)
```

```
[Out] Integral(1/((a + b*x)**(5/6)*(c + d*x)**(5/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(5/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1823 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{11/6}} dx$

Optimal. Leaf size=79

$$\frac{6\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6} {}_2F_1\left(\frac{1}{6},\frac{11}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{(c+dx)^{5/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[1/6, 11/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)
*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0873006, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6} {}_2F_1\left(\frac{1}{6},\frac{11}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{(c+dx)^{5/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(11/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeometr
ic2F1[1/6, 11/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)
*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 13.4758, size = 68, normalized size = 0.86

$$-\frac{6\sqrt[6]{a+bx}\,{}_2F_1\left(\begin{matrix}\frac{5}{6},-\frac{5}{6}\\\frac{1}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{5\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,(c+dx)^{\frac{5}{6}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(11/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)*hyper((5/6, -5/6), (1/6,), b*(-c - d*x)/(a*d
- b*c))/(5*(d*(a + b*x)/(a*d - b*c))**(1/6)*(c + d*x)**(5/6)*(a*d
 - b*c))
```

Mathematica [A] time = 0.160451, size = 99, normalized size = 1.25

$$\frac{6\left(4b(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{5d(a+bx)^{5/6}(c+dx)^{5/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(11/6)),x]
```

```
[Out] (6*(d*(a + b*x) + 4*b*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*(c + d
*x)*Hypergeometric2F1[1/6, 5/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))
/(5*d*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(5/6))
```

Maple [F] time = 0.073, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{6}}\,(dx+c)^{-\frac{11}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(11/6),x)
```

```
[Out] int(1/(b*x+a)^(5/6)/(d*x+c)^(11/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(11/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(11/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{11}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(11/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(5/6)*(d*x + c)^(11/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(11/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(11/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1824 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{17/6}}\,dx$

Optimal. Leaf size=80

$$\frac{6b\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{17}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{(c+dx)^{5/6}(bc-ad)^2}$$

```
[Out] (6*b*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeome
tric2F1[1/6, 17/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*
d)^2*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0892445, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}\,{}_2F_1\left(\frac{1}{6},\frac{17}{6};\frac{7}{6};-\frac{d(a+bx)}{bc-ad}\right)}{(c+dx)^{5/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(17/6)),x]
```

```
[Out] (6*b*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d))^(5/6)*Hypergeome
tric2F1[1/6, 17/6, 7/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*
d)^2*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 13.5056, size = 70, normalized size = 0.88

$$-\frac{6\sqrt[6]{a+bx}\,{}_2F_1\left(\begin{matrix}\frac{5}{6},-\frac{11}{6}\\-\frac{5}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{11\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,(c+dx)^{\frac{11}{6}}(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(17/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)*hyper((5/6, -11/6), (-5/6,), b*(-c - d*x)/(a*
d - b*c))/(11*(d*(a + b*x)/(a*d - b*c))**(1/6)*(c + d*x)**(11/6)*
(a*d - b*c))
```

Mathematica [A] time = 0.235128, size = 117, normalized size = 1.46

$$\frac{48b^2(c+dx)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-6d(a+bx)(ad-3bc-2bdx)}{11d(a+bx)^{5/6}(c+dx)^{11/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(17/6)),x]
```

```
[Out] (-6*d*(a + b*x)*(-3*b*c + a*d - 2*b*d*x) + 48*b^2*((d*(a + b*x))/
(-(b*c) + a*d))^(5/6)*(c + d*x)^2*Hypergeometric2F1[1/6, 5/6, 7/6
, (b*(c + d*x))/(b*c - a*d)])/(11*d*(b*c - a*d)^2*(a + b*x)^(5/6)
*(c + d*x)^(11/6))
```

Maple [F] time = 0.075, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{6}}\,(dx+c)^{-\frac{17}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(17/6),x)
```

```
[Out] int(1/(b*x+a)^(5/6)/(d*x+c)^(17/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(17/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(17/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(d^2x^2+2\,cdx+c^2)(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{5}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(17/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((d^2*x^2 + 2*c*d*x + c^2)*(b*x + a)^(5/6)*(d*x + c)^(
5/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(17/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(17/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1825 $\int \frac{(c+dx)^{11/6}}{(a+bx)^{5/6}}\,dx$

Optimal. Leaf size=424

$$-\frac{55(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{17/6}\sqrt[6]{d}}+\frac{55(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{17/6}\sqrt[6]{d}}-\frac{55(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{17/6}\sqrt[6]{d}}+\frac{55(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{17/6}\sqrt[6]{d}}+\frac{55(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{17/6}\sqrt[6]{d}}+\frac{11\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}{12b^2}+\frac{\sqrt[6]{a+bx}(c+dx)^{11/6}}{2b}$$

```
[Out] (11*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6))/(12*b^2) + ((a +
 b*x)^(1/6)*(c + d*x)^(11/6))/(2*b) - (55*(b*c - a*d)^2*ArcTan[1/
Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^
(1/6))])/(24*Sqrt[3]*b^(17/6)*d^(1/6)) + (55*(b*c - a*d)^2*ArcTan
[1/Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*
x)^(1/6))])/(24*Sqrt[3]*b^(17/6)*d^(1/6)) + (55*(b*c - a*d)^2*Arc
Tanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^
(17/6)*d^(1/6)) - (55*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b
*x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c
 + d*x)^(1/6)])/(144*b^(17/6)*d^(1/6)) + (55*(b*c - a*d)^2*Log[b^
(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1
/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(17/6)*d^(1/6))
```

Rubi [A] time = 0.925738, antiderivative size = 424, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{55(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{17/6}\sqrt[6]{d}}+\frac{55(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{17/6}\sqrt[6]{d}}-\frac{55(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{17/6}\sqrt[6]{d}}+\frac{55(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{17/6}\sqrt[6]{d}}+\frac{55(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{17/6}\sqrt[6]{d}}+\frac{11\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}{12b^2}+\frac{\sqrt[6]{a+bx}(c+dx)^{11/6}}{2b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(11/6)/(a + b*x)^(5/6),x]
```

```
[Out] (11*(b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6))/(12*b^2) + ((a +
 b*x)^(1/6)*(c + d*x)^(11/6))/(2*b) - (55*(b*c - a*d)^2*ArcTan[1/
Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^
(1/6))])/(24*Sqrt[3]*b^(17/6)*d^(1/6)) + (55*(b*c - a*d)^2*ArcTan
[1/Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*
x)^(1/6))])/(24*Sqrt[3]*b^(17/6)*d^(1/6)) + (55*(b*c - a*d)^2*Arc
Tanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^
(17/6)*d^(1/6)) - (55*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b
*x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c
 + d*x)^(1/6)])/(144*b^(17/6)*d^(1/6)) + (55*(b*c - a*d)^2*Log[b^
(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1
/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(17/6)*d^(1/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(11/6)/(b*x+a)**(5/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.205496, size = 111, normalized size = 0.26

$$\frac{(c+dx)^{5/6}\left(11(bc-ad)^2\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}\ {}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-d(a+bx)(11ad-17bc-6bdx)\right)}{12b^2d(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(11/6)/(a + b*x)^(5/6),x]
```

```
[Out] ((c + d*x)^(5/6)*(-(d*(a + b*x)*(-17*b*c + 11*a*d - 6*b*d*x)) + 1
1*(b*c - a*d)^2*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*Hypergeometr
ic2F1[5/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(12*b^2*d*(a +
 b*x)^(5/6))
```

Maple [F] time = 0.04, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{11}{6}}\,(bx+a)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(11/6)/(b*x+a)^(5/6),x)

[Out] int((d*x+c)^(11/6)/(b*x+a)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{11}{6}}}{(bx+a)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(5/6),x, algorithm="maxima")

[Out] integrate((d*x + c)^(11/6)/(b*x + a)^(5/6), x)
```

Fricas [A] time = 0.301349, size = 5763, normalized size = 13.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(5/6),x, algorithm="fricas")

[Out] -1/144*(220*sqrt(3)*b^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b
^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^
5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a
^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*
a^11*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6)*arctan(sqrt(3)*(b^3*d*
x + b^3*c)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2
- 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5
 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^
8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11
 + a^12*d^12)/(b^17*d))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*
(b*x + a)^(1/6)*(d*x + c)^(5/6) + 2*(d*x + c)*sqrt(((b^5*c^2 - 2*
a*b^4*c*d + a^2*b^3*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^12*c
^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d
^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*
```

d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3
*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^17
*d))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3
*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^6*d*x +
b^6*c)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 22
0*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 9
24*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 -
220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a
^12*d^12)/(b^17*d))^(1/3))/(d*x + c)) + (b^3*d*x + b^3*c)*((b^12*
c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*
d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6
*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^
3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^1
7*d))^(1/6))) + 220*sqrt(3)*b^2*((b^12*c^12 - 12*a*b^11*c^11*d +
66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4
- 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7
+ 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^
10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6)*arctan(sqrt(3)
*(b^3*d*x + b^3*c)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c
^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7
*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^
4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*
b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d + a
^2*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + 2*(d*x + c)*sqrt(-((b^5
*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)
*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*
b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6
*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^
9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^
12)/(b^17*d))^(1/6) - (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^
2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (b
^6*d*x + b^6*c)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10
*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^
7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c
^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c
*d^11 + a^12*d^12)/(b^17*d))^(1/3))/(d*x + c)) - (b^3*d*x + b^3*c
)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3
*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^
6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a
^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d
^12)/(b^17*d))^(1/6))) - 55*b^2*((b^12*c^12 - 12*a*b^11*c^11*d +
66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4
- 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7
+ 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^
10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6)*log(3025*((b^5
*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)
*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*
b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6
*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^
9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^
12)/(b^17*d))^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^
2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b
^6*d*x + b^6*c)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10
*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^
7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c
^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c

```
*d^11 + a^12*d^12)/(b^17*d))^(1/3))/(d*x + c)) + 55*b^2*((b^12*c^
12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^
3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d
^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*
d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^17*
d))^(1/6)*log(-3025*((b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(b*x +
 a)^(1/6)*(d*x + c)^(5/6)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2
*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*
a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495
*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 1
2*a^11*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6) - (b^4*c^4 - 4*a*b^3
*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(
1/3)*(d*x + c)^(2/3) - (b^6*d*x + b^6*c)*((b^12*c^12 - 12*a*b^11*
c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8
*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^
5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b
^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/3))/(d*x
 + c)) - 110*b^2*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^1
0*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c
^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*
c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*
c*d^11 + a^12*d^12)/(b^17*d))^(1/6)*log(55*((b^2*c^2 - 2*a*b*c*d
+ a^2*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6) + (b^3*d*x + b^3*c)*((
b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9
*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^
6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b
^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)
/(b^17*d))^(1/6))/(d*x + c)) + 110*b^2*((b^12*c^12 - 12*a*b^11*c^
11*d + 66*a^2*b^10*c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c
^8*d^4 - 792*a^5*b^7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*
c^5*d^7 + 495*a^8*b^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2
*c^2*d^10 - 12*a^11*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6)*log(55*
((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/6)*(d*x + c)^(5/6)
- (b^3*d*x + b^3*c)*((b^12*c^12 - 12*a*b^11*c^11*d + 66*a^2*b^10*
c^10*d^2 - 220*a^3*b^9*c^9*d^3 + 495*a^4*b^8*c^8*d^4 - 792*a^5*b^
7*c^7*d^5 + 924*a^6*b^6*c^6*d^6 - 792*a^7*b^5*c^5*d^7 + 495*a^8*b
^4*c^4*d^8 - 220*a^9*b^3*c^3*d^9 + 66*a^10*b^2*c^2*d^10 - 12*a^11
*b*c*d^11 + a^12*d^12)/(b^17*d))^(1/6))/(d*x + c)) - 12*(6*b*d*x
+ 17*b*c - 11*a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6))/b^2
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(11/6)/(b*x+a)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(5/6),x, algorithm="giac")

[Out] Timed out
```

3.1826 $\int \frac{(c+dx)^{5/6}}{(a+bx)^{5/6}}\,dx$

Optimal. Leaf size=378

$$-\frac{5(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{11/6}\sqrt[6]{d}}+\frac{5(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{11/6}\sqrt[6]{d}}-\frac{5(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{11/6}\sqrt[6]{d}}+\frac{5(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{11/6}\sqrt[6]{d}}+\frac{5(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{11/6}\sqrt[6]{d}}+\frac{\sqrt[6]{a+bx}(c+dx)^{5/6}}{b}$$

```
[Out] ((a + b*x)^(1/6)*(c + d*x)^(5/6))/b - (5*(b*c - a*d)*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(2*Sqrt[3]*b^(11/6)*d^(1/6)) + (5*(b*c - a*d)*ArcTan[1/Sqrt
[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6
))])/(2*Sqrt[3]*b^(11/6)*d^(1/6)) + (5*(b*c - a*d)*ArcTanh[(d^(1/
6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(11/6)*d^(1/
6)) - (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c +
 d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])
/(12*b^(11/6)*d^(1/6)) + (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a
 + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6)
)/(c + d*x)^(1/6)])/(12*b^(11/6)*d^(1/6))
```

Rubi [A] time = 0.793629, antiderivative size = 378, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{5(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{11/6}\sqrt[6]{d}}+\frac{5(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{11/6}\sqrt[6]{d}}-\frac{5(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{11/6}\sqrt[6]{d}}+\frac{5(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{11/6}\sqrt[6]{d}}+\frac{5(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{11/6}\sqrt[6]{d}}+\frac{\sqrt[6]{a+bx}(c+dx)^{5/6}}{b}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/(a + b*x)^(5/6),x]
```

```
[Out] ((a + b*x)^(1/6)*(c + d*x)^(5/6))/b - (5*(b*c - a*d)*ArcTan[1/Sqr
t[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
```

```
6))])/(2*Sqrt[3]*b^(11/6)*d^(1/6)) + (5*(b*c - a*d)*ArcTan[1/Sqrt
[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6
))])/(2*Sqrt[3]*b^(11/6)*d^(1/6)) + (5*(b*c - a*d)*ArcTanh[(d^(1/
6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(11/6)*d^(1/
6)) - (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c +
 d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])
/(12*b^(11/6)*d^(1/6)) + (5*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a
 + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6)
)/(c + d*x)^(1/6)])/(12*b^(11/6)*d^(1/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(5/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.151173, size = 90, normalized size = 0.24

$$\frac{(c+dx)^{5/6}\left((bc-ad)\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}\,{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+d(a+bx)\right)}{bd(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/(a + b*x)^(5/6),x]
```

```
[Out] ((c + d*x)^(5/6)*(d*(a + b*x) + (b*c - a*d)*((d*(a + b*x))/(-(b*c
) + a*d))^(5/6)*Hypergeometric2F1[5/6, 5/6, 11/6, (b*(c + d*x))/(
b*c - a*d)]))/(b*d*(a + b*x)^(5/6))
```

Maple [F] time = 0.034, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\,(bx+a)^{-\frac{5}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(5/6),x)
```

```
[Out] int((d*x+c)^(5/6)/(b*x+a)^(5/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(5/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(5/6), x)
```

Fricas [A] time = 0.27232, size = 3171, normalized size = 8.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(5/6),x, algorithm="fricas")
```

```
[Out] 1/12*(20*sqrt(3)*b*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2
 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*
d^6)/(b^11*d))^(1/6)*arctan(-sqrt(3)*(b^2*d*x + b^2*c)*((b^6*c^6
- 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^
4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6)/(2*(b*c
- a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6) - 2*(d*x + c)*sqrt(((b^3*c
 - a*b^2*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^6*c^6 - 6*a*b^5*c
^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d
^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6) + (b^2*c^2 - 2*a*b*
c*d + a^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) + (b^4*d*x + b^4*c
)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3
*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1
/3))/(d*x + c)) + (b^2*d*x + b^2*c)*((b^6*c^6 - 6*a*b^5*c^5*d + 1
5*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a
^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6))) + 20*sqrt(3)*b*((b^6*c^6
- 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^
4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6)*arctan(-
sqrt(3)*(b^2*d*x + b^2*c)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*
c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5
 + a^6*d^6)/(b^11*d))^(1/6)/(2*(b*c - a*d)*(b*x + a)^(1/6)*(d*x +
 c)^(5/6) - 2*(d*x + c)*sqrt(-((b^3*c - a*b^2*d)*(b*x + a)^(1/6)*
(d*x + c)^(5/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 -
20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6
)/(b^11*d))^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/
3)*(d*x + c)^(2/3) - (b^4*d*x + b^4*c)*((b^6*c^6 - 6*a*b^5*c^5*d
+ 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 -
```

```
6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/3))/(d*x + c)) - (b^2*d*x +
 b^2*c)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b
^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*
d))^(1/6))) + 5*b*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2
- 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d
^6)/(b^11*d))^(1/6)*log(25*((b^3*c - a*b^2*d)*(b*x + a)^(1/6)*(d*
x + c)^(5/6)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*
a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(
b^11*d))^(1/6) + (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/3)*
(d*x + c)^(2/3) + (b^4*d*x + b^4*c)*((b^6*c^6 - 6*a*b^5*c^5*d + 1
5*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a
^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/3))/(d*x + c)) - 5*b*((b^6*c^6
 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a
^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6)*log(-25
*((b^3*c - a*b^2*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6)*((b^6*c^6 - 6
*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b
^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6) - (b^2*c^2
- 2*a*b*c*d + a^2*d^2)*(b*x + a)^(1/3)*(d*x + c)^(2/3) - (b^4*d*x
 + b^4*c)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3
*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^1
1*d))^(1/3))/(d*x + c)) + 10*b*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2
*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*
c*d^5 + a^6*d^6)/(b^11*d))^(1/6)*log(-5*((b*c - a*d)*(b*x + a)^(1
/6)*(d*x + c)^(5/6) + (b^2*d*x + b^2*c)*((b^6*c^6 - 6*a*b^5*c^5*d
 + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 + 15*a^4*b^2*c^2*d^4 -
 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6))/(d*x + c)) - 10*b*((b^
6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*c^3*d^3 +
 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))^(1/6)*lo
g(-5*((b*c - a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6) - (b^2*d*x + b^
2*c)*((b^6*c^6 - 6*a*b^5*c^5*d + 15*a^2*b^4*c^4*d^2 - 20*a^3*b^3*
c^3*d^3 + 15*a^4*b^2*c^2*d^4 - 6*a^5*b*c*d^5 + a^6*d^6)/(b^11*d))
^(1/6))/(d*x + c)) + 12*(b*x + a)^(1/6)*(d*x + c)^(5/6))/b
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(5/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1827 $\int \frac{1}{(a+bx)^{5/6}\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=309

$$-\frac{\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{5/6}\sqrt[6]{d}}+\frac{\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{5/6}\sqrt[6]{d}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{5/6}\sqrt[6]{d}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{b^{5/6}\sqrt[6]{d}}+\frac{2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{5/6}\sqrt[6]{d}}$$

```
[Out] -((Sqrt[3]*ArcTan[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3
]*b^(1/6)*(c + d*x)^(1/6))])/(b^(5/6)*d^(1/6))) + (Sqrt[3]*ArcTan
[1/Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*
x)^(1/6))])/(b^(5/6)*d^(1/6)) + (2*ArcTanh[(d^(1/6)*(a + b*x)^(1/
6))/(b^(1/6)*(c + d*x)^(1/6))])/(b^(5/6)*d^(1/6)) - Log[b^(1/3) +
 (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a
+ b*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(5/6)*d^(1/6)) + Log[b^(1/3)
+ (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
 + b*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(5/6)*d^(1/6))
```

Rubi [A] time = 0.726441, antiderivative size = 309, normalized size of antiderivative = 1., number of steps used = 11, number of rules used = 7, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.368$

$$-\frac{\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{5/6}\sqrt[6]{d}}+\frac{\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{5/6}\sqrt[6]{d}}-\frac{\sqrt{3}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{5/6}\sqrt[6]{d}}+\frac{\sqrt{3}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{b^{5/6}\sqrt[6]{d}}+\frac{2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{5/6}\sqrt[6]{d}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(1/6)),x]
```

```
[Out] -((Sqrt[3]*ArcTan[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3
]*b^(1/6)*(c + d*x)^(1/6))])/(b^(5/6)*d^(1/6))) + (Sqrt[3]*ArcTan
[1/Sqrt[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*
x)^(1/6))])/(b^(5/6)*d^(1/6)) + (2*ArcTanh[(d^(1/6)*(a + b*x)^(1/
6))/(b^(1/6)*(c + d*x)^(1/6))])/(b^(5/6)*d^(1/6)) - Log[b^(1/3) +
 (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a
+ b*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(5/6)*d^(1/6)) + Log[b^(1/3)
+ (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
 + b*x)^(1/6))/(c + d*x)^(1/6)]/(2*b^(5/6)*d^(1/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(1/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.0646161, size = 73, normalized size = 0.24

$$\frac{6(c+dx)^{5/6}\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}{}_2F_1\left(\frac{5}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{5d(a+bx)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(1/6)),x]
```

```
[Out] (6*((d*(a + b*x))/(-(b*c) + a*d))^(5/6)*(c + d*x)^(5/6)*Hypergeom
etric2F1[5/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])/(5*d*(a + b*
x)^(5/6))
```

Maple [F] time = 0.057, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{5}{6}}\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(1/6),x)
```

```
[Out] int(1/(b*x+a)^(5/6)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(1/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(1/6)), x)
```

Fricas [A]   time = 0.244462, size = 797, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(1/6)),x, algorithm="fricas")
```

```
[Out] -2*sqrt(3)*(1/(b^5*d))^(1/6)*arctan(sqrt(3)*(b*d*x + b*c)*(1/(b^5
*d))^(1/6)/(2*(d*x + c)*sqrt(((b*x + a)^(1/6)*(d*x + c)^(5/6)*b*(
1/(b^5*d))^(1/6) + (b^2*d*x + b^2*c)*(1/(b^5*d))^(1/3) + (b*x + a
)^(1/3)*(d*x + c)^(2/3))/(d*x + c)) + (b*d*x + b*c)*(1/(b^5*d))^(
1/6) + 2*(b*x + a)^(1/6)*(d*x + c)^(5/6))) - 2*sqrt(3)*(1/(b^5*d)
)^(1/6)*arctan(sqrt(3)*(b*d*x + b*c)*(1/(b^5*d))^(1/6)/(2*(d*x +
c)*sqrt(-((b*x + a)^(1/6)*(d*x + c)^(5/6)*b*(1/(b^5*d))^(1/6) - (
b^2*d*x + b^2*c)*(1/(b^5*d))^(1/3) - (b*x + a)^(1/3)*(d*x + c)^(2
/3))/(d*x + c)) - (b*d*x + b*c)*(1/(b^5*d))^(1/6) + 2*(b*x + a)^(
1/6)*(d*x + c)^(5/6))) + 1/2*(1/(b^5*d))^(1/6)*log(4*((b*x + a)^(
1/6)*(d*x + c)^(5/6)*b*(1/(b^5*d))^(1/6) + (b^2*d*x + b^2*c)*(1/(
b^5*d))^(1/3) + (b*x + a)^(1/3)*(d*x + c)^(2/3))/(d*x + c)) - 1/2
*(1/(b^5*d))^(1/6)*log(-4*((b*x + a)^(1/6)*(d*x + c)^(5/6)*b*(1/(
b^5*d))^(1/6) - (b^2*d*x + b^2*c)*(1/(b^5*d))^(1/3) - (b*x + a)^(
1/3)*(d*x + c)^(2/3))/(d*x + c)) + (1/(b^5*d))^(1/6)*log(((b*d*x
+ b*c)*(1/(b^5*d))^(1/6) + (b*x + a)^(1/6)*(d*x + c)^(5/6))/(d*x
+ c)) - (1/(b^5*d))^(1/6)*log(-((b*d*x + b*c)*(1/(b^5*d))^(1/6) -
 (b*x + a)^(1/6)*(d*x + c)^(5/6))/(d*x + c))
```

Sympy [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{5}{6}}\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(1/6),x)
```

```
[Out] Integral(1/((a + b*x)**(5/6)*(c + d*x)**(1/6)), x)
```

GIAC/XCAS [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(1/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1828 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{7/6}} \, dx$

Optimal. Leaf size=30

$$\frac{6\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(1/6))/((b*c - a*d)*(c + d*x)^(1/6))
```

Rubi [A] time = 0.022563, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$\frac{6\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(7/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6))/((b*c - a*d)*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 3.32563, size = 26, normalized size = 0.87

$$-\frac{6\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(7/6),x)
```

```
[Out] -6*(a + b*x)**(1/6)/((c + d*x)**(1/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0385026, size = 30, normalized size = 1.

$$-\frac{6\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(7/6)),x]
```

```
[Out] (-6*(a + b*x)^(1/6))/((-(b*c) + a*d)*(c + d*x)^(1/6))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$-6\,\frac{\sqrt[6]{bx+a}}{\sqrt[6]{dx+c}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(5/6)/(d*x+c)^(7/6),x)
```

```
[Out] -6*(b*x+a)^(1/6)/(d*x+c)^(1/6)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(7/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(7/6)), x)
```

Fricas [A] time = 0.214111, size = 57, normalized size = 1.9

$$\frac{6\,(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}{bc^2-acd+(bcd-ad^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(7/6)),x, algorithm="fricas")
```

```
[Out] 6*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b*c^2 - a*c*d + (b*c*d - a*d^2
)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(7/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1829 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{13/6}} \, dx$

Optimal. Leaf size=66

$$\frac{36b\sqrt[6]{a+bx}}{7\sqrt[6]{c+dx}(bc-ad)^2}+\frac{6\sqrt[6]{a+bx}}{7(c+dx)^{7/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(1/6))/(7*(b*c - a*d)*(c + d*x)^(7/6)) + (36*b*(a +
b*x)^(1/6))/(7*(b*c - a*d)^2*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0517297, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{36b\sqrt[6]{a+bx}}{7\sqrt[6]{c+dx}(bc-ad)^2}+\frac{6\sqrt[6]{a+bx}}{7(c+dx)^{7/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(13/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6))/(7*(b*c - a*d)*(c + d*x)^(7/6)) + (36*b*(a +
b*x)^(1/6))/(7*(b*c - a*d)^2*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 6.91437, size = 56, normalized size = 0.85

$$\frac{36b\sqrt[6]{a+bx}}{7\sqrt[6]{c+dx}\,(ad-bc)^2}-\frac{6\sqrt[6]{a+bx}}{7\,(c+dx)^{\frac{7}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(13/6),x)
```

```
[Out] 36*b*(a + b*x)**(1/6)/(7*(c + d*x)**(1/6)*(a*d - b*c)**2) - 6*(a
+ b*x)**(1/6)/(7*(c + d*x)**(7/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0600439, size = 46, normalized size = 0.7

$$\frac{6\sqrt[6]{a+bx}(-ad+7bc+6bdx)}{7(c+dx)^{7/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(13/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6)*(7*b*c - a*d + 6*b*d*x))/(7*(b*c - a*d)^2*(c +
 d*x)^(7/6))
```

Maple [A] time = 0.007, size = 53, normalized size = 0.8

$$-{\frac{-36\,bdx+6\,ad-42\,bc}{7\,{a}^{2}{d}^{2}-14\,abcd+7\,{b}^{2}{c}^{2}}\sqrt[6]{bx+a} \left(dx+c \right) ^{-{\frac{7}{6}}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(13/6),x)
```

```
[Out] -6/7*(b*x+a)^(1/6)*(-6*b*d*x+a*d-7*b*c)/(d*x+c)^(7/6)/(a^2*d^2-2*
a*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{{\left(b x + a\right)}^{\frac{5}{6}} {\left(d x + c\right)}^{\frac{13}{6}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(13/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(13/6)), x)
```

Fricas [A] time = 0.213918, size = 159, normalized size = 2.41

$$\frac{6 \,{\left(6 \, b d x + 7 \, b c - a d\right)}{\left(b x + a\right)}^{\frac{1}{6}}{\left(d x + c\right)}^{\frac{5}{6}}}{7 \,{\left(b^{2} c^{4} - 2 \, a b c^{3} d + a^{2} c^{2} d^{2} +{\left(b^{2} c^{2} d^{2} - 2 \, a b c d^{3} + a^{2} d^{4}\right)} x^{2} + 2 \,{\left(b^{2} c^{3} d - 2 \, a b c^{2} d^{2} + a^{2} c d^{3}\right)} x\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(13/6)),x, algorithm="fricas")
```

```
[Out] 6/7*(6*b*d*x + 7*b*c - a*d)*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b^2*
c^4 - 2*a*b*c^3*d + a^2*c^2*d^2 + (b^2*c^2*d^2 - 2*a*b*c*d^3 + a^
2*d^4)*x^2 + 2*(b^2*c^3*d - 2*a*b*c^2*d^2 + a^2*c*d^3)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(13/6),x)

[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(13/6)),x, algorithm="giac")

[Out] Timed out
```

3.1830 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{19/6}}\,dx$

Optimal. Leaf size=101

$$\frac{432b^2\sqrt[6]{a+bx}}{91\sqrt[6]{c+dx}(bc-ad)^3}+\frac{72b\sqrt[6]{a+bx}}{91(c+dx)^{7/6}(bc-ad)^2}+\frac{6\sqrt[6]{a+bx}}{13(c+dx)^{13/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(1/6))/(13*(b*c - a*d)*(c + d*x)^(13/6)) + (72*b*(a
+ b*x)^(1/6))/(91*(b*c - a*d)^2*(c + d*x)^(7/6)) + (432*b^2*(a +
b*x)^(1/6))/(91*(b*c - a*d)^3*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0842166, antiderivative size = 101, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{432b^2\sqrt[6]{a+bx}}{91\sqrt[6]{c+dx}(bc-ad)^3}+\frac{72b\sqrt[6]{a+bx}}{91(c+dx)^{7/6}(bc-ad)^2}+\frac{6\sqrt[6]{a+bx}}{13(c+dx)^{13/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(19/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6))/(13*(b*c - a*d)*(c + d*x)^(13/6)) + (72*b*(a
+ b*x)^(1/6))/(91*(b*c - a*d)^2*(c + d*x)^(7/6)) + (432*b^2*(a +
b*x)^(1/6))/(91*(b*c - a*d)^3*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 12.7923, size = 88, normalized size = 0.87

$$-\frac{432b^2\sqrt[6]{a+bx}}{91\sqrt[6]{c+dx}\,(ad-bc)^3}+\frac{72b\sqrt[6]{a+bx}}{91\,(c+dx)^{\frac{7}{6}}\,(ad-bc)^2}-\frac{6\sqrt[6]{a+bx}}{13\,(c+dx)^{\frac{13}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(19/6),x)
```

```
[Out] -432*b**2*(a + b*x)**(1/6)/(91*(c + d*x)**(1/6)*(a*d - b*c)**3) +
 72*b*(a + b*x)**(1/6)/(91*(c + d*x)**(7/6)*(a*d - b*c)**2) - 6*(
a + b*x)**(1/6)/(13*(c + d*x)**(13/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0931227, size = 77, normalized size = 0.76

$$\frac{6\sqrt[6]{a+bx}\left(7a^2d^2-2abd(13c+6dx)+b^2\left(91c^2+156cdx+72d^2x^2\right)\right)}{91(c+dx)^{13/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(19/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6)*(7*a^2*d^2 - 2*a*b*d*(13*c + 6*d*x) + b^2*(91*
c^2 + 156*c*d*x + 72*d^2*x^2)))/(91*(b*c - a*d)^3*(c + d*x)^(13/6
))
```

Maple [A] time = 0.01, size = 105, normalized size = 1.

$$-\frac{432\,b^2d^2x^2-72\,abd^2x+936\,b^2cdx+42\,a^2d^2-156\,abcd+546\,b^2c^2}{91\,a^3d^3-273\,a^2cbd^2+273\,ab^2c^2d-91\,b^3c^3}\sqrt[6]{bx+a}\,(dx+c)^{-\frac{13}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(19/6),x)
```

```
[Out] -6/91*(b*x+a)^(1/6)*(72*b^2*d^2*x^2-12*a*b*d^2*x+156*b^2*c*d*x+7*
a^2*d^2-26*a*b*c*d+91*b^2*c^2)/(d*x+c)^(13/6)/(a^3*d^3-3*a^2*b*c*
d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(19/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(19/6)), x)
```

Fricas [A] time = 0.213139, size = 340, normalized size = 3.37

$$\frac{6\left(72\,b^2d^2x^2+91\,b^2c^2-26\,abcd+7\,a^2d^2+12\left(13\,b^2cd-abd^2\right)x\right)(bx+a)^{\frac{1}{6}}(}{91\,(b^3c^6-3\,ab^2c^5d+3\,a^2bc^4d^2-a^3c^3d^3+(b^3c^3d^3-3\,ab^2c^2d^4+3\,a^2bcd^5-a^3d^6)x^3+3\,(b^3c^4d^2-3\,ab^2c^3d^3+3\,a^2bc^2d^4-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(19/6)),x, algorithm="fricas")
```

```
[Out] 6/91*(72*b^2*d^2*x^2 + 91*b^2*c^2 - 26*a*b*c*d + 7*a^2*d^2 + 12*(
13*b^2*c*d - a*b*d^2)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6)/(b^3*c^6
 - 3*a*b^2*c^5*d + 3*a^2*b*c^4*d^2 - a^3*c^3*d^3 + (b^3*c^3*d^3 -
 3*a*b^2*c^2*d^4 + 3*a^2*b*c*d^5 - a^3*d^6)*x^3 + 3*(b^3*c^4*d^2
- 3*a*b^2*c^3*d^3 + 3*a^2*b*c^2*d^4 - a^3*c*d^5)*x^2 + 3*(b^3*c^5
*d - 3*a*b^2*c^4*d^2 + 3*a^2*b*c^3*d^3 - a^3*c^2*d^4)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(19/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(19/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1831 $\int \frac{1}{(a+bx)^{5/6}(c+dx)^{25/6}}\,dx$

Optimal. Leaf size=136

$$\frac{7776b^3\sqrt[6]{a+bx}}{1729\sqrt[6]{c+dx}(bc-ad)^4}+\frac{1296b^2\sqrt[6]{a+bx}}{1729(c+dx)^{7/6}(bc-ad)^3}+\frac{108b\sqrt[6]{a+bx}}{247(c+dx)^{13/6}(bc-ad)^2}+\frac{6\sqrt[6]{a+bx}}{19(c+dx)^{19/6}(bc-ad)}$$

```
[Out] (6*(a + b*x)^(1/6))/(19*(b*c - a*d)*(c + d*x)^(19/6)) + (108*b*(a
 + b*x)^(1/6))/(247*(b*c - a*d)^2*(c + d*x)^(13/6)) + (1296*b^2*(
a + b*x)^(1/6))/(1729*(b*c - a*d)^3*(c + d*x)^(7/6)) + (7776*b^3*
(a + b*x)^(1/6))/(1729*(b*c - a*d)^4*(c + d*x)^(1/6))
```

Rubi [A] time = 0.122174, antiderivative size = 136, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{7776b^3\sqrt[6]{a+bx}}{1729\sqrt[6]{c+dx}(bc-ad)^4}+\frac{1296b^2\sqrt[6]{a+bx}}{1729(c+dx)^{7/6}(bc-ad)^3}+\frac{108b\sqrt[6]{a+bx}}{247(c+dx)^{13/6}(bc-ad)^2}+\frac{6\sqrt[6]{a+bx}}{19(c+dx)^{19/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(5/6)*(c + d*x)^(25/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6))/(19*(b*c - a*d)*(c + d*x)^(19/6)) + (108*b*(a
 + b*x)^(1/6))/(247*(b*c - a*d)^2*(c + d*x)^(13/6)) + (1296*b^2*(
a + b*x)^(1/6))/(1729*(b*c - a*d)^3*(c + d*x)^(7/6)) + (7776*b^3*
(a + b*x)^(1/6))/(1729*(b*c - a*d)^4*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 20.0028, size = 121, normalized size = 0.89

$$\frac{7776b^3\sqrt[6]{a+bx}}{1729\sqrt[6]{c+dx}\,(ad-bc)^4}-\frac{1296b^2\sqrt[6]{a+bx}}{1729\,(c+dx)^{\frac{7}{6}}\,(ad-bc)^3}+\frac{108b\sqrt[6]{a+bx}}{247\,(c+dx)^{\frac{13}{6}}\,(ad-bc)^2}-\frac{6\sqrt[6]{a+bx}}{19\,(c+dx)^{\frac{19}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(5/6)/(d*x+c)**(25/6),x)
```

```
[Out] 7776*b**3*(a + b*x)**(1/6)/(1729*(c + d*x)**(1/6)*(a*d - b*c)**4)
 - 1296*b**2*(a + b*x)**(1/6)/(1729*(c + d*x)**(7/6)*(a*d - b*c)*
*3) + 108*b*(a + b*x)**(1/6)/(247*(c + d*x)**(13/6)*(a*d - b*c)**
2) - 6*(a + b*x)**(1/6)/(19*(c + d*x)**(19/6)*(a*d - b*c))
```

Mathematica [A] time = 0.18674, size = 95, normalized size = 0.7

$$\frac{6\sqrt[6]{a+bx}\left(216b^2(c+dx)^2(bc-ad)+126b(c+dx)(bc-ad)^2+91(bc-ad)^3+1296b^3(c+dx)^3\right)}{1729(c+dx)^{19/6}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(5/6)*(c + d*x)^(25/6)),x]
```

```
[Out] (6*(a + b*x)^(1/6)*(91*(b*c - a*d)^3 + 126*b*(b*c - a*d)^2*(c + d
*x) + 216*b^2*(b*c - a*d)*(c + d*x)^2 + 1296*b^3*(c + d*x)^3))/(1
729*(b*c - a*d)^4*(c + d*x)^(19/6))
```

Maple [A] time = 0.012, size = 171, normalized size = 1.3

$$-\frac{-7776x^3b^3d^3+1296ab^2d^3x^2-24624b^3cd^2x^2-756a^2bd^3x+4104ab^2cd^2x-26676b^3c^2dx+546a^3d^3-2394a^2cbd^2+}{1729a^4d^4-6916a^3bcd^3+10374a^2c^2b^2d^2-6916ab^3c^3d+1729b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(5/6)/(d*x+c)^(25/6),x)
```

```
[Out] -6/1729*(b*x+a)^(1/6)*(-1296*b^3*d^3*x^3+216*a*b^2*d^3*x^2-4104*b
^3*c*d^2*x^2-126*a^2*b*d^3*x+684*a*b^2*c*d^2*x-4446*b^3*c^2*d*x+9
1*a^3*d^3-399*a^2*b*c*d^2+741*a*b^2*c^2*d-1729*b^3*c^3)/(d*x+c)^(
19/6)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*
c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{25}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(25/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(5/6)*(d*x + c)^(25/6)), x)
```

Fricas [A] time = 0.216923, size = 567, normalized size = 4.17

$$\frac{6\left(1296b^3d^3x^3+1729b^3c^3-741ab^2c^2d+399a^2bcd\right.}{1729\left(b^4c^8-4ab^3c^7d+6a^2b^2c^6d^2-4a^3bc^5d^3+a^4c^4d^4+(b^4c^4d^4-4ab^3c^3d^5+6a^2b^2c^2d^6-4a^3bcd^7+a^4d^8)x^4+4(b^4c^5d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(25/6)),x, algorithm="fricas")
```

```
[Out] 6/1729*(1296*b^3*d^3*x^3 + 1729*b^3*c^3 - 741*a*b^2*c^2*d + 399*a
^2*b*c*d^2 - 91*a^3*d^3 + 216*(19*b^3*c*d^2 - a*b^2*d^3)*x^2 + 18
*(247*b^3*c^2*d - 38*a*b^2*c*d^2 + 7*a^2*b*d^3)*x)*(b*x + a)^(1/6
)*(d*x + c)^(5/6)/(b^4*c^8 - 4*a*b^3*c^7*d + 6*a^2*b^2*c^6*d^2 -
4*a^3*b*c^5*d^3 + a^4*c^4*d^4 + (b^4*c^4*d^4 - 4*a*b^3*c^3*d^5 +
6*a^2*b^2*c^2*d^6 - 4*a^3*b*c*d^7 + a^4*d^8)*x^4 + 4*(b^4*c^5*d^3
 - 4*a*b^3*c^4*d^4 + 6*a^2*b^2*c^3*d^5 - 4*a^3*b*c^2*d^6 + a^4*c*
d^7)*x^3 + 6*(b^4*c^6*d^2 - 4*a*b^3*c^5*d^3 + 6*a^2*b^2*c^4*d^4 -
 4*a^3*b*c^3*d^5 + a^4*c^2*d^6)*x^2 + 4*(b^4*c^7*d - 4*a*b^3*c^6*
d^2 + 6*a^2*b^2*c^5*d^3 - 4*a^3*b*c^4*d^4 + a^4*c^3*d^5)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(5/6)/(d*x+c)**(25/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(5/6)*(d*x + c)^(25/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1832 $\int \frac{(c+dx)^{13/6}}{(a+bx)^{7/6}}\, dx$

Optimal. Leaf size=449

$$-\frac{91\sqrt[6]{d}(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{19/6}}+\frac{91\sqrt[6]{d}(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{19/6}}+\frac{91\sqrt[6]{d}(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{19/6}}-\frac{91\sqrt[6]{d}(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{19/6}}+\frac{91\sqrt[6]{d}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{19/6}}+\frac{91d(a+bx)^{5/6}\sqrt[6]{c+dx}(bc-ad)}{12b^3}+\frac{13d(a+bx)^{5/6}(c+dx)^{7/6}}{2b^2}-\frac{6(c+dx)^{13/6}}{b\sqrt[6]{a+bx}}$$

```
[Out] (91*d*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(1/6))/(12*b^3) + (13
*d*(a + b*x)^(5/6)*(c + d*x)^(7/6))/(2*b^2) - (6*(c + d*x)^(13/6)
)/(b*(a + b*x)^(1/6)) + (91*d^(1/6)*(b*c - a*d)^2*ArcTan[1/Sqrt[3
] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))
])/(24*Sqrt[3]*b^(19/6)) - (91*d^(1/6)*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(24*Sqrt[3]*b^(19/6)) + (91*d^(1/6)*(b*c - a*d)^2*ArcTanh[(
d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(19/6)
) - (91*d^(1/6)*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(144*b^(19/6)) + (91*d^(1/6)*(b*c - a*d)^2*Log[b^(1/3)
+ (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
 + b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(19/6))
```

Rubi [A] time = 1.21958, antiderivative size = 449, normalized size of antiderivative = 1., number of

steps used = 14, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$-\frac{91\sqrt[6]{d}(bc-ad)^2\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{19/6}}+\frac{91\sqrt[6]{d}(bc-ad)^2\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{144b^{19/6}}+\frac{91\sqrt[6]{d}(bc-ad)^2\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{24\sqrt{3}b^{19/6}}-\frac{91\sqrt[6]{d}(bc-ad)^2\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{24\sqrt{3}b^{19/6}}+\frac{91\sqrt[6]{d}(bc-ad)^2\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{36b^{19/6}}+\frac{91d(a+bx)^{5/6}\sqrt[6]{c+dx}(bc-ad)}{12b^3}+\frac{13d(a+bx)^{5/6}(c+dx)^{7/6}}{2b^2}-\frac{6(c+dx)^{13/6}}{b\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(13/6)/(a + b*x)^(7/6),x]
```

```
[Out] (91*d*(b*c - a*d)*(a + b*x)^(5/6)*(c + d*x)^(1/6))/(12*b^3) + (13
*d*(a + b*x)^(5/6)*(c + d*x)^(7/6))/(2*b^2) - (6*(c + d*x)^(13/6)
)/(b*(a + b*x)^(1/6)) + (91*d^(1/6)*(b*c - a*d)^2*ArcTan[1/Sqrt[3
] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))
])/(24*Sqrt[3]*b^(19/6)) - (91*d^(1/6)*(b*c - a*d)^2*ArcTan[1/Sqr
t[3] + (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/
6))])/(24*Sqrt[3]*b^(19/6)) + (91*d^(1/6)*(b*c - a*d)^2*ArcTanh[(
d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(36*b^(19/6)
) - (91*d^(1/6)*(b*c - a*d)^2*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(144*b^(19/6)) + (91*d^(1/6)*(b*c - a*d)^2*Log[b^(1/3)
+ (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a
 + b*x)^(1/6))/(c + d*x)^(1/6)])/(144*b^(19/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(13/6)/(b*x+a)**(7/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.350099, size = 129, normalized size = 0.29

$$\frac{\sqrt[6]{c+dx}\left(-91a^2d^2+91(bc-ad)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-13abd(dx-13c)+b^2\left(-72c^2+25cdx+6d^2x^2\right)\right)}{12b^3\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(13/6)/(a + b*x)^(7/6),x]
```

```
[Out] ((c + d*x)^(1/6)*(-91*a^2*d^2 - 13*a*b*d*(-13*c + d*x) + b^2*(-72
*c^2 + 25*c*d*x + 6*d^2*x^2) + 91*(b*c - a*d)^2*((d*(a + b*x))/(-
(b*c) + a*d))^(1/6)*Hypergeometric2F1[1/6, 1/6, 7/6, (b*(c + d*x)
)/(b*c - a*d)]))/(12*b^3*(a + b*x)^(1/6))
```

Maple [F] time = 0.086, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{13}{6}}\,(bx+a)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(13/6)/(b*x+a)^(7/6),x)
```

```
[Out] int((d*x+c)^(13/6)/(b*x+a)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{13}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(13/6)/(b*x + a)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(13/6)/(b*x + a)^(7/6), x)
```

Fricas [A] time = 0.304735, size = 5878, normalized size = 13.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(13/6)/(b*x + a)^(7/6),x, algorithm="fricas")
```

```
[Out] -1/144*(364*sqrt(3)*(b^4*x + a*b^3)*((b^12*c^12*d - 12*a*b^11*c^1
1*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*
c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5
*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b
^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6)*arctan(sq
rt(3)*(b^4*x + a*b^3)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2
*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*
a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495
*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 -
12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6)/(2*(b^2*c^2 - 2*a*b*c*d
 + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + 2*(b*x + a)*sqrt(((
b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1
/6)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 2
20*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 +
924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 -
 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 +
 a^12*d^13)/b^19)^(1/6) + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^
2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(1/3)
+ (b^7*x + a*b^6)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^1
0*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*
b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8
*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a
^11*b*c*d^12 + a^12*d^13)/b^19)^(1/3))/(b*x + a)) + (b^4*x + a*b^
3)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 22
0*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 9
24*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 -
220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 +
a^12*d^13)/b^19)^(1/6))) + 364*sqrt(3)*(b^4*x + a*b^3)*((b^12*c^1
2*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9
*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^
6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c
^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^
19)^(1/6)*arctan(sqrt(3)*(b^4*x + a*b^3)*((b^12*c^12*d - 12*a*b^1
1*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4
*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^
7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a
^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6)/(2*(
b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) +
2*(b*x + a)*sqrt(-((b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(b*x + a
)^(5/6)*(d*x + c)^(1/6)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a
^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 79
2*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 4
95*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11
- 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6) - (b^4*c^4 - 4*a*b^3*
c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2
/3)*(d*x + c)^(1/3) - (b^7*x + a*b^6)*((b^12*c^12*d - 12*a*b^11*c
^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^
8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b
^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10
*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/3))/(b*x +
 a)) - (b^4*x + a*b^3)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^
```

2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792
*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 49
5*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 -
12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6))) - 91*(b^4*x + a*b^3)
*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*
a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924
*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 22
0*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^
12*d^13)/b^19)^(1/6)*log(8281*((b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d
^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^12*c^12*d - 12*a*b^11*c^1
1*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*
c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5
*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b
^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6) + (b^4*c^
4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*
(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^7*x + a*b^6)*((b^12*c^12*d -
12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4
+ 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7
- 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^
10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(
1/3))/(b*x + a)) + 91*(b^4*x + a*b^3)*((b^12*c^12*d - 12*a*b^11*c
^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^
8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b
^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10
*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6)*log(-82
81*((b^5*c^2 - 2*a*b^4*c*d + a^2*b^3*d^2)*(b*x + a)^(5/6)*(d*x +
c)^(1/6)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^
3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d
^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*
d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d
^12 + a^12*d^13)/b^19)^(1/6) - (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b
^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*(b*x + a)^(2/3)*(d*x + c)^(
1/3) - (b^7*x + a*b^6)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^
2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792
*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 49
5*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 -
12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/3))/(b*x + a)) - 182*(b^4
*x + a*b^3)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10
*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^
7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c
^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*
c*d^12 + a^12*d^13)/b^19)^(1/6)*log(91*((b^2*c^2 - 2*a*b*c*d + a^
2*d^2)*(b*x + a)^(5/6)*(d*x + c)^(1/6) + (b^4*x + a*b^3)*((b^12*c
^12*d - 12*a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c
^9*d^4 + 495*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*
c^6*d^7 - 792*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3
*c^3*d^10 + 66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/
b^19)^(1/6))/(b*x + a)) + 182*(b^4*x + a*b^3)*((b^12*c^12*d - 12*
a*b^11*c^11*d^2 + 66*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 49
5*a^4*b^8*c^8*d^5 - 792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 7
92*a^7*b^5*c^5*d^8 + 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 +
66*a^10*b^2*c^2*d^11 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6)
log(91((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(5/6)*(d*x + c
)^(1/6) - (b^4*x + a*b^3)*((b^12*c^12*d - 12*a*b^11*c^11*d^2 + 66
*a^2*b^10*c^10*d^3 - 220*a^3*b^9*c^9*d^4 + 495*a^4*b^8*c^8*d^5 -
792*a^5*b^7*c^7*d^6 + 924*a^6*b^6*c^6*d^7 - 792*a^7*b^5*c^5*d^8 +

```
 495*a^8*b^4*c^4*d^9 - 220*a^9*b^3*c^3*d^10 + 66*a^10*b^2*c^2*d^1
1 - 12*a^11*b*c*d^12 + a^12*d^13)/b^19)^(1/6))/(b*x + a)) - 12*(6
*b^2*d^2*x^2 - 72*b^2*c^2 + 169*a*b*c*d - 91*a^2*d^2 + (25*b^2*c*
d - 13*a*b*d^2)*x)*(b*x + a)^(5/6)*(d*x + c)^(1/6))/(b^4*x + a*b^
3)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(13/6)/(b*x+a)**(7/6),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{13}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(13/6)/(b*x + a)^(7/6),x, algorithm="giac")

[Out] integrate((d*x + c)^(13/6)/(b*x + a)^(7/6), x)
```

3.1833 $\int \frac{(c+dx)^{7/6}}{(a+bx)^{7/6}}\,dx$

Optimal. Leaf size=403

$$-\frac{7\sqrt[6]{d}(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{13/6}}+\frac{7\sqrt[6]{d}(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{13/6}}+\frac{7\sqrt[6]{d}(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{13/6}}-\frac{7\sqrt[6]{d}(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{13/6}}+\frac{7\sqrt[6]{d}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{13/6}}+\frac{7d(a+bx)^{5/6}\sqrt[6]{c+dx}}{b^2}-\frac{6(c+dx)^{7/6}}{b\sqrt[6]{a+bx}}$$

```
[Out] (7*d*(a + b*x)^(5/6)*(c + d*x)^(1/6))/b^2 - (6*(c + d*x)^(7/6))/(
b*(a + b*x)^(1/6)) + (7*d^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] - (2
*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2*
Sqrt[3]*b^(13/6)) - (7*d^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] + (2*
d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2*S
qrt[3]*b^(13/6)) + (7*d^(1/6)*(b*c - a*d)*ArcTanh[(d^(1/6)*(a + b
*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(13/6)) - (7*d^(1/6)*
(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/
3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*b^(1
3/6)) + (7*d^(1/6)*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(
1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*
x)^(1/6)])/(12*b^(13/6))
```

Rubi [A] time = 1.05817, antiderivative size = 403, normalized size of antiderivative = 1., number of steps used = 13, number of rules used = 9, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.474$

$$-\frac{7\sqrt[6]{d}(bc-ad)\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{13/6}}+\frac{7\sqrt[6]{d}(bc-ad)\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{12b^{13/6}}+\frac{7\sqrt[6]{d}(bc-ad)\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{2\sqrt{3}b^{13/6}}-\frac{7\sqrt[6]{d}(bc-ad)\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{2\sqrt{3}b^{13/6}}+\frac{7\sqrt[6]{d}(bc-ad)\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{3b^{13/6}}+\frac{7d(a+bx)^{5/6}\sqrt[6]{c+dx}}{b^2}-\frac{6(c+dx)^{7/6}}{b\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(7/6)/(a + b*x)^(7/6),x]
```

```
[Out] (7*d*(a + b*x)^(5/6)*(c + d*x)^(1/6))/b^2 - (6*(c + d*x)^(7/6))/(
b*(a + b*x)^(1/6)) + (7*d^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] - (2
*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2*
Sqrt[3]*b^(13/6)) - (7*d^(1/6)*(b*c - a*d)*ArcTan[1/Sqrt[3] + (2*
d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/(2*S
qrt[3]*b^(13/6)) + (7*d^(1/6)*(b*c - a*d)*ArcTanh[(d^(1/6)*(a + b
*x)^(1/6))/(b^(1/6)*(c + d*x)^(1/6))])/(3*b^(13/6)) - (7*d^(1/6)*
(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1/3))/(c + d*x)^(1/
3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x)^(1/6)])/(12*b^(1
3/6)) + (7*d^(1/6)*(b*c - a*d)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(
1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*
x)^(1/6)])/(12*b^(13/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(7/6)/(b*x+a)**(7/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.205424, size = 93, normalized size = 0.23

$$\frac{\sqrt[6]{c+dx}\left(7(bc-ad)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)+7ad-6bc+bdx\right)}{b^2\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(7/6)/(a + b*x)^(7/6),x]
```

```
[Out] ((c + d*x)^(1/6)*(-6*b*c + 7*a*d + b*d*x + 7*(b*c - a*d)*((d*(a +
 b*x))/(-(b*c) + a*d))^(1/6)*Hypergeometric2F1[1/6, 1/6, 7/6, (b*
(c + d*x))/(b*c - a*d)]))/(b^2*(a + b*x)^(1/6))
```

Maple [F] time = 0.076, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{7}{6}}\,(bx+a)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(7/6)/(b*x+a)^(7/6),x)

[Out] int((d*x+c)^(7/6)/(b*x+a)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{7}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(7/6),x, algorithm="maxima")

[Out] integrate((d*x + c)^(7/6)/(b*x + a)^(7/6), x)
```

Fricas [A] time = 0.271908, size = 3270, normalized size = 8.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(7/6),x, algorithm="fricas")

[Out] 1/12*(28*sqrt(3)*(b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 +
15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*
a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6)*arctan(-sqrt(3)*(b^3*x + a*b^2
)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3
*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1
/6)/(2*(b*c - a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6) - 2*(b*x + a)*
sqrt(((b^3*c - a*b^2*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6
*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 +
15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6) + (b^2*
c^2 - 2*a*b*c*d + a^2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^5
*x + a*b^4)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 -
20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7
)/b^13)^(1/3))/(b*x + a)) + (b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b^5
*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c
```

```
^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6))) + 28*sqrt(3)*(b^3
*x + a*b^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 -
20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7
)/b^13)^(1/6)*arctan(-sqrt(3)*(b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b
^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2
*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6)/(2*(b*c - a*d)*(b
*x + a)^(5/6)*(d*x + c)^(1/6) - 2*(b*x + a)*sqrt(-((b^3*c - a*b^2
*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6*d - 6*a*b^5*c^5*d^2
 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 -
 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^
2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) - (b^5*x + a*b^4)*((b^6*c^
6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 +
 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/3))/(b*x
+ a)) - (b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^
4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d
^6 + a^6*d^7)/b^13)^(1/6))) + 7*(b^3*x + a*b^2)*((b^6*c^6*d - 6*a
*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b
^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6)*log(49*((b^3*c
- a*b^2*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6*d - 6*a*b^5*
c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^
2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6) + (b^2*c^2 - 2*a*b*c
*d + a^2*d^2)*(b*x + a)^(2/3)*(d*x + c)^(1/3) + (b^5*x + a*b^4)*(
(b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^
3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/3)
)/(b*x + a)) - 7*(b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 +
15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*
a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6)*log(-49*((b^3*c - a*b^2*d)*(b*
x + a)^(5/6)*(d*x + c)^(1/6)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a
^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*
b*c*d^6 + a^6*d^7)/b^13)^(1/6) - (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*
(b*x + a)^(2/3)*(d*x + c)^(1/3) - (b^5*x + a*b^4)*((b^6*c^6*d - 6
*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4
*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/3))/(b*x + a)) +
 14*(b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^
4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 +
 a^6*d^7)/b^13)^(1/6)*log(-7*((b*c - a*d)*(b*x + a)^(5/6)*(d*x +
c)^(1/6) + (b^3*x + a*b^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2
*b^4*c^4*d^3 - 20*a^3*b^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*
c*d^6 + a^6*d^7)/b^13)^(1/6))/(b*x + a)) - 14*(b^3*x + a*b^2)*((b
^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b^3*c^3*
d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^(1/6)*l
og(-7*((b*c - a*d)*(b*x + a)^(5/6)*(d*x + c)^(1/6) - (b^3*x + a*b
^2)*((b^6*c^6*d - 6*a*b^5*c^5*d^2 + 15*a^2*b^4*c^4*d^3 - 20*a^3*b
^3*c^3*d^4 + 15*a^4*b^2*c^2*d^5 - 6*a^5*b*c*d^6 + a^6*d^7)/b^13)^
(1/6))/(b*x + a)) + 12*(b*d*x - 6*b*c + 7*a*d)*(b*x + a)^(5/6)*(d
*x + c)^(1/6))/(b^3*x + a*b^2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(7/6)/(b*x+a)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{7}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(7/6)/(b*x + a)^(7/6),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^(7/6)/(b*x + a)^(7/6), x)
```

3.1834 $\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{7/6}}\,dx$

Optimal. Leaf size=332

$$-\frac{\sqrt[6]{d}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{7/6}}+\frac{\sqrt[6]{d}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{7/6}}+\frac{\sqrt{3}\sqrt[6]{d}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{7/6}}-\frac{\sqrt{3}\sqrt[6]{d}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{b^{7/6}}+\frac{2\sqrt[6]{d}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{7/6}}-\frac{6\sqrt[6]{c+dx}}{b\sqrt[6]{a+bx}}$$

```
[Out] (-6*(c + d*x)^(1/6))/(b*(a + b*x)^(1/6)) + (Sqrt[3]*d^(1/6)*ArcTa
n[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d
*x)^(1/6))])/b^(7/6) - (Sqrt[3]*d^(1/6)*ArcTan[1/Sqrt[3] + (2*d^(
1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/b^(7/6)
 + (2*d^(1/6)*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x
)^(1/6))])/b^(7/6) - (d^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(2*b^(7/6)) + (d^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)
^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c +
d*x)^(1/6)])/(2*b^(7/6))
```

Rubi [A] time = 0.912692, antiderivative size = 332, normalized size of antiderivative = 1., number of steps used = 12, number of rules used = 8, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.421$

$$-\frac{\sqrt[6]{d}\log\left(-\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{7/6}}+\frac{\sqrt[6]{d}\log\left(\frac{\sqrt[6]{b}\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{c+dx}}+\frac{\sqrt[3]{d}\sqrt[3]{a+bx}}{\sqrt[3]{c+dx}}+\sqrt[3]{b}\right)}{2b^{7/6}}+\frac{\sqrt{3}\sqrt[6]{d}\tan^{-1}\left(\frac{1}{\sqrt{3}}-\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{7/6}}-\frac{\sqrt{3}\sqrt[6]{d}\tan^{-1}\left(\frac{2\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt{3}\sqrt[6]{b}\sqrt[6]{c+dx}}+\frac{1}{\sqrt{3}}\right)}{b^{7/6}}+\frac{2\sqrt[6]{d}\tanh^{-1}\left(\frac{\sqrt[6]{d}\sqrt[6]{a+bx}}{\sqrt[6]{b}\sqrt[6]{c+dx}}\right)}{b^{7/6}}-\frac{6\sqrt[6]{c+dx}}{b\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1/6)/(a + b*x)^(7/6),x]
```

```
[Out] (-6*(c + d*x)^(1/6))/(b*(a + b*x)^(1/6)) + (Sqrt[3]*d^(1/6)*ArcTa
n[1/Sqrt[3] - (2*d^(1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d
*x)^(1/6))])/b^(7/6) - (Sqrt[3]*d^(1/6)*ArcTan[1/Sqrt[3] + (2*d^(
```

```
1/6)*(a + b*x)^(1/6))/(Sqrt[3]*b^(1/6)*(c + d*x)^(1/6))])/b^(7/6)
 + (2*d^(1/6)*ArcTanh[(d^(1/6)*(a + b*x)^(1/6))/(b^(1/6)*(c + d*x
)^(1/6))])/b^(7/6) - (d^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)^(1
/3))/(c + d*x)^(1/3) - (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c + d*x
)^(1/6)])/(2*b^(7/6)) + (d^(1/6)*Log[b^(1/3) + (d^(1/3)*(a + b*x)
^(1/3))/(c + d*x)^(1/3) + (b^(1/6)*d^(1/6)*(a + b*x)^(1/6))/(c +
d*x)^(1/6)])/(2*b^(7/6))
```

Rubi in Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(1/6)/(b*x+a)**(7/6),x)
```

```
[Out] Timed out
```

Mathematica [C] time = 0.102547, size = 74, normalized size = 0.22

$$\frac{6\sqrt[6]{c+dx}\left(\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{1}{6};\frac{7}{6};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1/6)/(a + b*x)^(7/6),x]
```

```
[Out] (6*(c + d*x)^(1/6)*(-1 + ((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hyp
ergeometric2F1[1/6, 1/6, 7/6, (b*(c + d*x))/(b*c - a*d)]))/(b*(a
+ b*x)^(1/6))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\sqrt[6]{dx+c}\,(bx+a)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(1/6)/(b*x+a)^(7/6),x)
```

```
[Out] int((d*x+c)^(1/6)/(b*x+a)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{1}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(1/6)/(b*x + a)^(7/6), x)
```

Fricas [A] time = 0.242968, size = 857, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(7/6),x, algorithm="fricas")
```

```
[Out] -1/2*(4*sqrt(3)*(b^2*x + a*b)*(d/b^7)^(1/6)*arctan(sqrt(3)*(b^2*x
 + a*b)*(d/b^7)^(1/6)/(2*(b*x + a)*sqrt(((b*x + a)^(5/6)*(d*x + c
)^(1/6)*b*(d/b^7)^(1/6) + (b^3*x + a*b^2)*(d/b^7)^(1/3) + (b*x +
a)^(2/3)*(d*x + c)^(1/3))/(b*x + a)) + (b^2*x + a*b)*(d/b^7)^(1/6
) + 2*(b*x + a)^(5/6)*(d*x + c)^(1/6))) + 4*sqrt(3)*(b^2*x + a*b)
*(d/b^7)^(1/6)*arctan(sqrt(3)*(b^2*x + a*b)*(d/b^7)^(1/6)/(2*(b*x
 + a)*sqrt(-((b*x + a)^(5/6)*(d*x + c)^(1/6)*b*(d/b^7)^(1/6) - (b
^3*x + a*b^2)*(d/b^7)^(1/3) - (b*x + a)^(2/3)*(d*x + c)^(1/3))/(b
*x + a)) - (b^2*x + a*b)*(d/b^7)^(1/6) + 2*(b*x + a)^(5/6)*(d*x +
 c)^(1/6))) - (b^2*x + a*b)*(d/b^7)^(1/6)*log(4*((b*x + a)^(5/6)*
(d*x + c)^(1/6)*b*(d/b^7)^(1/6) + (b^3*x + a*b^2)*(d/b^7)^(1/3) +
 (b*x + a)^(2/3)*(d*x + c)^(1/3))/(b*x + a)) + (b^2*x + a*b)*(d/b
^7)^(1/6)*log(-4*((b*x + a)^(5/6)*(d*x + c)^(1/6)*b*(d/b^7)^(1/6)
 - (b^3*x + a*b^2)*(d/b^7)^(1/3) - (b*x + a)^(2/3)*(d*x + c)^(1/3
))/(b*x + a)) - 2*(b^2*x + a*b)*(d/b^7)^(1/6)*log(((b^2*x + a*b)*
(d/b^7)^(1/6) + (b*x + a)^(5/6)*(d*x + c)^(1/6))/(b*x + a)) + 2*(
b^2*x + a*b)*(d/b^7)^(1/6)*log(-((b^2*x + a*b)*(d/b^7)^(1/6) - (b
*x + a)^(5/6)*(d*x + c)^(1/6))/(b*x + a)) + 12*(b*x + a)^(5/6)*(d
*x + c)^(1/6))/(b^2*x + a*b)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{\sqrt[6]{c+dx}}{(a+bx)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(1/6)/(b*x+a)**(7/6),x)
```

```
[Out] Integral((c + d*x)**(1/6)/(a + b*x)**(7/6), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(1/6)/(b*x + a)^(7/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1835 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{5/6}}\,dx$

Optimal. Leaf size=30

$$-\frac{6\sqrt[6]{c+dx}}{\sqrt[6]{a+bx}(bc-ad)}$$

```
[Out] (-6*(c + d*x)^(1/6))/((b*c - a*d)*(a + b*x)^(1/6))
```

Rubi [A] time = 0.0246601, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{6\sqrt[6]{c+dx}}{\sqrt[6]{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(5/6)),x]
```

```
[Out] (-6*(c + d*x)^(1/6))/((b*c - a*d)*(a + b*x)^(1/6))
```

Rubi in Sympy [A] time = 3.37084, size = 24, normalized size = 0.8

$$\frac{6\sqrt[6]{c+dx}}{\sqrt[6]{a+bx}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(5/6),x)
```

```
[Out] 6*(c + d*x)**(1/6)/((a + b*x)**(1/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0348625, size = 30, normalized size = 1.

$$\frac{6\sqrt[6]{c+dx}}{\sqrt[6]{a+bx}(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(5/6)),x]
```

```
[Out] (6*(c + d*x)^(1/6))/((-(b*c) + a*d)*(a + b*x)^(1/6))
```

Maple [A] time = 0.007, size = 27, normalized size = 0.9

$$6\,\frac{\sqrt[6]{dx+c}}{\sqrt[6]{bx+a}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(b*x+a)^(7/6)/(d*x+c)^(5/6),x)
```

```
[Out] 6/(b*x+a)^(1/6)*(d*x+c)^(1/6)/(a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{5}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(5/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(5/6)), x)
```

Fricas [A] time = 0.206702, size = 57, normalized size = 1.9

$$-\frac{6\,(bx+a)^{\frac{5}{6}}(dx+c)^{\frac{1}{6}}}{abc-a^2d+(b^2c-abd)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(5/6)),x, algorithm="fricas")
```

```
[Out] -6*(b*x + a)^(5/6)*(d*x + c)^(1/6)/(a*b*c - a^2*d + (b^2*c - a*b*
d)*x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/6)/(d*x+c)**(5/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(5/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1836 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{11/6}}\,dx$

Optimal. Leaf size=64

$$-\frac{36d(a+bx)^{5/6}}{5(c+dx)^{5/6}(bc-ad)^2}-\frac{6}{\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}$$

```
[Out] -6/((b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6)) - (36*d*(a + b*x
)^(5/6))/(5*(b*c - a*d)^2*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0535162, antiderivative size = 64, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{36d(a+bx)^{5/6}}{5(c+dx)^{5/6}(bc-ad)^2}-\frac{6}{\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(11/6)),x]
```

```
[Out] -6/((b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(5/6)) - (36*d*(a + b*x
)^(5/6))/(5*(b*c - a*d)^2*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 6.79483, size = 54, normalized size = 0.84

$$-\frac{36d\,(a+bx)^{\frac{5}{6}}}{5\,(c+dx)^{\frac{5}{6}}\,(ad-bc)^2}+\frac{6}{\sqrt[6]{a+bx}\,(c+dx)^{\frac{5}{6}}\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(11/6),x)
```

```
[Out] -36*d*(a + b*x)**(5/6)/(5*(c + d*x)**(5/6)*(a*d - b*c)**2) + 6/((
a + b*x)**(1/6)*(c + d*x)**(5/6)*(a*d - b*c))
```

Mathematica [A] time = 0.0686956, size = 45, normalized size = 0.7

$$-\frac{6(ad+5bc+6bdx)}{5\sqrt[6]{a+bx}(c+dx)^{5/6}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(11/6)),x]
```

```
[Out] (-6*(5*b*c + a*d + 6*b*d*x))/(5*(b*c - a*d)^2*(a + b*x)^(1/6)*(c
+ d*x)^(5/6))
```

Maple [A] time = 0.009, size = 53, normalized size = 0.8

$$-\frac{36\,bdx+6\,ad+30\,bc}{5\,a^2d^2-10\,abcd+5\,b^2c^2}\frac{1}{\sqrt[6]{bx+a}}(dx+c)^{-\frac{5}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(11/6),x)
```

```
[Out] -6/5*(6*b*d*x+a*d+5*b*c)/(b*x+a)^(1/6)/(d*x+c)^(5/6)/(a^2*d^2-2*a
*b*c*d+b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(11/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(11/6)), x)
```

Fricas [A] time = 0.21362, size = 70, normalized size = 1.09

$$-\frac{6\,(6\,bdx+5\,bc+ad)}{5\,(b^2c^2-2\,abcd+a^2d^2)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(11/6)),x, algorithm="fricas")
```

```
[Out] -6/5*(6*b*d*x + 5*b*c + a*d)/((b^2*c^2 - 2*a*b*c*d + a^2*d^2)*(b*
x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/6)/(d*x+c)**(11/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{11}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(11/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(11/6)), x)
```

3.1837 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{17/6}}\,dx$

Optimal. Leaf size=98

$$-\frac{432bd(a+bx)^{5/6}}{55(c+dx)^{5/6}(bc-ad)^3}-\frac{72d(a+bx)^{5/6}}{11(c+dx)^{11/6}(bc-ad)^2}-\frac{6}{\sqrt[6]{a+bx}(c+dx)^{11/6}(bc-ad)}$$

```
[Out] -6/((b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(11/6)) - (72*d*(a + b*
x)^(5/6))/(11*(b*c - a*d)^2*(c + d*x)^(11/6)) - (432*b*d*(a + b*x
)^(5/6))/(55*(b*c - a*d)^3*(c + d*x)^(5/6))
```

Rubi [A] time = 0.0878213, antiderivative size = 98, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{432bd(a+bx)^{5/6}}{55(c+dx)^{5/6}(bc-ad)^3}-\frac{72d(a+bx)^{5/6}}{11(c+dx)^{11/6}(bc-ad)^2}-\frac{6}{\sqrt[6]{a+bx}(c+dx)^{11/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(17/6)),x]
```

```
[Out] -6/((b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(11/6)) - (72*d*(a + b*
x)^(5/6))/(11*(b*c - a*d)^2*(c + d*x)^(11/6)) - (432*b*d*(a + b*x
)^(5/6))/(55*(b*c - a*d)^3*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 12.0673, size = 87, normalized size = 0.89

$$\frac{432bd\left(a+bx\right)^{\frac{5}{6}}}{55\left(c+dx\right)^{\frac{5}{6}}\left(ad-bc\right)^{3}}-\frac{72d\left(a+bx\right)^{\frac{5}{6}}}{11\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^{2}}+\frac{6}{\sqrt[6]{a+bx}\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(17/6),x)
```

```
[Out] 432*b*d*(a + b*x)**(5/6)/(55*(c + d*x)**(5/6)*(a*d - b*c)**3) - 7
2*d*(a + b*x)**(5/6)/(11*(c + d*x)**(11/6)*(a*d - b*c)**2) + 6/((
a + b*x)**(1/6)*(c + d*x)**(11/6)*(a*d - b*c))
```

Mathematica [A] time = 0.120287, size = 77, normalized size = 0.79

$$-\frac{6\left(-5a^2d^2+2abd(11c+6dx)+b^2\left(55c^2+132cdx+72d^2x^2\right)\right)}{55\sqrt[6]{a+bx}(c+dx)^{11/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(17/6)),x]
```

```
[Out] (-6*(-5*a^2*d^2 + 2*a*b*d*(11*c + 6*d*x) + b^2*(55*c^2 + 132*c*d*
x + 72*d^2*x^2)))/(55*(b*c - a*d)^3*(a + b*x)^(1/6)*(c + d*x)^(11
/6))
```

Maple [A] time = 0.008, size = 105, normalized size = 1.1

$$-\frac{-432\,b^2d^2x^2-72\,abd^2x-792\,b^2cdx+30\,a^2d^2-132\,abcd-330\,b^2c^2}{55\,a^3d^3-165\,a^2cbd^2+165\,ab^2c^2d-55\,b^3c^3}\frac{1}{\sqrt[6]{bx+a}}(dx+c)^{-\frac{11}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(17/6),x)
```

```
[Out] -6/55*(-72*b^2*d^2*x^2-12*a*b*d^2*x-132*b^2*c*d*x+5*a^2*d^2-22*a*
b*c*d-55*b^2*c^2)/(b*x+a)^(1/6)/(d*x+c)^(11/6)/(a^3*d^3-3*a^2*b*c
*d^2+3*a*b^2*c^2*d-b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(17/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(17/6)), x)
```

Fricas [A] time = 0.217499, size = 201, normalized size = 2.05

$$-\frac{6\left(72\,b^2d^2x^2+55\,b^2c^2+22\,abcd-5\,a^2d^2+12\left(11\,b^2cd+abd^2\right)x\right)}{55\,(b^3c^4-3\,ab^2c^3d+3\,a^2bc^2d^2-a^3cd^3+(b^3c^3d-3\,ab^2c^2d^2+3\,a^2bcd^3-a^3d^4)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{5}{6}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(17/6)),x, algorithm="fricas")
```

```
[Out] -6/55*(72*b^2*d^2*x^2 + 55*b^2*c^2 + 22*a*b*c*d - 5*a^2*d^2 + 12*
(11*b^2*c*d + a*b*d^2)*x)/((b^3*c^4 - 3*a*b^2*c^3*d + 3*a^2*b*c^2
*d^2 - a^3*c*d^3 + (b^3*c^3*d - 3*a*b^2*c^2*d^2 + 3*a^2*b*c*d^3 -
 a^3*d^4)*x)*(b*x + a)^(1/6)*(d*x + c)^(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/6)/(d*x+c)**(17/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{17}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(17/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(17/6)), x)
```

3.1838 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{23/6}}\,dx$

Optimal. Leaf size=134

$$-\frac{7776b^2d(a+bx)^{5/6}}{935(c+dx)^{5/6}(bc-ad)^4}-\frac{1296bd(a+bx)^{5/6}}{187(c+dx)^{11/6}(bc-ad)^3}-\frac{108d(a+bx)^{5/6}}{17(c+dx)^{17/6}(bc-ad)^2}-\frac{6}{\sqrt[6]{a+bx}(c+dx)^{17/6}(bc-ad)}$$

```
[Out] -6/((b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(17/6)) - (108*d*(a + b
*x)^(5/6))/(17*(b*c - a*d)^2*(c + d*x)^(17/6)) - (1296*b*d*(a + b
*x)^(5/6))/(187*(b*c - a*d)^3*(c + d*x)^(11/6)) - (7776*b^2*d*(a
+ b*x)^(5/6))/(935*(b*c - a*d)^4*(c + d*x)^(5/6))
```

Rubi [A] time = 0.124579, antiderivative size = 134, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{7776b^2d(a+bx)^{5/6}}{935(c+dx)^{5/6}(bc-ad)^4}-\frac{1296bd(a+bx)^{5/6}}{187(c+dx)^{11/6}(bc-ad)^3}-\frac{108d(a+bx)^{5/6}}{17(c+dx)^{17/6}(bc-ad)^2}-\frac{6}{\sqrt[6]{a+bx}(c+dx)^{17/6}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(23/6)),x]
```

```
[Out] -6/((b*c - a*d)*(a + b*x)^(1/6)*(c + d*x)^(17/6)) - (108*d*(a + b
*x)^(5/6))/(17*(b*c - a*d)^2*(c + d*x)^(17/6)) - (1296*b*d*(a + b
*x)^(5/6))/(187*(b*c - a*d)^3*(c + d*x)^(11/6)) - (7776*b^2*d*(a
+ b*x)^(5/6))/(935*(b*c - a*d)^4*(c + d*x)^(5/6))
```

Rubi in Sympy [A] time = 19.3749, size = 121, normalized size = 0.9

$$-\frac{7776b^2d\left(a+bx\right)^{\frac{5}{6}}}{935\left(c+dx\right)^{\frac{5}{6}}\left(ad-bc\right)^4}+\frac{1296bd\left(a+bx\right)^{\frac{5}{6}}}{187\left(c+dx\right)^{\frac{11}{6}}\left(ad-bc\right)^3}-\frac{108d\left(a+bx\right)^{\frac{5}{6}}}{17\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)^2}+\frac{6}{\sqrt[6]{a+bx}\left(c+dx\right)^{\frac{17}{6}}\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(23/6),x)
```

```
[Out] -7776*b**2*d*(a + b*x)**(5/6)/(935*(c + d*x)**(5/6)*(a*d - b*c)**
4) + 1296*b*d*(a + b*x)**(5/6)/(187*(c + d*x)**(11/6)*(a*d - b*c)
```

```
**3) - 108*d*(a + b*x)**(5/6)/(17*(c + d*x)**(17/6)*(a*d - b*c)**
2) + 6/((a + b*x)**(1/6)*(c + d*x)**(17/6)*(a*d - b*c))
```

Mathematica [A] time = 0.234569, size = 97, normalized size = 0.72

$$\frac{6(a+bx)^{5/6}\sqrt[6]{c+dx}\left(-\frac{935b^3}{a+bx}-\frac{145bd(bc-ad)}{(c+dx)^2}-\frac{55d(bc-ad)^2}{(c+dx)^3}-\frac{361b^2d}{c+dx}\right)}{935(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(23/6)),x]
```

```
[Out] (6*(a + b*x)^(5/6)*(c + d*x)^(1/6)*((-935*b^3)/(a + b*x) - (55*d*
(b*c - a*d)^2)/(c + d*x)^3 - (145*b*d*(b*c - a*d))/(c + d*x)^2 -
(361*b^2*d)/(c + d*x)))/(935*(b*c - a*d)^4)
```

Maple [A] time = 0.013, size = 171, normalized size = 1.3

$$-\frac{7776\,x^3b^3d^3+1296\,ab^2d^3x^2+22032\,b^3cd^2x^2-540\,a^2bd^3x+3672\,ab^2cd^2x+20196\,b^3c^2dx+330\,a^3d^3-1530\,a^2cbd^2+33}{935\,a^4d^4-3740\,a^3bcd^3+5610\,a^2c^2b^2d^2-3740\,ab^3c^3d+935\,b^4c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(23/6),x)
```

```
[Out] -6/935*(1296*b^3*d^3*x^3+216*a*b^2*d^3*x^2+3672*b^3*c*d^2*x^2-90*
a^2*b*d^3*x+612*a*b^2*c*d^2*x+3366*b^3*c^2*d*x+55*a^3*d^3-255*a^2
*b*c*d^2+561*a*b^2*c^2*d+935*b^3*c^3)/(b*x+a)^(1/6)/(d*x+c)^(17/6
)/(a^4*d^4-4*a^3*b*c*d^3+6*a^2*b^2*c^2*d^2-4*a*b^3*c^3*d+b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{23}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(23/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(23/6)), x)
```

Fricas [A] time = 0.222684, size = 393, normalized size = 2.93

$$-\frac{6\left(1296\,b^3d^3x^3+935\,b^3c^3+561\,ab^2c^2d-255\,a^2bcd^2+55\,a^3d^3+216\left(17\,b^3cd^2+ab^2d^3\right)x^2+1}{935\,(b^4c^6-4\,ab^3c^5d+6\,a^2b^2c^4d^2-4\,a^3bc^3d^3+a^4c^2d^4+(b^4c^4d^2-4\,ab^3c^3d^3+6\,a^2b^2c^2d^4-4\,a^3bcd^5+a^4d^6)x^2+2\,(b^4c^5d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(23/6)),x, algorithm="fricas")
```

```
[Out] -6/935*(1296*b^3*d^3*x^3 + 935*b^3*c^3 + 561*a*b^2*c^2*d - 255*a^
2*b*c*d^2 + 55*a^3*d^3 + 216*(17*b^3*c*d^2 + a*b^2*d^3)*x^2 + 18*
(187*b^3*c^2*d + 34*a*b^2*c*d^2 - 5*a^2*b*d^3)*x)/((b^4*c^6 - 4*a
*b^3*c^5*d + 6*a^2*b^2*c^4*d^2 - 4*a^3*b*c^3*d^3 + a^4*c^2*d^4 +
(b^4*c^4*d^2 - 4*a*b^3*c^3*d^3 + 6*a^2*b^2*c^2*d^4 - 4*a^3*b*c*d^
5 + a^4*d^6)*x^2 + 2*(b^4*c^5*d - 4*a*b^3*c^4*d^2 + 6*a^2*b^2*c^3
*d^3 - 4*a^3*b*c^2*d^4 + a^4*c*d^5)*x)*(b*x + a)^(1/6)*(d*x + c)^
(5/6))
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(7/6)/(d*x+c)**(23/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{23}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(23/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(23/6)), x)
```

3.1839 $\int \frac{(c+dx)^{11/6}}{(a+bx)^{7/6}}\,dx$

Optimal. Leaf size=80

$$-\frac{6(c+dx)^{5/6}(bc-ad)\,{}_2F_1\left(-\frac{11}{6},-\frac{1}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b^2\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

```
[Out] (-6*(b*c - a*d)*(c + d*x)^(5/6)*Hypergeometric2F1[-11/6, -1/6, 5/
6, -((d*(a + b*x))/(b*c - a*d))])/(b^2*(a + b*x)^(1/6)*((b*(c + d
*x))/(b*c - a*d))^(5/6))
```

Rubi [A] time = 0.101725, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{6(c+dx)^{5/6}(bc-ad)\,{}_2F_1\left(-\frac{11}{6},-\frac{1}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b^2\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(11/6)/(a + b*x)^(7/6),x]
```

```
[Out] (-6*(b*c - a*d)*(c + d*x)^(5/6)*Hypergeometric2F1[-11/6, -1/6, 5/
6, -((d*(a + b*x))/(b*c - a*d))])/(b^2*(a + b*x)^(1/6)*((b*(c + d
*x))/(b*c - a*d))^(5/6))
```

Rubi in Sympy [A] time = 14.1917, size = 68, normalized size = 0.85

$$\frac{6d\,(a+bx)^{\frac{5}{6}}\,(c+dx)^{\frac{17}{6}}\,{}_2F_1\left(\begin{matrix}\frac{7}{6},\frac{17}{6}\\\frac{23}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{17\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(11/6)/(b*x+a)**(7/6),x)
```

```
[Out] 6*d*(a + b*x)**(5/6)*(c + d*x)**(17/6)*hyper((7/6, 17/6), (23/6,)
, b*(-c - d*x)/(a*d - b*c))/(17*(d*(a + b*x)/(a*d - b*c))**(5/6)*
(a*d - b*c)**2)
```

Mathematica [A] time = 0.325009, size = 95, normalized size = 1.19

$$-\frac{3(c+dx)^{5/6}\left(\frac{11d(a+bx)\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{5/6}}-11ad+10bc-bdx\right)}{5b^2\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(11/6)/(a + b*x)^(7/6),x]
```

```
[Out] (-3*(c + d*x)^(5/6)*(10*b*c - 11*a*d - b*d*x + (11*d*(a + b*x)*Hy
pergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])/((d*(
a + b*x))/(-(b*c) + a*d))^(5/6)))/(5*b^2*(a + b*x)^(1/6))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{11}{6}}\,(bx+a)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(11/6)/(b*x+a)^(7/6),x)
```

```
[Out] int((d*x+c)^(11/6)/(b*x+a)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{11}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(11/6)/(b*x + a)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^{\frac{11}{6}}}{(bx+a)^{\frac{7}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(7/6),x, algorithm="fricas")

[Out] integral((d*x + c)^(11/6)/(b*x + a)^(7/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(11/6)/(b*x+a)**(7/6),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{11}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(11/6)/(b*x + a)^(7/6),x, algorithm="giac")

[Out] integrate((d*x + c)^(11/6)/(b*x + a)^(7/6), x)
```

3.1840 $\int \frac{(c+dx)^{5/6}}{(a+bx)^{7/6}}\,dx$

Optimal. Leaf size=72

$$-\frac{6(c+dx)^{5/6}\,{}_2F_1\left(-\frac{5}{6},-\frac{1}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

```
[Out] (-6*(c + d*x)^(5/6)*Hypergeometric2F1[-5/6, -1/6, 5/6, -((d*(a +
b*x))/(b*c - a*d))])/(b*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d
))^(5/6))
```

Rubi [A] time = 0.0874622, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{6(c+dx)^{5/6}\,{}_2F_1\left(-\frac{5}{6},-\frac{1}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[6]{a+bx}\left(\frac{b(c+dx)}{bc-ad}\right)^{5/6}}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(5/6)/(a + b*x)^(7/6),x]
```

```
[Out] (-6*(c + d*x)^(5/6)*Hypergeometric2F1[-5/6, -1/6, 5/6, -((d*(a +
b*x))/(b*c - a*d))])/(b*(a + b*x)^(1/6)*((b*(c + d*x))/(b*c - a*d
))^(5/6))
```

Rubi in Sympy [A] time = 14.1892, size = 68, normalized size = 0.94

$$\frac{6d\left(a+bx\right)^{\frac{5}{6}}\left(c+dx\right)^{\frac{11}{6}}\,{}_2F_1\left(\begin{matrix}\frac{7}{6},\frac{11}{6}\\\frac{17}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{11\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\left(ad-bc\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**(5/6)/(b*x+a)**(7/6),x)
```

```
[Out] 6*d*(a + b*x)**(5/6)*(c + d*x)**(11/6)*hyper((7/6, 11/6), (17/6,)
, b*(-c - d*x)/(a*d - b*c))/(11*(d*(a + b*x)/(a*d - b*c))**(5/6)*
(a*d - b*c)**2)
```

Mathematica [A] time = 0.106784, size = 74, normalized size = 1.03

$$\frac{6(c+dx)^{5/6}\left(\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-1\right)}{b\sqrt[6]{a+bx}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(5/6)/(a + b*x)^(7/6),x]
```

```
[Out] (6*(c + d*x)^(5/6)*(-1 + ((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*Hyp
ergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(b*(a
 + b*x)^(1/6))
```

Maple [F] time = 0.043, size = 0, normalized size = 0.

$$\int 1\,(dx+c)^{\frac{5}{6}}\,(bx+a)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^(5/6)/(b*x+a)^(7/6),x)
```

```
[Out] int((d*x+c)^(5/6)/(b*x+a)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(7/6),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^(5/6)/(b*x + a)^(7/6), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^{\frac{5}{6}}}{(bx+a)^{\frac{7}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(7/6),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^(5/6)/(b*x + a)^(7/6), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**(5/6)/(b*x+a)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^(5/6)/(b*x + a)^(7/6),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1841 $\int \frac{1}{(a+bx)^{7/6}\sqrt[6]{c+dx}}\,dx$

Optimal. Leaf size=72

$$-\frac{6\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[6]{a+bx}\sqrt[6]{c+dx}}$$

```
[Out] (-6*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6, 1/6
, 5/6, -((d*(a + b*x))/(b*c - a*d))])/(b*(a + b*x)^(1/6)*(c + d*x
)^(1/6))
```

Rubi [A] time = 0.0870898, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{6\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{1}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{b\sqrt[6]{a+bx}\sqrt[6]{c+dx}}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(1/6)),x]
```

```
[Out] (-6*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6, 1/6
, 5/6, -((d*(a + b*x))/(b*c - a*d))])/(b*(a + b*x)^(1/6)*(c + d*x
)^(1/6))
```

Rubi in Sympy [A] time = 14.1599, size = 68, normalized size = 0.94

$$\frac{6d\,(a+bx)^{\frac{5}{6}}\,(c+dx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}\frac{7}{6},\frac{5}{6}\\ \frac{11}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{5\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(1/6),x)
```

```
[Out] 6*d*(a + b*x)**(5/6)*(c + d*x)**(5/6)*hyper((7/6, 5/6), (11/6,),
b*(-c - d*x)/(a*d - b*c))/(5*(d*(a + b*x)/(a*d - b*c))**(5/6)*(a*
d - b*c)**2)
```

Mathematica [A] time = 0.117863, size = 84, normalized size = 1.17

$$\frac{6(c+dx)^{5/6}\left(4\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-5\right)}{5\sqrt[6]{a+bx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(1/6)),x]
```

```
[Out] (6*(c + d*x)^(5/6)*(-5 + 4*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*H
ypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)]))/(5*
(b*c - a*d)*(a + b*x)^(1/6))
```

Maple [F] time = 0.055, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{6}}\,\frac{1}{\sqrt[6]{dx+c}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(1/6),x)
```

```
[Out] int(1/(b*x+a)^(7/6)/(d*x+c)^(1/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{1}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(1/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(1/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{1}{6}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(1/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*x + a)^(7/6)*(d*x + c)^(1/6)), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(a+bx)^{\frac{7}{6}}\sqrt[6]{c+dx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/6)/(d*x+c)**(1/6),x)
```

```
[Out] Integral(1/((a + b*x)**(7/6)*(c + d*x)**(1/6)), x)
```

GIAC/XCAS [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(1/6)),x, algorithm="giac")
```

```
[Out] Timed out
```

3.1842 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{7/6}}\,dx$

Optimal. Leaf size=79

$$-\frac{6\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)}$$

```
[Out] (-6*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6, 7/6
, 5/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*(a + b*x)^(1/6
)*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0894567, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{6\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{7}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(7/6)),x]
```

```
[Out] (-6*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6, 7/6
, 5/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)*(a + b*x)^(1/6
)*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 16.2874, size = 70, normalized size = 0.89

$$-\frac{6d\,(a+bx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}\frac{7}{6},-\frac{1}{6}\\ \frac{5}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}\sqrt[6]{c+dx}\,(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(7/6),x)
```

```
[Out] -6*d*(a + b*x)**(5/6)*hyper((7/6, -1/6), (5/6,), b*(-c - d*x)/(a*
d - b*c))/((d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(1/6)*(a*d
 - b*c)**2)
```

Mathematica [A] time = 0.301307, size = 102, normalized size = 1.29

$$-\frac{6\left(-8b(c+dx)\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)+5ad+5b(c+2dx)\right)}{5\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(7/6)),x]
```

```
[Out] (-6*(5*a*d + 5*b*(c + 2*d*x) - 8*b*((d*(a + b*x))/(-(b*c) + a*d))
^(1/6)*(c + d*x)*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/
(b*c - a*d)]))/(5*(b*c - a*d)^2*(a + b*x)^(1/6)*(c + d*x)^(1/6))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{6}}\,(dx+c)^{-\frac{7}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(7/6),x)
```

```
[Out] int(1/(b*x+a)^(7/6)/(d*x+c)^(7/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(7/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(7/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bdx^2+ac+(bc+ad)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(7/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(1/6)*(d*x
+ c)^(1/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(b*x+a)**(7/6)/(d*x+c)**(7/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{7}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(7/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(7/6)), x)
```

3.1843 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{13/6}}\,dx$

Optimal. Leaf size=80

$$-\frac{6b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{13}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}$$

```
[Out] (-6*b*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6, 1
3/6, 5/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*(a + b*x)
^(1/6)*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0904365, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{6b\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{13}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(13/6)),x]
```


```
[Out] (-6*b*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6, 1
3/6, 5/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^2*(a + b*x)
^(1/6)*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 14.2498, size = 73, normalized size = 0.91

$$-\frac{6d\,(a+bx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}\frac{7}{6},-\frac{7}{6}\\-\frac{1}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{7\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(c+dx)^{\frac{7}{6}}(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(13/6),x)
```

```
[Out] -6*d*(a + b*x)**(5/6)*hyper((7/6, -7/6), (-1/6,), b*(-c - d*x)/(a
*d - b*c))/(7*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(7/6)*(
a*d - b*c)**2)
```

Mathematica [A] time = 0.404952, size = 138, normalized size = 1.72

$$\frac{6\left(5a^2d^2+64b^2(c+dx)^2\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-10abd(5c+4dx)-5b^2\left(7c^2+24cdx+16d^2x^2\right)\right)}{35\sqrt[6]{a+bx}(c+dx)^{7/6}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(13/6)),x]
```

```
[Out] (6*(5*a^2*d^2 - 10*a*b*d*(5*c + 4*d*x) - 5*b^2*(7*c^2 + 24*c*d*x
+ 16*d^2*x^2) + 64*b^2*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c +
d*x)^2*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d
)]))/(35*(b*c - a*d)^3*(a + b*x)^(1/6)*(c + d*x)^(7/6))
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{6}}\,(dx+c)^{-\frac{13}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(13/6),x)
```

```
[Out] int(1/(b*x+a)^(7/6)/(d*x+c)^(13/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(13/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(13/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{1}{(bd^2x^3+ac^2+(2\,bcd+ad^2)x^2+(bc^2+2\,acd)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(13/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d^2*x^3 + a*c^2 + (2*b*c*d + a*d^2)*x^2 + (b*c^2 +
 2*a*c*d)*x)*(b*x + a)^(1/6)*(d*x + c)^(1/6)), x)
```

Sympy [F(-1)]   time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/6)/(d*x+c)**(13/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{13}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(13/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(13/6)), x)
```

3.1844 $\int \frac{1}{(a+bx)^{7/6}(c+dx)^{19/6}}\,dx$

Optimal. Leaf size=82

$$-\frac{6b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{19}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}$$

```
[Out] (-6*b^2*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6,
 19/6, 5/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*(a + b*
x)^(1/6)*(c + d*x)^(1/6))
```

Rubi [A] time = 0.0915884, antiderivative size = 82, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{6b^2\sqrt[6]{\frac{b(c+dx)}{bc-ad}}\,{}_2F_1\left(-\frac{1}{6},\frac{19}{6};\frac{5}{6};-\frac{d(a+bx)}{bc-ad}\right)}{\sqrt[6]{a+bx}\sqrt[6]{c+dx}(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[1/((a + b*x)^(7/6)*(c + d*x)^(19/6)),x]
```

```
[Out] (-6*b^2*((b*(c + d*x))/(b*c - a*d))^(1/6)*Hypergeometric2F1[-1/6,
 19/6, 5/6, -((d*(a + b*x))/(b*c - a*d))])/((b*c - a*d)^3*(a + b*
x)^(1/6)*(c + d*x)^(1/6))
```

Rubi in Sympy [A] time = 14.3448, size = 73, normalized size = 0.89

$$-\frac{6d\,(a+bx)^{\frac{5}{6}}\,{}_2F_1\left(\begin{matrix}\frac{7}{6},-\frac{13}{6}\\-\frac{7}{6}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{13\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{5}{6}}(c+dx)^{\frac{13}{6}}(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**(7/6)/(d*x+c)**(19/6),x)
```

```
[Out] -6*d*(a + b*x)**(5/6)*hyper((7/6, -13/6), (-7/6,), b*(-c - d*x)/(
a*d - b*c))/(13*(d*(a + b*x)/(a*d - b*c))**(5/6)*(c + d*x)**(13/6
)*(a*d - b*c)**2)
```

Mathematica [B] time = 0.414632, size = 179, normalized size = 2.18

$$\frac{768b^3(c+dx)^3\sqrt[6]{\frac{d(a+bx)}{ad-bc}}\,{}_2F_1\left(\frac{1}{6},\frac{5}{6};\frac{11}{6};\frac{b(c+dx)}{bc-ad}\right)-30\left(a^3d^3-a^2bd^2(5c+2dx)+ab^2d\left(23c^2+36cdx+16d^2x^2\right)+b^3\left(13c^3\right.\right.}{65\sqrt[6]{a+bx}(c+dx)^{13/6}(bc-ad)^4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/((a + b*x)^(7/6)*(c + d*x)^(19/6)),x]
```

```
[Out] (-30*(a^3*d^3 - a^2*b*d^2*(5*c + 2*d*x) + a*b^2*d*(23*c^2 + 36*c*
d*x + 16*d^2*x^2) + b^3*(13*c^3 + 62*c^2*d*x + 80*c*d^2*x^2 + 32*
d^3*x^3)) + 768*b^3*((d*(a + b*x))/(-(b*c) + a*d))^(1/6)*(c + d*x
)^3*Hypergeometric2F1[1/6, 5/6, 11/6, (b*(c + d*x))/(b*c - a*d)])
/(65*(b*c - a*d)^4*(a + b*x)^(1/6)*(c + d*x)^(13/6))
```

Maple [F] time = 0.059, size = 0, normalized size = 0.

$$\int 1\,(bx+a)^{-\frac{7}{6}}(dx+c)^{-\frac{19}{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^(7/6)/(d*x+c)^(19/6),x)
```

```
[Out] int(1/(b*x+a)^(7/6)/(d*x+c)^(19/6),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(19/6)),x, algorithm="maxima")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(19/6)), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{1}{(bd^3x^4+ac^3+(3\,bcd^2+ad^3)x^3+3\,(bc^2d+acd^2)x^2+(bc^3+3\,ac^2d)x)(bx+a)^{\frac{1}{6}}(dx+c)^{\frac{1}{6}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(19/6)),x, algorithm="fricas")
```

```
[Out] integral(1/((b*d^3*x^4 + a*c^3 + (3*b*c*d^2 + a*d^3)*x^3 + 3*(b*c
^2*d + a*c*d^2)*x^2 + (b*c^3 + 3*a*c^2*d)*x)*(b*x + a)^(1/6)*(d*x
 + c)^(1/6)), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**(7/6)/(d*x+c)**(19/6),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx+a)^{\frac{7}{6}}(dx+c)^{\frac{19}{6}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^(7/6)*(d*x + c)^(19/6)),x, algorithm="giac")
```

```
[Out] integrate(1/((b*x + a)^(7/6)*(d*x + c)^(19/6)), x)
```

3.1845 $\int (a+bx)^m (c+dx)^n \, dx$

Optimal. Leaf size=61

$$-\frac{(a+bx)^{m+1}(c+dx)^{n+1}\,{}_2F_1\left(1,m+n+2;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)}$$

```
[Out] -(((a + b*x)^(1 + m)*(c + d*x)^(1 + n)*Hypergeometric2F1[1, 2 + m
 + n, 2 + n, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*(1 + n)))
```

Rubi [A] time = 0.0659949, antiderivative size = 74, normalized size of antiderivative = 1.21, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$

$$\frac{(a+bx)^{m+1}(c+dx)^n\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(m+1,-n;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{b(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(1 + m)*(c + d*x)^n*Hypergeometric2F1[1 + m, -n, 2 + m
, -((d*(a + b*x))/(b*c - a*d))])/(b*(1 + m)*((b*(c + d*x))/(b*c -
 a*d))^n)
```

Rubi in Sympy [A] time = 14.9392, size = 56, normalized size = 0.92

$$\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}(a+bx)^{m+1}(c+dx)^n\,{}_2F_1\left(\left.\begin{matrix}-n,m+1\\m+2\end{matrix}\right|\frac{d(a+bx)}{ad-bc}\right)}{b(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**n,x)
```

```
[Out] (b*(-c - d*x)/(a*d - b*c))**(-n)*(a + b*x)**(m + 1)*(c + d*x)**n*
hyper((-n, m + 1), (m + 2,), d*(a + b*x)/(a*d - b*c))/(b*(m + 1))
```

Mathematica [A] time = 0.0976191, size = 73, normalized size = 1.2

$$\frac{(a+bx)^m(c+dx)^{n+1}\left(\frac{d(a+bx)}{ad-bc}\right)^{-m}\,{}_2F_1\left(-m,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^m*(c + d*x)^(1 + n)*Hypergeometric2F1[-m, 1 + n, 2 + n
, (b*(c + d*x))/(b*c - a*d)])/(d*(1 + n)*((d*(a + b*x))/(-(b*c) +
 a*d))^m)
```

Maple [F] time = 0.124, size = 0, normalized size = 0.

$$\int (bx + a)^m (dx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^n,x)
```

```
[Out] int((b*x+a)^m*(d*x+c)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^m (dx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx + a)^m (dx + c)^n, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m*(d*x + c)^n, x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int (a+bx)^m (c+dx)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**n,x)
```

```
[Out] Integral((a + b*x)**m*(c + d*x)**n, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^m (dx+c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m*(d*x + c)^n, x)
```

3.1846 $\int (a+bx)^m (c+dx)^3 \, dx$

Optimal. Leaf size=110

$$\frac{3d^2(bc-ad)(a+bx)^{m+3}}{b^4(m+3)}+\frac{(bc-ad)^3(a+bx)^{m+1}}{b^4(m+1)}+\frac{3d(bc-ad)^2(a+bx)^{m+2}}{b^4(m+2)}+\frac{d^3(a+bx)^{m+4}}{b^4(m+4)}$$

```
[Out] ((b*c - a*d)^3*(a + b*x)^(1 + m))/(b^4*(1 + m)) + (3*d*(b*c - a*d
)^2*(a + b*x)^(2 + m))/(b^4*(2 + m)) + (3*d^2*(b*c - a*d)*(a + b*
x)^(3 + m))/(b^4*(3 + m)) + (d^3*(a + b*x)^(4 + m))/(b^4*(4 + m))
```

Rubi [A] time = 0.126104, antiderivative size = 110, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{3d^2(bc-ad)(a+bx)^{m+3}}{b^4(m+3)}+\frac{(bc-ad)^3(a+bx)^{m+1}}{b^4(m+1)}+\frac{3d(bc-ad)^2(a+bx)^{m+2}}{b^4(m+2)}+\frac{d^3(a+bx)^{m+4}}{b^4(m+4)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^3,x]
```

```
[Out] ((b*c - a*d)^3*(a + b*x)^(1 + m))/(b^4*(1 + m)) + (3*d*(b*c - a*d
)^2*(a + b*x)^(2 + m))/(b^4*(2 + m)) + (3*d^2*(b*c - a*d)*(a + b*
x)^(3 + m))/(b^4*(3 + m)) + (d^3*(a + b*x)^(4 + m))/(b^4*(4 + m))
```

Rubi in Sympy [A] time = 28.4277, size = 95, normalized size = 0.86

$$\frac{d^3\left(a+bx\right)^{m+4}}{b^4\left(m+4\right)}-\frac{3d^2\left(a+bx\right)^{m+3}\left(ad-bc\right)}{b^4\left(m+3\right)}+\frac{3d\left(a+bx\right)^{m+2}\left(ad-bc\right)^2}{b^4\left(m+2\right)}-\frac{\left(a+bx\right)^{m+1}\left(ad-bc\right)^3}{b^4\left(m+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**3,x)
```

```
[Out] d**3*(a + b*x)**(m + 4)/(b**4*(m + 4)) - 3*d**2*(a + b*x)**(m + 3
)*(a*d - b*c)/(b**4*(m + 3)) + 3*d*(a + b*x)**(m + 2)*(a*d - b*c)
**2/(b**4*(m + 2)) - (a + b*x)**(m + 1)*(a*d - b*c)**3/(b**4*(m +
 1))
```

Mathematica [A] time = 0.256018, size = 195, normalized size = 1.77

$$\frac{(a+bx)^{m+1}\left(-6a^3d^3+6a^2bd^2(c(m+4)+d(m+1)x)-3ab^2d\left(c^2\left(m^2+7m+12\right)+2cd\left(m^2+5m+4\right)x+d^2\left(m^2+3m+2\right)\right.\right.}{b^4(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^3,x]
```

```
[Out] ((a + b*x)^(1 + m)*(-6*a^3*d^3 + 6*a^2*b*d^2*(c*(4 + m) + d*(1 +
m)*x) - 3*a*b^2*d*(c^2*(12 + 7*m + m^2) + 2*c*d*(4 + 5*m + m^2)*x
 + d^2*(2 + 3*m + m^2)*x^2) + b^3*(c^3*(24 + 26*m + 9*m^2 + m^3)
+ 3*c^2*d*(12 + 19*m + 8*m^2 + m^3)*x + 3*c*d^2*(8 + 14*m + 7*m^2
 + m^3)*x^2 + d^3*(6 + 11*m + 6*m^2 + m^3)*x^3)))/(b^4*(1 + m)*(2
 + m)*(3 + m)*(4 + m))
```

Maple [B] time = 0.012, size = 389, normalized size = 3.5

$$-\frac{(bx+a)^{1+m}\left(-b^3d^3m^3x^3-3\,b^3cd^2m^3x^2-6\,b^3d^3m^2x^3+3\,ab^2d^3m^2x^2-3\,b^3c^2dm^3x-21\,b^3cd^2m^2x^2-11\,b^3d^3mx^3+6\,ab^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^3,x)
```

```
[Out] -(b*x+a)^(1+m)*(-b^3*d^3*m^3*x^3-3*b^3*c*d^2*m^3*x^2-6*b^3*d^3*m^
2*x^3+3*a*b^2*d^3*m^2*x^2-3*b^3*c^2*d*m^3*x-21*b^3*c*d^2*m^2*x^2-
11*b^3*d^3*m*x^3+6*a*b^2*c*d^2*m^2*x+9*a*b^2*d^3*m*x^2-b^3*c^3*m^
3-24*b^3*c^2*d*m^2*x-42*b^3*c*d^2*m*x^2-6*b^3*d^3*x^3-6*a^2*b*d^3
*m*x+3*a*b^2*c^2*d*m^2+30*a*b^2*c*d^2*m*x+6*a*b^2*d^3*x^2-9*b^3*c
^3*m^2-57*b^3*c^2*d*m*x-24*b^3*c*d^2*x^2-6*a^2*b*c*d^2*m-6*a^2*b*
d^3*x+21*a*b^2*c^2*d*m+24*a*b^2*c*d^2*x-26*b^3*c^3*m-36*b^3*c^2*d
*x+6*a^3*d^3-24*a^2*b*c*d^2+36*a*b^2*c^2*d-24*b^3*c^3)/b^4/(m^4+1
0*m^3+35*m^2+50*m+24)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*(b*x + a)^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.222884, size = 671, normalized size = 6.1

$$\frac{\left(ab^3c^3m^3+24\,ab^3c^3-36\,a^2b^2c^2d+24\,a^3bcd^2-6\,a^4d^3+\left(b^4d^3m^3+6\,b^4d^3m^2+11\,b^4d^3m+6\,b^4d^3\right)x^4+\left(24\,b^4cd^2+\left(3\,b^4c\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*(b*x + a)^m,x, algorithm="fricas")
```

```
[Out] (a*b^3*c^3*m^3 + 24*a*b^3*c^3 - 36*a^2*b^2*c^2*d + 24*a^3*b*c*d^2
 - 6*a^4*d^3 + (b^4*d^3*m^3 + 6*b^4*d^3*m^2 + 11*b^4*d^3*m + 6*b^
4*d^3)*x^4 + (24*b^4*c*d^2 + (3*b^4*c*d^2 + a*b^3*d^3)*m^3 + 3*(7
*b^4*c*d^2 + a*b^3*d^3)*m^2 + 2*(21*b^4*c*d^2 + a*b^3*d^3)*m)*x^3
 + 3*(3*a*b^3*c^3 - a^2*b^2*c^2*d)*m^2 + 3*(12*b^4*c^2*d + (b^4*c
^2*d + a*b^3*c*d^2)*m^3 + (8*b^4*c^2*d + 5*a*b^3*c*d^2 - a^2*b^2*
d^3)*m^2 + (19*b^4*c^2*d + 4*a*b^3*c*d^2 - a^2*b^2*d^3)*m)*x^2 +
(26*a*b^3*c^3 - 21*a^2*b^2*c^2*d + 6*a^3*b*c*d^2)*m + (24*b^4*c^3
 + (b^4*c^3 + 3*a*b^3*c^2*d)*m^3 + 3*(3*b^4*c^3 + 7*a*b^3*c^2*d -
 2*a^2*b^2*c*d^2)*m^2 + 2*(13*b^4*c^3 + 18*a*b^3*c^2*d - 12*a^2*b
^2*c*d^2 + 3*a^3*b*d^3)*m)*x)*(b*x + a)^m/(b^4*m^4 + 10*b^4*m^3 +
 35*b^4*m^2 + 50*b^4*m + 24*b^4)
```

Sympy [A] time = 6.0803, size = 4004, normalized size = 36.4

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**3,x)
```

```
[Out] Piecewise((a**m*(c**3*x + 3*c**2*d*x**2/2 + c*d**2*x**3 + d**3*x*
*4/4), Eq(b, 0)), (6*a**4*d**3*log(a/b + x)/(6*a**4*b**4 + 18*a**
3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3) + 5*a**4*d**3/(6*a*
*4*b**4 + 18*a**3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3) + 1
8*a**3*b*d**3*x*log(a/b + x)/(6*a**4*b**4 + 18*a**3*b**5*x + 18*a
**2*b**6*x**2 + 6*a*b**7*x**3) + 9*a**3*b*d**3*x/(6*a**4*b**4 + 1
8*a**3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3) - 3*a**2*b**2*
c**2*d/(6*a**4*b**4 + 18*a**3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b*
*7*x**3) + 18*a**2*b**2*d**3*x**2*log(a/b + x)/(6*a**4*b**4 + 18*
a**3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3) - 2*a*b**3*c**3/
(6*a**4*b**4 + 18*a**3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3
) - 9*a*b**3*c**2*d*x/(6*a**4*b**4 + 18*a**3*b**5*x + 18*a**2*b**
6*x**2 + 6*a*b**7*x**3) + 6*a*b**3*d**3*x**3*log(a/b + x)/(6*a**4
*b**4 + 18*a**3*b**5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3) - 6*a
*b**3*d**3*x**3/(6*a**4*b**4 + 18*a**3*b**5*x + 18*a**2*b**6*x**2
 + 6*a*b**7*x**3) + 6*b**4*c*d**2*x**3/(6*a**4*b**4 + 18*a**3*b**
5*x + 18*a**2*b**6*x**2 + 6*a*b**7*x**3), Eq(m, -4)), (-6*a**3*d*
*3*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 9*a**3
*d**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 6*a**2*b*c*d**2*
log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 9*a**2*b*
c*d**2/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 12*a**2*b*d**3*
x*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 12*a**2
*b*d**3*x/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 3*a*b**2*c**
2*d/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 12*a*b**2*c*d**2*x
*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 12*a*b**
2*c*d**2*x/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 6*a*b**2*d*
```

```
*3*x**2*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - b
**3*c**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 6*b**3*c**2*d
*x/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 6*b**3*c*d**2*x**2*
log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 2*b**3*d*
*3*x**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2), Eq(m, -3)), (6*
a**3*d**3*log(a/b + x)/(2*a*b**4 + 2*b**5*x) + 6*a**3*d**3/(2*a*b
**4 + 2*b**5*x) - 12*a**2*b*c*d**2*log(a/b + x)/(2*a*b**4 + 2*b**
5*x) - 12*a**2*b*c*d**2/(2*a*b**4 + 2*b**5*x) + 6*a**2*b*d**3*x*l
og(a/b + x)/(2*a*b**4 + 2*b**5*x) + 6*a*b**2*c**2*d*log(a/b + x)/
(2*a*b**4 + 2*b**5*x) + 6*a*b**2*c**2*d/(2*a*b**4 + 2*b**5*x) - 1
2*a*b**2*c*d**2*x*log(a/b + x)/(2*a*b**4 + 2*b**5*x) - 3*a*b**2*d
**3*x**2/(2*a*b**4 + 2*b**5*x) - 2*b**3*c**3/(2*a*b**4 + 2*b**5*x
) + 6*b**3*c**2*d*x*log(a/b + x)/(2*a*b**4 + 2*b**5*x) + 6*b**3*c
*d**2*x**2/(2*a*b**4 + 2*b**5*x) + b**3*d**3*x**3/(2*a*b**4 + 2*b
**5*x), Eq(m, -2)), (-a**3*d**3*log(a/b + x)/b**4 + 3*a**2*c*d**2
*log(a/b + x)/b**3 + a**2*d**3*x/b**3 - 3*a*c**2*d*log(a/b + x)/b
**2 - 3*a*c*d**2*x/b**2 - a*d**3*x**2/(2*b**2) + c**3*log(a/b + x
)/b + 3*c**2*d*x/b + 3*c*d**2*x**2/(2*b) + d**3*x**3/(3*b), Eq(m,
 -1)), (-6*a**4*d**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*
b**4*m**2 + 50*b**4*m + 24*b**4) + 6*a**3*b*c*d**2*m*(a + b*x)**m
/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4)
+ 24*a**3*b*c*d**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b*
*4*m**2 + 50*b**4*m + 24*b**4) + 6*a**3*b*d**3*m*x*(a + b*x)**m/(
b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) -
3*a**2*b**2*c**2*d*m**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 +
35*b**4*m**2 + 50*b**4*m + 24*b**4) - 21*a**2*b**2*c**2*d*m*(a +
b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24
*b**4) - 36*a**2*b**2*c**2*d*(a + b*x)**m/(b**4*m**4 + 10*b**4*m*
*3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - 6*a**2*b**2*c*d**2*m**
2*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b*
*4*m + 24*b**4) - 24*a**2*b**2*c*d**2*m*x*(a + b*x)**m/(b**4*m**4
 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) - 3*a**2*b*
*2*d**3*m**2*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**
4*m**2 + 50*b**4*m + 24*b**4) - 3*a**2*b**2*d**3*m*x**2*(a + b*x)
**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**
4) + a*b**3*c**3*m**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35
*b**4*m**2 + 50*b**4*m + 24*b**4) + 9*a*b**3*c**3*m**2*(a + b*x)*
*m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4
) + 26*a*b**3*c**3*m*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*
b**4*m**2 + 50*b**4*m + 24*b**4) + 24*a*b**3*c**3*(a + b*x)**m/(b
**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 3
*a*b**3*c**2*d*m**3*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35
*b**4*m**2 + 50*b**4*m + 24*b**4) + 21*a*b**3*c**2*d*m**2*x*(a +
b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24
*b**4) + 36*a*b**3*c**2*d*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m
**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 3*a*b**3*c*d**2*m**3*
x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b
**4*m + 24*b**4) + 15*a*b**3*c*d**2*m**2*x**2*(a + b*x)**m/(b**4*
m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 12*a*
b**3*c*d**2*m*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b*
*4*m**2 + 50*b**4*m + 24*b**4) + a*b**3*d**3*m**3*x**3*(a + b*x)*
*m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4
) + 3*a*b**3*d**3*m**2*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**
3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 2*a*b**3*d**3*m*x**3*(a
 + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m +
 24*b**4) + b**4*c**3*m**3*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m*
```

```
*3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 9*b**4*c**3*m**2*x*(a
+ b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m +
24*b**4) + 26*b**4*c**3*m*x*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**
3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 24*b**4*c**3*x*(a + b*x
)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b*
*4) + 3*b**4*c**2*d*m**3*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m
**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 24*b**4*c**2*d*m**2*x
**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b*
*4*m + 24*b**4) + 57*b**4*c**2*d*m*x**2*(a + b*x)**m/(b**4*m**4 +
 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 36*b**4*c**
2*d*x**2*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 +
50*b**4*m + 24*b**4) + 3*b**4*c*d**2*m**3*x**3*(a + b*x)**m/(b**4
*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 21*b
**4*c*d**2*m**2*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*
b**4*m**2 + 50*b**4*m + 24*b**4) + 42*b**4*c*d**2*m*x**3*(a + b*x
)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b*
*4) + 24*b**4*c*d**2*x**3*(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3
+ 35*b**4*m**2 + 50*b**4*m + 24*b**4) + b**4*d**3*m**3*x**4*(a +
b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m + 24
*b**4) + 6*b**4*d**3*m**2*x**4*(a + b*x)**m/(b**4*m**4 + 10*b**4*
m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4) + 11*b**4*d**3*m*x**4*
(a + b*x)**m/(b**4*m**4 + 10*b**4*m**3 + 35*b**4*m**2 + 50*b**4*m
 + 24*b**4) + 6*b**4*d**3*x**4*(a + b*x)**m/(b**4*m**4 + 10*b**4*
m**3 + 35*b**4*m**2 + 50*b**4*m + 24*b**4), True))
```

GIAC/XCAS [A] time = 0.250798, size = 1233, normalized size = 11.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^3*(b*x + a)^m,x, algorithm="giac")
```

```
[Out] (b^4*d^3*m^3*x^4*e^(m*ln(b*x + a)) + 3*b^4*c*d^2*m^3*x^3*e^(m*ln(
b*x + a)) + a*b^3*d^3*m^3*x^3*e^(m*ln(b*x + a)) + 6*b^4*d^3*m^2*x
^4*e^(m*ln(b*x + a)) + 3*b^4*c^2*d*m^3*x^2*e^(m*ln(b*x + a)) + 3*
a*b^3*c*d^2*m^3*x^2*e^(m*ln(b*x + a)) + 21*b^4*c*d^2*m^2*x^3*e^(m
*ln(b*x + a)) + 3*a*b^3*d^3*m^2*x^3*e^(m*ln(b*x + a)) + 11*b^4*d^
3*m*x^4*e^(m*ln(b*x + a)) + b^4*c^3*m^3*x*e^(m*ln(b*x + a)) + 3*a
*b^3*c^2*d*m^3*x*e^(m*ln(b*x + a)) + 24*b^4*c^2*d*m^2*x^2*e^(m*ln
(b*x + a)) + 15*a*b^3*c*d^2*m^2*x^2*e^(m*ln(b*x + a)) - 3*a^2*b^2
*d^3*m^2*x^2*e^(m*ln(b*x + a)) + 42*b^4*c*d^2*m*x^3*e^(m*ln(b*x +
 a)) + 2*a*b^3*d^3*m*x^3*e^(m*ln(b*x + a)) + 6*b^4*d^3*x^4*e^(m*l
n(b*x + a)) + a*b^3*c^3*m^3*e^(m*ln(b*x + a)) + 9*b^4*c^3*m^2*x*e
^(m*ln(b*x + a)) + 21*a*b^3*c^2*d*m^2*x*e^(m*ln(b*x + a)) - 6*a^2
*b^2*c*d^2*m^2*x*e^(m*ln(b*x + a)) + 57*b^4*c^2*d*m*x^2*e^(m*ln(b
*x + a)) + 12*a*b^3*c*d^2*m*x^2*e^(m*ln(b*x + a)) - 3*a^2*b^2*d^3
*m*x^2*e^(m*ln(b*x + a)) + 24*b^4*c*d^2*x^3*e^(m*ln(b*x + a)) + 9
*a*b^3*c^3*m^2*e^(m*ln(b*x + a)) - 3*a^2*b^2*c^2*d*m^2*e^(m*ln(b*
x + a)) + 26*b^4*c^3*m*x*e^(m*ln(b*x + a)) + 36*a*b^3*c^2*d*m*x*e
^(m*ln(b*x + a)) - 24*a^2*b^2*c*d^2*m*x*e^(m*ln(b*x + a)) + 6*a^3
*b*d^3*m*x*e^(m*ln(b*x + a)) + 36*b^4*c^2*d*x^2*e^(m*ln(b*x + a))
```

```
 + 26*a*b^3*c^3*m*e^(m*ln(b*x + a)) - 21*a^2*b^2*c^2*d*m*e^(m*ln(
b*x + a)) + 6*a^3*b*c*d^2*m*e^(m*ln(b*x + a)) + 24*b^4*c^3*x*e^(m
*ln(b*x + a)) + 24*a*b^3*c^3*e^(m*ln(b*x + a)) - 36*a^2*b^2*c^2*d
*e^(m*ln(b*x + a)) + 24*a^3*b*c*d^2*e^(m*ln(b*x + a)) - 6*a^4*d^3
*e^(m*ln(b*x + a)))/(b^4*m^4 + 10*b^4*m^3 + 35*b^4*m^2 + 50*b^4*m
 + 24*b^4)
```

3.1847 $\int (a+bx)^m (c+dx)^2 \, dx$

Optimal. Leaf size=78

$$\frac{(bc-ad)^2(a+bx)^{m+1}}{b^3(m+1)}+\frac{2d(bc-ad)(a+bx)^{m+2}}{b^3(m+2)}+\frac{d^2(a+bx)^{m+3}}{b^3(m+3)}$$

```
[Out] ((b*c - a*d)^2*(a + b*x)^(1 + m))/(b^3*(1 + m)) + (2*d*(b*c - a*d
)*(a + b*x)^(2 + m))/(b^3*(2 + m)) + (d^2*(a + b*x)^(3 + m))/(b^3
*(3 + m))
```

Rubi [A] time = 0.0818789, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^2(a+bx)^{m+1}}{b^3(m+1)}+\frac{2d(bc-ad)(a+bx)^{m+2}}{b^3(m+2)}+\frac{d^2(a+bx)^{m+3}}{b^3(m+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^2,x]
```

```
[Out] ((b*c - a*d)^2*(a + b*x)^(1 + m))/(b^3*(1 + m)) + (2*d*(b*c - a*d
)*(a + b*x)^(2 + m))/(b^3*(2 + m)) + (d^2*(a + b*x)^(3 + m))/(b^3
*(3 + m))
```

Rubi in Sympy [A] time = 18.4533, size = 66, normalized size = 0.85

$$\frac{d^2\,(a+bx)^{m+3}}{b^3\,(m+3)}-\frac{2d\,(a+bx)^{m+2}\,(ad-bc)}{b^3\,(m+2)}+\frac{(a+bx)^{m+1}\,(ad-bc)^2}{b^3\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c)**2,x)
```

```
[Out] d**2*(a + b*x)**(m + 3)/(b**3*(m + 3)) - 2*d*(a + b*x)**(m + 2)*(
a*d - b*c)/(b**3*(m + 2)) + (a + b*x)**(m + 1)*(a*d - b*c)**2/(b*
*3*(m + 1))
```

Mathematica [A] time = 0.0987858, size = 99, normalized size = 1.27

$$\frac{(a+bx)^{m+1}\left(2a^2d^2-2abd(c(m+3)+d(m+1)x)+b^2\left(c^2\left(m^2+5m+6\right)+2cd\left(m^2+4m+3\right)x+d^2\left(m^2+3m+2\right)x^2\right)\right)}{b^3(m+1)(m+2)(m+3)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^2,x]
```

```
[Out] ((a + b*x)^(1 + m)*(2*a^2*d^2 - 2*a*b*d*(c*(3 + m) + d*(1 + m)*x)
 + b^2*(c^2*(6 + 5*m + m^2) + 2*c*d*(3 + 4*m + m^2)*x + d^2*(2 +
3*m + m^2)*x^2)))/(b^3*(1 + m)*(2 + m)*(3 + m))
```

Maple [B] time = 0.011, size = 159, normalized size = 2.

$$\frac{(bx+a)^{1+m}\left(b^2d^2m^2x^2+2\,b^2cdm^2x+3\,b^2d^2mx^2-2\,abd^2mx+b^2c^2m^2+8\,b^2cdmx+2\,b^2d^2x^2-2\,abcdm-2\,abd^2x+5\,b^2c}{b^3\left(m^3+6\,m^2+11\,m+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c)^2,x)
```

```
[Out] (b*x+a)^(1+m)*(b^2*d^2*m^2*x^2+2*b^2*c*d*m^2*x+3*b^2*d^2*m*x^2-2*
a*b*d^2*m*x+b^2*c^2*m^2+8*b^2*c*d*m*x+2*b^2*d^2*x^2-2*a*b*c*d*m-2
*a*b*d^2*x+5*b^2*c^2*m+6*b^2*c*d*x+2*a^2*d^2-6*a*b*c*d+6*b^2*c^2)
/b^3/(m^3+6*m^2+11*m+6)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*(b*x + a)^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.218834, size = 317, normalized size = 4.06

$$\frac{\left(ab^2c^2m^2+6\,ab^2c^2-6\,a^2bcd+2\,a^3d^2+\left(b^3d^2m^2+3\,b^3d^2m+2\,b^3d^2\right)x^3+\left(6\,b^3cd+\left(2\,b^3cd+ab^2d^2\right)m^2+\left(8\,b^3cd+ab^2d^2\right)}{b^3m^3+6\,b^3m^2+11\,b^3r}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*(b*x + a)^m,x, algorithm="fricas")
```

```
[Out] (a*b^2*c^2*m^2 + 6*a*b^2*c^2 - 6*a^2*b*c*d + 2*a^3*d^2 + (b^3*d^2
*m^2 + 3*b^3*d^2*m + 2*b^3*d^2)*x^3 + (6*b^3*c*d + (2*b^3*c*d + a
*b^2*d^2)*m^2 + (8*b^3*c*d + a*b^2*d^2)*m)*x^2 + (5*a*b^2*c^2 - 2
*a^2*b*c*d)*m + (6*b^3*c^2 + (b^3*c^2 + 2*a*b^2*c*d)*m^2 + (5*b^3
*c^2 + 6*a*b^2*c*d - 2*a^2*b*d^2)*m)*x)*(b*x + a)^m/(b^3*m^3 + 6*
b^3*m^2 + 11*b^3*m + 6*b^3)
```

Sympy [A] time = 2.87333, size = 1506, normalized size = 19.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c)**2,x)
```

```
[Out] Piecewise((a**m*(c**2*x + c*d*x**2 + d**2*x**3/3), Eq(b, 0)), (2*
a**2*d**2*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) +
 3*a**2*d**2/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - 2*a*b*c*d
/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) + 4*a*b*d**2*x*log(a/b
+ x)/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) + 4*a*b*d**2*x/(2*a
**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - b**2*c**2/(2*a**2*b**3 + 4
*a*b**4*x + 2*b**5*x**2) - 4*b**2*c*d*x/(2*a**2*b**3 + 4*a*b**4*x
 + 2*b**5*x**2) + 2*b**2*d**2*x**2*log(a/b + x)/(2*a**2*b**3 + 4*
a*b**4*x + 2*b**5*x**2), Eq(m, -3)), (-2*a**2*d**2*log(a/b + x)/(
a*b**3 + b**4*x) - 2*a**2*d**2/(a*b**3 + b**4*x) + 2*a*b*c*d*log(
a/b + x)/(a*b**3 + b**4*x) + 2*a*b*c*d/(a*b**3 + b**4*x) - 2*a*b*
d**2*x*log(a/b + x)/(a*b**3 + b**4*x) - b**2*c**2/(a*b**3 + b**4*
x) + 2*b**2*c*d*x*log(a/b + x)/(a*b**3 + b**4*x) + b**2*d**2*x**2
/(a*b**3 + b**4*x), Eq(m, -2)), (a**2*d**2*log(a/b + x)/b**3 - 2*
a*c*d*log(a/b + x)/b**2 - a*d**2*x/b**2 + c**2*log(a/b + x)/b + 2
*c*d*x/b + d**2*x**2/(2*b), Eq(m, -1)), (2*a**3*d**2*(a + b*x)**m
/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) - 2*a**2*b*c*d*m*
(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) - 6*a
**2*b*c*d*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b
**3) - 2*a**2*b*d**2*m*x*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 +
11*b**3*m + 6*b**3) + a*b**2*c**2*m**2*(a + b*x)**m/(b**3*m**3 +
6*b**3*m**2 + 11*b**3*m + 6*b**3) + 5*a*b**2*c**2*m*(a + b*x)**m/
(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) + 6*a*b**2*c**2*(a
 + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) + 2*a*b
**2*c*d*m**2*x*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m
+ 6*b**3) + 6*a*b**2*c*d*m*x*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**
2 + 11*b**3*m + 6*b**3) + a*b**2*d**2*m**2*x**2*(a + b*x)**m/(b**
3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) + a*b**2*d**2*m*x**2*(
a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) + b**3
*c**2*m**2*x*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m +
6*b**3) + 5*b**3*c**2*m*x*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 +
 11*b**3*m + 6*b**3) + 6*b**3*c**2*x*(a + b*x)**m/(b**3*m**3 + 6*
b**3*m**2 + 11*b**3*m + 6*b**3) + 2*b**3*c*d*m**2*x**2*(a + b*x)*
*m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) + 8*b**3*c*d*m*
x**2*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3)
+ 6*b**3*c*d*x**2*(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3
*m + 6*b**3) + b**3*d**2*m**2*x**3*(a + b*x)**m/(b**3*m**3 + 6*b*
```

```
*3*m**2 + 11*b**3*m + 6*b**3) + 3*b**3*d**2*m*x**3*(a + b*x)**m/(
b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3) + 2*b**3*d**2*x**3*
(a + b*x)**m/(b**3*m**3 + 6*b**3*m**2 + 11*b**3*m + 6*b**3), True
))
```

GIAC/XCAS [A] time = 0.301385, size = 574, normalized size = 7.36

$$\frac{b^3d^2m^2x^3e^{(m\ln(bx+a))} + 2\,b^3cdm^2x^2e^{(m\ln(bx+a))} + ab^2d^2m^2x^2e^{(m\ln(bx+a))} + 3\,b^3d^2mx^3e^{(m\ln(bx+a))} + b^3c^2m^2xe^{(m\ln(bx+a))} + 2\,ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^2*(b*x + a)^m,x, algorithm="giac")
```

```
[Out] (b^3*d^2*m^2*x^3*e^(m*ln(b*x + a)) + 2*b^3*c*d*m^2*x^2*e^(m*ln(b*
x + a)) + a*b^2*d^2*m^2*x^2*e^(m*ln(b*x + a)) + 3*b^3*d^2*m*x^3*e
^(m*ln(b*x + a)) + b^3*c^2*m^2*x*e^(m*ln(b*x + a)) + 2*a*b^2*c*d*
m^2*x*e^(m*ln(b*x + a)) + 8*b^3*c*d*m*x^2*e^(m*ln(b*x + a)) + a*b
^2*d^2*m*x^2*e^(m*ln(b*x + a)) + 2*b^3*d^2*x^3*e^(m*ln(b*x + a))
+ a*b^2*c^2*m^2*e^(m*ln(b*x + a)) + 5*b^3*c^2*m*x*e^(m*ln(b*x + a
)) + 6*a*b^2*c*d*m*x*e^(m*ln(b*x + a)) - 2*a^2*b*d^2*m*x*e^(m*ln(
b*x + a)) + 6*b^3*c*d*x^2*e^(m*ln(b*x + a)) + 5*a*b^2*c^2*m*e^(m*
ln(b*x + a)) - 2*a^2*b*c*d*m*e^(m*ln(b*x + a)) + 6*b^3*c^2*x*e^(m
*ln(b*x + a)) + 6*a*b^2*c^2*e^(m*ln(b*x + a)) - 6*a^2*b*c*d*e^(m*
ln(b*x + a)) + 2*a^3*d^2*e^(m*ln(b*x + a)))/(b^3*m^3 + 6*b^3*m^2
+ 11*b^3*m + 6*b^3)
```

3.1848 $\int (a+bx)^m(c+dx)\,dx$

Optimal. Leaf size=46

$$\frac{(bc-ad)(a+bx)^{m+1}}{b^2(m+1)}+\frac{d(a+bx)^{m+2}}{b^2(m+2)}$$

```
[Out] ((b*c - a*d)*(a + b*x)^(1 + m))/(b^2*(1 + m)) + (d*(a + b*x)^(2 +
 m))/(b^2*(2 + m))
```

Rubi [A] time = 0.0468932, antiderivative size = 46, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077

$$\frac{(bc-ad)(a+bx)^{m+1}}{b^2(m+1)}+\frac{d(a+bx)^{m+2}}{b^2(m+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x),x]
```

```
[Out] ((b*c - a*d)*(a + b*x)^(1 + m))/(b^2*(1 + m)) + (d*(a + b*x)^(2 +
 m))/(b^2*(2 + m))
```

Rubi in Sympy [A] time = 9.42377, size = 37, normalized size = 0.8

$$\frac{d\,(a+bx)^{m+2}}{b^2\,(m+2)}-\frac{(a+bx)^{m+1}\,(ad-bc)}{b^2\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(d*x+c),x)
```

```
[Out] d*(a + b*x)**(m + 2)/(b**2*(m + 2)) - (a + b*x)**(m + 1)*(a*d - b
*c)/(b**2*(m + 1))
```

Mathematica [A] time = 0.0366205, size = 41, normalized size = 0.89

$$\frac{(a+bx)^{m+1}(-ad+bc(m+2)+bd(m+1)x)}{b^2(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x),x]
```

```
[Out] ((a + b*x)^(1 + m)*(-(a*d) + b*c*(2 + m) + b*d*(1 + m)*x))/(b^2*(
1 + m)*(2 + m))
```

Maple [A] time = 0.004, size = 49, normalized size = 1.1

$$-\frac{(bx+a)^{1+m}\left(-bdmx-bcm-bdx+ad-2\,bc\right)}{b^2\left(m^2+3\,m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(d*x+c),x)
```

```
[Out] -(b*x+a)^(1+m)*(-b*d*m*x-b*c*m-b*d*x+a*d-2*b*c)/b^2/(m^2+3*m+2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*(b*x + a)^m,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.216684, size = 112, normalized size = 2.43

$$\frac{\left(abcm+2\,abc-a^2d+\left(b^2dm+b^2d\right)x^2+\left(2\,b^2c+\left(b^2c+abd\right)m\right)x\right)(bx+a)^m}{b^2m^2+3\,b^2m+2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*(b*x + a)^m,x, algorithm="fricas")
```

```
[Out] (a*b*c*m + 2*a*b*c - a^2*d + (b^2*d*m + b^2*d)*x^2 + (2*b^2*c + (
b^2*c + a*b*d)*m)*x)*(b*x + a)^m/(b^2*m^2 + 3*b^2*m + 2*b^2)
```

Sympy [A] time = 1.18981, size = 377, normalized size = 8.2

$$\begin{cases} a^m\left(cx+\frac{dx^2}{2}\right) \\ \frac{ad\log\left(\frac{a}{b}+x\right)}{ab^2+b^3x}+\frac{ad}{ab^2+b^3x}-\frac{bc}{ab^2+b^3x}+\frac{bdx\log\left(\frac{a}{b}+x\right)}{ab^2+b^3x} \\ -\frac{ad\log\left(\frac{a}{b}+x\right)}{b^2}+\frac{c\log\left(\frac{a}{b}+x\right)}{b}+\frac{dx}{b} \\ -\frac{a^2d(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{abcm(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{2abc(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{abdmx(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{b^2cmx(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{2b^2cx(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{b^2dmx^2(a+bx)^m}{b^2m^2+3b^2m+2b^2}+\frac{b^2d}{b^2m} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(d*x+c),x)
```

```
[Out] Piecewise((a**m*(c*x + d*x**2/2), Eq(b, 0)), (a*d*log(a/b + x)/(a
*b**2 + b**3*x) + a*d/(a*b**2 + b**3*x) - b*c/(a*b**2 + b**3*x) +
 b*d*x*log(a/b + x)/(a*b**2 + b**3*x), Eq(m, -2)), (-a*d*log(a/b
+ x)/b**2 + c*log(a/b + x)/b + d*x/b, Eq(m, -1)), (-a**2*d*(a + b
*x)**m/(b**2*m**2 + 3*b**2*m + 2*b**2) + a*b*c*m*(a + b*x)**m/(b*
*2*m**2 + 3*b**2*m + 2*b**2) + 2*a*b*c*(a + b*x)**m/(b**2*m**2 +
3*b**2*m + 2*b**2) + a*b*d*m*x*(a + b*x)**m/(b**2*m**2 + 3*b**2*m
 + 2*b**2) + b**2*c*m*x*(a + b*x)**m/(b**2*m**2 + 3*b**2*m + 2*b*
*2) + 2*b**2*c*x*(a + b*x)**m/(b**2*m**2 + 3*b**2*m + 2*b**2) + b
**2*d*m*x**2*(a + b*x)**m/(b**2*m**2 + 3*b**2*m + 2*b**2) + b**2*
d*x**2*(a + b*x)**m/(b**2*m**2 + 3*b**2*m + 2*b**2), True))
```

GIAC/XCAS [A] time = 0.337596, size = 200, normalized size = 4.35

$$\frac{b^2dmx^2e^{(m\ln(bx+a))}+b^2cmxe^{(m\ln(bx+a))}+abdmxe^{(m\ln(bx+a))}+b^2dx^2e^{(m\ln(bx+a))}+abcme^{(m\ln(bx+a))}+2\,b^2cxe^{(m\ln(bx+a))}+2\,a}{b^2m^2+3\,b^2m+2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)*(b*x + a)^m,x, algorithm="giac")
```

```
[Out] (b^2*d*m*x^2*e^(m*ln(b*x + a)) + b^2*c*m*x*e^(m*ln(b*x + a)) + a*
b*d*m*x*e^(m*ln(b*x + a)) + b^2*d*x^2*e^(m*ln(b*x + a)) + a*b*c*m
*e^(m*ln(b*x + a)) + 2*b^2*c*x*e^(m*ln(b*x + a)) + 2*a*b*c*e^(m*l
n(b*x + a)) - a^2*d*e^(m*ln(b*x + a)))/(b^2*m^2 + 3*b^2*m + 2*b^2
)
```

3.1849 $\int \frac{(a+bx)^m}{c+dx}\,dx$

Optimal. Leaf size=51

$$\frac{(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)}$$

```
[Out] ((a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((d*(a + b
*x))/(b*c - a*d))])/((b*c - a*d)*(1 + m))
```

Rubi [A] time = 0.0441945, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m/(c + d*x),x]
```

```
[Out] ((a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((d*(a + b
*x))/(b*c - a*d))])/((b*c - a*d)*(1 + m))
```

Rubi in Sympy [A] time = 5.36561, size = 37, normalized size = 0.73

$$-\frac{(a+bx)^{m+1}\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{d(a+bx)}{ad-bc}\right)}{(m+1)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m/(d*x+c),x)
```

```
[Out] -(a + b*x)**(m + 1)*hyper((1, m + 1), (m + 2,), d*(a + b*x)/(a*d
- b*c))/((m + 1)*(a*d - b*c))
```

Mathematica [A] time = 0.0439961, size = 66, normalized size = 1.29

$$\frac{(a+bx)^m\left(\frac{d(a+bx)}{b(c+dx)}\right)^{-m}\,{}_2F_1\left(-m,-m;1-m;\frac{bc-ad}{bc+bdx}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m/(c + d*x),x]
```

```
[Out] ((a + b*x)^m*Hypergeometric2F1[-m, -m, 1 - m, (b*c - a*d)/(b*c +
b*d*x)])/(d*m*((d*(a + b*x))/(b*(c + d*x)))^m)
```

Maple [F] time = 0.056, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m/(d*x+c),x)
```

```
[Out] int((b*x+a)^m/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m/(d*x + c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^m}{dx+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m/(d*x + c), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m/(d*x+c),x)
```

```
[Out] Integral((a + b*x)**m/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m/(d*x + c), x)
```

3.1850 $\int \frac{(a+bx)^m}{(c+dx)^2} dx$

Optimal. Leaf size=52

$$\frac{b(a+bx)^{m+1} {}_2F_1\left(2,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)^2}$$

```
[Out] (b*(a + b*x)^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, -((d*(a +
 b*x))/(b*c - a*d))])/((b*c - a*d)^2*(1 + m))
```

Rubi [A] time = 0.0346737, antiderivative size = 52, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{b(a+bx)^{m+1} {}_2F_1\left(2,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m/(c + d*x)^2,x]
```

```
[Out] (b*(a + b*x)^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, -((d*(a +
 b*x))/(b*c - a*d))])/((b*c - a*d)^2*(1 + m))
```

Rubi in Sympy [A] time = 5.1777, size = 39, normalized size = 0.75

$$\frac{b\,(a+bx)^{m+1} {}_2F_1\left(\begin{matrix} 2, m+1 \\ m+2 \end{matrix}\middle| \frac{d(a+bx)}{ad-bc}\right)}{(m+1)\,(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m/(d*x+c)**2,x)
```

```
[Out] b*(a + b*x)**(m + 1)*hyper((2, m + 1), (m + 2,), d*(a + b*x)/(a*d
 - b*c))/((m + 1)*(a*d - b*c)**2)
```

Mathematica [A] time = 0.0469105, size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m}{(c+dx)^2}\, dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^m/(c + d*x)^2,x]
```

```
[Out] Integrate[(a + b*x)^m/(c + d*x)^2, x]
```

Maple [F]   time = 0.068, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m/(d*x+c)^2,x)
```

```
[Out] int((b*x+a)^m/(d*x+c)^2,x)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m/(d*x + c)^2, x)
```

Fricas [F]   time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^m}{d^2x^2+2\,cdx+c^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c)^2,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m/(d^2*x^2 + 2*c*d*x + c^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a + bx)^m}{(c + dx)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m/(d*x+c)**2,x)
```

```
[Out] Integral((a + b*x)**m/(c + d*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx + a)^m}{(dx + c)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c)^2,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m/(d*x + c)^2, x)
```

3.1851 $\int \frac{(a+bx)^m}{(c+dx)^3} dx$

Optimal. Leaf size=54

$$\frac{b^2(a+bx)^{m+1} {}_2F_1\left(3,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)^3}$$

```
[Out] (b^2*(a + b*x)^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)^3*(1 + m))
```

Rubi [A] time = 0.0390526, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{b^2(a+bx)^{m+1} {}_2F_1\left(3,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m/(c + d*x)^3,x]
```

```
[Out] (b^2*(a + b*x)^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((d*(a
 + b*x))/(b*c - a*d))])/((b*c - a*d)^3*(1 + m))
```

Rubi in Sympy [A] time = 5.98509, size = 42, normalized size = 0.78

$$-\frac{b^2\left(a+bx\right)^{m+1} {}_2F_1\left(\begin{matrix} 3, m+1 \\ m+2 \end{matrix}\middle| \frac{d(a+bx)}{ad-bc}\right)}{(m+1)\left(ad-bc\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m/(d*x+c)**3,x)
```

```
[Out] -b**2*(a + b*x)**(m + 1)*hyper((3, m + 1), (m + 2,), d*(a + b*x)/
(a*d - b*c))/((m + 1)*(a*d - b*c)**3)
```

Mathematica [A] time = 0.054512, size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m}{(c+dx)^3} dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(a + b*x)^m/(c + d*x)^3,x]
```

```
[Out] Integrate[(a + b*x)^m/(c + d*x)^3, x]
```

Maple [F] time = 0.107, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m/(d*x+c)^3,x)
```

```
[Out] int((b*x+a)^m/(d*x+c)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c)^3,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m/(d*x + c)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\operatorname{integral}\left(\frac{(bx+a)^m}{d^3x^3+3\,cd^2x^2+3\,c^2dx+c^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c)^3,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m/(d^3*x^3 + 3*c*d^2*x^2 + 3*c^2*d*x + c^3), x
)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m/(d*x+c)**3,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{(dx+c)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c)^3,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m/(d*x + c)^3, x)
```

3.1852 $\int (a+bx)^3(c+dx)^n\,dx$

Optimal. Leaf size=111

$$-\frac{3b^2(bc-ad)(c+dx)^{n+3}}{d^4(n+3)}-\frac{(bc-ad)^3(c+dx)^{n+1}}{d^4(n+1)}+\frac{3b(bc-ad)^2(c+dx)^{n+2}}{d^4(n+2)}+\frac{b^3(c+dx)^{n+4}}{d^4(n+4)}$$

```
[Out] -(((b*c - a*d)^3*(c + d*x)^(1 + n))/(d^4*(1 + n))) + (3*b*(b*c -
a*d)^2*(c + d*x)^(2 + n))/(d^4*(2 + n)) - (3*b^2*(b*c - a*d)*(c +
 d*x)^(3 + n))/(d^4*(3 + n)) + (b^3*(c + d*x)^(4 + n))/(d^4*(4 +
n))
```

Rubi [A] time = 0.127839, antiderivative size = 111, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$-\frac{3b^2(bc-ad)(c+dx)^{n+3}}{d^4(n+3)}-\frac{(bc-ad)^3(c+dx)^{n+1}}{d^4(n+1)}+\frac{3b(bc-ad)^2(c+dx)^{n+2}}{d^4(n+2)}+\frac{b^3(c+dx)^{n+4}}{d^4(n+4)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^3*(c + d*x)^n,x]
```

```
[Out] -(((b*c - a*d)^3*(c + d*x)^(1 + n))/(d^4*(1 + n))) + (3*b*(b*c -
a*d)^2*(c + d*x)^(2 + n))/(d^4*(2 + n)) - (3*b^2*(b*c - a*d)*(c +
 d*x)^(3 + n))/(d^4*(3 + n)) + (b^3*(c + d*x)^(4 + n))/(d^4*(4 +
n))
```

Rubi in Sympy [A] time = 28.3153, size = 95, normalized size = 0.86

$$\frac{b^3\,(c+dx)^{n+4}}{d^4\,(n+4)}+\frac{3b^2\,(c+dx)^{n+3}\,(ad-bc)}{d^4\,(n+3)}+\frac{3b\,(c+dx)^{n+2}\,(ad-bc)^2}{d^4\,(n+2)}+\frac{(c+dx)^{n+1}\,(ad-bc)^3}{d^4\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**3*(d*x+c)**n,x)
```

```
[Out] b**3*(c + d*x)**(n + 4)/(d**4*(n + 4)) + 3*b**2*(c + d*x)**(n + 3
)*(a*d - b*c)/(d**4*(n + 3)) + 3*b*(c + d*x)**(n + 2)*(a*d - b*c)
**2/(d**4*(n + 2)) + (c + d*x)**(n + 1)*(a*d - b*c)**3/(d**4*(n +
 1))
```

Mathematica [A] time = 0.168333, size = 178, normalized size = 1.6

$$\frac{(c+dx)^{n+1}\left(a^3d^3\left(n^3+9n^2+26n+24\right)-3a^2bd^2\left(n^2+7n+12\right)(c-d(n+1)x)+3ab^2d(n+4)\left(2c^2-2cd(n+1)x+d^2\left(n^2+\right.\right.\right.}{d^4(n+1)(n+2)(n+3)(n+4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^3*(c + d*x)^n,x]
```

```
[Out] ((c + d*x)^(1 + n)*(a^3*d^3*(24 + 26*n + 9*n^2 + n^3) - 3*a^2*b*d
^2*(12 + 7*n + n^2)*(c - d*(1 + n)*x) + 3*a*b^2*d*(4 + n)*(2*c^2
- 2*c*d*(1 + n)*x + d^2*(2 + 3*n + n^2)*x^2) - b^3*(6*c^3 - 6*c^2
*d*(1 + n)*x + 3*c*d^2*(2 + 3*n + n^2)*x^2 - d^3*(6 + 11*n + 6*n^
2 + n^3)*x^3)))/(d^4*(1 + n)*(2 + n)*(3 + n)*(4 + n))
```

Maple [B] time = 0.011, size = 386, normalized size = 3.5

$$\frac{(dx+c)^{1+n}\left(b^3d^3n^3x^3+3\,ab^2d^3n^3x^2+6\,b^3d^3n^2x^3+3\,a^2bd^3n^3x+21\,ab^2d^3n^2x^2-3\,b^3cd^2n^2x^2+11\,b^3d^3nx^3+a^3d^3n^3+24\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^3*(d*x+c)^n,x)
```

```
[Out] (d*x+c)^(1+n)*(b^3*d^3*n^3*x^3+3*a*b^2*d^3*n^3*x^2+6*b^3*d^3*n^2*
x^3+3*a^2*b*d^3*n^3*x+21*a*b^2*d^3*n^2*x^2-3*b^3*c*d^2*n^2*x^2+11
*b^3*d^3*n*x^3+a^3*d^3*n^3+24*a^2*b*d^3*n^2*x-6*a*b^2*c*d^2*n^2*x
+42*a*b^2*d^3*n*x^2-9*b^3*c*d^2*n*x^2+6*b^3*d^3*x^3+9*a^3*d^3*n^2
-3*a^2*b*c*d^2*n^2+57*a^2*b*d^3*n*x-30*a*b^2*c*d^2*n*x+24*a*b^2*d
^3*x^2+6*b^3*c^2*d*n*x-6*b^3*c*d^2*x^2+26*a^3*d^3*n-21*a^2*b*c*d^
2*n+36*a^2*b*d^3*x+6*a*b^2*c^2*d*n-24*a*b^2*c*d^2*x+6*b^3*c^2*d*x
+24*a^3*d^3-36*a^2*b*c*d^2+24*a*b^2*c^2*d-6*b^3*c^3)/d^4/(n^4+10*
n^3+35*n^2+50*n+24)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.228875, size = 670, normalized size = 6.04

$$\frac{\left(a^3cd^3n^3 - 6\,b^3c^4 + 24\,ab^2c^3d - 36\,a^2bc^2d^2 + 24\,a^3cd^3 + \left(b^3d^4n^3 + 6\,b^3d^4n^2 + 11\,b^3d^4n + 6\,b^3d^4\right)x^4 + \left(24\,ab^2d^4 + \left(b^3cd^3 + \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (a^3*c*d^3*n^3 - 6*b^3*c^4 + 24*a*b^2*c^3*d - 36*a^2*b*c^2*d^2 +
24*a^3*c*d^3 + (b^3*d^4*n^3 + 6*b^3*d^4*n^2 + 11*b^3*d^4*n + 6*b^
3*d^4)*x^4 + (24*a*b^2*d^4 + (b^3*c*d^3 + 3*a*b^2*d^4)*n^3 + 3*(b
^3*c*d^3 + 7*a*b^2*d^4)*n^2 + 2*(b^3*c*d^3 + 21*a*b^2*d^4)*n)*x^3
 - 3*(a^2*b*c^2*d^2 - 3*a^3*c*d^3)*n^2 + 3*(12*a^2*b*d^4 + (a*b^2
*c*d^3 + a^2*b*d^4)*n^3 - (b^3*c^2*d^2 - 5*a*b^2*c*d^3 - 8*a^2*b*
d^4)*n^2 - (b^3*c^2*d^2 - 4*a*b^2*c*d^3 - 19*a^2*b*d^4)*n)*x^2 +
(6*a*b^2*c^3*d - 21*a^2*b*c^2*d^2 + 26*a^3*c*d^3)*n + (24*a^3*d^4
 + (3*a^2*b*c*d^3 + a^3*d^4)*n^3 - 3*(2*a*b^2*c^2*d^2 - 7*a^2*b*c
*d^3 - 3*a^3*d^4)*n^2 + 2*(3*b^3*c^3*d - 12*a*b^2*c^2*d^2 + 18*a^
2*b*c*d^3 + 13*a^3*d^4)*n)*x)*(d*x + c)^n/(d^4*n^4 + 10*d^4*n^3 +
 35*d^4*n^2 + 50*d^4*n + 24*d^4)
```

Sympy [A] time = 6.3583, size = 4004, normalized size = 36.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**3*(d*x+c)**n,x)
```

```
[Out] Piecewise((c**n*(a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x*
*4/4), Eq(d, 0)), (-2*a**3*c*d**3/(6*c**4*d**4 + 18*c**3*d**5*x +
 18*c**2*d**6*x**2 + 6*c*d**7*x**3) - 3*a**2*b*c**2*d**2/(6*c**4*
d**4 + 18*c**3*d**5*x + 18*c**2*d**6*x**2 + 6*c*d**7*x**3) - 9*a*
*2*b*c*d**3*x/(6*c**4*d**4 + 18*c**3*d**5*x + 18*c**2*d**6*x**2 +
 6*c*d**7*x**3) + 6*a*b**2*d**4*x**3/(6*c**4*d**4 + 18*c**3*d**5*
x + 18*c**2*d**6*x**2 + 6*c*d**7*x**3) + 6*b**3*c**4*log(c/d + x)
/(6*c**4*d**4 + 18*c**3*d**5*x + 18*c**2*d**6*x**2 + 6*c*d**7*x**
3) + 5*b**3*c**4/(6*c**4*d**4 + 18*c**3*d**5*x + 18*c**2*d**6*x**
2 + 6*c*d**7*x**3) + 18*b**3*c**3*d*x*log(c/d + x)/(6*c**4*d**4 +
 18*c**3*d**5*x + 18*c**2*d**6*x**2 + 6*c*d**7*x**3) + 9*b**3*c**
3*d*x/(6*c**4*d**4 + 18*c**3*d**5*x + 18*c**2*d**6*x**2 + 6*c*d**
7*x**3) + 18*b**3*c**2*d**2*x**2*log(c/d + x)/(6*c**4*d**4 + 18*c
**3*d**5*x + 18*c**2*d**6*x**2 + 6*c*d**7*x**3) + 6*b**3*c*d**3*x
**3*log(c/d + x)/(6*c**4*d**4 + 18*c**3*d**5*x + 18*c**2*d**6*x**
2 + 6*c*d**7*x**3) - 6*b**3*c*d**3*x**3/(6*c**4*d**4 + 18*c**3*d*
*5*x + 18*c**2*d**6*x**2 + 6*c*d**7*x**3), Eq(n, -4)), (-a**3*d**
3/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 3*a**2*b*c*d**2/(2*c
```

```
**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 6*a**2*b*d**3*x/(2*c**2*d*
*4 + 4*c*d**5*x + 2*d**6*x**2) + 6*a*b**2*c**2*d*log(c/d + x)/(2*
c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) + 9*a*b**2*c**2*d/(2*c**2*d
**4 + 4*c*d**5*x + 2*d**6*x**2) + 12*a*b**2*c*d**2*x*log(c/d + x)
/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) + 12*a*b**2*c*d**2*x/(2
*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) + 6*a*b**2*d**3*x**2*log(c
/d + x)/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 6*b**3*c**3*lo
g(c/d + x)/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 9*b**3*c**3
/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 12*b**3*c**2*d*x*log(
c/d + x)/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 12*b**3*c**2*
d*x/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) - 6*b**3*c*d**2*x**2
*log(c/d + x)/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2) + 2*b**3*d
**3*x**3/(2*c**2*d**4 + 4*c*d**5*x + 2*d**6*x**2), Eq(n, -3)), (-
2*a**3*d**3/(2*c*d**4 + 2*d**5*x) + 6*a**2*b*c*d**2*log(c/d + x)/
(2*c*d**4 + 2*d**5*x) + 6*a**2*b*c*d**2/(2*c*d**4 + 2*d**5*x) + 6
*a**2*b*d**3*x*log(c/d + x)/(2*c*d**4 + 2*d**5*x) - 12*a*b**2*c**
2*d*log(c/d + x)/(2*c*d**4 + 2*d**5*x) - 12*a*b**2*c**2*d/(2*c*d*
*4 + 2*d**5*x) - 12*a*b**2*c*d**2*x*log(c/d + x)/(2*c*d**4 + 2*d*
*5*x) + 6*a*b**2*d**3*x**2/(2*c*d**4 + 2*d**5*x) + 6*b**3*c**3*lo
g(c/d + x)/(2*c*d**4 + 2*d**5*x) + 6*b**3*c**3/(2*c*d**4 + 2*d**5
*x) + 6*b**3*c**2*d*x*log(c/d + x)/(2*c*d**4 + 2*d**5*x) - 3*b**3
*c*d**2*x**2/(2*c*d**4 + 2*d**5*x) + b**3*d**3*x**3/(2*c*d**4 + 2
*d**5*x), Eq(n, -2)), (a**3*log(c/d + x)/d - 3*a**2*b*c*log(c/d +
 x)/d**2 + 3*a**2*b*x/d + 3*a*b**2*c**2*log(c/d + x)/d**3 - 3*a*b
**2*c*x/d**2 + 3*a*b**2*x**2/(2*d) - b**3*c**3*log(c/d + x)/d**4
+ b**3*c**2*x/d**3 - b**3*c*x**2/(2*d**2) + b**3*x**3/(3*d), Eq(n
, -1)), (a**3*c*d**3*n**3*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3
+ 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 9*a**3*c*d**3*n**2*(c + d
*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*
d**4) + 26*a**3*c*d**3*n*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 +
 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 24*a**3*c*d**3*(c + d*x)**
n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4)
 + a**3*d**4*n**3*x*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d
**4*n**2 + 50*d**4*n + 24*d**4) + 9*a**3*d**4*n**2*x*(c + d*x)**n
/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4)
+ 26*a**3*d**4*n*x*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d*
*4*n**2 + 50*d**4*n + 24*d**4) + 24*a**3*d**4*x*(c + d*x)**n/(d**
4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) - 3*a
**2*b*c**2*d**2*n**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*
d**4*n**2 + 50*d**4*n + 24*d**4) - 21*a**2*b*c**2*d**2*n*(c + d*x
)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d*
*4) - 36*a**2*b*c**2*d**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3
+ 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 3*a**2*b*c*d**3*n**3*x*(c
 + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n +
 24*d**4) + 21*a**2*b*c*d**3*n**2*x*(c + d*x)**n/(d**4*n**4 + 10*
d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 36*a**2*b*c*d**
3*n*x*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*
d**4*n + 24*d**4) + 3*a**2*b*d**4*n**3*x**2*(c + d*x)**n/(d**4*n*
*4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 24*a**2
*b*d**4*n**2*x**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**
4*n**2 + 50*d**4*n + 24*d**4) + 57*a**2*b*d**4*n*x**2*(c + d*x)**
n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4)
 + 36*a**2*b*d**4*x**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 3
5*d**4*n**2 + 50*d**4*n + 24*d**4) + 6*a*b**2*c**3*d*n*(c + d*x)*
*n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4
) + 24*a*b**2*c**3*d*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*
```

```
d**4*n**2 + 50*d**4*n + 24*d**4) - 6*a*b**2*c**2*d**2*n**2*x*(c +
 d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 2
4*d**4) - 24*a*b**2*c**2*d**2*n*x*(c + d*x)**n/(d**4*n**4 + 10*d*
*4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 3*a*b**2*c*d**3*n
**3*x**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 +
50*d**4*n + 24*d**4) + 15*a*b**2*c*d**3*n**2*x**2*(c + d*x)**n/(d
**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 1
2*a*b**2*c*d**3*n*x**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 3
5*d**4*n**2 + 50*d**4*n + 24*d**4) + 3*a*b**2*d**4*n**3*x**3*(c +
 d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 2
4*d**4) + 21*a*b**2*d**4*n**2*x**3*(c + d*x)**n/(d**4*n**4 + 10*d
**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 42*a*b**2*d**4*n
*x**3*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*
d**4*n + 24*d**4) + 24*a*b**2*d**4*x**3*(c + d*x)**n/(d**4*n**4 +
 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) - 6*b**3*c**4
*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*
n + 24*d**4) + 6*b**3*c**3*d*n*x*(c + d*x)**n/(d**4*n**4 + 10*d**
4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) - 3*b**3*c**2*d**2*n
**2*x**2*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 +
50*d**4*n + 24*d**4) - 3*b**3*c**2*d**2*n*x**2*(c + d*x)**n/(d**4
*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + b**3
*c*d**3*n**3*x**3*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**
4*n**2 + 50*d**4*n + 24*d**4) + 3*b**3*c*d**3*n**2*x**3*(c + d*x)
**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**
4) + 2*b**3*c*d**3*n*x**3*(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3
+ 35*d**4*n**2 + 50*d**4*n + 24*d**4) + b**3*d**4*n**3*x**4*(c +
d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n + 24
*d**4) + 6*b**3*d**4*n**2*x**4*(c + d*x)**n/(d**4*n**4 + 10*d**4*
n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4) + 11*b**3*d**4*n*x**4*
(c + d*x)**n/(d**4*n**4 + 10*d**4*n**3 + 35*d**4*n**2 + 50*d**4*n
 + 24*d**4) + 6*b**3*d**4*x**4*(c + d*x)**n/(d**4*n**4 + 10*d**4*
n**3 + 35*d**4*n**2 + 50*d**4*n + 24*d**4), True))
```

GIAC/XCAS [A] time = 0.248451, size = 1233, normalized size = 11.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^3*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] (b^3*d^4*n^3*x^4*e^(n*ln(d*x + c)) + b^3*c*d^3*n^3*x^3*e^(n*ln(d*
x + c)) + 3*a*b^2*d^4*n^3*x^3*e^(n*ln(d*x + c)) + 6*b^3*d^4*n^2*x
^4*e^(n*ln(d*x + c)) + 3*a*b^2*c*d^3*n^3*x^2*e^(n*ln(d*x + c)) +
3*a^2*b*d^4*n^3*x^2*e^(n*ln(d*x + c)) + 3*b^3*c*d^3*n^2*x^3*e^(n*
ln(d*x + c)) + 21*a*b^2*d^4*n^2*x^3*e^(n*ln(d*x + c)) + 11*b^3*d^
4*n*x^4*e^(n*ln(d*x + c)) + 3*a^2*b*c*d^3*n^3*x*e^(n*ln(d*x + c))
 + a^3*d^4*n^3*x*e^(n*ln(d*x + c)) - 3*b^3*c^2*d^2*n^2*x^2*e^(n*l
n(d*x + c)) + 15*a*b^2*c*d^3*n^2*x^2*e^(n*ln(d*x + c)) + 24*a^2*b
*d^4*n^2*x^2*e^(n*ln(d*x + c)) + 2*b^3*c*d^3*n*x^3*e^(n*ln(d*x +
c)) + 42*a*b^2*d^4*n*x^3*e^(n*ln(d*x + c)) + 6*b^3*d^4*x^4*e^(n*l
n(d*x + c)) + a^3*c*d^3*n^3*e^(n*ln(d*x + c)) - 6*a*b^2*c^2*d^2*n
```

```
^2*x*e^(n*ln(d*x + c)) + 21*a^2*b*c*d^3*n^2*x*e^(n*ln(d*x + c)) +
 9*a^3*d^4*n^2*x*e^(n*ln(d*x + c)) - 3*b^3*c^2*d^2*n*x^2*e^(n*ln(
d*x + c)) + 12*a*b^2*c*d^3*n*x^2*e^(n*ln(d*x + c)) + 57*a^2*b*d^4
*n*x^2*e^(n*ln(d*x + c)) + 24*a*b^2*d^4*x^3*e^(n*ln(d*x + c)) - 3
*a^2*b*c^2*d^2*n^2*e^(n*ln(d*x + c)) + 9*a^3*c*d^3*n^2*e^(n*ln(d*
x + c)) + 6*b^3*c^3*d*n*x*e^(n*ln(d*x + c)) - 24*a*b^2*c^2*d^2*n*
x*e^(n*ln(d*x + c)) + 36*a^2*b*c*d^3*n*x*e^(n*ln(d*x + c)) + 26*a
^3*d^4*n*x*e^(n*ln(d*x + c)) + 36*a^2*b*d^4*x^2*e^(n*ln(d*x + c))
 + 6*a*b^2*c^3*d*n*e^(n*ln(d*x + c)) - 21*a^2*b*c^2*d^2*n*e^(n*ln
(d*x + c)) + 26*a^3*c*d^3*n*e^(n*ln(d*x + c)) + 24*a^3*d^4*x*e^(n
*ln(d*x + c)) - 6*b^3*c^4*e^(n*ln(d*x + c)) + 24*a*b^2*c^3*d*e^(n
*ln(d*x + c)) - 36*a^2*b*c^2*d^2*e^(n*ln(d*x + c)) + 24*a^3*c*d^3
*e^(n*ln(d*x + c)))/(d^4*n^4 + 10*d^4*n^3 + 35*d^4*n^2 + 50*d^4*n
 + 24*d^4)
```

3.1853 $\int (a+bx)^2(c+dx)^n\,dx$

Optimal. Leaf size=78

$$\frac{(bc-ad)^2(c+dx)^{n+1}}{d^3(n+1)}-\frac{2b(bc-ad)(c+dx)^{n+2}}{d^3(n+2)}+\frac{b^2(c+dx)^{n+3}}{d^3(n+3)}$$

```
[Out] ((b*c - a*d)^2*(c + d*x)^(1 + n))/(d^3*(1 + n)) - (2*b*(b*c - a*d
)*(c + d*x)^(2 + n))/(d^3*(2 + n)) + (b^2*(c + d*x)^(3 + n))/(d^3
*(3 + n))
```

Rubi [A] time = 0.0788176, antiderivative size = 78, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{(bc-ad)^2(c+dx)^{n+1}}{d^3(n+1)}-\frac{2b(bc-ad)(c+dx)^{n+2}}{d^3(n+2)}+\frac{b^2(c+dx)^{n+3}}{d^3(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^2*(c + d*x)^n,x]
```

```
[Out] ((b*c - a*d)^2*(c + d*x)^(1 + n))/(d^3*(1 + n)) - (2*b*(b*c - a*d
)*(c + d*x)^(2 + n))/(d^3*(2 + n)) + (b^2*(c + d*x)^(3 + n))/(d^3
*(3 + n))
```

Rubi in Sympy [A] time = 18.8128, size = 66, normalized size = 0.85

$$\frac{b^2(c+dx)^{n+3}}{d^3(n+3)}+\frac{2b(c+dx)^{n+2}(ad-bc)}{d^3(n+2)}+\frac{(c+dx)^{n+1}(ad-bc)^2}{d^3(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**2*(d*x+c)**n,x)
```

```
[Out] b**2*(c + d*x)**(n + 3)/(d**3*(n + 3)) + 2*b*(c + d*x)**(n + 2)*(
a*d - b*c)/(d**3*(n + 2)) + (c + d*x)**(n + 1)*(a*d - b*c)**2/(d*
*3*(n + 1))
```

Mathematica [A] time = 0.100781, size = 95, normalized size = 1.22

$$\frac{(c+dx)^{n+1}\left(a^2d^2\left(n^2+5n+6\right)+2abd(n+3)(d(n+1)x-c)+b^2\left(2c^2-2cd(n+1)x+d^2\left(n^2+3n+2\right)x^2\right)\right)}{d^3(n+1)(n+2)(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^2*(c + d*x)^n,x]
```

```
[Out] ((c + d*x)^(1 + n)*(a^2*d^2*(6 + 5*n + n^2) + 2*a*b*d*(3 + n)*(-c
 + d*(1 + n)*x) + b^2*(2*c^2 - 2*c*d*(1 + n)*x + d^2*(2 + 3*n + n
^2)*x^2)))/(d^3*(1 + n)*(2 + n)*(3 + n))
```

Maple [B] time = 0.012, size = 159, normalized size = 2.

$$\frac{(dx+c)^{1+n}\left(b^2d^2n^2x^2+2\,abd^2n^2x+3\,b^2d^2nx^2+a^2d^2n^2+8\,abd^2nx-2\,b^2cdnx+2\,b^2d^2x^2+5\,a^2d^2n-2\,abcdn+6\,abd^2x-\right.}{d^3\left(n^3+6\,n^2+11\,n+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^2*(d*x+c)^n,x)
```

```
[Out] (d*x+c)^(1+n)*(b^2*d^2*n^2*x^2+2*a*b*d^2*n^2*x+3*b^2*d^2*n*x^2+a^
2*d^2*n^2+8*a*b*d^2*n*x-2*b^2*c*d*n*x+2*b^2*d^2*x^2+5*a^2*d^2*n-2
*a*b*c*d*n+6*a*b*d^2*x-2*b^2*c*d*x+6*a^2*d^2-6*a*b*c*d+2*b^2*c^2)
/d^3/(n^3+6*n^2+11*n+6)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.219365, size = 320, normalized size = 4.1

$$\frac{\left(a^2cd^2n^2+2\,b^2c^3-6\,abc^2d+6\,a^2cd^2+\left(b^2d^3n^2+3\,b^2d^3n+2\,b^2d^3\right)x^3+\left(6\,abd^3+\left(b^2cd^2+2\,abd^3\right)n^2+\left(b^2cd^2+8\,abd^3\right)n\right)\right.}{d^3n^3+6\,d^3n^2+11\,d^3n+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (a^2*c*d^2*n^2 + 2*b^2*c^3 - 6*a*b*c^2*d + 6*a^2*c*d^2 + (b^2*d^3
*n^2 + 3*b^2*d^3*n + 2*b^2*d^3)*x^3 + (6*a*b*d^3 + (b^2*c*d^2 + 2
*a*b*d^3)*n^2 + (b^2*c*d^2 + 8*a*b*d^3)*n)*x^2 - (2*a*b*c^2*d - 5
*a^2*c*d^2)*n + (6*a^2*d^3 + (2*a*b*c*d^2 + a^2*d^3)*n^2 - (2*b^2
*c^2*d - 6*a*b*c*d^2 - 5*a^2*d^3)*n)*x)*(d*x + c)^n/(d^3*n^3 + 6*
d^3*n^2 + 11*d^3*n + 6*d^3)
```

Sympy [A] time = 2.92714, size = 1506, normalized size = 19.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**2*(d*x+c)**n,x)
```

```
[Out] Piecewise((c**n*(a**2*x + a*b*x**2 + b**2*x**3/3), Eq(d, 0)), (-a
**2*d**2/(2*c**2*d**3 + 4*c*d**4*x + 2*d**5*x**2) - 2*a*b*c*d/(2*
c**2*d**3 + 4*c*d**4*x + 2*d**5*x**2) - 4*a*b*d**2*x/(2*c**2*d**3
 + 4*c*d**4*x + 2*d**5*x**2) + 2*b**2*c**2*log(c/d + x)/(2*c**2*d
**3 + 4*c*d**4*x + 2*d**5*x**2) + 3*b**2*c**2/(2*c**2*d**3 + 4*c*
d**4*x + 2*d**5*x**2) + 4*b**2*c*d*x*log(c/d + x)/(2*c**2*d**3 +
4*c*d**4*x + 2*d**5*x**2) + 4*b**2*c*d*x/(2*c**2*d**3 + 4*c*d**4*
x + 2*d**5*x**2) + 2*b**2*d**2*x**2*log(c/d + x)/(2*c**2*d**3 + 4
*c*d**4*x + 2*d**5*x**2), Eq(n, -3)), (-a**2*d**2/(c*d**3 + d**4*
x) + 2*a*b*c*d*log(c/d + x)/(c*d**3 + d**4*x) + 2*a*b*c*d/(c*d**3
 + d**4*x) + 2*a*b*d**2*x*log(c/d + x)/(c*d**3 + d**4*x) - 2*b**2
*c**2*log(c/d + x)/(c*d**3 + d**4*x) - 2*b**2*c**2/(c*d**3 + d**4
*x) - 2*b**2*c*d*x*log(c/d + x)/(c*d**3 + d**4*x) + b**2*d**2*x**
2/(c*d**3 + d**4*x), Eq(n, -2)), (a**2*log(c/d + x)/d - 2*a*b*c*l
og(c/d + x)/d**2 + 2*a*b*x/d + b**2*c**2*log(c/d + x)/d**3 - b**2
*c*x/d**2 + b**2*x**2/(2*d), Eq(n, -1)), (a**2*c*d**2*n**2*(c + d
*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) + 5*a**2*c*
d**2*n*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3
) + 6*a**2*c*d**2*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3
*n + 6*d**3) + a**2*d**3*n**2*x*(c + d*x)**n/(d**3*n**3 + 6*d**3*
n**2 + 11*d**3*n + 6*d**3) + 5*a**2*d**3*n*x*(c + d*x)**n/(d**3*n
**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) + 6*a**2*d**3*x*(c + d*x)
**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) - 2*a*b*c**2*d
*n*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) -
6*a*b*c**2*d*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n +
6*d**3) + 2*a*b*c*d**2*n**2*x*(c + d*x)**n/(d**3*n**3 + 6*d**3*n*
*2 + 11*d**3*n + 6*d**3) + 6*a*b*c*d**2*n*x*(c + d*x)**n/(d**3*n*
*3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) + 2*a*b*d**3*n**2*x**2*(c
+ d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) + 8*a*b*
d**3*n*x**2*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6
*d**3) + 6*a*b*d**3*x**2*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 +
11*d**3*n + 6*d**3) + 2*b**2*c**3*(c + d*x)**n/(d**3*n**3 + 6*d**
3*n**2 + 11*d**3*n + 6*d**3) - 2*b**2*c**2*d*n*x*(c + d*x)**n/(d*
*3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) + b**2*c*d**2*n**2*x*
*2*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) +
b**2*c*d**2*n*x**2*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**
3*n + 6*d**3) + b**2*d**3*n**2*x**3*(c + d*x)**n/(d**3*n**3 + 6*d
```

```
**3*n**2 + 11*d**3*n + 6*d**3) + 3*b**2*d**3*n*x**3*(c + d*x)**n/
(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3) + 2*b**2*d**3*x**3
*(c + d*x)**n/(d**3*n**3 + 6*d**3*n**2 + 11*d**3*n + 6*d**3), Tru
e))
```

GIAC/XCAS [A] time = 0.243393, size = 574, normalized size = 7.36

$$\frac{b^2d^3n^2x^3e^{(n\ln(dx+c))} + b^2cd^2n^2x^2e^{(n\ln(dx+c))} + 2\,abd^3n^2x^2e^{(n\ln(dx+c))} + 3\,b^2d^3nx^3e^{(n\ln(dx+c))} + 2\,abcd^2n^2xe^{(n\ln(dx+c))} + a^2d^3n^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^2*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] (b^2*d^3*n^2*x^3*e^(n*ln(d*x + c)) + b^2*c*d^2*n^2*x^2*e^(n*ln(d*
x + c)) + 2*a*b*d^3*n^2*x^2*e^(n*ln(d*x + c)) + 3*b^2*d^3*n*x^3*e
^(n*ln(d*x + c)) + 2*a*b*c*d^2*n^2*x*e^(n*ln(d*x + c)) + a^2*d^3*
n^2*x*e^(n*ln(d*x + c)) + b^2*c*d^2*n*x^2*e^(n*ln(d*x + c)) + 8*a
*b*d^3*n*x^2*e^(n*ln(d*x + c)) + 2*b^2*d^3*x^3*e^(n*ln(d*x + c))
+ a^2*c*d^2*n^2*e^(n*ln(d*x + c)) - 2*b^2*c^2*d*n*x*e^(n*ln(d*x +
 c)) + 6*a*b*c*d^2*n*x*e^(n*ln(d*x + c)) + 5*a^2*d^3*n*x*e^(n*ln(
d*x + c)) + 6*a*b*d^3*x^2*e^(n*ln(d*x + c)) - 2*a*b*c^2*d*n*e^(n*
ln(d*x + c)) + 5*a^2*c*d^2*n*e^(n*ln(d*x + c)) + 6*a^2*d^3*x*e^(n
*ln(d*x + c)) + 2*b^2*c^3*e^(n*ln(d*x + c)) - 6*a*b*c^2*d*e^(n*ln
(d*x + c)) + 6*a^2*c*d^2*e^(n*ln(d*x + c)))/(d^3*n^3 + 6*d^3*n^2
+ 11*d^3*n + 6*d^3)
```

3.1854 $\int (a+bx)(c+dx)^n \, dx$

Optimal. Leaf size=47

$$\frac{b(c+dx)^{n+2}}{d^2(n+2)} - \frac{(bc-ad)(c+dx)^{n+1}}{d^2(n+1)}$$

```
[Out] -(((b*c - a*d)*(c + d*x)^(1 + n))/(d^2*(1 + n))) + (b*(c + d*x)^(
2 + n))/(d^2*(2 + n))
```

Rubi [A] time = 0.0493715, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$

$$\frac{b(c+dx)^{n+2}}{d^2(n+2)} - \frac{(bc-ad)(c+dx)^{n+1}}{d^2(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)*(c + d*x)^n,x]
```

```
[Out] -(((b*c - a*d)*(c + d*x)^(1 + n))/(d^2*(1 + n))) + (b*(c + d*x)^(
2 + n))/(d^2*(2 + n))
```

Rubi in Sympy [A] time = 9.48273, size = 37, normalized size = 0.79

$$\frac{b\left(c+dx\right)^{n+2}}{d^2\left(n+2\right)} + \frac{\left(c+dx\right)^{n+1}\left(ad-bc\right)}{d^2\left(n+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)*(d*x+c)**n,x)
```

```
[Out] b*(c + d*x)**(n + 2)/(d**2*(n + 2)) + (c + d*x)**(n + 1)*(a*d - b
*c)/(d**2*(n + 1))
```

Mathematica [A] time = 0.0352039, size = 41, normalized size = 0.87

$$\frac{(c+dx)^{n+1}(ad(n+2)-bc+bd(n+1)x)}{d^2(n+1)(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)*(c + d*x)^n,x]
```

```
[Out] ((c + d*x)^(1 + n)*(-(b*c) + a*d*(2 + n) + b*d*(1 + n)*x))/(d^2*(
1 + n)*(2 + n))
```

Maple [A] time = 0.005, size = 46, normalized size = 1.

$$\frac{(dx+c)^{1+n}\,(bdnx+adn+bdx+2\,ad-bc)}{d^2\,(n^2+3\,n+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)*(d*x+c)^n,x)
```

```
[Out] (d*x+c)^(1+n)*(b*d*n*x+a*d*n+b*d*x+2*a*d-b*c)/d^2/(n^2+3*n+2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.22024, size = 112, normalized size = 2.38

$$\frac{\left(acdn-bc^2+2\,acd+\left(bd^2n+bd^2\right)x^2+\left(2\,ad^2+\left(bcd+ad^2\right)n\right)x\right)(dx+c)^n}{d^2n^2+3\,d^2n+2\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (a*c*d*n - b*c^2 + 2*a*c*d + (b*d^2*n + b*d^2)*x^2 + (2*a*d^2 + (
b*c*d + a*d^2)*n)*x)*(d*x + c)^n/(d^2*n^2 + 3*d^2*n + 2*d^2)
```

Sympy [A] time = 1.17724, size = 377, normalized size = 8.02

$$\begin{cases} c^n\left(ax+\frac{bx^2}{2}\right) \\ -\frac{ad}{cd^2+d^3x}+\frac{bc\log\left(\frac{c}{d}+x\right)}{cd^2+d^3x}+\frac{bc}{cd^2+d^3x}+\frac{bdx\log\left(\frac{c}{d}+x\right)}{cd^2+d^3x} \\ \frac{a\log\left(\frac{c}{d}+x\right)}{d}-\frac{bc\log\left(\frac{c}{d}+x\right)}{d^2}+\frac{bx}{d} \\ \frac{acdn(c+dx)^n}{d^2n^2+3d^2n+2d^2}+\frac{2acd(c+dx)^n}{d^2n^2+3d^2n+2d^2}+\frac{ad^2nx(c+dx)^n}{d^2n^2+3d^2n+2d^2}+\frac{2ad^2x(c+dx)^n}{d^2n^2+3d^2n+2d^2}-\frac{bc^2(c+dx)^n}{d^2n^2+3d^2n+2d^2}+\frac{bcdnx(c+dx)^n}{d^2n^2+3d^2n+2d^2}+\frac{bd^2nx^2(c+dx)^n}{d^2n^2+3d^2n+2d^2}+\frac{bd^2x^2(c+dx)}{d^2n^2+3d^2n+2}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)*(d*x+c)**n,x)
```

```
[Out] Piecewise((c**n*(a*x + b*x**2/2), Eq(d, 0)), (-a*d/(c*d**2 + d**3
*x) + b*c*log(c/d + x)/(c*d**2 + d**3*x) + b*c/(c*d**2 + d**3*x)
+ b*d*x*log(c/d + x)/(c*d**2 + d**3*x), Eq(n, -2)), (a*log(c/d +
x)/d - b*c*log(c/d + x)/d**2 + b*x/d, Eq(n, -1)), (a*c*d*n*(c + d
*x)**n/(d**2*n**2 + 3*d**2*n + 2*d**2) + 2*a*c*d*(c + d*x)**n/(d*
*2*n**2 + 3*d**2*n + 2*d**2) + a*d**2*n*x*(c + d*x)**n/(d**2*n**2
 + 3*d**2*n + 2*d**2) + 2*a*d**2*x*(c + d*x)**n/(d**2*n**2 + 3*d*
*2*n + 2*d**2) - b*c**2*(c + d*x)**n/(d**2*n**2 + 3*d**2*n + 2*d*
*2) + b*c*d*n*x*(c + d*x)**n/(d**2*n**2 + 3*d**2*n + 2*d**2) + b*
d**2*n*x**2*(c + d*x)**n/(d**2*n**2 + 3*d**2*n + 2*d**2) + b*d**2
*x**2*(c + d*x)**n/(d**2*n**2 + 3*d**2*n + 2*d**2), True))
```

GIAC/XCAS [A] time = 0.230104, size = 200, normalized size = 4.26

$$\frac{bd^2nx^2e^{(n\ln(dx+c))}+bcdnxe^{(n\ln(dx+c))}+ad^2nxe^{(n\ln(dx+c))}+bd^2x^2e^{(n\ln(dx+c))}+acdne^{(n\ln(dx+c))}+2\,ad^2xe^{(n\ln(dx+c))}-bc^2e^{(n\ln(}}{d^2n^2+3\,d^2n+2\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] (b*d^2*n*x^2*e^(n*ln(d*x + c)) + b*c*d*n*x*e^(n*ln(d*x + c)) + a*
d^2*n*x*e^(n*ln(d*x + c)) + b*d^2*x^2*e^(n*ln(d*x + c)) + a*c*d*n
*e^(n*ln(d*x + c)) + 2*a*d^2*x*e^(n*ln(d*x + c)) - b*c^2*e^(n*ln(
d*x + c)) + 2*a*c*d*e^(n*ln(d*x + c)))/(d^2*n^2 + 3*d^2*n + 2*d^2
)
```

3.1855 $\int (c+dx)^n\,dx$

Optimal. Leaf size=18

$$\frac{(c+dx)^{n+1}}{d(n+1)}$$

```
[Out] (c + d*x)^(1 + n)/(d*(1 + n))
```

Rubi [A] time = 0.0108916, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143

$$\frac{(c+dx)^{n+1}}{d(n+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(c + d*x)^n,x]

[Out] (c + d*x)^(1 + n)/(d*(1 + n))
```

Rubi in Sympy [A] time = 1.66533, size = 12, normalized size = 0.67

$$\frac{(c+dx)^{n+1}}{d\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((d*x+c)**n,x)

[Out] (c + d*x)**(n + 1)/(d*(n + 1))
```

Mathematica [A] time = 0.010218, size = 17, normalized size = 0.94

$$\frac{(c+dx)^{n+1}}{dn+d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(c + d*x)^n,x]
```

```
[Out] (c + d*x)^(1 + n)/(d + d*n)
```

Maple [A] time = 0.002, size = 19, normalized size = 1.1

$$\frac{(dx+c)^{1+n}}{d(1+n)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^n,x)
```

```
[Out] (d*x+c)^(1+n)/d/(1+n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError
```

Fricas [A] time = 0.217538, size = 27, normalized size = 1.5

$$\frac{(dx+c)(dx+c)^n}{dn+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (d*x + c)*(d*x + c)^n/(d*n + d)
```

Sympy [A] time = 0.0396, size = 20, normalized size = 1.11

$$\frac{\begin{cases} \frac{(c+dx)^{n+1}}{n+1} & \text{for } n \neq -1 \\ \log(c+dx) & \text{otherwise} \end{cases}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**n,x)
```

```
[Out] Piecewise(((c + d*x)**(n + 1)/(n + 1), Ne(n, -1)), (log(c + d*x),
 True))/d
```

GIAC/XCAS [A] time = 0.275069, size = 24, normalized size = 1.33

$$\frac{(dx+c)^{n+1}}{d(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n,x, algorithm="giac")
```

```
[Out] (d*x + c)^(n + 1)/(d*(n + 1))
```

3.1856 $\int \frac{(c+dx)^n}{a+bx}\,dx$

Optimal. Leaf size=51

$$-\frac{(c+dx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)}$$

```
[Out] -(((c + d*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(c + d
*x))/(b*c - a*d)])/((b*c - a*d)*(1 + n)))
```

Rubi [A] time = 0.0352512, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{(c+dx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^n/(a + b*x),x]
```

```
[Out] -(((c + d*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(c + d
*x))/(b*c - a*d)])/((b*c - a*d)*(1 + n)))
```

Rubi in Sympy [A] time = 5.43047, size = 37, normalized size = 0.73

$$\frac{(c+dx)^{n+1}\,{}_2F_1\left(\begin{matrix}1, n+1\\ n+2\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{(n+1)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**n/(b*x+a),x)
```

```
[Out] (c + d*x)**(n + 1)*hyper((1, n + 1), (n + 2,), b*(-c - d*x)/(a*d
- b*c))/((n + 1)*(a*d - b*c))
```

Mathematica [A] time = 0.0334955, size = 51, normalized size = 1.

$$-\frac{(c+dx)^{n+1}\,{}_2F_1\left(1,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^n/(a + b*x),x]
```

```
[Out] -(((c + d*x)^(1 + n)*Hypergeometric2F1[1, 1 + n, 2 + n, (b*(c + d
*x))/(b*c - a*d)])/((b*c - a*d)*(1 + n)))
```

Maple [F] time = 0.061, size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^n/(b*x+a),x)
```

```
[Out] int((d*x+c)^n/(b*x+a),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a),x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^n/(b*x + a), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^n}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a),x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^n/(b*x + a), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c + dx)^n}{a + bx} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**n/(b*x+a),x)
```

```
[Out] Integral((c + d*x)**n/(a + b*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx + c)^n}{bx + a} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a),x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^n/(b*x + a), x)
```

3.1857 $\int \frac{(c+dx)^n}{(a+bx)^2}\,dx$

Optimal. Leaf size=51

$$\frac{d(c+dx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)^2}$$

```
[Out] (d*(c + d*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, (b*(c + d
*x))/(b*c - a*d)])/((b*c - a*d)^2*(1 + n))
```

Rubi [A] time = 0.0383093, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$\frac{d(c+dx)^{n+1}\,{}_2F_1\left(2,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^n/(a + b*x)^2,x]
```

```
[Out] (d*(c + d*x)^(1 + n)*Hypergeometric2F1[2, 1 + n, 2 + n, (b*(c + d
*x))/(b*c - a*d)])/((b*c - a*d)^2*(1 + n))
```

Rubi in Sympy [A] time = 5.33273, size = 41, normalized size = 0.8

$$\frac{d\left(c+dx\right)^{n+1}\,{}_2F_1\left(\begin{matrix}2,n+1\\n+2\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{\left(n+1\right)\left(ad-bc\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**n/(b*x+a)**2,x)
```

```
[Out] d*(c + d*x)**(n + 1)*hyper((2, n + 1), (n + 2,), b*(-c - d*x)/(a*
d - b*c))/((n + 1)*(a*d - b*c)**2)
```

Mathematica [A] time = 0.0458257, size = 0, normalized size = 0.

$$\int \frac{(c+dx)^n}{(a+bx)^2}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(c + d*x)^n/(a + b*x)^2,x]
```

```
[Out] Integrate[(c + d*x)^n/(a + b*x)^2, x]
```

Maple [F] time = 0.066, size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^n/(b*x+a)^2,x)
```

```
[Out] int((d*x+c)^n/(b*x+a)^2,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^2,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^n/(b*x + a)^2, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^n}{b^2x^2+2\,abx+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^2,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^n/(b^2*x^2 + 2*a*b*x + a^2), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^n}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**n/(b*x+a)**2,x)
```

```
[Out] Integral((c + d*x)**n/(a + b*x)**2, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^2,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^n/(b*x + a)^2, x)
```

3.1858 $\int \frac{(c+dx)^n}{(a+bx)^3}\,dx$

Optimal. Leaf size=54

$$-\frac{d^2(c+dx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)^3}$$

```
[Out] -((d^2*(c + d*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, (b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)^3*(1 + n)))
```

Rubi [A] time = 0.0465895, antiderivative size = 54, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{d^2(c+dx)^{n+1}\,{}_2F_1\left(3,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^n/(a + b*x)^3,x]
```

```
[Out] -((d^2*(c + d*x)^(1 + n)*Hypergeometric2F1[3, 1 + n, 2 + n, (b*(c
 + d*x))/(b*c - a*d)])/((b*c - a*d)^3*(1 + n)))
```

Rubi in Sympy [A] time = 5.93743, size = 42, normalized size = 0.78

$$\frac{d^2\,(c+dx)^{n+1}\,{}_2F_1\left(\begin{matrix}3,n+1\\n+2\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{(n+1)\,(ad-bc)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**n/(b*x+a)**3,x)
```

```
[Out] d**2*(c + d*x)**(n + 1)*hyper((3, n + 1), (n + 2,), b*(-c - d*x)/
(a*d - b*c))/((n + 1)*(a*d - b*c)**3)
```

Mathematica [A] time = 0.0559148, size = 0, normalized size = 0.

$$\int \frac{(c+dx)^n}{(a+bx)^3}\,dx$$

Verification is Not applicable to the result.

```
[In]  Integrate[(c + d*x)^n/(a + b*x)^3,x]
```

```
[Out] Integrate[(c + d*x)^n/(a + b*x)^3, x]
```

Maple [F] time = 0.105, size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^n/(b*x+a)^3,x)
```

```
[Out] int((d*x+c)^n/(b*x+a)^3,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^3,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^n/(b*x + a)^3, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(dx+c)^n}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^3,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^n/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x
)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(c+dx)^n}{(a+bx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**n/(b*x+a)**3,x)

[Out] Integral((c + d*x)**n/(a + b*x)**3, x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^3,x, algorithm="giac")

[Out] integrate((d*x + c)^n/(b*x + a)^3, x)
```

3.1859 $\int (a+bx)^{-4+n}(c+dx)^{-n}\,dx$

Optimal. Leaf size=143

$$-\frac{2d^2(a+bx)^{n-1}(c+dx)^{1-n}}{(1-n)(2-n)(3-n)(bc-ad)^3}-\frac{(a+bx)^{n-3}(c+dx)^{1-n}}{(3-n)(bc-ad)}+\frac{2d(a+bx)^{n-2}(c+dx)^{1-n}}{(2-n)(3-n)(bc-ad)^2}$$

```
[Out] -(((a + b*x)^(-3 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(3 - n))) +
 (2*d*(a + b*x)^(-2 + n)*(c + d*x)^(1 - n))/((b*c - a*d)^2*(2 - n
)*(3 - n)) - (2*d^2*(a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c -
 a*d)^3*(1 - n)*(2 - n)*(3 - n))
```

Rubi [A] time = 0.176205, antiderivative size = 143, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{2d^2(a+bx)^{n-1}(c+dx)^{1-n}}{(1-n)(2-n)(3-n)(bc-ad)^3}-\frac{(a+bx)^{n-3}(c+dx)^{1-n}}{(3-n)(bc-ad)}+\frac{2d(a+bx)^{n-2}(c+dx)^{1-n}}{(2-n)(3-n)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-4 + n)/(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^(-3 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(3 - n))) +
 (2*d*(a + b*x)^(-2 + n)*(c + d*x)^(1 - n))/((b*c - a*d)^2*(2 - n
)*(3 - n)) - (2*d^2*(a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c -
 a*d)^3*(1 - n)*(2 - n)*(3 - n))
```

Rubi in Sympy [A] time = 28.4438, size = 102, normalized size = 0.71

$$\frac{2d^2\left(a+bx\right)^{n-1}\left(c+dx\right)^{-n+1}}{\left(-n+1\right)\left(-n+2\right)\left(-n+3\right)\left(ad-bc\right)^3}+\frac{2d\left(a+bx\right)^{n-2}\left(c+dx\right)^{-n+1}}{\left(-n+2\right)\left(-n+3\right)\left(ad-bc\right)^2}+\frac{\left(a+bx\right)^{n-3}\left(c+dx\right)^{-n+1}}{\left(-n+3\right)\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-4+n)/((d*x+c)**n),x)
```

```
[Out] 2*d**2*(a + b*x)**(n - 1)*(c + d*x)**(-n + 1)/((-n + 1)*(-n + 2)*
(-n + 3)*(a*d - b*c)**3) + 2*d*(a + b*x)**(n - 2)*(c + d*x)**(-n
+ 1)/((-n + 2)*(-n + 3)*(a*d - b*c)**2) + (a + b*x)**(n - 3)*(c +
 d*x)**(-n + 1)/((-n + 3)*(a*d - b*c))
```

Mathematica [A] time = 0.212338, size = 112, normalized size = 0.78

$$\frac{(a+bx)^{n-3}(c+dx)^{1-n}\left(a^2d^2\left(n^2-5n+6\right)-2abd(n-3)(c(n-1)+dx)+b^2\left(c^2\left(n^2-3n+2\right)+2cd(n-1)x+2d^2x^2\right)\right)}{(n-3)(n-2)(n-1)(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-4 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(-3 + n)*(c + d*x)^(1 - n)*(a^2*d^2*(6 - 5*n + n^2) -
2*a*b*d*(-3 + n)*(c*(-1 + n) + d*x) + b^2*(c^2*(2 - 3*n + n^2) +
2*c*d*(-1 + n)*x + 2*d^2*x^2)))/((b*c - a*d)^3*(-3 + n)*(-2 + n)*
(-1 + n))
```

Maple [B] time = 0.01, size = 322, normalized size = 2.3

$$-\frac{(bx+a)^{-3+n}(dx+c)\left(a^2d^2n^2-2\,abcdn^2-2\,abd^2nx+b^2c^2n^2+2\,b^2cdnx+2\,b^2d^2x^2-5\,a^2d^2n+8\,abcdn\right.}{\left(a^3d^3n^3-3\,a^2bcd^2n^3+3\,ab^2c^2dn^3-b^3c^3n^3-6\,a^3d^3n^2+18\,a^2bcd^2n^2-18\,ab^2c^2dn^2+6\,b^3c^3n^2+11\,a^3d^3n-33\,a^2bcd^2n+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-4+n)/((d*x+c)^n),x)
```

```
[Out] -(b*x+a)^(-3+n)*(d*x+c)*(a^2*d^2*n^2-2*a*b*c*d*n^2-2*a*b*d^2*n*x+
b^2*c^2*n^2+2*b^2*c*d*n*x+2*b^2*d^2*x^2-5*a^2*d^2*n+8*a*b*c*d*n+6
*a*b*d^2*x-3*b^2*c^2*n-2*b^2*c*d*x+6*a^2*d^2-6*a*b*c*d+2*b^2*c^2)
/(a^3*d^3*n^3-3*a^2*b*c*d^2*n^3+3*a*b^2*c^2*d*n^3-b^3*c^3*n^3-6*a
^3*d^3*n^2+18*a^2*b*c*d^2*n^2-18*a*b^2*c^2*d*n^2+6*b^3*c^3*n^2+11
*a^3*d^3*n-33*a^2*b*c*d^2*n+33*a*b^2*c^2*d*n-11*b^3*c^3*n-6*a^3*d
^3+18*a^2*b*c*d^2-18*a*b^2*c^2*d+6*b^3*c^3)/((d*x+c)^n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n-4}(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 4)/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n - 4)*(d*x + c)^(-n), x)
```

Fricas [A] time = 0.232137, size = 691, normalized size = 4.83

$$-\frac{\left(2\,b^3d^3x^4+2\,ab^2c^3-6\,a^2bc^2d+6\,a^3cd^2+2\left(4\,ab^2d^3+\left(b^3cd^2-ab^2d^3\right)n\right)x^3+\left(ab^2c^3-2\,a^2bc^2d+a^3cd^2\right)n^2+\left(12\,a^2bd^3\right.}{(6\,b^3c^3-18\,ab^2c^2d+18\,a^2bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 4)/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] -(2*b^3*d^3*x^4 + 2*a*b^2*c^3 - 6*a^2*b*c^2*d + 6*a^3*c*d^2 + 2*(
4*a*b^2*d^3 + (b^3*c*d^2 - a*b^2*d^3)*n)*x^3 + (a*b^2*c^3 - 2*a^2
*b*c^2*d + a^3*c*d^2)*n^2 + (12*a^2*b*d^3 + (b^3*c^2*d - 2*a*b^2*
c*d^2 + a^2*b*d^3)*n^2 - (b^3*c^2*d - 8*a*b^2*c*d^2 + 7*a^2*b*d^3
)*n)*x^2 - (3*a*b^2*c^3 - 8*a^2*b*c^2*d + 5*a^3*c*d^2)*n + (2*b^3
*c^3 - 6*a*b^2*c^2*d + 6*a^2*b*c*d^2 + 6*a^3*d^3 + (b^3*c^3 - a*b
^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*n^2 - (3*b^3*c^3 - 7*a*b^2*c^2*
d - a^2*b*c*d^2 + 5*a^3*d^3)*n)*x)*(b*x + a)^(n - 4)/((6*b^3*c^3
- 18*a*b^2*c^2*d + 18*a^2*b*c*d^2 - 6*a^3*d^3 - (b^3*c^3 - 3*a*b^
2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n^3 + 6*(b^3*c^3 - 3*a*b^2*c^2
*d + 3*a^2*b*c*d^2 - a^3*d^3)*n^2 - 11*(b^3*c^3 - 3*a*b^2*c^2*d +
 3*a^2*b*c*d^2 - a^3*d^3)*n)*(d*x + c)^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-4+n)/((d*x+c)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n-4}}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 4)/(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(n - 4)/(d*x + c)^n, x)
```

3.1860 $\int (a+bx)^{-3+n}(c+dx)^{-n}\,dx$

Optimal. Leaf size=86

$$\frac{d(a+bx)^{n-1}(c+dx)^{1-n}}{(1-n)(2-n)(bc-ad)^2}-\frac{(a+bx)^{n-2}(c+dx)^{1-n}}{(2-n)(bc-ad)}$$

```
[Out] -(((a + b*x)^(-2 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(2 - n))) +
 (d*(a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c - a*d)^2*(1 - n)*
(2 - n))
```

Rubi [A] time = 0.0600141, antiderivative size = 86, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{d(a+bx)^{n-1}(c+dx)^{1-n}}{(1-n)(2-n)(bc-ad)^2}-\frac{(a+bx)^{n-2}(c+dx)^{1-n}}{(2-n)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-3 + n)/(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^(-2 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(2 - n))) +
 (d*(a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c - a*d)^2*(1 - n)*
(2 - n))
```

Rubi in Sympy [A] time = 12.6771, size = 60, normalized size = 0.7

$$\frac{d\left(a+bx\right)^{n-1}\left(c+dx\right)^{-n+1}}{\left(-n+1\right)\left(-n+2\right)\left(ad-bc\right)^{2}}+\frac{\left(a+bx\right)^{n-2}\left(c+dx\right)^{-n+1}}{\left(-n+2\right)\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-3+n)/((d*x+c)**n),x)
```

```
[Out] d*(a + b*x)**(n - 1)*(c + d*x)**(-n + 1)/((-n + 1)*(-n + 2)*(a*d
- b*c)**2) + (a + b*x)**(n - 2)*(c + d*x)**(-n + 1)/((-n + 2)*(a*
d - b*c))
```

Mathematica [A] time = 0.114339, size = 59, normalized size = 0.69

$$\frac{(a+bx)^{n-2}(c+dx)^{1-n}(-ad(n-2)+bc(n-1)+bdx)}{(n-2)(n-1)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-3 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(-2 + n)*(c + d*x)^(1 - n)*(-(a*d*(-2 + n)) + b*c*(-1
+ n) + b*d*x))/((b*c - a*d)^2*(-2 + n)*(-1 + n))
```

Maple [A]   time = 0.007, size = 127, normalized size = 1.5

$$-\frac{(bx+a)^{-2+n}(dx+c)(adn-bcn-bdx-2ad+bc)}{(a^2d^2n^2-2abcdn^2+b^2c^2n^2-3a^2d^2n+6abcdn-3b^2c^2n+2a^2d^2-4abcd+2b^2c^2)(dx+c)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-3+n)/((d*x+c)^n),x)
```

```
[Out] -(b*x+a)^(-2+n)*(d*x+c)*(a*d*n-b*c*n-b*d*x-2*a*d+b*c)/(a^2*d^2*n^
2-2*a*b*c*d*n^2+b^2*c^2*n^2-3*a^2*d^2*n+6*a*b*c*d*n-3*b^2*c^2*n+2
*a^2*d^2-4*a*b*c*d+2*b^2*c^2)/((d*x+c)^n)
```

Maxima [F]   time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n-3}(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 3)/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n - 3)*(d*x + c)^(-n), x)
```

Fricas [A]   time = 0.2272, size = 278, normalized size = 3.23

$$\frac{\left(b^2d^2x^3-abc^2+2a^2cd+\left(3abd^2+\left(b^2cd-abd^2\right)n\right)x^2+\left(abc^2-a^2cd\right)n-\left(b^2c^2-2abcd-2a^2d^2-\left(b^2c^2-a^2d^2\right)n\right)x\right)(}{(2b^2c^2-4abcd+2a^2d^2+(b^2c^2-2abcd+a^2d^2)n^2-3(b^2c^2-2abcd+a^2d^2)n)(dx+c)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 3)/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (b^2*d^2*x^3 - a*b*c^2 + 2*a^2*c*d + (3*a*b*d^2 + (b^2*c*d - a*b*
d^2)*n)*x^2 + (a*b*c^2 - a^2*c*d)*n - (b^2*c^2 - 2*a*b*c*d - 2*a^
```

```
2*d^2 - (b^2*c^2 - a^2*d^2)*n)*x)*(b*x + a)^(n - 3)/((2*b^2*c^2 -
 4*a*b*c*d + 2*a^2*d^2 + (b^2*c^2 - 2*a*b*c*d + a^2*d^2)*n^2 - 3*
(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*n)*(d*x + c)^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-3+n)/((d*x+c)**n),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n-3}}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 3)/(d*x + c)^n,x, algorithm="giac")

[Out] integrate((b*x + a)^(n - 3)/(d*x + c)^n, x)
```

3.1861 $\int (a+bx)^{-2+n}(c+dx)^{-n}\,dx$

Optimal. Leaf size=39

$$-\frac{(a+bx)^{n-1}(c+dx)^{1-n}}{(1-n)(bc-ad)}$$

```
[Out] -(((a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(1 - n)))
```

Rubi [A] time = 0.023225, antiderivative size = 39, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{(a+bx)^{n-1}(c+dx)^{1-n}}{(1-n)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-2 + n)/(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(1 - n)))
```

Rubi in Sympy [A] time = 4.31679, size = 26, normalized size = 0.67

$$\frac{(a+bx)^{n-1}(c+dx)^{-n+1}}{(-n+1)(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-2+n)/((d*x+c)**n),x)
```

```
[Out] (a + b*x)**(n - 1)*(c + d*x)**(-n + 1)/((-n + 1)*(a*d - b*c))
```

Mathematica [A] time = 0.0618041, size = 36, normalized size = 0.92

$$\frac{(a+bx)^{n-1}(c+dx)^{1-n}}{(n-1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-2 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(-1 + n)*(c + d*x)^(1 - n))/((b*c - a*d)*(-1 + n))
```

Maple [A] time = 0.005, size = 45, normalized size = 1.2

$$-\frac{(bx+a)^{-1+n}(dx+c)}{(adn-bcn-ad+bc)(dx+c)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-2+n)/((d*x+c)^n),x)
```

```
[Out] -(b*x+a)^(-1+n)*(d*x+c)/(a*d*n-b*c*n-a*d+b*c)/((d*x+c)^n)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n-2}(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 2)/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n - 2)*(d*x + c)^(-n), x)
```

Fricas [A] time = 0.226776, size = 81, normalized size = 2.08

$$-\frac{\left(bdx^2+ac+(bc+ad)x\right)(bx+a)^{n-2}}{(bc-ad-(bc-ad)n)(dx+c)^n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 2)/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] -(b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(n - 2)/((b*c - a*d -
(b*c - a*d)*n)*(d*x + c)^n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-2+n)/((d*x+c)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n-2}}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 2)/(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(n - 2)/(d*x + c)^n, x)
```

3.1862 $\int (a+bx)^{-1+n}(c+dx)^{-n}\,dx$

Optimal. Leaf size=66

$$\frac{(a+bx)^n(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n\,{}_2F_1\left(n,n;n+1;-\frac{d(a+bx)}{bc-ad}\right)}{bn}$$

```
[Out] ((a + b*x)^n*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F1[n, n
, 1 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*n*(c + d*x)^n)
```

Rubi [A] time = 0.0687426, antiderivative size = 66, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{(a+bx)^n(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n\,{}_2F_1\left(n,n;n+1;-\frac{d(a+bx)}{bc-ad}\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-1 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^n*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F1[n, n
, 1 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*n*(c + d*x)^n)
```

Rubi in Sympy [A] time = 14.8052, size = 49, normalized size = 0.74

$$\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^n(a+bx)^n(c+dx)^{-n}\,{}_2F_1\left(\begin{matrix} n,n \\ n+1 \end{matrix}\middle|\frac{d(a+bx)}{ad-bc}\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-1+n)/((d*x+c)**n),x)
```

```
[Out] (b*(-c - d*x)/(a*d - b*c))**n*(a + b*x)**n*(c + d*x)**(-n)*hyper(
(n, n), (n + 1,), d*(a + b*x)/(a*d - b*c))/(b*n)
```

Mathematica [A] time = 0.0893169, size = 88, normalized size = 1.33

$$\frac{(a+bx)^n(c+dx)^{1-n}\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}\,{}_2F_1\left(1-n,1-n;2-n;\frac{b(c+dx)}{bc-ad}\right)}{(n-1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-1 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^n*(c + d*x)^(1 - n)*Hypergeometric2F1[1 - n, 1 - n, 2
- n, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d)*(-1 + n)*((d*(a + b
*x))/(-(b*c) + a*d))^n)
```

Maple [F] time = 0.102, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{-1+n}}{(dx+c)^{n}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-1+n)/((d*x+c)^n),x)
```

```
[Out] int((b*x+a)^(-1+n)/((d*x+c)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n-1}(dx+c)^{-n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 1)/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n - 1)*(d*x + c)^(-n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{n-1}}{(dx+c)^{n}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 1)/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(n - 1)/(d*x + c)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-1+n)/((d*x+c)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n-1}}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 1)/(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(n - 1)/(d*x + c)^n, x)
```

3.1863 $\int (a+bx)^n (c+dx)^{-n}\,dx$

Optimal. Leaf size=72

$$\frac{(a+bx)^{n+1}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+1)}$$

```
[Out] ((a + b*x)^(1 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 1 + n, 2 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(1 + n)*(c +
 d*x)^n)
```

Rubi [A] time = 0.0627839, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{(a+bx)^{n+1}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(1 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 1 + n, 2 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(1 + n)*(c +
 d*x)^n)
```

Rubi in Sympy [A] time = 14.9378, size = 54, normalized size = 0.75

$$\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^n (a+bx)^{n+1} (c+dx)^{-n} {}_2F_1\left(\begin{matrix} n, n+1 \\ n+2 \end{matrix}\middle| \frac{d(a+bx)}{ad-bc}\right)}{b\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/((d*x+c)**n),x)
```

```
[Out] (b*(-c - d*x)/(a*d - b*c))**n*(a + b*x)**(n + 1)*(c + d*x)**(-n)*
hyper((n, n + 1), (n + 2,), d*(a + b*x)/(a*d - b*c))/(b*(n + 1))
```

Mathematica [A] time = 0.0556262, size = 80, normalized size = 1.11

$$-\frac{(a+bx)^n(c+dx)^{1-n}\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}{}_2F_1\left(1-n,-n;2-n;\frac{b(c+dx)}{bc-ad}\right)}{d(n-1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^n*(c + d*x)^(1 - n)*Hypergeometric2F1[1 - n, -n, 2 -
 n, (b*(c + d*x))/(b*c - a*d)])/(d*(-1 + n)*((d*(a + b*x))/(-(b*c
) + a*d))^n))
```

Maple [F] time = 0.118, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/((d*x+c)^n),x)
```

```
[Out] int((b*x+a)^n/((d*x+c)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{(dx+c)^n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(d*x + c)^n,x, algorithm="fricas")

[Out] integral((b*x + a)^n/(d*x + c)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/((d*x+c)**n),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(d*x + c)^n,x, algorithm="giac")

[Out] integrate((b*x + a)^n/(d*x + c)^n, x)
```

3.1864 $\int (a+bx)^{1+n}(c+dx)^{-n}\,dx$

Optimal. Leaf size=72

$$\frac{(a+bx)^{n+2}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n {}_2F_1\left(n,n+2;n+3;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+2)}$$

```
[Out] ((a + b*x)^(2 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 2 + n, 3 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(2 + n)*(c +
 d*x)^n)
```

Rubi [A] time = 0.0646945, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{(a+bx)^{n+2}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n {}_2F_1\left(n,n+2;n+3;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(2 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 2 + n, 3 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(2 + n)*(c +
 d*x)^n)
```

Rubi in Sympy [A] time = 16.4481, size = 66, normalized size = 0.92

$$\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}(a+bx)^n(c+dx)^{-n+1}(ad-bc)\,{}_2F_1\left(\left.\begin{matrix}-n-1,-n+1\\-n+2\end{matrix}\right|\frac{b(-c-dx)}{ad-bc}\right)}{d^2(-n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1+n)/((d*x+c)**n),x)
```

```
[Out] (d*(a + b*x)/(a*d - b*c))**(-n)*(a + b*x)**n*(c + d*x)**(-n + 1)*
(a*d - b*c)*hyper((-n - 1, -n + 1), (-n + 2,), b*(-c - d*x)/(a*d
- b*c))/(d**2*(-n + 1))
```

Mathematica [C] time = 0.620688, size = 200, normalized size = 2.78

$$a(a+bx)^n(c+dx)^{-n}\left(\frac{3bcx^2F_1\left(2;-n,n;3;-\frac{bx}{a},-\frac{dx}{c}\right)}{6acF_1\left(2;-n,n;3;-\frac{bx}{a},-\frac{dx}{c}\right)+2nx\left(bcF_1\left(3;1-n,n;4;-\frac{bx}{a},-\frac{dx}{c}\right)-adF_1\left(3;-n,n+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)}-\frac{(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}{}_2F_1\left(1-n,-n;2-n;\frac{b(c+dx)}{bc-ad}\right)}{d(n-1)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^(1 + n)/(c + d*x)^n,x]
```

```
[Out] (a*(a + b*x)^n*((3*b*c*x^2*AppellF1[2, -n, n, 3, -((b*x)/a), -((d
*x)/c)])/(6*a*c*AppellF1[2, -n, n, 3, -((b*x)/a), -((d*x)/c)] + 2
*n*x*(b*c*AppellF1[3, 1 - n, n, 4, -((b*x)/a), -((d*x)/c)] - a*d*
AppellF1[3, -n, 1 + n, 4, -((b*x)/a), -((d*x)/c)])) - ((c + d*x)*
Hypergeometric2F1[1 - n, -n, 2 - n, (b*(c + d*x))/(b*c - a*d)])/(
d*(-1 + n)*((d*(a + b*x))/(-(b*c) + a*d))^n)))/(c + d*x)^n
```

Maple [F] time = 0.114, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{1+n}}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1+n)/((d*x+c)^n),x)
```

```
[Out] int((b*x+a)^(1+n)/((d*x+c)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n+1}(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 1)/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n + 1)*(d*x + c)^(-n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{n+1}}{(dx+c)^n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 1)/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(n + 1)/(d*x + c)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1+n)/((d*x+c)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n+1}}{(dx+c)^n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 1)/(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(n + 1)/(d*x + c)^n, x)
```

3.1865 $\int (a+bx)^{2+n}(c+dx)^{-n}\,dx$

Optimal. Leaf size=72

$$\frac{(a+bx)^{n+3}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{n}\,{}_2F_1\left(n,n+3;n+4;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+3)}$$

```
[Out] ((a + b*x)^(3 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 3 + n, 4 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(3 + n)*(c +
 d*x)^n)
```

Rubi [A] time = 0.0646881, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{(a+bx)^{n+3}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{n}\,{}_2F_1\left(n,n+3;n+4;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+3)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(2 + n)/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(3 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 3 + n, 4 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(3 + n)*(c +
 d*x)^n)
```

Rubi in Sympy [A] time = 18.0169, size = 68, normalized size = 0.94

$$\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}(a+bx)^{n}(c+dx)^{-n+1}(ad-bc)^{2}\,{}_2F_1\left(\begin{matrix}-n-2,-n+1\\-n+2\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d^{3}(-n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(2+n)/((d*x+c)**n),x)
```

```
[Out] (d*(a + b*x)/(a*d - b*c))**(-n)*(a + b*x)**n*(c + d*x)**(-n + 1)*
(a*d - b*c)**2*hyper((-n - 2, -n + 1), (-n + 2,), b*(-c - d*x)/(a
*d - b*c))/(d**3*(-n + 1))
```

Mathematica [C] time = 0.997663, size = 317, normalized size = 4.4

$$a(a+bx)^n(c+dx)^{-n}\left(\frac{4b^2cx^3F_1\left(3;-n,n;4;-\frac{bx}{a},-\frac{dx}{c}\right)}{12acF_1\left(3;-n,n;4;-\frac{bx}{a},-\frac{dx}{c}\right)+3bcnxF_1\left(4;1-n,n;5;-\frac{bx}{a},-\frac{dx}{c}\right)-3adnxF_1\left(4;-n,n+1;5;-\frac{bx}{a},-\frac{dx}{c}\right)}+\frac{3abcx^2F_1\left(2;-n,n;3;-\frac{bx}{a},-\frac{dx}{c}\right)}{3acF_1\left(2;-n,n;3;-\frac{bx}{a},-\frac{dx}{c}\right)+nx\left(bcF_1\left(3;1-n,n;4;-\frac{bx}{a},-\frac{dx}{c}\right)-adF_1\left(3;-n,n+1;4;-\frac{bx}{a},-\frac{dx}{c}\right)\right)}-\frac{a(c+dx)\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}\,{}_2F_1\left(1-n,-n;2-n;\frac{b(c+dx)}{bc-ad}\right)}{d(n-1)}\right)$$

Warning: Unable to verify antiderivative.

```
[In]  Integrate[(a + b*x)^(2 + n)/(c + d*x)^n,x]
```

```
[Out] (a*(a + b*x)^n*((3*a*b*c*x^2*AppellF1[2, -n, n, 3, -((b*x)/a), -(
(d*x)/c)])/(3*a*c*AppellF1[2, -n, n, 3, -((b*x)/a), -((d*x)/c)] +
 n*x*(b*c*AppellF1[3, 1 - n, n, 4, -((b*x)/a), -((d*x)/c)] - a*d*
AppellF1[3, -n, 1 + n, 4, -((b*x)/a), -((d*x)/c)])) + (4*b^2*c*x^
3*AppellF1[3, -n, n, 4, -((b*x)/a), -((d*x)/c)])/(12*a*c*AppellF1
[3, -n, n, 4, -((b*x)/a), -((d*x)/c)] + 3*b*c*n*x*AppellF1[4, 1 -
 n, n, 5, -((b*x)/a), -((d*x)/c)] - 3*a*d*n*x*AppellF1[4, -n, 1 +
 n, 5, -((b*x)/a), -((d*x)/c)]) - (a*(c + d*x)*Hypergeometric2F1[
1 - n, -n, 2 - n, (b*(c + d*x))/(b*c - a*d)])/(d*(-1 + n)*((d*(a
+ b*x))/(-(b*c) + a*d))^n)))/(c + d*x)^n
```

Maple [F] time = 0.114, size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{2+n}}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(2+n)/((d*x+c)^n),x)
```

```
[Out] int((b*x+a)^(2+n)/((d*x+c)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n+2}(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 2)/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n + 2)*(d*x + c)^(-n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^{n+2}}{(dx+c)^{n}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 2)/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(n + 2)/(d*x + c)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(2+n)/((d*x+c)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^{n+2}}{(dx+c)^{n}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 2)/(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(n + 2)/(d*x + c)^n, x)
```

3.1866 $\int (a+bx)^{-n}(c+dx)^n\,dx$

Optimal. Leaf size=72

$$\frac{(a+bx)^{-n}(c+dx)^{n+1}\left(-\frac{d(a+bx)}{bc-ad}\right)^n {}_2F_1\left(n,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}$$

```
[Out] ((-((d*(a + b*x))/(b*c - a*d)))^n*(c + d*x)^(1 + n)*Hypergeometri
c2F1[n, 1 + n, 2 + n, (b*(c + d*x))/(b*c - a*d)])/(d*(1 + n)*(a +
 b*x)^n)
```

Rubi [A] time = 0.0746364, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{(a+bx)^{-n}(c+dx)^{n+1}\left(-\frac{d(a+bx)}{bc-ad}\right)^n {}_2F_1\left(n,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^n/(a + b*x)^n,x]
```

```
[Out] ((-((d*(a + b*x))/(b*c - a*d)))^n*(c + d*x)^(1 + n)*Hypergeometri
c2F1[n, 1 + n, 2 + n, (b*(c + d*x))/(b*c - a*d)])/(d*(1 + n)*(a +
 b*x)^n)
```

Rubi in Sympy [A] time = 15.0156, size = 54, normalized size = 0.75

$$\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^n (a+bx)^{-n}(c+dx)^{n+1}\,{}_2F_1\left(\begin{matrix} n,n+1 \\ n+2 \end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*x+c)**n/((b*x+a)**n),x)
```

```
[Out] (d*(a + b*x)/(a*d - b*c))**n*(a + b*x)**(-n)*(c + d*x)**(n + 1)*h
yper((n, n + 1), (n + 2,), b*(-c - d*x)/(a*d - b*c))/(d*(n + 1))
```

Mathematica [A] time = 0.0706926, size = 71, normalized size = 0.99

$$\frac{(a+bx)^{-n}(c+dx)^{n+1}\left(\frac{d(a+bx)}{ad-bc}\right)^n {}_2F_1\left(n,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^n/(a + b*x)^n,x]
```

```
[Out] (((d*(a + b*x))/(-(b*c) + a*d))^n*(c + d*x)^(1 + n)*Hypergeometri
c2F1[n, 1 + n, 2 + n, (b*(c + d*x))/(b*c - a*d)])/(d*(1 + n)*(a +
 b*x)^n)
```

Maple [F] time = 0.103, size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*x+c)^n/((b*x+a)^n),x)
```

```
[Out] int((d*x+c)^n/((b*x+a)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n)*(d*x + c)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left(\frac{(dx+c)^n}{(bx+a)^n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^n,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^n/(b*x + a)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x+c)**n/((b*x+a)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(dx+c)^n}{(bx+a)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n/(b*x + a)^n,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^n/(b*x + a)^n, x)
```

3.1867 $\int (a+bx)^{-1-n}(c+dx)^n\,dx$

Optimal. Leaf size=75

$$-\frac{(a+bx)^{-n}(c+dx)^n\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(-n,-n;1-n;-\frac{d(a+bx)}{bc-ad}\right)}{bn}$$

```
[Out] -(((c + d*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -((d*(a + b*x))/(
b*c - a*d))])/(b*n*(a + b*x)^n*((b*(c + d*x))/(b*c - a*d))^n))
```

Rubi [A] time = 0.0671104, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{(a+bx)^{-n}(c+dx)^n\left(\frac{b(c+dx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(-n,-n;1-n;-\frac{d(a+bx)}{bc-ad}\right)}{bn}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-1 - n)*(c + d*x)^n,x]
```

```
[Out] -(((c + d*x)^n*Hypergeometric2F1[-n, -n, 1 - n, -((d*(a + b*x))/(
b*c - a*d))])/(b*n*(a + b*x)^n*((b*(c + d*x))/(b*c - a*d))^n))
```

Rubi in Sympy [A] time = 14.8189, size = 54, normalized size = 0.72

$$-\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{-n}(a+bx)^{-n}(c+dx)^n\,{}_2F_1\left(\begin{matrix}-n,-n\\-n+1\end{matrix}\middle|\frac{d(a+bx)}{ad-bc}\right)}{bn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-1-n)*(d*x+c)**n,x)
```

```
[Out] -(b*(-c - d*x)/(a*d - b*c))**(-n)*(a + b*x)**(-n)*(c + d*x)**n*hy
per((-n, -n), (-n + 1,), d*(a + b*x)/(a*d - b*c))/(b*n)
```

Mathematica [A] time = 0.0729507, size = 81, normalized size = 1.08

$$-\frac{(a+bx)^{-n}(c+dx)^{n+1}\left(\frac{d(a+bx)}{ad-bc}\right)^n\,{}_2F_1\left(n+1,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{(n+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-1 - n)*(c + d*x)^n,x]
```

```
[Out] -((((d*(a + b*x))/(-(b*c) + a*d))^n*(c + d*x)^(1 + n)*Hypergeomet
ric2F1[1 + n, 1 + n, 2 + n, (b*(c + d*x))/(b*c - a*d)])/((b*c - a
*d)*(1 + n)*(a + b*x)^n))
```

Maple [F] time = 0.104, size = 0, normalized size = 0.

$$\int (bx + a)^{-1-n} (dx + c)^{n} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-1-n)*(d*x+c)^n,x)
```

```
[Out] int((b*x+a)^(-1-n)*(d*x+c)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{-n-1}(dx + c)^{n} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 1)*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n - 1)*(d*x + c)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx + a)^{-n-1}(dx + c)^{n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 1)*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^(-n - 1)*(d*x + c)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-1-n)*(d*x+c)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-1}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 1)*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(-n - 1)*(d*x + c)^n, x)
```

3.1868 $\int (a+bx)^{-2-n}(c+dx)^n\,dx$

Optimal. Leaf size=37

$$-\frac{(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(bc-ad)}$$

```
[Out] -(((a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(1 + n)))
```

Rubi [A] time = 0.0237575, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$

$$-\frac{(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-2 - n)*(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(1 + n)))
```

Rubi in Sympy [A] time = 4.25976, size = 27, normalized size = 0.73

$$\frac{(a+bx)^{-n-1}\,(c+dx)^{n+1}}{(n+1)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-2-n)*(d*x+c)**n,x)
```

```
[Out] (a + b*x)**(-n - 1)*(c + d*x)**(n + 1)/((n + 1)*(a*d - b*c))
```

Mathematica [A] time = 0.060137, size = 36, normalized size = 0.97

$$\frac{(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(ad-bc)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-2 - n)*(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((-(b*c) + a*d)*(1 + n))
```

Maple [A] time = 0.006, size = 41, normalized size = 1.1

$$\frac{(bx+a)^{-1-n}(dx+c)^{1+n}}{adn-bcn+ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(-2-n)*(d*x+c)^n,x)
```

```
[Out] (b*x+a)^(-1-n)*(d*x+c)^(1+n)/(a*d*n-b*c*n+a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-2}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-n - 2)*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n - 2)*(d*x + c)^n, x)
```

Fricas [A] time = 0.234408, size = 80, normalized size = 2.16

$$-\frac{\left(bdx^2+ac+(bc+ad)x\right)(bx+a)^{-n-2}(dx+c)^n}{bc-ad+(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-n - 2)*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] -(b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^(-n - 2)*(d*x + c)^n/(
b*c - a*d + (b*c - a*d)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-2-n)*(d*x+c)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{-n-2}(dx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 2)*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(-n - 2)*(d*x + c)^n, x)
```

3.1869 $\int (a+bx)^{-3-n}(c+dx)^n\,dx$

Optimal. Leaf size=80

$$\frac{d(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(n+2)(bc-ad)^2}-\frac{(a+bx)^{-n-2}(c+dx)^{n+1}}{(n+2)(bc-ad)}$$

```
[Out] -(((a + b*x)^(-2 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(2 + n))) +
 (d*(a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((b*c - a*d)^2*(1 + n)*
(2 + n))
```

Rubi [A] time = 0.0679673, antiderivative size = 80, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{d(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(n+2)(bc-ad)^2}-\frac{(a+bx)^{-n-2}(c+dx)^{n+1}}{(n+2)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-3 - n)*(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^(-2 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(2 + n))) +
 (d*(a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((b*c - a*d)^2*(1 + n)*
(2 + n))
```

Rubi in Sympy [A] time = 12.1437, size = 63, normalized size = 0.79

$$\frac{d\,(a+bx)^{-n-1}\,(c+dx)^{n+1}}{(n+1)\,(n+2)\,(ad-bc)^2}+\frac{(a+bx)^{-n-2}\,(c+dx)^{n+1}}{(n+2)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-3-n)*(d*x+c)**n,x)
```

```
[Out] d*(a + b*x)**(-n - 1)*(c + d*x)**(n + 1)/((n + 1)*(n + 2)*(a*d -
b*c)**2) + (a + b*x)**(-n - 2)*(c + d*x)**(n + 1)/((n + 2)*(a*d -
 b*c))
```

Mathematica [A] time = 0.112332, size = 60, normalized size = 0.75

$$\frac{(a+bx)^{-n-2}(c+dx)^{n+1}(ad(n+2)-b(cn+c-dx))}{(n+1)(n+2)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-3 - n)*(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(-2 - n)*(c + d*x)^(1 + n)*(a*d*(2 + n) - b*(c + c*n -
 d*x)))/((b*c - a*d)^2*(1 + n)*(2 + n))
```

Maple [A] time = 0.007, size = 123, normalized size = 1.5

$$\frac{(bx+a)^{-2-n}(dx+c)^{1+n}(adn-bcn+bdx+2ad-bc)}{a^2d^2n^2-2abcdn^2+b^2c^2n^2+3a^2d^2n-6abcdn+3b^2c^2n+2a^2d^2-4abcd+2b^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-3-n)*(d*x+c)^n,x)
```

```
[Out] (b*x+a)^(-2-n)*(d*x+c)^(1+n)*(a*d*n-b*c*n+b*d*x+2*a*d-b*c)/(a^2*d
^2*n^2-2*a*b*c*d*n^2+b^2*c^2*n^2+3*a^2*d^2*n-6*a*b*c*d*n+3*b^2*c^
2*n+2*a^2*d^2-4*a*b*c*d+2*b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-3}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 3)*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n - 3)*(d*x + c)^n, x)
```

Fricas [A] time = 0.230733, size = 279, normalized size = 3.49

$$\frac{\left(b^2d^2x^3-abc^2+2a^2cd+\left(3abd^2-\left(b^2cd-abd^2\right)n\right)x^2-\left(abc^2-a^2cd\right)n-\left(b^2c^2-2abcd-2a^2d^2+\left(b^2c^2-a^2d^2\right)n\right)x\right)(}{2b^2c^2-4abcd+2a^2d^2+(b^2c^2-2abcd+a^2d^2)n^2+3(b^2c^2-2abcd+a^2d^2)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 3)*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (b^2*d^2*x^3 - a*b*c^2 + 2*a^2*c*d + (3*a*b*d^2 - (b^2*c*d - a*b*
d^2)*n)*x^2 - (a*b*c^2 - a^2*c*d)*n - (b^2*c^2 - 2*a*b*c*d - 2*a^
```

```
2*d^2 + (b^2*c^2 - a^2*d^2)*n)*x)*(b*x + a)^(-n - 3)*(d*x + c)^n/
(2*b^2*c^2 - 4*a*b*c*d + 2*a^2*d^2 + (b^2*c^2 - 2*a*b*c*d + a^2*d
^2)*n^2 + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-3-n)*(d*x+c)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-3}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 3)*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(-n - 3)*(d*x + c)^n, x)
```

3.1870 $\int (a+bx)^{-4-n}(c+dx)^n\,dx$

Optimal. Leaf size=131

$$-\frac{2d^2(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(n+2)(n+3)(bc-ad)^3}-\frac{(a+bx)^{-n-3}(c+dx)^{n+1}}{(n+3)(bc-ad)}+\frac{2d(a+bx)^{-n-2}(c+dx)^{n+1}}{(n+2)(n+3)(bc-ad)^2}$$

```
[Out] -(((a + b*x)^(-3 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(3 + n))) +
 (2*d*(a + b*x)^(-2 - n)*(c + d*x)^(1 + n))/((b*c - a*d)^2*(2 + n
)*(3 + n)) - (2*d^2*(a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((b*c -
 a*d)^3*(1 + n)*(2 + n)*(3 + n))
```

Rubi [A] time = 0.141818, antiderivative size = 131, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$-\frac{2d^2(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(n+2)(n+3)(bc-ad)^3}-\frac{(a+bx)^{-n-3}(c+dx)^{n+1}}{(n+3)(bc-ad)}+\frac{2d(a+bx)^{-n-2}(c+dx)^{n+1}}{(n+2)(n+3)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-4 - n)*(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^(-3 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(3 + n))) +
 (2*d*(a + b*x)^(-2 - n)*(c + d*x)^(1 + n))/((b*c - a*d)^2*(2 + n
)*(3 + n)) - (2*d^2*(a + b*x)^(-1 - n)*(c + d*x)^(1 + n))/((b*c -
 a*d)^3*(1 + n)*(2 + n)*(3 + n))
```

Rubi in Sympy [A] time = 27.6312, size = 107, normalized size = 0.82

$$\frac{2d^2\left(a+bx\right)^{-n-1}\left(c+dx\right)^{n+1}}{\left(n+1\right)\left(n+2\right)\left(n+3\right)\left(ad-bc\right)^3}+\frac{2d\left(a+bx\right)^{-n-2}\left(c+dx\right)^{n+1}}{\left(n+2\right)\left(n+3\right)\left(ad-bc\right)^2}+\frac{\left(a+bx\right)^{-n-3}\left(c+dx\right)^{n+1}}{\left(n+3\right)\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-4-n)*(d*x+c)**n,x)
```

```
[Out] 2*d**2*(a + b*x)**(-n - 1)*(c + d*x)**(n + 1)/((n + 1)*(n + 2)*(n
 + 3)*(a*d - b*c)**3) + 2*d*(a + b*x)**(-n - 2)*(c + d*x)**(n + 1
)/((n + 2)*(n + 3)*(a*d - b*c)**2) + (a + b*x)**(-n - 3)*(c + d*x
)**(n + 1)/((n + 3)*(a*d - b*c))
```

Mathematica [A] time = 0.205105, size = 112, normalized size = 0.85

$$\frac{(a+bx)^{-n-3}(c+dx)^{n+1}\left(a^2d^2\left(n^2+5n+6\right)-2abd(n+3)(cn+c-dx)+b^2\left(c^2\left(n^2+3n+2\right)-2cd(n+1)x+2d^2x^2\right)\right)}{(n+1)(n+2)(n+3)(ad-bc)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-4 - n)*(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(-3 - n)*(c + d*x)^(1 + n)*(a^2*d^2*(6 + 5*n + n^2) -
2*a*b*d*(3 + n)*(c + c*n - d*x) + b^2*(c^2*(2 + 3*n + n^2) - 2*c*
d*(1 + n)*x + 2*d^2*x^2)))/((-(b*c) + a*d)^3*(1 + n)*(2 + n)*(3 +
 n))
```

Maple [B] time = 0.009, size = 318, normalized size = 2.4

$$\frac{(bx+a)^{-3-n}(dx+c)^{1+n}\left(a^2d^2n^2-2\,abcdn^2+2\,abd^2nx+b^2c^2n^2-2\,b^2cdnx+2\,b^2d^2x^2+5\,a^2d^2n-8\,abcdn+6\,a\right.}{a^3d^3n^3-3\,a^2bcd^2n^3+3\,ab^2c^2dn^3-b^3c^3n^3+6\,a^3d^3n^2-18\,a^2bcd^2n^2+18\,ab^2c^2dn^2-6\,b^3c^3n^2+11\,a^3d^3n-33\,a^2bcd^2n+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-4-n)*(d*x+c)^n,x)
```

```
[Out] (b*x+a)^(-3-n)*(d*x+c)^(1+n)*(a^2*d^2*n^2-2*a*b*c*d*n^2+2*a*b*d^2
*n*x+b^2*c^2*n^2-2*b^2*c*d*n*x+2*b^2*d^2*x^2+5*a^2*d^2*n-8*a*b*c*
d*n+6*a*b*d^2*x+3*b^2*c^2*n-2*b^2*c*d*x+6*a^2*d^2-6*a*b*c*d+2*b^2
*c^2)/(a^3*d^3*n^3-3*a^2*b*c*d^2*n^3+3*a*b^2*c^2*d*n^3-b^3*c^3*n^
3+6*a^3*d^3*n^2-18*a^2*b*c*d^2*n^2+18*a*b^2*c^2*d*n^2-6*b^3*c^3*n
^2+11*a^3*d^3*n-33*a^2*b*c*d^2*n+33*a*b^2*c^2*d*n-11*b^3*c^3*n+6*
a^3*d^3-18*a^2*b*c*d^2+18*a*b^2*c^2*d-6*b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-4}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 4)*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n - 4)*(d*x + c)^n, x)
```

Fricas [A] time = 0.231206, size = 687, normalized size = 5.24

$$-\frac{\left(2\,b^{3}d^{3}x^{4}+2\,ab^{2}c^{3}-6\,a^{2}bc^{2}d+6\,a^{3}cd^{2}+2\left(4\,ab^{2}d^{3}-\left(b^{3}cd^{2}-ab^{2}d^{3}\right)n\right)x^{3}+\left(ab^{2}c^{3}-2\,a^{2}bc^{2}d+a^{3}cd^{2}\right)n^{2}+\left(12\,a^{2}bd^{3}\right.}{6\,b^{3}c^{3}-18\,ab^{2}c^{2}d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 4)*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] -(2*b^3*d^3*x^4 + 2*a*b^2*c^3 - 6*a^2*b*c^2*d + 6*a^3*c*d^2 + 2*(
4*a*b^2*d^3 - (b^3*c*d^2 - a*b^2*d^3)*n)*x^3 + (a*b^2*c^3 - 2*a^2
*b*c^2*d + a^3*c*d^2)*n^2 + (12*a^2*b*d^3 + (b^3*c^2*d - 2*a*b^2*
c*d^2 + a^2*b*d^3)*n^2 + (b^3*c^2*d - 8*a*b^2*c*d^2 + 7*a^2*b*d^3
)*n)*x^2 + (3*a*b^2*c^3 - 8*a^2*b*c^2*d + 5*a^3*c*d^2)*n + (2*b^3
*c^3 - 6*a*b^2*c^2*d + 6*a^2*b*c*d^2 + 6*a^3*d^3 + (b^3*c^3 - a*b
^2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*n^2 + (3*b^3*c^3 - 7*a*b^2*c^2*
d - a^2*b*c*d^2 + 5*a^3*d^3)*n)*x)*(b*x + a)^(-n - 4)*(d*x + c)^n
/(6*b^3*c^3 - 18*a*b^2*c^2*d + 18*a^2*b*c*d^2 - 6*a^3*d^3 + (b^3*
c^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n^3 + 6*(b^3*c^3 -
 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n^2 + 11*(b^3*c^3 - 3*a
*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-4-n)*(d*x+c)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-4}(dx+c)^{n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 4)*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(-n - 4)*(d*x + c)^n, x)
```

3.1871 $\int (a+bx)^{-5-n}(c+dx)^n\,dx$

Optimal. Leaf size=186

$$\frac{6d^3(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(n+2)(n+3)(n+4)(bc-ad)^4}-\frac{6d^2(a+bx)^{-n-2}(c+dx)^{n+1}}{(n+2)(n+3)(n+4)(bc-ad)^3}-\frac{(a+bx)^{-n-4}(c+dx)^{n+1}}{(n+4)(bc-ad)}+\frac{3d(a+bx)^{-n-3}(c+dx)^{n+1}}{(n+3)(n+4)(bc-ad)^2}$$

```
[Out] -(((a + b*x)^(-4 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(4 + n))) +
 (3*d*(a + b*x)^(-3 - n)*(c + d*x)^(1 + n))/((b*c - a*d)^2*(3 + n
)*(4 + n)) - (6*d^2*(a + b*x)^(-2 - n)*(c + d*x)^(1 + n))/((b*c -
 a*d)^3*(2 + n)*(3 + n)*(4 + n)) + (6*d^3*(a + b*x)^(-1 - n)*(c +
 d*x)^(1 + n))/((b*c - a*d)^4*(1 + n)*(2 + n)*(3 + n)*(4 + n))
```

Rubi [A] time = 0.23032, antiderivative size = 186, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{6d^3(a+bx)^{-n-1}(c+dx)^{n+1}}{(n+1)(n+2)(n+3)(n+4)(bc-ad)^4}-\frac{6d^2(a+bx)^{-n-2}(c+dx)^{n+1}}{(n+2)(n+3)(n+4)(bc-ad)^3}-\frac{(a+bx)^{-n-4}(c+dx)^{n+1}}{(n+4)(bc-ad)}+\frac{3d(a+bx)^{-n-3}(c+dx)^{n+1}}{(n+3)(n+4)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-5 - n)*(c + d*x)^n,x]
```



```
[Out] -(((a + b*x)^(-4 - n)*(c + d*x)^(1 + n))/((b*c - a*d)*(4 + n))) +
 (3*d*(a + b*x)^(-3 - n)*(c + d*x)^(1 + n))/((b*c - a*d)^2*(3 + n
)*(4 + n)) - (6*d^2*(a + b*x)^(-2 - n)*(c + d*x)^(1 + n))/((b*c -
 a*d)^3*(2 + n)*(3 + n)*(4 + n)) + (6*d^3*(a + b*x)^(-1 - n)*(c +
 d*x)^(1 + n))/((b*c - a*d)^4*(1 + n)*(2 + n)*(3 + n)*(4 + n))
```

Rubi in Sympy [A] time = 50.6477, size = 153, normalized size = 0.82

$$\frac{6d^3\left(a+bx\right)^{-n-1}\left(c+dx\right)^{n+1}}{\left(n+1\right)\left(n+2\right)\left(n+3\right)\left(n+4\right)\left(ad-bc\right)^4}+\frac{6d^2\left(a+bx\right)^{-n-2}\left(c+dx\right)^{n+1}}{\left(n+2\right)\left(n+3\right)\left(n+4\right)\left(ad-bc\right)^3}+\frac{3d\left(a+bx\right)^{-n-3}\left(c+dx\right)^{n+1}}{\left(n+3\right)\left(n+4\right)\left(ad-bc\right)^2}+\frac{\left(a+bx\right)^{-n-4}\left(c+dx\right)^{n+1}}{\left(n+4\right)\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-5-n)*(d*x+c)**n,x)
```

```
[Out] 6*d**3*(a + b*x)**(-n - 1)*(c + d*x)**(n + 1)/((n + 1)*(n + 2)*(n
 + 3)*(n + 4)*(a*d - b*c)**4) + 6*d**2*(a + b*x)**(-n - 2)*(c + d
*x)**(n + 1)/((n + 2)*(n + 3)*(n + 4)*(a*d - b*c)**3) + 3*d*(a +
b*x)**(-n - 3)*(c + d*x)**(n + 1)/((n + 3)*(n + 4)*(a*d - b*c)**2
) + (a + b*x)**(-n - 4)*(c + d*x)**(n + 1)/((n + 4)*(a*d - b*c))
```

Mathematica [A] time = 0.467563, size = 181, normalized size = 0.97

$$-\frac{(a+bx)^{-n}(c+dx)^n\left(-\frac{6d^4}{(n+1)(n+2)(n+3)(n+4)(bc-ad)^4}+\frac{6d^3n}{(n+1)(n^3+9n^2+26n+24)(a+bx)(bc-ad)^3}-\frac{3d^2n}{(n+2)(n^2+7n+12)(a+bx)^2(bc-ad)^2}+\frac{}{(n+3)(n+4}\right.}{b}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-5 - n)*(c + d*x)^n,x]
```

```
[Out] -(((c + d*x)^n*((-6*d^4)/((b*c - a*d)^4*(1 + n)*(2 + n)*(3 + n)*(
4 + n)) + 1/((4 + n)*(a + b*x)^4) + (d*n)/((b*c - a*d)*(3 + n)*(4
 + n)*(a + b*x)^3) - (3*d^2*n)/((b*c - a*d)^2*(2 + n)*(12 + 7*n +
 n^2)*(a + b*x)^2) + (6*d^3*n)/((b*c - a*d)^3*(1 + n)*(24 + 26*n
+ 9*n^2 + n^3)*(a + b*x))))/(b*(a + b*x)^n))
```

Maple [B] time = 0.013, size = 661, normalized size = 3.6

$$\frac{(bx+a)^{-4-n}(dx+c)^{1+n}\left(a^3d^3n^3-3a^2bcd^2n^3+3a^2bd^3n^2x+3ab^2c^2dn^3-6ab^2cd^2n^2x+6ab^2d^3nx^2-b^3c^3n^3+3b^3c^2dn^2x\right.}{a^4d^4n^4-4a^3bcd^3n^4+6a^2b^2c^2d^2n^4-4ab^3c^3dn^4+b^4c^4n^4+10a^4d^4n^3-40a^3bcd^3n^3+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-5-n)*(d*x+c)^n,x)
```

```
[Out] (b*x+a)^(-4-n)*(d*x+c)^(1+n)*(a^3*d^3*n^3-3*a^2*b*c*d^2*n^3+3*a^2
*b*d^3*n^2*x+3*a*b^2*c^2*d*n^3-6*a*b^2*c*d^2*n^2*x+6*a*b^2*d^3*n*
x^2-b^3*c^3*n^3+3*b^3*c^2*d*n^2*x-6*b^3*c*d^2*n*x^2+6*b^3*d^3*x^3
+9*a^3*d^3*n^2-24*a^2*b*c*d^2*n^2+21*a^2*b*d^3*n*x+21*a*b^2*c^2*d
*n^2-30*a*b^2*c*d^2*n*x+24*a*b^2*d^3*x^2-6*b^3*c^3*n^2+9*b^3*c^2*
d*n*x-6*b^3*c*d^2*x^2+26*a^3*d^3*n-57*a^2*b*c*d^2*n+36*a^2*b*d^3*
x+42*a*b^2*c^2*d*n-24*a*b^2*c*d^2*x-11*b^3*c^3*n+6*b^3*c^2*d*x+24
*a^3*d^3-36*a^2*b*c*d^2+24*a*b^2*c^2*d-6*b^3*c^3)/(a^4*d^4*n^4-4*
a^3*b*c*d^3*n^4+6*a^2*b^2*c^2*d^2*n^4-4*a*b^3*c^3*d*n^4+b^4*c^4*n
^4+10*a^4*d^4*n^3-40*a^3*b*c*d^3*n^3+60*a^2*b^2*c^2*d^2*n^3-40*a*
b^3*c^3*d*n^3+10*b^4*c^4*n^3+35*a^4*d^4*n^2-140*a^3*b*c*d^3*n^2+2
10*a^2*b^2*c^2*d^2*n^2-140*a*b^3*c^3*d*n^2+35*b^4*c^4*n^2+50*a^4*
d^4*n-200*a^3*b*c*d^3*n+300*a^2*b^2*c^2*d^2*n-200*a*b^3*c^3*d*n+5
0*b^4*c^4*n+24*a^4*d^4-96*a^3*b*c*d^3+144*a^2*b^2*c^2*d^2-96*a*b^
3*c^3*d+24*b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-n-5}(dx+c)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 5)*(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-n - 5)*(d*x + c)^n, x)
```

Fricas [A] time = 0.236676, size = 1295, normalized size = 6.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 5)*(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] (6*b^4*d^4*x^5 - 6*a*b^3*c^4 + 24*a^2*b^2*c^3*d - 36*a^3*b*c^2*d^
2 + 24*a^4*c*d^3 + 6*(5*a*b^3*d^4 - (b^4*c*d^3 - a*b^3*d^4)*n)*x^
4 - (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*n
^3 + 3*(20*a^2*b^2*d^4 + (b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d
^4)*n^2 + (b^4*c^2*d^2 - 10*a*b^3*c*d^3 + 9*a^2*b^2*d^4)*n)*x^3 -
 3*(2*a*b^3*c^4 - 7*a^2*b^2*c^3*d + 8*a^3*b*c^2*d^2 - 3*a^4*c*d^3
)*n^2 + (60*a^3*b*d^4 - (b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*
c*d^3 - a^3*b*d^4)*n^3 - 3*(b^4*c^3*d - 6*a*b^3*c^2*d^2 + 9*a^2*b
^2*c*d^3 - 4*a^3*b*d^4)*n^2 - (2*b^4*c^3*d - 15*a*b^3*c^2*d^2 + 6
0*a^2*b^2*c*d^3 - 47*a^3*b*d^4)*n)*x^2 - (11*a*b^3*c^4 - 42*a^2*b
^2*c^3*d + 57*a^3*b*c^2*d^2 - 26*a^4*c*d^3)*n - (6*b^4*c^4 - 24*a
*b^3*c^3*d + 36*a^2*b^2*c^2*d^2 - 24*a^3*b*c*d^3 - 24*a^4*d^4 + (
b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*n^3 + 3*(2*b^4
*c^4 - 6*a*b^3*c^3*d + 3*a^2*b^2*c^2*d^2 + 4*a^3*b*c*d^3 - 3*a^4*
d^4)*n^2 + (11*b^4*c^4 - 40*a*b^3*c^3*d + 45*a^2*b^2*c^2*d^2 + 10
*a^3*b*c*d^3 - 26*a^4*d^4)*n)*x)*(b*x + a)^(-n - 5)*(d*x + c)^n/(
24*b^4*c^4 - 96*a*b^3*c^3*d + 144*a^2*b^2*c^2*d^2 - 96*a^3*b*c*d^
3 + 24*a^4*d^4 + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4
*a^3*b*c*d^3 + a^4*d^4)*n^4 + 10*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2
*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*n^3 + 35*(b^4*c^4 - 4*a*b
^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*n^2 + 50*
(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^
4*d^4)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-5-n)*(d*x+c)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{-n-5}(dx + c)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-n - 5)*(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^(-n - 5)*(d*x + c)^n, x)
```

3.1872 $\int (a+bx)^n (c+dx)^{-n}\,dx$

Optimal. Leaf size=72

$$\frac{(a+bx)^{n+1}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+1)}$$

```
[Out] ((a + b*x)^(1 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 1 + n, 2 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(1 + n)*(c +
 d*x)^n)
```

Rubi [A] time = 0.0665414, antiderivative size = 72, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$

$$\frac{(a+bx)^{n+1}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^n {}_2F_1\left(n,n+1;n+2;-\frac{d(a+bx)}{bc-ad}\right)}{b(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n/(c + d*x)^n,x]
```

```
[Out] ((a + b*x)^(1 + n)*((b*(c + d*x))/(b*c - a*d))^n*Hypergeometric2F
1[n, 1 + n, 2 + n, -((d*(a + b*x))/(b*c - a*d))])/(b*(1 + n)*(c +
 d*x)^n)
```

Rubi in Sympy [A] time = 14.9158, size = 54, normalized size = 0.75

$$\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^n (a+bx)^{n+1} (c+dx)^{-n} {}_2F_1\left(\begin{matrix} n, n+1 \\ n+2 \end{matrix}\middle| \frac{d(a+bx)}{ad-bc}\right)}{b(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n/((d*x+c)**n),x)
```

```
[Out] (b*(-c - d*x)/(a*d - b*c))**n*(a + b*x)**(n + 1)*(c + d*x)**(-n)*
hyper((n, n + 1), (n + 2,), d*(a + b*x)/(a*d - b*c))/(b*(n + 1))
```

Mathematica [A] time = 0.0650298, size = 80, normalized size = 1.11

$$-\frac{(a+bx)^n(c+dx)^{1-n}\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}\,{}_2F_1\left(1-n,-n;2-n;\frac{b(c+dx)}{bc-ad}\right)}{d(n-1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n/(c + d*x)^n,x]
```

```
[Out] -(((a + b*x)^n*(c + d*x)^(1 - n)*Hypergeometric2F1[1 - n, -n, 2 -
 n, (b*(c + d*x))/(b*c - a*d)])/(d*(-1 + n)*((d*(a + b*x))/(-(b*c
) + a*d))^n))
```

Maple [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n/((d*x+c)^n),x)
```

```
[Out] int((b*x+a)^n/((d*x+c)^n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n(dx+c)^{-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(d*x + c)^n,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^n}{(dx+c)^n},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(d*x + c)^n,x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n/(d*x + c)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n/((d*x+c)**n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^n}{(dx+c)^n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n/(d*x + c)^n,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n/(d*x + c)^n, x)
```

3.1873 $\int (a+bx)^n(c+dx)^{-1-n}\,dx$

Optimal. Leaf size=75

$$-\frac{(a+bx)^n(c+dx)^{-n}\left(-\frac{d(a+bx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(-n,-n;1-n;\frac{b(c+dx)}{bc-ad}\right)}{dn}$$

```
[Out] -(((a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, (b*(c + d*x))/(b*
c - a*d)])/(d*n*(-((d*(a + b*x))/(b*c - a*d)))^n*(c + d*x)^n))
```

Rubi [A] time = 0.0764983, antiderivative size = 75, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$-\frac{(a+bx)^n(c+dx)^{-n}\left(-\frac{d(a+bx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(-n,-n;1-n;\frac{b(c+dx)}{bc-ad}\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n*(c + d*x)^(-1 - n),x]
```

```
[Out] -(((a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, (b*(c + d*x))/(b*
c - a*d)])/(d*n*(-((d*(a + b*x))/(b*c - a*d)))^n*(c + d*x)^n))
```

Rubi in Sympy [A] time = 15.7879, size = 54, normalized size = 0.72

$$-\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}(a+bx)^n\,(c+dx)^{-n}\,{}_2F_1\left(\begin{matrix}-n,-n\\-n+1\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{dn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(d*x+c)**(-1-n),x)
```

```
[Out] -(d*(a + b*x)/(a*d - b*c))**(-n)*(a + b*x)**n*(c + d*x)**(-n)*hyp
er((-n, -n), (-n + 1,), b*(-c - d*x)/(a*d - b*c))/(d*n)
```

Mathematica [A] time = 0.0574878, size = 74, normalized size = 0.99

$$-\frac{(a+bx)^n(c+dx)^{-n}\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}\,{}_2F_1\left(-n,-n;1-n;\frac{b(c+dx)}{bc-ad}\right)}{dn}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n*(c + d*x)^(-1 - n),x]
```

```
[Out] -(((a + b*x)^n*Hypergeometric2F1[-n, -n, 1 - n, (b*(c + d*x))/(b*
c - a*d)])/(d*n*((d*(a + b*x))/(-(b*c) + a*d))^n*(c + d*x)^n))
```

Maple [F] time = 0.118, size = 0, normalized size = 0.

$$\int (bx+a)^{n} (dx+c)^{-1-n} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(d*x+c)^(-1-n),x)
```

```
[Out] int((b*x+a)^n*(d*x+c)^(-1-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n}(dx+c)^{-n-1}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 1),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\mathrm{integral}\left((bx+a)^{n}(dx+c)^{-n-1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 1),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^n*(d*x + c)^(-n - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(d*x+c)**(-1-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n (dx+c)^{-n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 1),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 1), x)
```

3.1874 $\int (a+bx)^n (c+dx)^{-2-n}\,dx$

Optimal. Leaf size=36

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(bc-ad)}$$

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*d)*(1 + n))
```

Rubi [A] time = 0.022004, antiderivative size = 36, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n*(c + d*x)^(-2 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*d)*(1 + n))
```

Rubi in Sympy [A] time = 4.28074, size = 29, normalized size = 0.81

$$-\frac{(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(d*x+c)**(-2-n),x)
```

```
[Out] -(a + b*x)**(n + 1)*(c + d*x)**(-n - 1)/((n + 1)*(a*d - b*c))
```

Mathematica [A] time = 0.0599223, size = 36, normalized size = 1.

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n*(c + d*x)^(-2 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*d)*(1 + n))
```

Maple [A] time = 0.006, size = 42, normalized size = 1.2

$$-\frac{(bx+a)^{1+n}(dx+c)^{-1-n}}{adn-bcn+ad-bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^n*(d*x+c)^(-2-n),x)
```

```
[Out] -(b*x+a)^(1+n)*(d*x+c)^(-1-n)/(a*d*n-b*c*n+a*d-b*c)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n(dx+c)^{-n-2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^n*(d*x + c)^(-n - 2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 2), x)
```

Fricas [A] time = 0.232217, size = 78, normalized size = 2.17

$$\frac{\left(bdx^2+ac+(bc+ad)x\right)(bx+a)^n(dx+c)^{-n-2}}{bc-ad+(bc-ad)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^n*(d*x + c)^(-n - 2),x, algorithm="fricas")
```

```
[Out] (b*d*x^2 + a*c + (b*c + a*d)*x)*(b*x + a)^n*(d*x + c)^(-n - 2)/(b
*c - a*d + (b*c - a*d)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(d*x+c)**(-2-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F]   time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^n (dx + c)^{-n-2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 2), x)
```

3.1875 $\int (a+bx)^n (c+dx)^{-3-n}\,dx$

Optimal. Leaf size=79

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-2}}{(n+2)(bc-ad)}+\frac{b(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(n+2)(bc-ad)^2}$$

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-2 - n))/((b*c - a*d)*(2 + n)) + (b
*(a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*d)^2*(1 + n)*(2
+ n))
```

Rubi [A] time = 0.0581825, antiderivative size = 79, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-2}}{(n+2)(bc-ad)}+\frac{b(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(n+2)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n*(c + d*x)^(-3 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-2 - n))/((b*c - a*d)*(2 + n)) + (b
*(a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*d)^2*(1 + n)*(2
+ n))
```

Rubi in Sympy [A] time = 12.4453, size = 63, normalized size = 0.8

$$\frac{b\,(a+bx)^{n+1}\,(c+dx)^{-n-1}}{(n+1)\,(n+2)\,(ad-bc)^2}-\frac{(a+bx)^{n+1}\,(c+dx)^{-n-2}}{(n+2)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(d*x+c)**(-3-n),x)
```

```
[Out] b*(a + b*x)**(n + 1)*(c + d*x)**(-n - 1)/((n + 1)*(n + 2)*(a*d -
b*c)**2) - (a + b*x)**(n + 1)*(c + d*x)**(-n - 2)/((n + 2)*(a*d -
 b*c))
```

Mathematica [A] time = 0.110791, size = 59, normalized size = 0.75

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-2}(-ad(n+1)+bc(n+2)+bdx)}{(n+1)(n+2)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n*(c + d*x)^(-3 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-2 - n)*(-(a*d*(1 + n)) + b*c*(2 +
n) + b*d*x))/((b*c - a*d)^2*(1 + n)*(2 + n))
```

Maple [A] time = 0.006, size = 124, normalized size = 1.6

$$-\frac{(bx+a)^{1+n}(dx+c)^{-2-n}(adn-bcn-bdx+ad-2bc)}{a^2d^2n^2-2abcdn^2+b^2c^2n^2+3a^2d^2n-6abcdn+3b^2c^2n+2a^2d^2-4abcd+2b^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(d*x+c)^(-3-n),x)
```

```
[Out] -(b*x+a)^(1+n)*(d*x+c)^(-2-n)*(a*d*n-b*c*n-b*d*x+a*d-2*b*c)/(a^2*
d^2*n^2-2*a*b*c*d*n^2+b^2*c^2*n^2+3*a^2*d^2*n-6*a*b*c*d*n+3*b^2*c
^2*n+2*a^2*d^2-4*a*b*c*d+2*b^2*c^2)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n(dx+c)^{-n-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 3),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 3), x)
```

Fricas [A] time = 0.239236, size = 277, normalized size = 3.51

$$\frac{\left(b^2d^2x^3+2abc^2-a^2cd+\left(3b^2cd+\left(b^2cd-abd^2\right)n\right)x^2+\left(abc^2-a^2cd\right)n+\left(2b^2c^2+2abcd-a^2d^2+\left(b^2c^2-a^2d^2\right)n\right)x\right)(b}{2b^2c^2-4abcd+2a^2d^2+(b^2c^2-2abcd+a^2d^2)n^2+3(b^2c^2-2abcd+a^2d^2)n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 3),x, algorithm="fricas")
```

```
[Out] (b^2*d^2*x^3 + 2*a*b*c^2 - a^2*c*d + (3*b^2*c*d + (b^2*c*d - a*b*
d^2)*n)*x^2 + (a*b*c^2 - a^2*c*d)*n + (2*b^2*c^2 + 2*a*b*c*d - a^
```

```
2*d^2 + (b^2*c^2 - a^2*d^2)*n)*x)*(b*x + a)^n*(d*x + c)^(-n - 3)/
(2*b^2*c^2 - 4*a*b*c*d + 2*a^2*d^2 + (b^2*c^2 - 2*a*b*c*d + a^2*d
^2)*n^2 + 3*(b^2*c^2 - 2*a*b*c*d + a^2*d^2)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(d*x+c)**(-3-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n (dx+c)^{-n-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 3),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 3), x)
```

3.1876 $\int (a+bx)^n (c+dx)^{-4-n}\,dx$

Optimal. Leaf size=130

$$\frac{2b^2(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(n+2)(n+3)(bc-ad)^3}+\frac{(a+bx)^{n+1}(c+dx)^{-n-3}}{(n+3)(bc-ad)}+\frac{2b(a+bx)^{n+1}(c+dx)^{-n-2}}{(n+2)(n+3)(bc-ad)^2}$$

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-3 - n))/((b*c - a*d)*(3 + n)) + (2
*b*(a + b*x)^(1 + n)*(c + d*x)^(-2 - n))/((b*c - a*d)^2*(2 + n)*(
3 + n)) + (2*b^2*(a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*
d)^3*(1 + n)*(2 + n)*(3 + n))
```

Rubi [A] time = 0.108186, antiderivative size = 130, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$

$$\frac{2b^2(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(n+2)(n+3)(bc-ad)^3}+\frac{(a+bx)^{n+1}(c+dx)^{-n-3}}{(n+3)(bc-ad)}+\frac{2b(a+bx)^{n+1}(c+dx)^{-n-2}}{(n+2)(n+3)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n*(c + d*x)^(-4 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-3 - n))/((b*c - a*d)*(3 + n)) + (2
*b*(a + b*x)^(1 + n)*(c + d*x)^(-2 - n))/((b*c - a*d)^2*(2 + n)*(
3 + n)) + (2*b^2*(a + b*x)^(1 + n)*(c + d*x)^(-1 - n))/((b*c - a*
d)^3*(1 + n)*(2 + n)*(3 + n))
```

Rubi in Sympy [A] time = 28.1043, size = 107, normalized size = 0.82

$$-\frac{2b^2\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-1}}{\left(n+1\right)\left(n+2\right)\left(n+3\right)\left(ad-bc\right)^3}+\frac{2b\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-2}}{\left(n+2\right)\left(n+3\right)\left(ad-bc\right)^2}-\frac{\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-3}}{\left(n+3\right)\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(d*x+c)**(-4-n),x)
```

```
[Out] -2*b**2*(a + b*x)**(n + 1)*(c + d*x)**(-n - 1)/((n + 1)*(n + 2)*(
n + 3)*(a*d - b*c)**3) + 2*b*(a + b*x)**(n + 1)*(c + d*x)**(-n -
2)/((n + 2)*(n + 3)*(a*d - b*c)**2) - (a + b*x)**(n + 1)*(c + d*x
)**(-n - 3)/((n + 3)*(a*d - b*c))
```

Mathematica [A] time = 0.208469, size = 112, normalized size = 0.86

$$\frac{(a+bx)^{n+1}(c+dx)^{-n-3}\left(a^2d^2\left(n^2+3n+2\right)-2abd(n+1)(c(n+3)+dx)+b^2\left(c^2\left(n^2+5n+6\right)+2cd(n+3)x+2d^2x^2\right)\right)}{(n+1)(n+2)(n+3)(bc-ad)^3}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n*(c + d*x)^(-4 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-3 - n)*(a^2*d^2*(2 + 3*n + n^2) -
2*a*b*d*(1 + n)*(c*(3 + n) + d*x) + b^2*(c^2*(6 + 5*n + n^2) + 2*
c*d*(3 + n)*x + 2*d^2*x^2)))/((b*c - a*d)^3*(1 + n)*(2 + n)*(3 +
n))
```

Maple [B] time = 0.008, size = 319, normalized size = 2.5

$$-\frac{(bx+a)^{1+n}\,(dx+c)^{-3-n}\,(a^2d^2n^2-2\,abcdn^2-2\,abd^2nx+b^2c^2n^2+2\,b^2cdnx+2\,b^2d^2x^2+3\,a^2d^2n-8\,abcdn-2}{a^3d^3n^3-3\,a^2bcd^2n^3+3\,ab^2c^2dn^3-b^3c^3n^3+6\,a^3d^3n^2-18\,a^2bcd^2n^2+18\,ab^2c^2dn^2-6\,b^3c^3n^2+11\,a^3d^3n-33\,a^2bcd^2n+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(d*x+c)^(-4-n),x)
```

```
[Out] -(b*x+a)^(1+n)*(d*x+c)^(-3-n)*(a^2*d^2*n^2-2*a*b*c*d*n^2-2*a*b*d^
2*n*x+b^2*c^2*n^2+2*b^2*c*d*n*x+2*b^2*d^2*x^2+3*a^2*d^2*n-8*a*b*c
*d*n-2*a*b*d^2*x+5*b^2*c^2*n+6*b^2*c*d*x+2*a^2*d^2-6*a*b*c*d+6*b^
2*c^2)/(a^3*d^3*n^3-3*a^2*b*c*d^2*n^3+3*a*b^2*c^2*d*n^3-b^3*c^3*n
^3+6*a^3*d^3*n^2-18*a^2*b*c*d^2*n^2+18*a*b^2*c^2*d*n^2-6*b^3*c^3*
n^2+11*a^3*d^3*n-33*a^2*b*c*d^2*n+33*a*b^2*c^2*d*n-11*b^3*c^3*n+6
*a^3*d^3-18*a^2*b*c*d^2+18*a*b^2*c^2*d-6*b^3*c^3)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n(dx+c)^{-n-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 4),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 4), x)
```

Fricas [A] time = 0.24218, size = 684, normalized size = 5.26

$$\frac{\left(2\,b^3d^3x^4+6\,ab^2c^3-6\,a^2bc^2d+2\,a^3cd^2+2\,\left(4\,b^3cd^2+\left(b^3cd^2-ab^2d^3\right)n\right)x^3+\left(ab^2c^3-2\,a^2bc^2d+a^3cd^2\right)n^2+\left(12\,b^3c^2d+\right.\right.}{6\,b^3c^3-18\,ab^2c^2d+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 4),x, algorithm="fricas")
```

```
[Out] (2*b^3*d^3*x^4 + 6*a*b^2*c^3 - 6*a^2*b*c^2*d + 2*a^3*c*d^2 + 2*(4
*b^3*c*d^2 + (b^3*c*d^2 - a*b^2*d^3)*n)*x^3 + (a*b^2*c^3 - 2*a^2*
b*c^2*d + a^3*c*d^2)*n^2 + (12*b^3*c^2*d + (b^3*c^2*d - 2*a*b^2*c
*d^2 + a^2*b*d^3)*n^2 + (7*b^3*c^2*d - 8*a*b^2*c*d^2 + a^2*b*d^3)
*n)*x^2 + (5*a*b^2*c^3 - 8*a^2*b*c^2*d + 3*a^3*c*d^2)*n + (6*b^3*
c^3 + 6*a*b^2*c^2*d - 6*a^2*b*c*d^2 + 2*a^3*d^3 + (b^3*c^3 - a*b^
2*c^2*d - a^2*b*c*d^2 + a^3*d^3)*n^2 + (5*b^3*c^3 - a*b^2*c^2*d -
 7*a^2*b*c*d^2 + 3*a^3*d^3)*n)*x)*(b*x + a)^n*(d*x + c)^(-n - 4)/
(6*b^3*c^3 - 18*a*b^2*c^2*d + 18*a^2*b*c*d^2 - 6*a^3*d^3 + (b^3*c
^3 - 3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n^3 + 6*(b^3*c^3 -
3*a*b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n^2 + 11*(b^3*c^3 - 3*a*
b^2*c^2*d + 3*a^2*b*c*d^2 - a^3*d^3)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(d*x+c)**(-4-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n(dx+c)^{-n-4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 4),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 4), x)
```

3.1877 $\int (a+bx)^n (c+dx)^{-5-n}\,dx$

Optimal. Leaf size=185

$$\frac{6b^3(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(n+2)(n+3)(n+4)(bc-ad)^4}+\frac{6b^2(a+bx)^{n+1}(c+dx)^{-n-2}}{(n+2)(n+3)(n+4)(bc-ad)^3}+\frac{(a+bx)^{n+1}(c+dx)^{-n-4}}{(n+4)(bc-ad)}+\frac{3b(a+bx)^{n+1}(c+dx)^{-n-3}}{(n+3)(n+4)(bc-ad)^2}$$

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-4 - n))/((b*c - a*d)*(4 + n)) + (3
*b*(a + b*x)^(1 + n)*(c + d*x)^(-3 - n))/((b*c - a*d)^2*(3 + n)*(
4 + n)) + (6*b^2*(a + b*x)^(1 + n)*(c + d*x)^(-2 - n))/((b*c - a*
d)^3*(2 + n)*(3 + n)*(4 + n)) + (6*b^3*(a + b*x)^(1 + n)*(c + d*x
)^(-1 - n))/((b*c - a*d)^4*(1 + n)*(2 + n)*(3 + n)*(4 + n))
```

Rubi [A] time = 0.177219, antiderivative size = 185, normalized size of antiderivative = 1., number of steps used = 4, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105

$$\frac{6b^3(a+bx)^{n+1}(c+dx)^{-n-1}}{(n+1)(n+2)(n+3)(n+4)(bc-ad)^4}+\frac{6b^2(a+bx)^{n+1}(c+dx)^{-n-2}}{(n+2)(n+3)(n+4)(bc-ad)^3}+\frac{(a+bx)^{n+1}(c+dx)^{-n-4}}{(n+4)(bc-ad)}+\frac{3b(a+bx)^{n+1}(c+dx)^{-n-3}}{(n+3)(n+4)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^n*(c + d*x)^(-5 - n),x]
```

```
[Out] ((a + b*x)^(1 + n)*(c + d*x)^(-4 - n))/((b*c - a*d)*(4 + n)) + (3
*b*(a + b*x)^(1 + n)*(c + d*x)^(-3 - n))/((b*c - a*d)^2*(3 + n)*(
4 + n)) + (6*b^2*(a + b*x)^(1 + n)*(c + d*x)^(-2 - n))/((b*c - a*
d)^3*(2 + n)*(3 + n)*(4 + n)) + (6*b^3*(a + b*x)^(1 + n)*(c + d*x
)^(-1 - n))/((b*c - a*d)^4*(1 + n)*(2 + n)*(3 + n)*(4 + n))
```

Rubi in Sympy [A] time = 51.6278, size = 153, normalized size = 0.83

$$\frac{6b^3\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-1}}{\left(n+1\right)\left(n+2\right)\left(n+3\right)\left(n+4\right)\left(ad-bc\right)^4}-\frac{6b^2\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-2}}{\left(n+2\right)\left(n+3\right)\left(n+4\right)\left(ad-bc\right)^3}+\frac{3b\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-3}}{\left(n+3\right)\left(n+4\right)\left(ad-bc\right)^2}-\frac{\left(a+bx\right)^{n+1}\left(c+dx\right)^{-n-4}}{\left(n+4\right)\left(ad-bc\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**n*(d*x+c)**(-5-n),x)
```

```
[Out] 6*b**3*(a + b*x)**(n + 1)*(c + d*x)**(-n - 1)/((n + 1)*(n + 2)*(n
 + 3)*(n + 4)*(a*d - b*c)**4) - 6*b**2*(a + b*x)**(n + 1)*(c + d*
x)**(-n - 2)/((n + 2)*(n + 3)*(n + 4)*(a*d - b*c)**3) + 3*b*(a +
b*x)**(n + 1)*(c + d*x)**(-n - 3)/((n + 3)*(n + 4)*(a*d - b*c)**2
) - (a + b*x)**(n + 1)*(c + d*x)**(-n - 4)/((n + 4)*(a*d - b*c))
```

Mathematica [A] time = 0.533182, size = 181, normalized size = 0.98

$$\frac{(a+bx)^n(c+dx)^{-n}\left(\frac{6b^4}{(n+1)(n+2)(n+3)(n+4)(bc-ad)^4}+\frac{6b^3n}{(n+1)(n^3+9n^2+26n+24)(c+dx)(bc-ad)^3}+\frac{3b^2n}{(n+2)(n^2+7n+12)(c+dx)^2(bc-ad)^2}+\frac{bn}{(n+3)(n+4)(c+\cdots}\right.}{d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^n*(c + d*x)^(-5 - n),x]
```

```
[Out] ((a + b*x)^n*((6*b^4)/((b*c - a*d)^4*(1 + n)*(2 + n)*(3 + n)*(4 +
 n)) - 1/((4 + n)*(c + d*x)^4) + (b*n)/((b*c - a*d)*(3 + n)*(4 +
n)*(c + d*x)^3) + (3*b^2*n)/((b*c - a*d)^2*(2 + n)*(12 + 7*n + n^
2)*(c + d*x)^2) + (6*b^3*n)/((b*c - a*d)^3*(1 + n)*(24 + 26*n + 9
*n^2 + n^3)*(c + d*x))))/(d*(c + d*x)^n)
```

Maple [B] time = 0.013, size = 662, normalized size = 3.6

$$-\frac{(bx+a)^{1+n}(dx+c)^{-4-n}\left(a^3d^3n^3-3a^2bcd^2n^3-3a^2bd^3n^2x+3ab^2c^2dn^3+6ab^2cd^2n^2x+6ab^2d^3nx^2-b^3c^3n^3-3b^3c^2dn\cdots\right.}{a^4d^4n^4-4a^3bcd^3n^4+6a^2b^2c^2d^2n^4-4ab^3c^3dn^4+b^4c^4n^4+10a^4d^4n^3-40a^3bcd^3n^3+\cdots}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^n*(d*x+c)^(-5-n),x)
```

```
[Out] -(b*x+a)^(1+n)*(d*x+c)^(-4-n)*(a^3*d^3*n^3-3*a^2*b*c*d^2*n^3-3*a^
2*b*d^3*n^2*x+3*a*b^2*c^2*d*n^3+6*a*b^2*c*d^2*n^2*x+6*a*b^2*d^3*n
*x^2-b^3*c^3*n^3-3*b^3*c^2*d*n^2*x-6*b^3*c*d^2*n*x^2-6*b^3*d^3*x^
3+6*a^3*d^3*n^2-21*a^2*b*c*d^2*n^2-9*a^2*b*d^3*n*x+24*a*b^2*c^2*d
*n^2+30*a*b^2*c*d^2*n*x+6*a*b^2*d^3*x^2-9*b^3*c^3*n^2-21*b^3*c^2*
d*n*x-24*b^3*c*d^2*x^2+11*a^3*d^3*n-42*a^2*b*c*d^2*n-6*a^2*b*d^3*
x+57*a*b^2*c^2*d*n+24*a*b^2*c*d^2*x-26*b^3*c^3*n-36*b^3*c^2*d*x+6
*a^3*d^3-24*a^2*b*c*d^2+36*a*b^2*c^2*d-24*b^3*c^3)/(a^4*d^4*n^4-4
*a^3*b*c*d^3*n^4+6*a^2*b^2*c^2*d^2*n^4-4*a*b^3*c^3*d*n^4+b^4*c^4*
n^4+10*a^4*d^4*n^3-40*a^3*b*c*d^3*n^3+60*a^2*b^2*c^2*d^2*n^3-40*a
*b^3*c^3*d*n^3+10*b^4*c^4*n^3+35*a^4*d^4*n^2-140*a^3*b*c*d^3*n^2+
210*a^2*b^2*c^2*d^2*n^2-140*a*b^3*c^3*d*n^2+35*b^4*c^4*n^2+50*a^4
*d^4*n-200*a^3*b*c*d^3*n+300*a^2*b^2*c^2*d^2*n-200*a*b^3*c^3*d*n+
50*b^4*c^4*n+24*a^4*d^4-96*a^3*b*c*d^3+144*a^2*b^2*c^2*d^2-96*a*b
^3*c^3*d+24*b^4*c^4)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n (dx+c)^{-n-5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 5),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 5), x)
```

Fricas [A] time = 0.252753, size = 1288, normalized size = 6.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 5),x, algorithm="fricas")
```

```
[Out] (6*b^4*d^4*x^5 + 24*a*b^3*c^4 - 36*a^2*b^2*c^3*d + 24*a^3*b*c^2*d
^2 - 6*a^4*c*d^3 + 6*(5*b^4*c*d^3 + (b^4*c*d^3 - a*b^3*d^4)*n)*x^
4 + (a*b^3*c^4 - 3*a^2*b^2*c^3*d + 3*a^3*b*c^2*d^2 - a^4*c*d^3)*n
^3 + 3*(20*b^4*c^2*d^2 + (b^4*c^2*d^2 - 2*a*b^3*c*d^3 + a^2*b^2*d
^4)*n^2 + (9*b^4*c^2*d^2 - 10*a*b^3*c*d^3 + a^2*b^2*d^4)*n)*x^3 +
 3*(3*a*b^3*c^4 - 8*a^2*b^2*c^3*d + 7*a^3*b*c^2*d^2 - 2*a^4*c*d^3
)*n^2 + (60*b^4*c^3*d + (b^4*c^3*d - 3*a*b^3*c^2*d^2 + 3*a^2*b^2*
c*d^3 - a^3*b*d^4)*n^3 + 3*(4*b^4*c^3*d - 9*a*b^3*c^2*d^2 + 6*a^2
*b^2*c*d^3 - a^3*b*d^4)*n^2 + (47*b^4*c^3*d - 60*a*b^3*c^2*d^2 +
15*a^2*b^2*c*d^3 - 2*a^3*b*d^4)*n)*x^2 + (26*a*b^3*c^4 - 57*a^2*b
^2*c^3*d + 42*a^3*b*c^2*d^2 - 11*a^4*c*d^3)*n + (24*b^4*c^4 + 24*
a*b^3*c^3*d - 36*a^2*b^2*c^2*d^2 + 24*a^3*b*c*d^3 - 6*a^4*d^4 + (
b^4*c^4 - 2*a*b^3*c^3*d + 2*a^3*b*c*d^3 - a^4*d^4)*n^3 + 3*(3*b^4
*c^4 - 4*a*b^3*c^3*d - 3*a^2*b^2*c^2*d^2 + 6*a^3*b*c*d^3 - 2*a^4*
d^4)*n^2 + (26*b^4*c^4 - 10*a*b^3*c^3*d - 45*a^2*b^2*c^2*d^2 + 40
*a^3*b*c*d^3 - 11*a^4*d^4)*n)*x)*(b*x + a)^n*(d*x + c)^(-n - 5)/(
24*b^4*c^4 - 96*a*b^3*c^3*d + 144*a^2*b^2*c^2*d^2 - 96*a^3*b*c*d^
3 + 24*a^4*d^4 + (b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4
*a^3*b*c*d^3 + a^4*d^4)*n^4 + 10*(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2
*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*n^3 + 35*(b^4*c^4 - 4*a*b
^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^4*d^4)*n^2 + 50*
(b^4*c^4 - 4*a*b^3*c^3*d + 6*a^2*b^2*c^2*d^2 - 4*a^3*b*c*d^3 + a^
4*d^4)*n)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**n*(d*x+c)**(-5-n),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^n (dx+c)^{-n-5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^n*(d*x + c)^(-n - 5),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^n*(d*x + c)^(-n - 5), x)
```

3.1878 $\int (a+bx)^{-2+n}(c+dx)^{1-n}\,dx$

Optimal. Leaf size=83

$$-\frac{(bc-ad)(a+bx)^{n-1}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{n}\,{}_2F_1\left(n-1,n-1;n;-\frac{d(a+bx)}{bc-ad}\right)}{b^2(1-n)}$$

```
[Out] -(((b*c - a*d)*(a + b*x)^(-1 + n)*((b*(c + d*x))/(b*c - a*d))^n*H
ypergeometric2F1[-1 + n, -1 + n, n, -((d*(a + b*x))/(b*c - a*d))]
)/(b^2*(1 - n)*(c + d*x)^n))
```

Rubi [A] time = 0.0944577, antiderivative size = 83, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$

$$-\frac{(bc-ad)(a+bx)^{n-1}(c+dx)^{-n}\left(\frac{b(c+dx)}{bc-ad}\right)^{n}\,{}_2F_1\left(n-1,n-1;n;-\frac{d(a+bx)}{bc-ad}\right)}{b^2(1-n)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(-2 + n)*(c + d*x)^(1 - n),x]
```

```
[Out] -(((b*c - a*d)*(a + b*x)^(-1 + n)*((b*(c + d*x))/(b*c - a*d))^n*H
ypergeometric2F1[-1 + n, -1 + n, n, -((d*(a + b*x))/(b*c - a*d))]
)/(b^2*(1 - n)*(c + d*x)^n))
```

Rubi in Sympy [A] time = 17.3383, size = 63, normalized size = 0.76

$$\frac{\left(\frac{b(-c-dx)}{ad-bc}\right)^{n}(a+bx)^{n-1}(c+dx)^{-n}(ad-bc)\,{}_2F_1\left(\begin{matrix} n-1,n-1 \\ n \end{matrix}\middle|\frac{d(a+bx)}{ad-bc}\right)}{b^2(-n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(-2+n)*(d*x+c)**(1-n),x)
```

```
[Out] (b*(-c - d*x)/(a*d - b*c))**n*(a + b*x)**(n - 1)*(c + d*x)**(-n)*
(a*d - b*c)*hyper((n - 1, n - 1), (n,), d*(a + b*x)/(a*d - b*c))/
(b**2*(-n + 1))
```

Mathematica [A] time = 0.267464, size = 101, normalized size = 1.22

$$\frac{(a+bx)^n(c+dx)^{1-n}\left(\frac{d\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}{}_2F_1\left(1-n,1-n;2-n;\frac{b(c+dx)}{bc-ad}\right)}{bc-ad}+\frac{1}{a+bx}\right)}{b(n-1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(-2 + n)*(c + d*x)^(1 - n),x]
```

```
[Out] ((a + b*x)^n*(c + d*x)^(1 - n)*((a + b*x)^(-1) + (d*Hypergeometri
c2F1[1 - n, 1 - n, 2 - n, (b*(c + d*x))/(b*c - a*d)])/((b*c - a*d
)*((d*(a + b*x))/(-(b*c) + a*d))^n)))/(b*(-1 + n))
```

Maple [F] time = 0.105, size = 0, normalized size = 0.

$$\int (bx+a)^{-2+n}(dx+c)^{1-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(-2+n)*(d*x+c)^(1-n),x)
```

```
[Out] int((b*x+a)^(-2+n)*(d*x+c)^(1-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n-2}(dx+c)^{-n+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 2)*(d*x + c)^(-n + 1),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n - 2)*(d*x + c)^(-n + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{n-2}(dx+c)^{-n+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 2)*(d*x + c)^(-n + 1),x, algorithm="fricas")

[Out] integral((b*x + a)^(n - 2)*(d*x + c)^(-n + 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(-2+n)*(d*x+c)**(1-n),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx + a)^{n-2} (dx + c)^{-n+1} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n - 2)*(d*x + c)^(-n + 1),x, algorithm="giac")

[Out] integrate((b*x + a)^(n - 2)*(d*x + c)^(-n + 1), x)
```

3.1879 $\int (a+bx)^{1+n}(c+dx)^{-1-n}\,dx$

Optimal. Leaf size=84

$$\frac{(bc-ad)(a+bx)^n(c+dx)^{-n}\left(-\frac{d(a+bx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(-n-1,-n;1-n;\frac{b(c+dx)}{bc-ad}\right)}{d^2n}$$

```
[Out] ((b*c - a*d)*(a + b*x)^n*Hypergeometric2F1[-1 - n, -n, 1 - n, (b*
(c + d*x))/(b*c - a*d)])/(d^2*n*(-((d*(a + b*x))/(b*c - a*d)))^n*
(c + d*x)^n)
```

Rubi [A] time = 0.0931391, antiderivative size = 84, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095

$$\frac{(bc-ad)(a+bx)^n(c+dx)^{-n}\left(-\frac{d(a+bx)}{bc-ad}\right)^{-n}\,{}_2F_1\left(-n-1,-n;1-n;\frac{b(c+dx)}{bc-ad}\right)}{d^2n}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^(1 + n)*(c + d*x)^(-1 - n),x]
```

```
[Out] ((b*c - a*d)*(a + b*x)^n*Hypergeometric2F1[-1 - n, -n, 1 - n, (b*
(c + d*x))/(b*c - a*d)])/(d^2*n*(-((d*(a + b*x))/(b*c - a*d)))^n*
(c + d*x)^n)
```

Rubi in Sympy [A] time = 17.0533, size = 65, normalized size = 0.77

$$-\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}(a+bx)^n\,(c+dx)^{-n}\,(ad-bc)\,{}_2F_1\left(\begin{matrix}-n-1,-n\\-n+1\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d^2n}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**(1+n)*(d*x+c)**(-1-n),x)
```

```
[Out] -(d*(a + b*x)/(a*d - b*c))**(-n)*(a + b*x)**n*(c + d*x)**(-n)*(a*
d - b*c)*hyper((-n - 1, -n), (-n + 1,), b*(-c - d*x)/(a*d - b*c))
/(d**2*n)
```

Mathematica [A] time = 0.159742, size = 131, normalized size = 1.56

$$\frac{(a+bx)^n(c+dx)^{-n}\left(\frac{d(a+bx)}{ad-bc}\right)^{-n}\left((n-1)(bc-ad)\,{}_2F_1\left(-n,-n;1-n;\frac{b(c+dx)}{bc-ad}\right)-bn(c+dx)\,{}_2F_1\left(1-n,-n;2-n;\frac{b(c+dx)}{bc-ad}\right)\right)}{d^2(n-1)n}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^(1 + n)*(c + d*x)^(-1 - n),x]
```

```
[Out] ((a + b*x)^n*(-(b*n*(c + d*x)*Hypergeometric2F1[1 - n, -n, 2 - n,
 (b*(c + d*x))/(b*c - a*d)]) + (b*c - a*d)*(-1 + n)*Hypergeometri
c2F1[-n, -n, 1 - n, (b*(c + d*x))/(b*c - a*d)]))/(d^2*(-1 + n)*n*
((d*(a + b*x))/(-(b*c) + a*d))^n*(c + d*x)^n)
```

Maple [F] time = 0.103, size = 0, normalized size = 0.

$$\int (bx+a)^{1+n}(dx+c)^{-1-n}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^(1+n)*(d*x+c)^(-1-n),x)
```

```
[Out] int((b*x+a)^(1+n)*(d*x+c)^(-1-n),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n+1}(dx+c)^{-n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 1)*(d*x + c)^(-n - 1),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(n + 1)*(d*x + c)^(-n - 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((bx+a)^{n+1}(dx+c)^{-n-1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 1)*(d*x + c)^(-n - 1),x, algorithm="fricas")

[Out] integral((b*x + a)^(n + 1)*(d*x + c)^(-n - 1), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**(1+n)*(d*x+c)**(-1-n),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{n+1}(dx+c)^{-n-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(n + 1)*(d*x + c)^(-n - 1),x, algorithm="giac")

[Out] integrate((b*x + a)^(n + 1)*(d*x + c)^(-n - 1), x)
```

3.1880 $\int (a+bx)^m (c+dx)^{1+2n-2(1+n)}\,dx$

Optimal. Leaf size=51

$$\frac{(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)}$$

```
[Out] ((a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((d*(a + b
*x))/(b*c - a*d))])/((b*c - a*d)*(1 + m))
```

Rubi [A] time = 0.034466, antiderivative size = 51, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$\frac{(a+bx)^{m+1}\,{}_2F_1\left(1,m+1;m+2;-\frac{d(a+bx)}{bc-ad}\right)}{(m+1)(bc-ad)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(c + d*x)^(1 + 2*n - 2*(1 + n)),x]
```

```
[Out] ((a + b*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, -((d*(a + b
*x))/(b*c - a*d))])/((b*c - a*d)*(1 + m))
```

Rubi in Sympy [A] time = 5.27879, size = 37, normalized size = 0.73

$$-\frac{(a+bx)^{m+1}\,{}_2F_1\left(\begin{matrix}1,m+1\\m+2\end{matrix}\middle|\frac{d(a+bx)}{ad-bc}\right)}{(m+1)\,(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m/(d*x+c),x)
```

```
[Out] -(a + b*x)**(m + 1)*hyper((1, m + 1), (m + 2,), d*(a + b*x)/(a*d
- b*c))/((m + 1)*(a*d - b*c))
```

Mathematica [A] time = 0.0377666, size = 66, normalized size = 1.29

$$\frac{(a+bx)^m\left(\frac{d(a+bx)}{b(c+dx)}\right)^{-m}\,{}_2F_1\left(-m,-m;1-m;\frac{bc-ad}{bc+bdx}\right)}{dm}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(c + d*x)^(1 + 2*n - 2*(1 + n)),x]
```

```
[Out] ((a + b*x)^m*Hypergeometric2F1[-m, -m, 1 - m, (b*c - a*d)/(b*c +
b*d*x)])/(d*m*((d*(a + b*x))/(b*(c + d*x)))^m)
```

Maple [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m/(d*x+c),x)
```

```
[Out] int((b*x+a)^m/(d*x+c),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^m/(d*x + c), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(bx+a)^m}{dx+c}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)^m/(d*x + c), x)
```

Sympy [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(a+bx)^m}{c+dx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m/(d*x+c),x)
```

```
[Out] Integral((a + b*x)**m/(c + d*x), x)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(bx+a)^m}{dx+c}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^m/(d*x + c),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)^m/(d*x + c), x)
```

3.1881 $\int \frac{(c+dx)^{1+2n-2(1+n)}}{(a+bx)^2}\,dx$

Optimal. Leaf size=57

$$-\frac{1}{(a+bx)(bc-ad)}-\frac{d\log(a+bx)}{(bc-ad)^2}+\frac{d\log(c+dx)}{(bc-ad)^2}$$

```
[Out] -(1/((b*c - a*d)*(a + b*x))) - (d*Log[a + b*x])/(b*c - a*d)^2 + (
d*Log[c + d*x])/(b*c - a*d)^2
```

Rubi [A] time = 0.0709204, antiderivative size = 57, normalized size of antiderivative = 1., number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$

$$-\frac{1}{(a+bx)(bc-ad)}-\frac{d\log(a+bx)}{(bc-ad)^2}+\frac{d\log(c+dx)}{(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Int[(c + d*x)^(1 + 2*n - 2*(1 + n))/(a + b*x)^2,x]
```

```
[Out] -(1/((b*c - a*d)*(a + b*x))) - (d*Log[a + b*x])/(b*c - a*d)^2 + (
d*Log[c + d*x])/(b*c - a*d)^2
```

Rubi in Sympy [A] time = 12.8051, size = 46, normalized size = 0.81

$$-\frac{d\log(a+bx)}{(ad-bc)^2}+\frac{d\log(c+dx)}{(ad-bc)^2}+\frac{1}{(a+bx)(ad-bc)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/(b*x+a)**2/(d*x+c),x)
```

```
[Out] -d*log(a + b*x)/(a*d - b*c)**2 + d*log(c + d*x)/(a*d - b*c)**2 +
1/((a + b*x)*(a*d - b*c))
```

Mathematica [A] time = 0.0410186, size = 53, normalized size = 0.93

$$\frac{d(a+bx)\log(c+dx)-d(a+bx)\log(a+bx)+ad-bc}{(a+bx)(bc-ad)^2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(c + d*x)^(1 + 2*n - 2*(1 + n))/(a + b*x)^2,x]
```

```
[Out] (-(b*c) + a*d - d*(a + b*x)*Log[a + b*x] + d*(a + b*x)*Log[c + d*
x])/((b*c - a*d)^2*(a + b*x))
```

Maple [A] time = 0.003, size = 57, normalized size = 1.

$$\frac{d\ln(dx+c)}{(ad-bc)^2}+\frac{1}{(ad-bc)(bx+a)}-\frac{d\ln(bx+a)}{(ad-bc)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/(b*x+a)^2/(d*x+c),x)
```

```
[Out] d/(a*d-b*c)^2*ln(d*x+c)+1/(a*d-b*c)/(b*x+a)-d/(a*d-b*c)^2*ln(b*x+
a)
```

Maxima [A] time = 1.34407, size = 124, normalized size = 2.18

$$-\frac{d\log(bx+a)}{b^2c^2-2\,abcd+a^2d^2}+\frac{d\log(dx+c)}{b^2c^2-2\,abcd+a^2d^2}-\frac{1}{abc-a^2d+(b^2c-abd)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)),x, algorithm="maxima")
```

```
[Out] -d*log(b*x + a)/(b^2*c^2 - 2*a*b*c*d + a^2*d^2) + d*log(d*x + c)/
(b^2*c^2 - 2*a*b*c*d + a^2*d^2) - 1/(a*b*c - a^2*d + (b^2*c - a*b
*d)*x)
```

Fricas [A] time = 0.215933, size = 126, normalized size = 2.21

$$-\frac{bc-ad+(bdx+ad)\log(bx+a)-(bdx+ad)\log(dx+c)}{ab^2c^2-2\,a^2bcd+a^3d^2+(b^3c^2-2\,ab^2cd+a^2bd^2)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)),x, algorithm="fricas")
```

```
[Out] -(b*c - a*d + (b*d*x + a*d)*log(b*x + a) - (b*d*x + a*d)*log(d*x
+ c))/(a*b^2*c^2 - 2*a^2*b*c*d + a^3*d^2 + (b^3*c^2 - 2*a*b^2*c*d
```

```
+ a^2*b*d^2)*x)
```

Sympy [A] time = 1.50607, size = 233, normalized size = 4.09

$$\frac{d\log\left(x+\frac{-\frac{a^3d^4}{(ad-bc)^2}+\frac{3a^2bcd^3}{(ad-bc)^2}-\frac{3ab^2c^2d^2}{(ad-bc)^2}+ad^2+\frac{b^3c^3d}{(ad-bc)^2}+bcd}{2bd^2}\right)}{(ad-bc)^2}-\frac{d\log\left(x+\frac{\frac{a^3d^4}{(ad-bc)^2}-\frac{3a^2bcd^3}{(ad-bc)^2}+\frac{3ab^2c^2d^2}{(ad-bc)^2}+ad^2-\frac{b^3c^3d}{(ad-bc)^2}+bcd}{2bd^2}\right)}{(ad-bc)^2}+\frac{1}{a^2d-abc+x\left(abd-b^2c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/(b*x+a)**2/(d*x+c),x)
```

```
[Out] d*log(x + (-a**3*d**4/(a*d - b*c)**2 + 3*a**2*b*c*d**3/(a*d - b*c
)**2 - 3*a*b**2*c**2*d**2/(a*d - b*c)**2 + a*d**2 + b**3*c**3*d/(
a*d - b*c)**2 + b*c*d)/(2*b*d**2))/(a*d - b*c)**2 - d*log(x + (a*
*3*d**4/(a*d - b*c)**2 - 3*a**2*b*c*d**3/(a*d - b*c)**2 + 3*a*b**
2*c**2*d**2/(a*d - b*c)**2 + a*d**2 - b**3*c**3*d/(a*d - b*c)**2
+ b*c*d)/(2*b*d**2))/(a*d - b*c)**2 + 1/(a**2*d - a*b*c + x*(a*b*
d - b**2*c))
```

GIAC/XCAS [A] time = 0.272628, size = 105, normalized size = 1.84

$$\frac{bd\ln\left(\left|\frac{bc}{bx+a}-\frac{ad}{bx+a}+d\right|\right)}{b^3c^2-2\,ab^2cd+a^2bd^2}-\frac{b}{(b^2c-abd)(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/((b*x + a)^2*(d*x + c)),x, algorithm="giac")
```

```
[Out] b*d*ln(abs(b*c/(b*x + a) - a*d/(b*x + a) + d))/(b^3*c^2 - 2*a*b^2
*c*d + a^2*b*d^2) - b/((b^2*c - a*b*d)*(b*x + a))
```

3.1882 $\int (a+bx)^m(ac(1+m)+bc(2+m)x)^{-3-m}\,dx$

Optimal. Leaf size=95

$$\frac{(a+bx)^{m+1}(ac(m+1)+bc(m+2)x)^{-m-1}}{a^2bc^2(m+1)(m+2)}-\frac{(a+bx)^{m+1}(ac(m+1)+bc(m+2)x)^{-m-2}}{abc(m+2)}$$

```
[Out] -(((a + b*x)^(1 + m)*(a*c*(1 + m) + b*c*(2 + m)*x)^(-2 - m))/(a*b
*c*(2 + m))) + ((a + b*x)^(1 + m)*(a*c*(1 + m) + b*c*(2 + m)*x)^(
-1 - m))/(a^2*b*c^2*(1 + m)*(2 + m))
```

Rubi [A] time = 0.112567, antiderivative size = 95, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.071$

$$\frac{(a+bx)^{m+1}(ac(m+1)+bc(m+2)x)^{-m-1}}{a^2bc^2(m+1)(m+2)}-\frac{(a+bx)^{m+1}(ac(m+1)+bc(m+2)x)^{-m-2}}{abc(m+2)}$$

Antiderivative was successfully verified.

```
[In]  Int[(a + b*x)^m*(a*c*(1 + m) + b*c*(2 + m)*x)^(-3 - m),x]
```

```
[Out] -(((a + b*x)^(1 + m)*(a*c*(1 + m) + b*c*(2 + m)*x)^(-2 - m))/(a*b
*c*(2 + m))) + ((a + b*x)^(1 + m)*(a*c*(1 + m) + b*c*(2 + m)*x)^(
-1 - m))/(a^2*b*c^2*(1 + m)*(2 + m))
```

Rubi in Sympy [A] time = 20.543, size = 80, normalized size = 0.84

$$-\frac{(a+bx)^{m+1}\left(ac\left(m+1\right)+bcx\left(m+2\right)\right)^{-m-2}}{abc\left(m+2\right)}+\frac{(a+bx)^{m+1}\left(ac\left(m+1\right)+bcx\left(m+2\right)\right)^{-m-1}}{a^2bc^2\left(m+1\right)\left(m+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((b*x+a)**m*(a*c*(1+m)+b*c*(2+m)*x)**(-3-m),x)
```

```
[Out] -(a + b*x)**(m + 1)*(a*c*(m + 1) + b*c*x*(m + 2))**(-m - 2)/(a*b*
c*(m + 2)) + (a + b*x)**(m + 1)*(a*c*(m + 1) + b*c*x*(m + 2))**(-
m - 1)/(a**2*b*c**2*(m + 1)*(m + 2))
```

Mathematica [C] time = 0.250216, size = 82, normalized size = 0.86

$$-\frac{(a+bx)^{m+1}\left(-\frac{b(m+2)x}{a}-m-1\right)^m(c(a(m+1)+b(m+2)x))^{-m}\,{}_2F_1\left(m+1,m+3;m+2;\frac{(m+2)(a+bx)}{a}\right)}{a^3bc^3(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(a + b*x)^m*(a*c*(1 + m) + b*c*(2 + m)*x)^(-3 - m),x]
```

```
[Out] -(((a + b*x)^(1 + m)*(-1 - m - (b*(2 + m)*x)/a)^m*Hypergeometric2
F1[1 + m, 3 + m, 2 + m, ((2 + m)*(a + b*x))/a])/(a^3*b*c^3*(1 + m
)*(c*(a*(1 + m) + b*(2 + m)*x))^m))
```

Maple [A] time = 0.007, size = 57, normalized size = 0.6

$$\frac{(bx+a)^{1+m}(bxm+am+2\,bx+a)\,x\,(bcxm+acm+2\,bcx+ac)^{-3-m}}{a^2(1+m)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^m*(a*c*(1+m)+b*c*(2+m)*x)^(-3-m),x)
```

```
[Out] (b*x+a)^(1+m)*(b*m*x+a*m+2*b*x+a)/a^2/(1+m)*x*(b*c*m*x+a*c*m+2*b*
c*x+a*c)^(-3-m)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bc(m+2)x+ac(m+1))^{-m-3}(bx+a)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*(m + 2)*x + a*c*(m + 1))^(-m - 3)*(b*x + a)^m,x, algorithm="maxima"
```

```
[Out] integrate((b*c*(m + 2)*x + a*c*(m + 1))^(-m - 3)*(b*x + a)^m, x)
```

Fricas [A] time = 0.242855, size = 115, normalized size = 1.21

$$\frac{\left(\left(b^2m+2\,b^2\right)x^3+(2\,abm+3\,ab)x^2+\left(a^2m+a^2\right)x\right)(acm+ac+(bcm+2\,bc)x)^{-m-3}(bx+a)^m}{a^2m+a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*(m + 2)*x + a*c*(m + 1))^(-m - 3)*(b*x + a)^m,x, algorithm="fricas"
```

```
[Out] ((b^2*m + 2*b^2)*x^3 + (2*a*b*m + 3*a*b)*x^2 + (a^2*m + a^2)*x)*(
a*c*m + a*c + (b*c*m + 2*b*c)*x)^(-m - 3)*(b*x + a)^m/(a^2*m + a^
```

```
2)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x+a)**m*(a*c*(1+m)+b*c*(2+m)*x)**(-3-m),x)

[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bc(m+2)x + ac(m+1))^{-m-3}(bx+a)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*c*(m + 2)*x + a*c*(m + 1))^(-m - 3)*(b*x + a)^m,x, algorithm="giac")

[Out] integrate((b*c*(m + 2)*x + a*c*(m + 1))^(-m - 3)*(b*x + a)^m, x)
```

3.1883 $\int (a+bx)^{-1-\frac{bc}{bc-ad}}(c+dx)^{-1+\frac{ad}{bc-ad}}\,dx$

Optimal. Leaf size=97

$$\frac{(a+bx)^{-\frac{ad}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{abc}-\frac{(a+bx)^{-\frac{bc}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{bc}$$

```
[Out] -((c + d*x)^((a*d)/(b*c - a*d))/(b*c*(a + b*x)^((b*c)/(b*c - a*d)
))) + (c + d*x)^((a*d)/(b*c - a*d))/(a*b*c*(a + b*x)^((a*d)/(b*c
- a*d)))
```

Rubi [A] time = 0.0790921, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$

$$\frac{(a+bx)^{-\frac{ad}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{abc}-\frac{(a+bx)^{-\frac{bc}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^(-1 - (b*c)/(b*c - a*d))*(c + d*x)^(-1 + (a*d)/(b*c - a*d)),x]
```

```
[Out] -((c + d*x)^((a*d)/(b*c - a*d))/(b*c*(a + b*x)^((b*c)/(b*c - a*d)
))) + (c + d*x)^((a*d)/(b*c - a*d))/(a*b*c*(a + b*x)^((a*d)/(b*c
- a*d)))
```

Rubi in Sympy [A] time = 31.1825, size = 104, normalized size = 1.07

$$-\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{bc}{-ad+bc}}(a+bx)^{\frac{bc}{ad-bc}}(c+dx)^{\frac{ad}{-ad+bc}}\,{}_2F_1\left(\begin{matrix}\frac{bc}{-ad+bc}+1,\ \frac{ad}{-ad+bc}\\ -\frac{bc}{ad-bc}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{ad}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**(-1-b*c/(-a*d+b*c))*(d*x+c)**(-1+a*d/(-a*d+b*c)),x)
```

```
[Out] -(d*(a + b*x)/(a*d - b*c))**(b*c/(-a*d + b*c))*(a + b*x)**(b*c/(a
*d - b*c))*(c + d*x)**(a*d/(-a*d + b*c))*hyper((b*c/(-a*d + b*c)
+ 1, a*d/(-a*d + b*c)), (-b*c/(a*d - b*c),), b*(-c - d*x)/(a*d -
b*c))/(a*d)
```

Mathematica [A] time = 0.330294, size = 46, normalized size = 0.47

$$\frac{x(a+bx)^{\frac{bc}{ad-bc}}(c+dx)^{\frac{ad}{bc-ad}}}{ac}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^(-1 - (b*c)/(b*c - a*d))*(c + d*x)^(-1 + (a*d)/(b*c - a*d)),x]

[Out] (x*(a + b*x)^((b*c)/(-(b*c) + a*d))*(c + d*x)^((a*d)/(b*c - a*d))
)/(a*c)
```

Maple [A] time = 0.007, size = 66, normalized size = 0.7

$$\frac{x}{ac}(bx+a)^{1-\frac{ad-2bc}{ad-bc}}(dx+c)^{1-\frac{2ad-bc}{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)^(-1-b*c/(-a*d+b*c))*(d*x+c)^(-1+a*d/(-a*d+b*c)),x)

[Out] (b*x+a)^(1-(a*d-2*b*c)/(a*d-b*c))*(d*x+c)^(1-(2*a*d-b*c)/(a*d-b*c
))/a/c*x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-\frac{bc}{bc-ad}-1}(dx+c)^{\frac{ad}{bc-ad}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-b*c/(b*c - a*d) - 1)*(d*x + c)^(a*d/(b*c - a*d) - 1),x, algo

[Out] integrate((b*x + a)^(-b*c/(b*c - a*d) - 1)*(d*x + c)^(a*d/(b*c -
a*d) - 1), x)
```

Fricas [A] time = 0.233403, size = 113, normalized size = 1.16

$$\frac{bdx^3+acx+(bc+ad)x^2}{(bx+a)^{\frac{2bc-ad}{bc-ad}}(dx+c)^{\frac{bc-2ad}{bc-ad}}ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-b*c/(b*c - a*d) - 1)*(d*x + c)^(a*d/(b*c - a*d) - 1),x, algo
```

```
[Out] (b*d*x^3 + a*c*x + (b*c + a*d)*x^2)/((b*x + a)^((2*b*c - a*d)/(b*
c - a*d))*(d*x + c)^((b*c - 2*a*d)/(b*c - a*d))*a*c)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**(-1-b*c/(-a*d+b*c))*(d*x+c)**(-1+a*d/(-a*d+b*c)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-\frac{bc}{bc-ad}-1}(dx+c)^{\frac{ad}{bc-ad}-1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x + a)^(-b*c/(b*c - a*d) - 1)*(d*x + c)^(a*d/(b*c - a*d) - 1),x, algo
```

```
[Out] integrate((b*x + a)^(-b*c/(b*c - a*d) - 1)*(d*x + c)^(a*d/(b*c -
a*d) - 1), x)
```

3.1884 $\int (a+bx)^{\frac{-2bc+ad}{bc-ad}}(c+dx)^{\frac{bc-2ad}{-bc+ad}}\,dx$

Optimal. Leaf size=97

$$\frac{(a+bx)^{-\frac{ad}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{abc}-\frac{(a+bx)^{-\frac{bc}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{bc}$$

```
[Out] -((c + d*x)^((a*d)/(b*c - a*d))/(b*c*(a + b*x)^((b*c)/(b*c - a*d)
))) + (c + d*x)^((a*d)/(b*c - a*d))/(a*b*c*(a + b*x)^((a*d)/(b*c
- a*d)))
```

Rubi [A] time = 0.0792646, antiderivative size = 97, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 51, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.039

$$\frac{(a+bx)^{-\frac{ad}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{abc}-\frac{(a+bx)^{-\frac{bc}{bc-ad}}(c+dx)^{\frac{ad}{bc-ad}}}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)^((-2*b*c + a*d)/(b*c - a*d))*(c + d*x)^((b*c - 2*a*d)/(-
(b*c) + a*d)),x]
```

```
[Out] -((c + d*x)^((a*d)/(b*c - a*d))/(b*c*(a + b*x)^((b*c)/(b*c - a*d)
))) + (c + d*x)^((a*d)/(b*c - a*d))/(a*b*c*(a + b*x)^((a*d)/(b*c
- a*d)))
```

Rubi in Sympy [A] time = 33.0808, size = 128, normalized size = 1.32

$$-\frac{\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{ad-2bc}{ad-bc}}(a+bx)^{\frac{ad-2bc}{-ad+bc}}(c+dx)^{-\frac{ad}{ad-bc}}(ad-bc)\,{}_2F_1\left(\begin{matrix}\frac{ad-2bc}{ad-bc},-\frac{ad}{ad-bc}\\-\frac{bc}{ad-bc}\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{ad^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((b*x+a)**((a*d-2*b*c)/(-a*d+b*c))*(d*x+c)**((-2*a*d+b*c)/(a*d-
b*c)),x)
```

```
[Out] -(d*(a + b*x)/(a*d - b*c))**((a*d - 2*b*c)/(a*d - b*c))*(a + b*x)
**((a*d - 2*b*c)/(-a*d + b*c))*(c + d*x)**(-a*d/(a*d - b*c))*(a*d
 - b*c)*hyper(((a*d - 2*b*c)/(a*d - b*c), -a*d/(a*d - b*c)), (-b*
c/(a*d - b*c),), b*(-c - d*x)/(a*d - b*c))/(a*d**2)
```

Mathematica [C] time = 0.218624, size = 159, normalized size = 1.64

$$\frac{(bc-ad)(a+bx)^{\frac{ad-2bc}{bc-ad}}\left(\frac{d(a+bx)}{ad-bc}\right)^{\frac{ad-2bc}{ad-bc}}(c+dx)^{\frac{ad}{bc-ad}}\,{}_2F_1\left(\frac{ad}{bc-ad},\frac{ad-2bc}{ad-bc};\frac{bc}{bc-ad};\frac{b(c+dx)}{bc-ad}\right)}{ad^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)^((-2*b*c + a*d)/(b*c - a*d))*(c + d*x)^((b*c - 2*a*d)/(-
(b*c) + a*d)),x]
```

```
[Out] ((b*c - a*d)*(a + b*x)^((-2*b*c + a*d)/(b*c - a*d))*((d*(a + b*x)
)/(-(b*c) + a*d))^((-2*b*c + a*d)/(-(b*c) + a*d))*(c + d*x)^((a*d
)/(b*c - a*d))*Hypergeometric2F1[(a*d)/(b*c - a*d), (-2*b*c + a*d
)/(-(b*c) + a*d), (b*c)/(b*c - a*d), (b*(c + d*x))/(b*c - a*d)])/
(a*d^2)
```

Maple [A] time = 0.007, size = 66, normalized size = 0.7

$$\frac{x}{ac}(bx+a)^{1-\frac{ad-2bc}{ad-bc}}(dx+c)^{1-\frac{2ad-bc}{ad-bc}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((b*x+a)^((a*d-2*b*c)/(-a*d+b*c))*(d*x+c)^((-2*a*d+b*c)/(a*d-
b*c)),x)
```

```
[Out] (b*x+a)^(1-(a*d-2*b*c)/(a*d-b*c))*(d*x+c)^(1-(2*a*d-b*c)/(a*d-b*c
))/a/c*x
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (bx+a)^{-\frac{2bc-ad}{bc-ad}}(dx+c)^{-\frac{bc-2ad}{bc-ad}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((b*x + a)^(-(2*b*c - a*d)/(b*c - a*d))*(d*x + c)^(-
(b*c - 2*a*d)/(b*c - a*d)),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)^(-(2*b*c - a*d)/(b*c - a*d))*(d*x + c)^(-(b*c
 - 2*a*d)/(b*c - a*d)), x)
```

Fricas [A] time = 0.233228, size = 113, normalized size = 1.16

$$\frac{bdx^3 + acx + (bc + ad)x^2}{(bx + a)^{\frac{2bc - ad}{bc - ad}}(dx + c)^{\frac{bc - 2ad}{bc - ad}}ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^((2*b*c - a*d)/(b*c - a*d))*(d*x + c)^((b*c - 2*a*d)/(b*c -
```

```
[Out] (b*d*x^3 + a*c*x + (b*c + a*d)*x^2)/((b*x + a)^((2*b*c - a*d)/(b*
c - a*d))*(d*x + c)^((b*c - 2*a*d)/(b*c - a*d))*a*c)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)**((a*d-2*b*c)/(-a*d+b*c))*(d*x+c)**((-2*a*d+b*c)/(a*d-
b*c)),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{1}{(bx + a)^{\frac{2bc - ad}{bc - ad}}(dx + c)^{\frac{bc - 2ad}{bc - ad}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/((b*x + a)^((2*b*c - a*d)/(b*c - a*d))*(d*x + c)^((b*c - 2*a*d)/(b*c -
```

```
[Out] integrate(1/((b*x + a)^((2*b*c - a*d)/(b*c - a*d))*(d*x + c)^((b*
c - 2*a*d)/(b*c - a*d))), x)
```

3.1885 $\int \frac{(1-x)^n}{\sqrt{1+x}}\,dx$

Optimal. Leaf size=30

$$2^{n+1}\sqrt{x+1}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};\frac{x+1}{2}\right)$$

```
[Out] 2^(1 + n)*Sqrt[1 + x]*Hypergeometric2F1[1/2, -n, 3/2, (1 + x)/2]
```

Rubi [A] time = 0.0220427, antiderivative size = 30, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$2^{n+1}\sqrt{x+1}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};\frac{x+1}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^n/Sqrt[1 + x],x]

[Out] 2^(1 + n)*Sqrt[1 + x]*Hypergeometric2F1[1/2, -n, 3/2, (1 + x)/2]
```

Rubi in Sympy [A] time = 2.832, size = 24, normalized size = 0.8

$$2\cdot 2^n\sqrt{x+1}\,{}_2F_1\left(\begin{matrix}-n,\frac{1}{2}\\\frac{3}{2}\end{matrix}\middle|\frac{x}{2}+\frac{1}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**n/(1+x)**(1/2),x)

[Out] 2*2**n*sqrt(x + 1)*hyper((-n, 1/2), (3/2,), x/2 + 1/2)
```

Mathematica [A] time = 0.0199474, size = 30, normalized size = 1.

$$2^{n+1}\sqrt{x+1}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};\frac{x+1}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^n/Sqrt[1 + x],x]
```

```
[Out] 2^(1 + n)*Sqrt[1 + x]*Hypergeometric2F1[1/2, -n, 3/2, (1 + x)/2]
```

Maple [F] time = 0.039, size = 0, normalized size = 0.

$$\int (1-x)^n \frac{1}{\sqrt{1+x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^n/(1+x)^(1/2),x)
```

```
[Out] int((1-x)^n/(1+x)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x+1)^n}{\sqrt{x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^n/sqrt(x + 1),x, algorithm="maxima")
```

```
[Out] integrate((-x + 1)^n/sqrt(x + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(-x+1)^n}{\sqrt{x+1}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^n/sqrt(x + 1),x, algorithm="fricas")
```

```
[Out] integral((-x + 1)^n/sqrt(x + 1), x)
```

Sympy [A] time = 3.622, size = 29, normalized size = 0.97

$$2\cdot 2^n\sqrt{x+1}\,{}_2F_1\left(\begin{matrix}\frac{1}{2},-n\\ \frac{3}{2}\end{matrix}\middle|\frac{(x+1)\,e^{2i\pi}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**n/(1+x)**(1/2),x)
```

```
[Out] 2*2**n*sqrt(x + 1)*hyper((1/2, -n), (3/2,), (x + 1)*exp_polar(2*I
*pi)/2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(-x+1)^n}{\sqrt{x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((-x + 1)^n/sqrt(x + 1),x, algorithm="giac")
```

```
[Out] integrate((-x + 1)^n/sqrt(x + 1), x)
```

3.1886 $\int \frac{(1+x)^n}{\sqrt{1-x}}\,dx$

Optimal. Leaf size=35

$$-2^{n+1}\sqrt{1-x}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};\frac{1-x}{2}\right)$$

```
[Out] -(2^(1 + n)*Sqrt[1 - x]*Hypergeometric2F1[1/2, -n, 3/2, (1 - x)/2
])
```

Rubi [A] time = 0.0208974, antiderivative size = 35, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-2^{n+1}\sqrt{1-x}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};\frac{1-x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 + x)^n/Sqrt[1 - x],x]
```

```
[Out] -(2^(1 + n)*Sqrt[1 - x]*Hypergeometric2F1[1/2, -n, 3/2, (1 - x)/2
])
```

Rubi in Sympy [A] time = 2.77172, size = 26, normalized size = 0.74

$$-2\cdot 2^n\sqrt{-x+1}\,{}_2F_1\left(\begin{matrix}-n,\frac{1}{2}\\\frac{3}{2}\end{matrix}\middle|-\frac{x}{2}+\frac{1}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1+x)**n/(1-x)**(1/2),x)
```

```
[Out] -2*2**n*sqrt(-x + 1)*hyper((-n, 1/2), (3/2,), -x/2 + 1/2)
```

Mathematica [A] time = 0.0170266, size = 35, normalized size = 1.

$$-2^{n+1}\sqrt{1-x}\,{}_2F_1\left(\frac{1}{2},-n;\frac{3}{2};\frac{1-x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 + x)^n/Sqrt[1 - x],x]
```

```
[Out] -(2^(1 + n)*Sqrt[1 - x]*Hypergeometric2F1[1/2, -n, 3/2, (1 - x)/2
])
```

Maple [F] time = 0.037, size = 0, normalized size = 0.

$$\int (1+x)^n \frac{1}{\sqrt{1-x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1+x)^n/(1-x)^(1/2),x)
```

```
[Out] int((1+x)^n/(1-x)^(1/2),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(x+1)^n}{\sqrt{-x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^n/sqrt(-x + 1),x, algorithm="maxima")
```

```
[Out] integrate((x + 1)^n/sqrt(-x + 1), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(x+1)^n}{\sqrt{-x+1}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^n/sqrt(-x + 1),x, algorithm="fricas")
```

```
[Out] integral((x + 1)^n/sqrt(-x + 1), x)
```

Sympy [A] time = 3.62835, size = 31, normalized size = 0.89

$$-2\cdot 2^{n}i\sqrt{x-1}\,{}_{2}F_{1}\left(\begin{matrix} \frac{1}{2},-n \\ \frac{3}{2} \end{matrix}\middle| \frac{(x-1)\,e^{i\pi}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1+x)**n/(1-x)**(1/2),x)
```

```
[Out] -2*2**n*I*sqrt(x - 1)*hyper((1/2, -n), (3/2,), (x - 1)*exp_polar(
I*pi)/2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(x+1)^{n}}{\sqrt{-x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^n/sqrt(-x + 1),x, algorithm="giac")
```

```
[Out] integrate((x + 1)^n/sqrt(-x + 1), x)
```

3.1887 $\int (1-x)^n (1+x)^{7/3} \, dx$

Optimal. Leaf size=33

$$\frac{3}{5} 2^{n-1} (x+1)^{10/3} \, {}_2F_1\left(\frac{10}{3}, -n; \frac{13}{3}; \frac{x+1}{2}\right)$$

```
[Out] (3*2^(-1 + n)*(1 + x)^(10/3)*Hypergeometric2F1[10/3, -n, 13/3, (1
 + x)/2])/5
```

Rubi [A] time = 0.0213483, antiderivative size = 33, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.067$

$$\frac{3}{5} 2^{n-1} (x+1)^{10/3} \, {}_2F_1\left(\frac{10}{3}, -n; \frac{13}{3}; \frac{x+1}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Int[(1 - x)^n*(1 + x)^(7/3),x]
```

```
[Out] (3*2^(-1 + n)*(1 + x)^(10/3)*Hypergeometric2F1[10/3, -n, 13/3, (1
 + x)/2])/5
```

Rubi in Sympy [A] time = 2.77662, size = 26, normalized size = 0.79

$$\frac{3 \cdot 2^{n} \left(x+1\right)^{\frac{10}{3}} {}_{2}F_{1}\left(\begin{matrix} -n, \frac{10}{3} \\ \frac{13}{3} \end{matrix}\middle| {\frac{x}{2} + \frac{1}{2}} \right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((1-x)**n*(1+x)**(7/3),x)
```

```
[Out] 3*2**n*(x + 1)**(10/3)*hyper((-n, 10/3), (13/3,), x/2 + 1/2)/10
```

Mathematica [A] time = 0.0338776, size = 33, normalized size = 1.

$$\frac{3}{5} 2^{n-1} (x+1)^{10/3} \, {}_2F_1\left(\frac{10}{3}, -n; \frac{13}{3}; \frac{x+1}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^n*(1 + x)^(7/3),x]
```

```
[Out] (3*2^(-1 + n)*(1 + x)^(10/3)*Hypergeometric2F1[10/3, -n, 13/3, (1
 + x)/2])/5
```

Maple [F] time = 0.036, size = 0, normalized size = 0.

$$\int (1-x)^{n} (1+x)^{\frac{7}{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^n*(1+x)^(7/3),x)
```

```
[Out] int((1-x)^n*(1+x)^(7/3),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (x+1)^{\frac{7}{3}} (-x+1)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(7/3)*(-x + 1)^n,x, algorithm="maxima")
```

```
[Out] integrate((x + 1)^(7/3)*(-x + 1)^n, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(x^{2}+2\,x+1\right)(x+1)^{\frac{1}{3}}(-x+1)^{n}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(7/3)*(-x + 1)^n,x, algorithm="fricas")
```

```
[Out] integral((x^2 + 2*x + 1)*(x + 1)^(1/3)*(-x + 1)^n, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**n*(1+x)**(7/3),x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (x+1)^{\frac{7}{3}}(-x+1)^n\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^(7/3)*(-x + 1)^n,x, algorithm="giac")
```

```
[Out] integrate((x + 1)^(7/3)*(-x + 1)^n, x)
```

3.1888 $\int (1-x)^{7/3}(1+x)^n\,dx$

Optimal. Leaf size=37

$$-\frac{3}{5}2^{n-1}(1-x)^{10/3}\,{}_2F_1\left(\frac{10}{3},-n;\frac{13}{3};\frac{1-x}{2}\right)$$

```
[Out] (-3*2^(-1 + n)*(1 - x)^(10/3)*Hypergeometric2F1[10/3, -n, 13/3, (
1 - x)/2])/5
```

Rubi [A] time = 0.0200921, antiderivative size = 37, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067

$$-\frac{3}{5}2^{n-1}(1-x)^{10/3}\,{}_2F_1\left(\frac{10}{3},-n;\frac{13}{3};\frac{1-x}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(1 - x)^(7/3)*(1 + x)^n,x]
```

```
[Out] (-3*2^(-1 + n)*(1 - x)^(10/3)*Hypergeometric2F1[10/3, -n, 13/3, (
1 - x)/2])/5
```

Rubi in Sympy [A] time = 2.73372, size = 27, normalized size = 0.73

$$-\frac{3\cdot 2^{n}\left(-x+1\right)^{\frac{10}{3}}\,{}_2F_1\left(\begin{matrix}-n,\frac{10}{3}\\ \frac{13}{3}\end{matrix}\middle|-\frac{x}{2}+\frac{1}{2}\right)}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate((1-x)**(7/3)*(1+x)**n,x)
```

```
[Out] -3*2**n*(-x + 1)**(10/3)*hyper((-n, 10/3), (13/3,), -x/2 + 1/2)/1
0
```

Mathematica [A] time = 0.0333838, size = 37, normalized size = 1.

$$-\frac{3}{5}2^{n-1}(1-x)^{10/3}\,{}_2F_1\left(\frac{10}{3},-n;\frac{13}{3};\frac{1-x}{2}\right)$$

Antiderivative was successfully verified.

```
[In]  Integrate[(1 - x)^(7/3)*(1 + x)^n,x]
```

```
[Out] (-3*2^(-1 + n)*(1 - x)^(10/3)*Hypergeometric2F1[10/3, -n, 13/3, (
1 - x)/2])/5
```

Maple [F] time = 0.037, size = 0, normalized size = 0.

$$\int (1-x)^{\frac{7}{3}} (1+x)^n \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((1-x)^(7/3)*(1+x)^n,x)
```

```
[Out] int((1-x)^(7/3)*(1+x)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (x+1)^n(-x+1)^{\frac{7}{3}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^n*(-x + 1)^(7/3),x, algorithm="maxima")
```

```
[Out] integrate((x + 1)^n*(-x + 1)^(7/3), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\left(x^2-2\,x+1\right)(x+1)^n(-x+1)^{\frac{1}{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^n*(-x + 1)^(7/3),x, algorithm="fricas")
```

```
[Out] integral((x^2 - 2*x + 1)*(x + 1)^n*(-x + 1)^(1/3), x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((1-x)**(7/3)*(1+x)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (x+1)^n(-x+1)^{\frac{7}{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((x + 1)^n*(-x + 1)^(7/3),x, algorithm="giac")
```

```
[Out] integrate((x + 1)^n*(-x + 1)^(7/3), x)
```

3.1889 $\int (1+2x)^{-m}(2+3x)^m\,dx$

Optimal. Leaf size=47

$$\frac{2^{-m-1}(2x+1)^{1-m}\,{}_2F_1(1-m,-m;2-m;-3(2x+1))}{1-m}$$

```
[Out] (2^(-1 - m)*(1 + 2*x)^(1 - m)*Hypergeometric2F1[1 - m, -m, 2 - m,
 -3*(1 + 2*x)])/(1 - m)
```

Rubi [A] time = 0.03759, antiderivative size = 47, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.059$

$$\frac{2^{-m-1}(2x+1)^{1-m}\,{}_2F_1(1-m,-m;2-m;-3(2x+1))}{1-m}$$

Antiderivative was successfully verified.

```
[In]  Int[(2 + 3*x)^m/(1 + 2*x)^m,x]
```

```
[Out] (2^(-1 - m)*(1 + 2*x)^(1 - m)*Hypergeometric2F1[1 - m, -m, 2 - m,
 -3*(1 + 2*x)])/(1 - m)
```

Rubi in Sympy [A] time = 4.0695, size = 29, normalized size = 0.62

$$\frac{2^{-m}\,(2x+1)^{-m+1}\,{}_2F_1\left(\left.\begin{matrix}-m,-m+1\\-m+2\end{matrix}\right|-6x-3\right)}{2\,(-m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((2+3*x)**m/((1+2*x)**m),x)
```

```
[Out] 2**(-m)*(2*x + 1)**(-m + 1)*hyper((-m, -m + 1), (-m + 2,), -6*x -
 3)/(2*(-m + 1))
```

Mathematica [A] time = 0.0360922, size = 47, normalized size = 1.

$$\frac{(-6x-3)^m(2x+1)^{-m}(3x+2)^{m+1}\,{}_2F_1(m,m+1;m+2;6x+4)}{3(m+1)}$$

Antiderivative was successfully verified.

```
[In]  Integrate[(2 + 3*x)^m/(1 + 2*x)^m,x]
```

```
[Out] ((-3 - 6*x)^m*(2 + 3*x)^(1 + m)*Hypergeometric2F1[m, 1 + m, 2 + m
, 4 + 6*x])/(3*(1 + m)*(1 + 2*x)^m)
```

Maple [F] time = 0.083, size = 0, normalized size = 0.

$$\int \frac{(2+3x)^m}{(1+2x)^m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((2+3*x)^m/((1+2*x)^m),x)
```

```
[Out] int((2+3*x)^m/((1+2*x)^m),x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (3x+2)^m (2x+1)^{-m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x + 2)^m/(2*x + 1)^m,x, algorithm="maxima")
```

```
[Out] integrate((3*x + 2)^m*(2*x + 1)^(-m), x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left(\frac{(3x+2)^m}{(2x+1)^m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x + 2)^m/(2*x + 1)^m,x, algorithm="fricas")
```

```
[Out] integral((3*x + 2)^m/(2*x + 1)^m, x)
```

Sympy [A] time = 156.431, size = 42, normalized size = 0.89

$$\frac{3^{2m}\left(x+\frac{2}{3}\right)\left(x+\frac{2}{3}\right)^{m}e^{-i\pi m}(m+1)\,{}_{2}F_{1}\left(\begin{matrix} m, m+1 \\ m+2 \end{matrix}\middle| 6x+4\right)}{(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((2+3*x)**m/((1+2*x)**m),x)
```

```
[Out] 3**(2*m)*(x + 2/3)*(x + 2/3)**m*exp(-I*pi*m)*gamma(m + 1)*hyper((
m, m + 1), (m + 2,), 6*x + 4)/gamma(m + 2)
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int \frac{(3\,x+2)^{m}}{(2\,x+1)^{m}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((3*x + 2)^m/(2*x + 1)^m,x, algorithm="giac")
```

```
[Out] integrate((3*x + 2)^m/(2*x + 1)^m, x)
```

3.1890 $\int \left(\frac{d(a+bx)}{-bc+ad}\right)^m (c+dx)^n\,dx$

Optimal. Leaf size=45

$$\frac{(c+dx)^{n+1}\,{}_2F_1\left(-m,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}$$

```
[Out] ((c + d*x)^(1 + n)*Hypergeometric2F1[-m, 1 + n, 2 + n, (b*(c + d*
x))/(b*c - a*d)])/(d*(1 + n))
```

Rubi [A] time = 0.0582823, antiderivative size = 45, normalized size of antiderivative = 1., number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$

$$\frac{(c+dx)^{n+1}\,{}_2F_1\left(-m,n+1;n+2;\frac{b(c+dx)}{bc-ad}\right)}{d(n+1)}$$

Antiderivative was successfully verified.

```
[In]  Int[((d*(a + b*x))/(-(b*c) + a*d))^m*(c + d*x)^n,x]
```

```
[Out] ((c + d*x)^(1 + n)*Hypergeometric2F1[-m, 1 + n, 2 + n, (b*(c + d*
x))/(b*c - a*d)])/(d*(1 + n))
```

Rubi in Sympy [A] time = 12.9038, size = 34, normalized size = 0.76

$$\frac{(c+dx)^{n+1}\,{}_2F_1\left(\begin{matrix}-m,n+1\\n+2\end{matrix}\middle|\frac{b(-c-dx)}{ad-bc}\right)}{d\,(n+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate((d*(b*x+a)/(a*d-b*c))**m*(d*x+c)**n,x)
```

```
[Out] (c + d*x)**(n + 1)*hyper((-m, n + 1), (n + 2,), b*(-c - d*x)/(a*d
 - b*c))/(d*(n + 1))
```

Mathematica [A] time = 0.103873, size = 46, normalized size = 1.02

$$\frac{(c+dx)^{n+1}\,{}_2F_1\left(-m,n+1;n+2;\frac{bc+bdx}{bc-ad}\right)}{dn+d}$$

Antiderivative was successfully verified.

```
[In]  Integrate[((d*(a + b*x))/(-(b*c) + a*d))^m*(c + d*x)^n,x]
```

```
[Out] ((c + d*x)^(1 + n)*Hypergeometric2F1[-m, 1 + n, 2 + n, (b*c + b*d
*x)/(b*c - a*d)])/(d + d*n)
```

Maple [F] time = 0.174, size = 0, normalized size = 0.

$$\int \left(\frac{d\,(bx+a)}{ad-bc}\right)^{m} (dx+c)^{n}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int((d*(b*x+a)/(a*d-b*c))^m*(d*x+c)^n,x)
```

```
[Out] int((d*(b*x+a)/(a*d-b*c))^m*(d*x+c)^n,x)
```

Maxima [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^{n} \left(-\frac{(bx+a)d}{bc-ad}\right)^{m} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n*(-(b*x + a)*d/(b*c - a*d))^m,x, algorithm="maxima")
```

```
[Out] integrate((d*x + c)^n*(-(b*x + a)*d/(b*c - a*d))^m, x)
```

Fricas [F] time = 0., size = 0, normalized size = 0.

$$\text{integral}\left((dx+c)^{n} \left(-\frac{bdx+ad}{bc-ad}\right)^{m}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*x + c)^n*(-(b*x + a)*d/(b*c - a*d))^m,x, algorithm="fricas")
```

```
[Out] integral((d*x + c)^n*(-(b*d*x + a*d)/(b*c - a*d))^m, x)
```

Sympy [F(-1)] time = 0., size = 0, normalized size = 0.

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate((d*(b*x+a)/(a*d-b*c))**m*(d*x+c)**n,x)
```

```
[Out] Timed out
```

GIAC/XCAS [F] time = 0., size = 0, normalized size = 0.

$$\int (dx+c)^n \left(-\frac{(bx+a)d}{bc-ad}\right)^m dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((d*x + c)^n*(-(b*x + a)*d/(b*c - a*d))^m,x, algorithm="giac")
```

```
[Out] integrate((d*x + c)^n*(-(b*x + a)*d/(b*c - a*d))^m, x)
```

3.1891 $\int (a + bx + cx^2 + dx^3) \, dx$

Optimal. Leaf size=28

$$ax + \frac{bx^2}{2} + \frac{cx^3}{3} + \frac{dx^4}{4}$$

```
[Out] a*x + (b*x^2)/2 + (c*x^3)/3 + (d*x^4)/4
```

Rubi [A] time = 0.0129856, antiderivative size = 28, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$ax + \frac{bx^2}{2} + \frac{cx^3}{3} + \frac{dx^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[a + b*x + c*x^2 + d*x^3,x]

[Out] a*x + (b*x^2)/2 + (c*x^3)/3 + (d*x^4)/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$b \int x \, dx + \frac{cx^3}{3} + \frac{dx^4}{4} + \int a \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(d*x**3+c*x**2+b*x+a,x)

[Out] b*Integral(x, x) + c*x**3/3 + d*x**4/4 + Integral(a, x)
```

Mathematica [A] time = 0.0000611168, size = 28, normalized size = 1.

$$ax + \frac{bx^2}{2} + \frac{cx^3}{3} + \frac{dx^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[a + b*x + c*x^2 + d*x^3,x]
```

```
[Out] a*x + (b*x^2)/2 + (c*x^3)/3 + (d*x^4)/4
```

Maple [A] time = 0.001, size = 23, normalized size = 0.8

$$ax + \frac{bx^2}{2} + \frac{cx^3}{3} + \frac{dx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(d*x^3+c*x^2+b*x+a,x)
```

```
[Out] a*x+1/2*b*x^2+1/3*c*x^3+1/4*d*x^4
```

Maxima [A] time = 1.32398, size = 30, normalized size = 1.07

$$\frac{1}{4}\,dx^4 + \frac{1}{3}\,cx^3 + \frac{1}{2}\,bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x^3 + c*x^2 + b*x + a,x, algorithm="maxima")
```

```
[Out] 1/4*d*x^4 + 1/3*c*x^3 + 1/2*b*x^2 + a*x
```

Fricas [A] time = 0.179296, size = 1, normalized size = 0.04

$$\frac{1}{4}x^4d + \frac{1}{3}x^3c + \frac{1}{2}x^2b + xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x^3 + c*x^2 + b*x + a,x, algorithm="fricas")
```

```
[Out] 1/4*x^4*d + 1/3*x^3*c + 1/2*x^2*b + x*a
```

Sympy [A] time = 0.037245, size = 22, normalized size = 0.79

$$ax + \frac{bx^2}{2} + \frac{cx^3}{3} + \frac{dx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x**3+c*x**2+b*x+a,x)
```

```
[Out] a*x + b*x**2/2 + c*x**3/3 + d*x**4/4
```

GIAC/XCAS [A] time = 0.232431, size = 30, normalized size = 1.07

$$\frac{1}{4}dx^4 + \frac{1}{3}cx^3 + \frac{1}{2}bx^2 + ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(d*x^3 + c*x^2 + b*x + a,x, algorithm="giac")
```

```
[Out] 1/4*d*x^4 + 1/3*c*x^3 + 1/2*b*x^2 + a*x
```

3.1892 $\int \left(-x^3+x^4\right) \, dx$

Optimal. Leaf size=15

$$\frac{x^5}{5}-\frac{x^4}{4}$$

```
[Out] -x^4/4 + x^5/5
```

Rubi [A] time = 0.00702779, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{x^5}{5}-\frac{x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Int[-x^3 + x^4,x]

[Out] -x^4/4 + x^5/5
```

Rubi in Sympy [A] time = 1.12936, size = 8, normalized size = 0.53

$$\frac{x^5}{5}-\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(x**4-x**3,x)

[Out] x**5/5 - x**4/4
```

Mathematica [A] time = 0.000056317, size = 15, normalized size = 1.

$$\frac{x^5}{5}-\frac{x^4}{4}$$

Antiderivative was successfully verified.

```
[In]  Integrate[-x^3 + x^4,x]
```

```
[Out] -x^4/4 + x^5/5
```

Maple [A] time = 0.001, size = 12, normalized size = 0.8

$$-\frac{x^4}{4}+\frac{x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^4-x^3,x)
```

```
[Out] -1/4*x^4+1/5*x^5
```

Maxima [A] time = 1.32982, size = 15, normalized size = 1.

$$\frac{1}{5}\,x^5-\frac{1}{4}\,x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4 - x^3,x, algorithm="maxima")
```

```
[Out] 1/5*x^5 - 1/4*x^4
```

Fricas [A] time = 0.174786, size = 1, normalized size = 0.07

$$\frac{1}{5}x^5-\frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4 - x^3,x, algorithm="fricas")
```

```
[Out] 1/5*x^5 - 1/4*x^4
```

Sympy [A] time = 0.028972, size = 8, normalized size = 0.53

$$\frac{x^5}{5}-\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**4-x**3,x)
```

```
[Out] x**5/5 - x**4/4
```

GIAC/XCAS [A] time = 0.268904, size = 15, normalized size = 1.

$$\frac{1}{5}\,x^{5} - \frac{1}{4}\,x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^4 - x^3,x, algorithm="giac")
```

```
[Out] 1/5*x^5 - 1/4*x^4
```

3.1893 $\int (-1 + x^5) \, dx$

Optimal. Leaf size=11

$$\frac{x^6}{6} - x$$

```
[Out] -x + x^6/6
```

Rubi [A] time = 0.00577281, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\frac{x^6}{6} - x$$

Antiderivative was successfully verified.

```
[In] Int[-1 + x^5,x]

[Out] -x + x^6/6
```

Rubi in Sympy [A] time = 1.02438, size = 5, normalized size = 0.45

$$\frac{x^6}{6} - x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**5-1,x)

[Out] x**6/6 - x
```

Mathematica [A] time = 0.0000547171, size = 11, normalized size = 1.

$$\frac{x^6}{6} - x$$

Antiderivative was successfully verified.

```
[In] Integrate[-1 + x^5,x]
```

```
[Out] -x + x^6/6
```

Maple [A] time = 0., size = 10, normalized size = 0.9

$$-x + \frac{x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^5-1,x)
```

```
[Out] -x+1/6*x^6
```

Maxima [A] time = 1.31669, size = 12, normalized size = 1.09

$$\frac{1}{6}x^6 - x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5 - 1,x, algorithm="maxima")
```

```
[Out] 1/6*x^6 - x
```

Fricas [A] time = 0.173576, size = 1, normalized size = 0.09

$$\frac{1}{6}x^6 - x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5 - 1,x, algorithm="fricas")
```

```
[Out] 1/6*x^6 - x
```

Sympy [A] time = 0.0274, size = 5, normalized size = 0.45

$$\frac{x^6}{6} - x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**5-1,x)
```

```
[Out] x**6/6 - x
```

GIAC/XCAS [A] time = 0.235654, size = 12, normalized size = 1.09

$$\frac{1}{6}\,x^{6} - x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5 - 1,x, algorithm="giac")
```

```
[Out] 1/6*x^6 - x
```

3.1894 $\int (7+4x)\,dx$

Optimal. Leaf size=9

$$2x^2+7x$$

```
[Out] 7*x + 2*x^2
```

Rubi [A] time = 0.00580993, antiderivative size = 9, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 5, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$2x^2+7x$$

Antiderivative was successfully verified.

```
[In] Int[7 + 4*x,x]
```

```
[Out] 7*x + 2*x^2
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$7x+4\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(7+4*x,x)
```

```
[Out] 7*x + 4*Integral(x, x)
```

Mathematica [A] time = 0.0000444776, size = 9, normalized size = 1.

$$2x^2+7x$$

Antiderivative was successfully verified.

```
[In] Integrate[7 + 4*x,x]
```

```
[Out] 7*x + 2*x^2
```

Maple [A] time = 0.002, size = 10, normalized size = 1.1

$$2\,x^{2}+7\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(7+4*x,x)
```

```
[Out] 2*x^2+7*x
```

Maxima [A] time = 1.33512, size = 12, normalized size = 1.33

$$2\,x^{2}+7\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x + 7,x, algorithm="maxima")
```

```
[Out] 2*x^2 + 7*x
```

Fricas [A] time = 0.17432, size = 1, normalized size = 0.11

$$2x^{2}+7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x + 7,x, algorithm="fricas")
```

```
[Out] 2*x^2 + 7*x
```

Sympy [A] time = 0.024328, size = 7, normalized size = 0.78

$$2x^{2}+7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(7+4*x,x)
```

```
[Out] 2*x**2 + 7*x
```

GIAC/XCAS [A] time = 0.249986, size = 12, normalized size = 1.33

$$2x^2 + 7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x + 7,x, algorithm="giac")
```

```
[Out] 2*x^2 + 7*x
```

3.1895 $\int \left(4x + \pi x^3\right)\, dx$

Optimal. Leaf size=14

$$\frac{\pi x^4}{4} + 2x^2$$

```
[Out] 2*x^2 + (Pi*x^4)/4
```

Rubi [A] time = 0.00792214, antiderivative size = 14, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\frac{\pi x^4}{4} + 2x^2$$

Antiderivative was successfully verified.

```
[In]  Int[4*x + Pi*x^3,x]
```

```
[Out] 2*x^2 + (Pi*x^4)/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{\pi x^4}{4} + 4\int x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(pi*x**3+4*x,x)
```

```
[Out] pi*x**4/4 + 4*Integral(x, x)
```

Mathematica [A] time = 0.0000591969, size = 14, normalized size = 1.

$$\frac{\pi x^4}{4} + 2x^2$$

Antiderivative was successfully verified.

```
[In]  Integrate[4*x + Pi*x^3,x]
```

```
[Out] 2*x^2 + (Pi*x^4)/4
```

Maple [A] time = 0.001, size = 13, normalized size = 0.9

$$2\,x^{2}+\frac{\pi\,x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(Pi*x^3+4*x,x)
```

```
[Out] 2*x^2+1/4*Pi*x^4
```

Maxima [A] time = 1.33141, size = 16, normalized size = 1.14

$$\frac{1}{4}\,\pi x^{4}+2\,x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi*x^3 + 4*x,x, algorithm="maxima")
```

```
[Out] 1/4*pi*x^4 + 2*x^2
```

Fricas [A] time = 0.198194, size = 16, normalized size = 1.14

$$\frac{1}{4}\,\pi x^{4}+2\,x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi*x^3 + 4*x,x, algorithm="fricas")
```

```
[Out] 1/4*pi*x^4 + 2*x^2
```

Sympy [A] time = 0.029973, size = 10, normalized size = 0.71

$$\frac{\pi x^{4}}{4}+2x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi*x**3+4*x,x)
```

```
[Out] pi*x**4/4 + 2*x**2
```

GIAC/XCAS [A] time = 0.253123, size = 16, normalized size = 1.14

$$\frac{1}{4}\pi x^4 + 2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(pi*x^3 + 4*x,x, algorithm="giac")
```

```
[Out] 1/4*pi*x^4 + 2*x^2
```

3.1896 $\int (2x+5x^2)\ dx$

Optimal. Leaf size=11

$$\frac{5x^3}{3}+x^2$$

```
[Out] x^2 + (5*x^3)/3
```

Rubi [A] time = 0.0059376, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 9, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{5x^3}{3}+x^2$$

Antiderivative was successfully verified.

```
[In]  Int[2*x + 5*x^2,x]
```

```
[Out] x^2 + (5*x^3)/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{5x^3}{3}+2\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(5*x**2+2*x,x)
```

```
[Out] 5*x**3/3 + 2*Integral(x, x)
```

Mathematica [A] time = 0.0000508773, size = 11, normalized size = 1.

$$\frac{5x^3}{3}+x^2$$

Antiderivative was successfully verified.

```
[In]  Integrate[2*x + 5*x^2,x]
```

```
[Out] x^2 + (5*x^3)/3
```

Maple [A] time = 0.002, size = 10, normalized size = 0.9

$$x^2 + \frac{5\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(5*x^2+2*x,x)
```

```
[Out] x^2+5/3*x^3
```

Maxima [A] time = 1.32721, size = 12, normalized size = 1.09

$$\frac{5}{3}\,x^3 + x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5*x^2 + 2*x,x, algorithm="maxima")
```

```
[Out] 5/3*x^3 + x^2
```

Fricas [A] time = 0.17347, size = 1, normalized size = 0.09

$$\frac{5}{3}x^3 + x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5*x^2 + 2*x,x, algorithm="fricas")
```

```
[Out] 5/3*x^3 + x^2
```

Sympy [A] time = 0.028448, size = 8, normalized size = 0.73

$$\frac{5x^3}{3} + x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5*x**2+2*x,x)

[Out] 5*x**3/3 + x**2
```

<u>GIAC/XCAS</u> [A] time = 0.25013, size = 12, normalized size = 1.09

$$\frac{5}{3}x^3 + x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(5*x^2 + 2*x,x, algorithm="giac")

[Out] 5/3*x^3 + x^2
```

3.1897 $\int \left(\frac{x^2}{2}+\frac{x^3}{3}\right) dx$

Optimal. Leaf size=15

$$\frac{x^4}{12}+\frac{x^3}{6}$$

```
[Out] x^3/6 + x^4/12
```

Rubi [A] time = 0.00690587, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{x^4}{12}+\frac{x^3}{6}$$

Antiderivative was successfully verified.

```
[In]  Int[x^2/2 + x^3/3,x]

[Out] x^3/6 + x^4/12
```

Rubi in Sympy [A] time = 1.37991, size = 8, normalized size = 0.53

$$\frac{x^4}{12}+\frac{x^3}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/2*x**2+1/3*x**3,x)

[Out] x**4/12 + x**3/6
```

Mathematica [A] time = 0.0000518372, size = 15, normalized size = 1.

$$\frac{x^4}{12}+\frac{x^3}{6}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^2/2 + x^3/3,x]
```

```
[Out] x^3/6 + x^4/12
```

Maple [A] time = 0.001, size = 12, normalized size = 0.8

$$\frac{x^3}{6} + \frac{x^4}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/2*x^2+1/3*x^3,x)
```

```
[Out] 1/6*x^3+1/12*x^4
```

Maxima [A] time = 1.32479, size = 15, normalized size = 1.

$$\frac{1}{12}\,x^4 + \frac{1}{6}\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/3*x^3 + 1/2*x^2,x, algorithm="maxima")
```

```
[Out] 1/12*x^4 + 1/6*x^3
```

Fricas [A] time = 0.17437, size = 1, normalized size = 0.07

$$\frac{1}{12}x^4 + \frac{1}{6}x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/3*x^3 + 1/2*x^2,x, algorithm="fricas")
```

```
[Out] 1/12*x^4 + 1/6*x^3
```

Sympy [A] time = 0.029032, size = 8, normalized size = 0.53

$$\frac{x^4}{12} + \frac{x^3}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2*x**2+1/3*x**3,x)
```

```
[Out] x**4/12 + x**3/6
```

GIAC/XCAS [A] time = 0.244507, size = 15, normalized size = 1.

$$\frac{1}{12}\,x^4+\frac{1}{6}\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/3*x^3 + 1/2*x^2,x, algorithm="giac")
```

```
[Out] 1/12*x^4 + 1/6*x^3
```

3.1898 $\int (3-5x+2x^2)\ dx$

Optimal. Leaf size=18

$$\frac{2x^3}{3}-\frac{5x^2}{2}+3x$$

```
[Out] 3*x - (5*x^2)/2 + (2*x^3)/3
```

Rubi [A] time = 0.00802677, antiderivative size = 18, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{2x^3}{3}-\frac{5x^2}{2}+3x$$

Antiderivative was successfully verified.

```
[In]  Int[3 - 5*x + 2*x^2,x]

[Out] 3*x - (5*x^2)/2 + (2*x^3)/3
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2x^3}{3}+3x-5\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(2*x**2-5*x+3,x)

[Out] 2*x**3/3 + 3*x - 5*Integral(x, x)
```

Mathematica [A] time = 0.0000537571, size = 18, normalized size = 1.

$$\frac{2x^3}{3}-\frac{5x^2}{2}+3x$$

Antiderivative was successfully verified.

```
[In]  Integrate[3 - 5*x + 2*x^2,x]
```

```
[Out] 3*x - (5*x^2)/2 + (2*x^3)/3
```

Maple [A] time = 0.001, size = 15, normalized size = 0.8

$$3x-\frac{5x^{2}}{2}+\frac{2x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(2*x^2-5*x+3,x)

[Out] 3*x-5/2*x^2+2/3*x^3
```

Maxima [A] time = 1.31911, size = 19, normalized size = 1.06

$$\frac{2}{3}x^{3}-\frac{5}{2}x^{2}+3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*x^2 - 5*x + 3,x, algorithm="maxima")

[Out] 2/3*x^3 - 5/2*x^2 + 3*x
```

Fricas [A] time = 0.171157, size = 1, normalized size = 0.06

$$\frac{2}{3}x^{3}-\frac{5}{2}x^{2}+3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*x^2 - 5*x + 3,x, algorithm="fricas")

[Out] 2/3*x^3 - 5/2*x^2 + 3*x
```

Sympy [A] time = 0.030954, size = 15, normalized size = 0.83

$$\frac{2x^{3}}{3}-\frac{5x^{2}}{2}+3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*x**2-5*x+3,x)

[Out] 2*x**3/3 - 5*x**2/2 + 3*x
```

GIAC/XCAS [A] time = 0.236446, size = 19, normalized size = 1.06

$$\frac{2}{3}x^3 - \frac{5}{2}x^2 + 3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*x^2 - 5*x + 3,x, algorithm="giac")

[Out] 2/3*x^3 - 5/2*x^2 + 3*x
```

3.1899 $\int \left(-2x + x^2 + x^3\right)\, dx$

Optimal. Leaf size=20

$$\frac{x^4}{4} + \frac{x^3}{3} - x^2$$

```
[Out] -x^2 + x^3/3 + x^4/4
```

Rubi [A] time = 0.00848915, antiderivative size = 20, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\frac{x^4}{4} + \frac{x^3}{3} - x^2$$

Antiderivative was successfully verified.

```
[In] Int[-2*x + x^2 + x^3,x]

[Out] -x^2 + x^3/3 + x^4/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{x^4}{4} + \frac{x^3}{3} - 2\int x\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**3+x**2-2*x,x)

[Out] x**4/4 + x**3/3 - 2*Integral(x, x)
```

Mathematica [A] time = 0.0000604768, size = 20, normalized size = 1.

$$\frac{x^4}{4} + \frac{x^3}{3} - x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[-2*x + x^2 + x^3,x]
```

```
[Out] -x^2 + x^3/3 + x^4/4
```

Maple [A] time = 0., size = 17, normalized size = 0.9

$$-x^2 + \frac{x^3}{3} + \frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3+x^2-2*x,x)
```

```
[Out] -x^2+1/3*x^3+1/4*x^4
```

Maxima [A] time = 1.32148, size = 22, normalized size = 1.1

$$\frac{1}{4}x^4 + \frac{1}{3}x^3 - x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3 + x^2 - 2*x,x, algorithm="maxima")
```

```
[Out] 1/4*x^4 + 1/3*x^3 - x^2
```

Fricas [A] time = 0.176844, size = 1, normalized size = 0.05

$$\frac{1}{4}x^4 + \frac{1}{3}x^3 - x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3 + x^2 - 2*x,x, algorithm="fricas")
```

```
[Out] 1/4*x^4 + 1/3*x^3 - x^2
```

Sympy [A] time = 0.028754, size = 12, normalized size = 0.6

$$\frac{x^4}{4} + \frac{x^3}{3} - x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**3+x**2-2*x,x)
```

```
[Out] x**4/4 + x**3/3 - x**2
```

GIAC/XCAS [A] time = 0.229173, size = 22, normalized size = 1.1

$$\frac{1}{4}x^4 + \frac{1}{3}x^3 - x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^3 + x^2 - 2*x,x, algorithm="giac")
```

```
[Out] 1/4*x^4 + 1/3*x^3 - x^2
```

3.1900 $\int (1 - x^2 - 3x^5) \, dx$

Optimal. Leaf size=16

$$-\frac{x^6}{2} - \frac{x^3}{3} + x$$

```
[Out] x - x^3/3 - x^6/2
```

Rubi [A] time = 0.00701179, antiderivative size = 16, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$-\frac{x^6}{2} - \frac{x^3}{3} + x$$

Antiderivative was successfully verified.

```
[In]  Int[1 - x^2 - 3*x^5,x]

[Out] x - x^3/3 - x^6/2
```

Rubi in Sympy [A] time = 1.44201, size = 10, normalized size = 0.62

$$-\frac{x^6}{2} - \frac{x^3}{3} + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-3*x**5-x**2+1,x)

[Out] -x**6/2 - x**3/3 + x
```

Mathematica [A] time = 0.0000601568, size = 16, normalized size = 1.

$$-\frac{x^6}{2} - \frac{x^3}{3} + x$$

Antiderivative was successfully verified.

```
[In]  Integrate[1 - x^2 - 3*x^5,x]
```

```
[Out] x - x^3/3 - x^6/2
```

Maple [A] time = 0.001, size = 13, normalized size = 0.8

$$x-\frac{x^{3}}{3}-\frac{x^{6}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-3*x^5-x^2+1,x)
```

```
[Out] x-1/3*x^3-1/2*x^6
```

Maxima [A] time = 1.34163, size = 16, normalized size = 1.

$$-\frac{1}{2}\,x^{6}-\frac{1}{3}\,x^{3}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-3*x^5 - x^2 + 1,x, algorithm="maxima")
```

```
[Out] -1/2*x^6 - 1/3*x^3 + x
```

Fricas [A] time = 0.177979, size = 1, normalized size = 0.06

$$-\frac{1}{2}x^{6}-\frac{1}{3}x^{3}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(-3*x^5 - x^2 + 1,x, algorithm="fricas")
```

```
[Out] -1/2*x^6 - 1/3*x^3 + x
```

Sympy [A] time = 0.033107, size = 10, normalized size = 0.62

$$-\frac{x^{6}}{2}-\frac{x^{3}}{3}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-3*x**5-x**2+1,x)

[Out] -x**6/2 - x**3/3 + x
```

GIAC/XCAS [A] time = 0.228001, size = 16, normalized size = 1.

$$-\frac{1}{2}x^{6}-\frac{1}{3}x^{3}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-3*x^5 - x^2 + 1,x, algorithm="giac")

[Out] -1/2*x^6 - 1/3*x^3 + x
```

3.1901 $\int (5 + 2x + 3x^2 + 4x^3) \, dx$

Optimal. Leaf size=13

$$x^4 + x^3 + x^2 + 5x$$

```
[Out] 5*x + x^2 + x^3 + x^4
```

Rubi [A] time = 0.006783, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$x^4 + x^3 + x^2 + 5x$$

Antiderivative was successfully verified.

```
[In]  Int[5 + 2*x + 3*x^2 + 4*x^3,x]

[Out] 5*x + x^2 + x^3 + x^4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$x^4 + x^3 + 5x + 2 \int x \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(4*x**3+3*x**2+2*x+5,x)

[Out] x**4 + x**3 + 5*x + 2*Integral(x, x)
```

Mathematica [A] time = 0.0000611168, size = 13, normalized size = 1.

$$x^4 + x^3 + x^2 + 5x$$

Antiderivative was successfully verified.

```
[In]  Integrate[5 + 2*x + 3*x^2 + 4*x^3,x]

[Out] 5*x + x^2 + x^3 + x^4
```

Maple [A] time = 0., size = 14, normalized size = 1.1

$$x^4 + x^3 + x^2 + 5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(4*x^3+3*x^2+2*x+5,x)
```

```
[Out] x^4+x^3+x^2+5*x
```

Maxima [A] time = 1.33053, size = 18, normalized size = 1.38

$$x^4 + x^3 + x^2 + 5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x^3 + 3*x^2 + 2*x + 5,x, algorithm="maxima")
```

```
[Out] x^4 + x^3 + x^2 + 5*x
```

Fricas [A] time = 0.172645, size = 1, normalized size = 0.08

$$x^4 + x^3 + x^2 + 5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x^3 + 3*x^2 + 2*x + 5,x, algorithm="fricas")
```

```
[Out] x^4 + x^3 + x^2 + 5*x
```

Sympy [A] time = 0.032049, size = 12, normalized size = 0.92

$$x^4 + x^3 + x^2 + 5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x**3+3*x**2+2*x+5,x)
```

```
[Out] x**4 + x**3 + x**2 + 5*x
```

GIAC/XCAS [A] time = 0.273282, size = 18, normalized size = 1.38

$$x^4 + x^3 + x^2 + 5\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4*x^3 + 3*x^2 + 2*x + 5,x, algorithm="giac")
```

```
[Out] x^4 + x^3 + x^2 + 5*x
```

3.1902 $\int \left(a+\frac{d}{x^3}+\frac{c}{x^2}+\frac{b}{x}\right)\,dx$

Optimal. Leaf size=22

$$ax+b\log(x)-\frac{c}{x}-\frac{d}{2x^2}$$

```
[Out] -d/(2*x^2) - c/x + a*x + b*Log[x]
```

Rubi [A] time = 0.0125757, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$ax+b\log(x)-\frac{c}{x}-\frac{d}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[a + d/x^3 + c/x^2 + b/x,x]

[Out] -d/(2*x^2) - c/x + a*x + b*Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$b\log{(x)}-\frac{c}{x}-\frac{d}{2x^2}+\int a\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(a+d/x**3+c/x**2+b/x,x)

[Out] b*log(x) - c/x - d/(2*x**2) + Integral(a, x)
```

Mathematica [A] time = 0.00997067, size = 22, normalized size = 1.

$$ax+b\log(x)-\frac{c}{x}-\frac{d}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[a + d/x^3 + c/x^2 + b/x,x]
```

```
[Out] -d/(2*x^2) - c/x + a*x + b*Log[x]
```

Maple [A] time = 0.003, size = 21, normalized size = 1.

$$-\frac{d}{2\,x^{2}}-\frac{c}{x}+ax+b\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(a+d/x^3+c/x^2+b/x,x)
```

```
[Out] -1/2*d/x^2-c/x+a*x+b*ln(x)
```

Maxima [A] time = 1.33844, size = 27, normalized size = 1.23

$$ax+b\log\left(x\right)-\frac{c}{x}-\frac{d}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a + b/x + c/x^2 + d/x^3,x, algorithm="maxima")
```

```
[Out] a*x + b*log(x) - c/x - 1/2*d/x^2
```

Fricas [A] time = 0.198006, size = 36, normalized size = 1.64

$$\frac{2\,ax^{3}+2\,bx^{2}\log\left(x\right)-2\,cx-d}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(a + b/x + c/x^2 + d/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*x^3 + 2*b*x^2*log(x) - 2*c*x - d)/x^2
```

Sympy [A] time = 0.62331, size = 19, normalized size = 0.86

$$ax+b\log\left(x\right)-\frac{2cx+d}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a+d/x**3+c/x**2+b/x,x)
```

```
[Out] a*x + b*log(x) - (2*c*x + d)/(2*x**2)
```

GIAC/XCAS [A] time = 0.26164, size = 28, normalized size = 1.27

$$ax + b\ln(|x|) - \frac{c}{x} - \frac{d}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(a + b/x + c/x^2 + d/x^3,x, algorithm="giac")
```

```
[Out] a*x + b*ln(abs(x)) - c/x - 1/2*d/x^2
```

3.1903 $\int \left(\frac{1}{x^5}+x+x^5\right) dx$

Optimal. Leaf size=22

$$\frac{x^6}{6}-\frac{1}{4x^4}+\frac{x^2}{2}$$

```
[Out] -1/(4*x^4) + x^2/2 + x^6/6
```

Rubi [A] time = 0.00865042, antiderivative size = 22, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 8, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{x^6}{6}-\frac{1}{4x^4}+\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-5) + x + x^5,x]

[Out] -1/(4*x^4) + x^2/2 + x^6/6
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{x^6}{6}+\int x\,dx-\frac{1}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**5+x+x**5,x)

[Out] x**6/6 + Integral(x, x) - 1/(4*x**4)
```

Mathematica [A] time = 0.00145016, size = 22, normalized size = 1.

$$\frac{x^6}{6}-\frac{1}{4x^4}+\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-5) + x + x^5,x]
```

```
[Out] -1/(4*x^4) + x^2/2 + x^6/6
```

Maple [A] time = 0.001, size = 17, normalized size = 0.8

$$-\frac{1}{4\,x^4}+\frac{x^2}{2}+\frac{x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^5+x+x^5,x)
```

```
[Out] -1/4/x^4+1/2*x^2+1/6*x^6
```

Maxima [A] time = 1.31807, size = 22, normalized size = 1.

$$\frac{1}{6}\,x^6+\frac{1}{2}\,x^2-\frac{1}{4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5 + x + 1/x^5,x, algorithm="maxima")
```

```
[Out] 1/6*x^6 + 1/2*x^2 - 1/4/x^4
```

Fricas [A] time = 0.196201, size = 23, normalized size = 1.05

$$\frac{2\,x^{10}+6\,x^6-3}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5 + x + 1/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(2*x^10 + 6*x^6 - 3)/x^4
```

Sympy [A] time = 0.077354, size = 15, normalized size = 0.68

$$\frac{x^6}{6}+\frac{x^2}{2}-\frac{1}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**5+x+x**5,x)
```

```
[Out] x**6/6 + x**2/2 - 1/(4*x**4)
```

GIAC/XCAS [A] time = 0.236736, size = 22, normalized size = 1.

$$\frac{1}{6}\,x^{6}+\frac{1}{2}\,x^{2}-\frac{1}{4\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^5 + x + 1/x^5,x, algorithm="giac")
```

```
[Out] 1/6*x^6 + 1/2*x^2 - 1/4/x^4
```

3.1904 $\int \left(\frac{1}{x^3}+\frac{1}{x^2}+\frac{1}{x}\right) dx$

Optimal. Leaf size=15

$$-\frac{1}{2x^2}-\frac{1}{x}+\log(x)$$

```
[Out] -1/(2*x^2) - x^(-1) + Log[x]
```

Rubi [A] time = 0.00734425, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$-\frac{1}{2x^2}-\frac{1}{x}+\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-3) + x^(-2) + x^(-1),x]

[Out] -1/(2*x^2) - x^(-1) + Log[x]
```

Rubi in Sympy [A] time = 0.929624, size = 12, normalized size = 0.8

$$\log(x)-\frac{1}{x}-\frac{1}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**3+1/x**2+1/x,x)

[Out] log(x) - 1/x - 1/(2*x**2)
```

Mathematica [A] time = 0.00290225, size = 15, normalized size = 1.

$$-\frac{1}{2x^2}-\frac{1}{x}+\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-3) + x^(-2) + x^(-1),x]
```

```
[Out] -1/(2*x^2) - x^(-1) + Log[x]
```

Maple [A] time = 0.002, size = 14, normalized size = 0.9

$$-\frac{1}{2\,x^2}-x^{-1}+\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/x^3+1/x^2+1/x,x)
```

```
[Out] -1/2/x^2-1/x+ln(x)
```

Maxima [A] time = 1.32805, size = 18, normalized size = 1.2

$$-\frac{1}{x}-\frac{1}{2\,x^2}+\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x + 1/x^2 + 1/x^3,x, algorithm="maxima")
```

```
[Out] -1/x - 1/2/x^2 + log(x)
```

Fricas [A] time = 0.202237, size = 23, normalized size = 1.53

$$\frac{2\,x^2\log\left(x\right)-2\,x-1}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/x + 1/x^2 + 1/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*x^2*log(x) - 2*x - 1)/x^2
```

Sympy [A] time = 0.080193, size = 12, normalized size = 0.8

$$\log\left(x\right)-\frac{2x+1}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**3+1/x**2+1/x,x)
```

```
[Out] log(x) - (2*x + 1)/(2*x**2)
```

GIAC/XCAS [A] time = 0.246294, size = 19, normalized size = 1.27

$$-\frac{1}{x} - \frac{1}{2\,x^2} + \ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x + 1/x^2 + 1/x^3,x, algorithm="giac")
```

```
[Out] -1/x - 1/2/x^2 + ln(abs(x))
```

3.1905 $\int \left(-\frac{2}{x^2}+\frac{3}{x}\right)\,dx$

Optimal. Leaf size=10

$$\frac{2}{x}+3\log(x)$$

```
[Out] 2/x + 3*Log[x]
```

Rubi [A] time = 0.00698491, antiderivative size = 10, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{2}{x}+3\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[-2/x^2 + 3/x,x]
```

```
[Out] 2/x + 3*Log[x]
```

Rubi in Sympy [A] time = 1.38341, size = 7, normalized size = 0.7

$$3\log\left(x\right)+\frac{2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(-2/x**2+3/x,x)
```

```
[Out] 3*log(x) + 2/x
```

Mathematica [A] time = 0.00215829, size = 10, normalized size = 1.

$$\frac{2}{x}+3\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[-2/x^2 + 3/x,x]
```

```
[Out] 2/x + 3*Log[x]
```

Maple [A] time = 0.002, size = 11, normalized size = 1.1

$$2\,x^{-1} + 3\,\ln\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-2/x^2+3/x,x)
```

```
[Out] 2/x+3*ln(x)
```

Maxima [A] time = 1.34181, size = 14, normalized size = 1.4

$$\frac{2}{x} + 3\,\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3/x - 2/x^2,x, algorithm="maxima")
```

```
[Out] 2/x + 3*log(x)
```

Fricas [A] time = 0.203769, size = 15, normalized size = 1.5

$$\frac{3\,x\log\left(x\right) + 2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3/x - 2/x^2,x, algorithm="fricas")
```

```
[Out] (3*x*log(x) + 2)/x
```

Sympy [A] time = 0.067683, size = 7, normalized size = 0.7

$$3\log\left(x\right) + \frac{2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2/x**2+3/x,x)
```

```
[Out] 3*log(x) + 2/x
```

GIAC/XCAS [A] time = 0.260882, size = 15, normalized size = 1.5

$$\frac{2}{x} + 3\ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(3/x - 2/x^2,x, algorithm="giac")
```

```
[Out] 2/x + 3*ln(abs(x))
```

3.1906 $\int \left(-\frac{1}{7x^6}+x^6\right)\,dx$

Optimal. Leaf size=15

$$\frac{x^7}{7}+\frac{1}{35x^5}$$

```
[Out] 1/(35*x^5) + x^7/7
```

Rubi [A] time = 0.00727833, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{x^7}{7}+\frac{1}{35x^5}$$

Antiderivative was successfully verified.

```
[In]  Int[-1/(7*x^6) + x^6,x]

[Out] 1/(35*x^5) + x^7/7
```

Rubi in Sympy [A] time = 1.20098, size = 10, normalized size = 0.67

$$\frac{x^7}{7}+\frac{1}{35x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-1/7/x**6+x**6,x)

[Out] x**7/7 + 1/(35*x**5)
```

Mathematica [A] time = 0.00167351, size = 15, normalized size = 1.

$$\frac{x^7}{7}+\frac{1}{35x^5}$$

Antiderivative was successfully verified.

```
[In]  Integrate[-1/(7*x^6) + x^6,x]
```

```
[Out] 1/(35*x^5) + x^7/7
```

Maple [A] time = 0.002, size = 12, normalized size = 0.8

$$\frac{1}{35\,x^5}+\frac{x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-1/7/x^6+x^6,x)
```

```
[Out] 1/35/x^5+1/7*x^7
```

Maxima [A] time = 1.34005, size = 15, normalized size = 1.

$$\frac{1}{7}\,x^7+\frac{1}{35\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6 - 1/7/x^6,x, algorithm="maxima")
```

```
[Out] 1/7*x^7 + 1/35/x^5
```

Fricas [A] time = 0.197554, size = 16, normalized size = 1.07

$$\frac{5\,x^{12}+1}{35\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6 - 1/7/x^6,x, algorithm="fricas")
```

```
[Out] 1/35*(5*x^12 + 1)/x^5
```

Sympy [A] time = 0.083025, size = 10, normalized size = 0.67

$$\frac{x^7}{7}+\frac{1}{35x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/7/x**6+x**6,x)
```

```
[Out] x**7/7 + 1/(35*x**5)
```

GIAC/XCAS [A] time = 0.241303, size = 15, normalized size = 1.

$$\frac{1}{7}\,x^{7}+\frac{1}{35\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^6 - 1/7/x^6,x, algorithm="giac")
```

```
[Out] 1/7*x^7 + 1/35/x^5
```

3.1907 $\int \left(1+\frac{1}{x}+x\right)\,dx$

Optimal. Leaf size=11

$$\frac{x^2}{2}+x+\log(x)$$

```
[Out] x + x^2/2 + Log[x]
```

Rubi [A] time = 0.00543139, antiderivative size = 11, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 6, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{x^2}{2}+x+\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[1 + x^(-1) + x,x]
```

```
[Out] x + x^2/2 + Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$x+\log(x)+\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1+1/x+x,x)
```

```
[Out] x + log(x) + Integral(x, x)
```

Mathematica [A] time = 0.000926031, size = 11, normalized size = 1.

$$\frac{x^2}{2}+x+\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[1 + x^(-1) + x,x]
```

```
[Out] x + x^2/2 + Log[x]
```

Maple [A] time = 0.002, size = 10, normalized size = 0.9

$$x + \frac{x^2}{2} + \ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1+1/x+x,x)
```

```
[Out] x+1/2*x^2+ln(x)
```

Maxima [A] time = 1.33625, size = 12, normalized size = 1.09

$$\frac{1}{2}x^2 + x + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x + 1/x + 1,x, algorithm="maxima")
```

```
[Out] 1/2*x^2 + x + log(x)
```

Fricas [A] time = 0.203674, size = 12, normalized size = 1.09

$$\frac{1}{2}x^2 + x + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x + 1/x + 1,x, algorithm="fricas")
```

```
[Out] 1/2*x^2 + x + log(x)
```

Sympy [A] time = 0.059823, size = 8, normalized size = 0.73

$$\frac{x^2}{2} + x + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1+1/x+x,x)

[Out] x**2/2 + x + log(x)
```

GIAC/XCAS [A] time = 0.310902, size = 14, normalized size = 1.27

$$\frac{1}{2}x^2 + x + \ln(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x + 1/x + 1,x, algorithm="giac")

[Out] 1/2*x^2 + x + ln(abs(x))
```

3.1908 $\int \left(-\frac{3}{x^3}+\frac{4}{x^2}\right) dx$

Optimal. Leaf size=13

$$\frac{3}{2x^2}-\frac{4}{x}$$

```
[Out] 3/(2*x^2) - 4/x
```

Rubi [A] time = 0.00710746, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{3}{2x^2}-\frac{4}{x}$$

Antiderivative was successfully verified.

```
[In]  Int[-3/x^3 + 4/x^2,x]

[Out] 3/(2*x^2) - 4/x
```

Rubi in Sympy [A] time = 1.34483, size = 8, normalized size = 0.62

$$-\frac{4}{x}+\frac{3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-3/x**3+4/x**2,x)

[Out] -4/x + 3/(2*x**2)
```

Mathematica [A] time = 0.00193142, size = 13, normalized size = 1.

$$\frac{3}{2x^2}-\frac{4}{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[-3/x^3 + 4/x^2,x]
```

```
[Out] 3/(2*x^2) - 4/x
```

Maple [A] time = 0.002, size = 12, normalized size = 0.9

$$\frac{3}{2\,x^{2}}-4\,x^{-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-3/x^3+4/x^2,x)
```

```
[Out] 3/2/x^2-4/x
```

Maxima [A] time = 1.3436, size = 15, normalized size = 1.15

$$-\frac{4}{x}+\frac{3}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4/x^2 - 3/x^3,x, algorithm="maxima")
```

```
[Out] -4/x + 3/2/x^2
```

Fricas [A] time = 0.192558, size = 14, normalized size = 1.08

$$-\frac{8\,x-3}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4/x^2 - 3/x^3,x, algorithm="fricas")
```

```
[Out] -1/2*(8*x - 3)/x^2
```

Sympy [A] time = 0.069589, size = 10, normalized size = 0.77

$$-\frac{8x-3}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-3/x**3+4/x**2,x)

[Out] -(8*x - 3)/(2*x**2)
```

GIAC/XCAS [A] time = 0.271602, size = 15, normalized size = 1.15

$$-\frac{4}{x} + \frac{3}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(4/x^2 - 3/x^3,x, algorithm="giac")

[Out] -4/x + 3/2/x^2
```

3.1909 $\int \left(\frac{1}{x}+2x+x^2\right)\,dx$

Optimal. Leaf size=13

$$\frac{x^3}{3}+x^2+\log(x)$$

```
[Out] x^2 + x^3/3 + Log[x]
```

Rubi [A] time = 0.00654493, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 10, $\frac{\text{number of rules}}{\text{integrand size}}=0.$

$$\frac{x^3}{3}+x^2+\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[x^(-1) + 2*x + x^2,x]

[Out] x^2 + x^3/3 + Log[x]
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{x^3}{3}+\log(x)+2\int x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(1/x+2*x+x**2,x)

[Out] x**3/3 + log(x) + 2*Integral(x, x)
```

Mathematica [A] time = 0.00144664, size = 13, normalized size = 1.

$$\frac{x^3}{3}+x^2+\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(-1) + 2*x + x^2,x]
```

```
[Out] x^2 + x^3/3 + Log[x]
```

Maple [A] time = 0.001, size = 12, normalized size = 0.9

$$x^2 + \frac{x^3}{3} + \ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x+2*x+x^2,x)
```

```
[Out] x^2+1/3*x^3+ln(x)
```

Maxima [A] time = 1.36116, size = 15, normalized size = 1.15

$$\frac{1}{3}x^3 + x^2 + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2 + 2*x + 1/x,x, algorithm="maxima")
```

```
[Out] 1/3*x^3 + x^2 + log(x)
```

Fricas [A] time = 0.197987, size = 15, normalized size = 1.15

$$\frac{1}{3}x^3 + x^2 + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2 + 2*x + 1/x,x, algorithm="fricas")
```

```
[Out] 1/3*x^3 + x^2 + log(x)
```

Sympy [A] time = 0.063826, size = 10, normalized size = 0.77

$$\frac{x^3}{3} + x^2 + \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x+2*x+x**2,x)
```

```
[Out] x**3/3 + x**2 + log(x)
```

GIAC/XCAS [A] time = 0.271008, size = 16, normalized size = 1.23

$$\frac{1}{3}\,x^3 + x^2 + \ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^2 + 2*x + 1/x,x, algorithm="giac")
```

```
[Out] 1/3*x^3 + x^2 + ln(abs(x))
```

3.1910 $\int \left(x^{5/6}-x^3\right)\,dx$

Optimal. Leaf size=17

$$\frac{6x^{11/6}}{11}-\frac{x^4}{4}$$

```
[Out] (6*x^(11/6))/11 - x^4/4
```

Rubi [A] time = 0.00703067, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{6x^{11/6}}{11}-\frac{x^4}{4}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/6) - x^3,x]
```

```
[Out] (6*x^(11/6))/11 - x^4/4
```

Rubi in Sympy [A] time = 1.11705, size = 12, normalized size = 0.71

$$\frac{6x^{\frac{11}{6}}}{11}-\frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] rubi_integrate(x**(5/6)-x**3,x)
```

```
[Out] 6*x**(11/6)/11 - x**4/4
```

Mathematica [A] time = 0.00314255, size = 17, normalized size = 1.

$$\frac{6x^{11/6}}{11}-\frac{x^4}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/6) - x^3,x]
```

```
[Out] (6*x^(11/6))/11 - x^4/4
```

Maple [A] time = 0.002, size = 12, normalized size = 0.7

$$\frac{6}{11}x^{\frac{11}{6}} - \frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(x^(5/6)-x^3,x)
```

```
[Out] 6/11*x^(11/6)-1/4*x^4
```

Maxima [A] time = 1.34102, size = 15, normalized size = 0.88

$$-\frac{1}{4}x^4 + \frac{6}{11}x^{\frac{11}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^3 + x^(5/6),x, algorithm="maxima")
```

```
[Out] -1/4*x^4 + 6/11*x^(11/6)
```

Fricas [A] time = 0.202475, size = 15, normalized size = 0.88

$$-\frac{1}{4}x^4 + \frac{6}{11}x^{\frac{11}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^3 + x^(5/6),x, algorithm="fricas")
```

```
[Out] -1/4*x^4 + 6/11*x^(11/6)
```

Sympy [A] time = 0.035211, size = 12, normalized size = 0.71

$$\frac{6x^{\frac{11}{6}}}{11} - \frac{x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x**(5/6)-x**3,x)
```

```
[Out] 6*x**(11/6)/11 - x**4/4
```

GIAC/XCAS [A]   time = 0.248686, size = 15, normalized size = 0.88

$$-\frac{1}{4}\,x^{4}+\frac{6}{11}\,x^{\frac{11}{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-x^3 + x^(5/6),x, algorithm="giac")
```

```
[Out] -1/4*x^4 + 6/11*x^(11/6)
```

3.1911 $\int \left(33+\sqrt[33]{x}\right)\,dx$

Optimal. Leaf size=13

$$\frac{33x^{34/33}}{34}+33x$$

```
[Out] 33*x + (33*x^(34/33))/34
```

Rubi [A] time = 0.00606912, antiderivative size = 13, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{33x^{34/33}}{34}+33x$$

Antiderivative was successfully verified.

```
[In]  Int[33 + x^(1/33),x]
```

```
[Out] 33*x + (33*x^(34/33))/34
```

Rubi in Sympy [A] time = 1.08291, size = 10, normalized size = 0.77

$$\frac{33x^{\frac{34}{33}}}{34}+33x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(33+x**(1/33),x)
```

```
[Out] 33*x**(34/33)/34 + 33*x
```

Mathematica [A] time = 0.00213685, size = 13, normalized size = 1.

$$\frac{33x^{34/33}}{34}+33x$$

Antiderivative was successfully verified.

```
[In]  Integrate[33 + x^(1/33),x]
```

```
[Out] 33*x + (33*x^(34/33))/34
```

Maple [A] time = 0.003, size = 10, normalized size = 0.8

$$33\,x+\frac{33}{34}x^{\frac{34}{33}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(33+x^(1/33),x)
```

```
[Out] 33*x+33/34*x^(34/33)
```

Maxima [A] time = 1.34213, size = 12, normalized size = 0.92

$$\frac{33}{34}\,x^{\frac{34}{33}}+33\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/33) + 33,x, algorithm="maxima")
```

```
[Out] 33/34*x^(34/33) + 33*x
```

Fricas [A] time = 0.196589, size = 12, normalized size = 0.92

$$\frac{33}{34}\,x^{\frac{34}{33}}+33\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/33) + 33,x, algorithm="fricas")
```

```
[Out] 33/34*x^(34/33) + 33*x
```

Sympy [A] time = 0.031848, size = 10, normalized size = 0.77

$$\frac{33x^{\frac{34}{33}}}{34}+33x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(33+x**(1/33),x)
```

```
[Out] 33*x**(34/33)/34 + 33*x
```

GIAC/XCAS [A] time = 0.240879, size = 12, normalized size = 0.92

$$\frac{33}{34}\, x^{\frac{34}{33}} + 33\, x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(1/33) + 33,x, algorithm="giac")
```

```
[Out] 33/34*x^(34/33) + 33*x
```

3.1912 $\int \left(\frac{1}{2\sqrt{x}} + 2\sqrt{x}\right) dx$

Optimal. Leaf size=15

$$\frac{4x^{3/2}}{3} + \sqrt{x}$$

```
[Out] Sqrt[x] + (4*x^(3/2))/3
```

Rubi [A] time = 0.00582433, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$\frac{4x^{3/2}}{3} + \sqrt{x}$$

Antiderivative was successfully verified.

```
[In]  Int[1/(2*Sqrt[x]) + 2*Sqrt[x],x]
```

```
[Out] Sqrt[x] + (4*x^(3/2))/3
```

Rubi in Sympy [A] time = 1.32555, size = 12, normalized size = 0.8

$$\frac{4x^{\frac{3}{2}}}{3} + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/2/x**(1/2)+2*x**(1/2),x)
```

```
[Out] 4*x**(3/2)/3 + sqrt(x)
```

Mathematica [A] time = 0.00398699, size = 14, normalized size = 0.93

$$\frac{1}{3}\sqrt{x}(4x + 3)$$

Antiderivative was successfully verified.

```
[In]  Integrate[1/(2*Sqrt[x]) + 2*Sqrt[x],x]
```

```
[Out] (Sqrt[x]*(3 + 4*x))/3
```

Maple [A] time = 0.004, size = 11, normalized size = 0.7

$$\frac{4x+3}{3}\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/2/x^(1/2)+2*x^(1/2),x)

[Out] 1/3*x^(1/2)*(4*x+3)
```

Maxima [A] time = 1.34557, size = 12, normalized size = 0.8

$$\frac{4}{3}x^{\frac{3}{2}} + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*sqrt(x) + 1/2/sqrt(x),x, algorithm="maxima")

[Out] 4/3*x^(3/2) + sqrt(x)
```

Fricas [A] time = 0.201514, size = 14, normalized size = 0.93

$$\frac{1}{3}(4x+3)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*sqrt(x) + 1/2/sqrt(x),x, algorithm="fricas")

[Out] 1/3*(4*x + 3)*sqrt(x)
```

Sympy [A] time = 0.036302, size = 12, normalized size = 0.8

$$\frac{4x^{\frac{3}{2}}}{3} + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/2/x**(1/2)+2*x**(1/2),x)

[Out] 4*x**(3/2)/3 + sqrt(x)
```

GIAC/XCAS [A] time = 0.233093, size = 12, normalized size = 0.8

$$\frac{4}{3}x^{\frac{3}{2}} + \sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(2*sqrt(x) + 1/2/sqrt(x),x, algorithm="giac")

[Out] 4/3*x^(3/2) + sqrt(x)
```

3.1913 $\int \left(-\frac{1}{x^2}+\frac{10}{x}+6\sqrt{x}\right) dx$

Optimal. Leaf size=15

$$4x^{3/2}+\frac{1}{x}+10\log(x)$$

```
[Out] x^(-1) + 4*x^(3/2) + 10*Log[x]
```

Rubi [A] time = 0.00751736, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$4x^{3/2}+\frac{1}{x}+10\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[-x^(-2) + 10/x + 6*Sqrt[x],x]
```

```
[Out] x^(-1) + 4*x^(3/2) + 10*Log[x]
```

Rubi in Sympy [A] time = 1.54196, size = 14, normalized size = 0.93

$$4x^{\frac{3}{2}}+10\log(x)+\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-1/x**2+10/x+6*x**(1/2),x)
```

```
[Out] 4*x**(3/2) + 10*log(x) + 1/x
```

Mathematica [A] time = 0.0118608, size = 15, normalized size = 1.

$$4x^{3/2}+\frac{1}{x}+10\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[-x^(-2) + 10/x + 6*Sqrt[x],x]
```

```
[Out] x^(-1) + 4*x^(3/2) + 10*Log[x]
```

Maple [A] time = 0.001, size = 14, normalized size = 0.9

$$x^{-1} + 4\,x^{3/2} + 10\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-1/x^2+10/x+6*x^(1/2),x)
```

```
[Out] 1/x+4*x^(3/2)+10*ln(x)
```

Maxima [A] time = 1.34325, size = 18, normalized size = 1.2

$$4\,x^{\frac{3}{2}} + \frac{1}{x} + 10\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(6*sqrt(x) + 10/x - 1/x^2,x, algorithm="maxima")
```

```
[Out] 4*x^(3/2) + 1/x + 10*log(x)
```

Fricas [A] time = 0.204929, size = 24, normalized size = 1.6

$$\frac{4\,x^{\frac{5}{2}} + 20\,x\log\left(\sqrt{x}\right) + 1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(6*sqrt(x) + 10/x - 1/x^2,x, algorithm="fricas")
```

```
[Out] (4*x^(5/2) + 20*x*log(sqrt(x)) + 1)/x
```

Sympy [A] time = 0.039479, size = 14, normalized size = 0.93

$$4x^{\frac{3}{2}} + 10\log(x) + \frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/x**2+10/x+6*x**(1/2),x)
```

```
[Out] 4*x**(3/2) + 10*log(x) + 1/x
```

GIAC/XCAS [A] time = 0.241525, size = 19, normalized size = 1.27

$$4\,x^{\frac{3}{2}} + \frac{1}{x} + 10\,\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(6*sqrt(x) + 10/x - 1/x^2,x, algorithm="giac")
```

```
[Out] 4*x^(3/2) + 1/x + 10*ln(abs(x))
```

3.1914 $\int \left(\frac{1}{x^{3/2}} + x^{3/2}\right) dx$

Optimal. Leaf size=17

$$\frac{2x^{5/2}}{5} - \frac{2}{\sqrt{x}}$$

```
[Out] -2/Sqrt[x] + (2*x^(5/2))/5
```

Rubi [A] time = 0.00668221, antiderivative size = 17, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 11, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{2x^{5/2}}{5} - \frac{2}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Int[x^(-3/2) + x^(3/2),x]
```

```
[Out] -2/Sqrt[x] + (2*x^(5/2))/5
```

Rubi in Sympy [A] time = 0.928095, size = 14, normalized size = 0.82

$$\frac{2x^{\frac{5}{2}}}{5} - \frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(1/x**(3/2)+x**(3/2),x)
```

```
[Out] 2*x**(5/2)/5 - 2/sqrt(x)
```

Mathematica [A] time = 0.00554275, size = 14, normalized size = 0.82

$$\frac{2\left(x^3-5\right)}{5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In]  Integrate[x^(-3/2) + x^(3/2),x]
```

```
[Out] (2*(-5 + x^3))/(5*Sqrt[x])
```

Maple [A] time = 0.006, size = 11, normalized size = 0.7

$$\frac{2x^3-10}{5}\frac{1}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(1/x^(3/2)+x^(3/2),x)
```

```
[Out] 2/5*(x^3-5)/x^(1/2)
```

Maxima [A] time = 1.34239, size = 15, normalized size = 0.88

$$\frac{2}{5}x^{\frac{5}{2}}-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2) + 1/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*x^(5/2) - 2/sqrt(x)
```

Fricas [A] time = 0.198824, size = 14, normalized size = 0.82

$$\frac{2\left(x^3-5\right)}{5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2) + 1/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(x^3 - 5)/sqrt(x)
```

Sympy [A] time = 0.034614, size = 14, normalized size = 0.82

$$\frac{2x^{\frac{5}{2}}}{5}-\frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(1/x**(3/2)+x**(3/2),x)
```

```
[Out] 2*x**(5/2)/5 - 2/sqrt(x)
```

GIAC/XCAS [A] time = 0.270201, size = 15, normalized size = 0.88

$$\frac{2}{5}\,x^{\frac{5}{2}} - \frac{2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2) + 1/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*x^(5/2) - 2/sqrt(x)
```

3.1915 $\int \left(-5x^{3/2} + 7x^{5/2}\right) \, dx$

Optimal. Leaf size=15

$$2x^{7/2} - 2x^{5/2}$$

```
[Out] -2*x^(5/2) + 2*x^(7/2)
```

Rubi [A] time = 0.00690811, antiderivative size = 15, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}} = 0.$

$$2x^{7/2} - 2x^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Int[-5*x^(3/2) + 7*x^(5/2),x]
```

```
[Out] -2*x^(5/2) + 2*x^(7/2)
```

Rubi in Sympy [A] time = 1.35229, size = 12, normalized size = 0.8

$$2x^{\frac{7}{2}} - 2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-5*x**(3/2)+7*x**(5/2),x)
```

```
[Out] 2*x**(7/2) - 2*x**(5/2)
```

Mathematica [A] time = 0.00420202, size = 10, normalized size = 0.67

$$2(x - 1)x^{5/2}$$

Antiderivative was successfully verified.

```
[In]  Integrate[-5*x^(3/2) + 7*x^(5/2),x]
```

```
[Out] 2*(-1 + x)*x^(5/2)
```

Maple [A] time = 0.004, size = 9, normalized size = 0.6

$$2\,x^{5/2}\left(-1+x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-5*x^(3/2)+7*x^(5/2),x)
```

```
[Out] 2*x^(5/2)*(-1+x)
```

Maxima [A] time = 1.34179, size = 15, normalized size = 1.

$$2\,x^{\frac{7}{2}}-2\,x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(7*x^(5/2) - 5*x^(3/2),x, algorithm="maxima")
```

```
[Out] 2*x^(7/2) - 2*x^(5/2)
```

Fricas [A] time = 0.201896, size = 19, normalized size = 1.27

$$2\left(x^3-x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(7*x^(5/2) - 5*x^(3/2),x, algorithm="fricas")
```

```
[Out] 2*(x^3 - x^2)*sqrt(x)
```

Sympy [A] time = 0.037805, size = 12, normalized size = 0.8

$$2x^{\frac{7}{2}}-2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-5*x**(3/2)+7*x**(5/2),x)
```

```
[Out] 2*x**(7/2) - 2*x**(5/2)
```

GIAC/XCAS [A] time = 0.261848, size = 15, normalized size = 1.

$$2x^{\frac{7}{2}} - 2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(7*x^(5/2) - 5*x^(3/2),x, algorithm="giac")
```

```
[Out] 2*x^(7/2) - 2*x^(5/2)
```

3.1916 $\int \left(\frac{2}{\sqrt{x}}+\sqrt{x}-\frac{x}{2}\right)\,dx$

Optimal. Leaf size=24

$$\frac{2x^{3/2}}{3}-\frac{x^2}{4}+4\sqrt{x}$$

```
[Out] 4*Sqrt[x] + (2*x^(3/2))/3 - x^2/4
```

Rubi [A] time = 0.00846067, antiderivative size = 24, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{2x^{3/2}}{3}-\frac{x^2}{4}+4\sqrt{x}$$

Antiderivative was successfully verified.

```
[In]  Int[2/Sqrt[x] + Sqrt[x] - x/2,x]
```

```
[Out] 4*Sqrt[x] + (2*x^(3/2))/3 - x^2/4
```

Rubi in Sympy [F] time = 0., size = 0, normalized size = 0.

$$\frac{2x^{\frac{3}{2}}}{3}+4\sqrt{x}-\frac{\int x\,dx}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-1/2*x+2/x**(1/2)+x**(1/2),x)
```

```
[Out] 2*x**(3/2)/3 + 4*sqrt(x) - Integral(x, x)/2
```

Mathematica [A] time = 0.00719066, size = 24, normalized size = 1.

$$\frac{2x^{3/2}}{3}-\frac{x^2}{4}+4\sqrt{x}$$

Antiderivative was successfully verified.

```
[In]  Integrate[2/Sqrt[x] + Sqrt[x] - x/2,x]
```

```
[Out] 4*Sqrt[x] + (2*x^(3/2))/3 - x^2/4
```

Maple [A] time = 0.002, size = 17, normalized size = 0.7

$$\frac{2}{3}x^{\frac{3}{2}} - \frac{x^2}{4} + 4\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-1/2*x+2/x^(1/2)+x^(1/2),x)

[Out] 2/3*x^(3/2)-1/4*x^2+4*x^(1/2)
```

Maxima [A] time = 1.34178, size = 22, normalized size = 0.92

$$-\frac{1}{4}x^2 + \frac{2}{3}x^{\frac{3}{2}} + 4\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2*x + sqrt(x) + 2/sqrt(x),x, algorithm="maxima")

[Out] -1/4*x^2 + 2/3*x^(3/2) + 4*sqrt(x)
```

Fricas [A] time = 0.214198, size = 19, normalized size = 0.79

$$-\frac{1}{4}x^2 + \frac{2}{3}(x+6)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2*x + sqrt(x) + 2/sqrt(x),x, algorithm="fricas")

[Out] -1/4*x^2 + 2/3*(x + 6)*sqrt(x)
```

Sympy [A] time = 0.037598, size = 19, normalized size = 0.79

$$\frac{2x^{\frac{3}{2}}}{3} + 4\sqrt{x} - \frac{x^2}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2*x+2/x**(1/2)+x**(1/2),x)
```

```
[Out] 2*x**(3/2)/3 + 4*sqrt(x) - x**2/4
```

GIAC/XCAS [A] time = 0.227877, size = 22, normalized size = 0.92

$$-\frac{1}{4}\,x^{2}+\frac{2}{3}\,x^{\frac{3}{2}}+4\,\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-1/2*x + sqrt(x) + 2/sqrt(x),x, algorithm="giac")
```

```
[Out] -1/4*x^2 + 2/3*x^(3/2) + 4*sqrt(x)
```

3.1917 $\int \left(-\frac{2}{x}+\frac{\sqrt{x}}{5}+x^{3/2}\right)\,dx$

Optimal. Leaf size=23

$$\frac{2x^{5/2}}{5}+\frac{2x^{3/2}}{15}-2\log(x)$$

```
[Out] (2*x^(3/2))/15 + (2*x^(5/2))/5 - 2*Log[x]
```

Rubi [A] time = 0.00902896, antiderivative size = 23, normalized size of antiderivative = 1., number of steps used = 1, number of rules used = 0, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.

$$\frac{2x^{5/2}}{5}+\frac{2x^{3/2}}{15}-2\log(x)$$

Antiderivative was successfully verified.

```
[In]  Int[-2/x + Sqrt[x]/5 + x^(3/2),x]

[Out] (2*x^(3/2))/15 + (2*x^(5/2))/5 - 2*Log[x]
```

Rubi in Sympy [A] time = 1.42753, size = 20, normalized size = 0.87

$$\frac{2x^{\frac{5}{2}}}{5}+\frac{2x^{\frac{3}{2}}}{15}-2\log\left(x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  rubi_integrate(-2/x+x**(3/2)+1/5*x**(1/2),x)

[Out] 2*x**(5/2)/5 + 2*x**(3/2)/15 - 2*log(x)
```

Mathematica [A] time = 0.0124739, size = 23, normalized size = 1.

$$\frac{2x^{5/2}}{5}+\frac{2x^{3/2}}{15}-2\log(x)$$

Antiderivative was successfully verified.

```
[In]  Integrate[-2/x + Sqrt[x]/5 + x^(3/2),x]
```

```
[Out] (2*x^(3/2))/15 + (2*x^(5/2))/5 - 2*Log[x]
```

Maple [A] time = 0.003, size = 16, normalized size = 0.7

$$\frac{2}{15}x^{\frac{3}{2}} + \frac{2}{5}x^{\frac{5}{2}} - 2\ \ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  int(-2/x+x^(3/2)+1/5*x^(1/2),x)
```

```
[Out] 2/15*x^(3/2)+2/5*x^(5/2)-2*ln(x)
```

Maxima [A] time = 1.34539, size = 20, normalized size = 0.87

$$\frac{2}{5}\,x^{\frac{5}{2}} + \frac{2}{15}\,x^{\frac{3}{2}} - 2\ \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2) + 1/5*sqrt(x) - 2/x,x, algorithm="maxima")
```

```
[Out] 2/5*x^(5/2) + 2/15*x^(3/2) - 2*log(x)
```

Fricas [A] time = 0.209862, size = 26, normalized size = 1.13

$$\frac{2}{15}\left(3\,x^2 + x\right)\sqrt{x} - 4\ \log\left(\sqrt{x}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2) + 1/5*sqrt(x) - 2/x,x, algorithm="fricas")
```

```
[Out] 2/15*(3*x^2 + x)*sqrt(x) - 4*log(sqrt(x))
```

Sympy [A] time = 0.038874, size = 20, normalized size = 0.87

$$\frac{2x^{\frac{5}{2}}}{5} + \frac{2x^{\frac{3}{2}}}{15} - 2\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(-2/x+x**(3/2)+1/5*x**(1/2),x)
```

```
[Out] 2*x**(5/2)/5 + 2*x**(3/2)/15 - 2*log(x)
```

GIAC/XCAS [A] time = 0.247914, size = 22, normalized size = 0.96

$$\frac{2}{5}\,x^{\frac{5}{2}} + \frac{2}{15}\,x^{\frac{3}{2}} - 2\ln\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In]  integrate(x^(3/2) + 1/5*sqrt(x) - 2/x,x, algorithm="giac")
```

```
[Out] 2/5*x^(5/2) + 2/15*x^(3/2) - 2*ln(abs(x))
```

4 Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Mathematica/Rubi followed by one for Maple. The following are links to the source code.

The following are the listing of the above functions.

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)
(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)

(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*         GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)

GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]

(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)
```

```
ExpnType[expn_] :=
  If[AtomQ[expn], 1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]]
```

```
ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]

SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]
HypergeometricFunctionQ[func_] := MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
AppellFunctionQ[func_] := MemberQ[{AppellF1},func]
```

```
# File: GradeAntiderivative.mpl Original version thanks to Albert Rich emailed on 03/21/2017
#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);
  #This check below actually is not needed, since I only call this grading only for
  #passed integrals. i.e. I check for "F" before calling this.

  if not type(result,freeof('int')) then
     return "F";
  end if;

  if ExpnType_result<=ExpnType_optimal then
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
         if leaf_count_result<=2*leaf_count_optimal then
            return "A";
         else
            return "B";
         end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      return "C";
  end if
end proc:
```

```
# is_contains_complex(result) takes expressions and returns true if it contains "I"
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
      1 else
    max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
        1 else
      max(2,ExpnType(op(1,expn))) end if else
    max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' or op(0,expn)='integrate' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:
```

```
ElementaryFunctionQ := proc(func)
  member(func,[exp,log,ln, sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[erf,erfc,erfi,FresnelS,FresnelC,Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
    op(2,u) else
  apply(op(0,u),op(2..nops(u),u))
  end if
end proc:
#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```